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FIELD IDENTIFICATION GUIDE TO THE LIVING MARINE RESOURCES OF PAKISTAN



FIELD IDENTIFICATION GUIDE TO THE LIVING MARINE RESOURCES OF PAKISTAN

by

Peter Nick Psomadakis
Fishery Resources Division
FAO Fisheries Department
Rome, Italy

Hamid Badar Osmany
Marine Fisheries Department,
Ministry of Ports & Shipping,
Government of Pakistan,
Karachi, Pakistan

Muhammad Moazzam
Director General (Retd.)
Marine Fisheries Department,
Ministry of Ports & Shipping,
Government of Pakistan,
Karachi, Pakistan

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This volume is the second FAO species identification field guide to the marine living resources of Pakistan (see Bianchi, 1985). The information included in the latter publication was expanded and refined as new data became available through extensive field work conducted, especially by the second and third author, during the last 35 years. Additional data obtained from two R/V *Dr. Fridtjof Nansen* resource surveys (October and November 2010) conducted in Pakistan’s waters were also incorporated in the guide. In two successive missions (November 2013 and April 2014) the first author joined forces with the second author at the Marine Fisheries Department, Karachi (MFD) to collect and identify specimens at landing sites. Species held in national and local museum collections were also examined and their identification verified. Specimens belonging to “problematic” taxa were tissue sampled, fixed in formalin and sent to specialists for more detailed examination. The inclusion of many new records of fish species for the waters of Pakistan was possible thanks to the untiring efforts by the second author to document the rich marine fish fauna of the country. Local names and fishing methods were included on the basis of information provided especially by the third author who has long experience with fisheries in Pakistan. The species accounts presented in this guide were mostly sourced from previously published FAO works for the region, such as the FAO Species identification Guide for the Western Indian Ocean, FAO Species identification Guide for the Western Central Pacific, FAO World Species Catalogues and other primary literature.

This Guide is not meant to be considered a complete checklist but a comprehensive list of marine and brackish-water commercial fish species that occur in Pakistan’s waters. It is aimed at being a reference guide for fishery officers, fishers and local scientists to help improve recording, assessment, production and sustainable management of marine resources.

A user-friendly pocket guide as well as a colour illustrated poster featuring a selection of the most common marine species exploited by Pakistan’s coastal fisheries were also produced as complement to the present Guide (see <http://www.fao.org/fishery/fishfinder/en>).

Programme manager: Johanne Fischer (FAO FishFinder Programme coordinator, 2009–2014)

Technical editing and formatting: Peter Nick Psomadakis (FAO, Rome)

Scientific illustrator (for material presented here for the first time): Emanuela D’Antoni (FAO, Rome)

Cover illustration and photo editing: Emanuela D’Antoni (FAO, Rome)

Psomadakis, P.N. , Osmany, H.B. & Moazzam, M.

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ABSTRACT

This field guide covers the major resource groups likely to be encountered in the fisheries of Pakistan. This includes shrimps, lobsters, crabs, bivalves, gastropods, cephalopods, sharks, batoid fishes, bony fishes, and sea snakes. Each resource group is introduced by a general section on technical terms and measurements pertinent to that group and an illustrated guide to orders and families of the group. The more important species are treated in detail with accounts providing scientific nomenclature, FAO names in English and French (where available), local names used in Pakistan, diagnostic features, one or more illustrations, maximum size, and notes on fisheries and habitat. Colour plates for a large number of the species are included. The guide is fully indexed and a list of further literature is appended.

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TABLE OF CONTENTS

INTRODUCTION	1
SHRIMPS AND PRAWNS	7
TECHNICAL TERMS AND MEASUREMENTS	7
GUIDE TO SUBORDERS AND FAMILIES	9
Sergestidae	11
Aristeidae	11
Penaeidae	12
Solenoceridae	20
Palaemonidae	21
LOBSTERS	23
TECHNICAL TERMS AND MEASUREMENTS	23
GUIDE TO FAMILIES	24
Palinuridae	25
Scyllaridae	28
CRABS	30
TECHNICAL TERMS AND MEASUREMENTS	30
GUIDE TO FAMILIES	31
Portunidae	32
Matutidae	35
BIVALVES	36
TECHNICAL TERMS AND MEASUREMENTS	36
GUIDE TO FAMILIES	37
Arcidae	40
Mytilidae	40
Pinnidae	41
Placunidae	42
Ostreidae	42
Solenidae	44
Veneridae	44
GASTROPODS	48
TECHNICAL TERMS AND MEASUREMENTS	48
GUIDE TO FAMILIES	49
Turbinidae	50
Muricidae	51
Babyloniidae	51
CEPHALOPODS	52
TECHNICAL TERMS AND MEASUREMENTS AND GUIDE TO ORDERS	52
Sepiidae	54
Ancistrocheiridae	58
Octopoteuthidae	59
Cranchiidae	59
Loliginidae	60
Onychoteuthidae	62

Chtenopterygidae	63
Ommastrephidae	63
Thysanoteuthidae	64
Octopodidae	65
Argonautidae	67
SHARKS	68
TECHNICAL TERMS AND MEASUREMENTS	68
GUIDE TO ORDERS AND FAMILIES	69
Echinorhinidae	73
Heterodontidae	73
Odontaspidae	73
Pseudocarchariidae	74
Alopiidae	74
Lamnidae	75
Hemiscylliidae	75
Stegostomatidae	76
Ginglymostomatidae	77
Rhincodontidae	77
Scyliorhinidae	77
Triakidae	78
Hemigaleidae	79
Carcharhinidae	79
Sphyrnidae	87
BATOID FISHES	89
TECHNICAL TERMS AND MEASUREMENTS	89
GUIDE TO ORDERS AND FAMILIES	90
Pristidae	95
Narkidae	96
Narcinidae	96
Torpedinidae	96
Rhinidae	97
Rhynchobatidae	97
Rhinobatidae	98
Rajidae	100
Dasyatidae	100
Gymnuridae	105
Myliobatidae	105
Rhinopteridae	107
Mobulidae	107
BONY FISHES	110
TECHNICAL TERMS AND MEASUREMENTS	110
GUIDE TO ORDERS AND FAMILIES	113
Elopidae	144
Megalopidae	144
Albulidae	144
Muraenidae	145
Ophichthidae	148
Congridae	148
Muraenesocidae	150

Clupeidae	151
Dussumieriidae	156
Engraulidae	157
Chirocentridae	160
Pristigasteridae	161
Chanidae	163
Ariidae	163
Plotosidae	168
Synodontidae	168
Myctophidae	171
Trachipteridae	172
Bregmacerotidae	172
Ophidiidae	172
Batrachoididae	173
Lophiidae	173
Antennariidae	174
Ogcocephalidae	175
Belonidae	175
Hemiramphidae	177
Exocoetidae	178
Holocentridae	181
Fistulariidae	182
Scorpaenidae	183
Apistidae	186
Tetrarogidae	186
Synanceiidae	186
Dactylopteridae	188
Triglidae	189
Platycephalidae	190
Latidae	193
Acropomatidae	194
Dinopercidae	194
Serranidae	195
Pseudochromidae	203
Terapontidae	203
Priacanthidae	204
Apogonidae	206
Sillaginidae	211
Lactariidae	212
Pomatomidae	212
Rachycentridae	213
Echeneidae	213
Carangidae	214
Coryphaenidae	232
Menidae	233
Leiognathidae	233
Bramidae	238
Emmelichthyidae	238
Lutjanidae	239
Caesionidae	250
Lobotidae	251
Gerreidae	251

Haemulidae	253
Sparidae	260
Lethrinidae	264
Nemipteridae	267
Sciaenidae	272
Polynemidae	280
Mullidae	282
Pempheridae	287
Kyphosidae	288
Drepaneidae	289
Monodactylidae	290
Chaetodontidae	290
Pomacanthidae	292
Pentacerotidae	292
Cepolidae	293
Mugilidae	293
Pomacentridae	297
Labridae	299
Scaridae	299
Champsodontidae	300
Uranoscopidae	300
Pinguipedidae	301
Blenniidae	301
Callionymidae	302
Gobiidae	302
Ephippidae	304
Scatophagidae	305
Siganidae	305
Acanthuridae	306
Sphyraenidae	308
Gempylidae	311
Trichiuridae	311
Scombridae	313
Xiphiidae	318
Istiophoridae	318
Centrolophidae	320
Nomeidae	320
Ariommatidae	321
Stromateidae	321
Psettodidae	322
Paralichthyidae	322
Bothidae	324
Samaridae	325
Soleidae	326
Cynoglossidae	328
Triacanthidae	331
Balistidae	332
Monacanthidae	334
Ostraciidae	335
Tetraodontidae	336
Diodontidae	339
Molidae	340

SEA SNAKES	341
TECHNICAL TERMS AND MEASUREMENTS	341
Elapidae	343
 BIBLIOGRAPHY	 348
 INDEX	 351
 LIST OF COLOUR PLATES	 382

INTRODUCTION

The Islamic Republic of Pakistan has a coastline of 1 046 km along the northern Arabian Sea, extending between 23°43' and 25°12'N latitude and 61° 38' and 68°10'E longitude (Figure 1). Administratively, Pakistan has four provinces, of which two, Sindh and Balochistan, are maritime provinces. Sindh Province, which is located on the eastern side between India in the east and the Hub River in the west, has a coastline of 295 km. Balochistan Province is located between the Hub River and the Iranian border and has a coastline of about 771 km. Much of the Sindh coast is characterized by a series of meandering creeks formed in the delta of the Indus River, some of which have fringing mangrove (*Avicennia marina*) stands. Vast mudflats and soft sediments provide habitat for many species including a large number of commercially important fishes and shellfishes which spend a part of their life cycle in the creek system. The western part of the coast of Sindh has a mix of rocky cliffs and extended sandy beaches. The continental shelf is about 150 km wide with a prominent subsea Indus Canyon (the Swatch) having a maximum depth of about 700 m.

The Balochistan coast is characterized by a number of prominent headlands with adjoining bays at Ormara, Pasni and Gwadar and large bays at Jiwani and Sonmiani. A major part of the coast is sandy with intermittent stretches of steep rocky outcrops. There are two uninhabited islands (Churna and Astola), two tombolos (Ormara and Gwadar) and two lagoons (Miani Hor and

Kalimat Khor). With the exception of a few ephemeral streams, no major rivers discharge on this coast. There are small stretches of mangroves in Miani Hor, Kalimat Khor and Gwadar Bay. The continental shelf is very narrow (about 6 km at Gwadar) with the exception of Sonmiani Bay where it extends to about 70 km.

The seafloor is mostly sandy or sand and mud on the eastern (Sindh to Sonmiani Bay) continental shelf but on the western shelf (Balochistan) it is uneven with numerous rugged canyons and rocky areas.

The Exclusive Economic Zone (EEZ) of Pakistan extends to 200 nautical miles (370 km) having an area of approximately 250 000 km². It covers the entire continental shelf and continental slope as well as part of the Arabian Sea floor with a maximum depth of 3 250 m. The EEZ of Pakistan is bisected by the Murray Ridge which runs south westerly from the Balochistan continental shelf to the Carlsberg Ridge. Pakistan has also claimed an extended continental shelf from 200 to 350 nautical miles, thus acquiring exclusive access to living (benthic) and non-living resources of the seabed in an area of about 50 000 km².

Pakistan's coastal waters are rich in fish and shellfish resources. The fish and shellfish fisheries from Pakistan's coastal and offshore area are estimated to land about 400 000 tonnes and providing livelihoods to about 300 000 fishers living in about 70 coastal towns and villages along the coastline.



Figure 1 - Map of Pakistan showing the two maritime provinces

Physical Features

The Arabian Sea is the north-western extension and the contiguous sea of the Indian Ocean. This sea is connected to two high saline and high temperature water-bodies i.e. Persian Gulf through the Gulf of Oman and the Strait of Hormuz and in the southwest, the Gulf of Aden connects it with the Red Sea. Pakistan forms a major part of the northern border to the Western Indian Ocean. The Indus Delta which covers approximately 600 000 ha is comprised of 17 major creeks, numerous minor creeks, extensive areas of mudflats, and 129 000 ha of mangrove forests. The dense forests are mostly located in the pockets created by the creeks. The source of freshwater is the perennial river, the Indus River, which flows through the Delta before reaching the Arabian Sea.

Oceanography

Pakistan's marine conditions are driven primarily by the Indian Ocean monsoons. The southwest (summer) monsoon season is from mid-May to mid-September, and the northeast (winter) monsoon season is from December to February. The months of mid-September to November and March to mid-May are transition months, known as the post-southwest monsoon calm period and the pre-southwest monsoon calm period, respectively. Wind speeds during the southwest monsoon are about 45-55 km/h and during the northeast monsoon about 20-30 km/h. The wind speed during calm period remains between 10 and 20 km/h. The climate of coastal Pakistan is dry-tropical with average annual rainfall along the coast of about 220 mm for Sindh and about 160 mm for Balochistan. The rainy season coincides with southwest monsoon in Sindh, whereas major rains occur in Balochistan during winter period.

The presence of a permanent oxygen minimum zone (OMZ) between 150 and 1 000 m depth is one of the significant features of the Arabian Sea which affects distribution and abundance of fish and shellfish faunas in coastal and offshore waters of Pakistan.

As a result of the monsoon dynamics and consequent high material flows in the region through the Persian Gulf and Red Sea, the coastal and offshore areas of Pakistan are considered to have global significance in terms of biogeochemical fluxes. The seasonal reversal of winds leads to upsloping of nutrient-rich water along the continental shelf of Pakistan during the summer monsoon season. The relatively cool upsloped water is characterized by low dissolved oxygen from the upper OMZ of the Northern Arabian Sea. The onset of winter monsoon causes inshore surface waters to cool several degrees (°C) due to convective cooling caused by cooler winds of the winter monsoon.

The presence of upsloped low oxygen water on the continental shelf affects the distribution of demersal fishes and shrimps. The movement of demersal fishes and shrimps to avoid the low oxygen water restricts distribution, increases density and, consequently, increases availability to fisheries.

Waters on the continental shelf of Pakistan generally exhibit higher primary productivity rates than those of

the open sea because of increased supply of nutrients from upsloped waters and river-borne nutrients. Shelf production is also enhanced by more frequent recycling on the sea bed and increased vertical mixing from bottom-induced turbulence.

The biomass of the zooplankton (100-200 mg/m³) in the upper 100 m of the Arabian Sea is several times higher than much of the sub-tropical gyres of the other oceans on the same latitude. Drastic day/night changes in the vertical distribution of biomass in the northern Arabian Sea are driven by vertical migration of mesopelagic fishes, almost exclusively one species, *Benthosema pterotum*. During the day, these fishes live at 300-400 m depth at fairly low oxygen concentration and migrate at night to concentrate in the upper 50 m. This as yet unexploited mesopelagic species appears to be the largest living resource of the area, and it is likely to have a life cycle of one year or less, so that its annual production rate would be very high. Conversely, invertebrate members of the deep scattering layer of the Arabian Sea do not seem to migrate and spend the day at depth in very low oxygen waters.

Tides

Tides play an important role in the water dynamics of the coastal areas of Pakistan, where the semi-diurnal tides (i.e. having two tidal cycles for every 24 hour period) have a maximum range of about 3.5 m. These tides drive a massive flow of water in and out of the creek areas of the Indus River and other coastal areas, carrying larvae and juveniles of important marine fish and shellfish species into nursery areas within the creek systems. Other coastal species enter the mudflats and mangroves for feeding under the influence of tides. The extent of tidal flow greatly increases during the southwest monsoon period as intensive wave action in the open ocean forces more water into the creek system during high tides. During the northeast monsoon, the flow in the creek system greatly decreases as offshore wave action under the influence of winds blowing from shore to the sea forces water offshore.

Sea temperature and salinity

The seawater temperatures, which range between 20 and 30 °C for most of the shelf, depend mainly on seawater circulation and depth. Temperatures start to increase from March and peak in June-July, and decrease after September with December-January being the period of lowest seawater temperature.

Sea surface salinity is quite stable along the coast of Pakistan as it ranges between 35.4 and 36.7. Salinity in lagoons and creeks is higher, ranging between 36.5 and 37.2 for most of the year. After floods and rains, the salinity in the vicinity of the main river flow in the Indus Delta and along major ephemeral streams may drop for a few days to near freshwater levels.

Coastal Habitats

Coastal and offshore areas of Pakistan offer a variety of

habitats extending from mudflats in the creek area to abyssal plains in the deep Arabian Sea basin. Coastal areas are dominated by sandy shores intermittently interrupted by rocky ledges and rocky outcrops. There are no coral reefs in Pakistan, but habitat around the islands of Churna and Astola and some submerged rock formations have coral assemblages dominated by *Goniopora albiconus*, *Favites pentagona*, *Favites complanata*, *Coscinaraea monile*, *Dendrophyllia robusta*, *Porites nodifera* and *Pocillopora damicornis*. Because of the limited distribution of coral along the Pakistan coast, coral-associated fish and shellfish species have limited diversity in Pakistan. The dominant habitats for fish and shellfish include mangrove areas and soft sediments or rocky bottoms on the continental shelf.

Mangroves

Mangrove forest cover in coastal Pakistan was estimated to include 132 000 ha mainly in the Indus Delta (129 000 ha) and in a few patches along the Balochistan coast (3 000 ha) in the Miani Hor, Kalamat Khor, and Gwadar Bay areas.

Mangroves of the Indus Delta are dominated by one species, *Avicennia marina*. *Rhizophora mucronata* and *Ceriops tagal* used to occur in the area and have been reintroduced in some areas. The Indus Delta is believed to have had as many as eight species, most of which are now locally extinct. Along the Balochistan coastline there are three pockets of mangroves located at Miani Hor represented by three species, *R. mucronata*, *C. tagal* and *A. marina*. It is the only area in Pakistan where all three species grow naturally. Kalamat Khor and Gwadar Bay have only one mangrove species, *A. marina*.

Mangrove areas have associated habitats consisting of creeks, shallow channels and vast mudflats. All these habitats support a variety of food chains and functions as breeding, nursery and feeding grounds for a variety of fish and shellfish species.

Rocky shores

Rocky shore and substrates are mainly located west of Karachi extending between Manora and Manjhar on the Sindh coast, and intermittently between Khalifa Point and Jiwani along the Balochistan coast, with major cliffs and rocky outcrops at Churna Island, Gaddani, Ras Malan, Ormara, Taq, Sakoni, Astola Island, Ras Zarrin, Karwat, Sur, Gwadar, Ganz, Daran and Jiwani. These habitats are extremely important as they support a variety of shellfish and diversified fish fauna in rock pools and associated habitats.

Soft sediment habitat

The coast of Pakistan is dominated by sandy, sand-and-mud and muddy habitats extending from intertidal areas to deep oceanic basins. Sandy shores are located on the outer marginal islands located in the Indus creek areas and patches extend from Karachi in Sindh to the western borders of Balochistan at Jiwani. The sandy patches

are predominantly intertidal in nature whereas sandy sediment may extend in some areas to a depth of about 40 m, especially in Sonmiani Bay. Muddy and sand-and-mud habitats dominate in the eastern areas, extending from creek marginal islands to the continental slope and even into the deep sea basin. This is the most extensive habitat type and supports a large variety of fish and shellfish species.

Pelagic habitat

There are three distinct pelagic habitats in Pakistan's waters. Beyond the continental shelf is the largest pelagic zone, extending to the limit of the EEZ of Pakistan and beyond. This habitat is dominated by the Arabian Sea OMZ for most of the year. Oxygen levels in this zone can be as low as 0.1 mg/litre between 200 and 1 000 m. This low oxygen zone contains unique fauna, predominantly consisting of lanternfishes (myctophids) dominated by *Bentosema pterotum* along with *Bentosema fibulatum*, *Diaphus* spp. and *Bolinichthys* spp. These mesopelagic species exhibit diurnal vertical migration and are believed to be an important food for large predators including squids, hairtails, tunas and billfishes.

The pelagic zone on the continental shelf is the second pelagic habitat and is known to have a rich fish and shellfish fauna. This area is also affected by the OMZ, which restricts fish distribution in this pelagic zone as low oxygen water moves towards the coastline during the southwest monsoon, thereby concentrating the fish in near-coastal areas. During the northeast monsoon, the influence of the OMZ on the continental shelf decreases and the distribution of fish expands across the shelf again. Pelagic communities in creek areas and shallow coastal waters are dominated by sardinellas, anchovies, scads and Indian mackerel, whereas in the offshore waters tunas, billfishes, narrow-barred Spanish mackerel and common dolphinfish are dominant.

Demersal habitat

Demersal habitats on the continental shelf are characterized by soft sediments (sands and muds) in the eastern part (Sindh and Sonmiani Bay) and harder bottoms (rocks and gravels) to the west. Both habitat types support a wide variety of fish and shellfish species. In the shallow soft bottom habitat, shrimps, croakers and sea catfishes dominate. In the harder bottom areas and in deeper demersal habitats of both types, there is a large variety of fish species including barracudas, pomfrets, eels, hairtailfishes, threadfin breams, sharks and rays. Most of the fish catch in Pakistan is of demersal origin.

Fishery

Pakistan has a large fleet consisting of about 12 000 fishing boats ranging from small fishing boats (less than 10 m) operating in shallow coastal waters to large trawlers and gillnetters (more than 25 m) operating in offshore waters in the EEZ of Pakistan. Fleet size and total fishing effort has grown from 800 small wind driven gillnet fishing boats in 1947 to 12 000 fishing vessels

today, some of which are more than 30 m long.

Gillnets are the most important fishing gear used in Pakistan. Types include small mesh size (2 cm) bottom-set gillnet called "Thukri" to large mesh size (15 cm) driftnets used by the tuna gillnetters targeting large pelagic species in the offshore waters of Pakistan. The majority of Balochistan fishing vessels and to a lesser extent those in Sindh use gillnets.

Shrimp trawling was introduced in Pakistan in 1950s, and now the shrimp fleet consists of about 2 500 mechanized fishing trawlers, which have the capacity to fish in deeper waters. Trawlers operate from shallow coastal waters out to a depth of about 100 m in the offshore waters. Previously, these vessels only conducted shrimp trawling, but since 2002 almost all trawlers operate both a shrimp trawl net (especially in August and September) and a high opening bottom trawl for fish. The operation of such a large trawling fleet has resulted both in the depletion of shrimp stocks and in a number of ecological impacts that may seriously affect the biological diversity and productivity of the fishing grounds. One major problem is the use of fine mesh size nets that end up catching juveniles of commercially important and unimportant food species in massive quantities. Due to their small size and low consumer preference these are called "trash fish". Trash fish are caught mainly from trawling for higher-value fish, crustaceans and molluscs and are now being converted into fishmeal used in animal feed for chicken farming.

Seine gear, locally known as "Katra" is used in Pakistan for catching small pelagics including sardinellas, anchovies and scads. It is estimated that there are more than 600 such boats, of which 500 are based in Sindh and 100 based at Damb (Balochistan). Misuse of this encircling gear can also have negative impacts, as it may catch juveniles of other commercially important fishes and cause habitat impacts when such gear is used in creek areas or very shallow coastal waters.

The estuarine set bag net (ESBN), locally known as "Bhulla" has been used in the creek area of Sindh since the late 1970s. This gear is placed in the creeks of the Indus Delta to catch fish and shellfish that migrate with incoming and outgoing tides. Because it is often set completely across smaller channels and uses a small mesh size, it catches large numbers of juveniles and even larvae of commercially important species. Although its use has been banned for many years, it is estimated that about 8 000 ESBNs are still operating in almost all large and small creeks of the Indus Delta system.

Longlines and handlines are also important fishing gear types used for catching large demersal species, including croakers, eels, groupers, seabreams, sharks and rays in coastal and offshore waters. In addition to these, cast nets and beach seines are also important gear types being used in coastal, creek and intertidal waters. Under national legislation, there is a ban on use of trawl net, ESBN and seine net in the creek area of the Indus Delta and the entire extent of Balochistan waters; however, extensive poaching occurs throughout these areas.

Under the present Deep-Sea Fishing Policy, the Government of Pakistan has permitted foreign deep-sea trawlers and tuna longliners to operate beyond 20

nautical miles from the coastline. Between 1982 and 2005, foreign trawling was conducted, ranging from 3 vessels in 1987 to 20 vessels in 2000. Since November 2005, no foreign trawlers have been operating in Pakistan.

Tuna longlining started in 1991 with the fleet increasing to 50 vessels in 1993. Offshore longlining continued until May 2009 with nine vessels operating. Under the Deep-Sea Fishing Policy, the Government of Pakistan still regularly invites applications from tuna longliners, tuna purse seiners and demersal trawlers; however, no viable proposals have been received since 2009.

In the coastal areas of Sindh, fisheries for hard shell Mollusca have operated since 1985. Export of carinate rock shell (*Indothais lacera*) and spiral ivory whelk (*Babylonia spirata*), was initially of shells which were obtained as bycatch in shrimp trawling. Later, a targeted fishery using baited traps was established in Pakistan. More recently, other export fisheries for clams including finger razor shell (*Solen dactylus*), marbled venus (*Marcia recens*), asiatic hard clam (*Meretrix meretrix*) and antique ark (*Anadara antiquata*) have been developed. These species are either hand-picked or harvested using rakes or spades.

Fisheries for jellyfish (Scyphozoa) were established in Pakistan in 2003. Prior to this, a major bloom of *Crambionella orsini* in 2002 had affected fish harvesting by shrimp trawlers and gillnetters but helped to establish processing of jellyfish in Pakistan. Although many jellyfish species are found in Pakistan, only *Catostylus perezii* and *Rhizostoma pulmo* are commercially harvested using mainly pelagic trawl or gillnet. After treatment with salt and alum, these jellyfishes are exported, mainly to China.

Species included in this guide

This guide is designed as a practical tool for all fisheries workers within Pakistan, particularly those facing the daily task of collecting fisheries statistics and other data by species on landing points, fish markets, fish in transit, and on board commercial and research vessels. It is also aimed at creating taxonomic interest among fisheries students so as to improve the number of taxonomists in the country.

The guide is based principally on original field work conducted by the authors, and includes those marine and brackish-water species of shrimps, lobsters, crabs, bivalves, gastropods, cephalopods, sharks, batoids, bony fishes, and sea snakes, considered to be regular components (with few exceptions) of the catches along Pakistan's coast. Fish species reported in the literature to occur in Pakistan but not found by the authors during field work are marked with an asterisk beside the scientific name. Given that the taxonomy of the fish fauna in the region is still ongoing, some species (e.g. *Echinorhinus brucus*, *Glyphis gangeticus*, *Glaucostegus granulatus*, *Rhinobatos annandalei*, *Himantura randalli*, *Secutor insidiator*, and *Zebrias synapturoides*) are included with the qualifier "cf" preceding the specific name. Undescribed and/or possibly undescribed species (e.g. *Iago* sp. A, *Harpadon* sp., *Saurida* sp., *Gymnothorax* sp.) are provisionally included with an

“sp” qualifier. Those species included in the guide on the basis of photographic record (e.g. *Dactyloptena gilberti*, *Epinephelus multinotatus*, *Decapterus smithvanizi*, and *Laeops nigrescens*) also have a “cf” qualifier preceding the specific name. Some fish species such as *Callionymus marleyi* (Callionymidae) and *Gerres longirostris* (Gerreidae) were not included because collected when the formatting of the guide was already in its final phase.

The finding of the acanthurid fish, *Acanthurus monroviae*, deserves a special mention. This tropical eastern Atlantic species has been recorded on several occasions far from its centre of distribution (see Langeneck *et al.*, 2015) and its anomalous finding in Pakistan’s waters should be considered an exceptional event by a vagrant specimen.

If a species not included in the guide is found, the user can follow the instructions here provided regarding its preservation and description and/or contact the FishFinder Programme.

Preservation of specimens

Preserved fish specimens are central to documenting and describing global biodiversity over time. Worldwide, museum and university collections provide irreplaceable resources and have an enduring role in taxonomic, ecological, biogeographical and evolutionary studies. It is therefore important that the correct preservation procedures be followed to ensure the quality and longevity of preserved fish specimens.

Specimens should be rinsed in water to clean off any mud or sand. Then, if possible, they should be immediately placed in 10 percent formalin solution upon capture (this is made by combining 1 part full strength formalin with 9 parts clean water). Fish specimens should be fixed in a natural posture, with the body straightened and mouth closed prior to fixation. The specimens should be placed head first into a wide-mouthed jar filled with enough formalin solution to cover the fish. Before fixing large specimens it is advisable to inject formalin into the body cavity (through the vent) or to make a lateral incision on the right side of the belly to allow the fixative into the body cavity. This is particularly important with large herbivorous fishes, as their guts will rapidly deteriorate.

Formalin is the best available fixative and is widely available from pharmacies worldwide. However, it contains formaldehyde, a hazardous chemical, so it is highly toxic and its fumes should not be inhaled. Rubber gloves should be worn while using formalin or handling formalin-fixed specimens. If you get formalin on your skin or in your eyes wash it off with large amounts of water. Always use formalin outdoors or in a well-ventilated area. Specimens usually have to be left in formalin to be fixed for a week or slightly more if larger than 10 cm. Subsequently they should be soaked for a day or two in clean freshwater before being transferred to 70–75 percent alcohol for long-term preservation. Alcohol is usually safe to handle, but can cause irritation to the skin in cases of prolonged contact and is highly flammable. Always rinse hands thoroughly with water after working with alcohol. Industrial alcohol is toxic and should never be drunk. Receptacles containing alcohol should always be properly and clearly labelled. Alcohol is prone to rapid evaporation, and receptacles holding it should be securely

covered at all times, and not be opened unnecessarily (Stiassny, 2015).

Presentation and format

The authors’ leading idea was to produce a compact and easily manageable guide that would be within reach of fishery workers at all levels. Consequently, the guide had to be kept as simple as possible (e.g. Arabic numerals used both for spinous and soft ray fin counts) and based largely on illustrations, while the text was kept as succinct as possible. This obviously implies certain limitations of the guide for an accurate identification of all species. It is therefore recommended, in the case of any doubt, that the regional sets of FAO Species Identification sheets for the Western Indian Ocean (Fischer and Bianchi, 1984) and/or the taxonomic literature cited in this guide be consulted, being more comprehensive in species coverage and giving a much more detailed account of the diagnostic characters of each species.

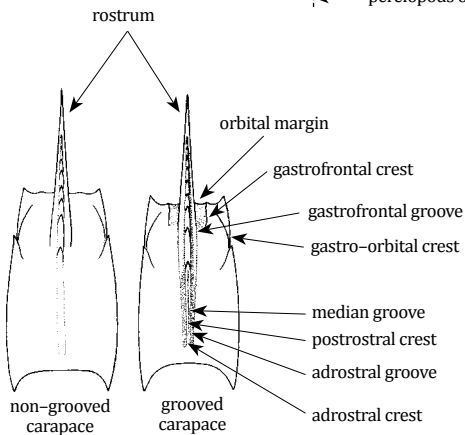
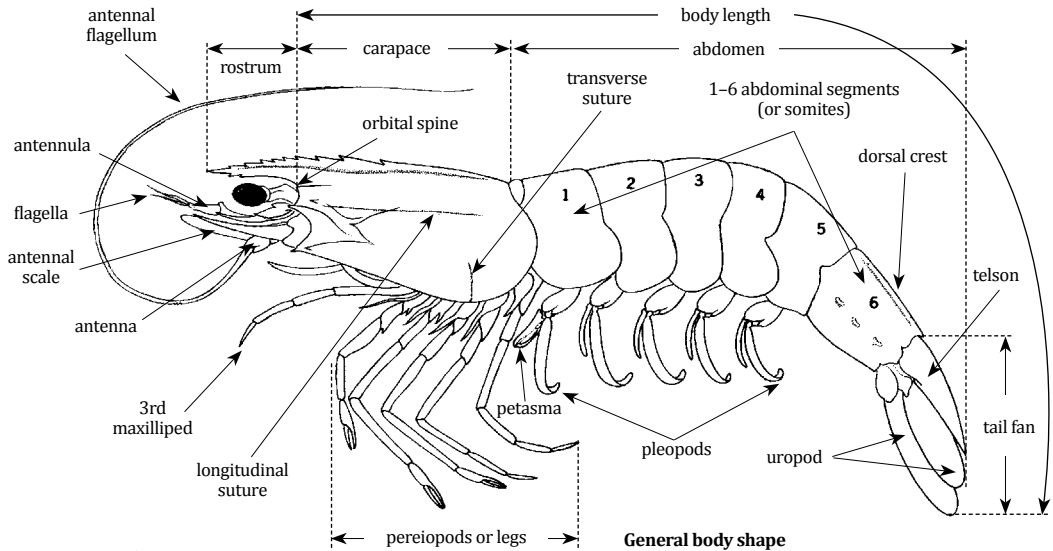
Each of the major taxonomic groups is introduced by a schematic illustration of the main body parts of a typical representative species and some measurements and technical terms of general use to fishery workers. A guide to the higher taxonomic categories, “Guide to Orders/Suborders and Families” arranged in phylogenetic (systematic) order is also included. Size information included in this section refers to the largest member species of a given family occurring in Pakistan’s waters. The first thing the user should do when a specimen is caught is to determine to which higher taxonomic category it belongs, and then follow the page number to reach the family within the “Guide to Species”. Once the family has been identified, the species can be determined by looking at all the species accounts. **Users are strongly advised not to rely exclusively on colour plates for species identification.** The arrangement of species within a family is alphabetical by genus and species. Text for each species includes information on names: scientific names; FAO names in English (En) and French (Fr) (where available) and local names in Urdu, Sindhi and Balochi (where available). The letters in brackets following local names indicate the localities from where the names were obtained: Balochistan (Bal) and Sindh (Sin) Maritime Provinces. The local names included are those gathered by the local authors over time in the course of their field work. It is hoped that other local names will be added directly on the sheets by users and communicated to fisheries offices or FAO. Maximum size for each species is expressed as total length (TL), fork length (FL), standard length (SL), disc width (DW) (only for batoids), body length (BL) (only for shrimps, prawns and lobsters), carapace width (CW) (only for crabs), and mantle length (ML) (only for cephalopods). Moreover, information on diagnostic features, colour pattern (including sexual dimorphism and ontogenetic changes), catch methods and habitat is provided. A remark section mostly with taxonomic and nomenclature comments is included where necessary.

Colour plates for a large number of species consisting almost exclusively of specimens taken in Pakistan’s waters are included at the end of the guide.

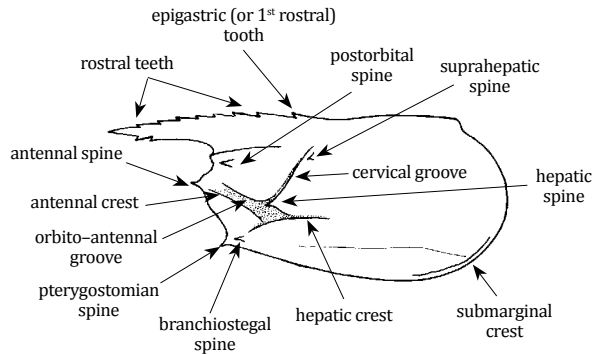
SHRIMPS AND PRAWNS

The "Guide to Suborders and Families" includes 2 suborders and 5 families, while the "Guide to Species" includes 26 species. The families Penaeidae and Aristeidae are of great commercial value on the local and international market (except those of small size). They also form the food of many fishes and play a major role in food relationships and ecology in both lagoons and the sea. Some species are reared in ponds (the main aquaculture sector in Pakistan).

TECHNICAL TERMS AND MEASUREMENTS



Carapace (dorsal view)



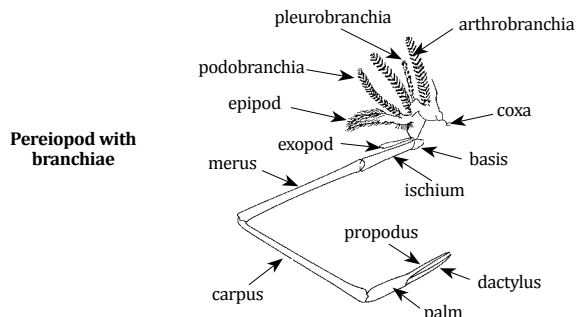
Carapace (lateral view)

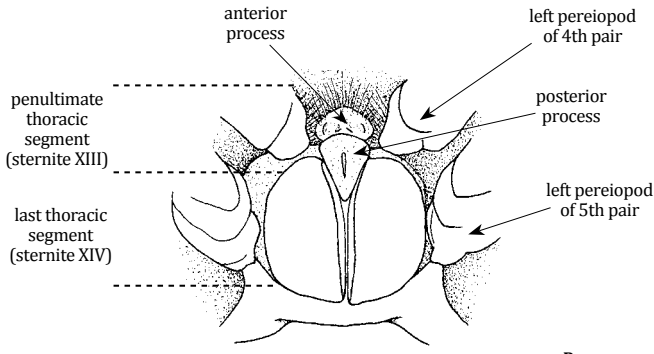


Telson with movable spines

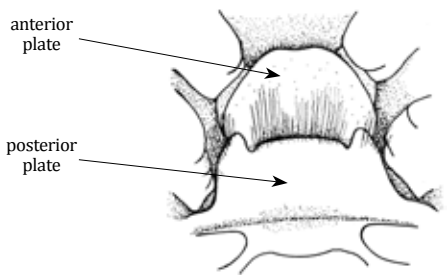
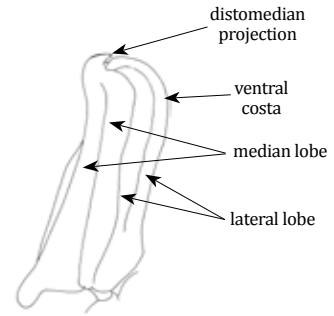


Telson without movable spines

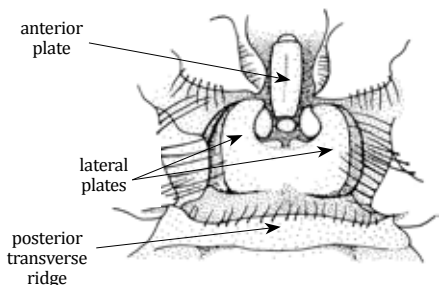
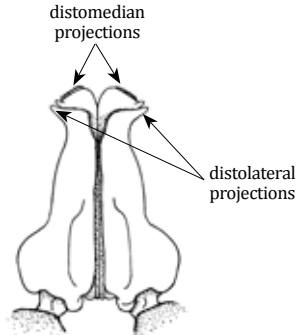




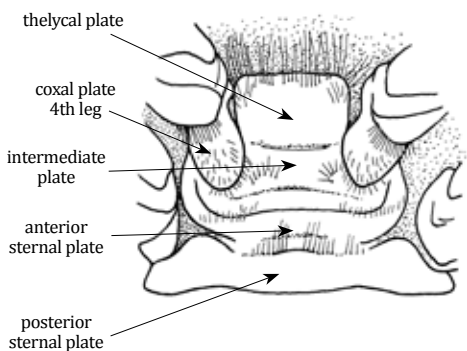
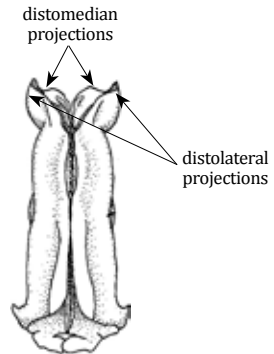
Penaeus



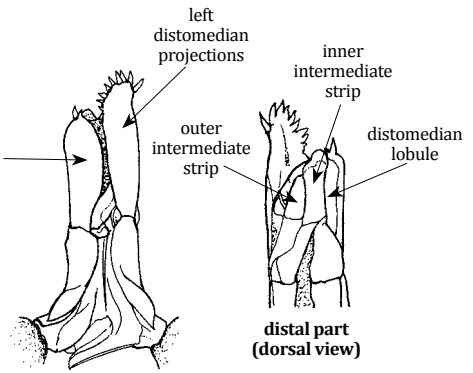
Parapenaeopsis



Metapenaeus



Metapenaeopsis



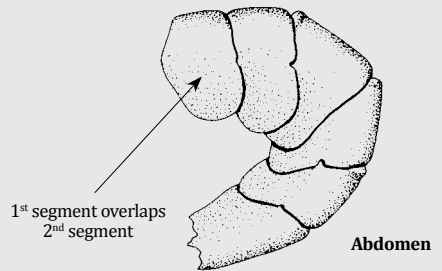
Basic types of thelycum of female penaeid shrimps (ventral view)

Basic types of petasma (joined endopods of 1st pair of pleopods) of male penaeid shrimps (ventral view - except otherwise stated)

GUIDE TO SUBORDERS AND FAMILIES

Suborder DENDROBRANCHIATA **Sergestoid and Penaeoid shrimps**

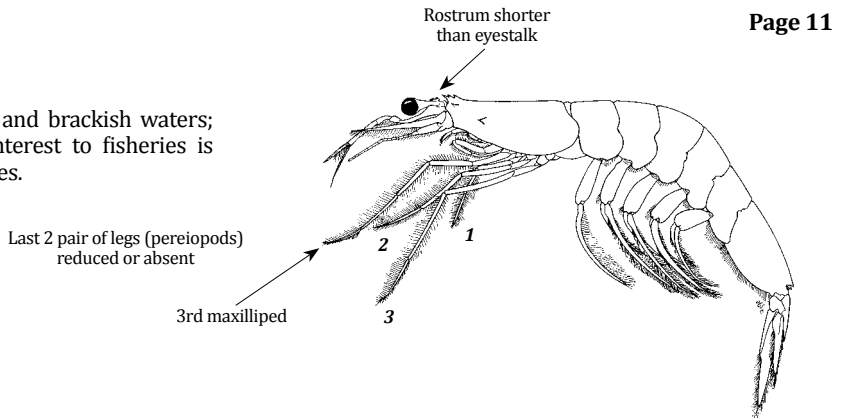
Pleuron of second abdominal segment overlapping that of third segment only; pincer of first 3 pairs of pereopods equal or sub-equal. Eggs not carried by the female.



SERGESTIDAE

Sergestid shrimps

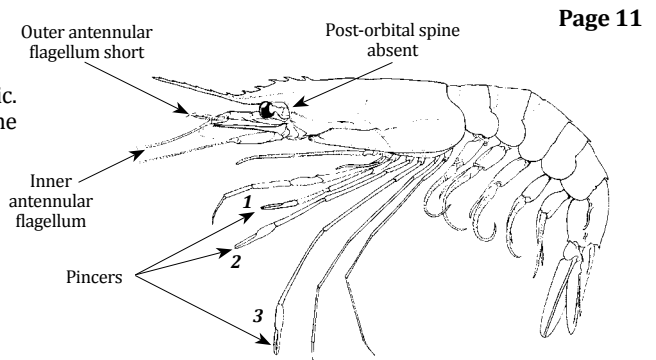
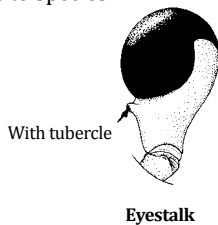
To about 4 cm (BL). Marine and brackish waters; epipelagic. One species of interest to fisheries is included in the Guide to Species.



ARISTEIDAE

Aristeid shrimps

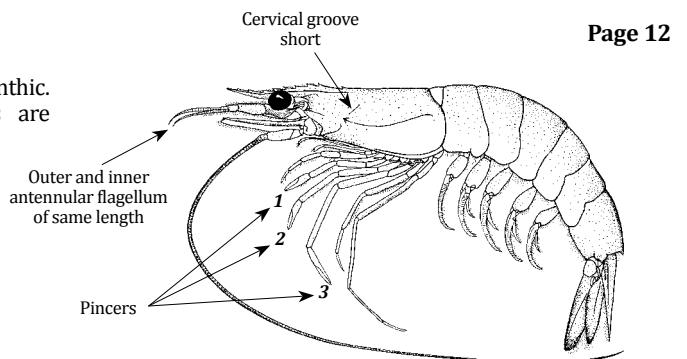
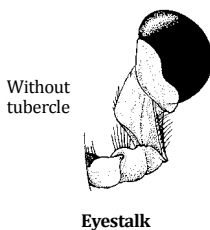
To about 15 cm (BL). Marine, deep water; benthic. One species of interest to fisheries is included in the Guide to Species.



PENAEIDAE

Penaeid shrimps

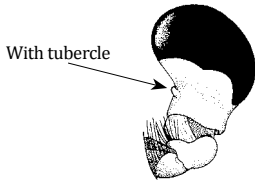
To about 27 cm (BL). Marine and estuarine, benthic. Seventeen species of interest to fisheries are included in the Guide to Species.



SOLENOCERIDAE

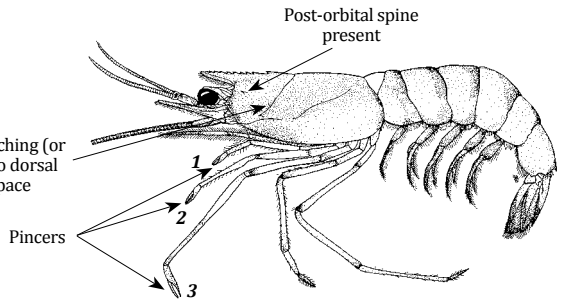
Solenocerid shrimps

To about 14 cm (BL). Marine, benthic, nocturnal. Three species of interest to fisheries are included in the Guide to Species.



Eyestalk

Cervical groove reaching (or almost reaching) to dorsal margin of carapace



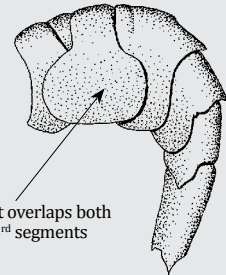
Post-orbital spine present

Pincers

Infraorder CARIDEA (Suborder PLEOCYEMATA)

Caridean shrimps

Pleuron of second abdominal segment overlapping those of first and third segment. First two pairs of pereiopods, or only the second, ending in a pincer; the last three pairs with a simple claw. Eggs carried by the female.



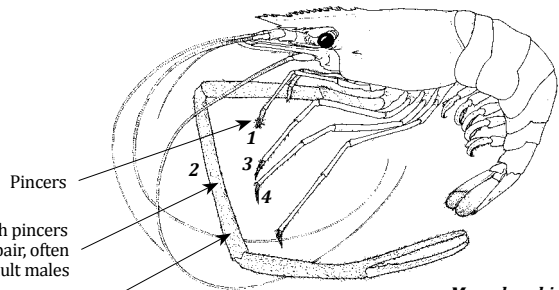
2nd segment overlaps both 1st and 3rd segments

Abdomen

PALAEMONIDAE

Palaemonid shrimps

To about 26 cm (BL). Marine, estuarine, and freshwater; benthic. Four species of interest to fisheries are included in the Guide to Species.

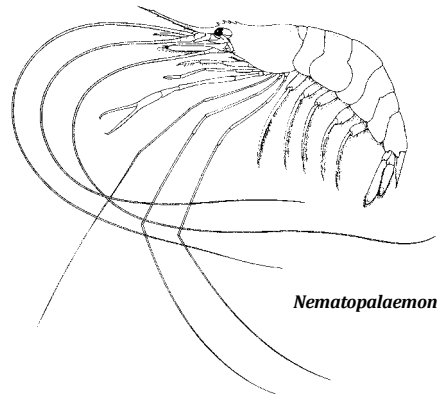


Pincers

2nd pair of pereiopods with pincers and more robust than 1st pair, often very long and strong in adult males

Carpus of 2nd pair of pereiopods unsegmented

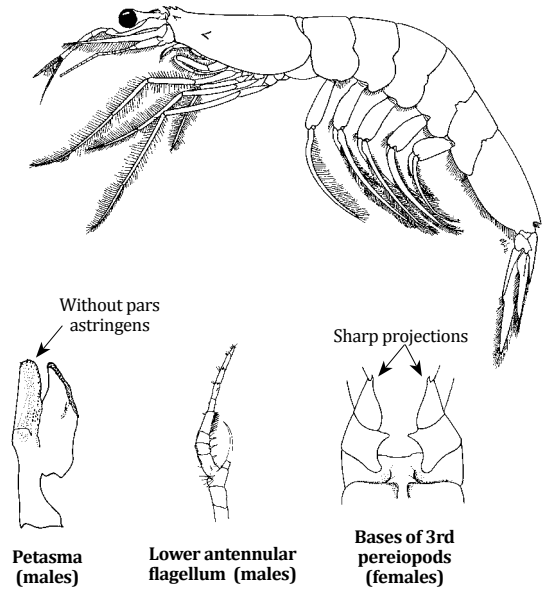
Macrobrachium



Nematopalaemon

SERGESTIDAE

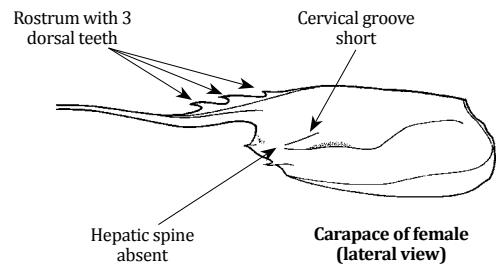
Sergestid shrimps

Acetes indicus H. Milne Edwards, 1830FAO names: Jawla paste shrimp (En)
Chevrette jawla (Fr)**Local name(s):** Saana, Bhusa (Sin).**Habitat:** Inhabits shallow, sometimes brackish coastal waters; epipelagic, usually swims in midwater or near the surface.**Fisheries:** Bottom trawls, gillnets, bag nets.**Distinctive Characters:** Procurved tooth present between bases of 1st pleopods; inner margin of basis of 3rd pereopods with sharply pointed projections; 3rd and 4th thoracic sternites deeply channeled longitudinally; petasma without pars astringens; and lower antennular flagellum with 1 clasping spine in males.**Colour:** In life, whole body almost transparent; milky or yellowish when dead.**Size:** To 1.5–2.5 cm (males), 2.3–4 cm (females)(BL)**ARISTEIDAE**

Aristeid shrimps

Aristeus alcocki Ramadan, 1938

FAO names: Arabian red shrimp (En)

Local name(s): Sana (Sin); Madak (Bal).**Habitat:** On muddy bottoms, at depths between 270 and 1086 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** Integument glabrous; rostrum in female long and slender, 0.6–1.1 in carapace length, upper margin curved downwards till distal end of 2nd segment of antennular peduncle (in male much shorter and seldom surpassing tip of antennular peduncle); telson shorter than inner uropod and provided with 3 movable spines on distal part.**Colour:** Pink with reddish bands on the posterior border of all abdominal segments.**Size:** To 15 cm (BL)

PENAEIDAE

Penaeid shrimps

Metapenaeopsis stridulans (Alcock, 1905)

FAO names: Fiddler shrimp (En)
Crevette violoneux (Fr)

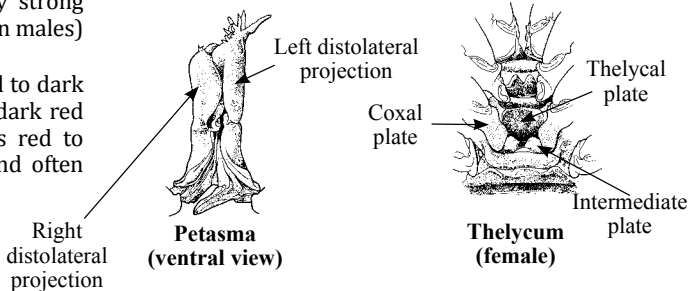
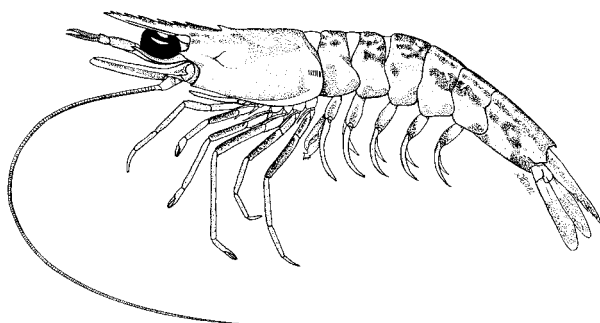
Local name(s): Kalri, Saana, Lal kiddi (Sin); Kalri, Madak (Bal).

Habitat: On sandy or muddy bottoms, from depths of 9 to 90 m.

Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Body densely covered with short hairs; rostrum reaching to, or almost to, tip of antennular peduncle and armed with 7–8 dorsal teeth, the penultimate tooth generally anterior to orbital margin of carapace; no ventral teeth on rostrum; stridulating organ (on posterior part of carapace) consisting of 4–6 very strong ridges in a wide, straight band; petasma (in males) asymmetrical.

Colour: White to reddish brown, with red to dark brown mottlings; pereopods pinkish to dark red except on their proximal parts; uropods red to brown except for their proximal third and often their tips.



Size: To 8.9 cm (males), 10.6 cm (females)(BL)

Metapenaeus affinis (H. Milne Edwards, 1837)

FAO names: Jinga shrimp (En)
Crevette jinga (Fr)

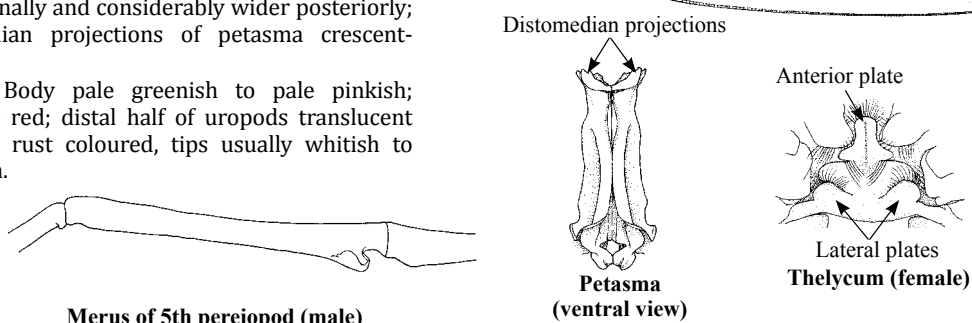
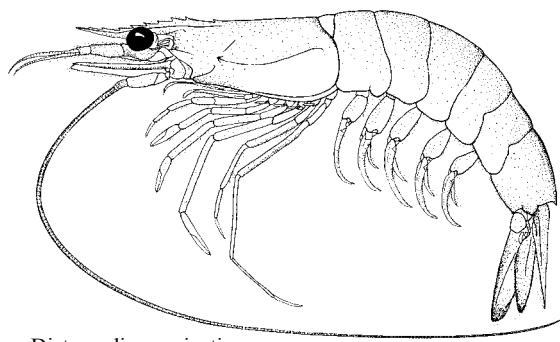
Local name(s): Kalri, Saana, Karachi kalri (Sin); Kalri, Madak (Bal).

Habitat: On mud or sandy-mud bottoms, from the coastline to depths of about 90 m.

Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Generally almost entire body pubescent; rostrum armed with 8–11 teeth along entire dorsal margin and no ventral teeth; merus of 5th pereopod in male with a proximal notch, followed by a twisted, keeled tubercle; anterior plate of thelycum deeply grooved longitudinally and considerably wider posteriorly; distomedian projections of petasma crescent-shaped.

Colour: Body pale greenish to pale pinkish; antennae red; distal half of uropods translucent green or rust coloured, tips usually whitish to yellowish.



Size: To 14.6 cm (males), 18.6 cm (females)(BL)

Metapenaeus brevicornis (H. Milne Edwards, 1837)

FAO names: Yellow shrimp (En)
Crevette jaune (Fr)

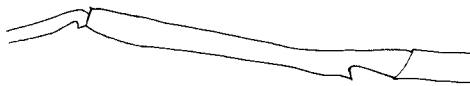
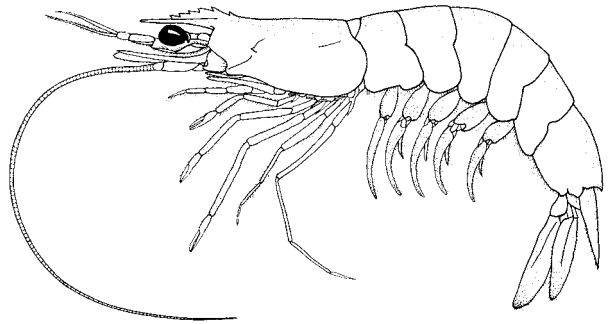
Local name(s): Kalri, Saana (Sin); Kalri, Madak (Bal).

Habitat: A marine to almost fresh-water species, found on sand or mud to depths of about 90 m, usually less than 30 m.

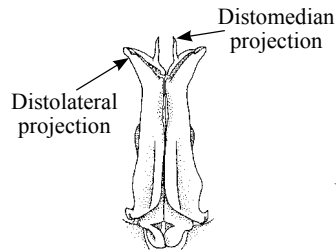
Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Almost entire body hairless; rostrum with 5–7 dorsal teeth (toothless on little less than its distal half) and no ventral teeth; rostral crest high; adrostral crest and groove reaching as far as 2nd rostral tooth; merus of 5th pereiopod in male with a proximal notch, followed by a keel-shaped tubercle.

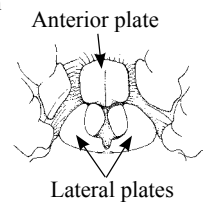
Colour: Body yellow to white, sometimes greyish, with distinct dark green to bluish brown specks; pleopods yellowish to pinkish; distal part of uropods brown to rusty red.



Merus of 5th pereiopod (male)



Petasma (ventral view)



Thelycum (female)

Size: To 15 cm (males), 20 cm (females)(BL)

Metapenaeus monoceros (Fabricius, 1798)

FAO names: Speckled shrimp (En)
Crevette mouchetée (Fr)

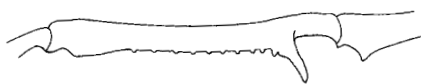
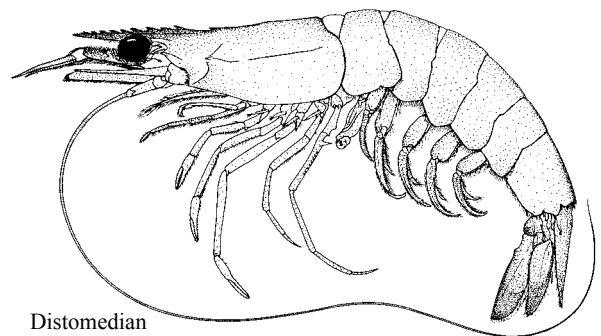
Local name(s): Kalri, Saana, Giddani kalri (Sin); Kalri, Madak (Bal).

Habitat: From the coastline down to deeper waters, on mud, sand or silt bottoms. Maximum depth 70 m.

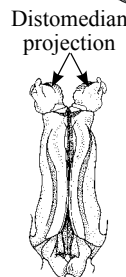
Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Almost entire body pubescent; rostrum with 9–12 teeth along entire dorsal margin and no ventral teeth; merus of fifth pereiopod in male with a proximal notch followed by a long, inwardly curved spiniform process and a row of tubercles.

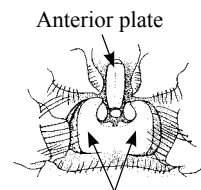
Colour: Body pink, green greyish or whitish with brown specks; rostral and mid-dorsal abdominal crests brown; antennae red; distal part of uropods purple-blue, external margin of exopods red.



Merus of 5th pereiopod (male)



Petasma (ventral view)



Thelycum (female)

Size: To 15 cm (males), 20 cm (females)(BL)

***Metapenaeus stebbingi* Nobili, 1904**

FAO names: Peregrine shrimp (En)
Crevette faucon (Fr)

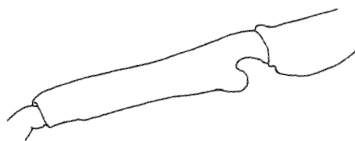
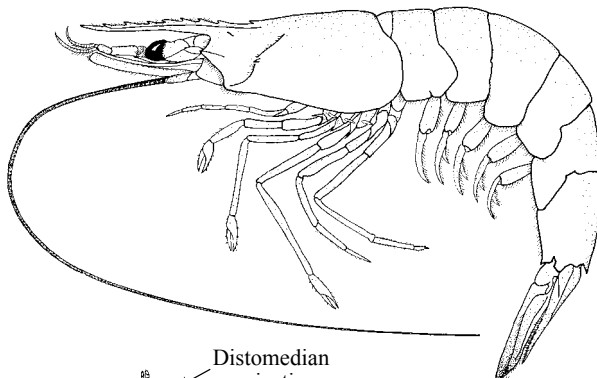
Local name(s): Kalri, Saana (Sin); Kalri, Madak (Bal).

Habitat: Soft bottoms from the shore down to deeper waters. Maximum depth 90 m.

Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Almost entire body hairless; rostrum with 7–10 teeth along entire dorsal margin reaching or exceeding distal margin of antennular peduncle; telson armed on each side with a row of small and movable spines.

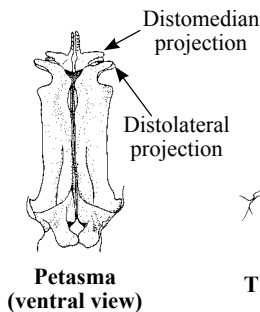
Colour: Body, pereopods and pleopods white to creamy-yellow with grey and rust coloured specks; antennae and distal part of uropods rusty colour to grey-purplish.



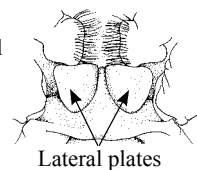
Merus of 5th pereopod (male)



Telson



Petasma (ventral view)



Thelycum (female)

Size: To 11 cm (males), 14 cm (females)(BL)

***Parapenaeopsis (Mierspenaeopsis) hardwickii* (Miers, 1878)**

FAO names: Spear shrimp (En)
Crevette javelot (Fr)

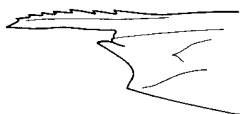
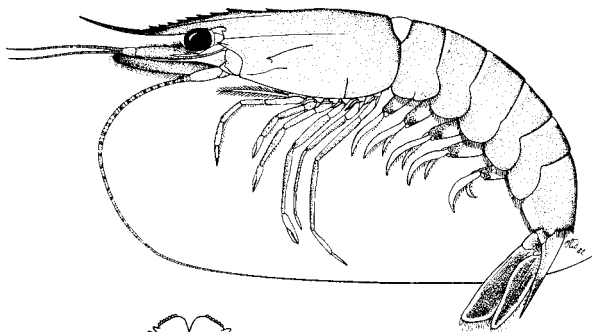
Local name(s): Kalri, Saana, Kiddi (Sin); Kalri, Madak (Bal).

Habitat: Found from the coastline to depths of about 90 m, usually less than 20 m, on bottom of mud, sandy-mud or sand.

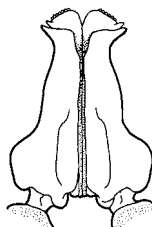
Fisheries: Bottom trawls, beach seines, gillnets.

Distinctive Characters: Body naked and smooth; rostrum armed with 9–11 dorsal teeth; in females, rostrum very long and of sigmoidal shape, with distal 1/3 to 1/2 toothless, extending far beyond antennular peduncle; in adult males, unarmed portion absent and slightly curving downward, only reaching to middle of 2nd antennular segment; posterior plate of thelycum with a pair of anterolateral tooth-like projections.

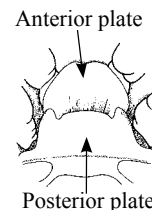
Colour: Body greyish to greenish grey, sometimes pink, and densely covered with dark-coloured dots; basal 1/3 of antennal flagella crossed with brown narrow bands; uropods dark reddish brown with yellowish margins.



Rostrum of large males



Petasma (ventral view)



Thelycum (female)

Size: To 11.1 cm (males), 13.5 cm (females)(BL)

***Parapenaeopsis (Mierspenaeopsis) sculptilis* (Heller, 1862)**

FAO names: Rainbow shrimp (En)
Crevette arc-en-ciel (Fr)

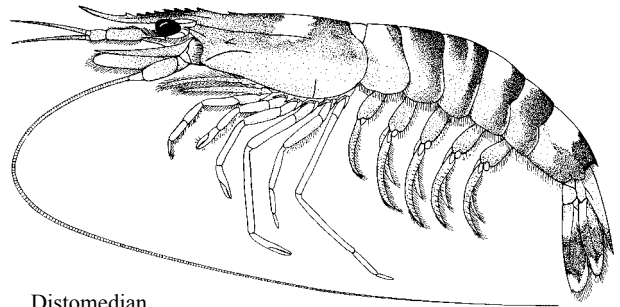
Local name(s): Kalri, Saana, (Sin); Kalri, Madak (Bal).

Habitat: Usually inhabits shallow waters from the coastline to depths of about 90 m, but mainly less than 40 m, on sand, mud, or mixed bottoms.

Fisheries: Bottom trawls, cast nets, beach seines, gillnets.

Distinctive Characters: Rostrum armed with 7–9 dorsal teeth; in females, sigmoid-shaped, toothless, on distal third to half, upcurved and exceeding antennular peduncle; in large males, curving downward, the unarmed portion absent and only reaching to middle of 2nd antennular article; posterior plate of thelycum without anterolateral tooth-like projections.

Colour: Body pale with wide, dark brown (almost black) transverse bands; carapace dark brown dorsally, except for a white band about its middle; uropods yellow to pink, with a very wide, dark brown middle transverse band.



Distomedian projection

Distolateral projection

Proximolateral lobe

Petasma (ventral view)

Anterior plate

Posterior plate

Thelycum (female)



Rostrum of large males

Size: To 13 cm (males), 17 cm (females)(BL)

***Parapenaeopsis (Parapenaeopsis) stylifera* (H. Milne Edwards, 1837)**

FAO names: Kiddi shrimp (En)
Crevette kiddi (Fr)

Local name(s): Kalri, Saana, Kiddi (Sin); Kalri, Madak (Bal).

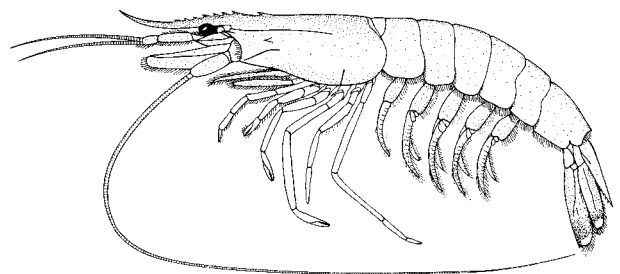
Habitat: Found from near the coastline to about 90 m depth, but usually in less than 50 m on mud or sandy-mud.

Fisheries: Bottom trawls, bag nets, cast nets, beach seines, gillnets.

Distinctive Characters: Rostrum sigmoid-shaped, strongly upcurved and by far overreaching tip of antennular peduncle (in males somewhat shorter), armed with 7–9 dorsal teeth; but toothless in distal half or more; telson armed with 4 pairs of lateral fixed spines; distolateral projections of petasma (males) slender, horn-like and straight.

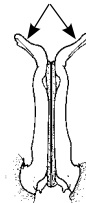
Colour: Pale brownish or pinkish white, sometimes greyish; rostrum and abdominal crest darker; pereopods and pleopods yellowish pink to reddish pink; distal part of uropods dark grey, their tips distinctly white.

(Plate I, 1)



Distolateral Projections

Anterior plate



Posterior plate

Petasma (ventral view)

Thelycum (female)

Size: To 11.7 cm (males), 14.5 cm (females)(BL)

***Parapenaeus longipes* Alcock, 1905**

FAO names: Flamingo shrimp (En)
Crevette flamand (Fr)

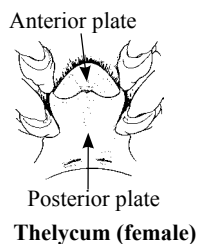
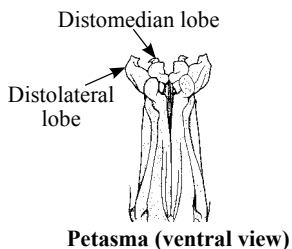
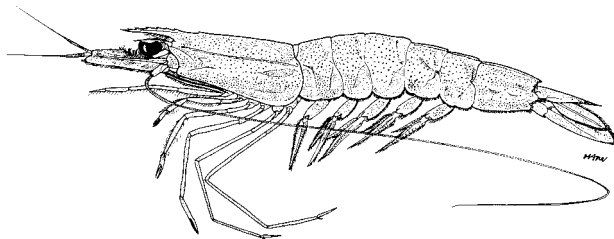
Local name(s): Kalri, Saana, Lal kiddi (Sin); Kalri, Madak (Bal).

Habitat: Rather deep waters from 10 m to 90 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body hairless; rostrum slightly curved downward and armed with 6–7 dorsal teeth and no ventral teeth; branchiostegal spine absent; no trace of hepatic crest; longitudinal suture present; antennular flagella shorter than carapace; telson armed with 1 pair of fixed lateral spines.

Colour: Pink to whitish, speckled with pink chromatophores; a red spot on distomedian part of outer uropods.



Size: To 7.6 cm (males), 7.9 cm (females)(BL)

***Penaeus (Fenneropenaeus) indicus* H. Milne Edwards, 1837**

FAO names: Indian white prawn (En)
Crevette royale blanche (Fr)

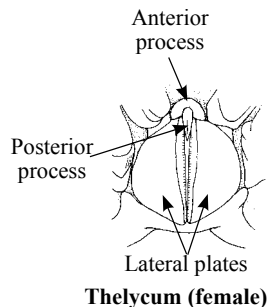
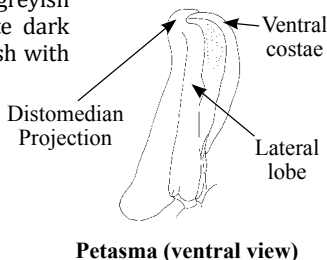
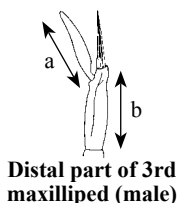
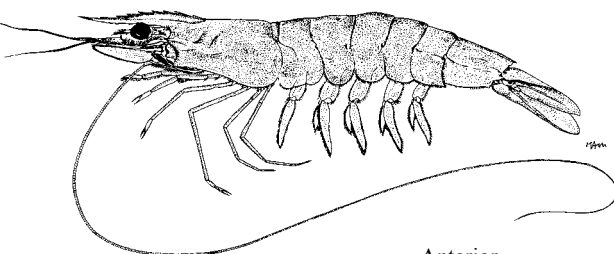
Local name(s): Jaira, Saana (Sin); Jaira, Madak, Patas (juveniles) (Bal).

Habitat: Shelf areas from the coastline to 90 m.

Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Carapace rather smooth lacking gastrofrontal and hepatic crests; rostrum slightly curved at tip and sigmoidal-shaped with 7–9 teeth on dorsal and 3–6 teeth on ventral margin; 3rd maxilliped of male with distal segment (a) about as long as 2nd segment (b) which bears a tuft of dense long hairs.

Colour: Body semi-translucent, somewhat yellowish white (small specimens) or greyish green and covered with numerous minute dark brown dots; distal part of uropods yellowish with red margins; antennal flagella yellowish.



Size: To 18.4 cm (males), 23 cm (females)(BL)

***Penaeus (Fenneropenaeus) merguensis* De Man, 1888**

(Plate I, 2) FAO names: Banana prawn (En)
Crevette banane (Fr)

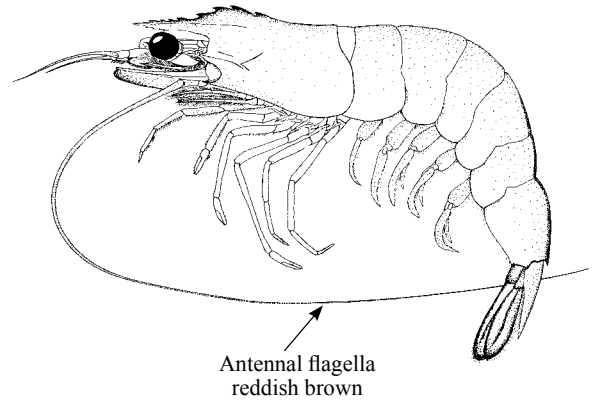
Local name(s): Jaira, Saana (Sin); Jaira, Madak, Patas (juveniles) (Bal).

Habitat: Shelf areas from the coastline to 90 m.

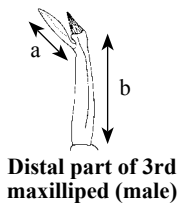
Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Carapace rather smooth, lacking gastrofrontal and hepatic crests; tip of rostrum horizontally straight, and rostral crest very high and broadly triangular in large specimens, bearing 6–9 upper teeth mostly 3–5 lower teeth; 3rd maxilliped of male with distal segment (a) only about half as long as 2nd segment (b) which bears a tuft of dense short hairs.

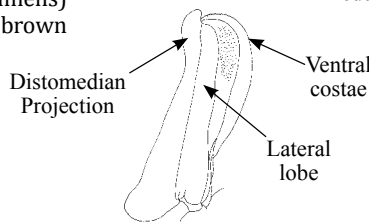
Colour: Body semi-translucent, somewhat yellowish (in youngs and moderate-sized specimens) to greenish (in very large specimens) and covered with numerous minute dark brown dots.



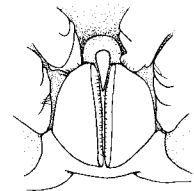
Antennal flagella reddish brown



Distal part of 3rd maxilliped (male)



Petasma (ventral view)



Thelycum (female)

Size: To 24 cm (males), 20 cm (females)(BL)

***Penaeus (Fenneropenaeus) penicillatus* Alcock, 1905**

FAO names: Redtail prawn (En)
Crevette queue rouge (Fr)

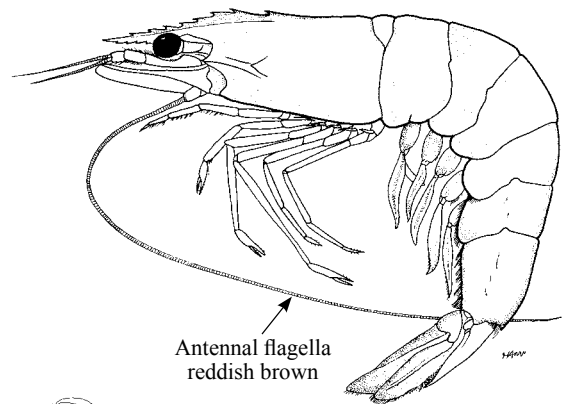
Local name(s): Jaira, Saana (Sin); Jaira, Madak, Patas (juveniles) (Bal).

Habitat: Shelf areas from the coastline to 90 m.

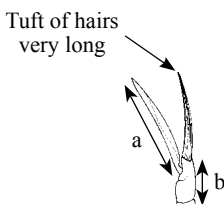
Fisheries: Bottom trawls, cast nets, bag nets, beach seines, gillnets.

Distinctive Characters: Carapace rather smooth, lacking gastrofrontal and hepatic crests; rostrum with 7–9 teeth on dorsal and 3–5 teeth on ventral margin; adrostral crest and groove extending as far as or just beyond epigastric tooth; 3rd maxilliped of male with distal segment (a) much longer than 2nd segment (b).

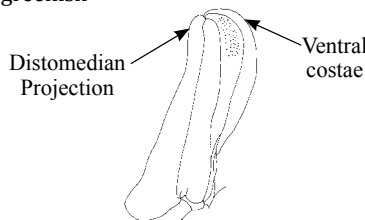
Colour: Body semi-translucent, slightly greenish and covered with numerous minute dark brown dots; distal half of uropods yellowish to greenish but always with reddish tips.



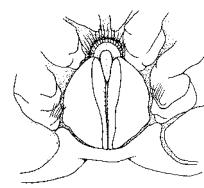
Antennal flagella reddish brown



Distal part of 3rd maxilliped (male)



Petasma (ventral view)



Thelycum (female)

Size: To 21.2 cm (males), 16.3 cm (females)(BL)

***Penaeus (Marsupenaeus) pulchricaudatus* Stebbing, 1914**

FAO names: Western kuruma prawn (En)

Local name(s): Jaira, Saana, (Sin); Jaira, Madak, Patas (juveniles) (Bal).

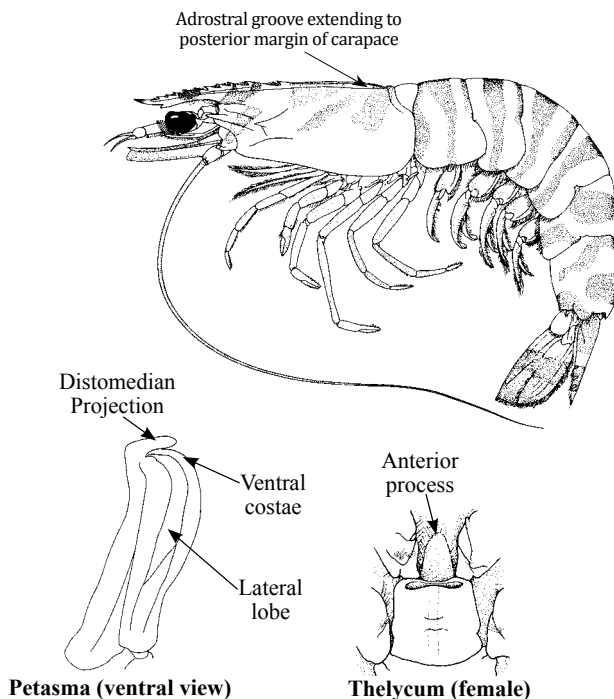
Habitat: Shelf areas from the coastline to 90 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Carapace with grooves and crests very distinct, bearing both gastrofrontal and hepatic crests; rostrum with 9–10 upper teeth and 1 lower tooth, lacking distinct accessory crest on the blade; thelycum of females a well-developed pouch with double tubes, opened anteriorly; telson armed with 3 pairs of movable spines.

Colour: Body pale yellowish and crossed with dark brown transverse bands; distal part of uropods with a patch of bright yellow, followed by another patch of bright blue, and with red margins.

Remarks: Previously synonymized with *Penaeus (Marsupenaeus) japonicus* Bate, 1888, but now regarded as a valid species (see Tsoi *et al.*, 2014).



Size: To 20 cm (males), 23.5 cm (females)(BL)

***Penaeus (Melicertus) canaliculatus* (Olivier, 1811)**

FAO names: Witch prawn (En)
Crevette sorciere (Fr)

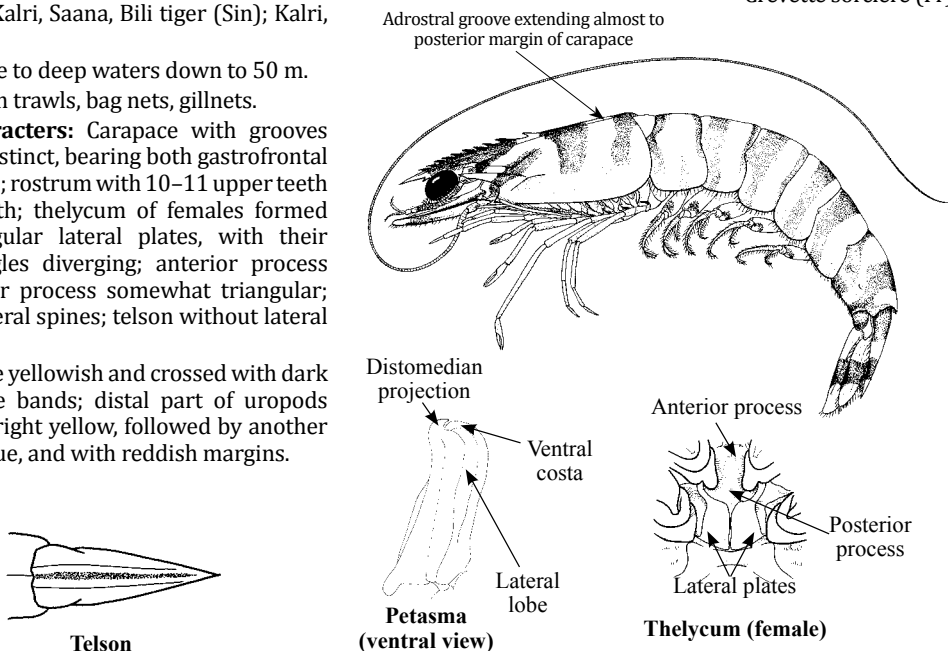
Local name(s): Kalri, Saana, Bili tiger (Sin); Kalri, Madak (Bal).

Habitat: Coastline to deep waters down to 50 m.

Fisheries: Bottom trawls, bag nets, gillnets.

Distinctive Characters: Carapace with grooves and crests very distinct, bearing both gastrofrontal and hepatic crests; rostrum with 10–11 upper teeth and 1 lower tooth; thelycum of females formed by 2 subrectangular lateral plates, with their anterolateral angles diverging; anterior process suboval; posterior process somewhat triangular; telson lacking lateral spines; telson without lateral spines.

Colour: Body pale yellowish and crossed with dark brown transverse bands; distal part of uropods with a patch of bright yellow, followed by another patch of bright blue, and with reddish margins.



Size: To 14.5 cm (males), 18.2 cm (females)(BL)

***Penaeus (Penaeus) monodon* Fabricius, 1798**

FAO names: Giant tiger prawn (En)
Crevette geante tigrée (Fr)

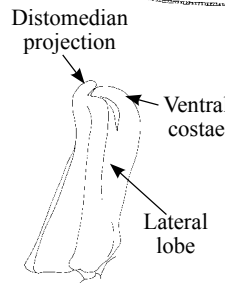
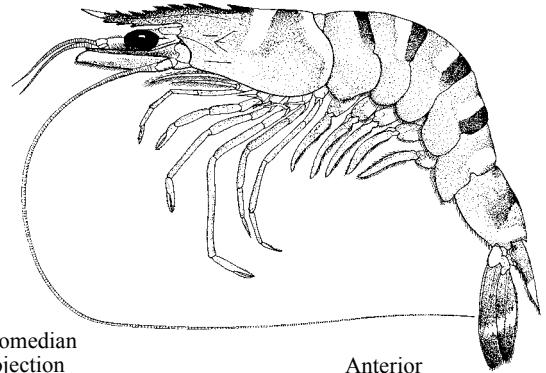
Local name(s): Jaira, Saana, (Sin); Jaira, Madak, Patapati (Bal).

Habitat: From the coastline to about 150 m on sand or mud bottoms; juveniles in mangrove swamps.

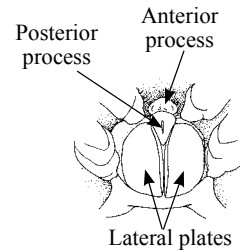
Fisheries: Bottom trawls, cast nets, gillnets.

Distinctive Characters: Carapace with grooves and crests distinct; rostrum with 6–8 dorsal teeth and 3 ventral teeth; adrostral crest extending to just before last postrostral tooth; gastrofrontal crest absent; hepatic crest almost horizontal and extending far behind antennal crest; 5th leg without exopod.

Colour: Body green-grey to brown, sometimes reddish or bluish; dorso-posterior margin of carapace generally cream yellow; often a transverse band of the same colour near middle of carapace; abdomen with dark brown to dark grey and pale yellow dorsal transverse bands; antennae uniformly greenish brown, not banded.



Petasma (ventral view)



Thelycum (female)

Size: To 27 cm (males), 34 cm (females)(BL)

***Penaeus (Penaeus) semisulcatus* De Haan, 1844**

(Plate I, 3)

FAO names: Green tiger prawn (En)
Crevette tigrée verte (Fr)

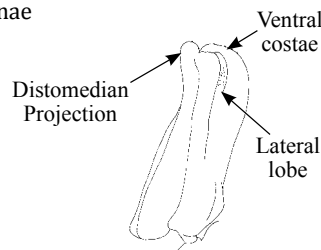
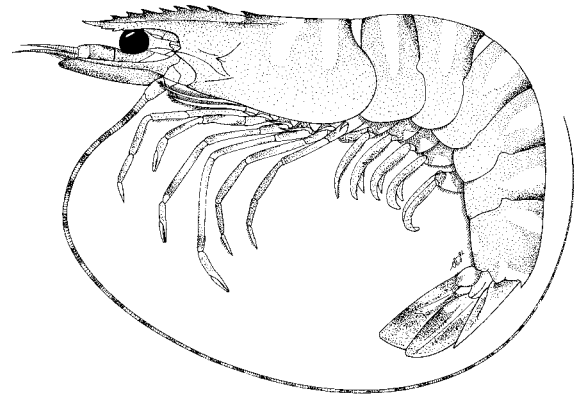
Local name(s): Jaira, Saana, (Sin); Jaira, Madak, Patapati (Bal).

Habitat: Continental shelf from the coastline down to 130 m, on mud or sand bottoms.

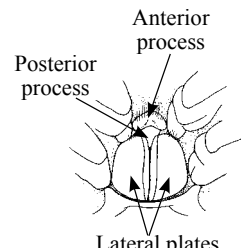
Fisheries: Bottom trawls, cast nets, gillnets.

Distinctive Characters: Carapace with grooves and crests distinct; rostrum with 6–8 upper teeth and 3 lower teeth; adrostral crest extending beyond last postrostral tooth; gastrofrontal crest absent; hepatic crest long and extending behind antennal crest, straight but distinctly sloping anteroventrally; 5th leg with exopod (somewhat hidden beneath carapace).

Colour: Body pale brown, sometimes greenish; carapace often with 2 yellow-cream dorsal transverse bands; abdomen with brown-grey and pale yellow dorsal transverse bands; antennae banded white and brown.



Petasma (ventral view)



Thelycum (female)

Size: To 18 cm (males), 23 cm (females)(BL)

Trachysalambria aspera (Alcock, 1905)

FAO names: Indian rough shrimp (En)

Local name(s): Kalri, Saana, Lal kiddi (Sin); Kalri, Madak (Bal).

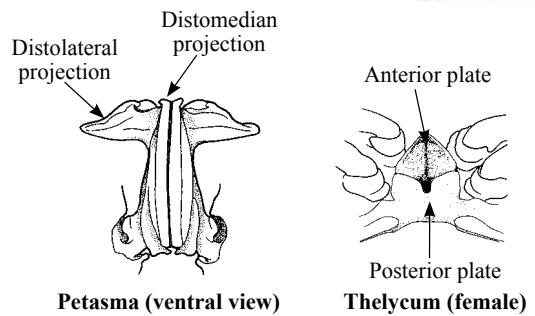
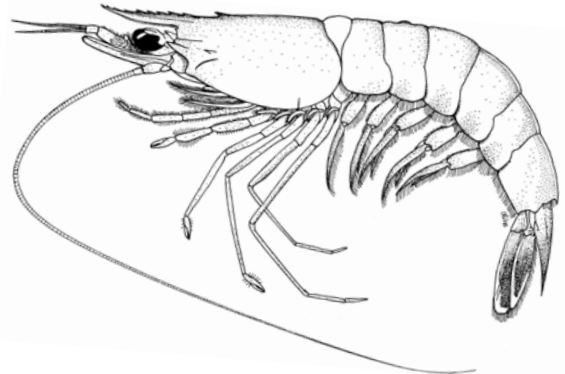
Habitat: Found on sand and mud bottoms from 8 m to about 110 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Entire body hairy, with grooves and crests on carapace obscure; rostrum straight or slightly upcurved at tip, armed with 8–10 upper teeth and no ventral teeth; first 3 pairs of pereopods bearing epipods, 1st pereopod generally armed with an ischial spine; last 4 abdominal segments with a low dorsal crest, distinctly incised posteriorly.

Colour: Body greyish pink to greyish blue, sometimes whitish on sides; often with a large reddish patch on the dorsal surface of the 2nd abdominal somite (segment); antennal flagella reddish; uropods almost entirely reddish, with margins whitish to yellowish.

Remarks: Ongoing revision on *Trachysalambria* shows that only the above species occurs in Pakistan (T.Y. Chan, personal communication, 2015).



Size: To 8.1 cm (males), 10.5 cm (females)(BL)

SOLENOCERIDAE

Solenocerid shrimps

Solenocera choprai Nataraj, 1945

FAO names: Ridgeback shrimp (En)

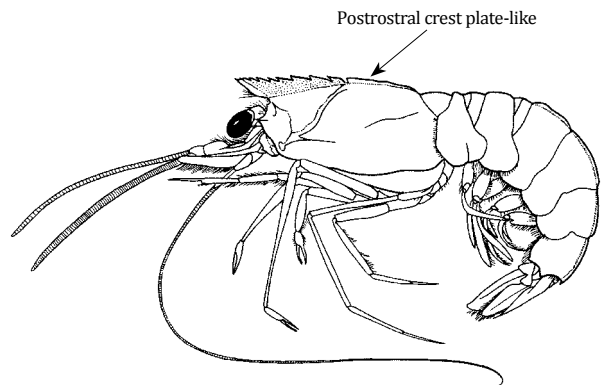
Local name(s): Lal kiddi, Bar sar ka kiddi (Sin); Sore kiddi (Bal).

Habitat: Soft bottoms from 75 m to 110 m.

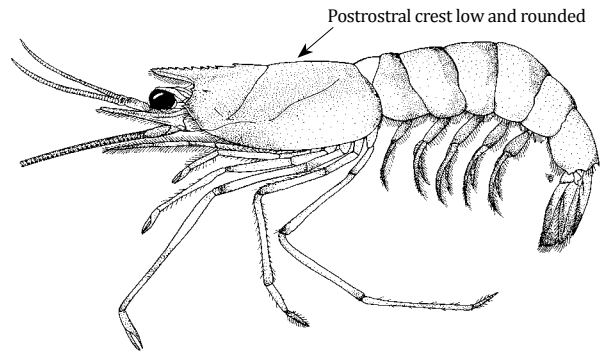
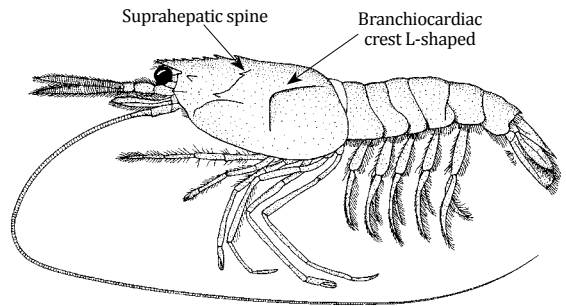
Fisheries: Bottom trawls.

Distinctive Characters: Rostrum with 8–10 dorsal teeth; postrostral crest plate-like, reaching posterior margin of carapace and interrupted by a notch just ahead of cervical groove; post-orbital spine present but no suprahepatic spine; telson with a pair of lateral spines.

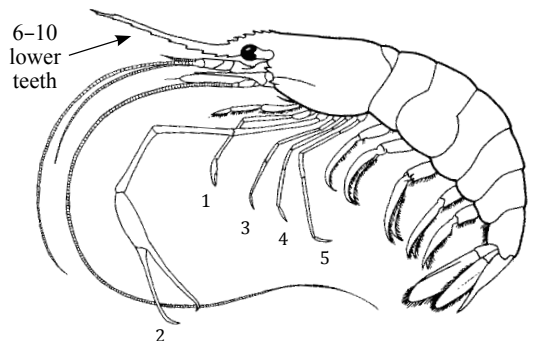
Colour: Body, pereopods and pleopods red; antennae banded dark red and white; uropods dark red, except for some white areas.



Size: To 9.5 cm (males), 13 cm (females)(BL)

Solenocera crassicornis (H. Milne Edwards, 1837)**FAO names:** Coastal mud shrimp (En)**Local name(s):** Lal kiddi, Bare sar ka kiddi (Sin); Sore kiddi (Bal).**Habitat:** Inhabits muddy bottoms close to shore, at depths from 20 to 85 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Rostrum with 4–7 (mostly 5) dorsal teeth; postrostral crest low and rounded; post-orbital spine present but no suprahepatic spine; telson without lateral spines.**Colour:** Body pink to pinkish orange; posterior border of each abdominal segment covered with a red cross band; eyes dark brown; antennular flagella and distal part of tail fan reddish.**Size:** To 9 cm (males), 14 cm (females)(BL)***Solenocera hextii*** Wood-Mason & Alcock, 1891**FAO names:** Deep-sea mud shrimp (En)
Salicoque des vases profondes (Fr)**Local name(s):** Lal kiddi, Bare sar ka kiddi (Sin); Sore kiddi (Bal).**Habitat:** Soft bottoms from 115 m to 500 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** Rostrum with 6–8 dorsal teeth; postrostral crest plate-like, reaching posterior margin of carapace and interrupted by a notch just ahead of cervical groove; post-orbital and suprahepatic spines present; branchiocardiac crest very distinct and L-shaped; telson with a pair of fixed distal lateral spines (trifurcate); fifth pereopod with a coxal spine.**Colour:** Bright pink.**Size:** To 12.7 cm (males), 13.8 cm (females)(BL)**PALAEEMONIDAE**

Palaemonid shrimps

Exopalaemon styliferus (H. Milne Edwards, 1840)**FAO names:** Roshna prawn (En)
Bouquet rosna (Fr)**Local name(s):** Khus (Sin).**Habitat:** Inhabits shallow coastal waters, brackish or marine, occasionally also in fresh water.**Fisheries:** Cast nets, beach seines, gillnets.**Distinctive Characters:** Rostrum long and slender, with an elevated basal crest of 5–7 teeth over the eye; most of distal part of dorsal margin toothless, save for 1–2 subdistal teeth; branchiostegal spine and branchiostegal groove present; dactyls of 5th pair of pereopods about 1/3 as long as propodus.**Colour:** Whitish translucent, with distal part of rostrum dark reddish brown and some darker spots on tips of uropods and telson; ovigerous females with large dark spots on first 4 abdominal pleura; eggs of berried females yellowish.**Size:** To 9 cm (males), 8.6 cm (females)(BL)

Macrobrachium malcolmsonii (H. Milne Edwards, 1844)

FAO names: Monsoon river prawn (En)
Bouquet mousson (Fr)

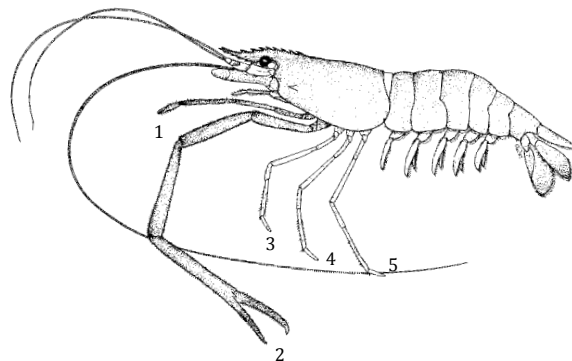
Local name(s): Saana (Sin).

Habitat: Essentially an inhabitant of flowing waters such as rivers and estuarine areas.

Fisheries: Cast nets, beach seines, gillnets.

Distinctive Characters: Rostrum rather long, reaching to about end of antennal scale, forming a high basal crest above the eye armed with 7–11 upper teeth; 4–7 lower teeth on rostrum; hepatic spine situated distinctly below antennal spine; in adult males, 2nd pair of pereopods with a very short pubescence which is especially distinct on the movable finger.

Colour: Body and anterior two pairs of pereopods (chelipeds) dark grey, paler ventrally; antennae and inner flagella of antennules grey; outer flagella brownish.



Size: To 23 cm (males), 20 cm (females)(BL)

Macrobrachium rosenbergii (De Man, 1879)

FAO names: Giant river prawn(En)
Bouquet géant (Fr)

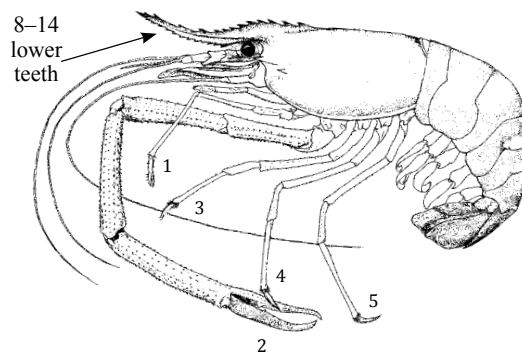
Local name(s): Saana (Sin).

Habitat: Inhabits mainly estuarine areas and rivers but sometimes also found at sea.

Fisheries: Cast nets, beach seines, gillnets.

Distinctive Characters: Rostrum long, well extending beyond antennal scale, forming a high basal crest above the eye armed with 11–14 upper teeth; hepatic spine situated distinctly below antennal spine; in adult males, entire 2nd pair of pereopods densely covered with spines and sharp tubercles.

Colour: Body generally dark green to greyish blue, with longitudinal or irregular streaks of darker and lighter colour; hinges of abdominal segments often orange; eggs yellowish; young and berried females often with some longitudinal golden strips on the sides of body.



Size: To 26 cm (males), 34 cm (females)(BL)

Nematopalaemon tenuipes (Henderson, 1893)

FAO names: Spider prawn (En)
Bouquet araignée (Fr)

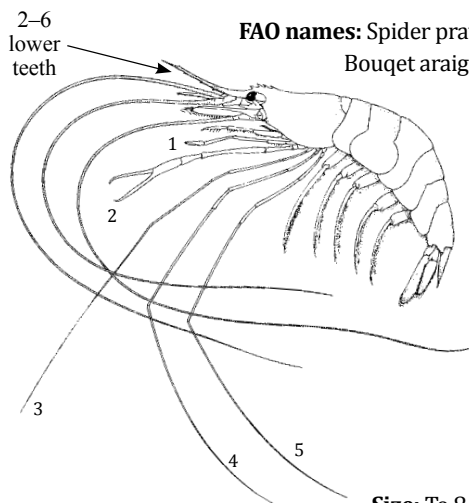
Local name(s): Saana (Sin).

Habitat: Inhabits shallow coastal waters to depths of about 20 m, and also found in estuarine and brackish waters.

Fisheries: Cast nets, beach seines, gillnets.

Distinctive Characters: Rostrum long and slender, with an elevated basal crest of 4–7 teeth over the eye; most of distal part of dorsal margin toothless save for a small subdistal tooth; dactyls of 3rd to 5th pairs of pereopods extremely long and thin, far longer than propodus and carpus combined.

Colour: Whitish translucent with distal part of rostrum dark reddish brown; some reddish brown colour on antennae, antennules and distal margins of uropods and telson; also a reddish brown spot on bases of uropods.

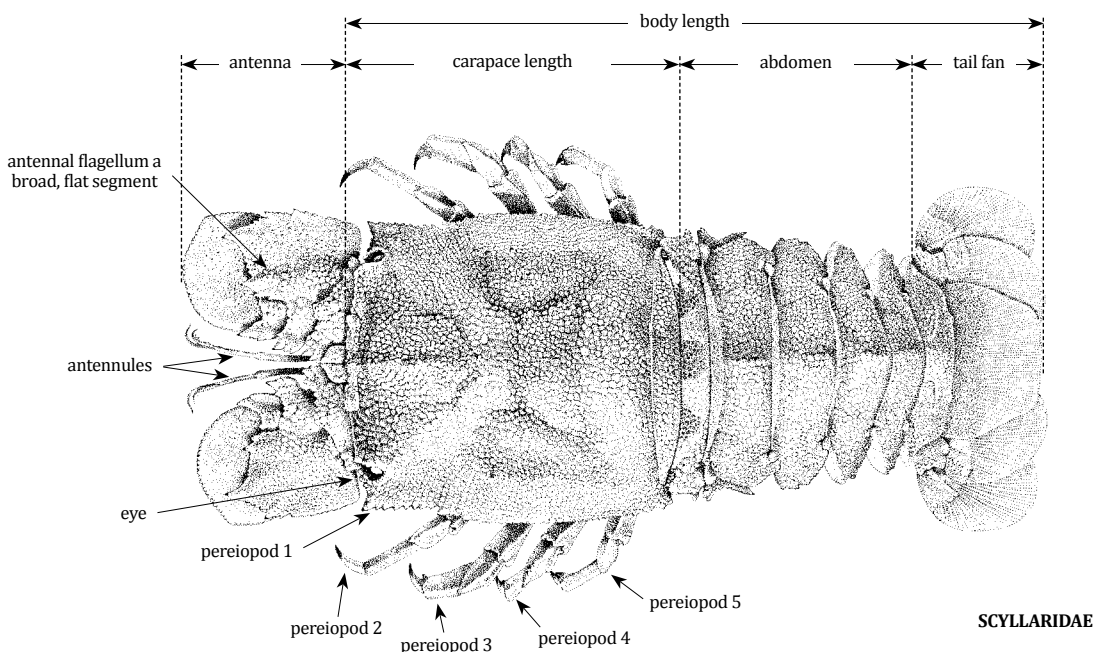
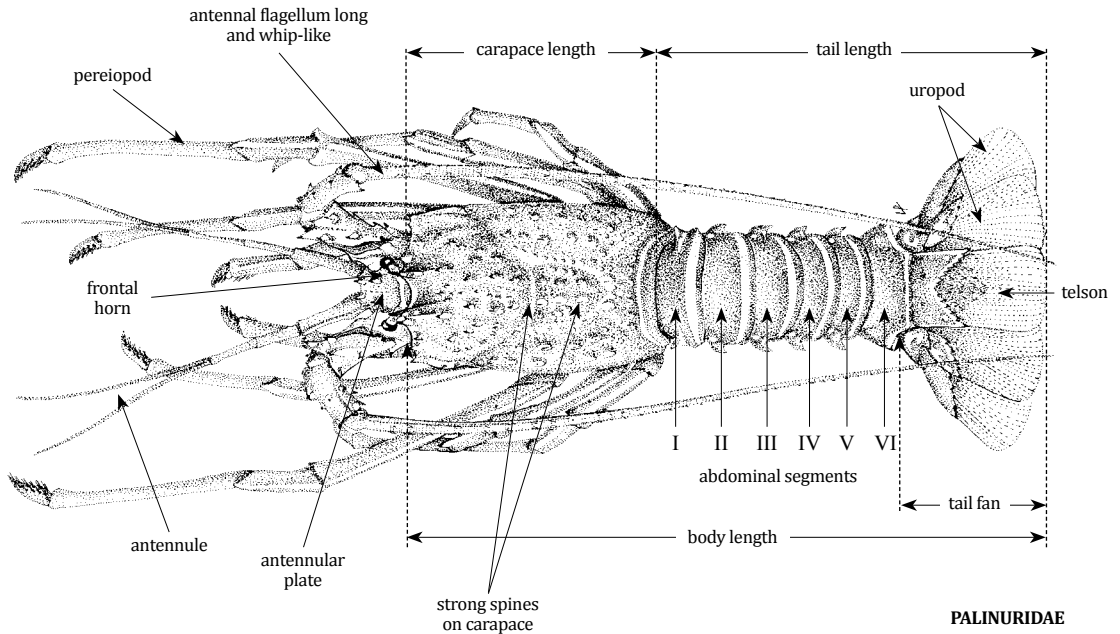


Size: To 8 cm (BL)

LOBSTERS

All species are of high commercial value locally and internationally. Five species occur in reasonable numbers in Pakistan: *Panulirus homarus*, *Panulirus ornatus*, *Panulirus polyphagus* and *Panulirus versicolor*. These are caught along the coast by the artisanal fishing fleet. One species, *Puelurus sewelli*, is caught by the industrial fishing fleet in off-shore waters, as well as members of the family Scyllaridae. The latter are also caught as by-catch by shallow water prawn trawling but are commercially unimportant, utilized as food fish by local people.

TECHNICAL TERMS AND MEASUREMENTS

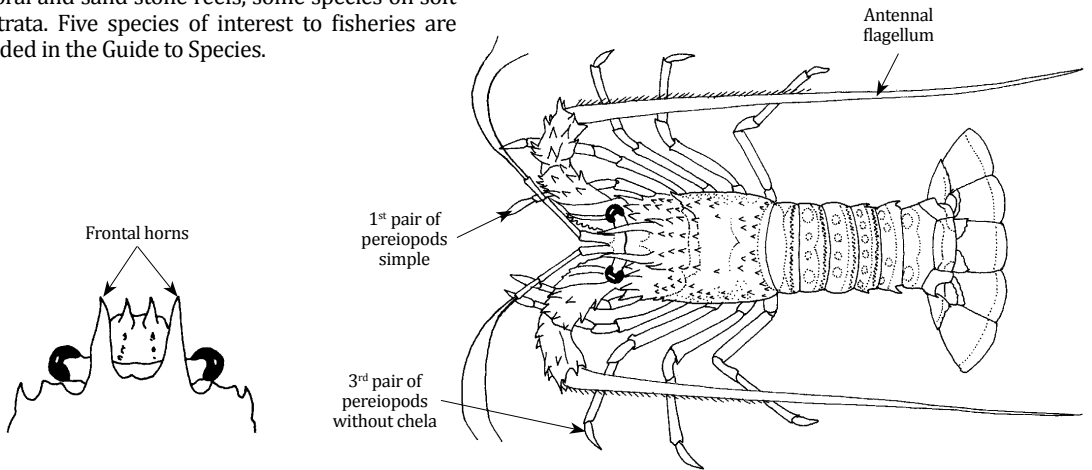


GUIDE TO FAMILIES

PALINURIDAE

Spiny lobsters

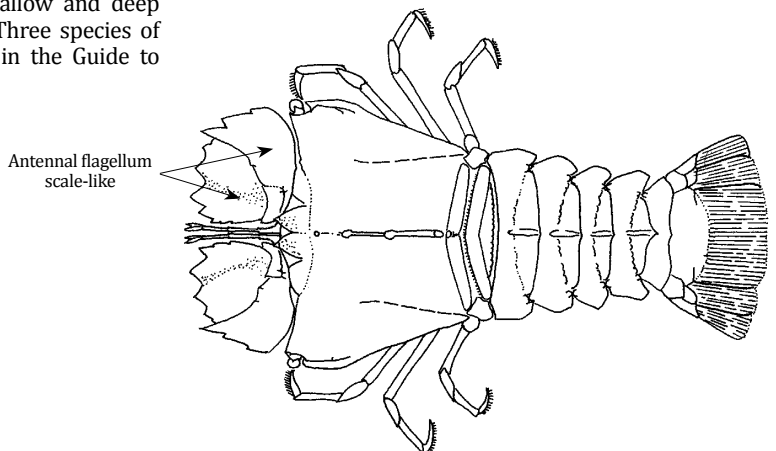
To about 50 cm (BL). Marine, mostly shallow waters on coral and sand stone reefs, some species on soft substrata. Five species of interest to fisheries are included in the Guide to Species.



SCYLLARIDAE

Slipper lobsters

To about 30 cm (BL). Marine, shallow and deep waters down to 484 m; benthic. Three species of interest to fisheries are included in the Guide to Species.



PALINURIDAE

Spiny lobsters

Panulirus homarus (Linnaeus, 1758)

(Plate I, 4)

FAO names: Scalloped spiny lobster (En)
Langouste festonnée (Fr)

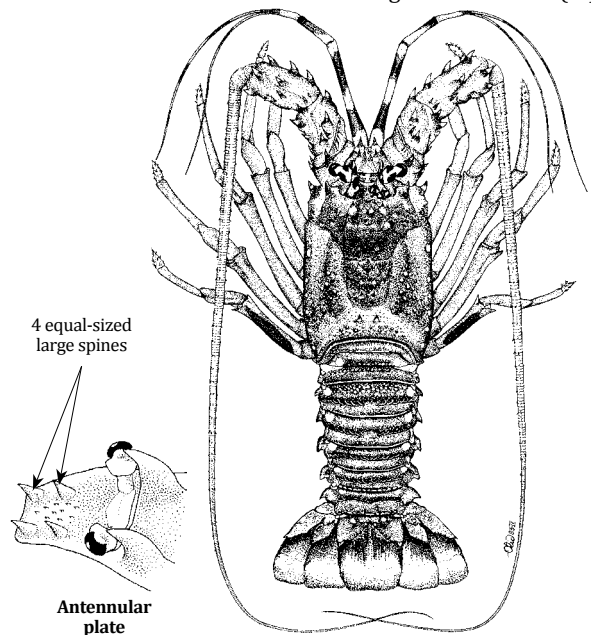
Local name(s): Kikat (Sin); Kika (Bal).

Habitat: Inhabits shallow waters among rocks, often in the surf zone. Maximum depth 90 m.

Fisheries: Gillnets.

Distinctive Characters: Carapace rounded, covered with numerous spines of various sizes; flagella of antennules longer than peduncle; rostrum absent; bases of antennae separated by a broad antennular plate bearing 2 equal, well separated pairs of principal spines and scattered smaller spines in between; each abdominal segment with a transverse groove, sometimes interrupted in the middle, its anterior margins formed into shallow scallops; pereopods 1 to 4 without pincers.

Colour: Dark greenish to blackish with numerous, very small white spots especially distinct on posterior half of abdomen, without transverse bands; antennules banded with white and green; pereopods with indistinct white spots and stripes.



Size: To 31 cm (BL)

Panulirus ornatus (Fabricius, 1798)

FAO names: Ornate spiny lobster (En)
Langouste ornée (Fr)

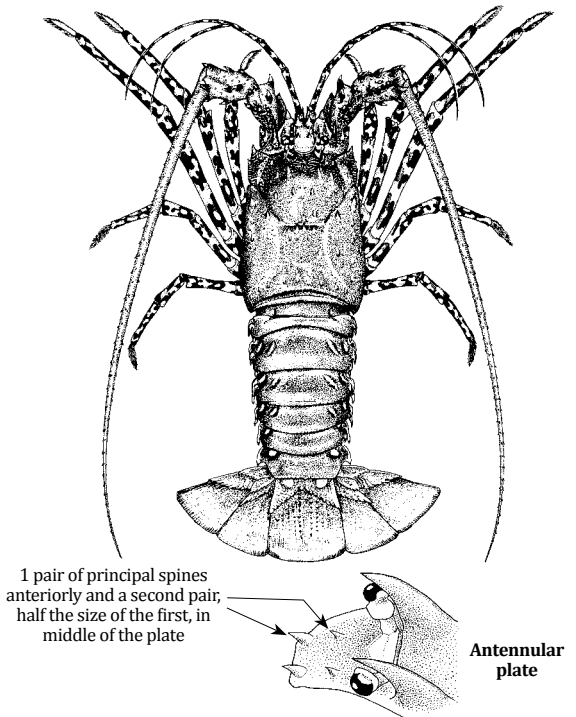
Local name(s): Kikat (Sin); Kika (Bal).

Habitat: Inhabits shallow, sometimes slightly turbid coastal waters usually on sand and mud substrates, but also on coral reefs and rocky bottoms. Maximum depth 8 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Carapace rounded, covered with numerous spines and tubercles of different sizes; flagella of antennules longer than antennular peduncles; bases of antennae separated by a broad antennular plate bearing one pair of spines anteriorly and a 2nd pair in the middle of the plate; each abdominal segment smooth without a transverse groove; pereopods without pincers.

Colour: Bluish or greenish spines on yellow carapace; anterior part of carapace and near the bases of the frontal horns and the anterior spines with a vermicular pattern of pale and dark lines; abdomen with a broad, dark transverse band over the middle of the segments, each segment with a large pale spot on sides and an additional oblique elongate mark higher up on the 2nd, 3rd and 4th segments; no transverse white band along posterior margin of the segments; antennular flagella banded; pereopods with distinct, sharply defined dark and pale blotches.



Size: To 50 cm, common 30.5 cm (BL)

Panulirus penicillatus (Olivier, 1791)

FAO names: Pronghorn spiny lobster (En)
Langouste fourchette (Fr)

Local name(s): Kikat (Sin); Kika (Bal).

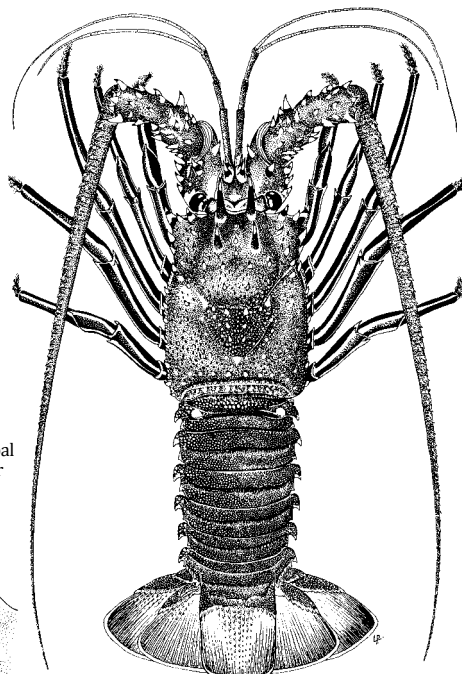
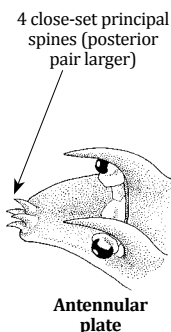
Habitat: Found in shallow waters, usually at depths from 1 to 4 m (maximum depth 16 m) at seaward edges of reefs, in clear waters not influenced by rivers.

Fisheries: Gillnets.

Distinctive Characters: Carapace rounded and spiny; flagella of antennules longer than antennular peduncle; rostrum absent; bases of antennae separated by a broad antennular space bearing 4 close-set principal spines (posterior pair larger); abdominal segments with a transverse groove, not continuous with pleural groove; pereiopods 1 to 4 without pincers.

Colour: Body dark blue and brown; males usually darker than females; eyes black; tips of large spines on carapace yellowish; antennular peduncle striped with white lines, flagella uniformly brownish; membranous areas at outer base of antenna light blue; legs conspicuously striped with white lines; abdomen with tiny pale dots; pleopods and soft part of tail fan black.

Remarks: This species is rare in Pakistan's waters.



Size: To 40 cm, common 20–30 cm (BL)

Panulirus polyphagus (Herbst, 1793)

(Plate I, 5)

FAO names: Mud spiny lobster (En)
Langouste de vase (Fr)

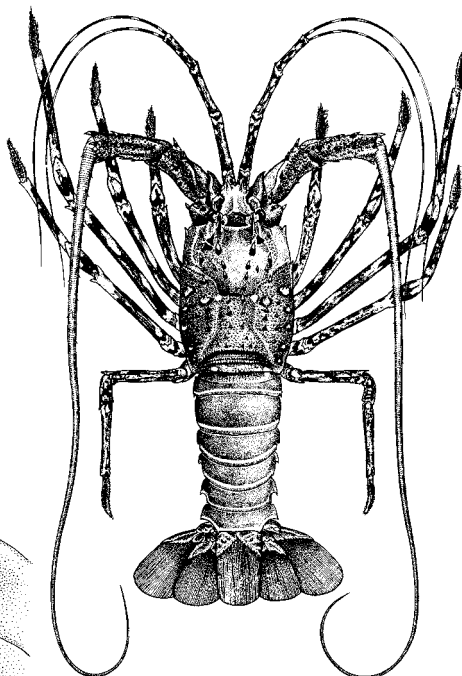
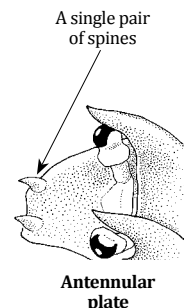
Local name(s): Kikat (Sin); Kika (Bal).

Habitat: Mainly found on muddy bottoms (sometimes also on rocky bottoms) in turbid waters near river mouths at depths from 3 to 90 m, but usually less than 40 m deep.

Fisheries: Gillnets, bollow trawls.

Distinctive Characters: Carapace rounded, covered with numerous spines of various sizes; flagella of antennules longer than antennular peduncle; rostrum absent; bases of antennae separated by a broad antennular space bearing a single pair of principal spines; abdominal segments without transverse grooves; pereiopods 1 to 4 without pincers.

Colour: Body dull green; eyes black-brown; spines on carapace with yellowish brown tips; orbital margin and posterior marginal groove yellowish white; antennular peduncle alternated with yellowish white and pale green bands; flagella banded with yellowish white and dark brown; pereiopods light brown with yellowish white blotches; abdomen with tiny pale dots; a yellowish white band with brown margins near posterior border of each segment.



Size: To 40 cm, common 20–25 cm (BL)

Panulirus versicolor (Latreille, 1804)

FAO names: Painted spiny lobster (En)
Langouste barriolée (Fr)

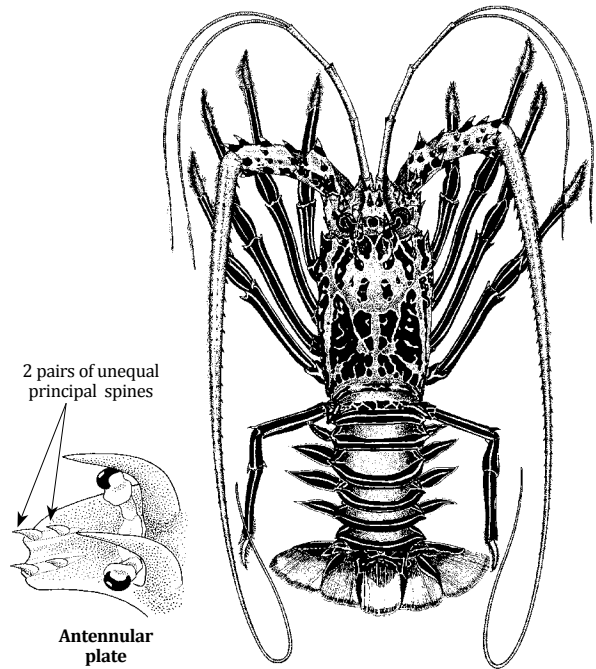
Local name(s): Kikat (Sin); Kika (Bal).

Habitat: Shallow waters, from the sub-littoral zone down to 15 m, on coral reefs, often on the seaward edges of the reef plateau; nocturnal.

Fisheries: Gillnets.

Distinctive Characters: Carapace rounded, covered with numerous spines of various sizes; flagella of antennules longer than antennular peduncle; rostrum absent; bases of antennae separated by a broad antennular space bearing 2 pairs of unequal and separate principal spines; abdominal segments without transverse grooves; pereopods 1 to 4 without pincers; abdominal segments II and III with broad sunken pubescent areas.

Colour: Green-blue with a distinctive pattern of blue-black patches and white lines on carapace; a transverse band of white, bordered by 2 black lines across each abdominal segment; pereopods and antennules longitudinally striped (blotched in *Panulirus ornatus*); bases of antennae bright pink, not extending onto antennular plate.



Size: To 40 cm, common 30 cm (BL)

Puerulus sewelli Ramadan, 1938

FAO names: Arabian whip lobster (En)

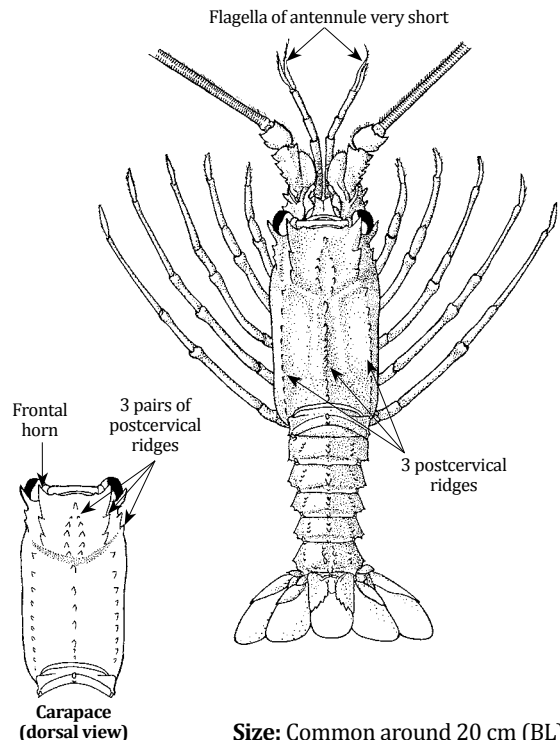
Local name(s): Kikat (Sin); Kika (Bal).

Habitat: Known from depths between 73 and 1608 m, but most commonly found from 200 to 500 m, on hard bottoms of coarse sand, mud or shells.

Fisheries: Off-shore bottom trawls.

Distinctive Characters: Carapace angular, with a median and 2 lateral tuberculate longitudinal ridges behind the transverse cervical groove, and 3 pairs of ridges in front; median postcervical ridge with 8 small teeth (5 postcervical followed by 3 intestinal); antennular plate present, without spines, forming stridulating organs with the antennal peduncle.

Colour: Body rather uniformly orange-brown, with distal parts of teeth on carapace and median keel on abdomen whitish; eyes black brown; antennal flagella with basal half orange-brown while distal half whitish; pereopods and antennules with basal segments orange-pink and distal segments somewhat whitish; abdomen with articulated parts of somites and pleural spurs whitish; eggs reddish.



Size: Common around 20 cm (BL)

SCYLLARIDAE

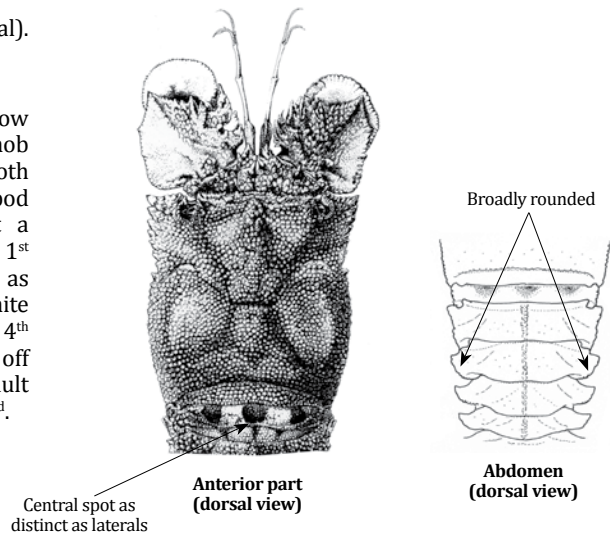
Slipper lobsters

***Scyllarides tridacnophaga* Holthuis, 1967**

FAO names: Clamkiller slipper lobster (En)

Local name(s): Jangli Kikat (Sin); Riami Kika (Bal).**Habitat:** Shallow waters from 5 m to 112 m.**Fisheries:** Gillnets.

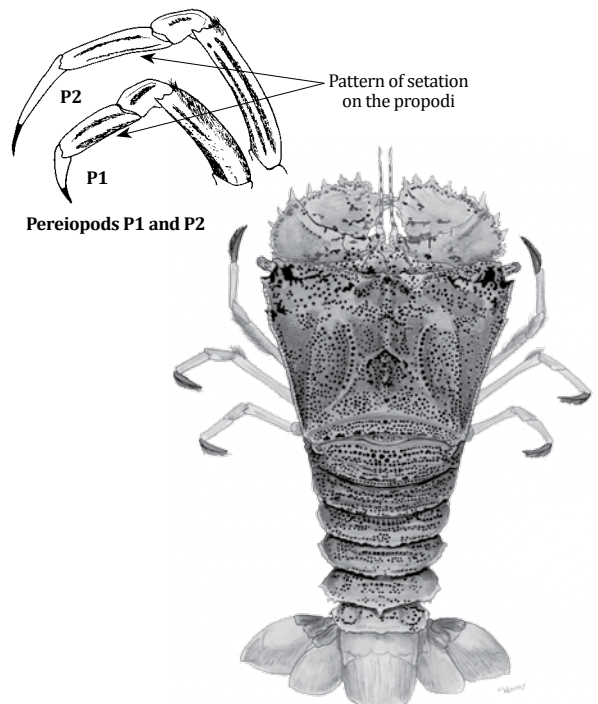
Distinctive Characters: Cervical groove narrow and shallow in its median area; cardiac knob thereby very little pronounced; pre-gastric tooth distinctly two-topped; carpus of the first pereiopod with a distinct dorsal groove and without a conspicuous basal swelling; central spot on 1st abdominal somite sharply defined, as distinct as laterals; outline of pleura of 2nd abdominal somite broadly rounded; median ridges on 2nd to 4th abdominal somite, sharp and distinctly set off from rest of surface; 4th abdominal somite of adult specimens not conspicuously higher than the 3rd.

Colour: Body reddish brown.**Size:** To 30 cm (BL)***Thenus indicus* Leach, 1815**

FAO names: Indian flathead lobster (En)

Local name(s): Kika (Sin).**Habitat:** Mud and sand bottoms. Depth range uncertain.**Fisheries:** Bottom trawls, gillnets.

Distinctive Characters: Body markedly depressed, with surface pubescent and granulate; carapace trapezoid, narrowing posteriorly, with weak branchial carinae and shallow cervical incisions; anterior part of lateral margin with only 2 teeth, posterior 3/4 without teeth; orbits situated at anterolateral angles of carapace; antennae broad, flattened and plate-like; all pereiopods without pincers and similar in size; abdomen with median carina and transverse grooves, 5th segment armed with a strong posteromedian spine; pleura directed downwards; outer faces of propodi of P1 and P2 having upper-most longitudinal groove bearing obvious setae over at least proximal half; merus of 3rd maxilliped with a small spine proximally on inner ventral margin; inner margin of ischium prominently dentate along entire length.

Colour: Pale yellowish brown with the granules of a darker brown; tips of the teeth whitish; tail fan with a yellow tinge; no spotting on pereiopods.**Size:** To 8.7 cm (CW)

Thenus parindicus Burton & Davie, 2007

Local name(s): Kika (Sin).

Habitat: Mud and sand bottoms. Depth range uncertain.

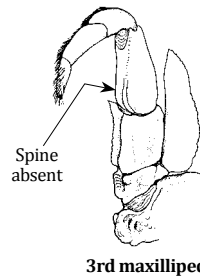
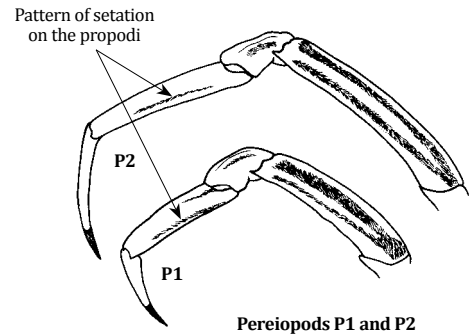
Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Similar to *Thenus indicus* but outer face of propodi of P1 and P2 having upper-most longitudinal groove with setae reduced to thin short line near base, or completely lacking; on P1 setae in upper-most groove extending only over proximal half; merus of 3rd maxilliped without a small spine proximally on inner ventral margin; inner margin of ischium distally dentate, but smoother and slightly molariform proximally.

Colour: Pale yellowish brown with the granules of a darker brown; tips of the teeth whitish; tail fan with a yellow tinge; no spotting on pereopods.

Remarks: Previously lumped under the name of "*Thenus orientalis*". The latter is now recognized to be a complex of five distinct species, two of which occur in Pakistan (Burton and Davie, 2007).

FAO names: False Indian flathead lobster (En)

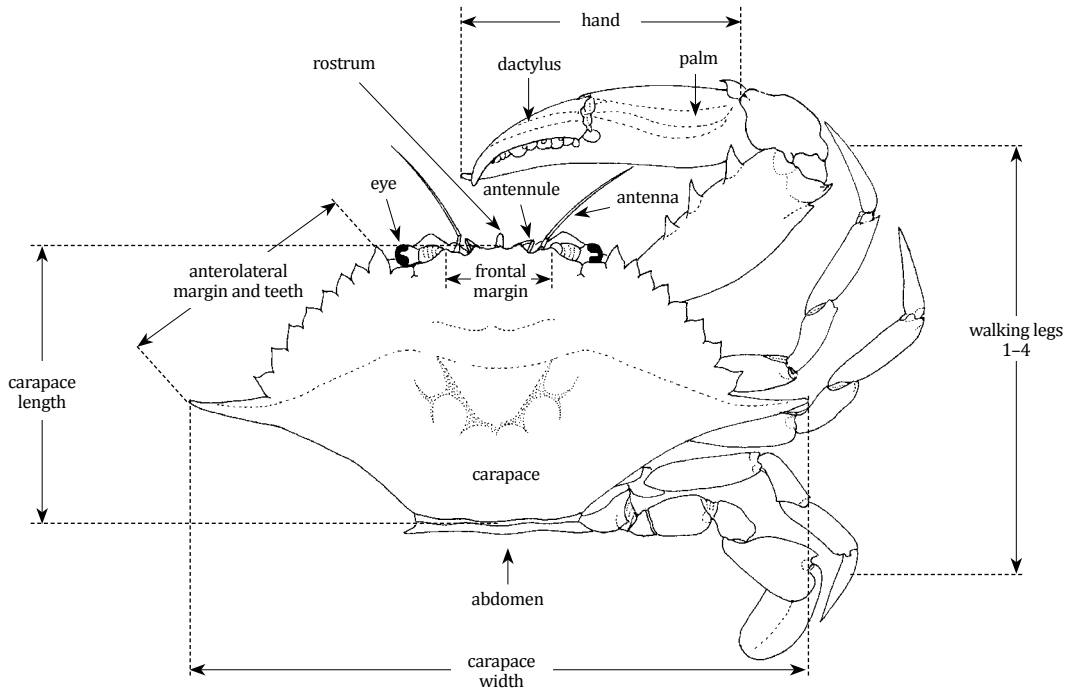


Size: To 8.8 cm (CW)

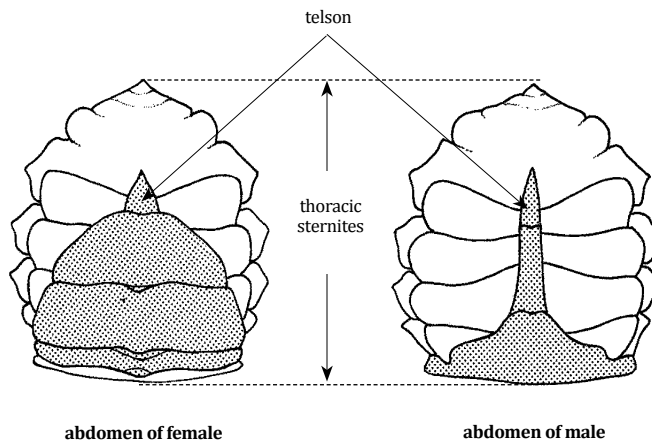
CRABS

Many species of crabs occur in Pakistan, but only a few species are considered important to fisheries. Among these, members of the family Portunidae (except those of small size) are considered of commercial value on the local and international market and exported in whole frozen, and in form of cut crab. Some species such as *Scylla olivacea* and *S. tranquebarica* are reared in ponds. Six species, belonging to the family Portunidae and 2 belonging to the family Matutidae have been included in the Guide to Species.

TECHNICAL TERMS AND MEASUREMENTS



General shape (dorsal view) of a brachyuran crab (family Portunidae)



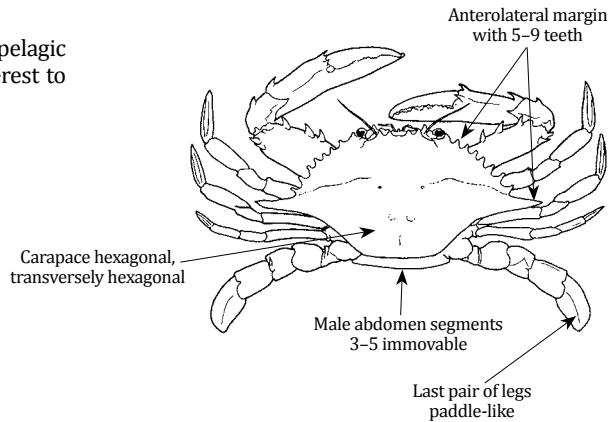
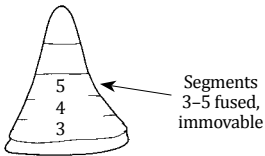
Thoracic sternum and abdomen (ventral view)

GUIDE TO FAMILIES

PORTUNIDAE

Swimming crabs

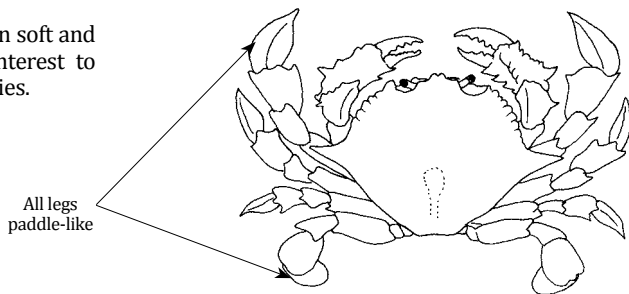
To about 20 cm (CW). Benthic to semipelagic crabs with diverse habits. Six species of interest to fisheries are included in the Guide to Species.



MATUTIDAE

Moon crabs

To about 6.5 cm (CW). Burrowing crabs on soft and mud substrates. Two species of little interest to fisheries are included in the Guide to Species.



Carapace circular to ovate; legs distinctly flattened laterally, last 2 segments of all legs paddle-like

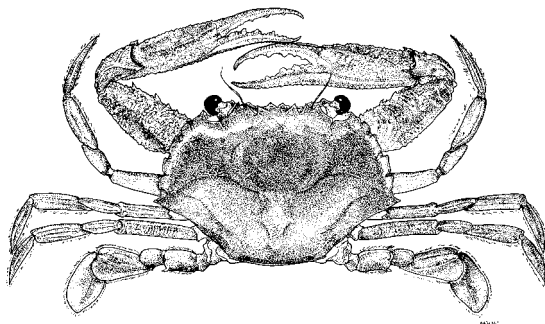
PORTUNIDAE

Swimming crabs

Charybdis smithii MacLeay, 1838)

(Plate I, 6)

FAO names: Smith's Swimming Crab (En)

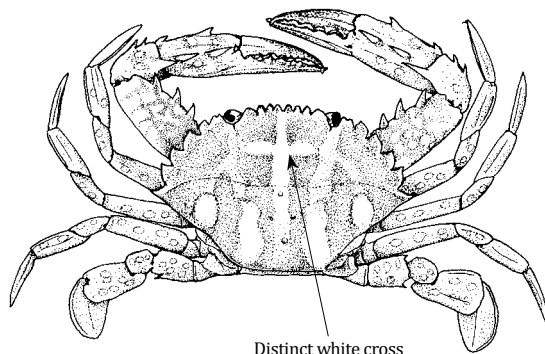
Local name(s): Kaikara (Sin); Kukri (Bal).**Habitat:** Soft substrates, 50–400 m depth.**Fisheries:** Gillnets, bottom trawls.**Distinctive Characters:** Carapace surface smooth; front with 6 acutely triangular teeth, margins of all teeth lined with small rounded granules; 6 teeth on each anterolateral margin (all teeth broad, blunt and truncate, except the posterior one which is small and sharp; palm of cheliped with 4 spines on upper surface; lateral margins of male abdominal segments 3 and 4 separated by deep V-shaped cleft.**Colour:** Reddish-brown to orange.

Size: To about 7.5 cm (CW)

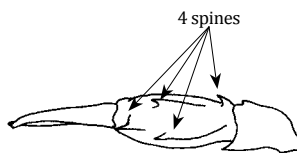
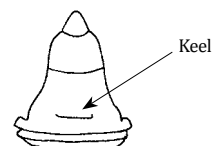
Charybdis feriatus (Linnaeus, 1758)

(Plate I, 7)

FAO names: Crucifix crab (En)

Local name(s): Kaikara, Lal kakra (Sin); Kukri (Bal).**Habitat:** Prefers sandy to sandy-muddy substrates, at depths from 30 to 60 m.**Fisheries:** Gillnets, bottom trawls.**Distinctive Characters:** Carapace ovate; front with 6 subequal triangular distally rounded teeth; 6 teeth on each anterolateral margin (1st anterolateral tooth distinctly bifid, last anterolateral tooth produced laterally); palm of cheliped with 4 spines on upper surface; male abdominal segment 4 keeled.**Colour:** Distinctive pattern of longitudinal stripes of maroon and white, usually with distinct white cross on median part of gastric region; legs and pincers with numerous scattered white spots.

Distinct white cross

Right cheliped
(dorsal view)

Male abdomen

Size: To about 18 cm (CW)

Portunus seignis (Forskål, 1775)

FAO names: Arabian Flower Crab (En)

Local name(s): Kaikara, Soda, Nila kakra, Blue kakra (Sin); Kukri, Gogotanga (Bal).

Habitat: Under rocks and in rock pools, on sandy or muddy substrate, intertidal to 55 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Carapace with fine granulation (adults); front with 4 minute, inconspicuous, almost obsolete teeth; 9 teeth on each anterolateral margin, last tooth at least 2 times larger than others; chelae elongate (more in males than in females) with conical tooth at the base of fingers; 3 spines on anterior margin of the merus of cheliped; legs laterally flattened to varying degrees, last 2 segments of last pair paddle-like.

Colour: Males with dark blue-green carapace with discrete white spots on carapace, sometimes merging into thin reticulated bands. Females similar in pattern to male except that tips of chelipeds are red tinged with a brownish red instead of blue tinged with deep rust red.

Remarks: Previously lumped under the name of "*Portunus pelagicus*". The latter is now recognized to be a complex of four distinct species (Lai, Ng and Davie, 2010).



Size: To 15.8 cm (CW), 7.5 (CL)

Portunus sanguinolentus (Herbst, 1783)

(Plate I, 8)

FAO names: Three-spot swimming crab (En)

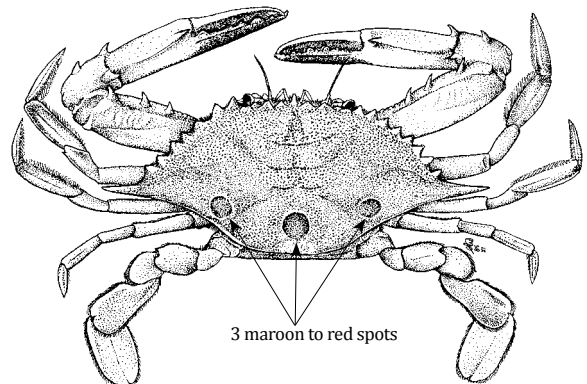
Local name(s): Kaikara, Tikari, Tiki kakara (Sin); Kukri, Tikari (Bal).

Habitat: Occurs on sandy to sandy-muddy substrates, from the intertidal zone (especially juveniles) to depths of 30 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Carapace finely granulose, regions just discernible; 9 teeth on each anterolateral margin, the last tooth 2-3 times larger than preceding teeth; chelae elongated in males; larger chela with conical tooth at base of fingers; pollex ridged.

Colour: Olive to dark green, with 3 prominent maroon to red spots on posterior 1/3 of carapace.



Size: To 20 cm (CW)

Scylla olivacea (Herbst, 1796)

FAO names: Orange mud crab (En)

Local name(s): Kaikara, Khunkhna (Sin); Kukri, Khunkhna (Bal).

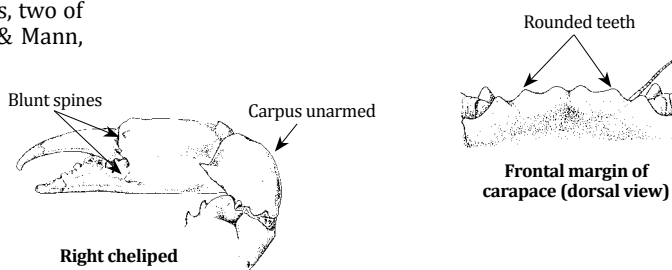
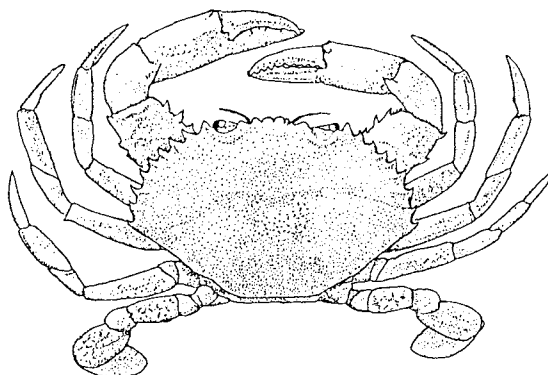
Habitat: Inhabits mangroves.

Fisheries: Gillnets, baited lines, hand picking, bottom trawls.

Distinctive Characters: Carapace smooth; front with 4 rounded and low teeth; 9 teeth on each anterolateral margin, last tooth subequal in size to others; palm of chelipeds usually with a pair of blunt prominences (may be spinous in juveniles and young adults); carpus of cheliped with only 1 low to very low granule on outer surface, never spiniform.

Colour: Carapace brownish to brownish green in colour (sometimes orangish), palm orange to yellow.

Remarks: This species used to be lumped under the name "*Scylla serrata*". The latter is now recognised to be a complex of four species, two of which occur in Pakistan (Keenan, Davie & Mann, 1998).



Size: To 15 cm (CW)

Scylla tranquebarica (Fabricius, 1798)

FAO names: Purple mud crab (En)

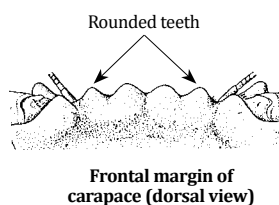
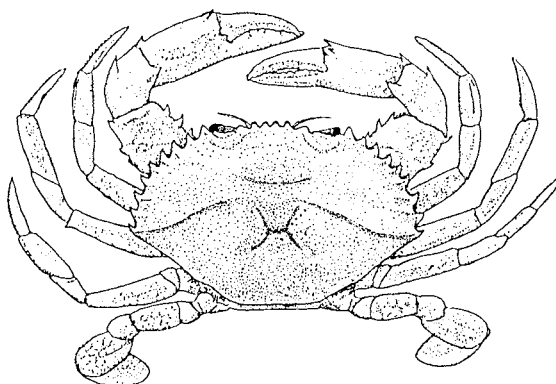
Local name(s): Kaikara, Khunkhna (Sin); Kukri, Khunkhna (Bal).

Habitat: Inhabits mangroves.

Fisheries: Gillnets, baited lines, hand picking, bottom trawls.

Distinctive Characters: Carapace smooth; front with 4 blunt moderate teeth; 9 teeth on each anterolateral margin, last tooth subequal in size to others; palm of chelipeds usually with distinct, sharp spines; carpus of cheliped with 2 distinct sharp granules or spines on outer surface.

Colour: Carapace usually very dark green to black; outer surface of palm purple; last legs marbled only in males.



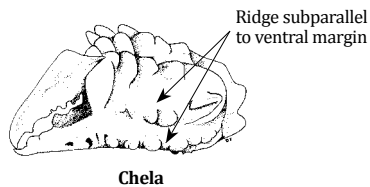
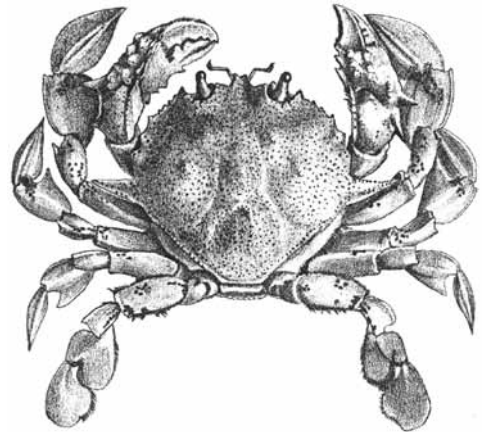
Size: To about 20 cm (CW)

MATUTIDAE

Moon crabs

Ashtoret lunaris (Forsskål, 1775)

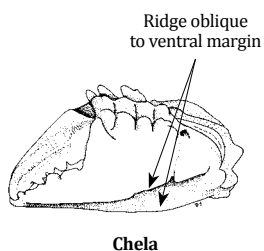
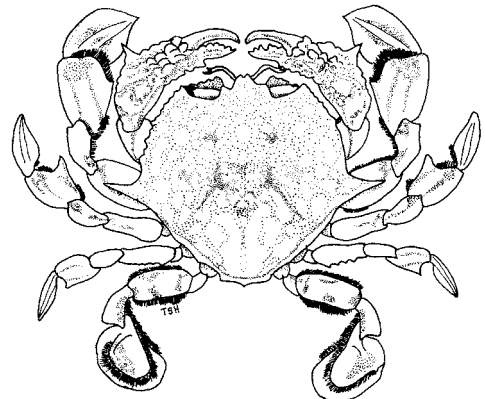
FAO names: Yellow moon crab (En)

Local name(s): Kaikara (Sin); Kukri (Bal).**Habitat:** Found in sandy substrates, often near reefs or seagrass beds, from the intertidal zone to a depth of 50 m.**Fisheries:** Gillnets, bottom trawls.**Distinctive Characters:** Surface of carapace minutely granular and provided with 6 mid-dorsal tubercles; anterolateral margins with 5 small tubercles followed by 3 large triangular tubercles; lateral spine 0.2 times carapace width; outer surface of palm with ridge subparallel to ventral margin**Colour:** Carapace light yellow covered with dark red to black spots.

Size: To 5 cm (CW)

Matuta planipes Fabricius, 1798

FAO names: Flower moon crab (En)

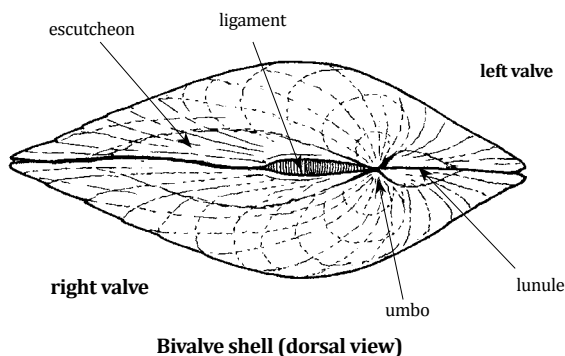
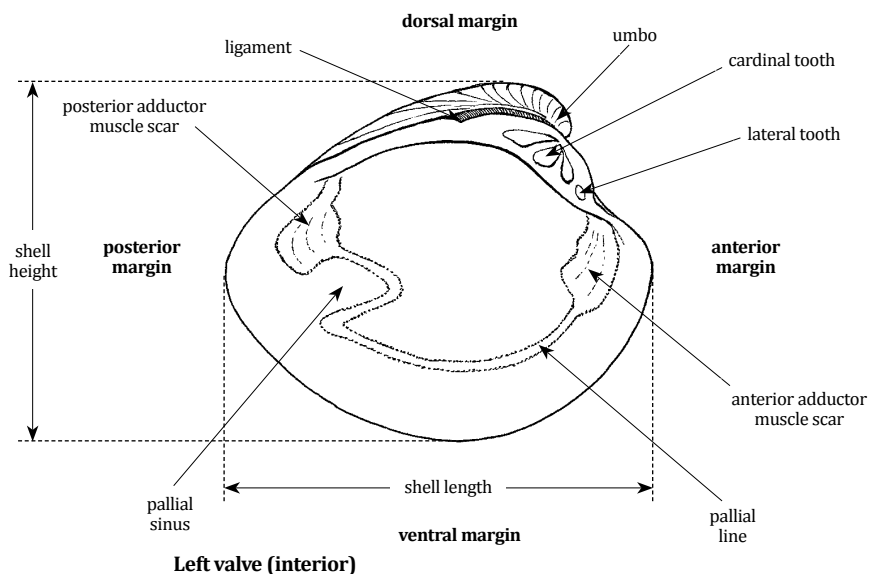
Local name(s): Kaikara (Sin); Kukri (Bal).**Habitat:** Mainly in soft substrates from depths of 10 to 40 m.**Fisheries:** Gillnets, bottom trawls.**Distinctive Characters:** Carapace rounded, with 2 long, well-developed lateral spines; anterolateral margins unevenly serrated; outer surface of palm with strong oblique ridge.**Colour:** Mosaic to reticulate network of maroon lines on a white background.**Remarks:** The coloration of this species is very distinctive and it cannot be confused with any other species in the area.

Size: To 6.5 cm (CW)

BIVALVES*

In Pakistan, coastal species are of great interest to fisheries and have potential for export and aquaculture. Bivalves are harvested by raking in shallow waters and intertidal mudflats. They are also manually dislodged from the substrata. Some species are collected for their nacreous shell or ability to develop pearls. For example, "khappo" shells (*Placuna placenta*) are used as windowpane materials in building construction and decoration and manufacture of shell craft products. Fifteen species belonging to seven families are included in the guide.

TECHNICAL TERMS AND MEASUREMENTS



Adductor muscle: Muscle connecting the two valves of a shell, tending to draw them together.

Byssus: Clump of horny threads spun by the foot, by which a Bivalve can anchor to a hard substrate.

Chomata: Small denticles and corresponding pits located on the inner margin of the valves (Ostreidae and Gryphaeidae).

Hinge: Top interlocking margin of the valves, often with shelly projections (teeth) and corresponding recesses (sockets).

Ligament: Horny, elastic structure joining the two valves dorsally, causing the opening of shell when adductor muscles relax.

Mantle: Fleishy sheet surrounding vital organs and composed of two lobes, one lining and secreting each valve.

Muscle scar: Impression marking the place of attachment of a muscle inside the shell.

Pallial line: A line near the internal margin of valve, marking the site of attachment of the mantle edge.

Umbo: The first formed part of a valve, usually above the hinge.

*Section upgraded and completed by J.-M. Poutiers (MNHN, Paris)

GUIDE TO FAMILIES

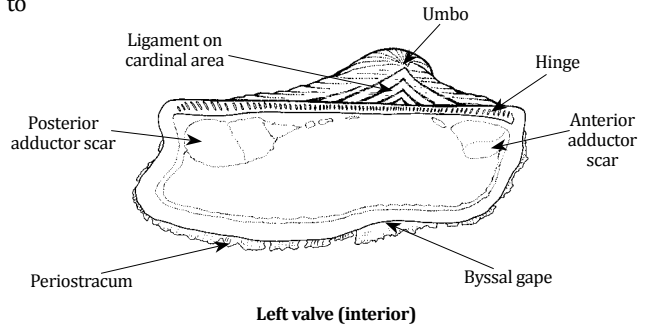
ARCIDAE

Page 40

Ark shells

To 10.5 cm. Marine. One species of interest to fisheries is included in the Guide to Species.

Shell equivalve or slightly inequivalve, more or less inequilateral; umbones in front of the midline, on top of a wide cardinal area covered with the external ligament; hinge elongate, almost straight, with numerous small transverse teeth; adductor muscle scars subequal; pallial line without a sinus.



Left valve (interior)

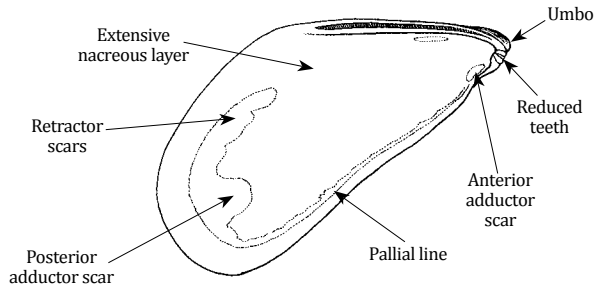
MYTILIDAE

Page 40

Sea mussels

To 19 cm. Marine and brackish waters. One species of interest to fisheries is included in the Guide to Species.

Shell equivalve and very inequilateral, with a narrow byssal gape; ligament external, deep-set in a whitish marginal ridge; hinge teeth absent or reduced; adductor muscle scars unequal, the anterior one small (sometimes absent); pallial line without a sinus; inner side of shell with an extensive nacreous layer.



Left valve (interior)

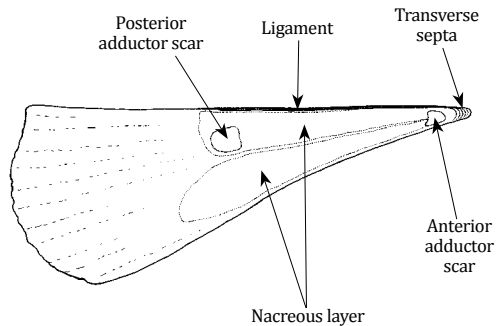
PINNIDAE

Page 41

Pen shells

To 48 cm. Marine. Two species of interest to fisheries are included in the Guide to Species.

Shell equivalve, very inequilateral, pointed in front, gaping ventrally and posteriorly; ligament recessed in long and narrow dorsal groove; hinge without teeth; two unequal adductor muscle scars; no pallial sinus; interior of shell with a thin nacreous layer restricted to the anterior half of valves.



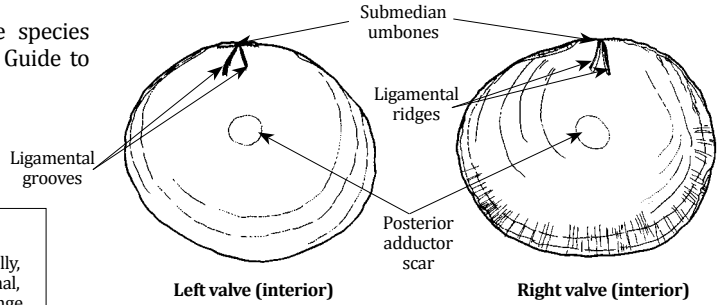
Left valve (interior)

PLACUNIDAE

Windowpane shells

To 22.5 cm. Marine and estuarine. One species of interest to fisheries is included in the Guide to Species.

Shell thin, nearly equilateral, rounded to saddle-shaped and very compressed laterally, slightly inequivalve; ligament mostly internal, forming an inverted V-shaped structure; hinge line straightish, without teeth; a single, centrally situated, rounded (posterior) adductor muscle scar; pallial line obscure, without a sinus.

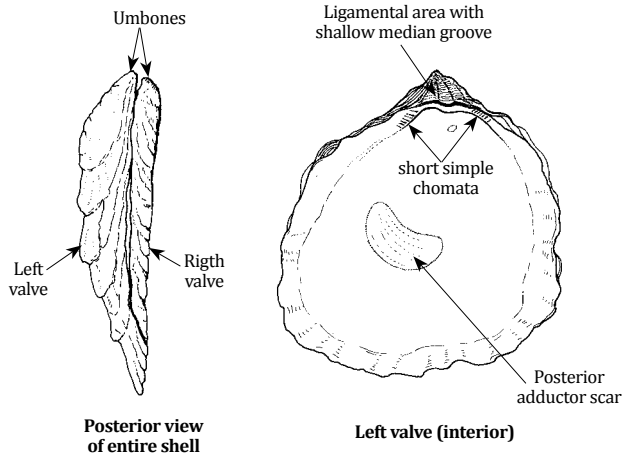


OSTREIDAE

Oysters

To 43 cm. Marine and estuarine. Three species of interest to fisheries are included in the Guide to Species.

Shell inequivalve, cemented to the substrate by the left (lower) valve which is generally larger and deeper; right (upper) valve quite flat; ligamental area with shallow median groove and 2 lateral thickenings; hinge without teeth; a single (posterior) adductor muscle scar; generally median in position; pallial line obscure to absent, without a sinus; internal margins smooth or with simple, short chomata.

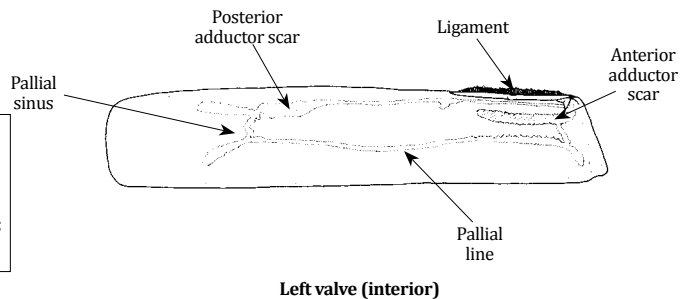


SOLENIDAE

Razor clams

To 13.5 cm. Marine. One species of interest to fisheries is included in the Guide to Species.

Shell equivalve with a narrowly elongate shape, very inequilateral and gaping at both ends; umbones at or nearby the anterior end; ligament external; only one cardinal tooth in each valve; 2 adductor muscle scars, the anterior one elongate; pallial sinus relatively shallow.

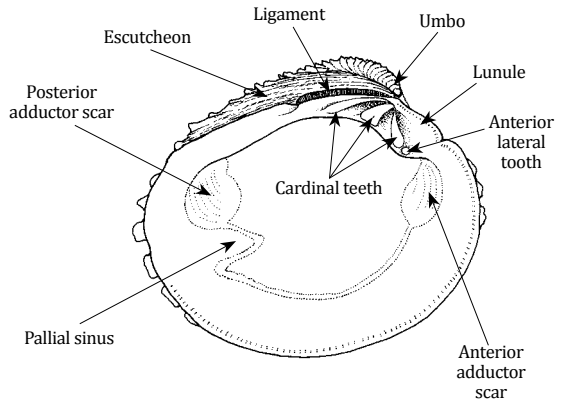


VENERIDAE

Venus clams

To 8 cm. Marine and brackish-water. Six species of interest to fisheries are included in the Guide to Species.

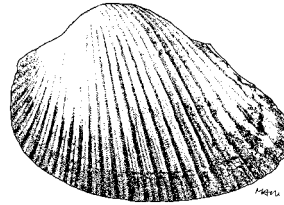
Shell equivalve and inequilateral; lunule and/or escutcheon usually present; ligament external; hinge with usually 3 cardinal teeth in each valve, anterior lateral teeth sometimes present; 2 more or less equal adductor muscle scars; pallial sinus usually present.



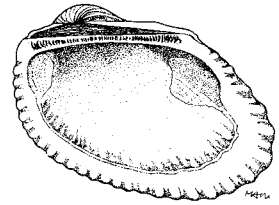
Left valve (interior)

ARCIDAE

Ark shells

Anadara antiquata (Linnaeus, 1758)**FAO names:** Antique ark (En)
Arche antique (Fr)**Local name(s):** Seep (Sin); Dandari (Bal).**Habitat:** On muddy bottoms. Intertidal and sublittoral to a depth of 25 m.**Fisheries:** Hands and knife.**Distinctive Characters:** Shell equivalve, solid, inequilateral, obliquely ovate and elongate in outline, with an extended posteroventral part; about 35 radial ribs at each valve; ribs usually with a narrow median groove on top; periostracum coarse and hairy, with fine lamellae and erect bristles, often eroded on umbones; no byssal gape; internal margins with strong crenulations.**Colour:** Outside of shell greyish white, often stained darker grey on umbonal and posterior areas; periostracum dark brown; inside of shell white.

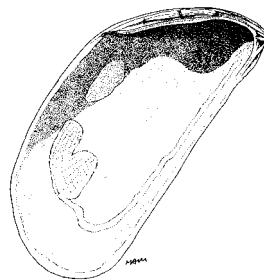
Exterior of left valve



Interior of right valve

Size: To 10.5 cm, common 7 cm shell length**MYTILIDAE**

Sea mussels

Perna viridis (Linnaeus, 1758)**FAO names:** Asian brown mussel (En)
Moule verte asiatique (Fr)**Local name(s):** Seep (Sin); Kuchki, Khar kunt (Bal).**Habitat:** Byssally attached to various hard objects or substrates. Littoral and sublittoral to a depth of 20 m.**Fisheries:** Hands and knife.**Distinctive Characters:** Shell elongate, roughly trigonal-ovate in outline, swollen and pointed anteriorly, rounded and compressed posteriorly; umbones terminal and sharply tapering, rather incurved; periostracum rather thick and smooth, adherent; ligamental ridge finely pitted; anterior adductor scar absent in adult specimens; anterior retractor scar separated, elongate-ovate in shape, situated a short way to posterior end of ligament.**Colour:** Outside of shell whitish under a bright periostracum which is dark brownish green anteriorly and olive-green to bright green posteriorly; interior an iridescent pale bluish green, with a vivid green margin of periostracum.

Interior of left valve



Exterior of right valve

Size: To 19 cm, common 8 cm shell length

PINNIDAE

Pen shells

Atrina pectinata (Linnaeus, 1767)

Local name(s): Seep (Sin); Kuchki, Khar kunt (Bal).

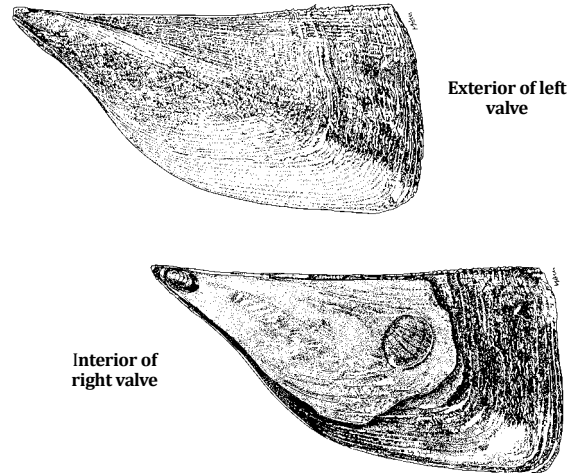
Habitat: On muddy bottoms. Intertidal and sublittoral to a depth of 25 m.

Fisheries: Hands and knife.

Distinctive Characters: Shell reaching a large size, usually rather thin, fragile, moderately inflated and triangularly wedge-shaped in outline, with a highly variable sculpture; outer surface of valves with 15 to 30 radial ribs which may be smooth to densely set with short, open spines; internal nacreous layer rather thin, undivided, occupying the anterior 2/3 to 3/4 of valves; posterior adductor scar completely enclosed within the nacreous area.

Colour: Outside of shell slightly shiny, translucent olivaceous tan, often tinged with darker purplish brown or grey toward the umbones. Interior similarly coloured, iridescent on nacreous area.

FAO names: Comb pen shell (En)
Jambonneau pectiné (Fr)



Size: To 37 cm, common 26 cm shell length

Atrina vexillum (Born, 1778)

Local name(s): Seep (Sin); Kuchki, Khar kunt (Bal).

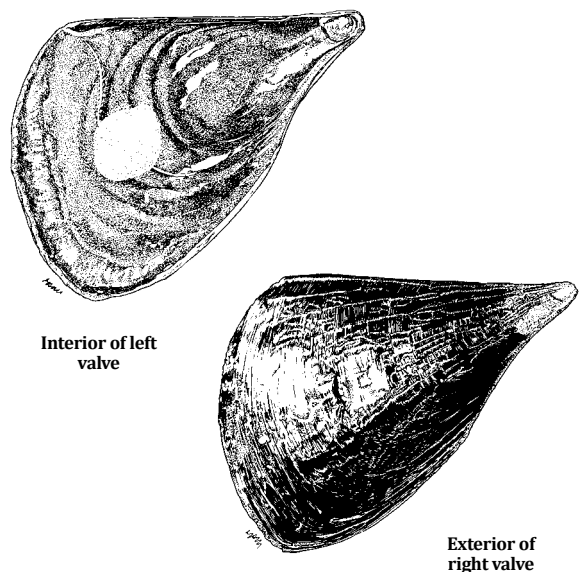
Habitat: In sandy-mud bottoms, or in sandy eel-grass patches on reefs sublittorally, from extreme low tide to a depth of about 35 m.

Fisheries: Hands and knife.

Distinctive Characters: Shell reaching a very large size, thick and solid, inflated, variable in shape from triangular to hatchet-shaped or subglobular; outside of valves with 10 to 17 main radial ribs, often bearing scale-like spines, and with weaker interstitial riblets; internal nacreous layer moderately strong, undivided, occupying the anterior half or 2/3 of valves; hind margin of posterior adductor scar slightly protruding beyond the nacreous area (protrusion of adductor scar more developed in mature specimens).

Colour: Outside of shell dark reddish brown to nearly black, usually dull; shell material semitranslucent, appearing a rich reddish purple when viewed with transmitted light; interior dark brown to black, iridescent on nacreous area.

FAO names: Flag pen shell (En)
Jambonneau noir (Fr)



Size: To 48 cm, common 30 cm shell length

PLACUNIDAE

Windowpane shells

Placuna placenta (Linnaeus, 1758)

FAO names: Windowpane oyster (En)
Placune ovale (Fr)

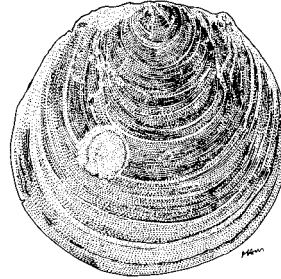
Local name(s): Khappo (Sin).

Habitat: On the surface of soft muddy to sandy-mud bottoms, from low tide levels to a depth of about 100 m. Main natural beds range from 4 to 20 m deep. Abundant in quiet waters of lagoons, protected bays and mangrove areas, or near estuaries.

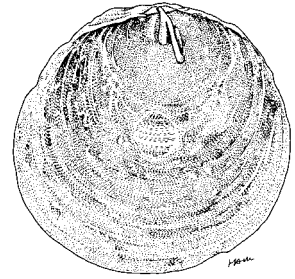
Fisheries: Collected by hands at low tide or by diving at shallow depths.

Distinctive Characters: Shell thin and more or less translucent, almost circular in outline; commissural plane flat; outer surface nearly smooth, excepting numerous, minute radiating threads forming tenuous wrinkles on the finely lamellate concentric lines of growth; right valve ridges for internal ligament gradually diverging from each other, the posterior ridge distinctly longer than the anterior; interior of shell smooth and glossy, with only very weak radiating lines.

Colour: Outside of shell silvery white with a dull finish, occasionally with pale brown or light purplish rays towards the umbones; interior nacreous white.



Exterior of left valve



Interior of right valve

Size: To 22.5 cm, common 10 cm shell length**OSTREIDAE**

Oysters

Crassostrea belcheri (G. B. Sowerby II, 1871)

FAO names: Belcher's cupped oyster (En)
Huître creuse de Belcher (Fr)

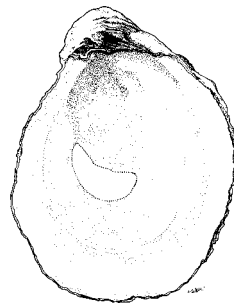
Local name(s): Kadda (Sin); Khar kunt (Bal).

Habitat: Marine to brackish water areas of estuaries. Intertidal zone and shallow subtidal water to about 5 m deep.

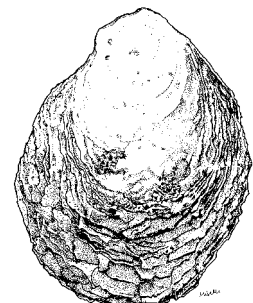
Fisheries: Hands and knife.

Distinctive Characters: Shell large to very large-sized, thick, very variable in shape but generally higher than long and rounded ovate to elongate orbicular in outline; both valves convex, left (lower) valve rather thick, heavy and more convex than right (upper) valve, with rather small to large-sized attachment area; umbonal cavity present under the hinge of left valve; adductor muscle scar large, oblong-lunate, somewhat concave anterodorsally and roughly as far from ventral margin as from the hinge; chomata completely absent.

Colour: Outside of shell whitish to dull green; interior of valves porcelaneous white, with pearly-white muscle scar.



Interior of left valve



Exterior of right valve

Size: To 43 cm, common 15 cm shell length

Crassostrea bilineata (Röding, 1798)

Local name(s): Kadda (Sin); Khar kunt (Bal).

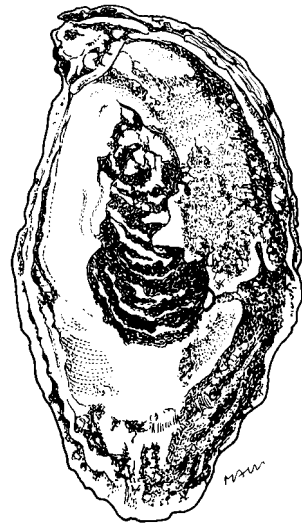
Habitat: Marine to brackish water areas of estuaries. Intertidal zone and sublittorally to a depth of about 20 m.

Fisheries: Hands and knife.

Distinctive Characters: Shell medium sized, usually poorly sculptured but rather foliaceous, very variable in shape but generally higher than long, roughly rounded, oblique triangular or elongate ovate in outline; left (lower) valve rather thick but lightweighted, more convex and larger than right (upper) valve, with small to medium-sized attachment area; a moderately small umbonal cavity present under the hinge of left valve; adductor muscle scar large, kidney-shaped, somewhat concave anterodorsally and a little nearer to ventral margin than to the hinge; chomata completely absent.

Colour: Outside of shell dirty white, often flushed with pale greyish brown; interior of valves whitish and shiny, often with irregular areas of chalky white, deep purple-brown to blackish on posterior adductor scar (sometimes also on inner margins).

FAO names: Slipper cupped oyster (En)
Huître creuse chausson (Fr)



Interior of
left valve

Size: To 21 cm, common 8 cm shell length

Dendostrea folium (Linnaeus, 1758)

Local name(s): Kadda (Sin); Khar kunt (Bal).

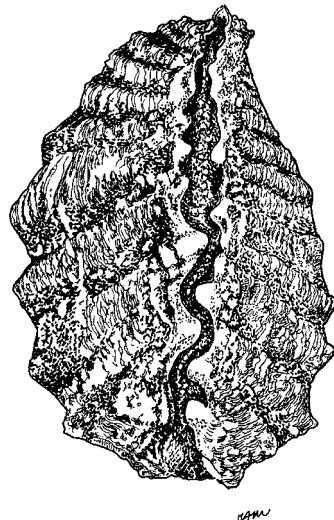
Habitat: On rocks, dead shells or seawhip stems, in marine and estuarine waters. Common in mangrove areas. Lower intertidal zone and sublittorally to a depth of 10 m or more.

Fisheries: Hands and knife.

Distinctive Characters: Shell rather small-sized, slightly inequivalve, variable in shape, irregularly subcircular or dorsoventrally elongate ovate in outline, depending on the substrate; left (lower) valve with short recurved spines forming clasping shelly extensions to attach shell to extraneous objects; valves strongly plicate beyond the attachment area by up to 15 or more rounded radial folds that markedly undulate the commissure; umbonal cavity of left valve shallow; chomata variably developed

Colour: Outside of shell with different shades of yellowish brown to purplish brown, usually with some darker radial lines or streaks; interior of shell glossy white with outer shell colour toward the margins and often iridescent patches of olive yellow.

FAO names: Leaf oyster (En)
Huître feuille (Fr)



Exterior of
left valve

Size: To 10 cm, common 6 cm shell length

SOLENIIDAE

Razor clams

Solen dactylus Cosel, 1989

FAO names: Finger razor shell (En)
Couteau dactyle (Fr)

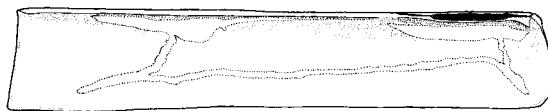
Local name(s): Maa-rori (Sin); Maa-rori (Bal).

Habitat: Burrowing vertically in mud and fine sand with mud and detritus. Tidal flats of lower intertidal zone.

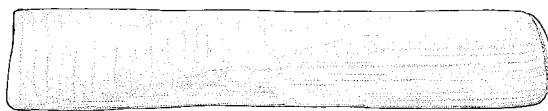
Fisheries: Harvested manually by means of a piece of hooked, sharpened wire that is thrust into the burrow.

Distinctive Characters: Shell very elongate rectangular in outline, with nearly straight, almost parallel to slightly diverging posteriorward dorsal and ventral margins; anterior margin truncate and slightly oblique, bordered by a marked deep and narrow furrow immediately anterior to the umbones; posterior margin truncate, with sharp corners; periostracum thin, often heavily eroded; posterior adductor scar widely confluent with dorsal branch of pallial sinus, which is rather broad and deep, with long ventral branch.

Colour: Outside of shell uniform ivory white; periostracum light green olive. Interior whitish.



Interior of left valve



Exterior of right valve

Size: To 13.5 cm, common 10 cm shell length

VENERIDAE

Venus clams

Marcia cordata (Forsskål in Niebuhr, 1775)

FAO names: Flame venus (En)
Vénus flammée (Fr)

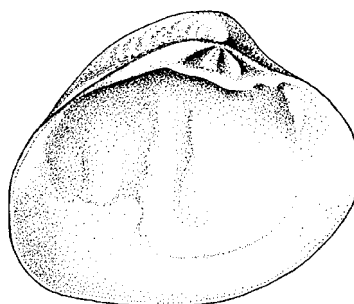
Local name(s): Badam (Sin); Kuchki (Bal).

Habitat: Intertidal and shallow subtidal sand.

Fisheries: Harvested manually by raking.

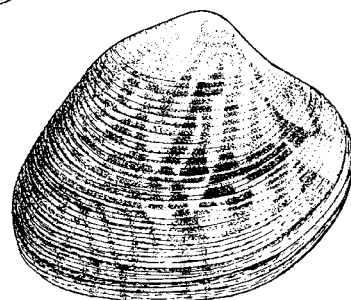
Distinctive Characters: Shell solid and moderately inflated, with a variable, inequilateral shape, roughly rounded to trigonal ovate in outline; lunule large, shallow, smoothish and well defined, escutcheon poorly defined; outer surface of shell covered with numerous, somewhat irregular fine, rounded and closely spaced concentric cords, sometimes fading out near posterior half of ventral margin; hinge plate relatively large, with a strongly sinuous ventral margin, bearing in each valve 3 prominent cardinal teeth, but no lateral teeth; pallial sinus moderately deep and broad, slightly ascending dorsally; internal margins smooth.

Colour: Outside of shell variable, whitish or buff to brown, often with various patterns of faint to well marked darker spots, blotches, radial or oblique rays; interior whitish, sometimes darker coloured on hinge area.



Interior of left valve

Exterior of right valve



Size: To 6 cm, common 4 cm shell length

Marcia recens (Holten, 1802)

FAO names: Marbled venus (En)
Vénus marbrée (Fr)

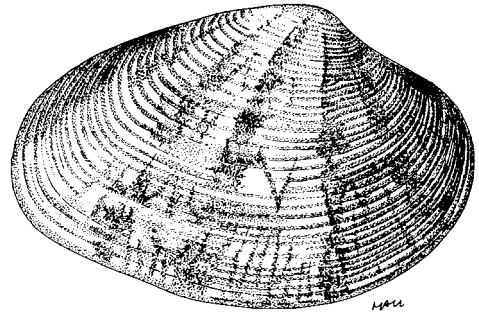
Local name(s): Badam (Sin); Kuchki (Bal).

Habitat: Shallow burrower of sand and muddy-sand bottoms. Intertidal and sublittoral to a depth of 50 m.

Fisheries: Harvested manually by raking.

Distinctive Characters: Shell solid and moderately inflated, with a variable, inequilateral shape, usually rounded ovate to elongate ovate in outline; lunule shallow and well developed, escutcheon poorly defined; outer surface of shell covered with numerous, somewhat irregular and relatively distantly spaced concentric cords, sometimes fading out near posterior half of ventral margin; hinge plate relatively narrow, with rather straight ventral margin, bearing in each valve 3 slender cardinal teeth, but no lateral teeth; pallial sinus moderately deep and broad, not ascending dorsally; internal margins smooth.

Colour: Outside of shell usually beige to light fawn, with a large variety of darker brown or even black rays, blotches, zigzag lines or spots; interior whitish, often tinged purplish blue on hinge area.



Exterior of right valve

Size: To 5 cm, common 4 cm shell length

Meretrix casta (Gmelin, 1791)

FAO names: Backwater hard clam
Cythérée pure (Fr)

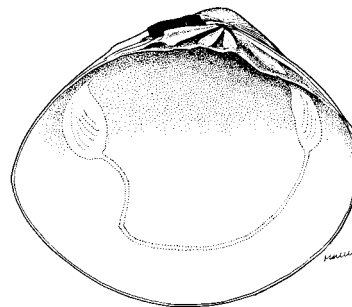
Local name(s): Badam (Sin); Kuchki (Bal).

Habitat: In sandy-muddy bottoms, in brackish waters of lagoons and estuaries. Intertidal and shallow subtidal waters to a depth of about 5 m.

Fisheries: Harvested manually by raking.

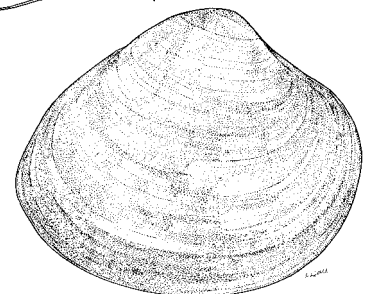
Distinctive Characters: Shell thick, moderately inflated with a slightly inequilateral shape, trigonal-ovate in outline; umbones slightly anterior, often strongly eroded, pointing on top of the somewhat convex dorsal margin; lunule smooth, defined by a fine shallow groove, escutcheon poorly distinct; outer surface of shell smooth, except from low concentric growth marks; periostracum smooth; hinge plate very robust, with an irregularly shaped, roughly straight ventral margin, bearing in each valve 3 strong cardinal teeth and well developed anterior lateral teeth; pallial sinus shallow and broadly open, meeting pallial line on posterior end; internal margins smooth.

Colour: Outside of shell variable under the light to dark brown or dirty grey periostracum; basically white, plain or with a few more or less distinct purplish brown rays toward umbones; interior white, dark purplish brown along posterodorsal margin.



Interior of left valve

Exterior of right valve



Size: To 6.9 cm, common 5 cm shell length

Meretrix meretrix (Linnaeus, 1758)

FAO names: Asiatic hard clam (En)
Cythérée commune (Fr)

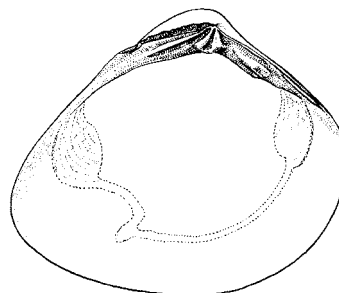
Local name(s): Badam (Sin); Kuchki (Bal).

Habitat: In sand and muddy-sand bottoms of open coasts. Intertidal and sublittoral waters to a depth of about 20 m.

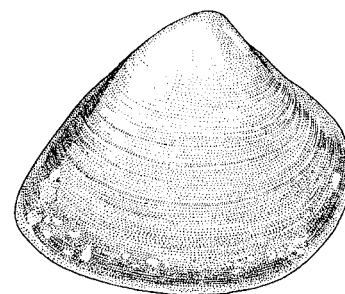
Fisheries: Harvested manually by raking.

Distinctive Characters: Shell thick, moderately inflated with a variable, nearly equilateral to rather inequilateral shape, trigonal-ovate in outline; umbones anterior, poorly inflated, pointing on top of dorsal margin; lunule smooth and poorly defined, escutcheon indistinct; outer surface of shell smooth, except from low concentric growth marks; periostracum smooth and glossy; hinge plate moderately thick, with a concave ventral margin, bearing in each valve 3 strong cardinal teeth and well developed anterior lateral teeth; pallial sinus broad and rather shallow, forming a horn-shaped process ventrally; internal margins smooth.

Colour: Outside of shell very variable in colour and pattern, under the transparent, pale straw-coloured periostracum; basically white or fawn to chestnut brown, plain or variously maculated with darker grey or brown; interior white, sometimes with dark brown along posterodorsal margin.



Interior of left valve



Exterior of right valve

Size: To 7.7 cm, common 6 cm shell length

Paphia (Protapes) cf. gallus (Gmelin, 1791)

FAO names: Rooster venus (En)
Palourde coq (Fr)

Local name(s): Badam (Sin); Kuchki (Bal).

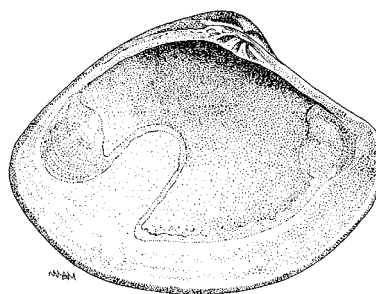
Habitat: Common in sandy beaches, but also sublittorally in sand and mud to a depth of about 50 m.

Fisheries: Harvested manually by raking.

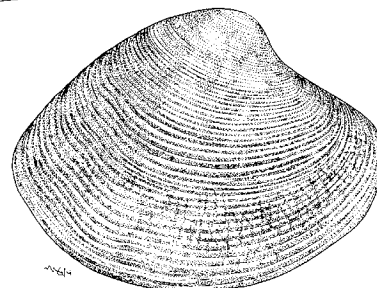
Distinctive Characters: Shell elongate ovate and subtrigonal in outline, slightly twisted to the left posteroventrally by a low radiating fold; lunule concave, smooth and with shallow marginal groove, escutcheon poorly distinct; outer surface of shell with numerous, regularly spaced, low concentric ridges separated by narrow shallow grooves; hinge plate thin, with 3 cardinal teeth in each valve, but without lateral teeth; pallial sinus deep and steeply ascending, subquadrate with rounded anterior end. Inner margins smooth.

Colour: Outside of shell fawn in colour, with dense, fine zigzag streaks and often four dark brown spotted rays; interior white.

Remarks: *Paphia (Protapes) gallus* represents a complex of sibling species, some of which remaining to be described.



Interior of left valve



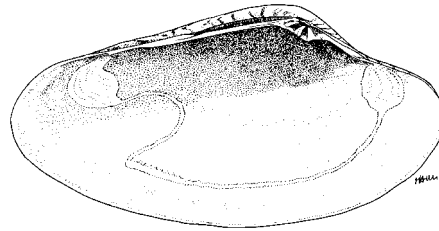
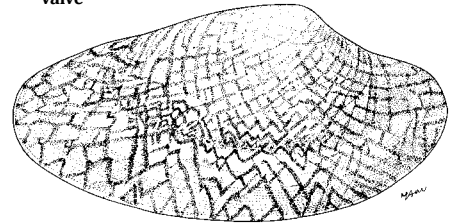
Exterior of right valve

Size: To 7.5 cm, common 6 cm shell length

Paphia textile (Gmelin, 1791)

FAO names: Textile venus (En)

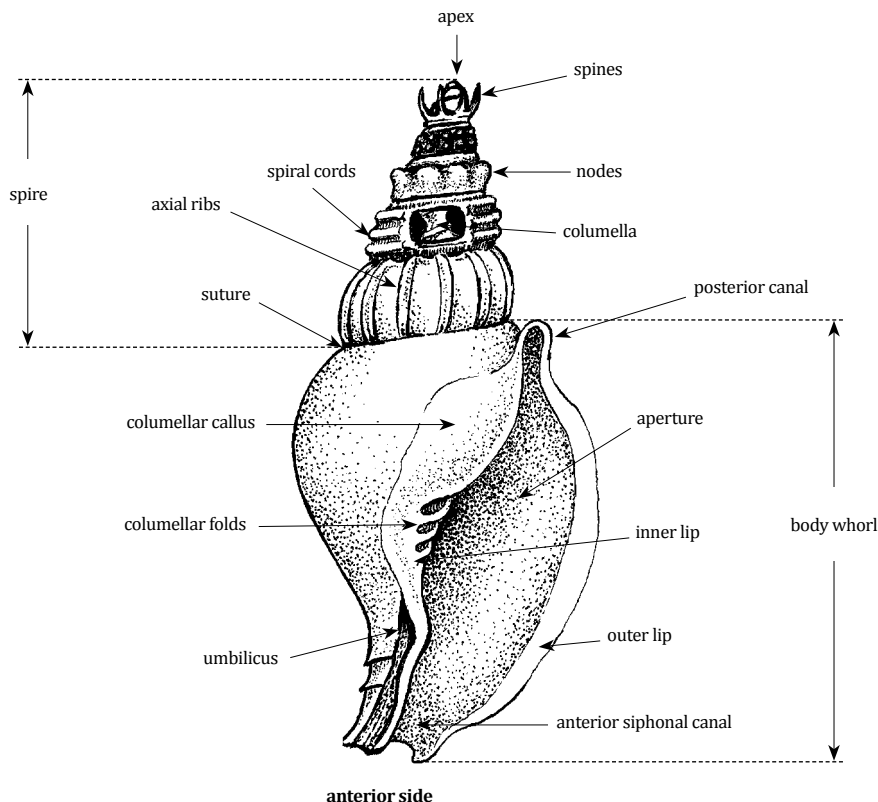
Palourde textile (Fr)

Local name(s): Badam (Sin); Kuchki (Bal).**Habitat:** In fine sand and mud bottoms. Intertidal and sublittoral to a depth of about 20 m.**Fisheries:** Harvested manually by raking.**Distinctive Characters:** Shell moderately inflated, strongly elongate transversely, elliptical-ovate in outline; umbones markedly anterior, approximately situated at the anterior 1/3 of shell length; anterodorsal and posterodorsal margins straightish and gently sloping; outer surface smooth and glossy, only with shallow concentric growth marks, but devoid of undulating oblique grooves on medial part of the shell; hinge narrow, with 3 radiating cardinal teeth but without lateral teeth; pallial sinus deep, markedly ascending, rounded in front and approximately extending over the posterior 2/5 of shell length; internal margins smooth.**Colour:** Outside of shell highly glossy, cream to pinkish brown, with a netted pattern of darker tan to greyish brown zigzag lines; dorsal margins with distant, dark purplish brown, short and transverse lines anterior and posterior to the umbones; interior whitish.Interior of left
valveExterior of
right valve**Size:** To 8 cm, common 6 cm shell length

GASTROPODS*

Several marine gastropod species are commercially important in Pakistan and are collected locally by artisanal fishermen for food, as bait and for the shell market. Four species belonging to three families are included in the guide.

TECHNICAL TERMS AND MEASUREMENTS



Gastropod shell (ventral view)

Aperture: Opening of shell, at the last formed margin; in a spiral shell, the margin nearer to the coiling axis forms the inner lip, and the opposite margin the outer lip.

Base: Lower part of the shell, anterior to level of periphery of body whorl.

Body whorl: The largest, last turn of the spiral in a coiled shell.

Callus: Thick secondary deposit of lime, generally shiny and porcellaneous.

Columella: Coiling axis of shell, forming the lower part of inner lip.

Operculum: Horny or calcareous part attached to the foot, sealing aperture when animal retracts within the shell.

Sculpture: Relief pattern on shell surface. When parallel to the curve of whorls, sculptural elements are spiral; when parallel to the coiling axis, they are axial.

Shoulder: Distinct spiral angulation of a whorl.

Siphonal canal: Trough-like or tubular extension of aperture anteriorly, for inclosure of a fleshy siphon.

Spire: All the whorls of a shell, except the last one.

Suture: Spiral line or groove of shell surface, where adjacent whorls meet.

Umbilicus: Opening at base of shell made around the coiling axis when columella is hollow.

Varix (pl. varices): Axial rib-like thickening of the outer surface of shell, representing a previous growth halt during which the outer lip of aperture thickened.

*Section upgraded and completed by J.-M. Poutiers (MNHN, Paris)

GUIDE TO FAMILIES

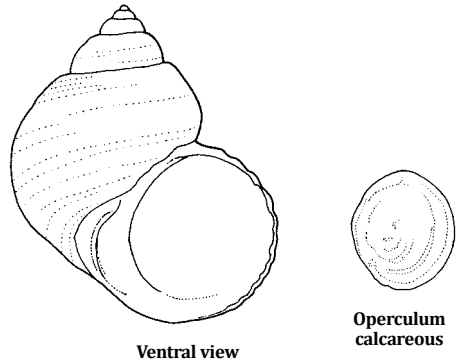
TURBINIDAE

Page 50

Turban shells

To 22 cm. Marine. Two species of interest to fisheries are included in the Guide to Species.

Shell thick, turbanate to conical (occasionally flattened) in shape; sculpture very variable, often spiral to nodular; aperture variously rounded, without a siphonal canal, nacreous inside; operculum strongly calcified



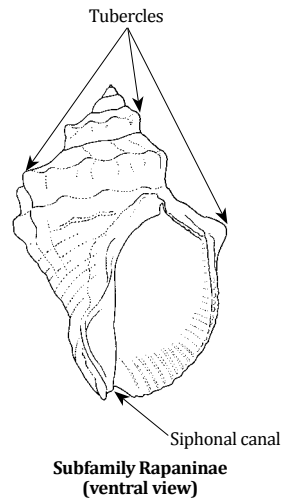
MURICIDAE

Page 51

Purpuras – Murex – Rock shells

To 6.3 cm. Marine. One species of interest to fisheries is included in the Guide to Species.

Shell variably shaped, generally with a raised spire and strong sculpture with spiral ridges and often axial varices, frequently bearing spines, tubercles or blade-like processes (axial varices absent in Rapaninae); siphonal canal short to long; operculum corneous



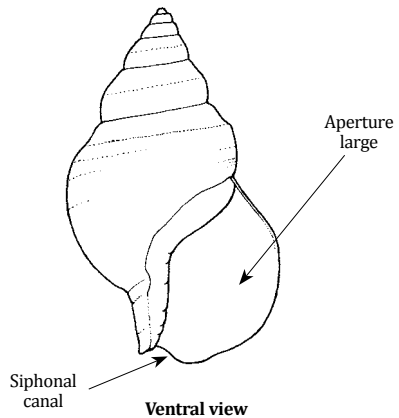
BABYLONIIDAE

Page 51

Ivory whelks

To 8.5 cm. Marine. One species of interest to fisheries is included in the Guide to Species. This family has been recently separated from the Buccinidae on anatomical and molecular grounds.

Shell ovate-conical and globose to slender in shape, generally with fairly pointed spire and large body whorl; outer surface smoothish, without axial varices or developed spines; coloration typically patterned with brown to orange markings, rather regularly arranged along spiral (sometimes diagonal) rows; siphonal canal short; operculum corneous, completely occluding the aperture.



TURBINIDAE

Turban shells

Lunella coronata (Gmelin, 1791)

Local name(s): Ghonga (Sin); Gur (Bal).

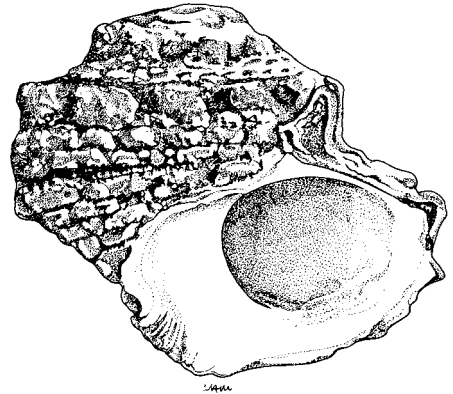
Habitat: Among rocks and gravel, or in crevices. Intertidal and shallow water.

Fisheries: Caught by hands.

Distinctive Characters: Shell relatively small, solid, longer than high and roughly turbanate in shape, with a low, dome-shaped spire and large body whorl; surface of shell covered with irregular spiral rows of coarse nodules and granules, two of which are more prominent on median portion of body whorl; aperture large and rounded, columella wide, flattened to somewhat excavated and produced at base; exterior of operculum convex, sparsely and finely granulated all over.

Colour: Outer colour of shell variable, pale dull green to orange-yellow and flecked with brown or reddish grey, the apex frequently eroded and red; interior of aperture iridescent; exterior of operculum greenish.

FAO names: Coronate moon turban (En)
Turbo couronné (Fr)



Ventral view

Size: To 5.5 cm, common 3.5 cm shell length

Turbo marmoratus Linnaeus, 1758

Local name(s): Ghonga (Sin); Gur (Bal).

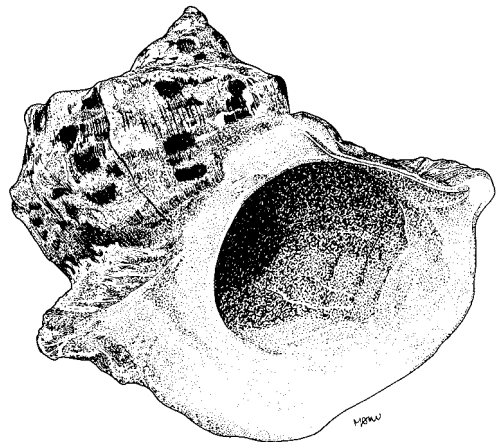
Habitat: In subtidal, coral reef areas open to a constant flow of clean oceanic water. Juveniles mainly living on reefs crests, at depths of 1 to 5 m; adults also occurring deeper on slopes, to about 20 m or more.

Fisheries: Caught by hands.

Distinctive Characters: Shell reaching a very large size, sturdy, roughly turbanate in shape with a rather small, pointed spire and a strongly developed, massive body whorl; spiral sculpture poorly developed, apart from 3 ribs on shoulder, periphery, and base of body whorl, bearing blunt tubercles; exterior of operculum smooth to finely granular.

Colour: Outside of shell dull-coloured, uniformly greenish or with spiral bands of alternating chestnut brown and grey spots; interior of aperture silvery white; exterior of operculum whitish.

FAO names: Green turban (En)
Turbo vert (Fr)



Ventral view

Size: To 22 cm, common 15 cm shell length

MURICIDAE

Purpuras – Murex – Rock shells

Indothais lacera (Born, 1778)

FAO names: Carinate rock shell (En)
Pourpre carénée (Fr)

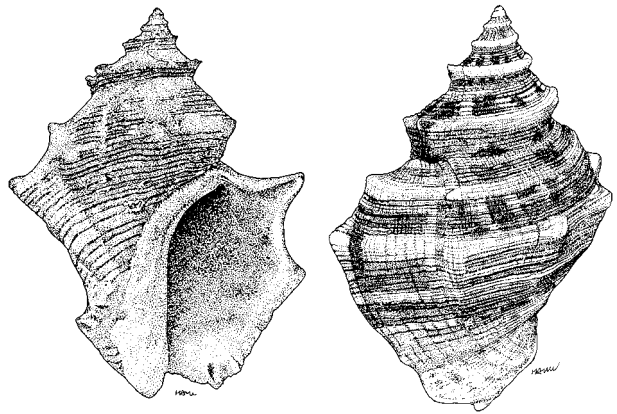
Local name(s): Star shell (Sin); Gur (Bal).

Habitat: On muddy littoral rocks, and subtidally to about 25 m deep.

Fisheries: Caught by hands, baited traps.

Distinctive Characters: Shell thick and heavy for its size, almost biconical in outline, with a moderately tall, conical spire and large, strongly angulated body whorl; surface of shell with many narrow, irregular spiral cords all over, and a sharply angular spiral ridge bearing spiny tubercles at periphery of each whorl; base of body whorl with a prominent spiral ridge bordering the umbilical excavation; anterior siphonal canal short and deep, widely open.

Colour: Outside of shell pale grey, cream or yellowish brown, often with quadrangular brown mottling; aperture flesh-coloured inside, becoming pale cream to orange on margins.



Ventral view

Dorsal view

Size: To 6.3 cm, common 4 cm shell length

BABYLONIIDAE

Ivory whelks

Babylonia spirata (Linnaeus, 1758)

FAO names: Spiral ivory whelk (En)
Babylonie spiralee (Fr)

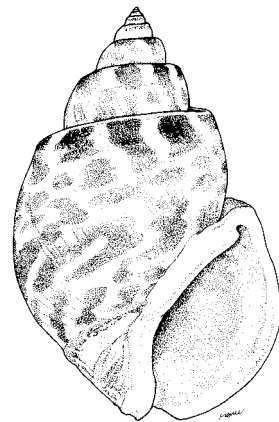
Local name(s): Ghonga (Sin); Jinni nakhun gur, Gur (Bal).

Habitat: On fine sandy muddy bottoms, from low tide level to a depth of about 20 m or more.

Fisheries: Caught by hands, baited traps.

Distinctive Characters: Shell broad, ovately conical and moderately short, with prominent and pointed spire; sutural canal conspicuous, wide and deep with angulate keel-like shoulder; body whorl somewhat flattened between the shoulder and the periphery; aperture about half of shell height; umbilicus varying from wide open to completely closed.

Colour: Ground colour white, blotches of varying shapes and sizes, generally arranged in spiral bands, ranging from pinkish orange to dark brown; periostracum thin, brown; aperture white.



Ventral view

Size: To 8.5 cm, common 4–5 cm shell length

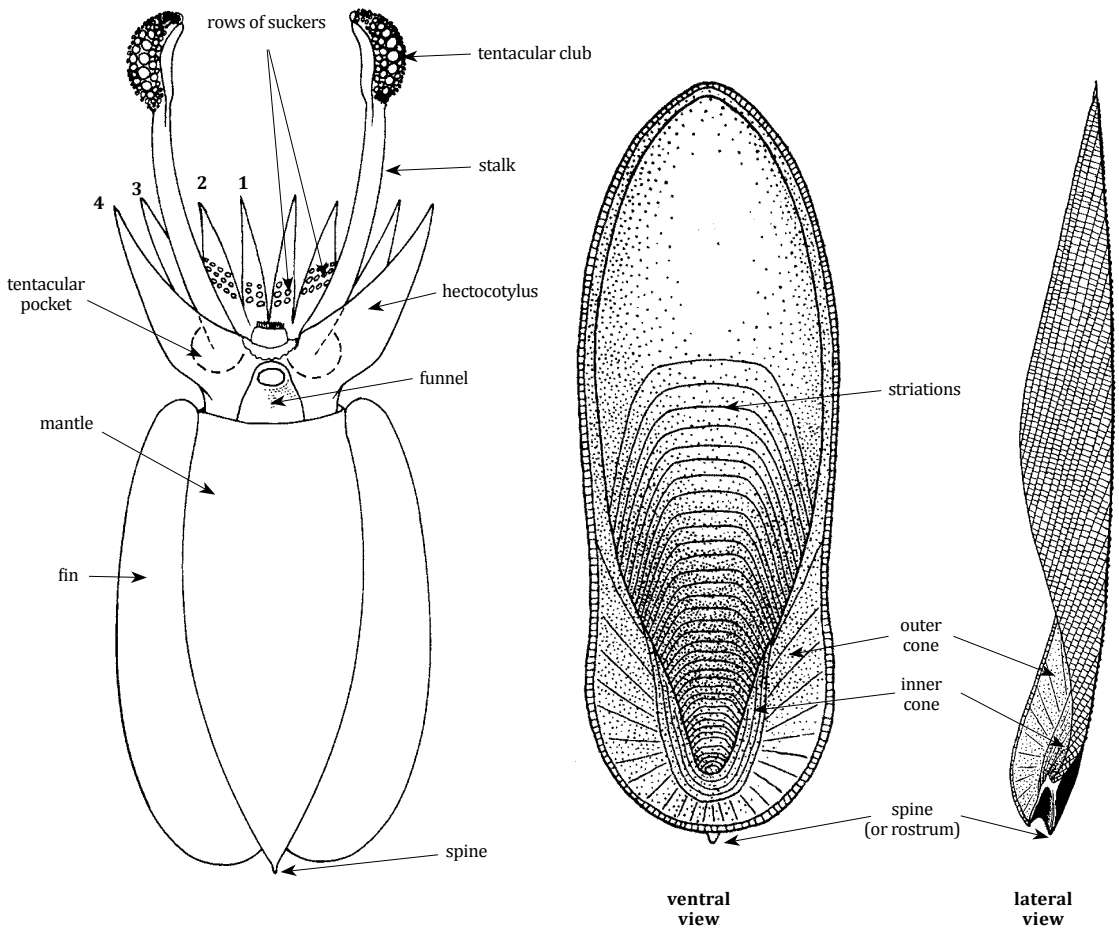
CEPHALOPODS

All species of octopus, squid and cuttlefish are eaten locally and are of commercial importance, also used as bait for various fish species and lobsters. The "Guide to Orders" and "Guide to Species" include three orders and 28 species, respectively.

TECHNICAL TERMS AND MEASUREMENTS AND GUIDE TO ORDERS

Order SEPIOIDEA - Cuttlefishes

Seption (internal shell) large, chalky, rigid; 8 arms and 2 retractile tentacles.

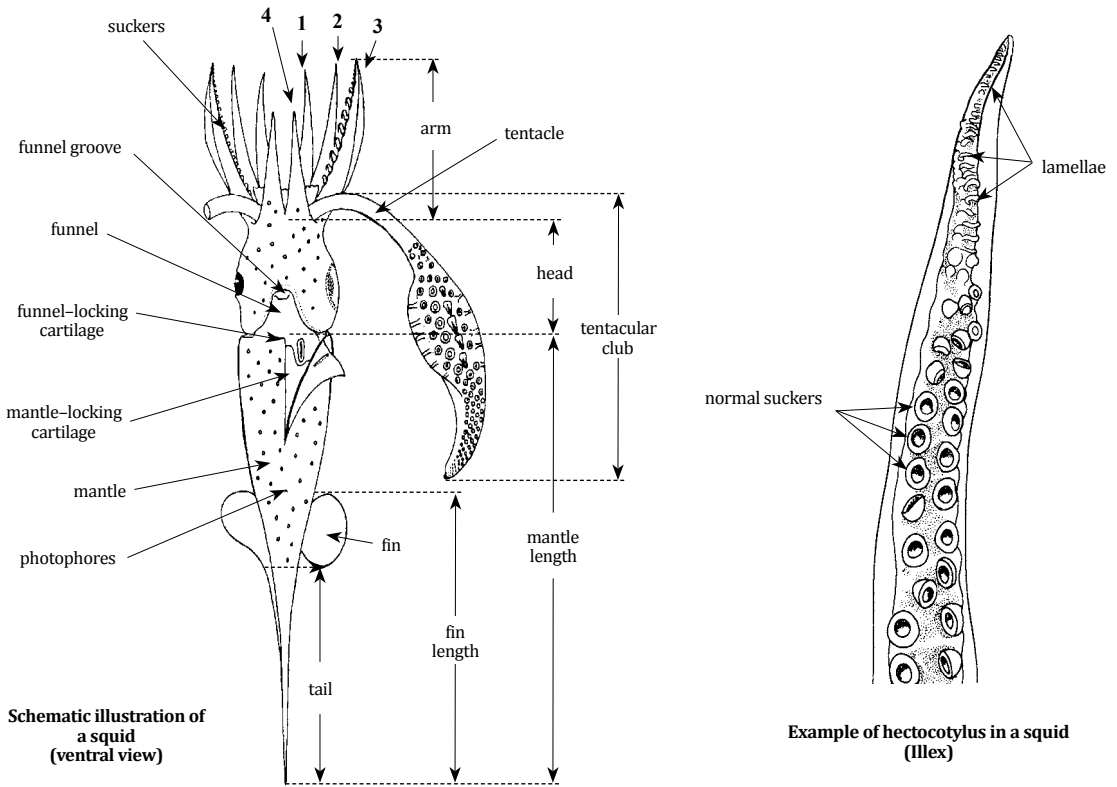


Schematic illustration of a cuttlefish (ventral view)

Cuttlebone

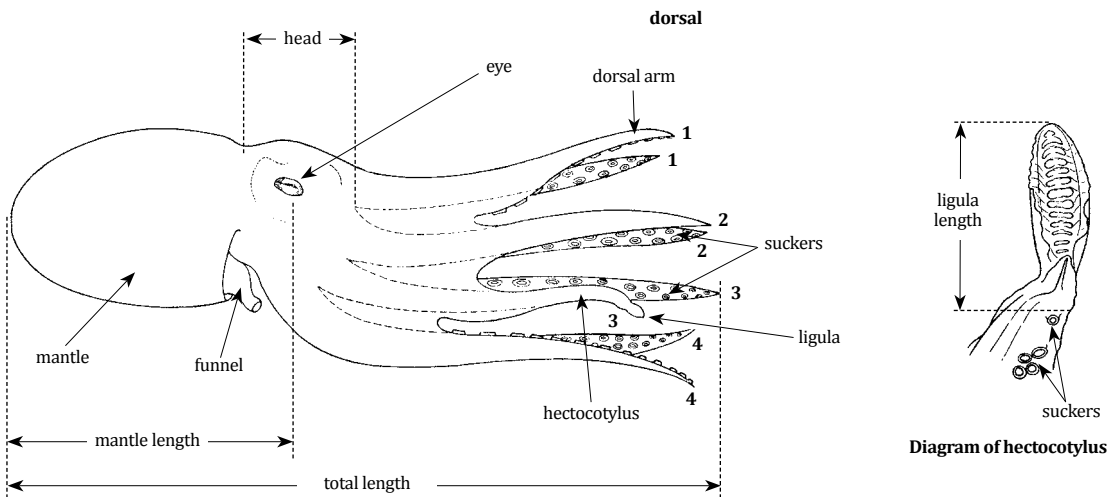
Order TEUTHOIDEA - Squids

Gladius (internal shell) chitinous, flexible, pen-shaped; 8 arms and 2 non-retractile tentacles.



Order OCTOPODA - Octopuses and Argonauts

Internal shell reduced or absent; 8 arms, no tentacles.



Schematic illustration of an octopus (lateral view)

SEPIIDAE

Cuttlefishes

***Sepia arabica* Massy, 1916**

FAO names: Arabian cuttlefish (En)
Seiche d'Arabie (Fr)

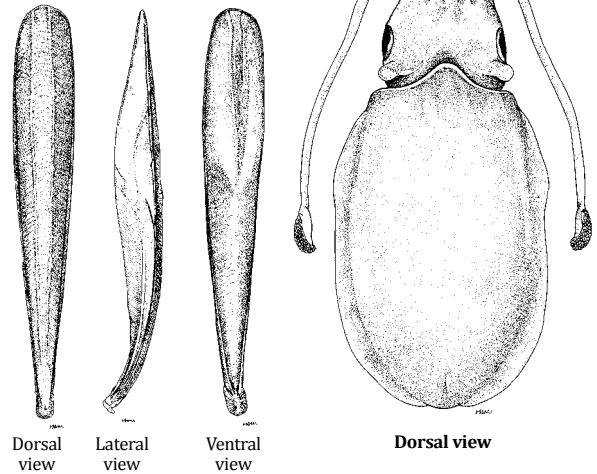
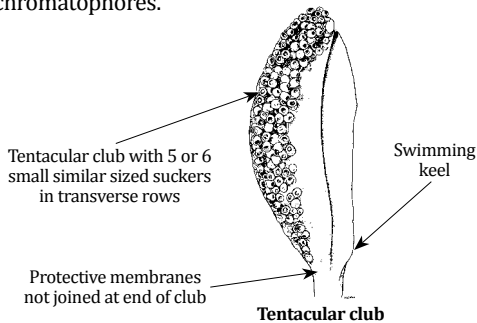
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: Depth range from 80 to 272 m.

Fisheries: Bottom trawls.

Distinctive Characters: Swimming keel of club extends proximally slightly beyond carpus; head with large, fleshy ear-shaped projections posterior to eyes; cuttlebone outline lanceolate; bone bluntly rounded anteriorly, very narrow, strongly tapered posteriorly; recurved ventrally

Colour: Reddish purple; head with chromatophores concentrated over eye orbits. Dorsal mantle chromatophores are irregularly distributed in patches; base of fins on posterior half with 10 to 12 patches of concentrated reddish purple chromatophores.



Cuttlebone

Size: To 8.8 cm (ML)

***Sepia omani* Adam & Rees, 1966**

FAO names: Oman cuttlefish (En)
Seiche d'Oman (Fr)

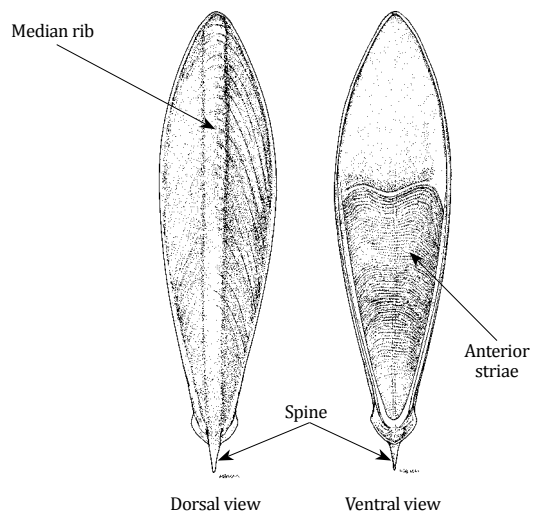
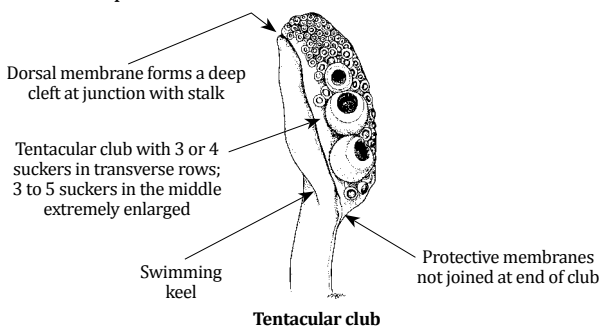
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: Depth range from 50 to 210 m.

Fisheries: Bottom trawls.

Distinctive Characters: Swimming keel of club extends proximally slightly beyond carpus; dorsal and ventral protective membranes not joined at base of club, do not continue along stalk; cuttlebone acuminate, acute, anteriorly and posteriorly; dorsal median rib present, sides almost parallel, flanked by shallow grooves; spine long, pointed; anterior striae shallow m-shape.

Colour: Light brown; dorsal mantle has dark brown transverse stripes.



Cuttlebone

Size: To 10 cm (ML)

***Sepia kobiensis* Hoyle, 1885**

FAO names: Kobi cuttlefish (En)
Seiche kobi (Fr)

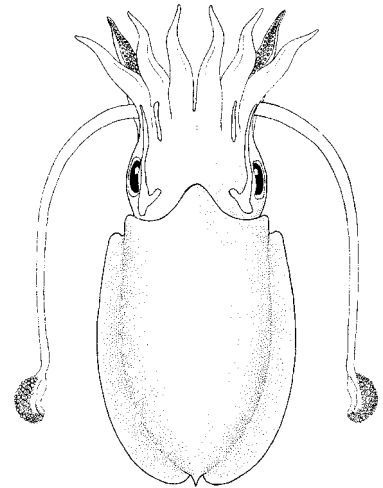
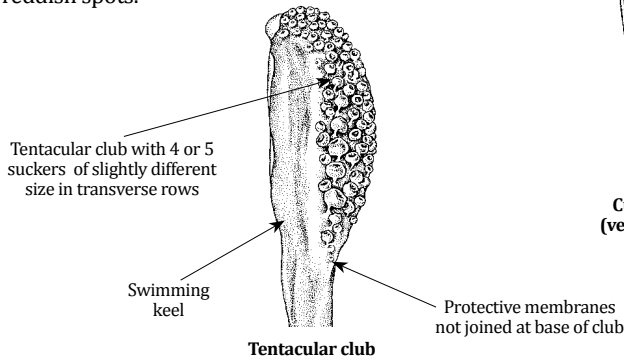
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: Depth range subtidal, to 200 m.

Fisheries: Bottom trawls.

Distinctive Characters: Swimming keel of club extends proximally slightly beyond carpus; dorsal and ventral protective membranes not joined at base of club; cuttlebone outline lanceolate; acuminate anteriorly and posteriorly; dorsal median rib indistinct, broadens anteriorly; dorsal surface pinkish, or yellowish.

Colour: Reddish brown; head with V-shape reddish stripe on dorsal margins of eye orbits and with orange stripes extending from posterior end of head to basal portions of arms I to III; dorsal mantle has reddish spots.



Size: To 9 cm (ML)

***Sepia pharaonis* Ehrenberg, 1831**

FAO names: Pharaoh cuttlefish (En)
Seiche pharaon (Fr)

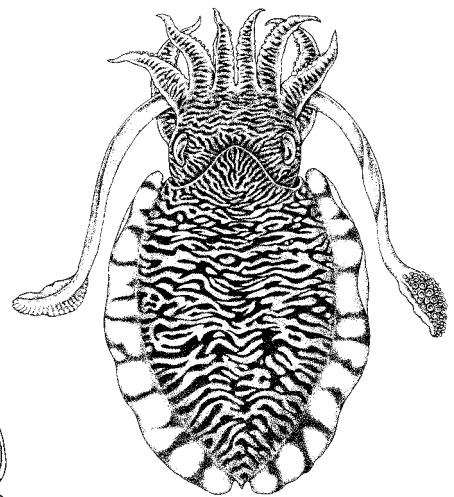
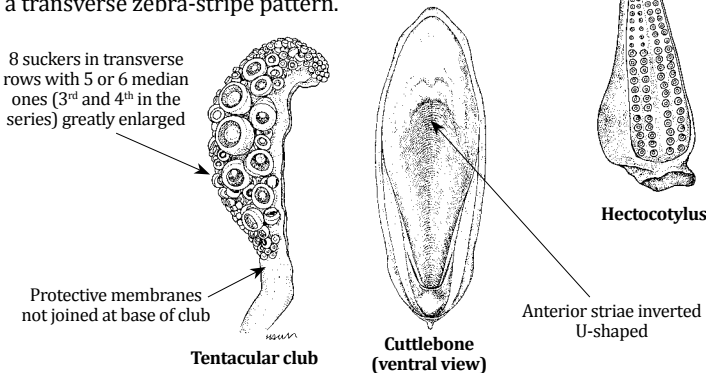
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: Neritic, demersal, from the coastline to 130 m.

Fisheries: Bottom trawls.

Distinctive Characters: Hectocotylus present on left ventral arm with 10 to 12 transverse rows of normal size suckers proximally, 6 rows of reduced suckers medially; suckers of hectocotylus in 2 dorsal series are much smaller than those in 2 ventral series.

Colour: Pale brownish or reddish purple; head and arms with transverse zebra-stripe pattern; dorsal mantle has white blotches or spots and has a transverse zebra-stripe pattern.



Size: To 42 cm (ML)

Sepia prashadi Winkworth, 1936

FAO names: Hooded cuttlefish (En)
Seiche capuchon (Fr)

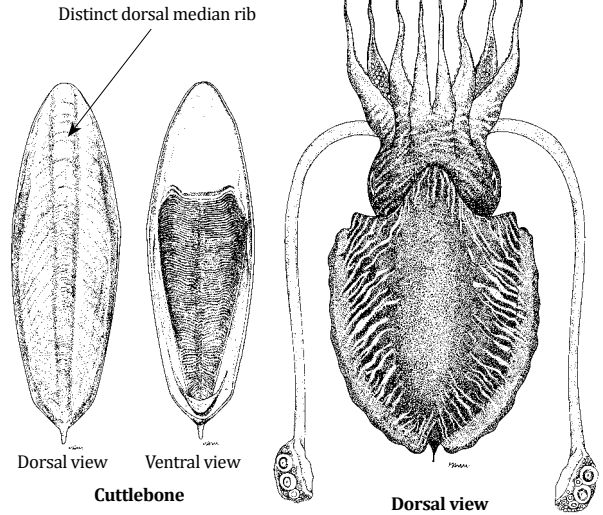
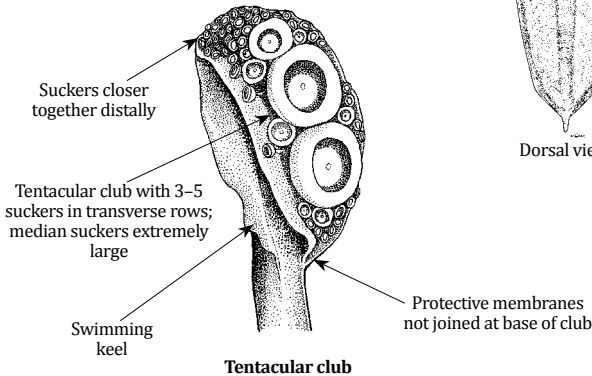
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: Neritic, demersal, from the shoreline to about 40 m.

Fisheries: Bottom trawls.

Distinctive Characters: Swimming keel of club extends proximally slightly beyond carpus; dorsal and ventral protective membranes not joined at base of club; cuttlebone outline oblong, anterior striae shallow m-shaped; hectocotylus present on left ventral arm with 4 rows of normal size suckers proximally, 12 to 14 rows of reduced suckers medially.

Colour: Dorsal mantle has transverse zebra-stripe pattern in breeding males.



Size: To 14 cm (ML)

Sepia ramani Neethiselvan, 2001

FAO names: Large striped cuttlefish (En)
Grande seiche rayée (Fr)

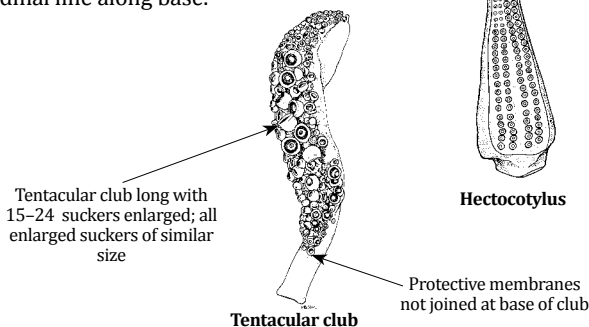
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: No information available.

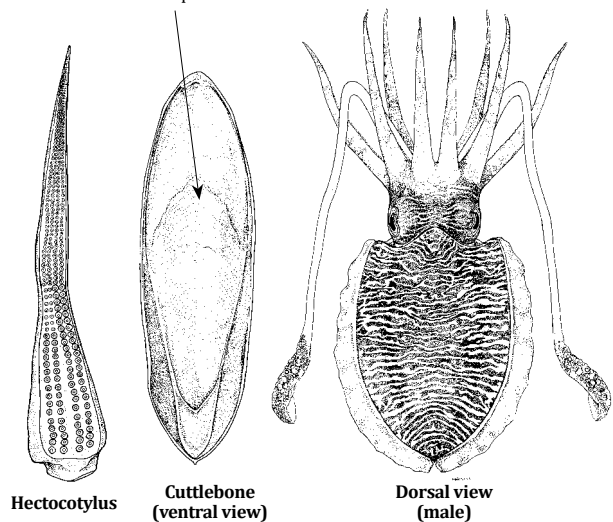
Fisheries: Bottom trawls.

Distinctive Characters: Swimming keel narrow, terminates at posterior end of carpus; dorsal and ventral protective membranes extend slightly beyond carpus, not joined at base of club; females with more elongate mantle; cuttlebone slender, elliptical with indistinct median and lateral ribs; spine short, stout.

Colour: Dorsal mantle, head and arms dark brown with transverse zebra-stripe pattern (more prominent in males than females, and more obvious in fresh animals); fins with pale, narrow, longitudinal line along base.



Anterior striae inverted V-shaped



Size: To 37.5 cm (ML)

***Sepia stellifera* (Homenko & Khromov, 1884)**

FAO names: Starry cuttlefish (En)
Seiche étoilée (Fr)

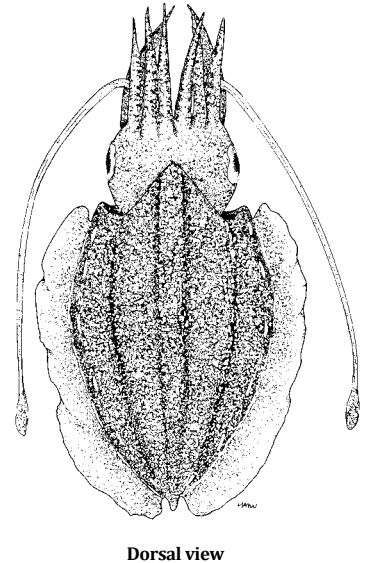
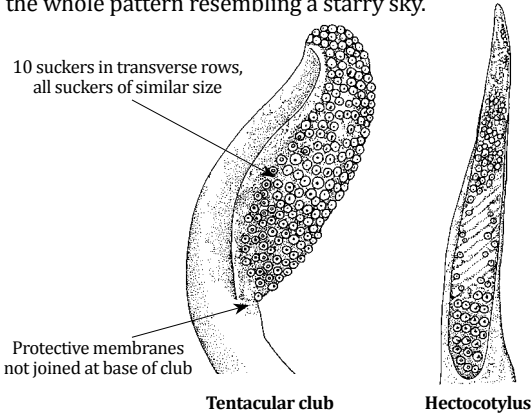
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: Depth to 200 m.

Fisheries: Bottom trawls.

Distinctive Characters: Hectocotylus present; on left ventral arm with normal suckers proximally, reduced suckers medially, then normal size suckers distally to arm tip; cuttlebone outline oval; bone very angular, V-shape anteriorly; dorsal median rib very pronounced; lateral ribs present; spine long, pointed, with dorsal and ventral keel.

Colour: Dorsal mantle with many small, bright, brown-pink spots, encircled with green-blue rings, the whole pattern resembling a starry sky.



Size: To 12 cm (ML)

***Sepia trygonina* (Rochebrune, 1884)**

FAO names: Trident cuttlefish (En)
Seiche trident (Fr)

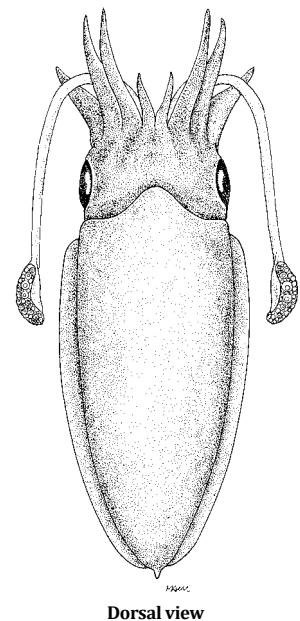
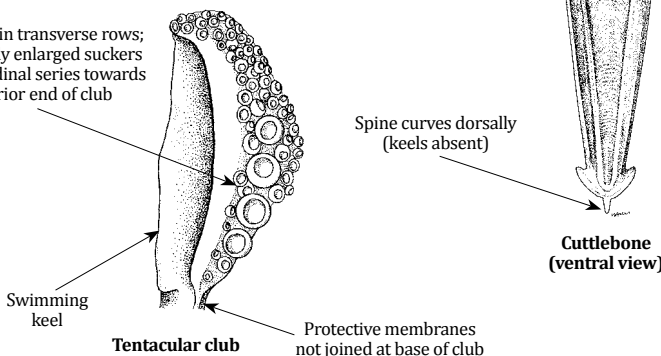
Local name(s): Myyah, Dimiri (Sin); Mus (Bal).

Habitat: Depth from 20 m to 410 m.

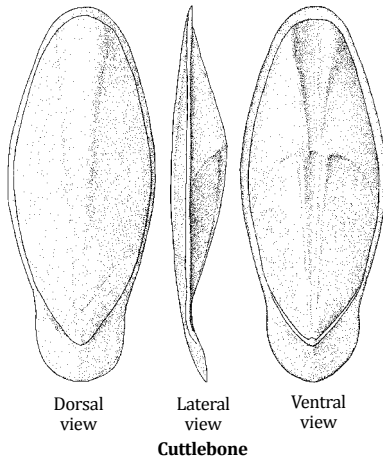
Fisheries: Bottom trawls.

Distinctive Characters: Mantle oblong, acuminate posteriorly; swimming keel of club extends proximally slightly beyond carpus; cuttlebone outline lanceolate, strongly recurved ventrally; dorsal surface pinkish.

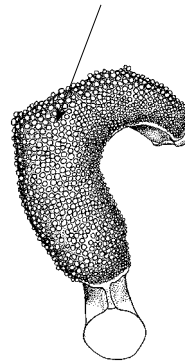
Colour: Purplish brown; base of fins in males with a dark purple band; adjacent to band (or partially on it) is a series of small oval or circular cream-coloured patches, often raised as low tubercles.



Size: To 14 cm (ML)

Sepiella inermis (Van Hasselt, 1835)**Local name(s):** Myyah, Dimiri (Sin); Mus (Bal).**Habitat:** Depth to 40 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** Hectocotylus present on left ventral arm with 10 rows of reduced suckers proximally; cuttlebone width 33–43% of cuttlebone length; strongly convex in lateral view; spine absent.**Colour:** Greyish brown; dorsal mantle has more than 7 reddish patches adjacent to base of fins.

Club with 12–24 suckers in transverse rows



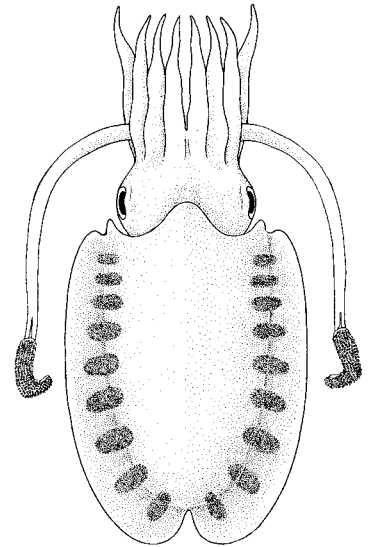
Tentacular club



Hectocotylus

FAO names: Spineless cuttlefish (En)

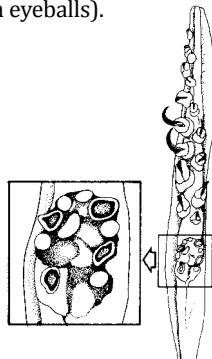
Sépia inermis (Fr)



Dorsal view

Size: To 12.5 cm (ML)**ANCISTROCHEIRIDAE**

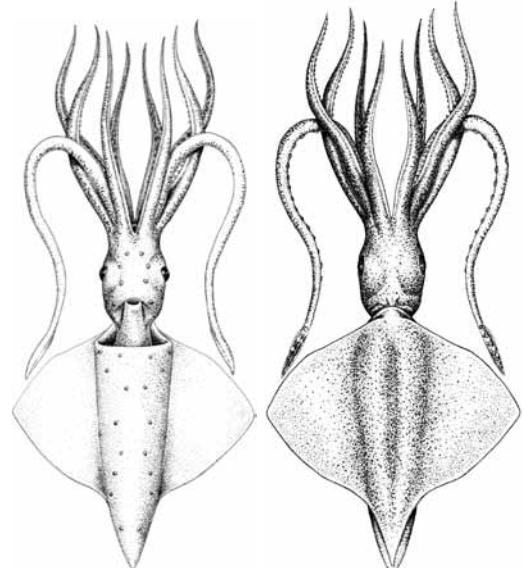
Sharpear enope squid

Ancistrocheirus lesueurii (d'Orbigny, 1842)**Local name(s):** None.**Habitat:** Oceanic species.**Fisheries:** Pelagic trawls.**Distinctive Characters:** Posterior end of mantle elongate, forms tail; hooks present on all arms; tentacular clubs with 2 series of hooks on manus; suckers absent; photophores present on ventral surface of fins, mantle, funnel, head, arms, and tentacles (no photophores on eyeballs).**Colour:** No information.

Tentacular club

FAO names: Sharpear enope squid (En)

Encornet cachalot (Fr)



Ventral view

Dorsal view

Size: To 41 cm (ML)

OCTOPOTEUTHIDAE

Octopus squids

Taningia danae Joubin, 1931

Local name(s): None.

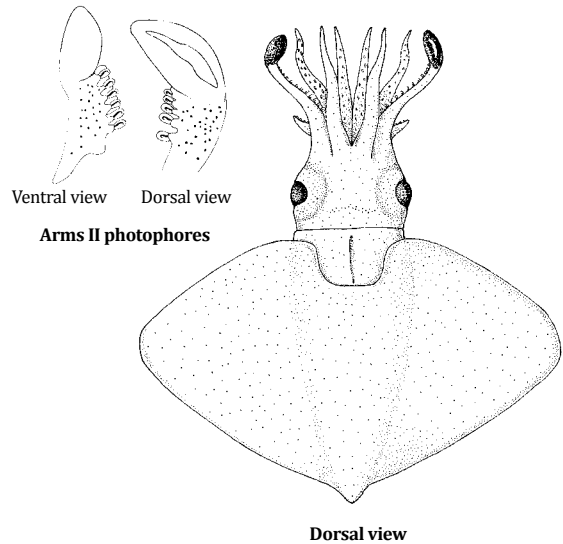
Habitat: Oceanic species.

Fisheries: Pelagic trawls.

Distinctive Characters: Tips of arms II only with a large, oval, swollen, composite photophore with a creamy white, crenulate bioluminescent producing surface, exposed when black eyelid-like skin folds are contracted open (no photophores on tips of any other arms); fins very large, occupy nearly entire mantle length by about 3 mm mantle length of the paralarva and throughout life; fins very broad, far in excess of mantle length (up to 130% of mantle length); tentacles cease to develop and are lost at a mantle length of 40–45 mm (although stumps may remain for some time); arms with large hooks in 2 series to the tips.

Colour: Mantle intense maroon.

FAO names: Taning's octopus squid (En)
Encornet-poulpe de Taning (Fr)



Size: To 170 cm (ML)

CRANCHIIDAE

Cranch squids

Liocranchia reinhardti (Steenstrup, 1856)

Local name(s): None.

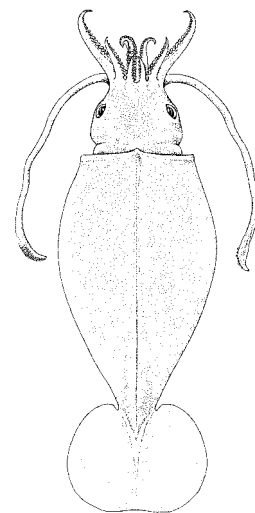
Habitat: Depth from the surface to 1 200 m.

Fisheries: Pelagic trawls.

Distinctive Characters: Mantle elongate, spindle-shaped, tapers posteriorly to narrow point, not covered with cartilaginous tubercles; 2 moderately long cartilaginous strips studded with cartilaginous tubercles extend from each funnel-mantle fusion in inverted-V pattern, co-equal in length or ventral component the longest; fins unite posterior to gladius, ovoid to nearly circular; funnel valve present; gladius with short conus; eyes with 14 oval photophores.

Colour: No information.

FAO names: Reinhardt's cranch squid (En)
Encornet-ourte de Reinhardt (Fr)



Dorsal view

Size: To 25 cm (ML)

LOLIGINIDAE

Inshore squids

***Loliolus (Loliolus) hardwickei* (Gray, 1849)**

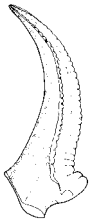
Local name(s): Mayyah, Sisi mayyah, Shishi mayya (Sin); Mus, Mayyah (Bal).

Habitat: Estuarine and coastal waters to a depth of 30 m.

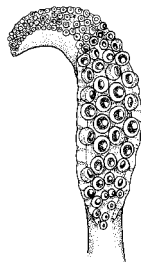
Fisheries: Bottom trawls.

Distinctive Characters: Mantle short, stout; fins large, heart-shaped, with anterior and lateral edges rounded, width up to 76% of mantle length; left ventral arm hectocotylized in males by the modification of both ventral and dorsal series of suckers along its entire length: suckers are missing, except at the very tip where 2 or 3 minute suckers may be present; clubs small, scarcely expanded; club suckers subequal

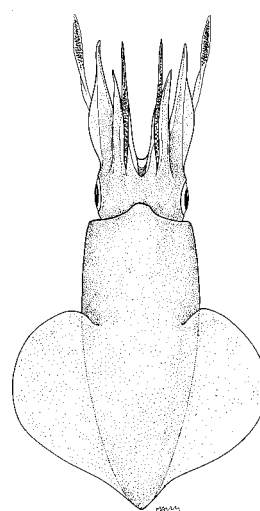
Colour: No information.



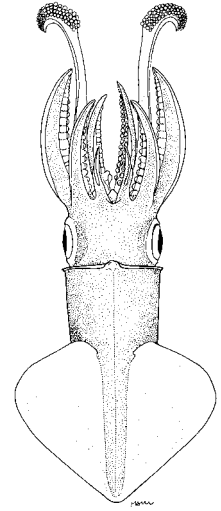
Hectocotylus



Tentacular club



Dorsal view of female



Dorsal view of male

Size: To 8.8 cm (ML)

***Sepioteuthis lessoniana* Férussac, 1831**

Local name(s): Mayyah, Sisi mayyah, Shishi mayya (Sin); Mus, Mayyah (Bal).

Habitat: Neritic, occurring from the surface down a maximum depth of at least 100 m.

Fisheries: Bottom trawls.

Distinctive Characters: Mantle long, robust, length of fin about 100% of mantle length; tentacular clubs long, expanded.

Colour: Brown on the back, with white spots and stripes, variously shaped; young specimens are usually more iridescent.

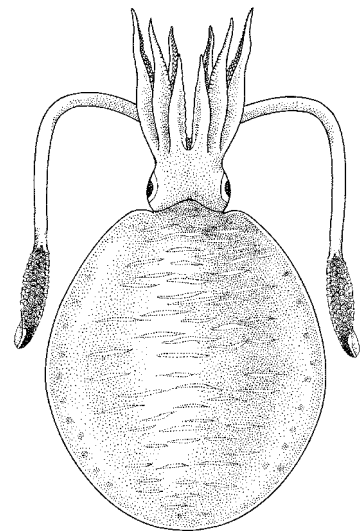


Hectocotylus



Tentacular club

Four rows of suckers



Dorsal view

Size: To 42 cm (males), 38 cm (females)(ML)

FAO names: Bigfin reef squid (En)
Calmar tonnelet (Fr)

***Uroteuthis (Photololigo) edulis* (Hoyle, 1885)**

FAO names: Swordtip squid (En)
Calmar épée (Fr)

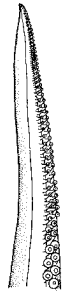
Local name(s): Mayyah, Sisi mayyah, Shishi mayya (Sin); Mus, Mayyah (Bal).

Habitat: Continental shelf waters.

Fisheries: Bottom trawls.

Distinctive Characters: Mantle moderately stout, elongate, slender in mature males; fins rhombic, attain 70% of mantle length in adults, anterior margin slightly convex, posterior margin gently concave, lateral angles rounded; suckers on arms II and III of mature males noticeably enlarged as a secondary sexual character; mature males have a cutaneous ridge on their ventral mantle surface.

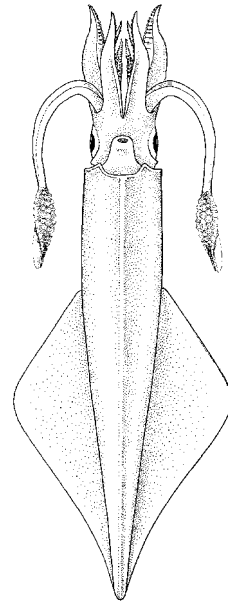
Colour: No information.



Hectocotylus



Tentacular club



Dorsal view

Size: To 50 cm (ML)

***Uroteuthis (Photololigo) duvaucelii* (d'Orbigny, 1835)**

FAO names: Indian squid (En)
Calmar indien (Fr)

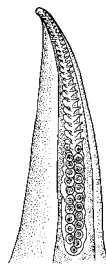
Local name(s): Mayyah, Sisi mayyah, Shishi mayya (Sin); Mus, Mayyah (Bal).

Habitat: A neritic shallow water species occurring from 30 m to 170 m; forms large aggregations during the spawning season.

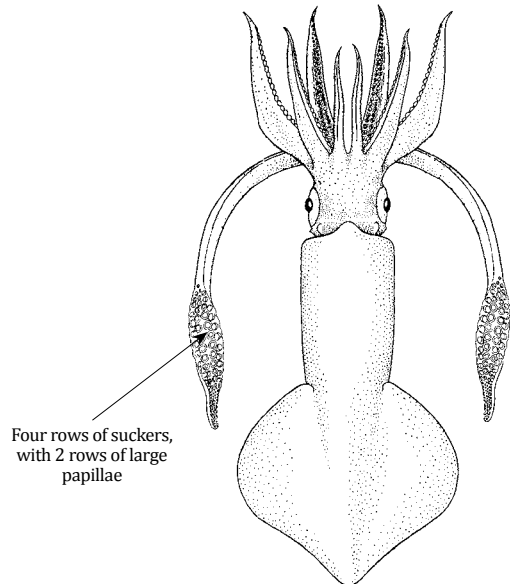
Fisheries: Bottom trawls.

Distinctive Characters: Mantle moderately long, slender; fins gently rhombic, broad, approximately 50% of mantle length (up to 60% of mantle length); tentacular clubs expanded, large, up to 45–50% of mantle length; large median manal suckers (<2 times diameter of marginal suckers) with 14 to 22 short, sharp teeth, subequal in size, regularly spaced around the entire margin.

Colour: No information.



Hectocotylus



Dorsal view

Size: To 32 cm (ML)

Uroteuthis (Photololigo) singhalensis (Ortmann, 1891)

Local name(s): Mayyah, Sisi mayyah, Shishi mayya (Sin); Mus, Mayyah (Bal).

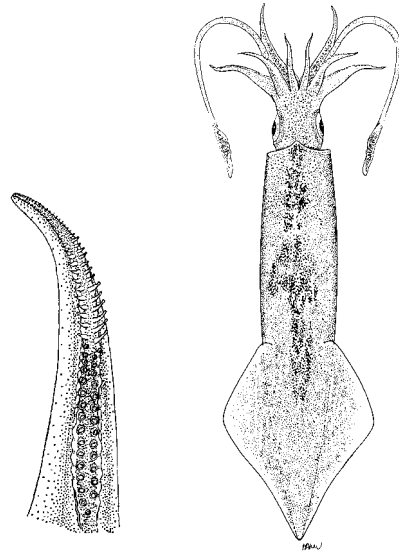
Habitat: Usually occurs at depths from 30 to 120 m, but extends to bottom depths of 220 m.

Fisheries: Bottom trawls.

Distinctive Characters: Mantle long, slender, cylindrical, tapers posteriorly into a sharply-pointed tip; fins narrow, rhombic in outline, anterior margin slightly convex, posterior margin slightly concave; relatively short in young specimens, up to 50 to 60% of mantle length in adults; tentacular clubs short, slightly expanded; suckers in medial series of manus only about 25% larger than those on lateral series; with 15 to 25 conical, sharply-pointed teeth around the entire margin, occasionally interposed with small, almost inconspicuous, pointed teeth..

Colour: No information.

FAO names: Long barrel squid (En)
Calmar baril (Fr)



Hectocotylus

Dorsal view

Size: To 50 cm (ML)

ONYCHOTEUTHIDAE

Clubhook squids

Onychoteuthis banksii (Leach, 1817)

Local name(s): None.

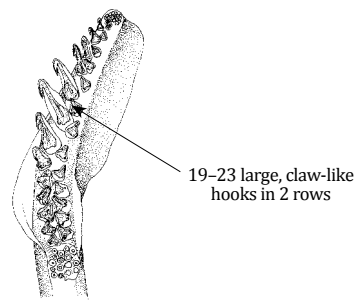
Habitat: An oceanic species occurring from the surface to about 150 m; it may also be found as deep as 800 m.

Fisheries: Bottom trawls.

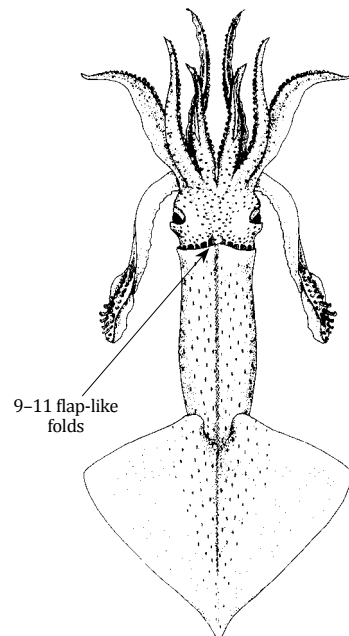
Distinctive Characters: Mantle robust; no marginal rows of suckers; gladius visible as a dark line through the skin along middle line of mantle.

Colour: No information.

FAO names: Common clubhook squid (En)
Cornet crochu (Fr)



Tentacular club

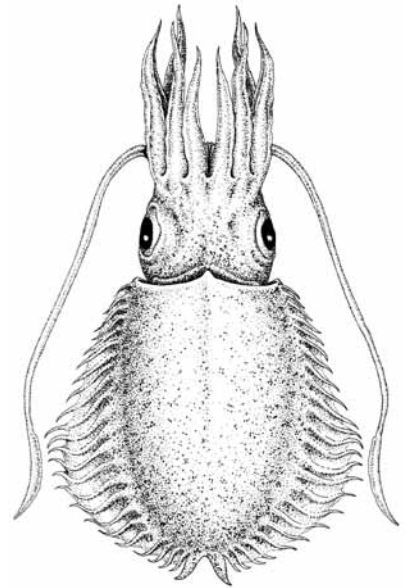


Dorsal view

Size: To 30 cm (ML)

CTENOPTERYGIDAE

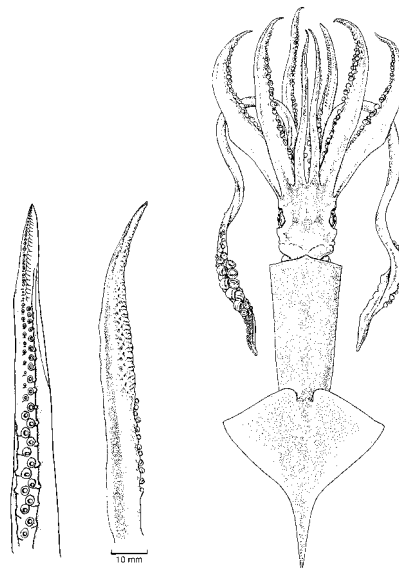
Comb-finned squids

Ctenopteryx sicula (Verany, 1851)**Local name(s):** None.**Habitat:** Midwater squids occurring at depths of 500 to 1 000 m during the day and migrate into near-surface waters at night (upper 200 m).**Fisheries:** Pelagic trawls.**Distinctive Characters:** Fins fused posteriorly, extend anteriorly the full length of the mantle in adults; posterior end of mantle broadly rounded; fins attach to lateral walls of muscular mantle, are comprised of slender muscle bundles (fin ribs) connected by their membranes, to produce a comb-like appearance; tentacular club suckers small to minute, in 8 to 20 irregular transverse series; tentacles narrow, clubs not expanded, no carpus (fixing apparatus).**Colour:** No information.**FAO names:** Sicilian comb-finned squid (En)
Calmar pectiné sicilienne (Fr)

Dorsal view

Size: To 10 cm (ML)**OMMASTREPHIDAE**

Flying squids

Ornithoteuthis volatilis (Sasaki, 1915)**Local name(s):** None.**Habitat:** From the surface (paralarvae; adults at night) to moderate depths, at the bottom in bathyal zone and in midwater above the slope.**Fisheries:** Not exploited at the moment**Distinctive Characters:** Mantle very narrow, muscular; drawn out posteriorly into a long pointed tail; fins long, sagittate, sharply lanceolate posteriorly, posterior margins concave; head broad, considerably broader than mantle width. tentacular club expanded with very large medial manal suckers; a single, round photophore patch occurs on the ventral surface of each eye; on viscera one large, round photophore occurs near the anus and one small oval photophore occurs at the posterior end of the intestine.**Colour:** No information.**FAO names:** Shiny bird squid (En)
Encornet planeur (Fr)

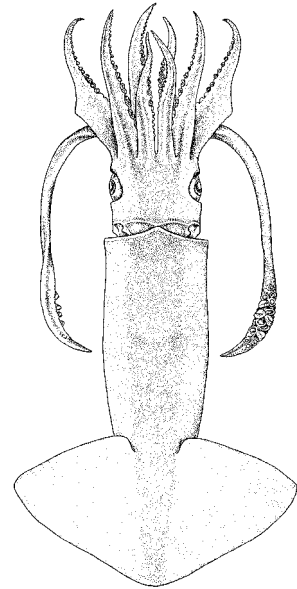
Hectocotylus arms

Dorsal view

Size: To 31 cm (ML)

Sthenoteuthis oualaniensis (Lesson, 1830)**Local name(s):** None.**Habitat:** Oceanic occurring from the surface to probably a maximum depth of 1 000 m.**Fisheries:** Not exploited at the moment**Distinctive Characters:** Mantle muscular, conical posteriorly; 2 rows of suckers on tentacular club; a large, oval photophoric patch on antero-dorsal surface of mantle; 6 to 8 pairs of suckers occur on the hectocotylized arm of mature males.**Colour:** No information.Left arm IV of male
hectocotylized

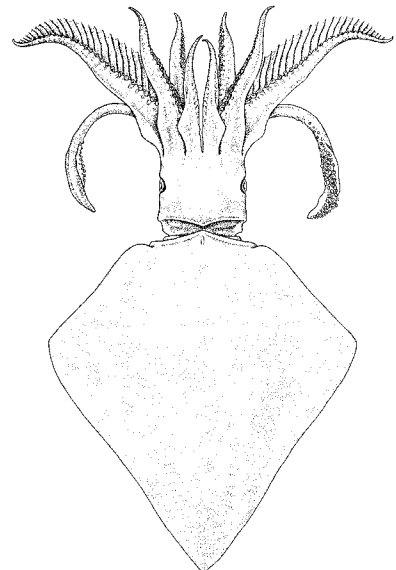
Tentacular club



Dorsal view

Size: To 65 cm (ML)**THYSANOTEUTHIDAE*****Thysanoteuthis rhombus*** Troschel, 1857**Local name(s):** None.**Habitat:** An epipelagic, oceanic species.**Fisheries:** Not exploited at the moment.**Distinctive Characters:** Mantle thick, muscular, tapering to a blunt tip posteriorly; fins long, broad, rhombic occupying the entire length of mantle; arms with 2 rows of suckers; buccal connectives attached to ventral borders of arms IV.**Colour:** No information.

Tentacular club

4 rows of
suckers

Dorsal view

Size: To 100 cm (ML)**FAO names:** Diamondback squid (En)
Chipiloua commun (Fr)

OCTOPODIDAE

Octopuses

***Amphioctopus aegina* (Gray, 1849)**

FAO names: Sandbird octopus (En)
Poulpe de sables (Fr)

Local name(s): Pichankara, Panchranga (Sin); Mus (Bal).

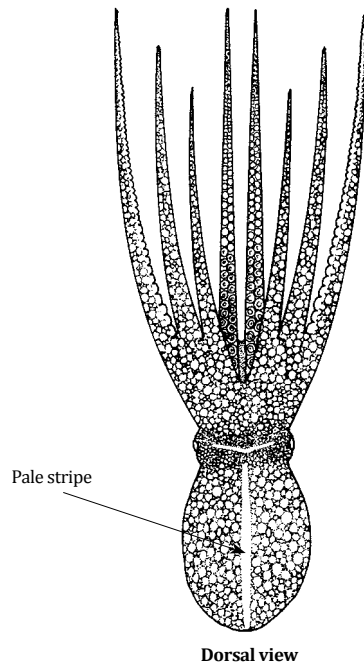
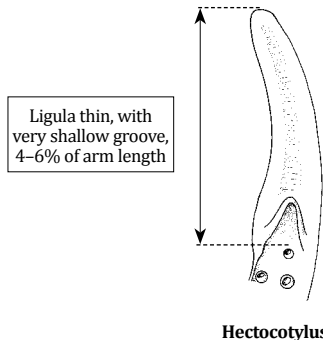
Habitat: A benthic species, occurring on muddy bottoms at depths to at least 40 m.

Fisheries: Lured hooks, spears, bottom trawls.

Distinctive Characters: Dorsal arms shorter than ventral arms; thin, moderate size ligula, 5–8% of arm length; single cirrus over eye.

Colour: Pattern of dark grooves enclosing pale round spots to form a round net mesh on dorsal and lateral surfaces, most obvious on arm bases.

Remarks: Presence in Pakistan needs to be confirmed.



Size: To 9 cm (ML), 30 cm (TL)

***Amphioctopus marginatus* (Taki, 1964)**

FAO names: Veined octopus (En)
Poulpe veiné (Fr)

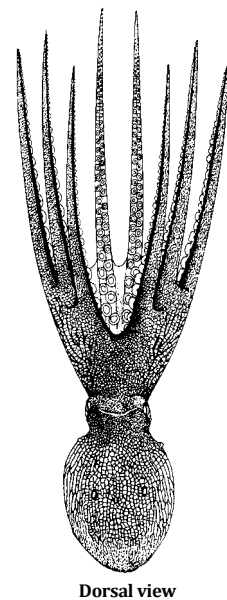
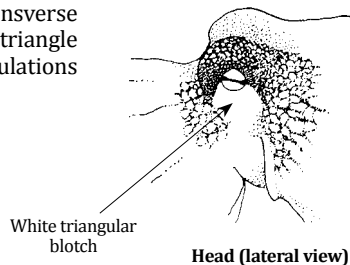
Local name(s): Pichankara, Panchranga (Sin); Mus (Bal).

Habitat: Known from coastal muddy waters on mud and sand substrates, subtidal to depths of at least 190 m.

Fisheries: Lured hooks, spears, bottom trawls.

Distinctive Characters: Lateral arms longest; ligula small and triangular; 1.5–3.5% of arm length.

Colour: Pattern of orange-brown to purple with dark reticulations defining distinct patches in irregular longitudinal rows; suckers white to pink contrasting against dark brown to black along leading edge of arms I to III; narrow transverse “head bar” visible in live animals; white triangle below each eye; dark vein-like reticulations distinctive on lateral arm crown



Size: To 10 cm (ML), 30 cm (TL)

'*Octopus*' cyanea Gray, 1849

FAO names: Big blue octopus (En)
Gros poulpe bleu (Fr)

Local name(s): Pichankara, Panchranga (Sin);
Mus (Bal).

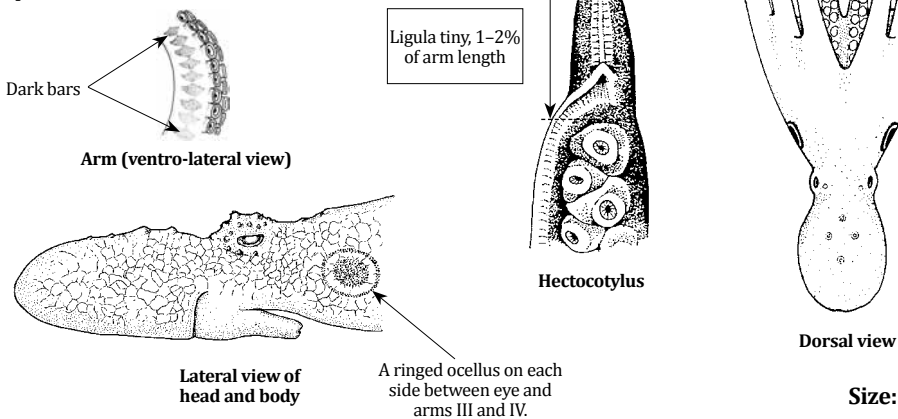
Habitat: A benthic species occurring on tropical coral reefs from intertidal flats to at least 22 m deep.

Fisheries: Spears, lured hooks, bottom trawls.

Distinctive Characters: Arms subequal in length; Ligula tiny, triangular, 1–2% of arm length; 1 large cirrus and 2 smaller tubercles over eye.

Colour: Mantle mottled, reticulate, arms with dark bars.

Remarks: This species likely belongs to a distinct genus. It is provisionally retained under the generic name '*Octopus*', with quotation marks indicating its unknown position.

***Octopus* cf. vulgaris** Cuvier, 1797

FAO names: Common octopus (En)
Pieuvre (Fr)

Local name(s): Pichankara, Panchranga (Sin);
Mus (Bal).

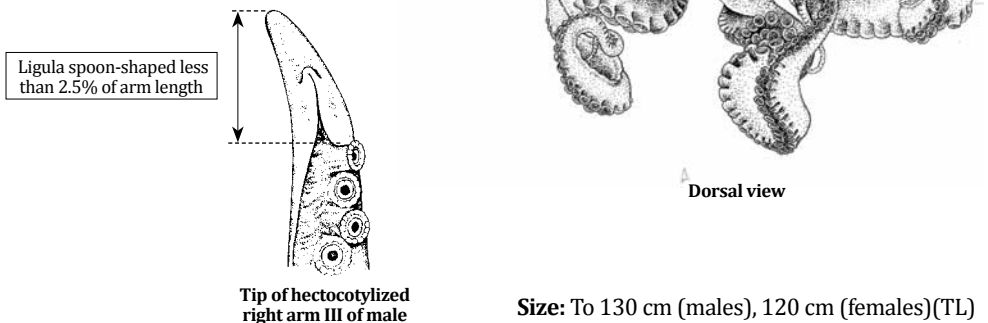
Habitat: From the coastline to the outer edge of the continental shelf down to 250 m; over rocks on coral reefs and sea grass beds.

Fisheries: Spears, lured hooks, bottom trawls.

Distinctive Characters: Arms stout, about equal in length and thickness; two rows of suckers on arms.

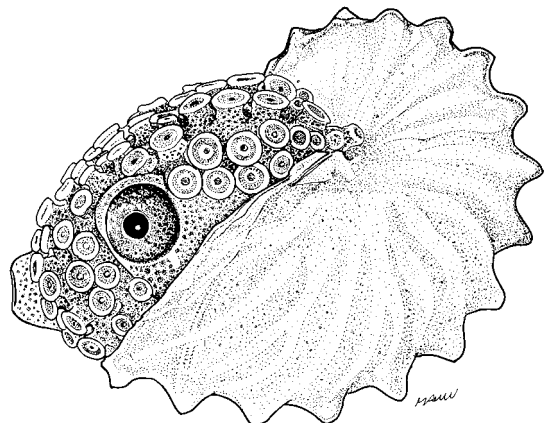
Colour: Grey, yellow, brown and green; changes colour to hide from predators.

Remarks: Presence in Pakistan needs to be confirmed.



ARGONAUTIDAE

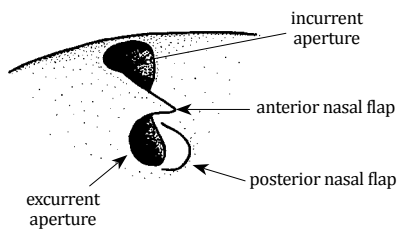
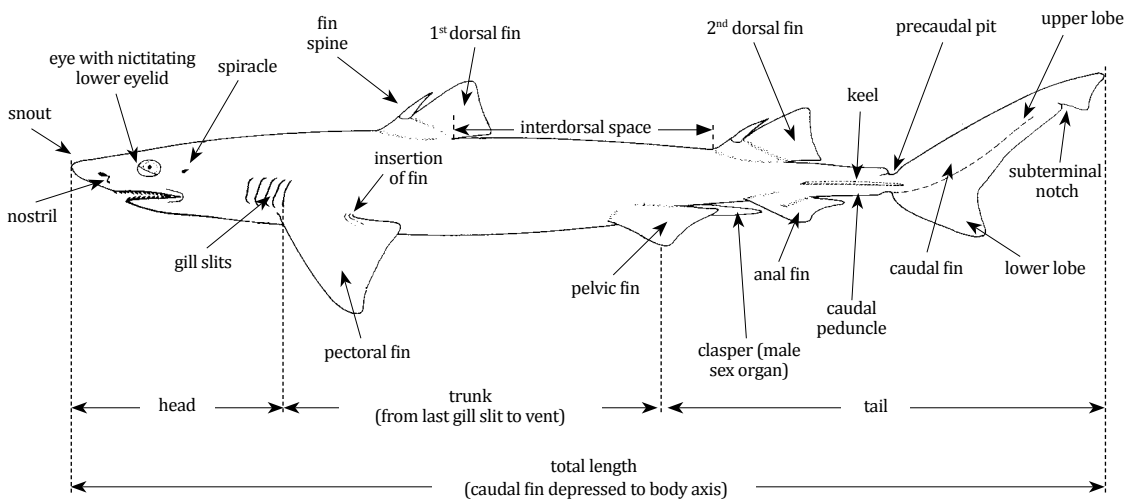
Argonauts

Argonauta argo Linnaeus, 1758**FAO names:** Greater argonaut (En)
Argonaute papier (Fr)**Local name(s):** None.**Habitat:** An epipelagic, oceanic species occurring in near surface waters.**Fisheries:** Bottom trawls.**Distinctive Characters:** Males minute; females shell covered by the membrane of 1st pair of arms; head small, eyes prominent; 1st arms lengths variable, other arms unequal in length (arms formula: 4>2>3); 4th arms the longest, over 3 times mantle length and 20–30% longer than 2nd arms; keel narrow, consistent in size and shape around circumference of shell.**Colour:** Body of females purple-blue to wine-red from above, light from below; extended 1st arm flap purple-red; shell, porcelain-white, early section and nodules on the keel dark brown; males with many small chromatophores.**Size:** To 43.8 cm (female), 1.5–2 cm (dwarf male)(TL)***Argonauta hians*** Lightfoot, 1768**FAO names:** Lesser argonaut (En)
Argonaute mineur (Fr)**Local name(s):** None.**Habitat:** An epipelagic, oceanic species occurring in near surface waters.**Fisheries:** Bottom trawls.**Distinctive Characters:** Males minute; females, shell covered by the membrane of 1st pair of arms; head small, eyes prominent; 1st arms lengths variable, other arms unequal in length (arms formula: 2>3>4); 2nd arms the longest, 1.4–2 times in mantle length; keel wide, its width 20–30% of shell length; keel tubercles increase in size around circumference of shell, alternate on opposing surfaces.**Colour:** Variable from deep maroon to silver; dorsal mantle adorned with large chromatophores, smaller chromatophores present on ventral mantle; shell off-white to brown, approximately 1st third of keel tubercles stained black.**Size:** To 11.8 cm (female), 1.2–2 cm (dwarf male)(TL)

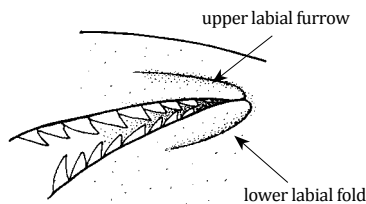
SHARKS

The guide to “Orders and Families” includes a total of 5 orders and 15 families of sharks known to occur in Pakistan. These are arranged by order using the classification adopted by Compagno (2001), Ebert, Fowler and Compagno (2013). The “Guide to Species” includes 47 species considered to be of current or potential use in fisheries or are caught as by-catch by various gears of Pakistan’s fishing fleet. Species reported in the literature to occur in Pakistan but not found by the authors during field work are marked with an asterisk (*) besides the scientific name. If one of the latter species is recorded, the user can follow the instructions present in the introduction regarding its preservation and/or contact the FishFinder Programme.

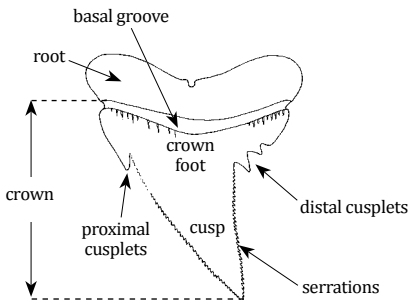
TECHNICAL TERMS AND MEASUREMENTS



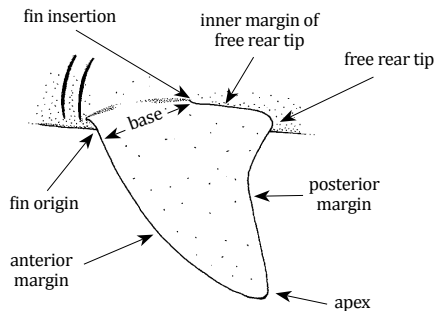
nostril



mouth corner



tooth (labial view)



pectoral fin

GUIDE TO ORDERS AND FAMILIES

Order SQUALIFORMES – Dogfish sharks

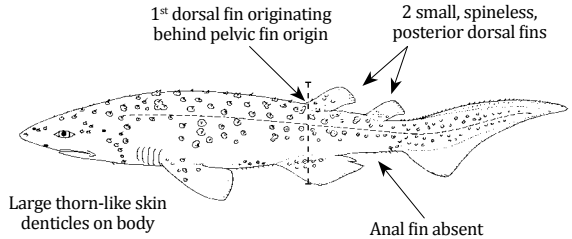
Five pairs of gill slits; 2 dorsal fins (with or without spines); anal fin absent.

Page 73

ECHINORHINIDAE

Bramble sharks

To 3.1 m. Demersal, from shallow depths to 1 100 m. Of little interest to fisheries. Marine. One species is included in the Guide to Species.



Order HETERODONTIFORMES – Bullhead sharks

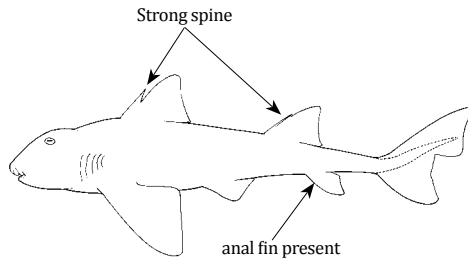
A strong spine on each dorsal fin; anal fin present.

Page 73

HETERODONTIDAE

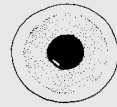
Bullhead sharks

To 61 cm. Mainly demersal in coastal waters from the intertidal zone to 275 m. Of little interest to fisheries. Marine. One species is included in the Guide to Species.



Order LAMNIFORMES – Mackerel sharks and allies

Five pairs of gill slits; 2 dorsal fins without spines; anal fin present; mouth strongly arched, extending well behind eyes; no movable nictitating eyelid; intestinal valve of ring type.



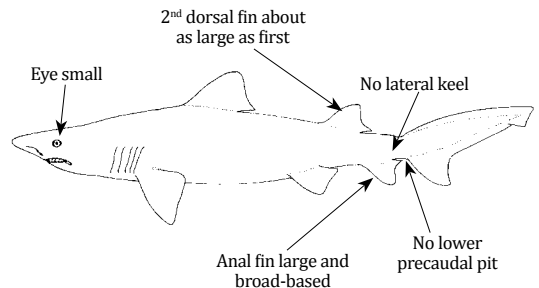
no movable nictitating eyelid

Page 73

ODONTASPIDIDAE

Sand tiger sharks

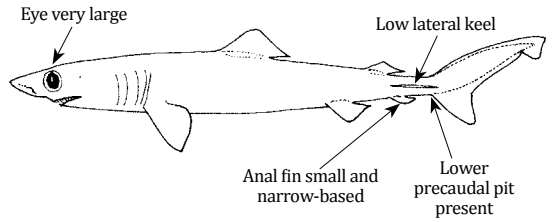
To 3.2 m. Epibenthic to epipelagic, inshore and offshore, from surface to possibly 1 600 m. One species is included in the Guide to Species.



PSEUDOCARCHARIIDAE

Crocodile shark

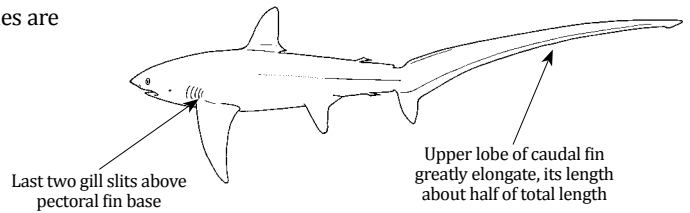
To 1.2 m. Pelagic, well offshore, from surface to at least 590 m. This family contains only one known species which is included in the Guide to Species.



ALOPIIDAE

Thresher sharks

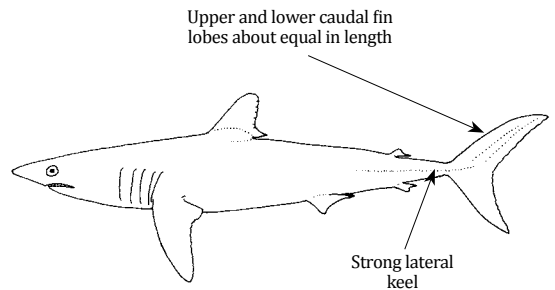
To 4.7 m. Pelagic, but also near the bottom, from the surface to depths of at least 500 m. Two species are included in the Guide to Species.



LAMNIDAE

Mackerel sharks

To about 4.2 m. Mainly epipelagic, from the surface to depths of at least 1 280 m. Two species are included in the Guide to Species.



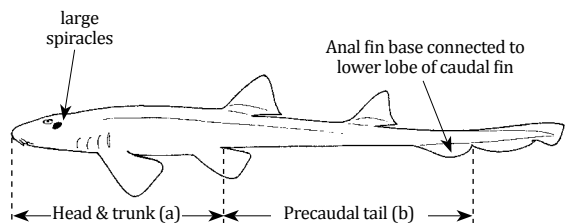
Order ORECTOLOBIFORMES - Carpet sharks

Five pairs of gill slits, often the 5th overlapping the 4th; 2 dorsal fins without spines; mouth transverse, well in front of eyes, usually with barbels (*Rhincodon typus* with broad head and wide mouth).

HEMISCYLLIIDAE

Longtailed carpetsharks

Mostly less than 77 cm. Mostly inshore bottom sharks. Three species are included in the Guide to Species.

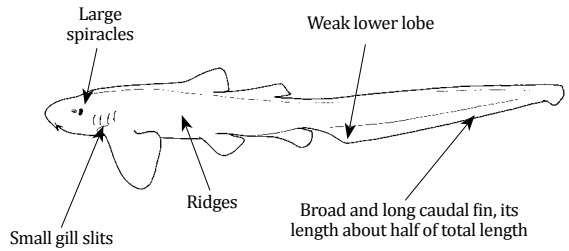


b>a

STEGOSTOMATIDAE

Zebra shark

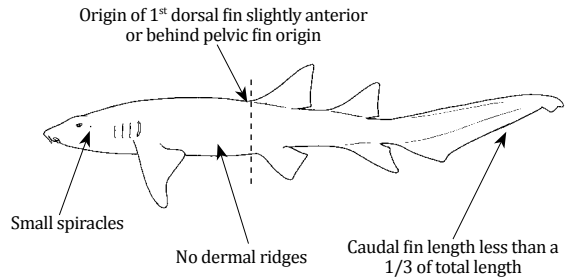
To 2.3 m. Demersal on continental and insular shelves from the intertidal zone down to 62 m. A single species worldwide included in the Guide to Species.



GINGLYMOSTOMATIDAE

Nurse sharks

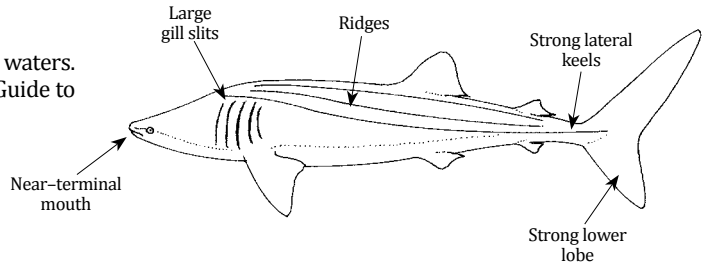
To 3.2 m. Demersal from the intertidal zone to a depth of at least 70 m. One species is included in the Guide to Species.



RHINCODONTIDAE

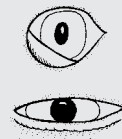
Whale shark

Possibly to 21 m. Epipelagic, in- and offshore waters. A single species worldwide included in the Guide to Species.



Order CARCHARHINIFORMES - Ground sharks and allies

Five pairs of gill slits; 2 dorsal fins without spines; anal fin present; mouth arched, extending behind anterior end of eyes; a movable nictitating eyelid; intestinal valve of scroll or spiral type.

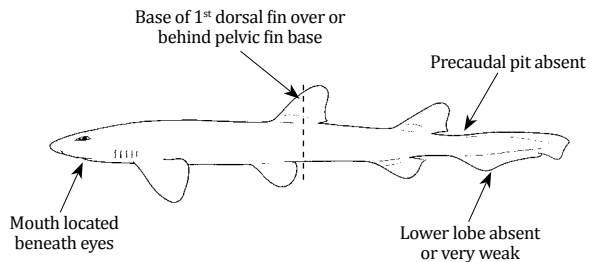


movable nictitating eyelid

SCYLIORHINIDAE

Catsharks

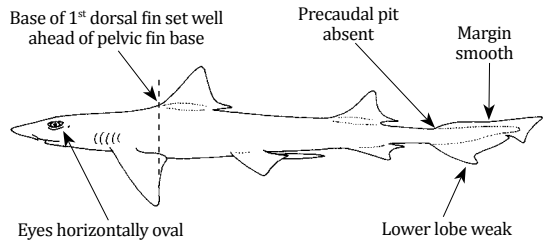
To about 70 cm. Demersal, from depths of 37 m to 1 840 m. One species is included in the Guide to Species.



TRIAKIDAE

Houndsharks

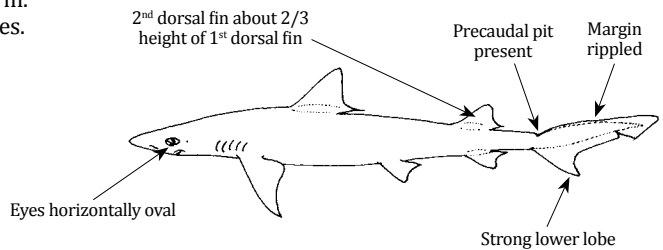
To 1.5 m. Demersal, from the intertidal region down to a depth of at least 1 000 m. Three species are included in the Guide to Species.



HEMIGALEIDAE

Weasel sharks

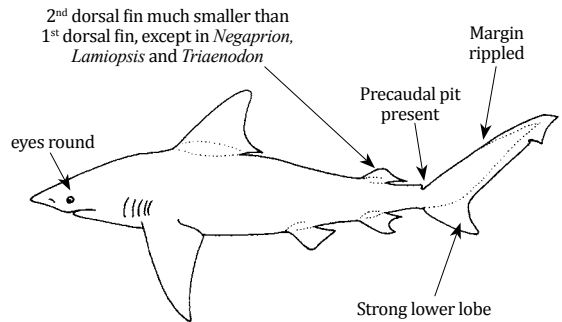
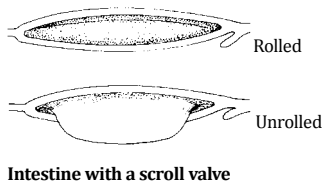
To 2.4 m. Demersal, from depths of 1 m to 100 m. Two species are included in the Guide to Species.



CARCHARHINIDAE

Requiem sharks

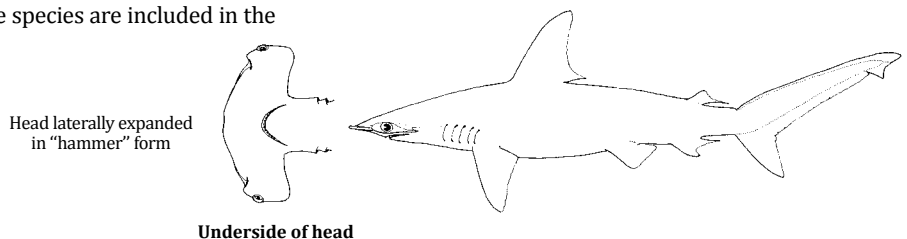
To 550 m. Demersal to epipelagic, from the surface to a depth of 800 m. Twenty-four species are included in the Guide to Species.



SPHYRNIDAE

Hammerhead sharks

To 6 m. Coastal and oceanic waters, from the surface to at least 275 m. Three species are included in the Guide to Species.



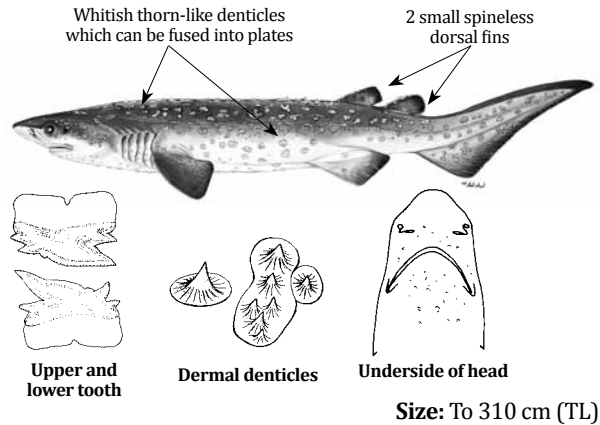
ECHINORHINIDAE

Bramble sharks

Echinorhinus cf. brucus (Bonnaterre, 1788)

Local name(s): Pagas (Sin); Limpi pagas (Bal).
Habitat: Demersal on continental and insular shelves, usually from 200 to 900 m.
Fisheries: Deep bottom trawls, line gears.
Distinctive Characters: Dorsal fins smaller than the pelvic fins, the 1st with its base over the pelvic bases; no anal fin; caudal fin without a subterminal notch; 20–26 teeth in upper jaw and 21–26 in lower jaw.
Colour: Grey, brownish or blackish, lighter below; fin edges blackish.
Remarks: A distinct form of *Echinorhinus brucus* occurs in the Indian Ocean (G. Naylor and M. Harris personal communication, 2015).

(Plate II, 9) **FAO names:** Bramble shark (En)
 Squale bouclé (Fr)



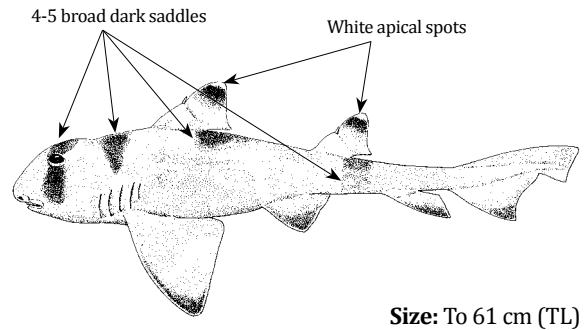
HETERODONTIDAE

Bullhead sharks

Heterodontus omanensis Baldwin, 2005

Local name(s): None.
Habitat: Presumably on soft bottoms down to 80 m.
Fisheries: Gillnets.
Distinctive Characters: Dorsal fins with spines; anal fin present; 1st dorsal fin origin over pectoral fin inner margins.
Colour: Fins tipped with dark brown or blackish; additionally a white spot on apices of dorsal fins.

(Plate II, 10) **FAO names:** Oman bullhead shark (En)



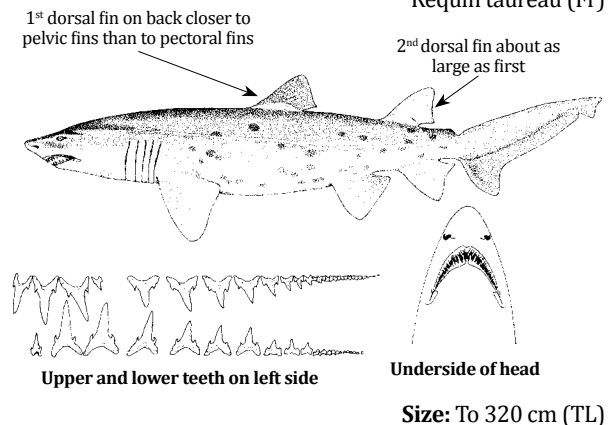
ODONTASPIDAE

Sand tiger sharks

Carcharias taurus Rafinesque, 1810 *

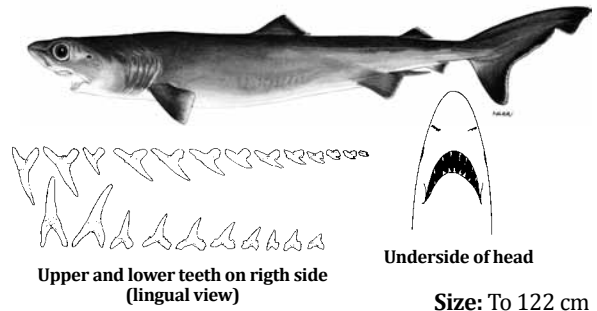
Local name(s): Dantani manger (Sin); Dantani pagas (Bal).
Habitat: Inshore from the surf zone and in shallow bays to at least 191 m.
Fisheries: Gillnets, line gears.
Distinctive Characters: Snout short and flattened; eyes small; no lateral keels and lower precaudal pit; 36–54 teeth in upper jaw and 32–46 in lower jaw; teeth large with prominent narrow cusps and lateral cusplets; 3 rows of large upper anterior teeth on each side of symphysis.
Colour: Light brown, often with darker reddish or brownish spots scattered on body, eyes with light green irises.

FAO names: Sand tiger shark (En)
 Requin taureau (Fr)



PSEUDOCARCHARIIDAE

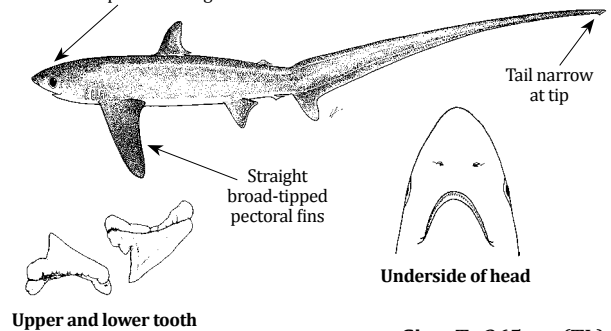
Crocodile shark

Pseudocarcharias kamoharai (Matsubara, 1936)FAO names: Crocodile shark (En)
Requin crocodile (Fr)**Local name(s):** None.**Habitat:** An oceanic species usually found offshore and far from land but sometimes occurring inshore.**Fisheries:** Driftnets.**Distinctive Characters:** Body slender; eyes very large; anal fin narrow-based, pivoting; caudal peduncle with both upper and lower precaudal pits and low lateral keels; 26–29 teeth in upper jaw and 19–26 in lower jaw.**Colour:** Grey or grey-brown dorsal surface, lighter ventral surface, and light-edged fins.**ALOPIIDAE**

Thresher sharks

Alopias pelagicus Nakamura, 1935

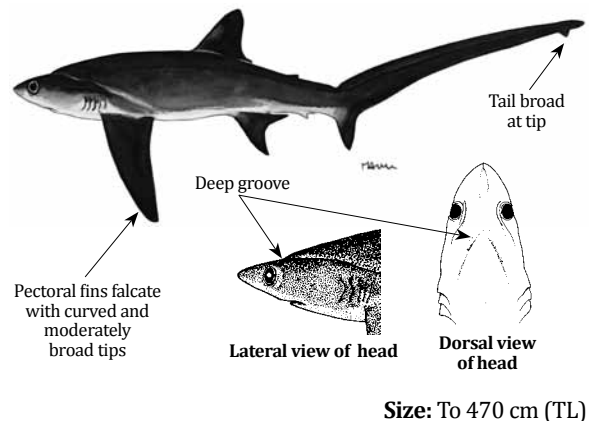
(Plate II, 11)

FAO names: Pelagic thresher (En)
Renard pélagique (Fr)**Local name(s):** Poonshirin, Parri (Sin); Dumbi, Mushk (Bal).**Habitat:** Oceanic, epipelagic, caught near shore where shelf is narrow. Maximum depth 150 m.**Fisheries:** Driftnets, line gears.**Distinctive Characters:** Long upper caudal lobe nearly as long as rest of shark; eyes small with orbits not expanded onto dorsal surface of head; labial furrows absent; 1st dorsal fin base somewhat closer to pectoral fin bases than pelvic fin bases.**Colour:** Deep blue or grey above, white below; white colour of abdomen not extending over pectoral fin bases.Head, narrow with arched profile
without deep horizontal groove

Upper and lower tooth

Alopias superciliosus Lowe, 1841

(Plate II, 12)

FAO names: Bigeye thresher (En)
Renard à gros yeux (Fr)**Local name(s):** Poonshirin, Parri (Sin); Dumbi, Mushk (Bal).**Habitat:** Oceanic and coastal waters down to 500 m.**Fisheries:** Driftnets, line gears.**Distinctive characters:** Similar to *Alopias pelagicus* but head nearly flat between eyes, with a deep horizontal groove on nape; eyes very large, with orbits expanded onto dorsal surface of head; 1st dorsal fin base closer to pelvic bases than to pectoral bases; teeth large, in 19–27 rows in upper jaw (teeth smaller and in 41–45 rows in *A. pelagicus*).**Colour:** Body purplish grey or grey-brown on upper surface and sides with underside grey to white; light colour of abdomen not extending over pectoral fin bases.Pectoral fins falcate
with curved and
moderately
broad tips

Lateral view of head

Dorsal view
of head

Size: To 470 cm (TL)

LAMNIDAE

Mackerel sharks

Isurus oxyrinchus Rafinesque, 1810

(Plate II, 13)

FAO names: Shortfin mako (En)
 Taupe bleu (Fr)

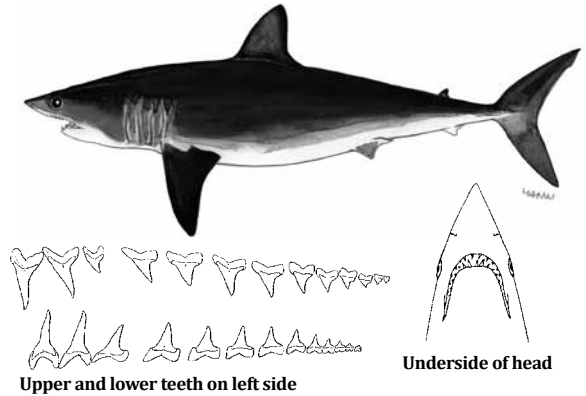
Local name(s): Aiyan manger, Nar manger, Aar (Sin); Nar manger (Bal).

Habitat: Pelagic in oceanic and coastal waters, usually near the surface.

Fisheries: Driftnets, line gears.

Distinctive Characters: Snout usually acutely pointed; pectoral fins considerably shorter than head, relatively narrow-tipped in young and acutely pointed in adults; 24–26 teeth in upper jaw and 24–29 in lower jaw; cusps of upper and lower anterior teeth flexed, with tips reversed.

Colour: Dorsolateral coloration brilliant blue or purplish in life, white below underside of snout and mouth in adults.



Size: To 400 cm, common 200 cm (TL)

Isurus paucus Guitart Manday, 1966

FAO names: Longfin mako (En)
 Petite taupe (Fr)

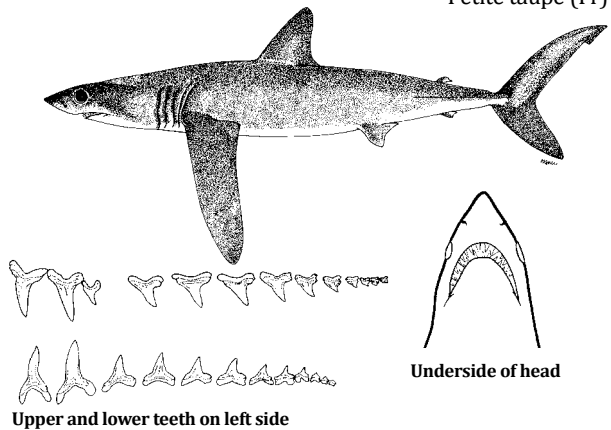
Local name(s): Aiyan manger Nar manger, Aar (Sin); Nar manger (Bal).

Habitat: Oceanic species that probably approaches land to give birth.

Fisheries: Driftnets, line gears.

Distinctive Characters: Snout narrowly to bluntly pointed, usually not acute; pectoral fins about as long as head or longer; relatively broad-tipped in young and adults; 24–26 teeth in upper jaw and 22–26 in lower jaw; cusps of upper and lower anterior teeth straight, with tips not reversed.

Colour: Dorsolateral coloration dark slaty blue or grey-black in life, underside white but with underside of snout and mouth dark in adults and large juveniles.



Size: To 417 cm, common 200 cm (TL)

HEMISCYLLIIDAE

Longtail carpetsharks

Chiloscyllium arabicum Gubanov, 1980 *

FAO names: Arabian carpet shark (En)
 Requin-chabot camot (Fr)

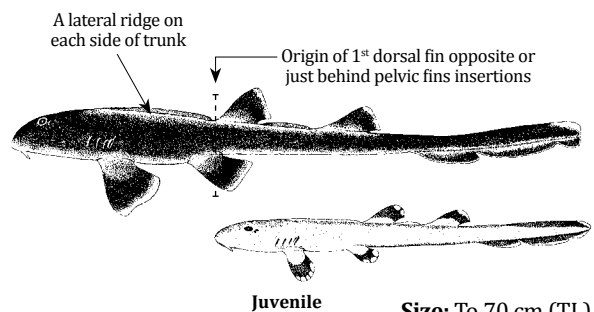
Local name(s): Billi, Kori, Kutta (Sin); Pishi, Goj (Bal).

Habitat: Inhabits coral reefs, lagoons, rocky shores, and mangrove estuaries from 3 to 100 m.

Fisheries: Bottom trawls, gillnets; line gears.

Distinctive Characters: Dorsal and anal fins set far back on very long thick tail; posterior edge of dorsal fins nearly straight; 2nd dorsal fin usually with a longer base than first.

Colour: Light brown; juveniles with light spots on fins.



Juvenile

Size: To 70 cm (TL)

Chiloscyllium griseum Müller & Henle, 1838

Local name(s): Billi, Kori, Kutta (Sin); Pishi, Goj (Bal).

Habitat: An inshore bottom shark, on rocks and in lagoons from 5 to 80 m.

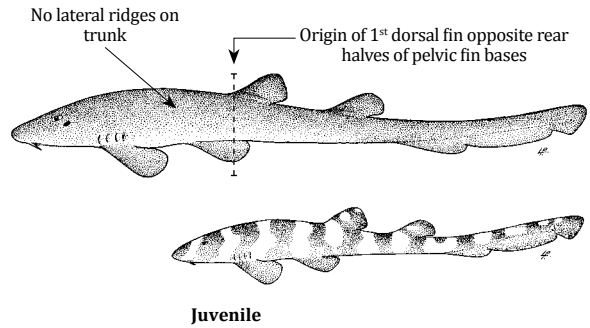
Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Body and tail moderately slender; dorsal and anal fins set far back on very long thick tail; dorsal fins with straight or convex posterior margins.

Colour: Colour pattern absent in adults but young with prominent dark saddle-marks without black edging.

(Plate II, 14)

FAO names: Grey bambooshark (En)
Requin-chabot gris (Fr)



Size: To 77 cm (TL)

Chiloscyllium indicum (Gmelin, 1789)*

Local name(s): Billi, Kori, Kutta (Sin); Pishi, Goj (Bal).

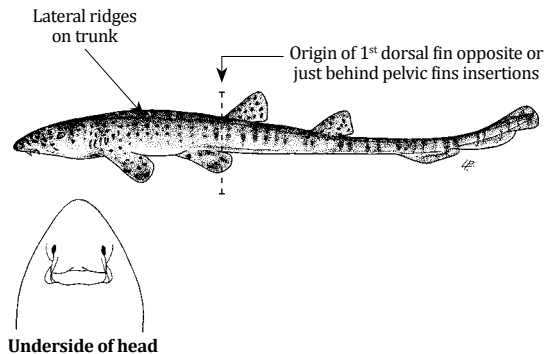
Habitat: An inshore bottom shark, on rocks and in lagoons from 5 to 80 m.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Body and tail very slender; dorsal and anal fins set far back on very long thick tail; dorsal fins with straight or convex posterior margins.

Colour: Numerous dark brown or blackish spots, dashes and bars on light brown background present in juveniles and adults; saddle-markings or bars of young without prominent black edging.

FAO names: Slender bambooshark (En)
Requin-chabot élégant (Fr)



Size: To 65 cm (TL)

STEGOSTOMATIDAE**Zebra shark*****Stegostoma fasciatum*** (Hermann, 1783)

Local name(s): Kori, Billi, Poonshrin (Sin); Pishi, Goj (Bal).

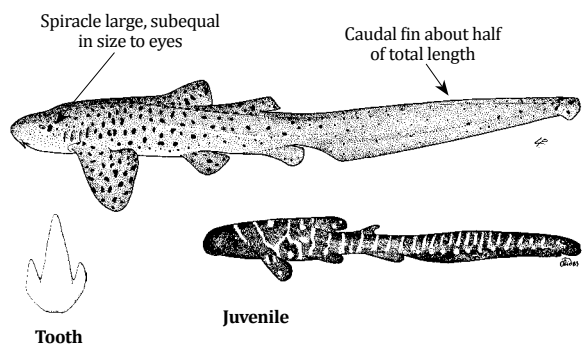
Habitat: Inshore, very common on coral reefs.

Fisheries: Gillnets, line gears.

Distinctive Characters: Body moderately stout with prominent ridges on dorsal surface and sides; small transverse mouth in front of laterally positioned eyes; small barbules; caudal fin with lower lobe hardly developed; no lateral keels or precaudal pits on caudal peduncle.

Colour: Sub-adults and adults with scattered dark spots on a yellowish background, shading into the whitish ventral surfaces; juveniles dark brown with vertical yellow stripes and spots.

FAO names: Zebra shark (En)
Requin zèbre (Fr)



Size: To 235 cm (TL)

GINGLYMOSTOMATIDAE

Nurse sharks

Nebrius ferrugineus (Lesson, 1831) *

FAO names: Tawny nurse shark (En)
Requin nourrice fauve (Fr)

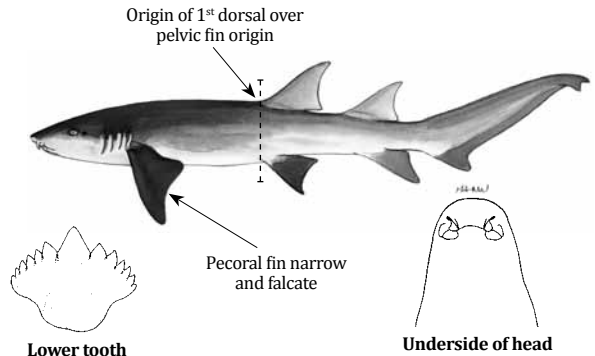
Local name(s): Kori, Billi, Poonshrin (Sin); Pishi, Goj (Bal).

Habitat: Demersal in shallow waters on coral and rocky reefs, in lagoons and on sand flats down to 70 m.

Fisheries: Gillnets, line gears.

Distinctive Characters: Mouth in front of laterally positioned eyes; barbels fairly long, almost reaching mouth; minute spiracles; no circumnarial grooves; angular dorsal fins; 1st dorsal fin larger than 2nd dorsal and anal fins; pectoral, dorsal and anal fins apically angular; body without lateral ridges.

Colour: No colour pattern, tan above, lighter below; fins slightly dusky.



Size: To 320 cm, common 250 cm (TL)

RHINCODONTIDAE

Whale shark

Rhincodon typus Smith, 1828 (Plate II, 15)

FAO names: Whale shark (En)
Requin baleine (Fr)

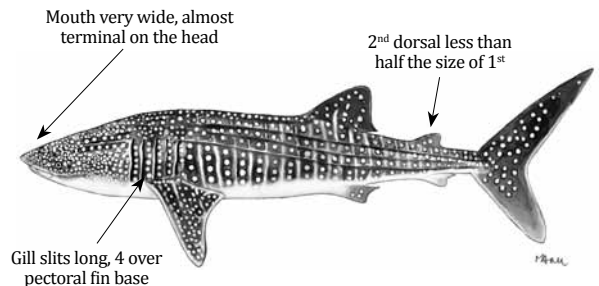
Local name(s): Andhi mangar (Sin); Baran (Bal).

Habitat: Pelagic often near the surface down to 980 m.

Fisheries: Gillnets, bottom trawls, harpoon.

Distinctive Characters: Head very wide and flattened; teeth minute; caudal fin with a strong lower lobe but no subterminal notch; caudal peduncle depressed with a strong keel on each side; upper precaudal pit present.

Colour: Dark grey, reddish or greenish grey above, with white or yellow spots and transverse stripes; white or yellowish below.



Size: To 16 m, possibly to 21 m (TL)

SCYLIORHINIDAE

Catsharks

Atelomycterus marmoratus (Anonymous [Bennett], 1830) *

FAO names: Coral catshark (En)
Chien corail (Fr)

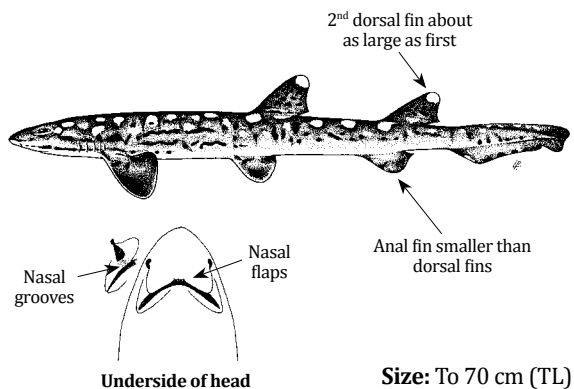
Local name(s): Kori (Sin); Tikki pishi (Bal).

Habitat: inshore on coral reefs and though to inhabit crevices and holes on reefs.

Fisheries: Gillnets.

Distinctive Characters: Head narrow; long mouth and very long labial furrows; anterior nasal flaps greatly expanded, reaching mouth; nasoral grooves present; eyes horizontal and oval; no upper precaudal pit; 1st dorsal fin origin about opposite or slightly in front of pelvic insertions.

Colour: Enlarged black spots merging to form dash and bar marks that bridge not clear saddle areas; large white spots scattered on sides, back and fin margins.



Size: To 70 cm (TL)

TRIAKIDAE

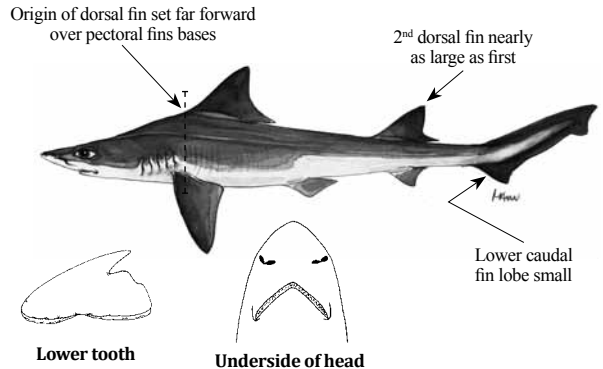
Houndsharks

Iago omanensis (Norman, 1939)

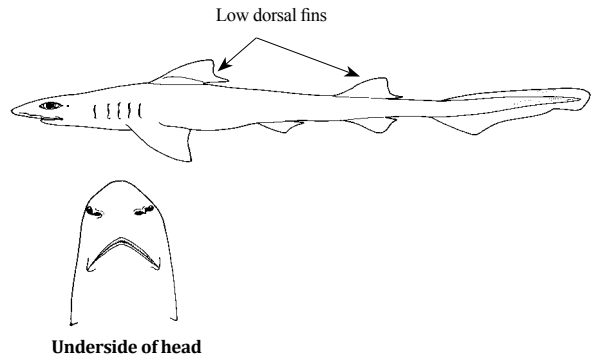
(Plate II, 16)

FAO names: Bigeye houndshark (En)

Requin-hâ à gros yeux (Fr)

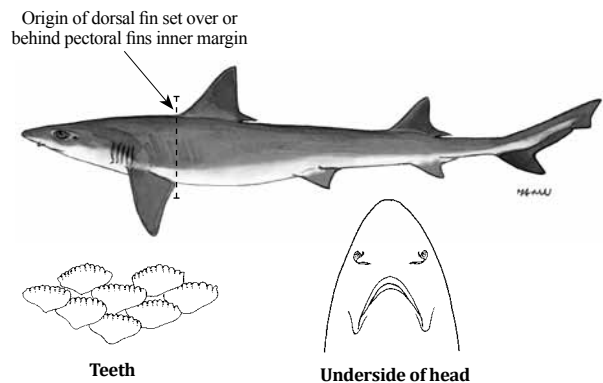
Local name(s): Chua, Pishik (Sin); Chao (Bal).**Habitat:** Found on the continental shelf and slope.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Body slender; snout rather short, preoral length about 0.7–0.9 times in mouth width; eyes lateral, subocular ridges obsolete; large gill slits, width of longest nearly equal to eye; small blade-like teeth.**Colour:** Brownish or greyish above and lighter below, with no conspicuous markings; margins of dorsal fins often somewhat darker.**Size:** To 58 cm (TL)***Iago* sp. A**

FAO names: Lowfin houndshark (En)

Local name(s): Chua, Pishik (Sin); Chao (Bal).**Habitat:** Outer continental shelf and upper slope below 183 m, also semipelagic.**Fisheries:** Bottom trawls.**Distinctive Characters:** Similar to *Iago omanensis* but with shorter head; slimmer body; much lower dorsal fins; smaller pectoral fins; softer skin and muscles and darker coloration.**Colour:** No information available.**Remarks:** A *Iago* species (yet to be described) often confused with *I. omanensis*, which has been recorded off the Gulf of Aden, West coast of India and now also in Pakistan.**Size:** To 41 cm (TL)***Mustelus mosis*** Hemprich & Ehrenberg, 1899

(Plate II, 17) FAO names: Arabian smooth-hound (En)

Emissole d'Arabie (Fr)

Local name(s): Bappa, Chua (Sin); Zaid (Bal).**Habitat:** Bottom dwelling in inshore and offshore waters, also on coral reefs.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Short head and snout; broad internarial space; eyes dorsolateral, subocular ridges strong; upper labial furrows about equal to lowers; teeth molariform and asymmetric, with cusp reduced to a low point; rostral cartilages and supraorbital crests hypercalcified in adults.**Colour:** Back and sides plain grey or grey-brown, underside cream-white; no spots on sides.**Size:** To 150 cm (TL)

HEMIGALEIDAE

Weasel sharks

***Chaenogaleus macrostoma* (Bleeker, 1852)**

FAO names: Hooktooth shark (En)
Milandre harpon (Fr)

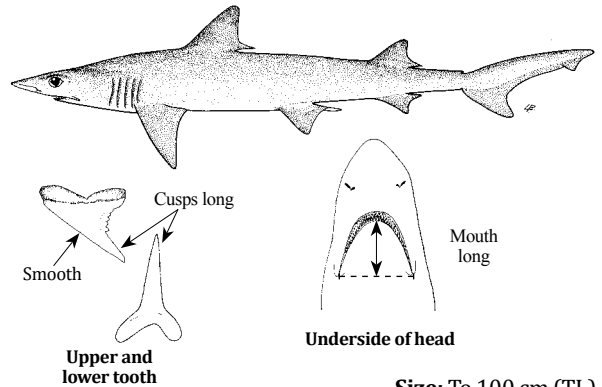
Local name(s): Loan (Sin); Loan (Bal).

Habitat: Continental and insular shelves at depths down to 59 m.

Fisheries: Gillnets, line gears.

Distinctive Characters: Snout obtusely wedge-shaped in dorsoventral view; very long parabolic mouth with prominently protruding lower teeth; fins not falcate; lower jaw rounded at symphysis; no toothless space at midline of jaws; 33–38 teeth in upper jaw and 34–36 in lower jaw; proximal edges of teeth smooth, sometimes a few cusplets on proximal edges of lower teeth.

Colour: Light grey or bronze colour with no prominent markings.



Size: To 100 cm (TL)

***Hemipristis elongata* Klunzinger, 1871**

(Plate II, 15)

FAO names: Snaggletooth shark (En)
Milandre chicor (Fr)

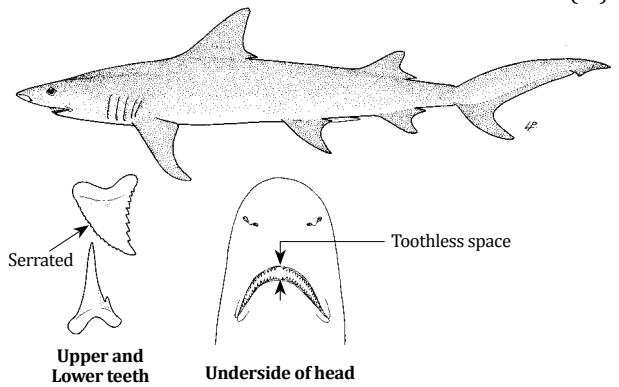
Local name(s): Loan (Sin); Loan (Bal).

Habitat: Continental and insular shelves at depths down to 132 m.

Fisheries: Gillnets, line gears.

Distinctive Characters: Snout long, broadly rounded in dorsoventral view; mouth with truncated lower symphysis and prominently protruding lower teeth; fins strongly falcate; 26–30 teeth in upper jaw and 30–36 in lower jaw; upper teeth with distal cusplets and proximal serrations, lower teeth with extremely long, hooked cusps and cusplets and serrations at their bases.

Colour: Grey or grey-brown above, lighter below, no prominent markings.



Size: To 240 cm (TL)

CARCHARHINIDAE

Requiem sharks

***Carcharhinus altimus* (Springer, 1950)**

FAO names: Bignose shark (En)
Requin babosse (Fr)

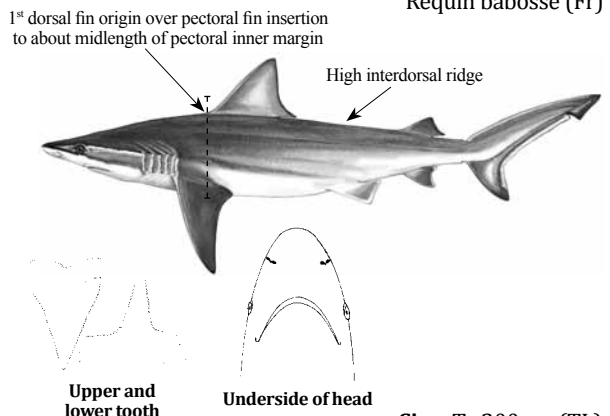
Local name(s): Kanati, Jangli mangar (Sin); Kalawani, Kanaitar (Bal).

Habitat: Offshore, near the edge of the continental and insular shelves and uppermost slopes.

Fisheries: Driftnets, line gears.

Distinctive Characters: Snout bluntly pointed to rounded in dorsoventral view; long nasal flaps; 1st dorsal and 2nd dorsal fins moderately high with short rear tips; long nearly straight pectoral fins; 28–30 teeth in upper jaw and 28–30 in lower jaw; upper jaw with high, triangular, serrated teeth; lower jaw with erect narrow-cusped serrated teeth.

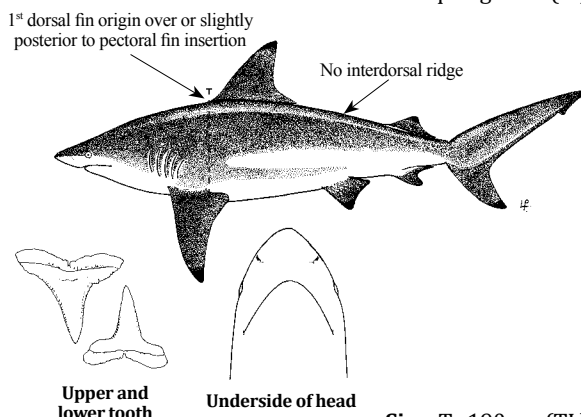
Colour: Light grey above, white below, with dusky fin tips (except for pelvics) but no conspicuous markings.



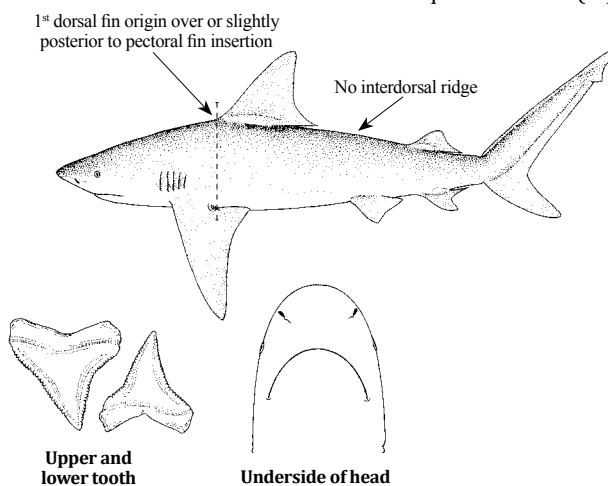
Size: To 300 cm (TL)

Carcharhinus amblyrhynchoides (Whitley, 1934)

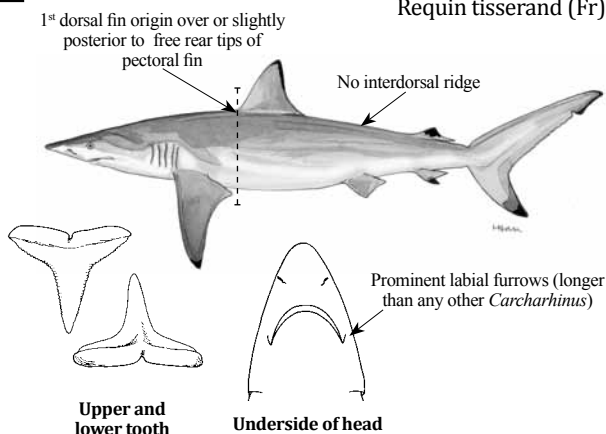
(Plate III, 19)

FAO names: Graceful shark (En)
Requin gracile (Fr)**Local name(s):** Moey, Karpick (Sin); Moozi (Bal).**Habitat:** Coastal, pelagic on continental and insular shelves.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Snout fairly short, wedge-shaped in dorsoventral view; large triangular 1st dorsal and moderately high 2nd dorsal fins, both fins with short rear tips; moderately large falcate pectoral fins; 31–33 teeth in upper jaw and 29–33 in lower jaw; erect and narrow-cusped serrated teeth in both jaws.**Colour:** Grey or grey-brown above, white below; pectoral, dorsal and pelvic fins, and ventral lobe of caudal fin black or dusky-tipped, sometimes inconspicuously.

Size: To 190 cm (TL)

Carcharhinus amboinensis (Müller & Henle, 1839)FAO names: Pigeye shark (En)
Requin balestrine (Fr)**Local name(s):** Kandri, More (juvenile) (Sin); Warook, Gwark (juvenile) (Bal).**Habitat:** Inshore and offshore, from the surface to the bottom.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Snout very short, bluntly rounded in dorsoventral view; eyes small; large triangular 1st dorsal fin (over 3 times 2nd dorsal height), both fins with short rear tips; large angular pectoral fins; 23–27 teeth in upper jaw and 23–25 in lower jaw; broadly triangular serrated teeth in upper jaw; slightly narrower cusped teeth with arched roots in lower jaw.**Colour:** Grey above, light below, fin tips dusky, especially in young, but not strikingly marked; an inconspicuous white band on flank.

Size: To 280 cm (TL)

Carcharhinus brevipinna (Müller & Henle, 1839)FAO names: Spinner shark (En)
Requin tisserand (Fr)**Local name(s):** Sid, Sida, Shid (Sin); Shid (Bal).**Habitat:** Coastal, pelagic on continental and insular shelves.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Snout pointed and long, its length equal to or greater than mouth width; small 1st dorsal and moderately high 2nd dorsal fins, both fins with short rear tips; small falcate pectoral fins; 32–39 teeth in upper jaw and 29–37 in lower jaw; erect and narrow-cusped teeth in both jaws; uppers with entirely or partly serrated edges, lowers smooth.**Colour:** Grey on back, white below; 2nd dorsal, anal, undersides of pectorals and lower caudal fin lobe black or dark grey-tipped in subadults and adults, but unmarked or nearly so in small individuals (below 1 m).

Size: To 280 cm (TL)

***Carcharhinus dussumieri* (Müller & Henle, 1839)**

FAO names: Whitecheek shark (En)
Requin à joues blanches (Fr)

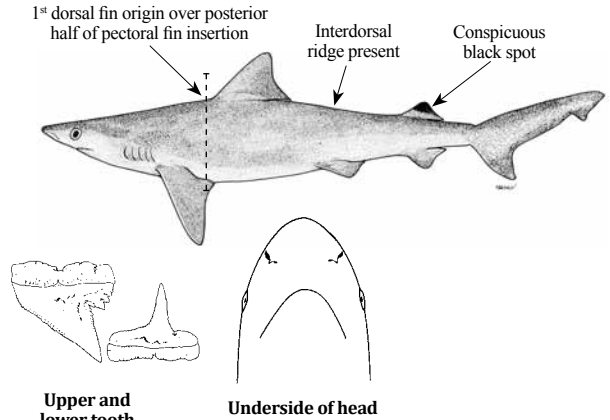
Local name(s): Gussi (Sin); Gussi, Gusso (Bal).

Habitat: Found on the continental and insular inshore areas.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Snout moderately long and rounded in dorsoventral view; fairly large horizontally-oval eyes; small triangular 1st dorsal fin and a moderately large 2nd dorsal fin, both fins with short rear tips; small semifalcate pectoral fins; 24–31 teeth in upper jaw and 22–32 in lower jaw; oblique-cusped serrated teeth in both jaws, upper teeth with strong, serrated cusplets.

Colour: Grey, or grey brown; black or dusky tip present on 2nd dorsal fin only, other fins with pale trailing edges; light stripe on flank not conspicuous.



Size: To 110 cm (TL)

***Carcharhinus falciformis* (Müller & Henle, 1839)**

(Plate III, 20)

FAO names: Silky shark (En)
Requin soyeux (Fr)

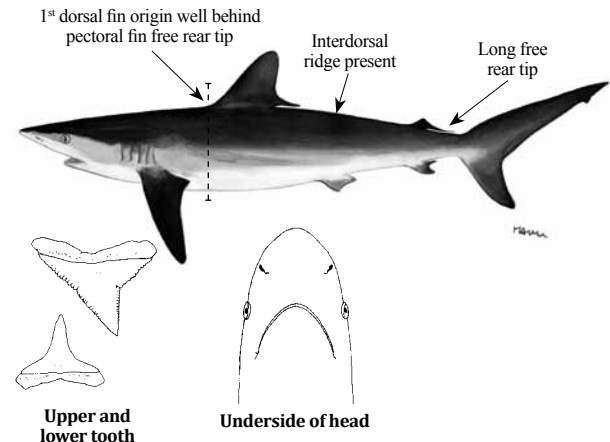
Local name(s): Karaint, Moi, Kali tilli (Sin); Kanaitar (Bal).

Habitat: Coastal and oceanic, common near slopes, from the surface to deeper waters down to 500 m.

Fisheries: Driftnets, gillnets, line gears.

Distinctive Characters: Snout narrowly rounded in dorsoventral view; 1st dorsal fin low to moderately high; 2nd dorsal fin free rear tip very long, more than 2 times the fin height; long narrow pectoral fins; 29–35 teeth in upper jaw and 27–37 in lower jaw; oblique-cusped serrated teeth in the upper jaw, upper teeth with basal cusplets or very strong serrations; lower teeth smooth-edged.

Colour: Dark grey to grey-brown above with an inconspicuous pale flank band, white below; fin marking inconspicuous; fin tips dusky except for 1st dorsal.



Size: To 330 cm (TL)

Carcharhinus hemiodon* (Müller & Henle, 1839)

FAO names: Pondicherry shark (En)
Requin baliai (Fr)

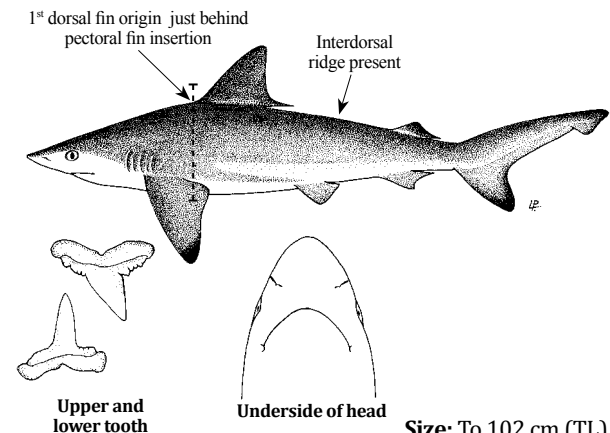
Local name(s): Barkali (Sin); Barkali (Bal).

Habitat: Coastal, on continental and insular shelves.

Fisheries: Gillnets, line gears.

Distinctive Characters: Snout fairly long and pointed in dorsoventral view; fairly large 1st dorsal fin and moderately large 2nd dorsal fin, both fins with short rear tips; small pectoral fins; 28–30 teeth in upper jaw and 26–28 in lower jaw; oblique-cusped weakly serrated upper teeth with strong cusplets; lower teeth with semierect, narrow smooth cusps.

Colour: Grey above, white below; fairly conspicuous black tips present on pectorals, 2nd dorsal, and dorsal and ventral caudal lobes.



Size: To 102 cm (TL)

Carcharhinus leucas (Müller & Henle, 1839)

FAO names: Bull shark (En)
Requin bouledogne (Fr)

Local name(s): Kandri, More (Juvenile) (Sin); Bagore, Worook, Gwark (Juvenile) (Bal).

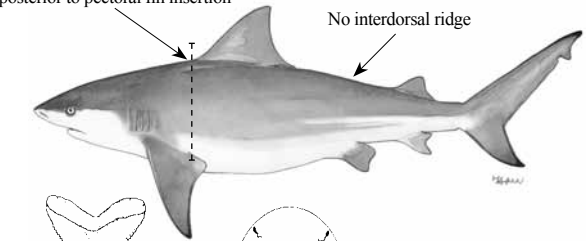
Habitat: Coastal, estuarine, riverine and lacustrine waters, usually found close inshore in marine habitats from 1 m to 152 m.

Fisheries: Gillnets, line gears.

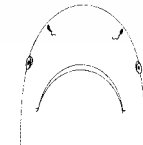
Distinctive Characters: Snout very short, bluntly rounded in dorsoventral view; eyes small; large triangular 1st dorsal fin (less than 3.2 times 2nd dorsal height), both fins with short rear tips; large angular pectoral fins; 24–29 teeth in upper jaw and 24–28 in lower jaw; broadly triangular serrated teeth in upper jaw; slightly narrower cusped teeth with arched roots in lower jaw.

Colour: Back greyish, belly white; fin tips dusky, especially in young, but not strikingly marked; an inconspicuous white band on flank.

1st dorsal fin origin over or slightly posterior to pectoral fin insertion



Upper and lower tooth



Underside of head

Size: To 360 cm (TL)

Carcharhinus limbatus (Müller & Henle, 1839)

(Plate III, 21)

FAO names: Blacktip shark (En)
Requin bordé (Fr)

Local name(s): Kanati, Karpick (Sin); Kalawani Kanaitar (Bal).

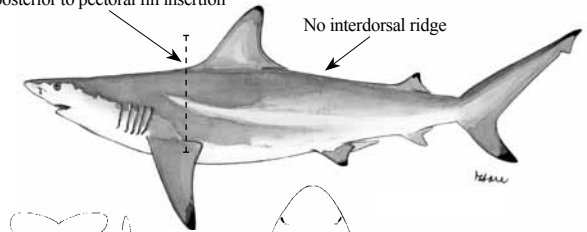
Habitat: Coastal and offshore but not truly oceanic species.

Fisheries: Gillnets, line gears.

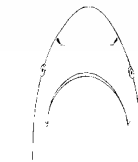
Distinctive Characters: Snout moderately long and pointed in dorsoventral view; large 1st dorsal fin and moderately large 2nd dorsal fin, both fins with short rear tips; moderately large pectoral fins; 30–35 teeth in upper jaw and 27–34 in lower jaw; erect, narrow-cusped serrated teeth in both jaws.

Colour: Grey above, white below; black tips usually present on pectorals, 2nd dorsal, and ventral caudal lobe, and sometimes on pelvic and anal fins (anal usually plain), and black edges usually present on 1st dorsal apex and dorsal caudal lobe.

1st dorsal fin origin over or slightly posterior to pectoral fin insertion



Upper and lower tooth



Underside of head

Size: To 297 cm

Carcharhinus longimanus (Poey, 1861)

(Plate III, 23)

FAO names: Oceanic whitetip shark (En)
Requin océanique (Fr)

Local name(s): Kanati, Ham, Aam (Sin); Ham (Bal).

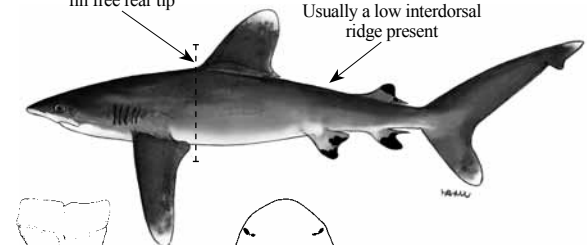
Habitat: Oceanic, epipelagic mostly far offshore but occasionally in coastal waters.

Fisheries: Driftnets, line gears.

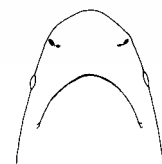
Distinctive Characters: Snout short and broadly rounded in dorsoventral view; 1st dorsal fin noticeably large with a very broadly rounded apex; pectoral fins long and paddle-shaped; 27–32 teeth in upper jaw and 27–33 in lower jaw.

Colour: Back usually dark grey with a bronze tinge or bluish; belly whitish or with a yellow tinge; mottled white fin tips on 1st dorsal, pectoral, and pelvic fins, and at tip of upper and lower caudal fin lobes; 2nd dorsal and anal fins black; juveniles with some black on pelvic fins and on caudal fin tips, and black saddle-marks on caudal peduncle.

1st dorsal fin origin over pectoral fin free rear tip



Upper and lower tooth



Underside of head

Size: To 350 cm (TL)

***Carcharhinus macloti* (Müller & Henle, 1839)**

(Plate III, 22)

FAO names: Hardnose shark (En)
Requin à nez rude (Fr)

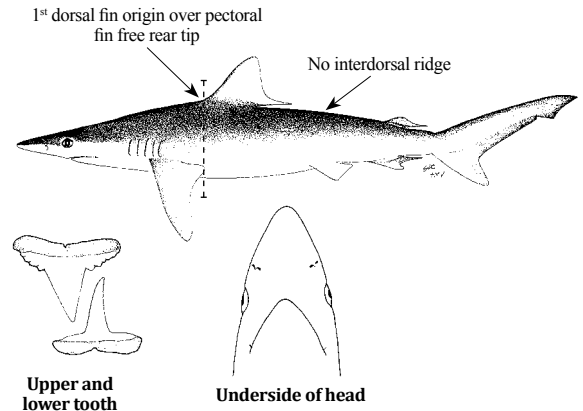
Local name(s): Tum kairo, Kandri, Bhusa (Sin); Jarroi pishik (Bal).

Habitat: Inshore and offshore continental waters.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Long narrowly rounded or somewhat pointed snout with an hypercalcified rostrum (can easily be felt by pinching its snout); 1st and 2nd dorsal fins small with extremely long rear tips; small pectoral fins; 29–32 teeth in upper jaw and 26–29 in lower jaw; oblique-cusped smooth-edged upper teeth with strong proximal and distal cusplets.

Colour: Grey or grey-brown above, white below, fins with light edges but not conspicuously marked; light flank marks not conspicuous.



Size: To 100 cm (TL)

Carcharhinus melanopterus* (Quoy & Gaimard, 1824)

FAO names: Blacktip reef shark (En)
Requin pointes noires (Fr)

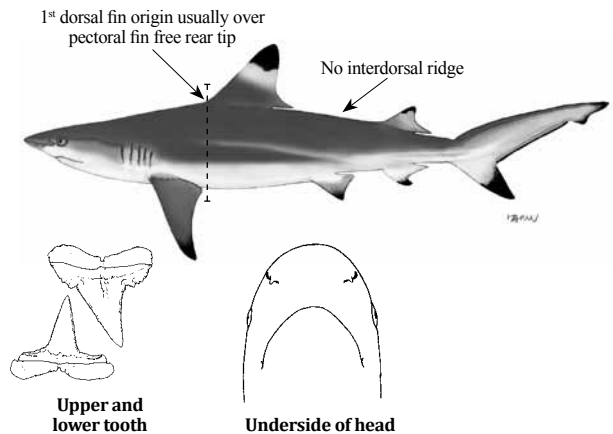
Local name(s): Bar-kali, Karpic (Sin); Bar-kali (Bal).

Habitat: Inshore and sometimes offshore, on continental and insular shelves.

Fisheries: Gillnets, line gears.

Distinctive Characters: Snout very short and blunt; 1st dorsal fin moderately large, 2nd dorsal fin moderately high with a short rear tip; 23–28 teeth in upper jaw and 21–27 in lower jaw; upper teeth with narrow, strongly serrated, erect to oblique, high cusps, and crown feet with coarser serrations and cusplets.

Colour: Light brown above, white below; 1st dorsal and ventral caudal lobe with a conspicuous black apical blotch, brilliantly highlighted proximally with white; other fins, generally with less prominent black fin tips; a conspicuous white band on flank.



Size: To 200 cm (TL)

***Carcharhinus plumbeus* (Nardo, 1827)**

FAO names: Sandbar shark (En)
Requin gris (Fr)

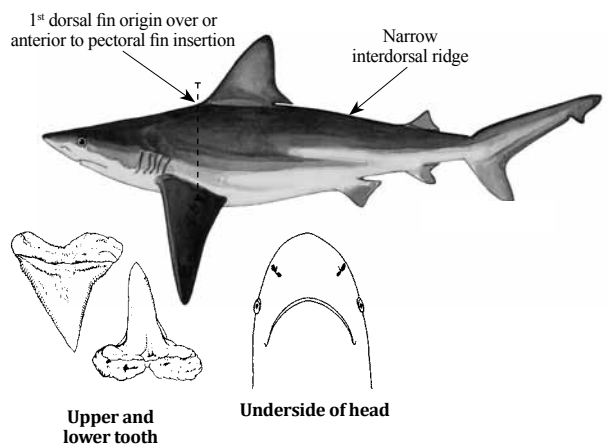
Local name(s): Karaint, Karpick (Sin); Kanaitar (Bal).

Habitat: Coastal pelagic, on continental and insular shelves and deeper waters adjacent to them. Maximum depth 280 m.

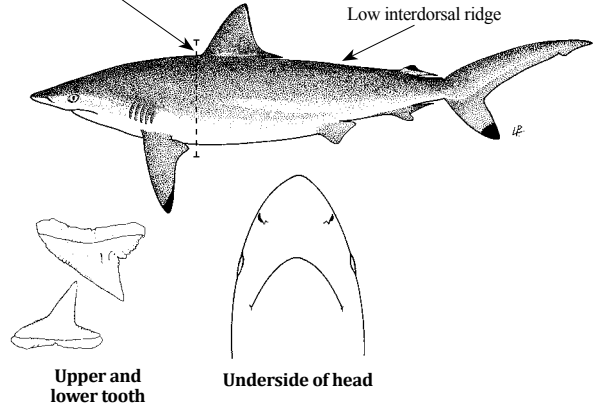
Fisheries: Gillnets, line gears.

Distinctive Characters: Snout short and broadly rounded or broadly parabolic in dorsoventral view; 1st dorsal fin triangular extremely tall and semifalcate; pectoral fins large, semifalcate, with narrowly rounded or pointed apices; 27–32 teeth in upper jaw and 25–32 in lower jaw; high, triangular, serrated upper teeth.

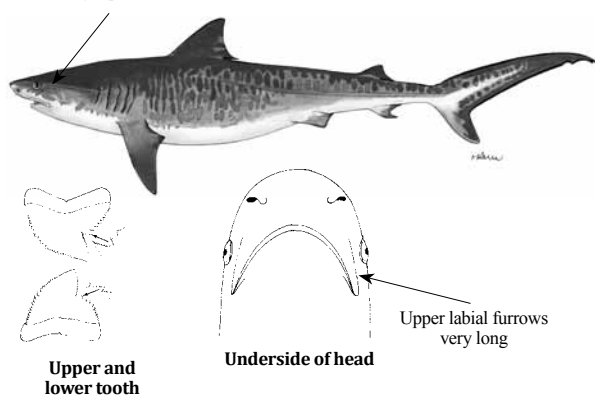
Colour: Grey-brown above, white below; tips and posterior edges of fins often dusky, but no conspicuous markings; an inconspicuous white band on flank.



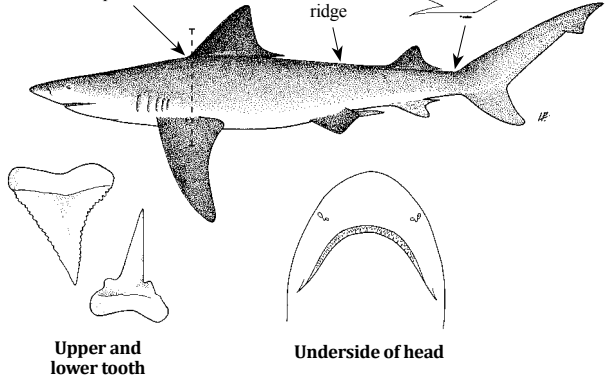
Size: To 240 cm (TL)

Carcharhinus sorrah* (Müller & Henle, 1839)*(Plate III, 24)****FAO names:** Spot-tail shark (En)
Requin à queue tachetée (Fr)**Local name(s):** Karaint, Karpick (Sin); Kanaitar (Bal).**Habitat:** Continental and insular shelves around coral reefs, usually 20–50 m. Maximum depth 140 m.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Snout moderately long and pointed in dorsoventral view; 1st dorsal fin moderate-size with a short rear tip; 2nd dorsal fin small with a long rear tip; pectoral fins fairly small, and falcate; 23–30 teeth in upper jaw and 23–30 in lower jaw; oblique-cusped serrated teeth in both jaws, upper teeth with strong cusplets.**Colour:** Grey above white below; a conspicuous and large black tip on the pectorals, 2nd dorsal, and ventral caudal lobe, but 1st dorsal only with black edge at most; a conspicuous white band on flank.1st dorsal fin origin over or slightly behind or slightly in front of pectoral fin free rear tip**Size:** To 160 cm (TL)***Galeocerdo cuvier* (Péron & Lesueur, 1822)****FAO names:** Tiger shark (En)
Requin tigre commun (Fr)**Local name(s):** Kar, Kari, Billi (Sin); Nar-mani (Bal).**Habitat:** Inshore and offshore waters near the surface and bottom.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Snout very short and bluntly rounded; upper labial furrows very long, extending to front of eye; spiracles present; a low rounded keel on each side of the caudal peduncle; interdorsal ridge present; 18–26 teeth in upper jaw and 18–26 in lower jaw; cockscomb-shaped curved teeth with heavy serrations and distal cusplets.**Colour:** Back dark-grey or greyish brown with dark brown or black rectangular spots often forming bars on sides of the fins but fading with growth.

Large spiracle

**Size:** To 550 cm, common 400 cm (TL)***Glyphis cf. gangeticus* (Müller & Henle, 1839)*****FAO names:** Ganges shark (En)
Requin du Ganges (Fr)**Local name(s):** Mangra (Sin); Gwareen (Bal).**Habitat:** Freshwater in rivers, possibly estuaries and inshore marine.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Snout very short and broadly rounded in dorsoventral view; minute eyes; 2nd dorsal rather large, about 1/2 height of 1st dorsal; upper precaudal pit longitudinal; anal fin deeply notched; 30–37 teeth in upper jaw and 31–34 in lower jaw; upper teeth with high, broad, serrated triangular cusps; 1st few lower front teeth with weakly serrated cutting edges and low cusplets on crown foot.**Colour:** Grey above, white below; no conspicuous markings.**Remarks:** A distinct form of *Glyphis gangeticus* occurs in Pakistan (M. Harris, personal communication, 2015)1st dorsal fin origin over posterior third of pectoral fin base

No interdorsal ridge

**Size:** To 275 cm (TL)

***Lamiopsis temminckii* (Müller & Henle, 1839)**

Local name(s): Gussi (Sin); Gusso (Bal).

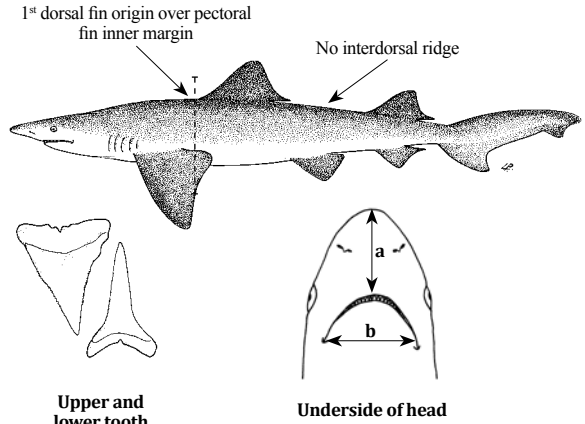
Habitat: Inshore continental shelf.

Fisheries: Gillnets, line gears, bottom trawls.

Distinctive Characters: Snout (a) moderately long, nearly equal to mouth width (b); small round eyes; 2nd dorsal fin nearly as large as 1st; upper precaudal pit longitudinal; pectoral fin broad and triangular; anal fin with posterior margin nearly straight; 29–37 teeth in upper jaw and 28–34 in lower jaw; upper teeth serrated and with broad triangular cusps; lower teeth with smooth, hooked, narrow cusps.

Colour: Light grey or tan above, light below, with no prominent markings.

FAO names: Broadfin shark (En)
Requin grandes ailes (Fr)



Size: To 168 cm (TL)

Loxodon macrorhinus* Müller & Henle, 1839

Local name(s): Gorrait, Khant (Sin); Tailago (Bal).

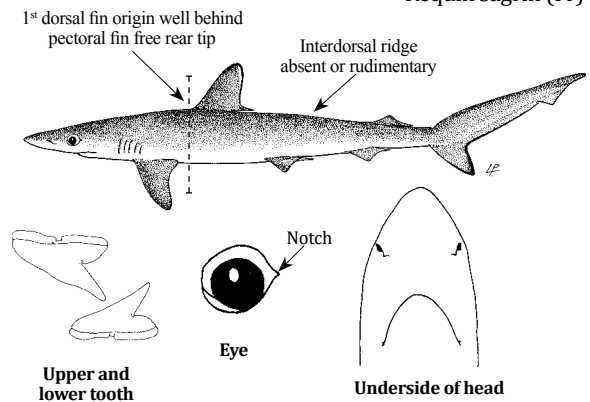
Habitat: Coastal clean waters, near the surface and bottom, from 7 m to 80 m.

Fisheries: Gillnets, line gears, bottom trawls.

Distinctive Characters: Snout long and narrow; short labial furrows; big eyes with rear notches; 2nd dorsal origin behind anal fin origin, anal fin with very long preanal ridges; 24–28 teeth in upper jaw and 24–29 in lower jaw; small, oblique-cusped teeth with smooth edges.

Colour: Grey above, pale below; fins with pale edges (transparent in life) caudal and 1st dorsal fin with a narrow dark margin.

FAO names: Sliteye shark (En)
Requin sagrin (Fr)



Size: To 98 cm (TL)

***Negaprion acutidens* (Rüppell, 1837)**

(Plate III, 25)

FAO names: Sicklefim lemon shark (En)
Requin limon faucille (Fr)

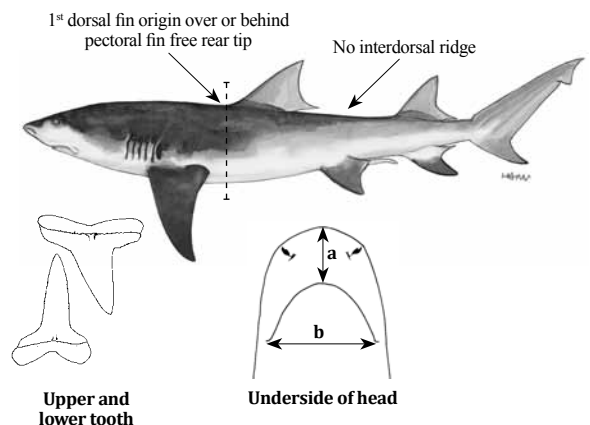
Local name(s): Ham (Sin); Jagri, Ham (Bal).

Habitat: Shallow inshore and offshore waters near the bottom often around coral reefs and sand plateaus down to 23 m.

Fisheries: Gillnets, line gears.

Distinctive Characters: Snout (a) blunt, shorter than mouth width (b); 2nd dorsal fin nearly as large as the 1st dorsal fin; dorsal, pectoral and pelvic fins strongly falcate; 29–32 teeth in upper jaw and 28–30 in lower jaw; narrow, smooth-cusped teeth in both jaws.

Colour: Yellowish brown above, paler below.

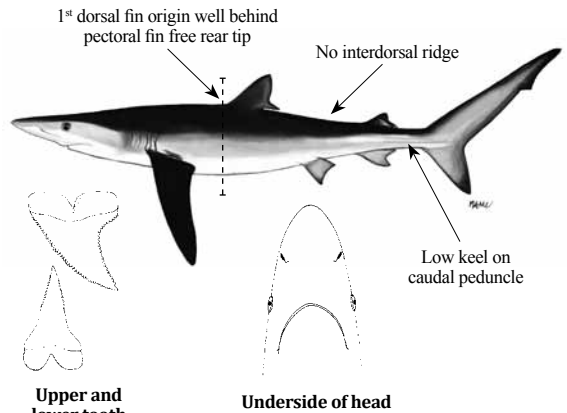


Size: To 310 cm (TL)

Prionace glauca (Linnaeus, 1758)

FAO names: Blue shark (En)

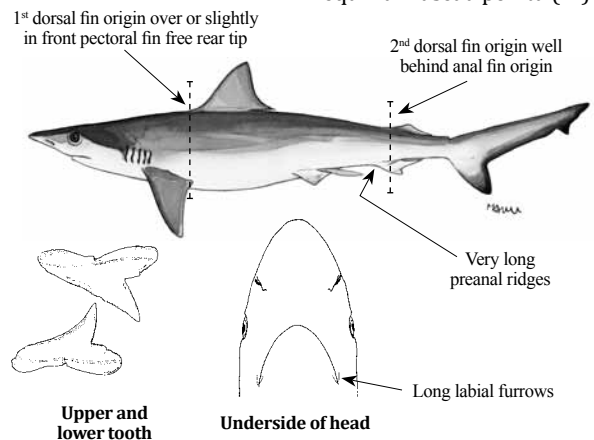
Peau bleue (Fr)

Local name(s): None.**Habitat:** Oceanic, epipelagic, usually near the surface.**Fisheries:** Driftnets.**Distinctive Characters:** A slim, graceful blue shark with a long, conical snout; large eyes; pectoral fins long and pointed; 1st dorsal fin closer to pelvic fins origin than pectoral fins free rear tips; 24–31 teeth in upper jaw and 24–34 in lower jaw; curved triangular upper teeth with serrated edges.**Colour:** Dark blue on back, bright blue on sides, white below, fading to purple blackish after death; tips of pectoral and anal fins dusky.**Size:** To 385 cm (TL)***Rhizoprionodon acutus*** (Rüppell, 1837)

(Plate III, 26)

FAO names: Milk shark (En)

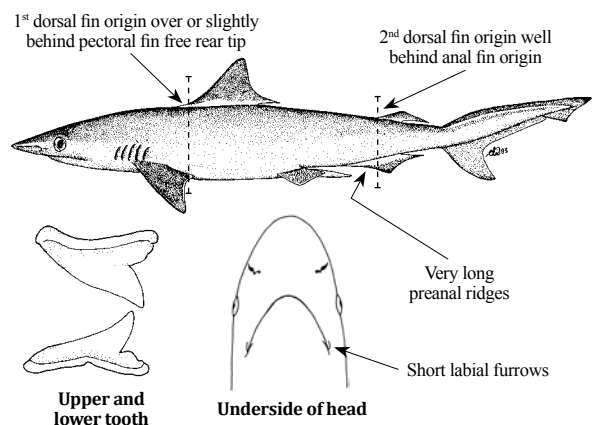
Requin à museau pointu (Fr)

Local name(s): Saik pishik, Gol (Sin); Sorapi pishik (Bal).**Habitat:** Inshore and offshore, from the surf line down to 200 m.**Fisheries:** Gillnets, line gears, bottom trawls.**Distinctive Characters:** A small shark with a long, narrow snout; big eyes without rear notch; long upper and lower labial furrows; 2nd dorsal fin smaller than anal fin; interdorsal ridge absent or rudimentary; 23–27 teeth on upper jaw and 22–26 on lower jaw; oblique-cusped teeth with smooth or weakly serrated edges.**Colour:** Grey or greyish brown above, white below; dorsal and anal fins slightly darker than back.**Size:** To 180 cm, common 110 cm (TL)***Rhizoprionodon oligolinx*** Springer, 1964

(Plate III, 27)

FAO names: Grey sharpnose shark (En)

Requin aiguille gris (Fr)

Local name(s): Gissi pishik, Golden (Sin); Tailago pishik, Sorapi (Bal).**Habitat:** inshore and offshore shark found on continental and insular shelves, from the surf line down to 36 m.**Fisheries:** Gillnets, line gears, bottom trawls.**Distinctive Characters:** Very small shark with a long snout; big eyes without rear notch; short upper and lower labial furrows; 2nd dorsal fin smaller than anal fin; interdorsal ridge absent or rudimentary; 23–25 teeth in upper jaw and 21–24 in lower jaw; oblique-cusped teeth with smooth or weakly serrated edges.**Colour:** Grey or brownish-grey above, pale below, bronzy when fresh, fins with dusky edges but not conspicuously marked.**Size:** To 70 cm

***Scoliodon laticaudus* Müller & Henle, 1838**

Local name(s): Pambi, Bamboli, Dun-da-nee (Sin); Bambhol (Bal).

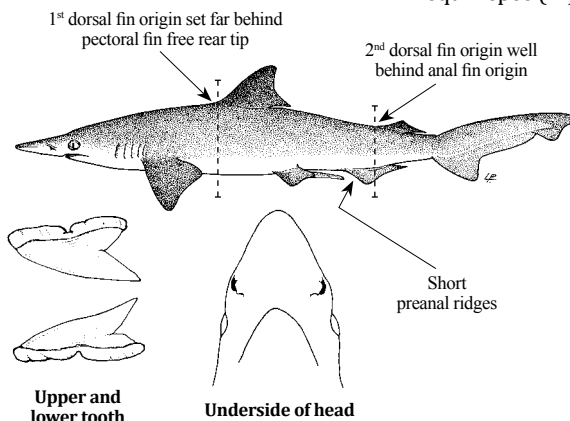
Habitat: Rocky substrates of coastal waters and lower reaches of tropical rivers.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Small stocky shark with a very long flattened, spade-like snout; small eyes; short, broad triangular pectoral fins; no interdorsal ridge; 25–33 teeth in upper jaw and 24–34 in lower jaw; small smooth-edged blade-like teeth with oblique cusps, distal blades, and no cusplets (teeth longer and more flexed in males)

Colour: Grey-brown above, light below, sometimes with obscure saddle bands; all fins with light margins.

FAO names: Spadenose shark (En)
Requin épée (Fr)



Size: To 74 cm (TL)

Trienodon obesus* (Rüppell, 1837)

Local name(s): Loan (Sin); Loan (Bal).

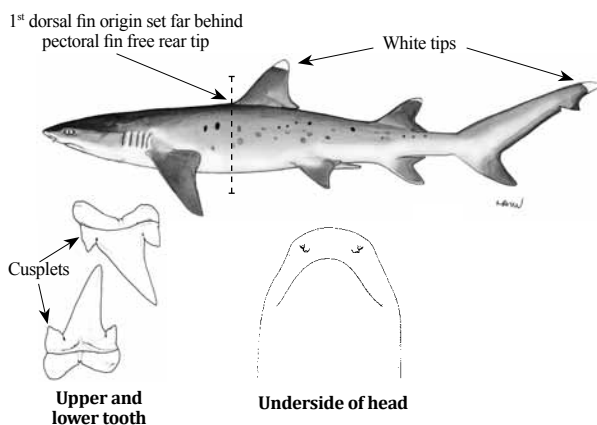
Habitat: Coastal clear waters and offshore islands, very common within coral reefs, lying inside crevices.

Fisheries: Gillnets; line gears.

Distinctive Characters: Snout extremely short and broadly rounded; horizontally oval eyes with posterior notches; downslanted mouth; prominent expanded, tubular anterior nasal flaps, a large 2nd dorsal fin that is still considerably smaller than the 1st dorsal; no interdorsal ridge; 45–50 teeth in upper jaw and 42–48 in lower jaw; small smooth-edged teeth with strong cusplets in both jaws.

Colour: Grey-brown above, white below; sometimes with dark spots on sides; 1st dorsal and caudal lobes with brilliant white tips; 2nd dorsal and caudal lobes sometimes white-tipped.

FAO names: Whitetip reef shark (En)
Requin corail (Fr)



Size: To 215 cm, common 160 cm (TL)

SPHYRNIDAE

Hammerhead sharks

***Eusphyra blochii* (Cuvier, 1816)**

Local name(s): None.

Habitat: Shallow water, continental and insular shelves.

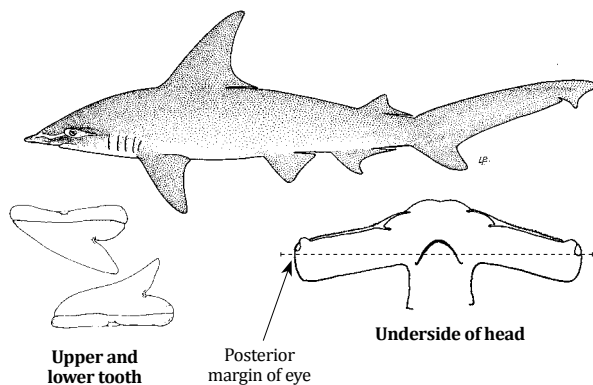
Fisheries: Gillnets.

Distinctive Characters: Unmistakable broad, wing-shaped head, with narrow blades nearly or quite half the shark's length; posterior margin of eyes below level of front of mouth; upper precaudal pit longitudinal, not crescent-shape; 30–31 teeth in upper jaw and 29 in lower jaw; smooth-edged teeth in both jaws.

Colour: Grey or grey-brown above, paler below.

Remarks: One juvenile specimen preserved in the Pakistan Museum of Natural History, Islamabad.

FAO names: Winghead shark (En)



Size: To 180 cm (TL)

Sphyrna lewini (Griffith & Smith, 1834)

(Plate III, 28)

FAO names: Scalloped hammerhead (En)
Requin-marteau halicorne (Fr)

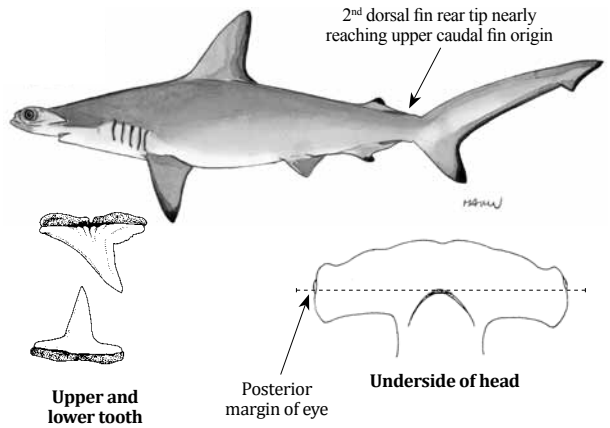
Local name(s): Budhar, Katiar (large size) (Sin); Bhuthar, Alwandi, Katial (large size), Kanti (Juveniles) (Bal).

Habitat: Inshore, offshore and semi-oceanic waters.

Fisheries: Driftnets, gillnets, line gears.

Distinctive Characters: Anterior margin of head with central notch and two smaller lateral indentations; posterior margin of eyes at about level of front of mouth; 1st dorsal fin high, moderately falcate, 2nd dorsal fin about same size as anal fin; pelvic fin with a nearly straight posterior margin; 30–36 teeth in upper jaw and 30–35 in lower jaw; teeth with long slender smooth-edged cusps.

Colour: Greyish brown or olivaceous above, shading to white below; pectoral fins tipped grey or black ventrally.



Size: To 420 cm, common 370 cm (TL)

Sphyrna mokarran (Rüppell, 1837)

FAO names: Great hammerhead (En)
Grand requin-marteau (Fr)

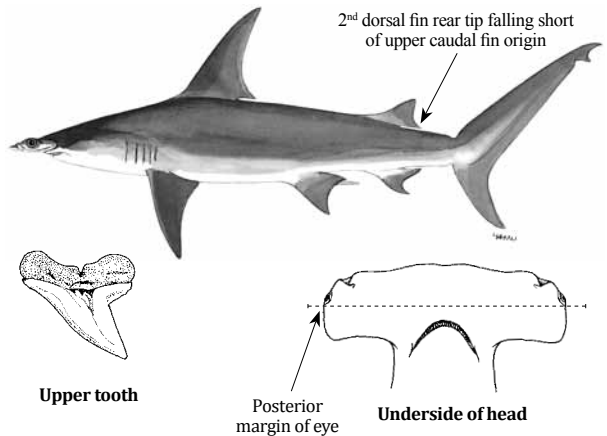
Local name(s): Budhar, Katiar (large size) (Sin); Buther, Maish, Katial (large) (Bal).

Habitat: Semi-oceanic also in inshore waters, often found around and on coral reefs.

Fisheries: Driftnets, gillnets, line gears.

Distinctive Characters: Anterior margin of head nearly straight with a notch at the centre; posterior margin of eyes well anterior to front of mouth; 1st dorsal fin very high, strongly falcate; 2nd dorsal fin moderately large, with a rather short inner margin; pectoral fins long and curved; pelvic fins with a deeply concave posterior margin; 36–39 teeth in upper jaw and 34–38 in lower jaw; teeth strongly serrated at all sizes.

Colour: Grey or grey-brown above, paler below; fins with dusky tips in young.

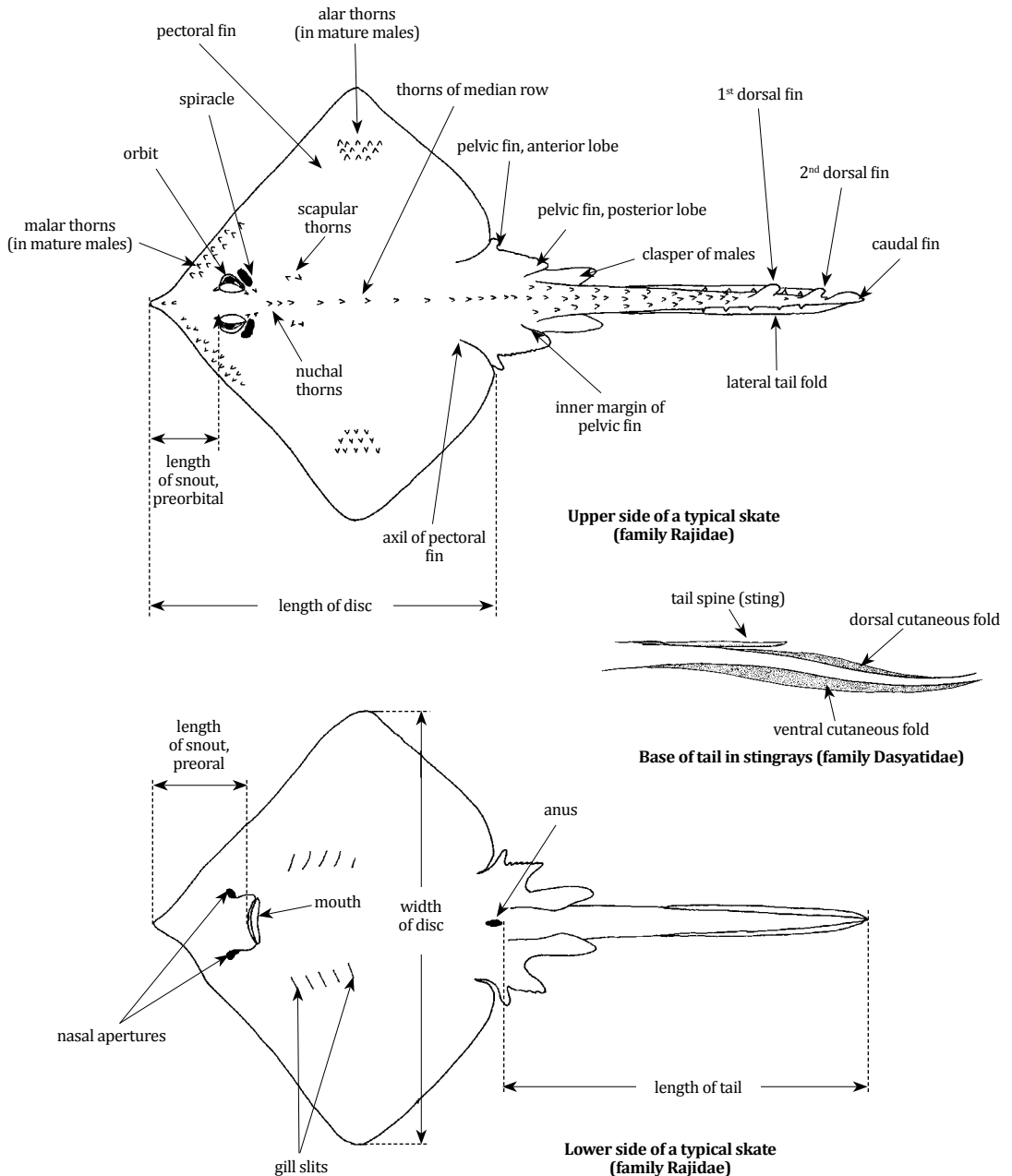


Size: To 600 cm (TL)

BATOID FISHES

The “Guide to Orders and Families”, includes a total of 4 Orders and 13 Families. The latter are arranged by order using the classification adopted by Aschliman, Claeson & McEachran *in* Carrier et al. (2012). The “Guide to Species”, includes 44 species belonging to 13 families. Species reported in the literature to occur in Pakistan but not found by the authors during field work are marked with an asterisk (*) besides the scientific name. If one of the latter species is recorded, the user can follow the instructions present in the introduction regarding its preservation and/or contact the FishFinder Programme.

TECHNICAL TERMS AND MEASUREMENTS



GUIDE TO ORDERS AND FAMILIES

Order PRISTIFORMES – Sawfishes

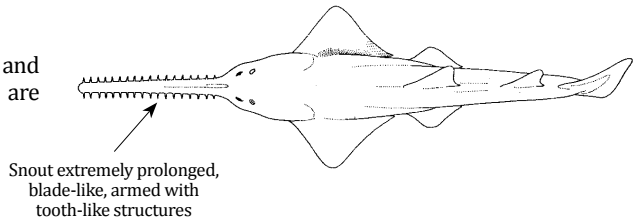
Body shark-like with a saw-like elongated snout bearing a row of strong lateral teeth on each side.

PRISTIDAE

Page 95

Sawfishes

To 7.3 m. Demersal in shallow marine waters and estuaries, enters freshwaters. Three species are included in the Guide to Species.



Order TORPEDINIFORMES – Electric rays

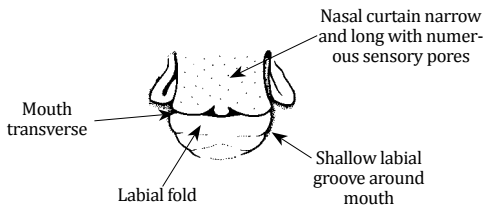
Pectoral fins greatly expanded and fused with head and trunk, forming a large oval disc; tail stout, without a spine. A large electric organ on each side of head, usually visible through the skin as a pattern of hexagonal markings.

NARKIDAE

Page 96

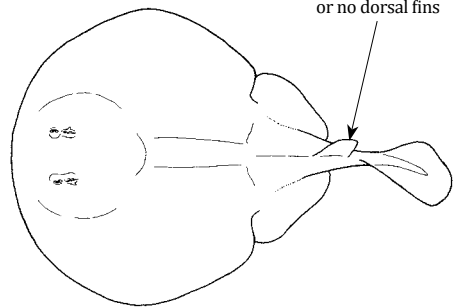
Sleeper rays

To 46 cm. Demersal, from shallow waters to depths of 330 m. One species is included in the Guide to Species.



Body entirely naked above and below

A single dorsal fin or no dorsal fins

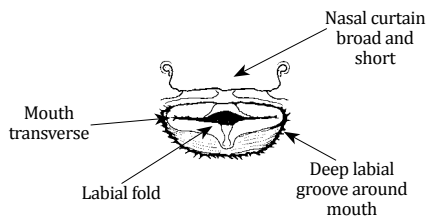


NARCINIDAE

Page 96

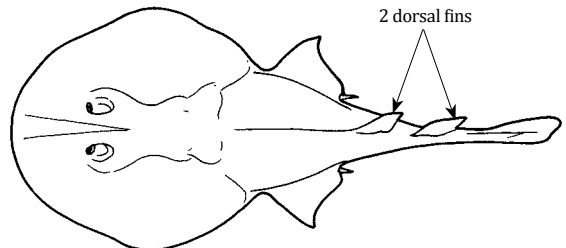
Numbfishes

To 66 cm. Demersal, from shallow waters to depths of 1 071 m. One species is included in the Guide to Species.



Body entirely naked above and below

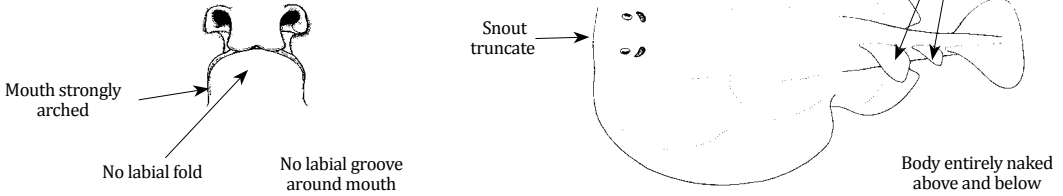
2 dorsal fins



TORPEDINIDAE

Torpedos

To 1.3 m. Demersal, from shallow waters to depths of 200 m. Two species are included in the Guide to Species.



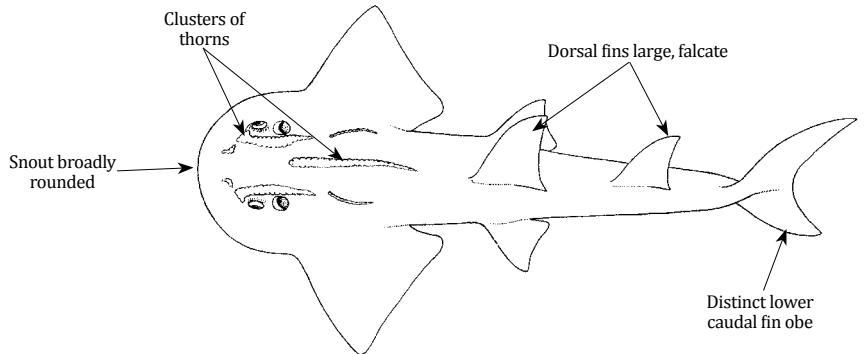
Order RAJIFORMES - Guitarfishes and Skates

Body elongate and shark-like with pectoral fins expanded and fused with head and trunk; tail stout not marked off from body, and without a spine.

RHINIDAE

Bowmouth guitarfish

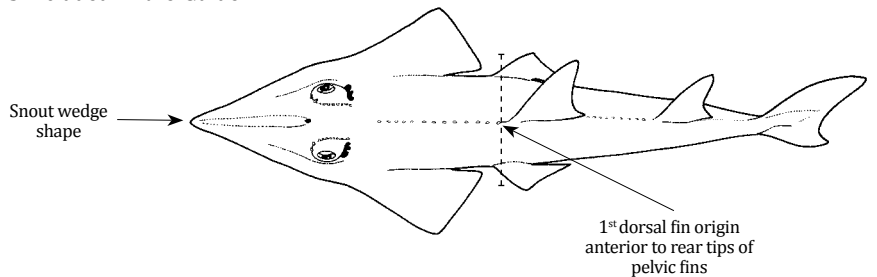
To 2.7 m TL. Demersal, from shallow waters to depths of 90 m. This family contains a single wide ranging Indo-West Pacific species which is included in the Guide to Species.



RHYNCHOBATIDAE

Wedgefishes

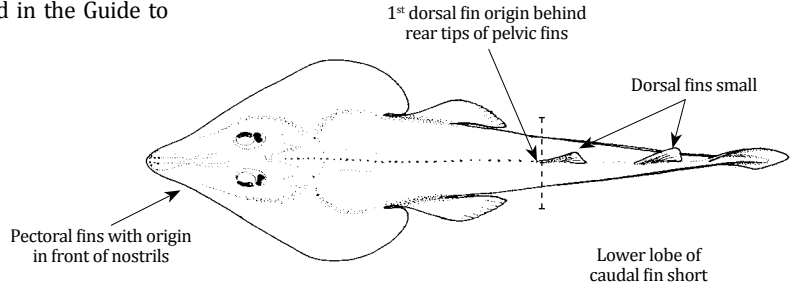
To 3 m TL. Demersal, in shallow waters to depths of at least 64 m. One species is included in the Guide to Species.



RHINOBATIDAE

Guitarfishes

To 3 m TL. Demersal, from shallow waters to depths of 366 m. Six species are included in the Guide to Species.

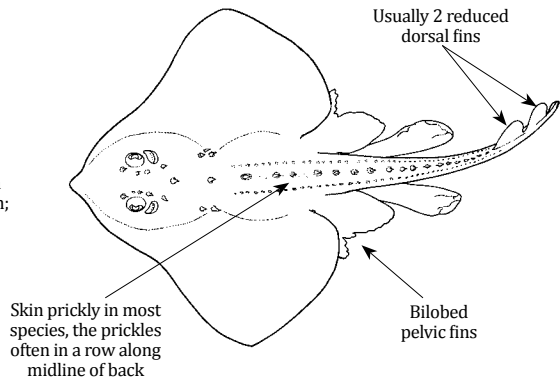


RAJIDAE

Skates

To 2.5 m TL. Demersal, rare in tropical shallow waters or near coral reefs. One species is included in the Guide to Species.

Disc quadrangular to rhomboidal; mouth transverse to arched, with numerous teeth; 5 pairs of ventral gill slits



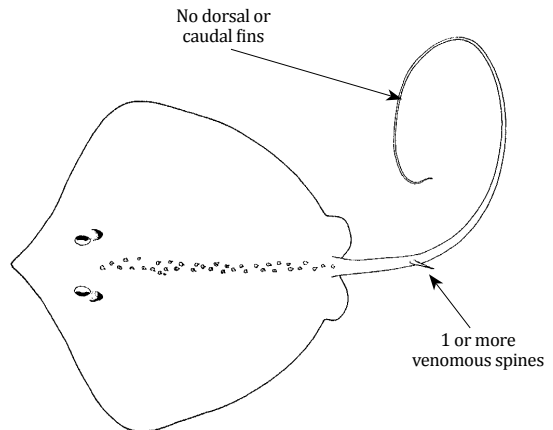
Order MYLIOBATIFORMES – Stingrays – Butterfly rays – Manta rays

Pectoral disc rhomboid, oval, or triangular in outline, elaborated into shaped wings in some forms; tail moderately stout to very slender; most species have one or more saw-edged spines or stings on the dorsal surface of the tail.

DASYATIDAE

Stingrays

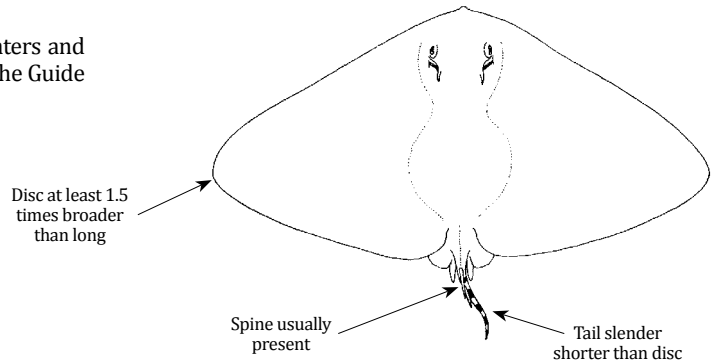
To 2 m disc width. Demersal, in coastal marine waters, enters freshwaters. Fourteen species are included in the Guide to Species.



GYMNURIDAE

Butterfly rays

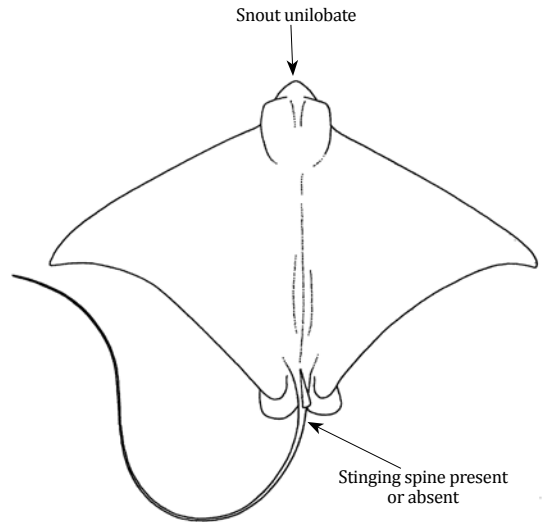
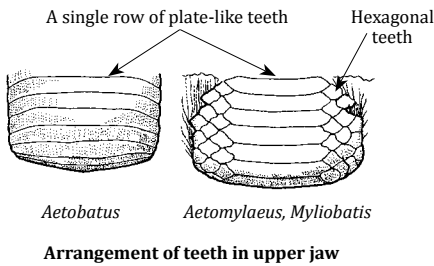
To 2.5 m disc width. Demersal, inshore waters and offshore banks. One species is included in the Guide to Species.



MYLIOBATIDAE

Eagle rays

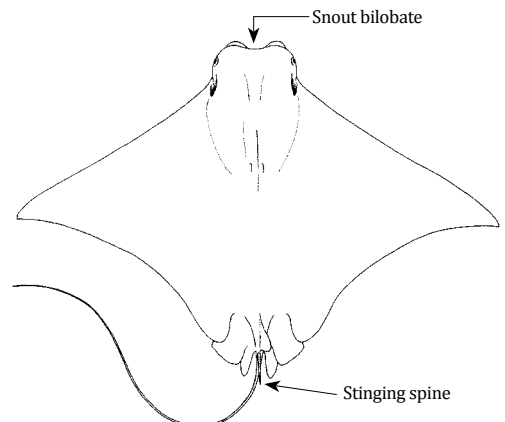
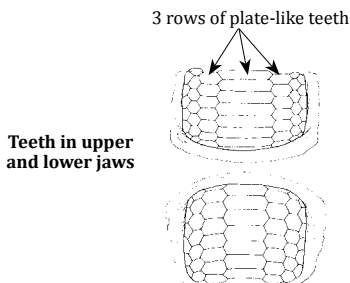
To 3 m disc width. Demersal, but often swim above the bottom in coastal waters. Four species are included in the Guide to Species.



RHINOPTERIDAE

Cownose rays

To 2.1 m disc width. Demersal, but often swim above the bottom in coastal waters. Two species are included in the Guide to Species.

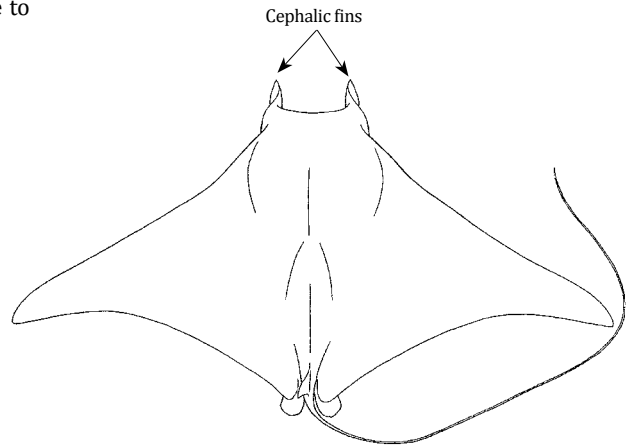


MOBULIDAE

Page 107

Manta rays - Devil rays

To 6.1 m disc width. Pelagic, in coastal and oceanic waters. Seven species are included in the Guide to Species.



PRISTIDAE

Sawfishes

Anoxypristis cuspidata (Latham, 1794) *

FAO names: Pointed sawfish (En)

Local name(s): Liara (Sin); Suddo, Blundo (Bal).

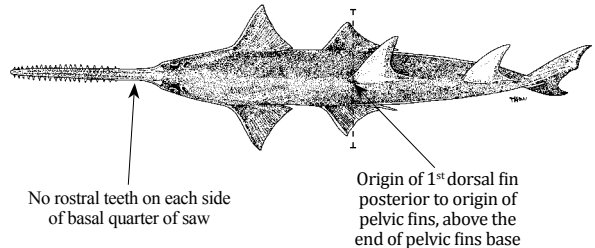
Habitat: Found inshore, often in river deltas and estuaries.

Fisheries: Incidental catches, mainly with set nets.

Distinctive Characters: Rostral teeth absent from basal quarter of saw; rostral teeth with sharp margins, falciform in adults and blade-like in young; pectoral fin bases narrow; caudal fin lunate with distinctive subterminal projection on upper lobe, and lower lobe well developed.

Colour: Grey above, white or greyish below, fins dusky, young dark grey, adults much paler and with greenish tinge.

Remarks: A very rare seriously threatened species possibly locally extinct in Pakistan.



Size: To 470 cm (TL)

Pristis pristis (Linnaeus, 1758)

FAO names: Common sawfish (En)

Local name(s): Liara (Sin); Suddo, Blundo (Bal).

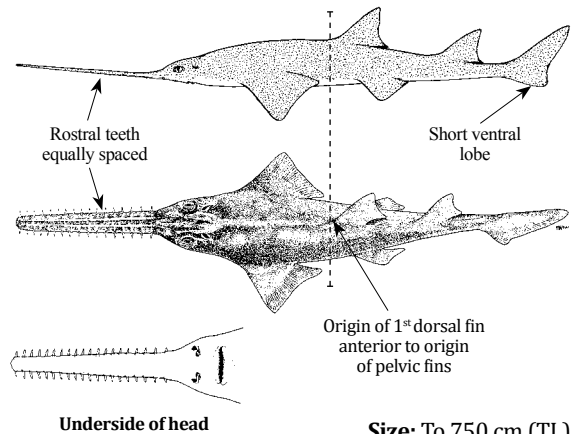
Habitat: Inshore and intertidal, and in fresh-water rivers and lakes.

Fisheries: Incidental catches, mainly with set nets.

Distinctive Characters: Rostral teeth present on basal quarter of saw; rostral teeth awl-like, with rounded anterior and flattened posterior margins, the posterior margin grooved in adults; falciform in adults and blade-like in young; pectoral fin bases broad; caudal fin without a subterminal notch but with a short ventral lobe.

Colour: Uniformly brownish above, whitish below.

Remarks: A very rare seriously threatened species. One large specimen misidentified as *Anoxypristis cuspidata* caught at Khajar Creek, River Indus mouth in June, 2013 (Moazzam and Osmany, 2015).



Size: To 750 cm (TL)

Pristis zijsron Bleeker, 1851 *

FAO names: Longcomb sawfish (En)

Local name(s): Liara (Sin); Suddo, Blundo (Bal).

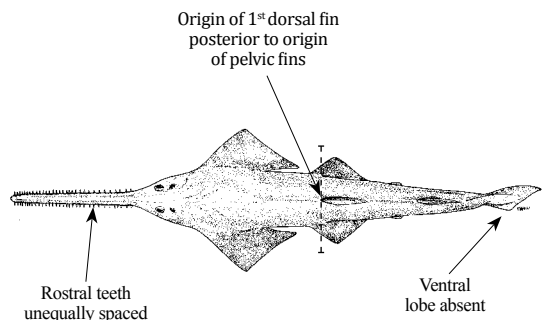
Habitat: Inshore and intertidal species known to enter freshwater in some areas.

Fisheries: Incidental catches, mainly with set nets.

Distinctive Characters: Similar to *Pristis pristis* but origin of dorsal fin posterior to pelvic fin insertion, about half way across the base of pelvic fin; rostral teeth on the anterior region of rostrum noticeably closer in comparison with those at posterior region; caudal fin with no ventral lobe.

Colour: Greenish grey above, white below.

Remarks: A very rare seriously threatened species possibly locally extinct in Pakistan.



Size: To 730 cm (TL)

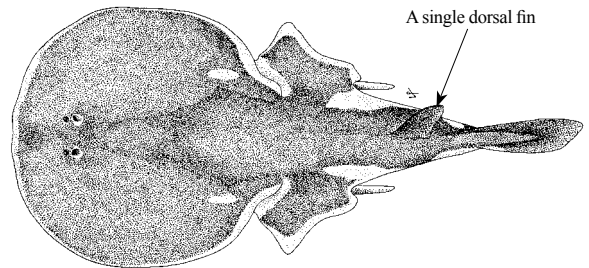
NARKIDAE

Sleeper rays

Narke dipterygia (Bloch & Schneider, 1801)

(Plate IV, 29)

FAO names: Spottail sleeper ray (En)

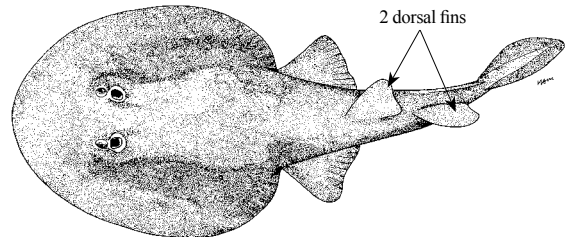
Local name(s): Kakoria, Takora, Bapha, Montar, Current pitan, Tankori, Bijli (Sin); Bootan (Bal).**Habitat:** Found in continental waters, both inshore and offshore.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body entirely naked above and below, without dermal denticles or thorns; margins of spiracles not raised or little raised above level of disc; pelvic fins angular.**Colour:** Dorsal surface plain brownish to greenish with white bars on sides of tail extending anteriorly to above rear pelvic fin bases; paired large white spots on rear of pectoral disc; ventral surface white.**Size:** To 18 cm (TL)**NARCINIDAE**

Numbfishes

Narcine timplei (Bloch & Schneider, 1801)

(Plate IV, 30)

FAO names: Brown numbfish(En)

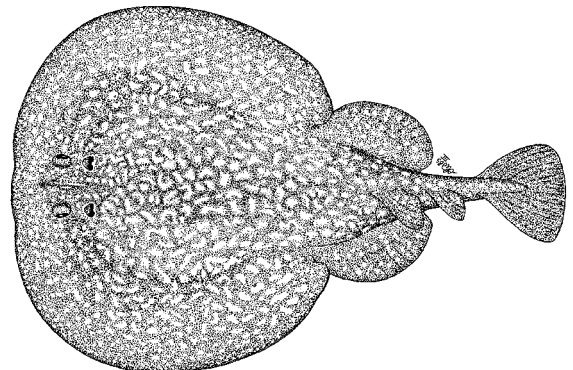
Local name(s): Kakoria, Takora, Bapha, Montar, Current pitan, Tankori, Bijli (Sin); Bootan (Bal).**Habitat:** Found in continental waters, both inshore and offshore.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Disc subtrapezoidal; body entirely naked above and below, without dermal denticles or thorns; tooth bands wide, broadly rounded.**Colour:** Uniform purplish-brown, brown, or tan dorsally devoid of any other markings.**Size:** To about 18 cm (TL)**TORPEDINIDAE**

Torpedos

Torpedo cf. panthera Olfers, 1831

(Plate IV, 31)

FAO names: Panther electric ray (En)

Local name(s): Kakoria, Takora, Bapha, Montar, Current pitan, Tankori, Bijli (Sin); Bootan (Bal).**Habitat:** Found on mud or sandy bottoms, from shallow water to a depth of 100 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Margin of spiracles with short tentacles or papillae; interdorsal distance is roughly equal to the distance between the 2nd dorsal and caudal fin.**Colour:** Somewhat variable, composed of small clusters of more or less isolated, and sometimes blurry whitish spots (much larger than sensory pore diameter) over the disc, pelvic fins, and tail.**Remarks:** Inclusion based on photographic record.**Size:** To 100 cm (TL)

Torpedo sinuspersici Olfers, 1831

(Plate IV, 32)

FAO names: Variable torpedo ray (En)

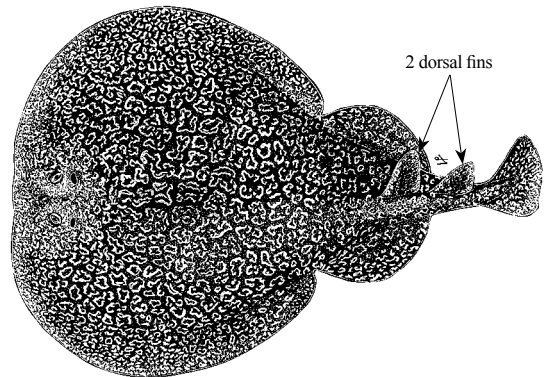
Local name(s): Kakoria, Takora, Bapha, Montar, Current pitan, Tankori, Bijli (Sin); Bootan (Bal).

Habitat: Found inshore in sandy bottoms, and well offshore from the surf zone down to 200 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Margin of spiracles with short tentacles or papillae; tail fin height much less than distance from upper tail fin origin to 1st dorsal fin.

Colour: Somewhat variable, composed of strong cream or whitish and rather thick vermiculations over disc, pelvic fins, and tail; many cream and irregular spots, no larger than eye diameter, on anterior and lateral disc regions.



Size: To 130 cm (TL)

RHINIDAE

Bowmouth guitarfish

Rhina ancylostoma Bloch & Schneider, 1801FAO names: Bowmouth guitarfish (En)
Angelot (Fr)

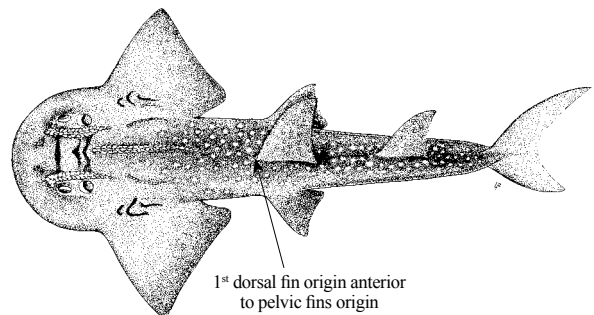
Local name(s): Bhuth-khair (Sin); Kobayyadri, Kohbaradri, Baradri (Bal).

Habitat: Inhabits coastal areas and on coral reefs, close inshore from 3 m to 90 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Snout rounded; heavy ridges with greatly enlarged denticles on back, over eyes and spiracles; caudal fin lunate, almost symmetrical.

Colour: Grey above, white below; numerous white spots dorsally on fins, body and tail; black spots on head and shoulders but no eyespots or ocelli.



Size: To 270 cm (TL)

RHYNCHOBATIDAE

Wedgefishes

Rhynchobatus laevis (Bloch & Schneider, 1801)

FAO names: Smoothnose wedgefish (En)

Local name(s): Seerole, Khair, Sail, Siroe, Kari (Sin); Zahro, Palore (Bal).

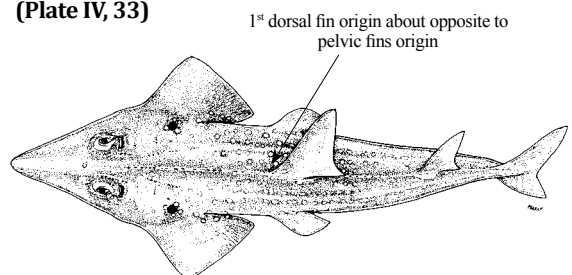
Habitat: Demersal inshore on the continental shelf.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Snout narrowly wedge-shaped; preorbital length usually over 17% of TL (young less than 50 cm TL); total free vertebral centra 149–158.

Colour: Olive-green above, white below (a black blotch sometimes on ventral side of snout); large black eyespots on pectoral fin bases; eye-brow like markings on the orbital membranes; rows of small white spots on trunk and tail of young (fading out in adults).

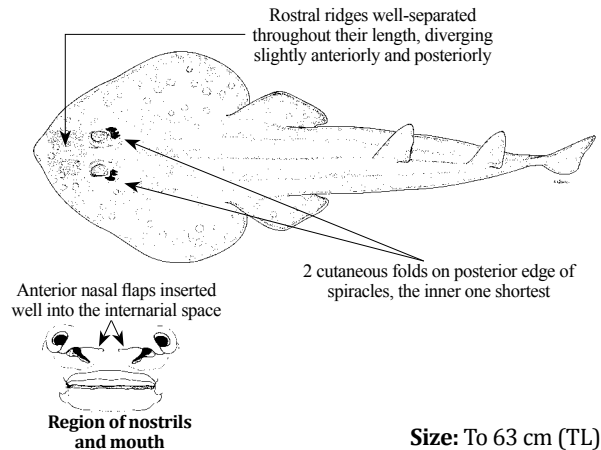
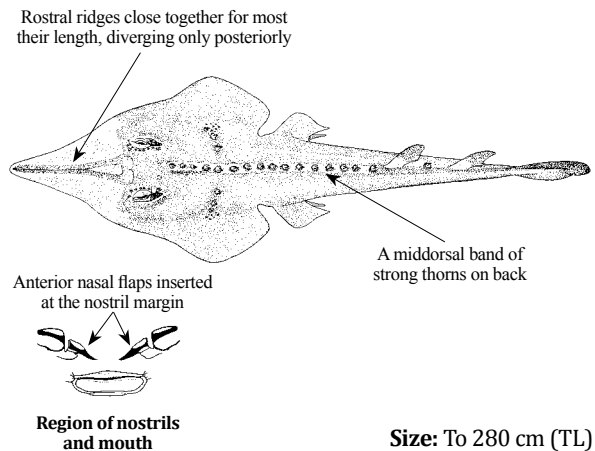
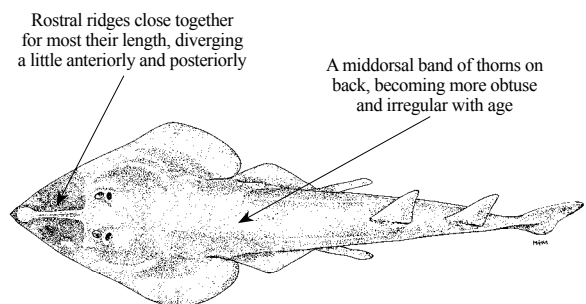
(Plate IV, 33)



Size: To at least 147 cm (TL)

RHINOBATIDAE

Guitarfishes

Acroteriobatus salalah (Randall & Compagno, 1995)**(Plate IV, 34)** **FAO names:** Salalah guitarfish (En)**Local name(s):** Rabba, Kairi, Seerol, Sail, Siroe, Cun-daree (Sin); Zahro (Bal).**Habitat:** Found inshore.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Snout short, bluntly pointed, its lateral margins slightly convex; preorbital length 8.7 in TL; nostrils with broad nasal flaps; anterior nasal flaps inserted well into the internarial space, almost to the snout midline (true of all *Acroteriobatus* species); no distinct series of spines (at least in adults).**Colour:** Tan dorsally with scattered, dark-edged, bluish white spots the size of pupil or a little larger on outer part of disc and on pelvic fins; whitish below.**Size:** To 63 cm (TL)***Glaucostegus cf. granulatus*** (Cuvier, 1829)**(Plate IV, 35)** **FAO names:** Granulated guitarfish (En)**Local name(s):** Rabba, Kairi, Seerol, Sail, Siroe, Cun-daree (Sin); Zahro (Bal).**Habitat:** Ranges from the intertidal to offshore continental shelves down to 119 m.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Snout long and anteriorly slender, its lateral margins straight or rather concave; preorbital length 4.7–4.9 in TL; subtransverse nostrils with narrow nasal flaps; anterior nasal flap inserted at the nostril margin (true of all *Glaucostegus* species); denticles enlarged on back and top of head; 2–3 thorns on each shoulder; a row of thorns median to spiracle and eye and on each rostral ridge.**Colour:** Grey-brown dorsally, except for large translucent area on snout to each side of rostral cartilages; whitish below.**Size:** To 280 cm (TL)***Glaucostegus halavi*** (Forsskål, 1775)**(Plate IV, 36)****FAO names:** Halavi guitarfish (En)**Local name(s):** Rabba, Kairi, Seerol, Sail, Siroe, Cun-daree (Sin); Zahro (Bal).**Habitat:** Found inshore.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Snout moderate, bluntly pointed, its lateral margins nearly straight; preorbital length 7.0–7.4 in TL; denticles enlarged on back and top of head; 1–2 thorns on each shoulder; a row of thorns median to spiracle and eye and on each rostral ridge; 2 cutaneous folds on posterior edge of spiracles, only the outer one well developed.**Colour:** Uniform tan dorsally, except for large translucent area on snout to each side of rostral cartilages; whitish below.**Size:** To 170 cm (TL)

***Glaucostegus obtusus* Müller & Henle, 1841**

Local name(s): Rabba, Kairi, Seerol, Sail, Siroe, Cun-daree (Sin); Zahro (Bal).

Habitat:

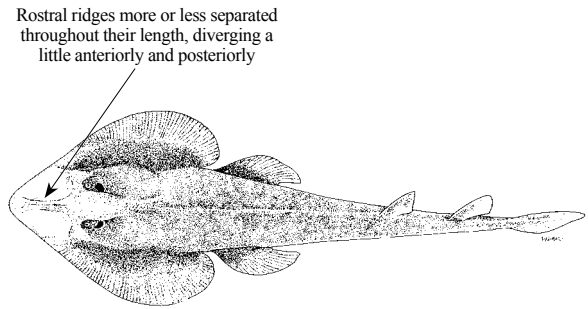
Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Snout short, broad-tipped, and obtusely pointed, its lateral margins scarcely concave; preorbital length 7.7–8.8 in TL; denticles enlarged on back and top of head; juveniles with preorbital, scapular and middorsal band of thorns on back; no distinct series of thorns or spines in adults; a single cutaneous fold on posterior edge of spiracles.

Colour: Adults ligh-brown (juveniles dark grey) dorsally, except for large traslucent area on snout to each side of rostral cartilages; whitish below.

(Plate V, 37)

FAO names: Bluntnose guitarfish (En)



Size: To 93 cm (TL)

***Rhinobatos* cf. *annandalei* Norman, 1926**

Local name(s): Rabba, Kairi, Seerol, Sail, Siroe, Cun-daree (Sin); Zahro (Bal).

Habitat: Demersal inshore on the continental shelf.

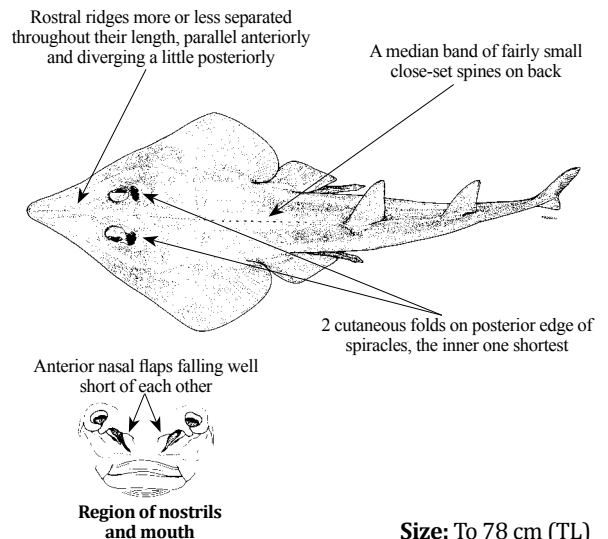
Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Snout moderate, bluntly pointed, its lateral margins a little concave; preorbital length 6.6–7.9 in TL; submarginal insertions of the anterior nasal flap falling well short of each other; skin covered with minute denticles, rather smooth to touch; 2–4 spines on each shoulder; a row of spines median to spiracle and eye.

Colour: No information available in the literature. Specimens collected in Pakistan brownish dorsally with small widely scattered white spots usually extending to, or behind 1st dorsal fin; ventral surface dirty white with sparse dusky blotches and dark edges on pectoral and pelvic fins.

(Plate V, 38)

FAO names: Annandale's guitarfish (En)



Size: To 78 cm (TL)

***Rhinobatos punctifer* Compagno & Randall, 1987**

Local name(s): Rabba, Kairi, Seerol, Sail, Siroe, Cun-daree (Sin); Zahro (Bal).

Habitat: Demersal inshore on the continental shelf.

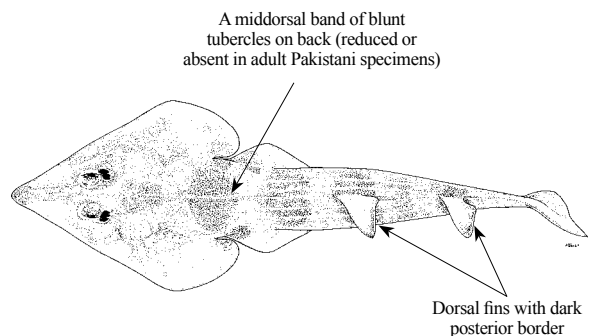
Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Similar to *Rhinobatos* cf. *annandalei* but disc narrower; spines on shoulders and median to spiracle and eye reduced or absent (at least in adult Pakistani specimens).

Colour: Extremely variable, from plain to richly ornate pattern consisting of wavy lines and ocelli. Most commonly, dorsal surface brownish grey with widely scattered white spots the size of pupil or smaller (not extending behind 1st dorsal fin in Pakistani specimens); ventral surface uniformly white except edges of pectoral and pelvic fins dark.

(Plate V, 39, 40)

FAO names: Spotted guitarfish (En)



Size: To 80.5 cm (TL)

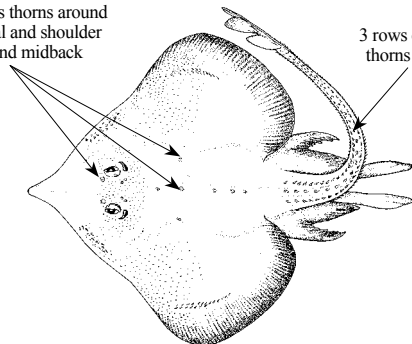
RAJIDAE

Skates

Amblyraja reversa (Lloyd, 1906)***Local name(s):** None.**Habitat:** Deep-water.**Fisheries:** No information available.**Distinctive Characters:** Disc shape subquadrate to subrhombic with outer disc corners angular; tail stout, usually less than the disc length.**Colour:** Disc surface white, becoming greyish at disc margins; pelvic fins greyish on upper surface; ventral surface of disc purplish-black.**Remarks:** This species is known only from a single specimen (holotype) collected off the Balochistan coast from a depth of about 1 500 m.**FAO names:** Reversed skate (En)

Conspicuous thorns around eyes, nuchal and shoulder region, and midback

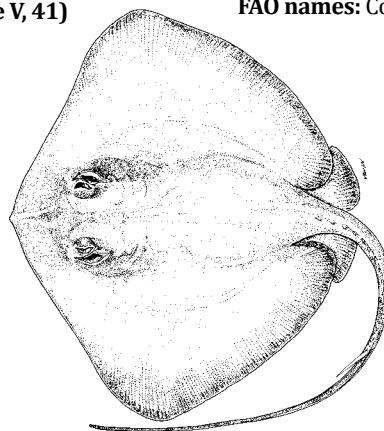
3 rows of large thorns on tail

**Size:** To 60 cm (TL)**DASYATIDAE**

Stingrays

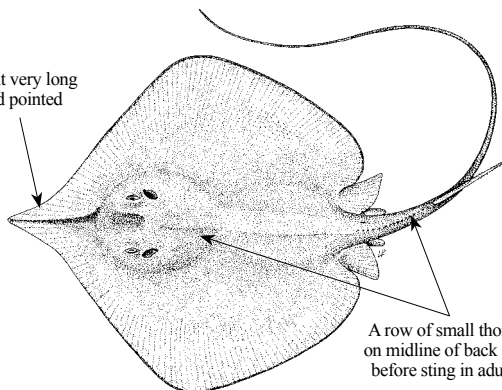
Dasyatis ushiei (Jordan & Hubbs, 1925)

(Plate V, 41)

FAO names: Cow stingray (En)**Local name(s):** Papri (Sin).**Habitat:** Demersal on insular and continental shelves, depth information not available.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Disc rhomboidal, its width less than 1.2 in disc length; anterior margin of disc angular; prominent skin fold present on ventral surface of tail; dorsal surface smooth, no median denticle band or enlarged tubercular thorns on back; very low ridge-like skin fold on dorsal tail beyond sting; large thorns on tail before sting.**Colour:** Dorsal surface dark grey, ventral surface of disc white with dark edge.**Size:** To 202 cm (DW)***Dasyatis zugei*** (Müller & Henle, 1841)**FAO names:** Pale-edged stingray (En)**Local name(s):** Papri (Sin).**Habitat:** Demersal on insular and continental shelves to a depth of at least 40 m.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Disc rhomboidal with broadly rounded apices; anterior margin of disc distinctly concave; tail relatively short; low skin fold on ventral surface of tail.**Colour:** Disc brownish dorsally, pale with dark edges ventrally.

Snout very long and pointed

A row of small thorns on midline of back and before sting in adults

**Size:** To 29 cm, common 18 cm (DW)

Himantura gerrardi (Gray, 1851)

(Plate V, 42)

FAO names: Whitespotted whipray (En)

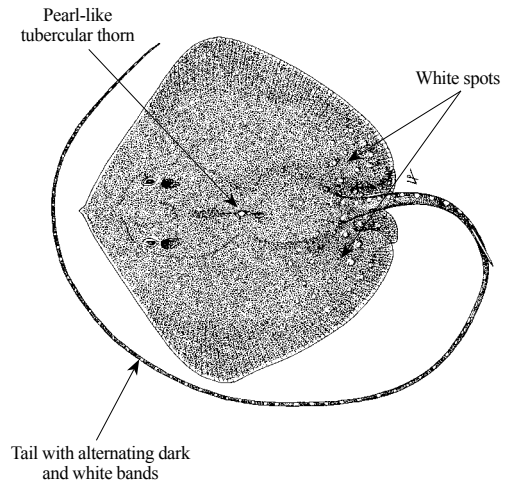
Local name(s): Pittan, Papri (Sin); Pittan, Uthar, Shikki (Bal).

Habitat: Demersal over sandy and mud bottoms from inshore to depths of at least 60 m; also found in river mouths.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Disc rhomboidal with narrowly rounded apices; anterior margin of disc almost straight; snout broadly triangular with small tip; tail very slender, elongate, whip-like beyond sting; denticle band narrow, not extending to tail base (in juveniles restricted to central disc); some enlarged denticles before and after pearl-like tubercular thorn; no cutaneous folds on tail.

Colour: Upper surface with diffuse white spots confined to posterior half of disc (sometimes spots very sparse, absent or also extending over anterior disc).



Size: To 85 cm (DW)

Himantura imbricata (Bloch & Schneider, 1801)

(Plate VI, 43)

FAO names: Scaly whipray (En)

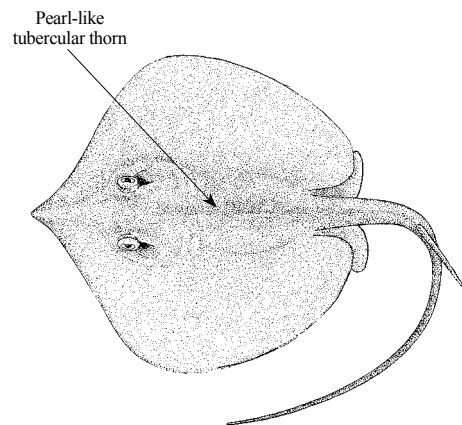
Local name(s): Pittan, Kutti, Papri (Sin); Pittan, Uthar (Bal).

Habitat: Littoral on mud or muddy-sand bottoms to depths of about 30 m; also found in estuarine habitats.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Disc hemispherical; anterior margin of disc markedly concave; snout acutely pointed; tail short, as long or slightly longer than disc in adults (longer in young); a broad median denticle band from interorbital to base of spine on tail; low dorsal and ventral cutaneous folds on tail.

Colour: Orangish brown, shading to light brown distally on disc, the zone of denticles on back grey-brown; pale with darker edges ventrally.



Size: To 25 cm (DW)

Himantura leoparda Manjaji-Matsumoto & Last, 2008

(Plate VI, 44)

FAO names: Leopard whipray (En)

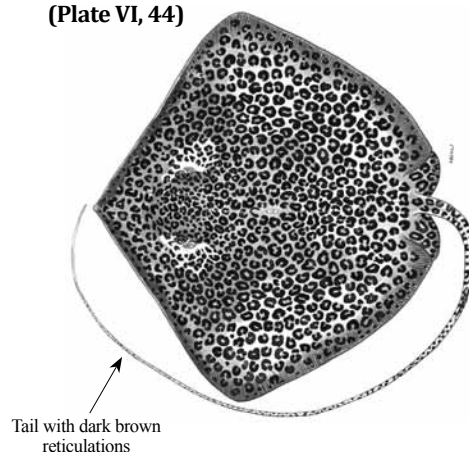
Local name(s): Chita (Sin).

Habitat: Occurs mainly inshore and coastal to depths of at least 70 m.

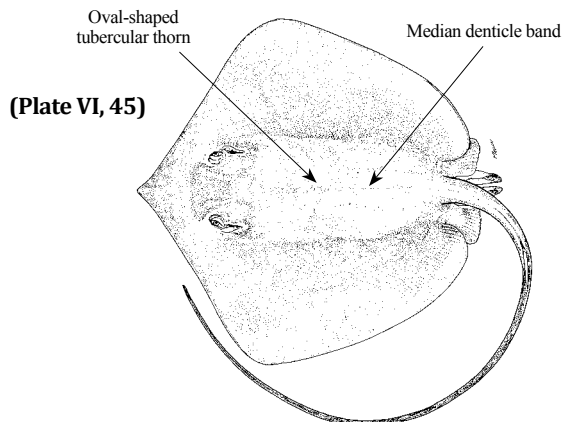
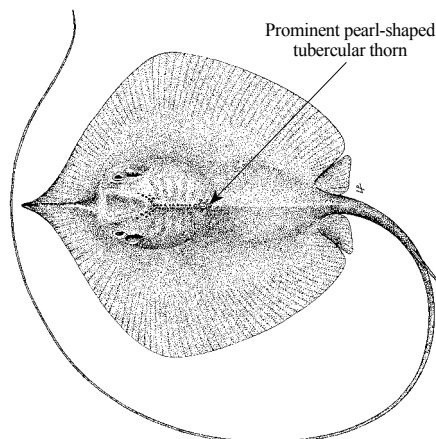
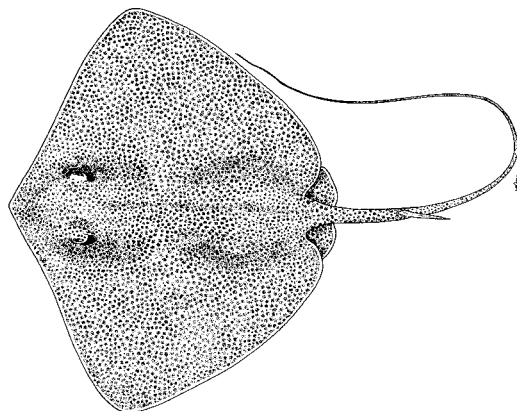
Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Disc rhomboidal with weakly angular to narrowly rounded apices; anterior margin of disc double convex; snout with a distinct apical lobe; tail slender, whip-like, tapering gently toward the sting; median denticle band narrow, poorly developed; a single row of enlarged heart-shaped denticles on back.

Colour: Dorsal surface covered with leopard-like spots in adults and large dark brown polygonal spots in young (<55 cm DW); ventral disc surface uniformly pale; tail of juveniles with a row of dark spots up to sting and with white and black bands beyond sting.



Size: To 110 cm (DW)

Himantura cf. randalli Last, Manjaji-Matsumoto & Moore, 2012**FAO names:** Arabian banded whipray (En)**Local name(s):** Papri (Sin).**Habitat:** Demersal over sandy and mud bottoms from inshore to depths of at least 40 m.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Disc weakly rhomboidal with rounded apices; anterior margin of disc almost straight; snout with a weak apical lobe; tail slender, whip-like, tapering gradually toward the sting; a broad median denticle band from interorbital to base of spine on tail.**Colour:** Dorsal surface uniformly coloured; ventral disc uniformly whitish; darker dorsal surface of tail sharply demarcated from paler ventral surface in adults; tail in juveniles dark with conspicuous white saddles, its distal portion usually uniformly dark.**Size:** To 41 cm (DW)***Himantura bleekeri*** (Blyth, 1860)**FAO names:** Bleeker's whipray (En)**Local name(s):** Papri (Sin).**Habitat:** Demersal over sandy and mud bottoms from inshore to depths of at least 40 m.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Disc subrhomboidal with broadly rounded apices; anterior margin of disc distinctly concave; snout narrow and acutely pointed; tail very elongate and slender, whip-like beyond sting; a very broad median denticle band from well before interorbit, extending along centre of disc and onto upper tail; no cutaneous folds on tail.**Colour:** Uniform dark brown or yellowish (greyish green in juveniles) above; greyish brown (white in juveniles) ventrally, with darker margin of disc and tail; dorsal tip of snout, lower jaw, base of pelvic fins, and some areas of belly usually white**Size:** To 119 cm (DW)***Himantura uarnak*** (Gmelin, 1789)**(Plate VI, 46)****FAO names:** Reticulate whipray (En)**Local name(s):** Chitto, Chitta (Sin); Garamari, Garabari (Bal).**Habitat:** Inshore ray occurring on soft substrates; often intertidal, but to depths of at least 50 m.**Fisheries:** Gillnets, bottom trawls, line gears.**Distinctive Characters:** Disc rhomboidal with narrowly rounded apices (broadly rounded in juveniles); snout broadly triangular, tip pointed; tail very elongate and slender, whip-like beyond sting; no cutaneous folds on tail; a broad median denticle band from interorbit, extending along centre of disc and onto upper tail; primary denticles inconspicuous.**Colour:** Dorsal surface covered with small black spots or fine reticulations in adults. Juveniles yellowish or brownish with dense array of small, dark brown spots (spaces between spots much narrower than 1/2 largest spot).**Size:** To 200 cm (DW)

Neotrygon kuhlii (Müller & Henle, 1841)

FAO names: Blue-spotted stingray (En)

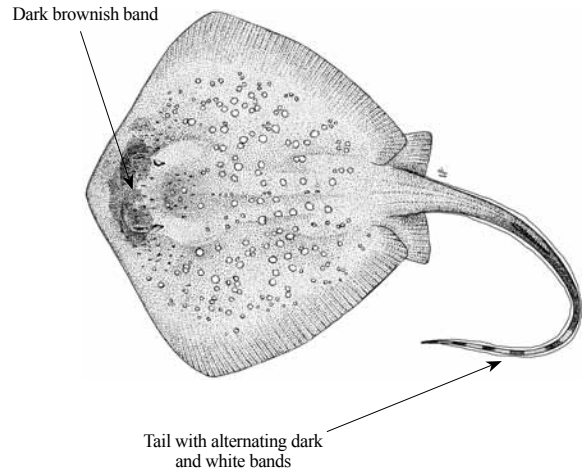
Local name(s): Kutti, Gadumb, Chitti, Pittan, Papri (Sin); Phulano (Bal).

Habitat: Inshore species living mainly on sandy substrates to a depth of 90 m.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Disc rhomboidal with somewhat angular (narrowly rounded in juveniles) apices; anterior margin almost straight; snout broadly rounded, tip seldom pointed; tail relatively broadbased, slightly depressed, slender and rather compressed beyond sting; denticles confined to single row of short, thorn-like elements along disc midline; cutaneous tail folds prominent.

Colour: Dorsal surface greyish, greenish, or brownish with prominent bluish spots or bluish white dark-edged ocelli; spots and ocelli variable in size and number; ventral surface mostly pale, slightly darker around disc margin.



Size: To 38 cm (DW)

Pastinachus sephen (Forsskål, 1775)

(Plate VI, 47)

FAO names: Cowtail stingray (En)
Pastenague plumetée (Fr)

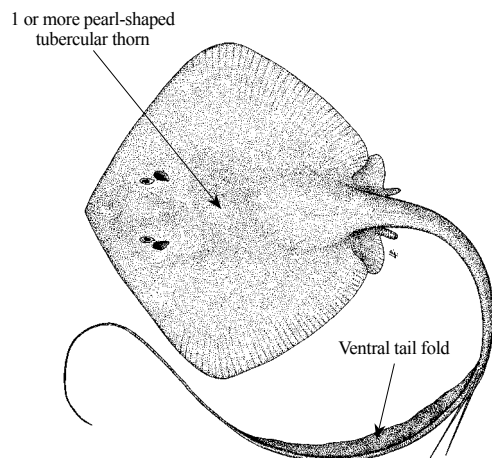
Local name(s): Gadum, Pittan, Papri (Sin); Pittandumb, Shikki (Bal).

Habitat: Coastal waters in lagoons, reef flats, and reef faces and estuaries down to 60 m.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Disc rhomboidal with broadly rounded apices; anterior margin of disc almost straight to slightly convex; snout broadly rounded, tip blunt; tail long and broad-based, less than twice body length; sting/s located well behind pelvics; median denticle band extending from near snout tip onto upper surface of tail; ventral tail fold high (2–3 times of tail depth above fold) but not reaching tail tip; no upper caudal tail fold.

Colour: Upper surface uniform, greyish brown to black; tail fold and tip black; ventral surface mostly white.



Size: To 180 cm (DW)

Pteroplatytrygon violacea (Bonaparte, 1832)

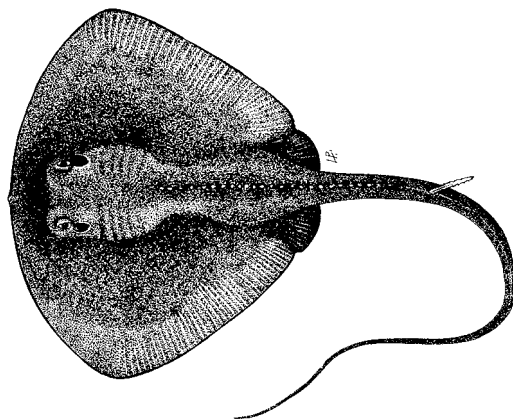
Local name(s): Pittan, Papri (Sin); Khadda pittan (Bal).

Habitat: Found in open waters usually in the first 100 m.

Fisheries: Driftnets, line gears.

Distinctive Characters: Disc trapezoidal with angular pectoral fin tips; anterior margin uniformly convex; tail long and whip-like with a prominent stinging spines; denticles confined to a single row of small, thorns along disc midline in adults; ventral tail fold very low, terminating well before tail tip.

Colour: Upper surface uniform dark purple to black; ventral surface almost entirely dark, but usually slightly lighter than dorsal surface.



Size: To 62 cm (DW), 163 cm (TL)

FAO names: Pelagic stingray (En)
Pastenague violette (Fr)

Taeniura lymma (Forsskål, 1775)*

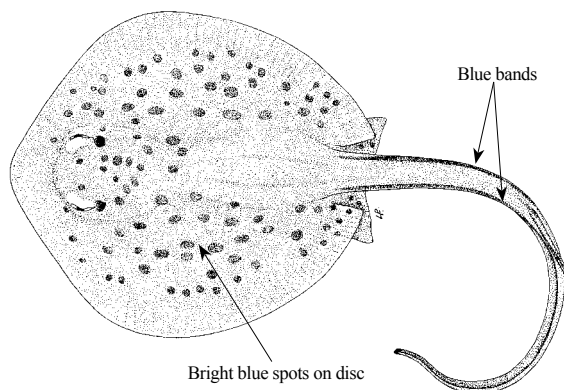
Local name(s): Pittan, Papri (Sin); Pittan, Shikki (Bal).

Habitat: Sandy bottoms of coastal waters down to 20 m.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Disc oval; anterior margin slightly convex; snout bluntly rounded, tip not pointed; tail rather broad-based, depressed, relatively short (about 1.5 disc width when undamaged), tapering rapidly to sting; mostly with 2 stings located well behind pelvis; disc smooth, except for patch of small, widely spaced thorns in nuchal area; ventral tail fold extending to tail tip.

Colour: Golden-brown with blue spots on disc and 2 broad blue bands on tail before sting.



Size: To 35 cm (DW), 70 cm (TL)

FAO names: Bluespotted ribbontail ray (En)
Pastenague queue à ruban (Fr)

Taeniurops meyeri (Müller & Henle, 1841)

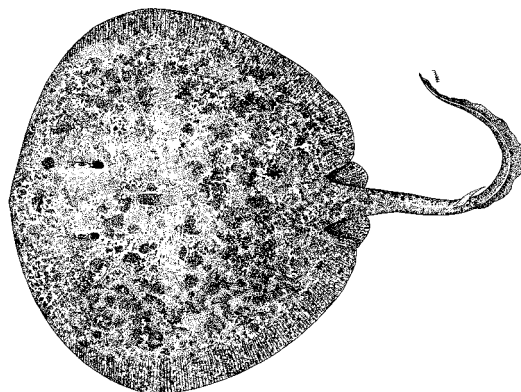
Local name(s): Pittan, Papri (Sin); Limpi, Pittan, Shikki (Bal).

Habitat: Benthic around coral reef habitats and on sand substrates from the surf zone to 439 m.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Disc subcircular; anterior margin uniformly convex, tip not pointed; tail short (length slightly longer than disc width when undamaged), relatively broad-based, depressed, tapering rapidly at sting; disc surface covered uniformly with short, widely-spaced granulations, no thorns; ventral tail fold prominent, extending to tail tip, several times deeper than tail above; dorsal tail fold absent.

Colour: Dorsal surface mottled, black and white (sometimes brownish); ventral surface of disc uniformly pale; tail uniformly black behind sting.



Size: To 180 cm (DW), 330 cm (TL)

(Plate VI, 48)

FAO names: Round ribbontail ray (En)
Pastenague éventail (Fr)

Urogymnus asperrimus* (Bloch & Schneider, 1801)

FAO names: Porcupine ray (En)

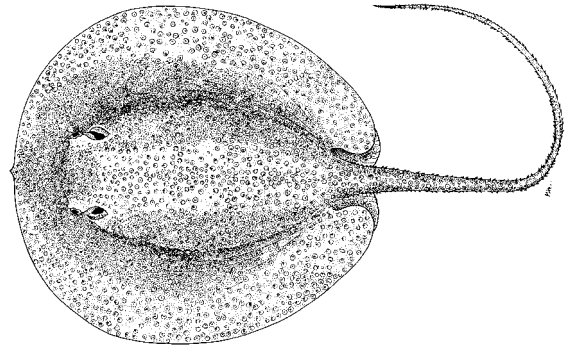
Local name(s): Pittan, Papri (Sin); Pittan (Bal).

Habitat: Demersal, in inshore waters.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: A heavily armored stingray lacking a venomous spine on tail; young with large, flat denticles on upper surface, and large juveniles and adults with additional sharp conical thorns and small pointed denticles; very thick elongated disc with broadly rounded outer corners; snout broadly rounded and tail slender; about as long as body and without cutaneous folds.

Colour: Disc light grey or whitish above, white below; tail tip blackish.



Size: To 147 cm (DW), 220 cm (TL)

GYMNURIDAE

Butterfly rays

***Gymnura poecilura* (Shaw, 1804)**

(Plate VII, 49)

FAO names: Long-tailed butterfly ray (En)

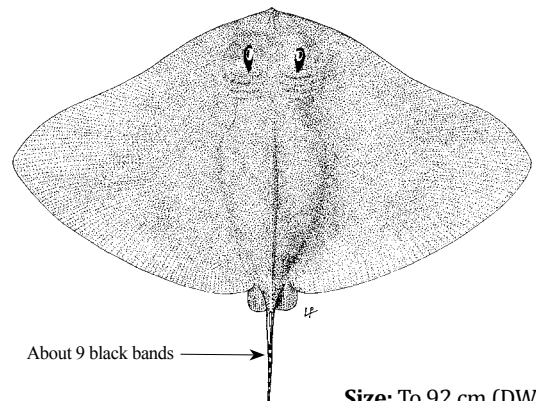
Local name(s): Bapha, Phappa (Sin); Phappo (Bal).

Habitat: Occurs in shallow inshore waters

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Disc lozenge-shaped, at least twice as broad as long; dorsal fin absent; no tentacle on posterior margin of spiracle; usually a small venomous spine on tail base.

Colour: Dorsal surface usually plain, sometimes with faint pale spots; ventral side white to creamy white; tail distinctly cross-banded.



About 9 black bands

Size: To 92 cm (DW)

MYLIOBATIDAE

Eagle rays

***Aetobatus flagellum* (Bloch & Schneider, 1801)**

FAO names: Longheaded eagle ray (En)

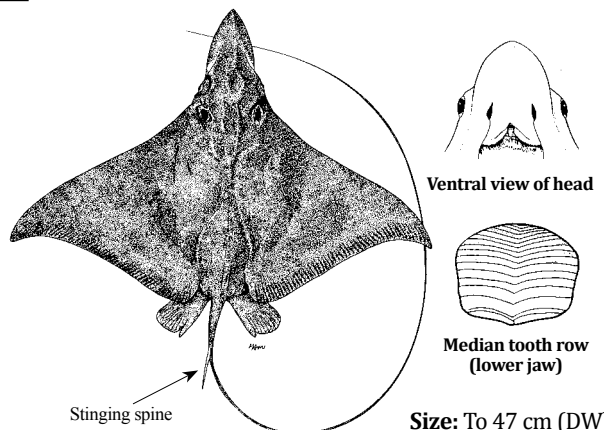
Local name(s): Magol, Kutti, Cheel (Sin); Chombo, Golat, Mushuk pitan (Bal).

Habitat: Inhabits inshore waters; also found in estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Disc diamond-shaped, very broad but relatively short; snout very long, narrowly rounded; skin smooth; teeth a single row in both jaws, those in lower jaw chevron-shaped; nasal curtain deeply notched (the last two characters valid for all *Aetobatus* species).

Colour: Dorsal disc surface plain, unspotted; ventral surface white.



Stinging spine

Size: To 47 cm (DW)

Aetobatus ocellatus (Kuhl, 1823)

(Plate VII, 50)

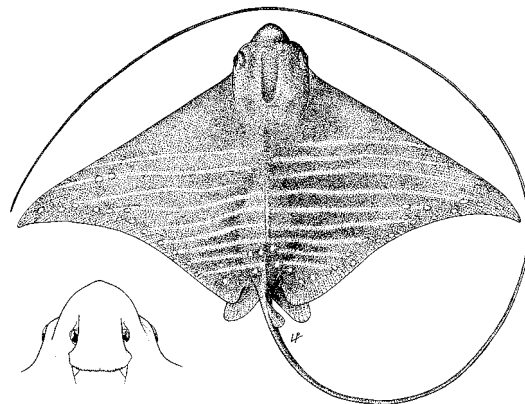
FAO names: Spotted eagle ray (En)
Aigle de mer léopard (Fr)**Local name(s):** Magol, Kutti, Cheel (Sin); Chombo, Golat, Mushuk pitan (Bal).**Habitat:** Coastal waters, down to 60 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Snout moderately long, broadly rounded; skin smooth; teeth a single row in both jaws, those in lower jaw chevron-shaped; nasal curtain deeply notched; tail and stinging spine very long (281% of DW and 9.7% of DW, respectively).**Colour:** Dorsal surface dark greenish grey to almost blackish, variably white spotted; white below.

Size: To 300 cm (DW)

Aetomylaeus milvus (Müller & Henle, 1841)

(Plate VII, 51)

FAO names: Not available (En)

Local name(s): Magol, Kutti, Cheel (Sin); Chombo, Golat, Mulla pitan (Bal).**Habitat:** Found inshore**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Disc much wider than long; head flattened dorsally with a prominent rostral lobe; teeth in 7 rows in both jaws, a long median one and 3 smaller ones on each side; edge of nasal curtain near mouth almost straight (the last two characters valid for all *Aetomylaeus* species); dorsal fin origin slightly forward or opposite to pelvic fin insertions; stinging spine absent.**Colour:** Dorsal surface greenish brown with yellowish transverse bands, breaking down to spots and blotches along posterior margins; white below.

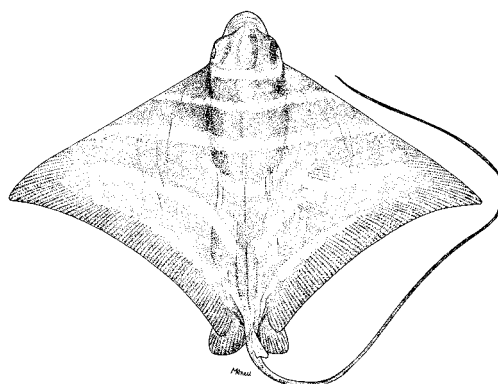
Ventral view of head

Size: To about 90 cm (DW)

Aetomylaeus nichofii (Bloch & Schneider, 1801)

(Plate VII, 52)

FAO names: Banded eagle ray (En)

Local name(s): Magol, Kutti, Cheel (Sin); Chombo, Golat, Mulla pitan (Bal).**Habitat:** inshore and offshore, ranging from the intertidal zone to a depth of at least 70 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Disc much wider than long; head flattened dorsally with a prominent rostral lobe; teeth in 7 rows in both jaws, a long median one and 3 smaller ones on each side; edge of nasal curtain near mouth almost straight; dorsal fin origin slightly forward or opposite to pelvic fin insertions; stinging spine absent.**Colour:** Dorsal disc surface yellowish or brownish with 5 pale blue cross bands, inconspicuous or absent in large specimens.

Size: To 65 cm (DW)

RHINOPTERIDAE

Cownose rays

Rhinoptera javanica Müller & Henle, 1841

(Plate VII, 53)

FAO names: Flapnose ray (En)
Mourine javanaise (Fr)

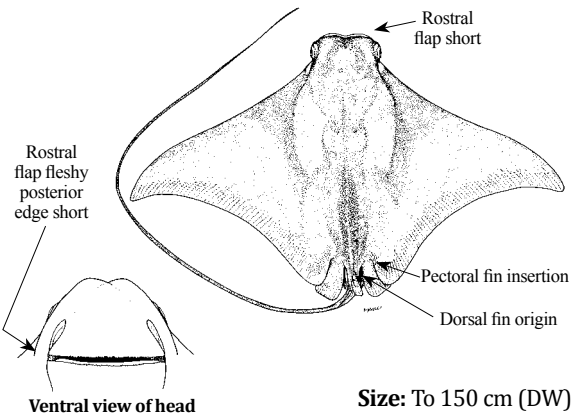
Local name(s): Gaim, Magole (Sin); Do-lunt (Bal).

Habitat: Most common inshore in bays, estuaries and near coral reefs.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Snout strongly notched medially to form two lobes; head relatively narrow, its width at spiracle 14.5–16% of DW; fleshy posterior edge of rostral flap not (or just) reaching mouth; tail long, about 2.6–3.4 in disc length (when undamaged); dorsal fin origin distinctly behind pectoral fin insertions; posterior margin of dorsal fin strongly concave; sting (when present) behind dorsal fin free rear tip.

Colour: Disc plain brown above, white below; no conspicuous markings.



Size: To 150 cm (DW)

Rhinoptera jayakari Boulenger, 1895

(Plate VII, 54)

FAO names: Oman cownose ray (En)

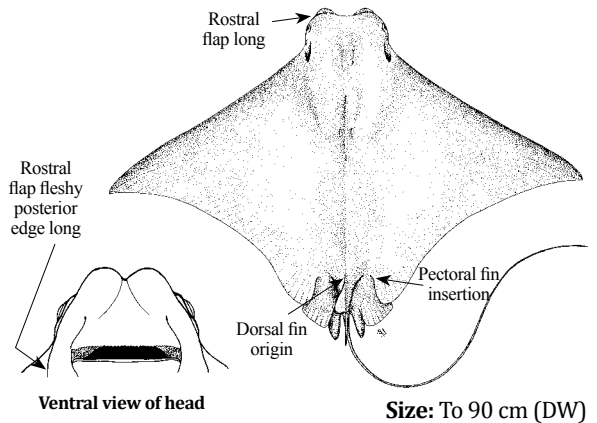
Local name(s): Gaim, Magole (Sin); Do-lunt (Bal).

Habitat: Usually pelagic in large schools, near the coast and well offshore.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Similar to *Rhinoptera javanica* but head broader, its width at spiracle 16.5–17.5% of DW; fleshy posterior edge of rostral flap extending past mouth (almost to 1st gill slit); tail shorter, about 1.4–1.8 in disc length (when undamaged); dorsal fin origin over or slightly forward of pectoral fin insertions; posterior margin of dorsal fin almost straight; sting (when present) beneath dorsal fin inner margin.

Colour: Olivaceous above, white below; tail black distally.



Size: To 90 cm (DW)

MOBULIDAE

Manta rays – Devil rays

Manta alfredi (Kreff, 1868)*

FAO names: Alfred’s manta (En)

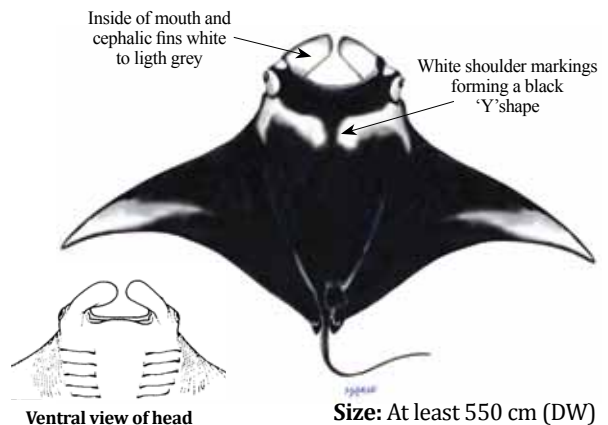
Local name(s): Karunj (Sin); Karunj (Bal).

Habitat: This species is commonly sighted inshore (within a few kilometers) and around islands.

Fisheries: Driftnets.

Distinctive Characters: A giant ray having an extremely broad head with long anterior horns or flaps; disc width 2.2–2.4 in its length; mouth on front of head (true of all *Manta* species); tail slender and whip-like about equal or longer than disc length; no stinging spine on tail.

Colour: Dorsal surface black with pale to white markings on shoulders; ventral surface mostly cream to white, occasionally with dark spots or patches between gills and on abdomen.



Size: At least 550 cm (DW)

Manta birostris (Walbaum, 1792)

Local name(s): Karunj (Sin); Karunj (Bal).

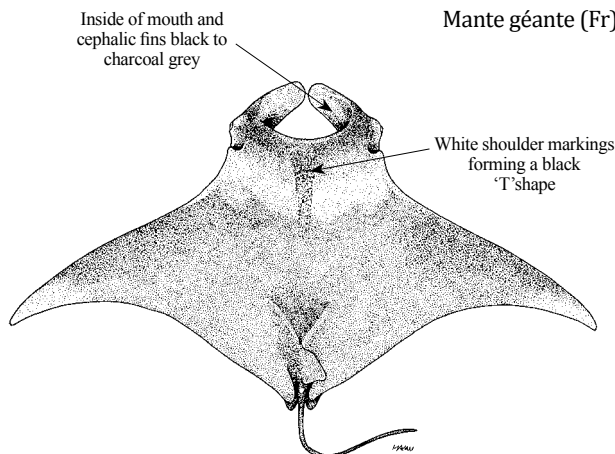
Habitat: This species is commonly sighted offshore, around islands and seamounts.

Fisheries: Driftnets.

Distinctive Characters: A giant ray having an extremely broad head with long anterior horns or flaps; disc width 2.2 its length; mouth terminal (on front of head); tail slender and whip-like shorter than disc length; stinging spine mostly encased in a calcified mass on tail base.

Colour: Dorsal surface black to dark brown, with conspicuous white shoulder patches; ventral surface mostly cream to white (sometimes almost completely black) with dark spots or patches mostly on the abdomen region, but between the gills; posterior gill slits often with black flaring.

FAO names: Giant manta (En)
Mante géante (Fr)



Size: To 610 cm (DW)

Mobula eregoodootenkee (Bleeker, 1859)

Local name(s): Karunj (Sin); Karunj (Bal).

Habitat: Pelagic, in coastal and oceanic waters.

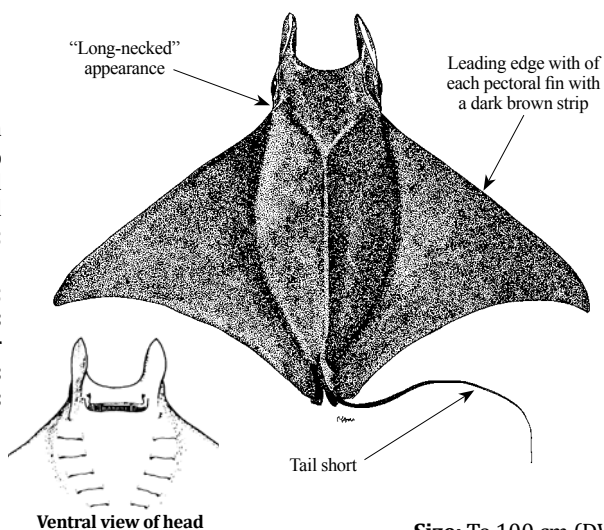
Fisheries: Driftnets, gillnets.

Distinctive Characters: A small devil ray with a long head and long prominent cephalic fins (>16% DW); mouth on underside of head (true of all *Mobula* species); disc broader than long; small dorsal fin at base of tail without a stinging spine; tail short, length less than disc width.

Colour: Dorsal surface uniformly greyish brown; tip of dorsal fin may or may not be white (varies regionally); ventral surface white with dark anterior pectoral fin margins; dark dorsal coloration extends onto anterior ventral surface of both pectoral fins about midway along the leading edge.

(Plate VII, 55)

FAO names: Longhorned mobula (En)



Size: To 100 cm (DW)

Mobula japonica (Müller & Henle, 1841)

Local name(s): Karunj (Sin); Karunj (Bal).

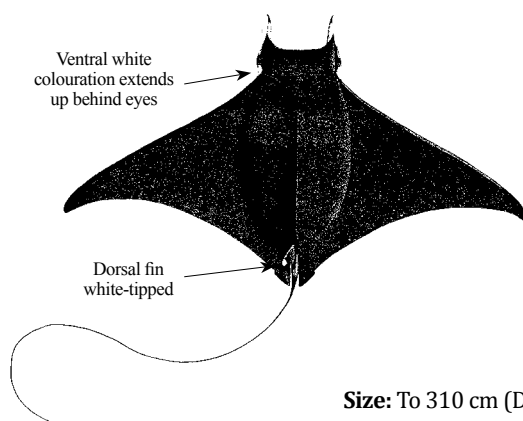
Habitat: Pelagic, in coastal and oceanic waters. Occurs singly or in groups

Fisheries: Driftnets, gillnets.

Distinctive Character: A medium-size devilray with a short head and cephalic fins; spiracles slit-like, located above disc edge; anterior disc margin straight or slightly curved; sharply pointed wing tips; tail very long, about equal to or longer than disc width; a short, serrated stinging spine on tail.

Colour: Bright blue to black above, white ventrally; dark band edged with lighter areas on posterior of head.

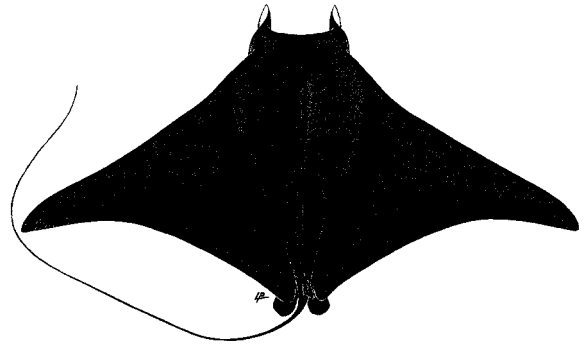
FAO names: Spinetail mobula (En)



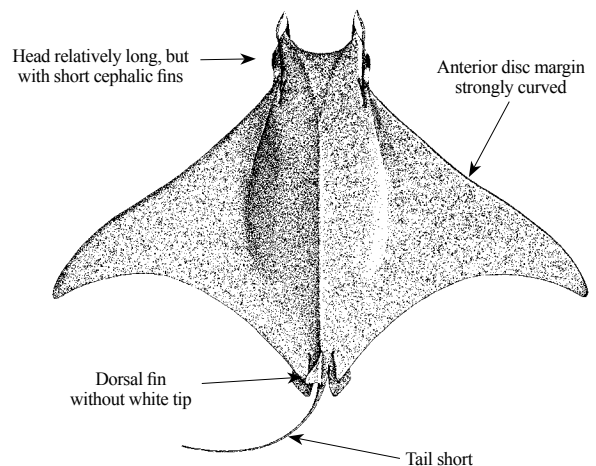
Size: To 310 cm (DW)

Mobula kuhlii (Müller & Henle, 1841)

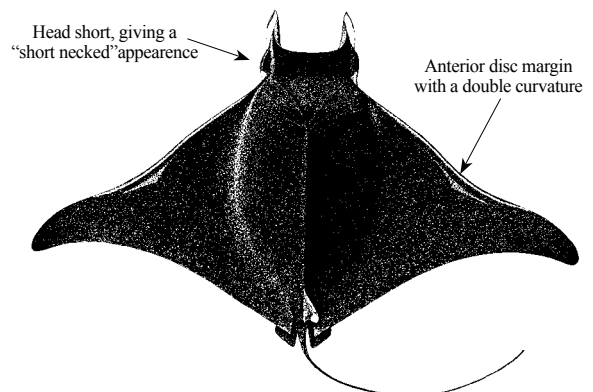
(Plate VII, 56)

FAO names: Lesser devilray (En)
Petit diable (Fr)**Local name(s):** Karunj (Sin); Karunj (Bal).**Habitat:** Known from continental coastal areas and not extending into the epipelagic zone and off oceanic islands.**Fisheries:** Gillnets.**Distinctive Character:** A small devilray with a short head bearing short cephalic fins (<16% DW); dorsal fin often white tipped; spiracles subcircular; located beneath disc edge; tail of variable size, usually shorter than disc; no stinging spine on tail.**Colour:** Grey-brown to blue black above, white below.**Size:** To 120 cm (DW)***Mobula tarapacana*** (Philippi, 1892)

FAO names: Sicklefyn devilray (En)

Local name(s): Karunj (Sin); Karunj (Bal).**Habitat:** Pelagic, in coastal and oceanic waters.**Fisheries:** Driftnets, gillnets.**Distinctive Characters:** A large devil ray with a long head, but short cephalic fins; anterior disc margins strongly curved; dorsal fin at base of tail without a stinging spine; tail short, length less than disc width.**Colour:** Uniformly olive-brown dorsally, white ventrally with a darker area along the rear margins of disc with a jagged anterior edge; often a dark area extending patchily from cephalic fins posteriorly along the gill areas.**Size:** To 340 cm (DW)***Mobula thurstoni*** (Lloyd, 1908)

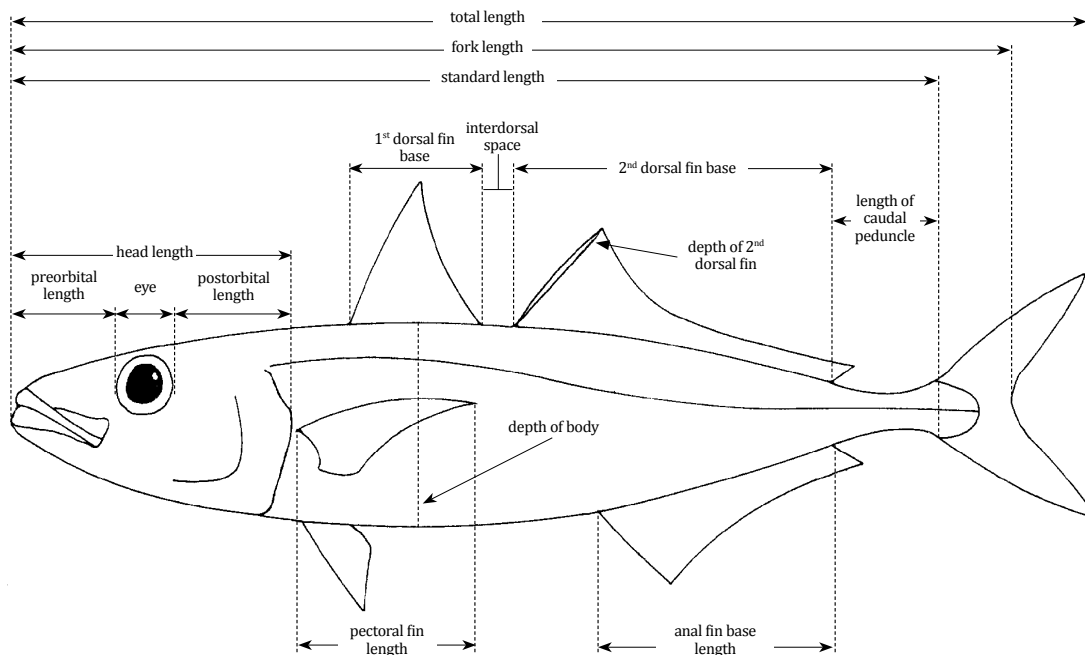
FAO names: Smoothtail mobula (En)

Local name(s): Karunj (Sin); Karunj (Bal).**Habitat:** Inshore and offshore of coastal continental waters.**Fisheries:** Gillnets.**Distinctive Characters:** A moderate size devil ray with a short head and short cephalic fins; anterior disc margins with a double curvature; fin at base of tail without a stinging spine; tail as long as disc (if not damaged) width.**Colour:** Dorsal surface dark blue to black (a dark band behind head, fades after death), ventral surface white down the middle, with silvery-bronzy fin tips; dorsal fin white tipped.**Size:** To 180 cm (DW)

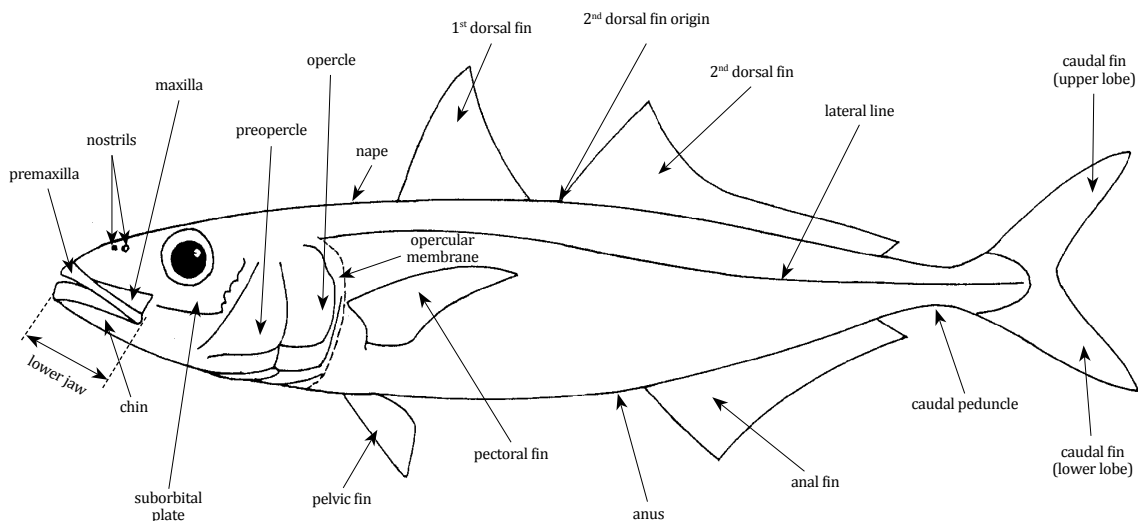
BONY FISHES

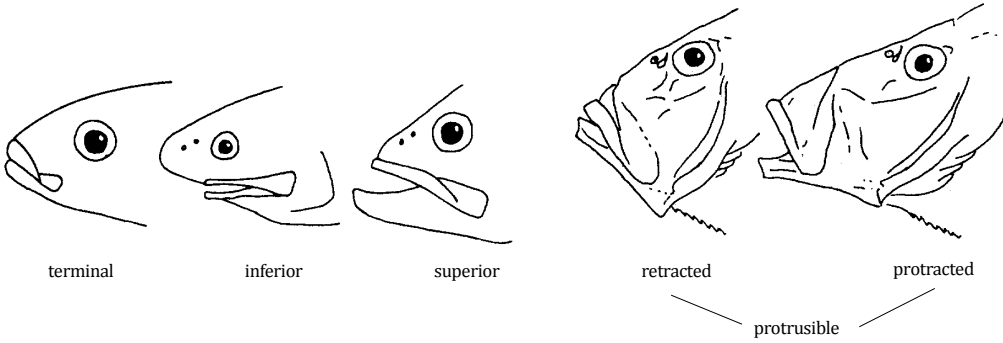
The “Guide to Orders and Families”, includes a total of 21 orders and 115 families. These are arranged by order (and suborder in the case of some Perciformes) using the classification adopted by Eschmeyer and Fricke (2015) which best reflects current use. Page numbers refer to those families that are treated in more detail in the species identification guide. The “Guide to Species”, includes 594 species belonging to 110 families. Species reported in the literature to occur in Pakistan but not found by the authors during field work are marked with an asterisk (*) besides the scientific name. If one of the latter species is recorded, the user can follow the instructions present in the introduction regarding its preservation and/or contact the FAO FishFinder Programme.

TECHNICAL TERMS AND MEASUREMENTS

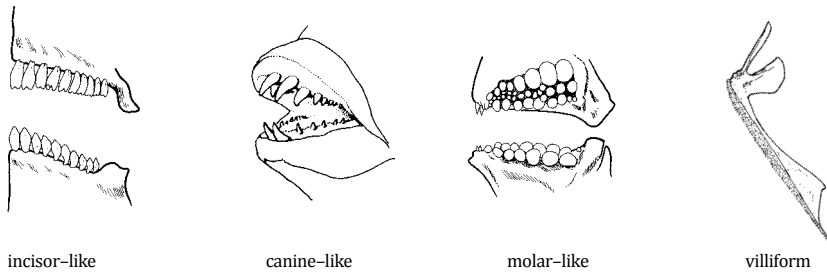


General Nomenclature of the External Morphology

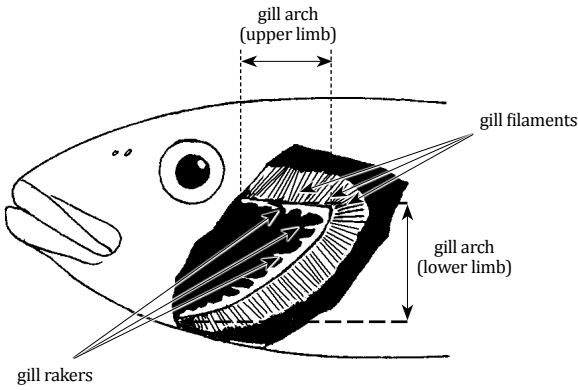




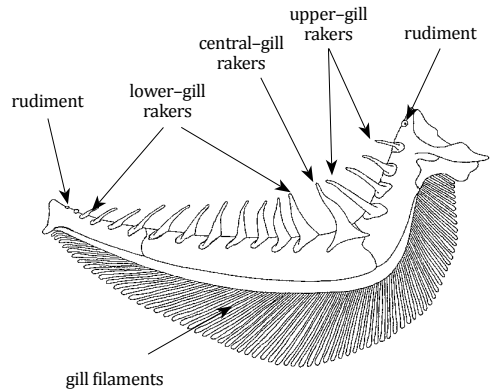
Mouth position and protrusibility



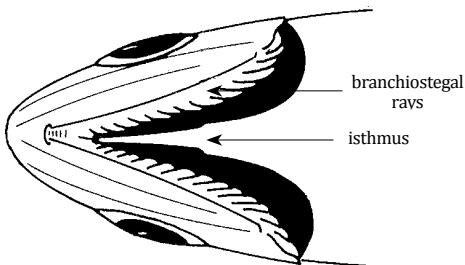
Common types of teeth



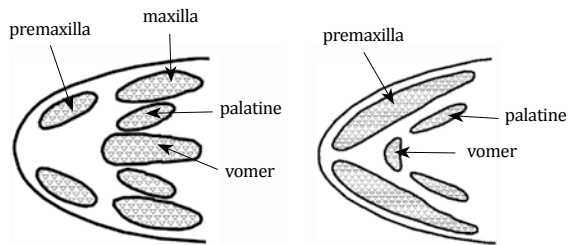
Position of 1st left gill arch with gill cover removed



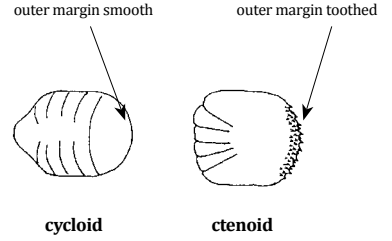
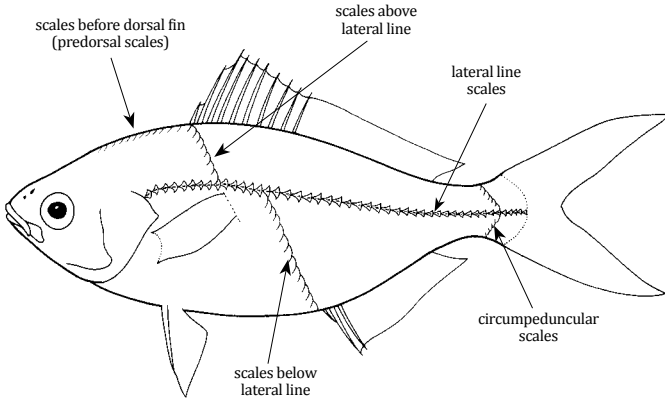
Structures of 1st left gill



Structures on ventral side of head

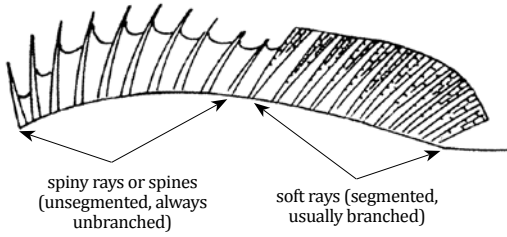


Roof of mouth and upper jaw

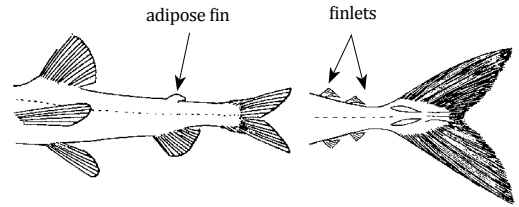


Schematic examples of typical scales

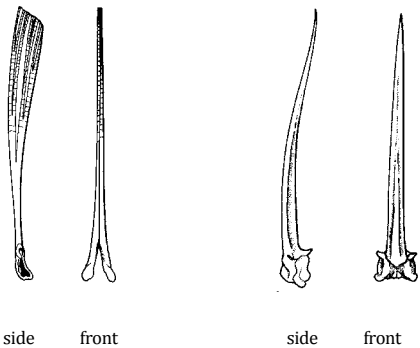
Common scale counts



Example of a continuous dorsal fin of a spiny-rayed fish



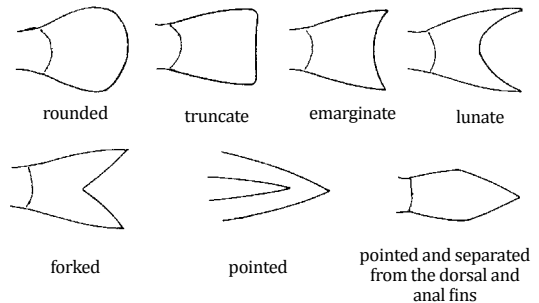
Accessory dorsal and anal fins: adipose fin and finlets



soft rays (branched, segments, 2 halves)

spines (solid)

Construction of fin rays



Most common types of caudal fins

GUIDE TO ORDERS AND FAMILIES

Order ELOPIFORMES – Tarpons and allies

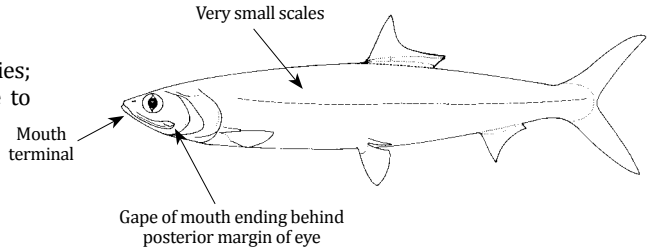
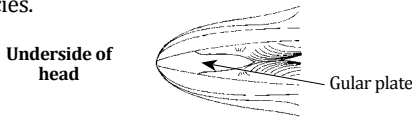
Fin spines absent; a single dorsal fin located above middle of body; pelvic fins in abdominal position; lateral line present; 20–27 branchiostegal rays; upper jaw extending past eye; tip of snout not overhanging mouth; colour silvery.

ELOPIDAE

Page 144

Ladyfishes – Tenponders

To 100 cm. Coastal marine waters and estuaries; pelagic. A single species included in the Guide to Species.

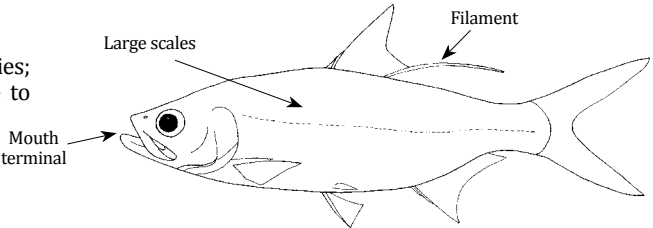
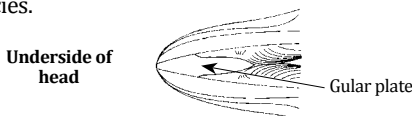


MEGALOPIDAE

Page 144

Tarpons

To 150 cm. Coastal marine waters and estuaries; pelagic. A single species included in the Guide to Species.



Order ALBULIFORMES – Bonefishes

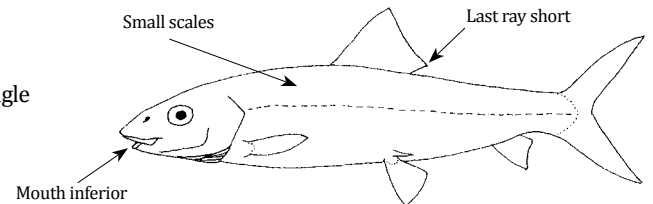
Fin spines absent; a single dorsal fin located above middle of body; pelvic fins in abdominal position; lateral line present; 6–16 branchiostegal rays; upper jaw not extending as far as front of eye; tip of snout overhanging mouth; colour silvery.

ALBULIDAE

Page 144

Bonefishes

To 70 cm. Coastal marine waters; demersal. A single species included in the Guide to Species.



Order ANGUILLIFORMES – Eels

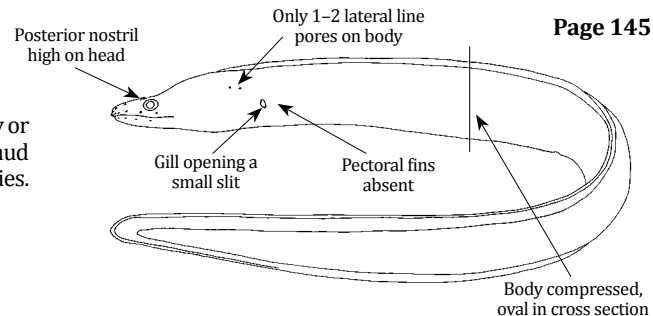
Body very elongate; pelvic fins absent; fin spines absent; usually scaleless.

MURAENIDAE

Page 145

Morays

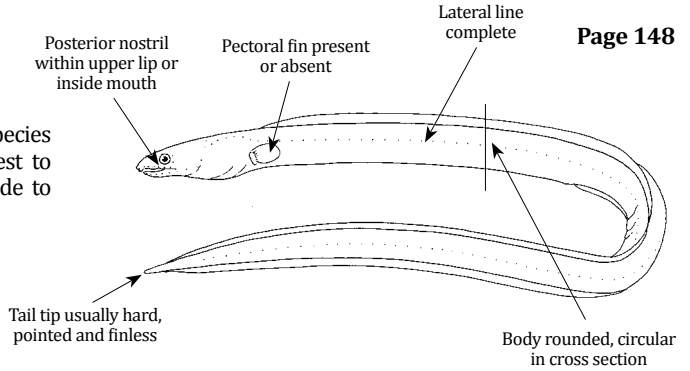
To 400 cm. Marine; mostly in shallow coastal rocky or coral reef habitats, but some occur over sand and mud to depths of 500 m; benthic. Of interest to fisheries. Nine species are included in the Guide to Species.



OPHICHTHIDAE

Snake eels - Worm eels

To about 100 cm. Marine and estuarine, one species entering freshwater; benthic. Of limited interest to fisheries. Two species are included in the Guide to Species.

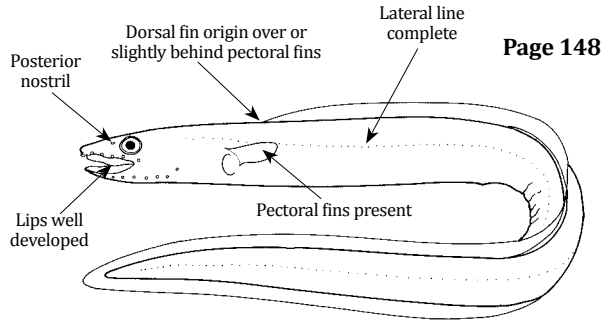


Page 148

CONGRIDAE

Conger eels

To 140 cm. Marine, coral reefs, and mud banks; benthic. Of interest to fisheries. Five species are included in the Guide to Species.

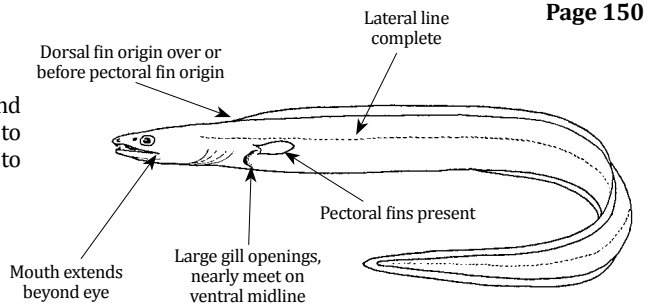
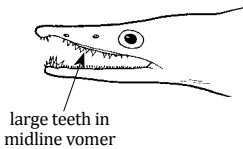


Page 148

MURAENESOCIDAE

Pike congers

To 250 cm. Marine, shallow coastal waters and estuaries to a depth of 100 m; benthic. Of interest to fisheries. Four species are included in the Guide to Species.



Page 150

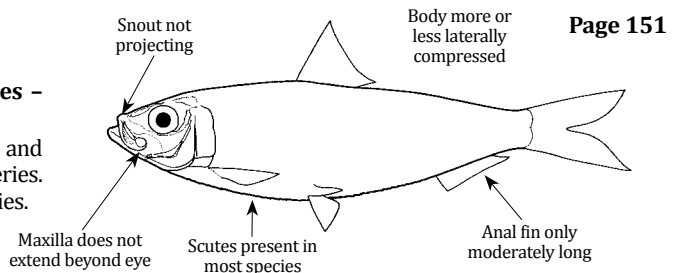
Order CLUPEIFORMES - Herrings and allies

Fin spines absent; a single dorsal fin located above middle of body; pelvic fins in abdominal position; lateral line absent; pelvic fins in abdominal position; a row of scutes along ventral profile (except Chirocentridae, some Clupeidae and some Engraulidae); colour silvery.

CLUPEIDAE

Herrings - Shads - Gizzard shads - Sardines - Sardinellas

To 60 cm. Coastal marine waters, estuaries and freshwater; mainly pelagic. Of interest to fisheries. Sixteen species are included in the Guide to Species.

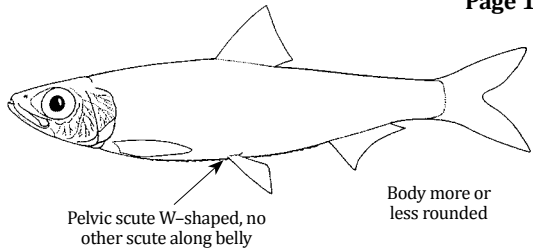


Page 151

DUSSUMIERIIDAE

Round herrings - Rainbow sardines

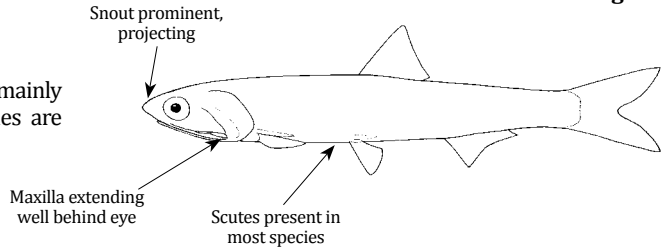
To 23 cm. Marine, pelagic and schooling fishes. Of interest to fisheries. Two species are included in the Guide to Species.



ENGRAULIDAE

Anchovies

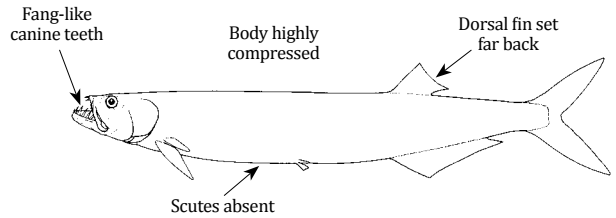
To about 21 cm. Coastal marine waters, mainly pelagic. Of interest to fisheries. Eleven species are included in the Guide to Species.



CHIROCENTRIDAE

Wolf-herrings

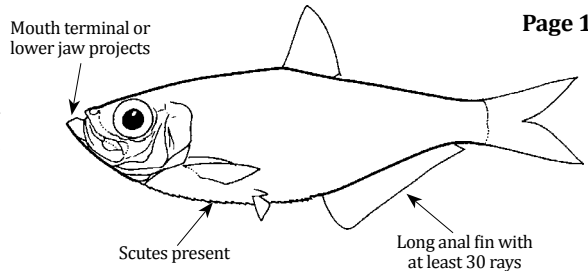
To 100 cm. Coastal marine waters, mainly pelagic. Of interest to fisheries. Two species are included in the Guide to Species.



PRISTIGASTERIDAE

Ilishas - Pellonas

To about 27 cm. Coastal marine waters, mainly pelagic. Of interest to fisheries. Six species included in the Guide to Species.



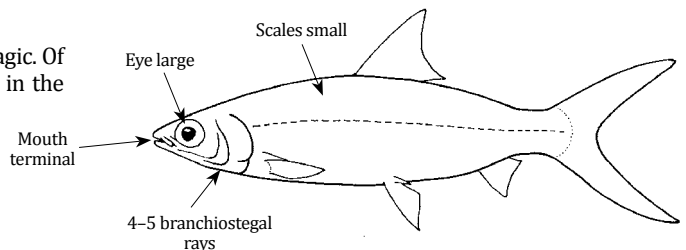
Order GONORHYNCHIFORMES – Milkfish and allies

Fin spines absent; a single dorsal fin; pelvic fins in abdominal position; lateral line present; 4–5 branchiostegal rays; mouth small, jaws toothless or teeth reduced; colour silvery.

CHANIDAE

Milkfish

To 180 cm. Marine and estuarine waters; pelagic. Of interest to fisheries. One species is included in the Guide to Species.



Order SILURIFORMES – Catfishes

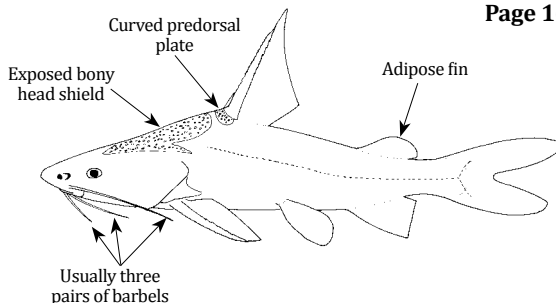
Barbels present around mouth; a strong spine usually present at front of dorsal and pectoral fins; an adipose fin often present; scales absent, but a bony head shield often present.

ARIIDAE

Page 163

Sea catfishes

To 185 cm. Coastal marine and estuarine waters; also freshwaters; benthic. Of interest to fisheries. Fourteen species are included in the Guide to Species.

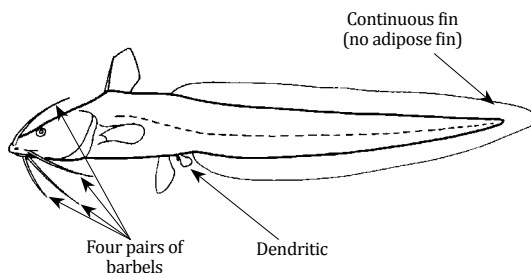


PLOTOSIDAE

Page 168

Eel catfishes

To about 40 cm. Marine, entering brackish and freshwaters; benthic. Of interest to fisheries. Two species are included in the Guide to Species.



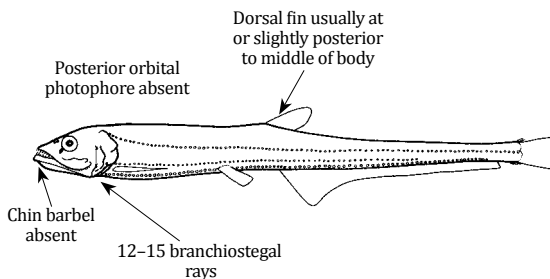
Order STOMIIFORMES – Hatchetfishes – Viperfishes and allies

Deep-sea fishes, having light organs (photophores); chin barbels present in some; premaxilla and maxilla both with teeth, and included in gape of mouth; ventral adipose fin present in some.

GONOSTOMATIDAE

Bristlemouths

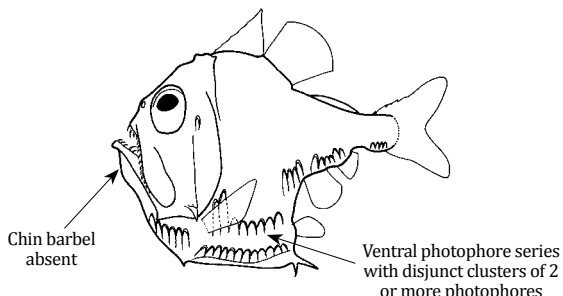
To about 25 cm. Marine, mostly deeper waters at depths below 200 m; meso- and bathypelagic. Of no interest to fisheries. Members of the genus *Gonostoma* have been identified from photographic records in Pakistan's waters without identification to the species level.



STERNOPTYCHIDAE

Marine hatchetfishes

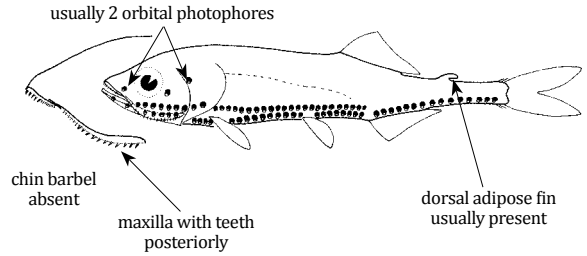
To about 20 cm. Marine, from the surface to depths below 300 m; meso- and bathypelagic. Of no interest to fisheries. Members of this family have been identified from photographic records in Pakistan's waters without identification to the species level.



PHOSICHTHYIDAE

Lightfishes

To about 30 cm. Marine, Mesopelagic from 200 to over 1 000 m. Of no interest to fisheries. Members of the genus *Vinciguerria* have been identified from photographic records in Pakistan's waters without identification to the species level.



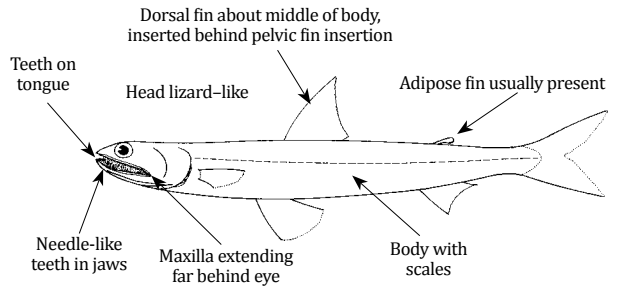
Order AULOPIFORMES - Greeneyes - Lizardfishes and allies

Premaxilla forming the gape of the mouth (maxilla excluded); upper jaw not protrusible; adipose fin usually present; no fin spines; caudal fin forked.

SYNODONTIDAE

Lizardfishes

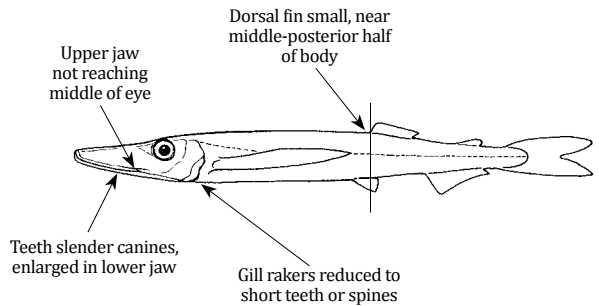
To 60 cm. Marine, from shallow waters to depths of 200 m, benthic. Of interest to fisheries. Eight species included in the Guide to Species.



PARALEPIDIDAE

Barracudinas

To about 15 cm. Marine, deep water, often migrating to near-surface at night. Members of this family have been identified from photographic records in Pakistan's waters without identification to the species level.



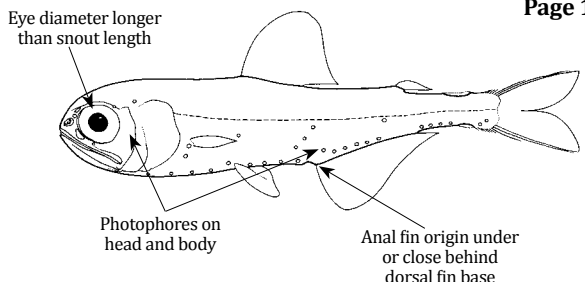
Order MYCTOPHIFORMES - Lanternfishes and allies

Fin spines absent; adipose fin present; light organs (photophores) sometimes present; maxilla toothless and excluded by gape by premaxilla; deep sea fishes.

MYCTOPHIDAE

Lanternfishes

To 10 cm. From the surface (at night) to depths below 2 000 m; mesopelagic to bathypelagic. Of little interest to fisheries. Two species included in the Guide to Species.



Order LAMPRIFORMES – Opahs and allies

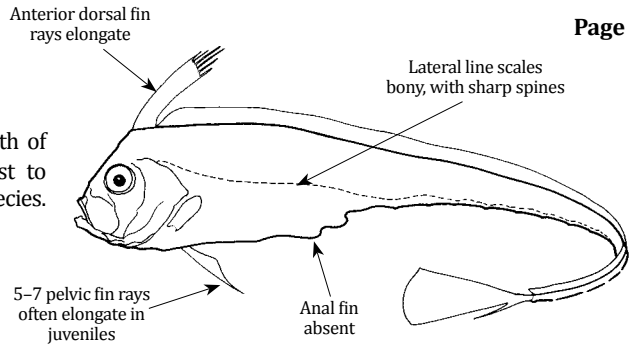
A diverse group of often strange looking fishes. No true spines in fins; pelvic fins under bases of pectorals.

Page 172

TRACHIPTERIDAE

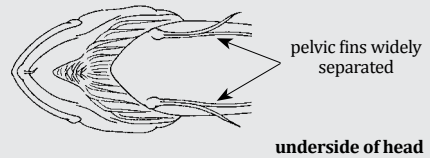
Ribbonfishes

To 110 cm. Marine, from the surface to a depth of 1 000 m; epi- to mesopelagic. Of no interest to fisheries. One species included in the Guide to Species.



Order GADIFORMES – Cods – Hakes

No sharp spines in fins (except in dorsal fin of some macrourids); pelvic fins below or anterior to pectoral fins and widely separated from each other, usually entire, but reduced to filaments in some species; all species with long dorsal and anal fins; barbels often present on chin.

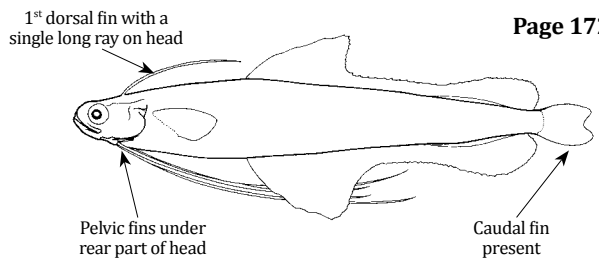


Page 172

BREGMACEROTIDAE

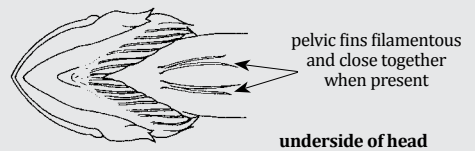
Codlets

To 10 cm, but usually smaller. Marine, from the surface to depths of 2 000 m; pelagic. Of no interest to fisheries. One species included in the Guide to Species.



Order OPHIDIIFORMES – Cusk eels – Brotulas

No sharp spines in fins; pelvic fins absent in some species; when present these fins are placed anterior to pectoral fins, sometimes far forward on underside of head; they are always close together and filamentous, each with not more than 2 rays; caudal fin separate or joined to dorsal and anal fins; snout without barbels.

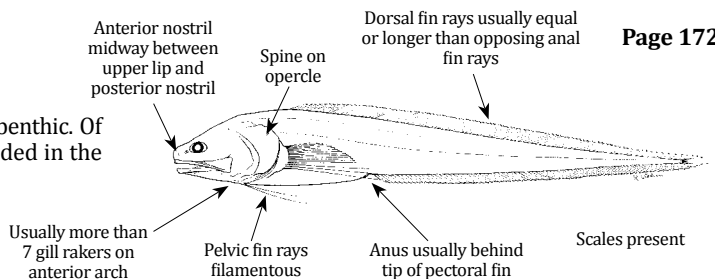


Page 172

OPHIDIIDAE

Cusk eels – Brotulas

To 100 cm. Marine, at depths of 650 m; benthic. Of no interest to fisheries. One species included in the Guide to Species.



Order BATRACHOIDIFORMES - Toadfishes

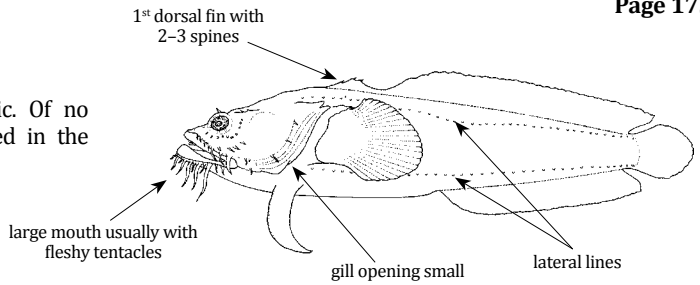
Head large and depressed, body compressed; two dorsal fins, the 1st with 2 or 3 spines; pelvic fins under throat; gill openings small, restricted to sides of head; one to several lateral lines on body.

BATRACHOIDIDAE

Page 173

Toadfishes

To about 30 cm. Coastal waters; benthic. Of no interest to fisheries. Two species included in the Guide to Species



Order LOPHIIFORMES - Anglerfishes and allies

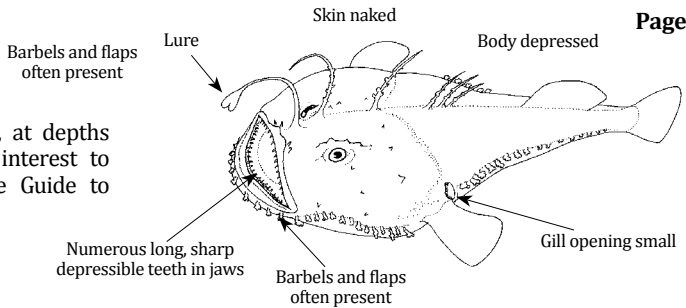
Body globulose or depressed; 1st spine of dorsal fin modified to form a 'fishing pole'; gill openings small and circular, usually located below or behind pectoral fins; pelvic fins absent or in front of pectoral fins.

LOPHIIDAE

Page 173

Goosefishes

To 40 cm. Marine, mainly deep water, at depths between 50 m and 500 m. Of little interest to fisheries. One species included in the Guide to Species.

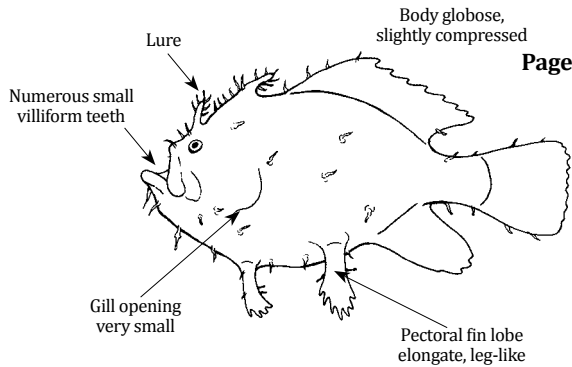


ANTENNARIIDAE

Page 174

Frogfishes

To 20 cm. Marine, coastal and surface waters to a depth of 100 m; mostly benthic. Of little interest to fisheries. Three species included in the Guide to Species.

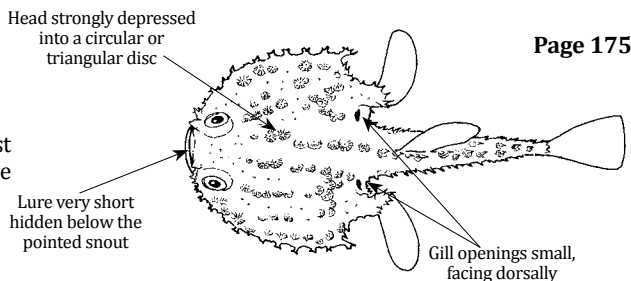


OGCOCEPHALIDAE

Page 175

Batfishes

To 30 cm. Marine, coastal and deep waters to at least 2 000 m; benthic. One species included in the Guide to Species.



Order BELONIFORMES – Flyingfishes and allies

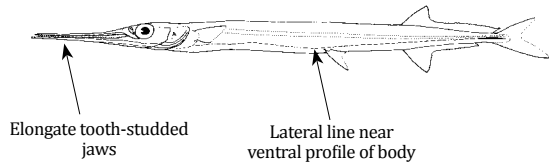
Either snout beak-like with upper or lower jaws greatly prolonged, or with enlarged, wing-like pectoral, and sometimes also pelvic fins; lateral line absent or near ventral profile of body; a single dorsal fin consisting of soft rays; non-protrusible upper jaw; pelvic fins abdominal.

BELONIDAE

Page 175

Needlefishes

To 150 cm. Marine, coastal and offshore waters, some entering estuaries and even freshwater; generally pelagic, swimming near the surface. Of interest to fisheries. Six species included in the Guide to Species.

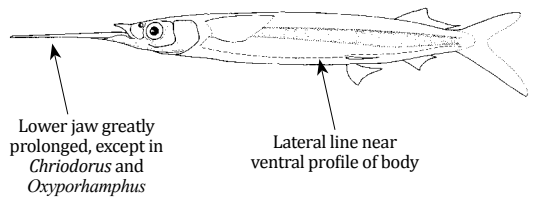


HEMIRAMPHIDAE

Page 177

Halfbeaks

To 45 cm. Marine, coastal and offshore waters, some entering estuaries and even freshwater; generally pelagic, swimming near the surface. Of interest to fisheries. Four species included in the Guide to Species.

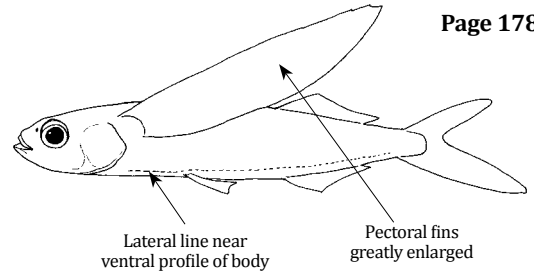


EXOCOETIDAE

Page 178

Flyingfishes

To 35 cm. Marine, pelagic in surface waters; capable of jumping out of the water and gliding for long distances. Of little interest to fisheries. Eight species included in the Guide to Species.



Order BERYCIFORMES – Squirrelfishes and allies

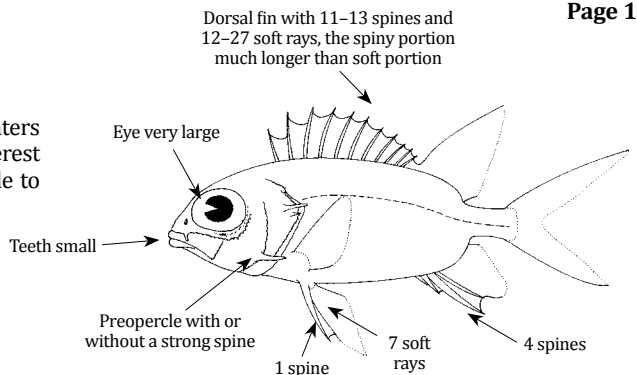
Head with spines and crests well developed; fin spines well developed (except in Anoplogastridae and Diretmidae); scales heavy and strongly ctenoid (rough).

HOLOCENTRIDAE

Page 181

Squirrelfishes – Soldierfishes

To about 30 cm. Marine, from shallow coastal waters to depths below 200 m; demersal. Of little interest to fisheries. Three species included in the Guide to Species.



Order SYGNATHIFORMES – Pipefishes and allies

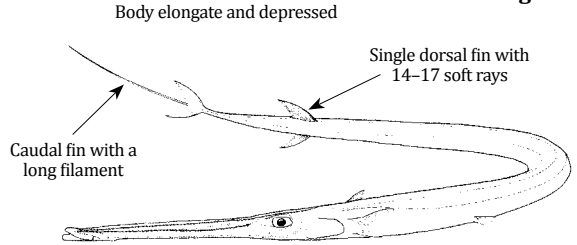
Body elongate, snout tube-like, mouth small; scales sometimes modified to form series of body plates.

FISTULARIIDAE

Page 182

Cornetfishes – Flutemouths

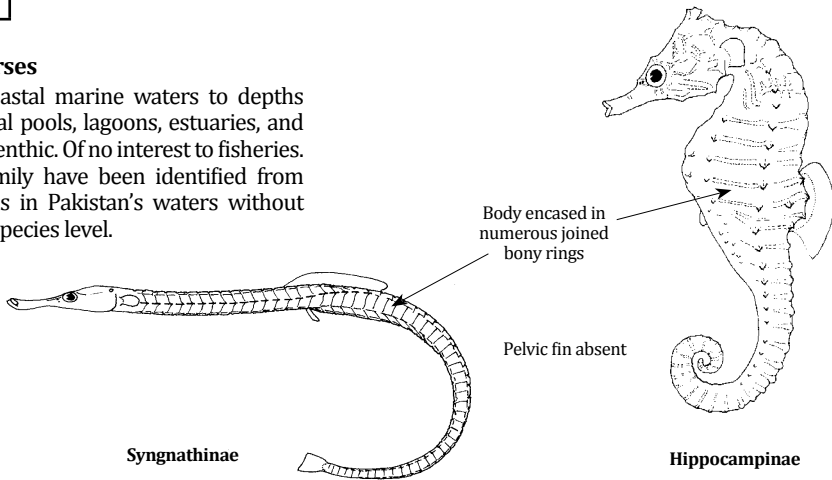
To about 200 cm. Marine, shallow coastal waters. Of little interest to fisheries, but flesh excellent. Two species included in the Guide to Species.



SYNGNATHIDAE

Pipefishes – Seahorses

To about 30 cm. Coastal marine waters to depths of about 90 m, littoral pools, lagoons, estuaries, and freshwater; mostly benthic. Of no interest to fisheries. Members of this family have been identified from photographic records in Pakistan’s waters without identification to the species level.



Order SCORPAENIFORMES – Scorpionfishes and allies

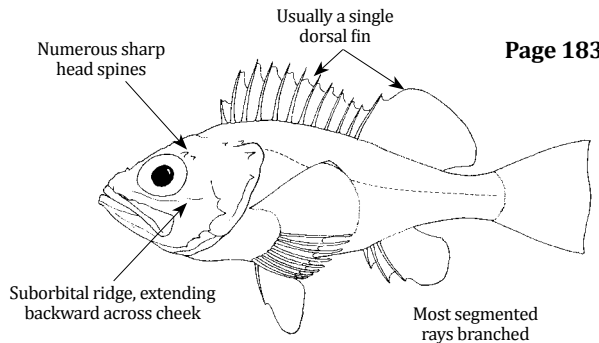
Cheeks with a bony strut (posterior extension of suborbital bone to preopercle); usually well developed spines on head and prominent spines in dorsal fin; pectoral fins usually rounded, sometimes greatly enlarged; membranes between lower rays of pectoral fins often incised; caudal fin usually rounded (rarely truncate, emarginate or forked).

SCORPAENIDAE

Page 183

Scorpionfishes – Rockfishes

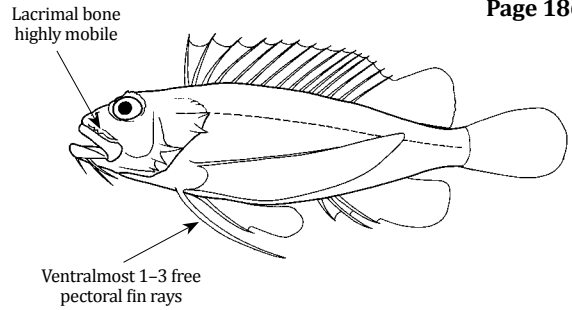
To about 30 cm. Marine, mostly in near shore rocky or coral reef habitats to a depth of 150 m; some species over soft bottoms to depths of 800 m; benthic. Of interest to fisheries. Nine species included in the Guide to Species.



APISTIDAE

Wasp scorpionfishes

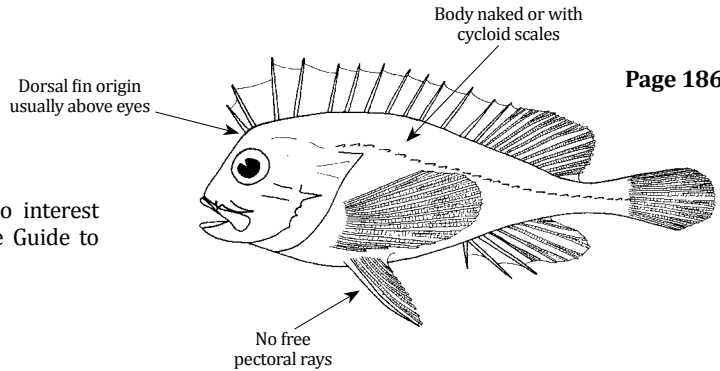
To 20 cm. Marine; benthic. Of no interest to fisheries. One species included in the Guide to Species.



TETRAROGIDAE

Wasp fishes

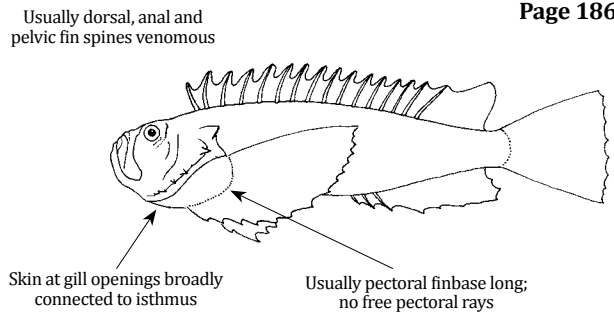
To about 21 cm. Marine; benthic. Of no interest to fisheries. One species included in the Guide to Species.



SYNANCEIIDAE

Stonefishes

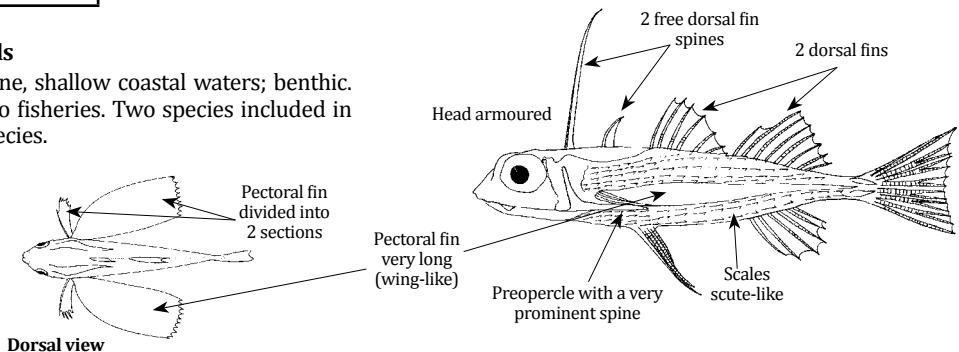
To 15 cm. Marine, coastal waters; benthic. Of no interest to fisheries. Five species included in the Guide to Species.



DACTYLOPTERIDAE

Flying gurnards

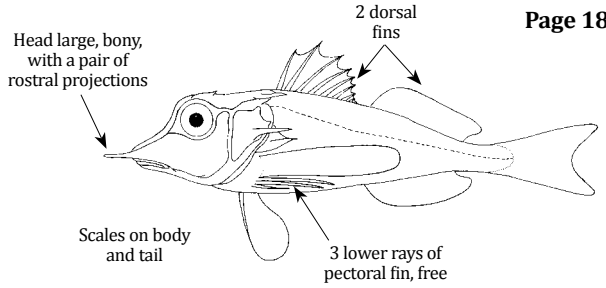
To 40 cm. Marine, shallow coastal waters; benthic. Of no interest to fisheries. Two species included in the Guide to Species.



TRIGLIDAE

Gurnards – Searobins

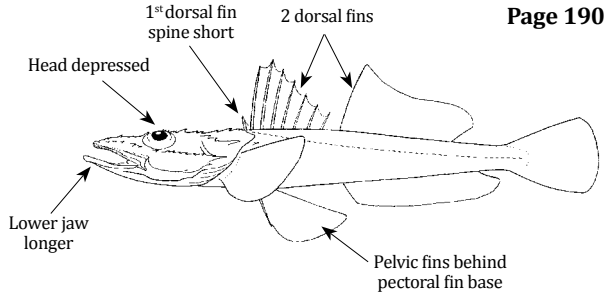
To about 30 cm. Marine coastal and deeper waters; benthic. Of little interest to fisheries. Five species included in the Guide to Species.



PLATYCEPHALIDAE

Spiny flatheads

To 50 cm. Marine, on sand and mud bottoms down to a depth of about 70 m. Of little interest to fisheries. Nine species included in the Guide to Species.



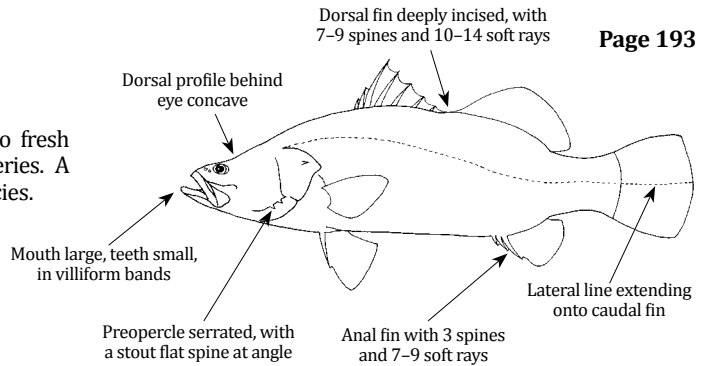
Order PERCIFORMES: PERCOIDEI – Perch-like fishes

Shape extremely variable; either two dorsal fins, or one dorsal fin with anterior elements being sharp spines; pelvic fins usually thoracic, and with one spine and five soft rays, placed well forward on ventral surface of body; maxillary bone not included in gape of mouth, but dorsal to the tooth-bearing premaxilla.

LATIDAE

Sea perch

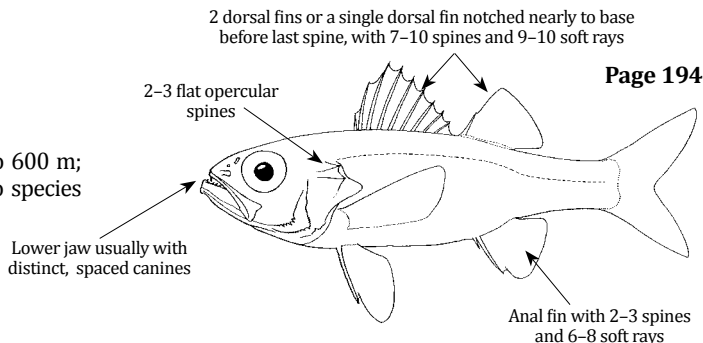
To 200 cm. Coastal marine and estuarine to fresh water; demersal. Of major interest to fisheries. A single species is included in the Guide to Species.



ACROPOMATIDAE

Lanternbellies

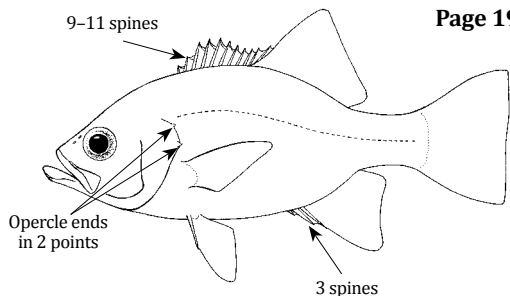
To 20 cm. Marine, from depths of 100 m to 600 m; demersal. Of little interest to fisheries. Two species included in the Guide to Species.



DINOPERCIDAE

Cavebasses

To 65 cm. Marine, on rocky reefs to depths beyond 50 m; demersal. Of interest to fisheries. A single species is included in the Guide to Species.

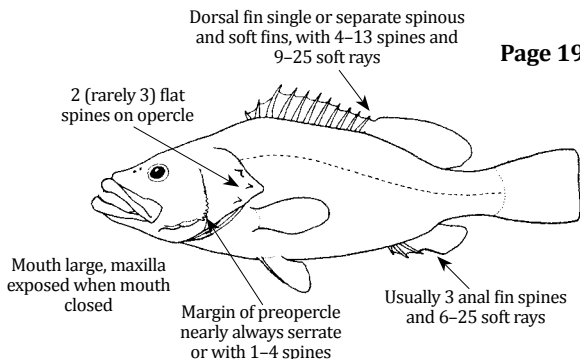


Page 194

SERRANIDAE

Groupers - Seabasses - Rockcods - Hinds - Combers - Coral trouts - Lyretails

To 230 cm. Marine, from the coastline to depths beyond 380 m; also estuarine; mostly demersal; a large and diverse family. Of major interest to fisheries. Twenty-four species included in the Guide to Species.

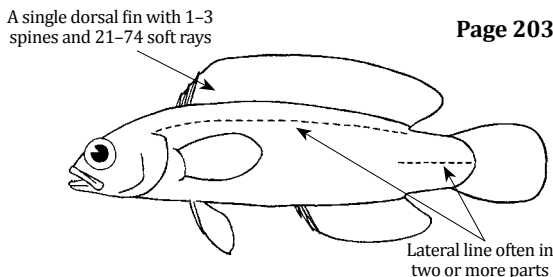


Page 195

PSEUDOCHROMIDAE

Dottybacks

To 10 cm, but most species less than 5 cm. Shallow coastal waters, especially coral reefs to depths of about 100 m; benthic. Of interest to the aquarium trade. One species included in the Guide to Species.

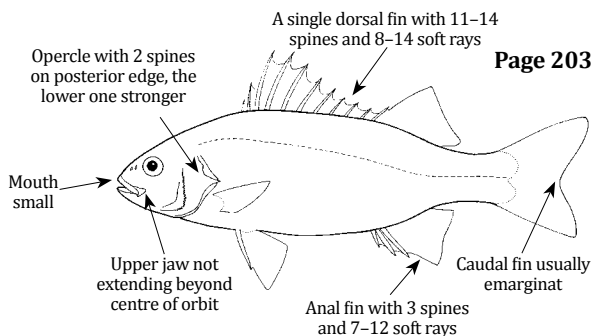


Page 203

TERAPONTIDAE

Grunters

To 30 cm. Marine, coastal waters and estuaries; demersal. Of little interest to fisheries. Four species included in the Guide to Species.

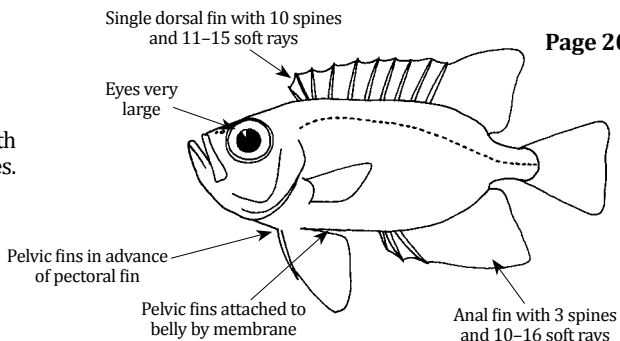


Page 203

PRIACANTHIDAE

Bigeyes

To about 68 cm. Marine, from the coastline to a depth of about 200 m; demersal. Of little interest to fisheries. Four species included in the Guide to Species.



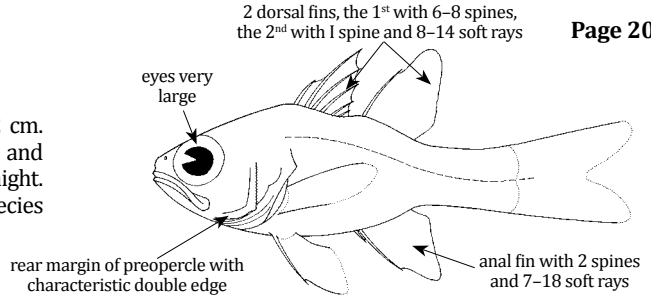
Page 204

APOGONIDAE

Page 206

Cardinalfishes

To about 25 cm, but most species less than 12 cm. Shallow coastal waters, and some in brackish and freshwater; benthic and benthopelagic at night. Of interest to the aquarium trade. Fifteen species included in the Guide to Species.

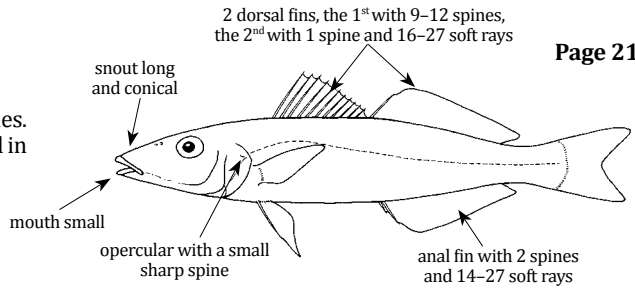


SILLAGINIDAE

Page 211

Sillagos

To about 45 cm. Marine coastal waters and estuaries. Of little interest to fisheries. Four species included in the Guide to Species.

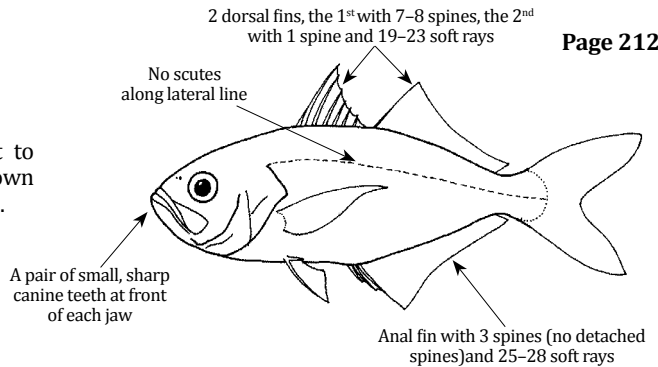


LACTARIIDAE

Page 212

False trevally

To 40 cm. Marine coastal waters. Of interest to fisheries. This family contains only one known species which is included in the Guide to Species.

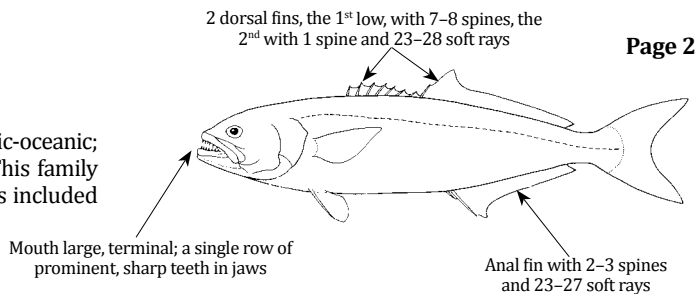


POMATOMIDAE

Page 212

Bluefish

To 130 cm. Marine, brackish; pelagic-oceanic; oceanodromous. Of interest to fisheries. This family contains only one known species which is included in the Guide to Species.

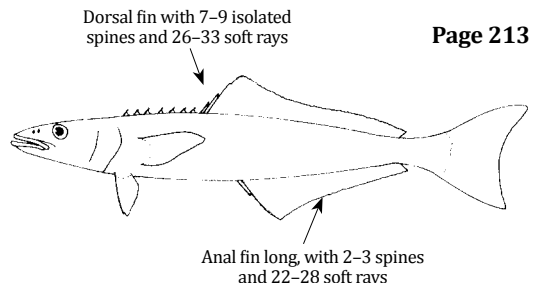


RACHYCENTRIDAE

Page 213

Cobia

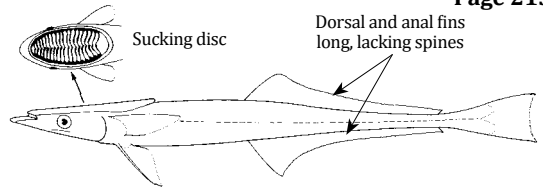
To 200 cm. Marine, pelagic in coastal waters, occasionally in estuaries. Of major interest to fisheries. This family contains only one known species which is included in the Guide to Species.



ECHENEIDAE

Remoras - Sharksuckers

To about 110 cm. Marine, pelagic; attach to larger marine animals such as sharks, turtles, and marine mammals. Of little interest to fisheries. Four species included in the Guide to Species.

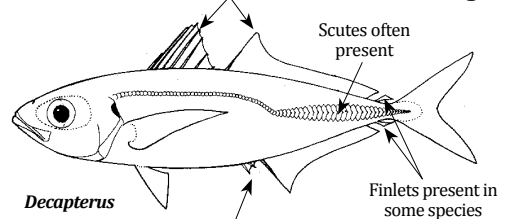


CARANGIDAE

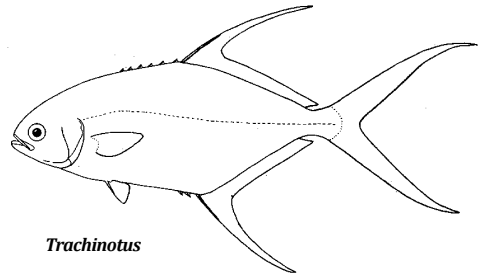
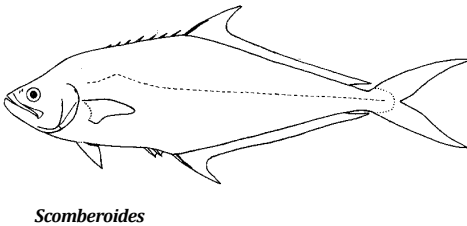
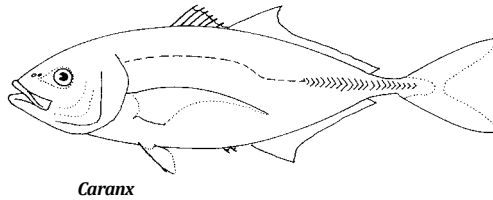
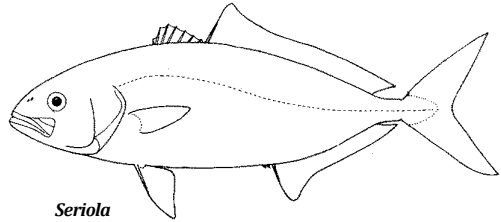
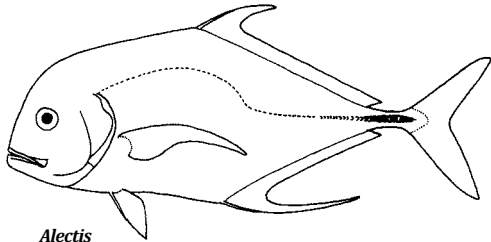
Jacks - Trevallies - Scads - Queen-fishes - Runners - Pompanos

To about 190 cm. Marine, from coastal waters to a depth of 200 m; a few species entering brackish waters; coastal pelagic or oceanic pelagic; a large and diverse family. Of major interest to fisheries. Fifty-three species included in the Guide to Species.

2 dorsal fins, the 1st low, with 4-7 spines, (embedded in some species), the 2nd with 1 spine and 18-44 soft rays



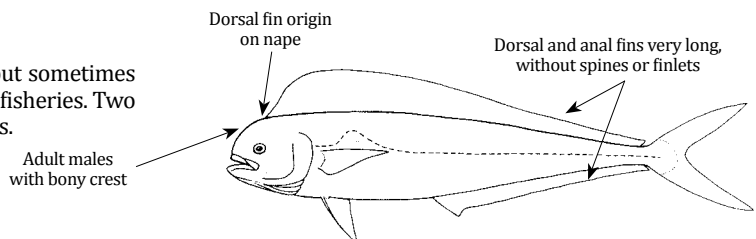
Anal fin long, with 1-2 spines separated from the rest of the fin followed by 1 spine and 15-39 soft rays



CORYPHAENIDAE

Dolphinfishes

To 200 cm. Marine, oceanic pelagic, but sometimes close to the coast. Of major interest to fisheries. Two species included in the Guide to Species.

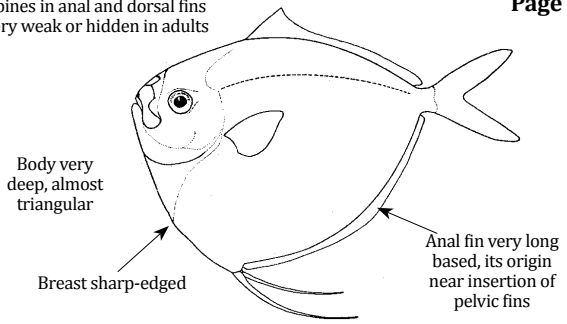


MENIDAE

Moonfish

To 30 cm. Marine, coastal waters, entering estuaries. Of little interest to fisheries. This family contains only one known species which is included in the Guide to Species.

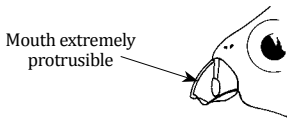
Spines in anal and dorsal fins very weak or hidden in adults



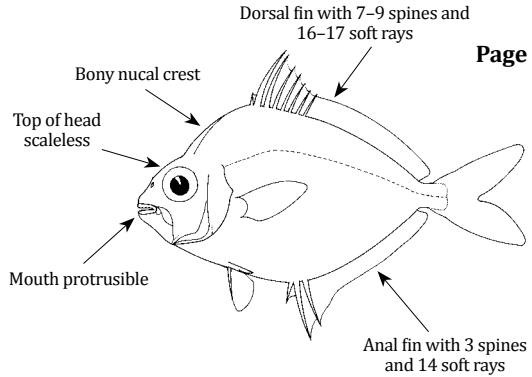
LEIOGNATHIDAE

Ponyfishes - Slipmouths - Tooth-ponies

To 28 cm. Marine, coastal waters, to a depth of 25 m and estuaries; schooling; demersal. Of little interest to fisheries. Fourteen species included in the Guide to Species.



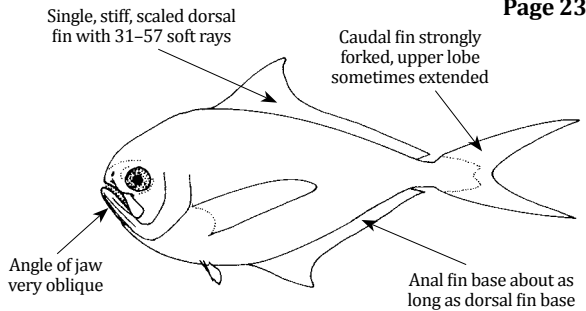
Detail of head



BRAMIDAE

Pomfrets

To about 60 cm. Marine, epipelagic. Of interest to fisheries. Two species included in the Guide to Species.

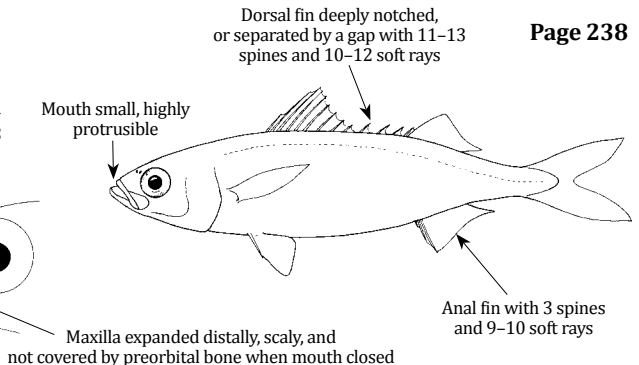
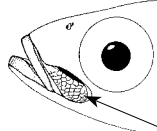
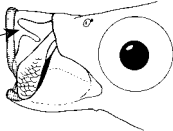


EMMELICHTHYDAE

Rovers

To about 70 cm. Marine waters from 100 to a depth of 400 m. Of interest to fisheries. A single species included in the Guide to Species.

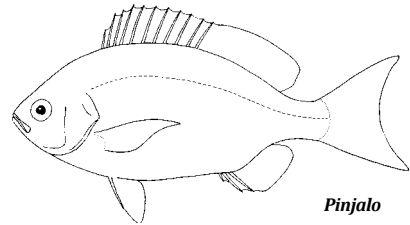
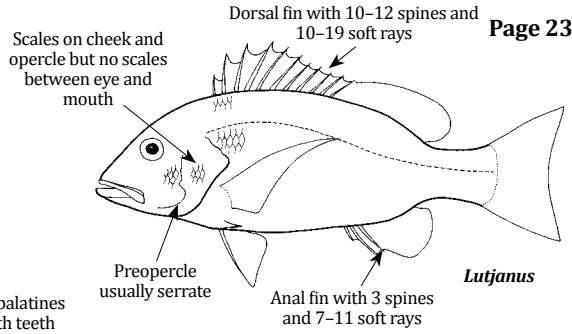
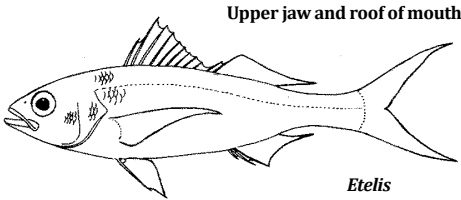
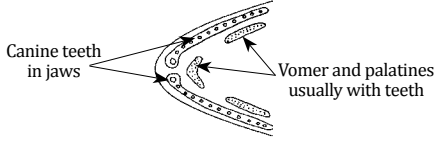
Premaxilla with a long median ascending process and prominent midlateral process



LUTJANIDAE

Snappers - Jobfishes

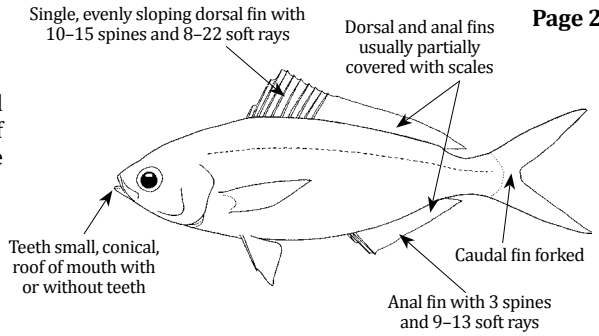
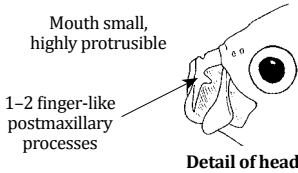
To 150 cm. Mostly marine, from the coastline to a depth of 360 m; some species enters estuaries and even rivers; mainly demersal. Of interest to fisheries. Thirty-four species included in the Guide to Species.



CAESIONIDAE

Fusiliers

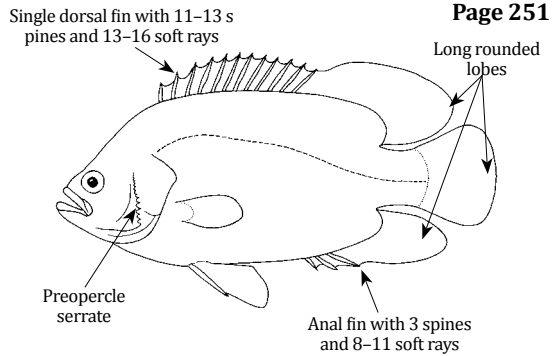
To about 40 cm. Marine, coastal waters, associated with reefs, to a depth of about 60 m; pelagic. Of interest to fisheries. Two species included in the Guide to Species.



LOBOTIDAE

Tripletails

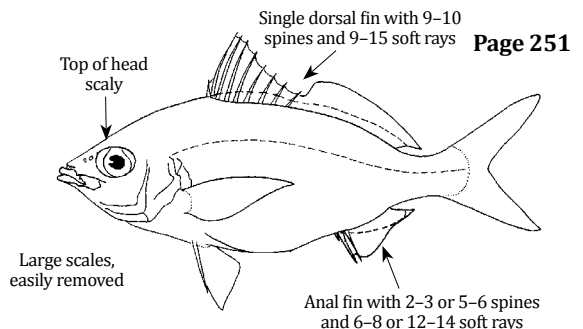
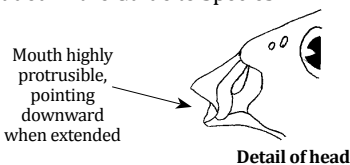
To 100 cm. Marine, oceanic-pelagic, drifting near the surface. Of little interest to fisheries. A single species included in the Guide to Species.



GERREIDAE

Silverbiddies - Mojarras

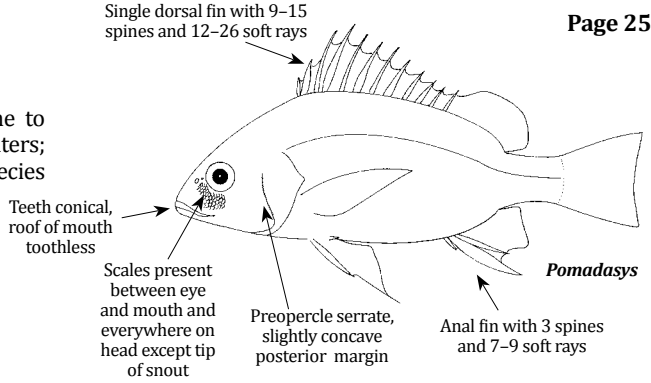
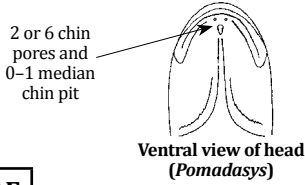
To 35 cm. Coastal marine waters to depths of about 60 m; also estuaries, coastal lagoons and freshwater; demersal. Of no interest to fisheries. Seven species included in the Guide to Species.



HAEMULIDAE

Grunts - Sweetlips - Rubberlips - Hotlips

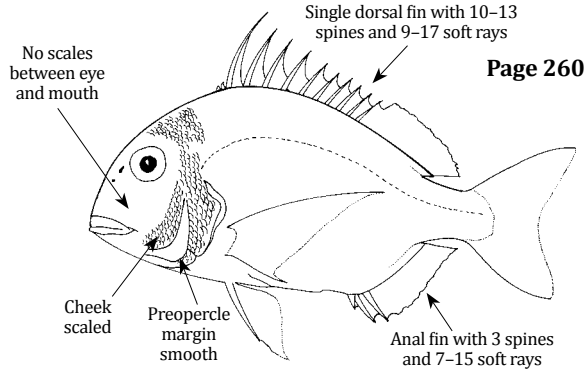
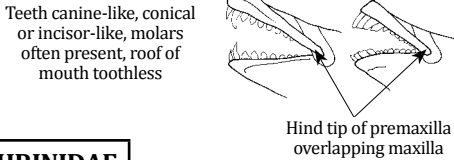
To 100 cm. Mostly marine, from the coastline to a depth of about 200 m, and in brackish waters; demersal. Of interest to fisheries. Nineteen species included in the Guide to Species.



SPARIDAE

Porgies - Seabreams

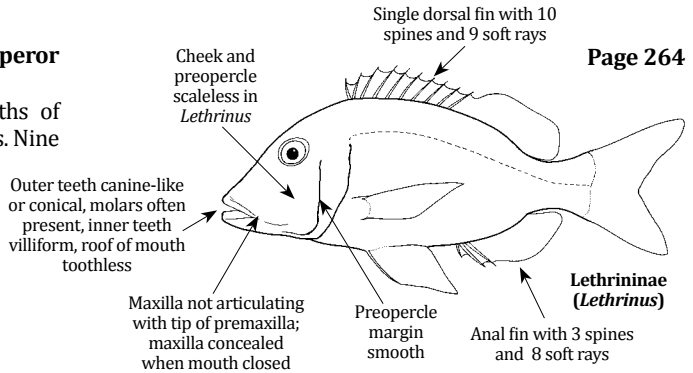
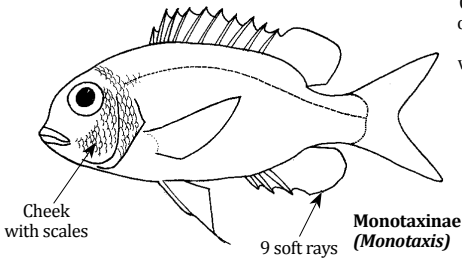
To 90 cm. Marine, coastal waters, to a depth of about 150 m; occasionally entering estuaries; demersal. Of major interest to fisheries. Fourteen species included in the Guide to Species.



LETHRINIDAE

Emperors - Large-eye breams - Emperor snappers

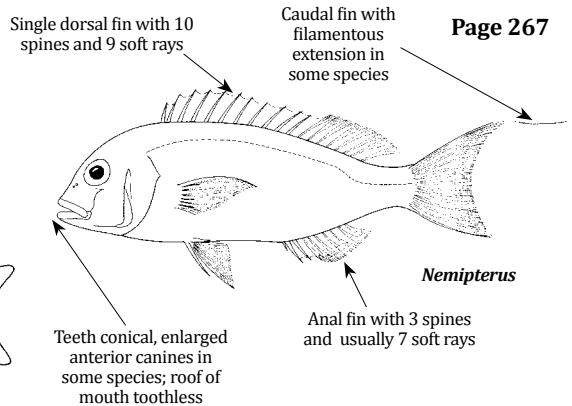
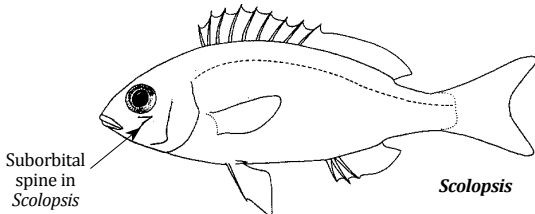
To 100 cm. Coastal marine waters to depths of about 185 m; demersal. Of interest to fisheries. Nine species included in the Guide to Species.



NEMIPTERIDAE

Threadfin breams - Monocle breams - Dwarf monocle breams

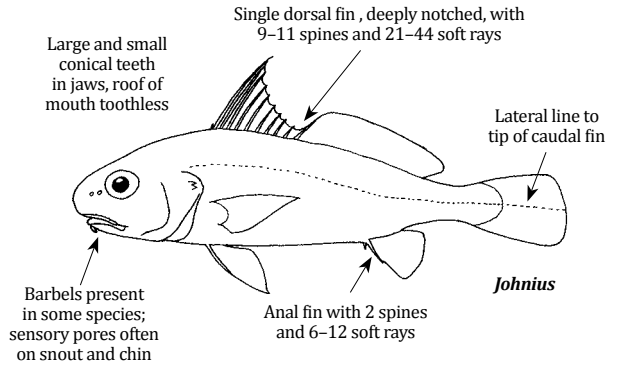
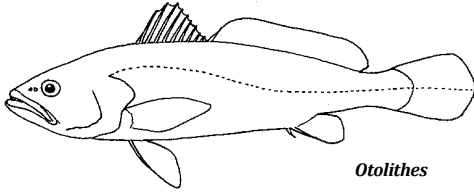
To 36 cm. Coastal marine waters to depths of about 400 m; demersal. Of interest to fisheries. Fourteen species included in the Guide to Species.



SCIAENIDAE

Croakers – Drums – Meagres – Weakfishes

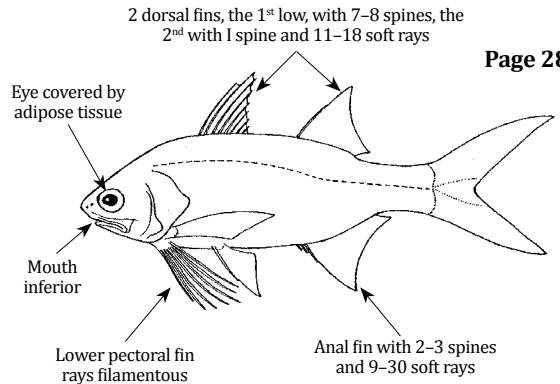
To 180 cm. Marine, from coastal waters to a depth of about 100 m; demersal. Of interest to fisheries. Twenty-five species included in the Guide to Species.



POLYNEMIDAE

Threadfins

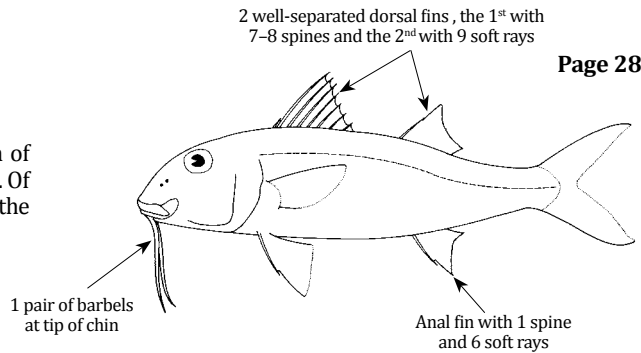
To 200 cm. Coastal marine waters, estuaries and coastal lagoons; fresh river mouths; demersal. Of interest to fisheries. Six species included in the Guide to Species.



MULLIDAE

Goatfishes – Red mullets

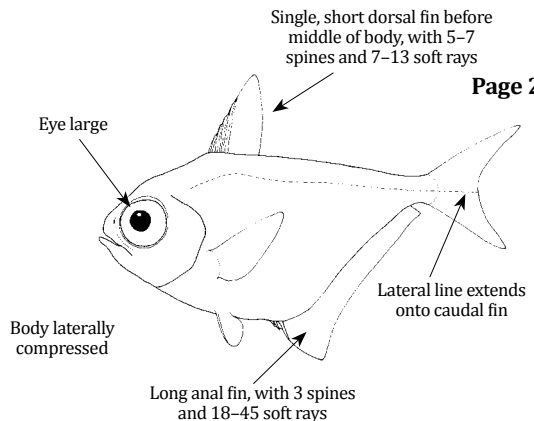
To 50 cm. Marine, from the coastline to a depth of about 100 m; occasionally in estuaries; demersal. Of interest to fisheries. Fifteen species included in the Guide to Species.



PEMPHERIDAE

Sweepers

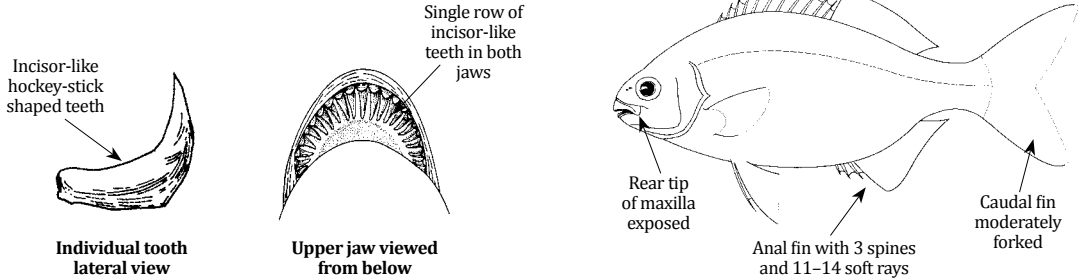
To about 17 cm. Coastal marine waters. Of no interest to fisheries. Two species included in the Guide to Species.



KYPHOSIDAE

Seachubs

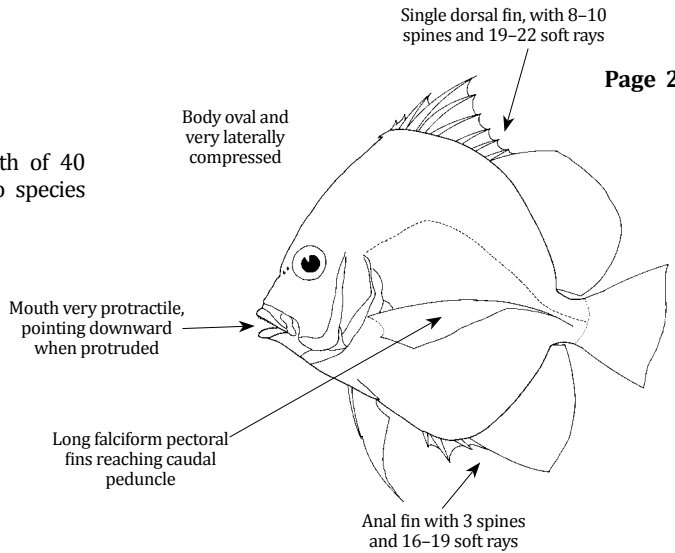
To 75 cm. Marine reef areas; mainly demersal. Of interest to fisheries. Three species included in the Guide to Species.



DREPANEIDAE

Sicklefishes

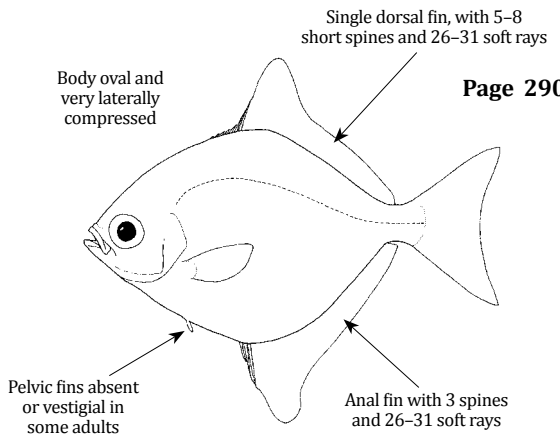
To 50 cm. Marine, mud banks, to a depth of 40 m; demersal. Of interest to fisheries. Two species included in the Guide to Species.



MONODACTYLIDAE

Moonies

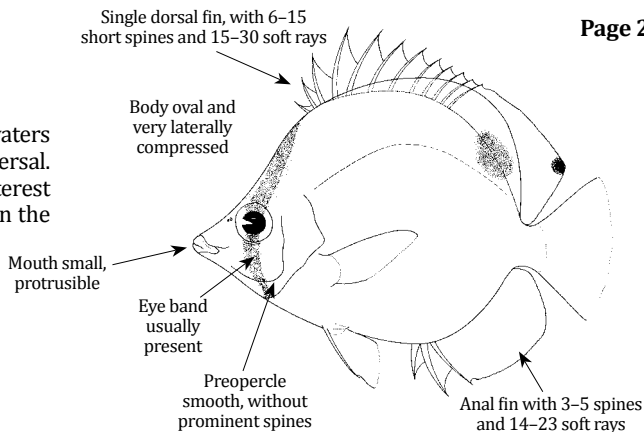
To about 30 cm. Marine, coastal waters, estuaries and entering freshwater. Of little interest to fisheries. Two species included in the Guide to Species.



CHAETODONTIDAE

Butterflyfishes

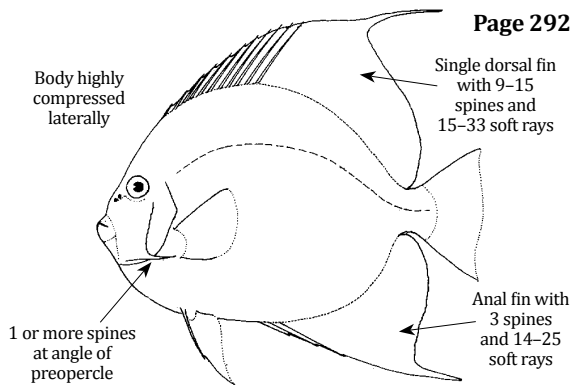
To about 20 cm. Marine, usually in shallow waters but occasionally to a depth of about 100 m; demersal. Of no interest to fisheries; some species of interest of the aquarium trade. Four species included in the Guide to Species.



POMACANTHIDAE

Angelfishes

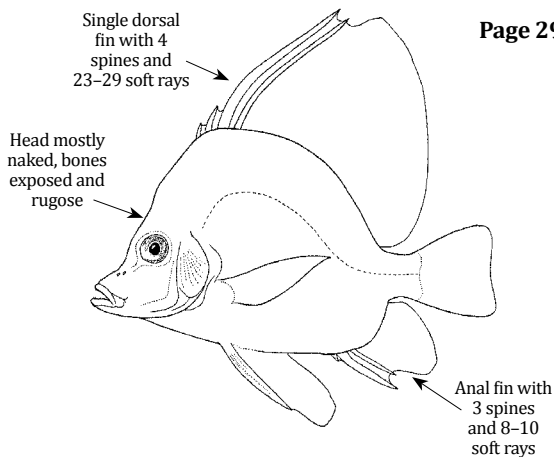
To 50 cm. Marine, from the coastline to a depth of about 70 m; demersal. Of no interest to fisheries; some species of interest of the aquarium trade. Two species included in the Guide to Species.



PENTACEROTIDAE

Armorheads

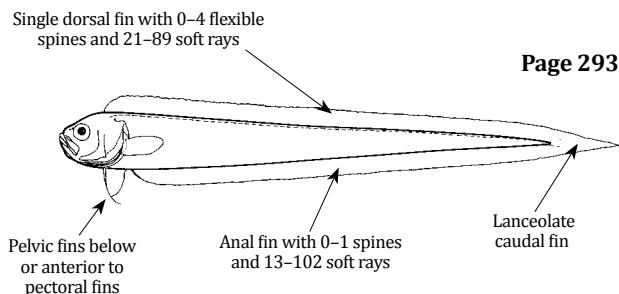
To 35 cm. Marine, on the continental shelf and slope at depths of about 400 m; demersal. Of no interest to fisheries. One species included in the Guide to Species.



CEPOLIDAE

Bandfishes

To 35 cm. Marine, from shallow waters to depths of 475 m; benthic. Of little interest to fisheries. One species included in the Guide to Species.



Order PERCIFORMES: MUGILOIDEI - Mulletts

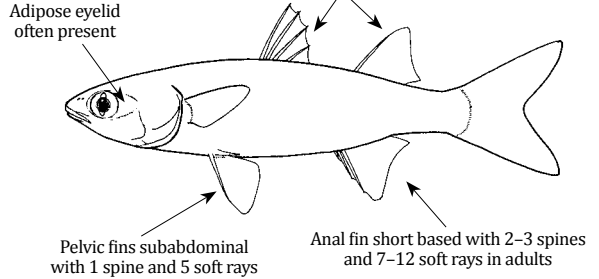
Body elongate and subcylindrical; head often broad and flattened dorsally; mouth small or moderate in size, terminal or inferior; pectoral fins high on body; 2 widely separated dorsal fins; sides silvery; no lateral line.

MUGILIDAE

Mulletts

To 90 cm. Coastal marine, estuaries and freshwater, at shallow depths (less than 20 m); mostly benthic in food habits, but usually swim near the surface. Of interest to fisheries. Twelve species included in the Guide to Species.

2 widely separated dorsal fins, the 1st with 4 slender spines, the 2nd with usually 9-10 soft rays; both fins short based **Page 293**



Order PERCIFORMES: LABROIDEI - Wrasses and allies

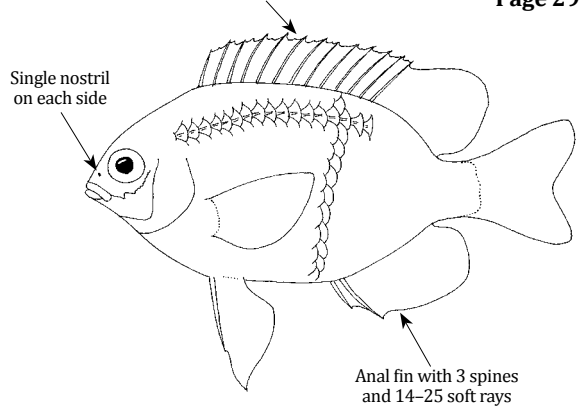
Well developed teeth, coalesced into plates in the Scaridae; scales usually large and cycloid (smooth); body compressed; usually colourful species.

POMACENTRIDAE

Damsel-fishes

To about 25 cm, but most species smaller than 5 cm. Coastal marine waters and estuaries; mostly demersal. Of no interest to fisheries, some species of interest to the aquarium trade. Five species included in the Guide to Species.

Single dorsal fin, with 7-17 spines and 9-21 soft rays **Page 297**

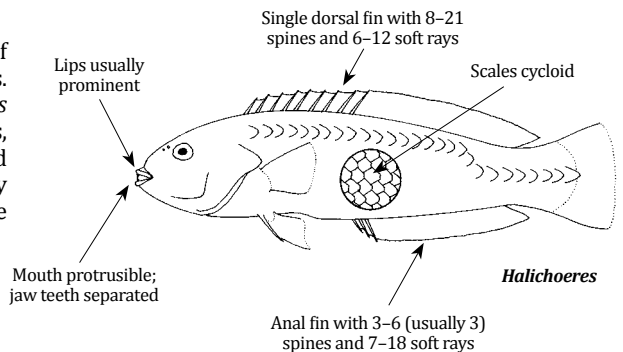


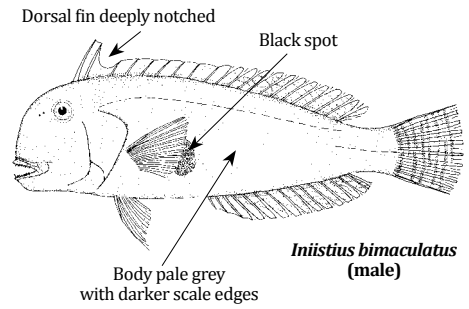
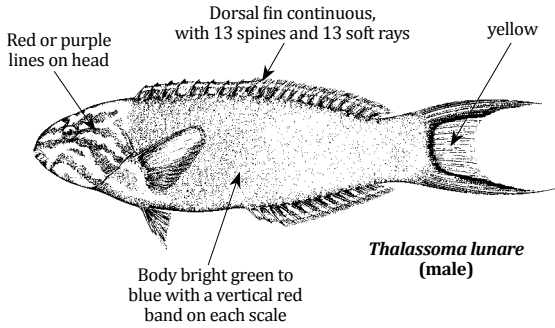
LABRIDAE

Wrasses - Hogfishes - Tuskfishes

To about 14 cm. Coastal marine waters to a depth of about 160 m; mostly demersal. Of interest to fisheries. A large and diverse group. *Iniistius bimaculatus* (Rüppell, 1829) and *Thalassoma lunare* (Linnaeus, 1758) apparently occur in Pakistan but not included in the Guide to Species because not supported by published records and/or voucher specimens. One species included in the Guide to Species.

Page 299

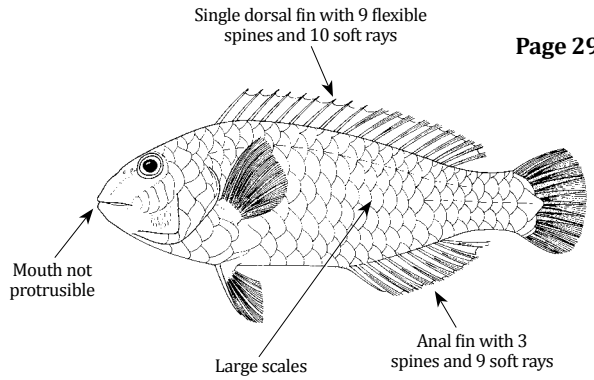
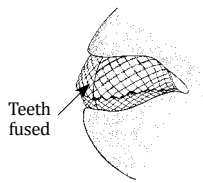




SCARIDAE

Parrotfishes

To 75 cm. Marine, in shallow waters rarely below 60 m; demersal. Of major interest to fisheries. Three species included in the Guide to Species.



Page 299

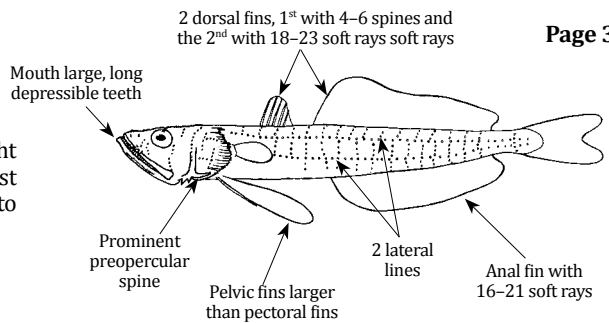
Order PERCIFORMES: TRACHINOIDEI - Weeverfishes and allies

A diverse assemblage of families difficult to characterize as a group.

CHAMPSODONTIDAE

Gapers - Crocodile toothfishes

To about 11 cm. Marine, from surface at night to a depth of 500 m, mesopelagic. Of no interest to fisheries. One species included in the Guide to Species.

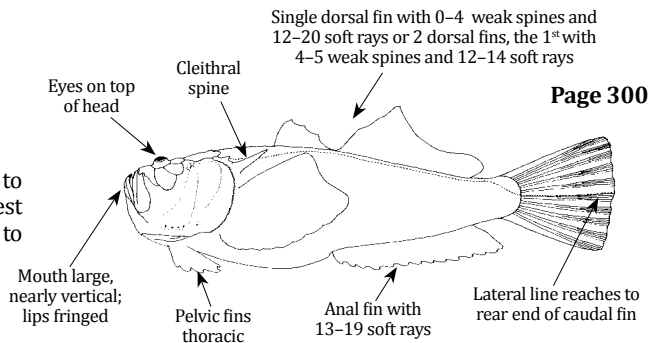


Page 300

URANOSCOPIDAE

Stargazers

To about 24 cm. Marine and estuarine; benthic to a depth of 500 m, mesopelagic. Of little interest to fisheries. One species included in the Guide to Species.

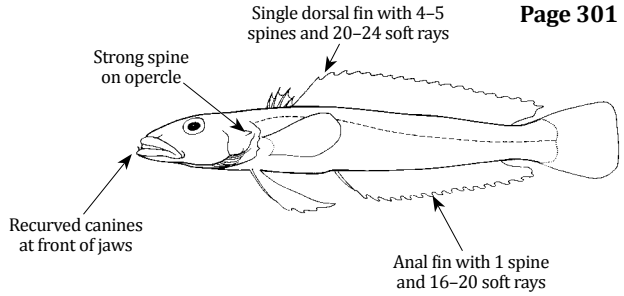


Page 300

PINGUIPEDIDAE

Sandperches

To about 30 cm. Marine, coastal waters; benthic. Of little interest to fisheries. Two species included in the Guide to Species.



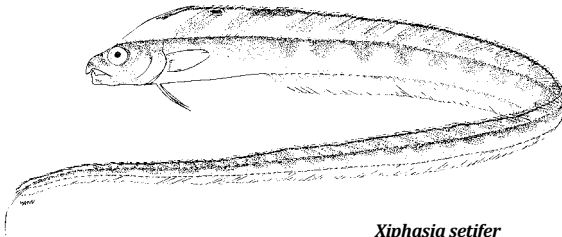
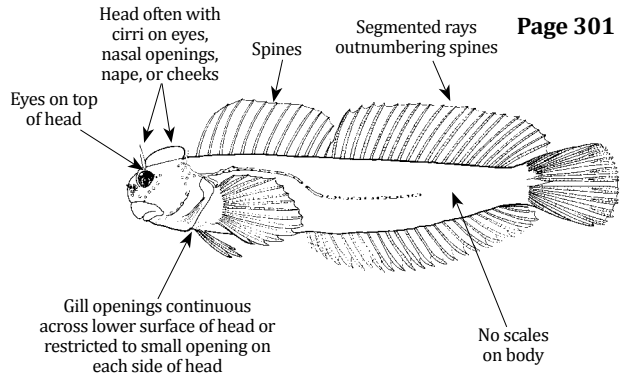
Order PERCIFORMES: BLENNIOIDEI - Blennies and allies

Dorsal fin long; pelvic fins reduced, with 1 hidden spine and 2 to 4 soft rays, located ahead of pectoral fins; tentacles often present on head; 2 anal-fin spines (one of them often difficult to see).

BLENNIIDAE

Blennies

To about 60 cm, but most species much less than 15 cm. Marine, in coastal waters, usually at depths less than 20 m; also estuaries and coastal lagoons; benthic. Of no interest to fisheries; some species of interest to the aquarium trade. One eel-like species *Xiphasia setifer* Swainson, 1839 included in the Guide to Species.



Xiphasia setifer

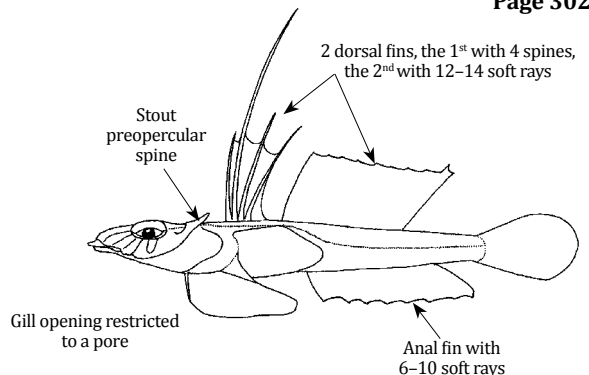
Order PERCIFORMES: CALLIONYMOIDEI - Dragonets

Head broad and depressed; sharp spine on either preopercle or, opercle and subopercle; pelvic fins with 1 spine and 5 soft rays; body scaleless; size usually less than 25 cm.

CALLIONYMIDAE

Dragonets

To about 16 cm. Marine, mainly from coastal reefs; benthic. Of no interest to fisheries; some species of interest to the aquarium trade. One species included in the Guide to Species. *Callionymus marleyi* Regan, 1918 identified from photos in Pakistan's waters and *Callionymus hindsii* Richardson, 1844 recorded in Pakistan (see Fricke, 2002) are not included in the Guide to Species.



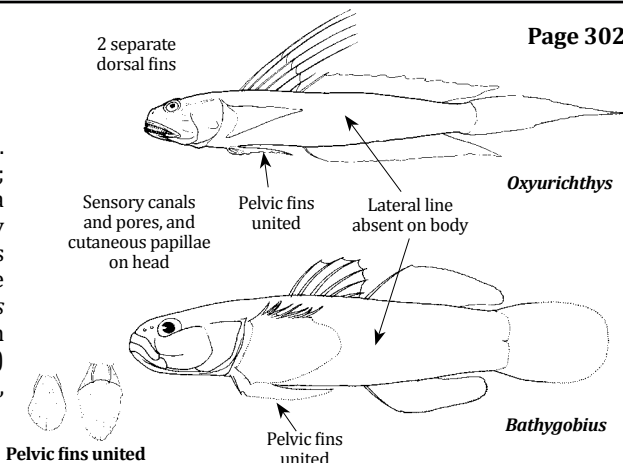
Order PERCIFORMES: GOBIOIDEI – Gobies and allies

Usually small fishes with pelvic fins either very close together or united into a single cup-like structure; sensory canals restricted to head.

GOBIIDAE

Gobies

To about 23 cm, but most species below 10 cm. Marine and brackish waters and some in freshwaters; usually in shallow waters, but a few species to a depth of below 150 m; benthic. The largest family of fishes. Of no interest to fisheries. Five species included in the Guide to Species. Members of the genera *Oxyurichthys*, *Glossogobius* and *Bathygobius* have been identified from photographic records in Pakistan's waters. *Odontamblyopus tenuis* (Day, 1876) recorded in Pakistan (see Murdy and Shibukawa, 2000) is not included in the Guide to Species.



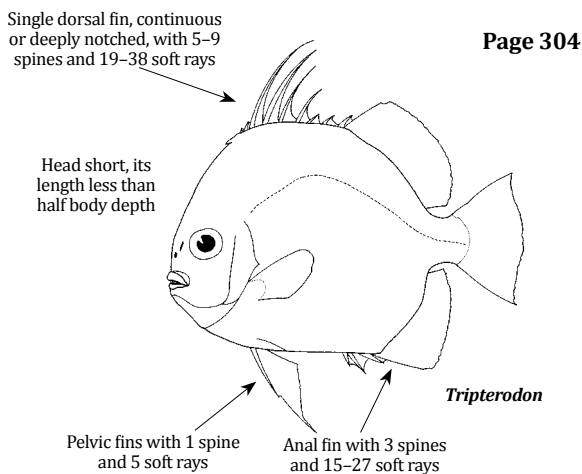
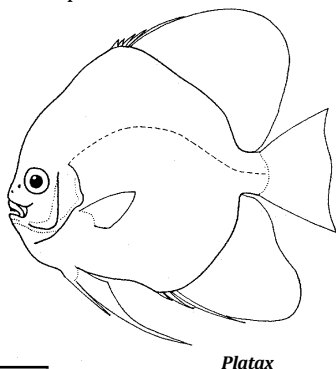
Order PERCIFORMES: ACANTHUROIDEI – Surgeonfishes and allies

Body deeply compressed laterally; scales small in most species; mouth small, slightly or non-protrusible; gill membranes broadly united to isthmus, restricting gill opening ventrally; pelvic fins with I-II spines and 3–5 soft rays.

EPHIPPIDAE

Spadefishes

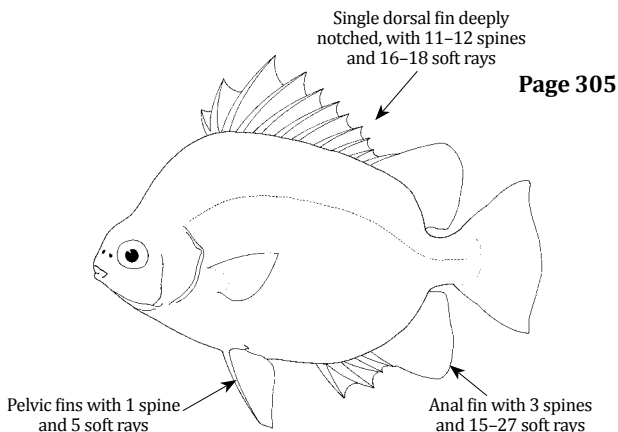
To 75 cm. Marine, shallow waters on mud banks; demersal. Of little interest to fisheries. Three species included in the Guide to Species.



SCATOPHAGIDAE

Scats

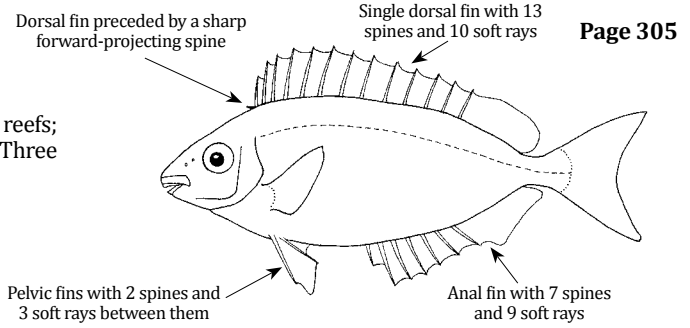
To about 38 cm. Marine and estuarine. Of little interest to fisheries. One species included in the Guide to Species.



SIGANIDAE

Rabbitfishes - Spinefoots

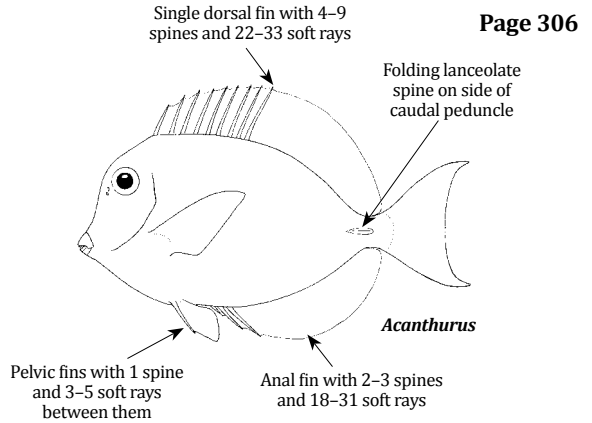
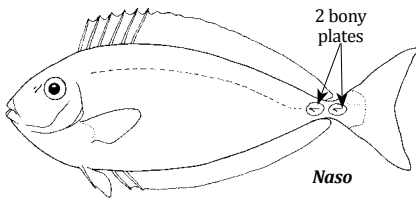
To 55 cm. Marine, coastal waters around reefs; demersal. Of major interest to fisheries. Three species included in the Guide to Species.



ACANTHURIDAE

Surgeonfishes - Tangs - Unicornfishes

To about 90 cm. Marine, in shallow waters associated with reefs, usually at a depth of less than 50 m; benthic. Of interest to fisheries. Seven species included in the Guide to Species.



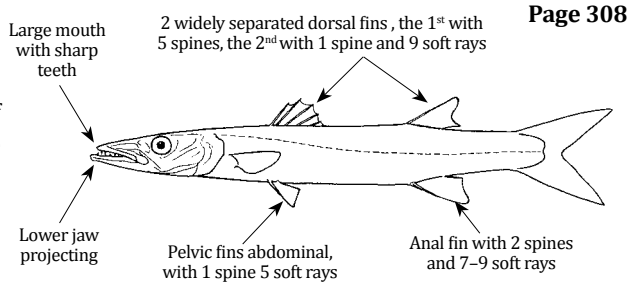
Order PERCIFORMES: SPHYRAENOIDEI - Barracudas

Body elongate, upper jaw not protrusible; generally silvery on sides; head and snout both very long; teeth strong; two dorsal fins.

SPHYRAENIDAE

Barracudas

To 200 cm. Marine, from coastal waters to a depth of about 100 m; pelagic neritic. Of interest to fisheries. Eight species included in the Guide to Species.



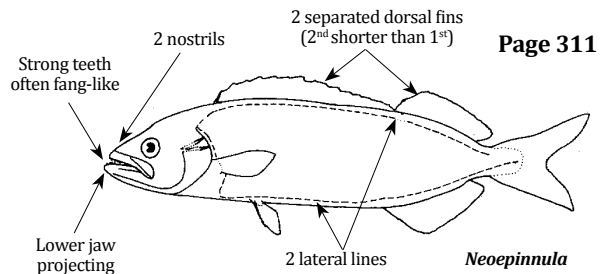
Order PERCIFORMES: SCOMBROIDEI - Tunas and allies

Finlets usually present at posterior ends of dorsal and anal fins; 1 to 3 keels on either side of caudal peduncle (except in most species of Gempylidae).

GEMPYLIDAE

Snake mackerels

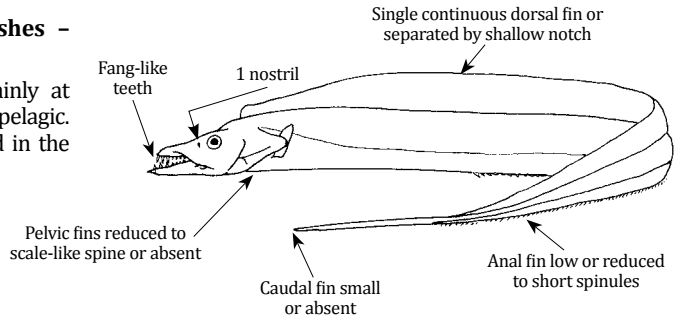
To about 30 cm. Marine, from the surface (at night) to depths below 600 m; pelagic. Of interest to fisheries. One species included in the Guide to Species.



TRICHIURIDAE

Cutlassfishes - Hairtailfishes - Frostfishes - Scabbardfishes

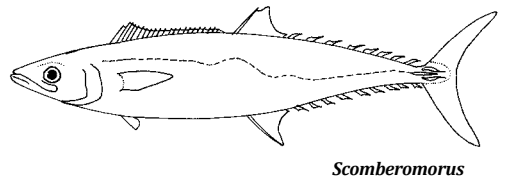
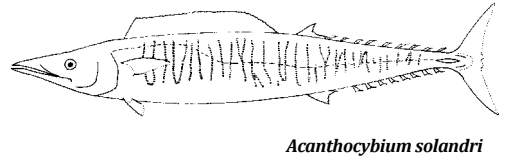
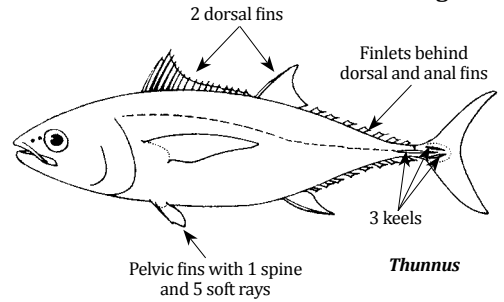
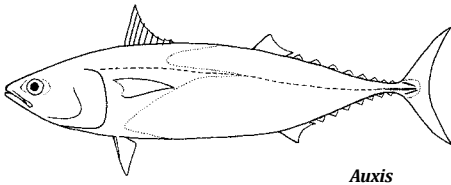
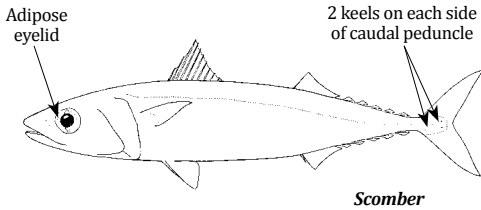
To 120 cm. Marine, from the surface (mainly at night) to depths below 1 000 m; benthic and pelagic. Of interest to fisheries. Five species included in the Guide to Species.



SCOMBRIDAE

Albacore - Bonitos - Kawakawa - Mackerels - Seerfishes - Tunas - Wahoo

To 250 cm. Marine, from surface waters to depths below 200 m; pelagic. Of major interest to fisheries. Fifteen species included in the Guide to Species.



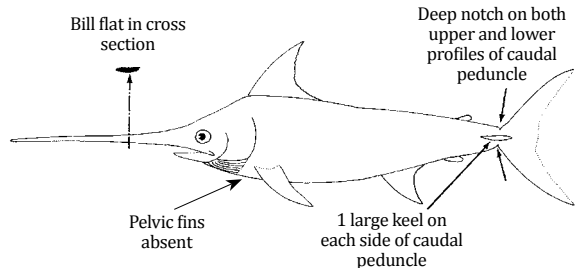
Order PERCIFORMES: XIPHIODEI - Billfishes

Characterized by the prolongation of the upper jaw, much beyond the lower jaw into a long rostrum which is flat and swordlike (swordfish) or rounded and spearlike (sailfishes, spearfishes and marlins).

XIPHIIDAE

Swordfish

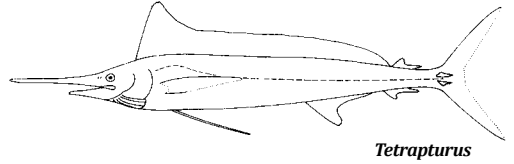
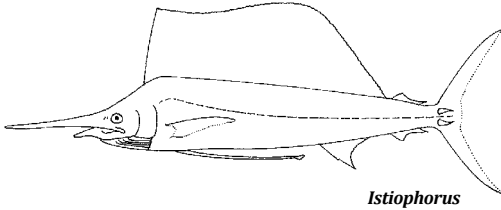
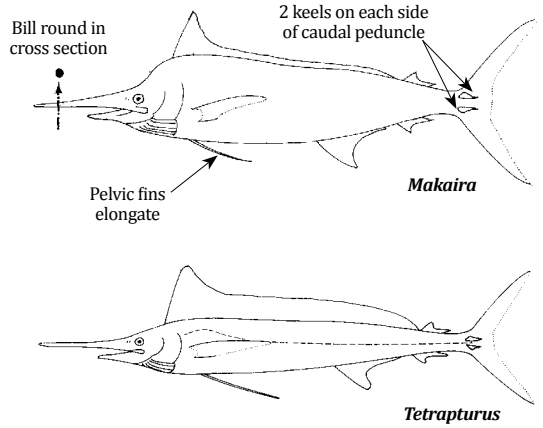
To 455 cm. Marine, from the surface to depths below 800 m; pelagic. Of major interest to fisheries. A single species worldwide, included in the Guide to Species.



ISTIOPHORIDAE

Marlins - Sailfishes - Spearfishes

To 500 cm. Marine, pelagic oceanic, usually above the thermocline. Of major interest to fisheries. Five species included in the Guide to Species.



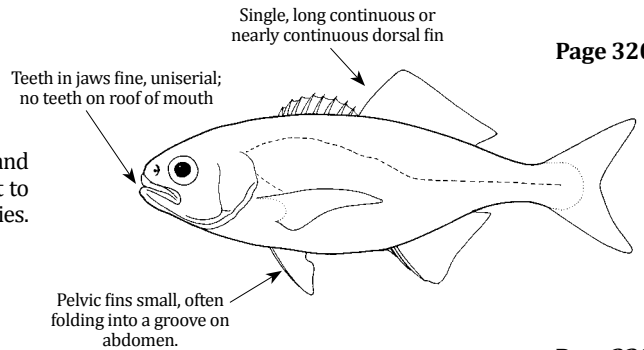
Order PERCIFORMES: STROMATEOIDEI - Harvestfishes and allies

Shape variable; snout blunt and thick; toothed saccular outgrowths (pharyngeal sacs) present in the gullet immediately behind the last gill arch; teeth small, approximately uniserial.

CENTROLOPHIDAE

Medusafishes - Ruffs - Barrelfishes

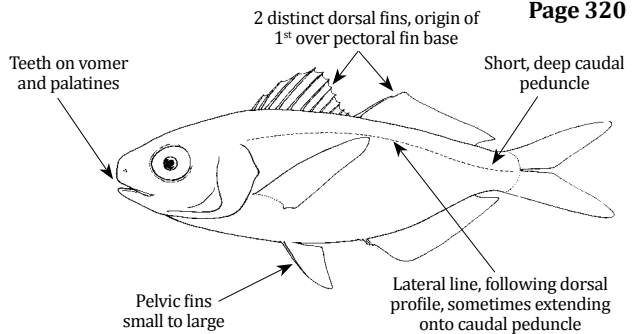
To 25 cm. Marine, between depths of 250 m and 300 m; mesopelagic to demersal. Of little interest to fisheries. One species included in the Guide to Species.



NOMEIDAE

Driftfishes - Cicarfishes

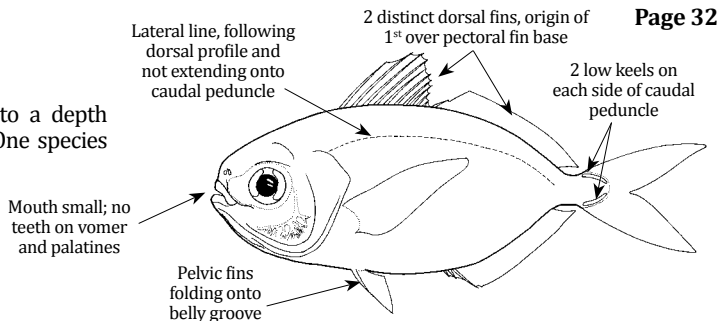
To 21 cm. Marine, deeper waters of the continental slope; epi- and mesopelagic. Of little interest to fisheries. One species included in the Guide to Species.



ARIOMMATIDAE

Ariommas - Driftfishes

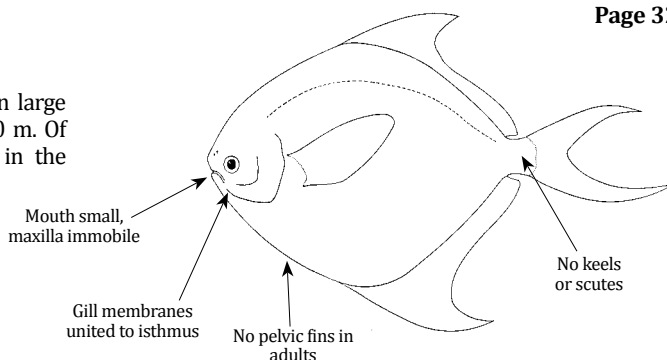
To 25 cm. Marine, continental waters, to a depth of 300 m. Of little interest to fisheries. One species included in the Guide to Species.



STROMATEIDAE

Butterfishes - Silver pomfrets

To 60 cm. Marine, coastal fishes occurring in large schools mainly in depths shallower than 100 m. Of interest to fisheries. Two species included in the Guide to Species.



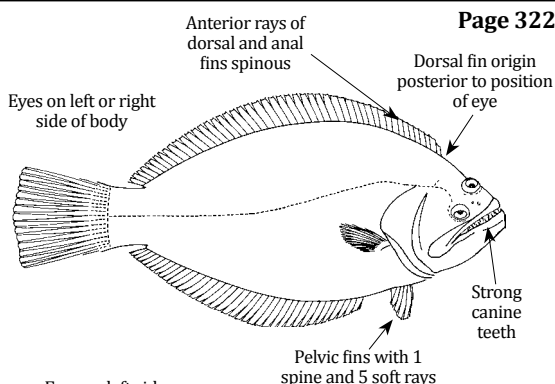
Order PLEURONECTIFORMES - Flatfishes

Flattened body shape; eyes present on one side of body only.

PSETTODIDAE

Spiny turbot

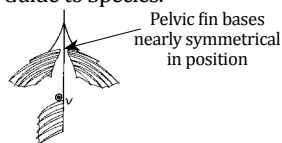
To 64 cm. Marine, coastal waters to depths of 100 m; benthic. Of interest to fisheries. One species included in the Guide to Species.



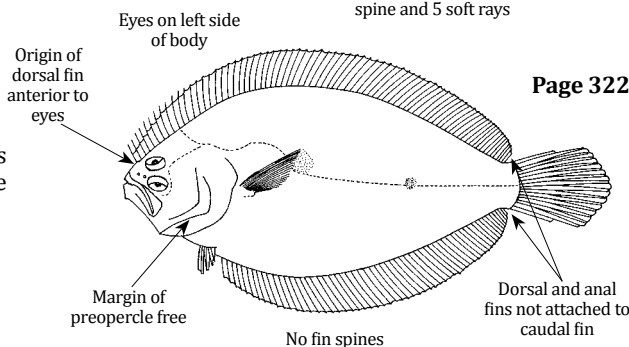
PARALICHTHYIDAE

Sand flounders - Short pelvic flounders

To about 45 cm. Marine, coastal waters to depths of 200 m; benthic. Of little interest to fisheries. Five species included in the Guide to Species.



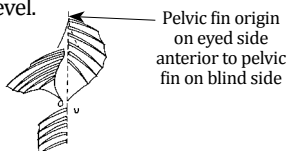
ventral view of pelvic fins



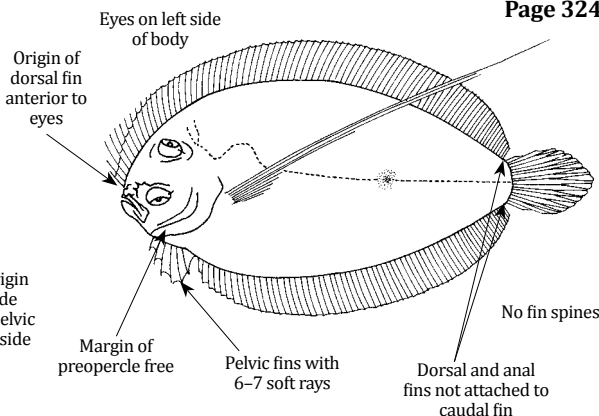
BOTHIDAE

Lefteye flounders

To 30 cm. Marine, from the coastline to a depth of about 600 m; benthic. Of little interest to fisheries. Five species included in the Guide to Species. Members of the genus *Arnoglossus* have been identified from photographic records in Pakistan's waters without identification to the species level.



Ventral view of pelvic fins



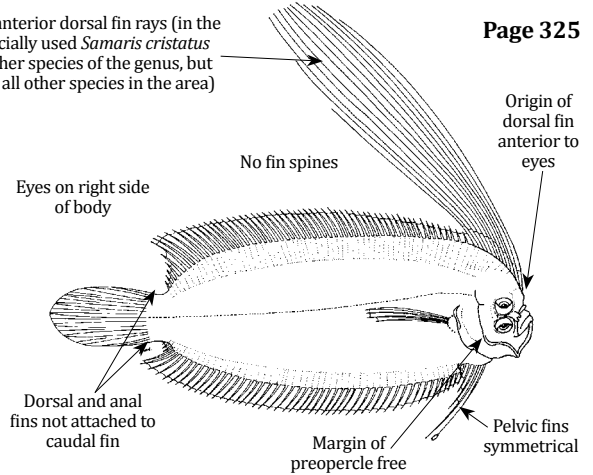
SAMARIDAE

Crested flounders

To 22 cm. Marine, primarily in deep waters; benthic. Of little interest to fisheries. One species included in the Guide to Species.

Elongate anterior dorsal fin rays (in the commercially used *Samaris cristatus* and another species of the genus, but absent in all other species in the area)

Page 325

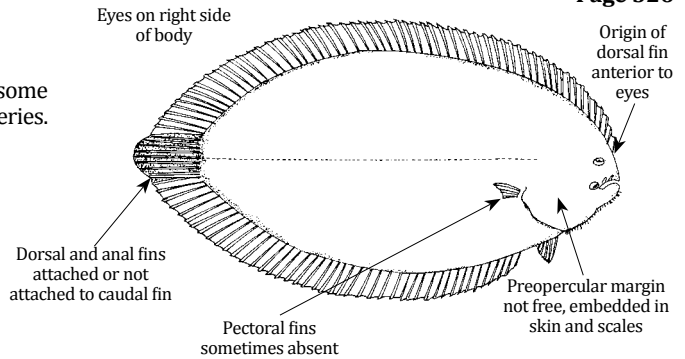


SOLEIDAE

Soles

To 32 cm. Marine, shallow coastal waters; some species in estuaries; benthic. Of interest to fisheries. Six species included in the Guide to Species.

Page 326

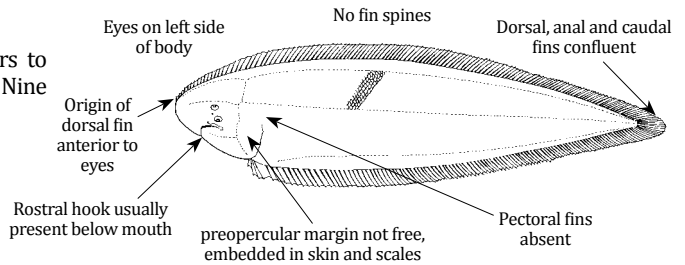


CYNOGLOSSIDAE

Tonguesoles

To 50 cm. Marine, from shallow coastal waters to depths of about 200 m. Of interest to fisheries. Nine species included in the Guide to Species.

Page 328



Order TETRAODONTIFORMES – Pufferfishes and allies

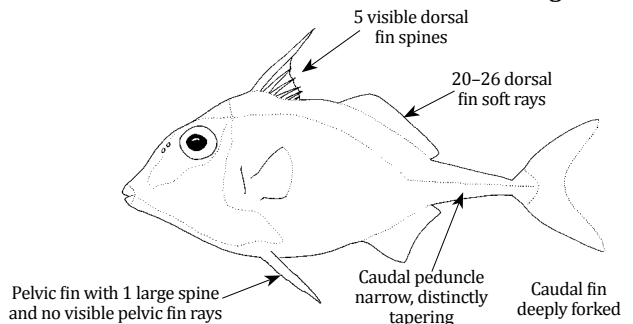
Pelvic fins absent or strongly reduced; a small mouth with strong teeth, frequently coalesced into a biting plate; a small gill opening; skin thick or rough, sometimes with prickles, spines or scaly plates.

TRIACANTHIDAE

Tripodfishes

To 30 cm. Marine, from the coastline to 100 m; benthic. Of no interest to fisheries. Three species included in the Guide to Species.

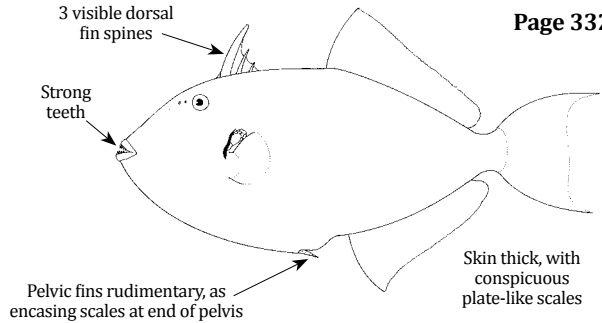
Page 331



BALISTIDAE

Triggerfishes

To about 60 cm. Marine, from the coastline to a depth of about 100 m; mostly benthic, a few benthopelagic. Of interest to fisheries. Six species included in the Guide to Species.

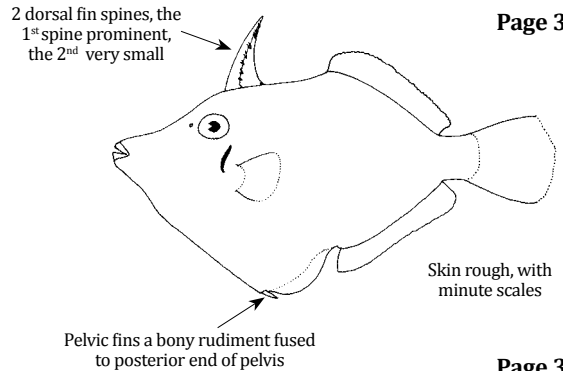


Page 332

MONACANTHIDAE

Filefishes - Leatherjackets

To 100 cm, but most smaller than 10 cm. Marine, from the coastline to a depth of about 100 m; mostly benthic. Of no interest to fisheries. Four species included in the Guide to Species

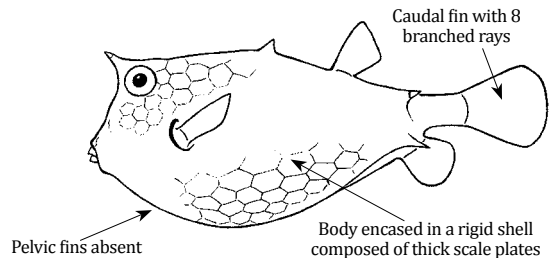


Page 334

OSTRACIIDAE

Boxfishes

To 50 cm. Marine, from the coast to a depth of about 100 m; benthic. Of no interest to fisheries, but of interest of the aquarium trade. Three species included in the Guide to Species

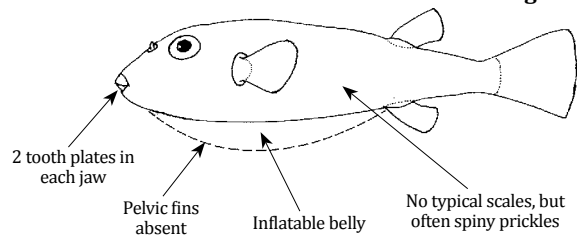


Page 335

TETRAODONTIDAE

Puffers

To about 100 cm. Coastal marine waters, estuaries, brackish lagoons, and occasionally freshwater; from the coastline to a depth of about 180 m; benthic. Poisonous and not eaten. Eight species included in the Guide to Species

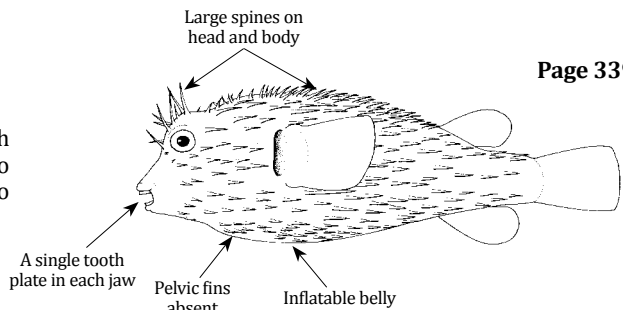


Page 336

DIODONTIDAE

Porcupinefishes - Spiny puffers - Burrfishes

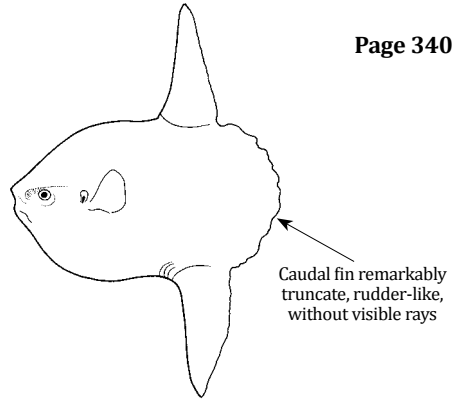
To 75 cm. Marine, from the coastline to a depth of about 100 m; mostly benthic. Of no interest to fisheries. Four species included in the Guide to Species.



Page 339

MOLIDAE**Page 340****Molas - Ocean sunfishes**

To 330 cm or more. Marine, from the surface to a depth of about 360 m; pelagic oceanic. Of little interest to fisheries. Two species included in the Guide to Species.



ELOPIDAE

Ladyfishes – Tenpounders

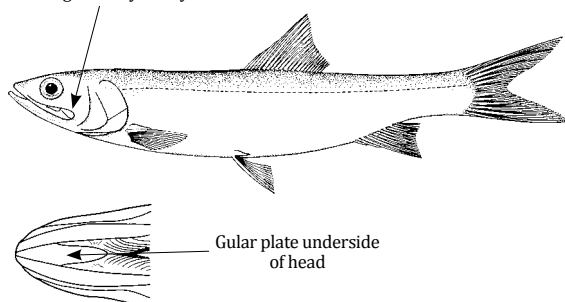
Elops machnata (Forsskål, 1775)

(Plate VIII, 57)

FAO names: Tenpounder (En)

Local name(s): Sulemani, Sairi (Sin); Bagga (Bal).**Habitat:** Pelagic in coastal waters entering lagoons and estuaries.**Fisheries:** Gillnets.**Distinctive Characters:** Teeth on jaws villiform; no spines in fins; single dorsal fin with 20–27 rays, its origin a little behind mid-point of body; anal fin short, with 14–17 rays, its origin well behind dorsal fin base; pelvic fin little, in front of dorsal fin origin; scales very small, about 100 on lateral line.**Colour:** Back blue-grey, sides silvery with a yellow tinge; fins faint yellow.

Mouth large, upper jaw reaching well beyond eye

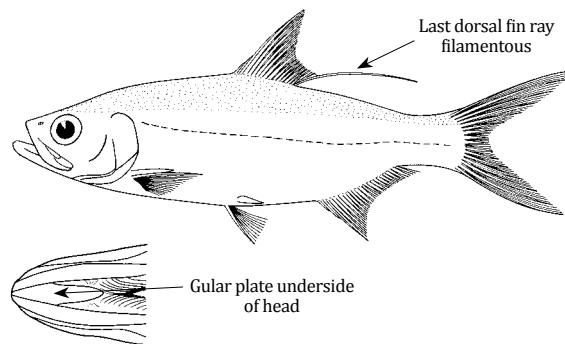
**Size:** To 100 cm, common 50 cm (TL)**MEGALOPIDAE**

Tarpons

Megalops cyprinoides (Broussonet, 1782)

FAO names: Indo-Pacific tarpon (En)

Tarpon Indo-Pacifique (Fr)

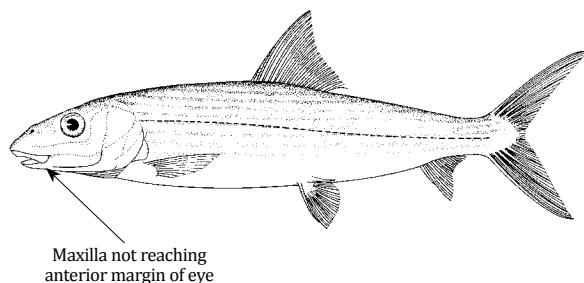
Local name(s): Sulemani, Sairi (Sin); Mota, Sanpo (Bal).**Habitat:** Pelagic in coastal waters entering lagoons and estuaries.**Fisheries:** Gillnets.**Distinctive Characters:** Lower jaw projecting; fins lacking spines; dorsal fin origin at about midpoint of body; anal fin origin a little behind end of dorsal fin base; 26–27 branchiostegal rays; large scales, 30–40 on lateral line.**Colour:** Back blue-green, flanks silvery.**Size:** To 150 cm (TL), common 30 cm (SL)**ALBULIDAE**

Bonefishes

Albula argentea (Forster, 1801)

(Plate VIII, 58)

FAO names: Indo-Pacific Longjaw bonefish (En)

Local name(s): Sulemani, Sairi (Sin); Mushuk (Bal).**Habitat:** Inshore, shallow waters on sandy and muddy bottoms.**Fisheries:** Gillnets.**Distinctive Characters:** Lower jaw angular, with a pointed symphysis; 68–73 pored lateral line scales; 8 scale rows above lateral line; tip of pelvic fin not reaching to anus.**Colour:** Head and body bright silvery, white on side and below; posterior margin of caudal fin black; base on pectoral and pelvic fins slightly yellow.**Size:** To 70 cm (SL)

MURAENIDAE

Morays

Echidna nebulosa (Ahl, 1789)*

FAO names: Snowflake moray (En)

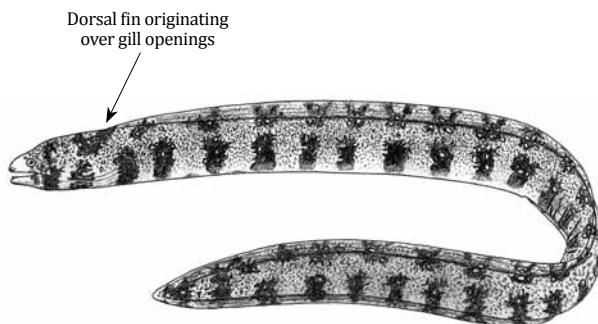
Local name(s): Karra, Karran, Sankh (Sin); Riami sang (Bal).

Habitat: Shallow reef areas from 2 m to 48 m.

Fisheries: Line gears, bottom trawls.

Distinctive Characters: Anus in about middle of body, preanal length 1.9–2.1 in TL; snout short and blunt; eye relatively small; teeth conical and granular in 2 rows on jaws, but all teeth more conical in young; teeth on vomer molariform in 2 parallel rows; 121–124 vertebrae.

Colour: Variable, but body typically pale with 2–3 rows of darker, star-like blotches along the body, each with a yellow centre; the spots variably combined to form vertical bands; smaller spots and mottling between the starry blotches.



Size: To 100 cm, common 50 cm (TL)

Gymnothorax dorsalis Seale, 1917

FAO names: Three-pore moray (En)

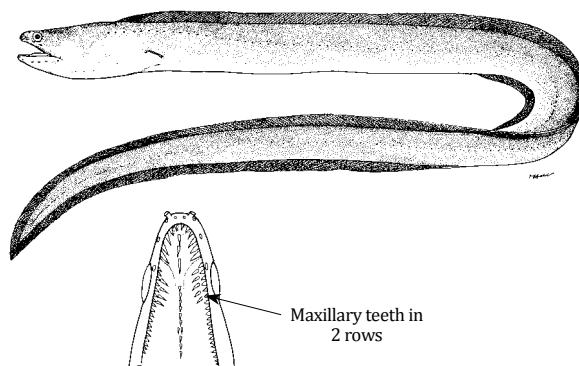
Local name(s): Karra, Karran, Sankh (Sin); Riami sang (Bal).

Habitat: Offshore, muddy or sandy bottoms.

Fisheries: Line gears, bottom trawls.

Distinctive Characters: Anus before midbody, preanal length 2.3 in TL; body depth at gill opening 24–27 in TL; snout short and bulbous; 3 pores along upper jaw (infraorbital); lower jaw prominent; lips papillose; eye closer to snout tip than to corner of mouth; teeth long and slender, widely spaced; maxillary teeth in 2 rows; 158 vertebrae.

Colour: Dark brown; fins darker than body, especially posteriorly.



Dentition of upper jaw

Size: To 83 cm (TL)

Gymnothorax favagineus Bloch & Schneider, 1801

(Plate VIII, 59)

FAO names: Laced moray (En)

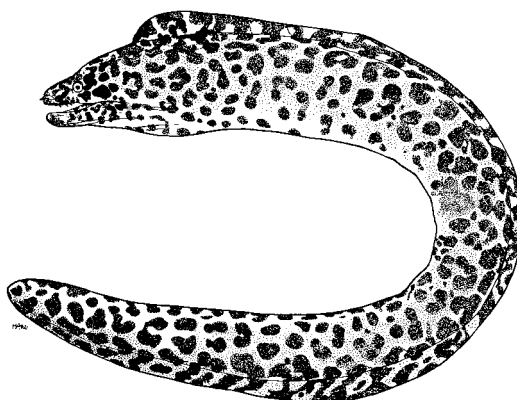
Local name(s): Karra, Karran, Sankh (Sin); Riami sang (Bal).

Habitat: Inhabits reef flats and outer reef slopes of continental reefs.

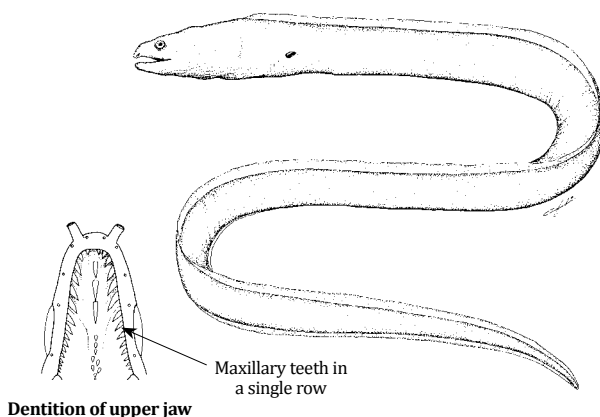
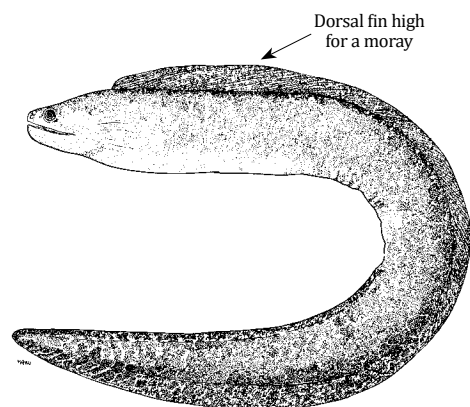
Fisheries: Line gears, bottom trawls.

Distinctive Characters: Anus before midbody, preanal length 2.1–2.2 in TL; body depth at gill opening 13–17 in TL; front of jaws usually with 4 large canines on each side, the more posterior teeth much smaller and angling backward; intermaxillary teeth a single median row, longer than lateral canines; 138–144 vertebrae.

Colour: Pale yellowish with numerous close-set large black spots, the pale interspaces forming a honeycomb-like pattern.



Size: To 300 cm (TL)

Gymnothorax phasmatodes* (Smith, 1962)*(Plate VIII, 60)****FAO names:** Ghost moray (En)**Local name(s):** Karra, Karran, Sankh (Sin); Riami sang (Bal).**Habitat:** Shallow water, on sand and rocks.**Fisheries:** Line gears, bottom trawls.**Distinctive Characters:** Anus at or just behind midbody, preanal length 1.7–2.0 in TL; body depth at gill openings 27–31 in TL; snout short and blunt, overhanging lower jaw; eye large, posterior margin above and just before corner of mouth; teeth long, slender and sharp; maxillary teeth in a single row; 168 vertebrae.**Colour:** Body pale tan to yellowish, shading to white ventrally; edge of fins white (the margin of dorsal fin appears sometimes light blue); head pores white; iris yellow.**Size:** To 46 cm (TL)***Gymnothorax prolatus* Sasaki & Amaoka, 1991****(Plate VIII, 61)****FAO names:** Slender plain moray (En)**Local name(s):** Karra, Karran, Sankh (Sin); Riami sang (Bal).**Habitat:** Probably inhabiting muddy or sandy bottoms.**Fisheries:** Line gears, bottom trawls.**Distinctive Characters:** Anus at midbody, preanal length 1.9–2.0 in TL; body depth at gill opening 29 in TL; snout bluntly rounded; eye moderate, closer to corner of mouth than to snout tip; teeth sharp and slender; maxillary teeth in 2 rows; 181–187 vertebrae.**Colour:** Body brown with dark fins; prominent white unpigmented spots surrounding supraorbital, infraorbital and mandibular pores and posterior nostril.**Size:** To 41 cm (TL)***Gymnothorax pseudothyroideus* (Bleeker, 1853)****(Plate VIII, 62)****FAO names:** Highfin moray (En)**Local name(s):** Karra, Karran, Sankh (Sin); Riami sang (Bal).**Habitat:** Found in shallow reefs, including tidepools.**Fisheries:** Line gears, bottom trawls.**Distinctive Characters:** Anus in about middle of body, preanal length 1.9–2.2 in TL; body depth at gill opening 10–18 in TL; eye over the middle of jaw; moderately large canine teeth in a single row in jaws, usually with one median row of 3 intermaxillary canines; 128–136 vertebrae.**Colour:** Pale yellowish, densely spotted with dark brown, the spots clustering to form dark blotches larger than eye in about 4 irregular rows on body; juveniles with a white margin on fins.**Size:** To 100 cm (TL)

Gymnothorax reticularis Bloch, 1795

FAO names: Ventral-barred moray (En)

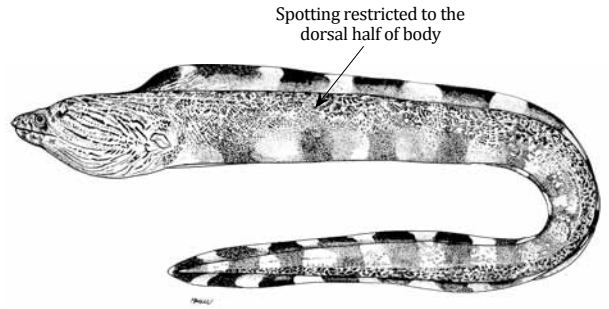
Local name(s): Karra, Karran, Sankh (Sin); Riami sang (Bal).

Habitat: Caught at depths to 100 m on sandy gravel bottom.

Fisheries: Bottom trawls.

Distinctive Characters: Anus slightly before midbody, preanal length 2.0–2.2 in TL; body depth at gill openings 16–18 in TL; eye closer to corner of mouth than to snout tip; maxillary, dentary and peripheral intermaxillary teeth with fine serrations; maxillary teeth usually in a single row; 114–126 vertebrae.

Colour: Body behind gill opening with 15–19 bars, more prominent on ventral half of body, obscured by spots on dorsal half; head and chin with closely spaced brown spots separated by narrow pale interspaces giving the impression of horizontal lines, especially in branchial region.



Size: To 60 cm (TL)

***Gymnothorax* sp.**

(Plate VIII, 63, 64)

FAO names: Not available (En)

Local name(s): Karra, Karran, Sankh (Sin); Riami sang (Bal).

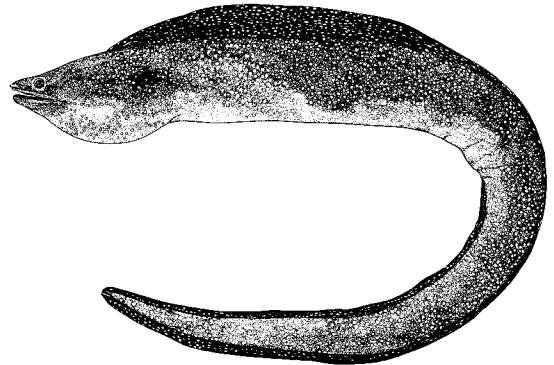
Habitat: Subtidal rocky and reef areas.

Fisheries: Line gears.

Distinctive Characters: Anus at about midbody, preanal length 2.0 in TL; body depth at gill openings 15.6 in TL; snout 4.7 in HL; eye closer to snout tip than to corner of mouth; teeth long, slender and sharp; maxillary teeth in a single row; no extra rows of intermaxillary teeth between outer and median rows; 130 vertebrae.

Colour: Head, body and fins dark purplish brown covered with numerous, very small, white spots (spots also inside of mouth); gill opening black.

Remarks: Possibly an undescribed species (needs to be checked against the syntypes of *Gymnothorax punctatus* Bloch & Schneider, 1801).



Size: To 83 cm (TL)

Strophidon sathete (Hamilton, 1822)

(Plate IX, 65)

FAO names: Slender giant moray (En)

Local name(s): Karra, Karran, Sankh (Sin); Riami sang (Bal).

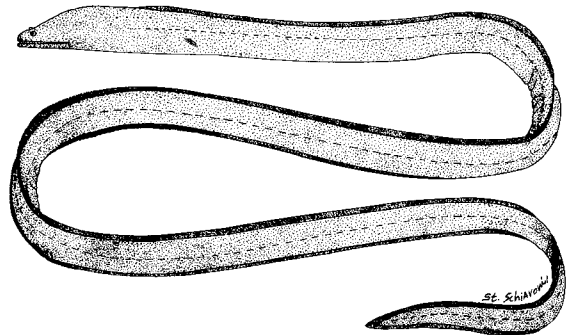
Habitat: Benthic, in shallow coastal waters, muddy areas, estuaries and river mouths.

Fisheries: Line gears, bottom trawls.

Distinctive Characters: Anus well before midbody, preanal length 2.3–2.9 in TL; body depth at gill openings 25–49 in TL; dorsal fin originating before gill opening; eye far forward over anterior third of gape; teeth numerous, slender and sharp; jaw (maxillary and dentary) teeth in 2 rows for most of their extent; intermaxillary teeth in 2 rows; 186–212 vertebrae.

Colour: Head, body and fins uniform brown.

Remarks: This is probably a complex of species that have not yet been sorted out.



Size: To 400 cm, common 70 cm (TL)

OPHICHTHIDAE

Snake eels – Worm eels

Pisodonophis boro (Hamilton, 1822)

FAO names: Rice-paddy eel (En)
Serpenton des rizières (Fr)

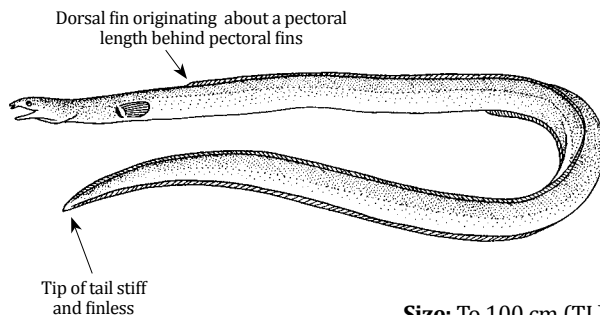
Local name(s): Karra, Karran (Sin); Ulla-lainduk (Bal).

Habitat: Lagoons and estuaries, enters freshwater and paddy fields.

Fisheries: Line gears, bagnets.

Distinctive Characters: Body cylindrical, compressed only along extreme tail tip; anterior nostril tubular, posterior along lower edge of lip; teeth granular to molariform, multiserial bands in jaws and vomer, but sharper in jaws.

Colour: Uniformly brownish olive above, lighter below; dorsal fin with a narrow black edge.



Size: To 100 cm (TL)

Pisodonophis cancrivorus (Richardson, 1848)

FAO names: Longfin snake-eel (En)

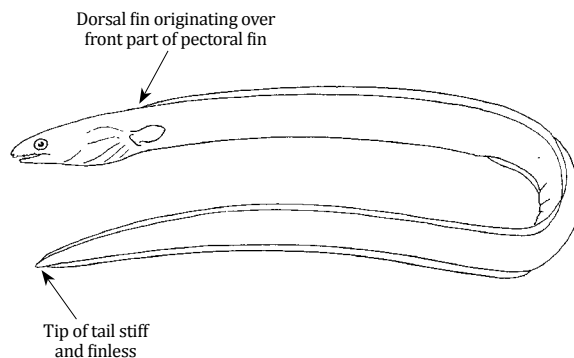
Local name(s): Karra, Karran (Sin); Ulla-lainduk (Bal).

Habitat: Lagoons and estuaries, enters freshwater.

Fisheries: Line gears, bagnets.

Distinctive Characters: Body cylindrical, compressed only along extreme tail tip; anterior nostril tubular, posterior along lower edge of lip; teeth granular to molariform, multiserial bands in jaws and vomer, but sharper in jaws.

Colour: Uniformly brownish olive above, light yellow below; dorsal fin with a narrow black edge.



Size: To 108 cm, common 50 cm (TL)

CONGRIDAE

Conger eels

Ariosoma gnanadossi Talwar & Mukherjee, 1977

(Plate IX, 66)

FAO names: Indian conger (En)

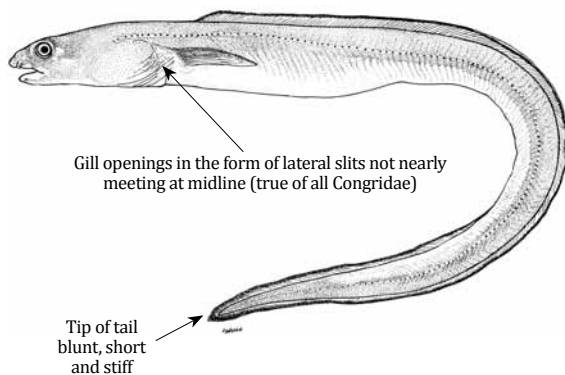
Local name(s): Bam (Sin); Sang (Bal)

Habitat: Soft bottoms down to 250 m depth.

Fisheries: Bottom trawls.

Distinctive Characters: Dorsal fin origin approximately over gill opening; eye diameter equal to length of snout; teeth minute, conical in 2-5 irregular rows on each jaw; posterior nostril ovoid, slightly nearer to eye than to tubular anterior nostril; dorsal and anal fin rays unsegmented; flange present on upper lip; intermaxillary tooth patch scarcely visible in front of closed mouth; 44-47 preanal lateral line pores; 141-145 total vertebrae.

Colour: Light brown above, paler below; dorsal and anal fins with a narrow blackish border; pectoral fins usually dusky.

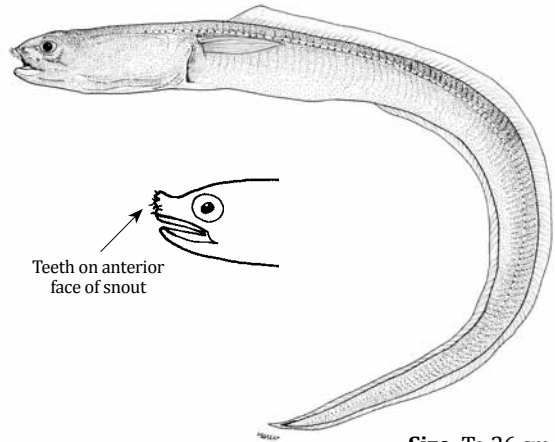


Size: To 37.6 cm (TL)

***Bathymyrus echinorhynchus* Alcock, 1889**

FAO names: Rough-nose conger (En)

Local name(s): Bam (Sin); Sang (Bal)
Habitat: Apparently offshore on sandy or muddy bottoms.
Fisheries: Bottoms trawls.
Distinctive Characters: Dorsal fin origin slightly behind the base of pectoral fins; anus well before midbody, preanal length >40% TL; eye diameter equal to length of snout; caudal fin short and tip of tail stiff; posterior nostril below mid-eye level; dorsal and anal fin rays unsegmented; flange present on upper lip; intermaxillary tooth patch fully exposed and curving upward on anterior face of snout, its height less than half of eye diameter.
Colour: Uniformly brownish yellowish; fins light.

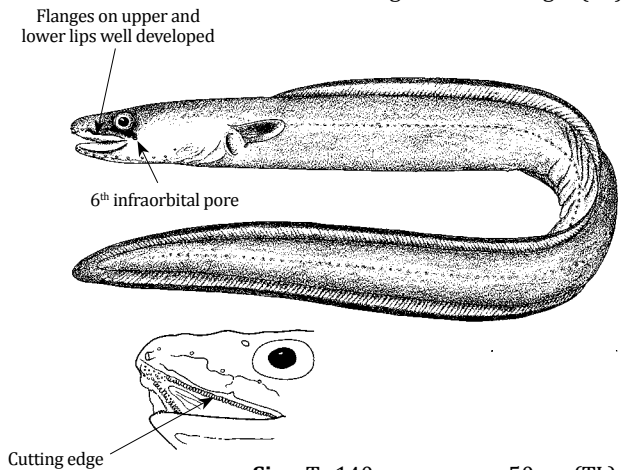


Size: To 26 cm (TL)

Conger cinereus* Rüppell, 1830

FAO names: Longfin African conger (En)

Local name(s): Bam (Sin); Sang (Bal).
Habitat: Benthic on reefs and active at night.
Fisheries: Bottom trawls, line gears.
Distinctive Characters: Dorsal fin originating over middle of pectoral fins; 2 rows of teeth in jaws, those of outer row larger; closely set and compressed to form a cutting edge; 6th infraorbital pore located close and slightly above posterior angle of jaw; 36–39 preanal lateral line pores.
Colour: Grey to brown with a broad black margin on median fins; a black spot on pectoral fins (absent on juveniles) and a black bar under the eye; in life with dark crossbars.



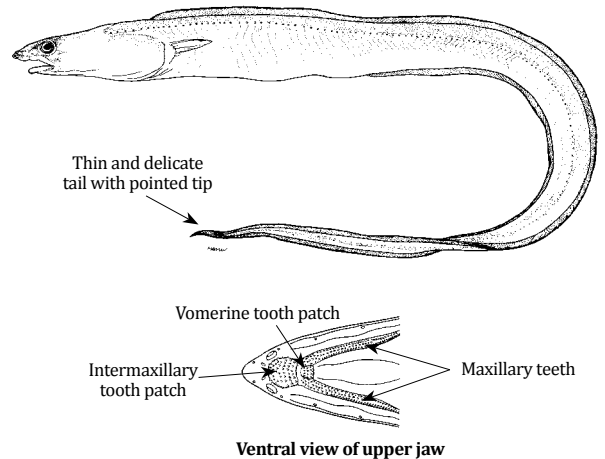
Size: To 140 cm, common 50 cm (TL)

***Rhynchoconger squaliceps* (Alcock, 1894)**

(Plate IX, 67)

FAO names: Small-toothed conger (En)

Local name(s): Bam (Sin); Sang (Bal).
Habitat: Found on soft bottoms down to 500 m depth.
Fisheries: Bottom trawls.
Distinctive Characters: Dorsal fin origin in front of base of pectoral fins; anterior nostril tubular on ventro-lateral side of snout tip; posterior nostril oval in front of mid-eye; upper jaw projects in front of lower jaw, leaving intermaxillary teeth exposed; small flange on upper lip; intermaxillary teeth small, conical, in a multiserial patch; vomerine teeth similar in shape, slightly smaller; maxillary and dentary teeth minute in irregular rows; no enlarged teeth present.
Colour: Dorsal side of head and body olive-grey, ventral side white; edges of dorsal and anal fins black; peritoneum whitish.

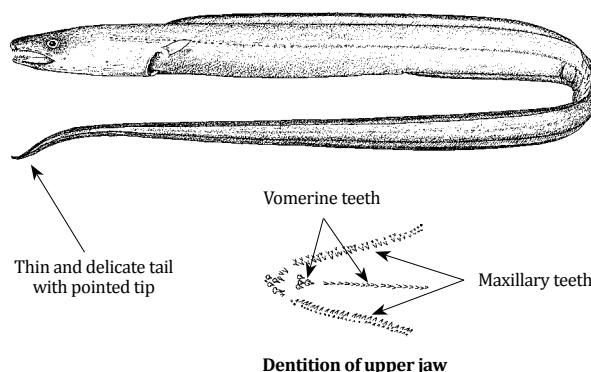


Size: To 57 cm (TL)

Uroconger cf. lepturus* (Richardson, 1845)*(Plate IX, 68)****FAO names:** Slender conger (En)**Local name(s):** Bam (Sin); Sang (Bal).**Habitat:** Offshore on soft sand-mud bottoms.**Fisheries:** Bottom trawls.

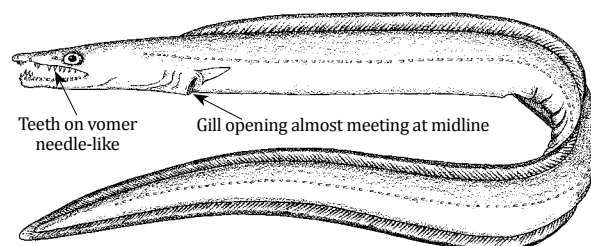
Distinctive Characters: Dorsal fin originating over base of pectoral fin; pectoral fins small and delicate; flanges on lips poorly developed; teeth very sharp and prominent, those on maxillary and dentary multiserial, forming a band, but no cutting edge; vomerine teeth in a single row, extending far back on roof of mouth; 42–44 preanal lateral line pores.

Colour: Light greyish brown, darker on opercle, the lower surface of head and trunk white; lateral line pores white; posterior part of dorsal and anal fins black.

**Size:** To 52 cm, common 30 cm (TL)**MURAENESOCIDAE****Pike congers*****Congresox talabonoides* (Bleeker, 1853)*****FAO names:** Indian pike conger (En)**Local name(s):** Bam (Sin); Sang (Bal).**Habitat:** Benthic, on soft bottoms, in estuaries, lagoons and shallow coastal waters down to 100 m.**Fisheries:** Bottom trawls, line gears.

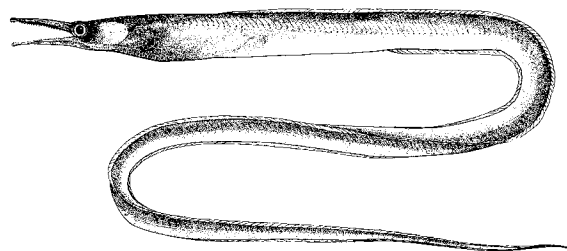
Distinctive Characters: Body elongate, cylindrical in front, compressed along tail; pectoral fins relatively small, about 4 times in head length; 57–68 dorsal fin rays and 35–40 lateral line pores before level of anus, respectively.

Colour: Head and body yellow, tinged with bronze, white below; dorsal and anal fins with narrow black edges.

**Size:** To 250 cm, common 180 cm (TL)***Gavialiceps taeniola* (Alcock, 1889)****(Plate IX, 69)****FAO names:** Gavial eel (En)**Local name(s):** Bam (Sin); Sang (Bal).**Habitat:** Benthopelagic on continental slopes between 350–1046 m.**Fisheries:** Pelagic trawls.

Distinctive Characters: Body flaccid; tail threadlike; snout long and slender with upper jaw strongly protruding over the lower jaw; teeth conical, tightly spaced in 3 rows on jaws; vomer with large medial teeth; pectoral fins absent or reduced to a rudiment; 40–43 (usually 40) lateral line pores to the origin of anal fin; 46–51 abdominal vertebrae.

Colour: Head black, body dark brown; peritoneum pigmented.

**Size:** To 64.7 cm (TL)

Muraenesox bagio (Hamilton, 1822)

FAO names: Common pike conger (En)
Morénésoce commun (Fr)

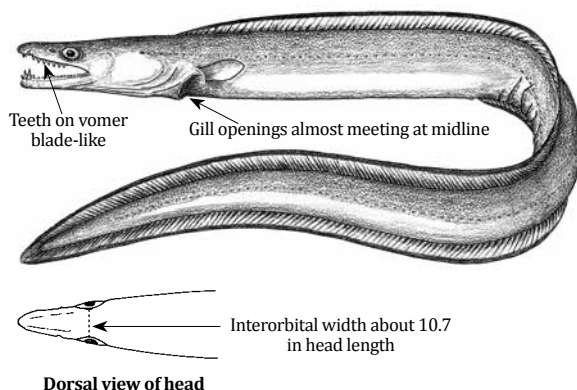
Local name(s): Bam (Sin); Sang (Bal).

Habitat: Benthic on soft bottoms in deeper waters down to 100 m.

Fisheries: Bottom trawls, line gears.

Distinctive Characters: Body elongate, cylindrical in front, compressed along tail; snout long; eye diameter 3 in snout length; posterior nostrils only slightly nearer to eye than to anterior nostrils; 47–59 dorsal fin rays and 33–39 lateral line pores before level of anus, respectively.

Colour: Light greyish brown with olive bronze above, lighter below; dorsal and anal fins with narrow black edges.



Size: To 200 cm, common 150 cm (TL)

Muraenesox cinereus (Forsskål, 1775)

(Plate IX, 70)

FAO names: Daggertooth pike conger (En)
Murénésoce-dague (Fr)

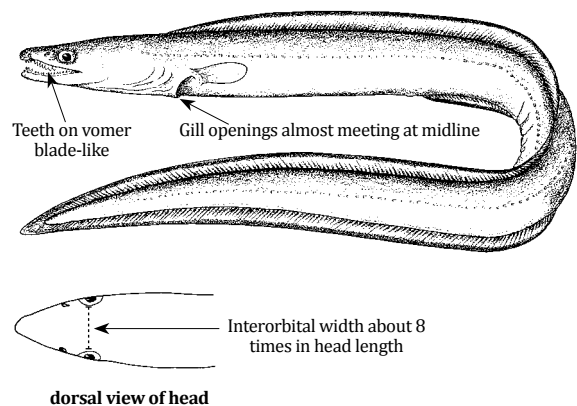
Local name(s): Bam (Sin); Sang (Bal).

Habitat: Benthic, on soft bottoms, in estuaries, lagoons and shallow coastal inlets down to 100 m.

Fisheries: Bottom trawls, line gears.

Distinctive Characters: Body elongate, cylindrical in front, compressed along tail; snout long; eye diameter 2–2.5 in snout length; 66–78 dorsal fin rays and 40–47 lateral line pores before level of anus, respectively.

Colour: Light to dark greyish brown above, lighter below; dorsal and anal fins with narrow black edges.



Size: To 220 cm, common 80 cm (TL)

CLUPEIDAE

Herrings – Shads – Gizzard shads – Sardines – Sardinellas

Anodontostoma chacunda (Hamilton, 1822)

(Plate IX, 71) **FAO names:** Chacunda gizzard shad (En)
Alose chaconde (Fr)

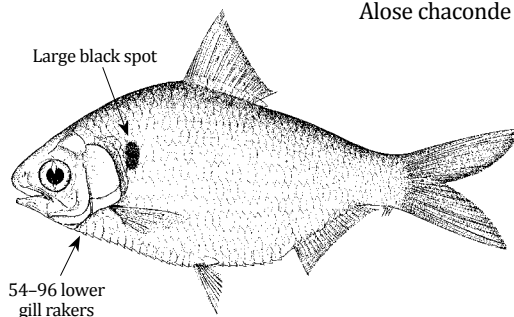
Local name(s): Dhaddi palli (Sin); Goi (Bal).

Habitat: Pelagic in inshore waters; also in estuaries.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: Body depth 40–70 of % SL in fishes over 10 cm; last dorsal fin ray not produced; abdomen fully scuted; longest gill rakers on lower part of arch less than corresponding gill filaments; hind edges of scales denticulated, the teeth thinner than gaps between them.

Colour: Large part of nape yellowish, flanks silvery, fins generally pale, caudal fin yellowish.



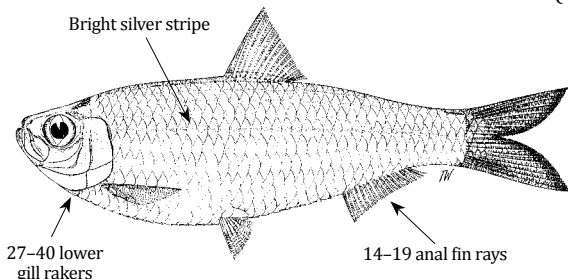
Size: To 22 cm, common 14 cm (SL)

Escualosa thoracata (Valenciennes, 1847)

Local name(s): Mithoo (Sin); Kashuk, Kasha (Bal).
Habitat: Coastal, pelagic, schooling species; juveniles apparently entering the lower parts of rivers.
Fisheries: Seines, gillnets, bagnet.
Distinctive Characters: Body depth 27–37% of SL; abdomen with 29 scutes (rarely 28–30); 7 pelvic fin rays; 2nd supramaxilla almost rectangular; no fleshy outgrowths on posterior margin of gill opening.
Colour: Body white to pale gray, inner edges of caudal fin darkish.

(Plate IX, 72)

FAO names: White sardine (En)
 Alose blanche (Fr)

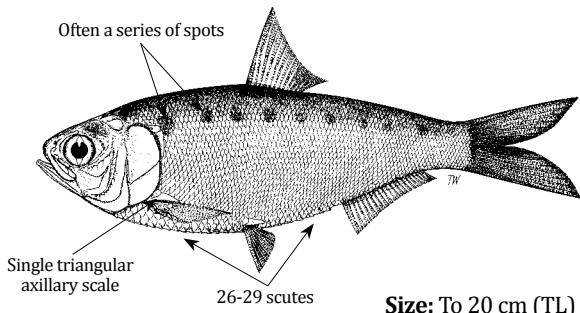


Size: To 10 cm, common 8 cm (SL)

Gudusia chapra (Hamilton, 1822)

Local name(s): Palri (Sin).
Habitat: Known from middle and upper reaches of rivers; also found in brackish waters.
Fisheries: Gillnets.
Distinctive Characters: Body depth 31–39% of SL; 77–91 scales in lateral series; depressed tip of dorsal fin to behind vertical from anal fin origin; hind margin of scales smooth; distinct median notch in upper jaw.
Colour: Dark blotch behind gill opening.

FAO names: Indian river shad (En)



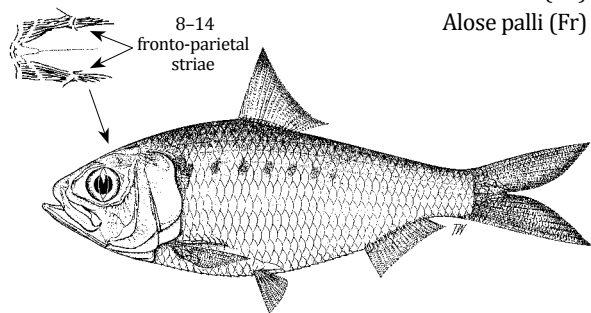
Size: To 20 cm (TL)

Hilsa kelee (Cuvier, 1829)

(Plate X, 73)

Local name(s): Palli, Palari (Sin); Kolgar, Bar-rug (Bal).
Habitat: Pelagic in coastal waters, enters estuaries.
Fisheries: Seines, gillnets, cast nets, bottom trawls.
Distinctive Characters: Abdomen with 27–31 scutes; upper jaw with a distinct median notch; a series of small triangular scales above axil of pectoral fins; hind part of body scales perforated.
Colour: Back blue-green, flanks silvery with 4–10 dark spots.

FAO names: Kelee shad (En)
 Alose palli (Fr)

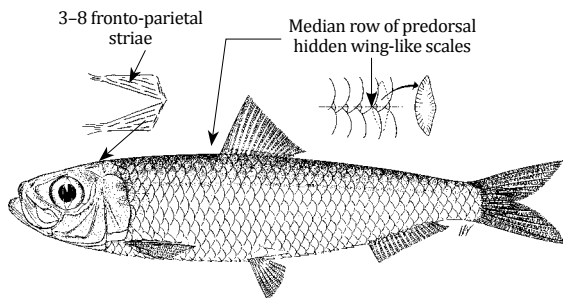


Size: To 35 cm (TL), common 16.5 cm (SL)

Herklotsichthys quadrimaculatus (Rüppell, 1837) *

Local name(s): Khasa (Sin); Ada-san (Bal).
Habitat: Pelagic in coastal waters.
Fisheries: Gillnets, seines, bagnet, bottom trawls.
Distinctive Characters: Belly with a distinct keel of scutes; lower part of 2nd supramaxilla larger than upper; 30–36 lower gill rakers.
Colour: Back blue-green; flanks silvery with 2 orange spots behind gill opening in life and a blue midlateral band; no black spots laterally on body.

FAO names: Bluestripe herring (En)
 Hareng à bande bleue (Fr)



Size: To 25 cm, common 10 cm (SL)

Nematalosa arabica Regan, 1917*

FAO names: Arabian guizzard shad (En)

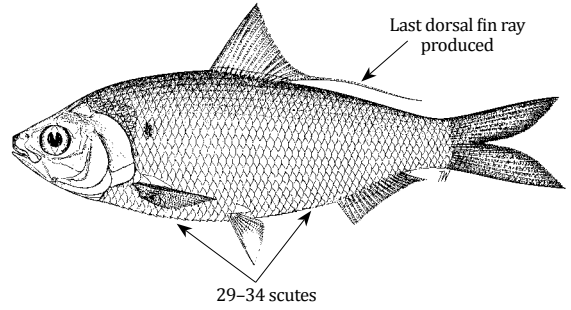
Local name(s): Dhaddi-palli (Sin); Goi (Bal).

Habitat: Marine, pelagic.

Fisheries: Gillnets, seines, bagnet, bottom trawls.

Distinctive Characters: Body depth 34–40% of SL; anterior arm of pre-operculum with a fleshy triangular area above, not covered by 3rd infra-orbital bone (see *Nematalosa nasus*); mouth subterminal; last dorsal fin ray filamentous; hind edge of scales not toothed.

Colour: A dark spot behind gill opening.



Size: To 16.5 cm (SL)

Nematalosa nasus (Bloch, 1795)

FAO names: Bloch's guizzard shad (En)
Chardin gros nez (Fr)

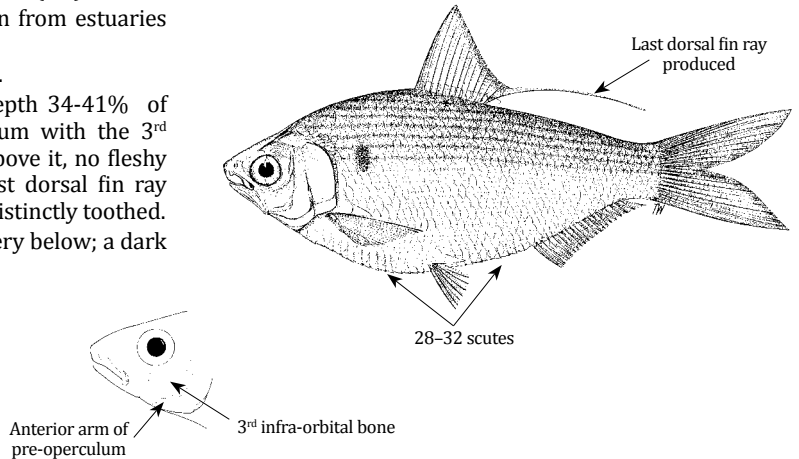
Local name(s): Dhaddi-palli (Sin); Goi (Bal).

Habitat: A pelagic species known from estuaries and coastal areas.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: Body depth 34-41% of SL; anterior arm of pre-operculum with the 3rd infra-orbital bone immediately above it, no fleshy gap between; mouth inferior; last dorsal fin ray filamentous; hind edge of scales distinctly toothed.

Colour: Dark bluish dorsally, silvery below; a dark spot behind gill opening.



Size: To 22 cm (TL), common 15 cm (SL)

Sardinella albella (Valenciennes, 1847)

FAO names: White sardinella (En)
Sardinelle blanche (Fr)

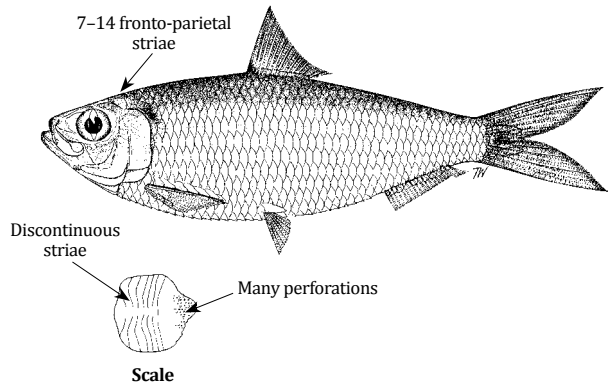
Local name(s): Tarli, Chaco (Sin); Lujar, Leejar (Bal).

Habitat: Pelagic in coastal waters and estuaries.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: Belly with a sharp keel of 30–32 scutes; predorsal scales paired and overlapping; 41–68 lower gill rakers; pelvic fin with 1 unbranched and 7 branched rays.

Colour: Back blue-green, flanks silvery; a dark spot at dorsal fin origin.



Size: To 14 cm, common 10 cm (SL)

Sardinella gibbosa (Bleeker, 1849)

Local name(s): Tarli, Chaco (Sin); Lujar, Leejar (Bal).

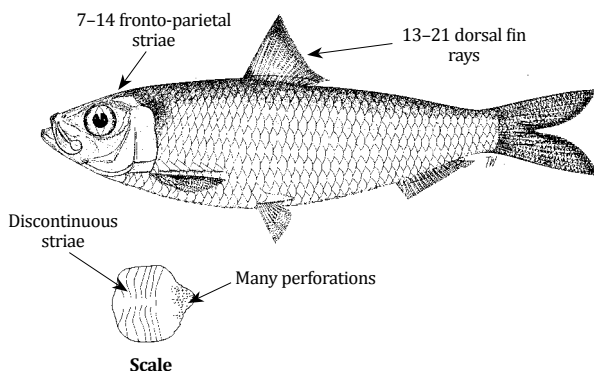
Habitat: Pelagic in coastal waters.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: Body moderately compressed, belly with a sharp keel of 32–34 scutes; predorsal scales paired and overlapping; discontinuous striae on body scales; pelvic fin with 1 unbranched and 7 branched rays; 45–59 lower gill rakers.

Colour: Back blue-green, flanks silvery; tip of dorsal fin and margin of caudal fin dusky, remainder of caudal faintly yellow, other fins clear; a small black spot at dorsal fin origin.

FAO names: Goldstripe sardinella (En)
Sardinelle dorée (Fr)



Size: To 17 cm, common 15 cm (SL)

Sardinella longiceps Valenciennes, 1847

Local name(s): Luar (Sin); Lujar, Leejar (Bal).

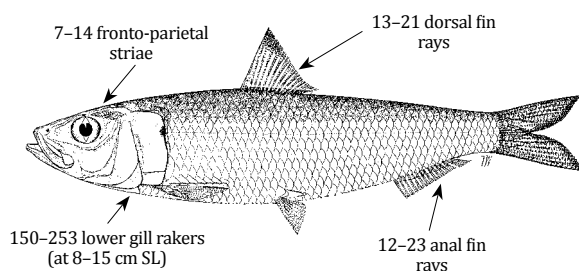
Habitat: Pelagic in coastal waters.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: Belly rounded with a low keel of scutes; pelvic fin with 1 unbranched and 8 branched rays; predorsal scales paired and overlapping.

Colour: Back blue-green, flanks silvery; a black spot on hind edge of gill cover.

FAO names: Indian oil sardine (En)
Sardinelle indienne (Fr)



Size: To 23 cm, common 20 cm (SL)

Sardinella melanura (Cuvier, 1829)

(Plate X, 74)

FAO names: Blacktip sardinella (En)
Sardinelle queue noire (Fr)

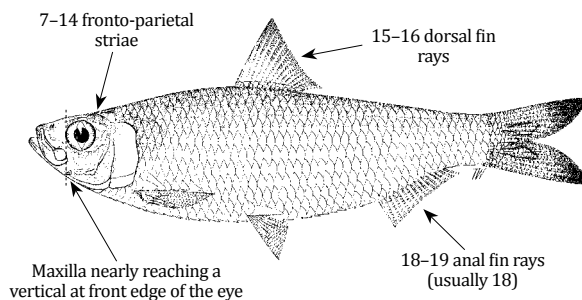
Local name(s): Tarli, Chaco (Sin); Lujar, Leejar (Bal).

Habitat: Pelagic in coastal waters.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: Belly with a sharp keel of 27–31 scutes; predorsal scales paired and overlapping; no perforations on posterior part of scales; discontinuous striae on body scales; pelvic fin with 1 unbranched and 7 branched rays; 38–74 lower gill rakers.

Colour: Back blue-green, flanks silvery; tips of caudal fin black (character retained in preserved specimens) distinguish this species from all other *Sardinella* species in the area.



Size: To 15 cm, common 10 cm (SL)

***Sardinella sindensis* (Day, 1878)**

Local name(s): Tarli, Chaco (Sin); Lujar, Leejar (Bal).

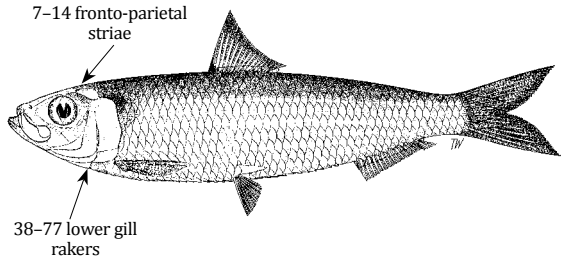
Habitat: Schooling pelagic species in coastal waters.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: Belly with a sharp keel of 31–34 scutes; predorsal scales paired and overlapping; discontinuous striae on body scales, posterior part with few perforations.

Colour: Back blue-green, flanks silvery.

FAO names: Sind sardinella (En)



Size: To 17 cm, common 14 cm (SL)

Spratelloides delicatulus* (Bennett, 1832)

Local name(s): Khasa (Sin); Dang-lo, Ada-san (Bal).

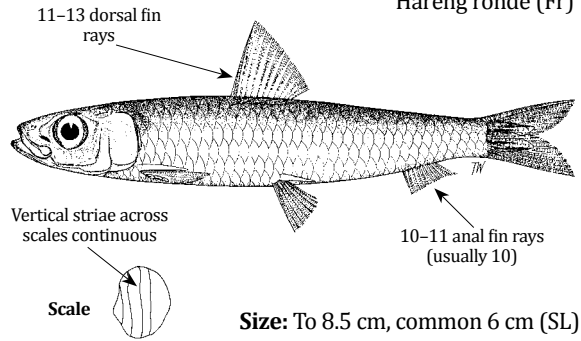
Habitat: Pelagic in shallow waters.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: No pre-pelvic or post-pelvic scutes, except for a W-shaped pelvic scute; usually 7 branchiostegal rays below mouth; 26–32 lower gill rakers.

Colour: No bright silver band along flanks; 2 prominent dark streaks on caudal fin base.

FAO names: Delicate round herring (En)
Hareng ronde (Fr)



Size: To 8.5 cm, common 6 cm (SL)

Spratelloides gracilis* (Temminck & Schlegel, 1846)

Local name(s): Khasa (Sin); Dang-lo, Ada-san (Bal).

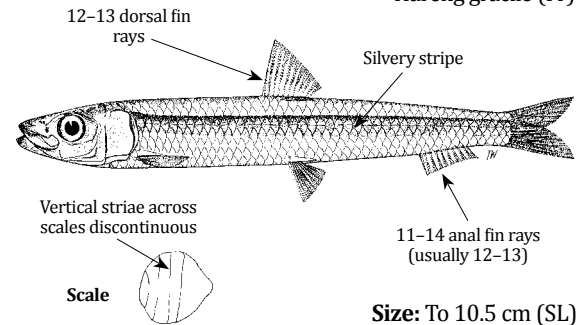
Habitat: Pelagic in shallow waters.

Fisheries: Seines, gillnets, bagnet.

Distinctive Characters: No pre-pelvic or post-pelvic scutes, except for a W-shaped pelvic scute; usually 7 branchiostegal rays below mouth; dorsal fin at about mid-point of body; anal fin very short and far behind dorsal fin base.

Colour: Back blue-green, flanks with a distinct silvery stripe.

FAO names: Silver-stripe round herring (En)
Hareng gracile (Fr)



Size: To 10.5 cm (SL)

***Tenualosa ilisha* (Hamilton, 1822)**

Local name(s): Palla (Sin); Palwar (Bal).

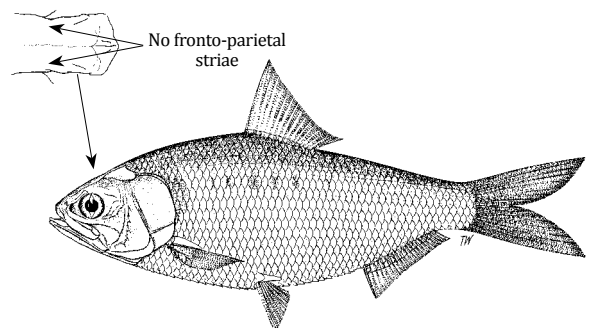
Habitat: Schooling in coastal waters and ascending rivers as much as 1200 km (usually 50–100 km).

Fisheries: Gillnets, bagnet.

Distinctive Characters: Head length 28–32% of SL; mouth terminal; belly with 30–33 scutes; 37–47 scales in lateral line series; distinct median notch in upper jaw, gill rakers on inner arches straight, scales not perforated; last dorsal fin ray not produced.

Colour: Back blue-green, flanks silvery, with a dark blotch behind gill opening, followed by a series of small spots along flanks in juveniles.

FAO names: Hilsa shad (En)
Alose paluva (Fr)



Size: To 60 cm, common 36 cm (SL)

Tenualosa toli (Valenciennes, 1847)

FAO names: Toli shad (En)
Alose toli (Fr)

Local name(s): Palla, Sumandar palla (Sin); Palwar (Bal).

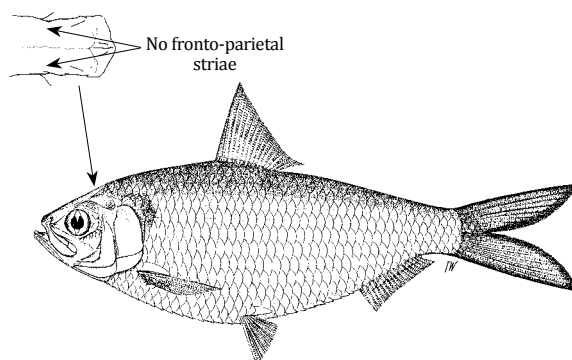
Habitat: Schooling in coastal waters, euryhaline and perhaps anadromous, ascending rivers to breed.

Fisheries: Gillnets, bagnet.

Distinctive Characters: Head length 25–27% of SL; mouth terminal; belly with 28–30 scutes, distinct median notch in upper jaw, gill rakers on inner arches straight, scales not perforated; last dorsal fin ray not produced.

Colour: Back blue-green, flanks silvery, with a dark blotch behind gill opening.

Remarks: Mainly caught along the Baluchistan coast.



Size: To 60 cm, common 40 cm (TL)

DUSSUMIERIIDAE

Round herrings – Rainbow sardines

Dussumieria acuta Valenciennes, 1847

(Plate X, 75)

FAO names: Rainbow sardine (En)
Sardine arc-en-ciel (Fr)

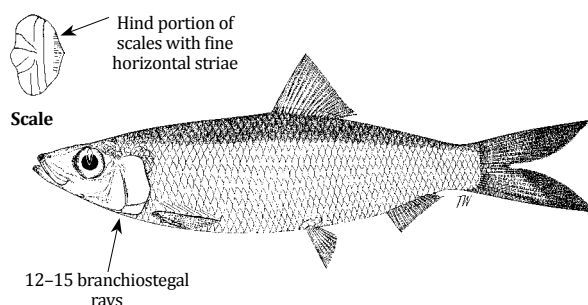
Local name(s): Har-luar (Sin); Paa-sali (Bal).

Habitat: Pelagic in inshore waters.

Fisheries: Seines, gillnets, bottom trawls.

Distinctive Characters: Body elongate, cylindrical, its depth 22–29% of SL; belly rounded without scutes; dorsal fin origin behind mid-point of body; pelvic fins below dorsal fin base; 19–26 gill rakers on lower limb of 1st arch.

Colour: Back iridescent blue with a shiny golden-brass line below; flanks silvery; caudal fin with a dark hind margin.



Size: To 20 cm (SL), common 15 cm (TL)

Dussumieria elopsoides Bleeker, 1849

FAO names: Slender rainbow sardine (En)
Sardine arc-en-ciel gracile (Fr)

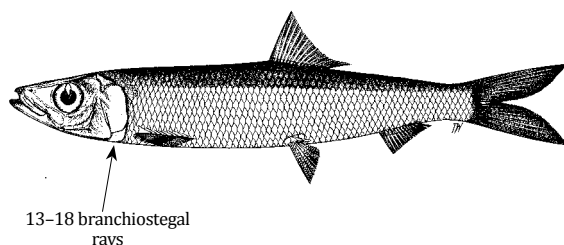
Local name(s): Har-luar (Sin); Paa-sali (Bal).

Habitat: A Pelagic inshore species.

Fisheries: Seines, gillnets, bottom trawls.

Distinctive Characters: Body elongate, slender, depth usually 16–22% of SL; belly rounded without scutes; no striae on posterior part of scales; 21–32 gill rakers on lower limb of 1st arch.

Colour: Back iridescent greenish blue with a narrow lateral band of silvery grey below; flanks and abdomen silvery white; upper surface of eye and head emerald-green; snout strongly pigmented; fins pale; caudal fin dusky with dark posterior margin.



Size: To 23 cm, common 20 cm (SL)

ENGRAULIDAE

Anchovies

Coilia dussumieri (Valenciennes, 1848)

Local name(s): Poonchar-karari, Poonchaari (Sin); Dumbi-padni (Bal).

Habitat: Inhabits coastal waters and estuaries.

Fisheries: Seines, bagnet, gillnets, bottom trawls.

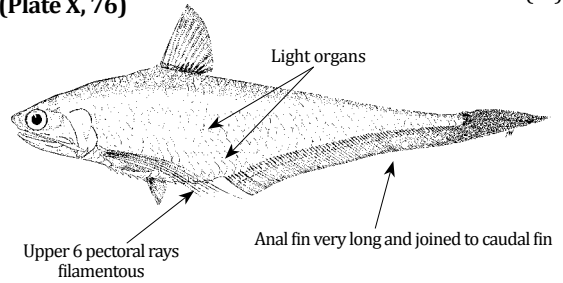
Distinctive Characters: Caudal fin small, pointed; belly with 12–15 total scutes; maxilla tip pointed, not quite reaching to edge of gill cover.

Colour: Flanks and belly with golden or pearly spots (light organs) in rows below scales also along isthmus, lower jaw, on cheek and gill cover.

FAO names: Goldspotted grenadier anchovy (En)

Alice taches d'or (Fr)

(Plate X, 76)



Size: To 20 cm, common 15 cm (SL)

Coilia neglecta (Whitehead, 1967)

Local name(s): Poonchar-karari, Poonchaari (Sin); Dumbi-padni (Bal).

Habitat: Inhabits coastal waters and estuaries.

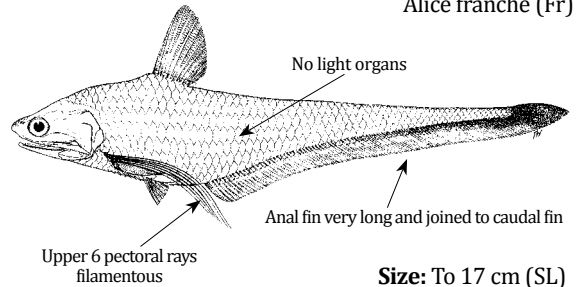
Fisheries: Seines, bagnet, gillnets, bottom trawls.

Distinctive Characters: Caudal fin small, pointed; belly with 12–15 total scutes; maxilla tip pointed, almost or just reaching to edge of gill cover.

Colour: Back light brown, flanks silvery, without golden or pearly spots.

FAO names: Neglected grenadier anchovy (En)

Alice franche (Fr)



Size: To 17 cm (SL)

Stolephorus commersonii Lacepède, 1803*

Local name(s): Khassa, Karari, Physsa (Sin); Adda saan (Bal).

Habitat: Pelagic in coastal waters.

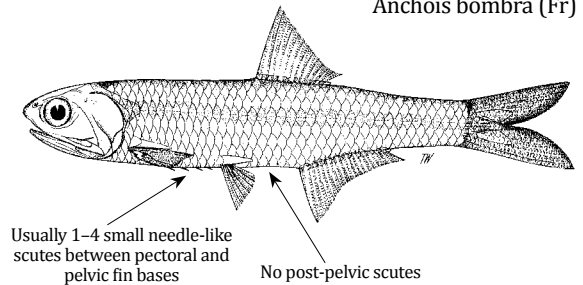
Fisheries: Seines, gillnets bagnets, bottom trawls.

Distinctive Characters: Maxilla long, reaching to posterior border of preopercle; urohyal exposed; pelvic fin tips reaching beyond dorsal fin origin; 23–28 lower gill rakers.

Colour: Body light transparent fleshy brown, with silvery band down flanks; back with 2 pigmented areas behind head; a double pigmented line before dorsal fin origin.

FAO names: Commerson's anchovy (En)

Anchois bomba (Fr)



Size: To 10 cm, common 8 cm (SL)

Stolephorus indicus (van Hasselt, 1823)

Local name(s): Khassa, Karari, Physsa (Sin); Adda saan (Bal).

Habitat: Pelagic in coastal waters.

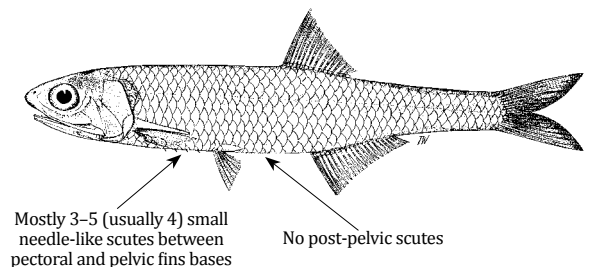
Fisheries: Seines, gillnets bagnets, bottom trawls.

Distinctive Characters: Maxilla tip short, not reaching anterior border of preopercle; urohyal not exposed; pelvic fin tips not reaching to dorsal fin origin; 20–28 lower gill rakers.

Colour: Light transparent fleshy brown, with a silver band down flanks; no dark pigment lines on back between head and dorsal fin origin.

FAO names: Indian anchovy (En)

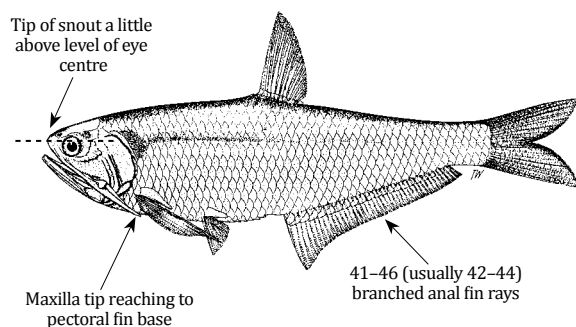
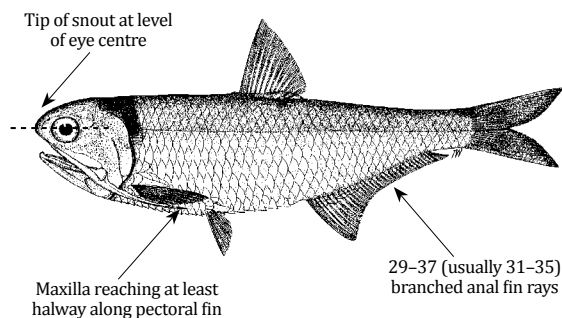
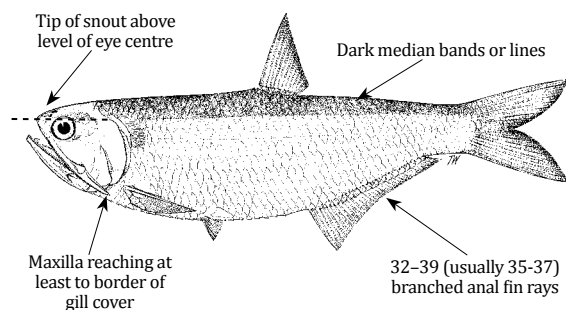
Anchois indien (Fr)



Size: To 15.5 cm, common 12 cm (SL)

Thryssa dayi (Wongratana, 1983) *

FAO names: Day's thryssa (En)

Local name(s): Karari, Karadi, Padan (Sin); Padni (Bal).**Habitat:** Pelagic in coastal waters, perhaps also in estuaries.**Fisheries:** Seines, gillnets, bagnets, bottom trawls.**Distinctive Characters:** Belly with 25–27 scutes from isthmus to anus; usually 14–18 lower gill rakers; 1st supra-maxilla oval, minute.**Colour:** Gill arches pinky orange, basibranchials black, inside of gill cover pale yellow or golden; a pair of dark lines along back.**Size:** To 21.5 cm (SL)***Thryssa dussumieri*** (Valenciennes, 1848)FAO names: Dussumier's thryssa (En)
Anchois-moustache mandeli (Fr)**Local name(s):** Karari, Karadi, Padan (Sin); Padni (Bal).**Habitat:** Pelagic in coastal waters, perhaps also in estuaries.**Fisheries:** Seines, gillnets, bagnets, bottom trawls.**Distinctive Characters:** Belly with 21–24 scutes from isthmus to anus; usually 17–19 lower gill rakers; 1st supra-maxilla absent.**Colour:** A dark blotch behind upper part of gill opening, sometimes joined to a dark saddle on nape.**Size:** To 11 cm (SL)***Thryssa hamiltonii*** (Gray, 1835)FAO names: Hamilton's thryssa (En)
Anchois-moustache mamata (Fr)**Local name(s):** Karari, Karadi, Padan (Sin); Padni (Bal).**Habitat:** Pelagic, in coastal waters, perhaps also in estuaries.**Fisheries:** Seines, gillnets, bagnets, bottom trawls.**Distinctive Characters:** Belly with 26–31 scutes from isthmus to anus; usually 12–14 lower gill rakers; 1st supra-maxilla minute, oval.**Colour:** A dark blotch of horizontal wavy black lines behind upper part of gill opening.**Size:** To 20 cm, common 17 cm (SL)

Thryssa malabarica (Bloch, 1795)

Local name(s): Karari, Karadi, Padan (Sin); Padni (Bal).

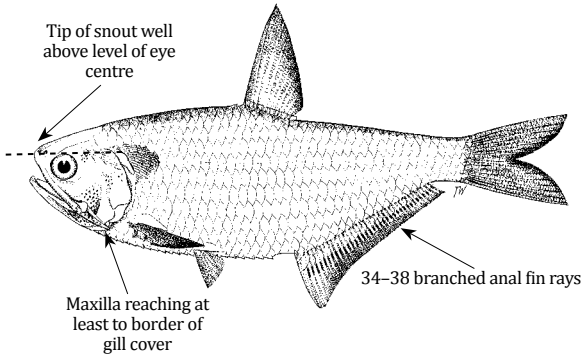
Habitat: Pelagic coastal schooling species, perhaps also in estuaries.

Fisheries: Seines, gillnets, bagnets, bottom trawls.

Distinctive Characters: Belly with 23–26 scutes from isthmus to anus; lower gill rakers 17–19; 1st supra-maxilla small, oval.

Colour: A dark blotch behind of gill opening; small spots on cheek, gill cover, maxilla and paired fins; gill arches pinky orange, inside of gill cover yellow and gold; inner part of anal fin deep yellow, the margin milky white.

FAO names: Malabar thryssa (En)
Anchois-moustache malabar (Fr)



Size: To 17.5 cm (SL)

Thryssa mystax (Bloch & Schneider, 1801)

Local name(s): Karari, Karadi, Padan (Sin); Padni (Bal).

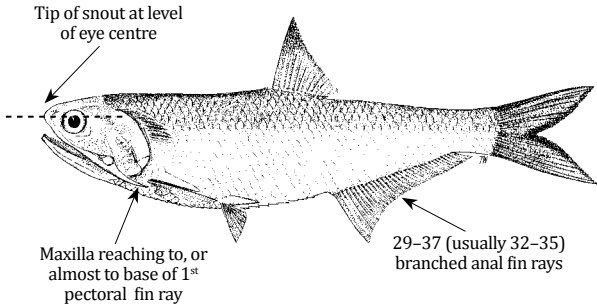
Habitat: Pelagic coastal schooling species, also in estuaries.

Fisheries: Seines, gillnets, bagnets, bottom trawls.

Distinctive Characters: Belly with 24–32 scutes from isthmus to anus; first supra-maxilla oval, minute; usually 14–16 lower gill rakers.

Colour: A dark blotch of wavy lines behind of gill opening; gill cavity light orange in life; dorsal fin tip black, upper, lower and posterior border of caudal fin black.

FAO names: Moustached thryssa (En)
Anchois-moustache sardelle (Fr)



Size: To 15.5 cm (SL)

Thryssa setirostris (Broussonet, 1782)

(Plate X, 77)

FAO names: Longjaw thryssa (En)
Anchois-moustache cornu (Fr)

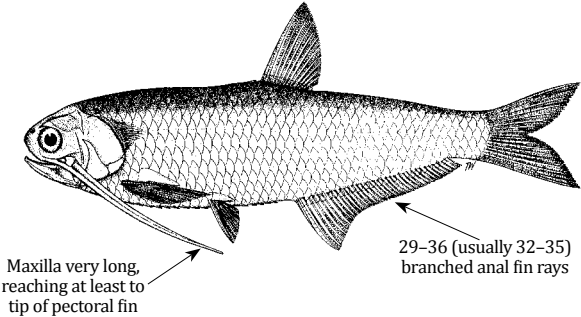
Local name(s): Karari, Karadi, Padan (Sin); Padni (Bal).

Habitat: Pelagic, in coastal waters, also in estuaries.

Fisheries: Seines, gillnets, bagnets, bottom trawls.

Distinctive Characters: Belly with 25–28 scutes from isthmus to anus; 10–12 lower gill rakers.

Colour: Head with gold tints; anal and caudal fins deep yellow; dark horizontal lines behind upper part of gills.



Size: To 18 cm (SL)

Thryssa vitirostris (Gilchrist & Thompson, 1908)

FAO names: Orangemouth anchovy (En)
Anchois-moustache cristal (Fr)

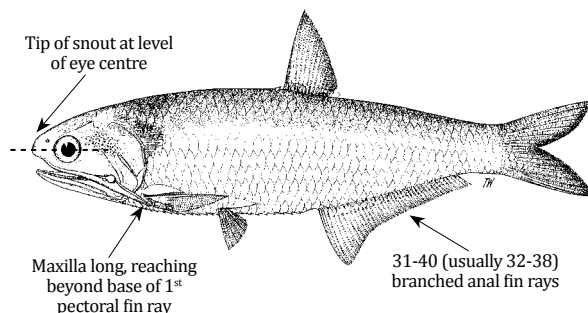
Local name(s): Karari, Karadi, Padan (Sin); Padni (Bal).

Habitat: Pelagic in inshore areas, enters estuaries and lagoons.

Fisheries: Seines, gillnets, bagnets, bottom trawls.

Distinctive Characters: Belly with 24–30 scutes from isthmus to anus; 1st supra-maxilla minute, oval; 18–24 lower gill rakers.

Colour: Back blue-green, flanks silvery; a dark blotch behind upper part of gill opening; inside of gill cavity bright orange.



Size: To 20 cm (TL)

CHIROCENTRIDAE

Wolf-herrings

Chirocentrus dorab (Forsskål, 1775)

(Plate X, 78)

FAO names: Dorab wolf-herring (En)
Chirocentre dorab (Fr)

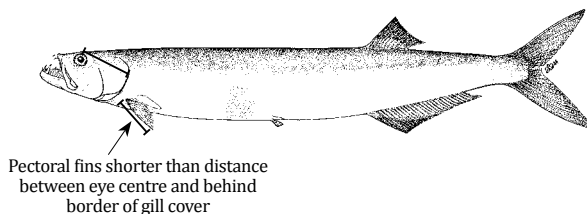
Local name(s): Gairi (Sin); Pashant (Bal).

Habitat: Pelagic in coastal waters down to 120 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Dorsal fin with 16–19 rays; anal fin with 29–36 rays.

Colour: Back with bands of green and blue; tip of dorsal fin and front of anal fin black.



Size: To 100 cm, common 60 cm (SL)

Chirocentrus nudus Swainson, 1839

(Plate I, 4)

FAO names: Whitefin wolf-herring (En)
Chirocentre sabre (Fr)

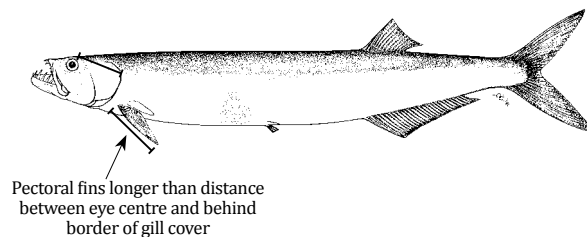
Local name(s): Gairi (Sin); Pashant (Bal).

Habitat: Pelagic in coastal waters down to 150 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Dorsal fin with 16–19 rays; anal fin with 29–36 rays.

Colour: Dorsal and anal fins colourless; back with bands of green and blue.



Size: To 100 cm, common 60 cm (SL)

PRISTIGASTERIDAE

Ilishas – Pellonas

Ilisha megaloptera (Swainson, 1839)

Local name(s): Pha-pant, Palli (Sin); Bee-chum (Bal).

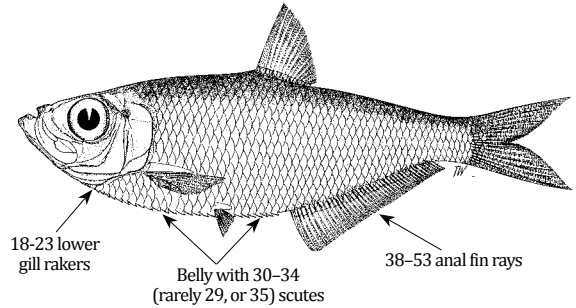
Habitat: An inshore species, apparently occurring also in rivers.

Fisheries: Gillnets, bottom trawls, seines.

Distinctive Characters: Body depth 28–39% of SL; shaft of maxilla without distinct lobe; no toothed hypomaxilla; swimbladder with single long tube passing posteriorly down right side of body cavity above anal fin base.

Colour: No distinctive colour pattern.

FAO names: Bigeye ilisha (En)
Alose à gros yeux (Fr)



Size: To 27.5 cm (SL)

Ilisha melastoma (Bloch and Schneider, 1801)

Local name(s): Pha-pant; Palli (Sin); Bee-chum (Bal).

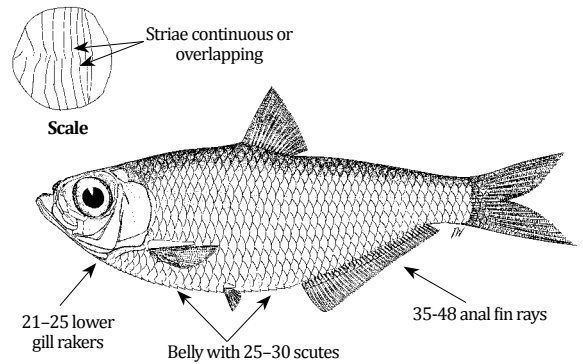
Habitat: An inshore species, apparently occurring also in rivers.

Fisheries: Gillnets, bottom trawls, seines.

Distinctive Characters: Body depth 33–42% of SL; shaft of maxilla without distinct lobe; no toothed hypomaxilla; swimbladder with 2 tubes passing posteriorly into body muscles on either side of haemal spine.

Colour: No distinctive colour pattern.

FAO names: Indian ilisha (En)
Alose indienne (Fr)



Size: To 17 cm (SL)

Ilisha sirishai Seshagiri Rao, 1975 *

Local name(s): Pha-pant; Palli (Sin); Bee-chum (Bal).

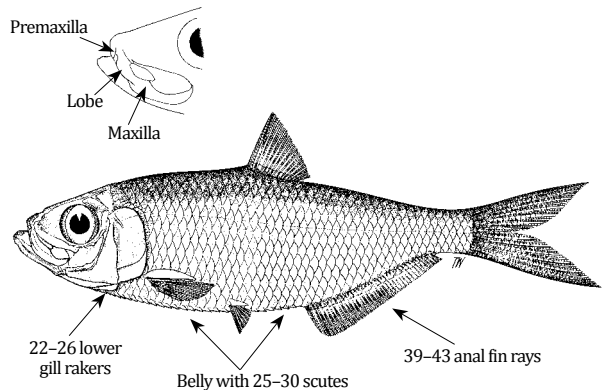
Habitat: An inshore species, apparently occurring also in rivers.

Fisheries: Gillnets, bottom trawls, seines.

Distinctive Characters: Body depth 32–37% SL; shaft of maxilla with distinct lobe; no toothed hypomaxilla; swimbladder without posterior tube (or tubes) passing posteriorly into body muscles.

Colour: No distinctive colour pattern.

FAO names: Lobejaw ilisha (En)



Size: To 23 cm (TL)

Ilisha striatula Wongratana, 1983

FAO names: Banded ilisha (En)

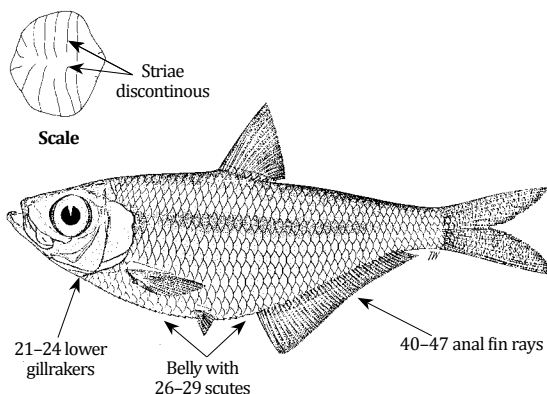
Local name(s): Pha-pant; Palli (Sin); Bee-chum (Bal).

Habitat: An inshore species, apparently occurring also in rivers.

Fisheries: Gillnets, bottom trawls, seines.

Distinctive Characters: Body depth 32–39% of SL; no toothed hypomaxilla; swimbladder with 2 tubes passing posteriorly into body muscles on either side of haemal spine.

Colour: A faint dark band along flanks.



Size: To 18 cm (SL)

Opisthopterus tardoore (Cuvier, 1829)

FAO names: Tardoore (En)

Poisson-papier tarture (Fr)

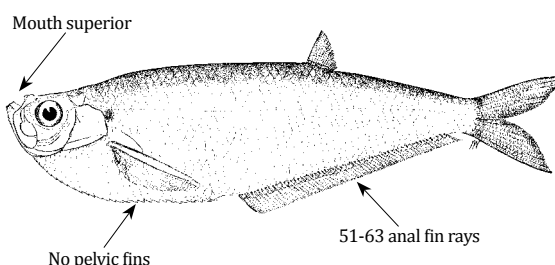
Local name(s): Koor (Sin); Pootuk (Bal).

Habitat: Schooling pelagic species in coastal waters.

Fisheries: Seines, gillnets, bagnet, bottom trawls.

Distinctive Characters: Belly convex in front with 29–35 scutes; pectoral fin about equal to head length or greater; dorsal fin small, well behind midpoint of body.

Colour: Back blue-green or grey, flanks silvery.



Size: To 20 cm (SL)

Pellona ditchela Valenciennes, 1847

FAO names: Indian pellona (En)

Alose-écaille indienne (Fr)

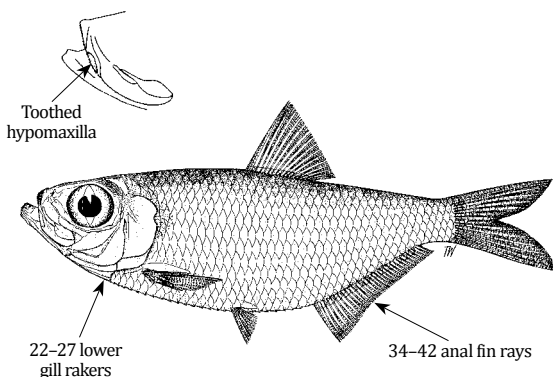
Local name(s): Pha-pant; Palli (Sin); Bee-chum (Bal).

Habitat: Pelagic in coastal waters, in estuaries, lagoons and rivers.

Fisheries: Gillnets, bottom trawls, seines.

Distinctive Characters: Belly with 26–28 scutes; toothed hypomaxilla present; scales with upper and lower vertical striae slightly overlapping each other at center of scales; swimbladder without posterior tube (or tubes) passing posteriorly into body muscles.

Colour: Head gold, snout and chin dusky; body dusky above, gold on flanks and silvery below.



Size: To 16 cm, common 13 cm (SL)

CHANIDAE

Milkfish

Chanos chanos (Forsskål, 1775)

(Plate X, 79)

FAO names: Milkfish (En)
Chano (Fr)

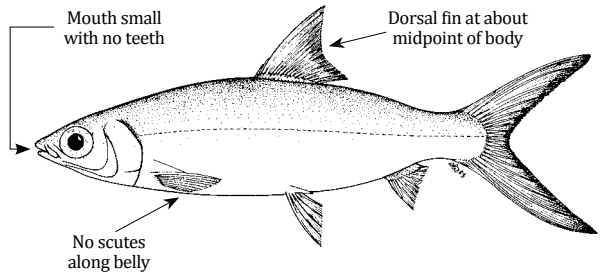
Local name(s): Murri, Sulemani (Sin); Murra (Bal).

Habitat: Coastal pelagic, entering estuaries, rivers and lakes.

Fisheries: Gillnets; important to fisheries for culture in fresh and brackish waters.

Distinctive Characters: Lower jaw with a small tubercle at tip; dorsal fin with 2 spines and 13–17 rays; anal fin with 2 spines and 8–10 rays; scales small; lateral line present.

Colour: Back olive green, flanks silvery; dorsal, anal and caudal fins with dark margins.



Size: To 180 cm, common 100 cm (SL)

ARIIDAE

Sea catfishes

Arius arius Hamilton, 1822

(Plate X, 80)

FAO names: Threadfin sea catfish (En)
Mâchoiron fouet (Fr)

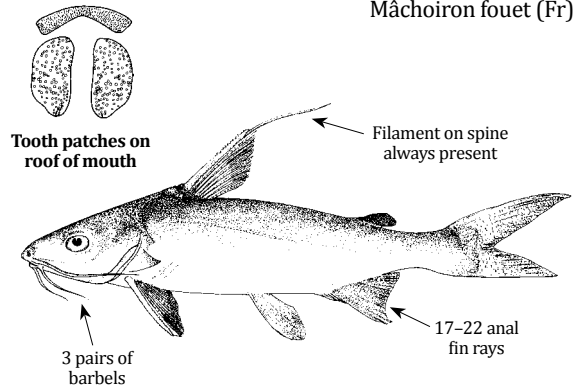
Local name(s): Khagga (Sin); Kun, Gallo, Bargai, Showkiar (Bal).

Habitat: Estuaries and inshore waters.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Three pairs of barbels; short and curved predorsal plate (true of all Ariidae species); palatal teeth peg-like or molariform, in 2 oval-elliptical patches, 1 on each side, placed forward on palate and usually parallel to each other; dorsal fin spine 2/3-4/5 of head length; 14–17 total gill rakers on 1st gill arch; lateral line bifurcates at tail base.

Colour: Body bluish brown above, white below; fins yellow; dorsal and caudal fins with dark margins; adipose fin with large black spot.



Size: To 40 cm (SL)

Arius maculatus (Thunberg, 1792)

FAO names: Spotted catfish (En)
Mâchoiron tacheté (Fr)

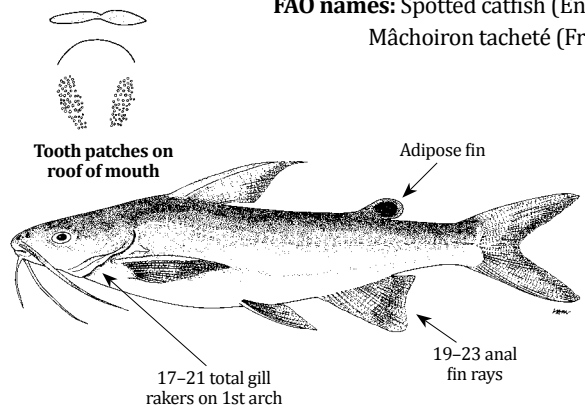
Local name(s): Khagga, Jairi khagga (Sin); Kun, Gallo, Showkiar (Bal).

Habitat: Estuaries and inshore waters.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Palatal teeth peg-like or molariform, in 2 oval patches, 1 on each side, placed well back on palate, their long axes tending to converge posteriorly; 17–21 total gill rakers on 1st gill arch.

Colour: Body bluish brown above, white below; fins yellow, dorsal and caudal fins with dark margins; adipose fin with a large black spot.



Size: To about 40 cm (SL)

Arius subrostratus Valenciennes, 1840*

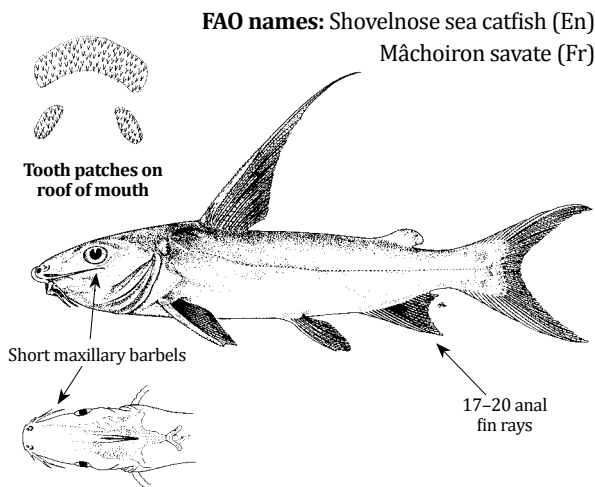
Local name(s): Khagga (Sin); Kun, Gallo (Bal).

Habitat: Estuaries, tidal rivers and marine waters.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Snout long, spatulate; maxillary barbels scarcely reach eye; palate teeth villiform or peg like, in a single small ovate patch on each side, each patch as long as eye diameter; dorsal fin filament often long.

Colour: Silvery blue above, becoming lighter on sides and belly; series of vertical bands on the body; fins edged with grey.



Size: To 39.5 cm, common 12 cm (SL)

Batrachocephalus mino (Hamilton, 1822)

Local name(s): Khagga (Sin); Kun, Gallo, Chonaro (Bal).

Habitat: Marine coastal waters, also in estuaries and tidal rivers.

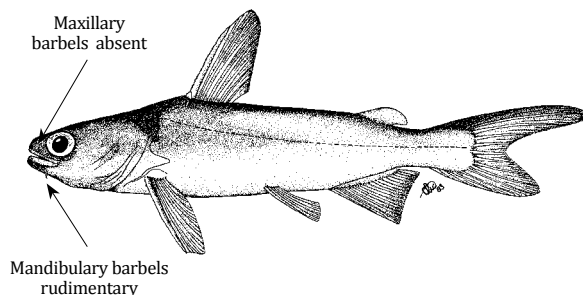
Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Wide band of conical, blunt teeth in both jaws; palatal teeth conical and blunt tipped, in a short longitudinal band on each side of palate, close to jaw teeth; eyes placed well forward; head shield exposed; only mandibular barbels present; fin spines strong and flattened, denticulated.

Colour: Body dark brown above, white below; fins dusky yellow, upper lobe of caudal fin dark.

(Plate X, 81)

FAO names: Beardless sea catfish (En)
Mâchoiron imberbe (Fr)



Size: To 25 cm (SL)

Hemiaris sona (Hamilton, 1822)

Local name(s): Khagga, Nilam khaga (Sin); Kun, Gallo, Raingi, Bargai (Bal).

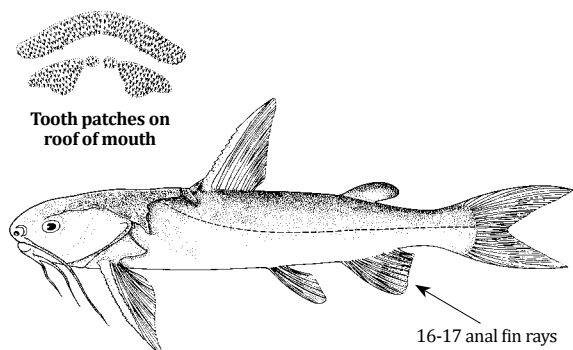
Habitat: Coastal marine waters and estuaries.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Palate teeth strong and sharp, in 2 patches placed side by side, the middle patch much smaller than the outer triangular patches; head shield and dorsal fin spine strong, granulated.

Colour: Brownish above, dashed with gold on sides, dull white below; outer adipose, caudal and anal fins bluish black.

FAO names: Sona sea catfish (En)
Mâchoiron goujon (Fr)



Size: To 92 cm, common 55 cm (SL)

Hemiaris sumatranus (Anonymus [Bennet], 1830)*

FAO names: Goat catfish (En)
Mâchoiron surmulet (Fr)

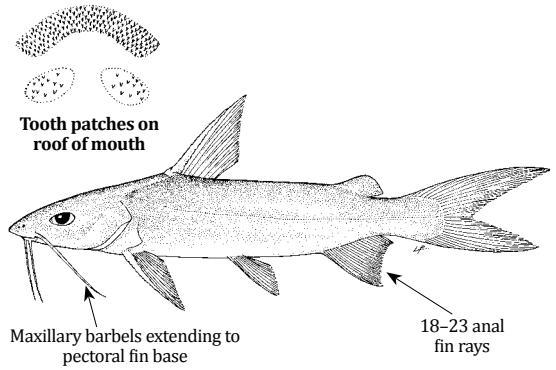
Local name(s): Khagga (Sin); Kun, Gallo, Motar (Bal).

Habitat: Marine coastal waters, also in estuaries and tidal rivers.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Palate teeth slender and sharp, in a single ovate or triangular patch on each side; head shield smooth to slightly granular; dorsal and pectoral fin spines denticulate along hind edges.

Colour: Dark brown, reddish, or bluish green above, lighter on sides and belly; fins grey-edged; pectoral and pelvic fins dark above.



Size: To 32 cm , common 12 cm (SL)

Hexanematichthys sagor (Hamilton, 1822)*

FAO names: Sagor catfish (En)
Mâchoiron sagor (Fr)

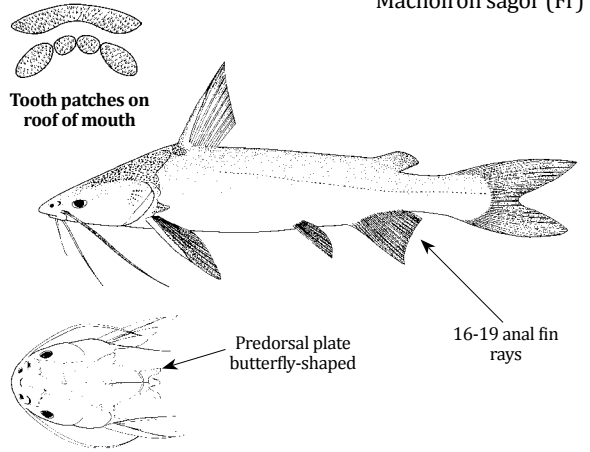
Local name(s): Khagga (Sin); Kun, Gallo, Bargai, Showkiar (Bal).

Habitat: Marine coastal waters, also in estuaries and tidal rivers.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Head shield striate and rugose; 4 oval patches of villiform teeth across front of palate, 2 on each side, inner patches smaller than outer patches; all spines with short filament; barbels flattened and strap-like, maxillary barbels often long.

Colour: Body bluish brown above, white below; fins dusky, paired fins with white margin; peritoneum fawn or dark grey.



Size: To 45 cm, common 30 cm (SL)

Nemapteryx nenga (Hamilton, 1822)

FAO names: Engraved catfish (En)

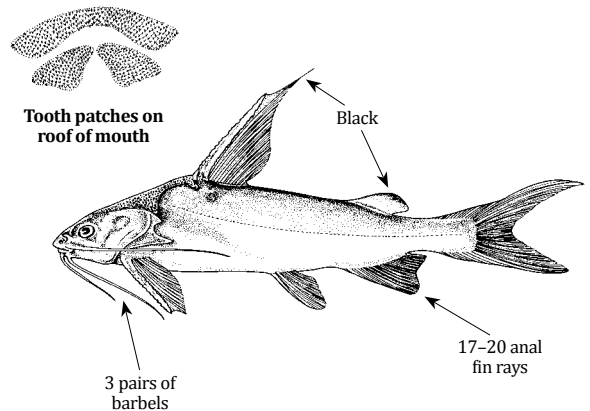
Local name(s): Khagga, Khagi (Sin); Kun, Gallo, Shazada, Si-agosh (Bal).

Habitat: Mostly marine, enters estuaries and tidal rivers.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Head shield granulated in series; palate teeth sharp and strong and densely packed in a single small, roughly triangular patch on each side; jaws strong, mouth gape wide; fin spines strong, rugose, serrated, dorsal tipped with filament.

Colour: Body bronze above; fins yellow; barbels and fin filaments black.



Size: To 45 cm, common 24 cm (SL)

Netuma bilineata (Valenciennes, 1840)

Local name(s): Khagga, Singhara (Sin); Kun, Gallo, Raingi, Kup-a-go, Kun, Bargai (Bal).

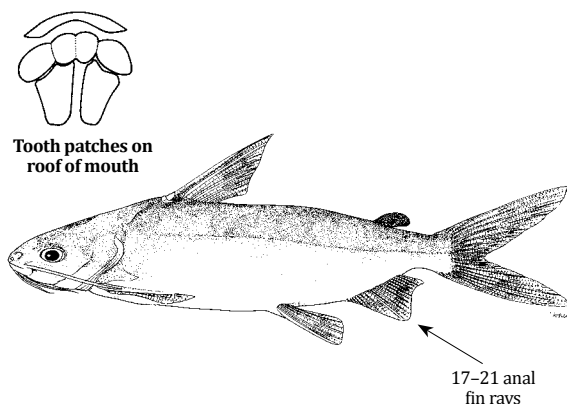
Habitat: Coastal marine waters and estuaries.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Snout rounded; mouth subterminal; fine sharp teeth arranged in 3 patches on each side of palate; patches usually forming a large triangle; inner patches fusing in older fish; adipose fin short-based and situated posteriorly; caudal fin lobes slender and tapered.

Colour: Body reddish or bluish brown, with bronze iridescence over back and sides; adipose fin dark brown.

FAO names: Bronze catfish (En)



Size: To 62 cm (SL)

Netuma thalassina (Ruppell, 1837)

Local name(s): Khagga, Singhara, Shokiar (Sin); Kun, Gallo, Raingi, Kup-a-go, Kun, Bargai (Bal).

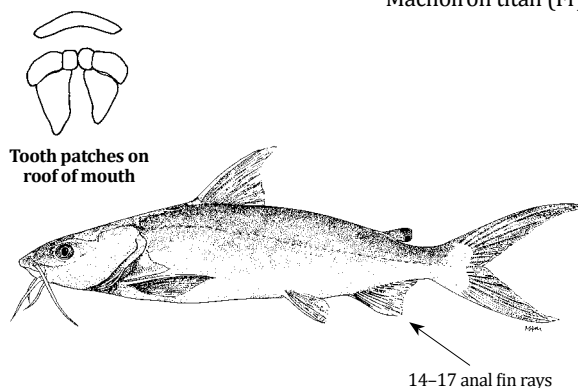
Habitat: Coastal marine waters and estuaries.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Snout prominent and somewhat pointed; mouth inferior; fine sharp teeth arranged in 3 patches on each side of palate; patches generally forming a large triangle; inner patches always separated at midline; adipose fin short-based and situated posteriorly; caudal fin lobes slender and distinctly tapered.

Colour: Body greyish blue to fawn, back and sides iridescent coppery or golden.

FAO names: Giant sea catfish (En)
Mâchoiron titan (Fr)



Size: To 185 cm, common 70 cm (SL)

Osteogeneiosus militaris (Linnaeus, 1758)

Local name(s): Khagga (Sin); Kun, gallo, Chonaro (Bal).

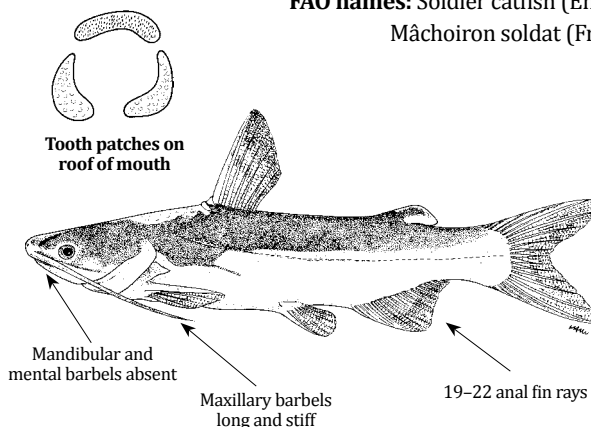
Habitat: Lower courses of rivers, coastal-lake systems, and inshore waters.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Head strongly depressed and head shield smooth; palatal teeth conical with blunt tips, grouped into 2 large, elliptical patches, 1 on each side; no mental nor mandibular barbels; stiff maxillary barbel reaching at least to pectoral fin base; thin fin spines.

Colour: Bluish above, white or cream below; margins of dorsal and adipose fins dark blue.

FAO names: Soldier catfish (En)
Mâchoiron soldat (Fr)



Size: To 35 cm, common 23 cm (SL)

***Plicofollis dussumieri* (Valenciennes, 1840)**

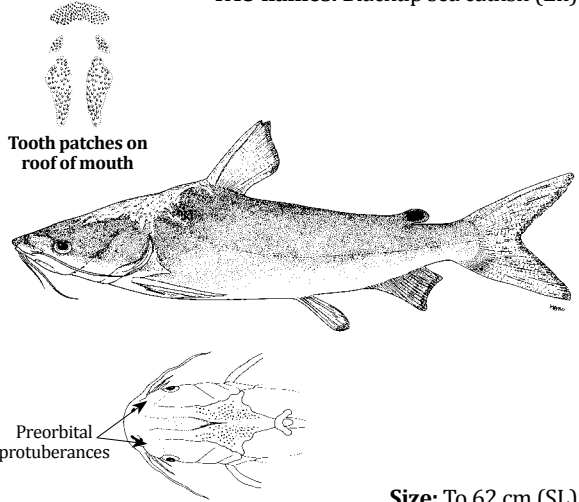
Local name(s): Khagga, Kun (Sin); Kun, Gallo, Showkiar (Bal).

Habitat: Purely marine waters down to 100 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Palate teeth stout and peg-like, in 2 separate patches on each side, placed one behind the other, anterior patches much smaller and ovate; anal fin with 14–18 rays.

Colour: Bluish black on dorsal surface and sides, dull white below; fin tips edged with black.



FAO names: Blacktip sea catfish (En)

Size: To 62 cm (SL)

***Plicofollis layardi* (Günther, 1866)**

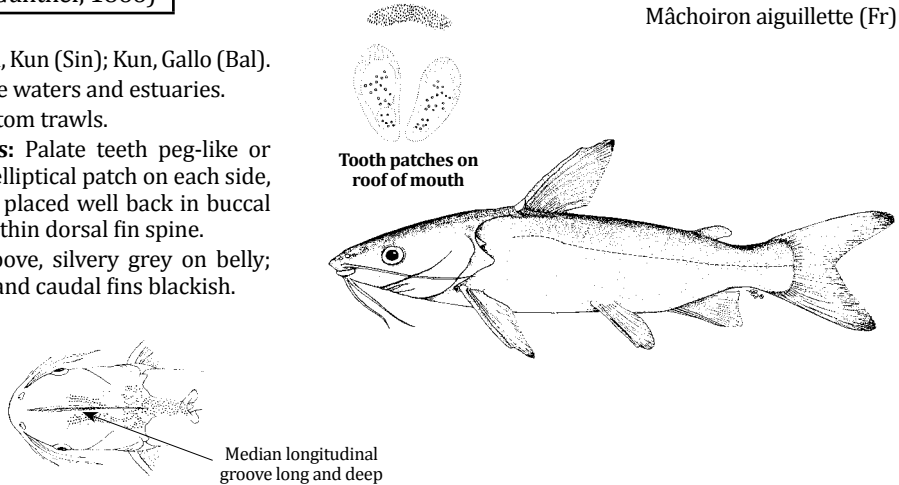
Local name(s): Khagga, Kun (Sin); Kun, Gallo (Bal).

Habitat: Coastal marine waters and estuaries.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Palate teeth peg-like or molariform in a single elliptical patch on each side, converging posteriorly, placed well back in buccal cavity; 18 anal fin rays; thin dorsal fin spine.

Colour: Bluish grey above, silvery grey on belly; tips of dorsal, pectoral and caudal fins blackish.



FAO names: Thinspine sea catfish (En)
Mâchoiron aiguillette (Fr)

Size: To 36 cm, common 23 cm (SL)

***Plicofollis platystomus* (Day, 1877) ***

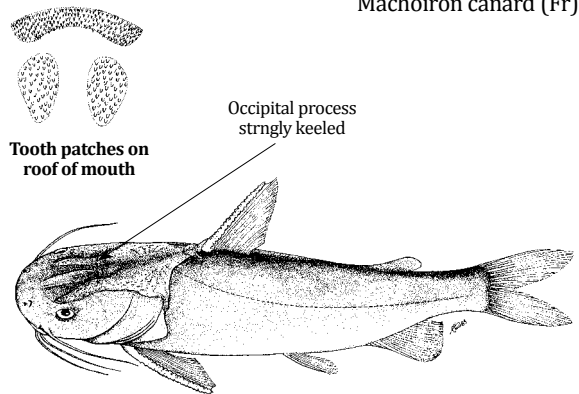
Local name(s): Khagga (Sin); Kun, Gallo, Torogallo (Bal).

Habitat: Coastal marine waters and estuaries.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Snout rounded, mouth gape wide; palate teeth conical or peg-like, in a single large oval patch on each side, rather longer than broad; occipital process strongly keeled; 19 anal fin rays.

Colour: Bluish black above, lighter below; fins yellowish green; no distinctive markings.



FAO names: Flatmouth sea catfish (En)
Mâchoiron canard (Fr)

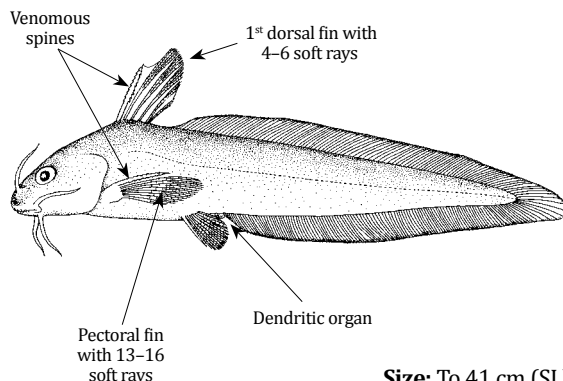
Size: To 31 cm (SL)

PLOTOSIDAE

Eel catfishes

Plotosus limbatus Valenciennes, 1840

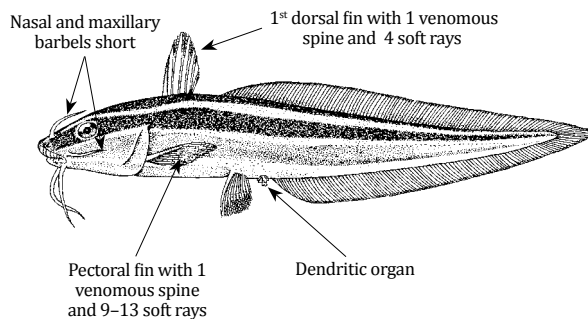
FAO names: Darkfin eel catfish (En)

Local name(s): Loonrah, Bam khaga (Sin); Rohila, Lohila (Bal).**Habitat:** Open coastal waters and estuaries.**Fisheries:** Bottom trawls, seines, gillnets, cast nets.**Distinctive Characters:** Profile arched from tip of snout to dorsal fin origin; 4 pairs of barbels, the maxillary barbels extending from just short of opercular margin to pectoral spine origin; 2nd dorsal fin and anal fin confluent with caudal fin; pelvic fins with 12–16 rays.**Colour:** Body reddish brown to dark brown, sometimes fading to a lighter brown ventrally; fins often blackish brown, usually with a black border.**Remarks:** First dorsal and pectoral spines are venomous and may be fatal.

Size: To 41 cm (SL)

Plotosus lineatus (Thunberg, 1787)

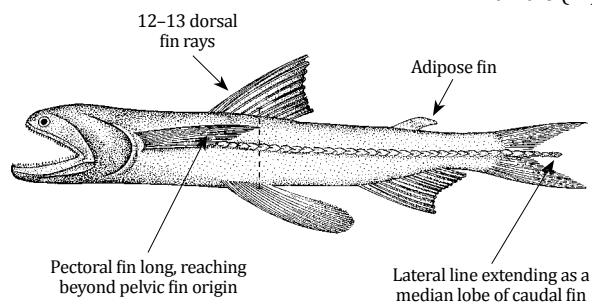
FAO names: Striped eel catfish (En)

Local name(s): Loonrah, Bam khaga (Sin); Rohila, Lohila (Bal).**Habitat:** Reefs, estuaries and tidal pools in schools.**Fisheries:** Bottom trawls, seines, gillnets, cast nets**Distinctive Characters:** Profile slightly arched from tip of snout to dorsal fin origin; 4 pairs of barbels, the nasal and maxillary barbels short, reaching to, or only slightly past, posterior margin of eye; 2nd dorsal fin and anal fin confluent with caudal fin; pelvic fins with 10–13 rays.**Colour:** Brown or black above, whitish below, with 2–3 stripes (white or yellow in life); 2 of the stripes from snout to near caudal peduncle.**Remarks:** First dorsal and pectoral spines are venomous and may be fatal.

Size: To 32 cm, common 25 cm (TL)

SYNODONTIDAE

Lizardfishes

Harpadon nehereus (Hamilton, 1822)FAO names: Bombay duck (En)
Bumalo (Fr)**Local name(s):** Bombil, Bambol (Sin); Bombla (Bal).**Habitat:** Benthic in offshore waters, also in deltas of rivers to feed during monsoons.**Fisheries:** Bottom trawls.**Distinctive Characters:** Body elongate and compressed; scales present only on posterior half of body; mouth very wide, armed with slender, recurved and depressible teeth of unequal size; pelvic fins reaching to or near origin of anal fin.**Colour:** Uniform light grey or brownish; semitransparent in appearance.

Size: To 40 cm, common 25 cm (TL)

Harpadon sp.

(Plate X, 82)

FAO names: Silver harpadon (En)

Local name(s): Bombil, Bambol (Sin); Bombla (Bal).

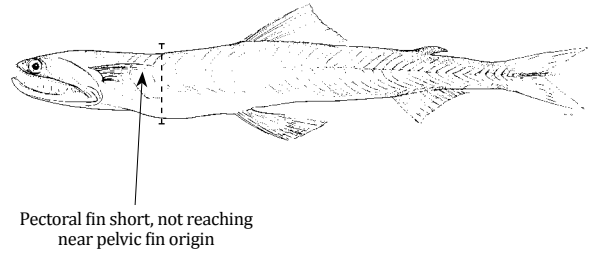
Habitat: Benthic in deeper offshore waters between 275 m to 375 m.

Fisheries: Bottom trawls.

Distinctive Characters: Body elongate, slender and compressed; small embedded scales over whole of body; mouth very wide, armed with slender recurved and depressible teeth of unequal size; pelvic fins not reaching origin of anal fin.

Colour: Silvery grey, semitransparent in appearance.

Remarks: This species has only been recently discovered and appears to be widespread in deeper waters of the Arabian Sea.



Size: To about 20 cm (TL)

Saurida longimanus (Norman, 1939)

(Plate XI, 83)

FAO names: Longfin lizardfish (En)

Anoli aile longue (Fr)

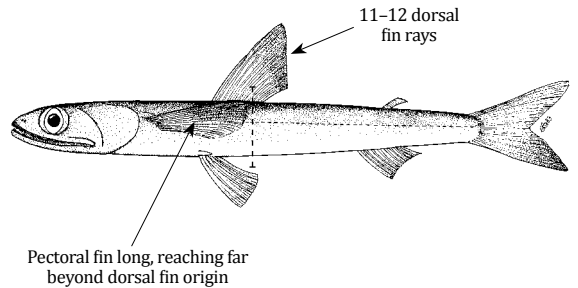
Local name(s): Bombla, Gadhi, Urbi, Disco (Sin); Bombla (Bal).

Habitat: Muddy bottoms from 100 m to 280 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate and tubular; several rows of teeth visible in both jaws even when mouth is closed; pelvic fin rays subequal in length; 14 pectoral fin rays.

Colour: Brownish above, silvery white below; upper half of pectoral fin and distal parts of dorsal fin and lower caudal lobe, dusky; otherwise, no markings.



Size: To 25 cm (TL)

Saurida tumbil (Bloch, 1795)

(Plate XI, 84)

FAO names: Greater lizardfish (En)

Anoli tumbil (Fr)

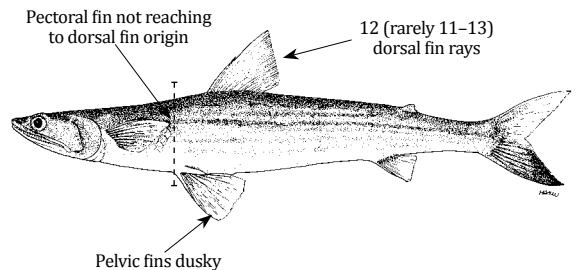
Local name(s): Bombla, Gadhi, Urbi, Disco (Sin); Bombla (Bal).

Habitat: Muddy bottoms from 20 m to 60 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head and caudal peduncle somewhat depressed; several rows of teeth visible in both jaws even when mouth is closed; 14-15 pectoral fin rays.

Colour: Back and sides brown, belly pale or silvery; distal parts of dorsal, pectoral and particularly caudal fins, dusky; otherwise, no markings.



Size: To 60 cm (FL)

Saurida* sp.*(Plate XI, 85)****FAO names:** Not available (En)

Local name(s): Bombla, Gadhi, Urbi, Disco (Sin); Bombla (Bal).

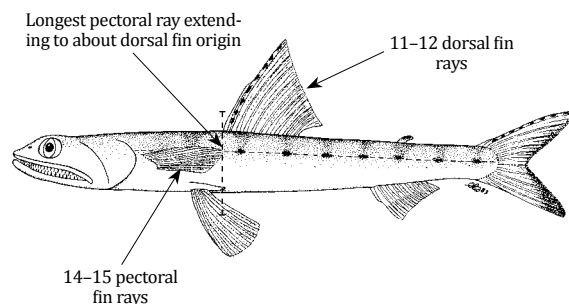
Habitat: Muddy bottoms from 20 m to 350 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Cigar-shaped, rounded or slightly compressed; the head pointed and depressed; the snout rounded; 9 pelvic fin rays, inner barely longer than outer.

Colour: Back and sides brown, belly pale or silvery; 8–10 bars often visible along lateral line; 2nd dorsal fin ray and upper caudal ray with dark spots.

Remarks: Previously recorded as *Saurida undosquamis*, but now regarded as a new species (B. Russell, personal communication, 2015).

**Size:** To 30 cm (TL)***Synodus indicus* (Day, 1873)*****FAO names:** Indian lizardfish (En)

Anoli indien (Fr)

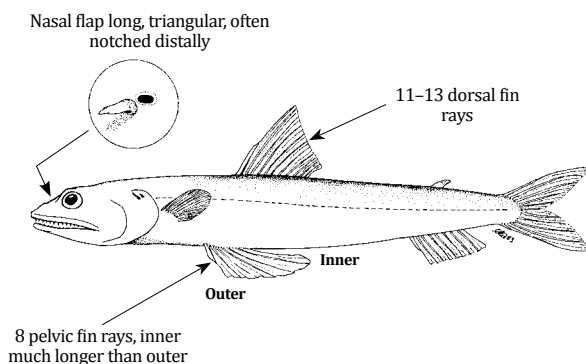
Local name(s): Bombla, Gadhi, Urbi, Disco (Sin); Bombla (Bal).

Habitat: Coastal waters from 20 m to 100 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Anterior palatine teeth short, not forming a discrete group; 8–11 anal fin rays; posterior pelvic process wide, peritoneum pale.

Colour: Body dusky pink above, with pale blue-grey blotches and stripes; two small pigmented spots at upper distal corner of operculum; 9–11 peritoneal spots.

**Size:** To 33 cm, common 12 cm (TL)***Synodus macrops* (Tanaka, 1917)*****FAO names:** Triplecross lizardfish (En)

Anoli croix (Fr)

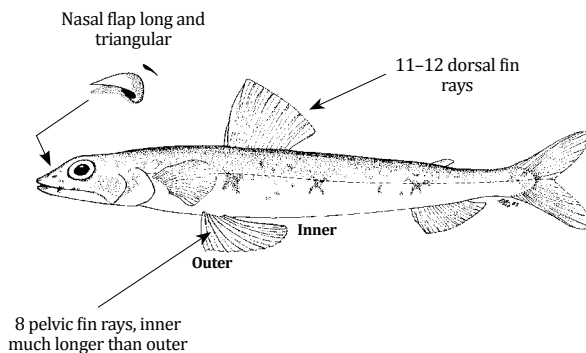
Local name(s): Bombla, Gadhi, Urbi, Disco (Sin); Bombla (Bal).

Habitat: Coastal waters from 35 m to 200 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Anterior palatine teeth short, not forming a discrete group; 10–11 anal fin rays; posterior pelvic process narrow; peritoneum grey to black.

Colour: Body tan, darker on back than on belly; 3 X-shaped spots on sides.

**Size:** To 20 cm, common 10 cm (TL)

***Trachinocephalus myops* (Forster, 1801)**

FAO names: Snakefish (En)

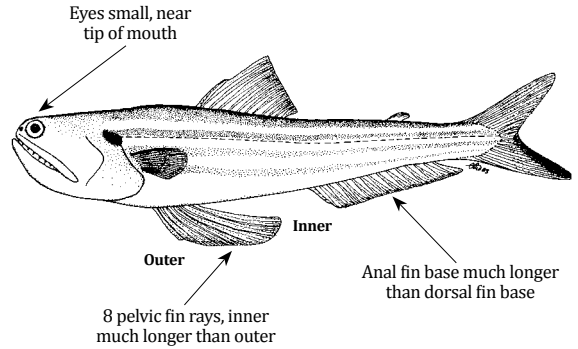
Local name(s): Bombla, Gadhi, Urbi, Disco (Sin); Bombla (Bal).

Habitat: Sand, shell, rock or mud bottoms from the shoreline down to 400 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth oblique with a single row of teeth on upper jaw visible even when mouth is closed; 14–15 anal fin rays.

Colour: A series of longitudinal blue and yellow stripes cover back and sides; belly pale yellow or gold; a large, dark, oblique spot at upper corner of gill cover.



Size: To 40 cm, common 25 cm (TL)

MYCTOPHIDAE

Lanternfishes

***Benthosema fibulatum* (Gilbert & Cramer, 1897)**

FAO names: Spinycheek lanternfish (En)

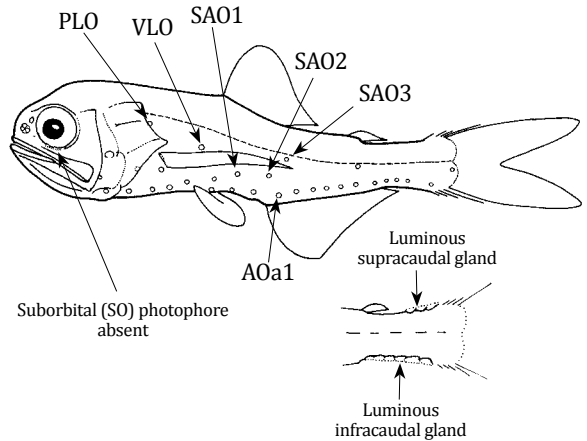
Local name(s): None.

Habitat: Benthopelagic and mesopelagic in slope waters and oceanic waters, but usually not high oceanic.

Fisheries: Pelagic trawls.

Distinctive Characters: Mouth terminal, snout not projecting; SO photophore absent; SAO3 on or behind vertical through AOa1; 1st gill arch with 6–9 gill rakers on upper limb, 13–20 on lower limb; SAO1 well below line connecting VLO and SAO2; PLO closer to lateral line than base of pectoral fins; both supra- and infracaudal organs well developed and present in males and females over 3 cm long.

Colour: silvery with metallic green or blue scales.



Size: To 10 cm (TL)

***Benthosema pterotum* (Alcock, 1890)**

(Plate XI, 86)

FAO names: Skinnycheek lanternfish (En)

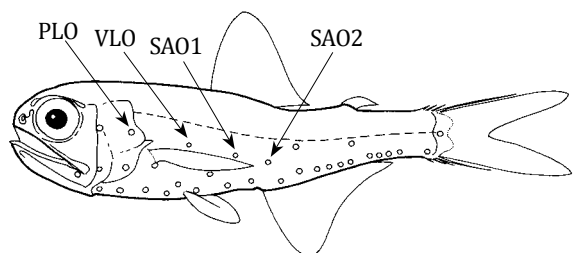
Local name(s): None.

Habitat: Benthopelagic and mesopelagic in slope and near continental/island waters; one of the shallowest dwelling species in the family, with day captures as shallow as 100 m.

Fisheries: Pelagic trawls.

Distinctive Characters: Similar to *Benthosema fibulatum* but SAO1 on line connecting VLO and SAO2; PLO at or below midway point between base of pectoral fins and lateral line; caudal luminous organs poorly developed, supracaudal in males, infracaudal in females, or absent

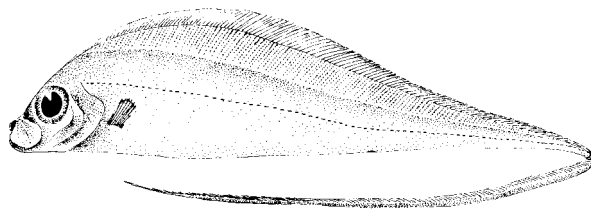
Colour: silvery with metallic green or blue scales.



Size: To about 7 cm (TL)

TRACHIPTERIDAE

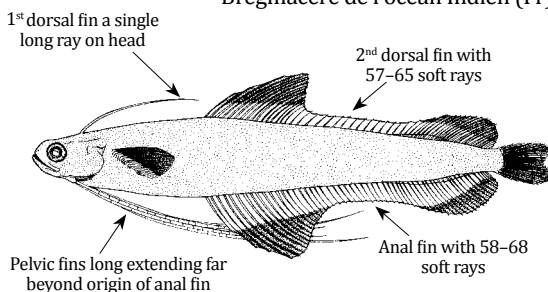
Ribbonfishes

Desmodema polystictum (Ogilby, 1898)**FAO names:** Polka-dot ribbonfish (En)**Local name(s):** None.**Habitat:** Epi- and mesopelagic species.**Fisheries:** Pelagic trawls.**Distinctive Characters:** Body elongate, ribbon-like, compressed; 4–10 dorsal caudal rays, more or less parallel to long axis of body; ventral caudal rays absent; no elongate spiny plates or bony tubercles along ventral edge of tail; dorsal fin with 120–124 elements.**Colour:** Head and body silvery; fins red. Specimens less than 10 cm are silvery in color with many dark spots.**Size:** To 110 cm (TL)**BREGMACEROTIDAE**

Codlets

Bregmaceros mccllelandi Thompson, 1840**FAO names:** Unicorn cod (En)

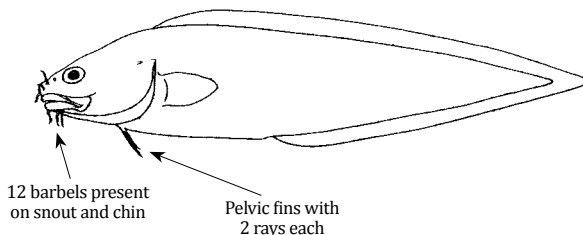
Bregmacère de l'océan Indien (Fr)

Local name(s): None.**Habitat:** Pelagic in coastal waters, in estuaries; also in the open ocean.**Fisheries:** Bottom trawls.**Distinctive Characters:** Head relatively short, 6 times in TL; lateral line scales less than 78.**Colour:** Upper part of pectoral fins black or rather dark; dark pigment usually present on caudal fin, anterior and posterior lobes of 2nd dorsal fin, and sometimes anterior and posterior lobes of anal fin (pigments often faint or absent, especially in young).**Size:** To 10 cm, common 7 cm (SL)**OPHIDIIDAE**

Cusk eels – Brotulas

Brotula multibarbata Temminck & Schlegel, 1846**FAO names:** Goatsbeard brotula (En)

Brotula barbe-de-boue (Fr)

Local name(s): Bam khaga (Sin).**Habitat:** Benthic on continental shelf and slope in deeper waters. Maximum depth 650 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** Body elongate with a tapering caudal fin; fine teeth present on jaws and on palate; fins spineless; dorsal and anal fins long, continuous with caudal fin; body completely covered with small, cycloid (smooth) scales.**Colour:** Dark brown with a submarginal black band; narrow white border on the dorsal and anal fins.**Size:** To 100 cm, common 30 cm (TL)

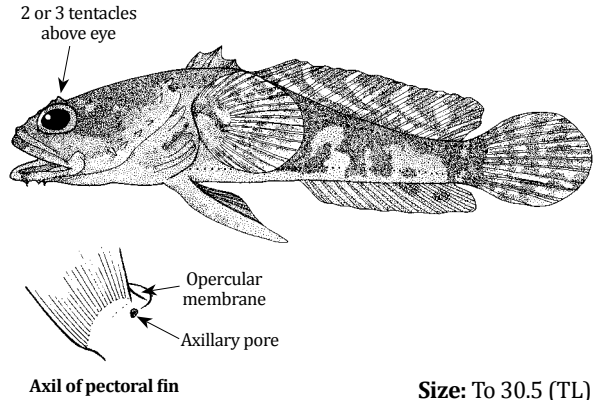
BATRACHOIDIDAE

Toadfishes

***Colletteichthys dussumieri* (Valenciennes, 1837)**

FAO names: Flat toadfish (En)

Local name(s): Bheel-alari (Bal); Serin (Sin).
Habitat: Usually seen hiding in crevices and burrows; prefers muddy bottom.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Head and anterior part of body depressed; 2 dorsal fins, the 1st with 3 spines, the 2nd with 20 soft rays; anal fin with 16 soft rays; 3 lateral lines; no scales; a funnel-shaped pit at top of pectoral fin axil, with glandular tissue inside and extending from ventral pit margin onto axil; short dermal flaps on chin.
Colour: Light brown, shading to white ventrally, with four, irregular, branching, dark brown bars on body and dark bands and blotches on head and fins.

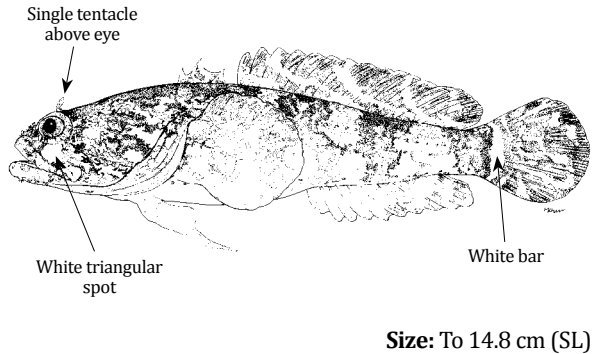


Size: To 30.5 (TL)

***Colletteichthys occidentalis* (Greenfield, 2012)**

FAO names: Arabian toadfish (En)

Local name(s): Bheel-alari (Bal); Serin (Sin).
Habitat: May occur in coral reefs or in seagrass or weedy bottoms; has been collected in tidepools.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Similar to *Colletteichthys dussumieri* but a single tentacle above eye; 2nd dorsal fin with usually 19 (in some cases 20) soft rays; anal fin with usually 15 (rarely 16) soft rays.
Colour: Light brown, shading to white ventrally, with four, irregular, branching, dark brown bars on body and dark bands and blotches on head and fins; pelvic fins white, crossed by 5 tan bars; dorsal, anal and caudal fins gray with distinct white markings.



Size: To 14.8 cm (SL)

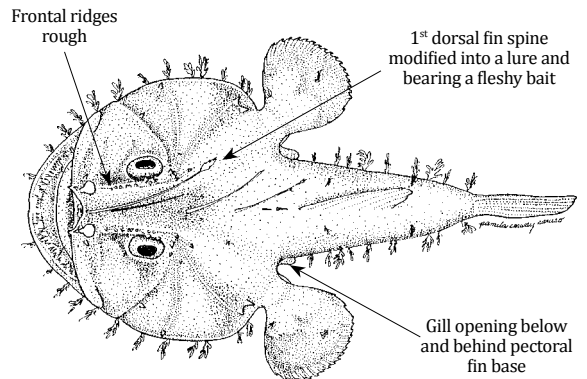
LOPHIIDAE

Goosefishes

***Lophiomus setigerus* (Vahl, 1797)**

FAO names: Blackmouth angler (En)

Local name(s): Bheel-alari (Bal).
Habitat: Inshore benthic on muddy to rocky bottoms, coral and rocky reefs to meso- and bathypelagic at depths from 30 m to 800 m.
Fisheries: Bottom trawls.
Distinctive Characters: Floor of mouth with a distinct reticulate pattern; 2nd cephalic dorsal fin spine stout and darkly pigmented; 2nd (soft) dorsal fin with 8 rays; anal fin with 6 rays.
Colour: Light to dark brown above, lighter below; dorsal surface frequently mottled; all fin rays with pale tips; 2nd cephalic dorsal fin spine darkly pigmented.



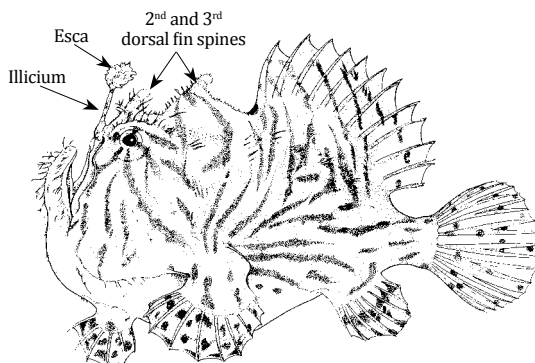
Size: To 40 cm, common 30 cm (TL)

ANTENNARIIDAE

Frogfishes

Antennarius hispidus (Bloch & Schneider, 1801)

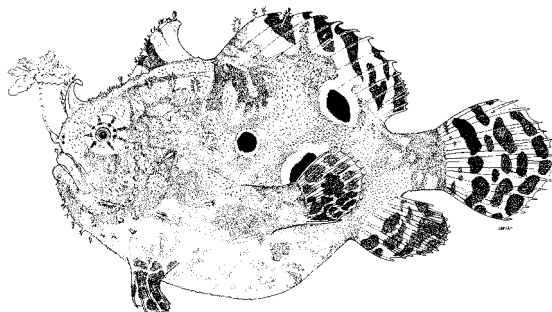
FAO names: Shaggy angler (En)

Local name(s): Bheel-alari (Bal).**Habitat:** Inhabits still muddy habitats that are either deep or offshore or shallow rocky and coral reefs.**Fisheries:** Bottom trawls.**Distinctive Characters:** Illicium (rod) banded, equal to or slightly longer than 2nd dorsal spine; esca (lure, bait) with large oval-shaped tuft with slender filaments.**Colour:** Ground color of head and body light-tan with narrow blackish brown streaks, some radiating from eye; all fins with blackish brown spots; belly without stripes.

Size: To about 20 cm (TL)

Antennarius indicus (Schultz, 1964)

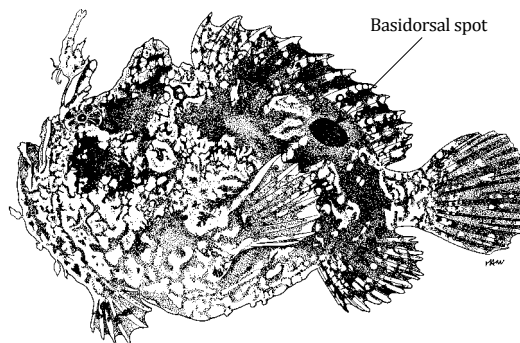
FAO names: Indian frogfish (En)

Local name(s): Bheel-alari (Bal).**Habitat:** Inhabits soft muddy and sandy bottoms in intertidal and subtidal zones, often associated with algae, near the surface to at least 29 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** Illicium (rod) banded, slightly longer than 2nd dorsal spine; esca (lure, bait) large, consisting of a cluster of leaf-like appendages.**Colour:** Yellowish brown with 2–3 dark round spots encircled by a light ring, one at base of 2nd dorsal fin and in midbody, sometimes a 3rd spot above anal fin; dark brown bars or rows of spots on fins; illicium dark-banded.

Size: To about 20 cm (TL)

Antennarius nummifer (Cuvier, 1817)

FAO names: Spotfin frogfish (En)

Local name(s): Bheel-alari (Bal).**Habitat:** Inhabits intertidal zone to depths of at least 25 m on both lagoon and seaward reefs.**Fisheries:** Bottom trawls.**Distinctive Characters:** Illicium (rod) about equal to length of 2nd dorsal spine; esca (lure, bait) large and variable, but often resembling a small shrimp; posterior end of dorsal and anal fin not broadly connected to caudal peduncle.**Colour:** Ground colour may be yellow, orange, pink, red, olive, brown, or brown mixed with another colour; a prominent ocellated black spot usually present at base of soft dorsal fin.

Size: To 13 cm (TL)

OGCOCEPHALIDAE

Batfishes

Haliutaea indica Annandale & Jenkins, 1910

FAO names: Indian handfish (En)

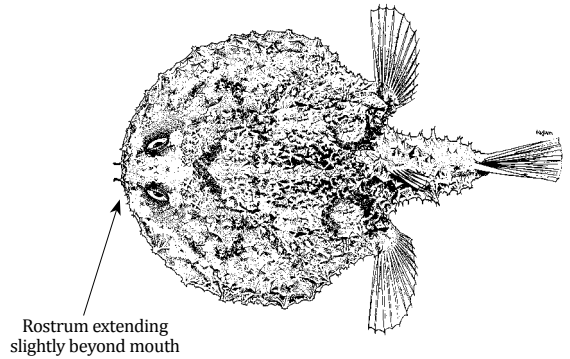
Local name(s): None.

Habitat: Demersal, offshore on continental shelves and upper continental slopes.

Fisheries: Bottom trawls.

Distinctive Characters: Disk distinctly rounded; dorsal surface covered with medium-sized, simple or bifurcated tubercles; ventral surface from completely naked to many scattered granular spinules; teeth on tongue forming two paddle-shaped patches, each with a long inner prolongation

Colour: Disk brownish yellow with symmetrical dark reticulations across dorsal surface; pectoral fin orange, with thin white line across middle of fin; 2 brown bars on caudal fin; ventral surface reddish.



Size: To 10 cm (TL)

BELONIDAE

Needlefishes

Ablennes hians (Valenciennes, 1846)

(Plate XI, 87)

FAO names: Flat needlefish (En)
Orphie plate (Fr)

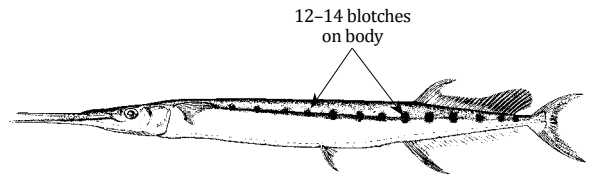
Local name(s): Linji, Sara kangho (Sin); Aalore (Bal).

Habitat: Pelagic, inhabiting offshore surface waters, abundant around islands.

Fisheries: Bottom trawls, gillnets.

Distinctive Character: Body strongly laterally compressed; dorsal fin with 23–26 (usually 24–25 rays); anal fin with 24–28 (usually 26–27 rays); gill rakers absent; pectoral fins falcate with 13–15 rays; anterior part of dorsal and anal fins with high falcate lobes; caudal peduncle without lateral keels.

Colour: Bluish green above, silvery white below.



Size: To 140 cm (TL)

Platybelone argalus (Lesueur, 1821) *

FAO names: Keeltail needlefish (En)
Orphie carénée (Fr)

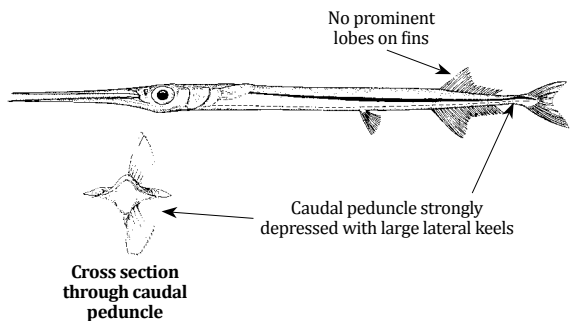
Local name(s): Linji, Sara kangho (Sin); Aalore (Bal).

Habitat: Pelagic in offshore waters.

Fisheries: Bottom trawls, gillnets.

Distinctive Character: Body rounded or squarish in cross-section; dorsal fin with 12–15 rays; anal fin with 15–20 rays; gill rakers present; pectoral fins not falcate.

Colour: Bluish green above, silvery below; a dark blue stripe along sides; fins unpigmented; scales and bones green.



Size: To 50 cm, common 35 cm (TL)

Strongylura leiura (Bleeker, 1850)

Local name(s): Linji, Sara kangho (Sin); Aalore (Bal).

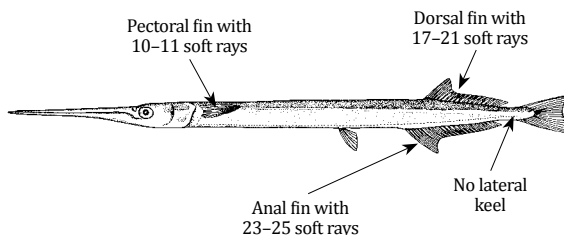
Habitat: In coastal areas, also in estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Character: Body elongate, laterally compressed, almost rectangular in cross section; origin of dorsal fin over 7th to 10th ray of anal fin; predorsal scales moderately small, 130 to 180; caudal fin emarginate (not deeply forked); gill rakers absent.

Colour: Back greenish, sides silvery, white ventrally; a black bar on cheek between opercle and preopercle; pectoral fins dark distally, the tip yellow.

FAO names: Banded needlefish (En)



Size: To 100 cm (TL)

Strongylura strongylura (van Hasselt, 1823)

Local name(s): Linji, Sara kangho (Sin); Aalore (Bal).

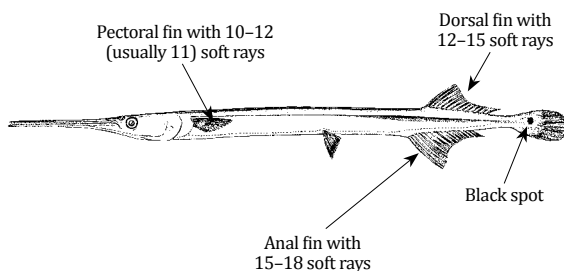
Habitat: In coastal areas and estuaries, also enters fresh water.

Fisheries: Bottom trawls, gillnets.

Distinctive Character: Body rounded in cross section; predorsal scales few and relatively large, 100 to 300; caudal peduncle without lateral keels; caudal fin rounded or truncate; gill rakers absent.

Colour: Back greenish, sides silvery, white ventrally; pectoral, pelvic and anal fins light; dorsal fin lobe and distal margin of caudal fin yellow in live adults; caudal fin with a prominent round black spot near its base; anterior margin of anal fin orange.

FAO names: Spottail needlefish (En)
Aiguillette ocelée (Fr)



Size: To 40 cm (SL)

Tylosurus acus (Lacepède, 1803)

Local name(s): Linji, Sara kangho (Sin); Aalore (Bal).

Habitat: Pelagic in offshore waters, also found in coastal waters.

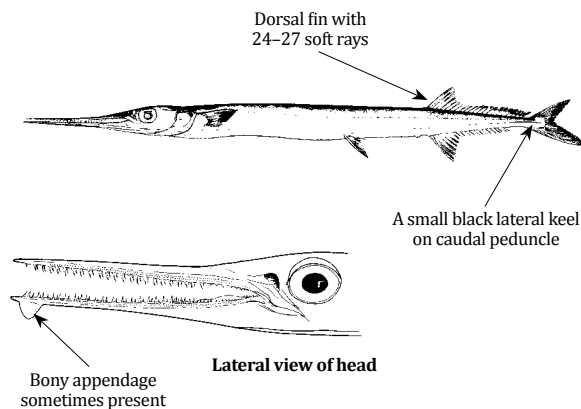
Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body rounded in cross-section; caudal fin deeply forked, lower lobe much longer than upper; upper jaw curved producing a gap between upper and lower jaws; teeth straight at all sizes; anal fin with 22–24 (usually 23) soft rays; gill rakers absent.

Colour: Dark bluish above, silvery white below; juveniles with elevated black lobe in posterior part of dorsal fin which is lost with growth.

Remarks: Circumglobal in tropical seas and divisible into four subspecies: *Tylosurus acus melanotus* extends from South Africa through the Central and South Pacific.

FAO names: Agujon needlefish (En)
Aiguille voyeuse (Fr)



Size: To 153 cm (TL), common 90 cm (SL)

Tylosurus crocodilus* (Péron & Lesueur, 1821)

Local name(s): Linji, Sara kangho (Sin); Aalore (Bal).

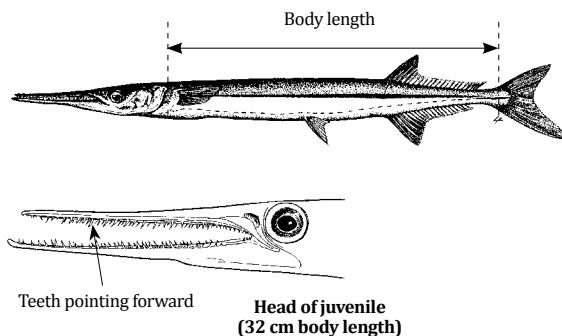
Habitat: Pelagic in coastal waters, but also offshore.

Fisheries: Bottom trawls, gillnets.

Distinctive Character: Similar to *Tylosurus acus* but upper jaw straight (so there is no appreciable gap between jaws); teeth pointing anteriorly in juveniles (to 40 cm body length); dorsal fin with 21–24 (usually 22 or 23) soft rays; anal fin with 19–22 (usually 21 or 22) soft rays.

Colour: Dark bluish green above, silvery below; a dark blue stripe along sides; juveniles (to 20 cm body length) with elevated black lobe in posterior part of dorsal fin which is lost with growth.

FAO names: Hound needlefish (En)
Aiguille crocodile (Fr)



Size: To 124 cm, common 90 (SL)

HEMIRAMPHIDAE**Halfbeaks*****Hemiramphus* cf. *archipelagicus* Collette & Parin, 1978**

FAO names: Jumping halfbeak (En)
Demi-bec saltou (Fr)

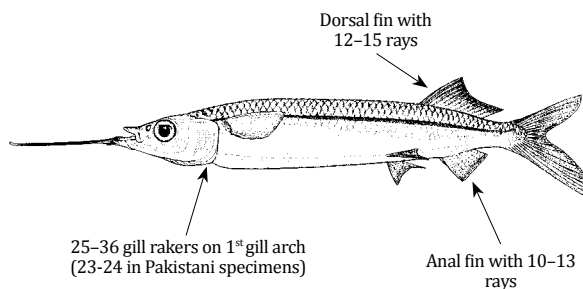
Local name(s): Sari kungghi, Kangha (Sin); Murrant (Bal).

Habitat: Inhabits the immediate vicinity of coasts, but juveniles of this species may sometimes be found with floating plants carried out to sea.

Fisheries: Gillnets, cast nets, bagnets, beach seine.

Distinctive Characters: Lower jaw very prolonged; upper jaw short triangular and scaleless; pectoral fins short, not reaching past nasal pit when folded forward; caudal fin deeply forked.

Colour: Dark bluish on back without any blotches on sides; a midlateral silvery stripe edged dorsally in dark green; silvery white on ventral side of body; beak dark, with a bright red fleshy tip; margin of caudal fin blackish as well as outer part of median fins.



Size: To about 34 cm (TL)

***Hemiramphus far* (Forsskål, 1775)**

(Plate XI, 88)

FAO names: Black-barred halfbeak (En)

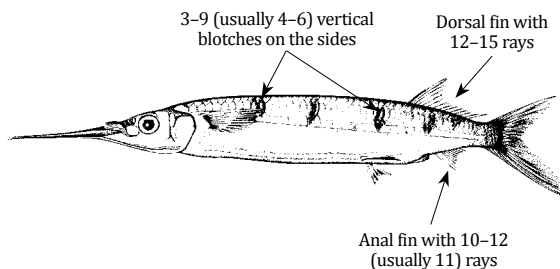
Local name(s): Sari kungghi, Kangha (Sin); Murrant (Bal).

Habitat: Found in proximity of continental coasts and islands, chiefly in areas of rich submerged vegetation.

Fisheries: Gillnets, cast nets, bagnets, beach seine.

Distinctive Characters: Lower jaw very prolonged; upper jaw short triangular and scaleless; pectoral fins short, not reaching past nasal pit when folded forward; total number of gill rakers on 1st gill arch 25–36 (usually 29–33).

Colour: Dark bluish above, silvery white below; beak dark, with a bright red fleshy tip.



Size: To about 45 cm, common to 27 cm (TL)

Hyporhamphus limbatus (Valenciennes, 1847)

FAO names: Congaturi halfbeak (En)
Demi-bec congaturi (Fr)

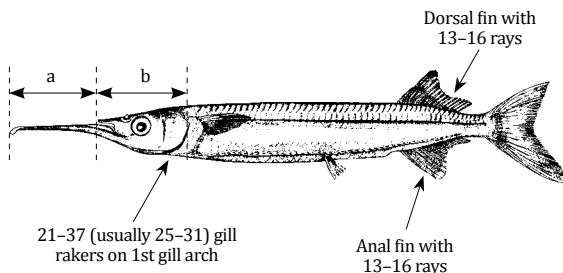
Local name(s): Sari kungghi, Kangha (Sin); Murrant (Bal).

Habitat: In coastal areas and estuaries, also enters fresh water.

Fisheries: Gillnets, cast nets, bagnets, beach seine.

Distinctive Characters: Lower jaw (a) usually longer than head (b) in adults, its length contained 0.7–1.3 times in head length; upper jaw short (wider than long), triangular and scaly; pelvic fin origin equidistant between eye and caudal fin base; caudal fin emarginate, not strongly forked.

Colour: Greenish above, the silvery lateral stripe widening posteriorly, white ventrally; fleshy tip of beak reddish.



Size: To 22 cm, common to 13 cm (SL)

Hyporhamphus sindensis (Regan, 1905)

FAO names: Sind halfbeak (En)

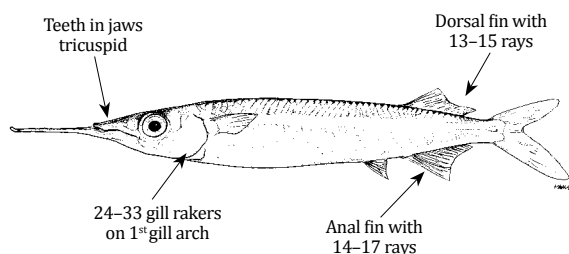
Local name(s): Sari kungghi, Kangha (Sin); Murrant (Bal).

Habitat: Pelagic in coastal waters.

Fisheries: Gillnets, cast nets, bagnets, beach seine.

Distinctive Characters: Greatly prolonged beak-like lower jaw, its length contained 0.9–1.7 times in head length; upper jaw short (longer than wide), triangular and scaly; pelvic fin origin equidistant between preopercle and caudal fin base; caudal fin emarginate, not strongly forked.

Colour: Grey with a narrow lateral silvery stripe that broadens somewhat posteriorly, the upper edge of which is green; fleshy tip of beak red.



Size: To 25 cm (TL)

EXOCOETIDAE

Flyingfishes

Cheilopogon abei Parin, 1996 *

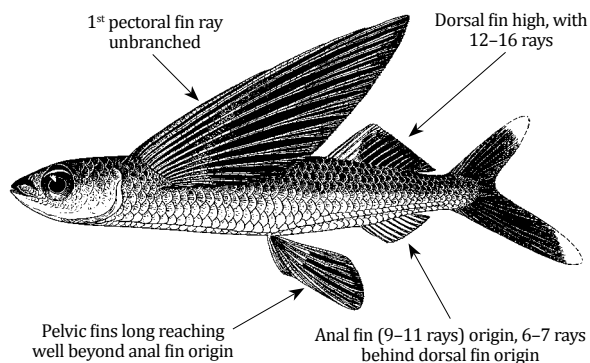
FAO names: Abe's flyingfish (En)

Local name(s): Jirri, Thuri, Parri (Sin); Jhirri (Bal).
Habitat: Pelagic in neritic and oceanic surface waters.

Fisheries: Gillnets.

Distinctive Characters: Head shorter than distance between dorsal fin origin and origin of upper caudal fin lobe; lower jaw slightly projecting; 22–29 predorsal scales; pelvic fins insertion closer to hind margin of head than to origin of lower caudal fin lobe; juveniles with a pair of short chin barbels with lateral flap.

Colour: Dorsal and pelvic fins with a bright black spot; anal fin without pigmentation; pectoral fins black with an oblique light stripe (usually bright yellow in life, sometimes grayish); caudal fin evenly dark gray.



Size: To 25 cm (SL)

***Cheilopogon furcatus* (Mitchill, 1815)**

FAO names: Spotfin flyingfish (En)

Local name(s): Jirri, Thuri, Parri (Sin); Jhirri (Bal).

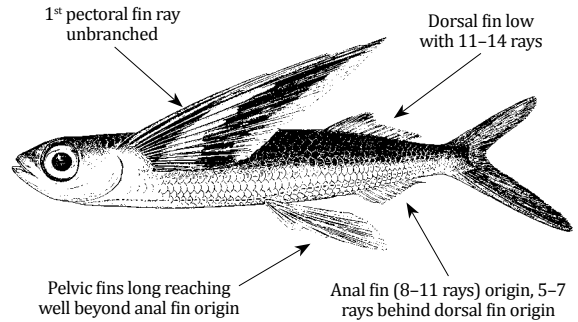
Habitat: Pelagic in oceanic surface waters.

Fisheries: Gillnets.

Distinctive Characters: Head shorter than distance between dorsal fin origin and origin of upper caudal fin lobe; lower jaw slightly projecting; 25–34 predorsal scales; pelvic fins insertion closer to hind margin of head than to origin of lower caudal fin lobe; juveniles with a pair of rather long (up to 50% SL) chin barbels, without lateral flaps.

Colour: Pectoral fins light or dark grey with a pale margin, the central portion crossed by a pale stripe becoming narrower toward anterior fin margin; pelvic fins pale.

Remarks: Indian Ocean population considered as subspecies *Cheilopogon furcatus neimani* Parin & Belyanina, 1998.



Size: To 35 cm (TL)

***Cheilopogon suttoni* (Whitley & Colefax, 1938)**

FAO names: Sutton’s flyingfish (En)
Exocet de Sutton (Fr)

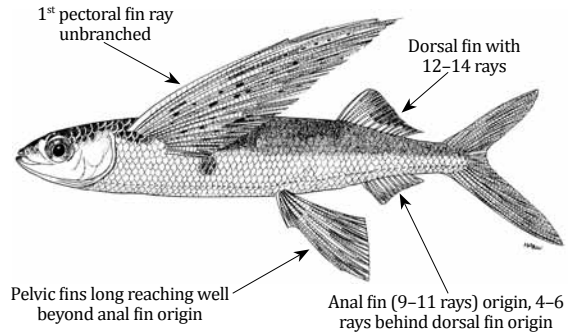
Local name(s): Jirri, Thuri, Parri (Sin); Jhirri (Bal).

Habitat: Pelagic in open ocean and neritic surface waters.

Fisheries: Gillnets.

Distinctive Characters: Head subequal to distance from dorsal fin origin to origin of upper caudal fin lobe; jaws of equal length or lower jaw is longer; 34–42 predorsal scales; pelvic fins inserted about midway between head and origin of lower caudal fin lobe; juveniles with 2 flattened chin barbels connecting at their base.

Colour: Dorsal fin usually with a black spot; pectoral fins grey or brownish with numerous scattered dark spots (spots may vary in number and size); pelvic fins usually without spots (spotted in juveniles).



Size: To 29 cm (SL)

Exocoetus monocirrhus* Richardson, 1846

FAO names: Barbel flyingfish (En)
Exocet boue (Fr)

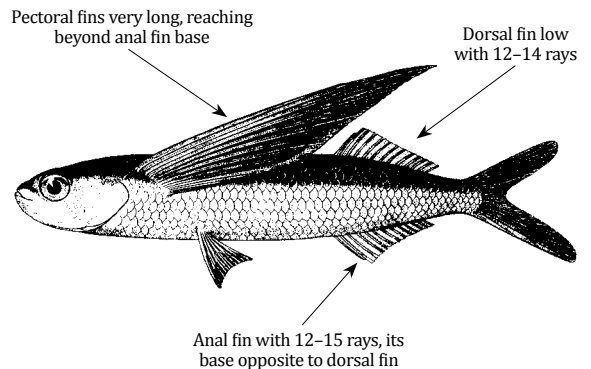
Local name(s): Jirri, Thuri, Parri (Sin); Jhirri (Bal).

Habitat: Pelagic in oceanic surface waters.

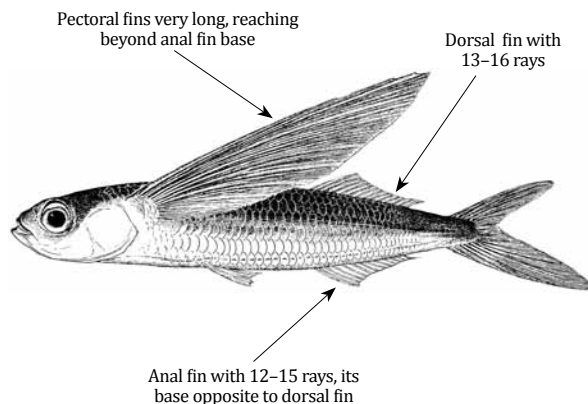
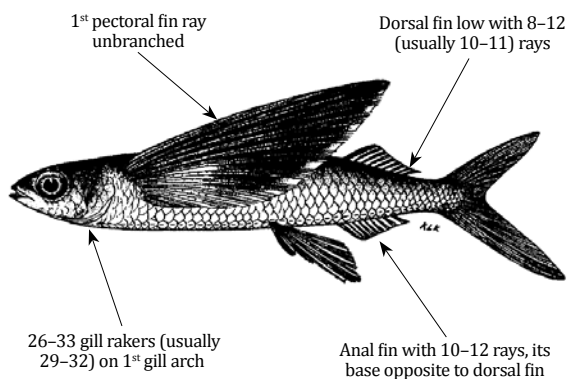
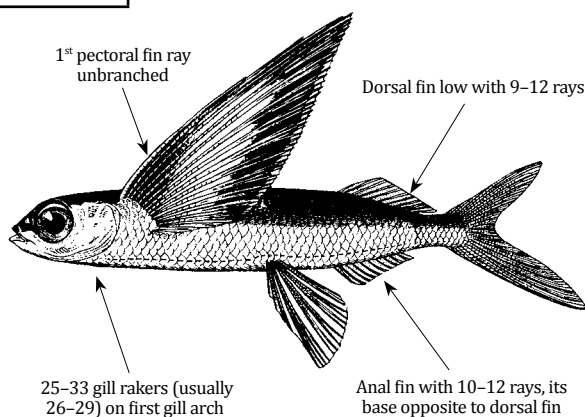
Fisheries: Gillnets.

Distinctive Characters: Upper jaw protrusible; 21–29 gill rakers on 1st gill arch; pelvic fins short, far from reaching anal fin; usually 7–7½ transverse rows of scales between dorsal fin origin and lateral line; juveniles hump-backed, with a single chin barbel and with black pelvic fins.

Colour: Body dark iridescent blue above, silvery white below; pectoral fins brown or dark brown and caudal fin greyish or brownish, other fins unpigmented.



Size: To 20 cm (SL)

Exocoetus volitans Linnaeus, 1758***Local name(s):** Jirri, Thuri, Parri (Sin); Jhirri (Bal).**Habitat:** Pelagic, both near and far from the coast.**Fisheries:** Gillnets.**Distinctive Characters:** Upper jaw protrusible; 29 to 37 (usually 32–34) gill rakers on 1st gill arch; pelvic fins short, far from reaching anal fin; usually 6–6½ transverse rows of scales between dorsal fin origin and lateral line; juveniles elongated, without chin barbel and with unpigmented pelvic fins.**Colour:** Dark above, pale below (dark colour usually iridescent blue in life); dorsal fin greyish; pectoral fins grey.**FAO names:** Tropical two-wing flyingfish (En)
Exocet volant (Fr)**Size:** To 18 cm (SL)***Hirundichthys coromandelensis*** (Hornell, 1923)**Local name(s):** Jirri, Thuri, Parri (Sin); Jhirri (Bal).**Habitat:** Pelagic in neritic surface waters, rare in the open ocean.**Fisheries:** Gillnets.**Distinctive Characters:** Usually 5½–7½ transverse rows of scales between dorsal fin origin and lateral line; pectoral fins with 16–18 rays; palatine teeth usually absent; pelvic fins long, reaching well beyond anal fin origin.**Colour:** Pectoral fins dark brown with a wide or narrow pale margin and virtually without “mirror” (i.e. pale transverse stripe); pelvic fins transparent; dorsal fin gray; anal fin semi-transparent (gray at the base), caudal fin light brown.**Remarks:** According to Shakhovskoy and Parin (2013) this species should be changed to *Hirundichthys oxycephalus coromandelensis*.**FAO names:** Coromandel flyingfish (En)
Exocet coromandel (Fr)**Size:** To 19 cm (SL)***Hirundichthys indicus indicus*** Shakhovskoy & Parin, 2013**Local name(s):** Jirri, Thuri, Parri (Sin); Jhirri (Bal).**Habitat:** Pelagic in oceanic surface waters.**Fisheries:** Gillnets.**Distinctive Characters:** Pectoral fins with 17–20 rays; palatine teeth always absent; pelvic fins long, reaching well beyond anal fin origin.**Colour:** Pectoral fins with a wide pale margin and with a very large “mirror” (i.e. pale transverse stripe) passing throughout the fin in fishes larger than 8 cm SL.**Remarks:** It differs from subspecies *Hirundichthys indicus orientalis* (occurring in the eastern Indian Ocean) by the absence of a dark spot on pelvic fins in specimens larger than 15 cm, as well as by having less predorsal scales: 26–35 (usually 28–30).**FAO names:** Not available (En)**Size:** To 19.2 cm (SL)

Hirundichthys speculiger (Valenciennes, 1846)

Local name(s): Jirri, Thuri, Parri (Sin); Jhirri (Bal).

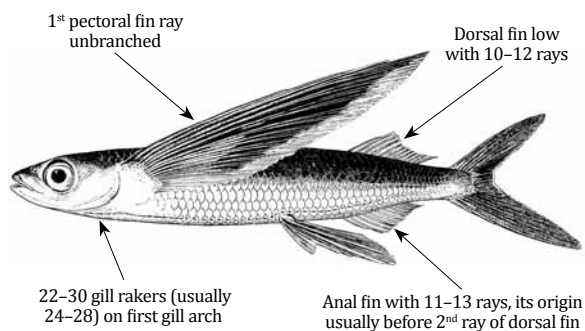
Habitat: Pelagic in oceanic surface waters.

Fisheries: Gillnets.

Distinctive Characters: Pectoral fins with 16–19 rays; palatine teeth present; pelvic fins long, reaching well beyond anal fin origin.

Colour: Dorsal fin unpigmented or greyish; pectoral fins dark with a pale triangle “mirror” and wide pale margin.

FAO names: Mirrowing flyingfish (En)
Exocet miroir (Fr)



Size: To 25 cm (SL)

HOLOCENTRIDAE**Squirrelfishes – Soldierfishes*****Myripristis botche*** Cuvier, 1829

(Plate XI, 89)

FAO names: Blacktip soldierfish (En)
Marignan poklé (Fr)

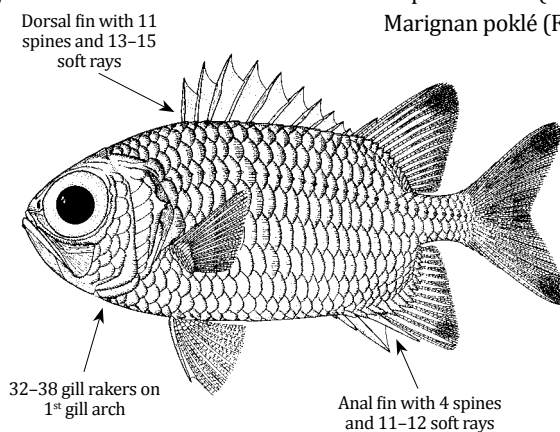
Local name(s): Sore mahi (Sin); Kohi mahi, Kolonto (Bal).

Habitat: Inhabits protected waters at depths greater than 25 m, often in silty reef areas. Tends to hide in caves or crevices during the day.

Fisheries: Gillnets.

Distinctive Characters: Snout short; lower jaw slightly projecting when mouth is closed; 2 pairs of tooth patches at front of lower jaw outside mouth; interorbital width not narrow, the width 4.5–5.65 in head length lateral line scales 27–29.

Colour: Light red; opercular margin black to or below level of lower edge of eye; median fins red, the leading edges white, the elevated part of soft dorsal and anal fins and caudal fin lobes tipped with black.



Size: To 31 cm (SL)

Ostichthys acanthorhinus Randall, Shimizu & Yamakawa, 1982

FAO names: Spinesnout squirrelfish (En)

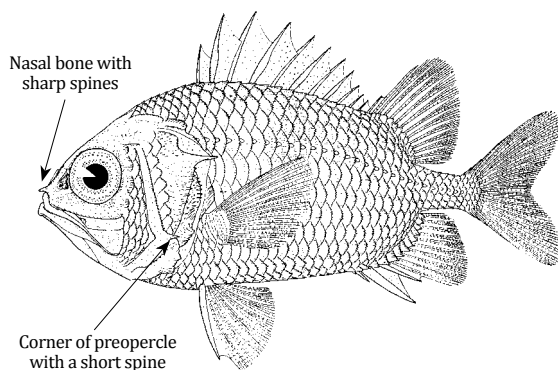
Local name(s): Sore mahi (Sin); Kohi mahi, Kolonto (Bal).

Habitat: Associated with reefs at depths from 272 m to 291 m.

Fisheries: Gillnets.

Distinctive Characters: Anterior end of each nasal bone with a sharp forward-directed spine projecting to or beyond median part of upper of upper lip; 3½ scale rows above lateral line to middle of spinous portion of dorsal fin; short stout spine at corner of preopercle; gill rakers on 1st gill arch 10 to 12 on upper limb and 16 to 18 on lower limb.

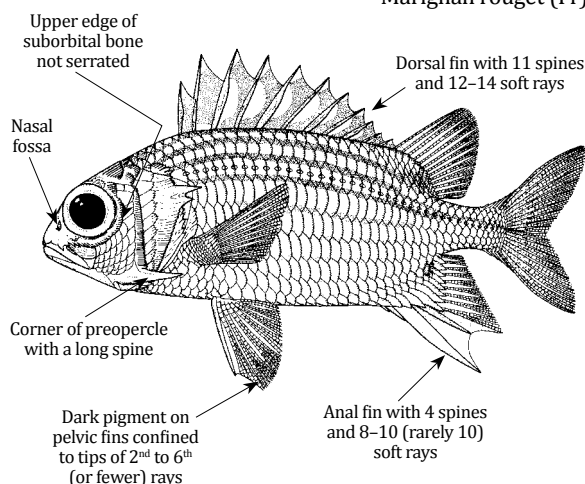
Colour: Color uniformly red, with no white markings.



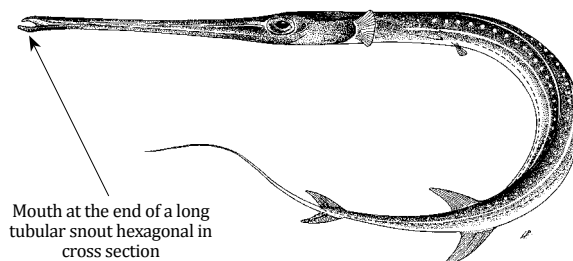
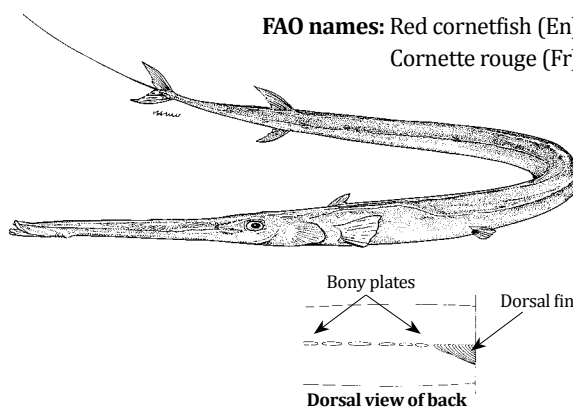
Size: To 22 cm (TL)

Sargocentron rubrum (Forsskål, 1775)

(Plate XI, 90)

FAO names: Redcoat (En)
Marignan rouget (Fr)**Local name(s):** Sore mahi (Sin); Kohi mahi, Kolonto (Bal).**Habitat:** Shallow water species found in protected habitats such as bays and lagoons.**Fisheries:** Gillnets.**Distinctive Characters:** Body depth 2.4–2.8 in SL; interorbital width 4.5–5.2 in SL; margin of nasal fossa with one or more spinules; no retrorse spine on nasal bone between nasal fossa and premaxillary groove; 32–39 lateral line scales; 2 ½ scale rows above lateral line to middle of spinous portion of dorsal fin; cheek with 5 diagonal rows of scales.**Colour:** Body with alternate stripes of red and silvery white; spiny dorsal fin red with white tips and a median band of white spots; no dark spots at pectoral fin base, but with elongate dark spots at bases of soft dorsal and anal fins.**Size:** To 32 cm, common 27 cm (TL)**FISTULARIIDAE**

Cornetfishes – Flutemouths

Fistularia commersonii Rüppell, 1838FAO names: Bluespotted cornetfish (En)
Cornette à taches bleues (Fr)**Local name(s):** Sari kangha (Sin); Moorat (Bal).**Habitat:** Seagrass beds and coral reefs in shallow waters.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Dorsal and anal fins short-based and opposite, with 15–17 and 14–16 segmented soft rays, respectively; pectoral fins with 13–15 rays; pelvic fins small and abdominal, with 6 rays.**Colour:** Brownish to olive above, lighter to silvery below; a pair of blue stripes or a row of blue spots along back; dorsal and anal fins with an orange cast becoming transparent at base; caudal filament white.**Size:** To 160 cm, common 100 cm (TL)***Fistularia petimba*** Lacepède, 1803FAO names: Red cornetfish (En)
Cornette rouge (Fr)**Local name(s):** Sari kangha (Sin); Moorat (Bal).**Habitat:** In coastal areas over soft beds down to more than 10 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Similar to *Fistularia commersonii* but with a row of elongate bony plates embedded in skin along midline of back anterior to dorsal fin; posterior lateral line ossifications ending in a sharp spine.**Colour:** Background colour red to orange-brown above, silvery below; vertical fins also have an orange cast.**Size:** To 200 cm, common 100 cm (TL)

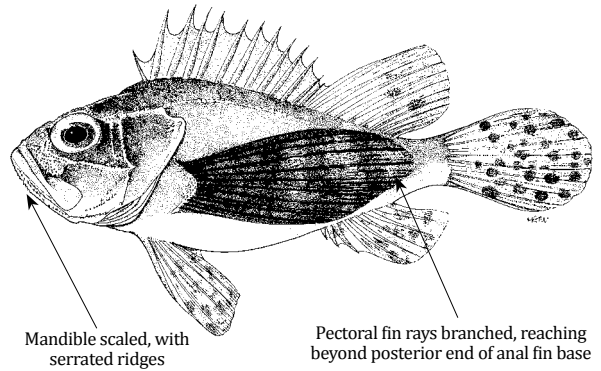
SCORPAENIDAE

Scorpionfishes – Rockfishes

***Brachyterois serrulifer* Fowler, 1938**

FAO names: Sawmaxilla scorpionfish (En)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).
Habitat: Benthic on muddy bottoms down to 82 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Dorsal fin spines short, nearly equal to length of dorsal fin soft rays; dorsal fin membrane moderately incised; dorsal fin with 13 spines and 10–11 soft rays; anal fin with 3 spines and 5–6 soft rays.
Colour: Reddish with five blackish bars on body; a black spot larger than eye on opercle; pectoral fin membranes black; soft dorsal, anal, caudal and pelvic fins with orange-red spots.

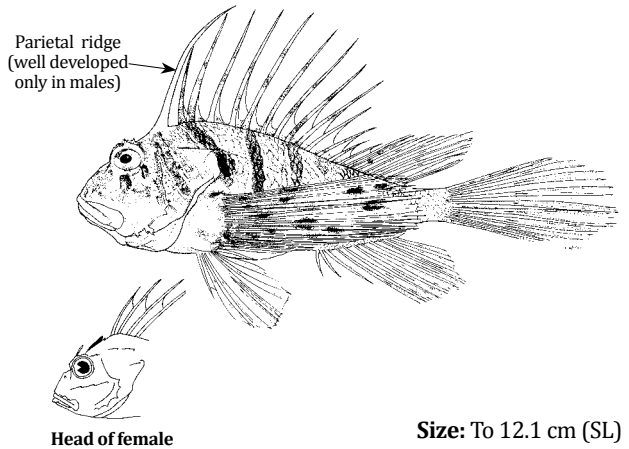


Size: To 15.5 cm (TL)

***Ebosia falcata* Eschmeyer & Rama-Rao, 1978**

FAO names: Falcate lionfish (En)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).
Habitat: Benthic at depths from 47 to 243 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Dorsal fin with 12–13 spines and 9–11 soft rays; anal fin with 3 spines and 7–9 (usually 8) soft rays; 17–18 pectoral fin rays; pectoral fin rays branched, reaching about to caudal fin base; scales ctenoid.
Colour: Two prominent bars radiate from eye ventrally; one oblique bar posterior to eye; five broad vertical bands on body below dorsal fin; a dark patch above base of pectoral fin; soft dorsal, caudal and anal fins with small dark spots; pectoral fins with large spots.

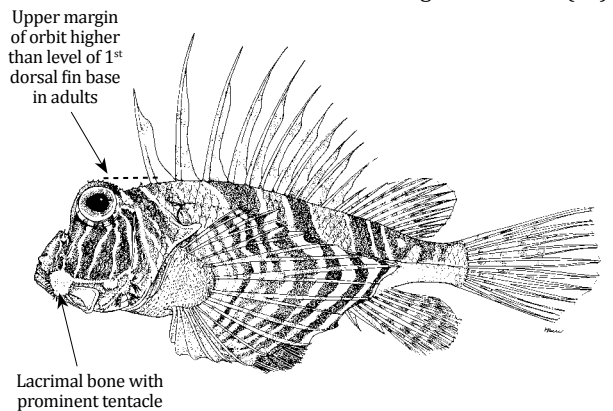


Size: To 12.1 cm (SL)

***Parapterois macrura* (Alcock, 1896)**

FAO names: Largehead firefish (En)

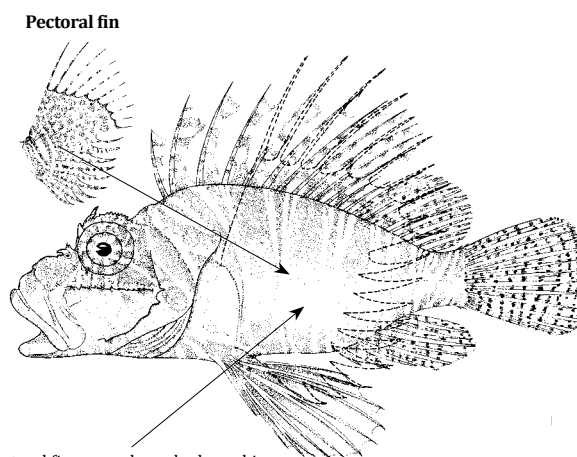
Local name(s): Seerin (Sin); Bheel-aalari (Bal).
Habitat: Benthic on sandy and muddy bottoms down to 151 m.
Fisheries: Bottom trawls.
Distinctive Characters: Dorsal fin with 13 spines and 9 soft rays; anal fin with 2 spines and 7 soft rays; midline of interorbital space without scales; top of bulge on snout well below ventralmost margin of orbit (in lateral view) in adults, 43–49 scales in logitudinal series; pectoral fin rays branched, reaching beyond posterior end of anal fin base.
Colour: Head and body reddish brown with narrow vertical dark bands beneath eye and on sides.



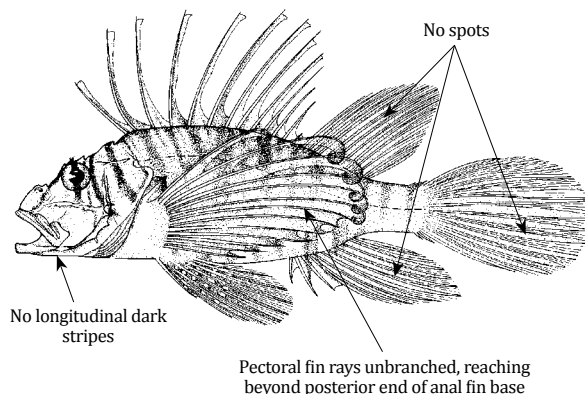
Size: To 12.4 cm (SL)

Pterois mombasae (Smith, 1957)

FAO names: Frillfin turkeyfish (En)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Benthic, normally found on soft bottoms or muddy substrates with rich rubble ridges amongst rich invertebrate growth, especially sponges down to 60 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body covered by ctenoid scales; dorsal fin with 13 spines, all shorter than body depth; anal fin with 3 spines and 6–7 soft rays; pectoral fin with 18–19 rays; tentacle above eye usually poorly developed or absent.**Colour:** Reddish brown with regular brown bars separated by paler lines of nearly equal width; bars on caudal peduncle thinner; extend posterodorsally; lines on head radiate from eye and enclose a brown ocellus on subopercle; upper half of pectorals with large dark spots on inner surface.**Size:** To 20 cm (SL)***Pterois russelii*** Bennett, 1831 (Plate XI, 91)

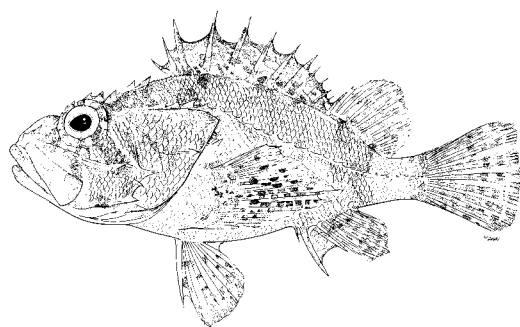
FAO names: Plaintail turkeyfish (En)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Benthic on soft bottoms down to 60 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Head with feeble spines in young, better developed in adults; dorsal fin membrane strongly incised, almost the entire height of fin; 3 anal spines; pectoral fins with 13 soft rays; upper 3–4 pectoral fin rays free from the fin membrane for about half their length; caudal fin rounded; scales small and cycloid.**Colour:** Reddish-brown with 4 dark crossbars on head; pectoral fin membrane usually covered with dark spots; pelvic fins mostly dusky, with light round spots on proximal half.**Size:** To 30 cm (SL)***Scorpaenodes investigatoris*** Eschmeyer & Rama-Rao, 1972

FAO names: Investigator scorpionfish (En)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Offshore level-bottom areas down to 170 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** Dorsal fin with 13 spines and 9 soft rays; anal fin with 3 spines and 5–6 soft rays; pectoral fins with 18–20 (usually 19) rays; 45–48 scale rows in longitudinal series (above lateral line from 1st lateral line scale to end of hypural); underside of the head naked or with cycloid scales.**Colour:** Body probably reddish; pectoral fins with dark spots; buccal cavity dusky.

(Plate XI, 92)

**Size:** To 7.3 cm (SL)

***Scorpaenodes muciparus* (Alcock, 1889)**

FAO names: Cave-headed scorpionfish (En)

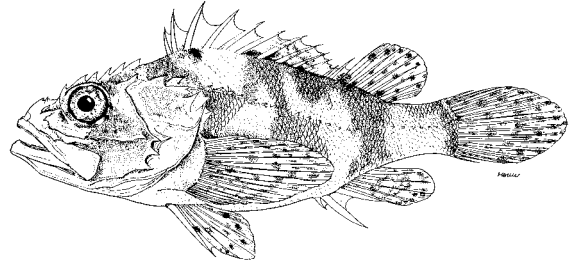
Local name(s): Seerin (Sin); Bheel-aalari (Bal).

Habitat: Offshore level-bottom areas down to 380 m.

Fisheries: Bottom trawls.

Distinctive Characters: Dorsal fin with 13 spines and 9 soft rays; anal fin with 3 spines and 5 soft rays; pectoral fins with 18–19 (usually 19) rays; 70–75 scale rows in longitudinal series (above lateral line from 1st lateral line scale to end of hypural); underside of the head naked or with cycloid scales.

Colour: Body coloration in preservative pale, with dark pigment on the sides arranged in more or less definite bars; a large dark spot near the posterior end of the spinous dorsal fin; fin membranes variably spotted.



Size: To 14.6 cm (SL)

***Scorpaenopsis lactomaculata* (Herre, 1945)**

FAO names: Whiteblotched scorpionfish (En)

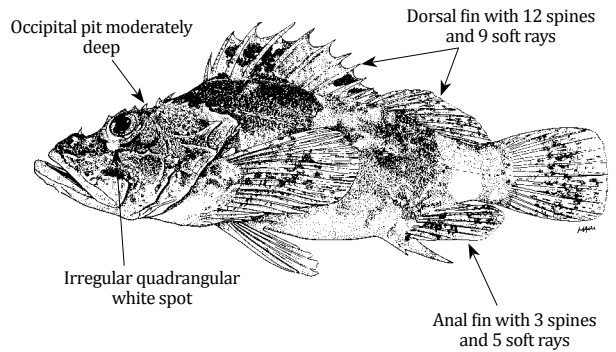
Local name(s): Seerin (Sin); Bheel-aalari (Bal).

Habitat: Benthic on sand and mud bottoms.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Snout not very long (3.05–3.35) in head length; a well developed depression below front of eye; 18–19 (usually 18) pectoral fin rays; 61–65 scales in longitudinal series.

Colour: Mottled brown to reddish brown with a broad irregular dark bar below spinous portion of dorsal fin, and another between soft portions of dorsal and anal fins; a hemispherical whitish spot often present below notched part of dorsal fin and a small whitish spot at rear base of dorsal fin.



Size: To 28 cm (TL)

***Scorpaenopsis ramaroi* Randall & Eschmeyer, 2001**

FAO names: Rama Rao's scorpionfish

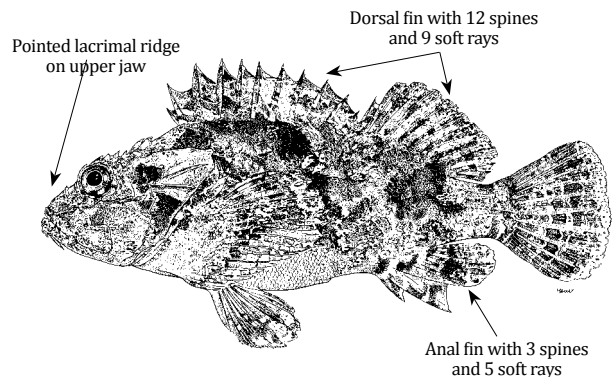
Local name(s): Seerin (Sin); Bheel-aalari (Bal).

Habitat: Benthic on silty sand and rocky bottom down to 60 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Occipital pit shallow; interorbital ridges prominent; a well developed depression below front of eye; 17–19 (usually 18) pectoral fin rays; upper opercular spine single; 45–49 scales in longitudinal series; supraocular tentacle varying from smaller than spine to as long as orbit diameter.

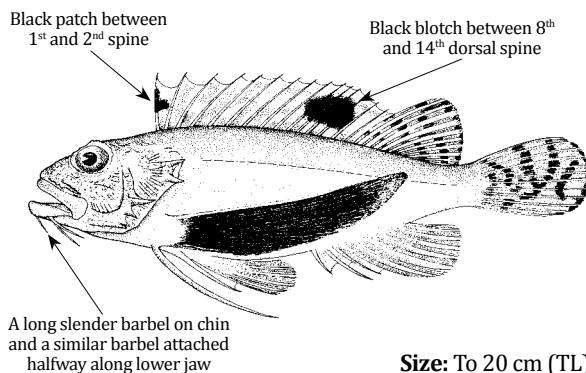
Colour: Dark reddish to brownish grey, strongly mottled with dark brown.



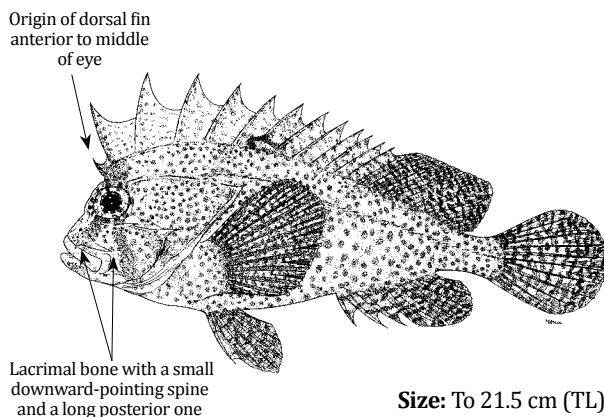
Size: To 20.8 cm (TL)

APISTIDAE

Wasp scorpionfishes

Apistus carinatus (Bloch & Schneider, 1801)**(Plate XII, 93)****FAO names:** Ocellated waspfish (En)**Local name(s):** Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Benthic on soft bottoms down to a depth of 60 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Preopercle with a strong spine and 2–3 shorter spines below; pectoral fins elongate, longest rays reaching to or beyond posterior end of anal fin; one pectoral fin ray detached from remainder of fin; scales on body.**Colour:** Body greyish dorsally and rosy ventrally; spiny part of dorsal fin grey, darker grey distally, with a black patch between; pectoral fins black, uppermost pectoral fin ray white.**Size:** To 20 cm (TL)**TETRAROGIDAE**

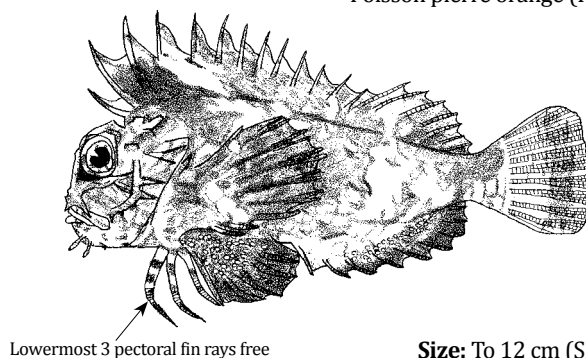
Wasp fishes

Snyderina guentheri (Boulenger, 1889)**FAO names:** Günther's waspfish (En)**Local name(s):** Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Demersal; depth range 24–300 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Dorsal fin with 13 spines and 10–11 soft rays; anal fin with 3 spines and 5–6 (usually 6) soft rays; pectoral fins with 13–14 (rarely 14) rays; body with small embedded cycloid scales; caudal peduncle slender; caudal fin long and broadly rounded.**Colour:** Dark reddish brown with small pale spots; three dark bars radiating downward from eye and one above to dorsal fin.**Size:** To 21.5 cm (TL)**SYNANCEIIDAE**

Stonefishes

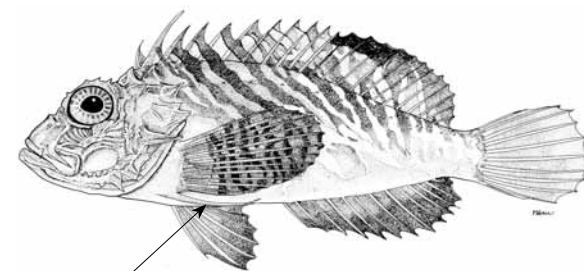
Choridactylus multibarbus Richardson, 1848**(Plate XII, 94)** **FAO names:** Orangebanded stingfish (En)

Poisson pierre orangé (Fr)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Benthic on sand or mud bottoms to a depth of about 50 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Head length 2.9–3.0 in SL; dorsal fin with 13–15 spines and 8–9 soft rays; anal fin with 2 spines and 8–9 soft rays; pectoral fin with 12 rays; no filamentous upper pectoral ray; body scaleless.**Colour:** Inner surface of pectoral fins black with several oblong orange bands; pelvic fins black or dark brown with numerous white spots.**Size:** To 12 cm (SL)

Minous dempsterae Eschmeyer, Hallacher & Rama Rao, 1979

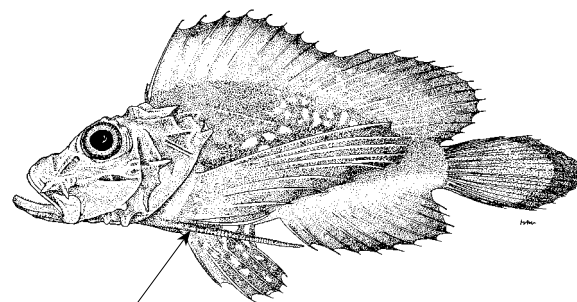
FAO names: Obliquebanded stingfish

Local name(s): Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Inhabits mud or clay bottoms down to a depth of 117 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** First dorsal fin spine less than half length of 2nd and close to its base; dorsal fin with 10–11 spines and 11–13 soft rays; anal fin with 2 spines and 9–11 soft rays; pectoral fin with 12 rays; 11–15 gill rakers on 1st gill arch; body scaleless.**Colour:** Grey dorsally with oblique pale bands in dorsal fin which extend onto upper two-thirds of body, the lower third of body pale; pectoral fins black, becoming pale on base; inner surface of pectoral fins grey with dark-edged white spots.

Pectoral fin with a single free ray ventrally

Size: To 15 cm (TL)***Minous inermis*** Alcock, 1889

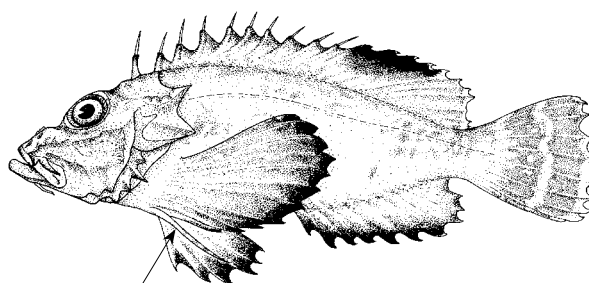
FAO names: Alcock's scorpionfish (En)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Depth range 35–420 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** First dorsal fin spine much shorter than 2nd spine and close to its base; dorsal fin with 9–10 spines and 12–14 soft rays; anal fin with 2 spines and 10–14 soft rays; 14–18 gill rakers on 1st gill arch; body scaleless; pectoral fins very long (3rd or 4th rays longest), reaching beyond base of last anal ray.**Colour:** Dark grey, the young with pale spots, shading to white ventrally; outer part of median fins dark grey; pectoral fins increasingly dark distally; inside of pectoral fins light grey; pelvic fins dark grey with pale spots.

Pectoral fin with a single free ray ventrally

Size: To 14 cm (TL)***Minous monodactylus*** (Bloch & Schneider, 1801)

(Plate XII, 95)

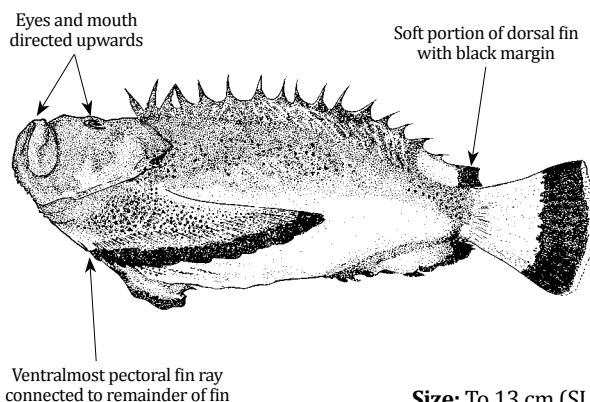
FAO names: Grey stingfish (En)
Poisson pierre gris (Fr)**Local name(s):** Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Found on mud or silty sand from near shore to at least 55 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** First dorsal fin spine equal to or longer than the 2nd, well separated from the second; dorsal fin with 9–11 spines and 10–12 soft rays; anal fin with 2 spines and 7–10 soft rays; 11–16 gill rakers on 1st gill arch; body scaleless.**Colour:** Mottled light grey, pale ventrally; a large black spot distally on anterior part of dorsal fin; anal and paired fins dark brown distally; inner surface of pectoral fins pale, without distinctive markings; caudal fin with two broad dark bars.

Pectoral fin with a single free ray ventrally

Size: To 15 cm (TL)

***Pseudosynanceia melanostigma* Day, 1875**

FAO names: Blackfin stonefish (En)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).**Habitat:** Benthic on mud bottoms.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Dorsal fin with 15–17 spines and 14–16 soft rays; anal fin with 3 spines and 7–8 soft rays; pectoral fin with 14–15 rays; 11–16 gill rakers on 1st gill arch; body scaleless.**Colour:** Mottled grey, pale ventrally; a large black spot on distal part of spinous dorsal fin; anal and paired fins with black margins; inner and outer surface of paired fins yellow; caudal fin white with a broad black bar distally.**Remarks:** Fin spines venomous, sting can cause extremely painful and perhaps fatal wounds.

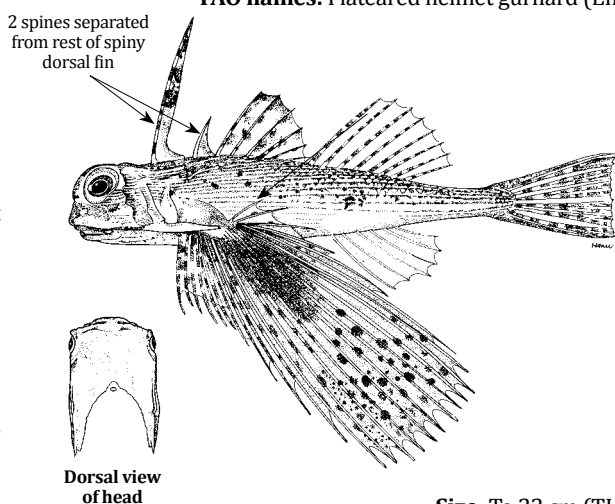
Size: To 13 cm (SL)

DACTYLOPTERIDAE

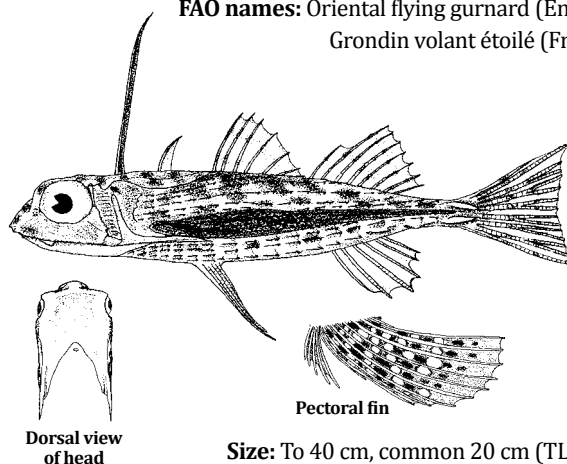
Flying gurnards

***Dactyloptena cf. gilberti* Snyder, 1909**

FAO names: Flateared helmet gurnard (En)

Local name(s): Jhiri (Sin); Jirri (Bal).**Habitat:** Over sand or mud-sand bottoms at depths of 20 to 71 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Heavily armored box-like body and wing-like pectoral fins; snout somewhat rounded and wide; interorbital width 16–23% of SL; granular projections on snout arranged in rows; lateral line present, extending to caudal fin.**Colour:** Pectoral fins dusky, with large dark spots arranged in row and especially dark over middle fin rays; separated anterior portion of pectoral fins paler, with no large ocellus or spot.**Remarks:** Included on the basis of photographic record.

Size: To 22 cm (TL)

***Dactyloptena orientalis* (Cuvier, 1829)**FAO names: Oriental flying gurnard (En)
Grondin volant étoilé (Fr)**Local name(s):** Jhiri (Sin); Jirri (Bal).**Habitat:** Benthic on sandy bottoms in coastal waters.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Similar to *Dactyloptena gilberti* but snout somewhat pointed; interorbital width 13–15% of SL; lateral line absent or greatly obscured.**Colour:** Usually yellowish brown above, light brown below, with small orange spots over top of head and back; dusky, golden spots on pectoral fins (larger distally).

Size: To 40 cm, common 20 cm (TL)

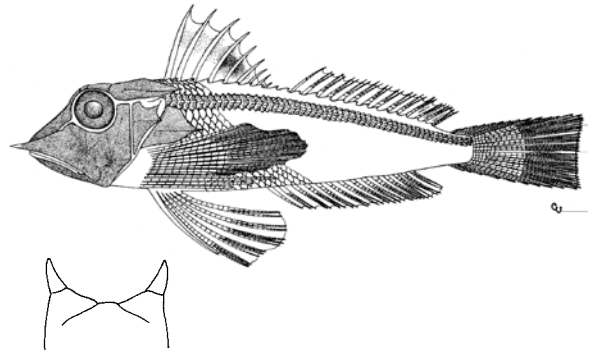
TRIGLIDAE

Gurnards – Searobins

***Lepidotrigla bispinosa* Steindachner, 1898**

FAO names: Bullhorn gurnard (En)
Grondin taureau (Fr)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).
Habitat: Bottom dweller that occurs at depths between 9 and 115 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Head large, triangular with many ridges and spines, and a fissure on top, behind eyes (occipital groove); rostral process with a single pair of prominent, blade-like spines; interorbital width 4.8–8.2% of SL; head length 31.5–41.7% of SL; 15–19 scale rows below lateral line.
Colour: Mostly red with belly and lower flanks light or white; broad reddish spot on posterior part of spinous dorsal fin.



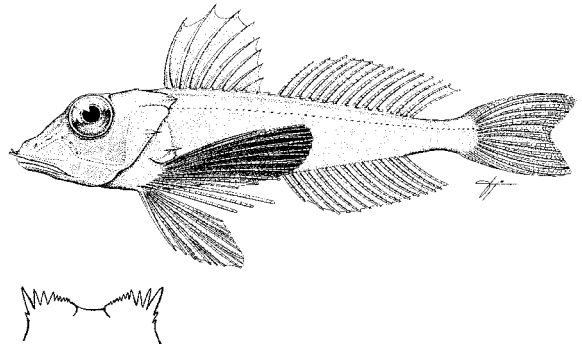
Rostral process in dorsal view

Size: To 16 cm (TL)

***Lepidotrigla faurei* Gilchrist & Thompson, 1914**

FAO names: Scalybreast gurnard (En)
Grondin armure (Fr)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).
Habitat: Bottom dweller that occurs in rather deep waters from 50 m to 175 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Head large, triangular, with many ridges and spines, and a fissure on top, behind eyes (occipital groove); rostral process with several prominent spines; dorsal fin with 8–9 spines and 15–17 soft rays; anal fin with 15–16 soft rays; pectoral fins variable in length; 12–16 scale rows below lateral line.
Colour: Mostly red.



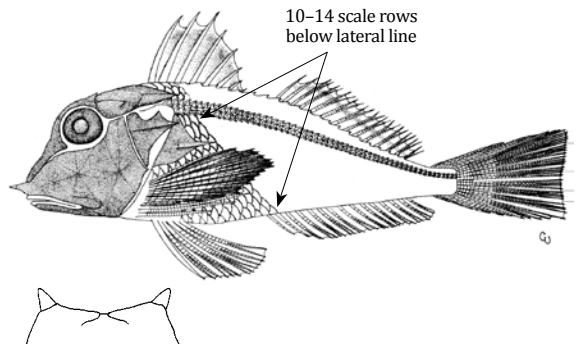
Rostral process in dorsal view

Size: To 18 cm (TL)

Lepidotrigla omanensis* Regan, 1905

FAO names: Oman gurnard (En)
Grondin d'Oman (Fr)

Local name(s): Seerin (Sin); Bheel-aalari (Bal).
Habitat: Bottom dweller that occurs in rather deep waters from 56 m to 220 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Head large, triangular, with many ridges and spines, and a fissure on top, behind eyes (occipital groove); rostral process with a single pair of prominent, blade-like spines; interorbital width 7.3–8.9% of SL; head length 38.2–43.1% of SL.
Colour: Mostly red, inner surface of pectoral fins black with a white margin that is broadest ventrally, spinous dorsal fin dusky posteriorly.



Rostral process in dorsal view

Size: To 12.5 cm (TL)

Lepidotrigla spiloptera Günther, 1880*

FAO names: Spotwing gurnard (En)
Grondin aile tachetée (Fr)

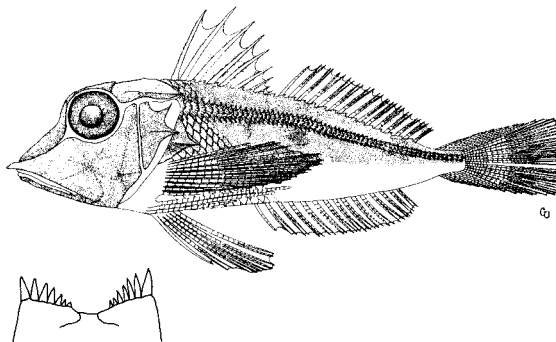
Local name(s): Seerin (Sin); Bheel-aalari (Bal).

Habitat: Bottom dweller that occurs in rather deep waters from 54 m to 256 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head large, triangular with many ridges and spines, and a fissure on top, behind eyes (occipital groove); rostral process with several prominent spines; dorsal fin with 8–9 spines and 15–16 soft rays; anal fin with 16 soft rays; 14–16 pectoral fin rays; 19–21 scale rows below lateral line; belly fully scaled.

Colour: Mostly red with definite silvery white breast, belly and lower flanks; pectoral membranes and rays between 2nd and 9th rays black.



Rostral process in dorsal view

Size: To 10 cm (TL)

Pterygotrigla arabica (Boulenger, 1888)

(Plate XII, 96)

FAO names: Blackspotted gurnard (En)
Grondin encré (Fr)

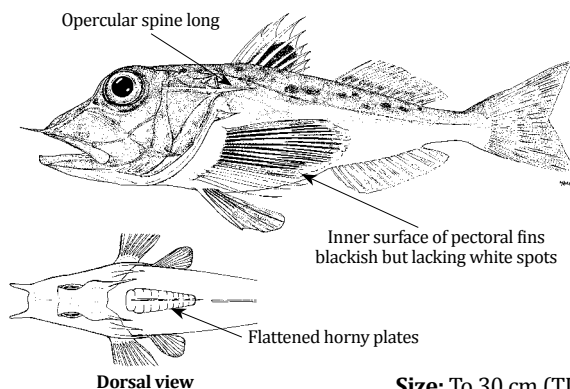
Local name(s): Seerin (Sin); Bheel-aalari (Bal).

Habitat: Inhabits mud bottoms to depths beyond 200 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head large, triangular, with many ridges and spines, but without a fissure on top behind eyes (occipital groove); bases of 1st dorsal fin expanded into broad, flattened horny plates; no plates or spines along base of 2nd dorsal fin; a single pair of prominent, blade-like spines.

Colour: Head and upper half of body light orange red with small dark spots on back and postorbital head; lower half of body silvery white.



Dorsal view

Size: To 30 cm (TL)

PLATYCEPHALIDAE

Spiny flatheads

Cociella punctata (Cuvier, 1829)

FAO names: Spotted flathead (En)

Local name(s): Kukkar (Sin); Kukkar (Bal).

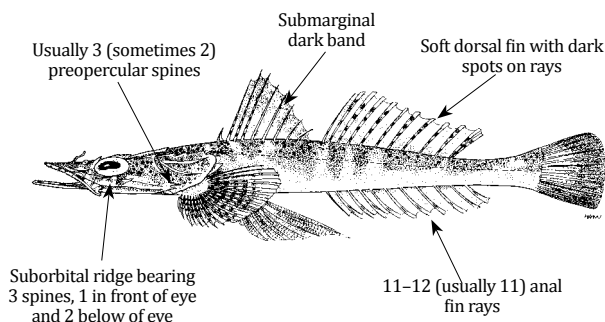
Habitat: Frequents shallow coastal areas in depths of 10 m or less.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate, head moderately depressed; uppermost preopercular spine longest, reaching only about half-way to opercular margin; 50–56 lateral line scales, anteriormost 1 to 16 scales bearing a small spine; teeth on vomer in 2 separate patches.

Colour: Numerous small dark spots on back reaching to below lateral line; soft dorsal fin with dark spots on rays; caudal fin usually with a broad dark marginal band or series of dark spots.

Remarks: *Cociella crocodila* (Cuvier, 1829) previously recorded in Pakistan, is restricted to the South China Sea area (L. Knapp, personal communication, 2014).

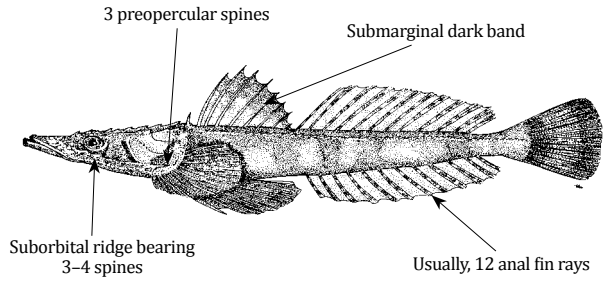


Size: To 35 cm, common 25 cm (TL)

Grammoplites scaber (Linnaeus, 1758)

Local name(s): Kukkar (Sin); Kukkar (Bal).
Habitat: Benthic, over mud and sand bottoms at depths to about 55 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Body elongate, head moderately depressed; upper preopercular spine longest, not reaching to opercular margin, bearing a small accessory spine on base; 5–6 lower gill rakers; 51–55 lateral line scales, each scale with a backward directed spine that extends beyond rear margin of scale, especially noticeable along caudal peduncle; teeth on vomer in 2 separate patches.
Colour: Head and body brownish above, whitish below; back crossed by about 6 dark bands (sometimes obscure or absent).

FAO names: Rough flathead (En)

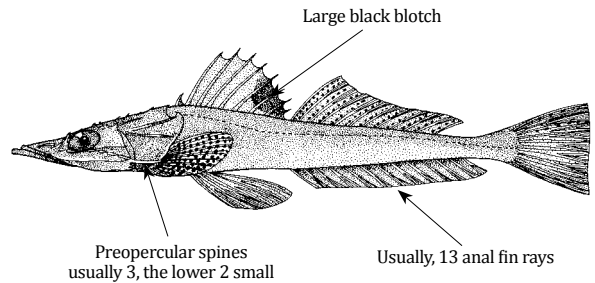


Size: To 30 cm, common 20 cm (TL)

Grammoplites suppositus (Troschel, 1840)

Local name(s): Kukkar (Sin); Kukkar (Bal).
Habitat: Benthic, over mud and sand bottoms at depths from 45 m to 95 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Body elongate with head strongly depressed; upper preopercular spine very long, reaching beyond margin of opercular membrane; 51–55 lateral line scales, all bearing spines (not as strong as in *Grammoplites scaber*) except for an occasional few on the posterior part of the body; teeth on vomer in 2 separate patches.
Colour: Brownish above, whitish below (back crossed by dark bands in Pakistani specimens); fins more or less dusky; upper pectoral rays and 2nd dorsal rays with dark spots; anal fin white.

FAO names: Spotfin flathead (En)

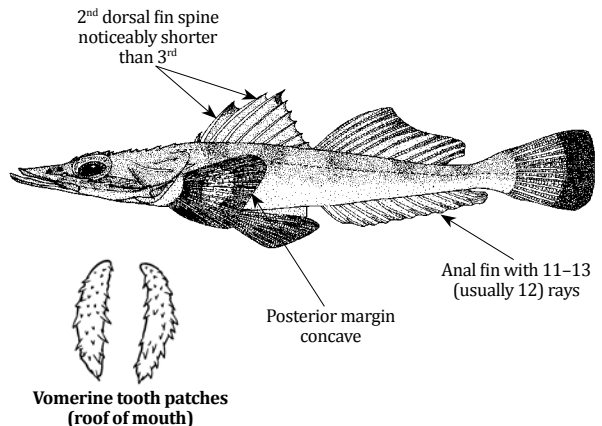


Size: To 30 cm, common 20 cm (TL)

Kumococius rodericensis (Cuvier, 1829) *

Local name(s): Kukkar (Sin); Kukkar (Bal).
Habitat: Benthic, over sand and mud bottoms at depths from 18 to 130 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Body elongate, head moderately depressed; preopercular spines 3, upper much longer, reaching nearly to or just past opercular margin; pectoral fins slightly falcate (posterior margin concave); suborbital ridge bearing numerous strong spines and serrations; teeth on vomer in 2 separate patches.
Colour: Brown with 4–5 faint dark bars on back; pectoral fins dark brown, with a clear or whitish central area; pelvic fins dark brown with a light edge; caudal fin dusky on posterior half.

FAO names: Spiny flathead (En)



Size: To 25 cm, common 20 cm (TL)

Onigocia pedimacula* (Regan, 1908)

Local name(s): Kukkar (Sin); Kukkar (Bal).

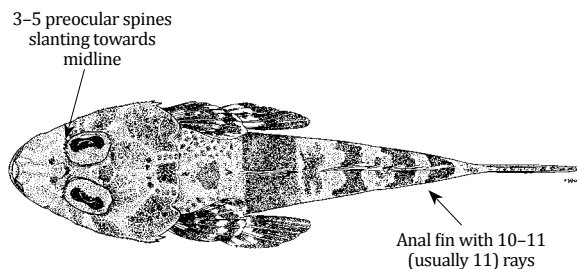
Habitat: Benthic, over sand or coral rubble bottoms at depths from 15 to 110 m; also on coral or rocky slopes.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate, head moderately depressed; 3 preopercular spines, upper longest, with an accessory spine on base; 29–33 lateral line scales, anterior 2 to 6 scales bearing spines; teeth on vomer in 2 separate patches.

Colour: Grey or brown with 4–6 dark bars on back, whitish below; pelvic fins with a prominent dark blotch in middle, a smaller dark blotch near base.

FAO names: Broadband flathead (En)



Size: To 11 cm, common 7 cm (TL)

***Platycephalus indicus* (Linnaeus, 1758)**

Local name(s): Kukkar (Sin); Kukkar (Bal).

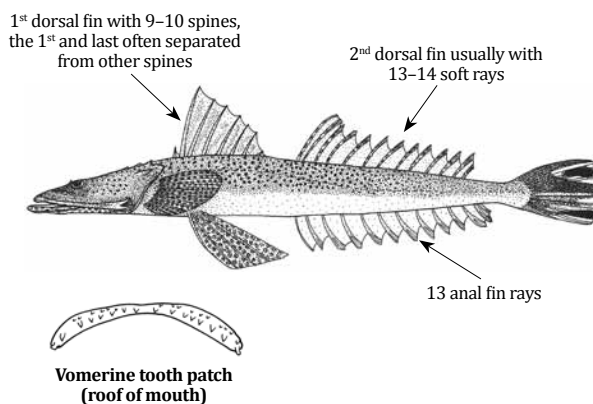
Habitat: Benthic on sandy bottoms in shallow areas, also in estuaries. Maximum depth 25 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate with head strongly depressed; head with smooth bony ridges; a single, small preopercular spine; vomerine teeth in one transverse patch; 2 preopercular spines, the upper a little shorter than the lower; 65–81 pored lateral line scales.

Colour: Brownish or greyish above, whitish below; small dark blotches on back and head; pectoral and pelvic fins with numerous brown blotches; caudal fin centrally yellow with black stripes on upper and lower margins.

FAO names: Bartail flathead (En)
Platycephale indien (Fr)



Size: To 50 cm, common 35 cm (TL)

Rogadius serratus* (Cuvier, 1829)

Local name(s): Kukkar (Sin); Kukkar (Bal).

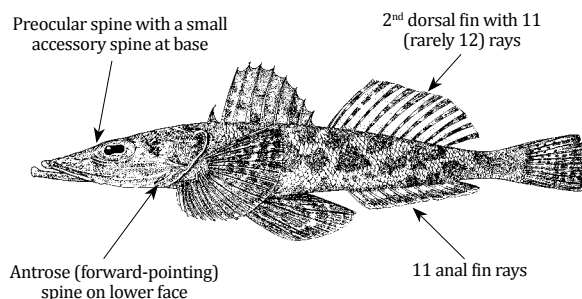
Habitat: Benthic, over sand around coral reefs to a depth of 11 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate, head moderately depressed; preopercular spines 4-5 (usually 4), uppermost longest, with an accessory spine on base; tip of antrorse spine barely visible; supraorbital and suborbital ridges bearing many fine serrations; teeth on vomer in 2 separate patches; 8–10 (usually 9) scale rows between soft dorsal fin origin and lateral line.

Colour: Body light tan above, pale below, back crossed by about 7–8 dark bands, side with a series of dark blotches; pectoral fins dark below with whitish edge, pale above with dark spots; pelvic fins with white base, black distally

FAO names: Serrated flathead (En)



Size: To 24 cm, common 15 cm (TL)

***Sorsogona melanoptera* Knapp & Wongratana, 1987**

FAO names: Obscure flathead (En)

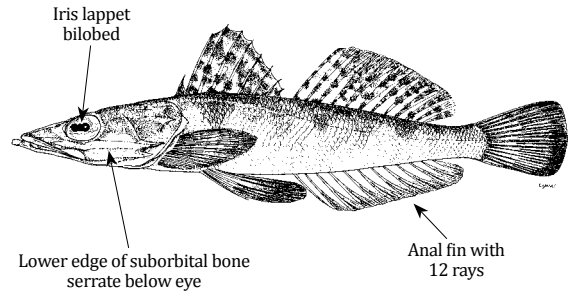
Local name(s): Kukkar (Sin); Kukkar (Bal).

Habitat: Benthic over sand or mud bottoms from depths of 15 to 117 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate, head moderately depressed; 3 preopercular spines; anterior lateral line scales with a spine, lacking on posterior scales; teeth on vomer in 2 separate patches.

Colour: Brown shading to paler ventrally; pelvic, 1st dorsal and caudal fin uniformly dusky; 2nd dorsal fin rays with dark blotches; humeral area under opercle pale or dusky.



Size: To 14.5 cm (TL)

Sorsogona prionota* (Sauvage, 1873)

FAO names: Halfspined flathead (En)

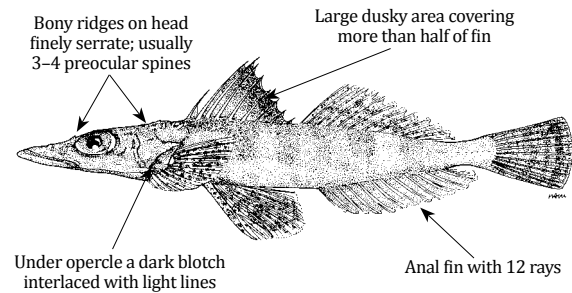
Local name(s): Kukkar (Sin); Kukkar (Bal).

Habitat: Benthic on sandy or muddy bottoms down to 65 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate, head moderately depressed; 3 preopercular spines; 4–6 horizontal scale rows above lateral line

Colour: Brownish in colour, with 4–5 bands crossing back; caudal fin with 3–5 narrow vertical dark bars; dorsal, pectoral and pelvic fin rays with dark spots; anal fin pale with whitish rays.



Size: To 22 cm (TL)

LATIDAE

Sea perches

***Lates calcarifer* (Bloch, 1790)**

FAO names: Barramundi (En)
Barramundi (Fr)

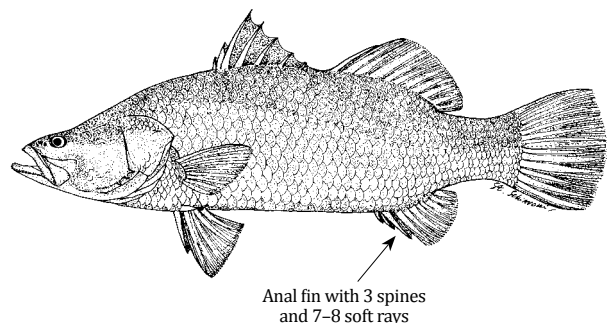
Local name(s): Dangri (Sin); Dangri (Bal).

Habitat: Found in coastal waters, estuaries and lagoons, usually at depths between 10 and 40 m.

Fisheries: Gillnets, bagnets, line gears.

Distinctive Characters: Nostrils close together; upper jaw reaching to behind eye; teeth villiform, no canines; tongue smooth; 1st dorsal fin with 7–9 spines and 10–11 soft rays; lower edge of preopercle serrated.

Colour: Two phases, either olive brown above with silver sides and belly (usually juveniles) or green-blue above and silver below; eyes bright pink, glowing at night.



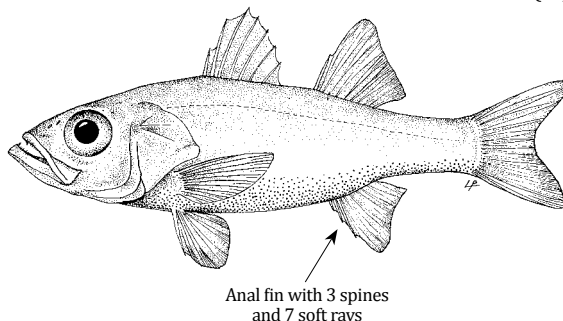
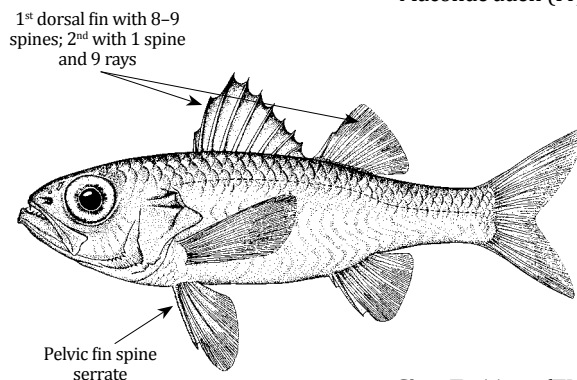
Size: To 200 cm, common 25–100 cm (TL)

ACROPOMATIDAE

Lanternbellies

Acropoma japonicum Günther, 1859

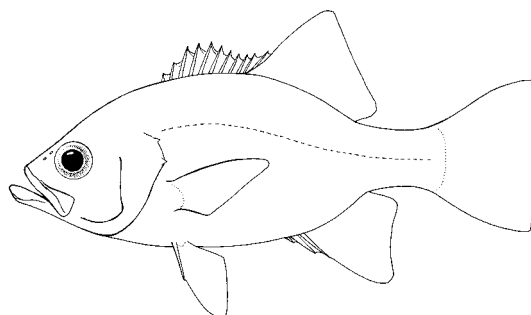
(Plate XII, 97)

FAO names: Glowbelly (En)
Maconde lumineux (Fr)**Local name(s):** None.**Habitat:** Occurs over trawlable bottoms from 100 m to 300 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** First dorsal fin with 8–9 slender spines, 2nd dorsal fin with 1 spine and 10 soft rays; anus closer to pelvic fin than to anal fin.**Colour:** Body pink, ventral surface abruptly silvery and thickly covered with dark dots; at night or in the dark, the entire ventral region is brighter.Anal fin with 3 spines
and 7 soft rays**Size:** To 20 cm (TL)***Synagrops adeni*** Kotthaus, 1970FAO names: Aden splitfin (En)
Maconde adeni (Fr)**Local name(s):** None.**Habitat:** Occurs over trawlable bottoms from 280 m to 600 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** A band of villiform teeth in upper jaw, separated by a gap at symphysis, with a large canine on each side of gap; anus closer to anal fin than to pelvic fin origin; anal fin with 2 spines and 7 soft rays; 17 pectoral fin rays.**Colour:** Head and body pale brown or dusky.1st dorsal fin with 8–9
spines; 2nd with 1 spine
and 9 raysPelvic fin spine
serrate**Size:** To 11 cm (TL)**DINOPERCIDAE**

Cavebasses

Dinoperca petersi (Day, 1875)

FAO names: Lampfish (En)

Local name(s): None.**Habitat:** Occurs on reefs down to a depth of 50 m; also found under ledges and at the entrance of caves.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body depth 2.3–2.5 in SL; nostrils oval, subequal and close together; dorsal fin with 9–11 spines and 18–20 soft rays; anal fin with 3 spines and 12–14 soft rays; 17–18 pectoral fin rays.**Colour:** Body, head and fins blackish brown; body with numerous white specks, fading in large adults; cheek brown, with a black band from front of snout to angle of preopercle.**Size:** To 75 cm (TL)

SERRANIDAE

Groupers – Seabasses – Rockcods – Hinds – Combers – Coral trouts – Lyretails

***Cephalopholis hemistiktos* (Rüppel, 1830)**

Local name(s): Chunni (Sin); Klancho, Nambo (Bal).

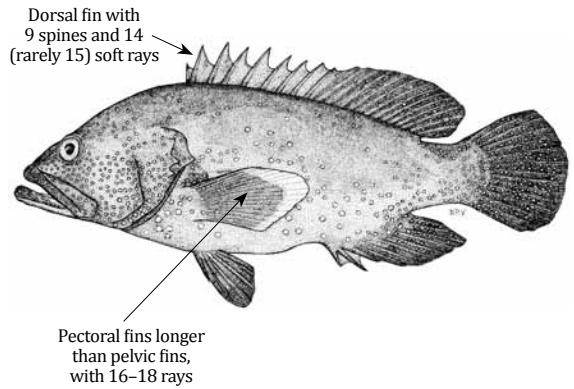
Habitat: Found on patchy reef areas in depths of up to 55 m.

Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Body depth less than head length, 2.7–3.0 in SL; anal fin with 3 spines and 8–10 soft rays; 47–52 lateral line scales.

Colour: Ground colour variable, from brownish red to reddish with numerous small blue ocelli on lower part of head and body, but few dorsally; caudal fin and rear part of dorsal and anal fins darker than the body and covered with small blue ocelli, their margins having a pale blue line; pectoral fins brown to reddish brown, with a few small blue ocelli at the base, the outer margin broadly yellow.

FAO names: Yellowfin hind (En)
Vielle d'Arabie (Fr)



Size: To 35 cm (TL)

***Cephalopholis sonnerati* (Valenciennes, 1828)**

Local name(s): Chunni (Sin); Klancho, Nambo (Bal).

Habitat: Reef-associated species, generally occurring in deep lagoon reefs and steep outer reef slopes down to 100 m depth.

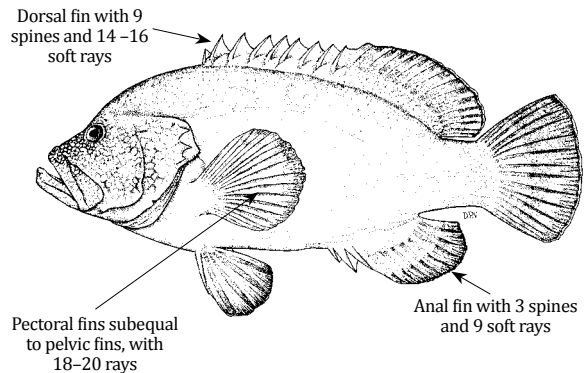
Fisheries: Bottom trawls, gillnets, line gears.

Distinctive Characters: Body depth greater than or subequal to head length, 2.3–2.8 in SL.

Colour: Adults from Indian Ocean with orange-red to reddish brown body, often with scattered small whitish or purple spots; purple network on head, maxilla, and lips; pectoral fins orange distally; membranes of soft dorsal, caudal, anal, and pelvic fins dusky; dorsal fin rays orange distally.

(Plate XII, 98)

FAO names: Tomato hind (En)
Vielle ananas (Fr)



Size: To 57 cm (TL)

***Chelidoperca occipitalis* Kotthaus, 1973**

Local name(s): None.

Habitat: Usually found on continental shelf and slope muddy bottoms.

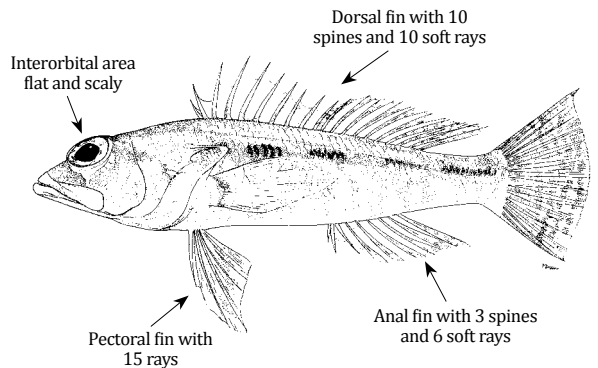
Fisheries: Bottom trawls.

Distinctive Characters: Body depth 3.9–4.1 in SL; interorbital 10.3–14.6 in head length; 44 lateral line scales; 3 scale rows above lateral line to dorsal fin origin.

Colour: Body pinkish orange with a dark stripe running along body, from opercular spine to base of caudal fin; ventral portion of trunk with 8–9 white bands on side; yellow spots on dorsal, caudal and anal fins (Pakistani specimens with bright yellow suborbital markings).

(Plate XII, 99)

FAO names: Not available (En)



Size: To 17.8 cm (TL)

Epinephelus areolatus (Forsskål, 1775)

Local name(s): Gisser (Sin); Nambo, Lotari (Bal).

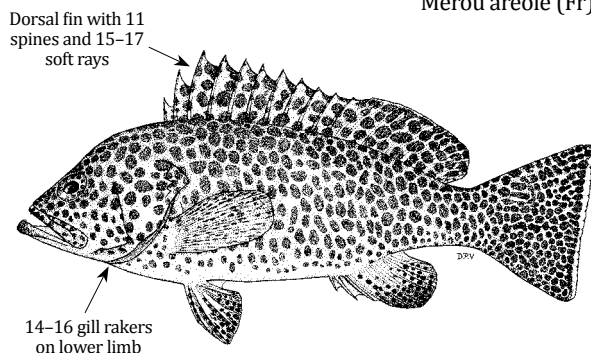
Habitat: Usually in sea grass beds near rocky reefs from 6 m to 200 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Preopercle serrate with 2–7 large serrae at the angle; anal fin with 3 spines and 7–8 soft rays; 17–19 pectoral fin rays; anal fin margin rounded, longest ray 1.9–2.3 in head length.

Colour: Head, body and fins pale, covered with numerous brown to yellowish brown spots, the largest about the size of pupil; caudal fin with a white posterior margin.

FAO names: Areolate grouper (En)
Mérour aréolé (Fr)



Size: To 47 cm (TL)

Epinephelus bleekeri (Vaillant, 1878)*

Local name(s): Chunni, Gisser (Sin); Chunni (Bal).

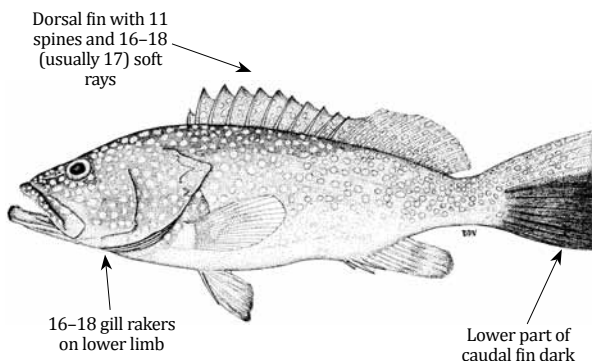
Habitat: Benthic on shallow banks and adjacent soft substrate in depths of 30–105 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Body depth 3.0–3.5 in SL; preopercle serrate with 2–9 enlarged serrae at the angle; anal fin with 3 spines and 8–9 soft rays; 17–19 pectoral fin rays; caudal fin margin truncate to slightly rounded.

Colour: Brownish to purplish grey with numerous orange-yellow spots (about half pupil diameter in adults) on head, body, dorsal fin and upper third of caudal fin.

FAO names: Duskytail grouper (En)
Mérour demideuil (Fr)



Size: To 76 cm (TL)

Epinephelus coioides (Hamilton, 1822)

Local name(s): Gisser, Mait (large specimens) (Sin); Nambo, Lotari, Komait (large specimens) (Bal).

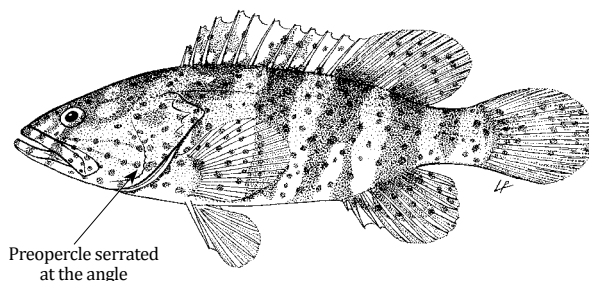
Habitat: Continental and island shores, also in estuaries; offshore down to 100 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Dorsal fin with 11 spines and 13–16 rays; anal fin with 3 spines and 8 soft rays; pectoral fins with 18–20 (usually 20) rays; caudal fin rounded.

Colour: Head, body and usually median fins with numerous orange, brownish orange or reddish brown spots; body with 5 faint irregular greyish bars which bifurcate ventrally.

FAO names: Orange-spotted grouper (En)
Mérour taches oranges (Fr)



Size: To 120 cm (TL)

Epinephelus diacanthus (Valenciennes, 1828)

FAO names: Spinycheek grouper (En)
Mérrou épineux (Fr)

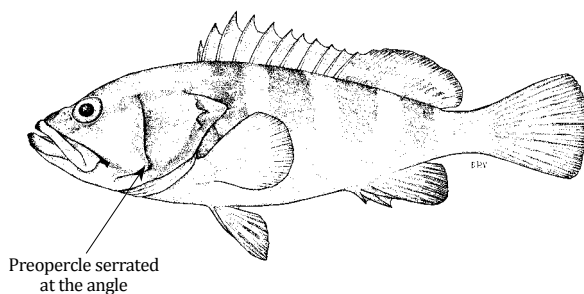
Local name(s): Damba, Gisser (Sin); Chancho (Bal).

Habitat: Occurs on mud or muddy sand bottoms in depths of 10 to 300 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Dorsal fin with 11 spines and 14–17 rays; anal fin with 3 spines and 8–9 (rarely 9) soft rays; pectoral fins with 18–20 rays.

Colour: Body pale greyish brown, usually with 5 dark vertical bars broader than interspaces.



Size: To 55 cm (TL)

Epinephelus epistictus (Temminck & Schlegel, 1842)

FAO names: Dotted grouper (En)
Mérrou pâle (Fr)

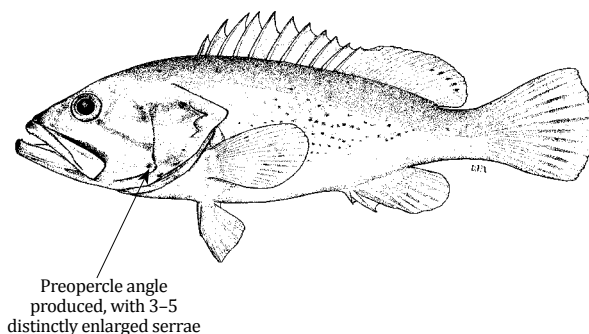
Local name(s): Chunni, Gisser (Sin); Chunni (Bal).

Habitat: Rocky and trawlable bottoms in depths of 71 to 290 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Upper edge of operculum straight or slightly convex; dorsal fin with 11 spines and 14–15 rays; anal fin with 3 spines and 7–8 rays; pectoral fins with 16–19 rays.

Colour: Background colour pale brownish to greyish; faint brownish black dots usually visible on dorso-lateral part of body and sometimes on postorbital part of head; faint dark band from eye to end of operculum.



Size: To 80 cm (TL)

Epinephelus erythrurus (Valenciennes, 1828)

(Plate XII, 100)

FAO names: Cloudy grouper (En)
Mérrou nébuleux (Fr)

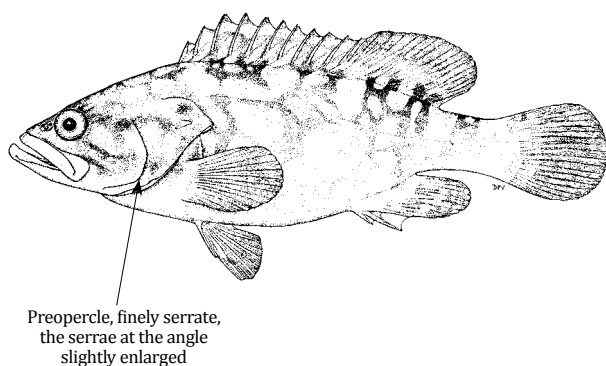
Local name(s): Gisser (Sin); Nambo, Lotari (Bal).

Habitat: Inhabits areas with muddy or silty-sand bottoms; also found in harbours and estuaries.

Fisheries: Line gears, gillnets.

Distinctive Characters: Membranes of spinous dorsal fin usually not (or slightly incised); dorsal fin with 11 spines and 15–17 soft rays; anal fin with 3 spines and 8 soft rays; 17–19 pectoral fin rays; caudal fin rounded.

Colour: Head and body dark brown or greenish brown, marbled with irregular pale spots and blotches; 1 or 2 faint dark streaks running posteriorly from eye.



Size: To 45 cm (TL)

Epinephelus fuscoguttatus (Forsskål, 1775) *

FAO names: Brown-marbled grouper (En)
Mérrou marron (Fr)

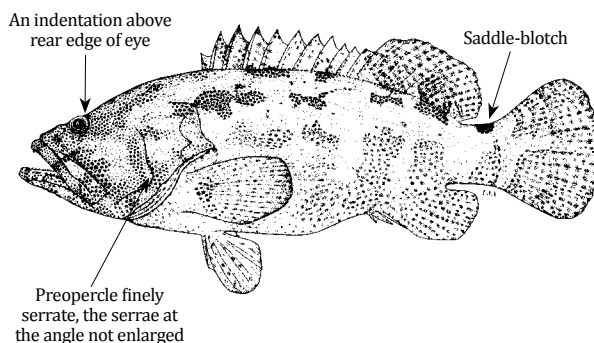
Local name(s): Gisser, Mait (large specimens) (Sin); Nambo, Lotari, Komait (large specimen) (Bal).

Habitat: Coral and rocky bottoms down to 60 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Front nostril tiny, rear one oval or triangular; dorsal fin with 11 spines and 13–15 soft rays; anal fin with 3 spines and 8 soft rays; 18–20 pectoral fin rays.

Colour: Generally brownish with many small dark spots on body and fins and large irregular dark blotches on head and body overlying smaller dark spots; a brownish black saddle-blotch on top of caudal peduncle.



Size: To 120 cm (TL)

Epinephelus lanceolatus (Bloch, 1790) *

FAO names: Giant grouper (En)
Mérrou lancéolé (Fr)

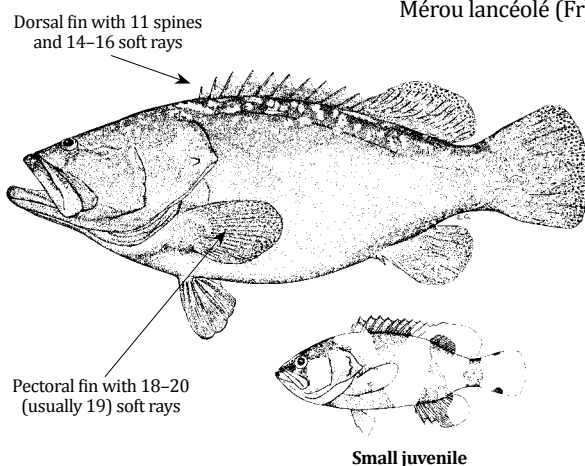
Local name(s): Gisser, Mait (large specimens) (Sin); Nambo, Lotari, Komait (large specimen) (Bal).

Habitat: Shallow and deep waters down to 100 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Eyes small; preopercle subangular, finely serrate; maxilla reaches well past eye; anal fin with 3 spines and 8 soft rays; lateral line anterior scales with branched tubules; lateral body scales smooth.

Colour: Small juveniles (<12 cm SL) yellow, with irregular broad black bars on body; small adults (20–50 cm SL) with irregular white or yellow spots on the black areas and fins with black spots; adults (80–150 cm SL) dark greyish or brown with pale mottlings, the fins with numerous small black spots; large adults (>160 cm SL) dark brown, the fins darker.



Size: To 230 cm (TL)

Epinephelus latifasciatus (Temminck & Schlegel, 1842)

FAO names: Striped grouper (En)
Mérrou à bandes (Fr)

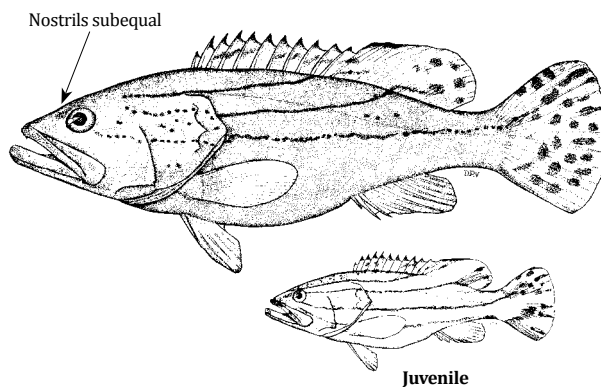
Local name(s): Gisser (Sin); Nambo, Lotari (Bal).

Habitat: Occurs between 20 and 230 m depth; juveniles on muddy or sandy bottoms, adults in rocky areas.

Fisheries: Line gears, gillnets.

Distinctive Characters: Preopercle with 3–7 enlarged serrae at angle; dorsal fin with 11 spines and 12–14 soft rays; anal fin with 3 spines and 8 soft rays; 17–19 pectoral fin rays; 56–65 lateral line scales; lateral body scales smooth.

Colour: Juveniles (<20 cm standard length) with 2 broad longitudinal, black-edged whitish bands that disappear in adults; head and body of large adults uniformly grey with dark lines, breaking into dashes and spots.



Size: To 230 cm (TL)

Epinephelus malabaricus (Bloch & Schneider, 1801)

FAO names: Malabar grouper (En)
Mérout malabar (Fr)

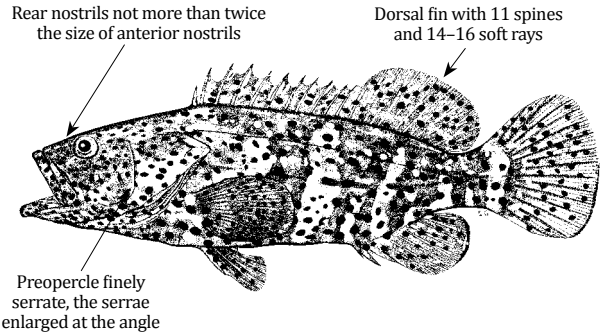
Local name(s): Gisser (Sin); Nambo, Lotari (Bal).

Habitat: Coral and rocky reefs, tide pools, estuaries, mangrove swamps and sand or mud bottoms from the shore to 150 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Anal fin with 3 spines and 8 soft rays; 18–20 (usually 19) pectoral fin rays; lateral body scales ctenoid; caudal fin rounded.

Colour: Head, body and fins brownish covered with small, well separated, blackish brown spots; irregular white or pale spots or blotches usually present on head and body; fins with scattered small black spots; often irregular brown bars visible on body.



Size: To 234 cm, common 100 cm (TL)

Epinephelus morrhua (Valenciennes, 1833)*

FAO names: Comet grouper (En)
Mérout comète (Fr)

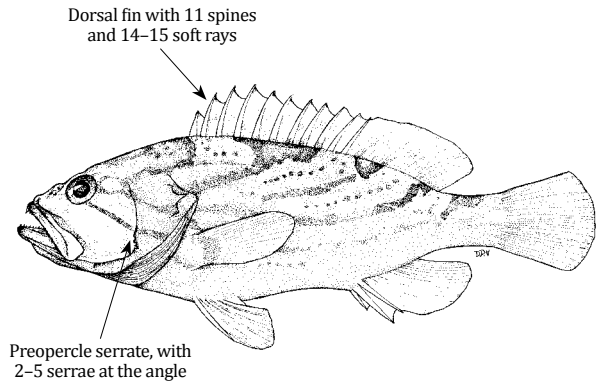
Local name(s): Gisser (Sin); Nambo, Lotari (Bal).

Habitat: Usually found in deep waters from 80 m to 370 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Anal fin with 3 spines and 7–8 soft rays; pectoral fins with 17–18 rays; caudal fin slightly to moderately rounded; body scales ctenoid (except on belly) without axillary scales.

Colour: Background colour light brownish with dark brown bands; dark bands on head; dark band from upper edge of opercle to blotch below dorsal fin.



Size: To 90 cm (TL)

Epinephelus cf. multinotatus (Peters, 1876)

(Plate XIII, 101) FAO names: White-blotched grouper (En)
Mérout plate grise (Fr)

Local name(s): Gisser (Sin); Nambo, Lotari (Bal).

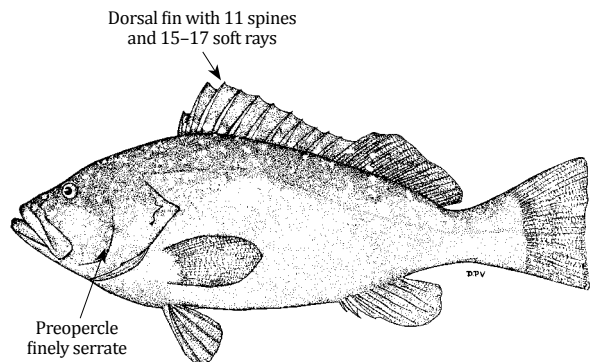
Habitat: Juveniles on inshore coral reefs; adults in deeper waters down to 90 m.

Fisheries: Line gears, gillnets.

Distinctive Characters: Body depth 2.6–2.9 in SL; anal fin with 3 spines and 8 soft rays; pectoral fins with 18–20 rays; caudal fin truncate to slightly emarginate (rounded in small individuals); scales on body ctenoid (except on belly).

Colour: Background colour of head and body purplish grey with whitish spots and blotches; usually dark reddish brown spots ventrally.

Remarks: Inclusion based on the photographic record of an individual resembling the above species. However, we cannot exclude that this is *Epinephelus jayakari* (Boulenger, 1889), a species no longer considered synonym of *E. multinotatus* (P. Heemstra, personal communication, 2015).



Size: To 100 cm (TL)

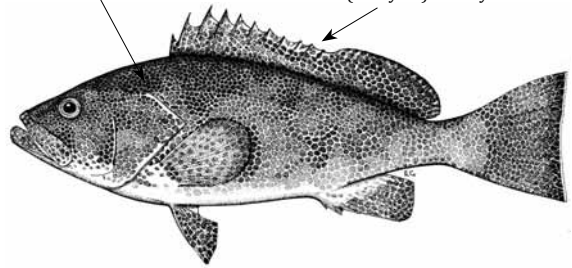
Epinephelus polylepis Randall & Heemstra, 1991 (Plate XIII, 102) **FAO names:** Smallscaled grouper (En)

Mérout petites écailles (Fr)

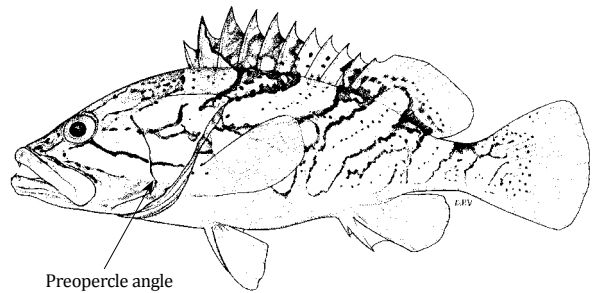
Local name(s): Chunni, Gisser (Sin); Chunni (Bal).**Habitat:** Known from rocky areas adjacent to soft bottoms from 10 m to 155 m.**Fisheries:** Line gears, gillnets.**Distinctive Characters:** Preopercle serrate, with enlarged serrae at the angle; anal fin with 3 spines and 8 soft rays; pectoral fins with 18–19 rays; caudal fin truncate or slightly emarginate; 65–72 lateral line scales.**Colour:** Head, body and fins covered (except ventral parts of head and body) with numerous small close-set dark brown spots; rear edge of caudal fin with white line and a row of blackish brown spots; dark maxillary streak present.

Spots on fins and dorsal parts of head and body smaller and closer together

Dorsal fin with 11 spines and 17 (rarely 16) soft rays

**Size:** To 61 cm (TL)***Epinephelus radiatus*** (Day, 1868) (Plate XIII, 103) **FAO names:** Oblique-banded grouper (En)

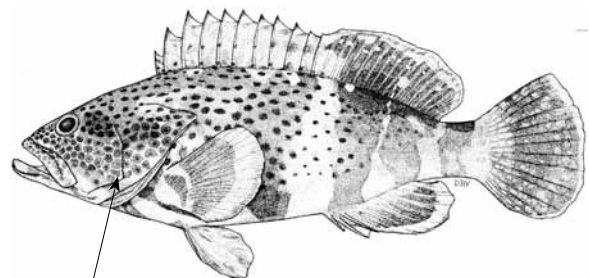
Mérout zèbre (Fr)

Local name(s): Gisser (Sin); Nambo, Lotari (Bal).**Habitat:** Found over hard substrates; adults at depths between 80 to 383 m; juveniles in 18–20 m.**Fisheries:** Line gears, gillnets.**Distinctive Characters:** Dorsal fin with 11 spines and 13–15 (rarely 13) soft rays; anal fin with 3 spines and 8 soft rays; pectoral fins with 17–18 rays; lateral body scales ctenoid; 52–66 lateral line scales; caudal fin slightly to moderately rounded.**Colour:** Pale greyish to yellowish brown with five, irregular, oblique, dark-edged, brown bands which bifurcate ventrally, the first on nape and extending onto head, the second to fourth extending into dorsal fin, and the last on caudal peduncle.

Preopercle angle produced, with 2–5 distinctly enlarged serrae

Size: To 70 cm (TL)***Epinephelus stoliczkae*** (Day, 1875) **FAO names:** Epaulet grouper (En)

Mérout épaulette (Fr)

Local name(s): Gisser (Sin); Nambo, Lotari (Bal).**Habitat:** Occurs on shallow sandy bottoms near small coral heads.**Fisheries:** Line gears, gillnets.**Distinctive Characters:** Dorsal fin with 11 spines and 16–18 soft rays; anal fin with 3 spines and 8 soft rays; pectoral fins with 17–19 rays; scales on body smooth except for area covered by pectoral fin; 48–53 lateral line scales; caudal fin rounded.**Colour:** Yellowish grey with a broad dark greyish brown bar on body below posterior spinous portion of dorsal fin, two more dark bars close together beneath soft portion of dorsal fin, and one on caudal peduncle; numerous dark reddish brown spots on head (where closely spaced) and anterior half to two-thirds of body; a dark blotch behind eye.

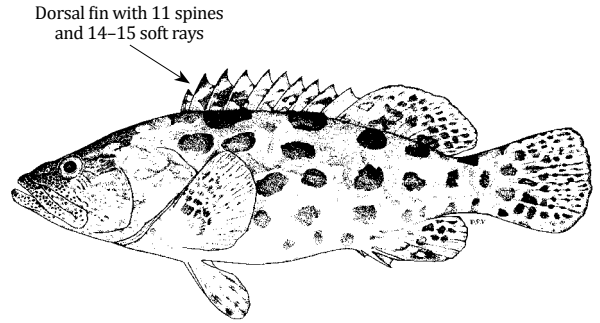
Preopercle angle with moderately enlarged serrae

Size: To 38 cm (TL)

***Epinephelus tukula* Morgans, 1959**

FAO names: Potato grouper (En)
Mérout patate (Fr)

Local name(s): Gisser (Sin); Nambo, Lotari (Bal).
Habitat: Coral reefs from 10 m to 150 m.
Fisheries: Handlines, longlines, gillnets.
Distinctive Characters: Maxilla reaches vertical at rear edge of eye; anal fin with 3 spines and 7-8 (rarely 7) soft rays; 18-20 pectoral fin rays; midlateral body scales ctenoid; 62-70 lateral line scales; caudal fin rounded.
Colour: Background colour pale brownish grey with several large round or oval dark brown to black widely spaced blotches, arranged in ventral series; streaks radiating from eye.

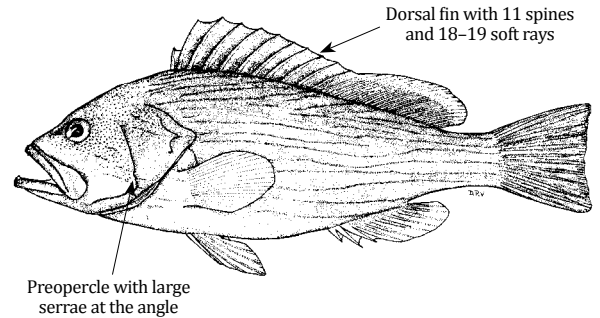


Size: To 200 cm (TL)

Epinephelus undulosus* (Quoy & Gaimard, 1824)

FAO names: Wavy-lined grouper (En)
Mérout ondulé (Fr)

Local name(s): Gisser (Sin); Nambo, Lotari (Bal).
Habitat: Sand banks from 24 m to 90 m.
Fisheries: Line gears, gillnets.
Distinctive Characters: Rear end of maxilla with a distinct protuberance covered by upper lip; anal fin with 3 spines and 8 soft rays; 18-19 pectoral fin rays; caudal fin truncate to slightly concave.
Colour: Background colour generally purplish grey or brownish, usually with wavy longitudinal lines on dorsal part of body.

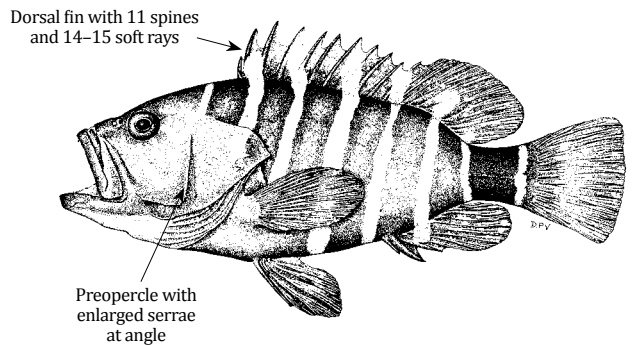


Size: To 120 cm (TL)

***Hyporthodus octofasciatus* (Griffen, 1926)**

FAO names: Eightbar grouper (En)
Mérout huit raies (Fr)

Local name(s): Gisser (Sin); Nambo, Lotari (Bal).
Habitat: Rocky reefs from 150 m to 300 m.
Fisheries: Bottom trawls, gillnets, line gears.
Distinctive Characters: Lower edge of subopercle and rear edge of interopercle distinctly serrate; anal fin with 3 spines and 9 rays; pectoral fins with 18-19 rays; maxilla reaches to below rear half of eye; midlateral body scales ctenoid; 65-71 lateral line scales; caudal fin rounded.
Colour: Background colour pale, with 8 broad dark bars; dark maxillary streak present.

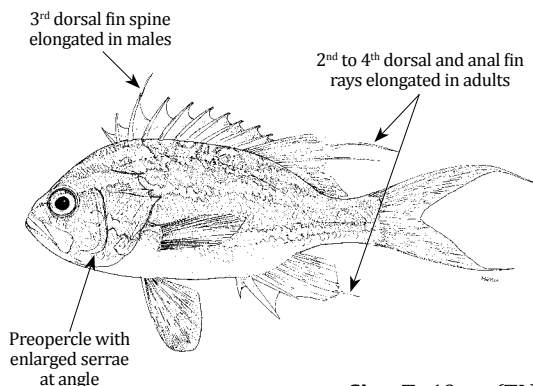


Size: To 130 cm (TL)

***Sacura bouleengeri* (Heemstra, 1973)**

FAO names: Boulenger's anthias (En)

Local name(s): Gisser (Sin); Nambo (Bal).
Habitat: Continental shelf, on rocky and reef areas.
Fisheries: Bottom trawls.
Distinctive Characters: Head large, subequal to body depth; dorsal fin with 10 spines and 14 rays; anal fin with 3 spines and 7 rays; pectoral fins with 16–17 rays; 30–33 gill rakers on lower limb of 1st gill arch; posterior soft rays of dorsal and anal fins distinctly shorter than anterior soft rays.
Colour: Yellowish brown with irregular lavender pink stripes or series of irregular blotches; bands and blotches on head violet.



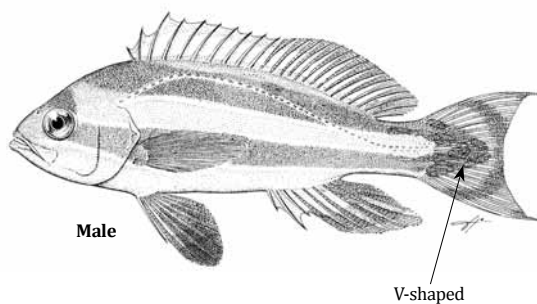
Size: To 19 cm (TL)

***Pseudanthias cf. conspicuus* (Heemstra, 1973)**

(Plate XIII, 104)

FAO names: Not available (En)

Local name(s): Gisser (Sin); Nambo (Bal).
Habitat: Depth range 21–93 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Body depth 2.6–3.0 in SL; head length 2.6–2.9 in SL; interorbital width 4.5–5.2 in head length; dorsal fin with 10 spines and 15–17 rays (no elongated spines or rays); anal fin with 3 spines and 6–7 rays; pectoral fin pointed with 17–19 rays; 38–43 lateral line scales.
Colour: Male: head and body pale, with 2 longitudinal dark brown bands, joined on caudal fin by V-shaped curved dark band. Female: pale (probably orange in life) with faint, subvertical series of dark spots (one on each scale of dorsal half of body, and each dark spot formed as cluster of minute melanophores).
Remarks: Inclusion based on photographic record.

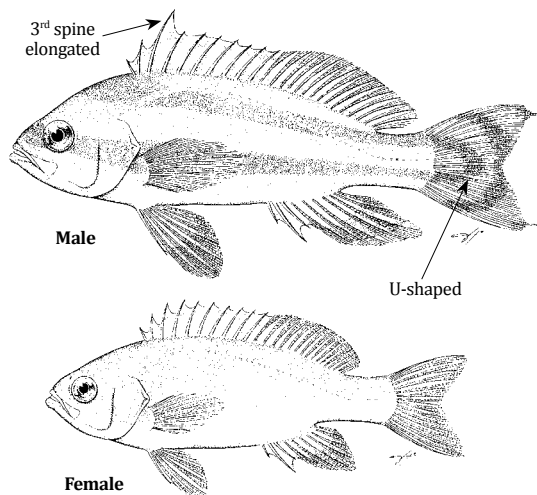


Size: To 7.5 cm (SL)

***Pseudanthias townsendi* (Boulanger, 1897)**

FAO names: Townsend's anthias (En)

Local name(s): Gisser (Sin); Nambo (Bal).
Habitat: Demersal on rocky bottoms at depths between 15 and 63 m.
Fisheries: Bottom trawls, gillnets.
Distinctive Characters: Body depth 2.8–3.3 in SL; head length 2.9–3.2 in SL; interorbital width 4.0–5.0 in head length; dorsal fin with 10 spines and 16–17 rays; anal fin with 3 spines and 7–8 rays; pectoral fin rounded with 16–18 rays; 37–42 lateral line scales.
Colour: Male: colour variable, often pink or pale yellow with 2 longitudinal dark brown bands, joined on caudal fin by U-shaped curved dark band; caudal fin corners with subterminal pale blue-grey band and a short, exserted yellow filament on each corner; Female: body scales pink and yellow; a narrow lavender band from below eye to pectoral base; tips of caudal lobes yellow.



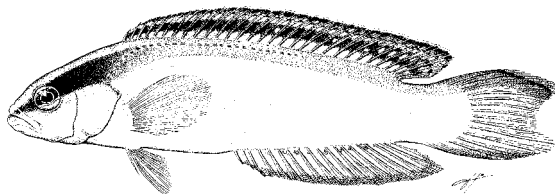
Size: To 9 cm (TL)

PSEUDOCHROMIDAE

Dottybacks

Pseudochromis aldabraensis Bauchot-Boutin, 1958

FAO names: Orange dottyback (En)

Local name(s): None.**Habitat:** Rocky substrata from 12 to at least 30 m.**Fisheries:** Gillnets, cast nets.**Distinctive Characters:** Dorsal fin with 3 spines and 27–31 (usually 28–30) soft rays; anal fin with 3 spines and 16–19 (usually 18–19) soft rays; caudal fin truncate.**Colour:** Bright orange with 3 blue bands, the uppermost along dorsal fin base and along top of head to upper jaw, the middle one ending at yellow-rimmed dark spot on opercular flap; dorsal fin blackish with 2 blue stripes; upper and lower edges of caudal fin blue, the upper with a black streak within the blue.

Size: To 10 cm (TL)

TERAPONTIDAE

Grunters

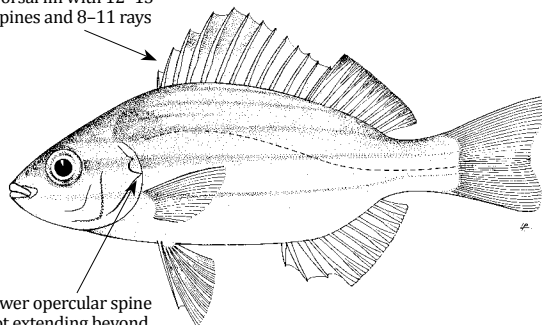
Pelates quadrilineatus (Bloch, 1790)

FAO names: Fourlined terapon (En)

Violon crépuscule (Fr)

Local name(s): Bambi, Bahnbi, Ghingra (Sin); Kabaloosh (Bal).**Habitat:** Inshore areas, sometimes in brackish waters down to 40 m.**Fisheries:** Bottom trawls, gillnets, seines, cast nets, bag net.**Distinctive Characters:** Anal fin with 3 spines and 9–11 soft rays, the 2nd anal spine subequal to the 3rd and shorter than longest anal rays.**Colour:** Body silvery grey dorsally, silvery white ventrally; 4–6 narrow, dark brown stripes on body; spiny part of dorsal fin and behind gill opening with blotches; mouth and gill cavity red in life.

Dorsal fin with 12–13 spines and 8–11 rays



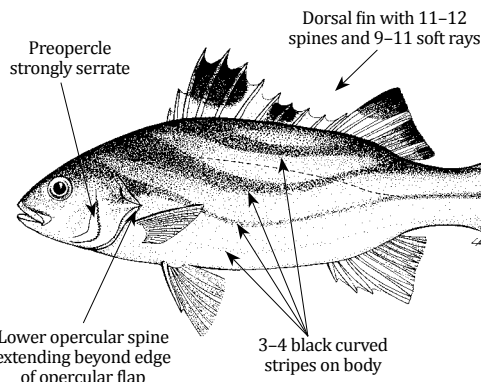
Lower opercular spine not extending beyond edge of opercular flap

Size: To 30 cm, common 20 cm (TL)

Terapon jarbua (Forsskål, 1775)

(Plate XIII, 105)

FAO names: Jarbua terapon (En)

Local name(s): Ghingra (Sin); Adhi-kulai, Guarak (large specimens), Kokita (Bal).**Habitat:** Inhabits coastal, brackish, and fresh waters, but spawns only in the sea.**Fisheries:** Bottom trawls, gillnets, seines, cast nets, bag net.**Distinctive Characters:** Anal fin with 3 spines and 7–10 soft rays; 2nd anal spine subequal to 3rd spine and shorter than longest anal rays; caudal fin emarginate.**Colour:** Body silvery dorsally and silvery white ventrally; dorsal fin with black bands on upper portions of fin membranes; caudal fin with median rays pigmented; both caudal lobes with dark tips and transverse bands.Preopercle strongly serrate
Lower opercular spine extending beyond edge of opercular flap

Size: To 36 cm, common 25 cm (TL)

Terapon puta Cuvier, 1829

FAO names: Small-scaled terapon (En)

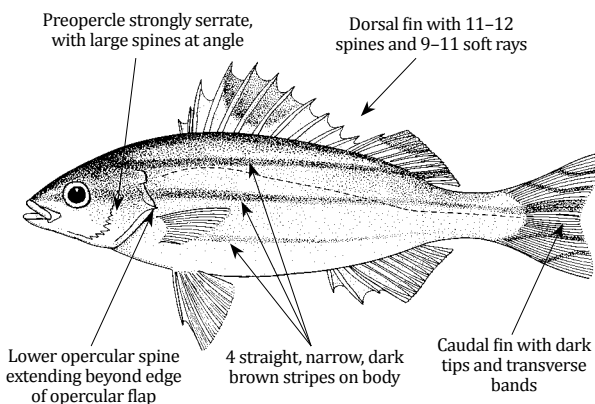
Local name(s): Khar-kaili, Ginghra (Sin); Kabloosh (Bal).

Habitat: Found in inshore waters, sometimes entering brackish and fresh waters.

Fisheries: Bottom trawls, gillnets, seines, cast nets, bag net.

Distinctive Characters: Body somewhat elongate; spiny part of dorsal fin strongly arched and deeply notched, 5th and 6th spines longest; margin of soft part of dorsal fin straight or emarginate; anal fin with 3 spines and 8–9 soft rays, 2nd spine shorter than the 3rd spine; margin of soft part of anal and caudal fins emarginate.

Colour: Body light grey or brown dorsally; tan or silvery white ventrally with 4 horizontal stripes on body (juveniles with 6–7 light grey vertical bars); dorsal fin with a black blotch.



Size: To 16 cm, common 12 cm (TL)

Terapon theraps Cuvier, 1829

(Plate XIII, 106)

FAO names: Largescaled terapon (En)

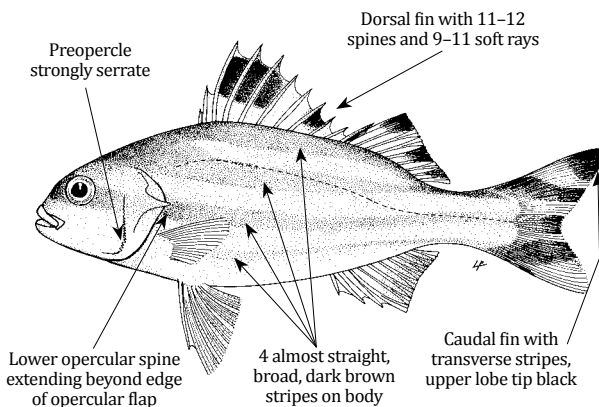
Local name(s): Ginghra (Sin); Adhi kuli (Bal).

Habitat: Found in inshore waters, sometimes entering brackish waters.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Body oblong compressed; spiny part of dorsal fin strongly arched and deeply notched; 3rd to 6th dorsal spine longest; anal fin with 3 spines and 7–9 soft rays, 3rd spine longest; caudal fin emarginate with rounded lobes.

Colour: Body dusky dorsally, silvery white ventrally with 4 horizontal stripes on body; (juveniles with 6–7 vertical bars); dorsal fin with black blotches; soft part of dorsal fin with a dark band along upper portions of anterior rays and a horizontal band on posterior rays.



Size: To 30 cm (TL)

PRIACANTHIDAE**Bigeyes*****Cookeolus japonicus*** (Cuvier, 1829)

(Plate XIII, 107)

FAO names: Longfinned bullseye (En)

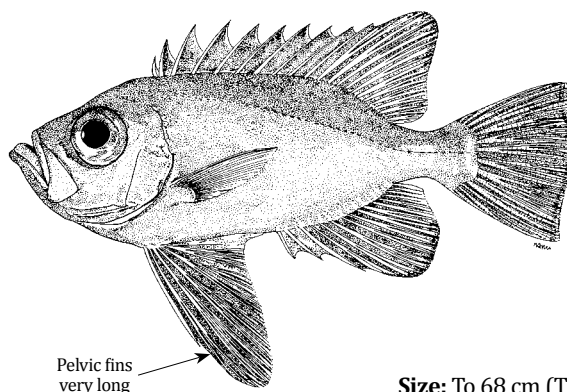
Local name(s): Botha, Baka (Sin); Bakko (Bal).

Habitat: Inhabits waters from 60 m to 400 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Dorsal fin single with 10 spines and 12–13 soft rays; anal fin with 3 spines and 12–14 soft rays; dorsal spines increase regularly in length from 1st to last; 10th spine more than twice length of 2nd spine; soft portions of dorsal and anal fins long and broadly pointed (except in very large specimens); pelvic fins exceeding head length (except in large adults).

Colour: Background colour silvery reddish, paler ventrally; membranes of dorsal and anal fins dark anteriorly; ventral membrane blackish, rays pale.



Size: To 68 cm (TL)

Priacanthus hamrur (Forsskål, 1775)

(Plate XIII, 108)

FAO names: Moontail bullseye (En)
Beauclair miroir (Fr)

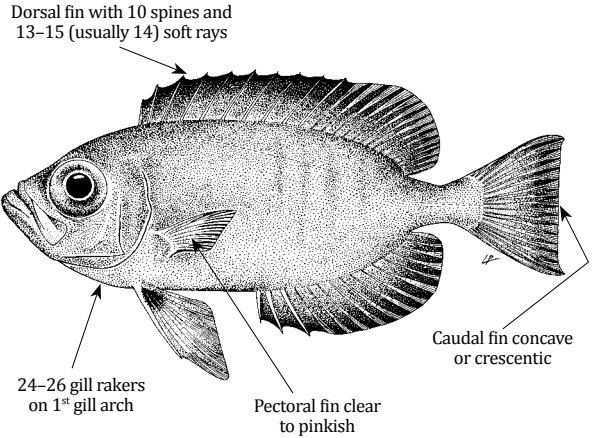
Local name(s): Botha, Baka (Sin); Bakko (Bal).

Habitat: Coral and rocky bootoms in 5–250 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Body depth at 6th dorsal spine usually less than 3 times in SL; spine at corner of preopercle short in adults, variable in young; anal fin with 3 spines and 13–16 (usually 15) soft rays; 48–57 vertical scale rows.

Colour: Red with about 15 small dark spots sometimes evident along lateral line; alternately, body may be silvery white with 7 darker red bars; black spot at base of 1st three pelvic rays; median and pelvic fins light dusky to nearly black and darkest near margins (dusky spots on dorsal, anal and pelvic fins sometimes present).



Size: To 40 cm, common 30 cm (TL)

Priacanthus prolixus Starnes, 1988

FAO names: Elongate bulleye (En)

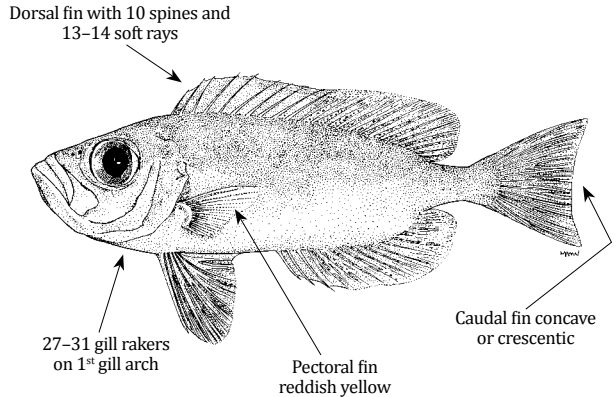
Local name(s): Botha, Baka (Sin); Bakko (Bal).

Habitat: Open bottoms from 35 m to 250 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Body elongate, its depth at 6th dorsal spine usually more than 3 times in SL; spine at corner of preopercle short in adults, variable in young; anal fin with 3 spines and 14–15 soft rays 44–51 vertical scale rows.

Colour: Red in colour with 7 small dark spots along lateral line; black spot at base of pelvic fins; median and pelvic fins more or less uniformly tinged with red (without black markings).



Size: To 25 cm (TL)

Priacanthus sagittarius Starnes, 1988

(Plate XIV, 109)

FAO names: Arrow bulleye (En)

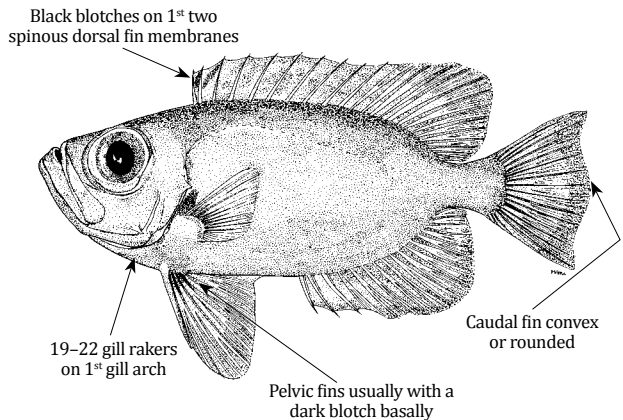
Local name(s): Botha, Baka (Sin); Bakko (Bal).

Habitat: Occurs in rocky and reef areas and occasionally in more open areas at depths of 60 to 100 m or more.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Body depth at 6th dorsal spine usually less than 3 times in SL; spine at corner of preopercle reduced in adults; length of 2nd dorsal fin spine about 2 times in length of 10th spine; scales in lateral series 67–74.

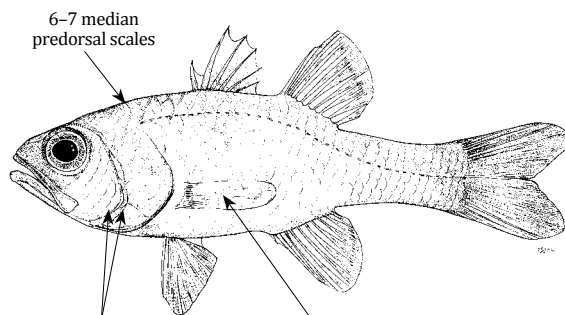
Colour: The head and body reddish silvery or, alternately, pale yellowish with gray mottling; iris of the eye pink to bright red; dorsal, anal, and caudal fins pink with reddish brown spots in the membranes, or yellowish with dusky spots.



Size: To 35 cm (TL)

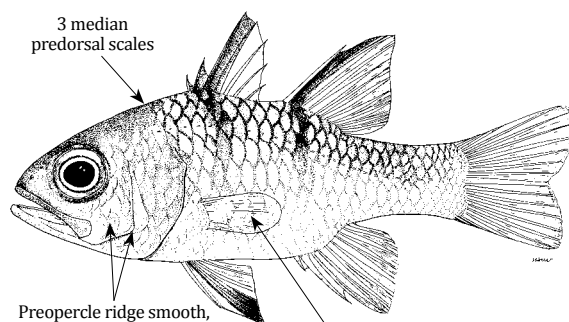
APOGONIDAE

Cardinalfishes

Apogon cf. talboti* Smith, 1961*(Plate XIV, 110)****FAO names:** Flame cardinalfish (En)**Local name(s):** Gogla (Sin).**Habitat:** Inhabits the dark recesses of shallow tropical coral and rocky reefs.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 6 visible spines, the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 17-19 developed gill rakers on 1st gill arch; 24 lateral line scales; caudal fin emarginate.**Colour:** Entirely opaque red.**Remarks:** Inclusion based on photographic record.

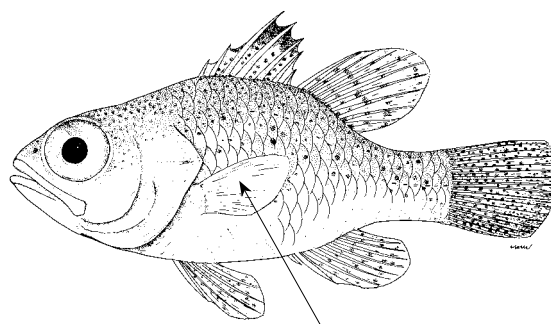
Preopercle ridge smooth, the edge with serrae on vertical part but crenulate and poorly ossified on ventral part

Pectoral fins with 13 rays

Size: To 14 cm (TL)***Apogonichthyoides enigmaticus* Smith, 1961****FAO names:** Short-tooth cardinalfish (En)**Local name(s):** Gogla (Sin).**Habitat:** Rocky bottom nocturnal species occurring at depths from less than 1 to at least 10 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines (3rd spine the longest and thickest), the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 12-17 developed gill rakers on 1st gill arch; 24 lateral line scales; caudal fin emarginate.**Colour:** Body brown, shading to silvery brown ventrally, the edges of scales dark brown; 2 narrow (one scale wide) dark brown bars on body, each continuing onto front of a dorsal fin (bars may be faint or absent in large adults).

Preopercle ridge smooth, the edge nearly fully serrated

Pectoral fins with 14-16 (usually 15) rays

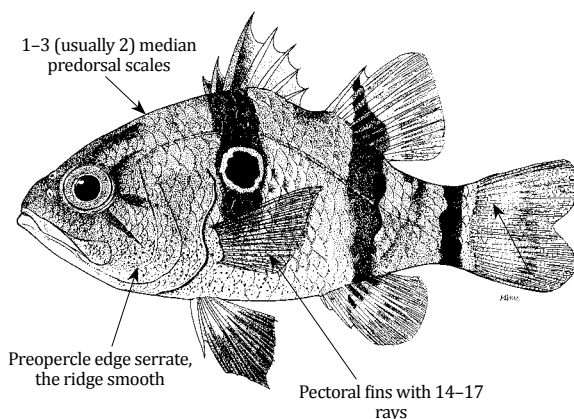
Size: To 14 cm (TL)***Apogonichthyoides cf. maculipinnis* (Regan, 1908)****(Plate XIV, 111) FAO names:** Freckled cardinal (En)**Local name(s):** Gogla (Sin).**Habitat:** Depth range 39-70 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines (3rd spine the longest and thickest), the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 12 developed gill rakers on 1st gill arch; caudal fin subtruncate; stomach and intestine pale.**Colour:** Few scattered small irregular dark spots on head and body; upper part of 1st dorsal fin blackish; 2nd dorsal, anal and pelvic fins with a series of small dark spots; caudal fin with numerous dark dots.**Remarks:** Inclusion based on photographic record.

Pectoral fins with 14 rays

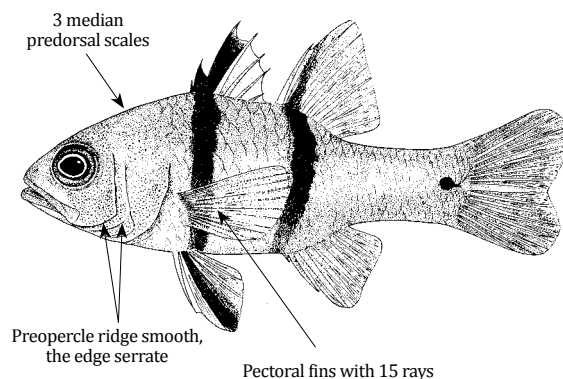
Size: To 5 cm (TL)

***Apogonichthyoides pharaonis* (Bellotti, 1874)**

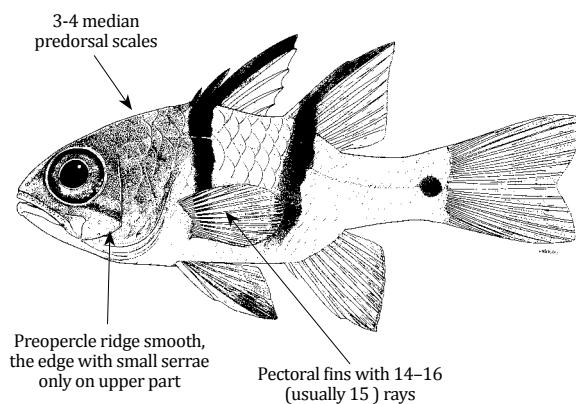
FAO names: Pharaoh's cardinal (En)

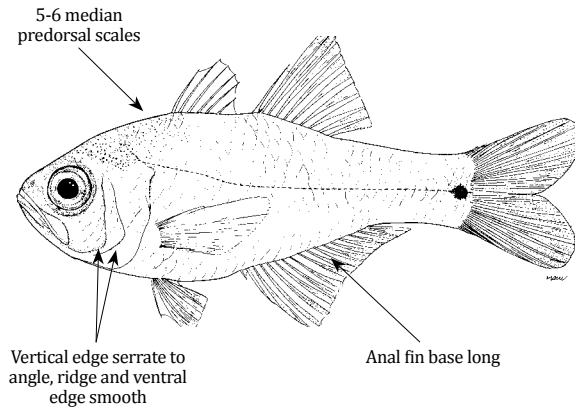
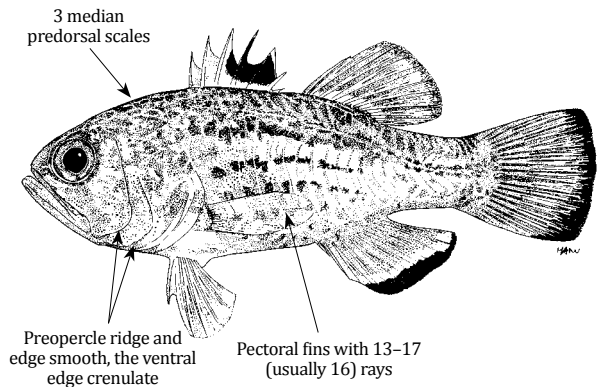
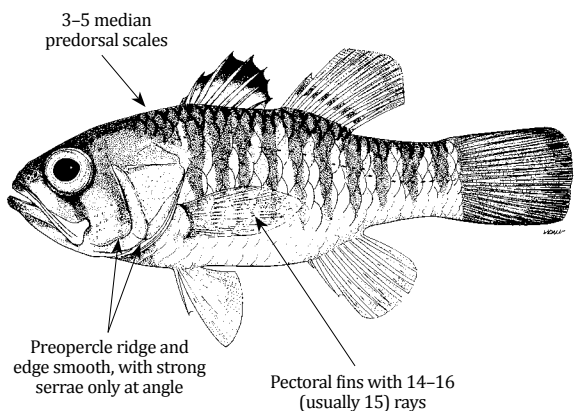
Local name(s): Gogla (Sin).**Habitat:** Inshore on silty reefs, seagrass beds, and in mangrove areas.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines, the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 16-21 developed gill rakers on 1st gill arch; caudal fin truncate or slightly emarginate; intestine pale.**Colour:** Three dark bars on body; 1st bar from anterior part of 1st dorsal base containing a large ocellus (sometimes faint or absent on one side) above pectoral fins; 2nd bar between bases of 2nd dorsal and anal fin; 3rd bar at caudal fin base, masking slightly wider caudal spot; faint bars frequently present between main 3 bars.**Size:** To 10.5 cm (TL)***Apogonichthyoides pseudotaeniatus* (Gon, 1986)**

FAO names: Doublebar cardinalfish (En)

Local name(s): Gogla (Sin).**Habitat:** No information available.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines (3rd spine the longest and thickest), the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 17-20 developed gill rakers on 1st gill arch; caudal fin slightly emarginate; stomach and intestine dark.**Colour:** Light reddish brown to grey dorsally, shading to light silvery grey with iridescence on side, with two narrow dark brown bars on body, the 1st continuous with a band at front of 1st dorsal fin, the 2nd originating below anterior part of 2nd dorsal fin; distinct dark, small basicaudal spot.**Size:** To 14 cm (TL)***Apogonichthyoides sialis* (Jordan & Thompson, 1914)**

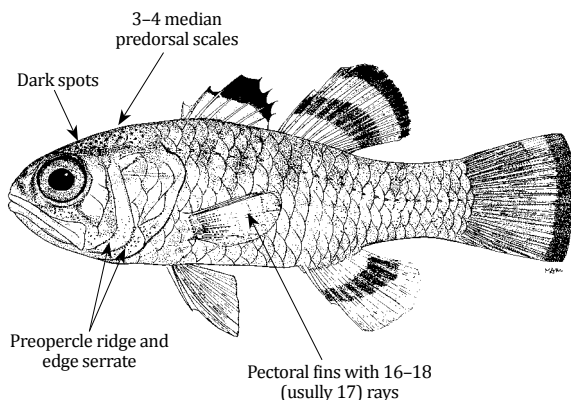
FAO names: Twinbar cardinalfish (En)

Local name(s): Gogla (Sin).**Habitat:** Found in silty coastal reefs around rocks and ledges in 8-15 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines (3rd spine the longest and thickest), the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 18-19 developed gill rakers on 1st gill arch; caudal fin emarginate; stomach and intestine pale.**Colour:** Body brownish to greenish grey anteriorly, shading to dark grey posteriorly, the edges of scales pale; two black bars (usually 2 scales wide) below dorsal fins extending ventrally beyond pectoral fin; axil of pectoral dark; pelvic fins dark brown with white leading edge; distinct dark, small basicaudal spot.**Size:** To 14 cm (TL)

Archamia bleekeri (Günther, 1859)**Local name(s):** Gogla (Sin).**Habitat:** No information available.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 6 visible spines, the 2nd with 1 spine and 9 soft rays (spines slender, none robust); anal fin with 2 spines and 15–17 soft rays; 13–15 (usually 14) pectoral fin rays; 20–21 developed gill rakers on 1st gill arch; caudal fin emarginate; stomach and intestine blackish.**Colour:** Body translucent in life, without striped or barred patterns; snout, lips and lower jaw greenish yellow; dark basicaudal spot not larger than pupil; no stripes or other marks in dorsal, anal pectoral or pelvic fins.**FAO names:** Bleeker's cardinalfish (En)**Size:** To 6 cm (SL)***Jaydia queketti*** Gilchrist, 1903**Local name(s):** Gogla (Sin).**Habitat:** Depth range 50–92 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 spines (4th spine the longest), the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 12–13 (2 on upper limb) developed gill rakers on 1st gill arch; caudal fin moderately rounded.**Colour:** Light pinkish grey dorsally shading to silvery on sides and ventrally, with a dark brown spot on scales on side of body below lateral line forming longitudinal rows; 1st dorsal fin with a large black spot in outer posterior part of fin; anal and caudal fins (and to a lesser extent the 2nd dorsal) with a blackish outer margin.**FAO names:** Spotfin cardinal (En)**Size:** To 10.7 cm (SL)***Jaydia striata*** (Smith & Radcliffe, 1912)**Local name(s):** Gogla (Sin).**Habitat:** Found in lagoon reefs from 10 to 82 m depth.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 spines (4th spine the longest), the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 11–14 (usually 2 on upper limb) developed gill rakers on 1st gill arch; caudal fin rounded; peritoneum silvery white with dusky spots.**Colour:** Body with 7–11 narrow dark brown bars; scale pockets above lateral line with dark edge; cheek stripe usually present; distal half of 1st dorsal fin dusky to dark brown; 2nd dorsal and caudal fins usually with darker distal edge; other fins usually pale.**FAO names:** Tiger cardinalfish (En)**Size:** To 7.6 cm (SL)

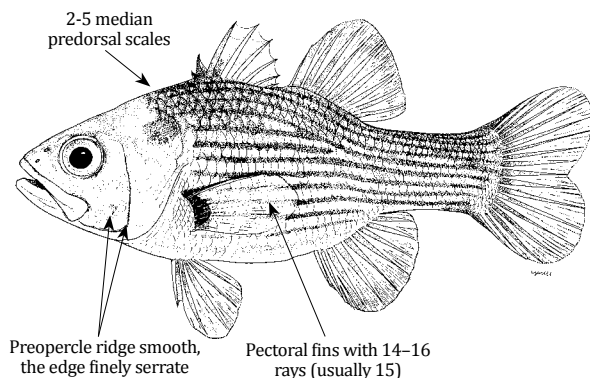
Jaydia truncata (Bleeker, 1855)

FAO names: Flagfin cardinalfish (En)

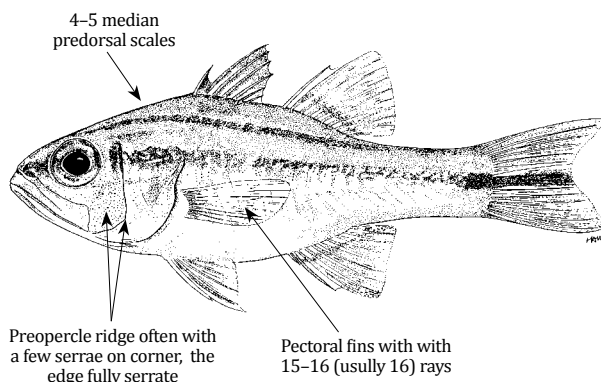
Local name(s): Gogla (Sin).**Habitat:** Depth range 15–110 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines (4th spine the longest), the 2nd with 1 spine and 9 soft rays; 10–11 (1 on upper limb) developed gill rakers on 1st gill arch; caudal fin slightly rounded.**Colour:** Light grey dorsally shading to silvery on side and ventrally, with 4–6 large dusky spots in a longitudinal row above lateral line (sometimes faint or absent); scale pockets above lateral line with dark edge; front of snout and chin blackish; outer half of 1st dorsal fin black; 2nd dorsal and anal fins with a middle blackish band, the 2nd dorsal and caudal with a distal blackish margin.**Size:** To 10.1 cm (SL)***Lepidamia natalensis*** (Gilchrist & Thompson, 1908)

FAO names: Manyline cardinalfish (En)

(Plate XIV, 112)

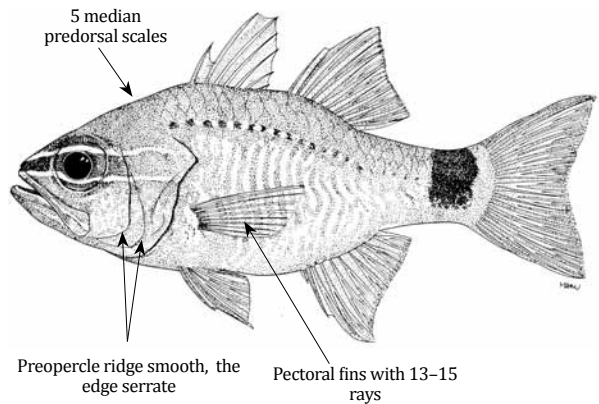
Local name(s): Gogla (Sin).**Habitat:** Usually around rocky and coral outcrops at depths between 1 and 10 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines, the 2nd with 1 spine and 9 soft rays; 40–47 (usually 41–44) lateral line scales; 6–8 developed gill rakers on lower limb of 1st gill arch; caudal fin slightly emarginate with rounded lobes.**Colour:** Light red, the body with longitudinal dark brown lines along the upper and lower edges of scales, those above lateral line following its curvature, those below straight; fins light red, the 1st dorsal with a black spot on third membrane near base; a semicircular dark brown spot across pectoral fin base; margin of caudal fin narrowly blackish.**Size:** To 19 cm (TL)***Ostorhinchus fasciatus*** (Shaw, 1790)

FAO names: Broadbanded cardinalfish (En)

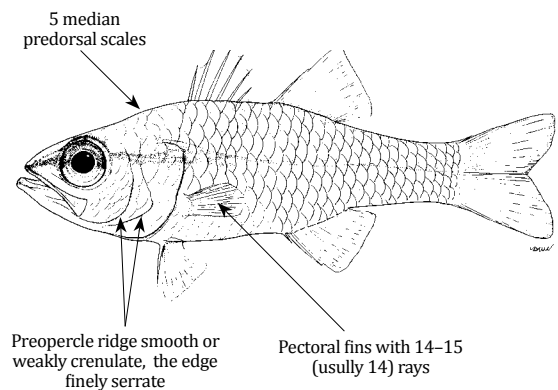
Local name(s): Gogla (Sin).**Habitat:** Inhabits coastal reefs, in sandy or weedy areas at depths between 2 and 127 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines, the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 24 lateral line scales; 11–13 developed gill rakers on lower limb of 1st gill arch; caudal fin slightly emarginate; intestine black.**Colour:** Grey dorsally shading to silvery white on sides and ventrally, with 2 blackish stripes, the 1st narrow from interorbital to upper edge of caudal peduncle, the 2nd from front of snout through eye to posterior end of caudal fin (stripe darkest on opercle and caudal fin).**Size:** To 10.3 cm (TL)

Ostorhinchus fleurieu Lacepède, 1802

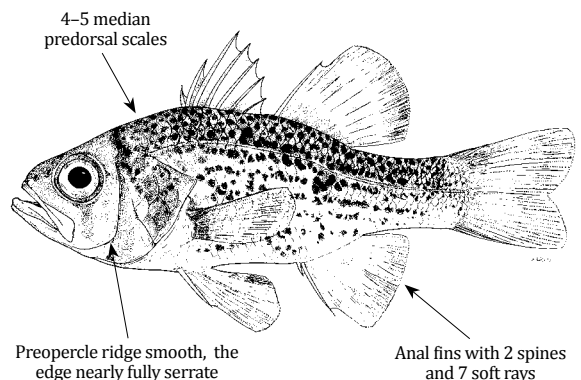
FAO names: Cardinalfish (En)

Local name(s): Gogla (Sin).**Habitat:** Common in shallow coastal reefs with moderate currents. Also in tidal channels of estuaries.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7 visible spines, the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 24 lateral line scales; 18–19 (3–4 on upper limb) developed gill rakers on 1st gill arch; caudal fin slightly emarginate; intestine dark brown to black.**Colour:** Coppery with iridescence; juveniles with peduncular spot, expanding to a broad blackish bar in adults; broad blackish stripe from front of snout to orbit, continuing diffusely behind eye; maxilla with a narrow blue streak.**Size:** To 12.5 cm (SL)***Ostorhinchus gularis*** (Fraser & Lachner, 1984)

FAO names: Gular cardinalfish (En)

Local name(s): Gogla (Sin).**Habitat:** Silt or sand bottoms at depths between 30–290 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 6 visible spines, the 2nd with 1 spine and 9 soft rays; anal fin with 2 spines and 8 soft rays; 24–25 lateral line scales; 21–24 (4–5 on upper limb) developed gill rakers on 1st gill arch; caudal fin slightly forked; anus is in a forward position near base of pelvic fins; digestive tract and anus black.**Colour:** Body pale, with a narrow blackish stripe from front of snout to eye, sometimes continuing across operculum and onto body as a double line; another dusky narrow stripe below 1st dorsal fin base sometimes present; fins pale.**Size:** To 6.6 cm (TL)***Holapogon maximus*** (Boulenger, 1888)

FAO names: Titan cardinalfish (En)

Local name(s): Gogla (Sin).**Habitat:** Rocky reefs usually 10 to 100 m.**Fisheries:** Caught mainly with bottom trawls.**Distinctive Characters:** Two separate dorsal fins, the 1st with 7–8 (usually 8) visible spines, the 2nd with 1 spine and 9 soft rays; pectoral fin with 13–14 rays; caudal fin slightly emarginate with rounded lobes.**Colour:** Pinkish tan to brownish yellow dorsally, shading to brassy with pink iridescence on side and ventrally; body and nape with numerous small brown spots, some on ventral part of body tending to merge to form irregular stripes; two slightly diagonal bars on head, one from top of iris across lower cheek, the 2nd (containing some dark spots) from nape across opercle; fins yellowish, the 1st dorsal with a black spot anteriorly at base.**Size:** To 25 cm (TL)

SILLAGINIDAE

Sillagos

Sillaginopsis domina (Cuvier, 1816)

Local name(s): Shoor, Ladypees, Bhambore (Sin); Hashoor (Bal).

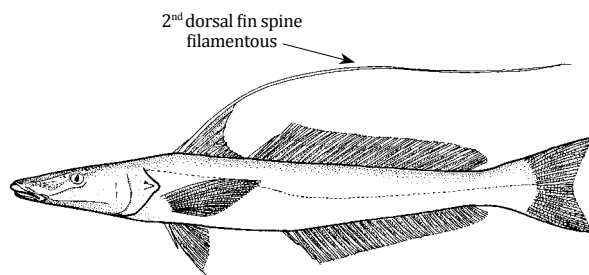
Habitat: Found in shallow, open muddy bays and estuaries.

Fisheries: Bottom trawls, gillnets, cast nets.

Distinctive Characters: Body elongate; head greatly flattened; eyes small, covered by adipose tissue; mouth small, terminal; 1st dorsal fin with 10 spines; 2nd dorsal fin with 1 spine and 25–27 rays; anal fin with 2 spines and 24–27 rays; swimbladder vestigial or absent.

Colour: Back light brown, lower flanks and belly pale brown to white; fins pale brownish, with a light dusting of fine black spots.

FAO names: Flathead sillago (En)
Pêche-madame camus (Fr)



Size: To 44 cm, common 25 cm (TL)

Sillago arabica McKay & McCarthy, 1989

Local name(s): Shoor, Ladypees, Bhambore (Sin); Hashoor (Bal).

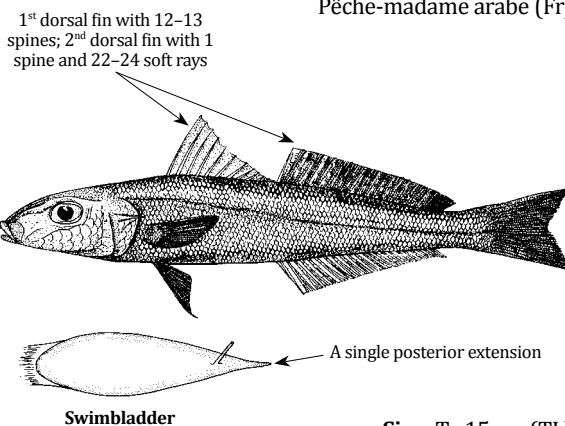
Habitat: Shallow sandy bottoms offshore and bays; also in estuaries down to 60 m.

Fisheries: Bottom trawls, gillnets, bagnets, cast nets.

Distinctive Characters: Body elongate; snout 31–38% of head length; opercle with a small sharp spine; anal fin with 2 spines and 22–24 soft rays; swimbladder with a single posterior extension.

Colour: Silvery without dark markings.

FAO names: Arabian sillago (En)
Pêche-madame arabe (Fr)



Size: To 15 cm (TL)

Sillaginopodys chondropus (Bleeker, 1849)

Local name(s): Shoor, Ladypees, Bhambore (Sin); Hashoor (Bal).

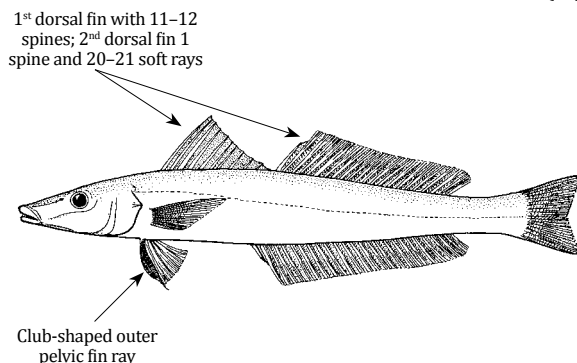
Habitat: Shallow coastal waters and bays; also in estuaries down to 5 m.

Fisheries: Bottom trawls, gillnets, bagnets, cast nets.

Distinctive Characters: Body elongate; anal fin with 2 spines and 22–23 soft rays; opercle with a sharp small spine; swimbladder reduced, no duct-like process.

Colour: Back pale brown; lower ventral flanks and belly paler; adult silver-grey; fins pale, the 1st dorsal fin with dusky tip.

FAO names: Clubfoot sillago (En)
Pêche-madame diablotin (Fr)



Size: To 35 cm, common 25 cm (TL)

Sillago sihama (Forsskål, 1775)

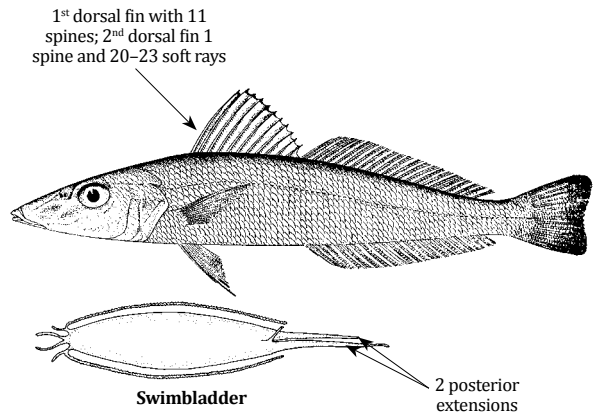
Local name(s): Shoor, Ladypees, Bhambore (Sin); Hashoor (Bal).

Habitat: Common along beaches, sandbars, mangrove creeks and estuaries; recorded from freshwater. Maximum depth 60 m.

Fisheries: Bottom trawls, gillnets, bagnets, cast nets.

Distinctive Characters: Body elongate; head length 24–30% in SL; anal fin with 2 spines and 21–23 soft rays; swimbladder with two posterior extensions.

Colour: Back light brown; lower ventral flanks and belly whitish or silvery, without dark blotches.



Size: To 30 cm, common 25 cm (TL)

FAO names: Silver sillago (En)
Pêche-madame argenté (Fr)

LACTARIIDAE

False trevally

Lactarius lactarius (Bloch & Schneider, 1801)

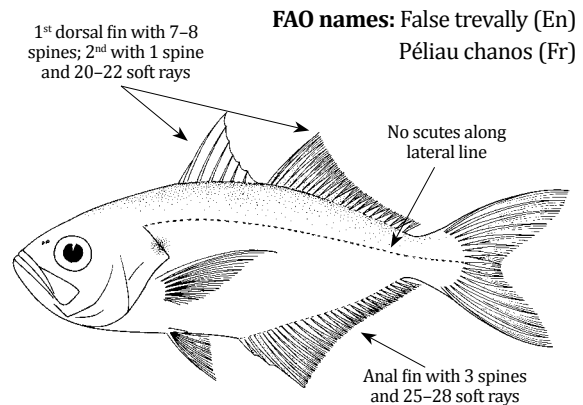
Local name(s): Bakka (Sin); Chilankar (Bal).

Habitat: Coastal deeper waters down to 100 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Maxilla reaching to posterior 1/3 of eye; mouth large and oblique, with a prominent lower jaw; caudal fin forked.

Colour: Silvery grey with blue iridescence above; silvery white below; a dusky spot on upper part of gill cover; fins all pale yellow; dorsal and caudal fins sometimes with dusky margins; the blue iridescence and sometimes the yellow of the fins are lost some hours after death.



Size: To 40 cm, common 30 cm (TL)

FAO names: False trevally (En)
Pélieu chanos (Fr)

POMATOMIDAE

Bluefish

Pomatomus saltatrix (Linnaeus, 1766)

Local name(s): None.

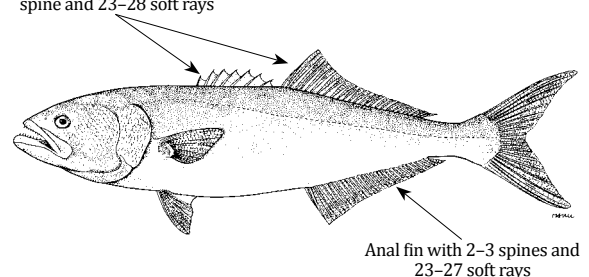
Habitat: Occurs in oceanic and coastal waters.

Fisheries: Gillnets.

Distinctive Characters: Body compressed; mouth large and terminal, lower jaw sometimes slightly projecting; jaw teeth prominent, sharp, compressed, in a single series.

Colour: Back greenish blue, sides and belly silvery; dorsal and anal fins pale green tinged with yellow; pectoral fins bluish at base; caudal fin dull greenish tinged with yellow.

1st dorsal fin short and low with 7–8 feeble spines; 2nd dorsal fin with 1 spine and 23–28 soft rays

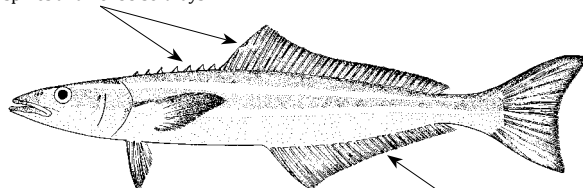


Size: To 130 cm, common 60 cm (TL)

FAO names: Bluefish (En)
Tassergal (Fr)

RACHYCENTRIDAE**Cobia*****Rachycentron canadum*** (Linnaeus, 1766)**FAO names:** Cobia (En)
Mafou (Fr)**Local name(s):** Sangra (Sin); Sanglore (Bal).**Habitat:** Pelagic, but also over shallow coral reefs, occasionally in estuaries.**Fisheries:** Bottom trawls, gillnets, line gears.**Distinctive Characters:** Head broad and depressed; mouth large, terminal, with projecting lower jaw; pectoral fins pointed; caudal fin lunate in adults, upper lobe longer than lower.**Colour:** Back and sides dark brown, with 2 sharply defined narrow light bands; belly yellowish.

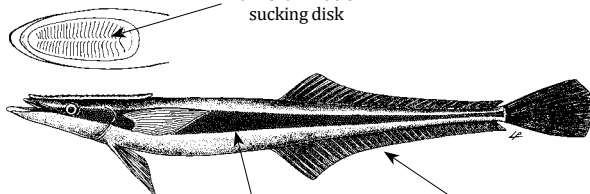
Dorsal fin with 7–9 isolated spines and 26–33 soft rays



Anal fin with 2–3 spines and 22–28 soft rays

Size: To 200 cm, common 110 cm (TL)**ECHENEIDAE****Remoras – Sharksuckers*****Echeneis naucrates*** Linnaeus, 1758**FAO names:** Live sharksucker (En)
Rémora commun (Fr)**Local name(s):** Leechik (Sin); Leeching (Bal).**Habitat:** Coastal and oceanic waters.**Fisheries:** Gillnets, driftnets (captured attached to the body of its host).**Distinctive Characters:** Body very elongate, its depth contained 8–14 in SL; pectoral fins pointed; caudal fin lanceolate in young, the middle rays elongate and filamentous, almost truncate in adults.**Colour:** Usually a dark longitudinal band on sides bordered with white; juveniles with upper and lower margins of fins white.

20–28 laminae on sucking disk

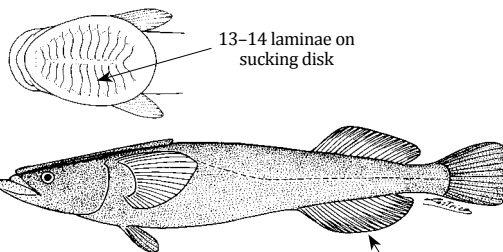


Dark longitudinal band

Anal fin long, with 29–41 rays

Size: To 110 cm (TL)***Remora albescens*** (Temminck & Schlegel, 1850)**FAO names:** White suckerfish (En)**Local name(s):** Leechik (Sin); Leeching (Bal).**Habitat:** Coastal and oceanic waters.**Fisheries:** Gillnets, driftnets (captured attached to the body of its host). Host specific on manta rays, but occasionally attaches to sharks and black marlin, *Makaira indica*.**Distinctive Characters:** Body not elongate, its depth contained 5–8 in SL; 17–22 soft dorsal fin rays; pectoral fins rounded; caudal fin forked in young, becoming truncate in adults.**Colour:** Pale grey to white.

13–14 laminae on sucking disk



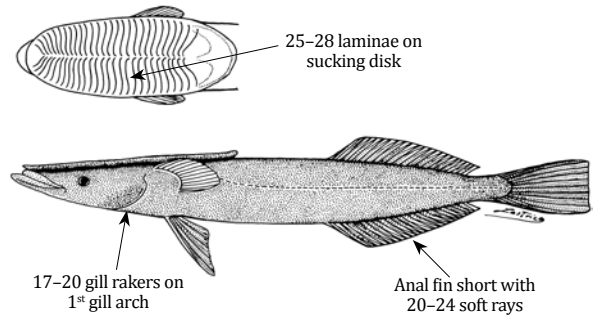
Pelvic fins narrowly attached to abdomen

Anal fin short with 21–26 soft rays

Size: To 30 cm (TL)

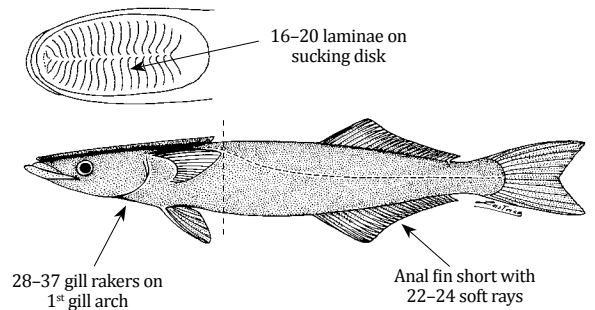
Remora australis (Bennett, 1840)

FAO names: Whalesucker(En)

Local name(s): Leechik (Sin); Leeching (Bal).**Habitat:** Coastal and oceanic waters.**Fisheries:** Gillnets, driftnets (captured attached to the body of its host). Attaches itself only to whales and dolphins.**Distinctive Characters:** Body not elongate, its depth contained 5–8 in SL; 20–23 soft dorsal fin rays; pectoral fins rounded; pelvic fins broadly attached to abdomen; caudal fin forked in young, becoming truncate in adults.**Colour:** Dark blue to slate grey; fins with narrow white edge.**Size:** To 76 cm (TL)***Remora remora*** (Linnaeus, 1758)

FAO names: Shark sucker (En)

Rémora des requins (Fr)

Local name(s): Leechik (Sin); Leeching (Bal).**Habitat:** Coastal and oceanic waters.**Fisheries:** Gillnets, driftnets (captured attached to the body of its host). Usually associated with sharks but also attaches itself to other large fishes, sea turtles and even ships.**Distinctive Characters:** Body not elongate, its depth contained 5–8 in SL; 21–27 soft dorsal fin rays; pectoral fins rounded; pelvic fins broadly attached to abdomen; posterior border of sucking disc located anterior to tips of adpressed pectoral fins; caudal fin forked in young, becoming emarginate in adults.**Colour:** Dark brownish grey.**Size:** To 86.4 cm (TL)**CARANGIDAE**

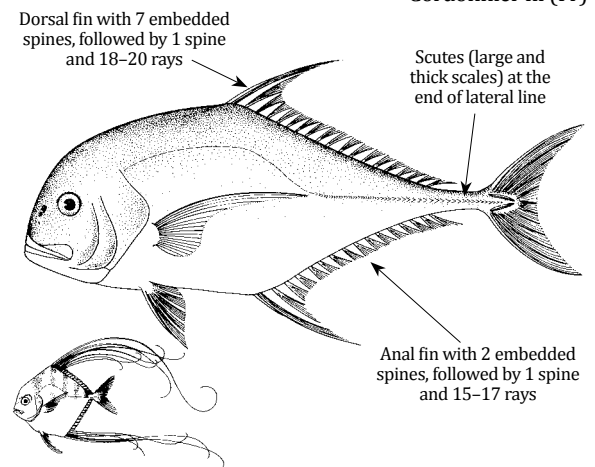
Jacks – Trevallies – Scads – Queen-fishes – Runners – Pompanos

Alectis ciliaris (Bloch, 1787)

(Plate XIV, 113)

FAO names: African pompano (En)

Cordonnier fil (Fr)

Local name(s): Oonth patar, Patar (Sin); Ushtar patar, Siah patar, Banzali (juveniles) (Bal).**Habitat:** Adults in shallow coastal waters; young are pelagic. Maximum depth 100 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Body deep becoming more elongate with growth, and very compressed; profile of nape and head broadly rounded; pectoral fins falcate, longer than head; pelvic fins elongate in young; 12–17 lower gill rakers; sometimes anal fin rays are filamentous also in adults.**Colour:** Mostly silvery with a light metallic bluish tinge on upper 1/3 of body and head; juveniles with 5 chevron-shaped dark bars on body, and a black blotch at base of 3rd to 6th soft dorsal fin ray; filaments black distally.**Juvenile of 13 cm SL** **Size:** To 150 cm; common 100 cm (FL)

Alectis indica (Rüppell, 1830)

(Plate XIV, 114)

FAO names: Indian threadfish (En)
Cordonnier plume (Fr)

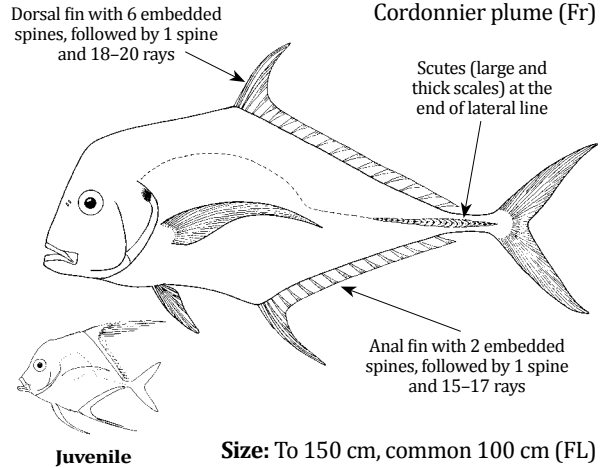
Local name(s): Oonth patal, Patal (Sin); Ushtar patar, Safay patar (Bal).

Habitat: Adults in coastal waters; juveniles often enter estuaries. Maximum depth more than 60 m.

Fisheries: Gillnets, bottom trawls.

Distinctive Characters: Body deep, becoming more elongate with growth, and very compressed; profile of head and nape somewhat angular; pectoral fins falcate, longer than head; 21–26 lower gill rakers; sometimes anal fin rays are filamentous also in adults.

Colour: Mostly silvery with a dusky green tinge dorsally; juveniles with dark bars on body; dorsal fin pale with leading edges at tips of rays dusky; anal fin pale yellow and caudal fin dusky green.



Size: To 150 cm, common 100 cm (FL)

Alepes djedaba (Forsskål, 1775)

(Plate XIV, 115)

FAO names: Shrimp scad (En)
Sélar subari (Fr)

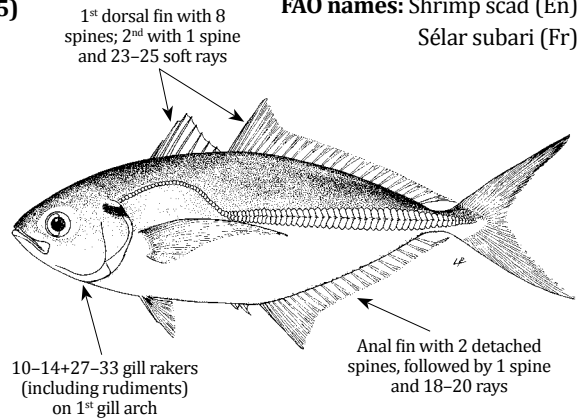
Local name(s): Para, Bakka (Sin); Bakoi, Bako patar (Bal)

Habitat: Common in near inshore reefs.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body oblong, compressed; snout pointed; adipose eyelid well-developed only on posterior half of eye; straight part of lateral line with 0–2 scales and 39–51 scutes.

Colour: Greyish green above, silvery to white below; a distinct black blotch on margin of opercle, bordered above by a smaller white spot; interradial membranes of spinous dorsal fin pale to dark dusky; caudal fin yellowish, except upper lobe often dusky to black distally; other fins pale.



Size: To 40 cm, common 25 cm (FL)

Alepes kleini (Bloch, 1793)

(Plate XIV, 116)

FAO names: Razorbelly scad (En)
Comère rubari (Fr)

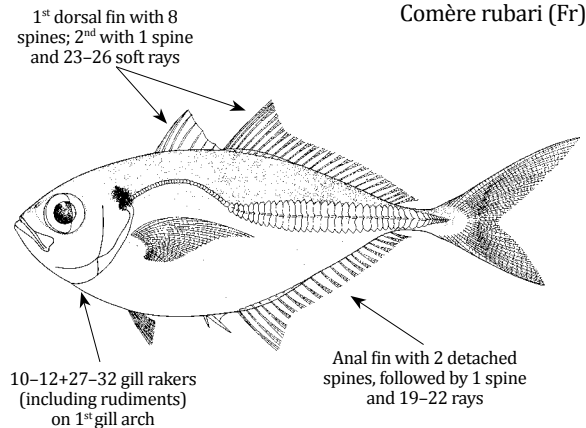
Local name(s): Para, Bakka (Sin); Bakoi, Bako patar (Bal)

Habitat: Pelagic species occurring in coastal waters throughout its range.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body oval, strongly compressed, with ventral profile distinctly more convex than dorsal profile; snout pointed; upper lobe of caudal fin longer than lower lobe in large adults; adipose eyelid well-developed only on posterior half of eye; straight part of lateral line with 0–2 scales and 35–45 scutes.

Colour: Silvery, sometimes with dark bars on upper half of body; a large black spot at upper end of gill opening; caudal fin yellowish, more so on upper lobe which has a narrow dusky edge; tongue dark except tip which is pale.



Size: To 16 cm, common 14 cm (FL)

Alepes melanoptera (Swainson, 1839) *

Local name(s): Para, Bakka (Sin); Bakoi, Bako patar (Bal)

Habitat: Pelagic species occurring in coastal waters throughout its range.

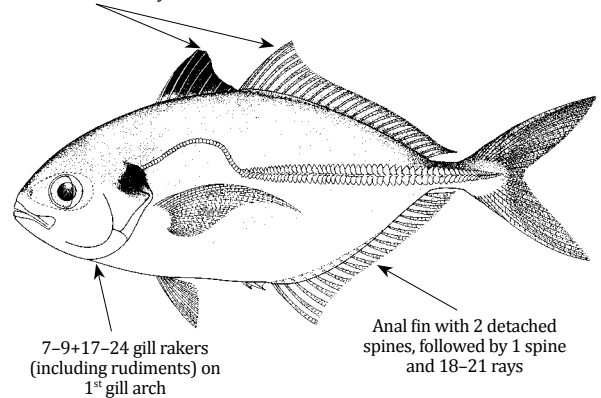
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body oblong, compressed, with dorsal and ventral profiles almost evenly convex; snout bluntly rounded; eyelid well developed only on posterior half of eye; straight part of lateral line with 0–4 scales and 49–69 scutes.

Colour: In life, grey-blue above, silvery to white below; a diffuse dusky blotch on margin of opercle; interradiation membranes of spinous dorsal fin black; second dorsal fin greyish, lobe pale distally; caudal fin dusky yellow, with darker trailing edges, other fins pale.

1st dorsal fin with 8 spines; 2nd with 1 spine and 23–26 soft rays

FAO names: Blackfin scad (En)
Sélar aile noire (Fr)



Size: To 21 cm (FL)

Alepes vari (Cuvier, 1833) *

Local name(s): Para, Bakka (Sin); Bakoi, Bako patar (Bal)

Habitat: Common in shallow coastal waters where it often swims near the surface

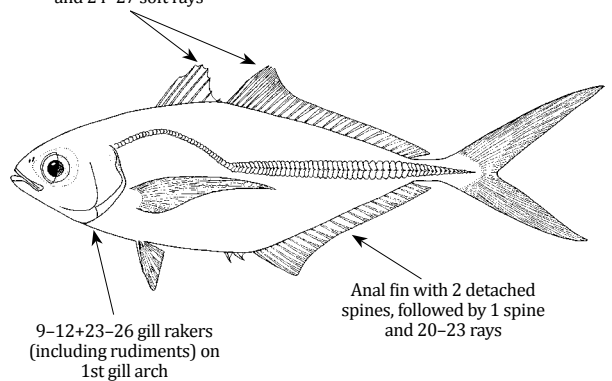
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body oblong, compressed, with dorsal and ventral profiles almost evenly convex; snout pointed; eyelid well-developed only on posterior half of eye; straight part of lateral line with 0–7 scales and 48–69 scutes.

Colour: In life, ash blue above, silvery to white below; a diffuse dusky blotch on margin of opercle; interradiation membranes of spinous dorsal fin pale to dark dusky; second dorsal fin, anal, and caudal fins dusky; mature males develop black pigmentation in spinous dorsal fin, lobes of soft dorsal and anal fins, and in pelvic fins that is lacking in females.

1st dorsal fin with 8 spines; 2nd with 1 spine and 24–27 soft rays

FAO names: Herring scad (En)
Sélar harangule (Fr)



Size: To 46 cm, common 30 cm (FL)

Atopos atopos (Bloch & Schneider, 1801)

Local name(s): Mori, Patal (Sin); Pattar (Bal).

Habitat: Common, in shallow coastal waters where it often swims near the surface.

Fisheries: Caught mainly with gillnets.

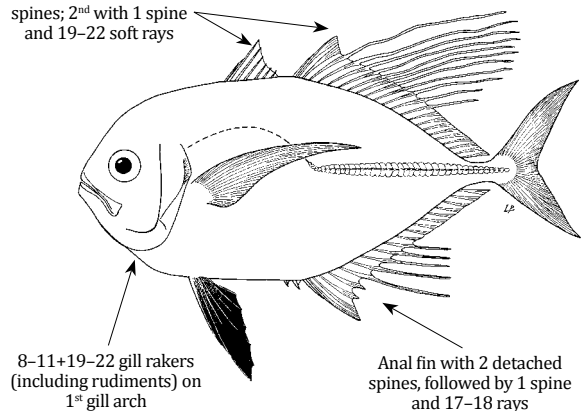
Distinctive Characters: Body strongly compressed, almost ovate; nape strongly convex; belly with a deep median groove, accommodating pelvic fins, anus, and anal fin spines; dorsal fin sexually dimorphic, in mature males (only) 6 to 12 of the central rays produced into filaments of greatly varying lengths; pelvic fins conspicuously long, tip of appressed fin extending almost to anal fin origin.

Colour: In life, head and body bluish green above, silvery below; membranes of pelvic fins black, with the rays white basally; other fins pale; young with indistinct dark bands and opercular spot, the latter prominent in adults.

(Plate XV, 117)

FAO names: Cleftbelly trevally (En)
Pompano à quille noire (Fr)

1st dorsal fin with 8 spines; 2nd with 1 spine and 19–22 soft rays



Size: To 23 cm (FL)

Atule mate (Cuvier, 1833) *

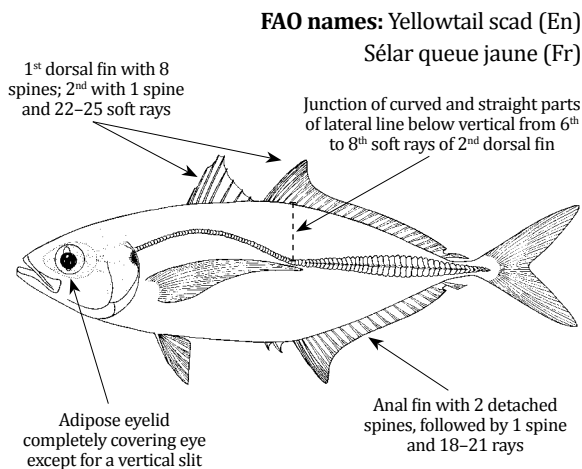
Local name(s): Seeri (Sin); Bakoi, Chonsar bakoi (Bal).

Habitat: Pelagic species occurring down to 50 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Terminal dorsal and anal fin rays finlet-like in adults, about twice length of adjacent rays and a little more separated but joined by interradiated membranes; pectoral fins long and falcate; lateral line gently arched anteriorly, its straight part with 0–10 scales and 36–49 scutes.

Colour: Bright olive-green dorsally, yellowish green laterally and whitish ventrally; dorso-laterally, 9 or 10 faint grey bars; a black spot, slightly smaller than eye, on upper margin of opercle and adjacent area of shoulder.



Size: To 30 cm, common 26 cm (FL)

Carangoides armatus (Rüppell, 1830)

(Plate XV, 118)

FAO names: Longfin trevally (En)

Carangue sap-sap (Fr)

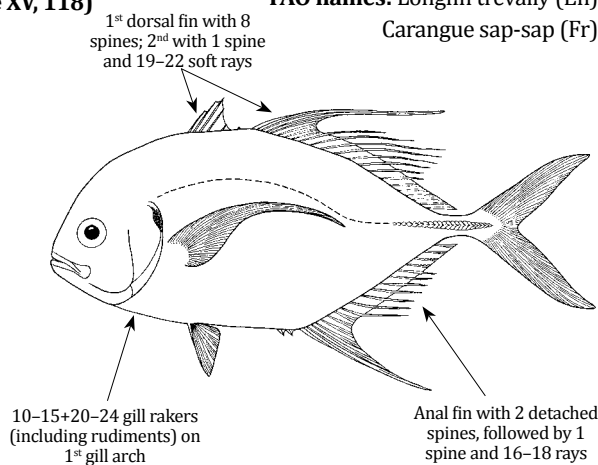
Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

Habitat: Adults are found in coastal waters near corals and rocks, also in shallow lagoons; juveniles may enter estuaries.

Fisheries: Caught mainly with gillnets

Distinctive Characters: Body strongly compressed and deep; head profile very steep in adults but relatively straight from snout to nape; chord of curved part of lateral line longer than straight part; adult males with 3–12 central dorsal filamentous rays.

Colour: Bluish grey above, silvery below; blackish blotch on upper margin of opercle; spinous dorsal fin blackish; 2nd dorsal and anal fins pale to dusky, leading edge of lobes dusky to blackish; caudal fin grey with leading and trailing edges black.



Size: To 50 cm (FL)

Carangoides bajad (Forsskål, 1775)

(Plate XV, 119)

FAO names: Orangespotted trevally (En)

Carangue lentigine (Fr)

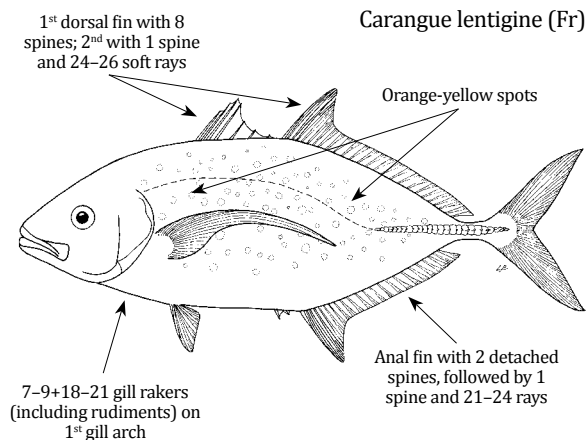
Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

Habitat: Adults are common along coastal reef slopes or around large coral heads in lagoons

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Lobe of 2nd dorsal fin shorter than head length; lateral line anteriorly with moderately regular arch, with junction of curved and straight parts below 11th to 15th soft ray of 2nd dorsal fin; straight part of lateral line with 20–30 scutes and 34–56 total elements (including anterior scales).

Colour: Brassy dorsally, shading to silvery white on sides, with numerous conspicuous orange-yellow spots; no dark opercular spot; capable of rapidly changing colour to almost entirely orange.



Size: To 49 cm (FL)

***Carangoides chrysophrys* (Cuvier, 1833)**

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

Habitat: Open waters of coastal reefs down to 60 m.

Fisheries: Caught mainly with gillnets.

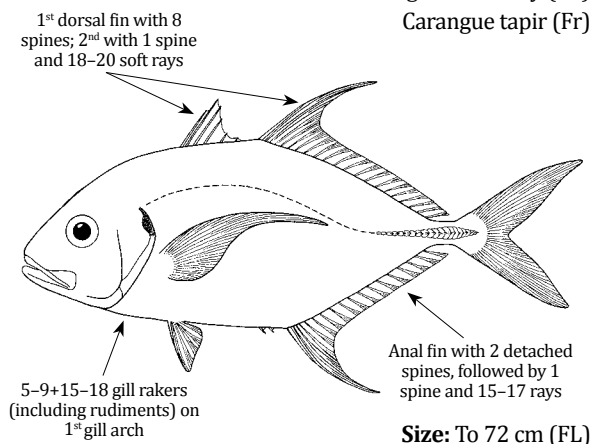
Distinctive Characters: Lobe of 2nd dorsal fin falcate, becoming shorter with age; lateral line anteriorly with moderately regular arch, with junction of curved and straight parts below 12th to 14th soft ray of 2nd dorsal fin; straight part of lateral line with 20 to 37 weak scutes and 32 to 42 total elements (including anterior scales).

Colour: Silvery with head and body greenish above; silvery with yellow-green reflections below; a small black blotch on upper edge of opercle; large adults sometimes very dark; head and fins blackish.

(Plate XV, 120)

FAO names: Longnose trevally (En)

Carangue tapir (Fr)

***Carangoides coeruleopinnatus* (Rüppell, 1830)**

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

Habitat: Deeper coastal reefs and rarely close to shore. Maximum depth 60 m.

Fisheries: Caught mainly with gillnets.

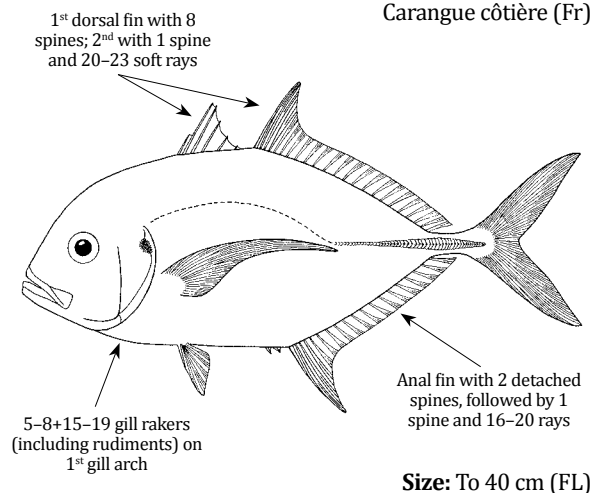
Distinctive Characters: Lobe of 2nd dorsal fin filamentous in young, becoming shorter with age; lateral line anteriorly with moderately regular arch, with junction of curved and straight parts below 12th to 14th soft ray of 2nd dorsal fin; straight part of lateral line with 16 to 20 scutes, and 31 to 50 total elements (including anterior scales).

Colour: Bluish green above, silvery grey below; sides with numerous, small yellow spots; small black blotch on upper margin of opercle; 2nd dorsal, anal and caudal fins dusky, the latter sometimes yellowish; pectoral fins pale yellow; pelvic fins hyaline to pale grey.

(Plate XV, 121)

FAO names: Coastal trevally (En)

Carangue côtière (Fr)

***Carangoides ferdau* (Forsskål, 1775)**

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

Habitat: Coastal waters adjacent to sandy beaches down to 200 m.

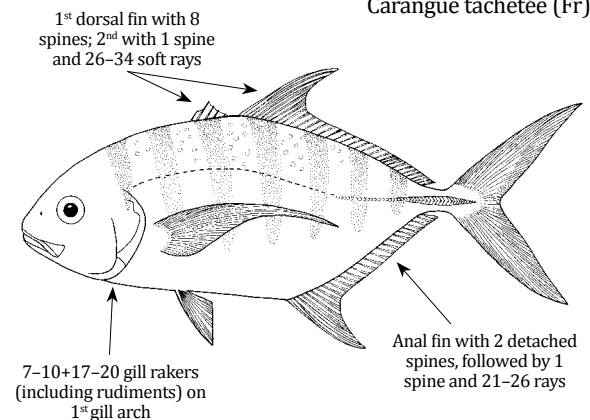
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Lobe of 2nd dorsal fin falcate, especially in small adults, but usually shorter than head length; snout bluntly rounded; lips of large adults not noticeably fleshy.

Colour: Adults typically with 5-6 dusky bands on sides that usually persist in marketed specimens; in life head and body generally silvery, blue-green above, paler below; caudal fin yellow-green with trailing edge and lobe tips dark; pelvic fins hyaline whitish.

FAO names: Blue trevally (En)

Carangue tachetée (Fr)



Size: To 70 cm (FL)

Carangoides fulvoguttatus* (Forsskål, 1775)

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

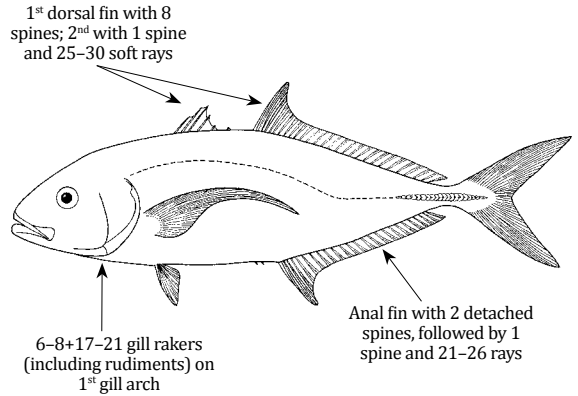
Habitat: Schools along outer reef slopes, rocky coasts and offshore banks.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Lateral line anteriorly with a low regular arch, with junction of curved and straight parts below 13th to 16th soft ray of 2nd dorsal fin; straight part of lateral line with 15-21 small scutes; chord of curved part of lateral line longer than straight part.

Colour: Adults iridescent blue-green dorsally, shading to silvery on sides, with many small golden or brassy spots mainly above midline; large individuals often with 3 irregular black blotches (sometimes very indistinct or absent) on flanks, the 1st below dorsal fin lobe.

FAO names: Yellowspotted trevally (En)
Carangue pailletée (Fr)



Size: To 120 cm (FL)

***Carangoides gymnostethus* (Cuvier, 1833)**

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

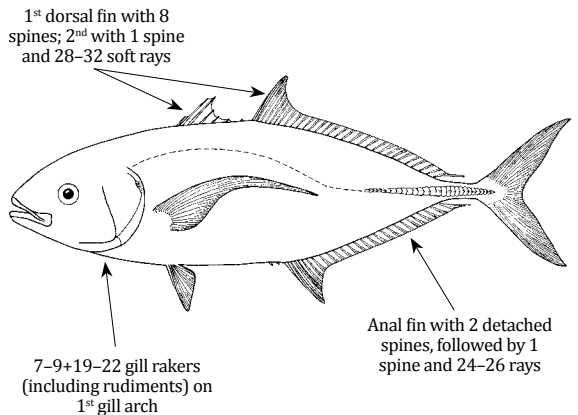
Habitat: Common over deeper offshore reefs.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Lateral line anteriorly with a low regular arch, with junction of curved and straight parts below 16th to 20th soft ray of 2nd dorsal fin; straight part of lateral line with 20-31 small scutes; chord of curved part of lateral line longer than straight part.

Colour: Adults olive-green above, silvery-white below with a few brown or golden spots sometimes present midlaterally; opercular spot dusky and inconspicuous; dorsal, anal and caudal fins pale olive-green to greenish-grey; leading edge and distal margin of anal fin white; pelvic and pectoral fins pale green to hyaline.

FAO names: Bludger (En)
Carangue balo (Fr)



Size: To 90 cm (FL)

***Carangoides hedlandensis* (Whitley, 1934)**

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

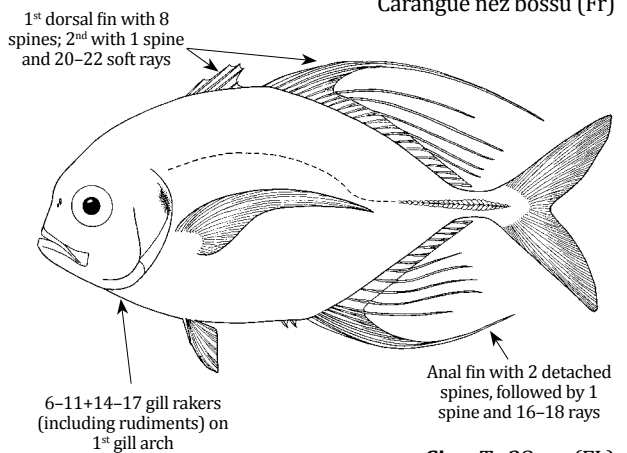
Habitat: Adults inhabit coastal waters of the continental shelf

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Head profile extremely steep in adults with a distinct "bump" in the interorbital region; chord of curved part of lateral line longer than straight part; adult males with 3-8 central dorsal and anal filamentous rays.

Colour: Greenish blue above, silvery grey below; blackish blotch on upper opercular margin; Spinous dorsal fin, elongated dorsal rays and edges of caudal fin blackish; interradi of soft anal fin rays often with a white spot basally.

(Plate XV, 122, 123) FAO names: Bumpnose trevally (En)
Carangue nez bossu (Fr)



Size: To 28 cm (FL)

Carangoides malabaricus (Bloch & Schneider, 1801)

FAO names: Malabar trevally (En)
Carangue monique (Fr)

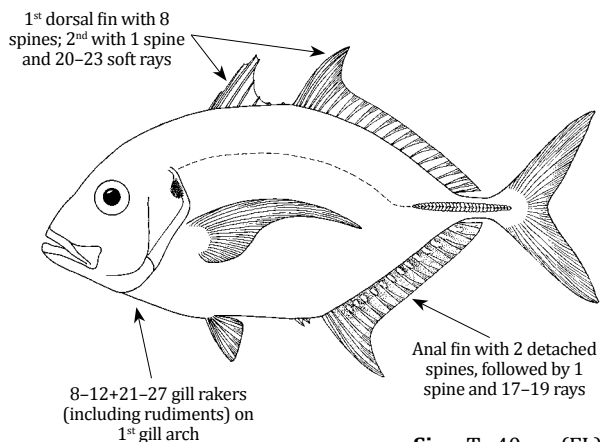
Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

Habitat: A benthopelagic species occurring over corals and rocky reefs but also found in shallow sandy bays.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Lateral line anteriorly with a moderate regular arch, with junction of curved and straight parts below 12th to 14th soft ray of 2nd dorsal fin; chord of curved part of lateral line longer than straight part.

Colour: Generally silvery with bluish grey above, silvery white below; caudal, soft dorsal and anal fins pale greenish yellow to dusky; interradiation of soft anal fin rays often with a white spot basally; tongue greyish brown to brown.

***Carangoides plagiotænia*** Bleeker, 1857 *

FAO names: Barcheck trevally (En)
Carangue grimée (Fr)

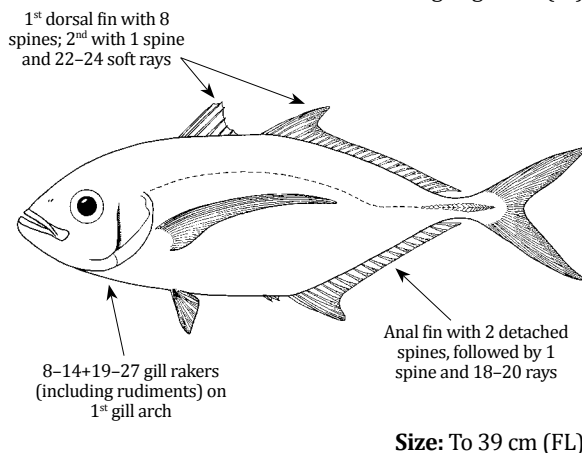
Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

Habitat: Generally along the edges of lagoons and seaward reef slopes.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Lower jaw somewhat enlarged and projecting beyond upper jaw; lateral line anteriorly with a relatively low arch, with junction of curved and straight parts below 13th to 15th soft ray of 2nd dorsal fin; straight part of lateral line with 20–26 scales followed by 11–18 relatively small scutes.

Colour: Generally silvery, greyish above, paler below; no opercular spot but adults with opercule posterior vertical margin distinctly dark to black; sides sometimes with 6 or 7 dusky oblique bands.

***Carangoides praeustus*** (Anonymous [Bennett], 1830)

FAO names: Brownback trevally (En)
Carangue à dos brun (Fr)

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

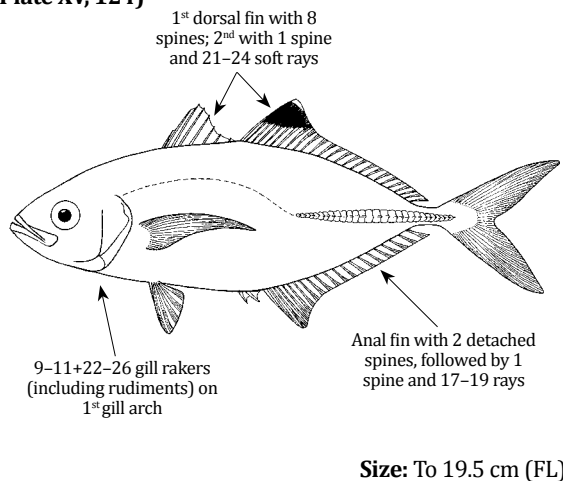
Habitat: Inhabits coastal waters throughout its range

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Spinous dorsal fin moderately high, longest spine nearly equal height of soft dorsal fin lobe; lateral line anteriorly with a moderate regular arch, with junction of curved and straight parts below 7th to 11th soft ray of 2nd dorsal fin; straight part of lateral line with 4–12 scales followed by 23–34 scutes.

Colour: In life, bluish grey above, silvery white below; no dark opercular spot; distal half of second dorsal fin lobe abruptly black, sometimes with a white margin, widest anteriorly; remainder of fin pale dusky; caudal fin pale yellowish, other fins hyaline to whitish.

(Plate XV, 124)



***Carangoides talamparoides* Bleeker, 1852** *

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Pattar, Kak-kawan (Bal).

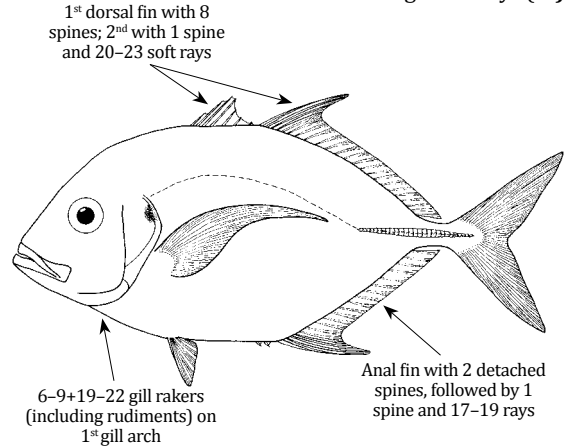
Habitat: Inhabits coastal waters throughout its range.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Lateral line anteriorly with a moderate regular arch, with junction of curved and straight parts below 12th to 14th soft ray of 2nd dorsal fin; straight part of lateral line with 20 to 32 weak scutes.

Colour: In life, generally silvery, bluish grey above, silvery white below; opercle with a small black spot on upper margin; tongue white to pale grey; soft dorsal and anal fins dusky; caudal fin with central rays dusky yellow with black distal margin.

FAO names: Imposter trevally (En)
Carangue cavallys (Fr)



Size: To 28 cm (FL)

***Caranx heberi* (Bennett, 1830)** (Plate XVI, 125)

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Kak-kawan, Gishran (Bal).

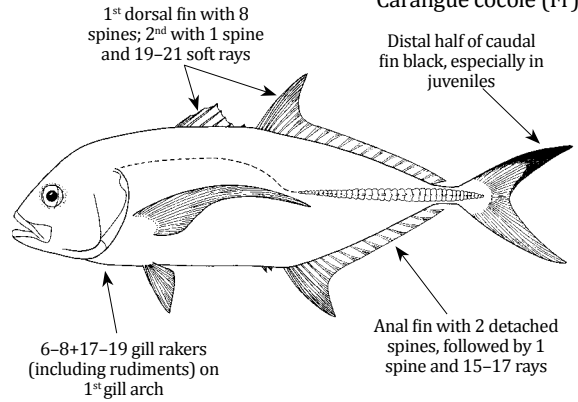
Habitat: Prefers clean, open coastal waters; adults are particularly common in small aggregations over rocky reefs.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Adipose eyelid moderately developed, small anteriorly, posterior adipose eyelid extends onto eye to rear border of pupil; straight part of lateral line with 0-4 anterior scales followed by 30-40 strong scutes.

Colour: Dark bronze to yellow-green above, silvery bronze to yellowish below; identified by its black-tipped caudal fin.

FAO names: Blacktip trevally (En)
Carangue cocole (Fr)



Size: To 85 cm (FL)

***Caranx ignobilis* (Forsskål, 1775)**

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Kak-kawan, Gishran (Bal).

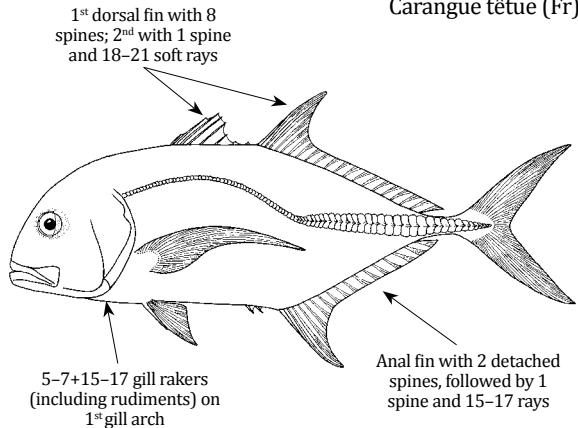
Habitat: Pelagic over sand and rock; adults occur singly and inhabit clear lagoon and seaward reefs

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Adipose eyelid moderately developed, small anteriorly; posterior eyelid extends onto eye rear border of pupil; straight part of lateral line with 0-4 anterior scales followed by 30-40 strong scutes.

Colour: Adults with body silvery grey to black above, usually paler below; fins uniformly pigmented grey to black, except for leading edges and tips of dorsal and anal fin lobes which are paler; mature males usually darker than females, sometimes head and fins completely black.

FAO names: Giant trevally (En)
Carangue tête (Fr)



Size: To 170 cm, common 100 cm (FL)

***Caranx lugubris* Poey, 1860**

(Plate XVI, 126)

FAO names: Black jack (En)
Carangue noire (Fr)

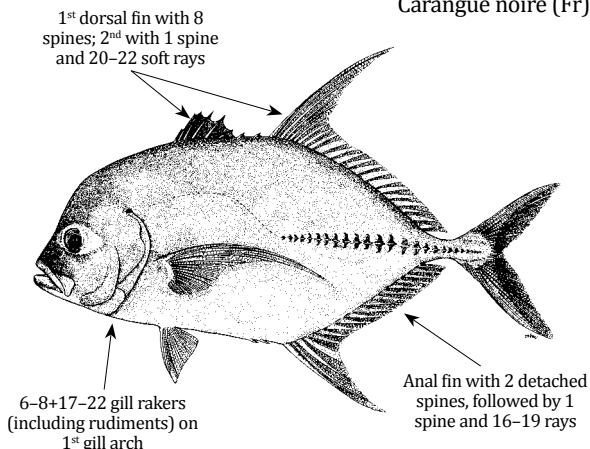
Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Kak-kawan, Gishran (Bal).

Habitat: Pelagic over sand and rock; adults occur singly and inhabit clear lagoon and seaward reefs

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Dorsal fin lobe contained 2.3–5.3 in FL in specimens larger than 15 cm FL; profile of head relatively steep and angular; adipose eyelid moderately developed, weak anteriorly, posterior eyelid extends onto eye to rear half of pupil; straight part of lateral line with 26–32 strong scutes

Colour: In life, head, body, and fins essentially uniform grey to brown, median fins and lateral line scutes usually dark brown to black; upper end of opercle frequently with a dark spot, much smaller than pupil diameter.



Size: To 100 cm, common 70 cm (TL)

Caranx melampygus* Cuvier, 1833

FAO names: Bluefin trevally (En)
Carangue aîle bleue (Fr)

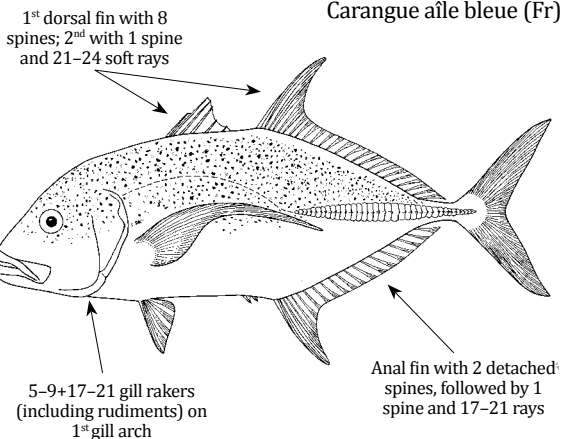
Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Kak-kawan, Gishran (Bal).

Habitat: Associated to reef habitats, lagoons and seaward reefs. Maximum depth 190 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Eyelid moderately developed, weak anteriorly, posterior eyelid, extends onto eye to rear border of pupil in large adults; straight part of lateral line with 27–42 strong scutes.

Colour: Adults with head and dorsal half of body brassy, suffused with blue, and covered with small blue-black spots; ventrally, body generally silvery white; 2nd dorsal, anal and caudal fins electric blue; pectoral fins mostly pale yellow; juveniles and young adults head and body silvery grey and fins pale to dark dusky, except for yellow pectoral fins.



Size: To 100 cm (FL)

***Caranx sexfasciatus* Quoy & Gaimard, 1825**

(Plate XVI, 127)

FAO names: Bigeye trevally (En)
Carangue vorace (Fr)

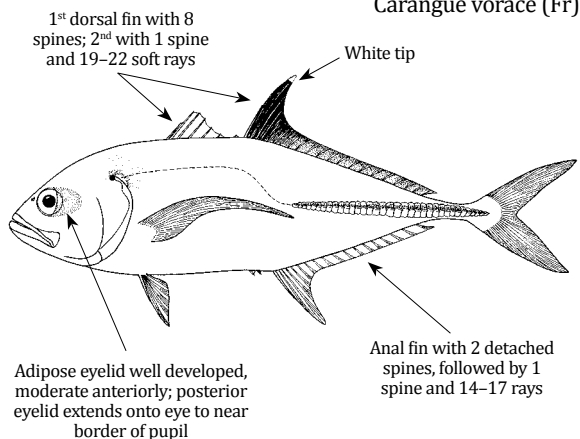
Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Kak-kawan, Gishran (Bal).

Habitat: Inhabit coastal and oceanic waters associated with reefs; often seen in large daytime schools; juveniles may be encountered in estuaries.

Fisheries: Caught mainly with gillnets.

Distinctive characters: Dorsal profile moderately convex anteriorly; 6–8+15–19 gill rakers (including rudiments) on 1st gill arch; straight part of lateral line with 27–36 strong scutes.

Colour: Adults with head and body silvery-olive to iridescent blue-green above, silvery olive whitish below; small blackish spot, much smaller than pupil diameter, at upper margin of opercle; 2nd dorsal fin olive to blackish; caudal fin yellowish to black; lateral line scutes dark to black.



Size: To 120 cm (FL)

Caranx tille* Cuvier, 1833

Local name(s): Patal, Kak-kar, Kak-kawan (Sin); Kak-kawan, Gishran (Bal).

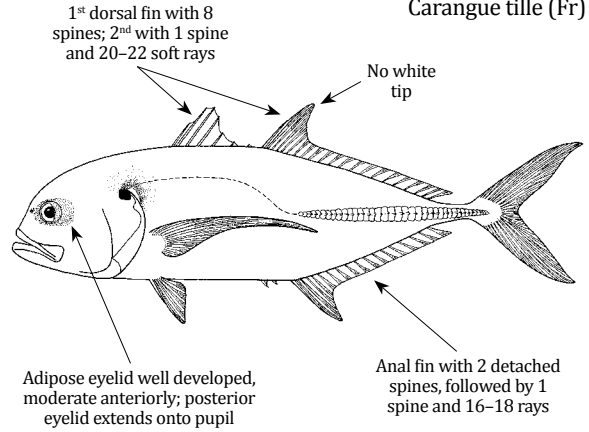
Habitat: A coastal species with a preference for inshore neritic waters, mainly around rocky and coral reefs.

Fisheries: Caught mainly with gillnets.

Distinctive characters: Dorsal profile strongly convex anteriorly; 6–8+15–17 gill rakers (including rudiments) on 1st gill arch; straight part of lateral line with 33–42 strong scutes.

Colour: Adults with head and body dark olive green to bluish grey above, shading to silvery white below; blackish spot, at least 1/2 diameter of pupil, at upper margin of opercle; 2nd dorsal fin olive-grey to blackish; anal and caudal fins yellow-olive to blackish; lateral-line scutes grey, except dark in caudal peduncle region.

FAO names: Tille trevally (En)
Carangue tille (Fr)



Size: To 120 cm (FL)

Decapterus macarellus* (Cuvier, 1833)

Local name(s): Seem, Chumma (Sin); Seem, Chumma (Bal).

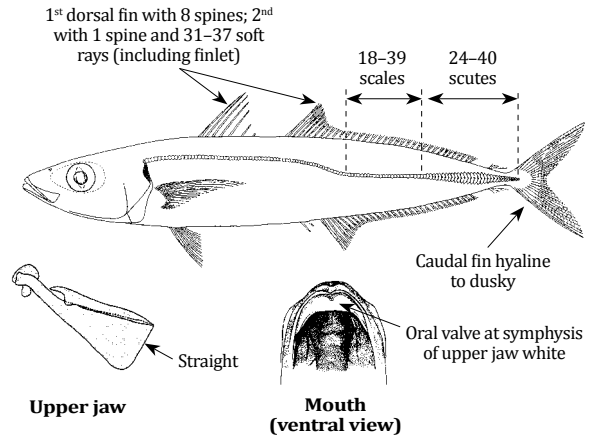
Habitat: A schooling species occurring from 40 m to 200 m.

Fisheries: Seines, gillnets, bottom trawls.

Distinctive Characters: Body elongate, nearly round in cross-section; adipose eyelid completely covering eye except for a vertical slit centred on pupil; terminal dorsal and anal soft rays each consisting of a detached finlet (above characters true of all *Decapterus*); posterior end of upper jaw noticeably slanted anteroventrally; pectoral fins short, 58–72% of head length; straight part of lateral line with 18–39 scales and 24–40 scutes.

Colour: Metallic blue above, silvery below; small black blotch on margin of opercle near upper edge; dorsal fin lobe sometimes dark distally; other fins mostly pale.

FAO names: Mackerel scad (En)
Comète maquereau (Fr)



Size: To 30 cm (FL)

***Decapterus macrosoma* Bleeker, 1851**

Local name(s): Seem, Chumma (Sin); Seem, Chumma (Bal).

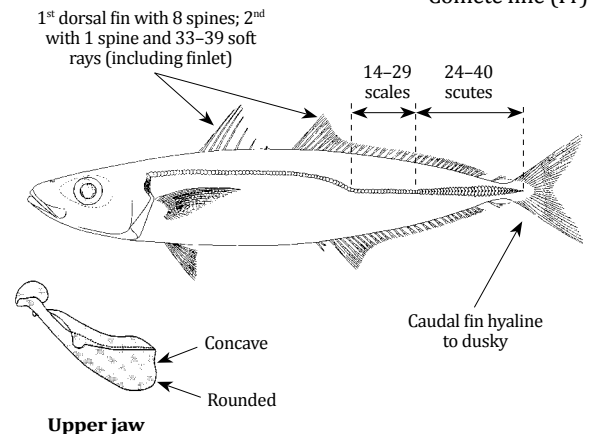
Habitat: A schooling species occurring from 30 m to 170 m.

Fisheries: Purse seines, gillnets.

Distinctive Characters: Posterior end of upper jaw concave above, rounded and produced below; pectoral fins short, 61–75% of head length, tip of appressed fins falling considerably short of a vertical line from 2nd dorsal fin origin; straight part of lateral line with 14–29 scales and 24–40 scutes; oral valve (membrane) at symphysis of upper jaw dusky or transparent.

Colour: Metallic blue above, silvery below; small black blotch on margin of opercle near upper edge; dorsal fin lobe sometimes dark distally; other fins mostly pale.

FAO names: Shortfin scad (En)
Comète fine (Fr)



Size: To 30 cm (FL)

Decapterus muroadsi (Temminck & Schlegel, 1844)

FAO names: Amberstripe scad (En)

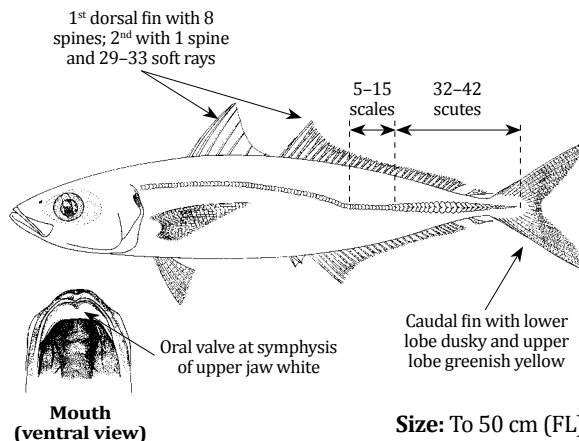
Local name(s): Seem, Chumma (Sin); Seem, Chumma (Bal).

Habitat: A schooling species occurring from 30 m to 170 m.

Fisheries: Seines, gillnets, bottom trawls.

Distinctive Characters: Posterior end of upper jaw straight above, not noticeably slanted anteroventrally; pectoral fins short, 71–93% of head length, tip of appressed fins falling usually short of a vertical line from 2nd dorsal fin origin; straight part of lateral line with 5–15 scales and 32–42 scutes.

Colour: Bluish green above, silvery below; small black blotch on margin of opercle near upper edge; amber stripe often present on sides; dorsal fin lobe usually dark distally; other fins mostly pale.

***Decapterus russelli*** (Rüppell, 1830)

(Plate XVI, 128)

FAO names: Indian scad (En)

Comète indienne (Fr)

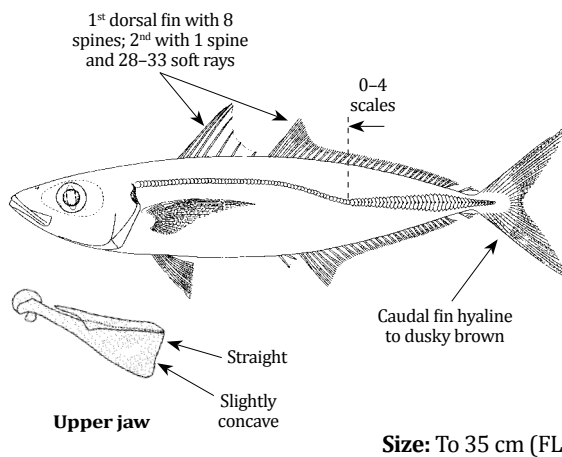
Local name(s): Seem, Chumma (Sin); Seem, Chumma (Bal).

Habitat: Coastal waters and on open banks in deeper waters down to 100 m.

Fisheries: Seines, gillnets, bottom trawls.

Distinctive Characters: Posterior end of upper jaw straight above, slightly concave and not noticeably slanted anteroventrally; pectoral fins short, 76.5–97% of head length, tip of appressed fins falling short of to slightly beyond a vertical line from 2nd dorsal fin origin; 10–14+30–39 gill rakers on 1st gill arch; straight part of lateral line with 0–4 scales and 30–40 relatively large scutes.

Colour: Bluish green above, silvery below; small black blotch or margin of opercle near upper edge; 2nd dorsal fin hyaline basally; other fins mostly hyaline (pelvic fins of adult males slightly dark).

***Decapterus cf. smithvanizi*** Kimura, Katahira & Kuriwa, 2013

FAO names: Slender red scad (En)

Local name(s): Seem, Chumma (Sin); Seem, Chumma (Bal).

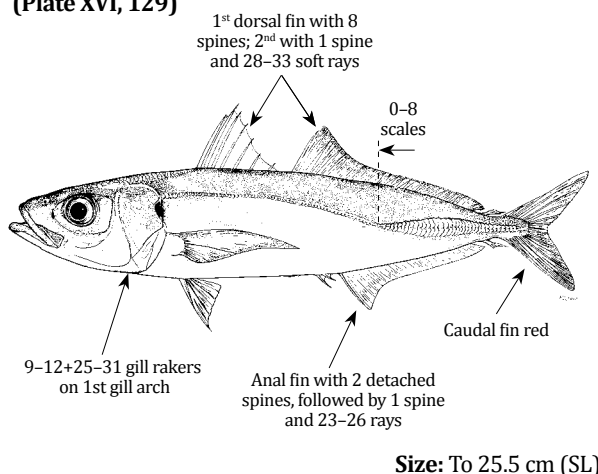
Habitat: A deep water schooling species.

Fisheries: Seines, gillnets, bottom trawls.

Distinctive Characters: Posterior margin of upper jaw straight or slightly concave; body depth 19.4–22.5% of SL; pectoral fins long, 25.7–30.6% of SL, tip of appressed fins usually extending beyond a vertical line through 2nd dorsal fin origin; opercular membrane without serrations; tip of upper jaw not hooked; curved part of lateral line with 54–62 cycloid scales; straight part of lateral line with 0–8 scales and 28–33 relatively large scutes.

Colour: Bluish pale black above, silvery white below; small black blotch or margin of opercle near upper edge; margins of both dorsal and pectoral fins, and dorsal finlet red; anal, pelvic fins, and ventral finlet pale white.

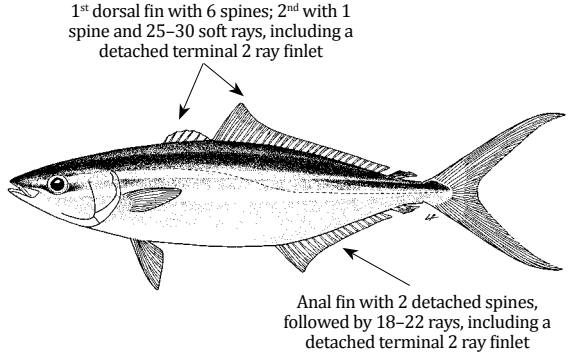
(Plate XVI, 129)



***Elagatis bipinnulata* (Quoy & Gaimard, 1825)**

(Plate XVI, 130) **FAO names:** Rainbow runner (En)
Comète saumon (Fr)

Local name(s): Sai, Gaidro, Safi (Sin); San-po (Bal).
Habitat: A pelagic species usually found at or near the surface, sometimes far offshore.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Upper jaw ending distinctly before eye; pectoral fins short, about 2 times in head length and about as long as pelvic fins; caudal fin deeply forked; lateral line with a slight anterior arch; no scutes; caudal peduncle grooves present.
Colour: Dark olive-blue or green above and white below; 2 narrow light blue or bluish white stripes along sides, with a broader olive or 1 yellowish stripe between them; fins dark white on olive-yellow tinge.

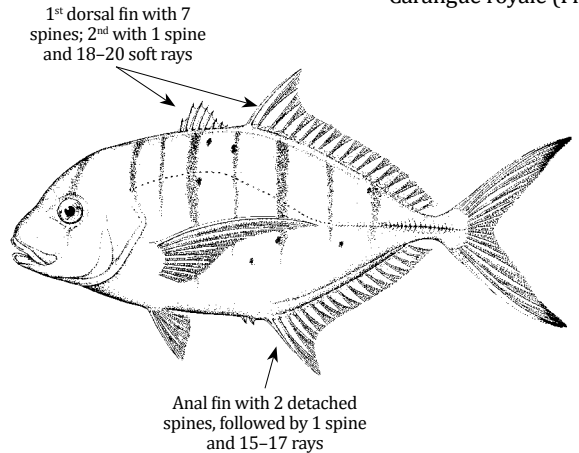


Size: To 150 cm, common 80 cm (FL)

***Gnathanodon speciosus* (Forsskål, 1775)**

FAO names: Golden trevally (En)
Carangue royale (Fr)

Local name(s): Gaddy, Kak-kawan (Sin); Gishran (Bal).
Habitat: Inshore, including rocky reefs, deep lagoons and seaward reefs.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Lip noticeably papillose and upper jaw strongly protractile; lobe of 2nd dorsal fin shorter.
Colour: Juveniles and young adults silvery to yellow with 7–11 black bands, usually alternating broad and narrow, the 1st band oblique through eye; upper margin of opercle black; all fins yellow; tips of caudal fin lobes black; bands fade in large adults and are replaced by a few patches or spots on sides; dark opercular spot also fades with age and body becomes yellow-green dorsally, pale yellow below.



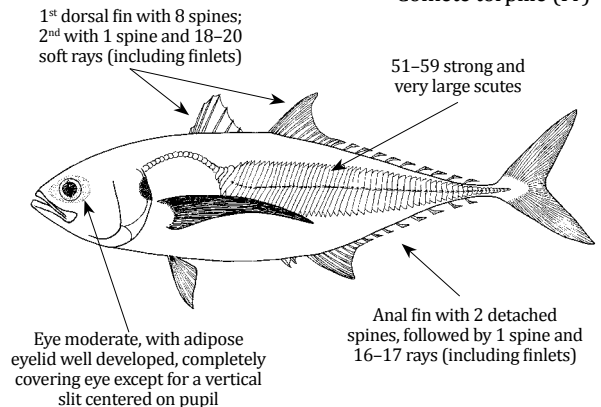
Size: To 120 cm (FL)

***Megalaspis cordyla* (Linnaeus, 1758)**

(Plate XVI, 131)

FAO names: Torpedo scad (En)
Comète torpille (Fr)

Local name(s): Binday-wal (Sin); Dar-dumb (Bal).
Habitat: A pelagic coastal schooling species, usually near the surface; intolerant of turbid waters.
Fisheries: Gillnets, seines, bottom trawls.
Distinctive Characters: Caudal peduncle strongly compressed with a marked medial keel; posterior part of dorsal and anal fins with 8–10 rays consisting of detached finlets; spiny dorsal fin moderately high, longest spine height about equal to length of soft dorsal fin lobe.
Colour: Head and body bluish grey to green dorsally, sides and belly silvery; large black opercular spot; dorsal and anal fins with upper half dusky; caudal fin dark, especially leading and trailing edges of fins.



Size: To 80 cm, common 40 cm (FL)

Naucrates ductor (Linnaeus, 1758)

FAO names: Pilotfish (En)
Poisson pilote (Fr)

Local name(s): Naram kak-kawan (Sin); Zarkaowk, Zarkao (Bal).

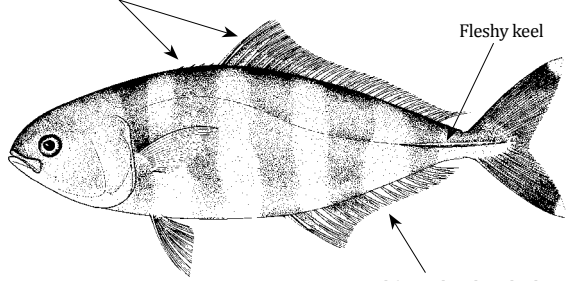
Habitat: Pelagic in oceanic waters, often associated with sharks, rays, other large fishes and turtles.

Fisheries: Pelagic trawls.

Distinctive Characters: No scutes on caudal peduncle; a well developed lateral line; fleshy keel on each side of dorsal and ventral peduncle grooves.

Colour: Head dark; 5–6 dark broad bars on body and a similar bar at end of caudal peduncle; 3–6 bars extending through soft dorsal and anal fin membranes, and the bars persistent at all sizes; rest of body bluish, or light or dusky; white tips prominent on upper and lower caudal fin lobes and smaller white tips on 2nd dorsal and anal fin lobes; most fins dusky to dark.

1st dorsal fin with 4–5 short spines; 2nd with 1 spine and 25–29 soft rays



Fleshy keel

Anal fin with 2 detached spines, followed by 1 spine and 15–17 rays

Size: To 70 cm, common 38 cm (FL)

Parastromateus niger (Bloch, 1795)

(Plate XVI, 132)

FAO names: Black pomfret (En)
Castagnoline noire (Fr)

Local name(s): Kala paplait, Karo-pitho (Sin); Siah-e-tighlum, Siah pithoo, Siah pushat (Bal).

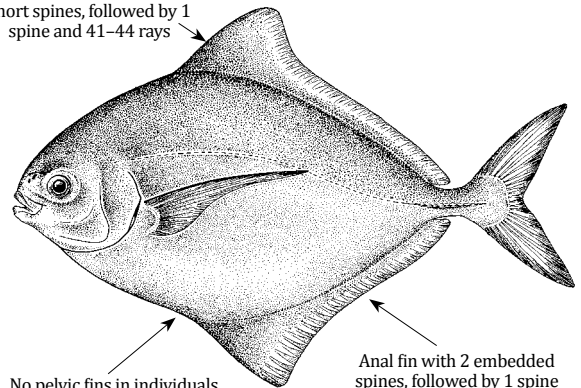
Habitat: Pelagic on the continental shelf from 15 m to 40 m, generally over muddy bottoms.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Mouth terminal; pectoral fins long and falcate; lateral line very weakly arched anteriorly with junction of straight and curved parts below posterior 1/3 of dorsal fin; straight part of lateral line with 8–19 weak scutes, forming a slight keel on caudal peduncle.

Colour: Adults uniformly silvery grey to bluish brown (yellowish brown when deciduous scales are missing); fins with dark edges; young with dark vertical bars and long black jugular pelvic fins.

Dorsal fin with 4–5 embedded short spines, followed by 1 spine and 41–44 rays



No pelvic fins in individuals larger than 10 cm

Anal fin with 2 embedded spines, followed by 1 spine and 35–39 rays

Size: To 75 cm, common 30 cm (FL)

Scomberoides commersonnianus Lacepède, 1801

(Plate XVI, 133) **FAO names:** Talang queenfish (En)
Sauteur talang (Fr)

Local name(s): Aal, Saram (Sin); Saram, Saram gazdani, Saram aanam (Bal).

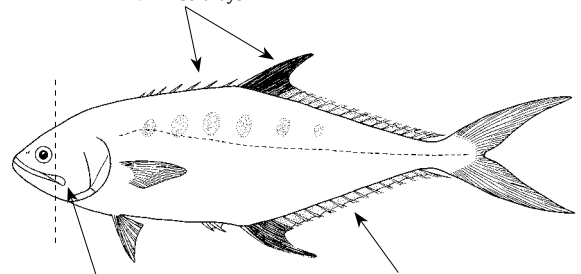
Habitat: Reefs and offshore islands, usually in small groups.

Fisheries: Gillnets, line gears.

Distinctive Characters: Body strongly compressed; no scutes; no caudal peduncle grooves; 8–15 (excluding rudiments) gill rakers on 1st gill arch.

Colour: Head and body dusky green to bluish dorsally, grey to silvery below; large individuals often golden especially ventrally; sides of adults with 5–8 large, plumbeous blotches above or touching lateral line, 1st two may intersect lateral line; dorsal and anal fins dusky to dark.

1st dorsal fin with 6–7 depressible short spines; 2nd with 1 spine and 19–21 soft rays



Upper jaw extending well beyond eye

Anal fin with 2 detached spines, followed by 16–19 rays

Size: To 120 cm (FL)

Scomberoides lysan (Forsskål, 1775)

Local name(s): Aal, Sain-yon, Saram (Sin); Saram, Sarum aalari (Bal).

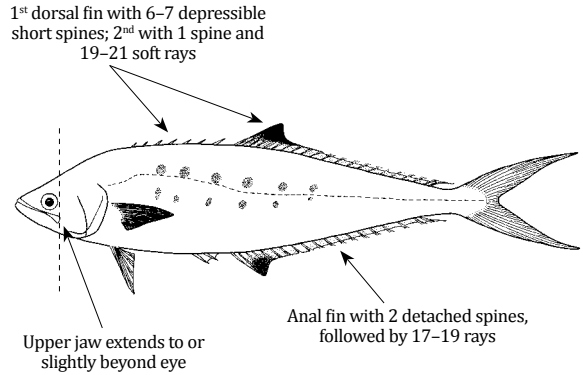
Habitat: Shallow lagoons to offshore areas, from 2 m to 100 m.

Fisheries: Gillnets, line gears.

Distinctive Characters: Body strongly compressed; no scutes; no caudal peduncle grooves; 21–27 (excluding rudiments) gill rakers on 1st gill arch; scales on midbody below lateral line partially embedded and sharply lanceolate.

Colour: Adults with a double series of 6–8 dusky roundish blotches above and below lateral line; distal half of dorsal fin lobe heavily pigmented; anal fin lobe white or pale yellow; often interradiol membrane of several anterior rays, black, especially in large individuals.

FAO names: Doublespotted queenfish (En)
Sauteurre sabre (Fr)



Size: To 110 cm (FL)

Scomberoides tala (Cuvier, 1832)

(Plate XVII, 134)

FAO names: Barred queenfish (En)
Sauteurre carsia (Fr)

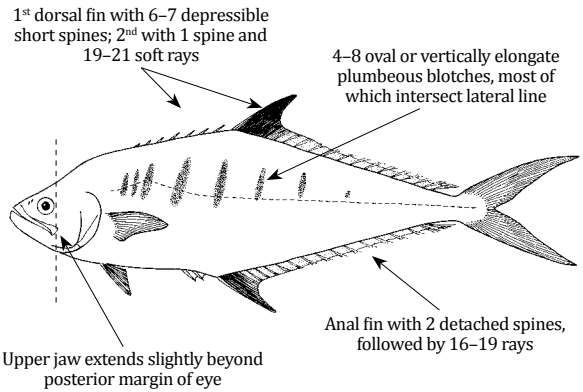
Local name(s): Aal, Say-hi aal, Sain-yon, Saram (Sin); Saram, Saram kainchan (Bal).

Habitat: Usually in small schools near the surface in coastal waters.

Fisheries: Gillnets, line gears.

Distinctive Characters: Body strongly compressed; upper jaw extends slightly beyond margin of eye in adults; no scutes; no caudal peduncle grooves; 11–15 (excluding rudiments) gill rakers on 1st gill arch; scales on midbody below lateral line partially embedded and bluntly lanceolate.

Colour: Greenish grey dorsally, grey to silvery below; dorsal and anal fins dusky to dark and uniformly pigmented; pectoral fins yellow and pelvic fins white in adults.



Size: To 60 cm (FL)

Scomberoides tol (Cuvier, 1832)

(Plate XVII, 135)

FAO names: Needlescaled queenfish (En)
Sauteurre leurre (Fr)

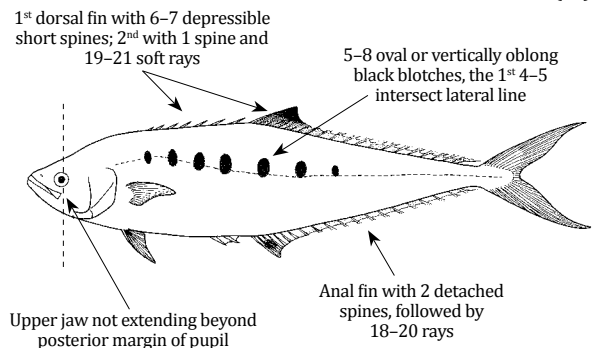
Local name(s): Aal, Say-hi aal, Sain-yon, Saram (Sin); Saram, Saram kainchan (Bal).

Habitat: Usually in small schools near the surface in coastal waters.

Fisheries: Gillnets, line gears.

Distinctive Characters: Body strongly compressed; upper jaw not extending beyond posterior margin of pupil in adults; no scutes; no caudal peduncle grooves; 21–26 (excluding rudiments) total gill rakers on 1st gill arch; scales on midbody below lateral line partially embedded slender and needle-like.

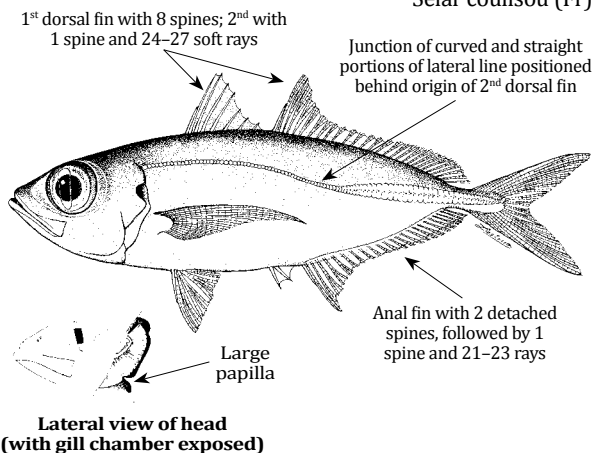
Colour: Body bluish dorsally, white ventrally; blotches faint or absent in juveniles; distal half dorsal fin lobe abruptly and heavily pigmented; anal fin lobe usually immaculate, white in life.



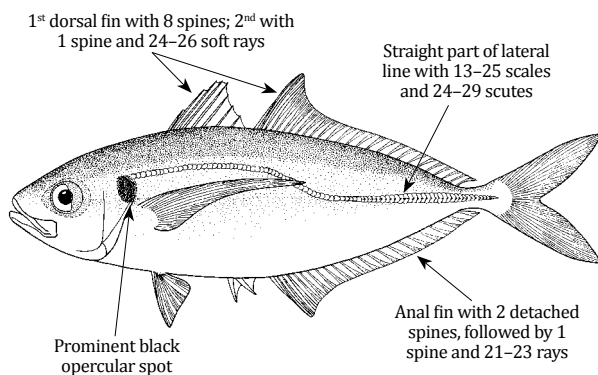
Size: To 60 cm (FL)

Selar crumenophthalmus (Bloch, 1793)

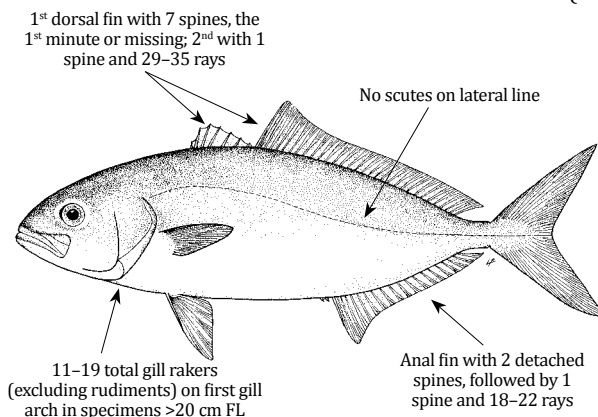
(Plate XVII, 136)

FAO names: Bigeye scad (En)
Sélar coulisou (Fr)**Local name(s):** Seem, Chumma (Sin); Seem, Chumma (Bal).**Habitat:** Inshore or shallow waters, but sometimes in deeper waters down to 170 m.**Fisheries:** Gillnets, seines, bottom trawls.**Distinctive Characters:** Adipose eyelid completely covering eye except for a vertical slit centered on pupil; scutes maximum height contained 2.1–2.9 in eye diameter; curved part of lateral line with 48–56 scales; no finlets.**Colour:** Body and top of head metallic blue or bluish green; lower 2/3 of body and head silvery or whitish; small, elongated blackish opercular spot on edge near upper margin; a narrow yellowish stripe may be present from edge of opercle to upper part of caudal peduncle.**Size:** To 30 cm, common 25 cm (FL)***Selaroides leptolepis*** (Cuvier, 1833)

(Plate XVII, 137)

FAO names: Yellowstripe scad (En)
Sélar à bande dorée (Fr)**Local name(s):** Seem, Bakko, Safi (Sin); Bakoi, Tailagi seem (Bal).**Habitat:** Adults form large demersal schools over soft bottom habitats at depths shallower than 50 m.**Fisheries:** Gillnets, seines, bottom trawls.**Distinctive Characters:** Adipose eyelid moderately developed on posterior half of eye; upper jaw strongly protractile with posterior end of jaw concave above, concave and produced below; edge of gill chamber smooth, without papillae; no finlets.**Colour:** Metallic blue above, silvery white below, with a broad yellow stripe from upper margin of eye to caudal peduncle; dorsal, anal, and caudal fins pale to dusky yellow; pelvic fins white.**Size:** To 22 cm, common 15 cm (FL)***Seriola dumerili*** (Risso, 1810)

(Plate XVII, 138)

FAO names: Greater amberjack (En)
Sérieole couronnée (Fr)**Local name(s):** Zarkao, Safi (Sin); Zarkao, Zarkaok (Bal).**Habitat:** Adults found in deep seaward reefs; occasionally entering coastal bays; smaller fish may be taken in shallow water.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** In adults, length of dorsal fin lobe about equal to, or slightly longer than pectoral fins; upper jaw very broad posteriorly (with very broad supramaxilla), and extending to below posterior margin of pupil; no scutes; caudal peduncle grooves present.**Colour:** Bluish grey or olivaceous above, sides and belly silvery white, sometimes brownish or with a pinkish tinge; usually a darker nuchal bar through eye to dorsal fin origin; often an amber stripe from eye along middle of body; juveniles with a dark nuchal bar and 6 dark body bars.**Size:** To 188 cm, common 100 cm (FL)

Seriola rivoliana Valenciennes, 1833

(Plate XVII, 139)

FAO names: Longfin yellowtail (En)
Sérieole limon (Fr)

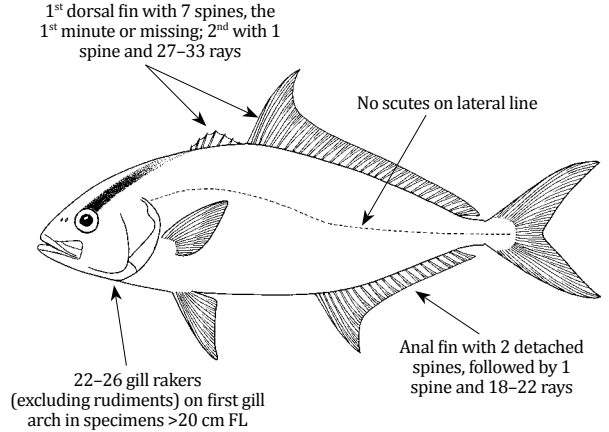
Local name(s): Zarkao, Safi (Sin); Zarkao, Zarkaok (Bal).

Habitat: Adults are pelagic and epipelagic, oceanic, rarely found in inshore waters.

Fisheries: Gillnets, line gears.

Distinctive Characters: In adults, length of dorsal fin lobe about 1.3–1.6 times longer than pectoral fins; upper jaw very broad posteriorly (with very broad supramaxilla), extending to below posterior midpoint of pupil no scutes; caudal peduncle grooves present.

Colour: Silvery blue-green to silvery olive dorsally, shading to silvery ventrally; a midlateral yellowish stripe usually present on body; an oblique, dark yellowish brown band from nape through eye to edge of upper lip; fins yellowish grey; juveniles with a dark nuchal bar and 6 dark body bars.



Size: To 160 cm, common 90 cm (FL)

Seriolina nigrofasciata (Rüppell, 1829)

(Plate XVII, 140)

FAO names: Blackbanded trevally (En)
Sérieole amourez (Fr)

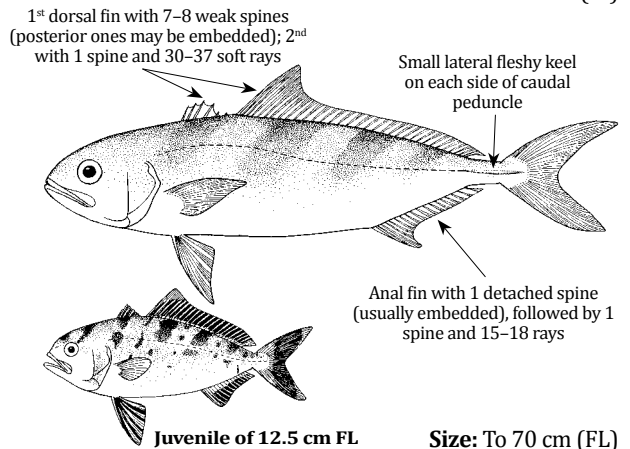
Local name(s): Kak-kar, Kak-kawan (Sin); Zarkawak, Zarkao (Bal).

Habitat: Solitary, mainly in offshore reefs on the continental shelf from 20 m to 150 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Upper jaw broadly rounded posteriorly (with moderately slender supramaxilla), usually extending to below posterior margin of eye; no scutes; caudal peduncle grooves present.

Colour: Head and body bluish grey to black dorsally, white to dusky below; young with 5–7 dark oblique bands and blotches on upper body that fade with age; spiny dorsal fin black; caudal and pelvic fins yellowish brown to black.



Size: To 70 cm (FL)

Trachinotus africanus Smith, 1967

(Plate XVII, 141)

FAO names: African pompano (En)
Pompaneau africain (Fr)

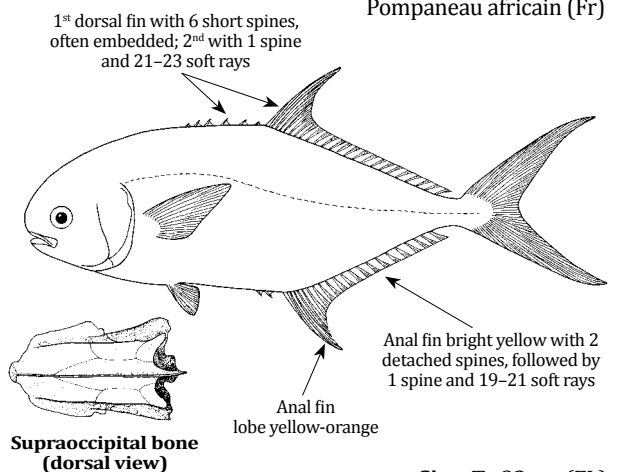
Local name(s): Sonaf (Sin); Sonam, Sonab (Bal).

Habitat: Adults inhabit coastal areas with reefs or rocky outcrops; juveniles in sheltered bays.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Profile of snout broadly rounded; tongue with a narrow patch of teeth, persisting to about 50 cm FL; supraoccipital bone of skull thin and blade-like in adults; no scutes or caudal peduncle grooves (true of all *Trachinotus* species).

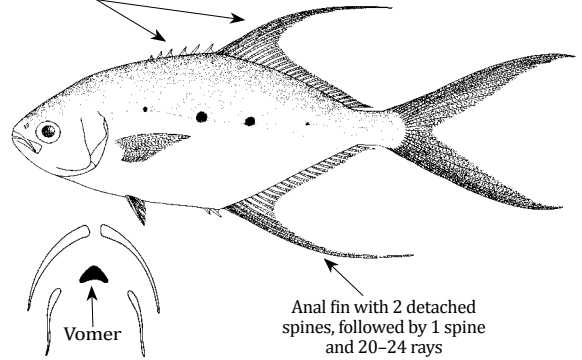
Colour: Adults bluish dorsally, ventral half of body silvery, the 2 areas separated by an indistinct orange-pink stripe; 2nd dorsal fin base and fin lobe dusky, distal half of fin yellow; caudal fin, pectoral, and pelvic fins yellowish; juveniles silvery with yellow hues, dorsal and anal fin lobes dusky.



Size: To 83 cm (FL)

Trachinotus baillonii (Lacepède, 1801)

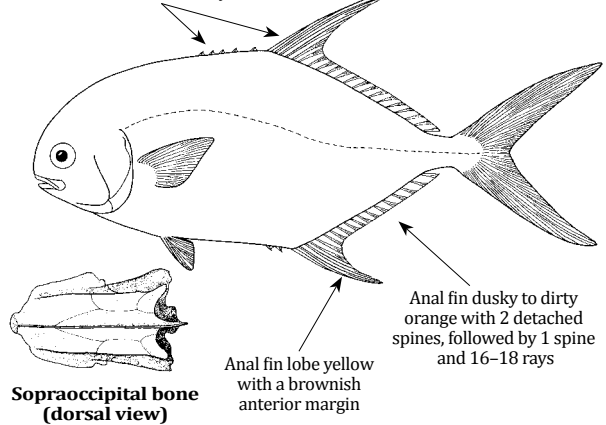
(Plate XVII, 142)

FAO names: Smallspotted dart (En)
Pompaneau muscadin (Fr)**Local name(s):** Sonaf (Sin); Sonab, Sonam, Kainchan (Bal).**Habitat:** Surge zone along sandy beaches and near surface waters of clear lagoon and seaward reefs.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Dorsal fin lobe shorter than anal fin lobe in specimens larger than about 25 cm FL; pelvic fins relatively short;**Colour:** Sides with 1–5 small black spots (absent on fish smaller than about 10–15 cm FL); all spots typically equal to or smaller than eye diameter and with half of spot below lateral line; caudal, 2nd dorsal and anal fins grey to black, lobes usually darker; pectoral fins pale to dusky yellow; pelvic fins pale yellow to orange-yellow.1st dorsal fin with 6 short spines; 2nd with 1 spine and 20–24 soft rays

Tooth patches on roof of mouth and upper jaw

Anal fin with 2 detached spines, followed by 1 spine and 20–24 rays

Size: To 60 cm (FL)

Trachinotus blochii (Lacepède, 1801)FAO names: Snubnose pompano (En)
Pompaneau lune (Fr)**Local name(s):** Sonaf (Sin); Sonam, Sonab (Bal).**Habitat:** Juveniles in sandy inshore and estuarine areas; large adults off seaward reefs.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Profile of snout broadly rounded; tongue toothless (except 2–3 slender teeth rarely on small specimens); supraoccipital bone of skull thin and blade-like in adults (easily observed by simple dissection along midline of nape).**Colour:** Head and body generally blue-grey above, paler below; large adults sometimes with most of body golden-orange, especially snout and lower half of body; 2nd dorsal fin dark, lobe of fin dusky orange; caudal fin dark to dirty orange, leading edges darkest; juveniles silvery with pale fins except lobes of median fins and anterior half of pelvic fins brownish to dirty orange.1st dorsal fin with 6 short spines, often embedded; 2nd with 1 spine and 18–20 soft rays

Supraoccipital bone (dorsal view)

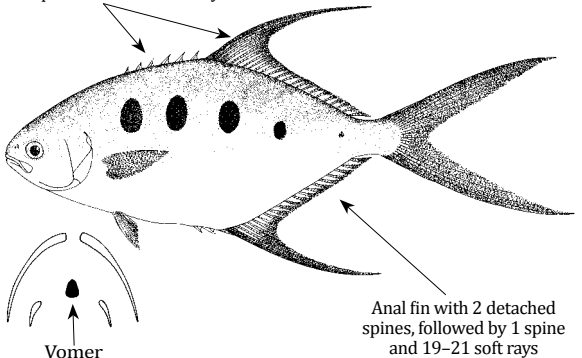
Anal fin lobe yellow with a brownish anterior margin

Anal fin dusky to dirty orange with 2 detached spines, followed by 1 spine and 16–18 rays

Size: To 70 cm (FL)

Trachinotus botla (Shaw, 1803)

(Plate XVIII, 143)

FAO names: Largespotted dart (En)
Pompaneau pierrot (Fr)**Local name(s):** Sonaf (Sin); Sonam, Sonab (Bal).**Habitat:** Inhabits coastal waters.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Dorsal fin lobe usually longer than anal fin lobe in specimens larger than about 25 cm FL; pelvic fins relatively long, their length contained 1.5–1.7 in pectoral fin length in specimens larger than about 25 cm FL.**Colour:** Sides with 1–5 large plumbeous spots (absent on fish smaller than about 10–13 cm FL) on a longitudinal row near lateral line; 2nd dorsal and anal fins black to blue-black, the lobes usually darker; caudal fin dusky with leading edges and most of lobes blue-black; pectoral fins pale; upper 2/3 of body sometimes dark.1st dorsal fin with 6 short spines; 2nd with 1 spine and 22–24 soft rays

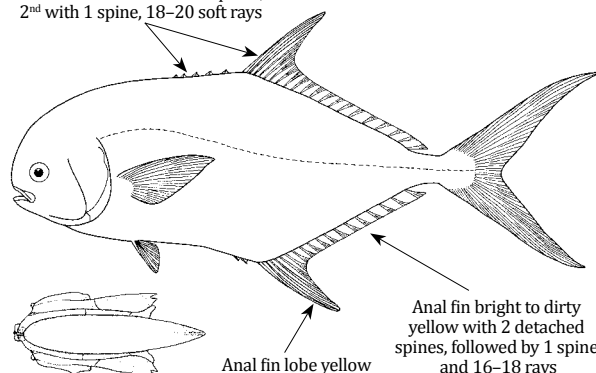
Tooth patches on roof of mouth and upper jaw

Anal fin with 2 detached spines, followed by 1 spine and 19–21 soft rays

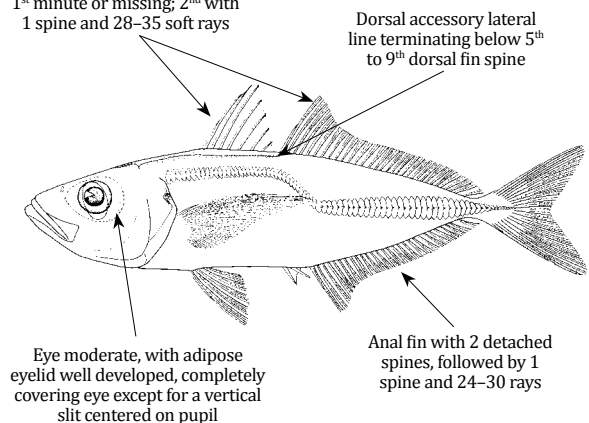
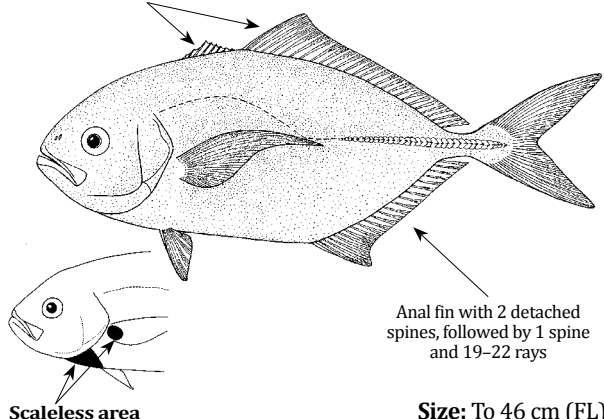
Size: To 75 cm (FL)

***Trachinotus mookalee* Cuvier, 1832**

(Plate XVIII, 144)

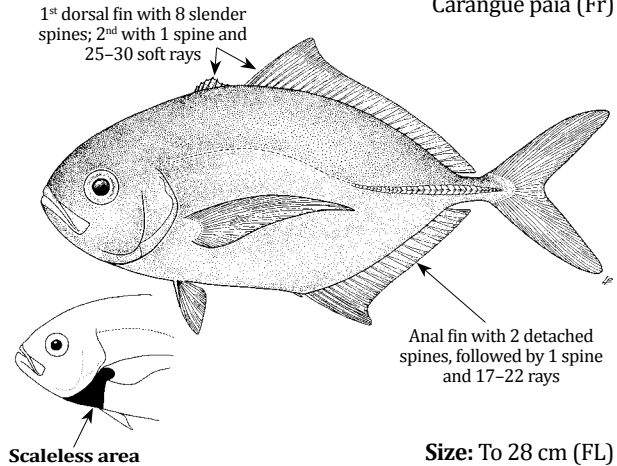
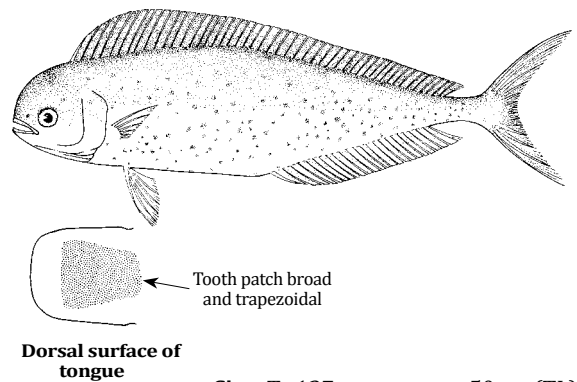
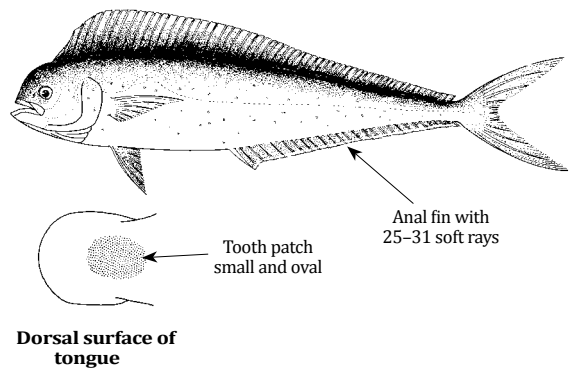
FAO names: Indian pompano (En)
Pompaneau indien (Fr)**Local name(s):** Sonaf (Sin); Sonam, Sonab (Bal).**Habitat:** Adults inhabit shallow coastal waters.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Profile of snout broadly rounded, in adults becoming nearly straight to interorbital region; tongue with a narrow band of teeth, persisting to about 50 cm FL; supraoccipital bone broad and sausage-shaped in adults >30 cm FL.**Colour:** Head and body silvery, greenish to bluish grey dorsally, paler below, large adults sometimes with body mostly bronze or greenish golden; 2nd dorsal and caudal fins dusky yellow, leading edges and fin tips darkest; pelvic fins pale yellow to white; pectoral fins dark; juveniles silvery with pale yellow fins, except distal half of dorsal fin lobe black.1st dorsal fin with 6 short spines;
2nd with 1 spine, 18–20 soft raysSupraoccipital bone
(dorsal view)Anal fin lobe yellow
without a brownish
anterior marginAnal fin bright to dirty
yellow with 2 detached
spines, followed by 1 spine
and 16–18 rays**Size:** To 77 cm (FL)***Trachurus indicus* Nekrasov, 1966**

(Plate XVIII, 145)

FAO names: Arabian scad (En)
Chinchard d'Arabie (Fr)**Local name(s):** Chumma seem (Sin); Tailagi seem (Bal).**Habitat:** Demersal from 20 m to 100 m.**Fisheries:** Gillnets, seines.**Distinctive Characters:** Scales in curved as well as straight part of lateral line enlarged and scute-like; maximum height of scales in curved part 2.4–4.2% of FL; maximum height of scutes in straight part 3.3–5.4% of FL; total scales and scutes in lateral line (excluding caudal scales), 71–79.**Colour:** No distinct markings except for a black opercular spot on edge near upper margin; body and head dorsally dusky to nearly black or grey to bluish green; lower 2/3 of body and head usually paler whitish to silvery.1st dorsal fin with 8 spines, the
1st minute or missing; 2nd with
1 spine and 28–35 soft raysDorsal accessory lateral
line terminating below 5th
to 9th dorsal fin spineAnal fin with 2 detached
spines, followed by 1
spine and 24–30 rays**Size:** To 35 cm, common 20 cm (FL)***Uraspis helvola* (Forster, 1801)***FAO names: Whitetongue jack (En)
Carangue langue blanche (Fr)**Local name(s):** Kakkar (Sin); Patar (Bal).**Habitat:** A benthic-pelagic species inhabiting shelf waters along continental coasts and around islands.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Tongue, roof and floor of mouth white or cream-coloured, the rest blue-black; curved part of lateral line with 48–66 scales.**Colour:** Body and head dark (leaden blue-black or dusky) in fish of 30 cm and larger (FL); juveniles with 6–7 very wide dark bars with narrow pale interspaces; traces of nuchal and opercular bands persisting to about 30 cm (FL); caudal fin pale yellowish dusky with trailing edges and tips of lobes blackish1st dorsal fin with 8 slender
spines; 2nd with 1 spine and
25–30 soft raysAnal fin with 2 detached
spines, followed by 1 spine
and 19–22 rays

Scaleless area

Size: To 46 cm (FL)

Uraspis uraspis* (Günther, 1860)*(Plate XVIII, 146)****FAO names:** Whitemouth jack; (En)
Carangue paia (Fr)**Local name(s):** Patal (Sin); Patar (Bal).**Habitat:** Adults occur in the continental shelf; forms schools in depths from 50 to at least 130 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Tongue, roof and floor of mouth white or cream-coloured, the rest blue-black; curved part of lateral line with 61–82 scales.**Colour:** Body and head dusky to black dorsally, shading to dusky or pale grey ventrally; juveniles and occasionally adults with 6 dusky or blue-black bars (bars evident on specimens as large as 22.5 cm fork length and absent on specimens as small as 12 cm) caudal fin pale to dusky with trailing edges dusky.**Size:** To 28 cm (FL)**CORYPHAENIDAE****Dolphinfishes*****Coryphaena equiselis* Linnaeus, 1758****FAO names:** Pompano dolphinfish (En)**Local name(s):** Aab-rose, Malhar (Sin); Amrusk, Amlooshk (Bal).**Habitat:** Pelagic, inhabiting open waters but also approaching the coast.**Fisheries:** Line gears, driftnets.**Distinctive Characters:** A single dorsal fin extending from just behind eye almost to caudal fin, with 52–59 soft rays; pectoral fins about 1/2 of head length; caudal fin deeply forked.**Colour:** Back brilliant metallic blue-green in life, fading rapidly after death to green tinge; sides silvery with a golden sheen and numerous black spots; dorsal fin dark; juveniles have entire margin of caudal fin white; pelvic fins not pigmented.**Size:** To 127 cm, common 50 cm (TL)***Coryphaena hippurus* Linnaeus, 1758****FAO names:** Common dolphinfish (En)
Coryphène commune (Fr)**Local name(s):** Aab-rose, Malhar (Sin); Amrusk, Amlooshk (Bal).**Habitat:** Pelagic, inhabiting open waters but also approaching the coast.**Fisheries:** Line gears, driftnets.**Distinctive Characters:** A single dorsal fin extending from above eye almost to caudal fin with 58–66 rays; pectoral fins more than 1/2 of head length; caudal fin deeply forked.**Colour:** Back brilliant metallic blue-green in life, fading after death to grey with a green tinge; sides silvery with a golden sheen and rows of dark spots or golden blotches; dorsal and anal fins black, the latter with a white edge.**Size:** To 210 cm, common 100 cm (TL)

MENIDAE

Moonfishes

Mene maculata (Bloch & Schneider, 1801)

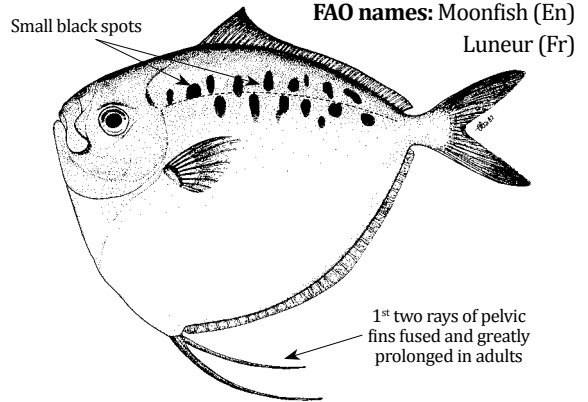
Local name(s): Kandairi, Chandni (Sin); Mith (Bal).

Habitat: Deeper coastal waters, around coral reefs, sometimes in estuaries.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Upper jaw protrusible; dorsal fin long and low; anal fin very long and low, with very short rays and overgrown with skin in adults, so that only their widely branched tips are visible; pectoral fins shorter than head, with 15 soft rays; caudal fin forked.

Colour: Dark blue dorsally and silvery white below.



Size: To 30 cm, common 20 cm (TL)

LEIOGNATHIDAE

Ponyfishes – Slipmouths – Tooth-ponies

Aurigequula fasciata (Lacepède, 1803)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

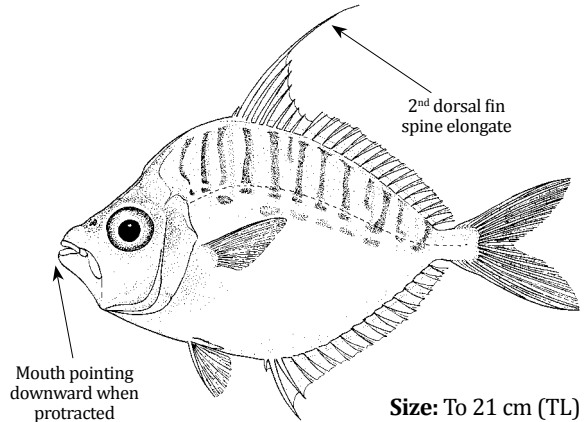
Habitat: Coastal shallow waters near bottom down to 40 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body deep and compressed, the back more strongly arched than anterior part of belly; body depth 1.7–2 in SL; head and breast scaleless; teeth small and weak; 2nd dorsal spine very long and filamentous.

Colour: Body silvery; about 11 widely spaced, dark vertical lines on back superimposed by a few yellow blotches and fading gradually towards lower sides; axil of pectoral fins yellow.

FAO names: Striped ponyfish (En)



Size: To 21 cm (TL)

Aurigequula longispina (Valenciennes, 1835)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

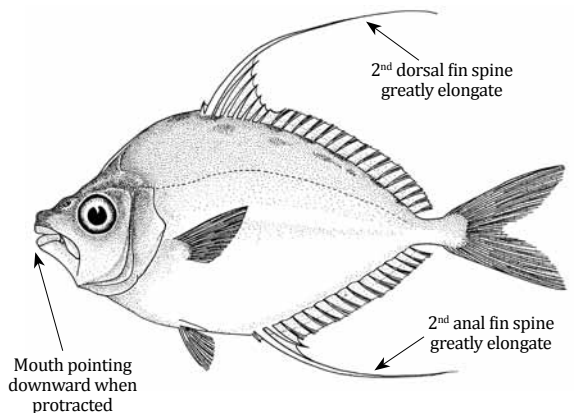
Habitat: Coastal shallow waters near bottom down to 40 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body oval, compressed and deep, its depth 1.7–2 in SL; head and breast scaleless; teeth small and weak; 2nd dorsal and anal fin spines very long and filamentous.

Colour: Belly more silvery than back which shows a few faint, unevenly spaced and horizontally elongate blotches, a few blotches below lateral line; tip of snout grey; dorsal and anal fins with yellow colouring, particularly on margins; caudal fin faint yellow with a more intense yellow blotch on lower lobe.

FAO names: Longspine ponyfish (En)



Size: To 16 cm, common 13 cm (TL)

Equulites leuciscus (Günther, 1860)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

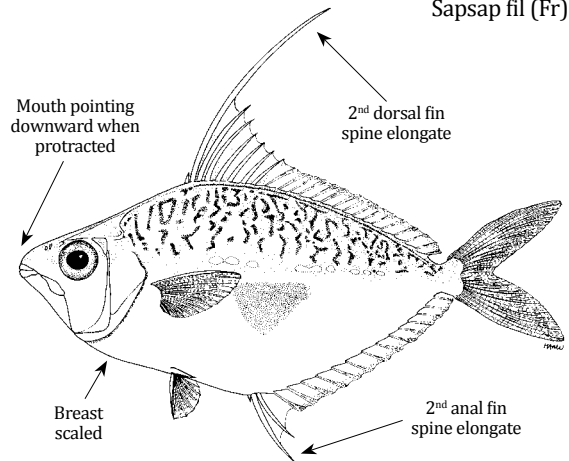
Habitat: Coastal shallow waters near bottom down to 40 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body only moderately deep, compressed, its depth 2–3 in SL; head scaleless; breast scaled; teeth small and weak; 2nd dorsal fin spine (sometimes also 2nd anal fin spine) very long and filamentous.

Colour: Belly silvery, back with irregular, partly semi-circular, greyish green vermiculations; membrane between dorsal fin spines yellow and mid-height edge of soft part of dorsal fin also yellow, superimposed with light grey; anal fin of similar colour to dorsal; posterior margin of caudal fin yellowish.

FAO names: Whipfin ponyfish (En)
Sapsap fil (Fr)



Size: To 25 cm, common 10 cm (TL)

Equulites oblongus (Valenciennes, 1835)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

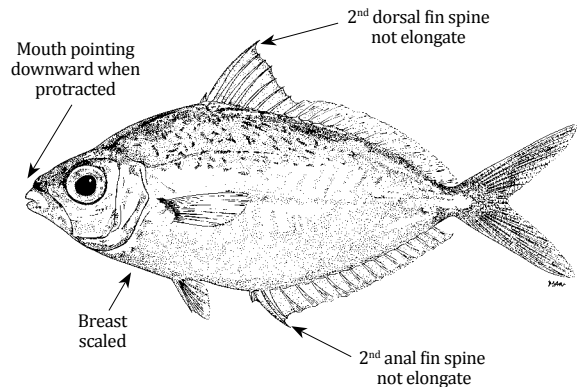
Habitat: Coastal shallow waters down to at least 20 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body moderately elongate and compressed, its depth 2.5–2.9 in SL; snout pointed; head scaleless, but scales present on breast; teeth small and weak.

Colour: Silvery grey dorsally with numerous, short, dark vermiculations extending a short distance below lateral line; anterior edge of snout blackish; borders of dorsal and anal fins yellow; caudal fin yellowish grey; axil of pectoral fins blackish.

FAO names: Oblong ponyfish (En)



Size: To 10 cm (TL)

Gazza minuta (Bloch, 1795)

(Plate XVIII, 148)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

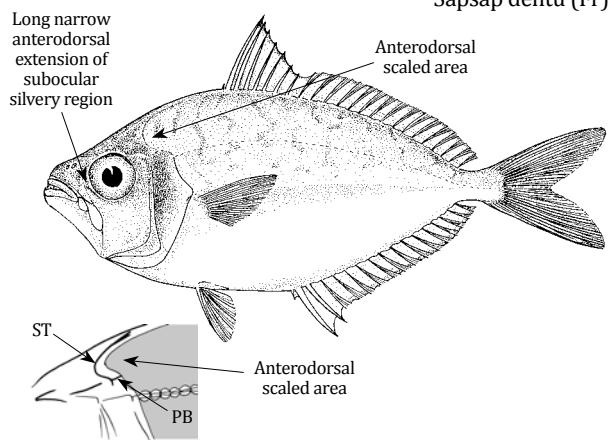
Habitat: Coastal waters down to 40 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body oval and somewhat compressed, its depth 28.3–46.5% of SL; dorsal and ventral profiles equally convex; mouth pointing forward when protracted; head and breast scaleless; distinct caniniform teeth in both jaws; anterodorsal scaled area reaching to tip of posterior branch (PB) of supratemporal canal (ST).

Colour: Silvery, back greyish, with dark yellow irregular marks extending to below lateral line; soft part of dorsal, pectoral and pelvic fins colourless; anterior part of anal yellow; underside of pectoral fin bases and snout with black dots; spiny dorsal fin black-edged.

FAO names: Tooth ponyfish (En)
Sapsap dentu (Fr)



Anterodorsal scaled area

Size: To 21 cm (FL)

Gazza rhombea Kimura, Yamashita & Iwatsuki, 2000 *

FAO names: Rhomboid toothpony (En)

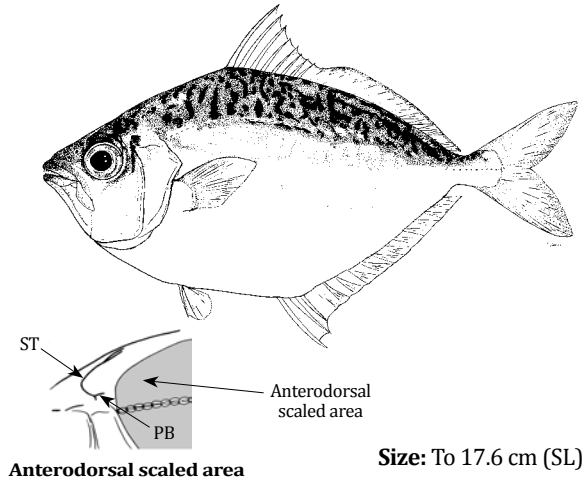
Local Name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

Habitat: Occurs over sandy or muddy bottoms in brackish or coastal waters of less than ca. 50 m depth

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Similar to *Gazza minuta* but body rhomboid in adults, its depth 34.2–51.8% of SL; anterodorsal scaled area not reaching to a vertical through tip of posterior branch (PB) of supratemporal canal (ST).

Colour: Head and body bluish dorsally, brilliant silvery white ventrally; snout dusky; anal fin base yellow; pectoral fin pale yellow with faintly bluish base; caudal fin pale yellow with faintly dark margin; pelvic fins colourless.



Karalla daura (Cuvier, 1829)

(Plate XVIII, 149)

FAO names: Goldenstripe ponyfish (En)

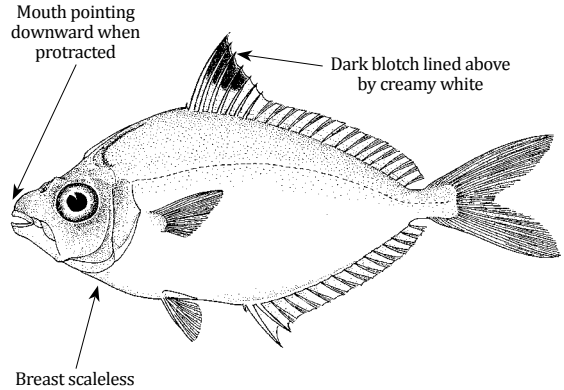
Local Name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

Habitat: Coastal shallow waters in schools near bottom up to 40 m.

Fisheries: Shore seines, bottom trawls, bagnets.

Distinctive Characters: Body rhomboid and compressed, its depth 2–2.5 in SL; dorsal and ventral profiles equally convex; head and breast scaleless; teeth small and weak.

Colour: Back grey-greenish, belly silvery; black dots all over ventral half of body; a golden hue on dorsal half of body and on head; very faint vertical lines above lateral line which disappear completely with increasing age; tip of snout black; distal half of anal fin golden yellow from 2nd spine onwards; broad yellow band over the lateral line, which disappears gradually on preservation.



Leiognathus equula (Forsskål, 1775)

(Plate XVIII, 147)

FAO names: Common ponyfish (En)

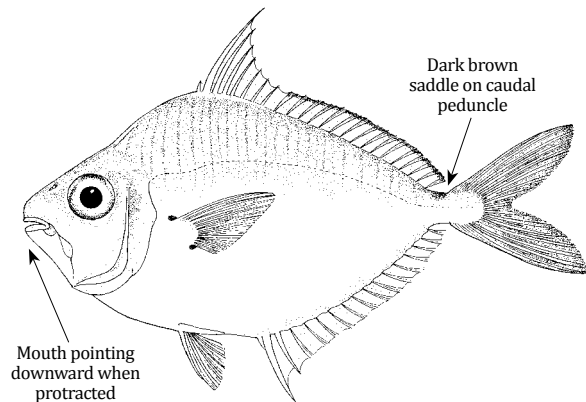
Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

Habitat: Coastal shallow waters near bottom down to 40 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body very deep, compressed, with a strongly humped back; body depth 1.7–1.9 in SL; head and breast scaleless.

Colour: Adults, back greyish, belly silvery, and close-set faint bars on back and sides; a dark brown saddle on caudal peduncle; axil of pectoral fins grey to black; margin of soft dorsal fin black. In juveniles (5–7 cm TL), thin, closely arranged, grey vertical lines descending from back to about midheight; membrane between anal fin spines conspicuously yellow.



Nuchequula blochii (Valenciennes, 1835)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

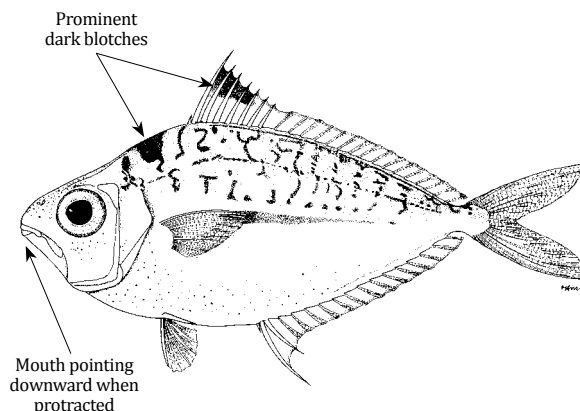
Habitat: Inhabits coastal inshore waters on bottoms of muddy sand at depths of 10 to 90 m; enters estuaries.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body somewhat elongate and compressed, its depth 35–45% of SL; snout rounded; breast scaled; cheek naked; anteroventral profile of the lower jaw almost straight; 2nd dorsal and anal fin spines not elongated; small villiform teeth in both jaws, the ones on upper jaw strongly recurved (true of all *Nuchequula* species).

Colour: Head and body almost uniformly silver; snout dusky; four horizontal rows of dark blotches or broken lines dorsolaterally on body, the uppermost row along dorsal fin base, the third on lateral line; dorsal, anal, caudal, and pectoral fins yellowish.

FAO names: Twoblotch ponyfish (En)
Sapsap à deux taches (Fr)



Size: To 10 cm, common 11 cm (TL)

Nuchequula gerreoides (Bleeker, 1851)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

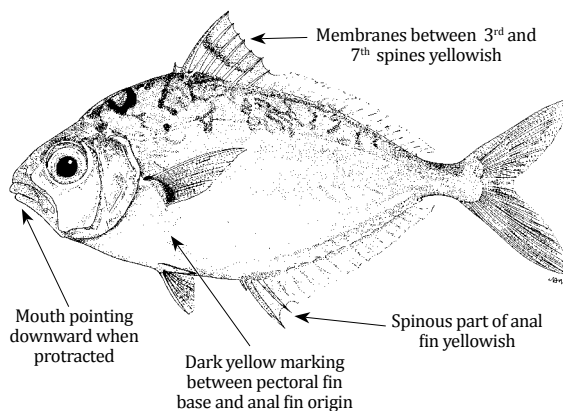
Habitat: Found in coastal waters. Enters estuaries.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body deep, oval and compressed, its depth 40–53% of SL; snout pointed; cheek and breast scaleless; anterior dorsolateral surface of the body almost completely scaled; anteroventral profile of the lower jaw strongly concave; 2nd dorsal and anal fin spines not elongated.

Colour: Head and body almost uniformly silver, sometimes many tiny black spots scattered ventrolaterally on body; a black blotch distally on the spinous dorsal fin membrane; pectoral fin axil light brown; distal part of soft anal fin yellowish.

FAO names: Decorated ponyfish (En)



Size: To 12.5 cm (SL)

Photopectoralis aureus (Abe & Haneda, 1972)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

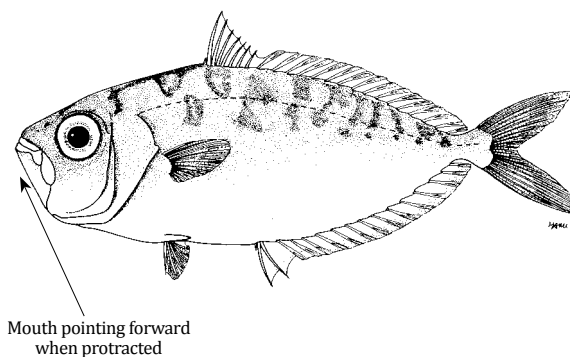
Habitat: Lives in deeper offshore coastal waters at depths greater than 70 m and down to 140 m.

Fisheries: Bottom trawls.

Distinctive Characters: Body only moderately deep and compressed, its depth 2.3–2.9 in SL; ventral profile much more convex than dorsal profile; single row of uniform teeth in each jaw, no canines.

Colour: Silvery upper half with irregular grey-brown blotches and marbling; in fresh specimens large gold luminous organ around esophagus; outer half or peak of spinous part of dorsal fin pale yellow, margin of spinous part edged in black; other fins colourless.

FAO names: Golden ponyfish (En)



Size: To cm 10, common 6 cm (TL)

Photopectoralis bindus (Valenciennes, 1835)

Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

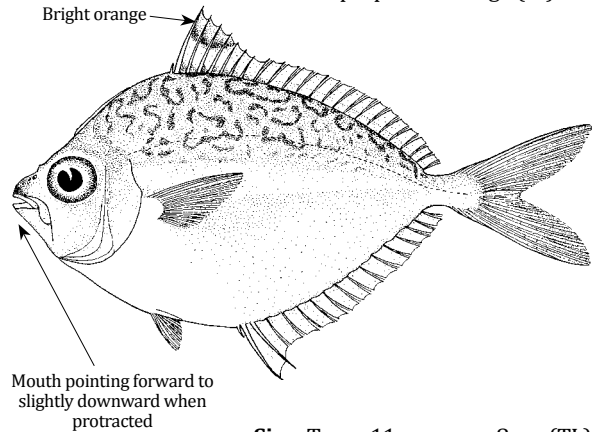
Habitat: Inhabits coastal inshore waters on bottoms of muddy sand at depths of 10 to 160 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body deep and strongly compressed, its depth 1.8–1.9 in SL; ventral profile at least as equally convex as dorsal profile; single row of uniform conical teeth in each jaw.

Colour: Body silvery, with short dark vermiculations on back; tip of snout, head, and ventral half of body with grey dots; spinous part of dorsal fin black at 1/2 height, above which the membrane between second and fifth spines bears a bright orange blotch which turns yellow on preservation in formalin.

FAO names: Orangefin ponyfish (En)
Sapsap voile orange (Fr)



Size: To cm 11, common 8 cm (TL)

Secutor cf. insidiator (Bloch, 1787)

(Plate XVIII, 150)

FAO names: Pugnose ponyfish (En)

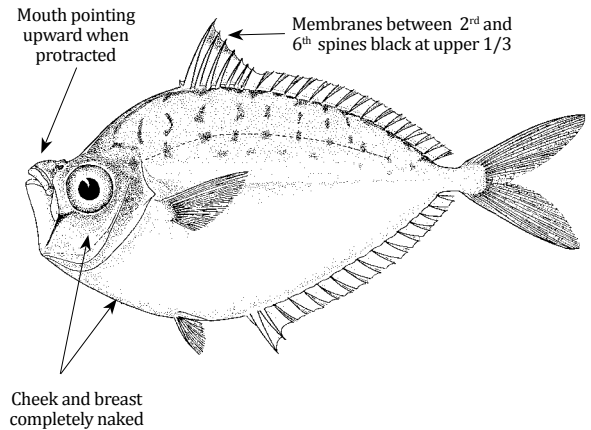
Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

Habitat: Demersal in coastal shallow waters down to 40 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body oval and compressed, its depth 40–60% of SL (body depth increases markedly with growth); head strongly concave above eye; minute teeth in both jaws; head strongly concave above eye; profile of lower jaw slightly concave; scales on body minute; 84–107 lateral line scales; 18–22 scale rows above lateral line; 38–47 scale rows below lateral line.

Colour: Back greenish to brownish, with 10–13 dark broken vertical bars and spots extending to little below lateral line; a black, curved band from lower margin of eye to posterior angle of lower jaw; caudal fin partly yellow.



Size: To 11 cm, common 8 cm (TL)

Secutor interruptus (Valenciennes, 1835)

FAO names: Pig-nosed pony-fish (En)

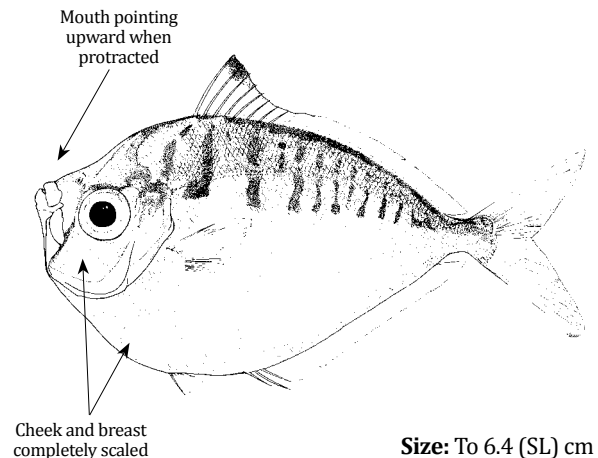
Local name(s): Tiklo, Kandairi, Paychari (Sin); Mit, Chiragho, Gar-chum (Bal).

Habitat: Shallow coastal waters; enters estuaries.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body oval, deep and strongly compressed, its depth 53.4–65.5% of SL; minute teeth in both jaws; head strongly concave above eye; profile of lower jaw concave; scales on head and body large; 54–60 lateral line scales; 9–14 scale rows above lateral line; 18–26 scale rows below lateral line.

Colour: Body silvery brownish dorsally, white ventrally; 9–12 series of vertical dark bars or blotches on dorsal half of body; tip of spinous dorsal fin black.



Size: To 6.4 (SL) cm

BRAMIDAE

Pomfrets – Ocean breams

Brama dussumieri Cuvier, 1831

Local name(s): Sonaf (Sin); Khadda sonaf (Bal).

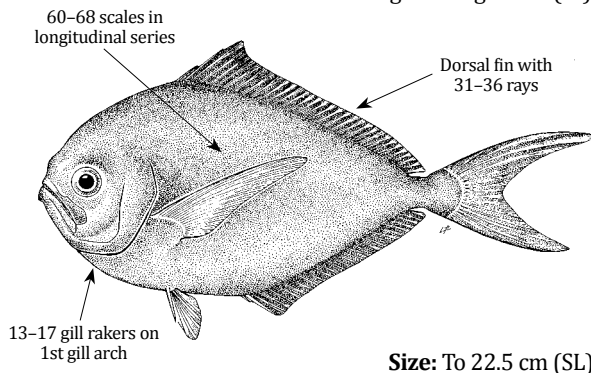
Habitat: Pelagic in upper oceanic waters and common throughout range.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body very deep, very compressed; forehead slightly arched; anal fin with 25–29 (usually 28) rays; distance from pectoral fin base to pelvic fin base less than 12.5% in SL; lateral line absent or scarcely visible.

Colour: Uniform silvery blue, slightly darker dorsally; underside of pectoral fin base pale or dusky; vertical fins dark; pectoral and pelvic fins translucent.

FAO names: Lesser bream (En)
Castagnole mignonne (Fr)

***Taractichthys steindachneri*** (Döderlein, 1883)

Local name(s): Sonaf, Khadda poplet (Sin); Khadda sonaf (Bal).

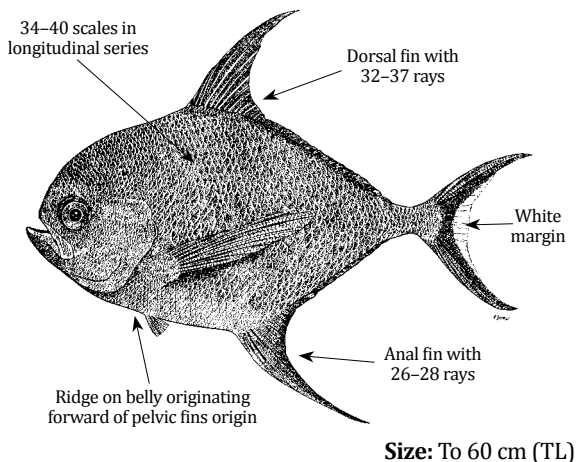
Habitat: Occurs along the shelf edge.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Anterior lobes of dorsal and anal fins high, but changing in shape and height with growth; adults without lateral line; interpelvic space distinctly convex, deep transverse grooves at origins of caudal fin lobes; upper lip free, not connected to snout near anterior nostril; 21–29 predorsal scales.

Colour: Body uniform dark grey; caudal fin with a posterior white margin

FAO names: Sickle pomfret (En)

**EMMELICHTHYDAE**

Rovers

Erythrocles schlegelii (Richardson, 1846)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

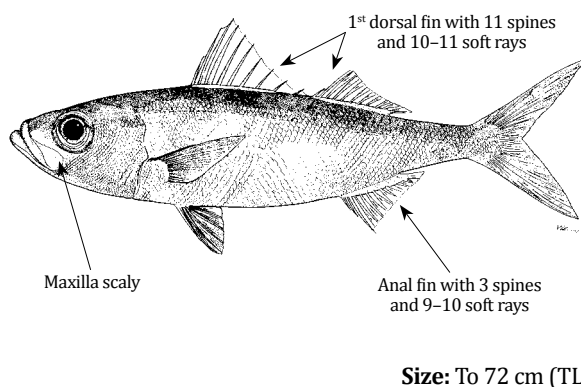
Habitat: Inhabits the continental shelf area.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Dorsal fin divided to base, but no distinct gap between spiny and soft-rayed fins; upper jaw very protrusible with poorly developed teeth; dorsal and anal fins with a basal scaly sheath; fleshy protuberance on rear margin of gill cavity; adults with low keel on mid-lateral region of caudal peduncle.

Colour: Reddish brown dorsally, silvery pink on sides and ventrally; lips and caudal fin red; remaining fins with red rays and translucent membranes; juveniles with 4–6 dark bars on body.

FAO names: Japanese rubyfish (En)



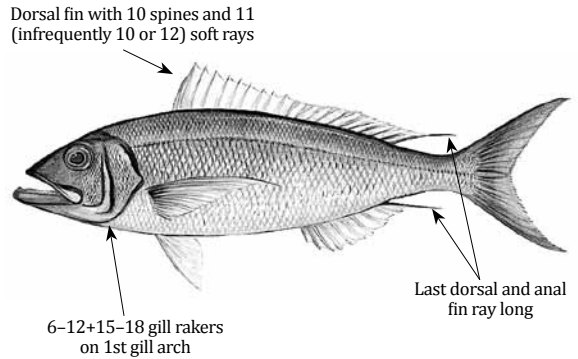
LUTJANIDAE

Snappers – Jobfishes

Aphareus furca* (Lacepède, 1801)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Solitary or in groups in inshore coral reefs of clear lagoons and seaward reefs, down to 122 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Lower jaw protruding; anal fin with 3 spines and 8 soft rays; maxilla without scales; interorbital region flat; teeth in jaws minute; roof of mouth toothless; membranes of dorsal and anal fins without scales; 71–74 tubed lateral line scales.
Colour: Silvery purplish brown dorsally, light silvery bluish grey ventrally; lower jaw silvery; vertical edge of opercle and preopercle blackish; median fins yellow to yellowish brown.

FAO names: Small toothed jobfish (En)
 Vivaneau tidents (Fr)

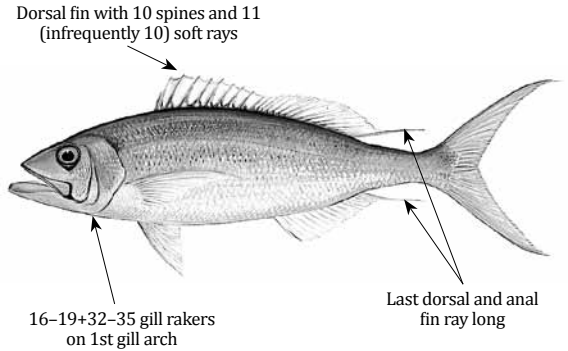


Size: To 70 cm, common 30 cm (TL)

Aphareus rutilans* Cuvier, 1830

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Reef areas from 10 m to 250 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Lower jaw protruding; anal fin with 3 spines and 8 soft rays; maxilla without scales; interorbital region flat; teeth in jaws minute (disappearing with age); roof of mouth toothless; membranes of dorsal and anal fins without scales; 69–75 tubed lateral line scales.
Colour: Blue-grey or mauve to overall reddish; margin of maxilla black; in some specimens, at least, inside of mouth, gill chamber, and gills shining silver; fins yellowish to reddish except pelvic and anal fins sometimes whitish.

FAO names: Rusty jobfish (En)
 Vivaneau rouillé (Fr)



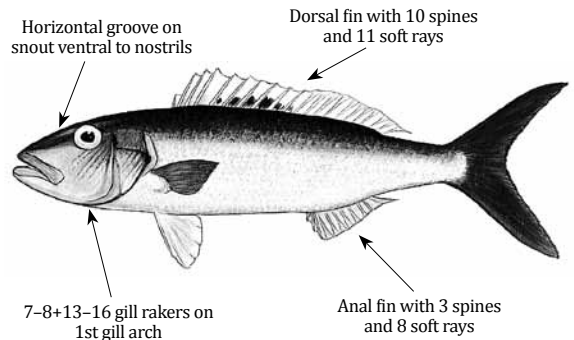
Size: To 110 cm, common 80 cm (TL)

***Aprion virescens* Valenciennes, 1830**

(Plate XIX, 151)

FAO names: Green jobfish (En)
 Vivaneau job (Fr)

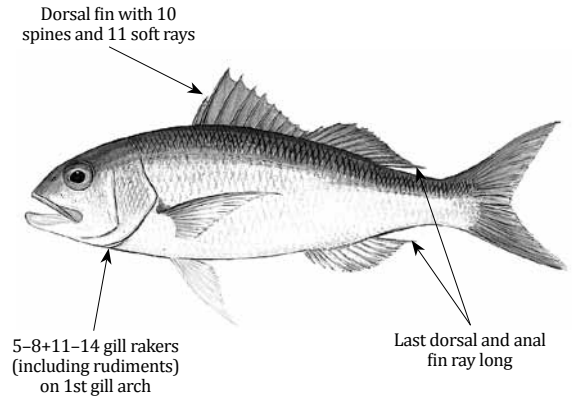
Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Shore reef areas, open waters, deep lagoons channels, down to 180 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Mouth terminal; jaws about equal; pectoral fins short; maxilla without scales; interorbital region flat; teeth in both jaws in bands, with strong canines anteriorly; membranes of dorsal and anal fins without scales; 48–50 tubed lateral line scales.
Colour: Dark green to blue or green; a black area often present at base of last 5 interspiny membranes of dorsal fin.



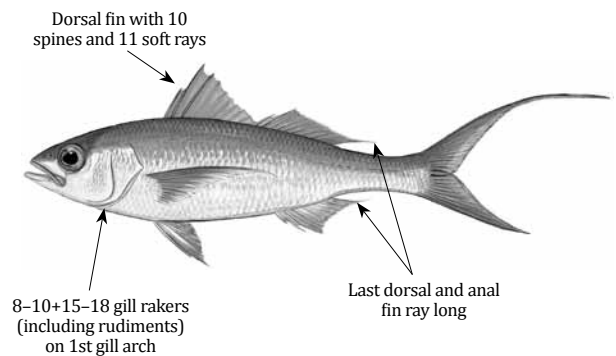
Size: To 110 cm, common 90 cm (TL)

Etelis carbunculus Cuvier, 1828 ***Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Rocky bottoms from 90 m to 400 m.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Upper and lower jaws with conical teeth; 1 to several enlarged canines on each side of both jaws; vomer and palatines with teeth; dorsal deeply notched between spinous and soft portions; maxilla with scales; interorbital region flattened; caudal fin forked, the lobes relatively short (25–30% of SL) compared to other *Etelis*; membranes of dorsal and anal fins without scales; 48–50 tubed lateral line scales.**Colour:** Mainly pink to red, becoming white on lower sides and belly.**FAO names:** Deep-water red snapper (En)

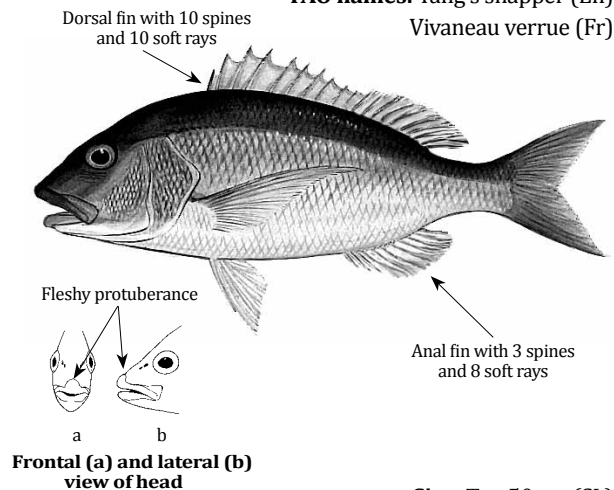
Vivaneau rubis (Fr)

**Size:** To 127 cm, common 65 cm (TL)***Etelis coruscans*** Valenciennes, 1862 ***Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Rocky bottoms from 100 m to 300 m.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Usually one to a few canine or canine-like teeth on each side of both jaws anteriorly, followed by a series of conical teeth; vomer and palatines with teeth; dorsal deeply notched between spinous and soft portions; maxilla with scales; interorbital region flattened; upper caudal fin lobe becoming greatly elongate with increased growth; membranes of dorsal and anal fins without scales; 48–50 tubed lateral line scales.**Colour:** Back and upper sides deep pink to red; lower sides and belly pink to white; fins pink to red.**FAO names:** Deepwater longtail red snapper (En)

Vivaneau flamme (Fr)

**Size:** To 120 cm, common 50 cm (TL)***Lipocheilus carnolabrum*** (Chan, 1970) ***Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Occurs over rocky bottoms of the continental shelf at depths between 90 and 300 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Mouth large, the upper jaw protruding when mouth is closed; adults with a thick, fleshy protrusion at anterior end of upper lip; maxilla without scales; interorbital region somewhat flattened to slightly convex; 5–7+11–14 gill rakers on 1st gill arch; vomerine teeth (on roof of mouth) in a chevron-shaped patch, without a medial posterior extension; no teeth on tongue; 49–54 tubed scales in lateral line.**Colour:** Back and upper part of head brown; yellowish or pinkish on sides; a silvery sheen on ventral portion of body.**FAO names:** Tang's snapper (En)

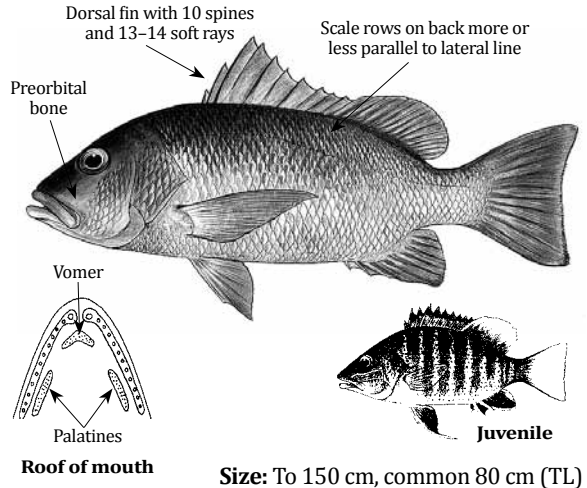
Vivaneau verrue (Fr)

**Size:** To >50 cm (SL)

***Lutjanus argentimaculatus* (Forsskål, 1775)**

(Plate XIX, 152) **FAO names:** Mangrove red snapper (En)
Vivaneau des mangroves (Fr)

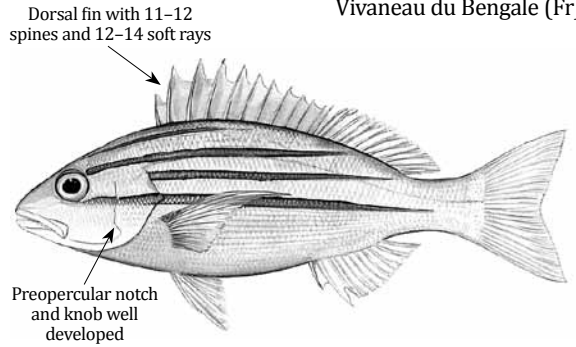
Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Juveniles and young adults in mangrove estuaries and lower reaches of freshwater streams; adults in deeper reef areas down to 120 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Preorbital bone relatively broad, wider than eye diameter; jaw teeth conical with upper canines notably enlarged (true of all *Lutjanus* species); preopercular notch and knob poorly developed; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue with a patch of granular teeth; 16–20 gill rakers on 1st gill arch.
Colour: Back and sides greenish brown to reddish; belly silvery or whitish; specimens from deep water frequently overall reddish; juveniles with a series of about 8 whitish bars crossing sides, and 1 or 2 blue lines across cheek.



Lutjanus bengalensis* (Bloch, 1790)

FAO names: Bengal snapper (En)
Vivaneau du Bengale (Fr)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Coral and rocky reefs from 10 m to 30 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Preorbital bone relatively narrow; its width usually less than eye diameter; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line.
Colour: Back and sides yellowish; belly whitish; sides with a series of 4 bright blue stripes; no black spot on back below middle of dorsal fin; the medial fins are yellow, the pectoral and pelvic fins whitish.

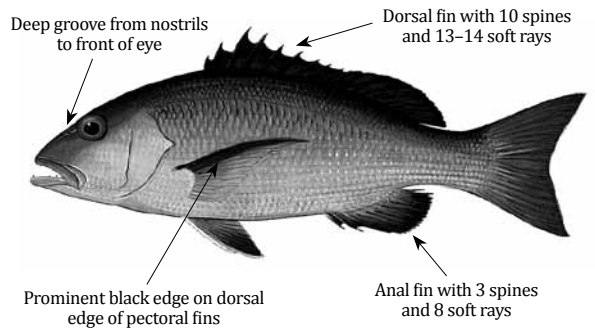


Size: To 30 cm, common 20 cm (TL)

Lutjanus bohar* (Forsskål, 1775)

FAO names: Two-spot red snapper (En)
Vivaneau chien rouge (Fr)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Channel and seaward reefs down to 180 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Preorbital bone relatively broad; its width usually greater than eye diameter; head profile slightly convex; preopercular notch and knob moderately developed; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue with a patch of granular teeth; 22–23 gill rakers on 1st gill arch.
Colour: Dark reddish brown on back, shading to red on sides, the scales with a whitish spot, thus forming a linear pattern; juveniles and some adults with 2 distinct silvery spots on body between lateral line and dorsal fin; usually centre of each scale silvery.



Size: To 90 cm, common 60 cm (TL)

Lutjanus coeruleolineatus (Rüppell, 1838)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

Habitat: Inhabits coral reefs at depths between about 10 and 20 m. Occurs solitarily or in small groups.

Fisheries: Caught mainly with gillnets.

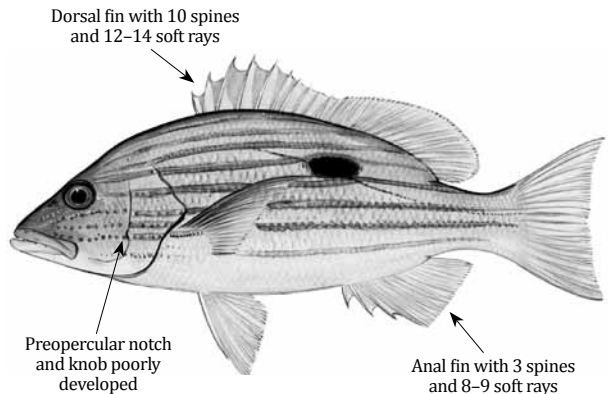
Distinctive Characters: ; Vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line; 21–23 gill rakers on 1st gill.

Colour: Yellow with 7 or 8 blue longitudinal stripes on sides, the upper 4 slanting posteriorly toward dorsal fin base; a large blackish spot on back below anterior portion of soft dorsal fin; blue spots and broken lines on head; fins yellowish.

(Plate XIX, 153)

FAO names: Blueline snapper (En)

Vivaneau strié (Fr)



Size: To 40 cm, common 20 cm (TL)

Lutjanus ehrenbergii (Peters, 1869) *

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

Habitat: Occurs in coastal lagoon and seaward reefs from 5 m to 20 m.

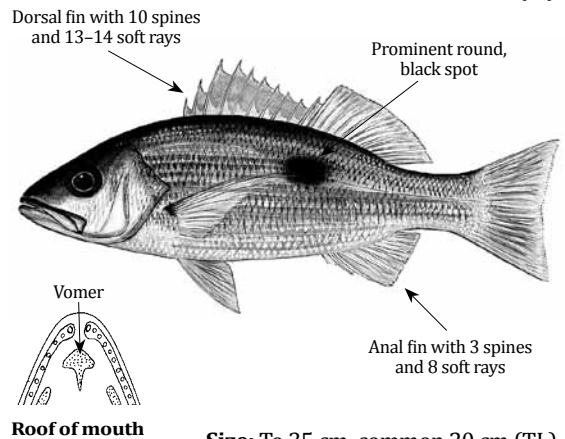
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Preorbital bone very narrow, about 1/2 of eye diameter; scale rows on back parallel to lateral line; preopercular notch and knob poorly developed; vomerine teeth (on roof of mouth) in a triangular patch with a short, median posterior projection; tongue with a patch of granular teeth; 16–21 gill rakers on 1st gill.

Colour: Body grey-brown dorsally, the edges of the scales darker than centres, shading to silvery grey on sides and ventrally, with four or five narrow yellow stripes on body below lateral line; fins yellow.

FAO names: Blackspot snapper (En)

Vivaneau encrier (Fr)



Size: To 35 cm, common 20 cm (TL)

Lutjanus erythropterus Bloch, 1790

(Plate XIX, 154)

FAO names: Crimson snapper (En)

Vivaneau cramoisi; (Fr)

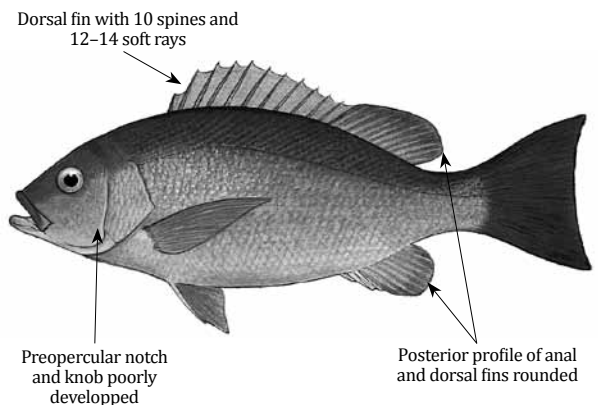
Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

Habitat: Inhabits trawling grounds and reefs to depths of at least 100 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Mouth relatively small, length of upper jaw smaller than distance between base of last dorsal and anal fin rays; vomerine teeth (on roof of mouth) in a V-shaped or triangular patch, without a medial posterior extension; no teeth on tongue; scale rows on back rising obliquely above lateral line; 18–19 gill rakers on 1st gill.

Colour: Overall pink or red, including fins; juveniles with a broad, oblique, black band extending from mouth to beginning of dorsal fin and a large black spot at base of caudal fin; frequently with narrow red stripes.



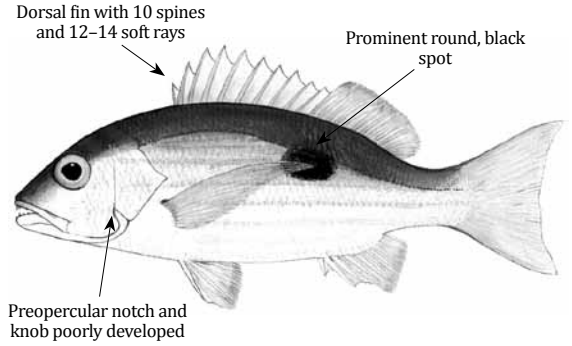
Size: To 81.6 cm (FL)

Lutjanus fulviflamma (Forsskål, 1775)

(Plate XIX, 155)

FAO names: Dory snapper (En)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Coral reefs from 3 m to 35 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Preorbital bone about equal in width to eye diameter or slightly less; vomerine tooth patch (on roof of mouth) triangular, with a medial posterior extension; tongue with a patch of granular teeth; scale rows on back rising obliquely above lateral line; 16–19 gill rakers on 1st gill arch.
Colour: Back and upper sides brown; lower sides whitish or light brown; a series of 6–7 yellow stripes on sides; fins yellowish.

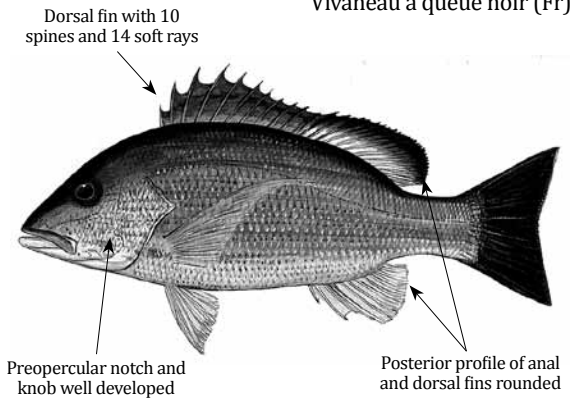


Size: To 35 cm, common 30 cm (TL)

Lutjanus fulvus (Forster, 1801) *

FAO names: Blacktail snapper (En)
Vivaneau a queue noir (Fr)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Coral reefs, lagoons and outer reef slopes from 1 m to 75 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Preorbital bone about equal in width to eye diameter; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line; 16–20 gill rakers on 1st gill arch.
Colour: Back and sides grey to brown; often with a series of narrow yellow or golden-brown stripes; belly and underside of head whitish; caudal fin blackish, dorsal and caudal fins with a narrow white border; pelvic and anal fins yellowish.

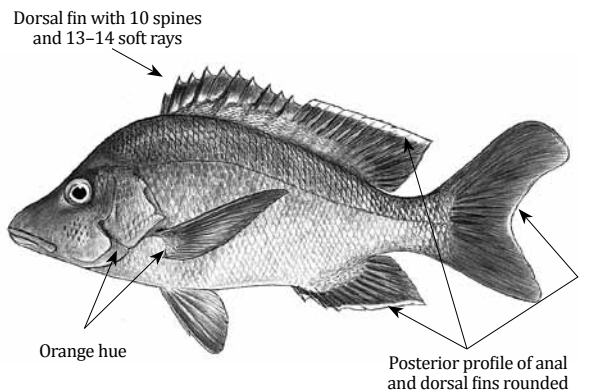


Size: To 40 cm, common 25 cm (TL)

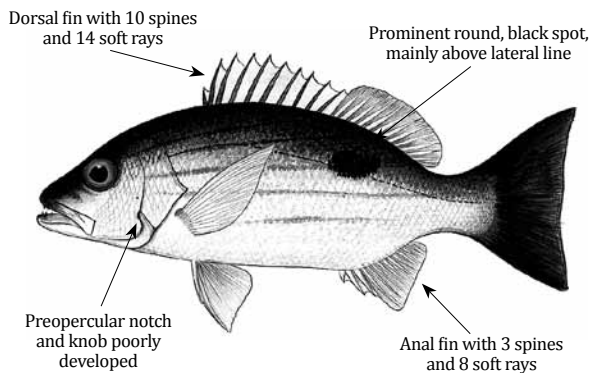
Lutjanus gibbus (Forsskål, 1775) *

FAO names: Humpback red snapper (En)
Vivaneau pagaie (Fr)

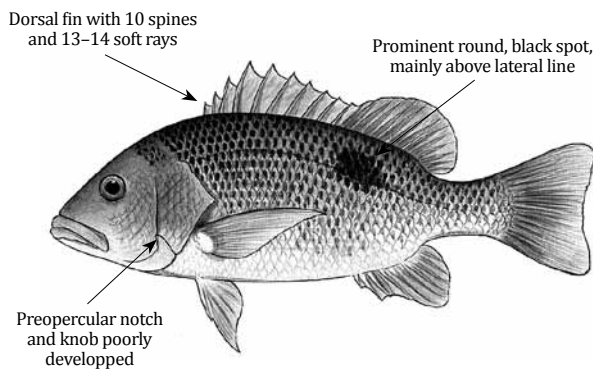
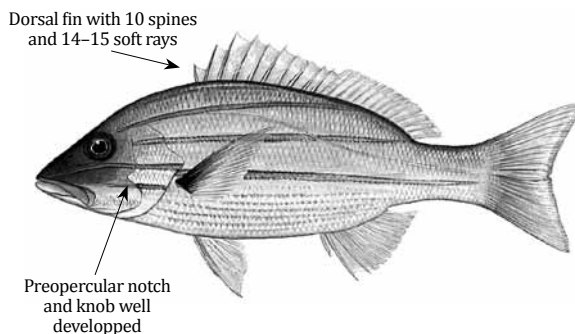
Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Lagoons and coral reefs from 1 m to 150 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Dorsal profile of head steeply sloped; preorbital bone broad, much wider than eye diameter; preopercular notch and knob well developed; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue toothless; caudal fin distinctly forked with rounded lobes; scale rows on back rising obliquely above lateral line; 25–30 gill rakers on 1st gill arch.
Colour: Red or grey, darker on back and upper portion of head; fins red or frequently dark brown to blackish; juveniles with a large round black spot at base of caudal fin.



Size: To 50 cm, common 40 cm (TL)

Lutjanus indicus Allen, White & Erdmann, 2013(Plate XIX, 156) **FAO names:** Indian snapper (En)**Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Inhabits offshore coral reefs and also inshore rock and coral reefs; juveniles found in brackish mangrove estuaries and lower reaches of freshwater streams.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Preorbital width about equal to, or slightly less than eye diameter; vomerine tooth patch (on roof of mouth) triangular, with a median posterior extension or diamond-shaped; tongue with a patch of granular teeth; scale rows on back rising obliquely above lateral line; 13–18 gill rakers on 1st gill arch.**Colour:** Back and upper side brownish; lower sides and belly pink to whitish with a silvery sheen; adults; 7 narrow yellow to brown stripes on sides, obliquely rising (except lower 2) dorsally and posteriorly which are present on both juveniles and adults.**Size:** To 22.6 cm (SL)***Lutjanus johnii*** (Bloch, 1792)

(Plate XIX, 157)

FAO names: John's snapper (En)
Vivaneau ziebelo (Fr)**Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Juveniles occur in brackish mangrove estuaries, adults on coral reefs down to 80 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Preorbital width equal to eye diameter or larger; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue with a patch of fine granular teeth; scale rows on back parallel to lateral line; 17–18 gill rakers on 1st gill arch.**Colour:** Generally yellow with a bronze to silvery sheen, grading to silvery white on belly and underside of head; centre of each scale on side with a reddish brown spot forming longitudinal rows on side of body.**Size:** To 97 cm, common 50 cm (TL)***Lutjanus kasmira*** (Forsskål, 1775)***FAO names:** Common bluestripe snapper (En)
Vivaneau à raies bleues (Fr)**Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Shallow sheltered reefs to exposed seaward reefs, below surge zone down to 265 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Preorbital width usually greater than eye diameter; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line; 20–22 gill rakers on 1st gill arch.**Colour:** Yellow with abrupt transition to white on lower one-third; a series of 4 blue stripes on yellow portion of body; several faint greyish stripes on lowermost part of sides; fins yellow.**Size:** To 40 cm, common 25 cm (TL)

***Lutjanus lemniscatus* (Valenciennes, 1828)**

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

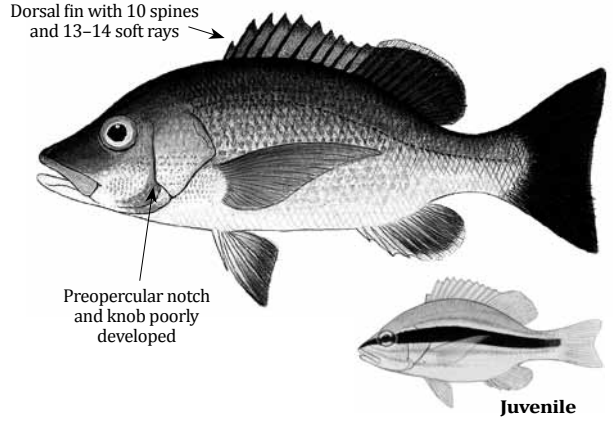
Habitat: Inhabits offshore reefs to depths of 70 to 80 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Snout profile slightly concave; preorbital bone usually much greater than eye diameter (at least in larger specimens); vomerine teeth (on roof of mouth) in a crescentic band, without a medial posterior extension; tongue with a patch of granular teeth; scale rows on back rising obliquely above lateral line extension; 18–21 gill rakers on 1st gill arch.

Colour: Back and upper sides grey-brown or olive; belly and underside of head whitish; dorsal and caudal fins brownish, remaining fins pink or reddish; juveniles with a broad black horizontal band from snout tip to caudal fin base.

FAO names: Yellowstreaked snapper (En)
Vivaneau à raies jaunes (Fr)
(Plates XIX, 158; XX, 159)



Size: To 65 cm, common 35 cm (TL)

Lutjanus lunulatus* (Park, 1797)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

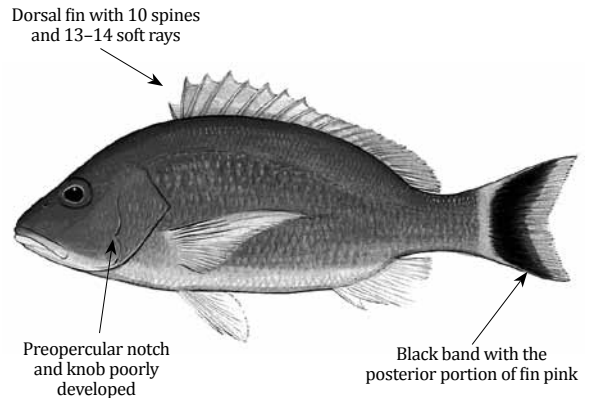
Habitat: Inhabits coral reefs at depths between about 10 and 30 m; usually seen solitarily or in small groups.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Preorbital width about equal to eye diameter; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue with a patch of granular teeth; scale rows on back rising obliquely above lateral line; 15–18 gill rakers on 1st gill arch.

Colour: Back and upper side brown to reddish pink; rear half of maxilla, lower part of preopercle, breast and abdomen creamy yellow; dorsal fin reddish pink to clear; caudal fin with broad, black crescent; pectoral, anal, and pelvic fins yellow.

FAO names: Lunartail snapper (En)
Vivaneau queue (Fr)



Size: To 40 cm (TL)

***Lutjanus lutjanus* Bloch, 1790** (Plate XX, 160)

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

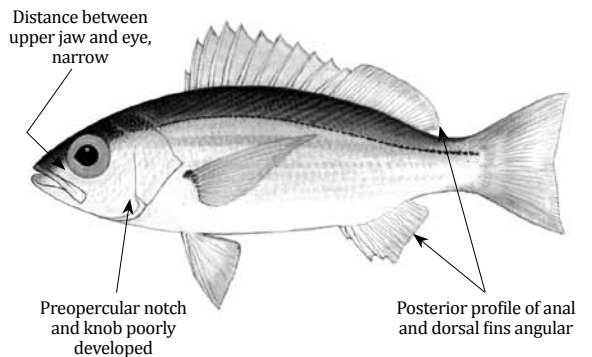
Habitat: Offshore coral reefs down to 90 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body fusiform and slender; dorsal fin with 10–12 (usually 11) spines and 12 soft rays; preorbital bone very narrow, much less than eye diameter; vomerine teeth (on roof of mouth) in a triangular patch, with a medial posterior extension; tongue with a patch of granular teeth; scale rows on back rising obliquely above lateral line; 24–26 gill rakers on 1st gill arch.

Colour: Background colour yellowish or pale brown, with a stronger dark yellow stripe along sides from tip of snout, through eye, to caudal fin; fins pale yellow to whitish.

FAO names: Bigeye snapper (En)
Vivaneau gros yeux (Fr)



Size: To 35 cm, common 20 cm (TL)

Lutjanus malabaricus (Bloch & Schneider, 1801) *

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

Habitat: Inhabits both coastal and offshore reefs from about 12–100 m depth.

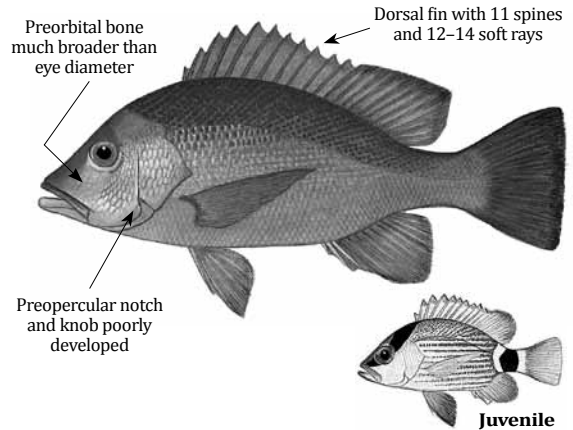
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Mouth large, maxilla length about equal to distance between bases of last dorsal and anal fin rays; vomerine teeth (on roof of mouth) in a triangular patch, without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line; 18–20 gill rakers on 1st gill arch.

Colour: Back and sides red or red-orange, lighter on lower parts; fins reddish; juveniles with a broad, oblique band of brown or black from upper jaw to beginning of dorsal fin, and a prominent black band across caudal peduncle with a pearly white anterior border.

FAO names: Malabar blood snapper (En)

Vivaneau malabar (Fr)



Size: To 100 cm, common 50 cm (TL)

Lutjanus quinque-lineatus (Bloch, 1790) *

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

Habitat: Inhabits sheltered lagoons and exposed, outer slope coral reefs at depths ranging from 2–40 m; frequently encountered in large aggregations including 100 or more individuals.

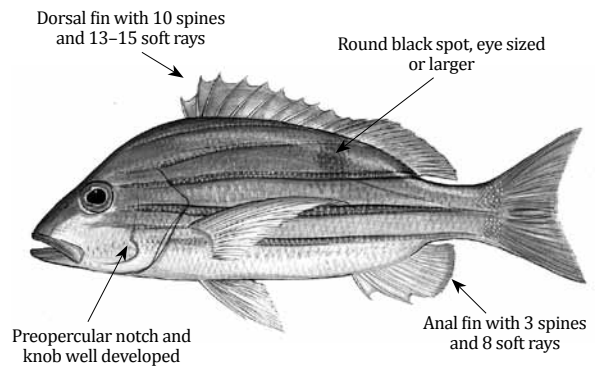
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Preorbital width usually less than eye diameter; vomerine teeth (on roof of mouth) in a V-shaped patch, without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line; 20–23 gill rakers on 1st gill arch.

Colour: Upper part of head brownish; sides and belly bright yellow; a series of 5 bright blue stripes on sides; fins yellow.

FAO names: Five-lined snapper (En)

Vivaneau à cinq bandes (Fr)



Size: To 38 cm, common 30 cm (TL)

Lutjanus rivulatus (Cuvier, 1828)

Local name(s): Chaya (Sin); Sor-duff (Bal).

Habitat: Coral reefs from 50 m to 100 m.

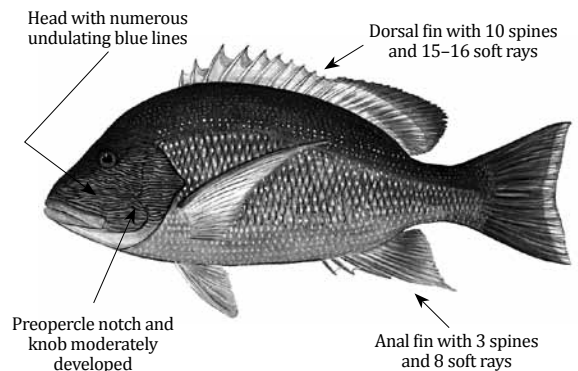
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Preorbital bone broad, about twice the eye diameter; vomerine teeth (on roof of mouth) in a V-shaped patch without a medial posterior extension; tongue toothless; preorbital bone broad, about twice the eye diameter; scale rows on back rising obliquely above lateral line; lips greatly thickened in adults; 17–18 gill rakers on 1st gill arch.

Colour: Generally brown with a reddish tinge; each scale on side with a pale brown border and 2–3 small bluish white spots in central portion; juveniles with a series of 3–8 brown bars on sides and a chalky white spot, with a broad blackish margin, present below anterior soft dorsal fin rays.

FAO names: Blubberlip snapper (En)

Vivaneau maori (Fr)

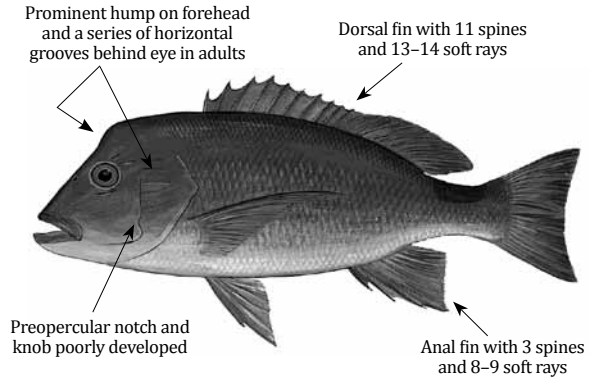


Size: To 80 cm, common 60 cm (TL)

***Lutjanus sanguineus* (Cuvier, 1828) ***

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Coral banks from 9 m to 100 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Anterior and posterior nostrils widely spaced; vomerine teeth (on roof of mouth) in a V-shaped patch without a medial posterior extension; tongue toothless; scale rows on back rising obliquely above lateral line; 19–21 gill rakers on 1st gill; 18–20 gill rakers on 1st gill arch.
Colour: Red dorsally, the scale centres silver-grey, silvery red on side and ventrally; fins red; roof of mouth bright yellow; juveniles with a broad brown bar from upper jaw to beginning of dorsal fin and a series of reddish horizontal lines on sides.

FAO names: Humphead snapper (En)
 Vivaneau tête (Fr)

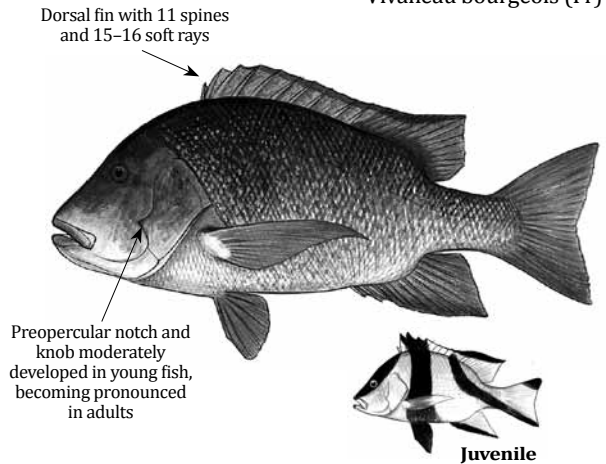


Size: To 100 cm, common 70 cm (TL)

***Lutjanus sebae* (Cuvier, 1816) ***

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Lagoons and sand flats near coral reefs from 10 m to 100 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Preorbital bone much wider than eye diameter; vomerine tooth patch a V-shaped or triangular patch, without a medial posterior extension; tongue toothless; lips in adults thick; scale rows on back rising obliquely above lateral line; 16–19 gill rakers on 1st gill arch.
Colour: Generally red or pink in adults; juveniles and smaller adults pink with 3 dark red bands, the 1st from 1st dorsal fin spine through eye to tip of snout; the 2nd from middle of spinous part of dorsal fin to pelvic fins; and the 3rd from base of last dorsal fin spine running obliquely downward to lower edge of caudal fin.

FAO names: Emperor red snapper (En)
 Vivaneau bourgeois (Fr)

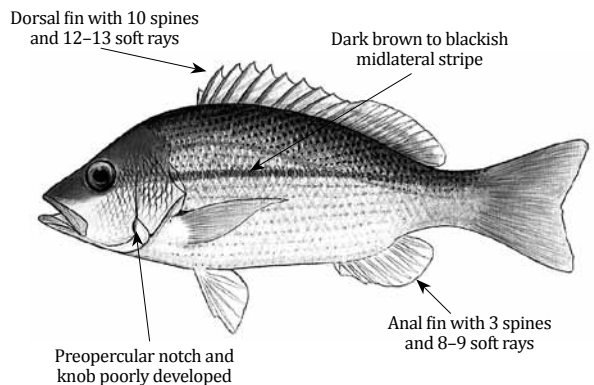


Size: To 100 cm, common 60 cm (TL)

***Lutjanus vitta* (Quoy & Gaimard, 1824) ***

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).
Habitat: Inhabits the vicinity of coral reefs, also in areas of flat bottom with occasional low coral outcrops at depths between about 10 and 40 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Preorbital width about equal to eye diameter; vomerine tooth patch triangular with a medial posterior extension or diamond-shaped; tongue with a patch of granular teeth; scale rows on back rising obliquely above lateral line; 15–19 gill rakers on 1st gill arch.
Colour: Back and upper sides brown, lower sides and belly whitish or pink; narrow longitudinal brown lines on sides; juveniles also with an oval black spot, lying in the middle of the stripe below last dorsal fin spine.

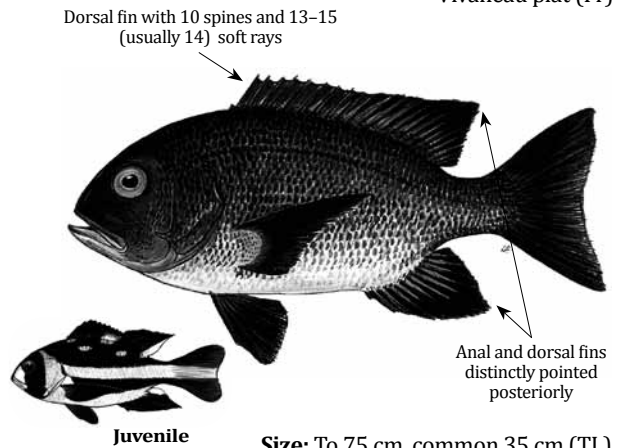
FAO names: Humphead snapper (En)
 Vivaneau tête (Fr)



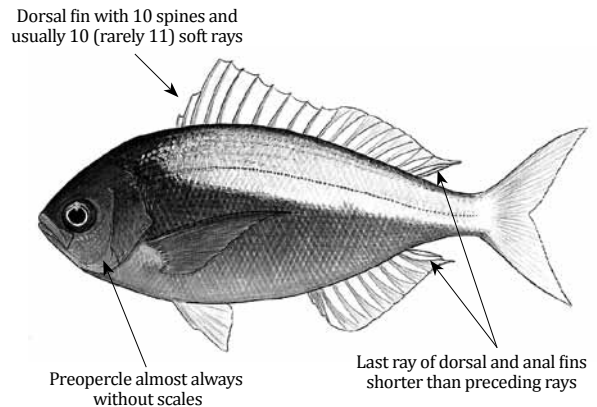
Size: To 100 cm, common 70 cm (TL)

Macolor niger (Forsskål, 1775)***Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Coral reefs from 3 m to 90 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Head profile distinctly convex; outer row of jaw teeth conical, enlarged anteriorly; vomerine tooth patch broadly V-shaped; scale rows on back parallel to lateral line; anal fin with 3 spines and 11 (rarely 10) soft rays; 89–107 (including rudiments) gill rakers on 1st arch; pelvic fins short and rounded at all sizes; preopercular notch deep and narrow.**Colour:** Adults mostly brownish black; individuals less than about 24 cm SL have black-and-white bands on body, about 5 (4 to 7) white spots on upper side, and white at tips of caudal fin lobes.**FAO names:** Black and white snapper (En)

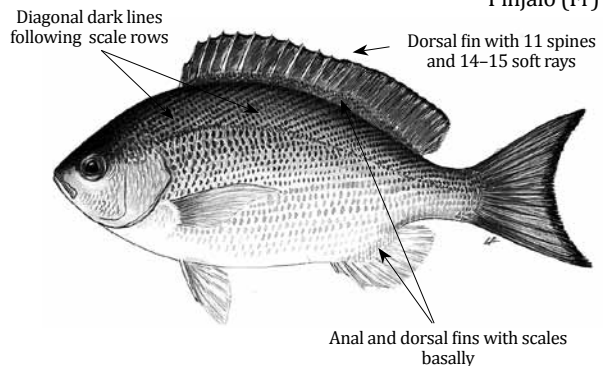
Vivaneau plat (Fr)

**Size:** To 75 cm, common 35 cm (TL)***Paracaesio xanthura*** (Bleeker, 1869)***Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Rocky bottoms from 20 m to 150 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Mouth terminal, jaws about equal; premaxillae protrusible; outer row of jaw teeth conical, usually not enlarged anteriorly; vomerine tooth patch broadly V-shaped; snout short, about equal to, or shorter than eye diameter; anal fin with 3 spines and 8 (rarely 9) soft rays; interorbital space convex; membranes of dorsal and anal fins without scales; 28–35 gill rakers on 1st arch; caudal fin deeply forked.**Colour:** Mainly bluish; broad yellow band on upper side beginning near anterior end of dorsal fin, continuing over most of caudal peduncle and out onto both lobes of caudal fin; dorsal fin grey to yellowish, other fins greyish or whitish.**FAO names:** Yellowtail blue snapper (En)

Vivanette queue jaune (Fr)

**Size:** To 50 cm (TL)***Pinjalo pinjalo*** (Bleeker, 1850)**(Plate XX, 162)****Local name(s):** Hira (Sin); Kun-la, Ka-nal cha (Bal).**Habitat:** Reefs and rocky bottoms down to 60 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Mouth small and oblique; dorsal profile of head convex; no caniniform teeth at anterior ends of jaws; vomerine tooth patch broadly V-shaped; anal fin with 3 spines and 9–10 (usually 10) soft rays; last ray of dorsal and anal fins shorter than preceding rays; 22–26 gill rakers on 1st arch; caudal fin deeply lunate.**Colour:** Body pink to silvery lavender dorsally, shading to pale pink or silvery white ventrally; dorsal and caudal fins reddish, usually suffused with yellow, the outer margin blackish.**FAO names:** Pinjalo (En)

Pinjalo (Fr)

**Size:** To 80 cm, common 30 cm (TL)

Pristipomoides filamentosus (Valenciennes, 1830)

(Plate XX, 161) **FAO names:** Crimson jobfish (En)
Colas fil (Fr)

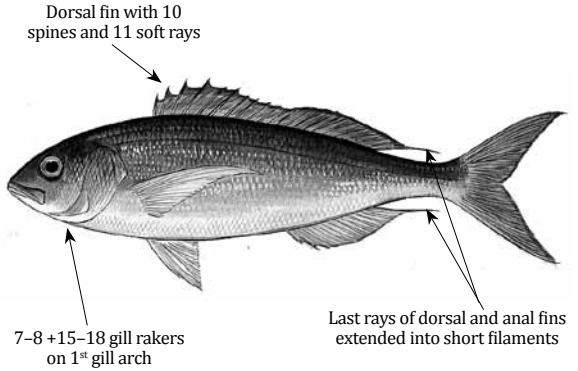
Local name(s): Hira, Kopra (Sin); Kun-la, Ka-nal cha (Bal)

Habitat: Rocky bottoms from 90 m to 360 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Length of upper jaw 2.4–2.7 times in head length; caniniform teeth at anterior ends of jaws not appreciably enlarged; maxilla without scales; vomerine teeth (on roof of mouth) in a triangular patch; tongue toothless; interorbital space flat; caudal fin deeply forked; no scales on dorsal and anal fins; 57–62 tubed lateral line scales; 7–9 (usually 8) pyloric caeca.

Colour: Back and sides ranging from brownish to lavender or reddish purple; head with narrow yellow lines and blue spots; dorsal and caudal fins light blue or lavender with reddish orange margins.



Size: To 100 cm, common 50 cm (TL)

Pristipomoides multidens (Day, 1871) *

FAO names: Goldband jobfish (En)
Colas à bande dorée (Fr)

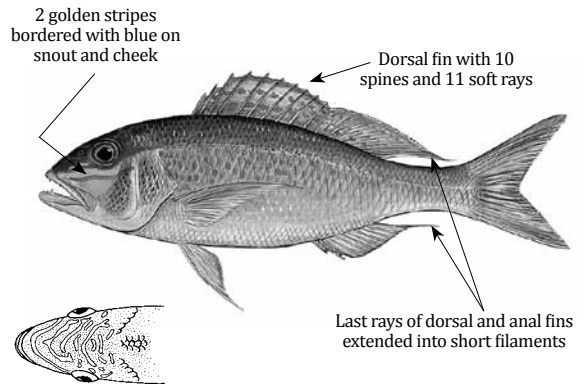
Local name(s): Hira, Kopra (Sin); Kun-la, Ka-nal cha (Bal)

Habitat: Rocky bottoms from 90 m to 360 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Suborbital wide, its width about 4–5 times in head length; anteriormost teeth in jaws enlarged into canines; interorbital space flat; vomerine teeth (on roof of mouth) in chevron-shaped patch; maxilla without scales; no teeth on tongue; bases of dorsal and anal fins scaleless; 48–50 tubed lateral line scales; caudal fin deeply forked; 6–8+13–15 gill rakers on 1st gill arch.

Colour: Yellowish to rosy, with about 6 broken golden stripes on sides; top of head with a series of transverse brownish yellow vermiculations; dorsal fin with yellowish stripes or rows of spots.



Dorsal view of head

Size: To 90 cm, common 60 cm (TL)

Pristipomoides sieboldii (Bleeker, 1855) *

FAO names: Lavender jobfish (En)
Colas lavande (Fr)

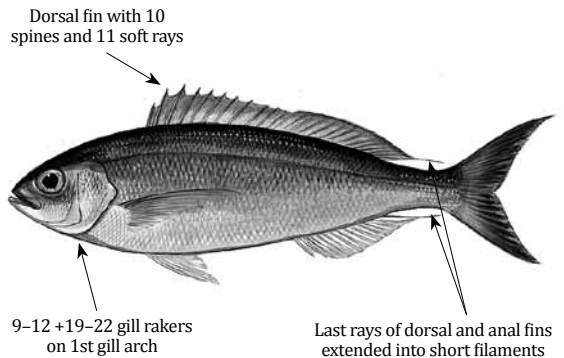
Local name(s): Hira, Kopra (Sin); Kun-la, Ka-nal cha (Bal)

Habitat: Rocky bottoms from 180 m to 360 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Caniniform teeth at anterior ends of jaws not appreciably enlarged; interorbital space flat; vomerine tooth patch (on roof of mouth) with backward prolongation in midline (patch sometimes diamond-shaped); tongue with a heart-shaped patch of small teeth; bases of dorsal and anal fins scaleless; 69–74 tubed lateral line scales; caudal fin deeply forked.

Colour: Silvery with lavender hue; dark spots on top of head, more conspicuous in young; margin of dorsal fin orange; caudal fin purplish with inner margin of fork pale.



Size: To 70 cm, common 40 cm (TL)

Pristipomoides zonatus* (Valenciennes, 1830)

Local name(s): Hira, Kopra (Sin); Kun-la, Ka-nal cha (Bal)

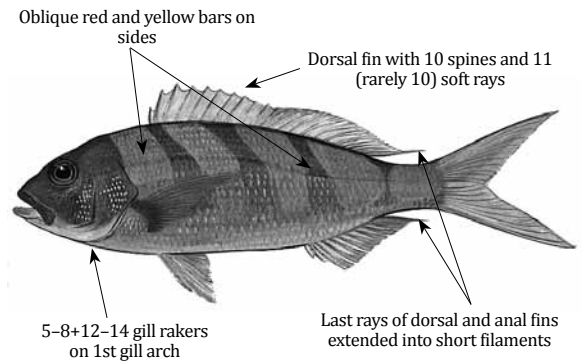
Habitat: Rocky bottoms from 70 m to 300 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Some anteriormost teeth in upper jaw enlarged and caniniform; interorbital space flattened to slightly convex; vomerine teeth (on roof of mouth) in chevron-shaped patch; maxilla without scales; tongue toothless; bases of dorsal and anal fins scaleless; last soft ray of dorsal and anal fins extended into short filaments; 63–67 tubed lateral line scales; caudal fin deeply forked.

Colour: Overall pink or reddish with alternating oblique red and yellow bars on side of body; dorsal and caudal fins yellow, other fins pink.

FAO names: Oblique-banded snapper (En)
Colas bagnard (Fr)



Size: To 50 cm, common 35 cm (TL)

CAESIONIDAE**Fusiliers*****Caesio lunaris* Cuvier, 1830**

Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

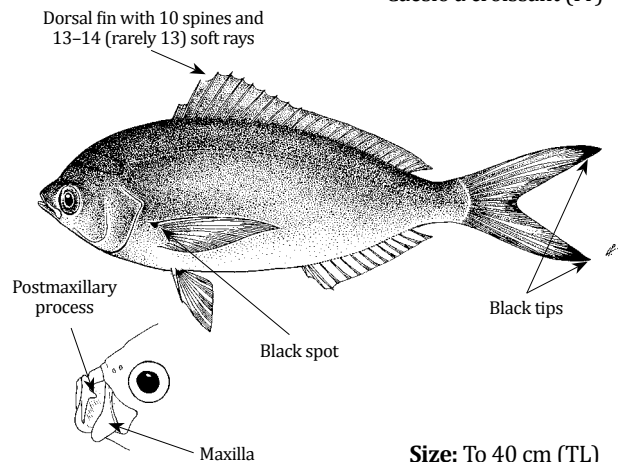
Habitat: Coastal areas, on or near coral reefs.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: A single postmaxillary process; small conical teeth in jaws, vomer, and palatines; anal fin with 3 spines and 10–11 (rarely 10) soft rays; supratemporal band of scales generally interrupted at dorsal midline by a narrow scaleless zone.

Colour: Body bluish, belly paler than upper sides; tips of caudal fin lobes, axil of pectoral fins, and upper base of pectoral fins black; caudal fin blue (except in juveniles where caudal fin and portions of caudal peduncle often yellow); pectoral, pelvic, and anal fins white to pale blue (pink or reddish after death); dorsal fin bluish.

FAO names: Lunar fusilier (En)
Caesio à croissant (Fr)



Size: To 40 cm (TL)

***Caesio varilineata* Carpenter, 1987**

(Plate XX, 163)

FAO names: Variable-lined fusilier (En)
Fusilier à bandes variées (Fr)

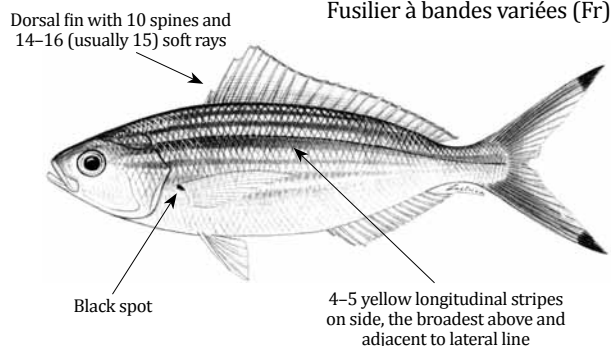
Local name(s): Hira (Sin); Kun-la, Ka-nal cha (Bal).

Habitat: Schooling in mid-water in deep lagoons and along seaward coral reefs from 1 m to 25 m.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: A single postmaxillary process; small conical teeth in jaws, vomer, and palatines; mouth protrusible; anal fin with 3 spines and 11–13 soft rays; pectoral fins with 20–23 rays; supratemporal band of scales generally interrupted at dorsal midline by a narrow scaleless zone.

Colour: Blue-green, shading to silvery-white ventrally; caudal fin lobes tipped with black



Size: To 40 cm (TL)

LOBOTIDAE

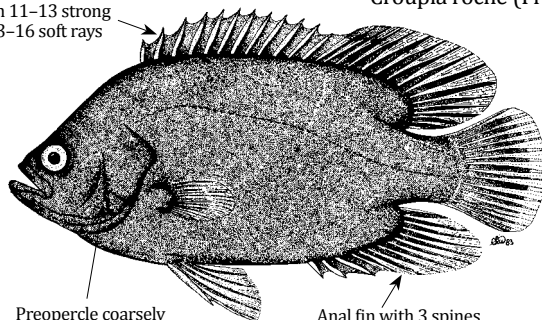
Tripletails

Lobotes surinamensis (Bloch, 1790)

(Plate XX, 164)

FAO names: Tripletail (En)
Croupia roche (Fr)**Local name(s):** Dai (Sin); Gazi-gwazi (Bal).**Habitat:** In coastal areas and estuaries; also found offshore around floating objects.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Jaws with an outer row of short, close-set canines and an inner band of smaller teeth; no teeth on vomer, palatines, or tongue; soft dorsal and anal fins large and broadly rounded, reaching past base of caudal fin (appearing as 3 tails together with rounded caudal fin).**Colour:** Juveniles brownish and often mottled darker; adults uniform dark brown or olive to mottled yellowish.

Dorsal fin with 11–13 strong spines and 13–16 soft rays



Preopercle coarsely serrate

Anal fin with 3 spines and 11–12 soft rays

Size: To 100 cm, common 50 cm (TL)**GERREIDAE**

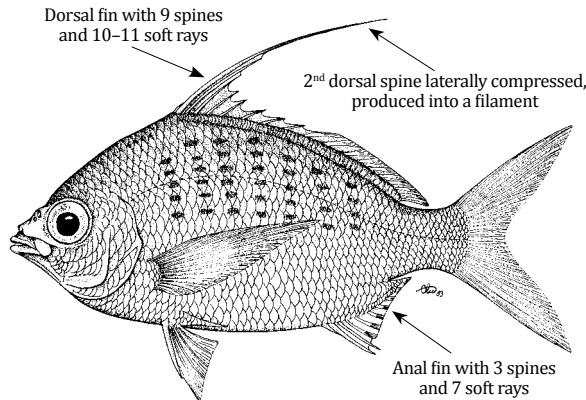
Silverbiddies – Mojarras

Gerres filamentosus Cuvier, 1829

FAO names: Whipfin silver-biddy (En)

Local name(s): Jhirki, Jirkini, Jhir-kili (Sin); Maadrow (Bal).**Habitat:** Shallow coastal waters down to 50 m.**Fisheries:** Gillnets, cast nets, bottom trawls.**Distinctive Characters:** Body deep, its depth 41.5–51.4% of SL; pectoral fin tip reaching to level of 1st anal spine; 43–46 lateral line scales to base of caudal fin, plus 2–5 scales on caudal fin base; 4½–5½ scale rows between lateral line and 5th dorsal fin spine.**Colour:** Silvery, with 6–12 vertical bands of pale brown ovoid spots on upper half of sides, coalescing as bars in small specimens; pectoral, pelvic, caudal and anal fins dusky hyaline; tips of pelvic, anal and caudal lobes, white; dorsal fin hyaline except for the end of filamentous spine, which is black.

Dorsal fin with 9 spines and 10–11 soft rays

2nd dorsal spine laterally compressed, produced into a filament

Anal fin with 3 spines and 7 soft rays

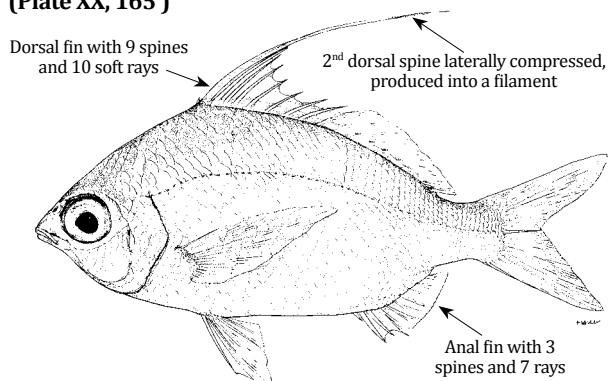
Size: To 35 cm, common 15 cm (TL)***Gerres infasciatus*** Iwatsuki & Kimura, 1998

FAO names: Nonbanded whipfin mojarra (En)

(Plate XX, 165)

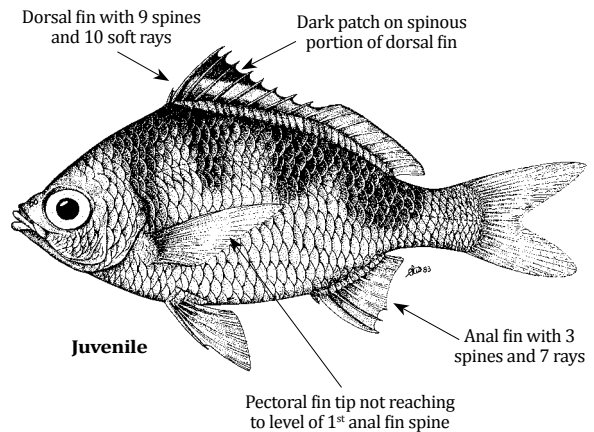
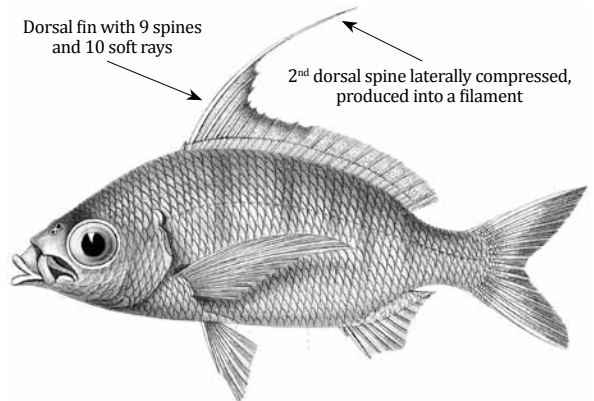
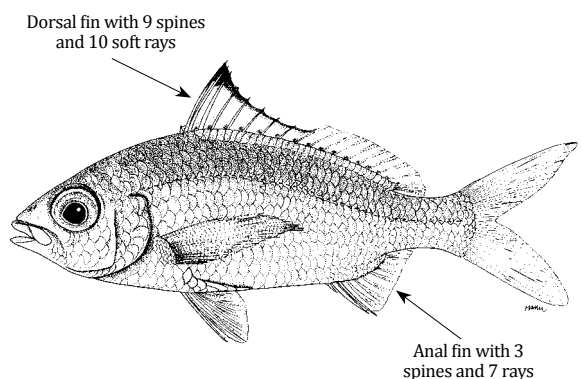
Local name(s): Jhirki, Jirkini, Jhir-kili (Sin); Maadrow (Bal).**Habitat:** Shallow coastal waters over sandy bottoms near outflows of rivers.**Fisheries:** Gillnets, cast nets, bottom trawls.**Distinctive Characters:** Body deep, its depth 45–47.1% of SL; pectoral fin tip reaching to level of 1st anal spine; 39–40 lateral line scales, plus 3–4 scales on caudal fin base; 4½ scale rows between lateral line and 5th dorsal fin spine.**Colour:** Brownish silver above, becoming more silver on lower sides (sometimes faint bands on body); snout blackish dorsally; 1st and 2nd soft dorsal fin ray tips yellow; narrow, faint dusky-yellowish margin on membrane of spinous dorsal fin (between 4th–9th spines) clearly apparent in fresh specimens.

Dorsal fin with 9 spines and 10 soft rays

2nd dorsal spine laterally compressed, produced into a filament

Anal fin with 3 spines and 7 rays

Size: To 14 cm (SL)

Gerres limbatus* Cuvier, 1830*(Plate XX, 166)****FAO names:** Saddleback silver-biddy (En)**Local name(s):** Jhirki, Jirkini, Jhir-kili (Sin); Maadrow (Bal).**Habitat:** Lives in tidal areas of estuaries and very shallow coastal waters.**Fisheries:** Gillnets, cast nets, bottom trawls.**Distinctive Characters:** Body depth contained 2.3–2.7 in SL; 33–35 lateral line scales, plus 3 more scales on caudal fin base; 2½–3 scale rows between lateral line and 5th dorsal spine.**Colour:** Body silvery (juveniles with 4–5 diffused dark saddle patches on back, almost disappearing with growth; caudal fin pale yellow (often with a dusky trailing edge); anal fin with anterior half yellow or dull orange, posterior whitish hyaline (rarely dusky); pelvic fins yellow or dull orange.**Size:** To 15 cm, common 10 cm (TL)***Gerres macracanthus* Bleeker, 1854****FAO names:** Longspined silverbiddy (En)**Local name(s):** Jhirki, Jirkini, Jhir-kili (Sin); Maadrow (Bal).**Habitat:** Coastal waters to depths of at least 30 m on sandy bottoms; also in estuaries; schooling.**Fisheries:** Gillnets, cast nets, bottom trawls.**Distinctive Characters:** Body elongate, its depth 35.6–44.9% of SL; 41–44 lateral line scales, plus 2–5 scales on caudal fin base; anal fin with 3 spines and 7 (rarely 8) soft rays; 4–5 scale rows between lateral line and 5th dorsal spine.**Colour:** Usually 6–10 (rarely 14) indistinct vertical bands in both fresh and preserved specimens; first and second dorsal fin ray tips dusky, pelvic fins hyaline when fresh.**Size:** To 20 cm (TL)***Gerres oyena* (Forsskål, 1775)*****FAO names:** Common silver-biddy (En)
Blanche commune (Fr)**Local name(s):** Jhirki, Jirkini, Jhir-kili (Sin); Maadrow (Bal).**Habitat:** Along sandy beaches but also enters estuaries and brackish lagoons.**Fisheries:** Gillnets, cast nets, bottom trawls.**Distinctive Characters:** Body oblong, its depth 3–3.3 in SL; 35–39 lateral line scales, plus 3–4 scales on caudal fin base; pectoral fin tip reaching to just above anus; 2nd and 3rd anal fin spines slender and short; 3–4 (usually 3½) scale rows between lateral line and 5th dorsal spine.**Colour:** Silvery, with a trace of pale olive above lateral line; 7 or 8 faint dusky bars on sides of body in young, absent in older fish; prominent black tip to spinous part of dorsal fin, usually confined to distal part of membrane between second and fifth spines but sometimes continuing as a black margin along whole of dorsal fin.**Size:** To 30 cm (TL)

Gerres phaiya Iwatsuki & Heemstra, 2001 *

Local name(s): Jhirki, Jirkini, Jhir-kili (Sin); Maadrow (Bal).

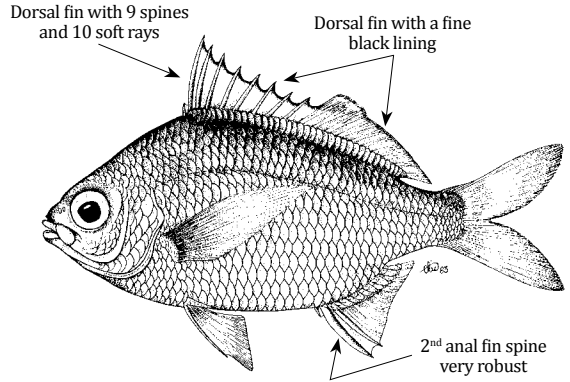
Habitat: Shallow coastal waters; also in estuaries and over bottoms of muddy sand; schooling.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body deep, its depth 2.1–2.3 in SL; 36–40 lateral line scales, plus 2–3 scales on caudal fin base; pectoral fin tip reaching slightly beyond level of 1st anal fin spine; 2nd and 3rd anal fin spines slender and short; 5½–6½ scale rows between lateral line and 5th dorsal spine.

Colour: Upper sides of head and trunk tinged with golden brown, grading to silver on lower sides; about 10 diffuse dusky bars spread across sides of trunk in some specimens; dorsal fin mostly hyaline; pelvic and anal fins strong or vivid yellow.

FAO names: Strong spine silver-biddy (En)



Size: To 13.7 cm (SL)

Pentaprion longimanus (Cantor, 1849) *

Local name(s): Jhirki, Jirkini, Jhir-kili (Sin); Maadrow (Bal).

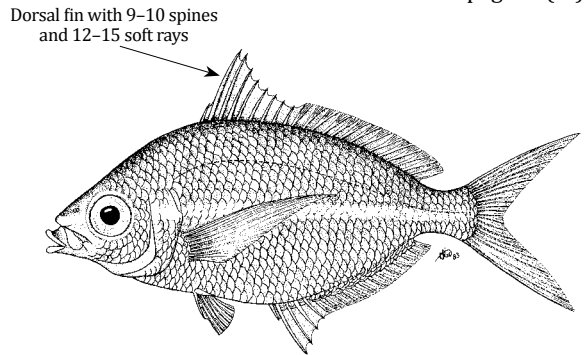
Habitat: Inhabits inshore areas, on muddy-sand bottoms, to depths of 70 m.

Fisheries: Gillnets, cast nets, bottom trawls.

Distinctive Characters: Body moderately deep, its depth 2.5–2.8 in SL; 44–48 lateral line scales to base of caudal fin; pectoral fins tip reaching a level half-way along base of anal fin; anal fin with 5–6 spines and 12–14 soft rays, its base longer than base of soft portion of dorsal fin; caudal fin deeply forked with pointed lobes.

Colour: Silvery, with a mirror-like stripe from snout to caudal peduncle; fins dusky yellow; market specimens pale pink or grey.

FAO names: Longfin silverbiddy (En)
Blanche à pagaies (Fr)



Size: To 20 cm, common 10 cm (TL)

HAEMULIDAE

Grunts – Sweetlips – Rubberlips – Hotlips

Diagramma picta (Thunberg, 1792)

(Plate XXI, 167, 168)

FAO names: Painted sweetlips (En)
Diagramme voilier (Fr)

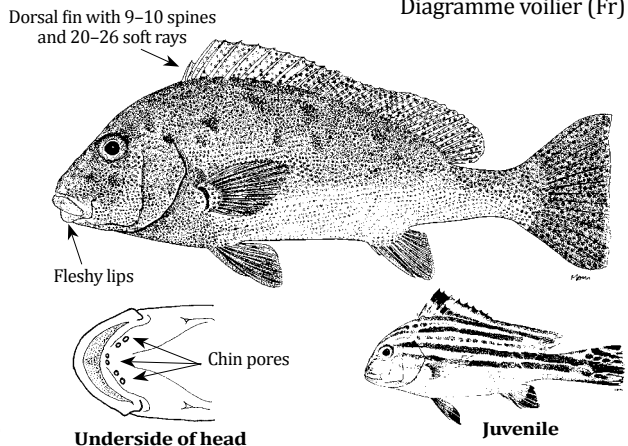
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Coastal waters around coral and rocky reefs. Maximum depth 80 m.

Fisheries: Handlines, gillnets, bottom trawls.

Distinctive Characters: Mouth small; chin with 6 pores, but no median pit; 17–23, rarely 17 or 18 gill rakers on 1st gill arch (5–9 on upper limb, 1 at corner, and 10–16 on lower limb); anal fin with 3 spines and 7 soft rays; caudal peduncle slender and long; scales small, ctenoid.

Colour: Longitudinal black bands on juveniles; adults blue-grey with bright yellow to golden orange spots sometimes forming lines on head; in large individuals the spots become small or indistinct; inside mouth bright orange to red.



Size: To 100 cm, common 55 cm (TL)

Plectorhinchus flavomaculatus (Cuvier, 1830)

(Plate XXI, 169)

FAO names: Lemonfish (En)

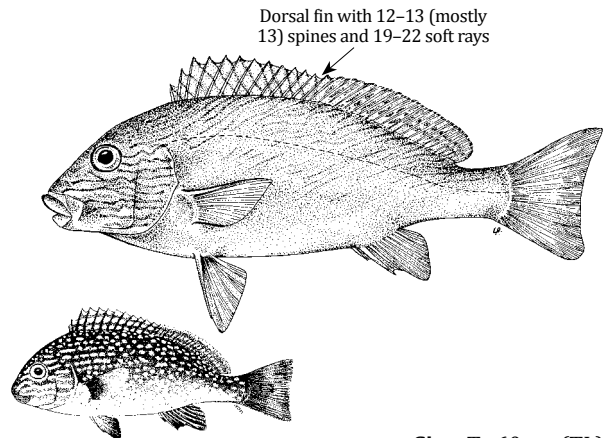
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Coastal waters near reefs and weedy areas.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy, moderately thickened with age; 26–34 gill rakers on 1st gill arch (11–14 on upper limb, 1 at corner, and 16 – 19 on lower limb); chin with 6 pores but no median pit; scales ctenoid (rough).

Colour: Body bluish grey; juveniles with golden or rusty-orange stripes along the body that break into a reticulate pattern and form small spots that may be lost with growth or remain as wavy lines of spots on head.



Juvenile

Size: To 60 cm (TL)

Plectorhinchus gaterinus (Forsskål, 1775)

(Plate XXI, 170)

FAO names: Blackspotted rubberlip (En)

Diagramme moucheté (Fr)

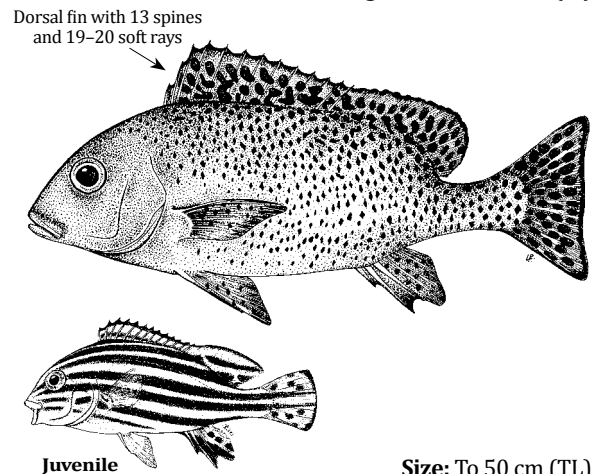
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Coastal reefs, usually among coral ledges.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy but not swollen; mouth red inside; 26–27 gill rakers on 1st gill arch (8 on upper limb, 1 at corner, and 17–18 on lower limb); chin with 6 pores but no median pit; pelvic fins longer than pectoral fins; scales ctenoid (rough).

Colour: Adults yellowish grey, back greenish and belly yellowish, with rows of dark grey to black spots on body and fins; juveniles pale silver grey with yellow fins and 5–7 brown longitudinal bands which break into lines of spots at 10–12 cm (SL); dorsal fin whitish with broad dark basal bands.



Juvenile

Size: To 50 cm (TL)

Plectorhinchus gibbosus (Lacepède, 1802)

(Plate XXI, 171)

FAO names: Harry hotlips (En)

Diagramme noir (Fr)

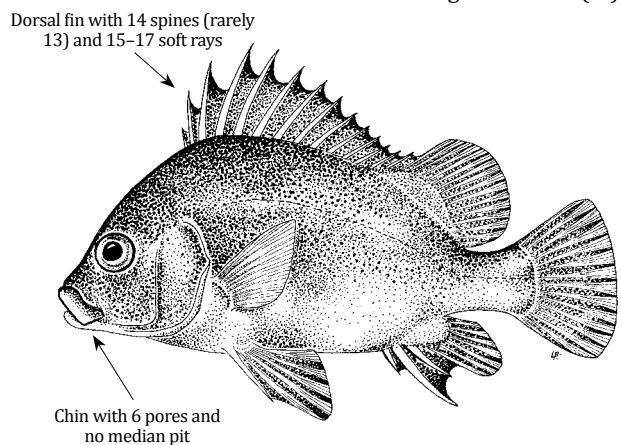
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Coastal reefs and estuaries.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy, greatly swollen with age; 24–30 gill rakers on 1st gill arch (8–10 on upper limb, 1 at corner, and 17–19 on lower limb); anal fin with 3 spines and 7 soft rays; pectoral fins with 17 rays; in juveniles, spiny portion of dorsal fin twice as high as soft portion, becoming about equal in height in large adults.

Colour: Juveniles brownish, caudal fin pink or transparent; adults uniform dark grey to brownish or blackish; large specimens are sometimes mottled with light brown.



Chin with 6 pores and no median pit

Size: To 75 cm (TL)

Plectorhinchus pictus (Tortonese, 1936)

(Plate XXI, 172)

FAO names: Trout sweetlips (En)
Diagramme truité (Fr)

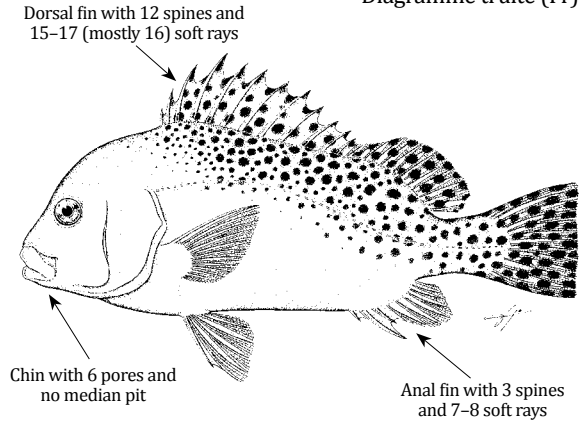
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: A solitary species found in lagoon and seaward reefs; adults usually under coral heads or in caves, while juveniles in shallow lagoons.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy, moderately swollen with age; 20–23 gill rakers on 1st gill arch (6–8 on upper limb, 1 at corner, and 11–14 on lower limb); scales ctenoid (rough).

Colour: Greyish brown, most of the body with rounded black pots about equal in size to interspaces, larger than interspaces in young; juveniles have 3 longitudinal brownish bands which may be broken into blotches and with numerous dark spots about equal to eye diameter between the 2 uppermost bands.



Size: To 84 cm (TL)

Plectorhinchus playfairi (Pellegrin, 1914)

FAO names: Whitebarred rubberlip (En)
Diagramme rayons de soleil (Fr)

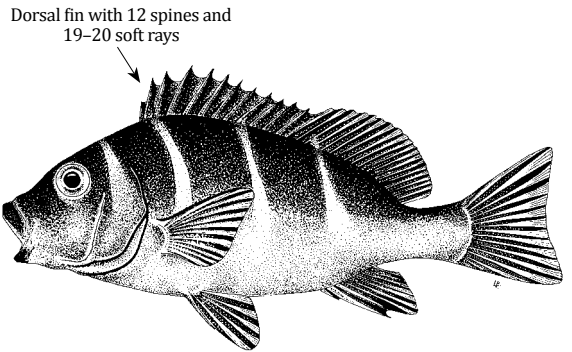
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Coastal reefs down to 80 m.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy, swollen with age; chin with 6 pores but no median pit; 32–34 gill rakers on 1st gill arch (11 on upper limb, 1 at corner and 20–22 on lower limb); lateral line with about 58–60 tubed scales; scales ctenoid.

Colour: Grey to black with 4 narrow white cross bars; lips, mouth and base of pectoral fins pink; tips of dorsal fin spines and edge of opercle red to scarlet.



Size: To 90 cm (TL)

Plectorhinchus schotaf (Forssskål, 1775)

(Plate XXI, 173)

FAO names: Minstrel sweetlips (En)
Diagramme ménestrel (Fr)

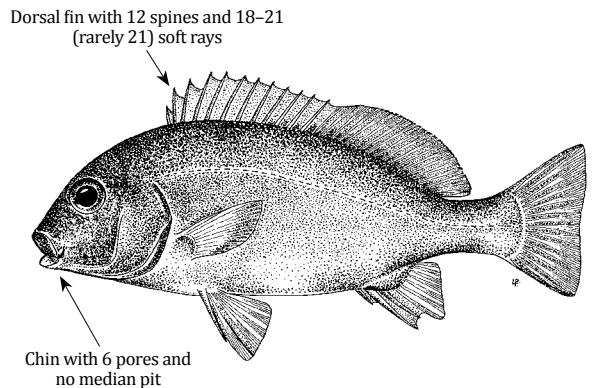
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Inhabits coastal waters near reefs.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy, moderately swollen with age; base of soft part of dorsal fin distinctly longer than head; 26–31 gill rakers on 1st gill arch (10–14 on upper limb, 1 at corner and 15–17 on lower limb); lateral line with about 54–58 tubed scales; scales ctenoid.

Colour: Dusky grey to brownish grey; posterior edge of preopercle and opercle with a red line; lips and mouth scarlet; juveniles sometimes with narrow faint blue lines on body and below eye; fins usually dark; freshly caught fish often have irregular broad pale bars and blotches which disappear after death.



Size: To 80 cm, common 60 cm (TL)

Plectorhinchus sordidus (Klunzinger, 1870)

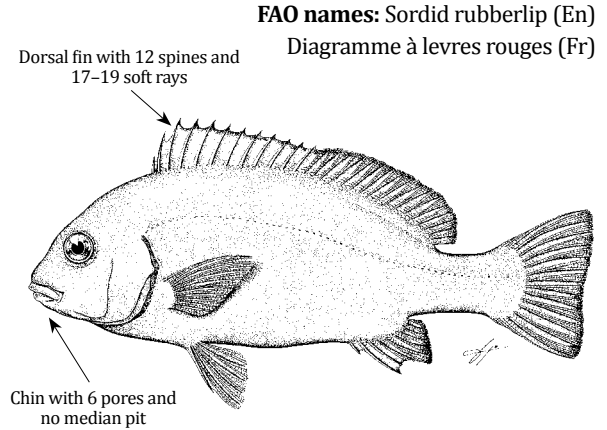
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Rocks and corals, as well as shallow weedy areas.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy, swollen with age; base of soft part of dorsal fin about equal to head length; 24–26 gill rakers on 1st gill arch (9–11 on upper limb, 1 at corner and 14–15 on lower limb); lateral line with about 54 tubed scales; scales ctenoid (rough).

Colour: Blue grey to steel grey with areas of bronze; fins and head leaden grey; inside of mouth, edge of opercle and lips scarlet; edge of membrane at front of dorsal fin darker; juveniles colorful.



Size: To 30 cm (TL)

Plectorhinchus vittatus (Linnaeus, 1758)*

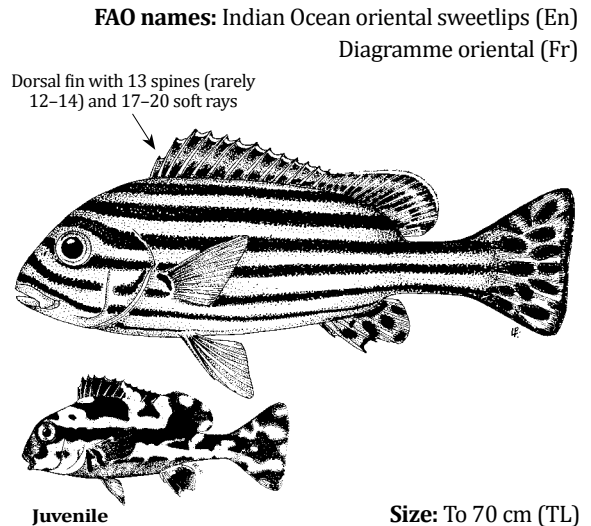
Local name(s): Chipran, Moi, Chapar moi (Sin); Chippil, Lunti (Bal).

Habitat: Coastal rocky and coral reefs.

Fisheries: Caught mainly by handlines and gillnets.

Distinctive Characters: Lips fleshy, greatly swollen with age; chin with 6 pores but no median pit; 28–35 gill rakers on 1st gill arch (9–11 on upper limb, 1 at corner, and 18–23 on lower limb); lateral line with about 60 tubed scales; scales ctenoid (rough).

Colour: Varies greatly with age; juveniles with connected black blotches and spots that gradually break up in adults into horizontal bands which unite at tip of snout; pectoral fins black in juveniles, becoming uniformly yellow in adults; tail spotted with age.



Size: To 70 cm (TL)

Pomadasys aheneus McKay & Randall, 1995

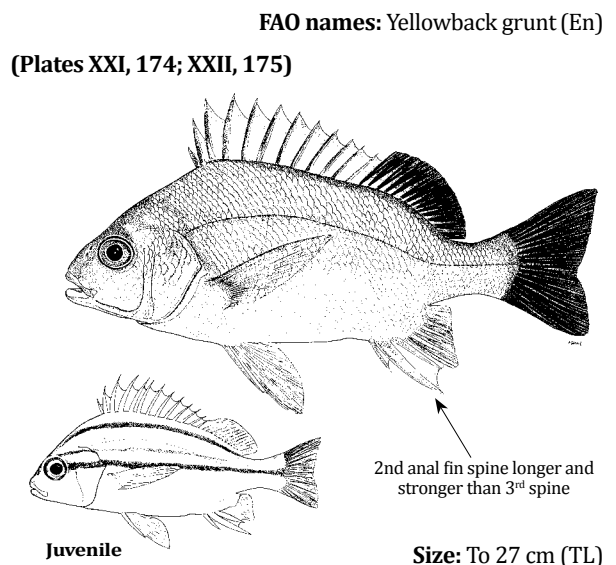
Local name(s): Siah Dhotar (Sin); Paalari (Bal).

Habitat: Inshore species associated more with rocky than sandy substrata.

Fisheries: Caught mainly by gillnets and bottom trawls.

Distinctive Characters: Body depth 2.3–2.6 in SL; mouth small, terminal, without fleshy lips; chin with 2 pores and a median pit; jaw teeth villiform (brush-like); dorsal fin with 12 spines and 13–14 soft rays; anal fin with 3 spines and 7–8 soft rays; 8½–9½ scale rows between lateral line and dorsal fin origin; scales ctenoid (rough).

Colour: In life brassy yellow on nape, anterior part of back, and upper sides; caudal fin and most of rayed dorsal fin blackish; juveniles yellow with two well-defined brown horizontal stripes and a thinner brown stripe in between.



Size: To 27 cm (TL)

Pomadasys argenteus (Forsskål, 1775)

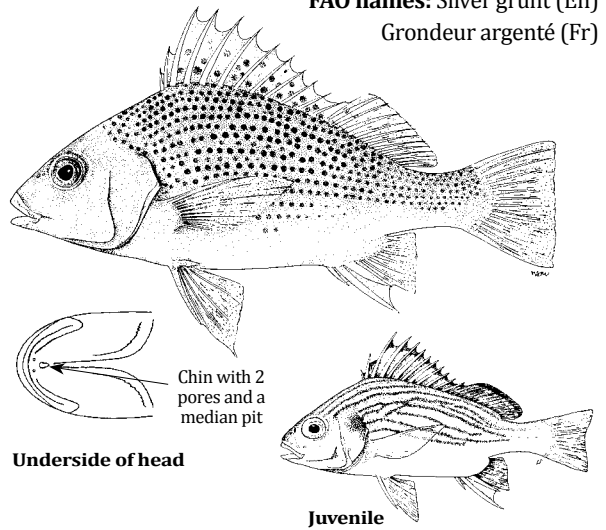
Local name(s): Dhotar (Sin); Kumpo (Bal).

Habitat: Coastal waters in open bays and estuaries.

Fisheries: Caught mainly by gillnets and bottom trawls.

Distinctive Characters: Body depth 2.7–2.8 in SL; mouth small, maxilla reaching to eye; lips not thickened; jaw teeth villiform (brush-like); dorsal fin with 12 spines and 14 soft rays; anal fin with 3 spines and 7 soft rays; 5 scale rows between lateral line and dorsal fin origin; scales ctenoid (rough).

Colour: Juveniles pale brownish, lighter below; back with irregular longitudinal streaks; dorsal fin with dusky membrane; a dark spot on gill cover; adults silvery, with dark blotches on dorsal fin and numerous scattered dark brown to blackish spots on body.



FAO names: Silver grunt (En)
Grondeur argenté (Fr)

Underside of head

Juvenile

Size: To 52 cm (TL)

Pomadasys argyreus (Valenciennes, 1833) *

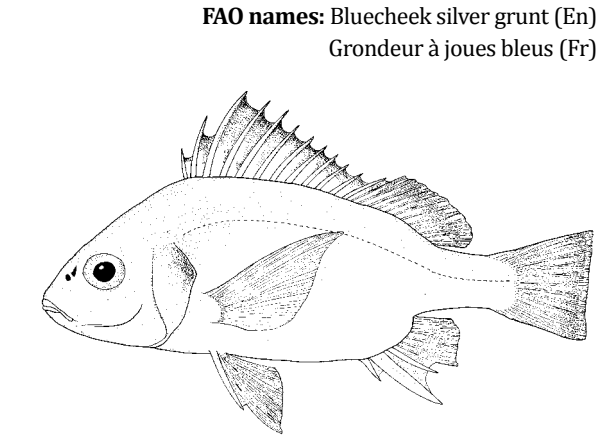
Local name(s): Dhotar (Sin); Kumpo (Bal).

Habitat: Coastal waters in open bays and on trawling grounds.

Fisheries: Caught mainly by gillnets and bottom trawls.

Distinctive Characters: Body depth 2.3–2.7 in SL; mouth small, maxilla reaching to eye; lips not thickened; jaw teeth villiform (brush-like); 2 pores and a median pit on chin; dorsal fin with 12 spines and 13 soft rays; anal fin with 3 spines and 7 soft rays; 6 scale rows between lateral line and dorsal fin origin; scales ctenoid (rough).

Colour: Body silvery; gill cover with a large blue black blotch extending onto opercle and becoming indistinct in adults; peritoneum pale sandy brown; alimentary canal pale (not black).



FAO names: Bluecheek silver grunt (En)
Grondeur à joues bleus (Fr)

Size: To 40 cm, common 25 cm (TL)

Pomadasys commersonnii (Lacepède, 1801)

(Plate XXII, 176) **FAO names:** Smallspotted grunter (En)

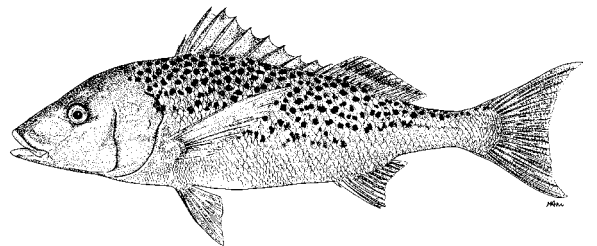
Local name(s): Holara, Dhotar, Holari dhotar (Sin); Ulo-la, Kumpo.

Habitat: Coastal waters in open bays and estuaries.

Fisheries: Caught mainly by gillnets and bottom trawls.

Distinctive Characters: Body relatively elongate, its depth 2.9–3.7 in SL; snout pointed; mouth small, maxilla reaching to posterior nostril or eye; lips fairly thick; 2 pores and a median pit on chin; dorsal fin with 11–12 spines and 13–16 soft rays; anal fin with 3 spines and 9–10 soft rays; 52–54 lateral line scales; scales ctenoid (rough).

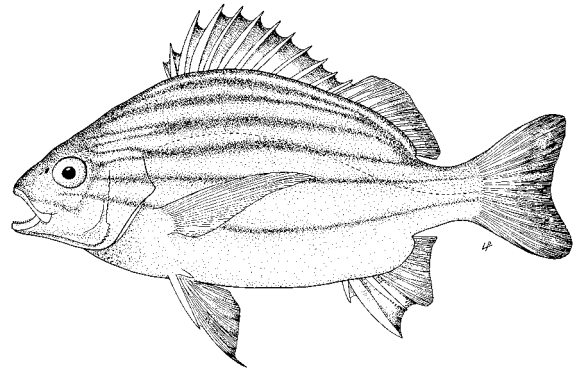
Colour: Silvery with small black spots on about upper two-thirds of body and on nape; a bluish black spot posteriorly on opercle.



Size: To 60 cm, common 35 cm (TL)

Pomadasys furcatus (Bloch & Schneider, 1801)

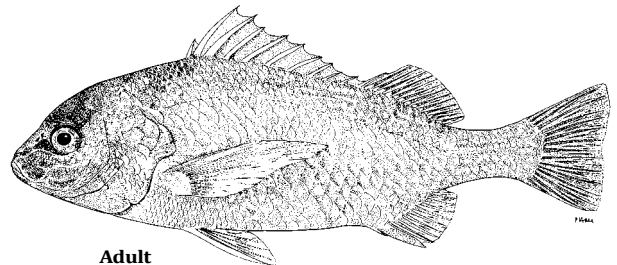
(Plate XXII, 177)

FAO names: Banded grunter (En)
Goret à six bandes (Fr)**Local name(s):** Dhotar (Sin); Kumpo (Bal).**Habitat:** Inhabits coastal waters near reefs.**Fisheries:** Caught mainly by gillnets and bottom trawls.**Distinctive Characters:** Body depth 2.9–3 in SL; mouth small, maxilla reaching to posterior nostril or eye; jaw teeth villiform (brush-like); 2 pores and a median pit on chin; dorsal fin with 12 spines and 14–16 soft rays; anal fin with 3 spines and 8–9 soft rays; 8–9 scale rows between lateral line and dorsal fin origin; soft portions of dorsal and anal fins with a row of interradiating scales.**Colour:** Body purplish-brown above, paler below, with about 6 longitudinal dark stripes that are usually bifurcate anteriorly; the stripes becoming progressively more bifurcate or double with age.

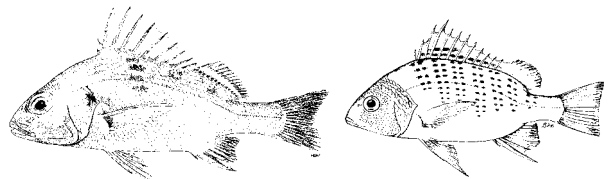
Size: To 50 cm

Pomadasys kaakan (Cuvier, 1830)

(Plate XXII, 178, 179)

FAO names: Javelin grunter (En)
Grondeur javelot (Fr)**Local name(s):** Dhotar (Sin); Kumpo (Bal).**Habitat:** : Inhabits estuaries and coastal waters down to 60 m.**Fisheries:** Caught mainly by gillnets and bottom trawls.**Distinctive Characters:** Body depth 2.5–3 in SL; mouth small, maxilla reaching to eye; jaw teeth villiform (brush-like); 2 pores and a median pit on chin; dorsal fin with 12 spines and 13–15 soft rays; anal fin with 3 spines and 7–8 soft rays; scales ctenoid; 7 scale rows between lateral line and dorsal fin origin.**Colour:** Juveniles with 12 or more vertical bars comprised of small dark brown spots or irregular blotches; dorsal fin spotted with dark brown to black spots on lower half of spinous dorsal fin and in 3 rows on rayed dorsal fin; adults uniform golden green above, silvery below with traces of the vertical bars present only when alive and spots on dorsal fins indistinct or absent; large individuals sometimes with head, ventral parts of body and lower lobe of caudal fin yellowish.

Adult



Subadult

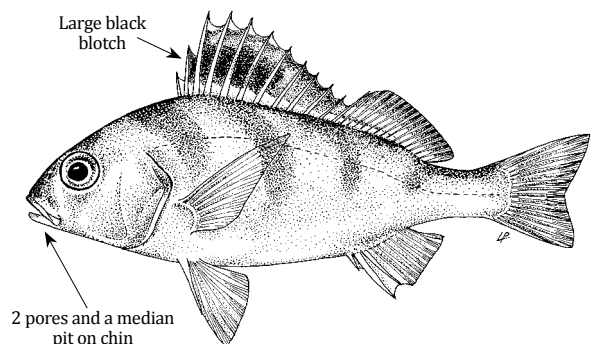
Juvenile

Size: To 80 cm, common 50 cm (TL)

Pomadasys maculatus (Bloch, 1793)

(Plate XXII, 180)

FAO names: Saddle grunt (En)

Local name(s): Gaingara, Gogaro, Dhotar (Sin); Paalari (Bal)**Habitat:** Inhabits coastal waters down to 40 m.**Fisheries:** Gillnets, bottom trawls.**Distinctive Characters:** Body depth 2.3–2.7 in SL; mouth small, maxilla reaching to eye; jaw teeth villiform (brush-like); dorsal fin with 12 spines and 13–15 soft rays; anal fin with 3 spines and 7 (rarely 6 or 8) soft rays; 7–9 scale rows between lateral line and dorsal fin origin; scales ctenoid (rough).**Colour:** Body silvery grey; head purplish; nape and back with a series of incomplete cross bars (the one on nape conspicuous); fins yellowish.

Size: To 55 cm, common 30 cm (TL)

Pomadasys multimaculatus (Playfair, 1867)*

FAO names: Cock grunter (En)

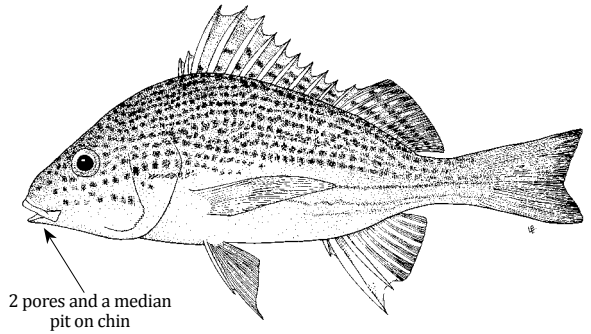
Local name(s): Dhotar (Sin); Taan-tar (Bal).

Habitat: Coastal waters along sandy beaches and estuaries.

Fisheries: Bottom trawls.

Distinctive Characters: Body depth 2.5–2.8 in SL; mouth small, maxilla reaching to level of posterior nostril; teeth villiform (brush-like); dorsal fin with 12 spines and 13 soft rays; anal fin with 3 spines and 7 soft rays; scales ctenoid (rough).

Colour: Body and head with small dark brown spots; dorsal fin spotted like on body.



Size: To 76 cm, common 50 cm (TL)

Pomadasys olivaceus (Day, 1875)

(Plate XXII, 181)

FAO names: Olive grunt (En)

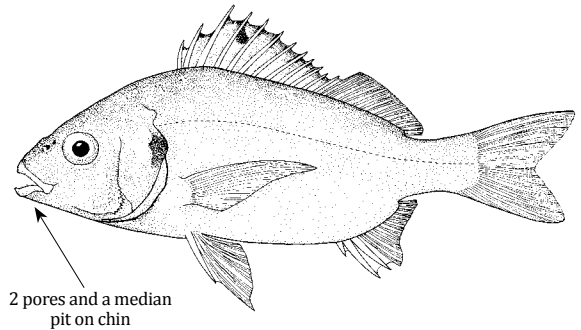
Local name(s): Dhotar (Sin); Kumpo (Bal).

Habitat: Inhabits coastal waters.

Fisheries: Caught mainly by gillnets and bottom trawls.

Distinctive Characters: Body depth 2.5–2.8 in SL; mouth small, maxilla reaching to level of posterior nostril or eye; jaw teeth villiform (brush-like); dorsal fin with 12 spines and 15–17 soft rays; anal fin with 3 spines and 11–13 soft rays; scales ctenoid (rough).

Colour: Body and head olive-grey, sometimes tinged with purple; a large blotch, bordered by yellow anteriorly at upper angle of gill cover; dorsal fin with fine brown dots.



Size: To 31 cm (TL)

Pomadasys stridens (Forsskål, 1775)

(Plate XXII, 182)

FAO names: Striped piggy (En)
Goret à trois bandes (Fr)

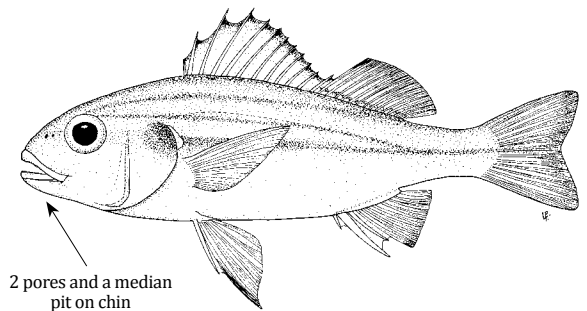
Local name(s): Gogra, Dhotar, Bukra (Sin); Kumpo, Palari (Bal).

Habitat: Inhabits coastal waters.

Fisheries: Caught mainly by gillnets and bottom trawls.

Distinctive Characters: Body depth 3.2–3.3 in SL; mouth small, maxilla reaching to eye; 10 scales between lateral line and dorsal fin origin; jaw teeth villiform (brush-like); dorsal fin with 12 spines and 13–16 soft rays; anal fin with 3 spines and 8–9 soft rays; scales ctenoid (rough).

Colour: Body brown above, white below with three brown to golden stripes on body; a dark spot present on opercle.



Size: To 20 cm (TL)

SPARIDAE

Porgies – Seabreams

Acanthopagrus arabicus Iwatsuki, 2013 (Plate XXIII, 183) **FAO names:** Arabian yellowfin seabream (En)

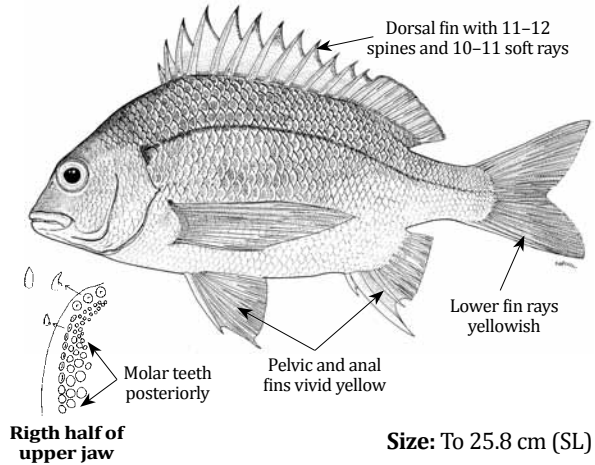
Local name(s): Dandyo, Dandia, Kissi, Kartan, Deleeri, Paaloo, Nehra (Sin); Tintle, Chan (Bal).

Habitat: Inhabits shallow coastal waters.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Anal fin with 3 spines and 8–9 soft rays; molariform teeth present in both jaws; 4½ scale rows between 5th dorsal spine and lateral line; interorbital area scaleless.

Colour: Silvery pale grey above; whitish silver below; visible streaks along longitudinal rows of body scales; dorsal fin greyish to hyaline and upper margin blackish; fin rays in terminal lower caudal fin lobe yellowish; pectoral fins whitish hyaline; conspicuous diffuse dark blotch at origin of lateral line.



Acanthopagrus berda (Forsskål, 1775) (Plate XXIII, 184) **FAO names:** Goldsilk seabream (En)

Pagre berda (Fr)

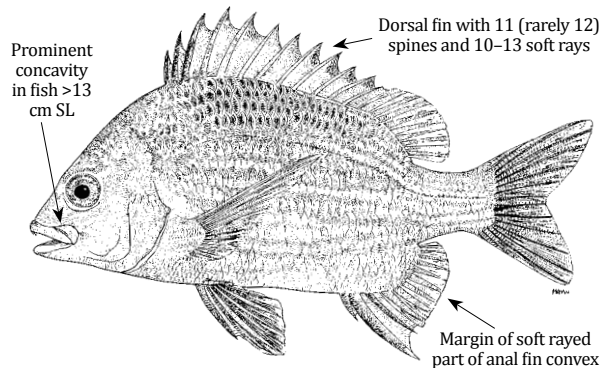
Local name(s): Kara dandyo, Dandia, Paaloo, Kala Dandya, Daleri (Sin); Cha, Tintle (Bal).

Habitat: Demersal in coastal waters.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Anal fin with 3 spines and 8–9 soft rays; molariform teeth present in both jaws; 3½ scale rows between 5th dorsal spine and lateral line; interorbital area scaleless.

Colour: Grey, dark silver or olive-brown with silvery or brassy reflections; upper part of body and scale bases darkest; lower part of head and body paler (some individuals observed in Pakistan completely blackish); a dark edge along opercle; pectoral fins dusky with a yellow tinge; soft dorsal, anal, pelvic, and caudal fins blackish.



Acanthopagrus catenula (Lacepède, 1801) **FAO names:** Bridled seabream (En)

Local name(s): Kukkirio, Lado, Pokia, Doolah, Gotala, Daro-dandya, Daleri (Sin); Shumala, Lado, Bah-mear, Banore (Bal).

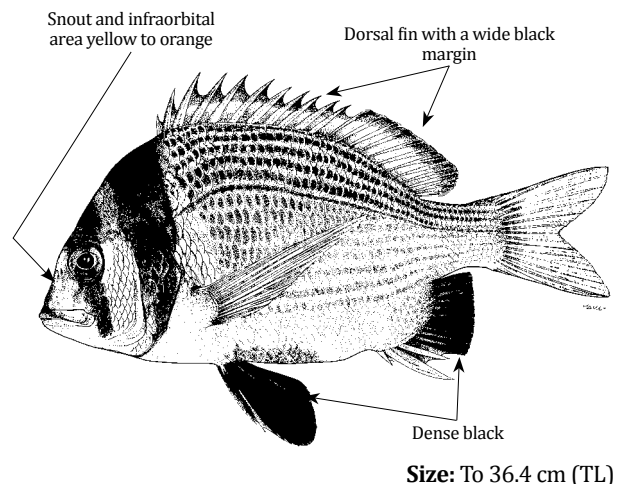
Habitat: Shallow coastal waters, mainly around coral reefs; enters estuaries and bays.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Dorsal fin with 11 spines and 12–15 soft rays; 4½ scale rows between fifth dorsal fin spine base and lateral line; molariform teeth present in both jaws; interorbital area scaleless; anal fin with 3 spines and 10 soft rays.

Colour: Silvery with two black bars on head; dorsal, caudal and pectoral fins yellow to orange shade.

Remarks: This species has been invariably confused with *Acanthopagrus bifasciatus* (Forsskål, 1775).



Acanthopagrus sheim Iwatsuki, 2013

FAO names: Spotted yellofin seabream (En)

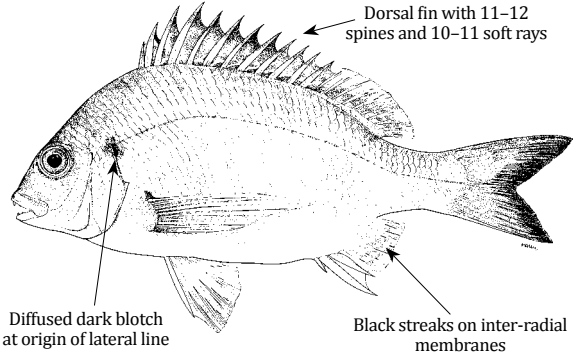
Local name(s): Kara dandyo, Dandia, Kissi, Deleeri, Jaras, Naira, Paaloo, Nehra (Sin); Cha, Jaraz, Tintle (Bal).

Habitat: Demersal in coastal waters.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Anal fins with 10 spines and 10 soft rays; 4½ scale rows between 5th dorsal fin spine base and lateral line; molariform teeth present in both jaws; interorbital area scaleless.

Colour: Silvery pale grey above; whitish silver below; weak streaks along longitudinal rows of body scales; specimens collected in Pakistan with pelvic and anal fins light yellow (not bright yellow as in *Acanthopagrus arabicus*); caudal fin blackish; fin rays in terminal lower caudal fin lobe yellowish (whitish in Pakistani specimens).



Size: To 30 cm (SL)

Argyrops spinifer (Forsskål, 1775)

FAO names: King soldier bream (En)
Spare royal (Fr)

Local name(s): Dand, Dandya, Kuranti, Kharak paaloo, Paaloo (Sin); Soroo, Malelak, Gwatak (Bal).

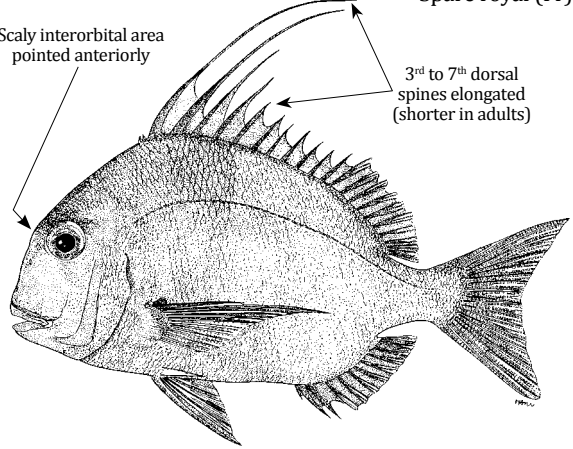
Habitat: Bottom dwelling species, common from 5 m to 100 m.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Dorsal fin with 11-12 spines and 10-11 soft rays; jaws with 4-6 enlarged canines at front, molariform/conical teeth behind; first 2 spines of dorsal fin very short; anal fin with 3 spines (2nd and 3rd sub-equal) and 8 soft rays; large adults (perhaps only males) developing a hump on nape.

Colour: Body mainly silvery pinkish, darker on head; usually dark red on margin of upper part of opercle; all fins red; young fish with 5 faint pink vertical pink bars on body.

Remarks: An undescribed *Argyrops* species occurs in Pakistan (Y. Iwatsuki, personal communication, 2015).



Size: To 70 cm, common 30 cm (TL)

Cheimerius nufar (Valenciennes, 1830)

(Plate XXIII, 185)

FAO names: Santer seabream (En)
Denté nufar (Fr)

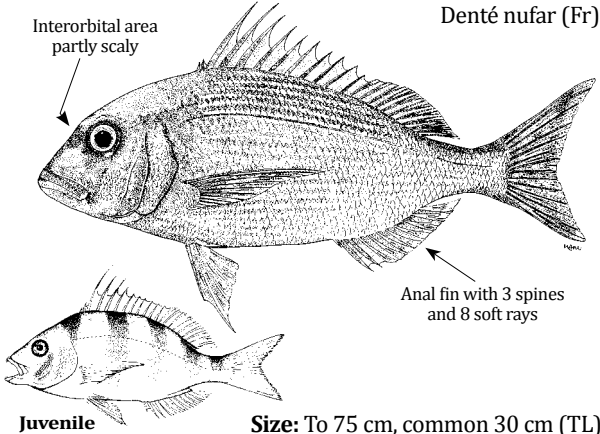
Local name(s): Dand, Dandya, Kuranti, Kharak paaloo, Paaloo (Sin); Soroo, Malelak, Gwatak (Bal).

Habitat: Rocky bottoms from 60 m to 100 m.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Jaws with 4-6 slender canines at front, smaller conical teeth behind; molars absent; dorsal fin with 11-12 spines and 10-11 rays, the 1st two spines short, 3rd to 7th elongate (shorter in adults); 1st pelvic ray elongate; caudal fin forked with pointed lobes.

Colour: Silvery pink with 4-5 faint red bars on body (more obvious in juveniles); faint dark bar through eye; front of snout pink.



Size: To 75 cm, common 30 cm (TL)

Crenidens indicus Day, 1873

(Plate XXIII, 186)

FAO names: Not available (En)

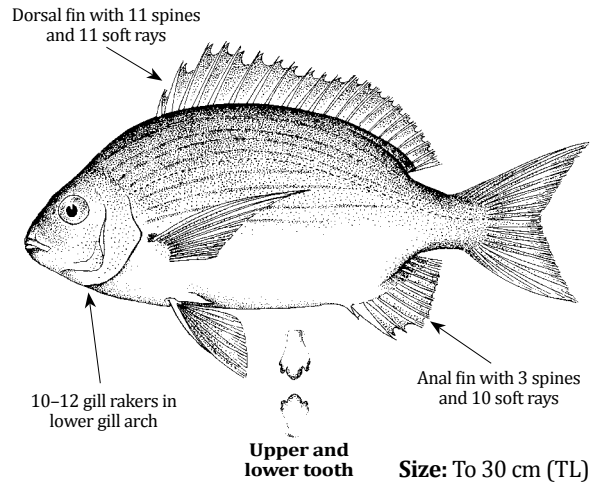
Local name(s): Kissi, Tikki wari kissi, Karo-dandya (Sin); Nawar, Keen-si (Bal)

Habitat: Muddy bottoms in shallow coastal waters, also in estuaries.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Body depth 2.1–2.3 in SL; each jaw 2–3 series of incisors, the cutting edge of each with five points; several rows of small granular teeth in posterior part of jaws; 5½–6½ scale rows between 10th dorsal fin spine base and lateral line; 2nd anal fin spine subequal or only slightly longer than 3rd anal fin spine.

Colour: Silvery with a dusky spot in scale centres, resulting in a striped effect; a blackish spot dorsally in pectoral fin axil.

***Diplodus capensis*** (Smith, 1844)

(Plate XXIII, 187)

FAO names: White seabream (Cape) (En)
Sar commun du Cap (Fr)

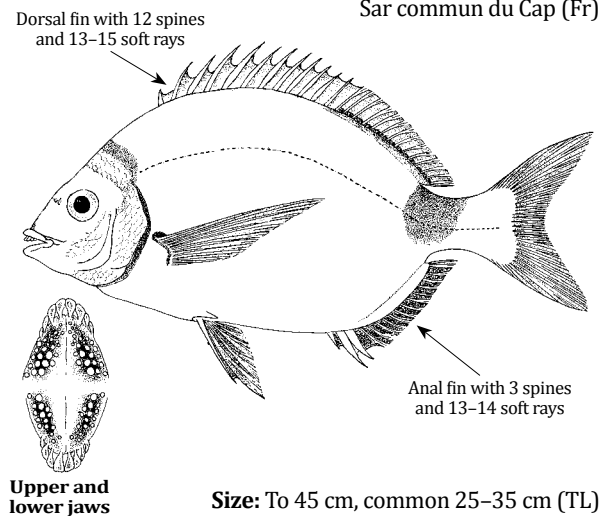
Local name(s): Kukkidia (Sin); Tintle (Bal).

Habitat: Found in rocky areas to about 50 m depth, enters estuaries, used also as nurseries.

Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Body depth 1.9–2.3 in SL; adults with 8 projecting incisiform teeth in front of each jaw; 3–4 rows of rounded molars behind; no scales between eyes and on preopercle flange; 8–10 (rarely 11) gill rakers on lower limb of 1st gill arch; 55–72 pored lateral line scales.

Colour: Head and body usually silvery; a large black saddle-shaped blotch on caudal peduncle; small black spot just above pectoral fin axil; diffuse black blotch at origin of lateral line; juveniles with 8–10 faint dark bars dorsally on body

***Diplodus omanensis*** Bauchot & Bianchi, 1984

FAO names: Oman seabream (En)

Local name(s): Taikairi, Tikka kissi, Tikki wari kissi, (Sin); Tip-puch (Bal).

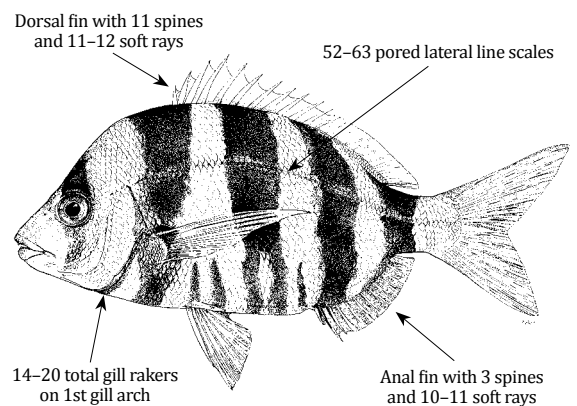
Habitat: Inshore waters over rocky bottoms.

Fisheries: Caught mainly with gillnets and handlines.

Distinctive Characters: Adults with 10–12 projecting incisiform teeth in upper jaw and 8 in lower jaw; posterior part of jaws with 2–3 rows of small molars; 52–63 pored lateral line scales.

Colour: Body silvery with four broad black bars (the first and second may bifurcate ventrally); 2 short narrow black bars ventrally in 1st silver interspace on body and 1 in 2nd; head with a black bar through eye; snout partly yellow.

Remarks: *Diplodus hottentotus* (Smith, 1844), known only from southern Mozambique to South Africa, has 5 (instead of 4) black bars on the body.



Pagellus affinis Boulenger, 1888

(Plate XXIII, 188)

FAO names: Arabian pandora (En)
Pageot d'Arabie (Fr)

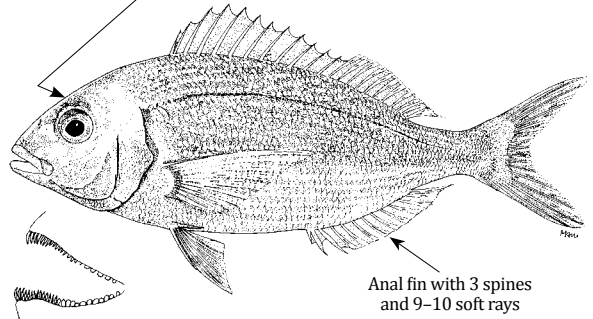
Local name(s): Dandya (Sin); Nawar, Dand (Bal).
Habitat: Occurs over various grounds, down to 150 m depth.

Fisheries: Caught mainly with gillnets and handlines.

Distinctive Characters: Body elongate, fusiform, its depth 2.6–3 in SL; sharp teeth and molars in jaws; dorsal fin with 12 slender spines and 10–11 soft rays; preopercle flange naked; 9–11 gill rakers on lower limb of 1st gill arch; 59–63 pored lateral line scales.

Colour: Pinkish silver with a pale blue spot in centres of scattered scales above lateral line but on nearly all scales below lateral line; opercular membrane light red.

Scalation on top of head reaching to beyond the level of vertical eye diameter



Lateral view of teeth in upper and lower jaws

Size: To 37 cm, common 15–20 cm (TL)

Rhabdosargus haffara (Forsskål, 1775)

FAO names: Haffara seabream (En)

Local name(s): Chan, Kapartan, Kabardan, Dandya (Sin); Chah, Nawar (Bal).

Habitat: Inhabits shallow waters, mainly around coral reefs, and over sand–muddy bottoms.

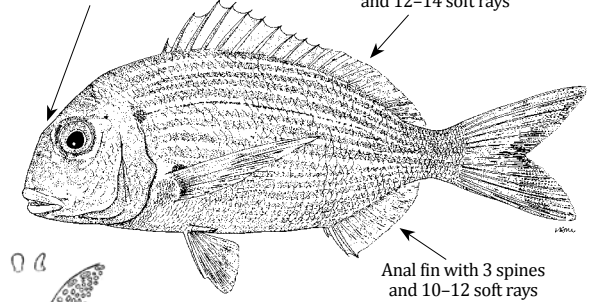
Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Body depth >2.3 in SL; 4–6 incisiform teeth at front of jaws followed by 3–5 series of molariform teeth, of which the inner posterior one is greatly enlarged; 5½–6½ scale rows between 5th dorsal spine and lateral line; preopercular flange entirely naked; 7–9 gill rakers on the lower limb; 55–66 pored lateral line scales.

Colour: Head and body silvery black; pelvic anal and caudal fins dusky gray to blackish, no yellow or golden longitudinal lines on body

Dorsal profile convex with a bump before eye

Dorsal fin with 11 spines and 12–14 soft rays



Righth half of upper jaw

Enlarged posterior molar

Size: To 35 cm (TL)

Rhabdosargus sarba (Forsskål, 1775)

(Plate XXIII, 189)

FAO names: Goldlined seabream (En)
Sargue doré (Fr)

Local name(s): Chan, Kapartan, Kabardan, Dandya (Sin); Chah, Nawar (Bal).

Habitat: Benthic in coastal waters, sometimes entering estuaries.

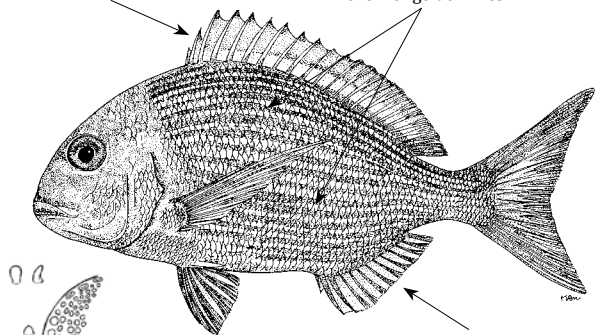
Fisheries: Caught mainly with gillnets, beach seine and handlines.

Distinctive Characters: Body depth <2.3 in SL; enlarged posterior molars in jaws as in *Rhabdosargus haffara*; 6½–7½ scale rows between 5th dorsal spine and lateral line; no preopercular flange entirely naked; 7–9 gill rakers on the lower limb; 56–64 lateral line scales.

Colour: Head and body silvery black; body with yellow or golden longitudinal lines, as well as yellowish coloration of pelvic and anal fins.

Dorsal fin with 11 spines and 12–14 (usually 13) soft rays

Yellow or golden lines



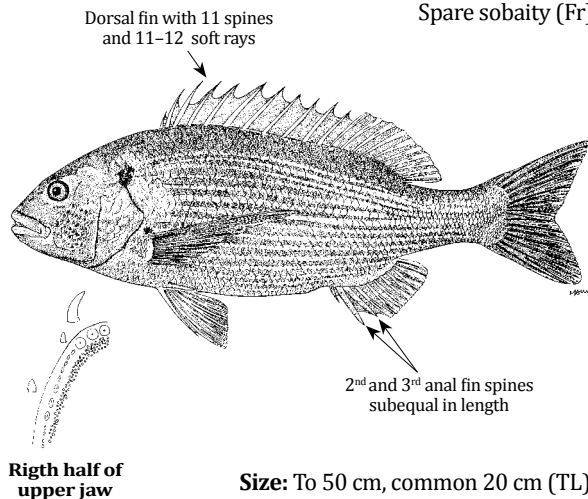
Righth half of upper jaw

Enlarged posterior molar

Size: To 80 cm, common 45 cm (TL)

Sparidentex hasta (Valenciennes, 1830)

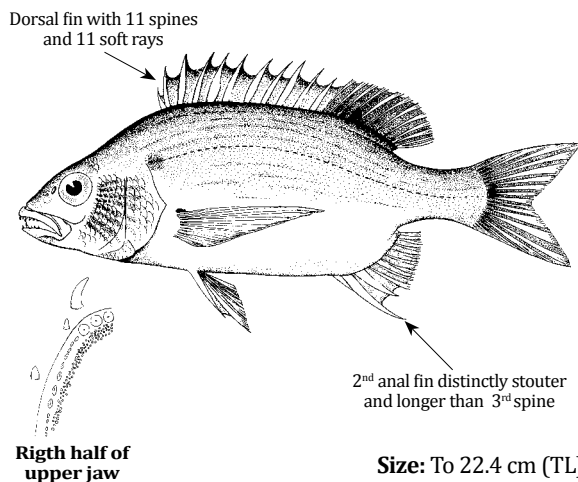
(Plate XXIII, 190)

FAO names: Sobaity seabream (En)
Spare sobaity (Fr)**Local name(s):** Dathi, Dhaathi (Sin); Jaraz, Dathi (Bal).**Habitat:** Adults occur in shallow coastal waters to moderate depths.**Fisheries:** Caught mainly with gillnets and handlines.**Distinctive Characters:** Anal fin with 3 spines and 8 soft rays; jaws with 4–6 enlarged canines at front, smaller conical and villiform teeth behind; molars absent; 5½ scale rows between 5th dorsal spine and lateral line.**Colour:** Silvery grey on back, paler to whitish on belly; scales with dark margins forming faint lines along sides of body; dorsal and anal fins dusky grey; pectoral fins light yellow to whitish and pelvic fins light grayish to whitish darker posterior margin; caudal fin dusky and posterior margin darker.

Size: To 50 cm, common 20 cm (TL)

Sparidentex jamalensis Amir, Siddiqui & Masroor, 2014

FAO names: Fanged seabream (En)

Local name(s): Dathi, Dhaathi, Kukkri (Sin); Jaraz (Bal).**Habitat:** Found in mangrove swamps and shallow coastal areas.**Fisheries:** Caught mainly with gillnets and handlines.**Distinctive Characters:** Anal fin with 3 spines and 8–9 soft rays; jaws with 6 enlarged canines at front, smaller conical and villiform teeth behind; molars absent; 3½–4½ scale rows between 5th dorsal spine and lateral line.**Colour:** Dull olive silvery above, becoming silvery-white on belly; scales with dark margins forming faint lines along sides of body; dorsal and anal fins dusky grey; pectoral fins light yellow to whitish and pelvic fins light grayish to whitish; caudal fin dusky and posterior margin darker.

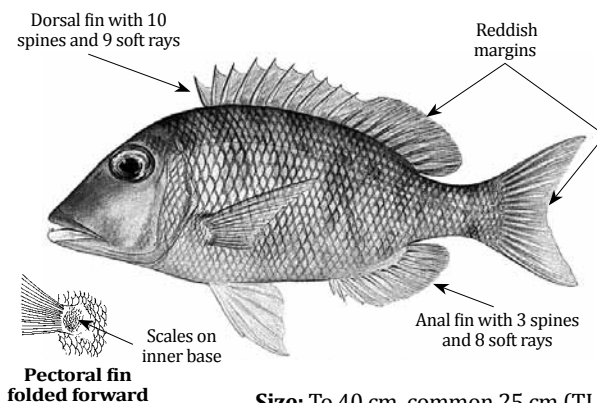
Size: To 22.4 cm (TL)

LETHRINIDAE

Emperors – Large-eye breams – Emperor snappers

Lethrinus borbonicus Valenciennes, 1830*

FAO names: Snubnose emperor (En)

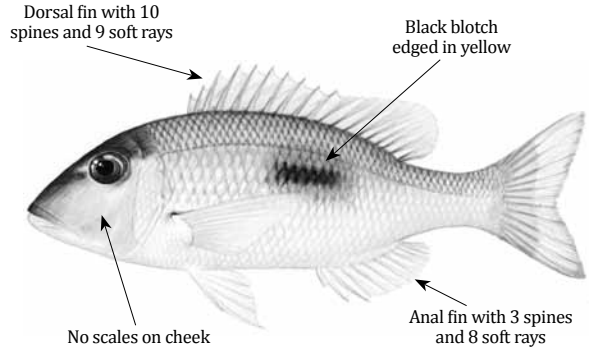
Local name(s): Mullah (Sin), Gadeer (Bal).**Habitat:** During daytime in sandy areas near reefs, sometimes in groups, but solitary at night. Maximum depth 40 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Body depth 2.7–2.9 in SL; snout length about 2.0–2.2 in head length; lateral teeth in jaws as molars; inner surface of the pectoral fin base densely scaled; 5½ scale rows between lateral line and base of middle dorsal fin spines; cheeks scaleless (true of all *Lethrinus* species).**Colour:** Body greenish grey or yellow-brown; irregular patterns of broken dusky bars on sides.

Size: To 40 cm, common 25 cm (TL)

Lethrinus harak (Forsskål, 1775) *

Local name(s): Mullah (Sin), Gadeer (Bal).
Habitat: Shallow sandy areas, coral rubble, mangroves, lagoon and seagrass areas, inshore and adjacent to coral reefs. Maximum depth 20 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Body depth 2.6–2.8 in SL; snout length about 2.0–2.6 in head length; lateral teeth in jaws in adults molars or rounded; inner surface of pectoral fin base densely covered with scales; 5½ (sometimes 4½) scale rows between lateral line and base of middle dorsal fin spines.
Colour: Olive-green above, lighter below, belly often tinged with pink; all fins pinkish to rosy-red; vertical fins mottled or striped.

FAO names: Thumbprint emperor (En)
 Empereur Saint Pierre (Fr)

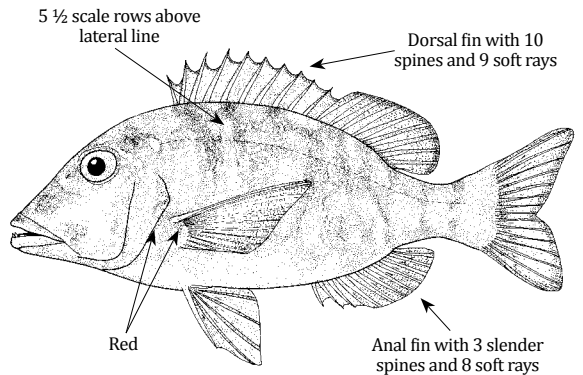


Size: To 50 cm, common 30 cm (TL)

Lethrinus lentjan (Lacepède, 1802) *

Local name(s): Mulla (Sin), Gadeer (Bal).
Habitat: Shallow sandy bottoms in coastal areas, deep lagoons and near coral reefs. Maximum depth 90 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Body depth 2.5–2.8 in SL; snout length about 1.9–2.4 in head length; lateral teeth in jaws as molars, molars with tubercles or broadly rounded; inner surface of pectoral fin bases scaleless or with only few scales; cheeks scaleless.
Colour: Body green-grey above, silver below; white spots sometimes on scale centres especially above lateral line; head brownish mauve-purple; posterior margin of opercle and sometimes base of pectoral fins red; dorsal fin white and orange mottled with a reddish margin.

FAO names: Pink ear emperor (En)
 Empereur lentille (Fr)



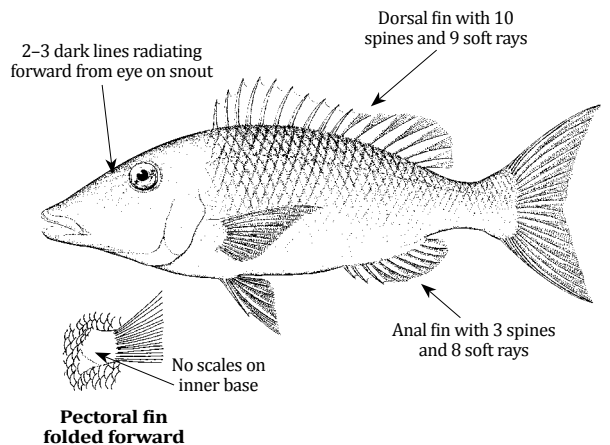
Size: To 50 cm, common 40 cm (TL)

Lethrinus microdon Valenciennes, 1830

(Plate XXIV, 191)

FAO names: Smalltooth emperor (En)
 Empereur tidents (Fr)

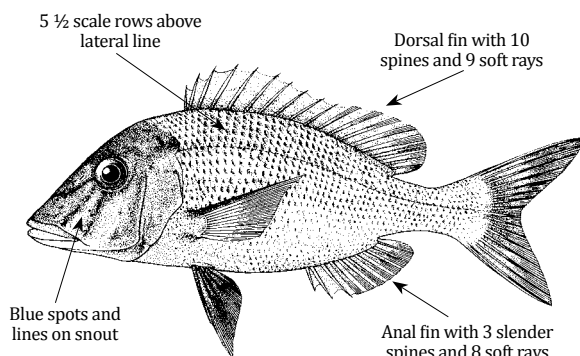
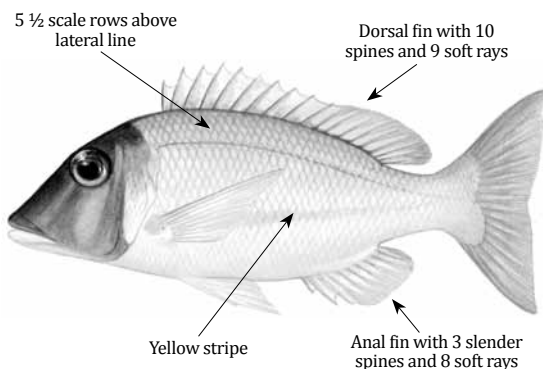
Local name(s): Mullah (Sin), Gadeer (Bal).
Habitat: Sandy areas near coral reefs. Maximum depth 80 m.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Body depth 2.9–3.4 in SL; snout length about 1.8–2.3 in head length; snout length (measured without lip) 0.7–0.8 in cheek height; lateral teeth in jaws conical; 4½ scale rows between lateral line and base of middle dorsal fin spines; inner surface of pectoral fin base and cheeks scaleless.
Colour: Body grey or brown with scattered irregular dark blotches on sides; fins pale or orangish; juveniles with indistinct cross band and a dark blotch between lateral line and middle of pectoral fins; 8 vertical bands usually present on upper half of body.



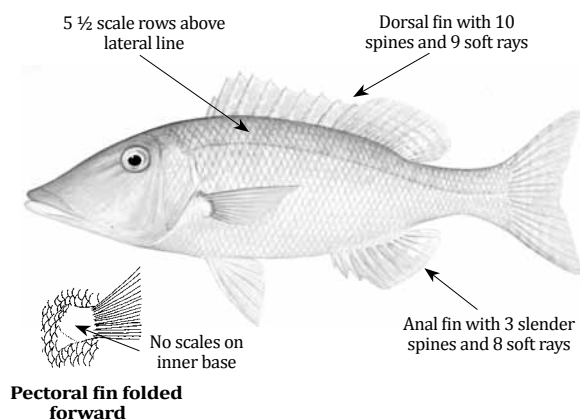
Size: To 80 cm, common 40 cm (TL)

Lethrinus nebulosus (Forsskål, 1775)

(Plate XXIV, 192)

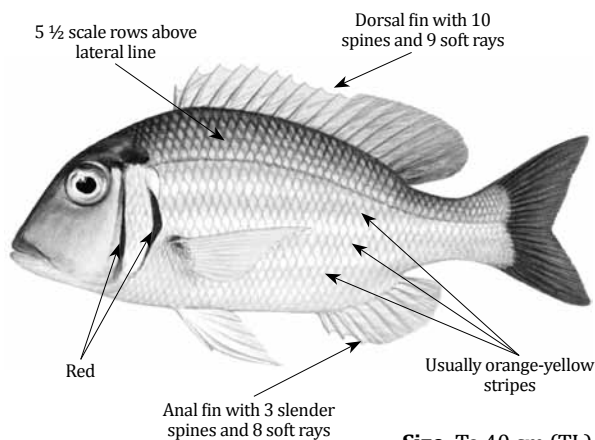
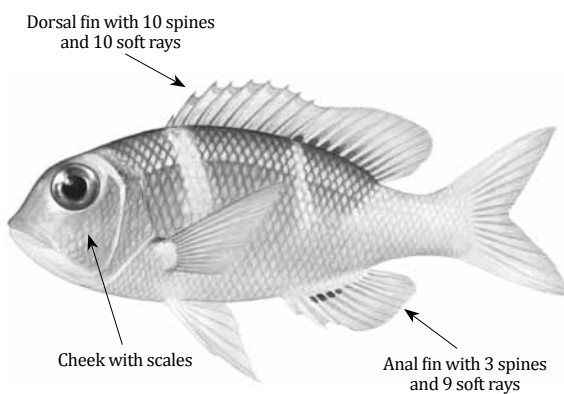
FAO names: Spangled emperor (En)
Empereur moris (Fr)**Local name(s):** Mullah (Sin), Gadeer (Bal).**Habitat:** Near shore and offshore coral reefs, lagoons, seagrass beds, mangrove swamps and coastal sand and rock areas. Maximum depth 75 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Body depth 2.5–2.9 in SL; snout length 1.8–2.4 in head length; snout length (measured without lip) 0.8–1 in cheek height; lateral teeth in jaws rounded with points or molars that often have tubercles; inner surface of pectoral fin base densely covered with scales; cheeks scaleless.**Colour:** Body yellowish or bronze, lighter below, centres of many scales with a white or light blue spot, sometimes irregular dark indistinct bars on sides; fins whitish or yellowish, pelvic fins dusky, edge of dorsal fin reddish.**Size:** To 87 cm, common 70 cm (TL)***Lethrinus obsoletus*** (Forsskål, 1775) *FAO names: Orange-striped emperor (En)
Empereur à bandes oranges (Fr)**Local name(s):** Mullah (Sin), Gadeer (Bal).**Habitat:** Inhabits seagrass beds, and sand and rubble areas of lagoons and reefs to depths of about 30 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Body depth 2.6–2.9 in SL; snout length 1.8–2.3 in head length; snout length (measured without lip) 0.8–0.9 in cheek height; lateral teeth in jaws conical or rounded; cheeks scaleless.**Colour:** Body light tan to brown, lighter below; head often with several broad indistinct vertical and diagonal light and dark bands; sometimes white spots below eye; posterior edge of operculum dark brown; fins whitish or tan, sometimes mottled.**Size:** To 100 cm, common 70 cm (TL)***Lethrinus olivaceus*** Valenciennes, 1830 *

FAO names: Longface emperor (En)

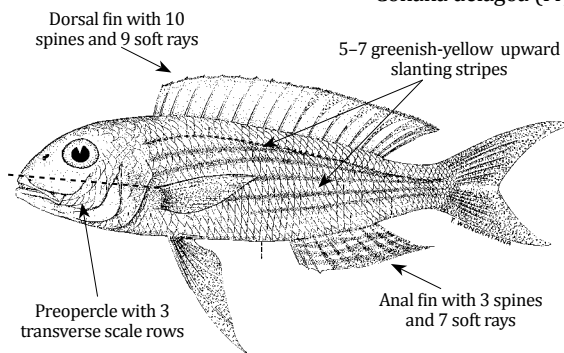
Local name(s): Mullah (Sin), Gadeer (Bal).**Habitat:** Coral reefs and coastal waters to rather deep waters. Maximum depth 190 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Body depth 2.9–3.4 in SL; snout length about 1.7–2.2 in head length, snout length (measured without lip) 0.6–0.8 in cheek height; lateral teeth in jaws conical; inner surface of pectoral fin base and cheeks scaleless.**Colour:** Body grey, lighter ventrally, often with scattered irregular dark blotches; snout with wavy dark streaks, upper jaw, especially near corner of mouth sometimes edged behind with red.**Size:** To 100 cm, common 70 cm (TL)

Lethrinus ornatus Valenciennes, 1830

(Plate XXIV, 193)

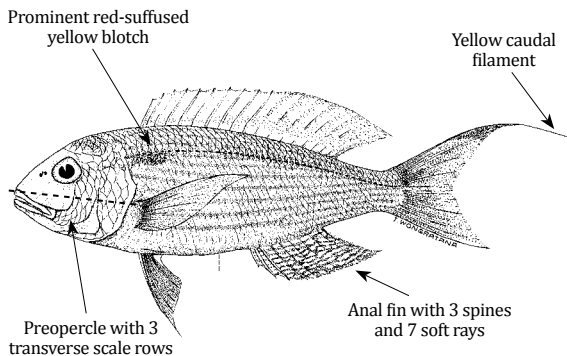
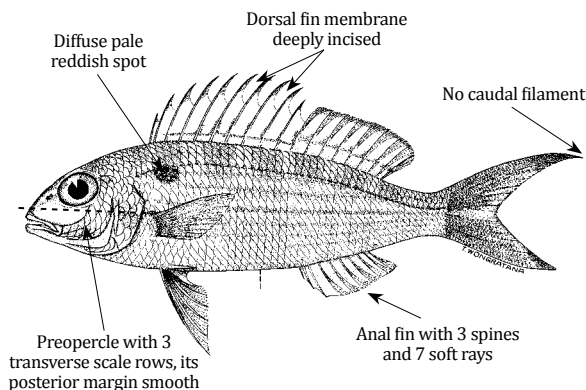
FAO names: Ornate emperor (En)
Empereur orné (Fr)**Local name(s):** Mullah (Sin), Gadeer (Bal).**Habitat:** Inhabits sandy and soft bottom inshore bays, seagrass beds, lagoons, and areas adjacent to reefs. Maximum depth 30 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Body depth 2.3–2.6 in SL; snout length about 2–2.5 in head length; lateral teeth in jaws rounded with points or molars; inner surface of pectoral fin base densely scaled; cheeks scaleless.**Colour:** Body dusky whitish, lighter below, with 5–6 yellow-orange stripes; posterior edge of opercle and preopercle bright red (the former more conspicuous); head brown or tan, sometimes a red spot on lower front edge of eye; pectoral fins orangish; pelvic and anal fins, and most of dorsal fin whitish; edge of dorsal and caudal fins reddish.**Size:** To 40 cm (TL)***Monotaxis grandoculis*** (Forsskål, 1775)*FAO names: Humpnose big-eye bream (En)
Empereur bossu (Fr)**Local name(s):** Mullah (Sin), Gadeer (Bal).**Habitat:** Inhabits lagoon and seaward reefs near sand patches. Maximum depth 100 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Head profile strongly convex in front of a large eye; a broad patch of small villiform teeth in jaws anteriorly, followed by 6–7 round, flat molars on each side and preceded by canines in front of each jaw; inner surface of pectoral fin base densely scaled.**Colour:** Body bluish grey above, paler below; lips yellow; area over and around eye yellow or orange; posterior part of dorsal fin with irregular dark spots at bases; small juveniles with 3 prominent black saddles separated by narrower white bars on upper half and a prominent black bar through eye.**Size:** To 60 cm, common 40 cm (TL)**NEMIPTERIDAE**

Threadfin breams – Monocle breams – Dwarf monocle breams

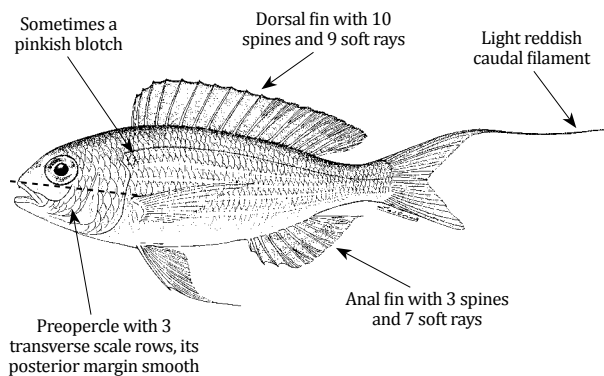
Nemipterus bipunctatus (Valenciennes, 1830)*FAO names: Delagoa threadfin bream (En)
Cohana delagoa (Fr)**Local name(s):** Lal-pari, Chakori, Korora (Sin); Kolonto (Bal).**Habitat:** Benthic on sandy or muddy bottoms from 18 m to 60 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Lower margin of eye tangent to or above a line from tip of snout to upper base of pectoral fin; small canine teeth anteriorly in upper jaw; pectoral fins reaching to or just behind anus; pelvic fins reaching to or just beyond level of anal fin origin; no filament on caudal fin.**Colour:** Upper part of body pinkish, shading to silvery on the ventral surface; pelvic fins white.**Size:** To 30 cm, common 25 cm (TL)

Nemipterus japonicus (Bloch, 1791)

(Plate XXIV, 194)

FAO names: Japanese threadfin bream (En)
Cohana japonaise (Fr)**Local name(s):** Lal-pari, Chakori, Korora (Sin); Kolonto (Bal).**Habitat:** Benthic in coastal waters, found on sandy bottoms from 5 m to 80 m.**Fisheries:** Bottoms trawls, gillnets.**Distinctive Characters:** Lower margin of eye above a line from tip of snout to upper base of pectoral fins; small canine teeth anteriorly in upper jaw; pectoral fins reaching to or beyond level of anal fin origin; pelvic fins not reaching to level of anal fin origin.**Colour:** Upper part of body pinkish, becoming silvery below; 11–12 pale golden yellow stripes along body from behind head to base of caudal fin, and a yellow band along belly; dorsal fin edged with red, a pale lemon stripe near its base; caudal fin pink, upper tip and filament yellow.**Size:** To 30 cm, common 25 cm (TL)***Nemipterus peronii*** (Valenciennes, 1830)*FAO names: Notchedfin threadfin bream (En)
Cohana tolu (Fr)**Local name(s):** Lal-pari, Chakori, Korora (Sin); Kolonto (Bal).**Habitat:****Fisheries:** Bottoms trawls, gillnets**Distinctive Characters:** Lower margin of eye just above a line from tip of snout to upper base of pectoral fins; pectoral fins not reaching to level of anus; small canine teeth anteriorly in upper jaw; pelvic fins reaching to level of anus.**Colour:** Upper part of body pinkish, with 7–8 indistinct darker pink saddles reaching to or just below the lateral line; lower part of body silvery, with faint golden lines following each scale row; a golden yellow stripe on snout in front of eye passing through nostrils; dorsal fin pale whitish pink, with a pale yellow line or series of spots just above base of fin.**Size:** To 26.5 cm, common 17cm (TL)***Nemipterus randalli*** Russell, 1986

FAO names: Randall's threadfin bream (En)

Local name(s): Lal-pari, Chakori, Korora (Sin); Kolonto (Bal).**Habitat:** Benthic on sandy or muddy bottoms from 22 m to 225 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Lower margin of eye tangent to or just above a line from tip of snout to upper base of pectoral fins; small canine teeth anteriorly in upper jaw; pectoral and pelvic fins reaching to or beyond level of anal fin origin.**Colour:** Body silvery-pink with 2–4 faint yellow stripes on sides below lateral line; broad yellow stripe on either side of ventral midline; dorsal fin edged with red, with yellow-pigmented markings on the lower 3/4 of the fin; caudal fin pink.**Size:** To 20 cm, common 15 cm (TL)

Nemipterus zysron* (Bleeker, 1856)

Local name(s): Lal-pari, Chakori, Korora (Sin); Kolonto (Bal).

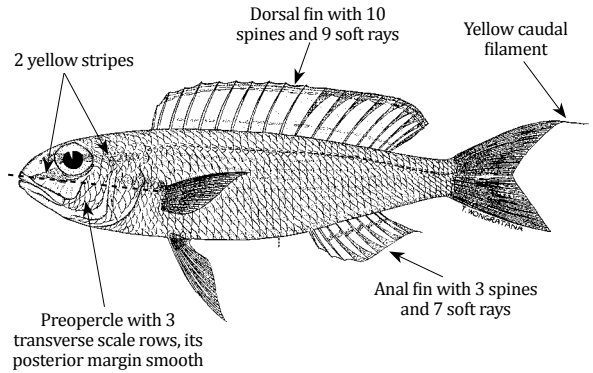
Habitat: Benthic on sandy bottoms near rocks from 10 m to 125 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body slender, lower margin of eye tangent to or just above a line from tip of snout to upper base of pectoral fins; small canine teeth anteriorly in upper jaw; pectoral and pelvic fins short, reaching just to level of anus upper lobe of caudal fin prolonged into a short filament, no filaments in other fins.

Colour: Upper part of body reddish, silvery below; dorsal fin pale with a narrow red margin paralleled immediately below by a thin yellow line and pale blue band; caudal fin pink with inner margin of fork deep red.

FAO names: Slender threadfin bream (En)
Cohana élégante (Fr)



Size: To 25 cm, common 21 cm (TL)

***Parascolopsis aspinosa* (Rao & Rao, 1981)**

Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

Habitat: A benthic species, found on sand or mud bottoms in offshore waters, in depths of 20–225 m.

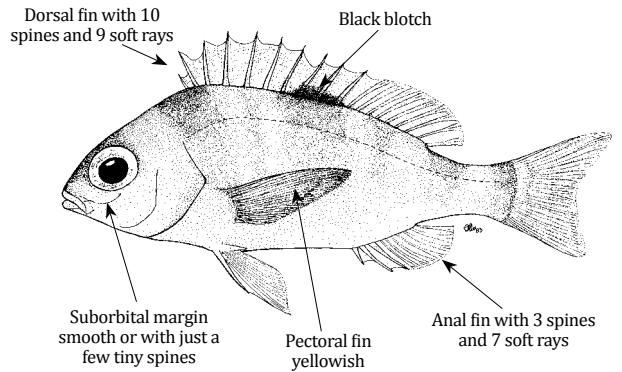
Fisheries: Bottom trawls, gillnets

Distinctive Characters: Head scales reaching forward to between level of anterior margin of eyes and posterior nostrils; no canine teeth in jaws; suborbital and maxilla naked; posterior edge of preopercle serrate; >3 transverse scale rows on preopercle; 10–11 gill rakers of 1st gill arch.

Colour: Body rosy-orange; 4 pale reddish saddles on back and 2 on caudal peduncle; suborbital and edge of preopercle silvery yellow; a black blotch (retained in preserved specimens) at base of dorsal fin between 8th spine and 1st soft ray; dorsal fin with orange edge; anal fin pale rosy.

FAO names: Smooth dwarf monocle bream (En)
Mamila lisse (Fr)

(Plate XXIV, 195)



Size: To 21 cm (TL)

***Parascolopsis boesemani* (Rao & Rao, 1981)**

Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

Habitat: A benthic species, found on sand or mud bottoms in offshore waters in depths of 20 to 25 m.

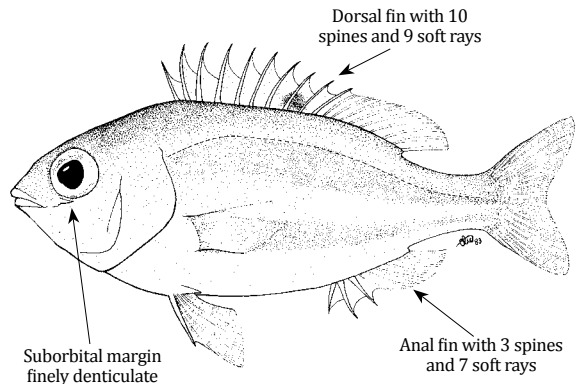
Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head scales reaching forward to level of posterior nostrils; no canine teeth in jaws; suborbital and maxilla naked; posterior edge of preopercle serrate; >3 transverse scale rows on preopercle; 9 gill rakers of 1st gill arch.

Colour: Body rosy-yellow; 3 pale rosy saddles on body and 1 on caudal peduncle; 2 light green stripes with a slight orange tinge, below lateral line; dorsal fin silvery yellow, a blood-red blotch between 7th and 10th spines; caudal fin silvery yellow, fork margin rosy.

FAO names: Redfin dwarf monocle bream (En)
Mamila aurore (Fr)

(Plate XXIV, 196)



Size: To 9.1 cm (SL)

Parascalopsis eriomma (Jordan & Richardson, 1909) *

FAO names: Rosy dwarf monocle bream (En)
Mamila rosée (Fr)

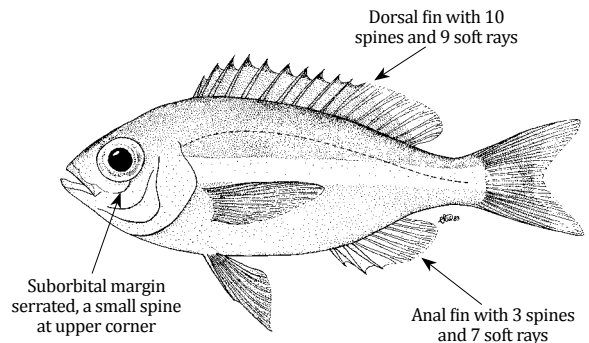
Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

Habitat: Benthic on sandy or muddy bottoms in offshore waters from 25 m to 175 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head scales reaching forward to between middle of eyes; no canine teeth in jaws; suborbital and maxilla naked; posterior edge of preopercle serrate; >3 transverse scale rows on preopercle; 17–19 gill rakers of 1st gill arch.

Colour: Overall pinkish; a broad yellowish longitudinal band along middle of body from above pectoral fins to base of caudal fin upper axil of pectoral fin black; dorsal fin pink, spinous margin reddish; pectoral and caudal fin yellowish.



Size: To 30 cm (TL)

Parascalopsis townsendi Boulenger, 1901 *

FAO names: Scaly dwarf monocle bream (En)
Mamila mignonne (Fr)

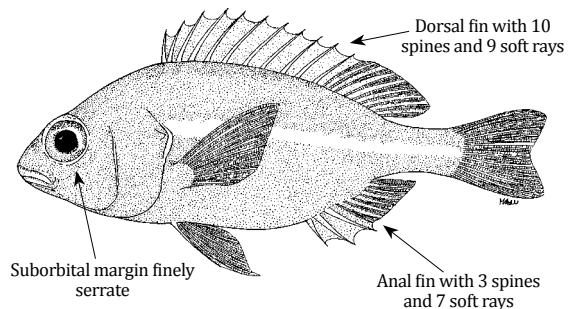
Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

Habitat: A benthic species, found on sand or mud bottoms in offshore waters in depths of 100–410 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head scales reaching forward to level of posterior nostrils; no canine teeth in jaws; lower limb of preopercle scaly; suborbital scaly; posterior edge of preopercle serrate; >3 transverse scale rows on preopercle; 10–13 gill rakers of 1st gill arch.

Colour: Uniform reddish with a silvery lateral stripe.



Size: To 15.5 cm, common 10 cm (SL)

Scolopsis bimaculata Rüppell, 1828

FAO names: Thumbprint monocle bream (En)
Mamila Saint Pierre (Fr)

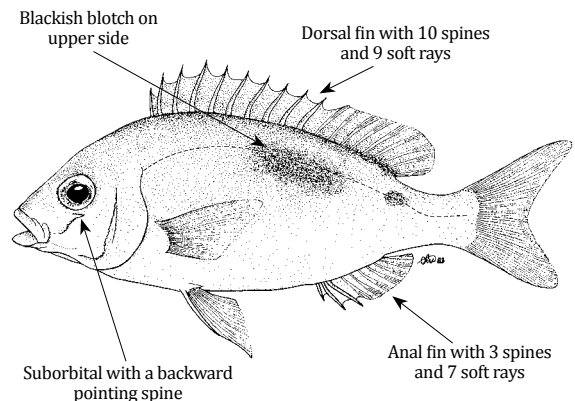
Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

Habitat: Benthic in inshore waters usually on coral reefs or on sandy bottoms near coral reefs down to 60 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head scales reaching forward to level of posterior nostrils; no canine teeth in jaws; pectoral fins with 2 unbranched rays and 15–17 (usually 16) branched rays; posterior margin of preopercle serrate; >3 transverse scale rows on preopercle.

Colour: Overall pale grey with an elongate blackish blotch (or pair of blotches) on upper side beginning below the 7th or 8th dorsal fin spine, its upper portion intersected by the lateral line; fins generally pale grey; a blue stripe joining eyes.



Size: To 31 cm, common 15 cm (TL)

Scolopsis ghanam (Forsskål, 1775)*

Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

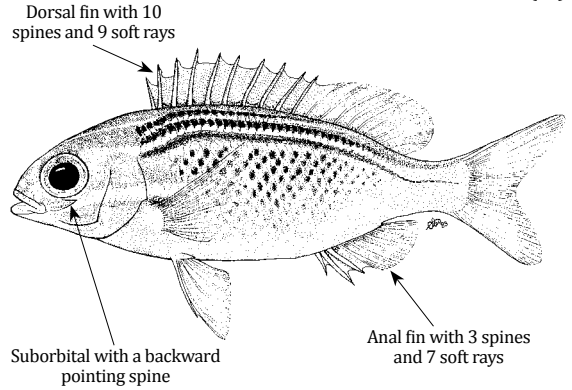
Habitat: Benthic in inshore waters on shallow sandy bottoms close to coral reefs.

Fisheries: Bottom trawls, gillnets

Distinctive Characters: Head scales reaching forward to level of middle of eyes; pectoral fins with 2 unbranched and 14 branched rays; posterior margin of preopercle serrate; >3 transverse scale rows on preopercle.

Colour: Silvery grey with numerous black or dark brown spots (one per scale) on sides and spots over lateral line forming 2-3 narrow brown or black longitudinal stripes with white spaces in between; a pearly white band from below eye to upper edge of pectoral base; fins blue-grey to whitish.

FAO names: Arabian monocle bream (En)
Mamila arabe (Fr)



Size: To 30 cm, common 12 cm (TL)

Scolopsis taeniata (Cuvier, 1830)

(Plate XXIV, 197)

FAO names: Black-streaked monocle bream (En)

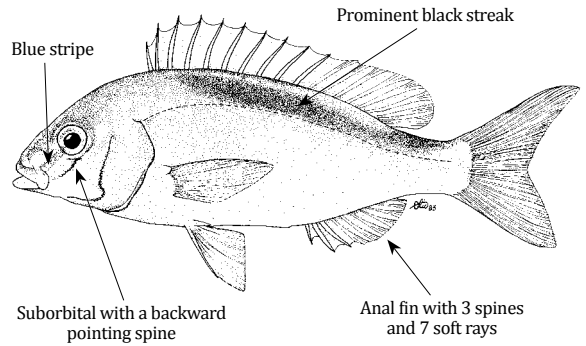
Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

Habitat: A benthic species, commonly found associated with reefs.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Head scales reaching forward to level of anterior margin of eyes; pectoral fins with 2 unbranched and 15-16 (usually 15) branched rays; posterior margin of preopercle serrate; >3 transverse scale rows on preopercle.

Colour: Greenish olive above, whitish below; a narrow whitish stripe along base of dorsal fin, beneath this, a dusky stripe above lateral line; a bright blue stripe from eye to upper jaw and from posterior edge of the eye to base of pectoral fin, where it ends in a blue spot; fins yellowish or reddish.



Size: To 36 cm, common 20 cm (TL)

Scolopsis torquatus (Cuvier, 1830)

(Plate XXIV, 198)

FAO names: Collared monocle bream (En)

Local name(s): Lal-pari, Chakori (Sin); Kolonto, Sore mahi (Bal).

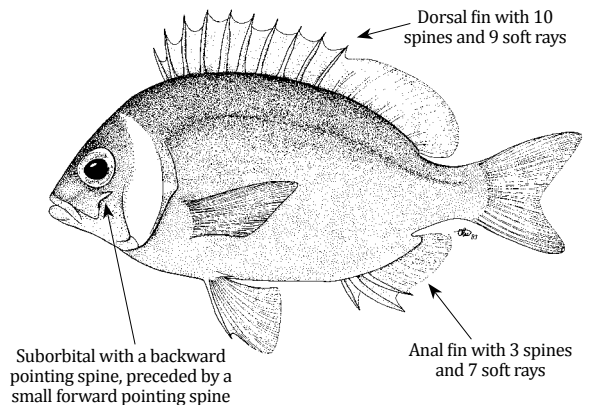
Habitat: Benthic inshore waters, usually on sandy or muddy bottoms close to reefs.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Serrations on preopercle margin distinct.

Colour: Upper posterior edge of operculum reddish; black spot present on upper base of pectoral fin; scales on sides with yellow tinge; median and paired fins bright yellow.

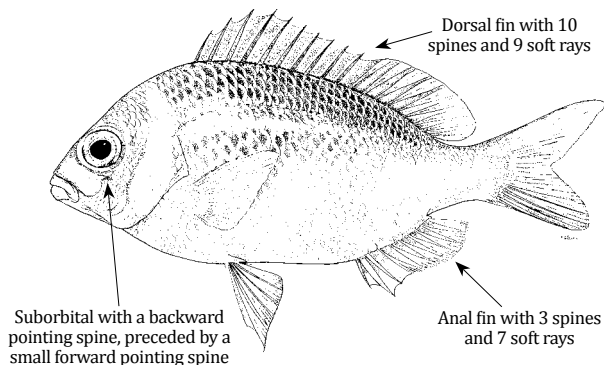
Remarks: Previously synonymized with *Scolopsis vosmeri* (Bloch, 1792), but now regarded as a valid species (B. Russell, personal communication, 2015).



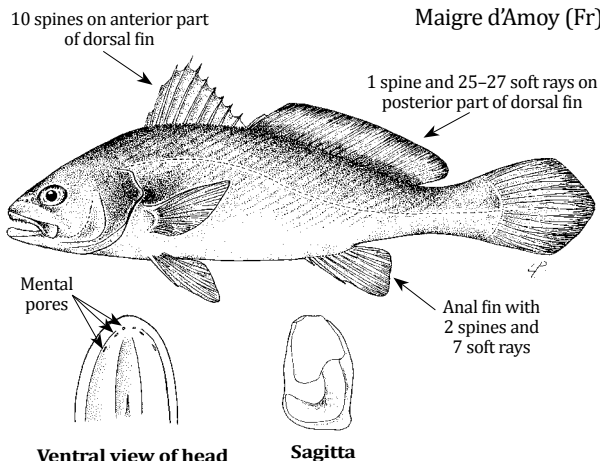
Size: To at least 17 cm (TL)

Scolopsis vosmeri (Bloch, 1792)**(Plate XXV, 199)****FAO names:** Whitecheek monocle bream (En)

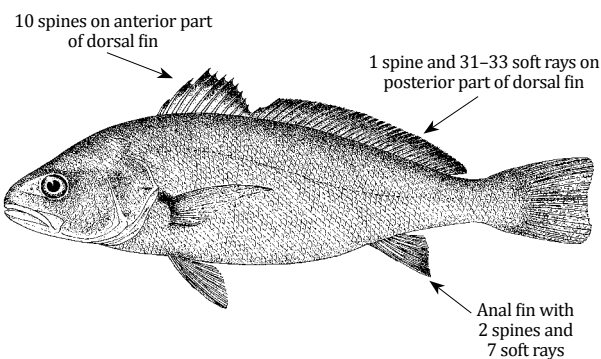
Mamila joues blanches (Fr)

Local name(s): Katti (Sin); Kolonto (Bal).**Habitat:** Benthic inshore waters, usually on sandy or muddy bottoms close to reefs.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Serrations on preopercle margin not distinct.**Colour:** Body colour usually dark with a reddish purple tinge; a broad, white vertical band from top of head on to gill covers and lateral whitish band below lateral line usually present; no black spot on upper base of pectoral fin; scales on sides of body with a dark spot at centre; median fins dirty red, pectoral fins with an orange tinge.**Size:** To 25 cm, common 15 cm (TL)**SCIAENIDAE****Croakers – Drums – Meagres – Weakfishes*****Argyrosomus amoyensis*** (Bleeker, 1863)**Local name(s):** Sooli, Sua (Sin); Sooli, Kir (Bal).**Habitat:** Inhabits coastal waters over muddy bottoms to about 60 m depth; form small schools.**Fisheries:** Gillnets, handlines.**Distinctive Characters:** Teeth well differentiated into large and small in both jaws; mental pores in 3 pairs; sagitta (large earstone) with a tadpole-shaped impression, the tail of which J-shaped; swimbladder carrot-shaped with 22–34 pairs of branched appendages, none entering the head.**Colour:** Greyish above and white silvery below; faint oblique stripes along scale rows on upper half of body; a pale yellow longitudinal stripe above lateral line; a black spot at pectoral fin base.**Remarks:** The validity of this species is questionable; most likely being a junior synonym of *Argyrosomus japonicus* (Temminck & Schlegel, 1843).**FAO names:** Amoy croaker (En)

Maigre d'Amoy (Fr)

**Size:** To 40 cm (TL)***Argyrosomus heinii*** (Steindachner, 1902)**(Plate XXV, 200)****FAO names:** Arabian sea meagre (En)

Maigre arabe (Fr)

Local name(s): Sooli, Sua (Sin); Sooli, Kir (Bal).**Habitat:** Coastal waters, mainly over muddy bottoms and in estuaries.**Fisheries:** Gillnets, handlines.**Distinctive Characters:** Mouth terminal; teeth well differentiated into large and small in both jaws; mental pores in 3 pairs; sagitta (large earstone) with a tadpole-shaped impression, the tail of which J-shaped; swimbladder carrot-shaped with 36 pairs of branched appendages, none entering the head; caudal fin truncate to slightly emarginate.**Colour:** Dark grey dorsally, shading to silvery on sides and ventrally; pelvic, anal and caudal fins dark; a black spot at base of pectoral fin; peritoneum unpigmented.**Size:** To 60 cm, common 30 cm (TL)

Argyrosomus japonicus (Temminck & Schlegel, 1843)

FAO names: Japanese meagre (En)

(Plate XXV, 201)

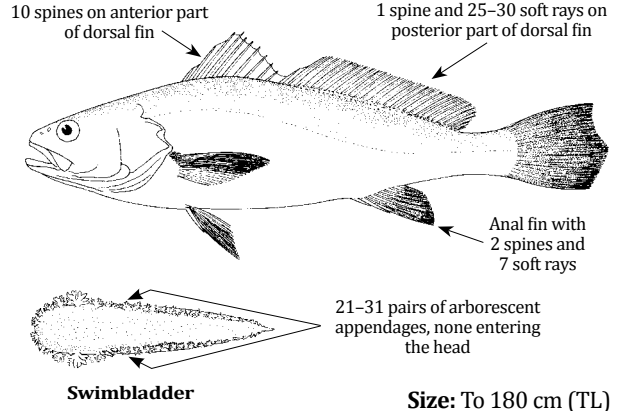
Local name(s): Sooli, Sua (Sin); Sooli, Kir (Bal).

Habitat: Found in estuaries (preferring those that are turbid), in the surf zone, and in the nearshore zone to depths of about 50 m.

Fisheries: Bottom trawls, gillnets, handlines.

Distinctive Characters: Mouth terminal; suborbital length 9.5–11.9 in head length, teeth well differentiated into large and small in both jaws; mental pores in 3 pairs; sagitta (large earstone) with a tadpole-shaped impression, the tail of which J-shaped; caudal fin S-shaped or almost truncate.

Colour: Body silvery grey becoming darker above and lighter below; dorsal and caudal fins grey to dark brown; peritoneum unpigmented; edges of jaws and inside of gill cover yellow.



Atrubucca alcocki Talwar, 1980

(Plate XXV, 202)

FAO names: Largehead croaker(En)

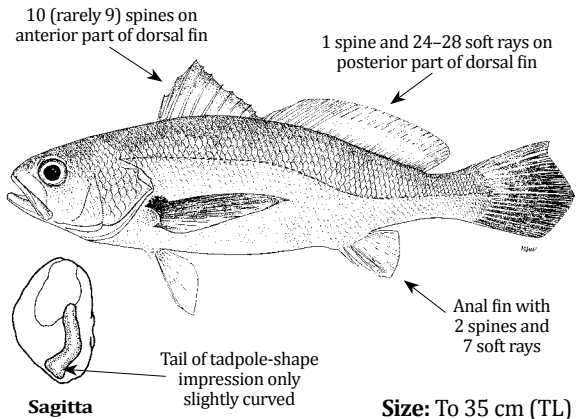
Local name(s): Bora, Mushka (Sin); Badi, Mushka (Bal).

Habitat: A rare deep-water species recorded at depths of 60–280 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth terminal, oblique; head length 2.6–2.7 in SL; gill filament length 18–22 in SL; anal fin with 2 spines and 7 soft rays; small and large teeth both in upper and lower jaws; inner row teeth on lower jaw strongly differentiated, widely spaced; mental pores in 3 pairs; swimbladder carrot-shaped with a number of arborescent appendages, none entering the head; caudal fin rhomboidal.

Colour: Body silvery, whitish below; lining of mouth, gill chamber, and peritoneum black.



Daysciaena albida (Cuvier, 1830)

(Plate XXV, 203)

FAO names: Bengal corvina (En)

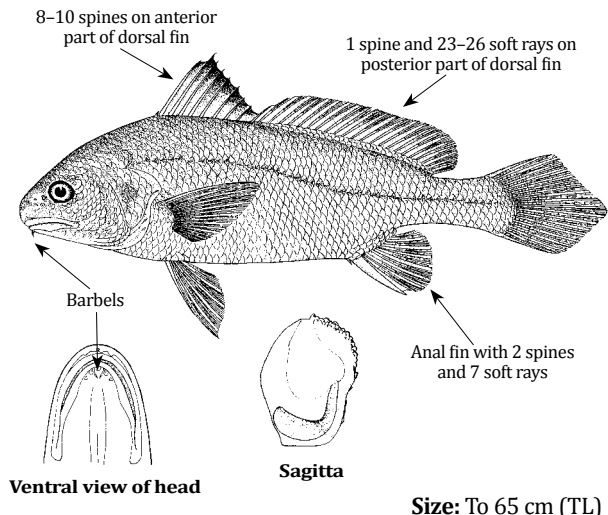
Local name(s): Goli (Sin); Goli (Bal).

Habitat: Inhabits shallow coastal waters and estuaries.

Fisheries: Gillnets, handlines.

Distinctive Characters: Mouth terminal or slightly inferior; a pair of minute barbels on chin; small and large teeth both in upper and lower jaw; 5 mental pores; 2nd anal fin spine subequal to peduncle length; swimbladder carrot-shaped, with 17–19 pairs of arborescent appendages along sides, 1st pair partly entering head; sagitta (large earstone) with a tadpole-shaped impression, of which the “tail” is sharply curved at about a right angle; caudal fin bluntly rhomboid in adults.

Colour: Grey dorsally, silvery ventrally; faint dark oblique line along scale series; spinous part of dorsal fin black, upper margin of 2nd part of dorsal fin dusky.



Dendrophysa russelii (Cuvier, 1829)

Local name(s): Bora, Boro, Kala kangra (Sin); Tont (Bal).

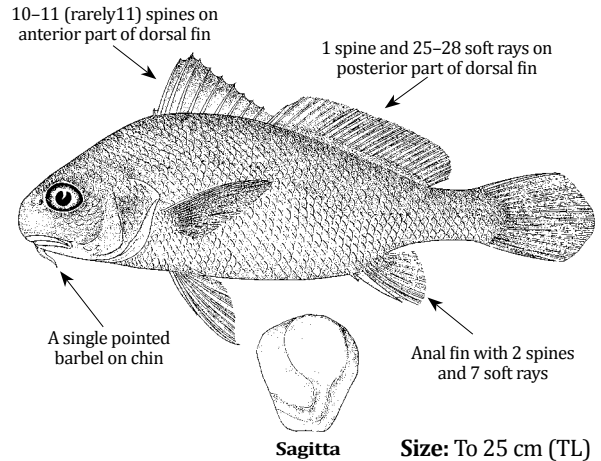
Habitat: Inhabits coastal waters; adults often in estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth inferior; teeth on upper jaw in a villose band, outer row slightly enlarged; teeth on lower jaw uniformly small; 5 mental pores; swimbladder carrot-shaped with 14–17 pairs of arborescent appendages along sides, none entering the head; sagitta (large earstone) with a tadpole-shaped impression, of which the “tail” is bent at a sharp angle; caudal fin rhomboid.

Colour: Body grey dorsally, shading to silvery white on belly; dark brown band on nape; opercle with a deep blue blotch.

FAO names: Goatee croaker (En)
Bourrugue chèvre (Fr)

***Johnius amblycephalus*** (Bleeker, 1855)

(Plate XXV, 204)

FAO names: Bearded croaker (En)
Courbine barbiche (Fr)

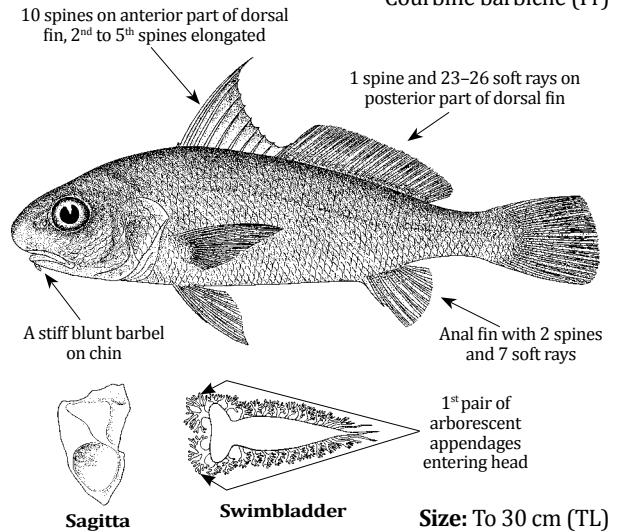
Local name(s): Bora, Kangra (Sin); Baddi, Bhora (Bal).

Habitat: Inhabits shallow coastal waters and estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth inferior; teeth differentiated into large and small in upper jaw only; lower jaw with a band of villiform teeth uniform in size; mental pores in 3 pairs, the 1st open at base of the barbel in a common pit; 7–12 scale rows above lateral line to origin of dorsal fin, 13–18 scale rows below lateral line to origin of anal fin; 17–18 pectoral fin rays; scales on head and dorsal part of body cycloid (smooth); swimbladder hammer-shaped; caudal fin slightly rhomboidal, S-shaped or truncate.

Colour: Back and flanks black or dark brown, belly whitish or pale yellow; upper part of the rather high spinous part of dorsal fin black.

***Johnius belangerii*** (Cuvier, 1830)

(Plate XXV, 205)

FAO names: Belanger's croaker (En)
Courbine de Belanger (Fr)

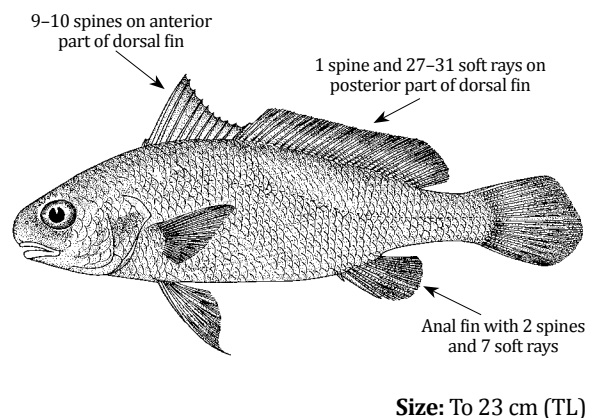
Local name(s): Bora, Kangra (Sin); Baddi, Bhora (Bal).

Habitat: Inhabits shallow coastal waters, enters estuaries and rivers.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth small, inferior; sagitta, swimbladder, mental pores and dentition as in *Johnius amblycephalus*; scales on head and body ctenoid (rough); gill rakers short, club-shaped, 9–11 on lower limb of 1st gill arch; caudal fin rhomboidal.

Colour: Body dark, but pigments sometimes irregular and concentrated into short, dark bars dorsally or on spinous dorsal fin; other fins often black; dark blotch shows through gill cover.



Johnius borneensis (Bleeker, 1851)

(Plate XXV, 206)

FAO names: Sharpnose hammer croaker (En)
Courbine dentue (Fr)

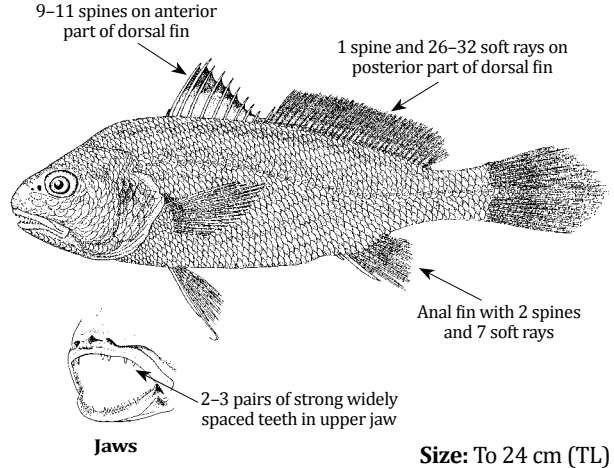
Local name(s): Bora, Kangra (Sin); Baddi, Bhora (Bal).

Habitat: Inhabits shallow coastal waters, estuaries and rivers.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth large, subterminal; snout pointed when seen from above; swimbladder; mental pores and sagitta as in other *Johnius* species; teeth differentiated into large and small in both jaws; 7–16 gill rakers on lower limb of 1st gill arch; 7–13 scale rows above lateral line to origin of dorsal fin, 10–16 scale rows below lateral line to origin of anal fin; small scales on spinous dorsal fin basally.

Colour: Head and body dusky mauve above, silver-white below; dusky streak usually present along midsides; fins pale yellow or cream, outer 2/3 of spinous dorsal fin black (occasionally dusky).



Size: To 24 cm (TL)

Johnius carouna (Cuvier, 1830)

(Plate XXVI, 207)

FAO names: Caroun croaker (En)
Courbine caroune (Fr)

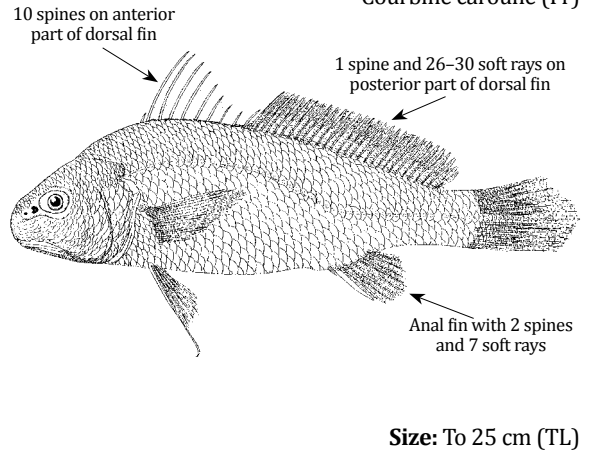
Local name(s): Bora, Kangra (Sin); Baddi, Bhora (Bal).

Habitat: Inhabits shallow coastal waters, entering estuaries and mangrove swamps.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth small, inferior; sagitta, swimbladder; mental pores and dentition as in *Johnius amblycephalus*; gill rakers pointed, slender, not club-shaped, 11–14 on lower limb of 1st gill arch; 6–9 scale rows above lateral line to origin of dorsal fin, 10–14 scale rows below lateral line to origin of anal fin; caudal fin rhomboidal.

Colour: Upper 2/3 of body light grey or with a white sheen, lower 1/3 yellowish; pectoral, pelvic, and anal fins and lower part of caudal fin with yellow tinge.



Size: To 25 cm (TL)

Johnius carutta Bloch, 1793

(Plate XXVI, 208)

FAO names: Karut croaker (En)
Courbine carutte (Fr)

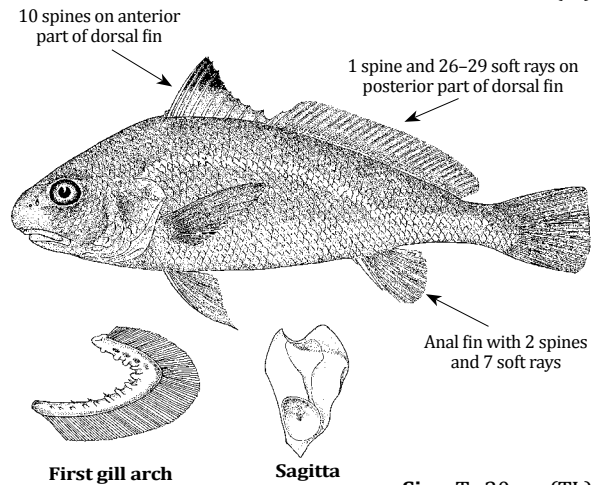
Local name(s): Bora, Kangra (Sin); Baddi, Bhora (Bal).

Habitat: Inhabits inshore waters down to 40 m depth.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth small, inferior; sagitta, swimbladder; mental pores (skin around chin pores sometimes thick) and dentition as in *Johnius amblycephalus*; scales on head and front part of body cycloid (smooth), rear part of body with finely ctenoid scales; gill rakers very short, stumpy 7–10 on lower limb of first gill arch; 7–10 scale rows above lateral line to origin of dorsal fin, 12–17 scale rows below lateral line to origin of anal fin; caudal fin truncate or weakly S-shaped.

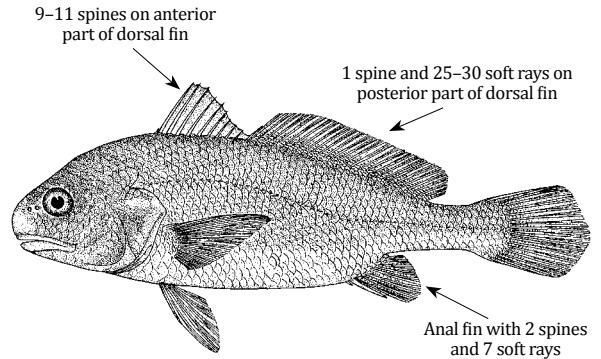
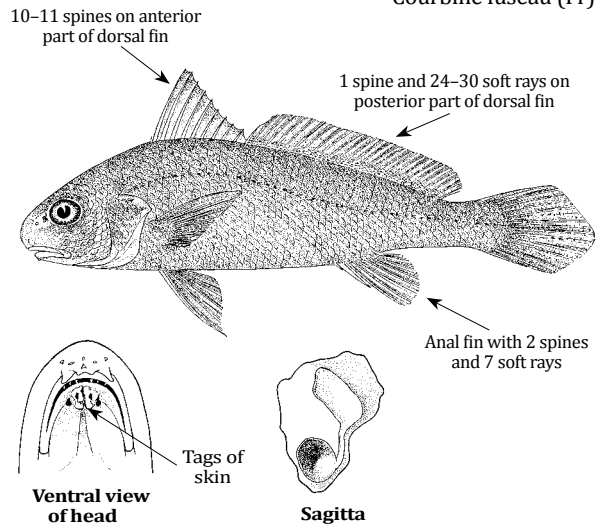
Colour: Upper two-thirds of body dark grey or brown with a pale yellow streak along lateral line; belly whitish; upper two-thirds of 1st dorsal fin black.



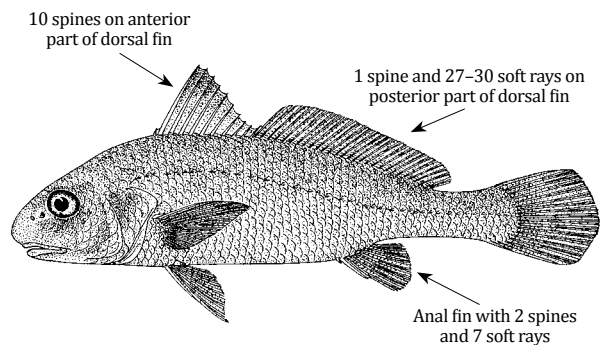
Size: To 30 cm (TL)

Johnius dussumieri (Cuvier, 1830)

(Plate XXVI, 209)

FAO names: Sin croaker (En)
Courbine chinoise (Fr)**Local name(s):** Bora, Kangra (Sin); Baddi, Bhora (Bal).**Habitat:** Inhabits shallow coastal waters, estuaries and rivers.**Fisheries:** Bottom trawls; Gillnets.**Distinctive Characters:** Similar to *Johnius bornensis* but snout broadly rounded when seen from above and without strong anterior teeth and scales on spinous dorsal fin; 13–18 gill rakers on lower limb of 1st gill arch; 6–8 scale rows above lateral line to origin of dorsal fin, 9–14 scale rows below lateral line to origin of anal fin.**Colour:** Greyish on back, silvery and glossed with golden on flanks and belly; distal 3rd of spinous dorsal fin dusky; anal and paired fins yellowish.**Size:** To 30 cm (TL)***Johnius elongatus*** Lal Mohan, 1976FAO names: Spindle croaker (En)
Courbine fuseau (Fr)**Local name(s):** Bora, Kangra (Sin); Baddi, Bhora (Bal).**Habitat:** Inhabits coastal waters, down to 30 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Mouth small, inferior; sagitta, swimbladder and dentition as in *Johnius amblycephalus*; no barbel on chin but mental pores surrounded by thickened skin, produced into 2 short, irregular tags between the median and first lateral pores; scales on body ctenoid; gill rakers short but not club-shaped, 7–11 on lower limb of 1st gill arch; 6–10 scale rows above lateral line to origin of dorsal fin, 12–15 scale rows below lateral line to origin of anal fin; caudal fin rhomboidal or weakly S-shaped.**Colour:** Body colour varies from silvery to dark brown; darker individuals with a narrow pale streak along lateral line; tips of dorsal, anal and caudal fins peppered with black.**Size:** To 20 cm (TL)***Johnius macrorhynchus*** (Lal Mohan, 1976)

(Plate XXVI, 210)

FAO names: Bigsnout croaker; (En)
Courbine longnez (Fr)**Local name(s):** Bora, Kangra (Sin); Baddi, Bhora (Bal).**Habitat:** Inhabits shallow coastal waters.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Mouth small, inferior; sagitta, swimbladder and dentition as in *Johnius amblycephalus* but molariform teeth posteriorly in lower jaw; scales on body ctenoid; gill rakers short, stumpy, 6–10 on lower limb of 1st gill arch; 6–9 scale rows above lateral line to origin of dorsal fin, 10–14 scale rows below lateral line to origin of anal fin; caudal fin truncate or S-shaped (over 15 cm TL).**Colour:** Body silvery, lower part with a golden tinge; anal and paired fins yellow; a faint steel blue blotch on gill cover.**Size:** To 30 cm (TL)

Kathala axillaris (Cuvier, 1830) *

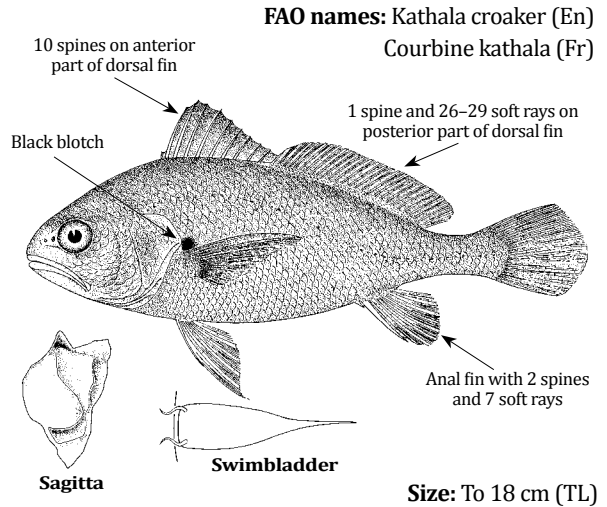
Local name(s): Bora, Kangra (Sin); Baddi, Bhora (Bal).

Habitat: Found in shallow coastal waters.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth terminal and oblique; mental pores in 3 pairs, the 1st pair small and at front of chin; teeth differentiated into large and small in both jaws; 21–24 slender gill rakers on lower limb of 1st gill arch; 8–12 scale rows above lateral line to origin of dorsal fin, 12–15 scale rows below lateral line to origin of anal fin; swimbladder carrot-shaped, with only one pair of horn-like appendages arising at front end and entering head.

Colour: Body grey-green dorsally, flanks yellow-silver; spinous dorsal fin black.



Nibea maculata (Bloch & Schneider, 1801)

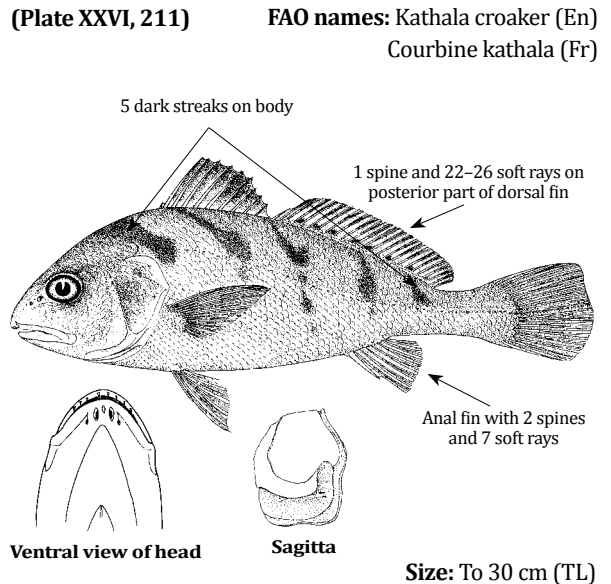
Local name(s): Chann, Bora (Sin); Tont, Koh-e-tont, Taan-tah (Bal).

Habitat: Found in coastal waters.

Fisheries: Bottom trawls; gillnets.

Distinctive Characters: Mouth inferior; mental pores in 3 pairs, the first pair close together, united by a crescent-shaped groove just behind symphysis; teeth differentiated into large and small in both jaws; 10 spines on anterior part of dorsal fin; 8–11 slender gill rakers on lower limb of first gill arch; 10–13 scale rows above lateral line to origin of dorsal fin, 17–21 scale rows below lateral line to origin of anal fin; swimbladder carrot-shaped with branched appendages along its entire lateral sides.

Colour: Spinous dorsal fin black, except base pale, soft dorsal fin with black margin and series of dark spots along base.



Nibea soldado (Lacepède, 1802) *

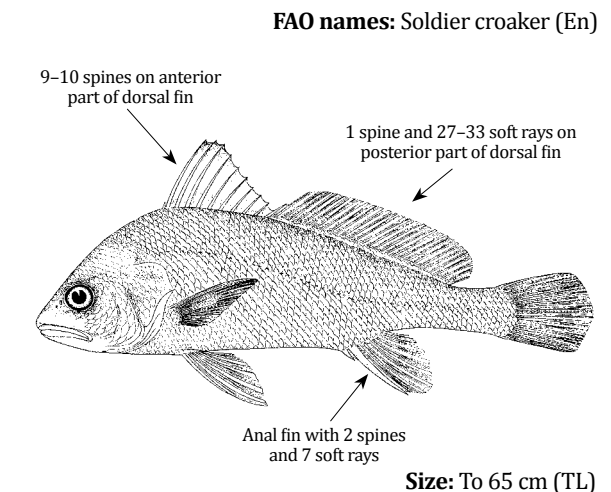
Local name(s): Chann, Bora (Sin); Tont, Koh-e-tont, Taan-tah (Bal).

Habitat: Found in coastal waters.

Fisheries: Bottom trawls; gillnets.

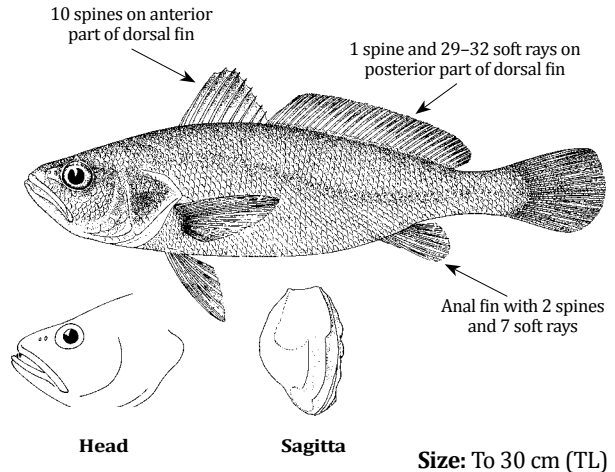
Distinctive Characters: Mouth inferior; mental pores, dentition, sagitta and swimbladder as in *Nibea maculata*; 8–13 gill rakers on lower limb of 1st gill arch; 8–13 scale rows above lateral line to origin of dorsal fin, 12–17 scale rows below lateral line to origin of anal fin.

Colour: Body silvery with faint series of oblique stripes along scale series; margin of soft dorsal fin dark; paired fins with yellow tinge.

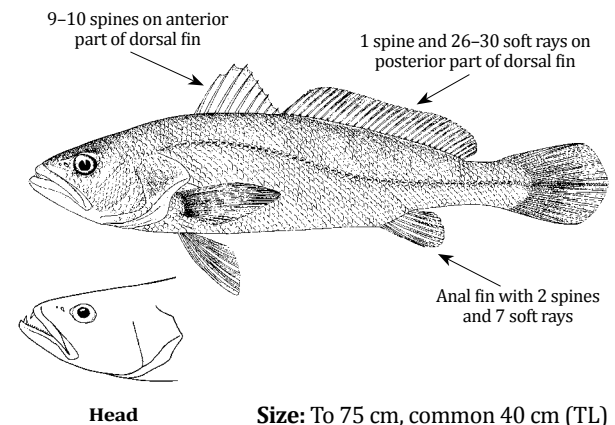


Otolithes cuevieri Trewavas, 1974

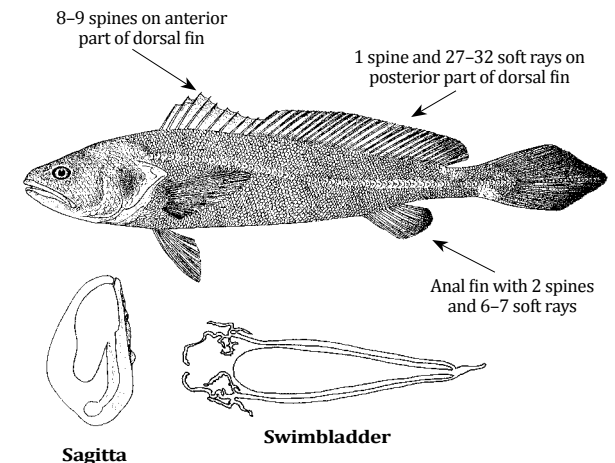
(Plate XXVI, 212)

FAO names: Lesser tigertooth croaker (En)
Verrue tigre (Fr)**Local name(s):** Mush-ka (Sin); Pandasi, Mushka, Warna mush-ka (Bal).**Habitat:** Inhabits inshore and coastal waters.**Fisheries:** Bottom trawls, gillnets, handlines.**Distinctive Characters:** Body fairly slender; depth slightly less than head length; mouth large and strongly oblique; lower jaw projecting; no upper pores on snout; 1–2 pairs of moderate canine teeth in upper jaw or both jaws; 13–15 gill rakers on lower limb of first gill arch; swimbladder carrot-shaped, with branching appendages along its entire lateral sides; caudal fin rhomboid.**Colour:** Scale centres brown on upper two thirds of body, forming narrow oblique bands; spinous dorsal fin edged in grey-black; anal and paired fins yellowish.**Size:** To 30 cm (TL)***Otolithes ruber*** (Bloch & Schneider, 1801)

(Plate XXVI, 213)

FAO names: Tigertooth croaker (En)
Grande verrue tigre (Fr)**Local name(s):** Mush-ka (Sin); Pandasi, Mushka, Warna mush-ka (Bal).**Habitat:** Coastal waters, sheltered bays and estuarine systems; tolerant to turbid waters and wide range of salinities. Maximum depth 40 m.**Fisheries:** Bottom trawls, gillnets, handlines.**Distinctive Characters:** Similar to *Otolithes cuevieri* but with canine teeth in upper jaw or both jaws stronger; 8–12 gill rakers on lower limb of 1st gill arch; caudal fin rhomboid (pointed in juveniles).**Colour:** Body brownish above, silvery with a golden sheen on flanks and belly, often with oblique dark streaks dorsally; anal and paired fins reddish or pale brown.**Size:** To 75 cm, common 40 cm (TL)***Otolithoides biauritus*** (Cantor, 1849)

(Plate XXVI, 214)

FAO names: Bronze croaker (En)
Verrue bronzée (Fr)**Local name(s):** Rangan, Rain-gar (Sin); Rangan, Rain-gar (Bal).**Habitat:** Inhabits coastal and inshore waters.**Fisheries:** Gillnets, handlines.**Distinctive Characters:** Body elongate; mouth large and terminal; teeth well differentiated in size in both jaws; dorsal fin weakly notched; mental pores in 2 pairs, the first small, at front of chin, separated by symphysis; swimbladder carrot-shaped, with a pair of long tubular branches that originate near its rear end and run forward beside the main bladder and parallel to it as they penetrate the transverse septum and ramify into several caeca under the skull; caudal fin acutely pointed.**Colour:** Head and body greyish, flanks silvery with golden tinge, paler on belly; lateral line golden yellow; median fins yellow to pale orange; pelvic fins pale orange; brownish with a black spot at axil.**Size:** To 160 cm (SL)

Otolithoides pama* (Hamilton, 1822)

FAO names: Pama croaker (En)

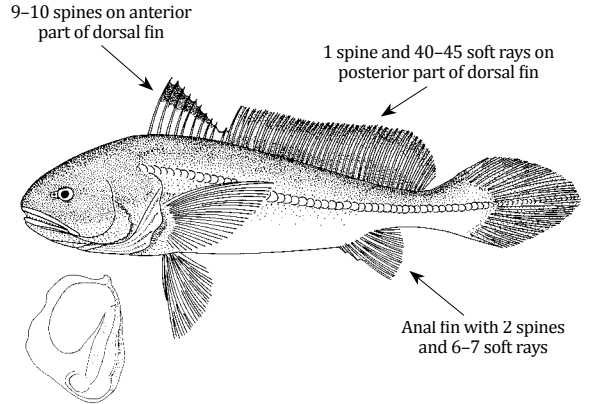
Local name(s): Rangan, Rain-gar (Sin); Rangan, Rain-gar (Bal).

Habitat: Inhabits coastal and inshore waters.

Fisheries: Gillnets, handlines.

Distinctive Characters: Body elongate; mouth large and terminal; dentition, mental pores and swimbladder as in *Otolithoides biauritus*; 13-15 gill rakers on lower limb of 1st gill arch; 12-15 scale rows above lateral line to origin of dorsal fin, 14-17 scale rows below lateral line to origin of anal fin;

Colour: Body pale brownish dorsally and silvery white on belly; head shot with golden and purple; fins yellowish; upper half of dorsal fin grey.



Sagitta

Size: To 50 cm (TL)

***Paranibea semiluctuosa* (Cuvier, 1830)**

(Plate XXVII, 215) **FAO names:** Half-mourning croaker (En)
Courbine lugubre (Fr)

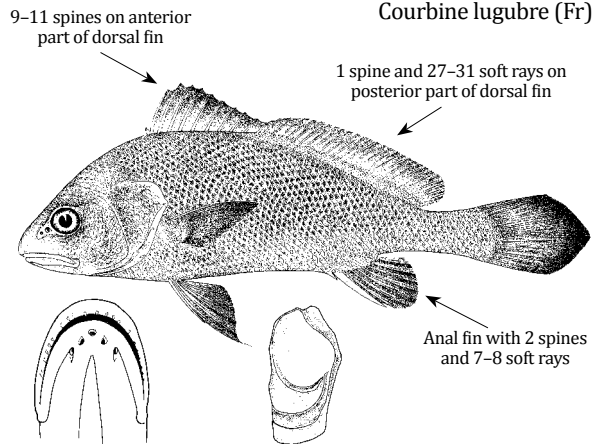
Local name(s): Kadra, Kaw-wa, Kangh (Sin); Siah-ho, Sukkan (Bal).

Habitat: Inhabits coastal waters.

Fisheries: Bottom trawls, gillnets, handlines.

Distinctive Characters: Body deep, back arched; mouth slightly inferior; 5 mental pores; teeth differentiated into large and small in upper jaw only, teeth in lower jaw uniform in size; 6-9 well developed gill rakers on 1st gill arch; swimbladder carrot-shaped with branched appendages along its entire lateral sides, front pair of appendages entering the head.

Colour: Body dark with numerous oblique wavy black stripes reaching down the flanks to belly; anal and pelvic fins very dark.



Size: To 40 cm (TL)

***Pennahia anea* (Bloch, 1793)**

(Plate XXVII, 216)

FAO names: Donkey croaker (En)

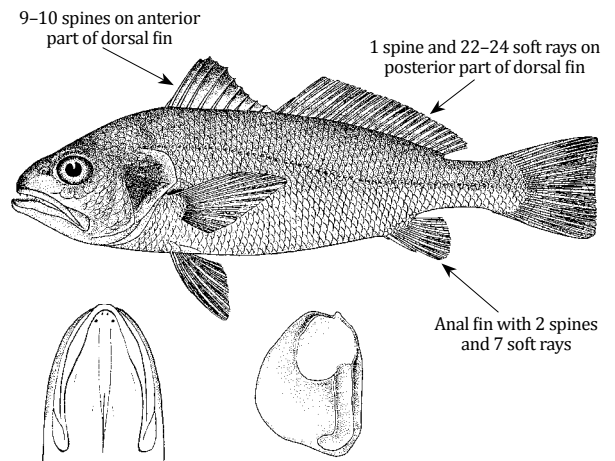
Local name(s): Bora, Sufaid kangra (Sin); Baddi, Bhora (Bal).

Habitat: Inhabits coastal waters down to 60 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth large, oblique; mental pores in 2 pairs, both small, the 1st pair at front of chin, separated by symphysis; teeth well differentiated into large and small in both jaws; 10-12 slender gill rakers on lower limb of 1st gill arch; swimbladder carrot-shaped with branched appendages along its entire lateral sides, anterior appendages not entering the head; caudal fin truncate.

Colour: Head and body greyish light brown on back, becoming paler ventrally with increasing silvery reflection to whitish abdomen; gill cover with diffused dark blotch; upper 2/3 of spinous dorsal fin dusky.



Size: To 30 cm (TL)

Protonibea diacantha (Lacepède, 1802)

Local name(s): Sua, Suati, Suachi, Ghol (Sin); Kir, Swach (Bal).

Habitat: Inhabits coastal waters down to 60 m.

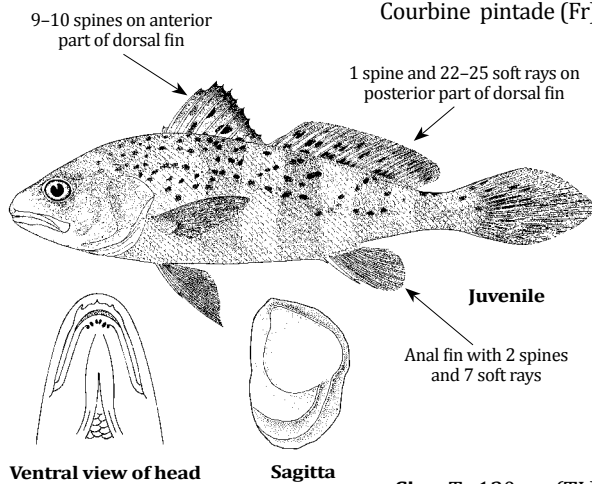
Fisheries: Handlines, gillnets.

Distinctive Characters: Mouth large, slightly oblique; mental pores in 3 pairs, the 1st pair small, close together, united by a crescent-shaped groove just behind symphysis; teeth differentiated into large and small in both jaws; 7–10 elongate gill rakers on lower limb of 1st gill arch; swimbladder carrot-shaped with branched appendages along its entire lateral sides; no appendages entering head.

Colour: 3–5 dark bars along back and many small black spots (about size of pupil) on top of head, upper half of body and caudal fin; pectoral, pelvic, and anal fins and lower part of caudal fin black; in larger fishes, bars and spots obscure or absent.

(Plate XXVII, 217, 218)

FAO names: Spotted croaker (En)
Courbine pintade (Fr)

***Umbrina canariensis*** Valenciennes, 1843

Local name(s): Kaw-wa, Kangh (Sin); Siahò (Bal).

Habitat: Occurs near shore in surf zone and out to 414 m depth.

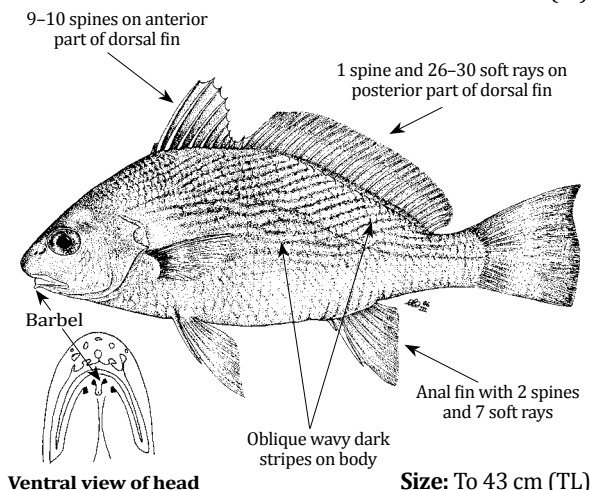
Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Snout rounded, mouth inferior; a short fleshy chin barbel with a median pore at its tip, and 2 pores on each side lateral to barbel; teeth villiform; pectoral fin length 20–25% SL; 8–12 gill rakers on lower limb of 1st gill arch; swimbladder simple, without appendages; caudal fin wedge-shaped.

Colour: Body greyish silver; darker dorsally, paler ventrally; distal parts of soft dorsal, pelvics, anal and caudal fin dark grey to black; opercular membrane not dark, but inside operculum is dark to black. Individuals can change to dark brown overall in a few seconds.

(Plate XXVII, 219)

FAO names: Canary drum (En)
Ombrine bronze (Fr)

**POLYNEMIDAE**

Threadfins

Eleutheronema tetradactylum (Shaw, 1804)

Local name(s): Rawans, Seeri, Photani, Siari, Rishi (Sin); Gwanz, Rishi, Talsa, Lukwa (Bal).

Habitat: Along coasts and in estuaries.

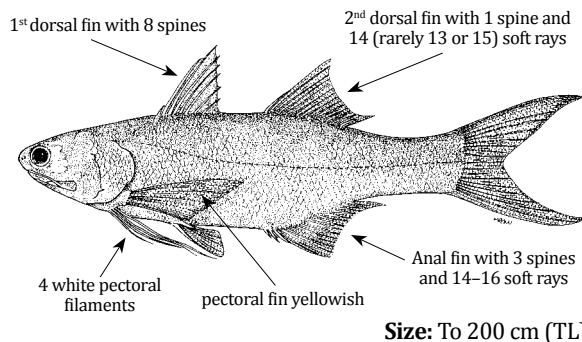
Fisheries: Gillnets, handlines.

Distinctive Characters: Pectoral fin insertion well below midline of body; anterior part of lower jaw with small teeth extending onto lateral surface of lower jaw; 71–80 pored lateral line scales; 9–12 scale rows above lateral line; 13–15 scale rows below lateral line.

Colour: Head and trunk with slight darkish silver tinge, becoming lighter on lower sides; anterior margins of 1st and 2nd dorsal fins blackish.

(Plate XXVII, 220)

FAO names: Fourfinger threadfin (En)
Barbure à quatre doigts (Fr)



***Filimanus similis* Feltes, 1991**

Local name(s): Rawans, Seeri, Photani, Siari, Rishi (Sin); Gwanz, Rishi, Talsa, Lukwa (Bal).

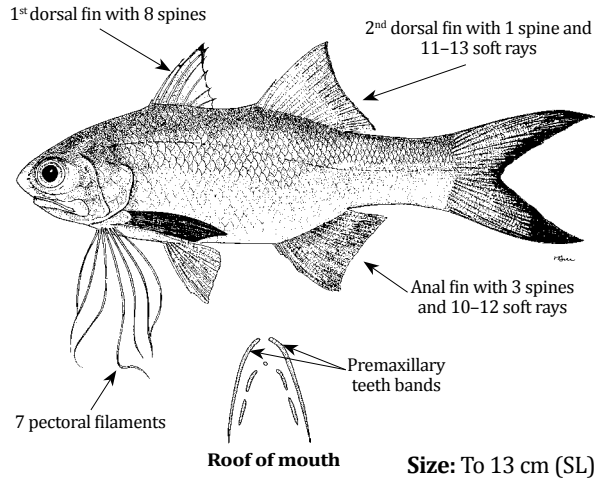
Habitat: Usually found in 1–80 m on open sandflats and muddy substrates; also in estuaries.

Fisheries: Gillnets, handlines.

Distinctive Characters: Teeth on lower jaw restricted to dorsal surface; 7 pectoral filaments; space separating premaxillary teeth bands 2 or more times width of each band; 40–49 gill rakers on 1st gill arch.

Colour: Upper sides of head and trunk with brown tinge, becoming golden on lower sides; posterior margins of 1st, 2nd dorsal, anal, and caudal fins blackish, remaining parts yellowish; pectoral fin mostly black; base of pectoral filaments white, becoming yellowish white on posterior tips; base of pelvic fin white, other parts yellowish.

FAO names: Indian sevenfinger threadfin (En)
Barbure sept doigts des Indes (Fr)



Size: To 13 cm (SL)

***Leptomelanosoma indicum* (Shaw, 1804)**

Local name(s): Rawans, Seeri, Photani, Siari, Rishi (Sin); Gwanz, Rishi, Talsa, Lukwa (Bal).

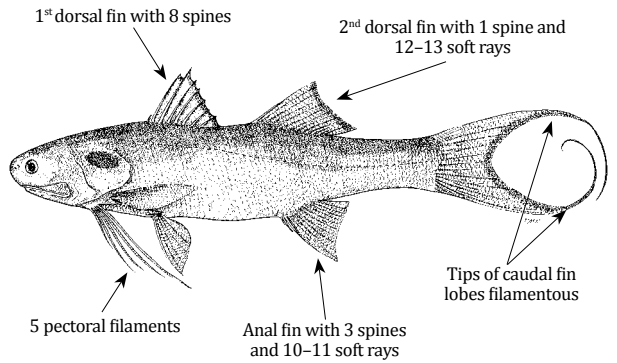
Habitat: Mainly occurs near estuaries, sometimes entering rivers.

Fisheries: Gillnets, handlines.

Distinctive Characters: Anterior 1/3 of lower jaw with small teeth extending onto lateral surface; swimbladder with many appendages inserted into lateral walls of abdominal cavity; 18–21 gill rakers on 1st gill arch.

Colour: Head and upper sides of trunk tinged slightly blackish brown; distal part of 1st and 2nd dorsal fins and caudal fin blackish; base of pectoral filaments dusky yellowish grading to blackish posteriorly; pectoral fin membrane deep black.

FAO names: Indian threadfin (En)
Barbure indien (Fr)



Size: To 142 cm (TL)

***Polydactylus mullani* (Hora, 1926)**

(Plate XXVII, 221)

FAO names: Arabian blackspot threadfin (En)
Barbure à tache noire d'Arabie (Fr)

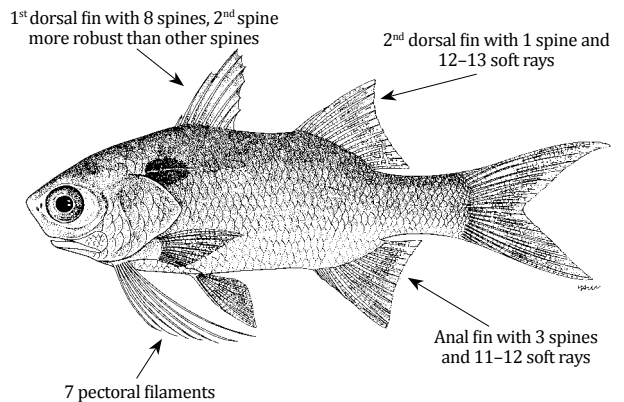
Local name(s): Rawans, Seeri, Photani, Siari, Rishi (Sin); Gwanz, Rishi, Talsa, Lukwa (Bal).

Habitat: Taken from depths of 14 to 115 m.

Fisheries: Gillnets, handlines.

Distinctive Characters: Teeth on lower jaw restricted to dorsal surface; 7 pectoral filaments; pectoral fin rays branched; 31–35 gill rakers on 1st gill arch.

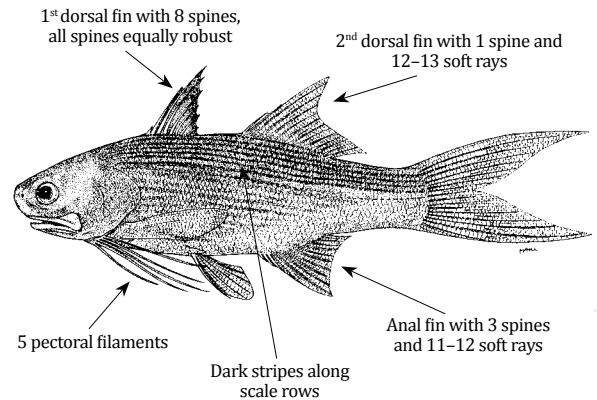
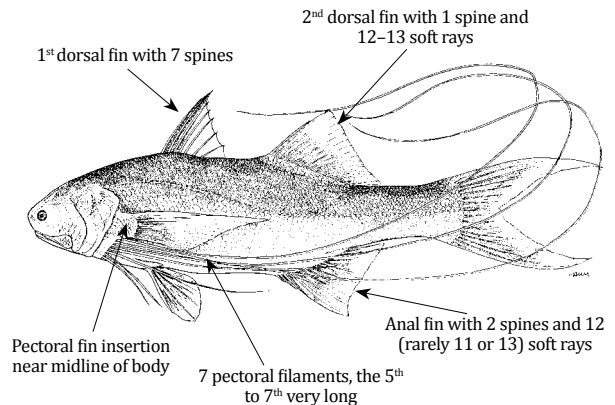
Colour: Head and upper sides of trunk tinged darkly silver, becoming lighter silver on lower sides; snout semi-translucent; pectoral fin membrane grey with scattered melanophores; base of pectoral filaments white, becoming dark posteriorly; anterior margin and lower tip of pelvic fin grey, other parts white; a large black spot anteriorly on lateral line



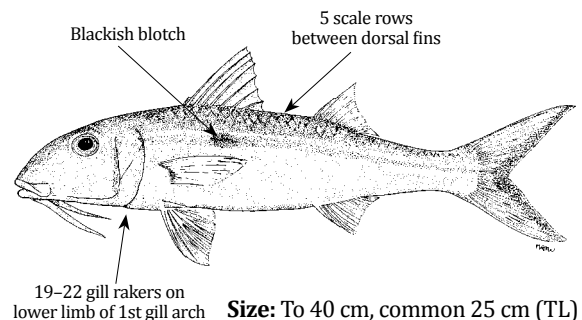
Size: At least to 19 cm (SL)

Polydactylus plebeius (Broussonet, 1782)

(Plate XXVII, 222)

FAO names: Striped threadfin (En)
Barbure rayé (Fr)**Local name(s):** Rawans, Seeri, Photani, Siari, Rishi (Sin); Gwanz, Rishi, Talsa, Lukwa (Bal).**Habitat:** Occurs over soft bottoms from estuaries to coastal beaches; also in deeper water (<122 m).**Fisheries:** Gillnets, handlines.**Distinctive Characters:** Lower jaw teeth pattern and premaxillary teeth bands as in *P. mullani*; upper jaw short, its length 13–16% of SL; 60–68 pored lateral line scales; 8–9 scale rows above lateral line; 12–13 scale rows below lateral line; 24–32 gill rakers on 1st gill arch.**Colour:** Head and upper sides of trunk tinged slightly blackish silver, becoming lighter silver on lower sides; abdominal region white; snout semi-transparent; 1st and 2nd dorsal fins and caudal fin pale with blackish posterior margins; pectoral fin membrane blackish; pectoral filaments white.**Size:** At least to 45 cm (SL)***Polynemus paradiseus*** Linnaeus, 1758FAO names: Paradise threadfin (En)
Barbure paradis (Fr)**Local name(s):** Rawans, Seeri, Photani, Siari, Rishi (Sin); Gwanz, Rishi, Talsa, Lukwa (Bal).**Habitat:** Lives over sandy bottoms, regularly entering freshwaters during breeding season.**Fisheries:** Gillnets, handlines.**Distinctive Characters:** Eye small, its diameter ≥ 1.3 in snout length; 66–71 pored lateral line scales; 6–7 scale rows above lateral line; 11–12 scale rows below lateral line; 30–34 gill rakers on 1st gill arch; swimbladder absent.**Colour:** Head and body grayish black dorsally, yellow ventrally; anterior parts of 1st and 2nd dorsal fins grayish black, other parts yellow; posterior margin of caudal fin yellow, other parts greyish black; pectoral and pelvic fins uniformly vivid yellow; base of pectoral filaments vivid yellow, becoming whitish yellow on posterior tips.**Size:** At least to 20 cm (SL)**MULLIDAE**

Goatfishes – Red mullets

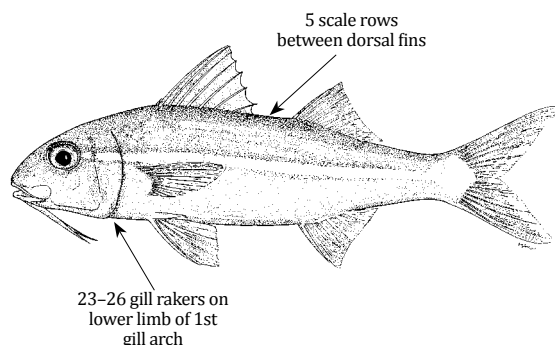
Mulloidichthys flavolineatus (Lacepède, 1801)*FAO names: Yellowstripe goatfish (En)
Capucin à bande jaune (Fr)**Local name(s):** Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Shallow waters on sandy bottoms of calm lagoons and bays; on or near reefs to 35 m depth.**Fisheries:** Bottoms trawls, gillnets.**Distinctive Characters:** Body elongate, its depth at anal fin origin 4.7–5.6 in SL; villiform teeth in a band in jaws; no teeth on roof of mouth; 1st dorsal fin with 8 spines; 34–38 lateral line scales.**Colour:** Silver white with a yellow mid-lateral body stripe edged in pale blue; a blackish blotch usually present in the yellow stripe beneath 1st dorsal fin; barbels white; fins whitish to faint yellowish.

Mulloidichthys vanicolensis (Valenciennes, 1831)

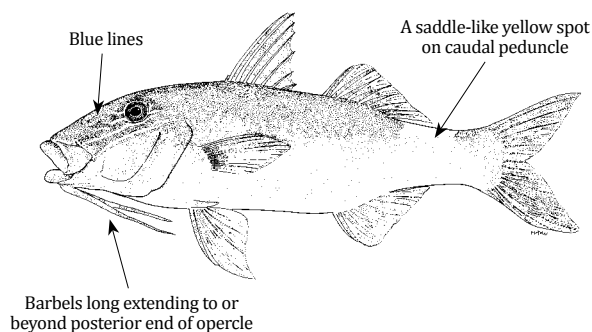
FAO names: Yellowfin goatfish (En)

Capucin de Vanicolo (Fr)

(Plate XXVIII, 223)

Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Shallow waters on sandy bottoms of calm lagoons and bays; on or near reefs.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body moderately elongate, its depth at anal fin origin 4.0–4.8 in SL; villiform teeth in a band in jaws; no teeth on roof of mouth; 1st dorsal fin with 8 spines; 36–38 lateral line scales.**Colour:** Whitish to pink with a yellow mid-lateral body stripe edged in pale blue; no dark blotch; barbels white; fins yellow.**Size:** To 38 cm, common 25 cm (TL)***Parupeneus cyclostomus*** (Lacepède, 1801) *

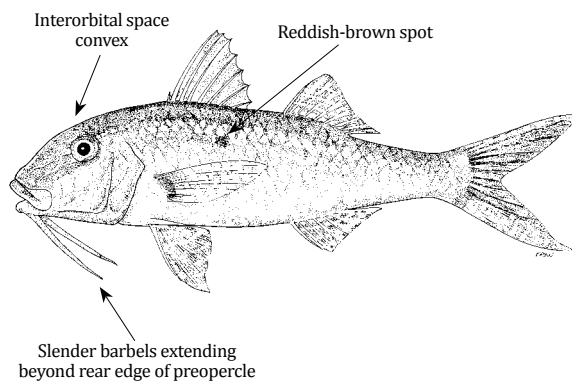
FAO names: Gold-saddle goatfish (En)

Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Found on coral reefs from 5 to 125 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Dorsal profile of snout straight to slightly concave; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth; 1st dorsal fin with 8 spines; 22–26 gill rakers on lower limb of 1st gill arch; 3 rows of scales between dorsal fins.**Colour:** Two colour phases, one entirely yellow the other yellowish grey with blue markings on scales; irregular blue lines radiating from eye and below eye; other blue lines on 2nd dorsal, anal and caudal fin.**Size:** To 50 cm, common 35 cm (TL)***Parupeneus heptacanthus*** (Lacepède, 1802)

(Plate XXVIII, 224)

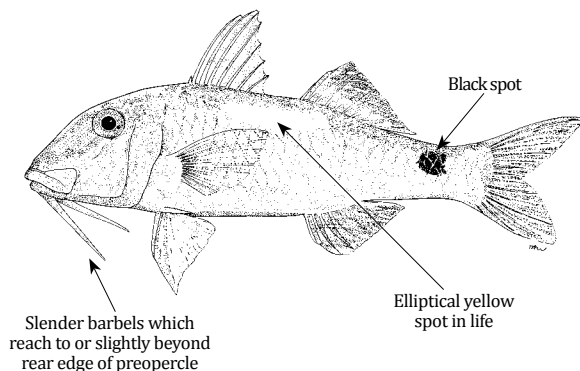
FAO names: Cinnabar goatfish (En)

Rouget-barbet cinnabare (Fr)

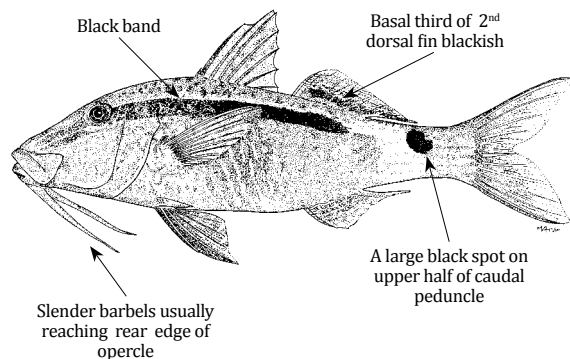
Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Lives over silty bottoms between 2–88 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Dorsal profile of head convex; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth; posterior end of maxilla evenly convex; 1st dorsal fin with 8 spines; 15–17 (usually 16) pectoral fin rays; 21–23 gill rakers on lower limb of 1st gill arch; 3 rows of scales between dorsal fins.**Colour:** Light orange-red dorsally, paler ventrally, often with an indistinct narrow yellow stripe just above lateral line; a small dark reddish spot usually present below lateral line above distal third of pectoral fin.**Size:** To 36 cm, common 24 cm (TL)

Parupeneus indicus (Shaw, 1803)

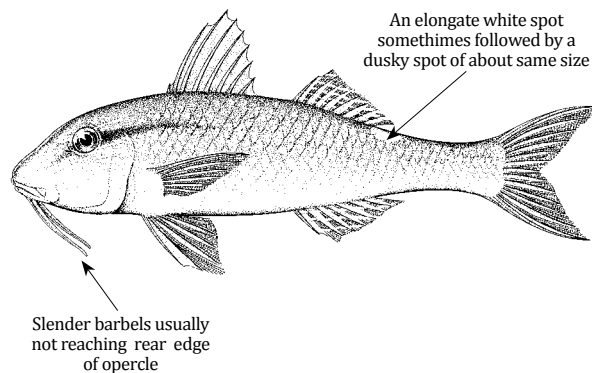
(Plate XXVIII, 225)

FAO names: Indian goatfish (En)
Rouget-barbet indien (Fr)**Local name(s):** Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Inhabits shallow coastal waters in <10 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Last ray of 2nd dorsal and anal fin longer than penultimate ray; 15–17 (usually 16) pectoral rays; 18–21 gill rakers on lower limb of 1st gill arch; 3 rows of scales between dorsal fins.**Colour:** Body greenish to reddish brown dorsally; a large, horizontal elongate, yellow spot (sometimes partly white) centred on lateral line below posterior part of 1st dorsal fin and interdorsal space; irregular pale blue lines radiating from eye; other blue lines on 2nd dorsal, anal and caudal fin.**Size:** To 45 cm, common 30 cm (TL)***Parupeneus macronemus*** (Lacepède, 1801) *

FAO names: Long-barbel goatfish (En)

Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Shallow sandy or weedy bottoms between 3–40 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Last dorsal and anal soft ray of adults much longer than penultimate ray; 15–17 (usually 16) pectoral fin rays; 27–30 gill rakers on lower limb of 1st gill arch; 3 rows of scales between dorsal fins.**Colour:** Reddish brown, paler ventrally and posteriorly; a black band from upper end of gill opening, ending beneath rear base of 2nd dorsal fin; a vertical pale blue line or spot on scales of body below dark stripe, and light blue lines on margin of dark band on head; basal third of 2nd dorsal fin blackish with a narrow extension to posterior tip of fin; lateral edge of pelvic fins broadly blackish.**Size:** To 40 cm, common 25 cm (TL)***Parupeneus margaritatus*** Randall & Guézé, 1984 *

FAO names: Pearly goatfish (En)

Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Soft bottoms in the vicinity of reefs or rocky outcrops between 1–55 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Last dorsal soft ray only slightly longer than penultimate ray; mouth small, the upper jaw length 3.0–3.5 in head length; 15–17 (usually 16) pectoral fin rays; 22–25 gill rakers on lower limb of 1st gill arch.**Colour:** Grey to brownish red dorsally, whitish to light red ventrally, with a distinct white to light blue spot on each scale of body below lateral line in life; a brown band on snout from upper lip to eye, often continuing onto postorbital head.**Size:** To 18.9 cm (TL)

Parupeneus rubescens (Lacepède, 1801)

(Plate XXVIII, 226)

FAO names: Rosy goatfish (En)
Rouget-barbet sellé (Fr)

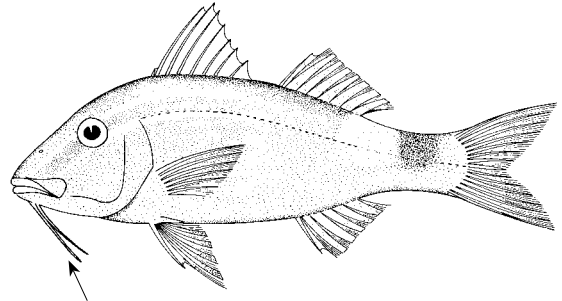
Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).

Habitat: Coastal waters, on turbid and silty sandy bottoms with coral reefs between 2–200 m depth.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth small; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth; 8–9 vertical scale rows along upper part of caudal peduncle; pectoral fins with usually 16 (rarely 15 or 17) rays; 21–25 gill rakers on lower limb of 1st gill arch; 3 vertical scale rows in space between dorsal fins.

Colour: Reddish to greenish brown dorsally, shading to light red ventrally; a large black spot on posterior part of caudal peduncle, preceded by a whitish spot; a pale-edged dark brown band from front of snout through eye.



Slender barbels usually reaching posterior rear margin of preopercle

Size: To 43 cm, common 23 cm (TL)

Parupeneus trifasciatus (Lacepède, 1801) *

FAO names: Doublebar goatfish (En)
Rouget-barbet double-tache (Fr)

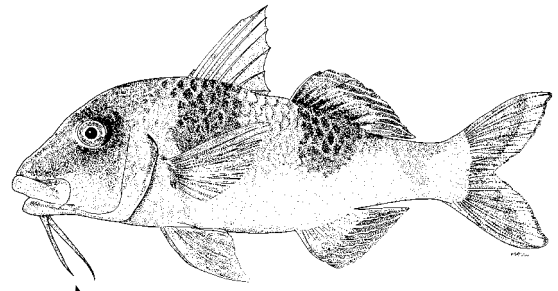
Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).

Habitat: Coral reefs down to 80 m depth.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Mouth small; a single row of well-spaced, stout, conical teeth in jaws; no teeth on roof of mouth; pectoral fins with usually 16 (rarely 15 or 17) rays; 28–32 gill rakers on lower limb of 1st gill arch; 3 rows of scales between dorsal fins.

Colour: Body colour yellowish grey to brownish red; 2 broad saddle-like dark bars below 1st dorsal and posterior part of 2nd dorsal fin and often a 3rd faint one on caudal peduncle; the dark saddle-like bars of small individuals much more evident.



Slender barbels which usually do not reach rear margin of preopercle

Size: To 35 cm, common 24 cm (TL)

Upeneus guttatus (Day, 1868)

(Plate XXVIII, 227)

FAO names: Two-tone goatfish (En)

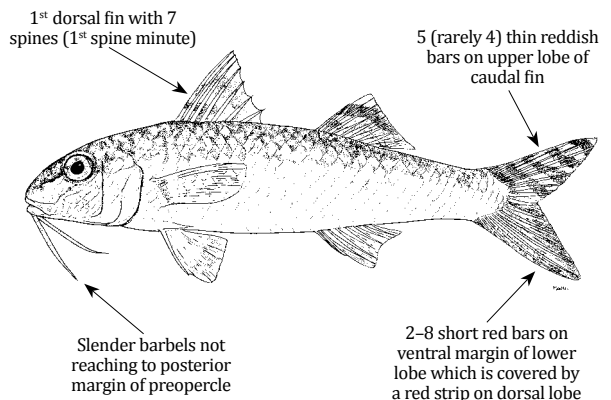
Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).

Habitat: Depth range 8–165 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body depth at 1st dorsal fin origin 22–26% of SL; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer (true of all *Upeneus* species); 12–15 (mostly 13) pectoral fin rays; 5–8+16–19 (total = 23–26) gill rakers on 1st gill arch; scales on 2nd dorsal and anal fins.

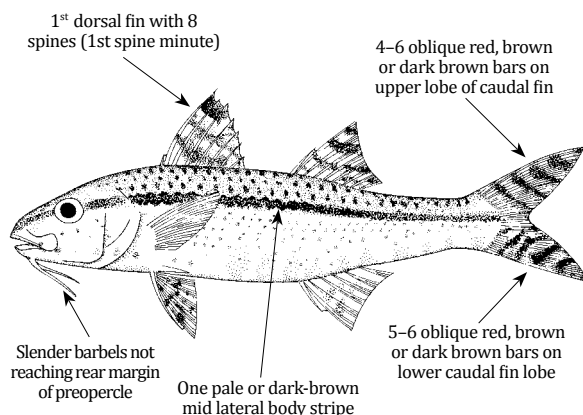
Colour: Body colour variable, often white or rose below lateral line, covered by red pigmentation above lateral line which may also reach down ventrally and to head, sometimes forming red patches or blotches; belly white; barbels yellow or white in fresh fish; caudal fin lobe bars and stripe fade away post mortem.



Size: To 16 cm (SL)

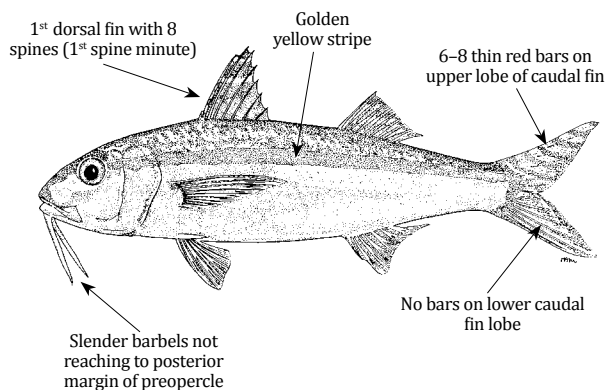
Upeneus heemstra Uiblein & Gouws, 2014 *

FAO names: Heemstra goatfish (En)

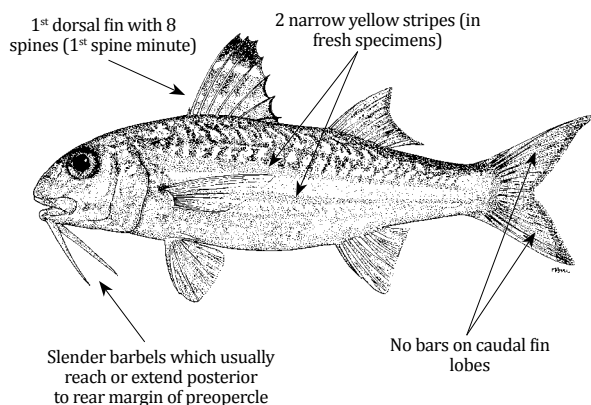
Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Depth range 0–12 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body depth at 1st dorsal fin origin 3.8–4.6 in SL; 1st dorsal fin height 4.4–5.3 in SL; 2nd dorsal fin height 5.4–6.0 in SL; 13–14 pectoral fin rays; 4–8+14–18 (total = 19–24) gill rakers on 1st gill arch; scales on 2nd dorsal and anal fins.**Colour:** Body and head ground colour white or beige, slightly darker above lateral line, with irregular red, brown or black spots and/or blotches; 1st dorsal fin with a large blotch around tip; fresh specimens with yellow or pale brown barbels.**Size:** To 15 cm (SL)***Upeneus moluccensis*** (Bleeker, 1855)

(Plate XXVIII, 228)

FAO names: Goldband goatfish (En)

Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Muddy bottoms from 1 m to 99 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body depth at 1st dorsal fin origin 3.7–4.3 in SL; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer; 14–16; pectoral fin rays; 7–9+18–21 (total = 26–29) gill rakers on 1st gill arch; scales on 2nd dorsal and anal fins.**Colour:** Golden yellow stripe about as broad as pupil passing from eye along upper side of body to upper caudal base; head and body above stripe silvery pink to greenish, silvery white below; tip of 1st dorsal fin tip brown or black.**Size:** To 18 cm (SL)***Upeneus sulphureus*** Cuvier, 1829 *

FAO names: Sulphur goatfish (En)

Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).**Habitat:** Schooling in coastal waters from 20 m to 60 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body depth at 1st dorsal fin origin 3.0–3.9 in SL; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer; 7–8+19–22 (total = 27–30) gill rakers on 1st gill arch; 15–16 pectoral fin rays; scales on 2nd dorsal and anal fins.**Colour:** Back greenish, mottled with bronze; silvery white on side; tip of 1st dorsal fin black; upper caudal fin lobe grey, lower lobe yellowish at fin base.**Size:** To 20 cm (SL)

***Upeneus supravittatus* Uiblein & Heemstra, 2010**

FAO names: Long-fin goatfish(En)

(Plate XXVIII, 229)

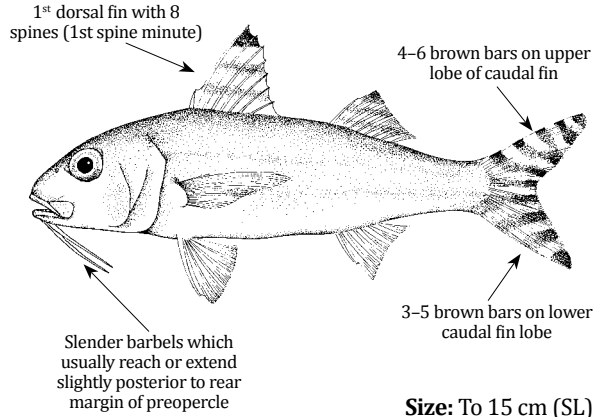
Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).

Habitat: Maximum reported depth is 40 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body depth at 1st dorsal fin origin 3.3–4.0 in SL; villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer; 7–9+21–23 (total = 27–32) gill rakers on 1st gill arch; pectoral fin length 0.8–1.1 in body depth at anus; 16–17 pectoral fin rays; scales on 2nd dorsal and anal fins.

Colour: Body with two narrow, pale-brown lateral stripes, the uppermost extending from behind head to caudal fin base, the lowermost from pectoral fin base to caudal fin base; stripes on mid body connecting to oblique bars on caudal fin; tip of 1st dorsal fin dark.



Size: To 15 cm (SL)

Upeneus vittatus* (Forsskål, 1775)

FAO names: Yellowstriped goatfish (En)

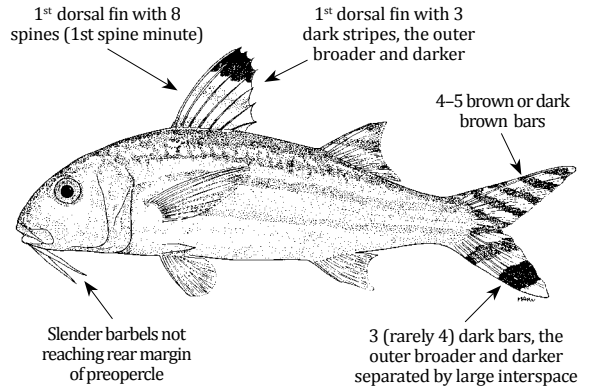
Local name(s): Adrakh, Chakori (Sin); Kolonto (Bal).

Habitat: Shallow sandy areas or lagoons and coastal reefs. Maximum depth 100 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body depth at 1st dorsal fin origin 3.3–4.2 in SL; 7–9+19–21 (total = 25–29) gill rakers on 1st gill arch; pectoral fin length 1.3–1.4 in body depth at anus; 15–16 pectoral fin rays; scales on 2nd dorsal and anal fins.

Colour: Body with two yellow or pale-brown lateral stripes, the uppermost extending from eye to caudal fin base, the lowermost from pectoral fin base to caudal fin base; stripes on mid body connecting to oblique bars on caudal fin; barbels white.



Size: To 28 cm, common 20 cm (SL)

PEMPHERIDAE

Sweepers

***Pempheris malabarica* Cuvier, 1831**

(Plate XXVIII, 230)

FAO names: Malabar Sweeper (En)

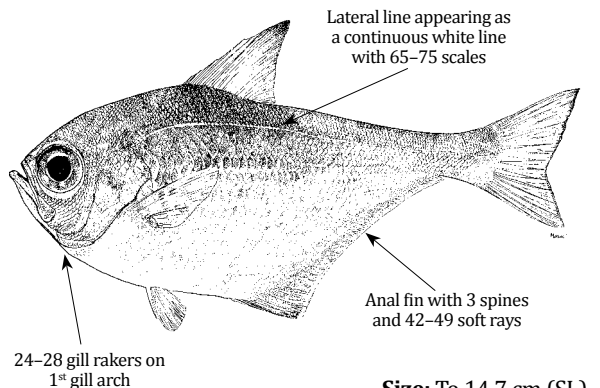
Local name(s): Lal pari (Sin); Kolonto (Bal).

Habitat: Shallow coastal waters above reefs and rocky areas.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body depth 2.3–2.45 in SL; scales on side of chest ctenoid; this species has the highest count of lateral line scales of the genus and the lowest count of gill rakers; lower jaw large and projecting, with two patches of teeth dorsally at the front of the jaw that are still half exposed when mouth fully closed.

Colour: Orangish to reddish copper, the scales with a dark spot forming straight horizontal stripes above and below lateral line; median fins orangish red; no dark band at base of anal fin.

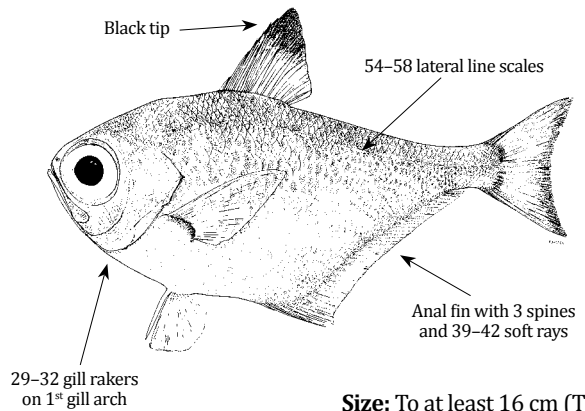


Size: To 14.7 cm (SL)

Pempheris russellii Day, 1888

(Plate XXIX, 231)

FAO names: Russell's Sweeper (En)

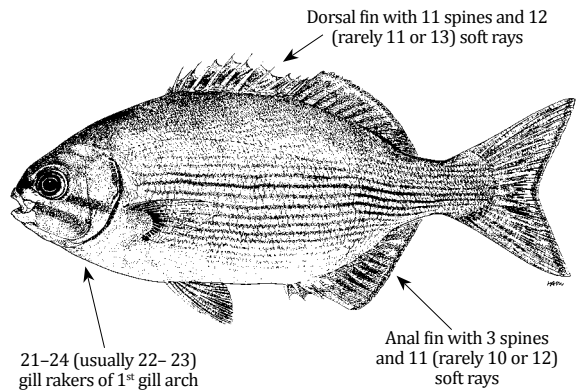
Local name(s): Lal pari (Sin); Kolonto (Bal).**Habitat:** Shallow coastal waters above reefs and rocky areas.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Body depth 2.1–2.2 in SL; scales on side of chest partly cycloid; teeth in lower jaw twice as large, well-spaced, in a maximum of four or five rows.**Colour:** Grayish, the scales with a dark spot forming horizontal stripes curving downwards below lateral line; pelvic fins white.**Size:** To at least 16 cm (TL)**KYPHOSIDAE**

Seachubs

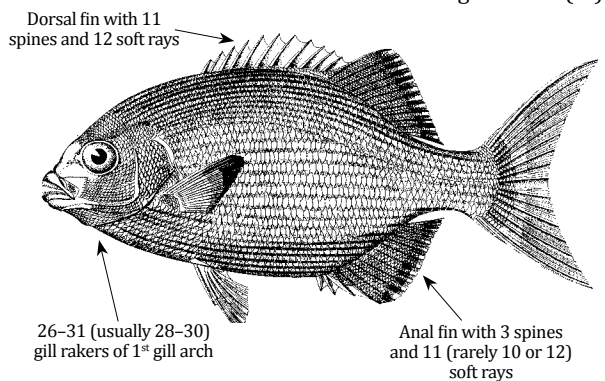
Kyphosus bigibbus Lacepède, 1801

(Plate XXIX, 232)

FAO names: Brown chub (En)

Local name(s): Jal Pari, Khadda dandia (Sin).**Habitat:** Shallow coastal waters above reefs and rocky areas.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Single row of lanceolate incisor-like teeth on both jaws (true of all Kyphosidae); soft portion of dorsal fin not higher than spiny portion; 51–55 (usually 53) pored lateral line scales; 12–15 (usually 13–14) scale rows above lateral line; 20–25 (usually 21–22) scale rows below lateral line.**Colour:** Silvery grey, the edges of the scales brown, resulting in a longitudinal linear pattern on body; a broad silvery stripe from front of snout to below eye, bordered below by a grey streak; opercular membrane dark brown; fins dark grey.**Size:** To 75 cm (TL)***Kyphosus cinerascens*** (Forsskål, 1775)

(Plate XXIX, 233)

FAO names: Blue Sea chub (En)
Calicagère bleue (Fr)**Local name(s):** Jal Pari, Khadda dandia (Sin).**Habitat:** Occurs in shallow coastal waters around reefs and rocks.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Soft part of dorsal fin clearly higher than the longest spine; 49–52 (usually 50–51) pored lateral line scales; 9–12 (usually 10–11) scale rows above lateral line; 17–21 (usually 18–20) scale rows below lateral line.**Colour:** Silvery grey, olivaceous to dusky dark above; a dark stripe between each row of scales; a grey or silvery stripe under the eye; opercular membrane dark brown vertical fins blackish, paired fins lighter.**Size:** To 50 cm (TL)

Kyphosus vaigiensis (Quoy & Gaimard, 1825)

Local name(s): Jal Pari, Khadda dandia (Sin); Nawar (Bal).

Habitat: Over hard, algal coated bottoms of exposed surf-swept outer reef flats, lagoons, and seaward reefs to a depth of at least 24 m.

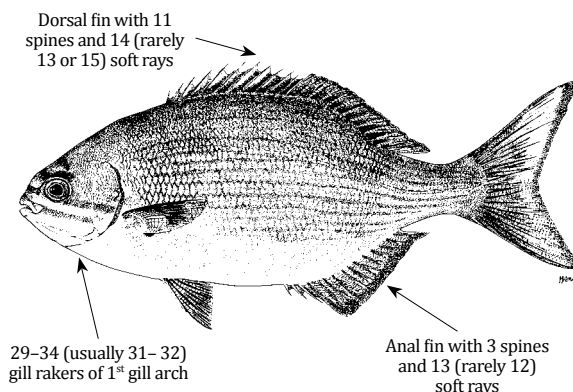
Fisheries: Caught mainly with gillnets.

Distinctive Characters: Maxilla reaching to below anterior edge of eye when mouth fully closed; soft portion of dorsal fin not higher than spiny portion; 51–55 (usually 52–53) pored lateral line scales; 11–14 (usually 12–13) scale rows above lateral line; 18–21 (usually 18–19) scale rows below lateral line.

Colour: Silvery grey with narrow brassy stripes along upper and lower edges of scales of body; two oblique brassy bands on snout and cheeks; opercular membrane usually yellowish brown.

(Plate XXIX, 234)

FAO names: Brassy chub (En)



Size: To 70 cm (TL)

DREPANEIDAE

Sicklefishes

Drepane longimana (Bloch & Schneider, 1801)

Local name(s): Pha-ran, Jalaibi (Sin); Sarando (Bal).

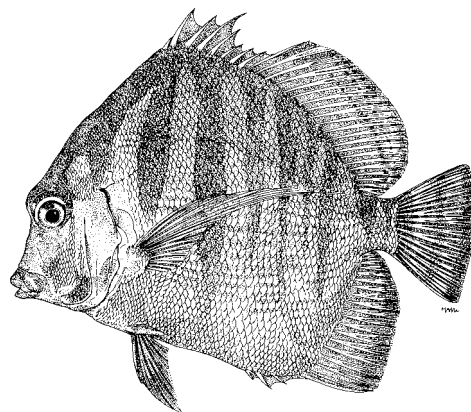
Habitat: Coastal waters including estuaries.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Body oval, strongly compressed; mouth highly protrusible; teeth pointed, slender, crowded together; dorsal fin with 8–9 (usually 8) spines and 19–23 rays; anal fin with 3 spines and 17–19 rays.

Colour: Head and body silvery; 4–10 subvertical dark bars (bars faint or absent in some specimens); median fins dusky, darker distally; 2–3 longitudinal rows of small dark spots on soft dorsal fin; some specimens with front part of head dark, and lips white.

FAO names: Concertina fish (En)



Size: To 50 cm (TL)

Drepane punctata (Linnaeus, 1758)

(Plate XXIX, 235)

FAO names: Spotted sicklefish (En)
Forgeron tacheté (Fr)

Local name(s): Pha-ran, Jalaibi (Sin); Sarando (Bal).

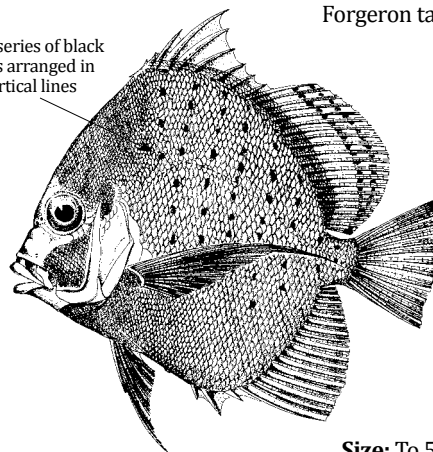
Habitat: Occurs in a variety of inshore habitats, such as sand or mud bottoms, reefs, estuaries, and harbours.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Body, mouth and teeth as in *Drepane longimana*; dorsal fin with 8–10 (usually 9) spines and 20–22 soft rays; anal fin with 3 spines and 16–19 rays.

Colour: Head and body silvery; fins dusky yellow; dorsal and caudal fins darker distally; 2 or 3 longitudinal rows of small dark spots on soft dorsal fin.

5–10 series of black spots arranged in vertical lines



Size: To 50 cm (TL)

MONODACTYLIDAE

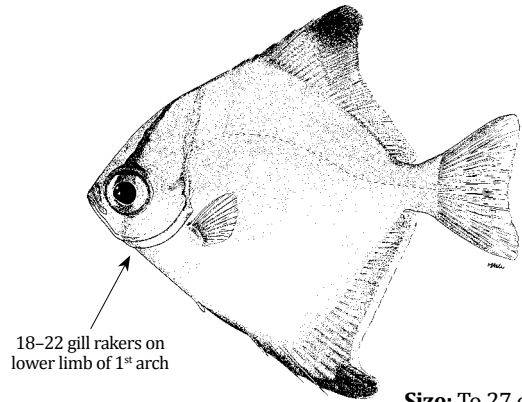
Moonies

Monodactylus argenteus (Linnaeus, 1758)

(Plate XXIX, 236)

FAO names: Silver moony (En)

Local name(s): Paplet, Poplet (Sin); Pithoo (Bal).
Habitat: Shallow coastal waters, fresh waters, estuaries and harbours.
Fisheries: Gillnets.
Distinctive Characters: Body oval, strongly compressed, its depth 1.2–1.6 in SL; teeth flattened, tricuspid, middle cusp much longer than other cusps; pelvic fins very small or absent in adults; dorsal fin with 8 spines and 27–30 soft rays; anal fin with 3 spines and 27–30 soft rays.
Colour: Adults silvery; tips of dorsal and anal fin lobes yellow, dusky yellow or blackish; juveniles dusky silver with 2 curved dark stripes across head.

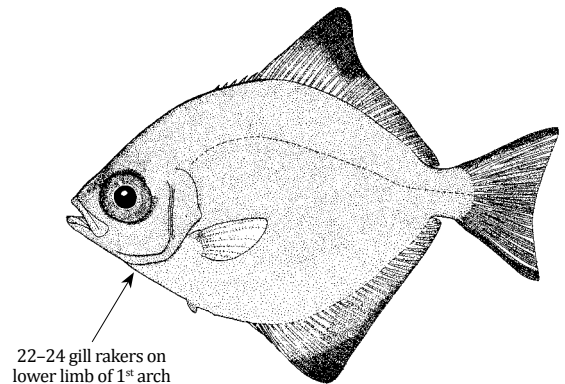


Size: To 27 cm (SL)

Monodactylus falciformis Lacepède, 1801*

FAO names: Full moony (En)

Local name(s): Paplet, Poplet (Sin); Pithoo (Bal).
Habitat: Estuaries and shallow coastal waters.
Fisheries: Gillnets.
Distinctive Characters: Body oval strongly compressed, its depth 1.5–2.0 in SL; teeth slender slightly curved, needle-like; pelvic fins very small or absent in adults; dorsal fin with 8 spines and 25–30 soft rays; anal fin with 3 spines and 25–29 soft rays; dorsal and anal fin spines small and inconspicuous; 17–18 pectoral fin rays.
Colour: Adults silvery; tips of dorsal and anal fin lobes dusky yellow or blackish; juveniles dusky silver with 11 or 12 dark vertical bars.



Size: To 31 cm (TL)

CHAETODONTIDAE

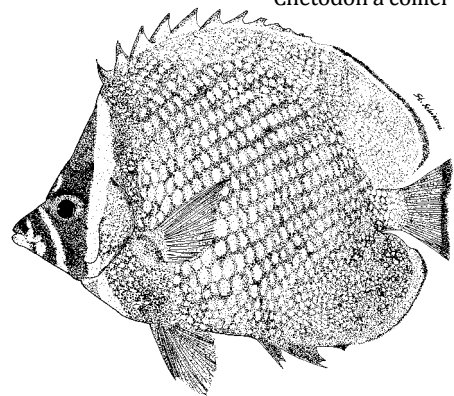
Butterflyfishes

Chaetodon collare Bloch, 1787

(Plate XXX, 237)

FAO names: Redtail butterflyfish (En)
Chétodon à collier (Fr)

Local name(s): Pari, Rani koi (Sin); Dateera (Bal).
Habitat: Inhabits coral reefs and aggregates in midwater at depths of 3–15 m; forms pairs or small to large groups.
Fisheries: Caught mainly with gillnets.
Distinctive Characters: Dorsal fin with 12 spines and 25–28 soft rays; anal fin with 3 spines and 20–22 soft rays.
Colour: Head brown with a prominent white bar from dorsal fin origin to chest, preceded by a black bar below eye which is edged anteriorly with white, snout and chin black with white markings; caudal fin red with a whitish posterior margin and black submarginal band.

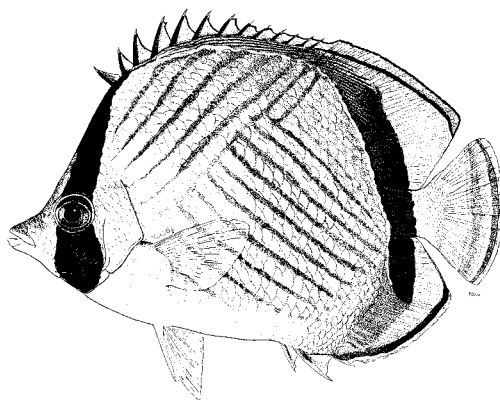


Size: To 18 cm (TL)

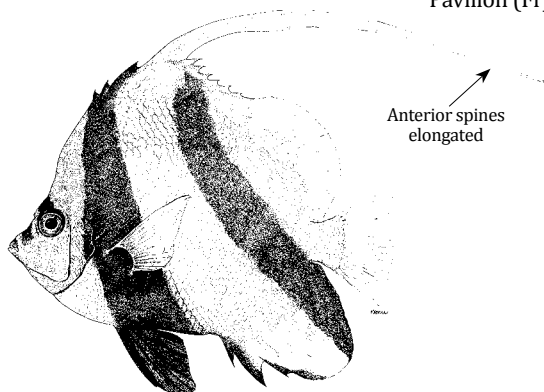
Chaetodon pictus Forsskål, 1775

(Plate XXX, 238)

FAO names: Horseshoe butterflyfish (En)

Local name(s): Pari, Rani koi (Sin); Dateera (Bal).**Habitat:** Inhabits coral reefs at depths of about 3 to 30 m; forms pairs.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Dorsal fin with 13 spines and 23–25 soft rays; anal fin with 3 spines and 19–22 soft rays.**Colour:** Body white with bluish black lines in two series set at right angles; head white with a black bar from high on nape through eye; a black bar across caudal peduncle, extending basally into dorsal and anal fins to form a horseshoe mark; rest of these and the caudal fin largely yellow, the caudal with a reddish brown bar in the middle, a clear posterior border, and a reddish brown submarginal band.

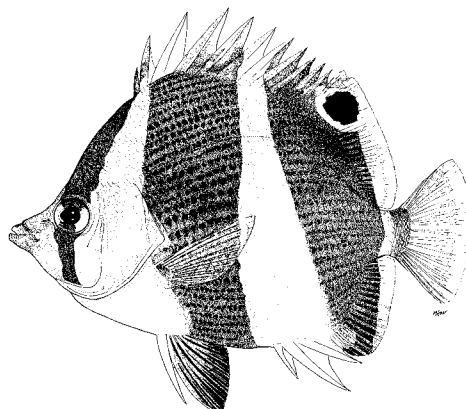
Size: To 18 cm (TL)

Heniochus acuminatus (Linnaeus, 1758)FAO names: Longfin bannerfish (En)
Pavillon (Fr)**Local name(s):** Pari, Rani koi (Sin); Dateera (Bal).**Habitat:** Inhabits coral reefs at depths of 2 to 40 m; usually found in pairs, but rarely in aggregations.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Dorsal fin with 11 (rarely 12) spines and 24–27 soft rays; anal fin with 3 spines and 15–18 soft rays.**Colour:** Body white with 2 broad black bands; snout and interorbital space largely blackish; caudal fin and posterior part of dorsal fin mainly yellow.**Remarks:** Frequently exported through the aquarium trade.

Size: To 20 cm (TL)

Roa jayakari (Norman, 1939)

FAO names: Jayakar's butterflyfish (En)

Local name(s): Pari, Rani koi (Sin); Dateera (Bal).**Habitat:** Reef-associated; depth range 33–274 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Dorsal fin with 11 spines and 21–23 soft rays; anal fin with 3 spines and 17–18 soft rays; caudal fin rounded.**Colour:** White with two broad dark brown bars on body, the 1st extending into dorsal fin, the 2nd into both the dorsal and anal fins; white interspace in middle of body broader ventrally; a dark brown bar from high on nape through eye, ending at lower edge of preopercle; a white edged black spot about as large as eye on soft portion of dorsal fin in upper posterior part of second brown bar.

Size: To 16 cm (TL)

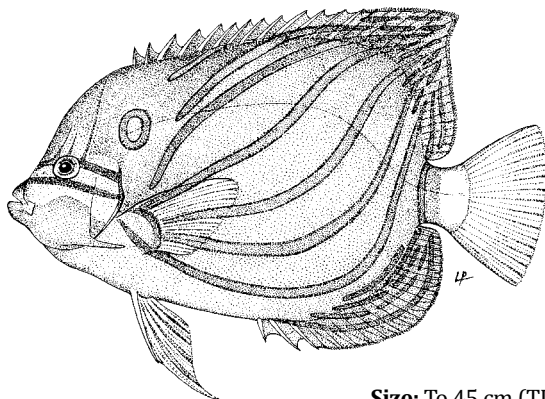
POMACANTHIDAE

Angelfishes

Pomacanthus annularis (Bloch, 1787)

(Plate XXX, 239)

FAO names: Blueringed angelfish (En)

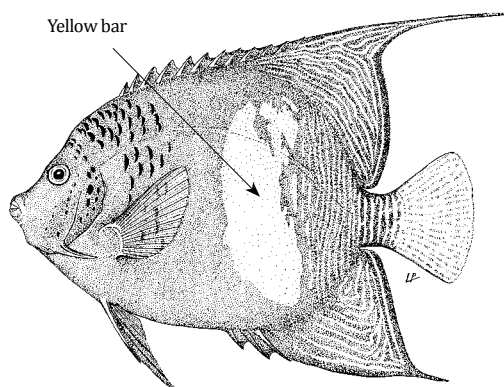
Local name(s): Pari, Rani koi (Sin); Dateera (Bal).**Habitat:** Inhabits lagoons and coral reefs at depths of 10 to 30 m; forms pairs.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Mouth small, with slender bristle-like teeth; a conspicuous spine occurs at angle of preopercle; dorsal fin with 13 spines and 20–21 soft rays; anal fin with 3 spines and 20 soft rays; a rounded soft anal fin.**Colour:** Adults brown with several distinct diagonal blue lines and a distinct blue ring above upper edge of opercle; caudal fin transparent white.

Size: To 45 cm (TL)

Pomacanthus maculosus (Forsskål, 1775)

(Plate XXX, 240)

FAO names: Yellowbar angelfish (En)

Local name(s): Pari, Rani koi (Sin); Dateera (Bal).**Habitat:** More often in silty reef areas than in rich coral growth. Maximum depth 50 m.**Fisheries:** Caught mainly with gillnets.**Distinctive Characters:** Mouth small, with slender bristle-like teeth; a conspicuous spine occurs at angle of preopercle; dorsal fin with 12–13 spines and 21–23 soft rays; anal fin with 3 spines and 19–20 soft rays; pectoral fins with 18–20 soft rays; pelvic fins elongate; soft portions of dorsal and anal fins elevated and angular.**Colour:** Body bluish; caudal fin yellowish; irregular pale bluish and yellow lines on soft portions of dorsal and anal fins; irregular yellow bar on body.

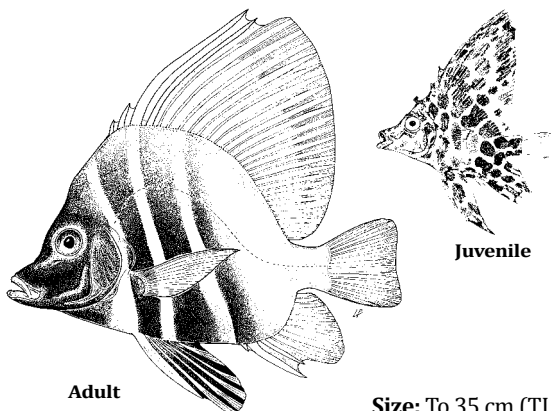
Size: To 50 cm, common 20 (TL)

PENTACEROTIDAE

Armorheads

Histiopertus typus Temminck & Schlegel, 1844

FAO names: Sailfin armourhead (En)

Local name(s): None.**Habitat:** Steep seaward reef drop-offs; bottom dweller from 40 m to 400 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Head mostly naked, the bones exposed and rugose; dorsal fin very high, sail-like, with 4 spines, the 1st two short; 23–29 dorsal fin soft rays; anal fin with 3 spines and 8–10 soft rays.**Colour:** Adult body pale, with dark brown bars; juveniles pale with large dark brown blotches over head, body, and dorsal, anal, and pelvic fins; pectoral and caudal fins pale, without spots.

Adult

Juvenile

Size: To 35 cm (TL)

CEPOLIDAE

Bandfishes

Acanthocepola indica (Day, 1888)

(Plate XXX, 241)

FAO names: Not available (En)

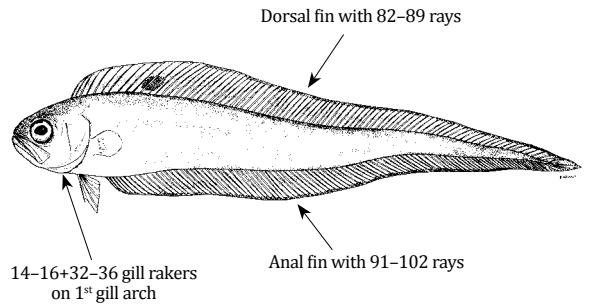
Local name(s): None.

Habitat: Burrow dweller occurring on muddy bottoms.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate and compressed; head length 6.7–8.6 in SL; last ray of dorsal and anal fins broadly united to caudal fin by a membrane; dorsal and anal fins long and continuous; preopercle with 6–7 blunt spines, longest at angle.

Colour: Head and body orange-red; 18–20 yellow stripes on sides; median fins orange-red; paired fins yellow with orange rays.



Size: To 35 cm (TL)

MUGILIDAE

Mulletts

Chelon klunzingeri (Day, 1888)

FAO names: Klunzinger’s mullet (En)

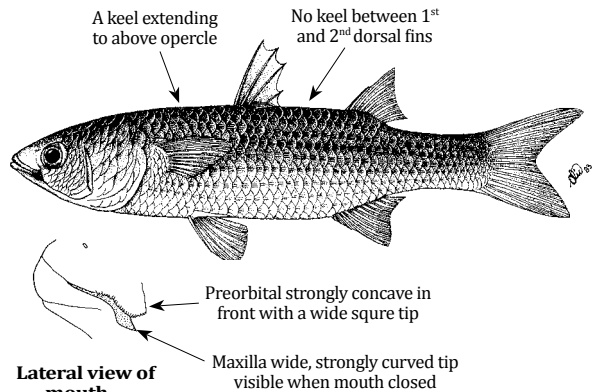
Local name(s): Chowdi, Mundi, Phal, Bhangam, Mainguch (Sin); Murba, Maingh (Bal).

Habitat: Lives mainly in marine, coastal waters.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Adipose eyefold widely developed anteriorly and posteriorly; head length 27–31.3% of SL; origin of 1st dorsal fin equidistant to tip of snout and caudal fin base; 32–38 scales in longitudinal series; 79–109 gill rakers on 1st gill arch; caudal fin forked; 5 pyloric caeca.

Colour: Greenish grey dorsally, soon shading to silvery on sides and ventrally; golden iridescence often present dorsally on head; posterior edge of caudal fin narrowly blackish.



Size: To 20 cm (TL)

Chelon macrolepis (Smith, 1846)

FAO names: Largescale mullet (En)

Mulet à grandes écailles (Fr)

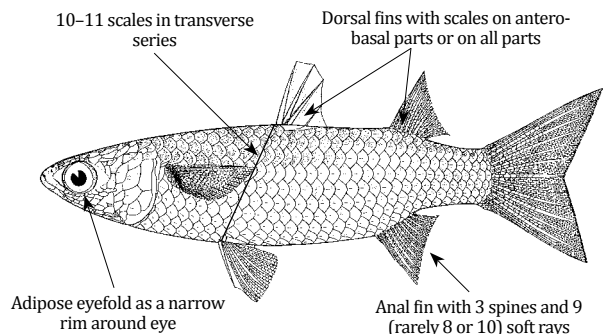
Local name(s): Pharra, Mori, Teet pharan (Sin); Mundi, Mundsar, Murba, Gwaraiz (Bal).

Habitat: Schooling in shallow coastal lagoon waters, estuaries and brackish waters.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: A small slender part of maxilla exposed when mouth closed; origin of 1st dorsal fin closer to base of caudal fin than tip of snout; pectoral axillary scale rudimentary or absent; scales in longitudinal series 31–35 (usually 32–33); caudal fin forked; 4–6 pyloric caeca.

Colour: Greenish grey dorsally; flanks and abdomen silvery; fins grey or bluish with dusky margins, may appear yellowish at base.



Size: To 60 cm, common 26 cm (TL)

Chelon melinopterus (Valenciennes, 1836)*

Local name(s): Chowdi, Mundi, Phal, Bhangam, Mainguch (Sin); Mundi, Murba (Bal).

Habitat: Shallow coastal lagoon waters, estuaries and brackish waters.

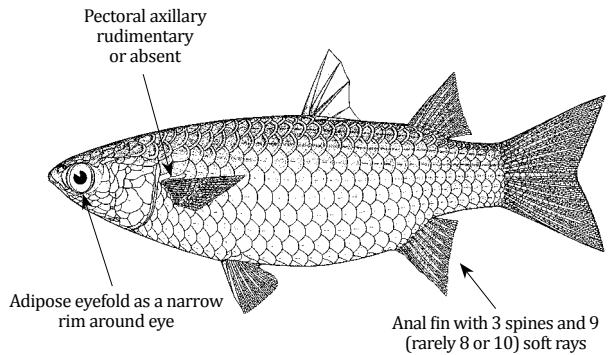
Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: A small slender part of maxilla exposed when mouth closed; caudal peduncle compressed; 1st dorsal fin origin nearer to caudal fin base than to snout tip; 2nd dorsal fin origin at vertical through middle of anal fin base; 2nd dorsal and anal fins densely scaled; 26–29 scales in lateral series; 9–11 scales in transverse series; caudal fin forked; 4–6 pyloric caeca.

Colour: Greenish brown above, white to silvery below; distal margins of dorsal fins and entire caudal fin dusky.

FAO names: Otomebora mullet (En)

Mulet otomebora (Fr)



Size: To 22 cm, common 18 cm (TL)

Chelon parsia (Hamilton, 1822)*

Local name(s): Boi, Paras, Chowdi, Boi, Mori (Sin); Chowdi, Polat, Murba, Mori (Bal).

Habitat: A schooling species, found in shallow coastal waters including brackish waters.

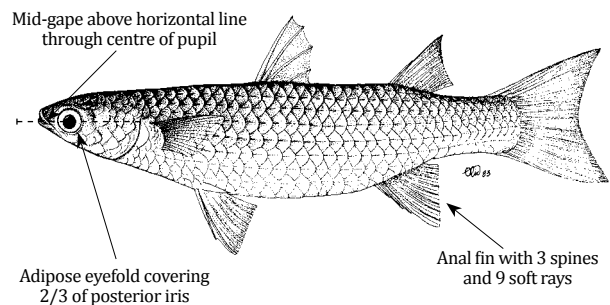
Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: A small slender part of maxilla exposed when mouth closed; 1st dorsal fin origin nearer to snout tip than to caudal fin base; pectoral axillary scale rudimentary or absent; 31–36 scales in longitudinal series.

Colour: Greenish brown above, white to silvery below; a golden spot on upper operculum; base of 2nd dorsal, anal and caudal fins yellowish, other fins off-white with dusky margins.

FAO names: Gold-spot mullet (En)

Mulet joue d'or (Fr)



Size: To 16 cm, common 15 cm (TL)

Chelon tade (Forsskål, 1775)*

Local name(s): Chowdi, Mundi, Phal, Bhangam, Mainguch (Sin); Mundi, Murba (Bal).

Habitat: Mainly a marine species, often entering estuaries and backwaters.

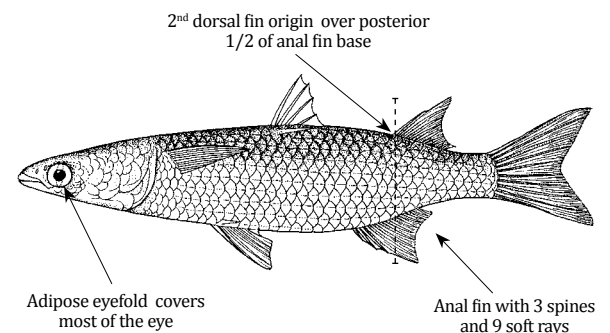
Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Body elongate, depth at 1st dorsal fin 20–22% of SL; maxilla as in other *Chelon* species; head wide, much depressed and pointed; 1st dorsal fin midway between tip of snout and base of caudal fin or slightly nearer the latter; pectoral axillary scale rudimentary or absent; 30–35 scales in longitudinal series; 10–11 scales in transverse series; caudal fin forked; 5 pyloric caeca.

Colour: Greenish brown dorsally, whitish ventrally; flanks with 5–7 indistinct longitudinal lines along scale rows.

FAO names: Tade mullet (En)

Mulet tade (Fr)



Size: To 70 cm, common 33 cm (TL)

Ellochelon vaigiensis (Quoy & Gaimard, 1825)

(Plate XXX, 242) **FAO names:** Squaretail mullet (En)
Mulet mopiro (Fr)

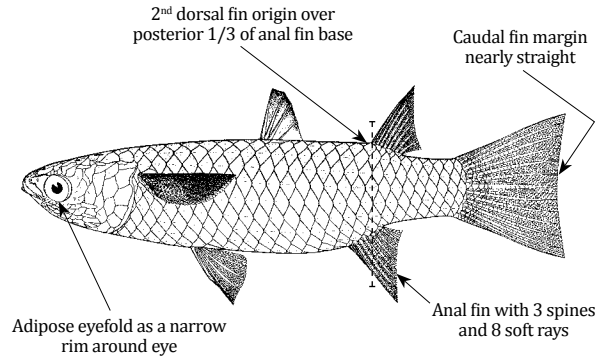
Local name(s): Bhangnan, Mundi, Pharra, Mori (Sin); Gid, Piant, Murba (Bal).

Habitat: Shallow coastal waters and estuaries.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: First dorsal fin origin nearer to caudal fin base than to snout tip; 25–29 (commonly 26) scales in longitudinal series; 8–10 scales in transverse series; 14–23 pyloric caeca.

Colour: Olive brown on back, silvery on sides, white with pale yellow suffusion on belly; scales on upper sides with brown blotches giving the effect of longitudinal bands; caudal fin yellow; pectoral fin wholly black in small fish, lower section yellowish in adults.



Size: To 63 cm, common 35 cm (TL)

Liza subviridis (Valenciennes, 1836)

(Plate XXXI, 243)

FAO names: Greenback mullet (En)
Mulet dos vert (Fr)

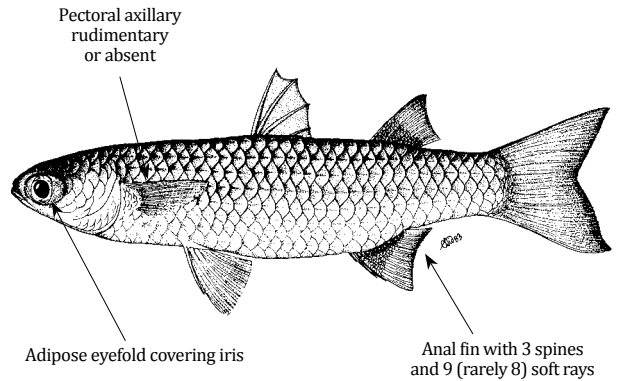
Local name(s): Chow-di, Mori, Boi (Sin); Maing, Murba (Bal).

Habitat: Schools in shallow coastal waters and enters lagoons, estuaries, and fresh waters.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: A small slender part of maxilla exposed when mouth closed; origin of 1st dorsal fin midway between tip of snout and base of caudal fin, or just closer to latter; both fins well scaled on all parts; scales in longitudinal series 28–32 (rarely 26, 27 or 33); 9–11 (rarely 12) scales in transverse series; caudal fin forked; 4–6 pyloric caeca.

Colour: Dark greenish dorsally, brownish over head, white ventrally; 3–6 indistinct, dark stripes along upper rows of scales; caudal fin bluish with black margin.



Size: To 40 cm (SL),

Moolgarda cunnesius (Valenciennes, 1836)*

FAO names: Longarm mullet (En)

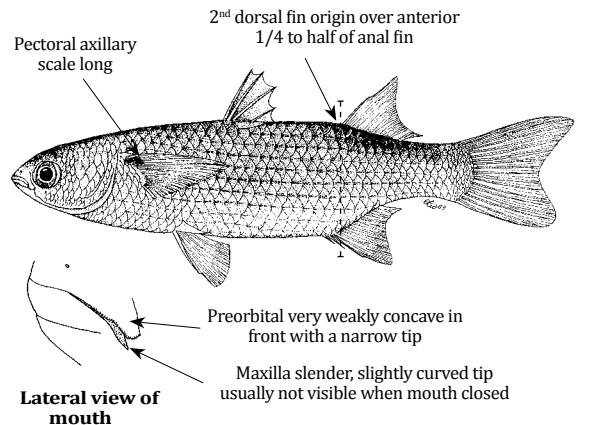
Local name(s): Pharra, Taint pharra (Sin); Pal-low, Murba, Mundsar (Bal).

Habitat: Probably inhabiting shallow coastal waters and browsing on benthic substrates.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Snout more or less pointed, 20–25% of head length; origin of 1st dorsal fin nearer to snout tip than to caudal fin base; anal fin with 3 spines and 9 soft rays; adipose eyefold usually as a rim around eye; both fins scaled only on anterior and basal parts; 37–43 scales in longitudinal series; 17–18 (rarely 15 or 16) scales in transverse series; 5–7 pyloric caeca.

Colour: Greenish grey dorsally; flanks and abdomen silvery; 2nd dorsal and anal fins with black margins.



Size: To 41 cm, common 25 cm (TL)

Moolgarda perusii (Valenciennes, 1836)

(Plate XXXI, 244)

FAO names: Longarm mullet (En)

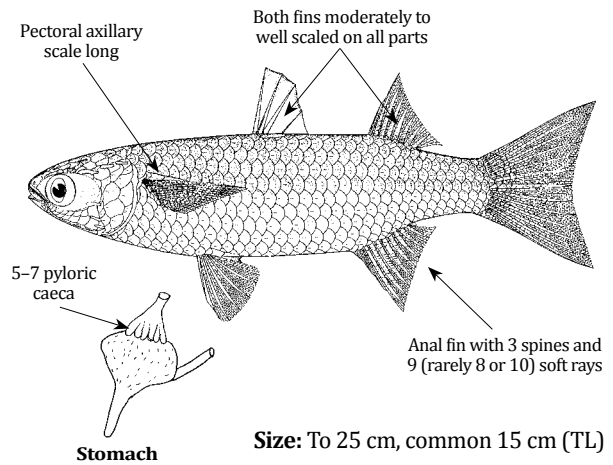
Local name(s): Pharra, Taint pharra (Sin); Pal-low, Murba, Mundsar (Bal).

Habitat: Schooling in coastal waters and estuaries.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Similar to *Moolgarda cunnesius* but snout short and blunt, 17–21% of head length; origin of 1st dorsal fin midway between snout tip and caudal fin base, or slightly nearer latter; adipose eyefold covering most of iris posteriorly and partly anteriorly; 31–34 (rarely 35) scales in longitudinal series; 10½–11½ scales in transverse series.

Colour: Greenish dorsally; flanks and abdomen silvery; gold opercular spot; fins dusky, particularly at margins; pectoral fins with dark spot dorsally at origin.



Size: To 25 cm, common 15 cm (TL)

Moolgarda seheli (Forsskål, 1775)*

FAO names: Bluespot mullet (En)

Mulet à tache bleue (Fr)

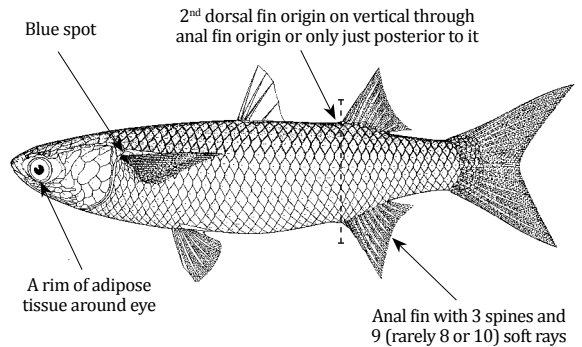
Local name(s): Say-sari, Pallow (Sin); Gwaraiz, Mundsar, Murbo, Pharra (Bal).

Habitat: Brackish and fresh waters; spawns at sea.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Maxilla and preorbital as in *Moolgarda cunnesius*; snout 18–22% of head length; 1st dorsal fin origin nearer to snout tip than to caudal fin base or equidistant; both fins always well scaled basally and medially, and more or less scaled on distal parts; 36–42 (usually 38–40) scales in longitudinal series; 12–14 scales in transverse series; 6–9 pyloric caeca.

Colour: Greenish brown on back, silvery below; upper rows of scales with dusky spots; 2nd dorsal and caudal fins pale blue; pelvic, anal and 1st dorsal fin white, pectoral fins dull yellow with a blue axillary spot; upper lobe of caudal fin with a dark blue tip.



Size: To 60 cm, common 40 cm (TL)

Moolgarda speigleri (Bleeker, 1858)*

FAO names: Speigler's mullet (En)

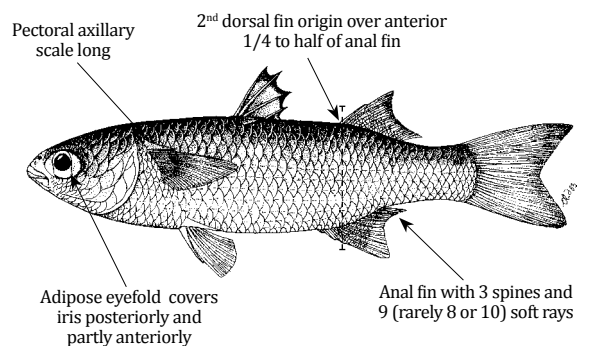
Local name(s): Say-sari, Pallow (Sin); Gwaraiz, Mundsar, Murbo, Pharra (Bal).

Habitat: Brackish and fresh waters; spawns at sea.

Fisheries: Bottom trawls, gillnets; beach seines; bag nets.

Distinctive Characters: Maxilla and preorbital as in *Moolgarda cunnesius*; 1st dorsal fin origin nearer to snout tip than to caudal fin base; both fins well scaled on all parts; 37–41 scales in longitudinal series; 11–12 scales in transverse series; 4 pyloric caeca.

Colour: Greenish dorsally; flanks and abdomen silvery; 1st dorsal fin with black margin, other fins dusky; pectoral fins with dark spot dorsally at origin.



Size: To 60 cm, common 40 cm (TL)

Mugil cephalus Linnaeus, 1758

(Plate XXXI, 245)

FAO names: Flathead grey mullet (En)
Mulet à grosse tête (Fr)

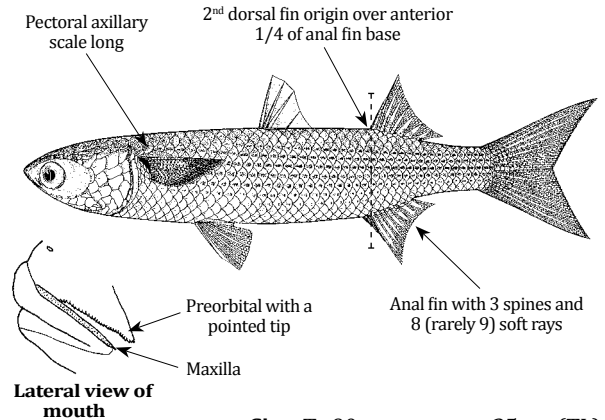
Local name(s): Phal, Phar, Say-sari, Maingach, Pharra, Minyhaj, Duggi (Sin); Tagan, Murba (Bal).

Habitat: Coastal waters and adjacent lagoons.

Fisheries: Bottom trawls, gillnets; beach seines; bag nets.

Distinctive Characters: Maxilla and serrate anteroventral edge of preorbital straight; adipose eyefold covering most of the eye; both fins scaled only anterobasally; usually 38–42 scales in longitudinal series; 13–15 (rarely 16) scales in transverse series; 2 pyloric caeca.

Colour: Olive-green on back, silvery on sides with 6–7 dark stripes following rows of scales (stripes less conspicuous ventrally); fins dusky; pectoral fins with a dark purple spot at origin and whitish margin.



Size: To 90 cm, common 35 cm (TL)

POMACENTRIDAE

Damselfishes

Abudefduf bengalensis (Bloch, 1787)

(Plate XXXI, 246)

FAO names: Bengal sergeant (En)

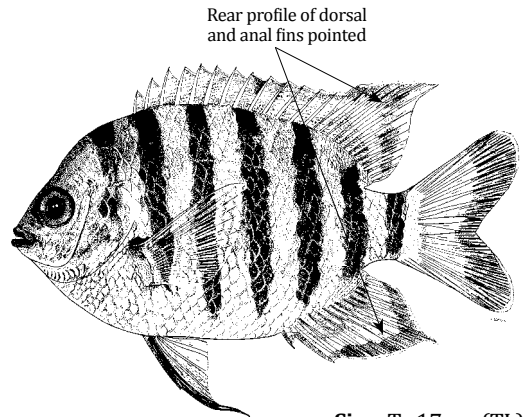
Local name(s): Margan, Jabal kui (Sin); Baanore, Shaher bano (Bal).

Habitat: Relatively sheltered coastal reefs and lagoons in shallow water (about 1-6 m depth).

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body depth 1.6–2.0 in SL; dorsal fin with 13 spines and 13–15 (usually 14, occasionally 13) soft rays; anal fin with 2 spines and 13–14 rays; pectoral rays 16–20 (usually 18–19); 19–23 lateral line scales; 22–26 gill rakers on 1st gill arch.

Colour: White with 6-7 relatively thin dark bars on head and body.



Size: To 17 cm (TL)

Abudefduf vaigiensis (Quoy & Gaimard, 1825)

FAO names: Indo-Pacific sergeant (En)

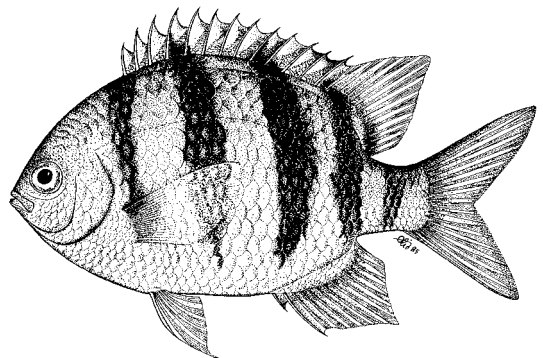
Local name(s): Margan, Jabal kui (Sin); Baanore, Shaher bano (Bal).

Habitat: Adults inhabit upper edge of outer reef slopes and inshore rocky reefs.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body depth 1.5–1.8 in SL; dorsal fin with 13 spines and 12–14 soft rays; anal fin with 2 spines and 11–13 rays; pectoral rays 16–20; 19–23 lateral line scales; 23–33 gill rakers on 1st gill arch.

Colour: Body pale with 5 black bars on body; dorsal surface yellow.



Size: To 20 cm (TL)

Abudefduf sordidus (Forsskål, 1775)

(Plate XXXI, 247)

FAO names: Blackspot sergeant (En)

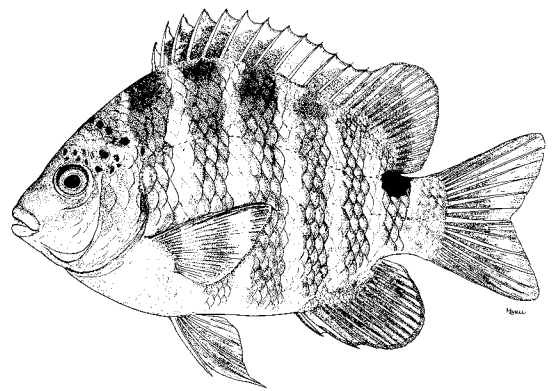
Local name(s): Margan, Jabal kui (Sin); Baanore, Shaher bano (Bal).

Habitat: Inhabit rocky lagoons, reef flat shorelines and piers subject to mild surge; juveniles common in tide pools.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body depth 1.5–1.8 in SL; dorsal fin with 13 spines and 14–16 (usually 15) soft rays; anal fin with 2 spines and 14–15 rays; pectoral rays 18–20; 20–23 lateral line scales; 20–28 gill rakers on 1st gill arch.

Colour: Body pale, usually with 6–7 dark bars (sometimes the bars are obscured by a dense overlay of small dark spots all over the body); distinct black spot on upper surface of peduncle; dark spot at upper end of pectoral fin base; small black spots above and behind eye and across nape.



Size: To 24 cm (TL)

Chrysiptera unimaculata (Cuvier, 1830)

FAO names: Onespot demoiselle (En)

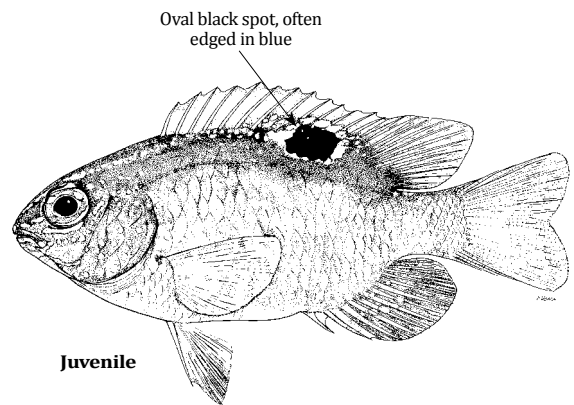
Local name(s): Margan, Jabal kui (Sin); Baanore, Shaher bano (Bal).

Habitat: Inhabits shallow exposed reefs and rocky shores, with mild to moderate wave action.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body depth 2.1–2.4 in SL; dorsal fin with 13 spines and 13–14 (rarely 14) soft rays; anal fin with 2 spines and 12–14 rays; pectoral rays 18–19 (usually 18); 16–18 lateral line scales; 7–8+14–18 gill rakers on 1st gill arch.

Colour: Color variable, but adults usually grey-brown with a vertically elongate bluish spot on each scale of body; pectoral fins usually yellow; juveniles with a blue band from snout over eye ending in a large black spot at rear base of soft part of fin and extending dorsally onto caudal peduncle.



Size: To 10 cm (TL)

Neopomacentrus sindensis (Day, 1873)

(Plate XXXI, 248)

FAO names: Arabian demoiselle (En)

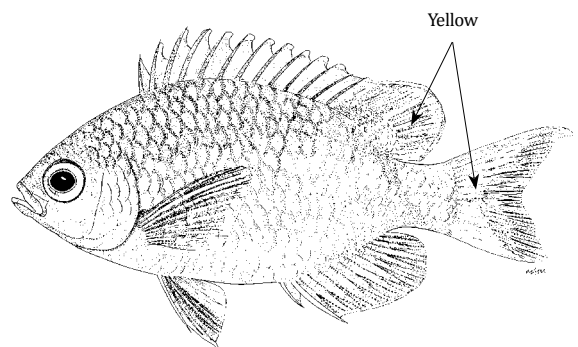
Local name(s): Margan, Jabal kui (Sin); Baanore, Shaher bano (Bal).

Habitat: Inhabits shallow exposed reefs and rocky shores, with mild to moderate wave action.

Fisheries: Caught mainly with gillnets.

Distinctive Characters: Body depth 2.3–2.6 in SL; dorsal fin with 13 spines and 11–12 soft rays; anal fin with 2 spines and 11–12 rays; pectoral rays 18–19; 18–19 lateral line scales; 8–9+17–18 gill rakers on 1st gill arch.

Colour: Brownish to bluish grey, the scale edges dark, shading to yellow on caudal peduncle and fin; scales posteriorly on body with a small blue spot; posterior part of dorsal fin also yellow; margin of dorsal and anal fins bright blue except posteriorly; a black spot at upper base of pectoral fins; pelvic fins usually mostly black.



Size: To 10 cm (TL)

LABRIDAE

Wrasses – Hogfishes – Tuskfishes

Halichoeres nigrescens (Bloch & Schneider, 1801)

FAO names: Bubblefin wrasse (En)

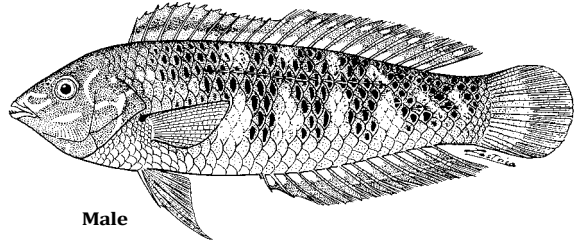
Local name (s): Popat (Sin).

Habitat: Shallow weedy areas of rocky shorelines.

Fisheries: Gillnets, cast net.

Distinctive Characters: Dorsal fin with 9 spines and 12 soft rays; anal fin with 3 spines and 12 soft rays; pectoral fins with 14–15 soft rays; head naked; 2nd to 5th dorsal fin spines higher than the rest of the fin.

Colour: Juveniles and females with thick mid-lateral stripe and ocellus midway in dorsal fin; males greenish brown dorsally and whitish ventrally with 6–7 reddish brown bars; oblique red streaks on head; vertical blue spot or band behind upper half of eye.



Male

Size: To 14 cm (TL)

SCARIDAE

Parrotfishes

Scarus arabicus (Steindachner, 1902) *

FAO names: Arabian parrotfish (En)

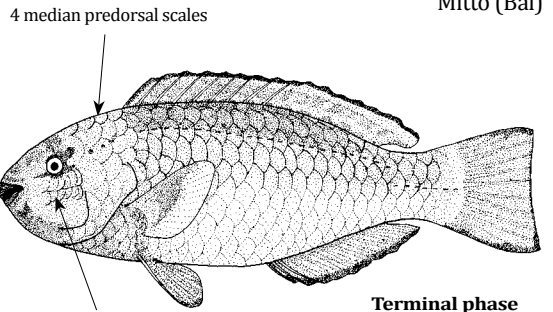
Local name(s): Popat, Tota (Sin); Mitto (Bal)

Habitat: Shallow reefs, on flats and reef fronts.

Fisheries: Gillnets.

Distinctive Characters: Teeth fused to form smooth dental plates (true of all *Scarus*); no teeth on side of dental plates; dorsal profile of head of terminal males steep; nostrils very small; caudal fin of initial phase truncate.

Colour: Initial phase grey-brown, the scale edges orangish; lower part of head mainly turquoise blue; caudal fin dark grey-brown with a narrow white posterior margin; terminal males with a broad irregular green band across interorbital space and enclosing eye; front of snout green, the edge of upper lip narrowly pink; pectoral fins purple, the upper edge broadly blue.



Terminal phase

Size: To 45 cm (TL)

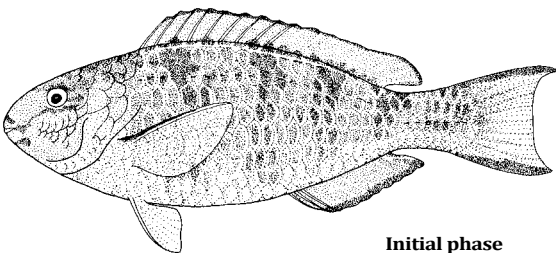
Scarus ghobban Forsskål, 1775

(Plate XXXI, 249, 250)

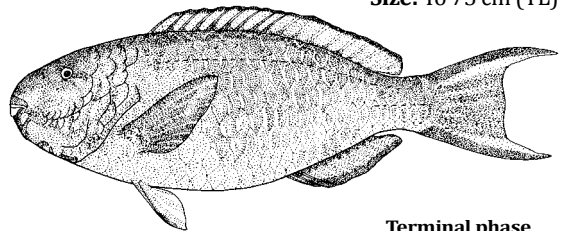
FAO names: Blue-barred parrotfish (En)

Local name(s): Popat, Tota (Sin); Mitto (Bal)

Size: To 75 cm (TL)



Initial phase



Terminal phase

Habitat: Shallow reefs, on flats and reef fronts.

Fisheries: Gillnets.

Distinctive Characters: Usually 6 median predorsal scales, the 4th usually largest; 3 rows of scales on cheek, the lowermost with 1-2 scales; large adults with 1-3 conical teeth posteriorly on side of upper dental plates; posterior nostril oval, 2-5 times larger than anterior.

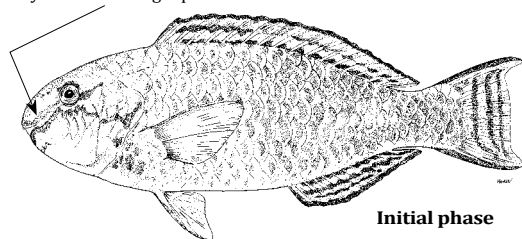
Colour: Initial phase with scale centres bluish, the edges orange-yellow; often with 5 blue bars on body; terminal males with a broad irregular green band from corner of mouth across lower part of head linked with two blue-green bands on chin; edge of upper lips salmon pink with a broad green band above; dental plates pale salmon.

Scarus zufar Randall & Hoover, 1995

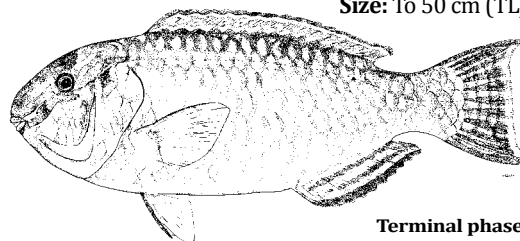
(Plate XXXII, 251, 252)

FAO names: Dhofar parrotfish (En)**Local name(s):** Popat, Tota (Sin);

Mitto (Bal)

Size: To 50 cm (TL)2 green bands separated
by a narrow orange space

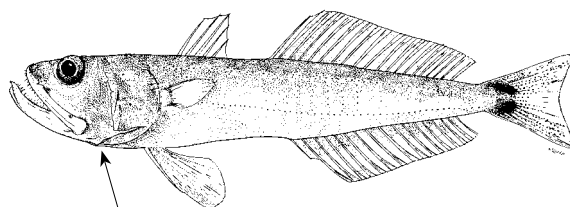
Initial phase



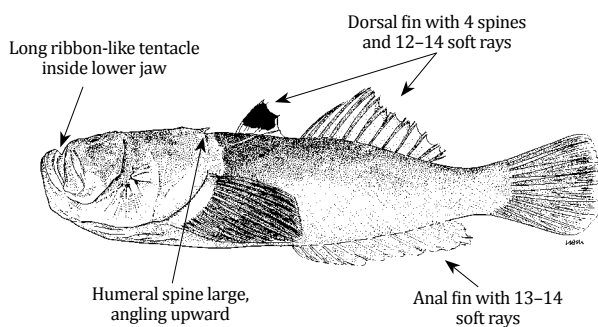
Terminal phase

Habitat: usually seen along exposed rocky shores.**Fisheries:** Gillnets.**Distinctive Characters:** Usually 4 median predorsal scales; 2 rows of scales on cheek; no teeth posteriorly on side of upper dental plates; nostrils very small.**Colour:** Body of initial phase orange with a submarginal green arc on each scale; pectoral fins orange with a narrow blue-green upper edge; terminal male similar; a large orange to salmon pink area beneath and around pectoral fin.**CHAMPSODONTIDAE**

Gapers – Crocodile toothfishes

Champsodon omanensis Regan, 1908**FAO names:** Not available (En)**Local name(s):** None.**Habitat:** Occurs in great shoals. Depth range 135–1 120 m.**Fisheries:** Pelagic trawls.**Distinctive Characters:** Maxilla extends beyond posterior margin of eye; premaxillae notched lateral to symphysis; chin dark and thickly scaled; belly scaled at least halfway from vent to pelvic fin base; breast fully scaled.**Colour:** Body silvery, slightly darker brown dorsally; dark blotch at caudal base; pectoral, pelvic, dorsal and anal fins with melanophores along rays; chin spotted with melanophores.1+10–12 gill
rakers on 1st gill arch**Size:** To 10.6 cm (SL)**URANOSCOPIDAE**

Stargazers

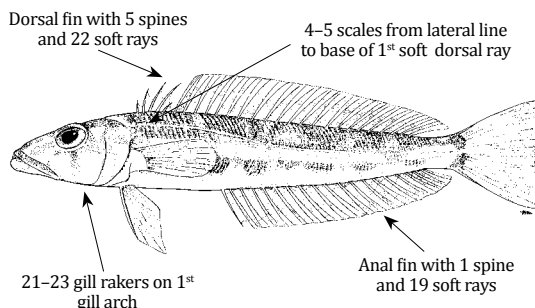
Uranoscopus dollfusi Brüß, 1987**FAO names:** Dollfus' stargazer (En)**Local name(s):** Serin (Sin); Bheel-aalari (Bal).**Habitat:** Occurs on soft bottoms to 46 m depth.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body depth 3.55–4.3 in SL; spinous dorsal fin barely linked basally to soft dorsal; a pair of suprascapular spines above opercle, the inner one triangular, about half length of the outer; 5 striated, ventrally-directed bony ridges on preopercle ending in sharp spines.**Colour:** Grey-brown, paler ventrally; fine reticulum of ridges on external bones of head reddish; outer ¾ of spinous dorsal fin black, the basal ¼ white; caudal fin grey-brown with a white posterior margin.**Size:** To 23.7 cm (TL)

PINGUIPEDIDAE

Sandperches

Parapercis alboguttata (Günther, 1872)

FAO names: Whitespot sandsmelt (En)

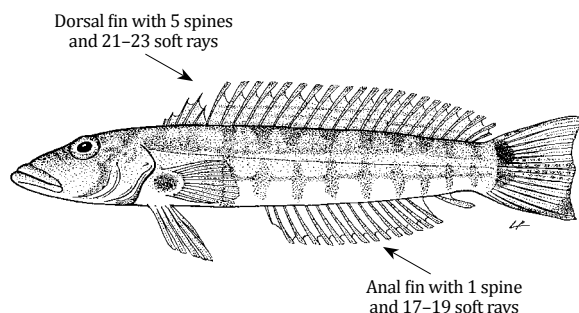
Local name(s): Bhabi (Sin); Riami-hashoor (Bal).**Habitat:** A coastal species found in trawling grounds.**Fisheries:** Bottom trawls, gillnets, hand lines.**Distinctive Characters:** Body depth 6.0–6.8 in SL; 18 or 19 pectoral fin rays; 3 pairs of canine teeth in outer row at front of lower jaw; no palatine teeth.**Colour:** Body light red dorsally, shading to white ventrally; longitudinal rows of indistinct light red blotches on body, ending in two distinct dark red spots on base of caudal fin; snout light blue with oblique yellow lines.

Size: To 27 cm (TL)

Parapercis robinsoni Fowler, 1929

(Plate XXXII, 253)

FAO names: Smallscale grubfish (En)

Local name(s): Bhabi (Sin); Riami-hashoor (Bal).**Habitat:** Clear lagoons and reefs from 6 m to 55 m.**Fisheries:** Bottom trawls, gillnets, hand lines.**Distinctive Characters:** Body depth 5.1–6.5 in SL; 16–18 pectoral fin rays; 3 pairs of canine teeth in outer row at front of lower jaw; no palatine teeth.**Colour:** Body with a midlateral dark-edged white stripe about as broad as eye; body below stripe white with 7–9 narrow blackish bars which continue faintly across white stripe; body above stripe brown with large blackish blotches and small irregular blotches between the larger ones; blue lines between and below eyes; black blotch at base of upper caudal rays and a less distinct blotch at base of lower caudal rays.

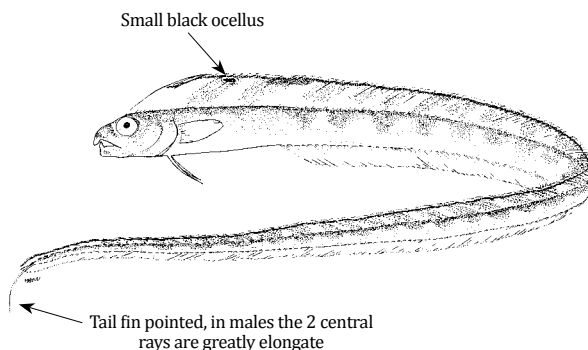
Size: To 30 cm (TL)

BLENNIIDAE

Blennies

Xiphasia setifer Swainson, 1839

FAO names: Hairtail blenny (En)

Local name(s): Laiduk (Sin); Ala-laiduk (Bal).**Habitat:** Occurs on mud or sand bottoms; takes refuge in tubes or burrows.**Fisheries:** Bottom trawls.**Distinctive Characters:** Body compressed and extremely elongate, its depth 30–40 in SL; dorsal fin with 13–14 flexible spines and 105–119 segmented rays, fin origin in adults between front edge of eyes; anal fin rays 107–119.**Colour:** Pale grey-brown with 20–28 indistinct broad dark bars extending into dorsal fin; margin of soft dorsal fin dusky with white edge.

Size: To 60 cm (TL)

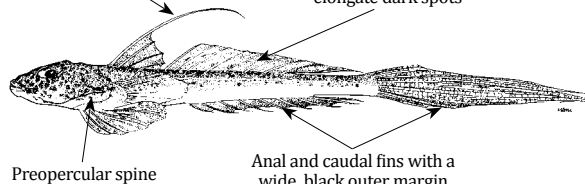
CALLIONYMIDAE

Dragonets

Callionymus margaretae Regan, 1905

(Plate XXXII, 254)

FAO names: Margaret's dragonet (En)

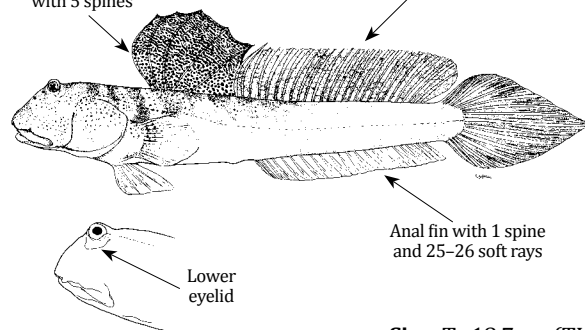
Local name(s): Jirri (Sin); Murrant (Bal).**Habitat:** Benthic, in shallow coastal areas.**Fisheries:** Bottom trawls.**Distinctive Characters:** Preopercular spine with 3–6 short spinules on dorsomedial edge and a strong antrose lower spine; anal fin with 8 rays; 16–21 pectoral fin rays.**Colour:** A row of dark saddles on back and a row of elongate dark blotches just below lateral line; suborbital region of males with small dark spots; caudal fin with vertical rows of black spots along central part of fin (fin may be plain dusky in females).1st dorsal fin with 4 spines and 9 soft rays; 1st spine elongate in both sexes2nd dorsal fin with elongate dark spots**Size:** To 16 cm (TL)**GOBIIDAE**

Gobies

Boleophthalmus dussumieri Valenciennes, 1837

FAO names: Dussumier's mudskipper (En)

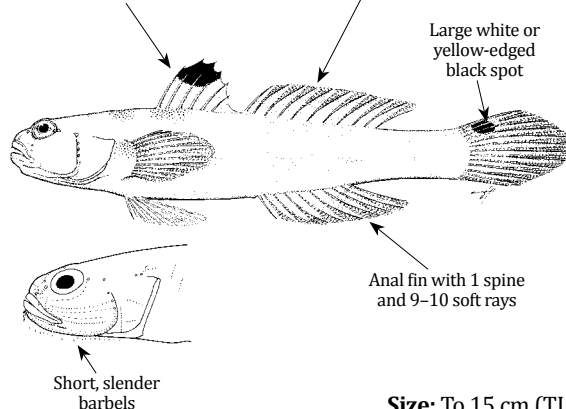
(Plate XXXII, 255)

Local name(s): Gulla (Sin); Gullo (Bal).**Habitat:** Lives on mud flats.**Fisheries:** Bottom trawls.**Distinctive Characters:** Eyes close together, movable to above dorsal profile of head; caudal fin length 21.9–25.5% SL; head length 23.6–28.7% SL; length of D2 base 42.2–44.7% SL; longitudinal scale count 103–185; predorsal scales 48–56; lower jaw teeth notched; pelvic fins united.**Colour:** Grey, the scale centres paler than edges, with dark grey dots on head, anterior body, and pectoral fin base; 1st dorsal fin with small black spots; 2nd dorsal fin with rows of small white spots, the largest at base; anal fin whitish.1st dorsal fin with 5 spines2nd dorsal fin with 1 spine and 24–27 soft rays**Size:** To 18.7 cm (TL)***Parachaeturichthys polynema*** (Bleeker, 1853)

FAO names: Taileyed goby (En)

Local name(s): Gulla (Sin); Gullo (Bal).**Habitat:** Usually found on muddy bottoms.**Fisheries:** Bottom trawls.**Distinctive Characters:** Body depth 5.3–6.0 in SL; 20–22 pectoral fin rays; 25–30 scales in longitudinal series; caudal fin pointed, 3.0–3.05 in SL; scales on body ctenoid, cycloid on head, those on cheek small; pelvic fins joined to form a disc with a frenum, not reaching anus.**Colour:** Pale yellowish, the edges of the scales narrowly blackish; a white-edged black spot nearly as large as eye on upper part of caudal fin about one-third distance to posterior edge of fin; a large black spot distally on first three membranes of 1st dorsal fin.1st dorsal fin with 6 spines2nd dorsal fin with 1 spine and 9–11 soft rays

Large white or yellow-edged black spot

**Size:** To 15 cm (TL)

***Aulopareia ocellata* (Day, 1873)**

(Plate XXXII, 256)

FAO names: Fat taileded goby (En)

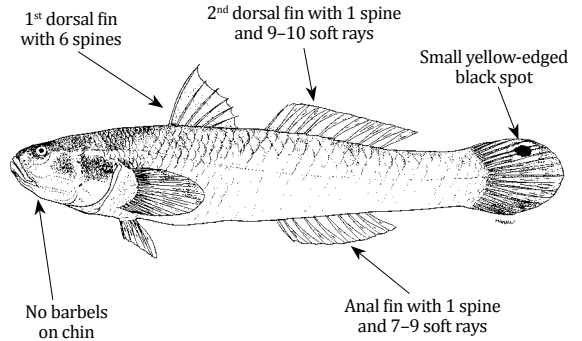
Local name(s): Gulla (Sin); Gullo (Bal).

Habitat: Usually found on muddy bottoms.

Fisheries: Bottom trawls.

Distinctive Characters: The species resembles *Parachaeturichthys polynema* but no barbels below the jaws, other than the bilobed fleshy frenum; no scales below the lower jaw or extending onto the branchiostegal membranes.

Colour: Background colour olive green; a dark green spot above margin of opercle; about 6 indistinct blotches along sides of the body; dorsal and caudal fins dark with some indistinct spots or bars; anal fin whitish, its basal half covered with fine black spots; a small black spot, ringed in pale yellow at the top of caudal fin.



Size: To 14 cm (TL)

***Trypauchen vagina* (Bloch & Schneider, 1801)**

FAO names: Pink worm goby (En)

Local name(s): Gulla (Sin); Gullo (Bal).

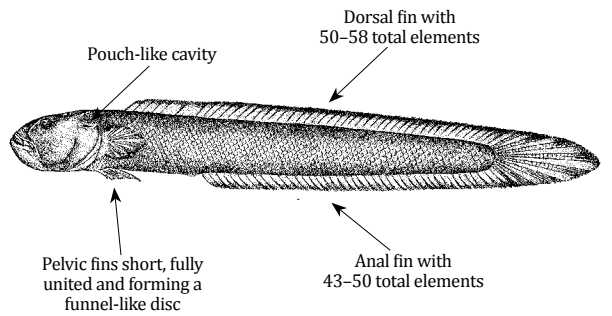
Habitat: Occurs along the bottom in tidal rivers and estuaries; burrows in mud

Fisheries: Bottom trawls.

Distinctive Characters: SL typically 84% or more of TL; head length less than 18% of SL; predorsal length less than 22% of SL; prepelvic length less than 18% of SL; preanal length 36% or less of SL; no fang-like teeth on jaws (teeth on outer row sometimes strongly caninoid); head naked; abdomen fully scaled; 23-24 caudal vertebrae.

Colour: Head and body entirely reddish.

Remarks: Inclusion based on photographic record.



Size: To 22 cm (TL)

***Taenioides nigrimarginatus* Hora, 1924**

FAO names: Blackfin eel goby (En)

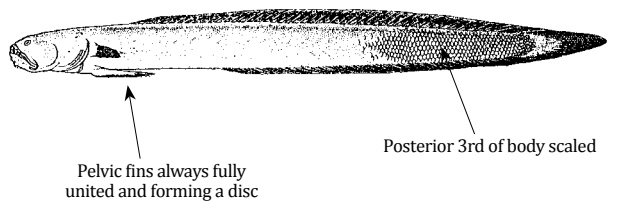
Local name(s): Gulla (Sin); Gullo (Bal).

Habitat: Occurs along muddy bottoms of coastal rivers, estuaries, bays and lakes.

Fisheries: Bottom trawls.

Distinctive Characters: Head and body with distinct cutaneous ridges; no postsymphyseal canine teeth in lower jaw; upper lip thick, fleshy, with fringed dorsal margin; caudal fin short, the length usually subequal to head length; ventral surface of lower jaw usually with several clusters of long, fleshy barbels; scales posteriorly on the body, remaining parts naked.

Colour: Head and body pinkish to red; median fins blackish.



Size: To 23 cm (TL)

EPHIPPIDAE

Spadefishes

Platax orbicularis (Forsskål, 1775)

Local name(s): Pharan, Safi, Pari poplet (Sin); Dateera, Riama sarando (Bal).

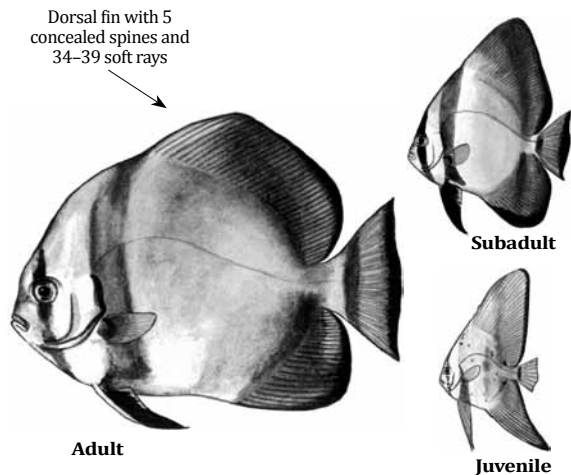
Habitat: Juveniles among mangroves and on inner sheltered lagoons; sub-adults in deeper lagoons and channels, large adults in open waters over sandy areas of deep lagoons down to 30 m.

Fisheries: Gillnets.

Distinctive Characters: Forehead profile somewhat angular; 5 pores on each side of lower jaw; anal fin with 3 spines and 25–29 soft rays.

Colour: Adults (above 20 cm) yellowish silvery or dusky with a dark bar through eye and another bar just behind head; occasionally with a few small, scattered black spots on body; median fins yellowish, with black margins posteriorly; pelvic fins black; juveniles with dark vermiculated bar through eye; caudal fin transparent except for base, which is reddish brown.

FAO names: Copper batfish (En)



Size: To 50 cm, common 25 cm (TL)

Platax teira (Forsskål, 1775)

(Plate XXXII, 257, 258)

FAO names: Spotbelly batfish (En)

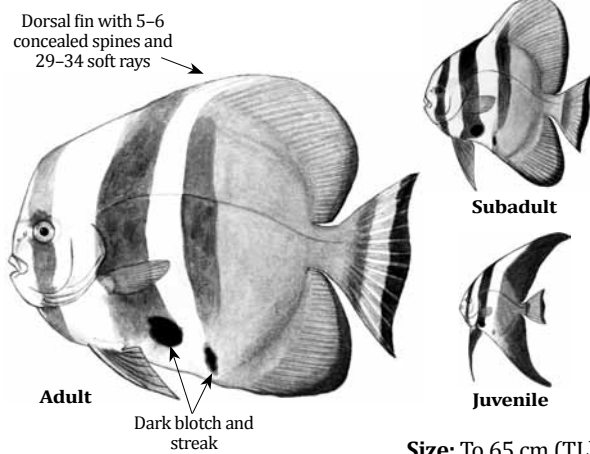
Local name(s): Pharan, Safi, Pari poplet (Sin); Dateera, Riama sarando (Bal).

Habitat: Juveniles in shallow protected areas; adults in lagoons and seaward reefs down to 20 m.

Fisheries: Gillnets.

Distinctive Characters: Adults with high nearly vertical forehead and prominent hump on nape; 5 pores on each side of lower jaw; anal fin with 3 spines and 21–26 soft rays.

Colour: Yellowish silvery or dusky, with a black bar through eye and another dark bar from dorsal fin origin across rear edge of operculum and pectoral fin base to belly, where it usually encloses a black blotch, with another smaller black vertical streak often present at origin of anal fin; median fins dusky yellow, with black margins posteriorly.



Size: To 65 cm (TL)

Tripteron orbis Playfair, 1867

(Plate XXXIII, 259)

FAO names: African spadefish (En)

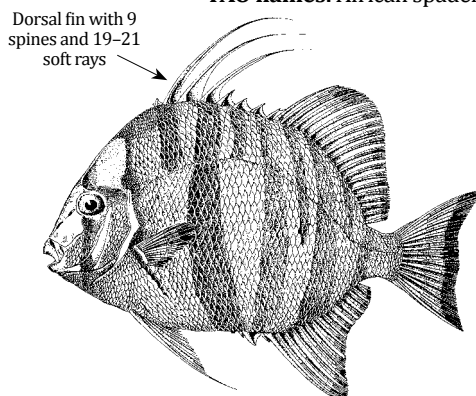
Local name(s): Pharan, Safi, Pari poplet (Sin); Dateera, Riama sarando (Bal).

Habitat: Found in shallow inshore areas over silty bottoms near reefs from 10 m to 30 m.

Fisheries: Gillnets.

Distinctive Characters: Adults with high, nearly vertical forehead; mouth small with thick lips; ~4 rows of incisiform teeth with brown cusps; 1st spine very short, 3rd to 5th elongate; 1st pelvic fin ray elongate, reaching past anal fin base in juveniles; anal fin with 3 spines and 15–17 soft rays.

Colour: Silvery grey, with 9–10 somewhat dark crossbars, fading with age, the 1st passing through the eye.



Size: To 75 cm, common 30 cm (TL)

SCATOPHAGIDAE

Scats

Scatophagus argus (Linnaeus, 1766)

(Plate XXXIII, 260)

FAO names: Spotted scat (En)

Local name(s): Kui, Ku-yun, Quinn (Sin); Dateera (Bal).

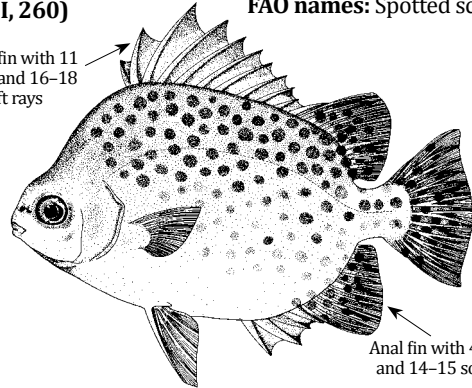
Habitat: Occurs in estuaries, harbours, and lower reaches of fresh-water streams.

Fisheries: Bottom trawls, gillnets, beach seines, bag nets.

Distinctive Characters: Mouth small, horizontal, not protractile; teeth villiform, in several rows on jaws.

Colour: Greenish with black spots; in large adults, spots may be faint and restricted to dorsal part of flanks; juveniles with a few large roundish blotches or with about 5–6 broad, dark, vertical bars.

Dorsal fin with 11 spines and 16–18 soft rays



Anal fin with 4 spines and 14–15 soft rays

Size: To 38 cm, common 30 cm (TL)

SIGANIDAE

Rabbitfishes – Spinefoots

Siganus canaliculatus (Park, 1797)

(Plate XXXIII, 261)

FAO names: White-spotted spinefoot (En)

Sigan pintade (Fr)

Local name(s): Safi (Sin); Safi, Mah-pari (Bal).

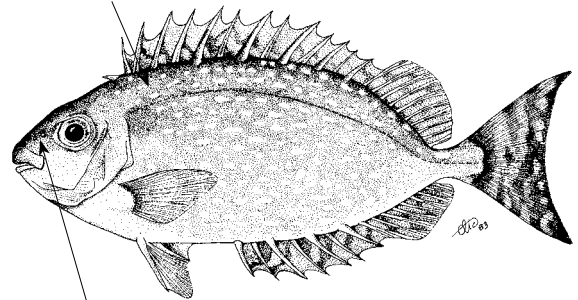
Habitat: Demersal, neritic, schooling in turbid inshore areas and inner reefs near river mouths down to 40 m.

Fisheries: Bottom trawls, gillnets, cast nets.

Distinctive Characters: Body compressed, moderately slender, its depth 2.3–2.8 in SL; head profile slightly concave above orbit; snout pointed rather than blunt; caudal fin almost emarginate in specimens under 10 cm, forked in larger fish; a forward-directed spine present in front of dorsal fin (true of all *Siganus* species).

Colour: In life, highly variable, depending on mood of fish and colour of substrate; greenish grey above to silver on belly; numerous pearly blue spots covering nape and sides, arranged more or less in horizontal rows, 2–3 rows above lateral line; frightened and injured fish mottled brown.

16–27 scale rows between lateral line and bases of leading dorsal fin spines



Anterior nostril with a flap reaching less than half way to posterior nostril in adults

Size: To 30 cm, common 20 cm (TL)

Siganus javus (Linnaeus, 1766)

(Plate XXXIII, 262)

FAO names: Streaked spinefoot (En)

Local name(s): Safi (Sin); Safi, Mah-pari (Bal).

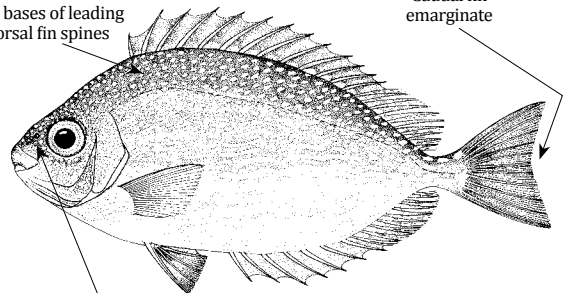
Habitat: Occurs in small schools of up to 10 individuals or so, in shallow coastal waters, brackish lagoons and rock or coral reefs.

Fisheries: Bottom trawls, gillnets, cast nets.

Distinctive Characters: Body deep and compressed, its depth 2–2.3 in SL; head profile slightly concave above orbit; snout short and blunt.

Colour: Back dark bronze, to paler below; numerous gun-metal blue spots on head and upper sides, about pinhead size on head but posteriorly just slightly smaller than pupil, coalescing into paler silvery blue undulating lines on mid- and lower sides.

30–35 scale rows between lateral line and bases of leading dorsal fin spines



Caudal fin emarginate

Anterior nostril with a flap reaching half way to posterior nostril

Size: To 55 cm (TL)

Siganus luridus (Rüppell, 1829)

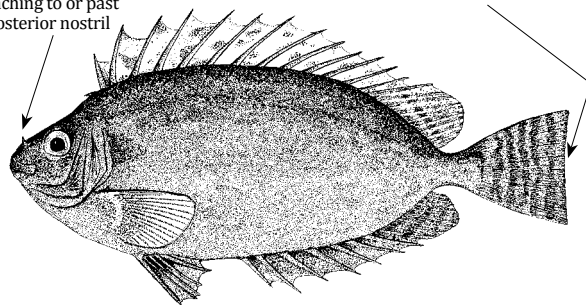
(Plate XXXIII, 263)

FAO names: Dusky spinefoot (En)

Local name(s): Safi (Sin); Safi, Mah-pari (Bal).**Habitat:** Demersal, schooling around rock and coral reefs.**Fisheries:** Bottom trawls, gillnets, cast nets.**Distinctive Characters:** Body depth 2.1–2.8 in SL; head profile strongly concave above orbit; snout very blunt; 15–20 scale rows between lateral line and bases of leading dorsal fin spines; caudal fin truncate.**Colour:** Head and sides olive green or very dark brown; sides often conspicuously marked with fine, pale reticulating lines, but sometimes pattern very indistinct and disappearing at death; pectoral fins hyaline-yellow.

Anterior nostril with a long flap reaching to or past posterior nostril

Caudal fin truncate



Size: To 30 cm, common 20 cm (TL)

ACANTHURIDAE

Surgeonfishes – Tangs – Unicornfishes

Acanthurus mata (Cuvier, 1829)

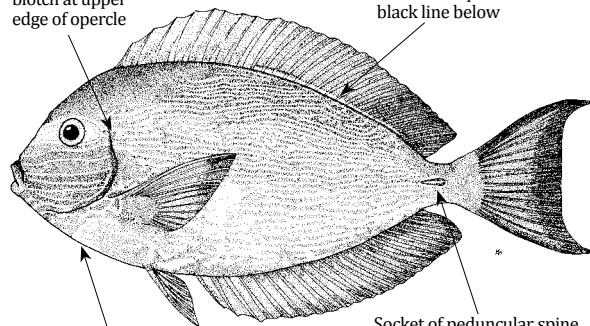
(Plate XXXIII, 264)

FAO names: Elongate surgeonfish (En)

Local name(s): Pharan, Safi (Sin); Dateera (Bal).**Habitat:** Coastal and offshore reefs, often in small groups in mid-waters.**Fisheries:** Gillnets.**Distinctive Characters:** Body depth 2.1–2.5 in SL; snout short, 6.6–6.9 in SL; caudal peduncle slender, 10–12 times in SL; dorsal fin with 9 spines and 24–26 soft rays; anal fin with 3 spines and 23–24 soft rays; caudal fin of adults deeply emarginate, double emarginate in juveniles.**Colour:** Dark brown with slightly irregular lengthwise blue lines on head and body; a yellow area behind eye and 2 yellow bands extending anteriorly from eye; capable of colour change to overall pale blue.

A small blackish blotch at upper edge of opercle

Narrow blue stripe with a black line below

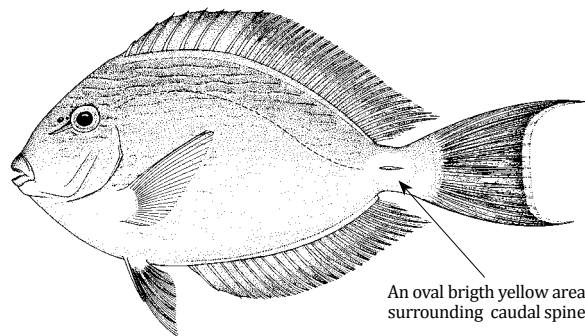
13–17 gill rakers on 1st gill arch

Socket of peduncular spine yellow anteriorly, sheath black

Size: To 50 cm (TL)

Acanthurus monroviae (Steindachner, 1876)

(Plate XXXIII, 265) FAO names: Monrovia doctorfish (En)

Local name(s): Pharan, Safi (Sin); Dateera (Bal).**Habitat:** Coastal species found in the mouth of rivers and lagoons.**Fisheries:** Gillnets.**Distinctive Characters:** Body depth 2.0–2.2 in SL; dorsal fin with 9 spines and 25–27 soft rays; anal fin with 3 spines and 24–26 soft rays; caudal fin deeply emarginate.**Colour:** Body gray to brown with irregular longitudinal pale bluish lengthwise lines on head and body.**Remarks:** A single specimen (320 cm SL) caught off Karachi on the 19-04-2014, deposited in the Bishop Museum (Hawaii).

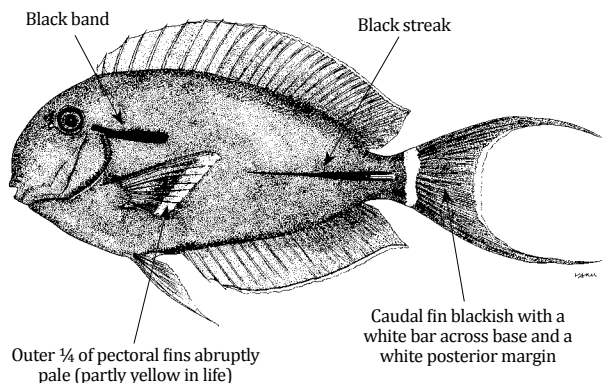
An oval bright yellow area surrounding caudal spine

Size: To 45 cm (SL)

Acanthurus nigricauda Duncker & Mohr, 1929

FAO names: Epalette surgeonfish (En)

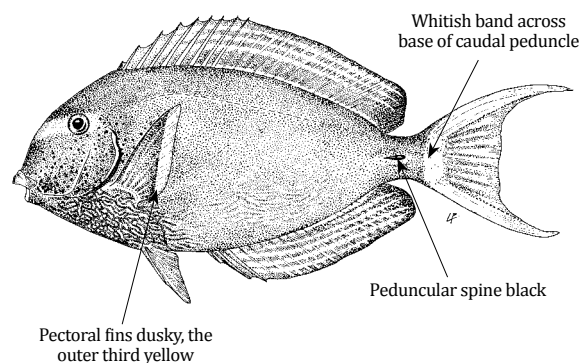
(Plate XXXIII, 266)

Local name(s): Pharan, Safi (Sin); Dateera (Bal).**Habitat:** Lagoons and bays, around isolated coral heads and rocks and on sandy bottoms.**Fisheries:** Gillnets.**Distinctive Characters:** Body depth 2.0–2.2 in SL; dorsal fin with 9 spines and 25–28 soft rays; anal fin with 3 spines and 23–26 rays; dorsal profile of head of large adults strongly convex; caudal fin progressively more lunate with age; 20–21 gill rakers on 1st gill arch.**Colour:** Brown without lines on body or spots on head; a horizontal black band passing posteriorly from upper end of gill opening (first appearing at about 6 cm SL); a horizontal black streak, enclosing and extending anteriorly from peduncular spine extending forward from (first appearing at about 10 cm SL); dorsal and anal fins without stripes, the distal margin blue.**Size:** To 40 cm (TL)***Acanthurus xanthopterus*** Valenciennes, 1835

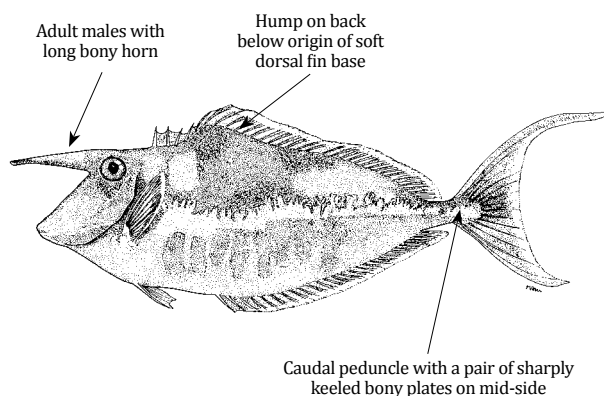
FAO names: Yellowfin surgeonfish (En)

Chirurgien aile jaune (Fr)

(Plate XXXIV, 267)

Local name(s): Pharan, Safi (Sin); Dateera (Bal).**Habitat:** Lagoon and seaward reefs; adults are common in sandy habitats near reefs from 20 m to 90 m.**Fisheries:** Gillnets.**Distinctive Characters:** Body depth 1.9–2.2 in SL; snout 4.8–5.3 in SL; dorsal fin with 9 spines and 25–27 soft rays; anal fin with 3 spines and 23–25 soft rays; caudal fin deeply emarginate to lunate; 16–24 gill rakers on 1st gill arch.**Colour:** Body purplish grey when alive; greyish brown when preserved; a region of dull yellow in front of eye, a lesser extension posterior to lower part of eye; dorsal and anal fins brownish yellow with 4 longitudinal blue bands and a blue-grey band at base.**Size:** To 70 cm, common 50 cm (TL)***Naso brachycentron*** (Valenciennes, 1835)

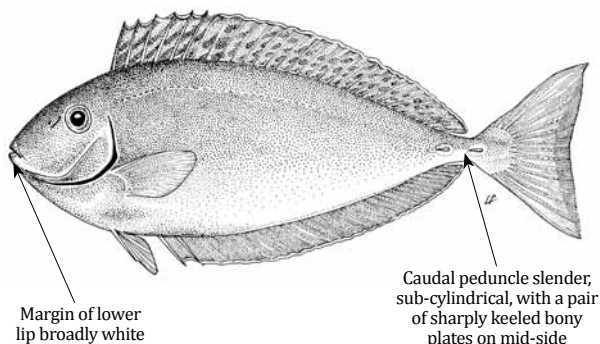
FAO names: Humpback unicornfish (En)

Local name(s): Safi (Sin).**Habitat:** Inhabits deep coastal, usually in small groups but occasionally in large schools.**Fisheries:** Gillnets.**Distinctive Characters:** Profile of nape below base of spinous dorsal fin concave; body depth 2.3–2.7 in SL; dorsal fin with 4–5 spines and 28–30 soft rays; anal fin with 2 spines and 27–28 soft rays; pelvic fins with 1 spine and 3 soft rays; adult female with only a prominent bump before eye.**Colour:** Head and body grey dorsally, pale ventrally, the demarcation irregular; often a few small pale blue spots behind the eye; dark bars may be present on lower side of large males.**Size:** To 90 cm (TL)

Naso hexacanthus (Bleeker, 1855)

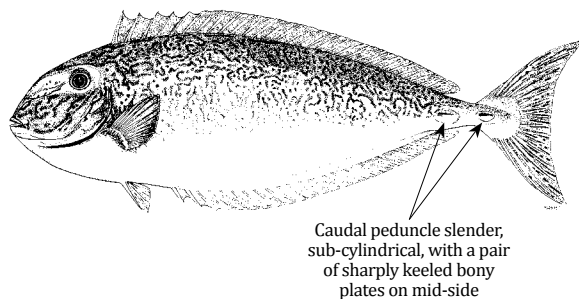
(Plate XXXIV, 268)

FAO names: Sleek unicornfish (En)

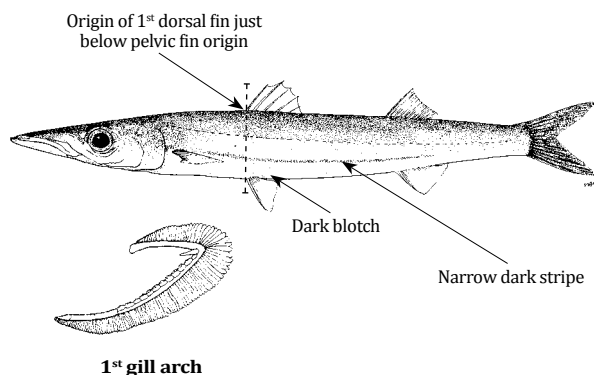
Local name(s): Pharan, Safi (Sin); Dateera (Bal).**Habitat:** Inhabits clear lagoon and seaward reef slopes from 6 to 150 m.**Fisheries:** Gillnets.**Distinctive Characters:** Dorsal profile of head uniformly convex, without any bony projection or prominence; body depth 2.6–3.0 in SL; dorsal fin with 6 (rarely 5 or 7) spines and 26–29 soft rays; anal fin with 2 spines and 27–30 soft rays; pelvic fins with 1 spine and 3 soft rays; caudal fin emarginate in young, becoming truncate in adults.**Colour:** Brown to bluish grey, shading ventrally to yellowish (in life the colour may vary from dark brown to light blue-grey); edge of operculum and preopercle usually dark brown; dorsal and anal fins yellowish with faint diagonal brown bands and a blue margin; tongue black in adults.**Size:** To 75 cm, common 50 cm (TL)***Naso reticulatus*** Randall, 2001

(Plate XXXIV, 269)

FAO names: Reticulate unicornfish (En)

Local name(s): Pharan, Safi (Sin); Dateera (Bal).**Habitat:** Lives in the open waters near drop-offs.**Fisheries:** Gillnets.**Distinctive Characters:** Dorsal profile of head convex, with a slight angularity before eye; body depth 3.1–3.2 in SL; dorsal fin with 5 spines and 29 soft rays; anal fin with 2 spines and 27 soft rays; caudal fin emarginate.**Colour:** Body brown, shading to whitish ventrally; numerous dark markings on about upper ½ of head, body and caudal fin; pectoral fins pale grey, shading to blackish distally**Size:** To 56.8 cm (TL)**SPHYRAENIDAE****Barracudas*****Sphyraena acutipinnis*** Day, 1876

FAO names: Sharpfin barracuda (En)

Local name(s): Kund (Sin); Kund (Bal).**Habitat:** Inhabits lagoon and seaward reefs; also in bays; schooling species; nocturnally active.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Maxilla reaching to below anterior nostril; 1st gill arch with 1 prominent gill raker; caudal fin forked without a pair of lobes at posterior margin; 122–128 pored lateral line scales.**Colour:** Body silvery grey, greenish dorsally with a narrow dark stripe on the lower flank; a dark marking present on body near pelvic-fin base; caudal fin darkish.**Size:** To 80 cm, common 50 cm

***Sphyraena barracuda* (Edwards, 1771)**

(Plate XXXIV, 270)

FAO names: Great barracuda (En)
Barracuda (Fr)

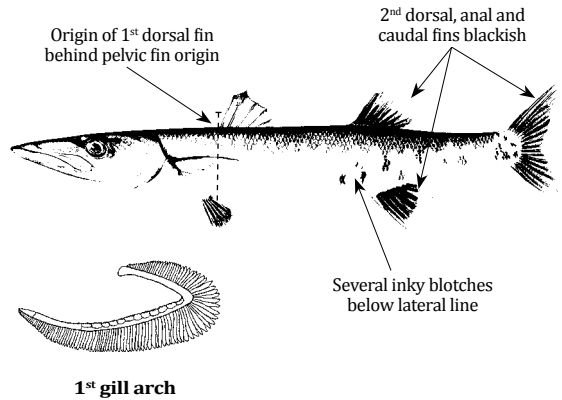
Local name(s): Kund (Sin); Kund (Bal).

Habitat: Juveniles usually in estuaries or mangrove swamps; adults in open sea and close to reef. Diurnal, and solitary or in small schools.

Fisheries: Gillnets, line gears.

Distinctive Characters: Maxilla reaching at least to anterior margin of eye; no gill rakers on 1st gill arch; upper and lower gill arch with rough platelets which lack distinct spines; caudal fin forked in small juveniles, double emarginate in adults, 69–85 pored lateral line scales.

Colour: Adults dusky silver, bluish black dorsally with about 20 oblique dark bars on upper half of body, these not across lateral line; caudal fin black with white tips; some black blotches sometimes present on underside of posterior body; juveniles with a series of large dark blotches irregularly arranged on sides of body.



Size: To 200 cm, common 140 cm (TL)

Sphyraena forsteri* Cuvier, 1829

FAO names: Bigeye barracuda (En)
Bécune de Forster (Fr)

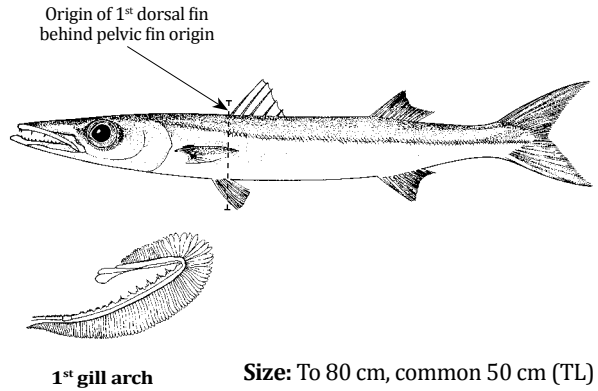
Local name(s): Kund (Sin); Kund (Bal).

Habitat: Nocturnally active, in large schools above lagoon patch reefs and along outer reef slopes by day.

Fisheries: Gillnets, line gears.

Distinctive Characters: Maxilla either not reaching anterior margin of eye, or to just below anterior margin; no gill rakers on 1st gill arch; upper and lower gill arch with many platelets, each bearing distinct small spines; caudal fin forked without a pair of lobes at posterior margin; 112–123 pored lateral line scales.

Colour: Blue or black above, sides silvery, without dark bars or chevrons; a black axillary blotch at base of pectoral fins; caudal fin darkish.



Size: To 80 cm, common 50 cm (TL)

***Sphyraena jello* Cuvier, 1829**

(Plate XXXIV, 271)

FAO names: Pickhandle barracuda (En)
Bécune jello (Fr)

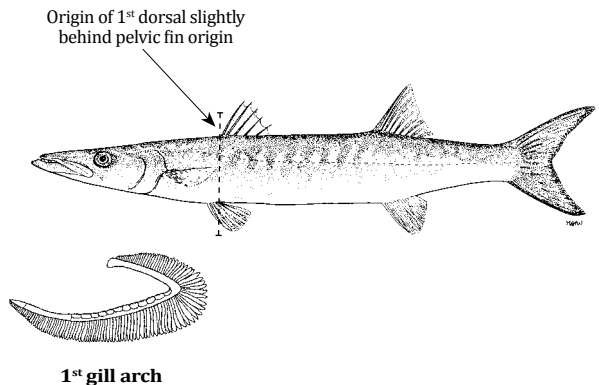
Local name(s): Kund (Sin); Kund (Bal).

Habitat: Inhabits bays, estuaries, and turbid inner lagoons. Diurnal; solitary or in small schools.

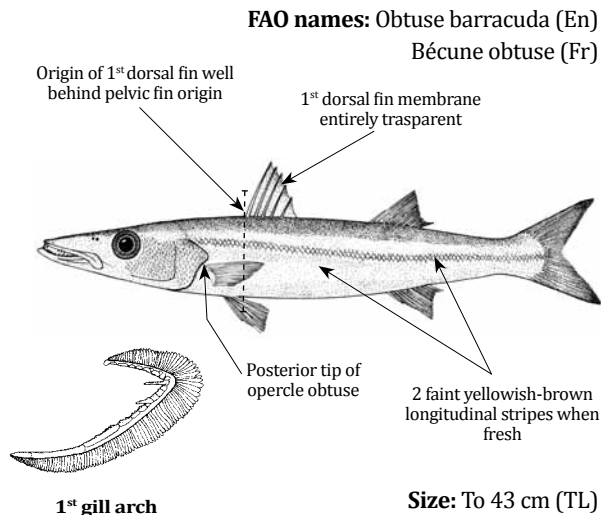
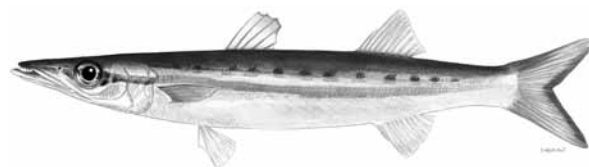
Fisheries: Gillnets, line gears.

Distinctive Characters: Maxilla reaching to just below anterior margin of eye; no gill rakers on 1st gill arch; upper and lower gill arch with rough platelets which lack distinct spines; caudal fin forked without a pair of lobes at posterior margin; 130–140 pored lateral line scales.

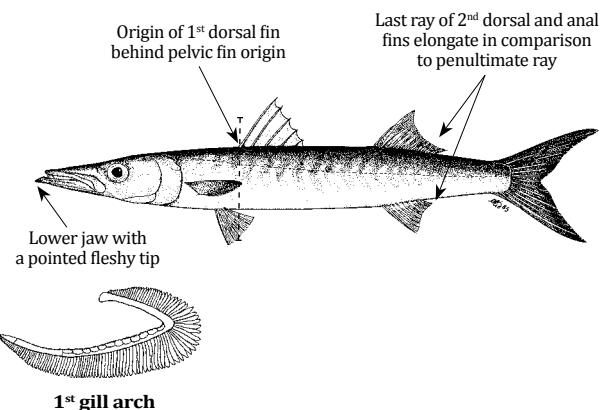
Colour: Body dusky yellowish green dorsally with about 20 dark crossbars reaching only slightly below lateral line; dorsal fins dusky green; anal fin pale; caudal fin dusky yellow; juveniles with fewer, more irregular crossbars



Size: To 150 cm, common 120 cm (TL)

Sphyraena obtusata Cuvier, 1829**Local name(s):** Kund (Sin); Kund (Bal).**Habitat:** Inhabiting bays and estuaries.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Maxilla not reaching to below anterior margin of eye; 1st gill arch with 2 prominent gill rakers; caudal fin forked without a pair of lobes at posterior margin; tip of pectoral fins reaching past origin of 1st dorsal fin; 78–85 pored lateral line scales; 5–7½ scales above lateral line; 8½–9½ scales below lateral line.**Colour:** Head and body dark green dorsally (when fresh), silvery white below; anal and pelvic fins transparent; pectoral fin dusky, with a dark margin on base; caudal fin yellow, greenish near base, entire margin dusky.***Sphyraena pinguis*** Günther, 1874**(Plate XXXIV, 272)****FAO names:** Red barracuda (En)**Local name(s):** Kund (Sin); Kund (Bal).**Habitat:** Found near shore on mud, sandy mud or rock bottoms. Usually forms large schools.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Similar to *Sphyraena obtusata* but with 80–94 pored lateral line scales; 7½–9½ scales above lateral line; 10½–12½ scales below lateral line; posterior tip of opercle sharply pointed.**Colour:** Head and body dark brown when fresh; 1st dorsal fin membrane dusky distally; body with a single longitudinal dark gray, dark brown or dark yellow (indistinct in some specimens) stripe running above pectoral fin base and extending to middle of caudal fin base; pectoral fins brown on upper half, transparent on lower half.***Sphyraena putnamae*** Jordan & Seale, 1905**(Plate XXXIV, 273)****FAO names:** Sawtooth barracuda (En)

Bécune chevronnée (Fr)

Local name(s): Kund (Sin); Kund (Bal).**Habitat:** Inhabiting bays and turbid inner lagoons. A nocturnally active species occurring in relatively large schools during the day.**Fisheries:** Gillnets, line gears.**Distinctive Characters:** Maxilla reaching to just below anterior margin of eye; no gill rakers on 1st gill arch; upper and lower gill arch with rough platelets which lack distinct spines; caudal fin forked, in large adults with a pair of indistinct lobes at posterior margin; 120–130 pored lateral line scales.**Colour:** About 15 dark chevron-shaped bars crossing lateral line on body; dorsal, caudal and upper part of pectoral fins dusky; pelvic and anal fins white.

Sphyraena qenie* Klunzinger, 1870

FAO names: Blackfin barracuda (En)

Local name(s): Kund (Sin); Kund (Bal).

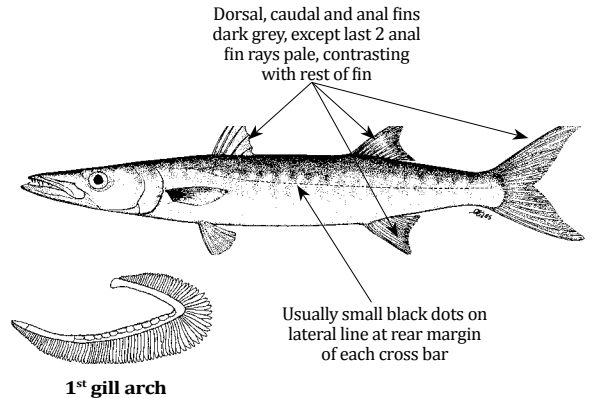
Habitat: Inhabiting clear waters in the vicinity of coral reefs. Usually seen during the day in large semistationary schools.

Fisheries: Gillnets, line gears.

Distinctive Characters: Similar to *Sphyraena putnamae* but last ray of 2nd dorsal fin not elongate in comparison to penultimate ray; lower jaw without a pointed fleshy tip; 123–136 pored lateral line scales.

Colour: Body with 18–22 vertical or slightly curved dark crossbars extending well below lateral line; cross bars slightly wider than interspaces.

Remarks: Widespread in the Indo-Pacific. The exact geographical range is uncertain because of confusion with *Sphyraena jello* and *S. putnamae*.



Size: To 115 cm, common 80 cm (TL)

GEMPYLIDAE

Snake mackerels

***Neopinnula orientalis* (Gilchrist & von Bonde, 1924)**

(Plate XXXIV, 274) FAO names: Sackfish (En)
Escolier oriental (Fr)

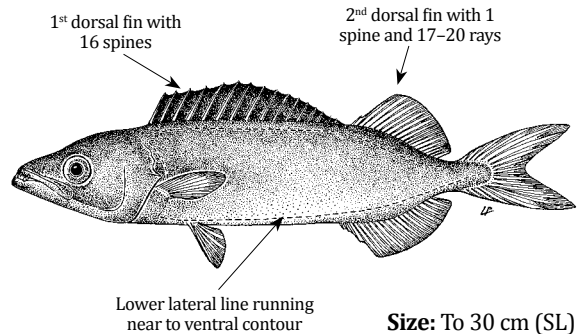
Local name(s): None

Habitat: Benthopelagic on the upper slopes at depths between 200 and 570 m.

Fisheries: Deep water trawls.

Distinctive Characters: Mouth large; eye moderate in size; anal fin with 3 spines and 17–19 soft rays; pectoral fins with 13–14 rays; pelvic fins well developed and large with one spine and 5 rays; caudal fin forked; 2 lateral lines on the sides, both originating from above the upper angle of the gill opening.

Colour: Uniformly bluish brown; fins pale except blackish 1st dorsal fin; lining of buccal and branchial cavities black.



TRICHIURIDAE

Cutlassfishes – Hairtailfishes – Frostfishes – Scabbardfishes

Eupleurogrammus glossodon* (Bleeker, 1860)

FAO names: Longtooth hairtail (En)
Poisson-sabre dentu (Fr)

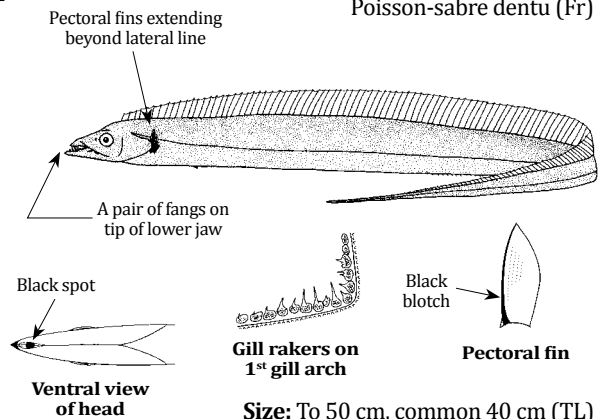
Local name(s): Chind (Sin); Tinji (Bal).

Habitat: Benthopelagic, in coastal waters down to depths of about 80 m.

Fisheries: Bottom trawls, gillnets, bag nets, line gears.

Distinctive Characters: Body ribbon-like tapering to a point; eye small, located close to dorsal profile of head; lower margin of subopercle convex; pelvic fins scale-like, situated below 11th to 14th soft dorsal fin ray.

Colour: Fresh specimens are steel blue with metallic reflections, becoming silvery grey after death; dorsal side of posterior part of body slightly black; dermal process at tip of each jaw black.



Eupleurogrammus muticus* (Gray, 1831)

FAO names: Smallhead hairtail (En)
Poisson sabre asbas (Fr)

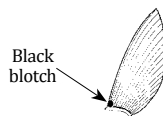
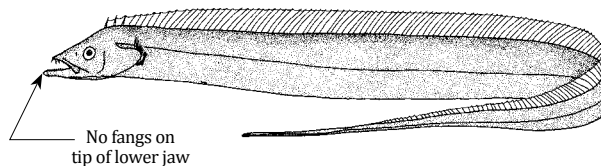
Local name(s): Chind (Sin); Tinji (Bal).

Habitat: Benthopelagic, in coastal waters down to depths of about 80 m.

Fisheries: Bottom trawls, gillnets, bag nets, line gears.

Distinctive Characters: Similar to *Eupleurogrammus glossodon* but scale-like pelvic fins situated below 15th to 18th soft dorsal fin ray; eye located far from dorsal profile of head.

Colour: As in *E. glossodon* but no black spot on ventral side of lower jaw dermal process at tip of each jaw black; both dorsal and ventral sides of posterior part of body black; a small pale black spot on base of anterior margin of pectoral fins.



Pectoral fin

Size: To 70 cm, common 50 cm (TL)

***Lepturacanthus savala* (Cuvier, 1829)**

(Plate XXXV, 275)

FAO names: Savalai hairtail (En)
Poisson-sabre cimetterre (Fr)

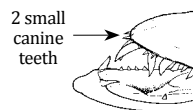
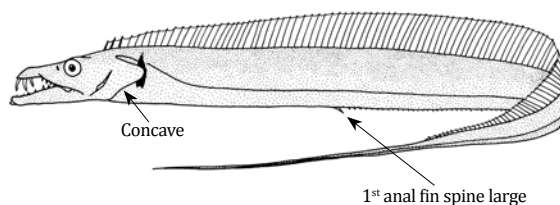
Local name(s): Chind (Sin); Tinji (Bal).

Habitat: Benthopelagic, in coastal waters down to depths of about 100 m.

Fisheries: Bottom trawls, gillnets, bag nets, line gears.

Distinctive Characters: Body ribbon-like tapering to a point; pelvic fins absent; lower margin of subopercle concave; small canine teeth on upper jaw projecting forward; pectoral fins extending beyond lateral line; 1st anal fin spine large, its length 1/2 eye diameter; soft anal fin rays pungent spinules breaking through ventral skin.

Colour: Fresh specimens are steel blue with metallic reflections, tapering part white; margin of anus pale; tip of both jaws black; inside of opercle and anterior part of the shoulder girdle, pale black.



Detail of mouth

Size: To 100 cm, common 70 cm (TL)

***Tentoriceps cristatus* (Klunzinger, 1884)**

FAO names: Crested hairtail (En)
Poisson sabre manchot (Fr)

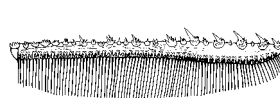
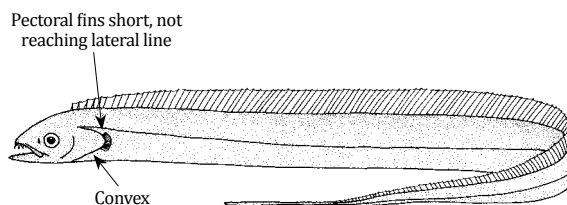
Local name(s): Chind (Sin); Tinji (Bal).

Habitat: Benthopelagic or pelagic, in coastal waters at depths of 30 to 110 m.

Fisheries: Bottom trawls, gillnets, bag nets, line gears.

Distinctive Characters: Body ribbon-like tapering to a point; dorsal profile of head evenly convex; lower margin of subopercle convex; pelvic fins scale-like, situated below 47th to 50th soft dorsal fin ray.

Colour: Fresh specimens are silvery white, becoming silvery gray with dark cloud-like patches after death; jaws and dorsal and anal fin bases sooty.



Gill rakers on 1st gill arch



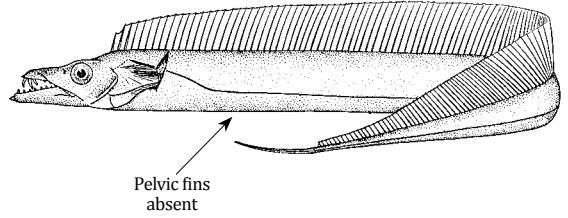
Ventral view of pelvic fins

Size: To 90 cm, common 30–70 cm (TL)

Trichiurus lepturus Linnaeus, 1758

FAO names: Largehead hairtail (En)
Poisson sabre commun (Fr)

Local name(s): Chind (Sin); Tinji (Bal).
Habitat: Benthopelagic, in coastal waters down to depths of about 100 m.
Fisheries: Bottom trawls, gillnets, bag nets, line gears.
Distinctive Characters: Similar to *Lepturacanthus savala* but no small canine teeth projecting forward on upper jaw; 1st anal fin spine small, its length less than pupil diameter; soft anal fin rays slightly breaking through ventral skin in smaller specimens.
Colour: Fresh specimens steel blue with silvery reflection; pectoral fins semitransparent; other fins sometimes tinged with pale yellow, colour sometimes becoming uniformly silvery grey after death.



Size: To 120 cm, common 50–100 cm (TL)

SCOMBRIDAE

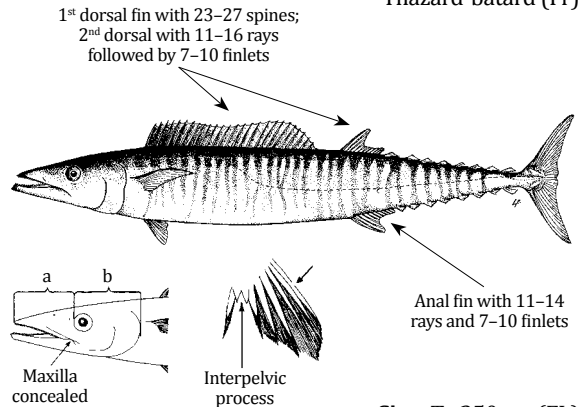
Albacore – Bonitos – Kawakawa – Mackerels – Seerfishes – Tunas – Wahoo

Acanthocybium solandri (Cuvier, 1832)

(Plate XXXV, 276)

FAO names: Wahoo (En)
Thazard-bâtard (Fr)

Local name(s): Har gore, Bagari (Sin); Gore, Har gore.
Habitat: Epipelagic, oceanic.
Fisheries: Gillnets, trolling and line gears.
Distinctive Characters: Body very elongate, fusiform and only slightly laterally compressed; snout (a) about as long as rest of head (b); teeth strong, triangular, compressed, and finely serrate; gill rakers absent; 2 small flaps (interpelvic process) between pelvic fins.
Colour: Head and body iridescent blue-green dorsally, silvery below; live fish often show 24–30 dark blue vertical bars on sides which extend to below lateral line (the bars become dark grey after death).



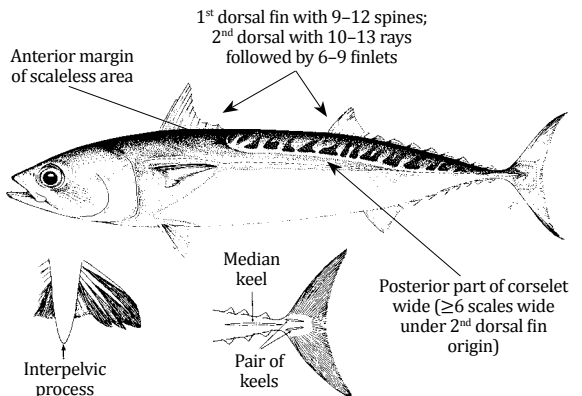
Size: To 250 cm (FL)

Auxis rochei (Risso, 1810)

(Plate XXXV, 277)

FAO names: Bullet tuna (En)
Bonitou (Fr)

Local name(s): Budki, Chunki (Sin); Ulbuk, Chunki (Bal).
Habitat: Epipelagic, neritic and oceanic.
Fisheries: Gillnets, seines.
Distinctive Characters: Body robust, elongate and rounded; 2 dorsal fins separated by a large interspace (at least equal to length of 1st dorsal fin base); teeth small and conical, in a single series; 43–48 gill rakers on 1st gill arch; pectoral fins short, not reaching vertical line from anterior margin of scaleless area above corselet.
Colour: Back bluish, turning to deep purple or almost black on head; scaleless area with pattern of 15 or more fairly broad, nearly vertical dark bars; belly white; pectoral and pelvic fins purple.



Size: To 40 cm (FL)

Auxis thazard (Lacepède, 1800)

FAO names: Frigate tuna (En)
Auxide (Fr)

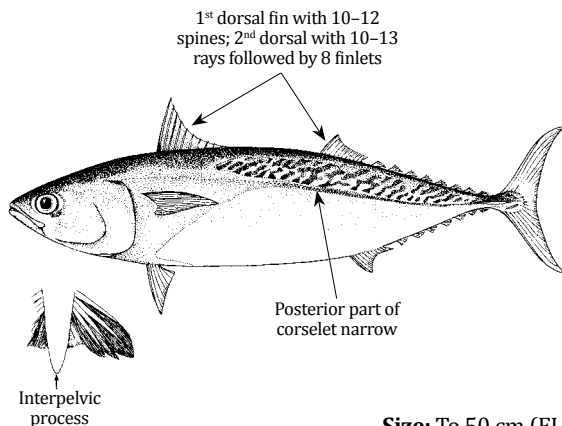
Local name(s): Budki, Chunki (Sin); Ulbuk, Chunki (Bal).

Habitat: Epipelagic, neritic and oceanic.

Fisheries: Gillnets, seines.

Distinctive Characters: Similar to *Auxis rochei*, but 36–42 gill rakers on 1st gill arch; pectoral fin reaching past vertical line from anterior margin of scaleless area above corselet; corselet well developed but narrow in its posterior part (no more than 5 scales wide under 2nd dorsal fin origin).

Colour: Back bluish, turning to deep purple or almost black on the head; a pattern of 15 or more narrow, oblique to nearly horizontal, dark wavy lines in scaleless area above lateral line; belly white; pectoral and pelvic fins purple.



Size: To 50 cm (FL)

Euthynnus affinis (Cantor, 1849)

(Plate XXXV, 278)

FAO names: Kawakawa (En)
Thonine orientale (Fr)

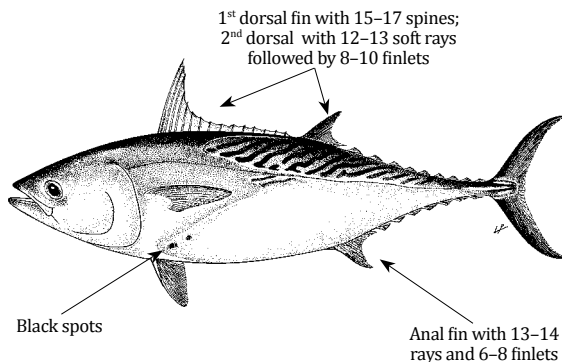
Local name(s): Chunki, Budki (Sin); Ul-lus, Gad-dak (juveniles) (Bal).

Habitat: Epipelagic and neritic.

Fisheries: Gillnets.

Distinctive Characters: Body robust, elongate and fusiform; teeth small and conical, in a single series; both dorsal fins separated by only a narrow interspace (not wider than eye) 2 flaps (interpelvic process) between pelvic fins; 25–29 pectoral fin rays; 29–35 gill rakers on 1st gill arch.

Colour: Back dark blue with a complicated striped pattern which does not extend forward beyond middle of 1st dorsal fin; lower sides and belly silvery white several characteristic dark spots between pelvic and pectoral fins (which, however, may not always be present).



Size: To 100 cm, common 60 cm (FL)

Katsuwonus pelamis (Linnaeus, 1758)

(Plate XXXV, 279)

FAO names: Skipjack tuna (En)
Listao (Fr)

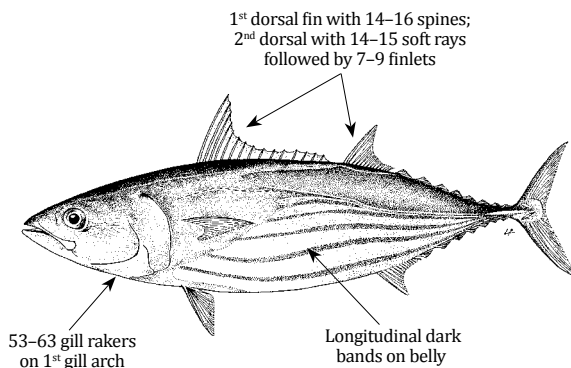
Local name(s): Kish-ki (Sin); Kish-ki (Bal).

Habitat: Epipelagic and oceanic.

Fisheries: Gillnets.

Distinctive Characters: Body fusiform, elongate and rounded; teeth small and conical, in a single series; both dorsal fins separated by only a narrow interspace (not wider than eye); 2 flaps (interpelvic process) between pelvic fins.

Colour: Back dark purplish blue, lower sides and belly silvery, with 4–6 very conspicuous longitudinal dark bands which in live specimens may appear as discontinuous lines of dark blotches.



Size: To 100 cm (FL)

Rastrelliger kanagurta (Cuvier, 1816)

(Plate XXXV, 280)

FAO names: Indian mackerel (En)
Maquereau des Indes (Fr)

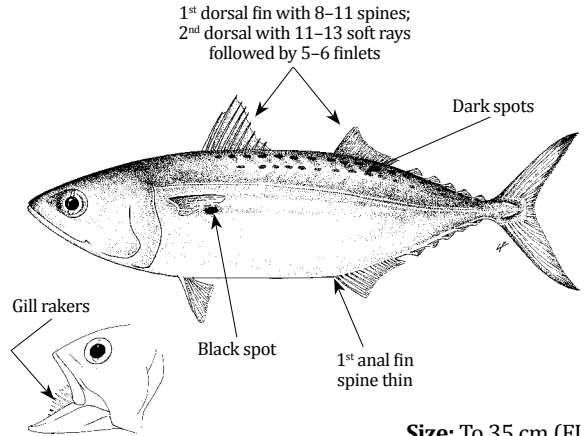
Local name(s): Baangra, Seem (Sin); Baangra, Seem (BaL).

Habitat: Pelagic, schooling in coastal waters.

Fisheries: Gillnets, seines.

Distinctive Characters: Body depth at posterior margin of opercle 4.3–5.2 in FL; gill rakers very long, visible when mouth is opened, 30–46 on lower limb on 1st gill arch; 2 widely separated dorsal fins; maxilla partly concealed, covered by lacrimal bone; well developed adipose eyelid; interpelvic process small and single.

Colour: Back blue-green with longitudinal dark bands dorsally (golden in fresh specimens), silvery below; 1 or 2 rows of small, dark spots on sides of dorsal fin bases; dorsal fins yellowish with black tips; caudal and pectoral fins yellowish; other fins dusky.



Size: To 35 cm (FL)

Sarda orientalis (Temminck & Schlegel, 1844)

(Plate XXXV, 281)

FAO names: Striped bonito (En)
Bonite oriental (Fr)

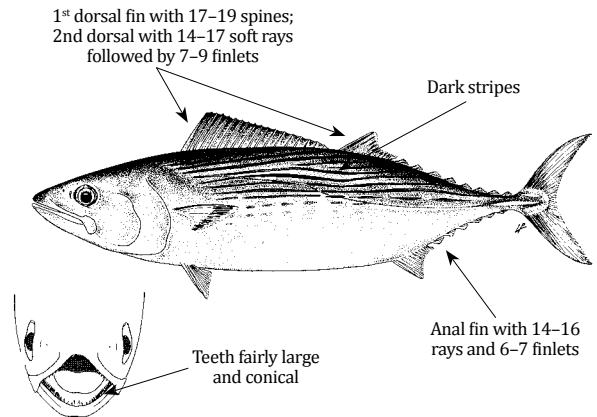
Local name(s): Dantani (Sin); Dantani (BaL).

Habitat: Pelagic in coastal waters.

Fisheries: Gillnets.

Distinctive Characters: Upper jaw reaching beyond posterior margin of eye; dorsal fins close together; teeth fairly large and conical, 10–20 on each side of upper and lower jaws; pelvic fins separated by 2 flaps (interpelvic process); caudal peduncle slender, with a prominent lateral keel between two smaller keels on each side; 8–13 gill rakers on 1st gill arch.

Colour: Back and upper sides steel-blue, with 5–11 dark slightly oblique stripes running forward and downward; lower sides and belly silvery; juveniles (to 30 cm fork length) with several transverse bars; 1st dorsal fin solid black.



Size: To 100 cm, common 55 cm (FL)

Scomber australasicus Cuvier, 1832

(Plate XXXV, 282)

FAO names: Blue mackerel (En)
Maquereau tacheté (Fr)

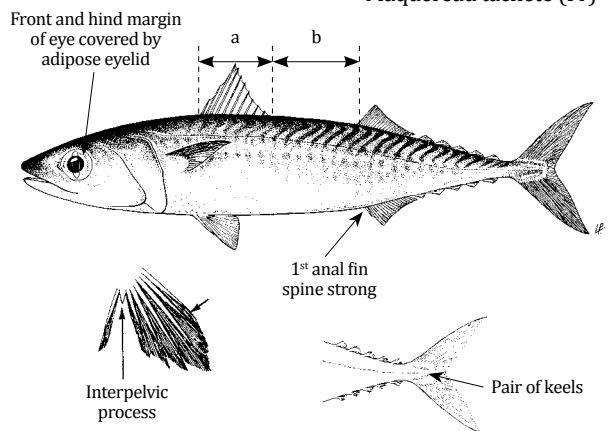
Local name(s): Baangra, Seem (Sin); Baangra, Seem (BaL).

Habitat: Epipelagic, neritic species, schooling by size; its biology is little known.

Fisheries: Gillnets, seines.

Distinctive Characters: Teeth in upper and lower jaws small and conical; teeth also present of roof of mouth; 2 widely separated dorsal fins, the 1st with 10–13 (usually 11 or 12) spines; 2nd dorsal and anal fins with 12 soft rays followed by 5 finlets; distance from 10th spine to origin of 2nd dorsal fin (b) clearly greater than distance between 1st and 10th spine (a).

Colour: Markings on back oblique lines which zigzag and undulate; belly pearly white marked with thin, wavy, broken lines which in places appear as speckling.



Size: To 40 cm, common 30 cm (FL)

Scomberomorus commerson (Lacepède, 1800)

Local name(s): Gore (Sin); Gore (Bal).

Habitat: Pelagic in coastal waters from 15 m to 200 m; found in small schools.

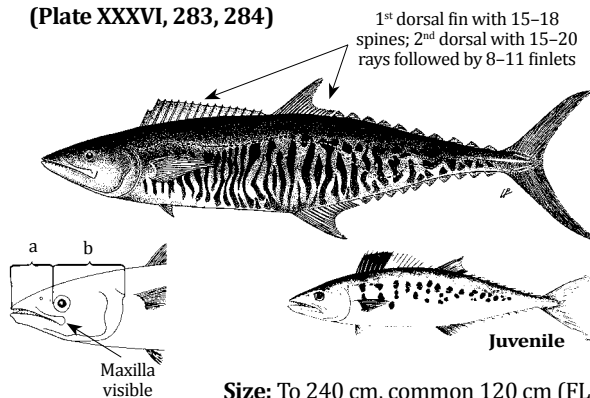
Fisheries: Gillnets, trolling and line gears.

Distinctive Characters: Body elongate, moderately strongly compressed; snout (a) much shorter than rest of head (b); teeth in jaws strong and compressed (last two characters true of all *Scomberomorus*); 1–8 gill rakers on 1st gill arch; lateral line abruptly bent downward below end of 2nd dorsal fin.

Colour: Back iridescent blue-grey, sides silver with bluish reflections, marked with numerous thin, wavy vertical bands; juveniles frequently spotted.

FAO names: Narrow-barred Spanish mackerel (En)
Thazard rayé indo-pacifique (Fr)

(Plate XXXVI, 283, 284)



Size: To 240 cm, common 120 cm (FL)

Scomberomorus guttatus (Bloch & Schneider, 1801)

Local name(s): Kal-gan, Surmai (Sin); Kar-gan (Bal).

Habitat: Pelagic in coastal waters from 15 m to 200 m. Sometimes entering turbid estuarine waters; usually found in small schools.

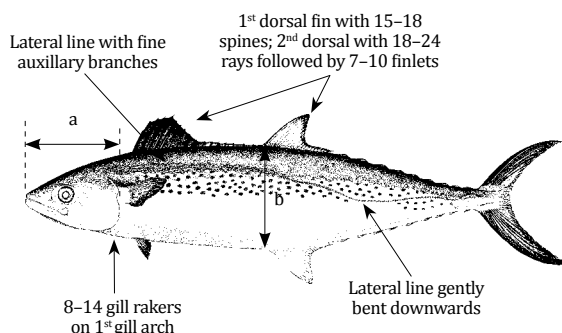
Fisheries: Gillnets.

Distinctive Characters: Body depth (b) less or nearly equal to head length (a); lateral line with many fine auxiliary branches anteriorly, almost straight to below middle of 2nd dorsal fin and gently bent downward to middle of caudal peduncle; Intestine with 2 folds and 3 limbs.

Colour: Blue on back, silvery on sides; about 3 irregular rows of dark round spots (smaller than eye) on sides of body; spinous dorsal fin dark up to eighth spine, white posteriorly, with distal margin black.

FAO names: Indo-Pacific king mackerel (En)
Thazard ponctué indo-pacifique (Fr)

(Plate XXXVI, 285)



Size: To 76 cm, common 55 cm (FL)

Scomberomorus koreanus (Kishinouye, 1915)

Local name(s): Kal-gan, Surmai (Sin); Kar-gan (Bal).

Habitat: Pelagic in neritic waters.

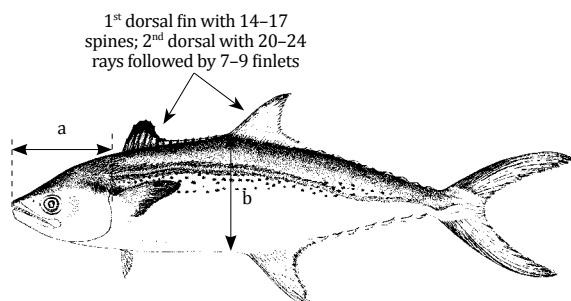
Fisheries: Gillnets.

Distinctive Characters: Similar to *Scomberomorus guttatus* but body depth (b) greater than head length (a); intestine with 4 folds and 5 limbs; 10–14 gill rakers on 1st gill arch.

Colour: Back iridescent greyish blue, sides silvery, with 2–3 irregular rows of small, dark, round spots (smaller than eye size); fins blackish; 1st dorsal fin black.

(Plate XXXVI, 286)

FAO names: Korean seerfish (En)
Thazard coréen (Fr)



Size: To 150 cm, common 60 cm (FL)

***Scomberomorus lineolatus* (Cuvier, 1829) ***

FAO names: Streaked seerfish (En)
Thazard cirrus (Fr)

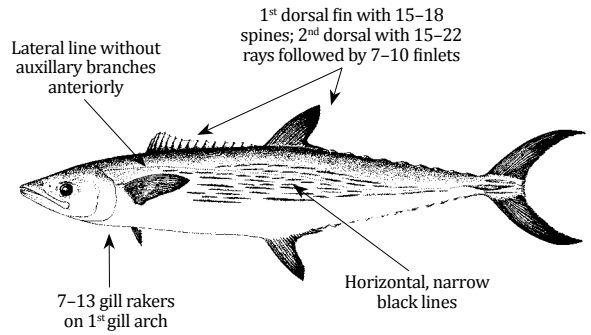
Local name(s): Kal-gan, Surmai (Sin); Kar-gan (Bal).

Habitat: Unlike *Scomberomorus commerson* and *S. guttatus*, *S. lineolatus* is not encountered in very turbid waters or much reduced salinity.

Fisheries: Gillnets.

Distinctive Characters: Body elongate, strongly compressed; lateral line running almost straight to below second dorsal finlet, then slightly bent downward toward keel of caudal peduncle (which is very wide).

Colour: Back blue-grey; sides silvery white, upper part of body marked with a series of irregular, horizontal, narrow black lines sometimes breaking up into spots ventrally.



Size: To 80 cm, common 70 cm (FL)

***Thunnus albacares* (Bonnaterre, 1788)**

(Plate XXXVI, 287)

FAO names: Yellowfin tuna (En)
Thon albacore (Fr)

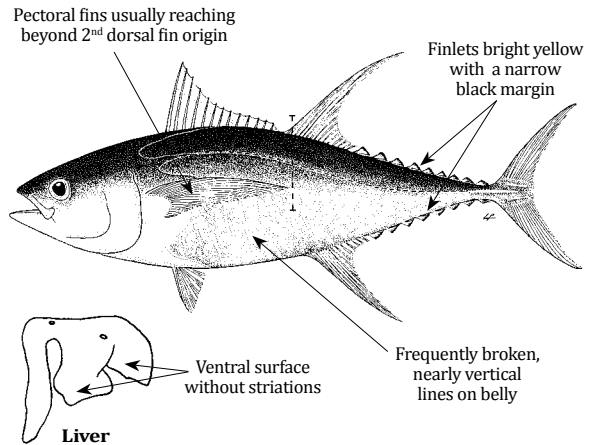
Local name(s): Gaydar, Bum (Sin); Gaydar, Bum, Zardag, Gooshi, Batli (Bal).

Habitat: Epipelagic and mesopelagic in offshore waters from surface to 600 m.

Fisheries: Driftnets.

Distinctive Characters: Body elongate and fusiform, slightly compressed laterally; teeth small and conical, in a single series; 2 dorsal fins, separated only by a narrow interspace; 2 flaps (interpelvic process) between pelvic fins (above characters valid for all *Thunnus*); 2nd dorsal and anal fin greatly elongated in adults; 26-34 gill rakers on 1st gill arch; swimbladder present.

Colour: Back metallic dark blue changing through yellow to silver on belly; dorsal and anal fins, and dorsal and anal finlets bright yellow, the finlets with a narrow black border.



Size: To 239 cm, common 150 cm (FL)

***Thunnus obesus* (Lowe, 1839)**

FAO names: Bigeye tuna (En)
Thon obèse (Fr)

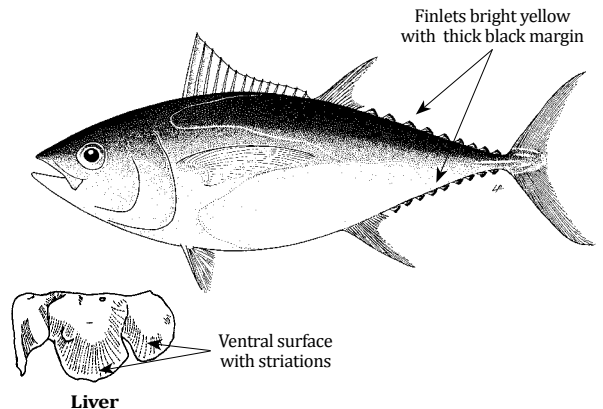
Local name(s): Gaydar, Bum (Sin); Gaydar, Bum, Zardag, Gooshi, Batli (Bal).

Habitat: Epipelagic and mesopelagic in offshore waters from surface to 250 m.

Fisheries: Driftnets.

Distinctive Characters: Similar to *Thunnus albacares* but more robust; 2nd dorsal and anal fin never greatly elongated; 23-31 gill rakers on 1st gill arch; ventral surface of liver with prominent striations; juveniles with very long pectoral fins, reaching well beyond origin of 2nd dorsal fin.

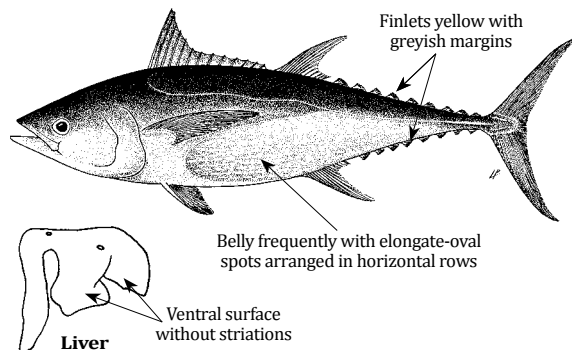
Colour: Back metallic dark blue, lower sides and belly whitish; a lateral iridescent blue band runs along sides in live specimens; 1st dorsal fin deep yellow, 2nd dorsal and anal fins light yellow.



Size: To 200 cm, common 180 cm (FL)

Thunnus tonggol (Bleeker, 1851)

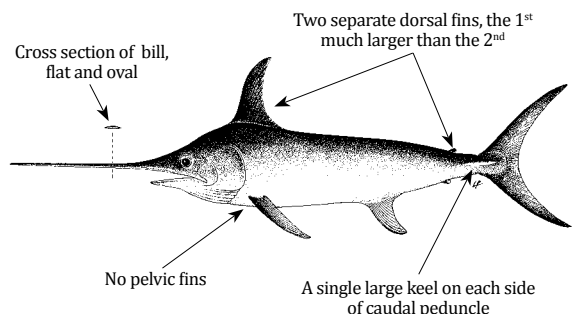
(Plate XXXVI, 288)

FAO names: Longtail tuna (En)
Thon mignon (Fr)**Local name(s):** Dawan (Sin); Aahoor (Sin).**Habitat:** Predominantly coastal species avoiding very turbid waters and areas with reduced salinity such as estuaries.**Fisheries:** Gillnets.**Distinctive Characters:** Similar to *Thunnus albacares* but 2nd dorsal and anal fin lobes never greatly elongated; 19–27 (usually 26 or fewer) gill rakers on 1st gill arch; no swimbladder**Colour:** Back dark blue or black; dorsal, pectoral, and pelvic fins blackish, tip of second dorsal and anal fins washed with yellow; anal fin silvery; caudal fin blackish, with streaks of yellowish green.**Size:** To 145 cm, common 70 cm (FL)**XIPHIIDAE**

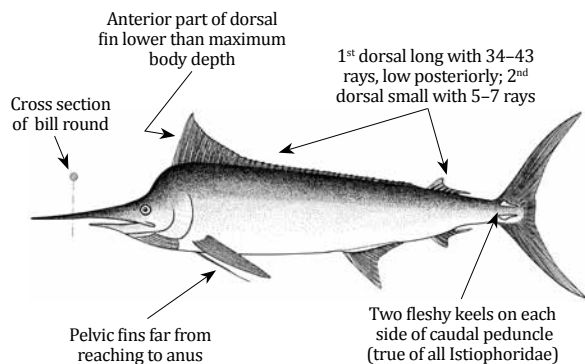
Swordfish

Xiphias gladius Linnaeus, 1758

(Plate XXXVI, 289)

FAO names: Swordfish (En)
Espadon (Fr)**Local name(s):** Somali ghora (Sin); Somali ghora (Bal).**Habitat:** Epipelagic, primarily oceanic, also occurs in coastal waters.**Fisheries:** Driftnets.**Distinctive Characters:** Upper jaw flattened and prolonged into a long sword-like bill; pectoral fins falcate, a little rigid; two separate anal fins, the 1st much longer than the 2nd; juveniles with both jaws prolonged into long bills and dorsal and anal fins continuous.**Colour:** Head and body blackish brown, dark grey, bronze or bluish black dorsally, paler below; fin membrane of 1st dorsal fin dark blackish brown, other fins brown or blackish brown.**Size:** To 455 cm, common 300 cm (TL)**ISTIOPHORIDAE**

Marlins – Sailfishes – Spearfishes

Istiompax indica (Cuvier, 1832)FAO names: Black marlin (En)
Makaire noir (Fr)**Local name(s):** Ghora, Qatil (Sin); Asp, Hasp, Zangisar (Bal).**Habitat:** Oceanic, highly migratory, and epipelagic, usually above thermocline.**Fisheries:** Driftnets.**Distinctive Characters:** Upper jaw prolonged into a long bill, round in cross-section (true of all Istiophoridae); body elongate and robust, not compressed; profile of head distinctly elevated; pectoral fins rigid and not capable of folding flat against sides of body.**Colour:** Body dark blue dorsally, silvery white ventrally; 1st dorsal fin membrane blue-black, usually unspotted; other fins brown-black; no markings or dots on sides of body; after death body turns greyish white.**Size:** To 465 cm (FL)

Istiophorus platypterus (Shaw, 1792)

(Plate XXXVI, 290)

FAO names: Indo-Pacific sailfish (En)
Voilier indo-pacifique (Fr)

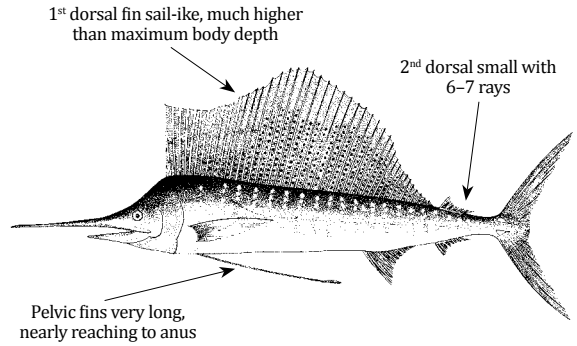
Local name(s): Ghora (Sin); Asp, Hasp (Bal).

Habitat: Oceanic, epipelagic, and highly migratory, usually above thermocline.

Fisheries: Driftnets.

Distinctive Characters: Body elongate and compressed; 1st dorsal fin very high (middle rays longest) with about 42–49 rays; 2 separate anal fins, with 12–17 and 6–7 rays, respectively; pectoral fins falcate, with 17–20 rays

Colour: Body dark bluish violet dorsally, silvery white ventrally; 1st dorsal membrane dark blue with many small black spots; more or less 20 horizontal bars on body, each consisting of several pale blue spots.



Size: To 348 cm (FL)

Kajikia audax (Philippi, 1887)

FAO names: Striped marlin (En)
Marlin rayé (Fr)

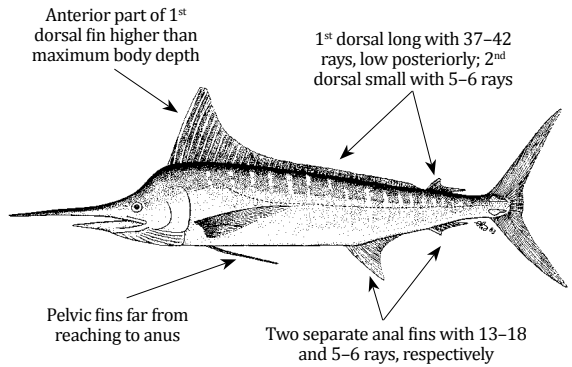
Local name(s): Ghora, Qatil (Sin); Asp, Hasp, Zangisar (Bal).

Habitat: Epipelagic and oceanic species, usually swimming above thermocline.

Fisheries: Driftnets.

Distinctive Characters: Body elongate-fusiform and fairly compressed; forehead fairly elevated; pectoral fins depressible to side of body, with 21–23 rays.

Colour: Body dark blue dorsally, silvery white ventrally; 1st dorsal fin membrane blue black; other fins dark brown; about 20 vertical bars, each consisting of several small pale blue spots or lines on body.



Size: To 420 cm, common 290 cm (TL)

Makaira nigricans Lacepède, 1802

FAO names: Blue marlin (En)
Makaire bleu (Fr)

Local name(s): Ghora, Qatil (Sin); Asp, Hasp, Zangisar (Bal).

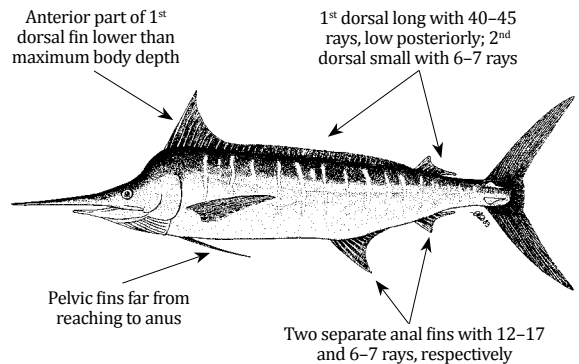
Habitat: Oceanic, epipelagic.

Fisheries: Driftnets.

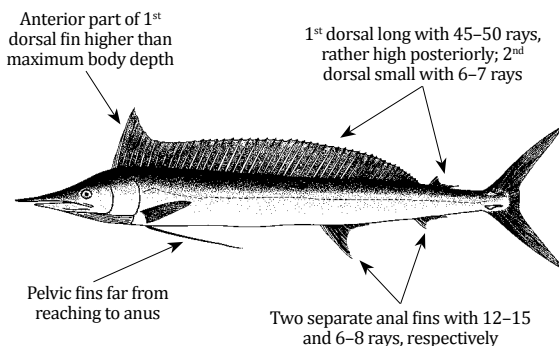
Distinctive Characters: Body elongate-fusiform and not strongly compressed; forehead conspicuously elevated; pectoral fins depressible to side of body, with 20–23 rays.

Colour: Body blue dorsally, silvery white ventrally; 1st dorsal fin membrane blue black, unspotted; other fins dark brown; about 15 vertical bars, each consisting of pale blue spots and lines on body.

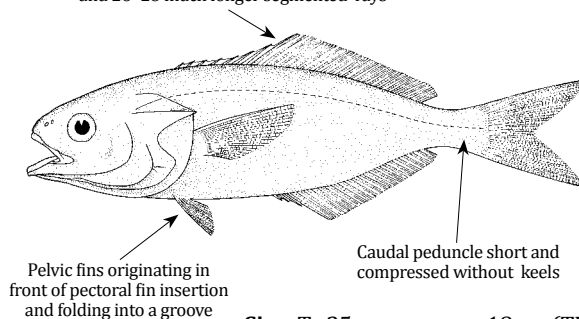
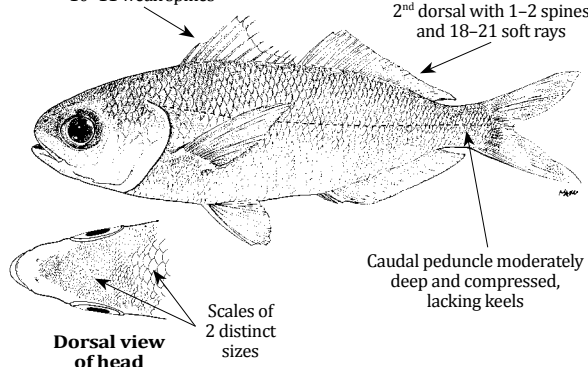
Remarks: Some authors such as Nakamura (1985) recognize Atlantic (*M. nigricans*) and Indo-Pacific (*M. mazara*) blue marlin as distinct species based on differences in lateral line morphology, but genetic data (Collette, McDowell and Graves, 2006) indicates that there is one world-wide cosmopolitan species in tropical and temperate waters.



Size: To 500 cm, common 350 cm (TL)

Tetrapturus angustirostris* Tanaka, 1915*Local name(s):** Ghora (Sin); Asp, Hasp (Bal).**Habitat:** Highly oceanic, migratory, and epipelagic, usually above thermocline.**Fisheries:** Driftnets.**Distinctive Characters:** Body elongate and fairly compressed; bill short, less than 15% of body length; forehead nearly straight; pectoral fins short with 17–19 rays; pelvic fins about twice the length of pectoral fins.**Colour:** Body dark blue dorsally, blue splattered with brown laterally, and silvery white ventrally, without dots or stripes; 1st dorsal fin dark blue, without dots or blotches, remaining fins brown or dark brown; bases of 1st and 2nd anal fins often tinged with silvery white.**FAO names:** Shortbill spearfish (En)
Makaire à rostre court (Fr)**Size:** To 230 cm, common 190 cm (TL)**CENTROLOPHIDAE****Medusafishes – Ruffs – Barrelfishes*****Psenopsis cyanea* (Alcock, 1890)****FAO names:** Indian ruff (En)**Local name(s):** Khadda polet (Sin); Khadda tighlam (Bal).**Habitat:** Found in deep water, forming small schools.**Fisheries:** Bottom trawls.**Distinctive Characters:** Body only moderately deep, compressed; palate toothless; eye diameter less than 25% of head length; anal fin originating behind mid-body, with 3–4 weak spines and 21–23 segmented rays.**Colour:** Generally uniform brownish to violet, with a darker head and often with a spot on shoulder; opercles blackish and gill cavity dark; inside of mouth lightly speckled.

A single dorsal fin with 6–7 weak, short spines and 26–28 much longer segmented rays

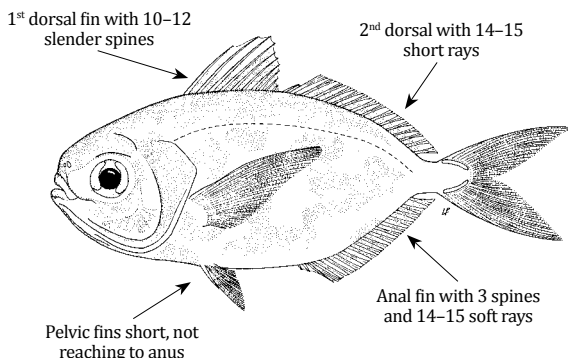
**Size:** To 25 cm, common 18 cm (TL)**NOMEIDAE****Driftfishes – Cigarfishes*****Cubiceps whiteleggii* (Waite, 1894)****(Plate XXXVII, 291)****FAO names:** Shadow driftfish (En)
Derivant indien (Fr)**Local name(s):** Khadda polet (Sin); Khadda tighlam (Bal).**Habitat:** Deep waters on the continental slope.**Fisheries:** Bottom trawls.**Distinctive Characters:** Snout blunt and broad, mouth small; jaw teeth small, in a single series; teeth on midline of roof of mouth and tongue in single rows; anal fin with 3 spines and 18–19 (rarely 17 or 20) soft rays; pectoral fins with 18–20 rays, reaching to anus; caudal fin lobes capable of folding into a single lobe; scales fairly small, cycloid (smooth), easily shed.**Colour:** Preserved specimens brown, a little darker on back than sides, inside of opercle dark; silvery cast in life.1st dorsal fin with 10–11 weak spines2nd dorsal with 1–2 spines and 18–21 soft rays**Size:** To 21 cm (TL)

ARIOMMATIDAE

Ariommas

Ariomma indicum (Day, 1871)

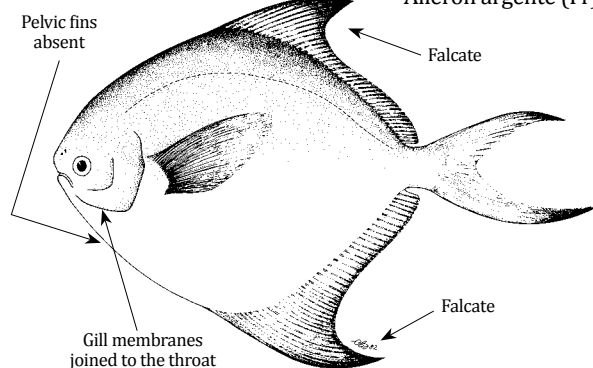
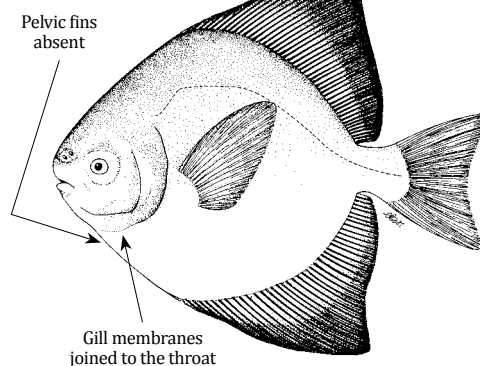
(Plate XXXVII, 292)

FAO names: Indian driftfish (En)
Ariomme indienne (Fr)**Local name(s):** Khadda polet (Sin); Khadda tighlam (Bal).**Habitat:** Muddy bottoms down to 300 m.**Fisheries:** Bottom trawls.**Distinctive Characters:** Body depth usually 42–50% SL; caudal peduncle short, almost square in cross-section with two fleshy keels at base of caudal fin; anal fin with 3 spines and 14–15 soft rays; eyes large, surrounded by thick adipose tissue; caudal fin lobes not capable of folding into a single lobe.**Colour:** Silvery with bluish tinge on back; inside opercle black; eye with 2 golden crescents separated by a vertical dark region; large specimens may be uniformly dark; fins grayish.**Size:** To 25 cm, common 18 cm (TL)**STROMATEIDAE**

Butterfishes – Silver pomfrets

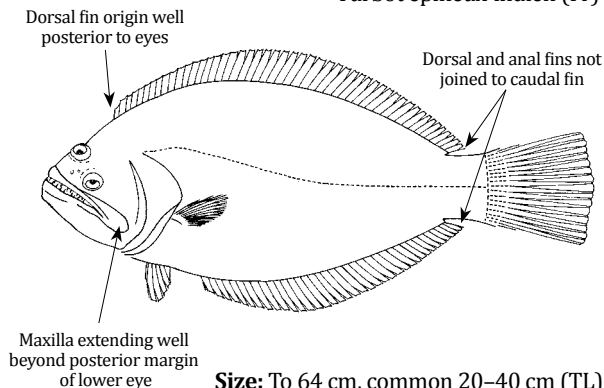
Pampus argenteus (Euphrasen, 1788)

(Plate XXXVII, 293)

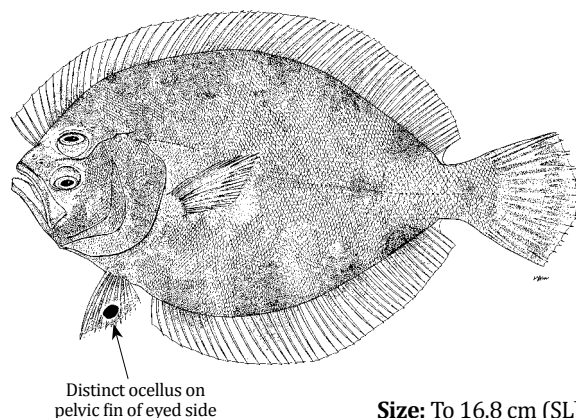
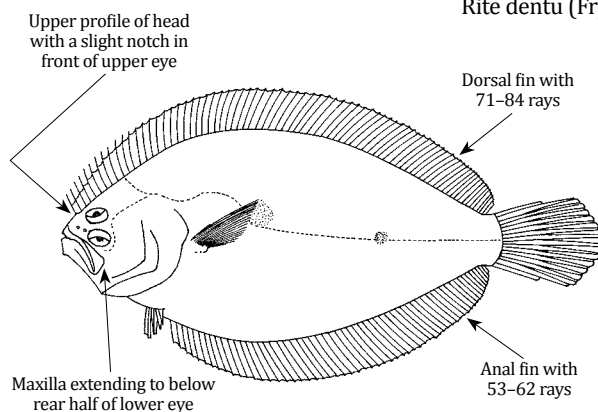
FAO names: Silver pomfret (En)
Aileron argente (Fr)**Local name(s):** Sufaid poplt, Achopitho, Ghir pitho (Sin); Tighlum, Pitho (Bal).**Habitat:** Demersal on the continental shelf to about 80 m; forms large schools over muddy bottoms.**Fisheries:** Bottom trawls, gillnets, seine gears, bagnets.**Distinctive Characters:** Body firm, very deep, oval, compressed; dorsal and anal fins preceded by 5–10 short, blade-like spines with pointed ends (embedded and barely visible in adults); dorsal fin rays 37–43; caudal fin deeply forked, lower lobe often extended.**Colour:** Silvery white on sides, slightly darker bluish or greyish on back.**Size:** To 60 cm, common 30 cm (SL)***Pampus chinensis*** (Euphrasen, 1788)*FAO names: Chinese silver pomfret (En)
Aileron chinois (Fr)**Local name(s):** Gabbar (Sin); Wan-nag, Marz (Bal).**Habitat:** Inshore, demersal on the continental shelf over muddy bottoms; usually occurs in schools; sometimes enters estuaries.**Fisheries:** Bottom trawls, gillnets, seine gears, bagnets.**Distinctive Characters:** Similar to *Pampus argenteus* but dorsal and anal fins not produced into a falcate lobe anteriorly; no blade-like spines before dorsal and anal fins; 43–50 dorsal fin rays; caudal fin not deeply forked, lobes equal in length.**Colour:** Greyish to brownish dorsally, silvery white on sides; covered in dark pigment spots; fins silvery to greyish, darkest distally.**Size:** To 60 cm, common 30 cm (SL)

PSETTODIDAE

Spiny turbot

Psettodes erumei (Bloch & Schneider, 1801)**Local name(s):** Hajjam (Sin); Dantani swaso, Kochuk (Bal).**Habitat:** Benthic in coastal waters and estuaries on muddy and sandy bottoms down to 100 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body oval and flat, but thicker than that in most other flat fishes; mouth large with strong canine teeth; pelvic fins with 1 spine and 5 soft rays; both eyes on left or right side; anterior rays of dorsal and anal fins spinous.**Colour:** Usually brown or grey, sometimes with 4 broad dark crossbars; dorsal, anal and caudal fin tips black; eyed side occasionally only partially coloured.**(Plate XXXVII, 294)****FAO names:** Indian halibut (En)
Turbot épineux-indien (Fr)**PARALICHTHYIDAE**

Sand flounders – Short pelvic flounders

Cephalopsetta ventrocellata Dutt & Rao, 1965**(Plate XXXVII, 295)****FAO names:** Not available (En)**Local name(s):** Khaitar, Sole (Sin); Boti (Bal).**Habitat:** Benthic in coastal waters and estuaries on muddy and sandy bottoms down to 200 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Eyes on left side of head (true of all Paralichthyidae); head length 2.3–3.1 (usually 2.3–2.9) in SL; snout short, 4.7–5.9 in head length; 23–31 closely spaced teeth on lower jaw of blind side, no enlarged canines; scales on eyed side with feeble ctenii and those on blind side cycloid.**Colour:** Background colour of eyed side brownish with varying pattern of irregular dark blotches; a distinct black spot enclosed by a light-coloured ring (ocellus) between the 3rd and 5th ray of pelvic fin of the ocular side.***Pseudorhombus arsius*** (Hamilton, 1822)**FAO names:** Largetooth flounder (En)
Rite dentu (Fr)**Local name(s):** Khaitar, Sole (Sin); Boti (Bal).**Habitat:** Benthic in coastal waters and estuaries on muddy and sandy bottoms down to 200 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body ovoid, its depth 1.8–2.3 in SL; upper jaw teeth small, closely spaced posteriorly, becoming widely spaced and enlarged anteriorly; lower jaw teeth large, widely spaced, 8–18 on blind side lower jaw; gill rakers longer than broad, 9–13 on lower limb of 1st gill arch; scales on eyed side ctenoid, those on blind side cycloid.**Colour:** Background colour of eyed side brownish with varying pattern of dark spots but always a large black blotch and 1 or 2 smaller dark spots along lateral line.

Pseudorhombus elevatus Ogilby, 1912

(Plate XXXVII, 296)

FAO names: Deep flounder (En)
Rite targeur (Fr)

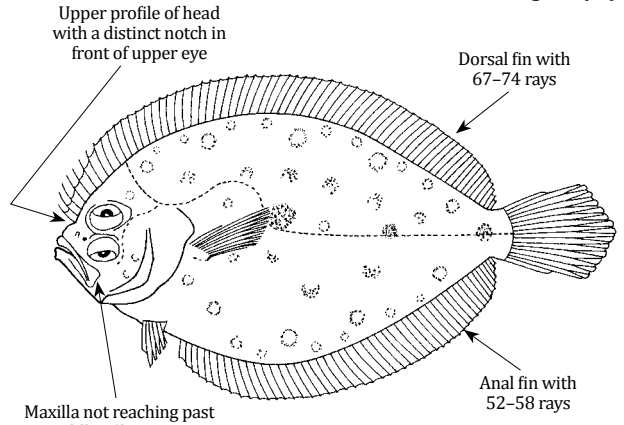
Local name(s): Khaitar, Sole (Sin); Boti (Bal).

Habitat: Benthic on clay, sand and mud bottoms at depths from 7 m to 200 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body deeply ovoid, its depth 1.7–2.0 in SL; teeth in both jaws all small, not enlarged anteriorly; a broad flap-like membrane joining proximal half of 1st dorsal fin ray to head; scales ctenoid on eyed side and cycloid on blind side; gill rakers long and slender, 15–19 on lower limb of 1st gill arch.

Colour: Body pale brownish, a distinct large blotch at junction of straight and curved parts of lateral line, and many dark rings and spots scattered on body and median fins.



Size: To 20 cm, common 15 cm (SL)

Pseudorhombus javanicus (Bleeker, 1853) *

FAO names: Javan flounder (En)
Rite javanais (Fr)

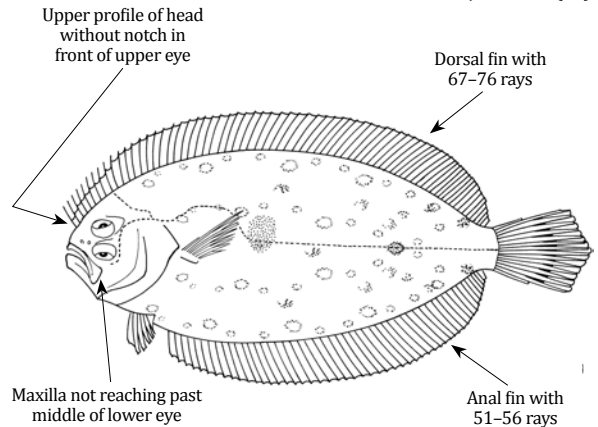
Local name(s): Khaitar, Sole (Sin); Boti (Bal).

Habitat: Inhabits shallow waters on mud and sand bottoms on the continental shelf.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body ovoid, its depth 2.1–2.4 in SL; teeth in both jaws small, with slightly enlarged teeth anteriorly; scales on eyed side ctenoid on anterior part and on dorsal and ventral margins on eyed side of body, cycloid on remaining areas; scales cycloid on blind side; gill rakers pointed, moderately short, 12–16 on lower limb of 1st gill arch.

Colour: Body brownish, a distinct, large dark blotch at junction of straight and curved parts of lateral line and a smaller blotch on middle of straight section of lateral line, many dark rings scattered on body.



Size: To 35 cm, common 20 cm (SL)

Pseudorhombus triocellatus (Bloch & Schneider, 1801) *

FAO names: Three spotted flounder (En)
Rite à trois taches (Fr)

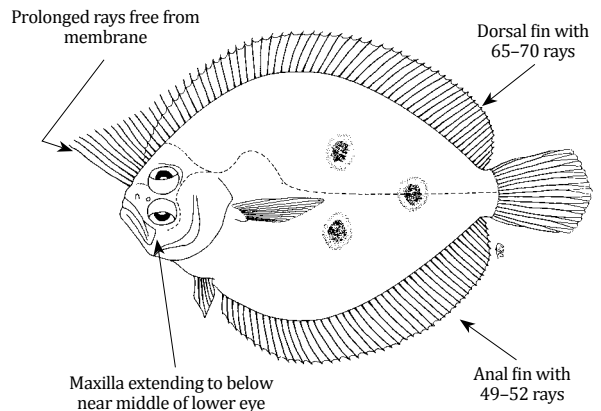
Local name(s): Khaitar, Sole (Sin); Boti (Bal).

Habitat: Inhabits mud and sand bottoms in shallow waters on the continental shelf.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body deeply ovoid, its depth 1.5–1.8 times in SL; upper profile of head without distinct notch in front of upper eye; teeth in both jaws small, not enlarged anteriorly; scales ctenoid on eyed side, cycloid on blind side; gill rakers long and slender, 20–25 on lower limb of 1st gill arch.

Colour: Body brownish, with 1 ocellus above and one below lateral line and 1 ocellus on posterior third of straight section of lateral line; many indistinct spots and blotches on body.



Size: To 15 cm, common 10 cm (SL)

BOTHIDAE

Lefteye flounders

Bothus myriaster (Temminck & Schlegel, 1846)*

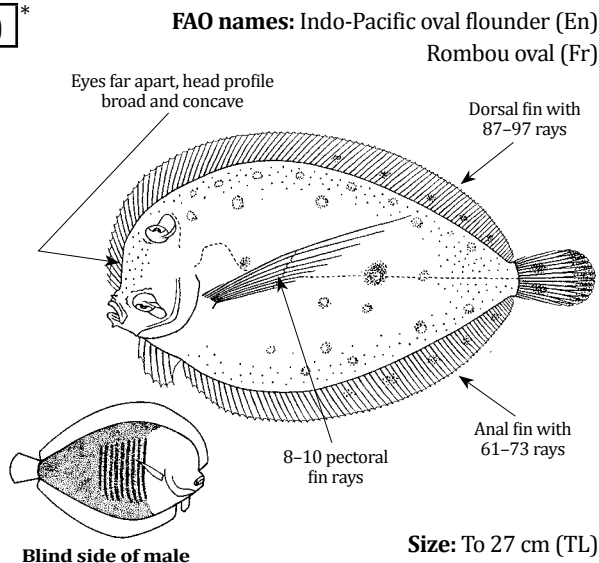
Local name(s): Khaitar, Sole (Sin); Boti, Swasso (Bal).

Habitat: Lives on sand and mud bottoms at depths of 10 to 155 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Scales very small, cycloid on eyed side except at upper and lower edges of body; lateral line with 74–108 scales; 5–8 gill rakers on lower limb of 1st gill arch; males with broad flaps on eyes, spines on snout and around orbits, a larger space between eyes and longer pectoral fin rays than females.

Colour: Eyed side brown with many dark spots; 2–3 diffused dark blotches along lateral line; blind side yellowish white on front half of body; darker posteriorly with several dark cross bars, darkest in males, faint or missing in juveniles and females.

***Bothus pantherinus*** (Rüppell, 1830)*

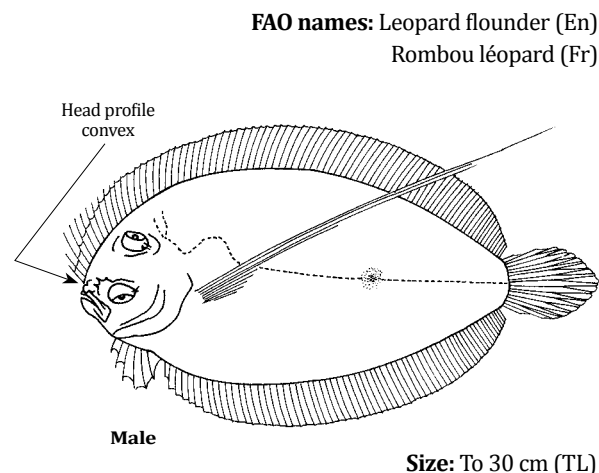
Local name(s): Khaitar, Sole (Sin); Boti, Swasso (Bal).

Habitat: Lives on sand and mud bottoms at depths of 0–150 m; often found close to reefs.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Similar to *Bothus myriaster* but head profile distinctly convex; all scales on eyed side ctenoid; usually 2–3 tentacles on each eye; 9–12 pectoral fin rays on eyed side; lateral line with 74–87 scales.

Colour: Eyed side with numerous dark spots, blotches, and rings on body and median fins; 1 distinct dark blotch on middle of straight section of lateral line; blind side tan or whitish, without distinctive markings.

***Crossorhombus azureus*** (Alcock, 1889)

(Plate XXXVII, 297, 298)

FAO names: Blue flounder (En)

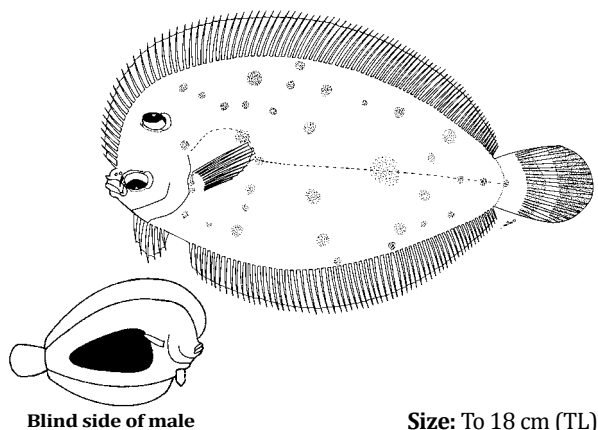
Local name(s): Khaitar, Sole (Sin); Boti, Swasso (Bal).

Habitat: Lives on mud bottoms at depths of 13 to 60 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Similar to *Bothus myriaster* but pectoral fin on eyed side with 11–14 rays, its length 1.3–1.6 in head length in both sexes; scales on eyed side with elongate ctenii; lateral line with 56–63 scales.

Colour: Eyed side brownish grey, with darker spots and blotches; caudal fin with 2 distinct dark bands; blind side whitish in females; males with distinct bluish black pyriform colour pattern on blind side.



Engyprosopon grandisquama (Temminck & Schlegel, 1846) *

FAO names: Largescale flounder (En)
Perpeire à grandes écailles (Fr)

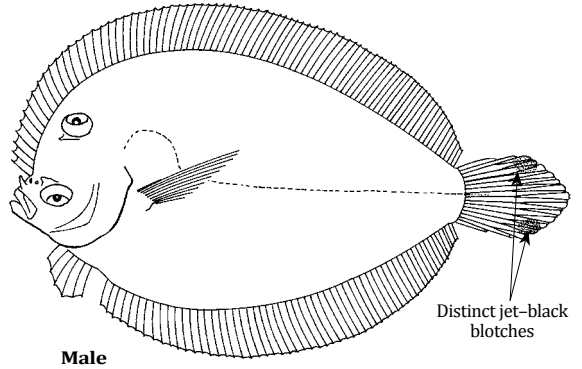
Local name(s): Khaitar, Sole (Sin); Boti, Swasso (Bal).

Habitat: Living on mud and sand bottoms on the continental shelf at depths of about 10 to 100 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Similar to *Bothus myriaster* but scales large, those on eyed side with short ctenii; adult males with a distinct spine on rim of each orbit; pectoral fin on eyed side subequal to or shorter than head length in both sexes; lateral line scales less than 63.

Colour: Eyed side light brown with irregular dark spots and rings; 2-3 obscure dark spots on straight portion of lateral line; blind side light brown except pale yellowish white head in males, uniformly pale yellowish white in females.



Size: To 15 cm, common 10 cm (TL)

Laeops cf. nigrescens Lloyd, 1907

(Plate XXXVIII, 299)

FAO names: Darkfinned flounder (En)

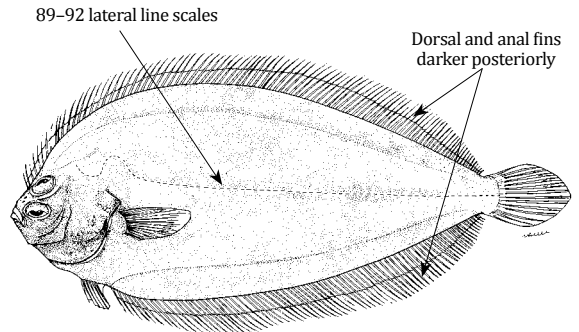
Local name(s): None.

Habitat: Demersal; collected between 220-238 m.

Fisheries: Bottom trawls.

Distinctive Characters: Body elliptical, thin; head short; mouth small with posterior margin of upper jaw just reaching vertical through anterior pupil of lower eye; dorsal fin rays 95-98; anal fin rays 80-83; pectoral fin on eyed side with 13 rays; 8-10 gillrakers on lower limb of 1st arch; 89-92 lateral line scales; no elongate dorsal fin rays; dorsal fin origin above posterior nostril on blind side.

Colour: Eyed side brownish, with irregular darker patches; dorsal and anal fins darker posteriorly.



Size: To 15 cm (TL)

SAMARIDAE

Crested flounders

Samaris cristatus Gray, 1831

FAO names: Cockatoo righteye flounder (En)

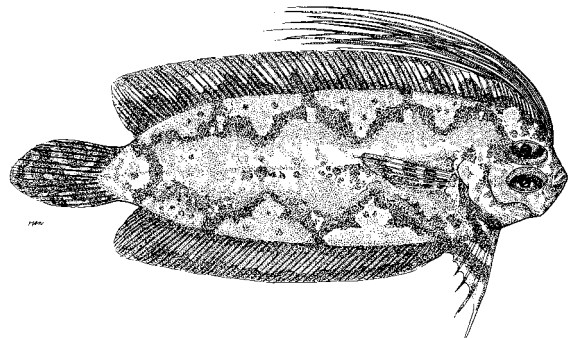
Local name(s): None.

Habitat: Lives on sandy bottoms at depths of about 20 to 70 m.

Fisheries: Bottom trawls.

Distinctive Characters: Both eyes on right side of head; anterior dorsal fin rays and rays of pelvic fin on eyed side elongate and filamentous; pectoral fin on eyed side with 4 rays, pectoral fin on blind side missing or rudimentary; all caudal fin rays unbranched.

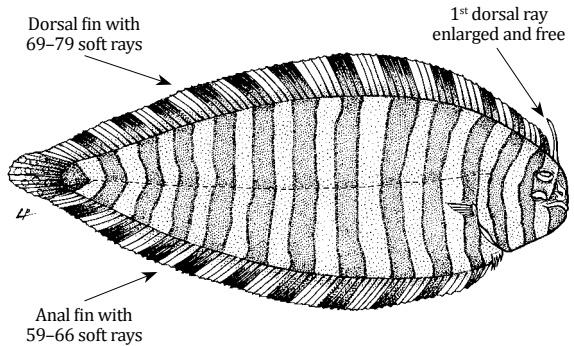
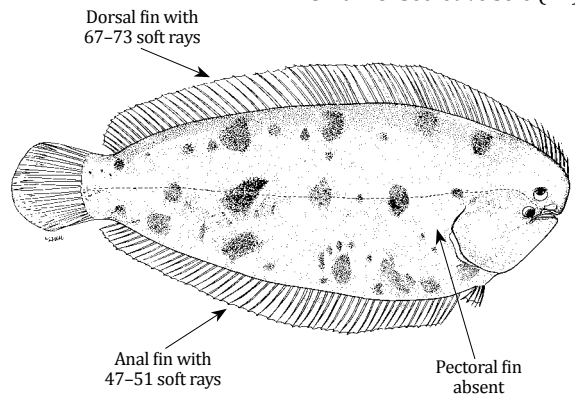
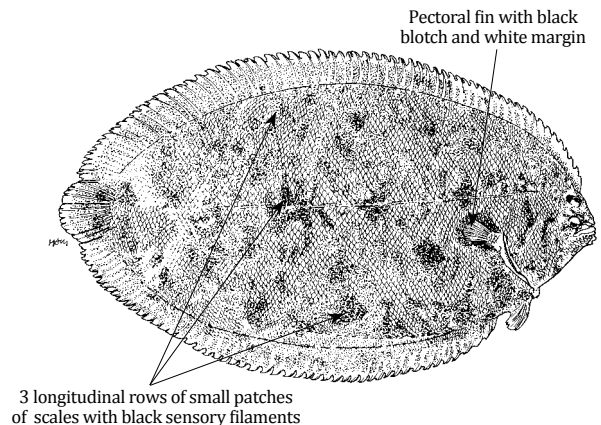
Colour: Body on eyed side brownish with darker spots and blotches; elongate anterior dorsal fin rays white, remainder of dorsal fin, anal fin, and caudal fin brown; blind side of body whitish.



Size: To 22 cm, common 16 cm (TL)

SOLEIDAE

Soles

Aesopia cornuta Kaup, 1858**(Plate XXXVIII, 300)****FAO names:** Unicorn sole (En)**Local name(s):** Khaitar, Phani, Soli (Sin); Swasso (Bal).**Habitat:** Benthic in coastal waters to at least 100 m.
Fisheries: Bottom trawls.**Distinctive Characters:** Both eyes on right side of head (true of all Soleidae); 1st ray of dorsal fin enlarged and free; dorsal and anal fins broadly attached to caudal fin; scales smooth, cycloid or weakly ctenoid; 11–15 pectoral fin rays.**Colour:** Background colour greyish or brown with 15–16 black-edged dark bars; caudal fin blackish with pale or yellow spots.**Size:** To 25 cm (SL)***Aseraggodes cf. umbratilis*** (Alcock, 1894)**FAO name:** Secretive sole (En)**Local name(s):** Khaitar, Phani, Soli (Sin); Swasso (Bal).**Habitat:** Benthic on soft bottoms from 70 to 271 m.
Fisheries: Bottom trawls.**Distinctive Characters:** Pectoral fins absent; tubular anterior nostril not reaching posterior to middle of lower eye; head large, 2.9–3.4 in SL; eye very small, 8.7–11.7 in head length.**Colour:** Eyed side in alcohol light brown with 3 longitudinal rows of dark brown blotches on body 2 to 3 times larger than eye, one row dorsal (but well below dorsal fin), one ventral (but well above anal fin), and one along lateral line; fin rays light brown, the membranes dark brown.**Size:** To 7.8 cm (SL)***Brachirus orientalis*** (Bloch & Schneider, 1801)**(Plate XXXVIII, 301)****FAO names:** Oriental sole (En)
Sole d'orient (Fr)**Local name(s):** Khaitar, Phani, Soli (Sin); Swasso (Bal).**Habitat:** Inhabits sand or mud bottoms in shallow coastal waters.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Body oval and flat; eyes on right side, separated by small scaly interorbital space; dorsal and anal fins joined to caudal fin; pectoral fins well developed; scales strongly ctenoid on eyed side, mostly weakly ctenoid on blind side with some cycloid.**Colour:** Eyed side grey or brown with numerous, cloudy, and indistinct patches; blind side uniformly light yellow, without sooty blotches; median and pelvic fins uniformly dark with white margins; blind side pelvic fin white.**Size:** To 30 cm (SL)

***Solea elongata* Day, 1877**

(Plate XXXVIII, 302)

FAO names: Elongate sole (En)
Sole élancée (Fr)

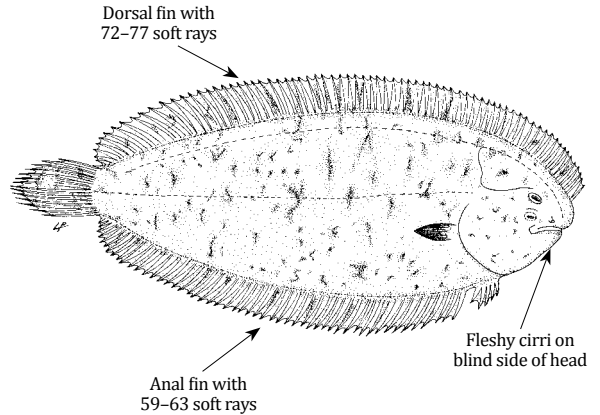
Local name(s): Khaitar, Phani, Soli (Sin); Swasso (Bal).

Habitat: Inhabits sand or mud bottoms in shallow coastal waters.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate and flat; eyes on right side, small, separated by scaly space, half the eye diameter; mouth small, curved, maxilla reaching to below middle of lower eye; scales weakly ctenoid on both sides; dorsal and anal fins separated from caudal fin; pectoral fins well developed, symmetrical.

Colour: Brownish or greyish, spotted or blotched darker; the markings are more distinct near the margin of the body, and often tend to form irregular vertical bands; a black blotch present on distal part of pectoral fin.



Size: To 11.5 cm (TL)

***Dagetichthys commersonii* (Lacepède, 1802)**

FAO names: Commerson's sole (En)
Sole de Commerson (Fr)

(Plate XXXVIII, 303)

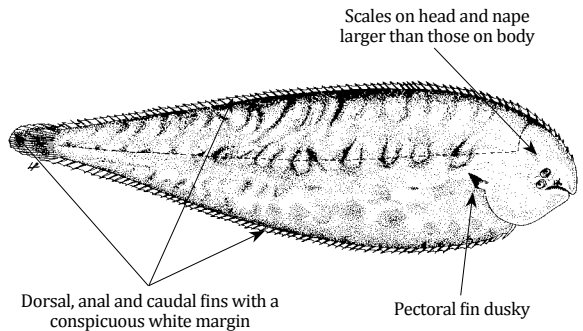
Local name(s): Khaitar, Phani, Soli (Sin); Swasso (Bal).

Habitat: Inhabits mainly sand or mud bottoms in coastal waters.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate, broad anteriorly and tapering posteriorly; eyes on right side, with scaly interorbital space; mouth curved, cleft reaching posteriorly only to vertical through middle of upper eye; scales ctenoid on eyed side, cycloid on blind side; dorsal and anal fins joined to caudal fin; pectoral fins symmetrical in size.

Colour: Grey or brown on eyed side of body; dorsal, anal, and caudal fins dusky towards edges of both sides and with a conspicuous white margin.



Size: To 32 cm, common 20-30 cm (TL)

***Zebrias* cf. *synapturoides* (Jenkins, 1910)**

(Plate XXXVIII, 304)

FAO names: Indian zebra sole (En)
Sole zèbre (Fr)

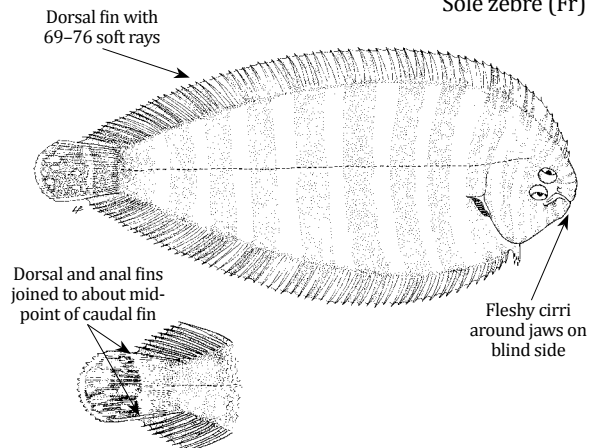
Local name(s): Khaitar, Phani, Soli (Sin); Swasso (Bal).

Habitat: Inhabits shallow sand/mud bottoms on the continental shelf and in estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body elongate and flat; eyes on right side, nearly contiguous, without tentacle; anal fin with 59-63 rays; pectoral fin with 11 rays on eyed side; scales strongly ctenoid on both sides of body.

Colour: Greyish, with 12-13 darker crossbars, broader than the interspaces; posterior part of caudal fin with a circular area of dark brown, margined with yellowish-white, and with a number of yellowish white spots and blotches in the centre.



Size: To 15 cm, common 10 cm (TL)

CYNOGLOSSIDAE

Tonguesoles

Cynoglossus arel (Bloch & Schneider, 1801)

Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

Habitat: Inhabits muddy and sandy bottoms on the continental shelf to depths of about 125 m.

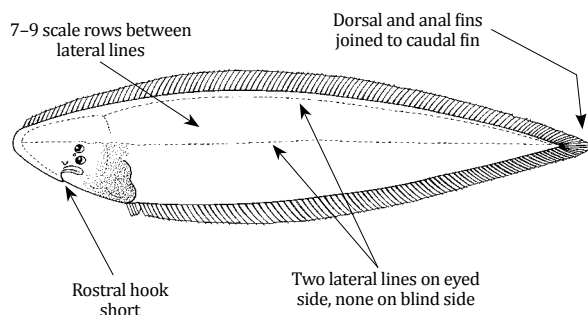
Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side with a small scaly interorbital space; snout obtusely pointed; corner of mouth reaching posteriorly to or beyond lower eye, about midway between gill opening and tip of snout; scales large, ctenoid on eyed side of body, cycloid on blind side; usually 10 caudal fin rays.

Colour: Eyed side uniform brown, with a dark patch on gill cover; blind side white.

FAO names: Largescale tonguesole (En)

(Plate XXXVIII, 305)



Size: To 38 cm, common 20-30 cm (TL)

Cynoglossus quadrilineatus (Bleeker, 1851)*

Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

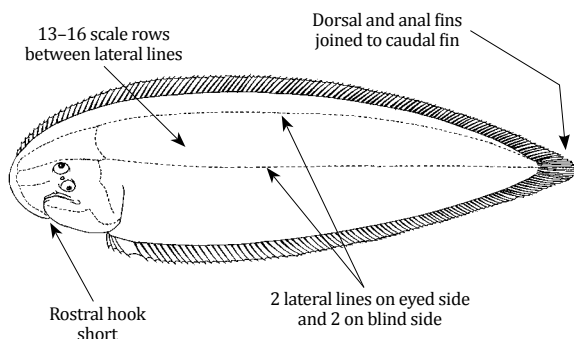
Habitat: Inhabits muddy and sandy bottoms on the inner continental shelf to about 80 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side with a small scaly interorbital space; snout rounded; corner of mouth reaching posteriorly beyond lower eye, nearer to gill opening than to tip of snout; scales ctenoid on eyed side of body, cycloid on blind side; usually 12 caudal fin rays.

Colour: Eyed side brown with an irregular dark blotch on gill cover; blind side white.

FAO names: Fourlined tonguesole (En)



Size: To 40 cm, common 15-30 cm (TL)

Cynoglossus carpenteri Alcock, 1889

(Plate XXXVIII, 306)

FAO names: Hooked tonguesole (En)
Langue crochet (Fr)

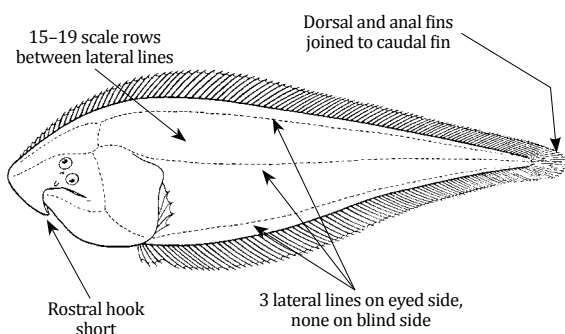
Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

Habitat: Inhabits sandy bottoms in deeper waters from 120 to 450 m depth.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side with a small scaly interorbital space; snout obtusely pointed; corner of mouth extending to below the posterior border of lower eye or a little beyond, either slightly nearer to gill opening than to tip of snout or midway between them; scales cycloid on both sides of body; usually 10 caudal fin rays.

Colour: Upper side uniformly brownish, lower whitish.



Size: To 23 cm, common 15 cm (TL)

Cynoglossus cynoglossus (Hamilton, 1822) *

Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

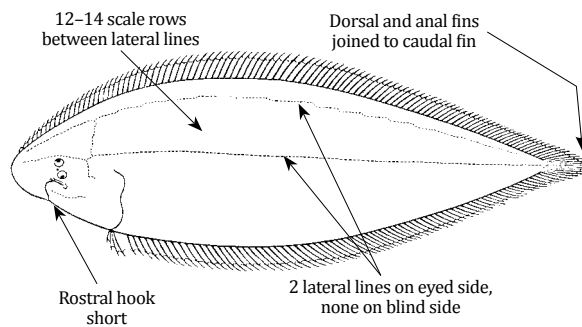
Habitat: Inhabits muddy and sandy bottoms, often in shallow areas, including brackish waters.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side of head; snout rounded; corner of mouth not reaching posteriorly beyond vertical through posterior margin of lower eye, nearer to tip of snout than to gill opening; scales on both sides of body ctenoid; usually 10 caudal fin rays.

Colour: Eyed side uniformly brown-grey, with vague dark marbling.

FAO names: Bengal tonguesole (En)



Size: To 20 cm, common 10-15 cm (TL)

Cynoglossus dispar Day, 1877 *

Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

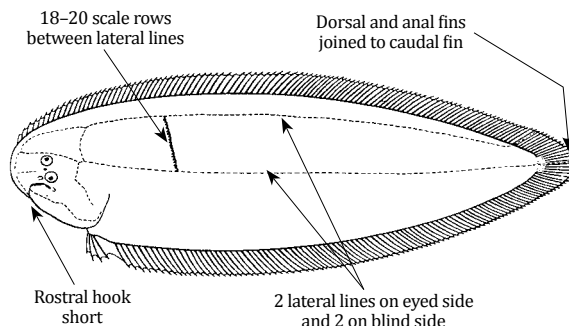
Habitat: Inhabits muddy and sandy bottoms on the continental shelf.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side of body with a small scaly space between them; snout rounded; corner of mouth extending below posterior border of lower eye, much nearer to tip of snout than to gill opening; scales ctenoid on eyed side of body, cycloid on blind side; usually 10 caudal fin rays.

Colour: Eyed side brownish with somewhat darker irregular blotches; blind side whitish.

FAO names: Roundhead tonguesole (En)
Langue à tête ronde (Fr)



Size: To 38 cm, common 30 cm (TL)

Cynoglossus dubius Day, 1873 *

Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

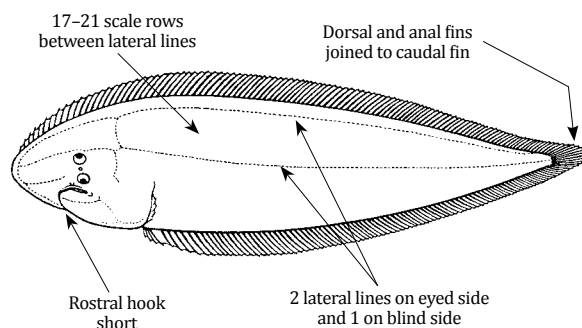
Habitat: Inhabits muddy and sandy bottoms on the continental shelf.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side of body with a small scaly space between them; snout obtusely pointed; corner of mouth extending below posterior border of lower eye, nearer to gill opening than to tip of snout; scales cycloid on both sides of body, except near bases of dorsal and anal fins where scales are weakly ctenoid; usually 12 caudal fin rays.

Colour: Eyed side uniformly brown, blind side whitish.

FAO names: Carrot tonguesole (En)



Size: To 50 cm, common 30 cm (TL)

***Cynoglossus lachneri* Menon, 1977**

Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

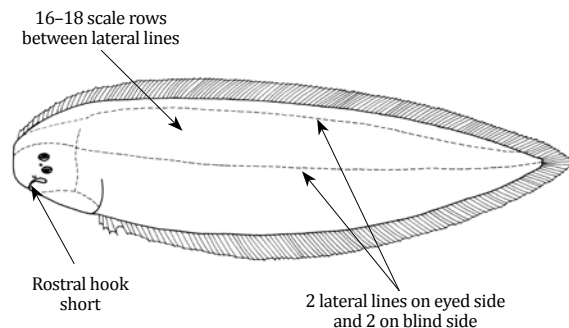
Habitat: Sandy bottoms on the continental shelf.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side with a small scaly interorbital space; snout rounded; corner of mouth extending below posterior border of lower eye, nearer to tip of snout than to gill opening; scales ctenoid on eyed side of body, cycloid on blind side; usually 10 caudal fin rays.

Colour: Upper side uniformly dark brown, lower side whitish.

FAO names: Lachner's tonguesole (En)
Langue de Lachner (Fr)



Size: To 46 cm, common 30 cm (TL)

Cynoglossus puncticeps* (Richardson, 1846)*(Plate XXXIX, 307)**

FAO names: Speckled tonguesole (En)
Langue tachetée (Fr)

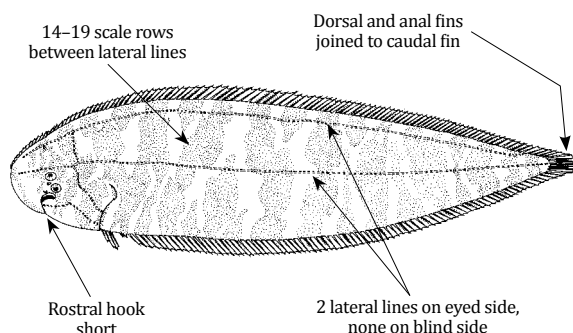
Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

Habitat: Found on the continental shelf over sandy and muddy bottoms to about 140 m; also in lower courses of rivers and in estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side with a small scaly interorbital space; snout rounded; corner of jaws not reaching posteriorly beyond vertical through posterior margin of lower eye, a little nearer to tip of snout than to gill opening; scales ctenoid on both sides of body; usually 10 caudal fin rays.

Colour: Eyed side yellow-brown, with very distinct irregular dark brown blotches, often forming irregular cross bands; some rays of dorsal and anal fins dashed with dark brown.



Size: To 18 cm, common 8-10 cm (TL)

***Paraplagusia bilineata* (Bloch, 1787)**

FAO names: Doublelined tonguesole (En)
Langue a deux ligne (Fr)

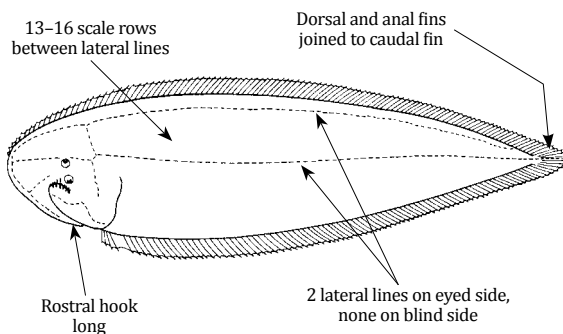
Local name(s): Chah-ail, Sole, Kukker jib (Sin); Mundsar swasso, Gok zaban, Zahmay swasso (Bal).

Habitat: Inhabits muddy and sandy bottoms on the inner continental shelf; also in estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Eyes on left side with a small scaly interorbital space; snout rounded; corner of mouth not reaching beyond vertical through posterior margin of lower eye, nearer to gill opening than to tip of snout; mouth fringed with branched labial papillae; scales ctenoid on both sides of body; 75-97 scales in midlateral line; usually 8 caudal fin rays.

Colour: Eyed side brown with pale ocelli and sometimes spotted or marbled with darker patches; blind side tinged with yellow.



Size: To 30 cm, common 25 cm (TL)

TRIACANTHIDAE

Tripodfishes

***Pseudotriacanthus strigilifer* (Cantor, 1849)**

Local name(s): Tida, Kookh (Sin); Pokki, Khar (Bal).

Habitat: Coastal and estuarine waters, over sandy or muddy substrates, to depths of usually 60 m, occasionally to 100 m.

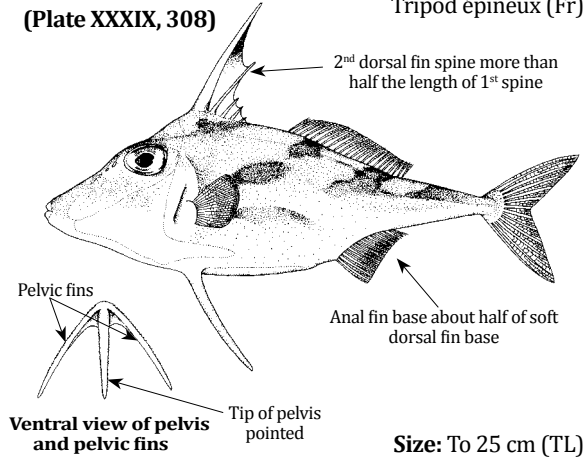
Fisheries: Gillnets, bottom trawls, beach seines, bag nets, cast nets.

Distinctive Characters: Scale-covered ventral surface of pelvis much wider anteriorly than posteriorly, distinctly tapered to a point.

Colour: Upper half of head and body dusky silver, and lower half silvery, with large, elongate, brown to orange blotches, usually with darker margins; distal two-thirds of 1st dorsal fin spine usually blackish; a dusky blotch on the pectoral fin.

FAO names: Longspined tripodfish (En)
Tripod épineux (Fr)

(Plate XXXIX, 308)



***Triacanthus biaculeatus* (Bloch, 1786)**

Local name(s): Tida, Kookh (Sin); Pokki, Khar (Bal).

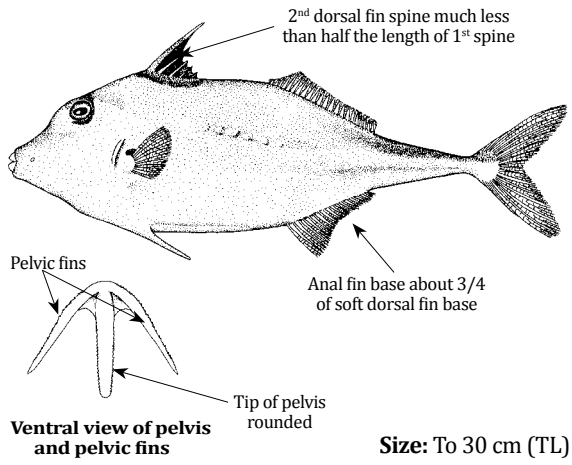
Habitat: Coastal and estuarine waters, over sandy or muddy substrate, to depths of 60 m.

Fisheries: Gillnets, bottom trawls, beach seines, bag nets, cast nets.

Distinctive Characters: Scale-covered ventral surface of pelvis almost as wide anteriorly as posteriorly, not distinctly tapered to a point; outline of head from base of 1st dorsal fin spine to above eye an even slightly convex curve or almost a straight line.

Colour: Upper side dusky silver and lower side creamy silver, with an indistinct silvery stripe along midside of body; spiny dorsal fin membrane very dark between 1st and 3rd spines, and usually equally dark between 3rd and 5th spines.

FAO names: Short-nosed tripodfish (En)
Tripodin nez court (Fr)



***Triacanthus nieuhoftii* Bleeker, 1852**

(Plate XXXIX, 309)

FAO names: Silver tripodfish (En)

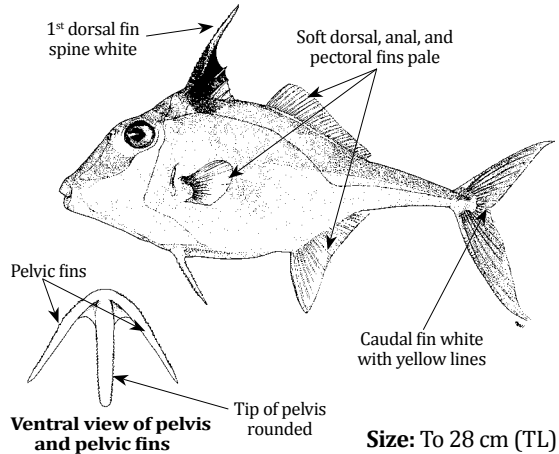
Local name(s): Tida, Kookh (Sin); Pokki, Khar (Bal).

Habitat: Coastal, over sandy or muddy substrate.

Fisheries: Gillnets, bottom trawls, beach seines, bag nets, cast nets.

Distinctive Characters: Similar to *Triacanthus biaculeatus* but spiny dorsal fin membrane very black between 1st and 2nd spines, slightly to much less darker between 2nd and 3rd spines, and pale between 3rd and 5th spines; outline of head between base of 1st dorsal fin spine and eyes somewhat convex in front of spine and then straight or slightly concave over eye.

Colour: Dorsal half of body silvery light brown, ventral half silvery white; several irregular dark yellow blotches on mid-body.



BALISTIDAE

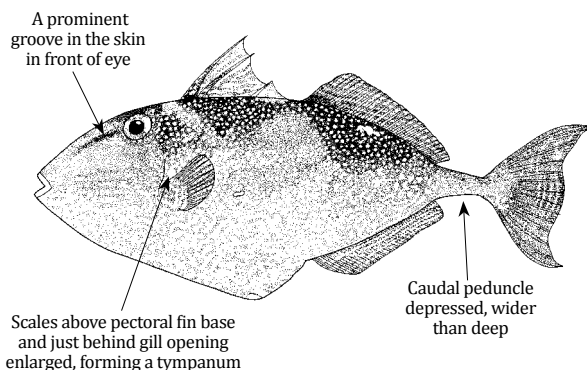
Triggerfishes

Abalistes stellatus (Anonymous, 1798)

(Plate XXXIX, 310)

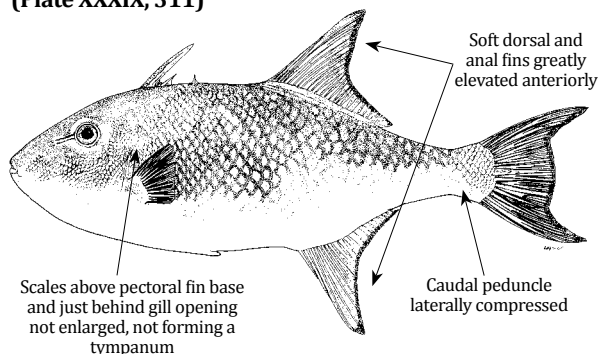
FAO names: Starry triggerfish (En)

Baliste étoilé (Fr)

Local name(s): Kookh (Sin); Pokki, Khar, Har (Bal).**Habitat:** Inhabits mud and silt sand bottoms to depths of 350 m. Also in estuaries.**Fisheries:** Gillnets.**Distinctive Characters:** Body depth 2.0–2.5 in SL; 2 dorsal fins with 3 dorsal fin spines and 25–27 soft rays, respectively; mouth terminal; scales of posterior part of body with prominent keels, forming longitudinal ridges.**Colour:** Grey-brown to olivaceous on back, pale below, with small pale blue or yellow spots dorsally and larger yellow spots ventrally (frequently faint); 3 large white blotches on back, disappearing in large specimens; soft dorsal and anal fins with yellow, slightly oblique stripes; pectoral fins yellow.**Size:** To 60 cm, common 40 cm (TL)***Canthidermis macrolepis*** (Boulenger, 1888)

(Plate XXXIX, 311)

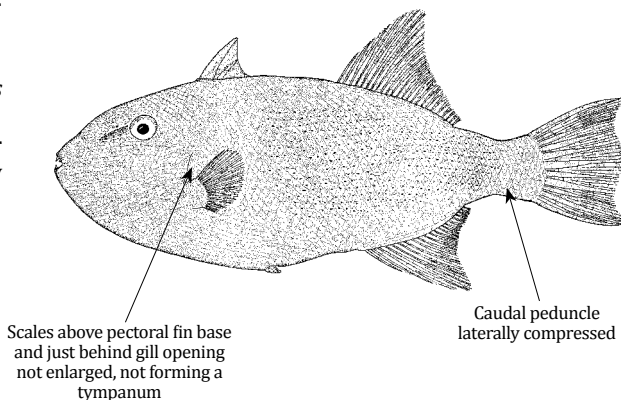
FAO names: Largescale triggerfish (En)

Local name(s): Kookh (Sin); Pokki, Khar, Har (Bal).**Habitat:** Occurs in offshore waters but it comes inshore to lay demersal eggs in a nest of sand.**Fisheries:** Driftnets.**Distinctive Characters:** Body elongate for a balistid, its depth 3.0–4.4 in SL in adults (about 1.8 in SL in juveniles); 2 dorsal fins with 3 spines and 23–26 rays, respectively; anal fin with 21–23 rays; pectoral fins with 14–15 rays; mouth terminal; cheeks evenly scaly; caudal fin double emarginate in adults (rounded in juveniles).**Colour:** Grey, shading to pale grey ventrally; edges of 2nd dorsal, anal and caudal fins blackish; pectoral fins blackish.**Size:** To 60 cm (TL)***Canthidermis maculata*** (Bloch, 1786)

(Plate XXXIX, 312)

FAO names: Ocean triggerfish (En)

Baliste rude (Fr)

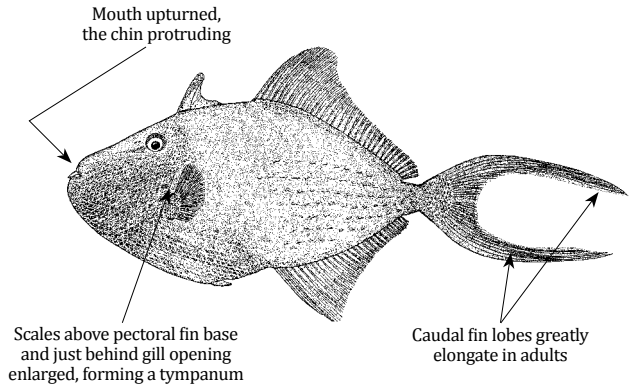
Local name(s): Kookh (Sin); Pokki, Khar, Har (Bal).**Habitat:** Occurs in offshore waters.**Fisheries:** Driftnets.**Distinctive Characters:** Similar to *Canthidermis macrolepis* but with white spots on body.**Colour:** Head, body and fins of adults dark, lighter below with elongated white spots that may disappear with growth.**Size:** To 50 cm (TL)

Odonus niger (Rüppell, 1836)

(Plate XXXIX, 313)

FAO names: Red-toothed triggerfish (En)
Baliste dents rouges (Fr)

Local name(s): Kookh (Sin); Pokki, Khar, Har (Bal).
Habitat: Occurs on current-swept seaward coral reefs to depths of 40 m.
Fisheries: Gillnets.
Distinctive Characters: Body depth 1.8–2.1 in SL; 2 upper teeth projecting and canine-like; prominent groove in the skin in front of eye; 2 dorsal fins with 3 spines and 33–36 rays, respectively; anal fin with 28–31 soft rays; caudal peduncle compressed laterally.
Colour: Blue to dark purplish blue; soft dorsal, anal and caudal fins margin light blue; teeth red



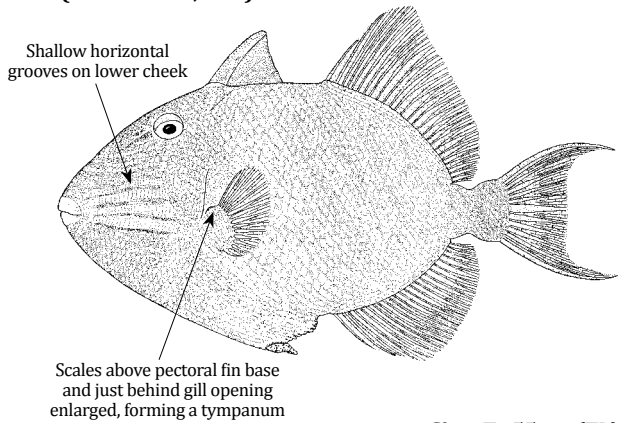
Size: To 50 cm, common 30 cm (TL)

Pseudobalistes fuscus (Bloch & Schneider, 1801)

FAO names: Yellow-spotted triggerfish (En)

(Plate XXXIX, 314)

Local name(s): Kookh (Sin); Pokki, Khar, Har (Bal).
Habitat: Occurs solitary in coral reefs at depths to 50 m.
Fisheries: Gillnets.
Distinctive Characters: Anterior part of cheek largely naked; prominent groove in the skin in front of eye; 2 dorsal fins with 3 spines and 25–27 rays, respectively; anal fin with 19–24 rays; pectoral fins with 14–15 rays; mouth terminal; caudal peduncle compressed laterally; caudal rounded in young, double emarginate in adults, lobes produced with growth.
Colour: Deep blue to greyish blue with small yellow spots, these often forming irregular network; margins of soft dorsal, anal, and caudal fins light blue.



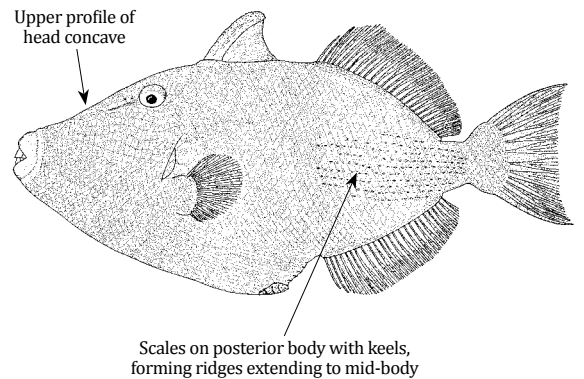
Size: To 55 cm (TL)

Sufflamen fraenatum (Latreille, 1804)

(Plate XL, 315)

FAO names: Masked triggerfish (En)
Baliste masqué (Fr)

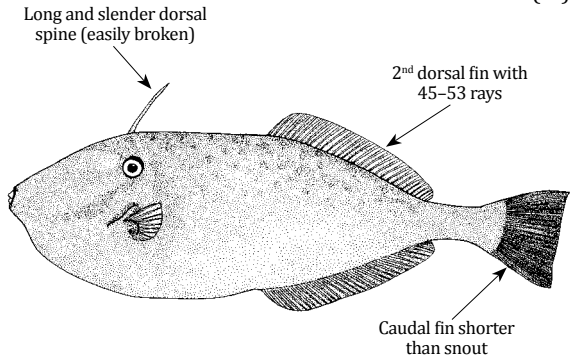
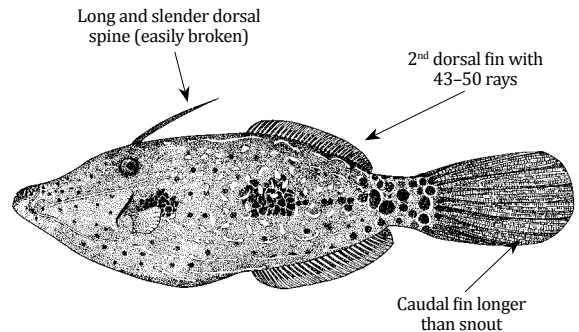
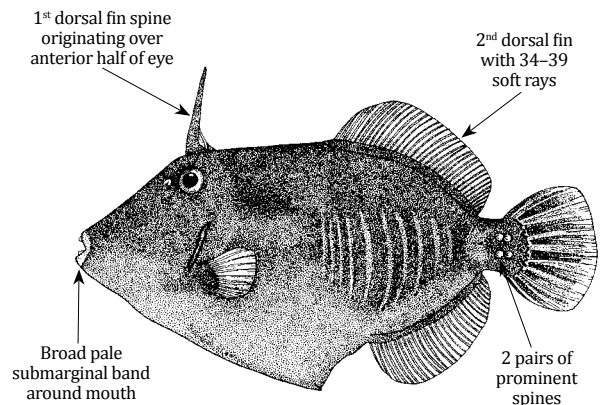
Local name(s): Kookh (Sin); Pokki, Khar, Har (Bal).
Habitat: Occurs in seaward reefs of 10 to 186 m.
Fisheries: Gillnets.
Distinctive Characters: Body depth 1.8–2.1 in SL; prominent groove in the skin in front of eye; scales above pectoral fin base and just behind gill opening much enlarged, forming a tympanum; 2 dorsal fins with 3 spines and 27–31 rays, respectively; anal fin with 24–28 rays; pectoral fins with 14–16 rays; mouth terminal.
Colour: Head and body yellowish brown to dark brown; yellow stripe encircling lower jaw and meeting just behind the mouth; juveniles sand-coloured with numerous thin black-pin stripes.



Size: To 38 cm (TL)

MONACANTHIDAE

Filefishes – Leatherjackets

Aluterus monoceros (Linnaeus, 1758)**(Plate XL, 316)****FAO names:** Unicorn leatherjacket filefish (En)
Bourse loulou (Fr)**Local name(s):** Kako, Kookh, Sapna (Sin); Pokki, Khar, Har (Bal).**Habitat:** Semi-pelagic on the continental shelf down to 50 m.**Fisheries:** Driftnets.**Distinctive Characters:** Body moderately deep and compressed; smooth leathery skin; snout profile straight to convex; anal fin with 47–53 soft rays; pectoral fins with 15 soft rays; rudimentary pelvic spine plate-like, disappearing in large specimens.**Colour:** Uniform light grey to sandy or with darker blotches and spots; fins yellowish with caudal more dusky.**Size:** To 76 cm, common 40 cm (TL)***Aluterus scriptus*** (Osbeck, 1765)**(Plate XL, 317)****FAO names:** Scribbled leatherjacket filefish (En)**Local name(s):** Kako, Kookh, Sapna (Sin); Pokki, Khar, Har (Bal).**Habitat:** Lagoons and seaward reefs from 2 m to 80 m.**Fisheries:** Driftnets.**Distinctive Characters:** Body elongate, strongly compressed; snout profile prominently concave; anal fin with 46–52 soft rays; pectoral fins with 13–15 soft rays; spinous pelvic knob rudimentary or absent.**Colour:** Ground colour olive brown to grey, with blue lines and dark spots; juveniles may be yellowish-brown with dark spots.**Size:** To 100 cm (TL)***Cantherhines dumerilii*** (Hollard, 1854)**(Plate XL, 318)****FAO names:** Whitespotted filefish (En)
Bourse à taches blanches (Fr)**Local name(s):** Kako, Kookh, Sapna (Sin); Pokki, Khar, Har (Bal).**Habitat:** Inhabits shallow coral reefs.**Fisheries:** Gillnets.**Distinctive Characters:** Body deep and compressed; snout nearly straight; groove in interdorsal space for receiving first dorsal-fin spines when folded rearwards deep; pelvic-fin rudiment consisting of 3 pairs of encasing scales; anal fin with rays 28–35 soft rays; pectoral fin with 14 or 15 (rarely 14) soft rays.**Colour:** Pale grey to greenish brown with about 12–14 vertical dark bars on body, more evident posteriorly; lips whitish; soft dorsal, anal and pectoral fins pale yellowish; adult males with caudal fin, part of caudal peduncle, and peduncle spines orange.**Size:** To 38 cm (TL)

***Stephanolepis diaspros* Fraser-Brunner, 1940**

Local name(s): Kako, Kookh, Sapna (Sin); Pokki, Khar, Har (Bal).

Habitat: Lives in coastal rocky substrate, usually with vegetation.

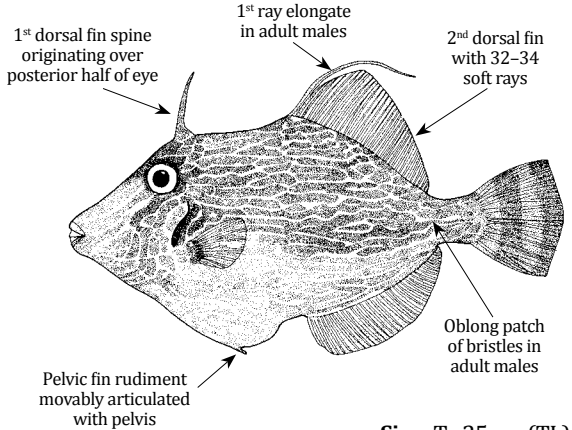
Fisheries: Gillnets.

Distinctive Characters: Body deep and compressed; snout concave; 1st dorsal fin spine armed with small to medium-sized posteriorly directed barbs, not received into a groove in back when depressed; anal fin with rays 31–34 soft rays; pectoral fin with 14–16 soft rays.

Colour: Greyish brown with darker blotches and a narrow network of pale lines, those on body tending to be more horizontal) arranged; fins pale, the caudal with 2 darker curved crossbars; juveniles plain yellow.

FAO names: Reticulated leatherjacket (En)
Bourse garmale (Fr)

(Plate XL, 319)



Size: To 25 cm (TL)

OSTRACIIDAE

Boxfishes

***Ostracion rhinorhynchus* Bleeker, 1851**

(Plate XL, 320)

FAO names: Horn-nosed boxfish (En)

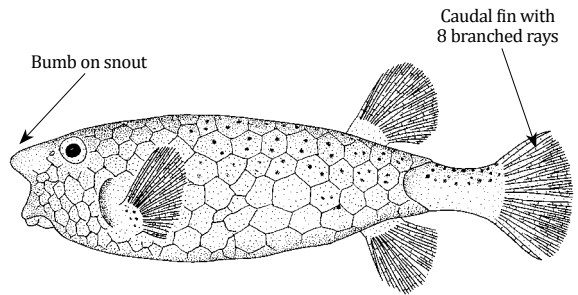
Local name(s): Bund khook, Jabal, Khook, Tidda (Sin); Tooru, Toora (Bal).

Habitat: Coastal on coral reefs and flat bottoms, to a depth of 50 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body almost completely encased in a rectangular bony shell or carapace with no ridge on dorsal midline; ridges and back gently rounded; no spines on carapace; spinous dorsal fin and pelvic fins absent; no isolated bony plates on caudal peduncle.

Colour: Body blue-grey with blue lines bordering hexagonal bony plates of carapace; many small black spots on carapace; fins pale.



Size: To 35 cm (TL)

***Tetrosomus gibbosus* (Linnaeus, 1758)**

(Plate XL, 321)

FAO names: Humpback boxfish (En)

Coffre bossu (Fr)

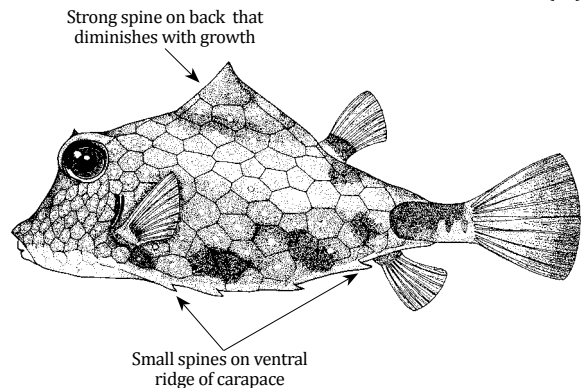
Local name(s): Bund khook, Jabal, Khook, Tidda (Sin); Tooru, Toora (Bal).

Habitat: Coastal, frequently found in seagrass beds and sandy bottoms to depths of 50 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Carapace triangular in cross-section; a strong spine on back and smaller ones on ventral ridges.

Colour: Body light brown to yellowish grey with brown network of hexagons and irregular blotches frequently found on side; dorsal, anal, and pectoral fins pale and caudal fin dusky.

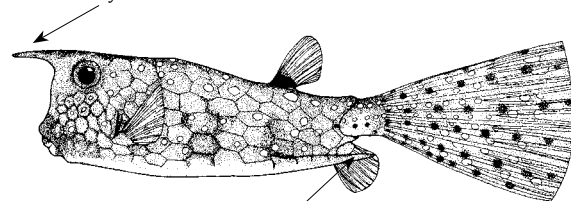


Size: To 30 cm (TL)

Lactoria cornuta (Linnaeus, 1758)

(Plate XL, 322)

FAO names: Longhorn cowfish (En)

Local name(s): Bund khook, Jabal, Khook, Tidda (Sin); Tooru, Toora (Bal).**Habitat:** Coastal on coral and rocky reefs, to depths of 100 m.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Caudal fin greatly elongate, one half to two-thirds of carapace length.**Colour:** Body yellowish brown with light blue spots on sides; dorsal, anal and pectoral fins pale; caudal fin yellowish with light blue spots.A pair of strong spines
about twice eye diameterA pair of stout spines projecting
posteriorly from postero-ventral
corner of carapace

Size: To 50 cm (TL)

TETRAODONTIDAE

Puffers

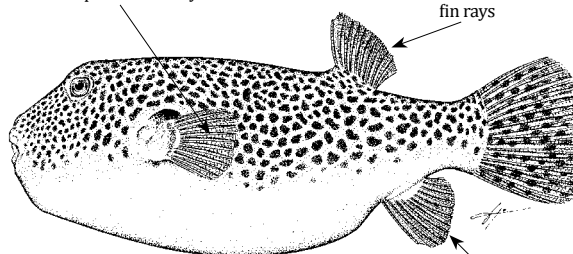
Arothron stellatus (Anonymous, 1798)

(Plate XLI, 323)

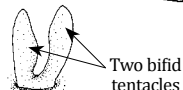
FAO names: Stellate puffer (En)

Local name(s): Kako, Kookh (Sin); Tooro (Bal).**Habitat:** Adults on deep slopes and outer reefs; juveniles inshore, usually on muddy substrates and estuaries.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Small spinules on head and body except top of snout, base of fins, and side of caudal peduncle, the spinules most evident ventrally; a single lateral line on side of body.**Colour:** Adults white with small black spots on head, body, and median fins, those on pectoral fin base and around gill opening largest; juveniles yellow to orange with small black spots, the abdomen with broad, irregular, oblique, black bands.

17-20 pectoral fin rays

11-12 dorsal
fin rays

11 anal fin rays

Two bifid
tentacles

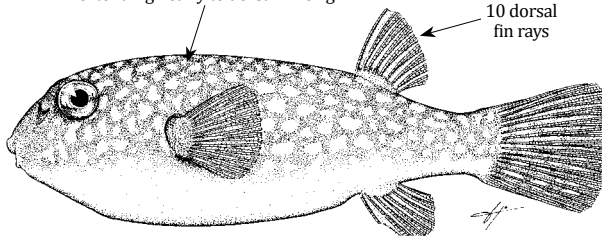
Nasal organ

Size: To 120 cm, common 54 cm (TL)

Chelonodontops patoca (Hamilton, 1822)

(Plate XLI, 324)

FAO names: Milkspotted puffer (En)

Local name(s): Kako, Kookh (Sin); Tooro (Bal).**Habitat:** Inhabits coastal waters and enters the lower reaches of rivers and lagoons.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** A patch of spinules on back from behind interorbital space nearly to dorsal fin and another on throat and abdomen; nasal organ a depression with a low rim and anterior and posterior flaps; 2 lateral lines, the upper joining the lower in the region above or behind anal fin; caudal fin slightly rounded.**Colour:** Grey to brown dorsally with large round to ovate white spots (sometimes with dark centres), shading to white ventrally; a broad streak of yellow on lower side within the white ventral side.Spinules patch on back
extending nearly to dorsal fin origin10 dorsal
fin rays

8 anal fin rays



Nasal organ

Size: To 38 cm (SL)

Lagocephalus inermis (Temminck & Schlegel, 1850)

FAO names: Smooth blaasop (En)

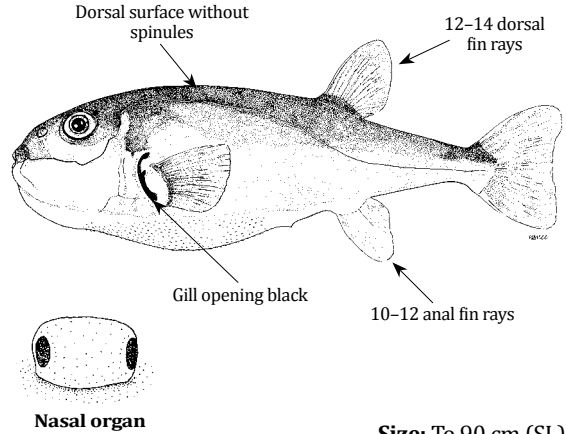
Local name(s): Kako, Kookh (Sin); Tooro (Bal).

Habitat: A marine species mainly occurring on the shelf edge.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Minute embedded spinules on belly from below eye almost to anus, otherwise body and head smooth; 2 lateral lines, the lower in a ventrolateral ridge from front of chin to lower base of caudal fin (applies to all species of the genus); nasal organ a tubular papilla set in a depression with a nostril at each end (also generic); caudal fin slightly concave.

Colour: Greenish or dark grey above, lower half of body silvery white; gill opening black internally; peritoneum pale grey.



Size: To 90 cm (SL)

Lagocephalus lagocephalus (Linnaeus, 1758)

FAO names: Oceanic puffer (En)
Compère océanique (Fr)

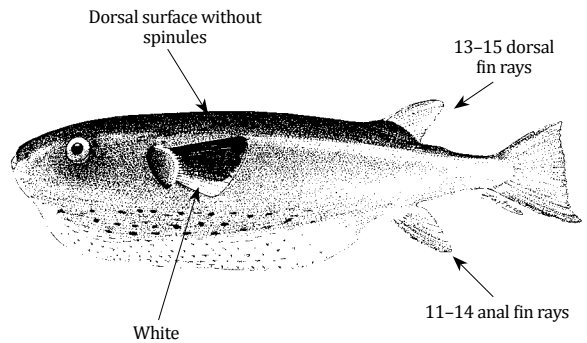
Local name(s): Kako, Kookh (Sin); Tooro (Bal).

Habitat: Primarily pelagic but occasionally entering estuaries.

Fisheries: Bottom trawls.

Distinctive Characters: Body smooth except for well-developed spinules on belly from chin to anus; nasal organ covered by small sac with 2 nostrils; caudal fin lunate, lower lobe longer than upper in adults.

Colour: Adults dark green, brownish grey, or blue above, white below; juveniles with about 9 bars on back, from eye to dorsal fin; dark spots on front and middle of belly and on side near pectoral base in specimens less than 33 cm; pectoral fins dark, except lower 1/3 of fin white.



Size: To 61 cm (TL)

Lagocephalus lunaris (Bloch & Schneider, 1801) (Plate XLI, 323)

FAO names: Lunartail puffer (En)

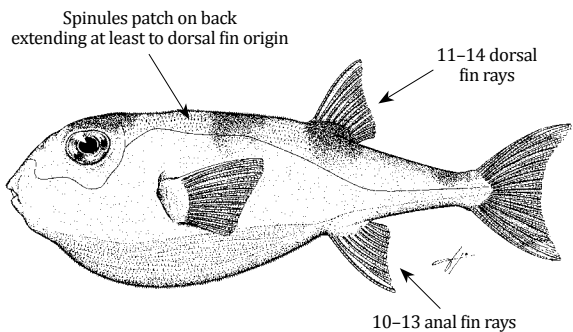
Local name(s): Kako, Kookh (Sin); Tooro (Bal).

Habitat: Mainly marine, occasionally enters estuaries.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: A broad patch of spinules dorsally on head and body from above posterior edge of nostrils to origin of dorsal fin; patch of spinules ventrally on body from below anterior edge of eyes to below tip of pectoral fins; caudal fin deeply emarginate.

Colour: Grey dorsally without obvious dark markings, silvery on side and ventrally, sometimes with a golden sheen on lower side; caudal fin often yellowish grey on upper half, the lower half bluish.

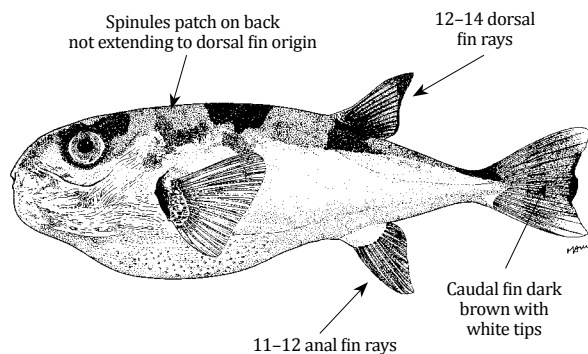
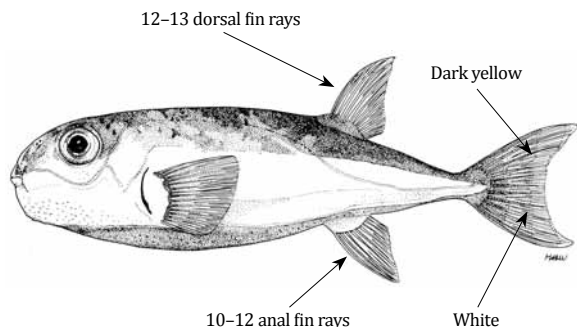


Size: To 45 cm (SL)

Lagocephalus guentheri Miranda Ribeiro, 1915

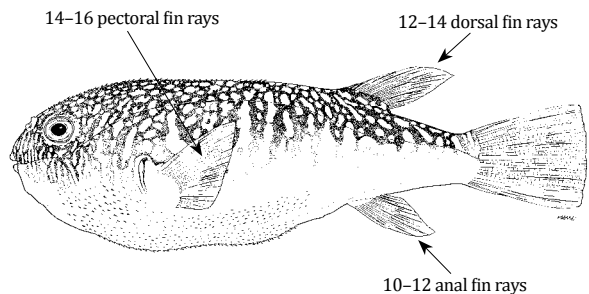
FAO names: Diamondback puffer (En)

(Plate XLI, 325)

Local name(s): Kako, Kookh (Sin); Tooro (Bal).**Habitat:** A marine species occurring on the continental shelf.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** A rhomboidal or elliptical-shaped spinule patch that extends posteriorly to the region dorsal to the posterior part of the pectoral fin; patch of spinules ventrally on body from below nostrils and ending a 1/2 to 2/3 eye diameter anterior to anus; caudal fin with a slight posterior extension medially that makes it appear to be double emarginate (only in fresh specimens).**Colour:** Dorsal half of body light brown with several dusky bands; side of head and body broadly silvery; ventral part of body silvery white; caudal fin dark brown, the lobe tips white; dorsal fin dusky, and pectoral and anal fins pale.**Size:** To 26 cm (TL)***Lagocephalus spadiceus*** (Richardson, 1845)FAO names: Half-smooth golden pufferfish (En)
Tétraodon-lièvre doré (FR)**Local name(s):** Kako, Kookh (Sin); Tooro (Bal).**Habitat:** Essentially an inhabitant of marine waters, but enters the mouths of rivers.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Similar to *Lagocephalus guentheri* but caudal fin slightly lunate, without a medial posterior extension.**Colour:** Dorsal half of body grayish brown, side silver white, and belly white; caudal fin with 2/3 of dorsal lobe yellow and 1/3 of ventral lobe white.**Size:** To 43.1 cm (TL)***Takifugu oblongus*** (Bloch, 1786)

(Plate XLI, 326)

FAO names: Lattice blaasop (En)

Local name(s): Kako, Kookh (Sin); Tooro (Bal).**Habitat:** Lives in shallow coastal waters, but enters brackish waters.**Fisheries:** Bottom trawls, gillnets.**Distinctive Characters:** Belly, top of head and front part of back covered with spinules (spinules on back and belly well separated); 2 lateral lines, the lower along the ventrolateral part of peduncle on a low skin ridge; nasal organ covered by small sac with 2 nostrils; caudal fin truncated**Colour:** Brownish above with pale spots, yellowish white below; transverse white bars on back from snout to caudal peduncle.**Size:** To 40 cm (TL)

DIODONTIDAE

Porcupinefishes – Spiny puffers – Burrfishes

Cyclichthys orbicularis (Bloch, 1785)

(Plate XLI, 327)

FAO names: Birdbeak burrfish (En)
Porc-épine bécard (Fr)

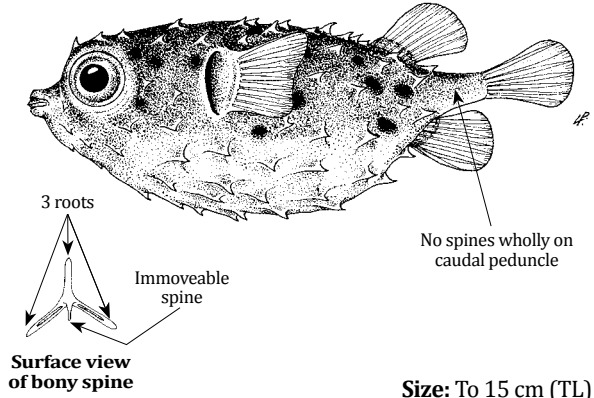
Local name(s): Kako, Kookh (Sin); Tooro (Bal).

Habitat: Found from surface to 150 m, usually over soft bottoms, but occasionally on reefs.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body bearing massive but relatively short, immovable spines; 4 dorsally between pectoral fin bases, 8–9 anterior to dorsal fin base; a short, movable spine near corner of mouth; all spines on top of head with 3-rooted; dorsal and anal fins rounded and set far back on body; pelvic fins absent (true of all Diodontidae); no fleshy tentacle.

Colour: Back brown to grey, white on belly; clusters of spots occasionally merged to form blotches; no dark spots on fins; a light area often surrounds the spine bases on back and sides.



Size: To 15 cm (TL)

Cyclichthys spilostylus (Leis & Randall, 1982)

(Plate XLI, 328)

FAO names: Spotbase burrfish (En)

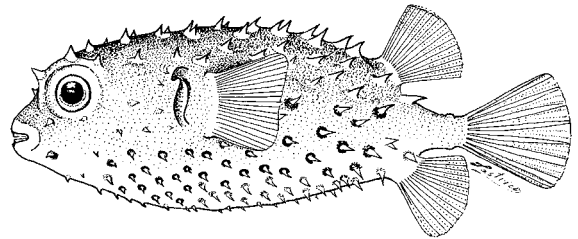
Local name(s): Kako, Kookh (Sin); Tooro (Bal).

Habitat: Found in coastal waters in the vicinity of reefs.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Similar to *Cyclichthys orbicularis* but spines more numerous, 5–6 dorsally between pectoral fin bases, 11–12 anterior to dorsal fin base; no movable spines; some spines on top of head with 4 roots; nasal organs separated by more than one eye diameter; teeth thick.

Colour: Body with many small unclustered black spots at base of spines laterally and ventrally.



Size: To 35 cm (TL)

Diodon holocanthus Linnaeus, 1758

(Plate XLI, 329)

FAO names: Longspined porcupinefish (En)
Porc-épine ballon (Fr)

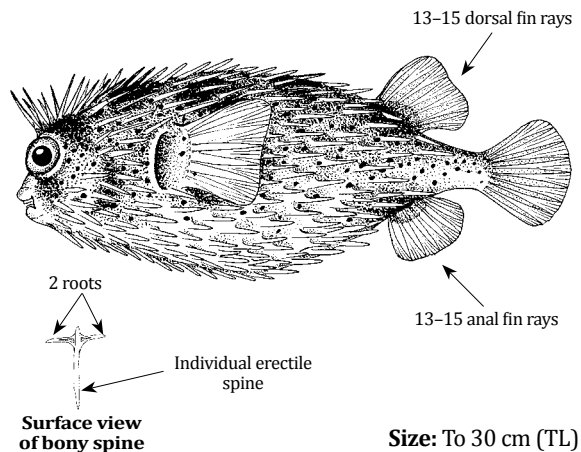
Local name(s): Kako, Kookh (Sin); Tooro (Bal).

Habitat: Juveniles pelagic, to about 6 to 9 cm; larger fish found in a variety of benthic habitats from shallow reefs to open, soft bottoms to at least 100 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Body bearing long erectile 2-rooted spines (below skin); no small downward-pointing spine below anterior margin of eye; 12–15 spines along ventral midline from lower jaw to anus; 12–16 spines from snout to dorsal base; no spines wholly on caudal peduncle; a pair of short barbels on chin.

Colour: Back brown to grey white on belly; 6 large dark blotches on back and head; many small black spots on back and sides; blotch below eye continues over interorbital; no spots on fins.



Size: To 30 cm (TL)

***Diodon hystrix* Linnaeus, 1758**

Local name(s): Kako, Kookh (Sin); Tooro (Bal).

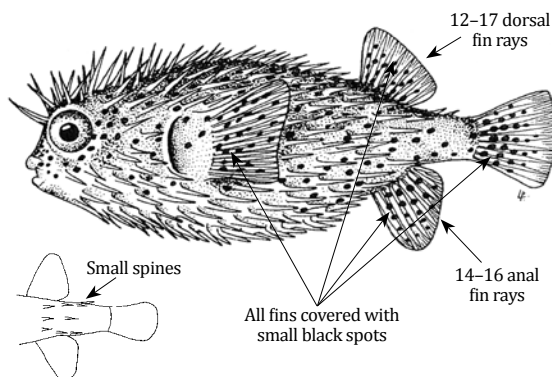
Habitat: Juveniles pelagic, to about 20 cm; larger fish on reefs to at least 50 m.

Fisheries: Bottom trawls, gillnets.

Distinctive Characters: Similar to *Diodon holocanthus* but one or more small spines dorsally on caudal peduncle; 14–19 spines along ventral midline from lower jaw to anus; 16–20 spines from snout to dorsal base; no tentacles on chin.

Colour: Benthic stage grey to brown with back, sides and fins covered with small black spots; dark gutter band present; belly white, surrounded by dusky ring.

FAO names: Spot-fin porcupinefish (En)
Porc-épine boubou (Fr)



Posterior part of body

Size: To 75 cm (TL)

MOLIDAE**Molas – Ocean sunfishes*****Mola mola* (Linnaeus, 1758)**

Local name(s): Adhi manger (Sin); Kup-e-paggas (Bal).

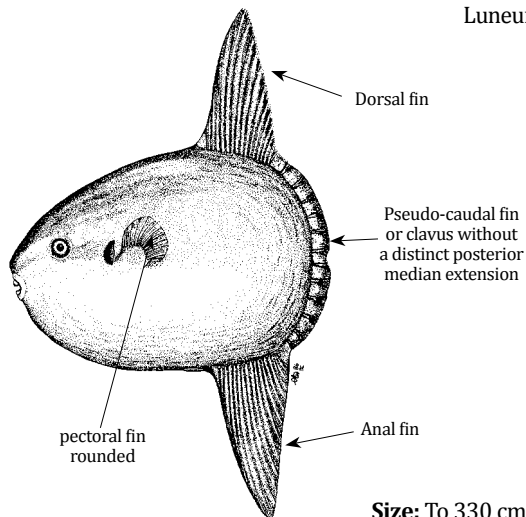
Habitat: Oceanic, often drifting at the surface on their side as if basking in the sun.

Fisheries: Driftnets.

Distinctive Characters: Body very deep, oval or almost circular in lateral profile, its depth 1–1.5 in body length; lips not funnel-like, closing in roundish form; skin with rough texture; pectoral fin small and rounded, not fitting into shallow groove in side of body; clavus supported by about 12 fin rays, of which 8 or 9 bear ossicles; ossicles widely separated, less broad than spaces between them; pelvic fins absent.

Colour: Grey to dark grey on back; grey-brown or brownish green on sides, with silvery reflections and dusky below; sides sometimes with small light spots.

FAO names: Ocean sunfish (En)
Luneur (Fr)



Size: To 330 cm (TL)

***Ranzania laevis* (Pennant, 1776)**

(Plate XLI, 330)

FAO names: Slender mola (En)
Ranzania (Fr)

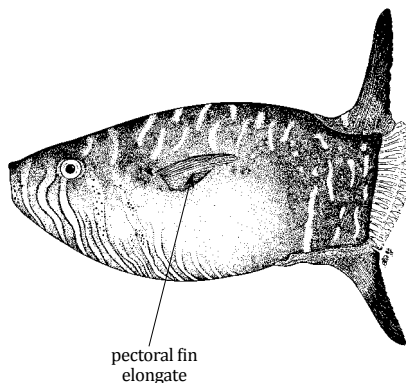
Local name(s): Adhi manger (Sin); Kup-e-paggas (Bal).

Habitat: Oceanic, epipelagi and generally solitary.

Fisheries: Driftnets.

Distinctive Characters: Body moderately deep, more or less oblong in lateral profile, body depth approximately 2 times in body length; lips funnel-like, closing as a vertical slit; skin smooth; pectoral fins elongate, fitting into shallow groove in side of body; pelvic fins absent.

Colour: Dorsal half of body dark blue; side and ventral parts of body brilliant silver with several blue, grey, brown or green darkish stripes and spots; series of dark stripes curving below and behind eye to ventral part of head and body.



Size: To 90 cm (TL)

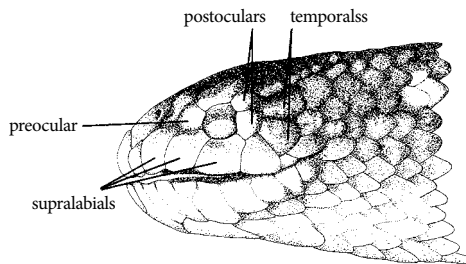
SEA SNAKES

Sea snakes are principally adapted to the marine environment. They inhabit shallow waters along coasts and islands, river mouths, and ascend into rivers up to more than 100 miles from the sea. The most typical feature of sea snakes is the **vertically flattened paddle-like tail**, which is absent in all other aquatic or terrestrial snakes. Nostrils are small with interior valves which are closed when the snake is diving. Eyes are small with round pupils. Venomous fangs are present at the front of the upper jaw, they are usually followed by solid teeth posteriorly on the maxillary. Ventral scutes are much reduced; dorsal scales are juxtaposed in most species.

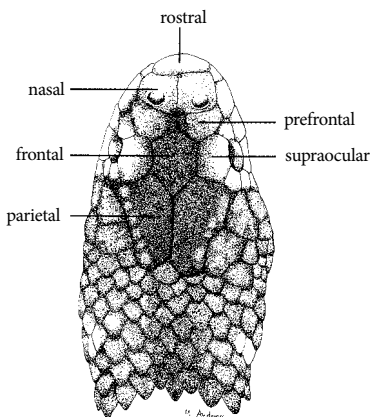
Sea snakes occur in tropical and subtropical regions. As predators on top of the food chain, they are of great ecological importance. Little is known about their biology. They are diurnal or nocturnal and feed almost entirely on fish and fish eggs. The genus *Laticauda* is oviparous (egg-laying) while all other sea snakes are viviparous (livebearing), giving birth to 2–18 live young at sea. Osmoregulation is achieved through sublingual salt glands which secrete a hypersaline fluid. In Pakistan, sea snakes are caught in almost all types of fishing gears and are usually discarded by fishermen. Sea snake bite can be a cause of fatalities, though no confirmed reports have yet been received. Typical victims are fishermen handling gape nets, sorting fish on a trawler, or dragging a net while wading in muddy coastal waters or river mouths. Some sea snakes are gentle, inoffensive creatures which bite only when provoked, but other species are much more aggressive (e.g. *Hydrophis stokesii*, *Hydrophis schistosa*, *Hydrophis ornatus*) (Rasmussen, 2001). Even though sea snakes rarely inject much of their venom, so that frequently no or only trivial severity of envenomation is recognizable, all sea snakes should be handled with great caution. **If a snake bite has occurred, the following first-aid procedures are recommended:** if the bite is on an arm or leg, a broad crepe bandage (or material of similar type) should be wrapped immediately around the area of the bite. The bandage must be very tight and extended over the entire arm or leg. Then a splint should be used to immobilize the arm or leg and hospital treatment must be sought as quickly as possible. If the bite is on the body, firmly press the area of the bite and look for hospital treatment immediately.

Ten species of sea snakes are included in the “Guide to Species”. Five species, *Acrochordus granulatus* (Schneider, 1799), *Hydrophis cantoris* Günther, 1864, *Hydrophis caeruleus* (Shaw, 1802), *Hydrophis fasciatus* (Schneider, 1799) and *Hydrophis mamillaris* (Daudin, 1803) known to occur in Pakistani waters are not included in the guide. Users can refer to The Reptile Database, <http://www.reptile-database.org> (Uetz and Jirí Hošek, 2015) for detailed information on these species. Information and figures in this chapter are adopted from Carpenter *et al.* (1997), Rasmussen (2001), Uetz and Hošek (2015).

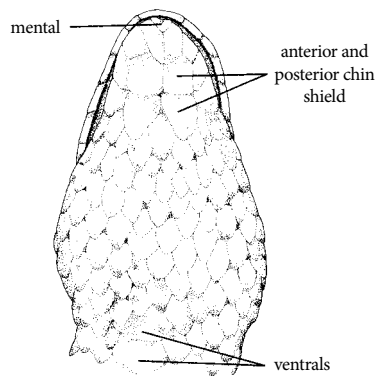
TECHNICAL TERMS



Head (lateral view)



Head (dorsal view)



Head (ventral view)

IDENTIFICATION NOTE

Identification of sea snakes to the species level is quite problematic. The genus *Hydrophis* especially shows wide interspecific variation which makes the exclusive use of external characters difficult for identification. For species identification, only characters that are visible without using a microscope are included in the keys. The shields on the head and the number of scale rows around the body are particularly important, as well as the shape of head, the size and number of ventral scales, and the position of the maxillary bone.

When **counting scale rows around the neck and body** it is important to remember that the count around the neck is a minimum count, while the count around the body is a maximum count. To be sure of the minimum count around the neck, it is necessary to count the scale rows 3 or 4 times, starting 1 ½ head length behind the head and then 2, 2 ½, and 3 head lengths behind the head. When counting scale rows around the body the maximum count is normally found just behind the midbody. However, to be sure of the precise maximum count it is helpful to count 3 or 4 times between midbody and anus. All scale rows are counted in a straight line around the body, starting at a ventral and counting each scale along this line. The ventral scale is not included in the dorsal scale-row count.

In the key to species of *Hydrophis* it was necessary to include the **count of maxillary teeth** behind the venomous-fangs. Use a needle to push the gum around the teeth to above the maxillary bone and keep the gum in this position by fixing the needle at the roof of mouth (sometimes it is necessary to use 2 needles). A microscope is required to count the maxillary teeth.

ELAPIDAE
(HYDROPHIINAE)

Hydrophis curtus (Shaw, 1802)

(Plate XLII, 331)

FAO names: Short sea snake (En)
Lapémide court (Fr)

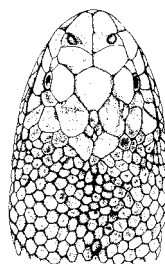
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Inhabits coastal waters.

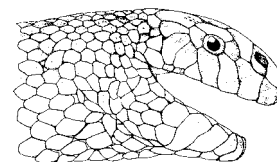
Fisheries: No importance to fishery.

Distinctive characters: Head short, slightly distinct from neck, body short; rostral wider than high, trifid; single pre- and postocular, parietals broken into 5–6 small scales; nasal suture touching second supralabial; 6–7 supralabials, fourth touching eye, 9 infralabials; body scale smooth or with a central tubercle, male with short spine on lowest row, 35–39 at midbody; ventrals small, 165–180, usually distinct anteriorly, very small or absent posteriorly; maxillary teeth behind the venom-fangs 3–6.

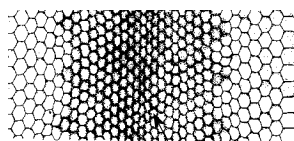
Colour: Body greenish or yellowish above, whitish below, with 44–55 dark greenish to black bands, which sometimes fuse longitudinally on dorsum, narrowing laterally (sometimes bands meet below, encircling the body).



Head (dorsal view)



Head (lateral view)



44–55 narrow bands on body

Size: To 110 cm (TL)

Hydrophis cyanocinctus Daudin, 1803

(Plate XLII, 332)

FAO names: Annulated sea snake (En)

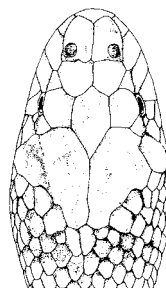
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Inhabits coastal waters.

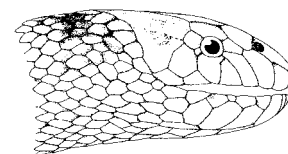
Fisheries: No importance to fishery.

Distinctive characters: Head moderately small, slightly distinct from neck, rostral prolonged ventrally; dorsal body scales imbricate with 2–3 keels, or row of tubercles, 38–48 at midbody; supralabials 7–8, second in contact with prefrontal, 2–3 touching eye, 9–10 infralabials; ventrals distinct, anteriorly about twice the size of adjacent scales, 314–384; maxillary teeth behind the venom-fangs 5–8.

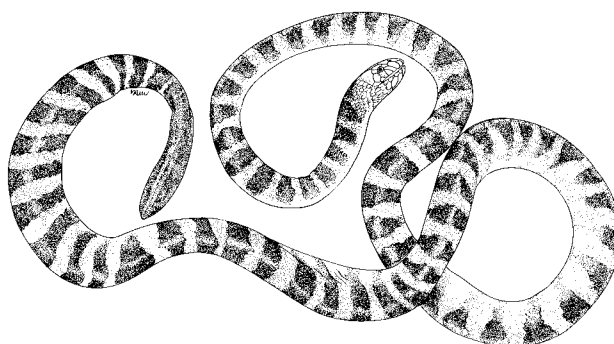
Colour: Body usually pale yellow green or greyish above, whitish below with 47–70 dark bluish or black bands. Bands very variable, from encircling completely the body to narrowing out to disappear laterally. On the posterior part of the body the dorsal bands are always broader than the interspaces between them; banding pattern fades with age.



Head (dorsal view)



Head (lateral view)



Size: To 275 cm (TL)

Hydrophis gracilis (Shaw, 1802)

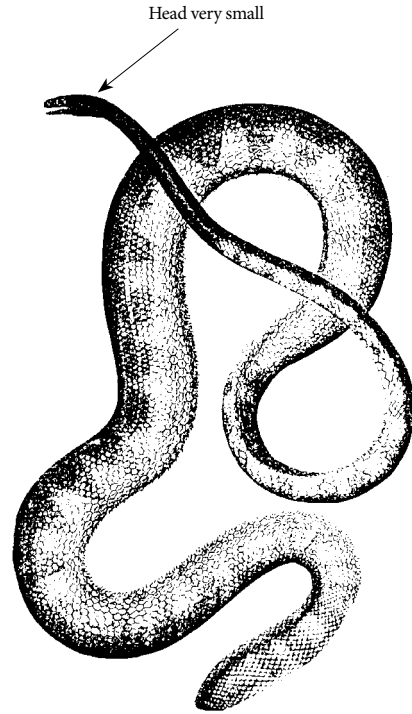
(Plate XLII, 333)

FAO names: Small-headed sea snake (En)**Local name(s):** Samundri sanp (Sin); Daryai mar (Bal).**Habitat:** Inhabits coastal waters.

Fisheries: No importance to fishery.

Distinctive characters: Head small, body long and slender anteriorly; only second supralabial in contact with prefrontal; 17–21 scale rows around neck, 30–36 around thickest part of body (increase from neck to midbody 18–24); ventrals divided by a longitudinal fissure, 220–350; maxillary teeth behind venom-fangs 5–6.

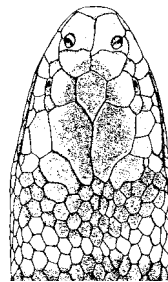
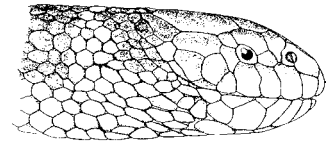
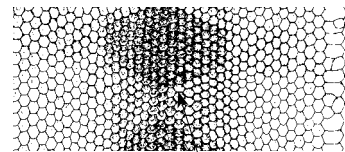
Colour: Ground colour yellowish or whitish, with black or greyish bands partially joined together in a zig-zag pattern.

**Size:** To 122 cm (TL)***Hydrophis lapemoides*** (Gray, 1849)**FAO names:** Persian Gulf sea snake (En)**Local name(s):** Samundri sanp (Sin); Daryai mar (Bal).**Habitat:** Inhabits coastal waters.

Fisheries: No importance to fishery.

Distinctive characters: Temporals small, 2+3 or 3+3; supralabials 8. Second in contact with prefrontal, third and fourth or third to fifth touching eye; dorsal scales at midbody 39–45, a feeble tubercle or keel on scales of posterior half of body; ventral scales 324–346; maxillary teeth behind poison-fangs 8–11.

Colour: Striking patterning comprising 33 to 43 dark bands along the length of the body, contrasted against a background colour of yellow or pale green. The bands become significantly wider on the upper surface of the body relative to the sides, but are thin on the tail, which has a dark tip. Head with a narrow, yellow band in front of the eyes.

**Head (dorsal view)****Head (lateral view)**33–43 blackish bands on body
(interspaces 2.5 times wider than bands)**Size:** To 96 cm (TL)

Hydrophis ornatus (Gray, 1842)

FAO names: Reef sea snake (En)

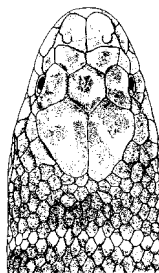
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Inhabits coastal waters.

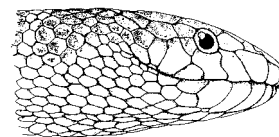
Fisheries: No importance to fishery.

Distinctive characters: Head large, body robust, not elongate, greatest diameter posteriorly about twice that of the neck; 1 preocular. 2 postoculars; 2 anterior temporals; 7–8 supralabials, second in contact with prefrontal, third and fourth in eye; dorsal scales slightly imbricate or juxtaposed, 34–41 rows on neck, 33–55 at midbody; ventrals 209–312, anteriorly about twice as large as adjacent scales, narrowing posteriorly; maxillary teeth behind venom-fangs 9–13.

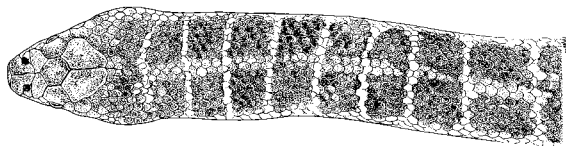
Colour: Body grayish or light olive to almost white above with broad dark bars or rhomboidal spots separated by narrow interspaces; yellowish or whitish below.



Head (dorsal view)



Head (lateral view)



Size: To 115 cm (TL)

Hydrophis platurus (Linnaeus, 1766)

FAO names: Yellowbelly sea snake (En)
Serpent marin jaune (Fr)

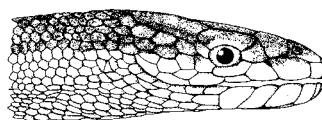
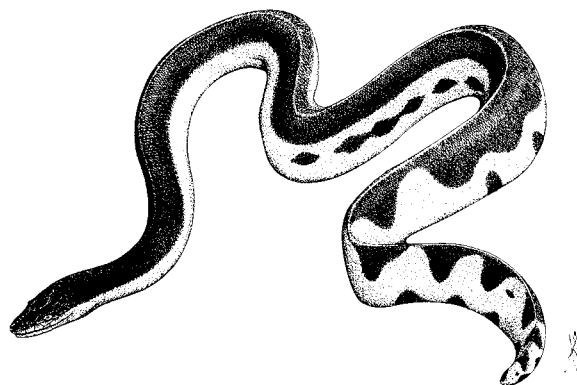
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Pelagic, lives near the surface.

Fisheries: No importance to fishery.

Distinctive characters: Head narrow, snout elongate, nostrils superior, nasal shields in contact with one another; prefrontal in contact with 2nd upper labial; 1–2 pre- and 2–3 postoculars; 2–4 small anterior temporals; 6–8 upper labials, fourth below eye or separated by a subocular; body scales juxtaposed, sub-quadrangular in shape, in 45–55 rows around thickest part of body; ventral scales, 264–406, very small and, if distinct, divided by a longitudinal groove, but usually indistinguishable from adjacent body scales; maxillary teeth behind venom-fangs 7–11.

Colour: Variable but most often distinctly bicolored, black above, yellow or brown below, the dorsal and ventral colors sharply demarcated from one another; ventrally there may be a series of black spots or bars on the yellow or brown background, or the yellow may extend dorsally so that there is only a narrow middorsal black stripe, or a series of black crossbars.



Head (lateral view)

Size: To about 100 cm (TL)

Hydrophis schistosus Daudin, 1803

(Plate XLII, 334)

FAO names: Beaked sea snake (En)
Enhydrine ardoisée (Fr)

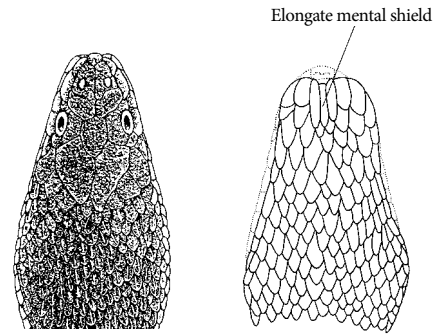
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Very abundant on mud flats along coastal areas and in river mouths. Aggressive and very poisonous.

Fisheries: No importance to fishery.

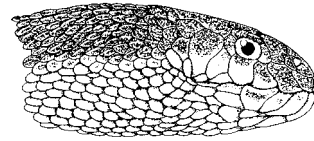
Distinctive characters: Head scales densely tuberculated, rostral produced downward in a beak; mental scute small, partly concealed within mental groove; scale rows around neck 40–55, 51–65 at midbody, scales somewhat imbricate or juxtaposed, with short central keel; ventrals 300–365; 2–6 preanals; 3–4 maxillary teeth behind venom-fangs; 5–6 palatine teeth, larger than pterygoid teeth.

Colour: Young dark gray above, whitish below, with dark gray or black annuli; pattern disappears in adults which are uniform gray in colour.



Head (dorsal view)

Head (ventral view)



Head (lateral view)

Size: To about 140 cm (TL)

Hydrophis spiralis (Shaw, 1802)

(Plate XLII, 335)

FAO names: Yellow sea snake (En)
Hydrophide-spirale (Fr)

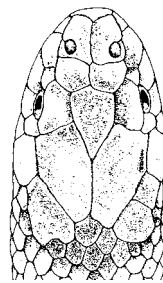
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Inhabits coastal waters.

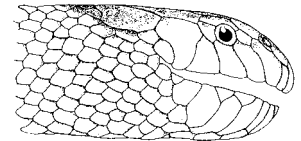
Fisheries: No importance to fishery.

Distinctive characters: Scales on thickest part of body imbricate with rounded or pointed tips, 25–31 rows around neck, 33–38 around midbody; normally 1 anterior temporal; 6–8 upper labials, third and fourth or third to fifth in eye; ventrals 340–350, distinct throughout, about twice as broad as adjacent body scales; enlarged preanals 2–5; 6–7 maxillary teeth behind venom-fangs.

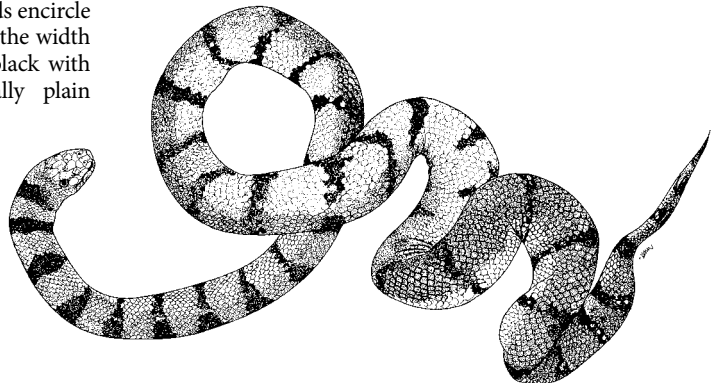
Colour: Yellowish or yellowish green above, dorsal scales black edged; 35–54 narrow black bands encircle body, the bands usually less than one-third the width of the lighter interspaces; head in young black with yellow horseshoe-shaped marking (usually plain yellow in adults).



Head (dorsal view)



Head (lateral view)



Size: To at least 275 cm (TL)

Hydrophis stokesii (Gray, 1846)

FAO names: Stoke's sea snake (En)
Astrotie de Stokes (Fr)

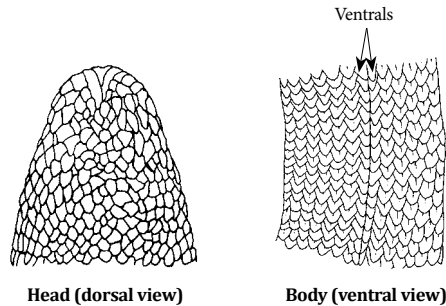
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Inhabits coastal waters.

Fisheries: No importance to fishery.

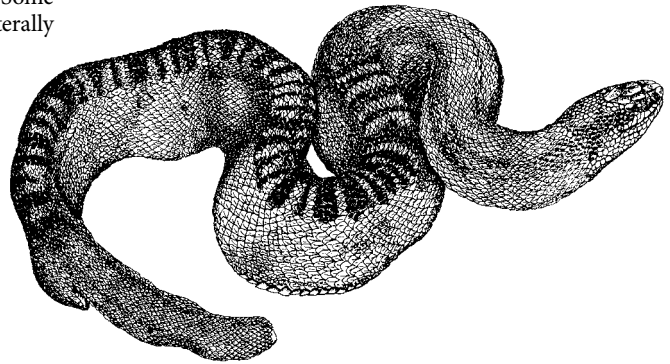
Distinctive characters: Head and body very stout; scale rows around neck 37–47, 47–59 at midbody, strongly imbricate, keeled; ventrals 226–286, divided into pairs of overlapping foliiform scales, except on throat (in adult, the ventrals form a marked ridge in the posterior part of the body); maxillary teeth behind venom-fangs 6–7.

Colour: Highly variable; body ranging from brown to more creamy-white above, pale brown or whitish below. Sometimes it has 32–37 dark or black bands above, each tapering to a point laterally. Some specimens have spots in between the bands, laterally as well as ventrally.



Head (dorsal view)

Body (ventral view)



Size: To about 180 cm (TL)

Hydrophis viperinus (Schmidt, 1852)

(Plate XLII, 336)

FAO names: Viperine sea snake (En)

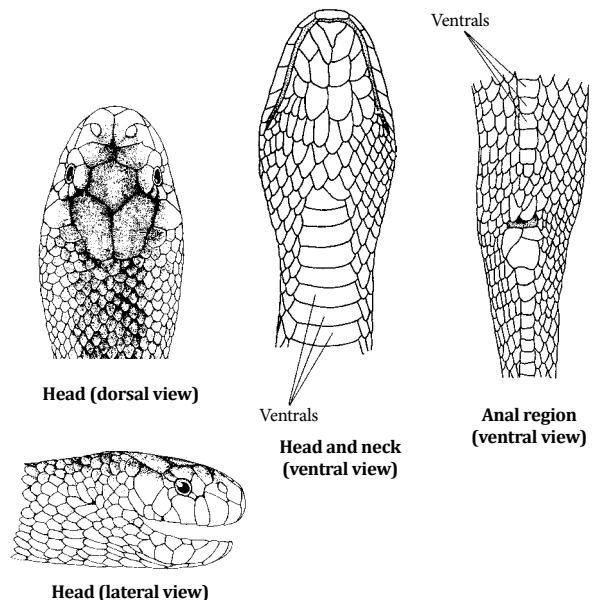
Local name(s): Samundri sanp (Sin); Daryai mar (Bal).

Habitat: Inhabits coastal waters.

Fisheries: No importance to fishery.

Distinctive characters: Head short, wide; rostral with three short projections fitting into chin grooves; dorsal scales hexagonal, juxtaposed, in 27–34 rows on the neck, 37–50 at midbody; ventrals 233–280, anteriorly about half the width of the body, narrowing posteriorly to about twice the width of the adjacent scales, or slightly less; nostrils superior, nasal shields in contact with one another; prefrontals longer than broad, not in contact with upper labials; 1, rarely 2, pre- and 1–2 postoculars; 7–9 upper labials, 3–5 bordering eye (sometimes only 3–4 or 4–5); usually 1 anterior temporal, occasionally 2 or 3; maxillary teeth behind the venom-fangs 5.

Colour: Body color, more or less bicolored, gray above, white below, the 2 usually clearly demarked on the sides, often with 25–35 dark rhomboidal spots, rarely with dark bands.



Head (dorsal view)

Ventrals
Head and neck
(ventral view)

Ventrals
Anal region
(ventral view)

Head (lateral view)

Size: To 92.5 cm (males), 82 cm (females) (TL)

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INDEX OF SCIENTIFIC AND VERNACULAR NAMES

Explanation of the System

Italics: Valid scientific names (genera and species).

ROMAN: Family names.

ROMAN: Names of groups, classes, orders, suborders, and subfamilies.

Roman: FAO and vernacular names.

A	
Aab-rose	232
Aa hoor	318
Aal	226, 227
Aalore	175, 176
Aam	82
Aar	75
abei, Cheilopogon	178
Abe's flyingfish	178
Ablennes hians	175
Abudefduf bengalensis	297
Abudefduf sordidus	298
Abudefduf vaigiensis	297
Acanthocephala indica	293
Acanthocybium solandri	138, 313
Acanthopagrus arabicus	260
Acanthopagrus berda	260
Acanthopagrus catenula	260
Acanthopagrus sheim	261
acanthorhinus, Ostichthys	181
ACANTHURIDAE	306, 137
ACANTHUROIDEI	136
Acanthurus mata	306
Acanthurus monroviae	5, 306
Acanthurus nigricauda	307
Acanthurus xanthopterus	307
Acetes indicus	11
Achopitho	321
Acrochordus granulatus	341
Acropoma japonicum	194
ACROPOMATIDAE	123, 194
Acroteriobatus salalah	98
acuminatus, Heniochus	291
acus, Tylosurus	176
acuta, Dussumieria	156
acutidens, Negaprion	85
acutipinnis, Sphyræna	308
acutus, Rhizoprionodon	86
Ada-san	152, 155
Adda saan	157
adeni, Synagrops	194
Aden splitfin	194
Adhi-kulai	203
Adhi kuli	204
Adhi manger	340
Adrakh	282-287
aegina, Amphioctopus	65
Aesopia cornuta	326
Aetobatus flagellum	105
Aetobatus ocellatus	106
Aetomylaeus milvus	106
Aetomylaeus nichofii	106
affinis, Euthynnus	314
affinis, Metapenæus	12
affinis, Pagellus	263
African pompano	229
African spadefish	304
africanus, Trachinotus	229
Agujon needlefish	176
aheneus, Pomadasys	256
Aigle de mer léopard	106
Aiguille crocodile	177
Aiguillette ocelée	176
Aiguille voyeuse	176
Aileron argente	321
Aileron chinois	321
Aiyan manger	75
Ala-laiduk	301
albacares, Thunnus	317
Albacore	138, 313
albella, Sardinella	153
albescens, Remora	213
albiconus, Goniopora	3
albida, Daysciaena	273
alboguttata, Parapercis	301
Albula argentea	144
ALBULIDAE	113
ALBULIFORMES	113
alcocki, Aristeus	11
alcocki, Atrobuca	273
Alcock's scorpionfish	187
aldabraensis, Pseudochromis	203
Alectis	126
Alectis ciliaris	214
Alectis indica	215
Alepes djedaba	215
Alepes kleini	215
Alepes melanoptera	216
Alepes vari	216
alfredi, Manta	107
Alfred's manta	107
Alice franche	157
Alice taches d'or	157
Alopias pelagicus	74
Alopias superciliosus	74
ALOPIIDAE	70, 74
Alose à gros yeux	161
Alose blanche	152
Alose chaconde	151
Alose-écaille indienne	162
Alose indienne	161
Alose palli	152
Alose paluva	155
Alose toli	156
altimus, Carcharhinus	79
Aluterus monoceros	334
Aluterus scriptus	334
Alwandi	88
Amberstripe scad	224
amblycephalus, Johnius	274
Amblyraja reversa	100
amblyrhynchoides, Carcharhinus	80
amboinensis, Carcharhinus	80
Amlooshk	232
Amoy croaker	272
amoyensis, Argyrosomus	272
Amphioctopus aegina	65
Amrusk	232
Anadara antiquata	4
Anchois bombra	157
Anchois indien	157
Anchois-moustache cornu	159
Anchois-moustache cristal	160
Anchois-moustache malabar	159
Anchois-moustache mamata	158
Anchois-moustache mandeli	158
Anchois-moustache sardelle	159
Anchovies	3, 115, 157
ANCISTROCHEIRIDAE	58
Ancistrocheirus lesueurii	58
ancylostoma, Rhina	99
Andhi mangar	77
anea, Pennahia	279
Angelfishes	132
Angelot	97
Anglerfishes	119
angustirostris, Tetrapturus	320

- annandalei, Rhinobatos cf.* 4, 99
 Annandale's guitarfish 99
annularis, Pomacanthus 292
 Annulated sea snake 343
Anodontostoma chacunda 151
 Anoli aile longue 169
 Anoli croix 170
 Anoli indien 170
 Anoli tumbil 169
Anoxypristis cuspidata 95
ANTENNARIIDAE 119, 174
Antennarius hispidus 174
Antennarius indicus 174
Antennarius nummifer 174
antiquata, Anadara 4
 antique ark 4
Aphareus furca 239
Aphareus rutilans 239
APISTIDAE 122, 186
Apistus carinatus 186
Apogon cf. talboti 206
Apogonichthyoides cf. maculipinnis 206
Apogonichthyoides enigmaticus 206
Apogonichthyoides pharaonis 207
Apogonichthyoides pseudotaeniatus 207
Apogonichthyoides sialis 207
APOGONIDAE 125, 206
Aprion virescens 239
 Arabian banded whipray 102
 Arabian blackspot threadfin 281
 Arabian carpet shark 75
 Arabian demoiselle 298
 Arabian Flower Crab 33
 Arabian guizzard shad 153
 Arabian monocle bream 271
 Arabian pandora 263
 Arabian parrotfish 299
 Arabian red shrimp 11
 Arabian scad 231
 Arabian sea meagre 272
 Arabian sillago 211
 Arabian smooth-hound 78
 Arabian toadfish 173
 Arabian whip lobster 27
 Arabian yellowfin seabream 260
arabica, Nematalosa 153
arabica, Pterygotrigla 190
arabica, Sillago 211
arabicum, Chiloscylidium 75
arabicus, Acanthopagrus 260
arabicus, Scarus 299
Archamia bleekeri 208
archipelagicus, Hemiramphus cf. 177
ARCIDAE 37, 40
arel, Cynoglossus 328
 Areolate grouper 196
areolatus, Epinephelus 196
argalus, Platybelone 175
argentea, Albula 144
argenteus, Monodactylus 290
argenteus, Pampus 321
argenteus, Pomadasys 257
argentimaculatus, Lutjanus 241
argo, Argonauta 67
Argonauta argo 67
Argonauta hians 67
 Argonaute mineur 67
 Argonaute papier 67
ARGONAUTIDAE 67
 Argonauts 53, 67
argus, Scatophagus 305
argyreus, Pomadasys 257
Argyrops spinifer 261
Argyrosomus amoyensis 272
Argyrosomus heinii 272
Argyrosomus japonicus 273
ARIIDAE 116, 163
Ariomma indicum 321
 Ariommas 139, 321
ARIOMMATIDAE 139, 321
 Ariomme indienne 321
Ariosoma gnanadossi 148
ARISTAEIDAE 9, 11
 Aristaeid shrimps 9, 11
Aristeus alcocki 11
arius, Arius 163
Arius arius 163
Arius maculatus 163
Arius subrostratus 164
 Ark shells 37, 40
armatus, Carangoides 217
 Armorheads 132, 292
Arnoglossus 140
Arothron stellatus 336
 Arrow bulleye 205
arsius, Pseudorhombus 322
Aseraggodes cf. umbratilis 326
Ashoret lunaris 35
 asiatic hard clam 4
 Asiatic hard clam 46
 Asp. 318-320
aspera, Trachysalambria 20
asperrimus, Urogymnus 105
aspinosa, Parasclopsis 269
 Astrotie de Stokes 347
Atelomycterus marmoratus 77
Atrina pectinata 41
Atrina vexillum 41
Atrobucca alcocki 273
atropos, Atropus 216
Atropus atropos 216
Atule mate 217
audax, Kajikia 319
Aulopareia ocellata 303
AULOPIFORMES 117
aureus, Photopectoralis 236
Aurigequula fasciata 233
Aurigequula longispina 233
australasicus, Scomber 315
australis, Remora 214
 Auxide 314
Auxis 138
Auxis rochei 313
Auxis thazard 314
Avicennia marina 1, 3
axillaris, Kathala 277
B
 Baangra 315
 Baanore 297, 298
Babylonia spirata 4, 51
 Babylonie spiralée 51
BABYLONIIDAE 49, 51
 Backwater hard clam 45
 Badam 45
 Baddi 274-277, 279
 Badi 273

Bagari	313	Bearded croaker	274
Bagga	144	Beardless sea catfish	164
bagio, Muraenesox	151	Beauclaire miroir	205
Bagore	82	Bécune chevronnée	310
Bah-mear	260	Bécune de Forster	309
Bahnbi	203	Bécune jello	309
baillonii, Trachinotus	230	Bécune obtuse	310
bajad, Carangoides	217	Bee-chum	161, 162
Baka	204, 205	belangerii, Johnius	274
Bakka	212, 215, 216	Belanger's croaker	274
Bakko	204, 205, 228	belcheri, Crassostrea	42
Bakoi	215-217, 228	BELONIDAE	120, 175
Bako patar	215, 216	BELONIFORMES	120
Baliste dents rouges	333	Bengal corvina	273
Baliste étoilé	332	bengalensis, Abudedefduf	297
Baliste masqué	333	bengalensis, Lutjanus	241
Baliste rude	332	Bengal sergeant	297
BALISTIDAE	142, 332	Bengal snapper	241
Bam	148-151	Bengal tonguesole	329
Bambhol	87	Bentosema fibulatum	3, 171
Bambi	203	Bentosema pterotum	2, 3, 171
Bambol	168, 169	berda, Acanthopagrus	260
Bamboli	87	BERYCIFORMES	120
Bam khaga	168, 172	Bhabi	301
Banana prawn	17	Bhambore	211, 212
Banded eagle ray	106	Bhangan	293-295
Banded grunter	258	Bheel-aalari	183-190, 300
Banded ilisha	162	Bheel-alari	173, 174
Banded needlefish	176	Bhora	274-277, 279
Bandfishes	293	Bhusa	11, 83
banksii, Onychoteuthis	62	Bhuthar	88
Banore	260	Bhuth-khair	97
Banzali	214	biaculeatus, Triacanthus	331
Bapha	96, 105	biauritus, Otolithoides	278
Bappa	78	Big blue octopus	66
Baradri	97	Bigeye barracuda	309
Baran	77	Bigeye houndshark	78
Barbel flyingfish	179	Bigeye ilisha	161
Barbure à quatre doigts	280	Bigeyes	124, 204
Barbure à tâche noire d'Arabie	281	Bigeye scad	228
Barbure indien	281	Bigeye snapper	245
Barbure paradis	282	Bigeye thresher	74
Barbure rayé	282	Bigeye trevally	222
Barbure sept doigts des Indes	281	Bigeye tuna	317
Barcheek trevally	220	Bigfin reef squid	60
Bare sar ka kiddi	21	bigibbus, Kyphosus	288
Bargai	163, 164, 166	Bignose shark	79
Bar-kali	83	Bigsnout croaker	276
Barkali	81	Bijli	96
Barracuda	309	bilineata, Crassostrea	43
Barracudas	3, 137, 308	bilineata, Netuma	166
barracuda, Sphyaena	309	bilineata, Paraplagusia	330
Barracudinas	117	Bili tiger	18
Barramundi	193	Billfishes	3, 138
Barred queenfish	227	Billi	75-77, 84
Barrelfishes	320	bimaculata, Scolopsis	270
Bar-rug	152	bimaculatus, Iniistius	133, 134
Bar sar ka kiddi	20	Binday-wal	225
Bartail flathead	192	bindus, Photopectoralis	237
Batfishes	119, 175	bipinnulata, Elagatis	225
Bathygobius	136	bipunctatus, Nemipterus	267
Bathymyrus echinorhynchus	149	Birdbeak burrfish	339
Batli	317	birostris, Manta	108
BATOID FISHES	89	bispinosa, Lepidotrigla	189
Batoids	4, 5	BIVALVES	4, 36
Batrachcephalus mino	164	Black and white snapper	248
BATRACHOIDIDAE	119, 173	Blackbanded trevally	229
BATRACHOIDIFORMES	119	Black-barred halfbeak	177
Beaked sea snake	346	Blackfin barracuda	311

- Blackfin eel goby 303
 Blackfin scad 216
 Blackfin stonefish 188
 Black jack 222
 Black-lip pearl oyster 40
 Black marlin 318
 Blackmouth angler 173
 Black pomfret 226
 Blackspot sergeant 298
 Blackspot snapper 242
 Blackspotted gurnard 190
 Blackspotted rubberlip 254
 Black-streaked monocle bream 271
 Blacktail snapper 243
 Blacktip reef shark 83
 Blacktip sardinella 154
 Blacktip sea catfish 167
 Blacktip shark 82
 Blacktip soldierfish 181
 Blacktip trevally 221
 Blanche à pagaies 253
 Blanche commune 252
bleekeri, Archamia **208**
bleekeri, Epinephelus **196**
bleekeri, Himantura **102**
 Bleeker's cardinalfish 208
 Bleeker's whipray 102
 Blennies 135
BLENNIIDAE **135**
BLENNIOIDEI **135**
blochii, Eusphyra **87**
blochii, Nuchequula **236**
blochii, Trachinotus **230**
 Blubberlip snapper 246
 Bludger 219
 Blue-barred parrotfish 299
 Bluecheek silver grunt 257
 Bluefin trevally 222
 Bluefish 125, 212
 Blue flounder 324
 Blue kakra 33
 Blueline snapper 242
 Blue mackerel 315
 Blue marlin 319
 Blueringed angelfish 292
 Blue Sea chub 288
 Blue shark 86
 Bluespot mullet 296
 Bluespotted cornetfish 182
 Bluespotted ribbontail ray 104
 Blue-spotted stingray 103
 Bluestripe herring 152
 Blue trevally 218
 Blundo 95
 Bluntnose guitarfish 99
boesemani, Parascolopsis **269**
bohar, Lutjanus **241**
 Boi 294, 295
Boleophthalmus dussumieri **302**
Bolinichthys spp. **3**
 Bombay duck 168
 Bombil 168, 169
 Bombla 168-171
 Bonefishes 113, 144
 Bonite oriental 315
 Bonitos 138
 Bonitou 313
BONY FISHES **4, 110**
 Bootan 96
 Bora 273-277, 279
borbonicus, Lethrinus **264**
borneensis, Johnius **275**
 Boro 274
boro, Pisodonophis **148**
botche, Myripristis **181**
 Botha 204, 205
BOTHIDAE **324, 140**
Bothus myriaster **324**
Bothus pantherinus **324**
 Boti 322-325
botla, Trachinotus **230**
boulengeri, Sacura **202**
 Boulenger's anthias 202
 Bouquet araignée 22
 Bouquet géant 22
 Bouquet rosna 21
 Bouquet mousson 22
 Bourrugue chèvre 274
 Bourse à taches blanches 334
 Bourse garnale 335
 Bourse loulou 334
 Bowmouth guitarfish 91, 97
 Boxfishes 142
Brachirus orientalis **326**
brachycentron, Naso **307**
Brachypterois serrulifer **183**
Brama dussumieri **238**
 Bramble sharks 69, 73
BRAMIDAE **127, 238**
 Brassy chub 289
 Bregmacère de l'océan Indien 172
Bregmaceros mccllellandi **172**
BREGMACEROTIDAE **118**
brevicornis, Metapenaeus **13**
brevipinna, Carcharhinus **80**
 Bridled seabream 260
 Bristlemouths 116
 Broadband cardinalfish 209
 Broadband flathead 192
 Broadclub cuttlefish 54
 Broadfin shark 85
 Bronze catfish 166
 Bronze croaker 278
 Brotula barbe-de-boue 172
Brotula multibarбата **172**
 Brotulas 118, 172
 Brownback trevally 220
 Brown chub 288
 Brown-marbled grouper 198
 Brown numbfish 96
brucus, Echinorhinus cf. **4, 73**
 Bubblefin wrasse 299
 Budhar 88
 Budki 313, 314
 Bukra 259
 Bullet tuna 313
 Bullhead sharks 69, 73
 Bullhorn gurnard 189
 Bull shark 82
 Bum 317
 Bumalo 168
 Bumnose trevally 219
 Bund khook 335, 336
 Burrfishes 142, 339
 Buther 88
 Butterfishes 140, 321
 Butterflyfishes 132, 290
 Butterfly rays 93, 105

C

<i>caerulescens, Hydrophis</i>	341	<i>Caranx heberi</i>	221
Caesio à croissant	250	<i>Caranx ignobilis</i>	221
<i>Caesio lunaris</i>	250	<i>Caranx lugubris</i>	222
CAESIONIDAE	128, 250	<i>Caranx melampygyus</i>	222
<i>Caesio varilineata</i>	250	<i>Caranx sexfasciatus</i>	222
<i>calcarifer, Lates</i>	193	<i>Caranx tille</i>	223
Calicagère bleue	288	<i>carbunculus, Etelis</i>	240
<i>callianassa, Charybdis</i>	32	CARCHARHINIDAE	72, 79
CALLIONYMIDAE	5, 135	CARCHARHINIFORMES	71
CALLIONYMOIDEI	135	<i>Carcharhinus altimus</i>	79
<i>Callionymus hindsi</i>	135	<i>Carcharhinus amblyrhynchoides</i>	80
<i>Callionymus margaretae</i>	302	<i>Carcharhinus amboinensis</i>	80
<i>Callionymus marleyi</i>	5, 135	<i>Carcharhinus brevipinna</i>	80
<i>Callistoctopus macropus</i>	65	<i>Carcharhinus limbatus</i>	82
Calmar baril	62	<i>Carcharhinus dussumieri</i>	81
Calmar épée	61	<i>Carcharhinus falciformis</i>	81
Calmar indien	61	<i>Carcharhinus hemiodon</i>	81
Calmar pectiné sicilienne	63	<i>Carcharhinus leucas</i>	82
Calmar tonnelet	60	<i>Carcharhinus longimanus</i>	82
<i>canadum, Rachycentron</i>	213	<i>Carcharhinus macloti</i>	83
<i>canaliculatus, Penaeus (Melicertus)</i>	18	<i>Carcharhinus melanopterus</i>	83
<i>canaliculatus, Siganus</i>	305	<i>Carcharhinus plumbeus</i>	83
<i>canariensis, Umbrina</i>	280	<i>Carcharhinus sorrah</i>	84
Canary drum	280	<i>Carcharias taurus</i>	73
<i>cancrivorus, Pisodonophis</i>	148	Cardinalfish	210
<i>Cantherhines dumerilii</i>	334	Cardinalfishes	125, 206
<i>Canthidermis macrolepis</i>	332	CARIDEA	10
<i>Canthidermis maculata</i>	332	Carinate rock shell	4, 51
<i>cantoris, Hydrophis</i>	341	<i>carinatus, Apistus</i>	186
<i>capensis, Diplodus</i>	262	<i>carnolabrum, Lipocheilus</i>	240
Capucin à bande jaune	282	<i>carouna, Johnius</i>	275
Capucin de Vanicolo	283	Caroun croaker	275
CARANGIDAE	126, 214	<i>carpenteri, Cynoglossus</i>	328
<i>Carangoides armatus</i>	217	Carrot tonguesole	329
<i>Carangoides bajad</i>	217	<i>carutta, Johnius</i>	275
<i>Carangoides chrysocephalus</i>	218	Castagnole mignonne	238
<i>Carangoides coerleopinnatus</i>	218	Castagnoline noire	226
<i>Carangoides ferdau</i>	218	<i>casta, Meretrix</i>	45
<i>Carangoides fulvoguttatus</i>	219	<i>catenula, Acanthopagrus</i>	260
<i>Carangoides gymnotethus</i>	219	<i>Catostylus perezii</i>	4
<i>Carangoides hedlandensis</i>	219	Catsharks	71, 77
<i>Carangoides malabaricus</i>	220	Cavebasses	124, 194
<i>Carangoides plagiotaenia</i>	220	Cave-headed scorpionfish	185
<i>Carangoides praeustus</i>	220	CENTROLOPHIDAE	139
<i>Carangoides talamparoides</i>	221	<i>Cephalopholis hemistiktos</i>	195
Carangue à dos brun	220	<i>Cephalopholis sonnerati</i>	195
Carangue aïle bleue	222	CEPHALOPODS	4, 5, 52
Carangue balo	219	<i>Cephalopsetta ventrocellata</i>	322
Carangue cavallys	221	<i>cephalus, Mugil</i>	297
Carangue cocole	221	CEPOLIDAE	132, 293
Carangue côtière	218	<i>Ceriops tagal</i>	3
Carangue grimée	220	Cha.	260, 261
Carangue langue blanche	231	Chaco	153-155
Carangue lentigine	217	chacunda, Anodontostoma	151
Carangue monique	220	Chacunda guizzard shad	151
Carangue nez bossu	219	<i>Chaenogaleus macrostoma</i>	79
Carangue noire	222	<i>Chaetodon collaris</i>	290
Carangue paia	232	<i>Chaetodon pictus</i>	291
Carangue paillétée	219	CHAETODONTIDAE	132
Carangue royale	225	Chah.	263
Carangue sap-sap	217	Chah-ail	328-330
Carangue tachetée	218	Chakori	267-271, 282-287
Carangue tapir	218	<i>Champsodon omanensis</i>	300
Carangue tête	221	CHAMPSODONTIDAE	134
Carangue tille	223	Chan.	260, 263
Carangue vorace	222	Chancho	197
<i>Caranx</i>	126	Chandni	233
		CHANIDAE	115, 163
		Chan.	277

- Chano 163
chanos, Chanos **163**
Chanos chanos **163**
 Chao 78
 Chapar moi 253-256
chapra, Gudusia **152**
Charybdis callianassa **32**
Charybdis feriatus **32**
 Chaya 246
 Cheel 105, 106
Cheilopogon abei **178**
Cheilopogon furcatus **179**
Cheilopogon furcatus neimani **179**
Cheilopogon suttoni **179**
Cheimerius nufar **261**
Chelidoperca occipitalis **195**
Chelon klunzingeri **293**
Chelon macrolepis **293**
Chelon melinopterus **294**
Chelonodontops patoca **336**
Chelon parsia **294**
Chelon tade **294**
 Chétodon à collier 290
 Chevette jawla 11
 Chien corail 77
 Chilankar 212
Chiloscyllium arabicum **75**
Chiloscyllium griseum **76**
Chiloscyllium indicum **76**
 Chinchard d'Arabie 231
 Chind 312, 313
chinensis, Pampus **321**
 Chinese silver pomfret 321
 Chipiloua commun 64
 Chippil 253-256
 Chipran 253-256
 Chiragho 233-235
 Chirocentre dorab 160
 Chirocentre sabre 160
CHIROCENTRIDAE **115, 160**
Chirocentrus dorab **160**
Chirocentrus nudus **160**
 Chirurgien aile jaune 307
 Chita 101
 Chitta 102
 Chitti 103
 Chitto 102
 Chombo 105, 106
 Chonaro 164, 166
chondropus, Sillaginopodys **211**
Chonsar bakoi **217**
choprai, Solenocera **20**
Choridactylus multibarbus **186**
 Chow-di 295
 Chowdi 293, 294
Chrysiptera unimaculata **298**
chrysophrys, Carangoides **218**
CHTENOPTERYGIDAE **63**
Chtenopteryx sicula **63**
 Chua 78
 Chumma 223, 224, 228
 Chumma seem 231
 Chunki 313, 314
 Chunni 195-197, 200
 Cigarfishes 320
ciliaris, Alectis **214**
cinerascens, Kyphosus **288**
cinereus, Muraenesox **151**
 Cinnabar goatfish 283
 Clamkiller slipper lobster 28
 Cleftbelly trevally 216
 Cloudy grouper 197
 Clubfoot sillago 211
CLUPEIDAE **114, 151**
CLUPEIFORMES 114
 Coastal mud shrimp 21
 Coastal trevally 218
 Cobia 125, 213
Cociella punctata **190**
 Cockatoo righteye flounder 325
 Cock grunter 259
 Codlets 118, 172
 Cods 118
coeruleolineatus, Lutjanus **242**
coeruleopinnatus, Carangoides **218**
 Coffre bossu 335
 Cohana delagoa 267
 Cohana élégante 269
 Cohana japonaise 268
 Cohana tolu 268
Coilia dussumieri **157**
Coilia neglecta **157**
coioides, Epinephelus **196**
 Colas à bande dorée 249
 Colas bagnard 250
 Colas fil 249
 Colas lavande 249
collare, Chaetodon **290**
 Collared monocle bream 271
Colletteichthys dussumieri **173**
Colletteichthys occidentalis **173**
 Combers 124, 195
 Comb-finned squids 63
 Comb pen shell 41
 Comère rubari 215
 Comète fine 223
 Comète maquereau 223
 Comète queue rouge 224, 225
 Comet grouper 199
commersonii, Fistularia **182**
commersonianus, Scomberoides **226**
commersonii, Dagetichthys **327**
commersonii, Pomadasys **257**
commersonii, Stolephorus **157**
Commerson's anchovy **157**
commerson, Scomberomorus **316**
 Commerson's sole 327
 Common bluestripe snapper 244
 Common clubhook squid 62
 Common dolphinfish 3, 232
 Common octopus 66
 Common pike conger 151
 Common ponyfish 235
 Common sawfish 95
 Common silver-biddy 252
complanata, Favites **3**
 Concertina fish 289
 Congaturi halfbeak 178
Conger cinereus **149**
 Conger eels 114, 148
Congresox talabonoides **150**
CONGRIDAE **114, 148**
conspicuous, Pseudanthias cf. **202**
Cookeolus japonicus **204**
 Copper batfish 304
 Coral catshark 77
 Coral trouts 124, 195
cordata, Marcia **44**

Cordonnier fil	214
Cordonnier plume	215
cordyla, Megalaspis	225
Cornet crochu	62
Cornetfishes	121, 182
Cornette à taches bleues	182
Cornette rouge	182
corniculata, Aegicerias	3
cornuta, Aesopia	326
cornuta, Lactoria	336
coromandelensis, Hirundichthys	180
Coromandel flyingfish	180
coronata, Lunella	50
Coronate moon turban	50
coruscans, Etelis	240
Coryphaena equiselis	232
Coryphaena hippurus	232
CORYPHAENIDAE	126, 232
Coryphène commune	232
Coscinaraea monile	3
Courbine barbiche	274
Courbine caroune	275
Courbine carutte	275
Courbine chinoise	276
Courbine de Belanger	274
Courbine dentue	275
Courbine fuseau	276
Courbine kathala	277
Courbine longnez	276
Courbine lugubre	279
Courbine pintade	280
Couteau dactyle	44
Cownose rays	93, 107
Cowries	49
Cow stingray	100
Cowtail stingray	103
CRABS	4, 5, 30
Crambionella orsini	4
CRANCHIIDAE	59
Cranch squids	59
crassicornis, Solenocera	21
Crassostrea belcheri	42
Crassostrea bilineata	43
Crenidens indicus	262
Crested flounders	141, 325
Crested hairtail	312
Crevette arc-en-ciel	15
Crevette banane	17
Crevette faucon	14
Crevette flamand	16
Crevette geante tigrée	19
Crevette jaune	13
Crevette javelot	14
Crevette jinga	12
Crevette kidi	15
Crevette mouchetée	13
Crevette queue rouge	17
Crevette royale blanche	16
Crevette sorciere	18
Crevette tigrée verte	19
Crevette violoneux	12
Crimson jobfish	249
Crimson snapper	242
cristatus, Samaris	325
cristatus, Tentoriceps	312
Croakers	3, 4, 130, 272
Crocodile shark	70, 74
Crocodile toothfishes	134, 300
crocodilus, Tylosurus	177

Crossorhombus azureus	324
Croupia roche	251
Crucifix crab	32
crumenophthalmus, Selar	228
Cubiceps whiteleggii	320
Cun-daree	98, 99
cunnesius, Moolgarda	295
Current pitan	96
curtus, Hydrophis	343
curvirostris, Trachypenaeus	22
Cusk eels	118, 172
cuspidata, Anoxypristis	95
Cutlassfishes	138, 311
Cuttlefishes	52, 54
cuvier, Galeocerdo	84
cuvieri, Otolithes	278
cyanea, Octopus	66
cyanea, Psenopsis	320
cyanocinctus, Hydrophis	343
Cylichthys orbicularis	339
Cylichthys spilostylus	339
cyclostomus, Parupeneus	283
CYNOGLOSSIDAE	328, 141
Cynoglossus arel	328
Cynoglossus carpenteri	328
cynoglossus, Cynoglossus	329
Cynoglossus cynoglossus	329
Cynoglossus dispar	329
Cynoglossus dubius	329
Cynoglossus lachneri	330
Cynoglossus puncticeps	330
Cynoglossus quadrilineatus	328
cyprinoides, Megalops	144
Cytherée commune	46
Cytherée pure	45

D

Dactyloptena cf. gilberti	4, 188
Dactyloptena orientalis	188
DACTYLOPTERIDAE	122, 188
dactylus, Solen	4, 44
Dagetichthys commersonii	327
Daggertooth pike conger	151
Dai	251
Daleri	260
Damba	197
damicornis, Pocillopora	3
Damsel fishes	133, 297
danae, Tanningia	59
Dand	261, 263
Dandia	260, 261
Dandya	260-263
Dandyo	260
Dang-lo	155
Dangri	193
Dantani	315
Dantani manger	73
Dantani pagas	73
Dantani swaso	322
Dar-dumb	225
Darkfin eel catfish	168
Darkfined flounder	325
Daro-dandya	260
Daryai mar	343-347
DASYATIDAE	92, 100
Dasyatis ushieii	100
Dasyatis zugei	100
Dateara	290-292, 304-308

- Dathi 264
daura, Karalla 235
Dawan 318
dayi, Thyrysa 158
Daysciaena albida 273
Day's thryssa 158
Decapterus 126
Decapterus cf. smithvanizi 5, 224
Decapterus macarellus 223
Decapterus macrosoma 223
Decapterus muroadsi 224
Decapterus russelli 224
Decorated ponyfish 236
Deep flounder 323
Deep-sea mud shrimp 21
Deepwater longtail red snapper 240
Deep-water red snapper 240
Delagoa threadfin bream 267
Deleeri 260, 261
Delicate round herring 155
delicatulus, Spratelloides 155
Demi-bec congaturi 178
Demi-bec saltou 177
dempsterae, Minous 187
Dendostrea folium 43
DENDROBRANCHIATA 9
Dendrophyllia robusta 3
Dendrophysa russelii 274
Denté nufar 261
Derivant indien 320
Desmodema polystictum 172
Devil rays 94, 107
Dhaathi 264
Dhaddi palli 151
Dhaddi-palli 153
Dhofar parrotfish 300
Dhotar 257, 258, 259
diacantha, Protonibea 280
diacanthus, Epinephelus 197
Diagramma picta 253
Diagramme à levres rouges 256
Diagramme ménestrel 255
Diagramme moucheté 254
Diagramme noir 254
Diagramme oriental 256
Diagramme rayons de soleil 255
Diagramme truité 255
Diagramme voilier 253
Diamondback puffer 338
Diamondback squid 64
Diaphus spp. 3
diaspros, Stephanolepis 335
Dimiri 55
Dinoperca petersi 194
DINOPERCIDAE 124
Diodon holocanthus 339
Diodon hystrix 340
DIODONTIDAE 142, 339
Diplodus capensis 262
Diplodus hottentotus 262
Diplodus omanensis 262
dipterygia, Narke 96
Disco 169-171
ditchela, Pellona 162
djedaba, Alepes 215
Dogfish sharks 69
dollfusi, Uranoscopus 300
Dollfus' stargazer 300
Dolphinfishes 126, 232
Do-lunt 107
domina, Sillaginopsis 211
Donkey croaker 279
Doolah 260
dorab, Chirocentrus 160
Dorab wolf-herring 160
dorsalis, Gymnothorax 145
Dory snapper 243
Dotted grouper 197
Dottybacks 124, 203
Doublebar cardinalfish 207
Doublebar goatfish 285
Doublelined tonguesole 330
Doublespotted queenfish 227
Dragonets 135
DREPANEIDAE 131
Drepane longimana 289
Drepane punctata 289
Driftfishes 139, 320
Drums 129, 130, 272
dubius, Cynoglossus 329
ductor, Naucrates 226
Duggi 297
Dumbi 74
Dumbi-padni 157
dumerilii, Cantherhines 334
dumerilii, Seriola 228
Dun-da-nee 87
Dusky spinefoot 306
Duskytail grouper 196
Dussumieria acuta 156
Dussumieria elopsoides 156
dussumieri, Boleophthalmus 302
dussumieri, Brama 238
dussumieri, Carcharhinus 81
dussumieri, Coilia 157
dussumieri, Colletteichthys 173
DUSSUMIERIIDAE 115
dussumieri, Johnius 276
dussumieri, Plicofollis 167
dussumieri, Thyrysa 158
Dussumier's mudskipper 302
Dussumier's thryssa 158
duvaucelii, Uroteuthis (Photololigo) 61
Dwarf monocle breams 129, 267
- ## E
- Eagle rays 93, 105
Ebosia falcata 183
ECHENEIDAE 126, 213
Echeneis naucrates 213
Echidna nebulosa 145
ECHINORHINIDAE 69, 73
Echinorhinus cf. brucus 4, 73
echinorhynchus, Bathymyrus 149
edulis, Uroteuthis (Photololigo) 61
Eel catfishes 116, 168
Eels 3, 113
ehrenbergii, Lutjanus 242
Eightbar grouper 201
Elagatis bipinnulata 225
ELAPIDAE 343
Electric rays 90
Eleutheronema tetradactylum 280
elevatus, Pseudorhombus 323
Ellochelon vaigiensis 295
elongata, Hemipristis 79
elongata, Solea 327

Elongate bulleye	205	<i>Eusphra blochii</i>	87
Elongate sole	327	<i>Euthynnus affinis</i>	314
Elongate surgeonfish	306	Exocet boue	179
<i>elongatus, Johnius</i>	276	Exocet coromandel	180
ELOPIDAE	113, 144	Exocet de Sutton	179
ELOPIFORMES	113	Exocet miroir	181
<i>Elops machnata</i>	144	Exocet volant	180
<i>elopoides, Dussumieria</i>	156	EXOCOETIDAE	120, 178
Emissole d'Arabie	78	<i>Exocoetus monocirrhus</i>	179
Empereur à bandes oranges	266	<i>Exocoetus volitans</i>	180
Empereur bossu	267	<i>Exopalaemon styliferus</i>	21
Empereur lentille	265		
Empereur moris	266	F	
Empereur orné	267	<i>falcata, Ebosia</i>	183
Empereur Saint Pierre	265	Falcate lionfish	183
Empereur tidents	265	<i>falciformis, Carcharhinus</i>	81
Emperor red snapper	247	<i>falciformis, Monodactylus</i>	290
Emperors	129, 264	False Indian flathead lobster	29
Emperor snappers	129, 264	False trevally	125, 212
Encornet bande violette	64	Fanged seabream	264
Encornet cachalot	58	<i>far, Hemiramphus</i>	177
Encornet-oultre de Reinhardt	59	<i>fasciata, Aurigequula</i>	233
Encornet planeur	63	<i>fasciatum, Stegostoma</i>	76
Encornet-poulpe de Taning	59	<i>fasciatus, Ostorhinchus</i>	209
ENGRAULIDAE	115, 157	Fat taileyed goby	303
Engraved catfish	165	<i>faurei, Lepidotrigla</i>	189
<i>Engyprosopon grandisquama</i>	325	<i>favagineus, Gymnothorax</i>	145
Enhydrine ardoisée	346	<i>Favites complanata</i>	3
<i>enigmaticus, Apogonichthyoides</i>	206	<i>Favites pentagona</i>	3
Epaulet grouper	200	<i>ferdau, Carangoides</i>	218
Epaulette surgeonfish	307	<i>feriatus, Charybdis</i>	32
EPHIPPIDAE	136, 304	<i>ferrugineus, Nebrius</i>	77
<i>Epinephelus areolatus</i>	196	<i>fibulatum, Benthoosema</i>	171
<i>Epinephelus bleekeri</i>	196	Fiddler shrimp	12
<i>Epinephelus cf. multinotatus</i>	4, 199	<i>filamentosus, Gerres</i>	251
<i>Epinephelus coioides</i>	196	<i>filamentosus, Pristipomoides</i>	249
<i>Epinephelus diacanthus</i>	197	Filefishes	142, 334
<i>Epinephelus epistictus</i>	197	<i>Filimanus similis</i>	281
<i>Epinephelus erythrurus</i>	197	Finger razor shell	4, 44
<i>Epinephelus fuscoguttatus</i>	198	<i>Fistularia commersonii</i>	182
<i>Epinephelus jayakari</i>	199	<i>Fistularia petimba</i>	182
<i>Epinephelus lanceolatus</i>	198	FISTULARIIDAE	121, 182
<i>Epinephelus latifasciatus</i>	198	Five-lined snapper	246
<i>Epinephelus malabaricus</i>	199	<i>flagellum, Aetobatus</i>	105
<i>Epinephelus morrhua</i>	199	Flagfin cardinalfish	209
<i>Epinephelus polylepis</i>	200	Flag pen shell	41
<i>Epinephelus radiatus</i>	200	Flame cardinalfish	206
<i>Epinephelus stoliczkae</i>	200	Flamingo shrimp	16
<i>Epinephelus tukula</i>	201	Flapnose ray	107
<i>Epinephelus undulosus</i>	201	Plateared helmet gurnard	188
<i>epistictus, Epinephelus</i>	197	Flatfishes	140
<i>equiselis, Coryphaena</i>	232	Flathead grey mullet	297
<i>equula, Leiognathus</i>	235	Flathead sillago	211
<i>Equulites leuciscus</i>	234	Flatmouth sea catfish	167
<i>Equulites oblongus</i>	234	Flat needlefish	175
<i>eregoodootenkee, Mobula</i>	108	Flat toadfish	173
<i>erionna, Parascalopsis</i>	270	<i>flavolineatus, Mulloidichthys</i>	282
<i>erumei, Psettodes</i>	322	<i>flavomaculatus, Plectorhinchus</i>	254
<i>Erythrocles schlegelii</i>	238	<i>fleurieu, Ostorhinchus</i>	210
<i>erythropterus, Lutjanus</i>	242	Flower moon crab	35
<i>erythrurus, Epinephelus</i>	197	Flutemouths	121, 182
Escolier oriental	311	Flyingfishes	120, 178
<i>Escualosa thoracata</i>	152	Flying gurnards	122, 188
Espadon	318	Flying squids	63
<i>Etelis</i>	128	<i>folium, Dendostrea</i>	43
<i>Etelis carbunculus</i>	240	Forgeron tacheté	289
<i>Etelis coruscans</i>	240	<i>forsteri, Sphyræna</i>	309
<i>Eupleurogrammus glossodon</i>	311	<i>Fourfinger threadfin</i>	280
<i>Eupleurogrammus muticus</i>	312		

Fourlined terapon	203
Fourlined tonguesole	328
fraenatum, Sufflamen	333
Freckled cardinal	206
Frigate tuna	314
Frillfin turkeyfish	184
Frogfishes	119, 174
Frostfishes	138, 311
Full moony	290
fulviflamma, Lutjanus	243
fulvoguttatus, Carangoides	219
fulvus, Lutjanus	243
furca, Aphareus	239
furcatus, Cheilopogon	179
furcatus, Pomadasys	258
fuscoguttatus, Epinephelus	198
fuscus, Pseudobalistes	333
Fusilier à bandes variées	250
Fusiliers	128, 250

G

Gabbar	321
Gad-dak	314
Gaddy	225
Gadeer	264-267
Gadhi	169-171
GADIFORMES	118
Gadum	103
Gadumb	103
Gaidro	225
Gaim	107
Gaingara	258
Gairi	160
Galeocерdo cuvier	84
Gallo	163-166
gallus, Paphia (Protapes)	46
Ganges shark	84
gangeticus, Glyphis cf.	4, 84
Gapers	134, 300
Garabari	102
Garamari	102
Gar-chum	233-235
Gastropods	4, 48
gaterinus, Plectorhinchus	254
Gavial eel	150
Gavialiceps taeniola	150
Gaydar	317
Gazi-gwazi	251
Gazza minuta	234
Gazza rhombea	235
GEMPYLIDAE	137, 311
gerrardi, Himantura	101
GERREIDAE	5, 128, 251
gerreoides, Nuchequula	236
Gerres filamentosus	251
Gerres infasciatus	251
Gerres limbatus	252
Gerres longirostris	5
Gerres macracanthus	252
Gerres oyena	252
Gerres phaiya	253
ghanam, Scolopsis	271
Ghingra	203
Ghir pitho	321
ghobban, Scarus	299
Ghol	280
Ghonga	50, 51
Ghora	318-320

Ghost moray	146
Giant grouper	198
Giant manta	108
Giant river prawn	22
Giant sea catfish	166
Giant tiger prawn	19
Giant trevally	221
gibbosa, Sardinella	154
gibbosus, Plectorhinchus	254
gibbosus, Tetrasomus	335
gibbus, Lutjanus	243
Gid	295
Giddani kalri	13
gilberti, Dactyloptena cf.	4, 188
Ginghra	204
INGLYMOSTOMATIDAE	71, 77
Gishran	221-223, 225
Gisser	196-202
Gissi pishik	86
Gizzard shads	151
gladius, Xiphias	318
glauca, Prionace	86
Glaucostegus cf. granulatus	4, 98
Glaucostegus halavi	98
Glaucostegus obtusus	99
glossodon, Eupleurogrammus	311
Glossogobius	136
Glowbelly	194
Glyphis cf. gangeticus	4, 84
gnanadossi, Ariosoma	148
Gnathanodon speciosus	225
Goat catfish	165
Goatee croaker	274
Goatfishes	130, 282
Goatsbeard brotula	172
Gobies	136, 302
GOBIIDAE	136, 302
GOBIOIDEI	136
Gogaro	258
Gogla	206-210
Gogotanga	33
Gogra	259
Goi	151, 153
Goj	75-77
Gok zaban	328-330
Gol	86
Golat	105, 106
Goldband goatfish	286
Goldband jobfish	249
Golden	86
Golden ponyfish	236
Goldenstripe ponyfish	235
Golden trevally	225
Goldlined seabream	263
Gold-saddle goatfish	283
Goldsilks seabream	260
Gold-spot mullet	294
Goldspotted grenadier anchovy	157
Goldstripe sardinella	154
Goli	273
Goniopora albiconus	3
GONORHYNCHIFORMES	115
Gonostoma	116
GONOSTOMATIDAE	116
Goosefishes	119, 173
Gooshi	317
Gore	313, 316
Goret a six bandes	258
Goret à trois bandes	259

Gorrait	85	<i>Gymnothorax punctatus</i>	147
Gotala	260	<i>Gymnothorax reticularis</i>	147
Graceful shark	80	<i>Gymnothorax sp.</i>	4, 147
<i>gracilis, Hydrophis</i>	344	<i>Gymnura poecilura</i>	105
<i>gracilis, Saurida</i>	172	GYMNURIDAE	93, 105
<i>gracilis, Spratelloides</i>	155		
<i>Grammolites scaber</i>	191	H	
<i>Grammolites suppositus</i>	191	HAEMULIDAE	129, 253
Grande seiche rayée	56	<i>haffara, Rhabdosargus</i>	263
Grande verrue tigre	278	Haffara seabream	263
<i>grandisquama, Engyprosopon</i>	325	Hairtail blenny	301
Grand requin-marteau	88	Hairtailfishes	3, 138, 311
Granulated guitarfish	98	Hajjam	322
<i>granulatus, Acrochordus</i>	341	Hakes	118
<i>granulatus, Glaucostegus cf.</i>	4, 98	<i>halavi, Glaucostegus</i>	98
Great barracuda	309	Halavi guitarfish	98
Greater amberjack	228	Halfbeaks	120, 177
Greater argonaut	67	Half-mourning croaker	279
Greater lizardfish	169	Half-smooth golden pufferfish	338
Great hammerhead	88	Halfspined flathead	193
Greenback mullet	295	<i>Halichoeres</i>	133
Green jobfish	239	<i>Halichoeres nigrescens</i>	299
Green tiger prawn	19	<i>Halieutaea indica</i>	175
Green turban	50	Ham	82, 85
Grey bambooshark	76	<i>hamiltonii, Thyssa</i>	158
Grey sharpnose shark	86	Hamilton's thyssa	158
Grey stingfish	187	Hammerhead sharks	72, 87
<i>griseum, Chiloscylium</i>	76	<i>hamrur, Priacanthus</i>	205
Grondeur à joues bleus	257	Har	332-335
Grondeur argenté	257	<i>harak, Lethrinus</i>	265
Grondeur javelot	258	Hardnose shark	83
Grondin aile tachetée	190	<i>hardwicki, Loliolus</i>	60
Grondin armure	189	<i>hardwickii, Parapenaeopsis (Mierspenaeopsis)</i>	14
Grondin d'Oman	189	Hareng à bande bleue	152
Grondin encré	190	Hareng gracile	155
Grondin taureau	189	Hareng ronde	155
Grondin volant étoilé	188	Har gore	313
Gros poulpe bleu	66	Har-luar	156
Ground sharks	71	<i>Harpadon nehereus</i>	168
Groupers	4, 124, 195	<i>Harpadon sp.</i>	4, 169
Grunters	124, 203	Harry hotlips	254
Grunts	129, 253	Hasp	318-320
Guarak	203	<i>hasta, Sparidentex</i>	264
<i>Gudusia chapra</i>	152	<i>heberi, Caranx</i>	221
<i>guentheri, Lagocephalus</i>	338	<i>hedlandensis, Carangoides</i>	219
<i>guentheri, Snyderina</i>	186	Heemstra goatfish	286
Guitarfishes	92, 98	<i>heemstra, Upeneus</i>	286
Gular cardinalfish	210	<i>heinii, Argyrosomus</i>	272
<i>gularis, Ostorhinchus</i>	210	<i>helvola, Uraspis</i>	231
Gulla	302, 303	<i>Hemirarius sona</i>	164
Gullo	302, 303	<i>Hemirarius sumatranus</i>	165
Günther's waspfish	186	HEMIGALEIDAE	72, 79
Gur	50, 51	<i>hemiodon, Carcharhinus</i>	81
Gurnards	123, 189	<i>Hemipristis elongata</i>	79
Gussi	81, 85	HEMIRAMPHIDAE	120, 177
Gusso	81, 85	<i>Hemiramphus cf. archipelagicus</i>	177
<i>guttatus, Scomberomorus</i>	316	<i>Hemiramphus far</i>	177
<i>guttatus, Upeneus</i>	285	HEMISCYLLIIDAE	70, 75
Gwanz	280, 281, 282	<i>hemistiktos, Cephalopholis</i>	195
Gwaraiz	293, 296	<i>Heniochus acuminatus</i>	291
Gwark	80, 82	<i>heptacanthus, Parupeneus</i>	283
Gwatak	261	<i>Herklotsichthys quadrimaculatus</i>	152
<i>gymnostethus, Carangoides</i>	219	Herrings	114, 151
<i>Gymnothorax phasmatodes</i>	146	Herring scad	216
<i>Gymnothorax dorsalis</i>	145	HETERODONTIDAE	69, 73
<i>Gymnothorax favagineus</i>	145	HETERODONTIFORMES	69
<i>Gymnothorax meleagris</i>	147	<i>Heterodontus omanensis</i>	73
<i>Gymnothorax prolatas</i>	146	<i>hexacanthus, Naso</i>	308
<i>Gymnothorax pseudothyrsoides</i>	146		

<i>Hexanemichthys sagor</i>	165	<i>Iago omanensis</i>	78
<i>hextii, Solenocera</i>	21	<i>Iago sp. A</i>	4, 78
<i>hians, Ablennes</i>	175	<i>ignobilis, Caranx</i>	221
<i>hians, Argonauta</i>	67	<i>Ilisha megaloptera</i>	161
Highfin moray	146	<i>Ilisha melastoma</i>	161
<i>Hilsa kelee</i>	152	Ilishas	115, 161
Hilsa shad	155	<i>Ilisha sirishai</i>	161
<i>Himantura bleekeri</i>	102	<i>Ilisha striatula</i>	162
<i>Himantura cf. randalli</i>	4, 102	<i>ilisha, Tenualosia</i>	155
<i>Himantura gerrardi</i>	101	<i>imbricata, Himantura</i>	101
<i>Himantura imbricata</i>	101	Imposter trevally	221
<i>Himantura leoparda</i>	101	Indian anchovy	157
<i>Himantura uarnak</i>	102	Indian conger	148
Hinds	124, 195	Indian driftfish	321
<i>hindsii, Callionymus</i>	135	Indian flathead lobster	28
<i>Hippocampus</i>	121	Indian frogfish	174
<i>hippurus, Coryphaena</i>	232	Indian goatfish	284
Hira	238-242, 244-250	Indian halibut	322
<i>Hirundichthys coromandelensis</i>	180	Indian handfish	175
<i>Hirundichthys indicus indicus</i>	180	Indian ilisha	161
<i>Hirundichthys indicus orientalis</i>	180	Indian lizardfish	170
<i>Hirundichthys oxycephalus coromandelensis</i>	180	Indian mackerel	3
<i>Hirundichthys speculiger</i>	181	Indian mackerel	315
<i>hispidus, Antennarius</i>	174	Indian Ocean oriental sweetlips	256
<i>Histiopaterus typus</i>	292	Indian oil sardine	154
Hogfishes	133	Indian pellona	162
<i>Holapogon maximus</i>	210	Indian pike conger	150
Holara	257	Indian pompano	231
Holari dhotar	257	Indian river shad	152
<i>holocanthus, Diodon</i>	339	Indian rough shrimp	20
HOLOCENTRIDAE	120, 181	Indian ruff	320
<i>homarus, Panulirus</i>	25	Indian scad	224
Hooded cuttlefish	56	Indian sevenfinger threadfin	281
Hooked tonguesole	328	Indian snapper	244
Hooktooth shark	79	Indian squid	61
Horn-nosed boxfish	335	Indian threadfin	281
Horseshoe butterflyfish	291	Indian threadfish	215
Hotlips	129, 253	Indian white prawn	16
<i>hottentotus, Dipodus</i>	262	Indian zebra sole	327
Hound needlefish	177	<i>indica, Acanthocephala</i>	293
Houndsharks	72, 78	<i>indica, Alectis</i>	215
Huître creuse chausson	43	<i>indica, Halieutaea</i>	175
Huître feuille	43	<i>indica, Istiompax</i>	318
Humpback boxfish	335	<i>indicum, Ariomma</i>	321
Humpback red snapper	243	<i>indicum, Chiloscylidium</i>	76
Humpback unicornfish	307	<i>indicum, Leptomelanosoma</i>	281
Humphead snapper	247	<i>indicus, Acetes</i>	11
Humpnose big-eye bream	267	<i>indicus, Antennarius</i>	174
Hydrophide-spirale	346	<i>indicus, Crenidens</i>	262
HYDROPHIINAE	343	<i>indicus, Hirundichthys indicus</i>	180
<i>Hydrophis caeruleus</i>	341	<i>indicus, Lutjanus</i>	244
<i>Hydrophis cantoris</i>	341	<i>indicus, Parupeneus</i>	284
<i>Hydrophis curtus</i>	343	<i>indicus, Penaeus (Fenneropenaeus)</i>	16
<i>Hydrophis cyanocinctus</i>	343	<i>indicus, Stolephorus</i>	157
<i>Hydrophis gracilis</i>	344	<i>indicus, Synodus</i>	170
<i>Hydrophis lapemoides</i>	344	<i>indicus, Thenus</i>	28
<i>Hydrophis mamillaris</i>	341	<i>indicus, Trachurus</i>	231
<i>Hydrophis ornatus</i>	345	Indo-Pacific king mackerel	316
<i>Hydrophis platurus</i>	345	Indo-Pacific Longjaw bonefish	144
<i>Hydrophis schistosus</i>	346	Indo-Pacific oval flounder	324
<i>Hydrophis spiralis</i>	346	Indo-Pacific sailfish	319
<i>Hydrophis stokesii</i>	347	Indo-Pacific tarpon	144
<i>Hydrophis viperinus</i>	347	<i>Indothais lacera</i>	4, 51
<i>Hyporhamphus limbatus</i>	178	<i>inermis, Lagocephalus</i>	337
<i>Hyporhamphus sindensis</i>	178	<i>inermis, Minous</i>	187
<i>Hyporthodus octofasciatus</i>	201	<i>inermis, Sepiella</i>	58
<i>hystrix, Diodon</i>	340	<i>infasciatus, Gerres</i>	251
		<i>Iniistius bimaculatus</i>	133, 134
		Inshore squids	60

- insidiator, Secutor cf.* 4, 237
interruptus, Secutor 237
investigatoris, Scorpaenodes 184
Investigator scorpionfish 184
Istiompax indica 318
ISTIOPHORIDAE 139, 318
Istiophorus 139
Istiophorus platypterus 319
Isurus oxyrinchus 75
Ivory whelks 51
- J**
- Jabal 335, 336
Jabal kui 297, 298
Jacks 126, 214
Jagri 85
Jaira 16, 17, 19
Jairi khagga 163
Jalaibi 289
Jal Pari 288, 289
jamalensis, Sparidentex 264
Jambonneau noir 41
Jambonneau pectiné 41
Jangli Kikat 28
Jangli mangar 79
Japanese meagre 273
Japanese rubyfish 238
Japanese threadfin bream 268
japanica, Mobula 108
japonicum, Acropoma 194
japonicus, Argyrosomus 273
japonicus, Cookeolus 204
japonicus, Nemipterus 268
japonicus, Penaeus (Marsupenaeus) 18
Jaras 261
Jaraz 261, 264
jarbua, Terapon 203
Jarbua terapon 203
Jarroi pishik 83
Javan flounder 323
javanica, Rhinoptera 107
javanicus, Pseudorhombus 323
Javelin grunter 258
javus, Siganus 305
Jawla paste shrimp 11
jayakari, Epinephelus 199
jayakari, Rhinoptera 107
jayakari, Roa 291
Jayakar's butterflyfish 291
Jaydia queketti 208
Jaydia striata 208
Jaydia truncata 209
jello, Sphyaena 309
JELLYFISH 4
Jhiri 188
Jhirki 251-253
Jhir-kili 251-253
Jhirri 178-181
Jinga shrimp 12
Jinni nakhun gur 51
Jirkini 251-253
Jirri 178-181, 188, 302
Jobfishes 128, 239
johnii, Lutjanus 244, 245
Johnius 130
Johnius amblycephalus 274
Johnius belangerii 274
Johnius borneensis 275
Johnius carouna 275
Johnius carutta 275
Johnius dussumieri 276
Johnius elongatus 276
Johnius macrorhynchus 276
John's snapper 244
Jumping halfbeak 177
- K**
- kaakan, Pomadasys* 258
Kabaloosh 203, 204
Kabardan 263
Kadda 43
Kadra 279
Kaikara 32-35
Kain-chan 230
Kairi 98, 99
Kajikia audax 319
Kak-kar 217-223, 229
Kakkar 231
Kak-kawan 217-223, 225, 229
Kako 334-338, 340
Kakoria 96
Kala 260
Kala kangra 274
Kala paplait 226
Kalawani 79, 82
Kal-gan 316, 317
Kali tilli 81
Kalri 12-15, 18, 20
kamoharai, Pseudocarcharias 74
kanagurta, Rastrelliger 315
Kanaitar 79, 81-84
Ka-nal cha 238-250
Kanati 79, 82
Kandairi 233, 234, 235
Kandri 80, 82, 83
Kangh 279, 280
Kangha 177, 178
Kangra 274-277
Kanti 88
Kapartan 263
Kar 84
Karachi kalri 12
Kara dandyo 260, 261
Karadi 158-160
Karaint 81, 83, 84
Karalla daura 235
Karari 157-160
Kar-gan 317
Kari 84, 97
Karo-dandya 262
Karo-pitho 226
Karpic 83
Karpick 80-84
Karra 145-148
Karran 145-148
Kartan 260
Karunj 107-109
Karut croaker 275
Kasha 152
Kashuk 152
kasmira, Lutjanus 244
Kathala axillaris 277
Kathala croaker 277
Katial 88
Katiar 88
Katsuwonus pelamis 314

Katti. 272
 Kawakawa 138, 313, 314
 Kaw-wa 279, 280
 Keel-tail needlefish. 175
 Keen-si 262
kelee, Hilsa **152**
 Kelee shad 152
 Khadda dandia 288, 289
 Khadda pittan 104
 Khadda polet 320, 321
 Khadda poplet 238
 Khadda sonaf 238
 Khadda tighlam 320, 321
 Khagga 163-166
 Khagi 165
 Khair 97
 Khaitar 322-327
 Khant 85
 Khappo 42
 Khar 331-335
 Kharak paaloo 261
 Khar-kaili 204
 Khar kunt 41, 43
 Khasa 152, 155
 Khassa 157
 Khook 335, 336
 Khunkhna 34
 Khus 21
 Kiddi 14, 15
 Kiddi shrimp 15
 Kika 25-29
 Kikat 25-27
 King soldier bream 261
 Kir 272, 273, 280
 Kish-ki 314
 Kissi 260-262
 Klancho 195
kleini, Alepes **215**
klunzingeri, Chelon **293**
 Klunzinger's mullet 293
 Knifejaws 132
 Kobayyadri 97
 Kobi cuttlefish 55
kobiensis, Sepia **55**
 Kochuk 322
 Kohbaradri 97
 Koh-e-tont 277
 Kohi mahi 181, 182
 Kokita 203
 Kolgar 152
 Kolonto 181, 182, 267-272, 282-288
 Komait 196, 198
 Kookh 331-338, 340
 Koor 162
 Kopra 249, 250
 Korean seerfish 316
koreanus, Scomberomorus **316**
 Kori 75, 76, 77
 Korora 267, 268, 269
 Kuchki 41, 45
kuhlii, Mobula **109**
kuhlii, Neotrygon **103**
 Kui 305
 Kukkar 190-193
 Kukker jib 328-330
 Kukkida 262
 Kukkirio 260
 Kukkri 264
 Kukri 32-35

Kumococius rodericensis **191**
 Kumpo 257-259
 Kun 163-166
 Kund 308-311
 Kun-la 238-250
 Kup-a-go 166
 Kup-e-paggas 340
 Kuranti 261
 Kutta 75, 76
 Kutti 101, 103, 105, 106
 Ku-yun 305
KYPHOSIDAE **131, 288**
Kyphosus bigibbus **288**
Kyphosus cinerascens **288**
Kyphosus vaigiensis **289**

L

LABRIDAE **133**
LABROIDEI **133**
 Laced moray 145
lacera, Indothais **4, 51**
lachneri, Cynoglossus **330**
 Lachner's tonguesole 330
LACTARIIDAE **125, 212**
lactarius, Lactarius **212**
Lactarius lactarius **212**
lactomaculata, Scorpaenopsis **185**
Lactoria cornuta **336**
 Lado 260
 Ladyfishes 113, 144
 Ladypees 211, 212
Laeops cf. nigrescens **5, 325**
laevis, Ranzania **340**
laevis, Rhynchobatus **97**
Lagocephalus guentheri **338**
Lagocephalus inermis **337**
Lagocephalus, Lagocephalus **337**
Lagocephalus lagocephalus **337**
Lagocephalus lunaris **337**
Lagocephalus spadiceus **338**
 Laiduk 301
 Lal kakra 32
 Lal kiddi 12, 16, 20, 21
 Lal pari 287, 288
 Lal-pari 267-271
Lamiopsis temminckii **85**
LAMNIDAE **70, 75**
LAMNIFORMES **69**
 Lampfish 194
LAMPRIFORMES **118**
lancoletus, Epinephelus **198**
 Langouste barriolée 26
 Langouste de vase 26
 Langouste festonnée 25
 Langouste fourchette 26
 Langouste ornée 25
 Langue a deux ligne 330
 Langue à tête ronde 329
 Langue crochet 328
 Langue de Lachner 330
 Langue tachetée 330
 Lanternbellies 123, 194
 Lanternfishes 3, 117, 171
 Lapémide court 343
lapemoides, Hydrophis **344**
 Large-eye breams 129, 264
 Largehead croaker 273
 Largehead firefish 183

Largehead hairtail	313	Linji	175, 176
Largescaled terapon	204	<i>Loocranchia reinhardtii</i>	59
Largescale flounder	325	<i>Lipocheilus carnolabrum</i>	240
Largescale mullet	293	Listao	314
Largescale tonguesole	328	Little Indian squid	60
Largescale triggerfish	332	Live sharksucker	213
Largespotted dart	230	Lizardfishes	117, 168
Large striped cuttlefish	56	<i>Liza subviridis</i>	295
Largetooth flounder	322	Loan	79, 87
<i>Lates calcarifer</i>	193	Lobejaw ilisha	161
<i>laticaudus, Scoliodon</i>	87	<i>LOBOTES surinamensis</i>	251
LATIDAE	123, 193	LOBOTIDAE	128, 251
<i>latifasciatus, Epinephelus</i>	198	LOBSTERS	4, 23
Lattice blaasop	338	Lohila	168
Lavender jobfish	249	LOLIGINIDAE	60
<i>layardi, Plicofollis</i>	167	<i>Loliolus hardwickei</i>	60
Leaf oyster	43	Long	287
Leatherjackets	334, 142	Longarm mullet	295, 296
Leechik	213, 214	Long-barbel goatfish	284
Leeching	213, 214	Long barrel squid	62
Leejar	153-155	Longcomb sawfish	95
Lefteye flounders	324, 140	Longface emperor	266
LEIOGNATHIDAE	127, 233	Longfin African conger	149
<i>Leiognathus berbis</i>	237	Longfin bannerfish	291
<i>Leiognathus equula</i>	235	Longfin lizardfish	169
<i>leiura, Strongylura</i>	176	Longfin mako	75
<i>lemniscatus, Lutjanus</i>	245	Longfinned bullseye	204
Lemonfish	254	Longfin silverbidy	253
<i>lentjan, Lethrinus</i>	265	Longfin snake-eel	148
<i>leoparda, Himantura</i>	101	Longfin trevally	217
Leopard flounder	324	Longfin yellowtail	229
Leopard whipray	101	Longheaded eagle ray	105
<i>Lepidamia natalensis</i>	209	Longhorn cowfish	336
<i>Lepidotrigla bispinosa</i>	189	Longhorned mobula	108
<i>Lepidotrigla faurei</i>	189	<i>longiceps, Sardinella</i>	154
<i>Lepidotrigla omanensis</i>	189	<i>longimana, Drepane</i>	289
<i>Lepidotrigla spiloptera</i>	190	<i>longimanus, Carcharhinus</i>	82
<i>leptolepis, Selaroides</i>	228	<i>longimanus, Pentaprion</i>	253
<i>Leptomelanosoma indicum</i>	281	<i>longimanus, Saurida</i>	169
<i>Lepturacanthus savala</i>	312	<i>longipes, Parapenaeus</i>	16
<i>lepturus, Uroconger cf.</i>	150	<i>longirostris, Gerres</i>	5
Lesser argonaut	67	<i>longispina, Aurigequula</i>	233
Lesser bream	238	Longjaw thryssa	159
Lesser devilray	109	Longnose trevally	218
Lesser tigertooth croaker	278	Longspined porcupinefish	339
<i>lessoniana, Sepioteuthis</i>	60	Longspined silverbidy	252
<i>lesueuri, Ancistrocheirus</i>	58	Longspined tripodfish	331
LETHRINIDAE	129, 264	Longspine ponyfish	233
<i>Lethrinus</i>	129	Long-tailed butterfly ray	105
<i>Lethrinus borbonicus</i>	264	Longtailed carpetsharks	70, 75
<i>Lethrinus harak</i>	265	Longtail tuna	318
<i>Lethrinus lentjan</i>	265	Longtooth hairtail	311
<i>Lethrinus microdon</i>	265	Loonrah	168
<i>Lethrinus nebulosus</i>	266	LOPHIIDAE	119
<i>Lethrinus obsoletus</i>	266	LOPHIIFORMES	119
<i>Lethrinus olivaceus</i>	266	<i>Lophiomus setigerus</i>	173
<i>Lethrinus ornatus</i>	267	Lotari	196-199, 201
<i>leucas, Carcharhinus</i>	82	Lowfin houndshark	78
<i>leuciscus, Equulites</i>	234	<i>Loxodon macrorhinus</i>	85
<i>lewini, Sphyrna</i>	88	Luar	154
Liara	95	<i>lugubris, Caranx</i>	222
<i>limbatus, Carcharhinus</i>	82	Lujar	153-155
<i>limbatus, Gerres</i>	252	Lukwa	280-282
<i>limbatus, Hyporhamphus</i>	178	Lunar fusilier	250
<i>limbatus, Plotosus</i>	168	<i>lunare, Thalassoma</i>	133, 134
Limpi	104	<i>lunaris, Ashtoret</i>	35
Limpi pagas	73	<i>lunaris, Caesio</i>	250
<i>lineatus, Plotosus</i>	168	<i>lunaris, Lagocephalus</i>	337
<i>lineolatus, Scomberomorus</i>	317	Lunartail puffer	337

Lunartail snapper	245
Lunella coronata	50
Luneur	233, 340
Lunti	253-256
<i>lunulatus, Lutjanus</i>	245
<i>luridus, Siganus</i>	306
LUTJANIDAE	128, 239
<i>Lutjanus</i>	128
<i>Lutjanus argentimaculatus</i>	241
<i>Lutjanus bengalensis</i>	241
<i>Lutjanus bohar</i>	241
<i>Lutjanus coeruleolineatus</i>	242
<i>Lutjanus ehrenbergii</i>	242
<i>Lutjanus erythropterus</i>	242
<i>Lutjanus fulviflamma</i>	243
<i>Lutjanus fulvus</i>	243
<i>Lutjanus gibbus</i>	243
<i>Lutjanus indicus</i>	244
<i>Lutjanus johnii</i>	245
<i>Lutjanus kasmira</i>	244
<i>Lutjanus lemniscatus</i>	245
<i>Lutjanus lunulatus</i>	245
<i>lutjanus, Lutjanus</i>	245
<i>Lutjanus lutjanus</i>	245
<i>Lutjanus malabaricus</i>	246
<i>Lutjanus quinquelineatus</i>	246
<i>Lutjanus rivulatus</i>	246
<i>Lutjanus sanguineus</i>	247
<i>Lutjanus sebae</i>	247
<i>Lutjanus vitta</i>	247
<i>lymma, Taeniura</i>	104
Lyretails	124, 195
<i>lysan, Scomberoides</i>	227

M

Maadrow	251-253
Maa-rori	44
<i>macarellus, Decapterus</i>	223
<i>machnata, Elops</i>	144
Mâchoiron aiguillette	167
Mâchoiron canard	167
Mâchoiron fouet	163
Mâchoiron goujon	164
Mâchoiron imberbe	164
Mâchoiron sagor	165
Mâchoiron savate	164
Mâchoiron soldat	166
Mâchoiron surmulet	165
Mâchoiron tacheté	163
Mâchoiron titan	166
Mackerels	138, 313
Mackerel sharks	69, 70
<i>macloti, Carcharhinus</i>	83
<i>Macolor niger</i>	248
Maconde aden	194
Maconde lumineux	194
<i>macracanthus, Gerres</i>	252
<i>Macrobrachium malcolmsonii</i>	22
<i>Macrobrachium rosenbergii</i>	22
<i>macrolepis, Canthidermis</i>	332
<i>macrolepis, Chelon</i>	293
<i>macronemus, Parupeneus</i>	284
<i>macrops, Synodus</i>	170
<i>macropus, Callistocopus</i>	65
<i>macrorhinus, Loxodon</i>	85
<i>macrorhynchus, Johnius</i>	276
<i>macrosoma, Decapterus</i>	223
<i>macrostoma, Chaenogaleus</i>	79

<i>macrura, Parapterois</i>	183
<i>maculata, Canthidermis</i>	332
<i>maculata, Mene</i>	233
<i>maculata, Nibea</i>	277
<i>maculatus, Arius</i>	163
<i>maculatus, Pomadasys</i>	258
<i>maculipinnis, Apogonichthyoides cf.</i>	206
<i>maculosus, Pomacanthus</i>	292
Madak	11-17, 19, 20
Mafou	213
Magol	105, 106
Magole	107
Mah-pari	305, 306
Maigre arabe	272
Maigre d'Amoy	272
Maing	295
Maingach	297
Maingh	293
Mainguch	293, 294
Maish	88
Mait	196, 198
Makaira	139
<i>Makaira nigricans</i>	319
Makaire à rostre court	320
Makaire bleu	319
Makaire noir	318
Malabar Sweeper	287
Malabar blood snapper	246
Malabar grouper	199
<i>malabarica, Pempheris</i>	287
<i>malabarica, Thryssa</i>	159
<i>malabaricus, Carangoides</i>	220
<i>malabaricus, Epinephelus</i>	199
<i>malabaricus, Lutjanus</i>	246
Malabar thryssa	159
Malabar trevally	220
<i>malcolmsonii, Macrobrachium</i>	22
Malelak	261
Malhar	232
Mamila arabe	271
Mamila aurore	269
Mamila joues blanches	272
Mamila lisse	269
Mamila mignonne	270
Mamila rosée	270
Mamila Saint Pierre	270
<i>mamillaris, Hydrophis</i>	341
Mangrove red snapper	241
Man-of-war fishes	139
<i>Manta alfredi</i>	107
<i>Manta birostris</i>	108
Manta rays	94, 107
Mante géante	108
Manyline cardinalfish	209
Maquereau des Indes	315
Maquereau tacheté	315
Marbled venus	4, 45
<i>Marcia cordata</i>	44
<i>Marcia recens</i>	4, 45
Margan	297, 298
<i>margaretae, Callionymus</i>	302
<i>Margaret's dragonet</i>	302
<i>margaritatus, Parupeneus</i>	284
<i>margaritifera, Pinctada</i>	40, 42, 44
Marignan poklé	181
Marignan rouget	182
<i>marina, Avicennia</i>	1, 3
Marine hatchetfishes	116
<i>marleyi, Callionymus</i>	5, 135

Marlin rayé	319	<i>Minous inermis</i>	187
Marlins	139, 318	<i>Minous monodactylus</i>	187
<i>marmoratus, Atelomycterus</i>	77	Minstrel sweetlips	255
<i>marmoratus, Turbo</i>	50	<i>minuta, Gazza</i>	234
Marz	321	Minyhaj	297
Masked triggerfish	333	Mirrowing flyingfish	181
<i>mata, Acanthurus</i>	306	Mit	233, 234
<i>mate, Atule</i>	217	Mith	233
<i>Matuta planipes</i>	35	Mithoo	152
MATUTIDAE	31, 35	Mitto	299, 300
<i>maximus, Holapogon</i>	210	<i>Mobula eregoodootenkee</i>	108
Mayyah	60	<i>Mobula japanica</i>	108
<i>mccllellandi, Bregmaceros</i>	172	<i>Mobula kuhlii</i>	109
Meagres	129, 130, 272	<i>Mobula tarapacana</i>	109
Medusafishes	139, 320	<i>Mobula thurstoni</i>	109
<i>Megalaspis cordyla</i>	225	MOBULIDAE	94, 107
MEGALOPIDAE	113, 144	Moey	80
<i>Megalops cyprinoides</i>	144	Moi	81, 253-256
<i>megaloptera, Ilisha</i>	161	Mojarras	128, 251
<i>melampygus, Caranx</i>	222	<i>mokarran, Sphyrna</i>	88
<i>melanoptera, Alepes</i>	216	<i>mola, Mola</i>	340
<i>melanoptera, Sorsogona</i>	193	<i>Mola mola</i>	340
<i>melanopterus, Carcharhinus</i>	83	Molas	143, 340
<i>melanostigma, Pseudosynanceia</i>	188	MOLIDAE	143, 340
<i>melanotus, Tylosurus acus</i>	176	<i>moluccensis, Upeneus</i>	286
<i>melanura, Sardinella</i>	154	<i>mombasae, Pterois</i>	184
<i>melastoma, Ilisha</i>	161	MONACANTHIDAE	142, 334
<i>meleagris, Gymnothorax</i>	147	<i>monile, Coscinaraea</i>	3
<i>melinopterus, Chelon</i>	294	<i>monoceros, Aluterus</i>	334
<i>Mene maculata</i>	233	<i>monoceros, Metapenaeus</i>	13, 14
MENIDAE	127, 233	<i>monocirrhus, Exocoetus</i>	179
<i>Meretrix casta</i>	45	Monocle breams	129, 267
<i>meretrix, Meretrix</i>	4, 46	MONODACTYLIDAE	131
<i>Meretrix meretrix</i>	4, 46	<i>Monodactylus argenteus</i>	290
<i>merguiensis, Penaeus (Fenneropenaeus)</i>	17	<i>Monodactylus falciformis</i>	290
Mérou à bandes	198	<i>monodactylus, Minous</i>	187
Mérou aréolé	196	<i>monodon, Penaeus (Penaeus)</i>	19
Mérou comète	199	<i>Monotaxis</i>	129
Mérou demideuil	196	<i>Monotaxis grandoculis</i>	267
Mérou épaulette	200	Monrovia doctorfish	306
Mérou epineux	197	<i>monroviae, Acanthurus</i>	5, 306
Mérou huit raies	201	Monsoon river prawn	22
Mérou lancéolé	198	Montar	96
Mérou malabar	199	<i>mookalee, Trachinotus</i>	231
Mérou marron	198	<i>Moolgarda cunnesius</i>	295
Mérou nébuleux	197	<i>Moolgarda perusii</i>	296
Mérou ondulé	201	<i>Moolgarda seheli</i>	296
Mérou pâle	197	<i>Moolgarda speigleri</i>	296
Mérou patate	201	Moon crabs	31, 35
Mérou petites écailles	200	Moonfish	127, 233
Mérou plate grise	199	Moonies	131, 290
Mérou taches oranges	196	Moontail bullseye	205
Mérou zébre	200	Moorat	182
<i>Metapenaeopsis stridulans</i>	12	Moozi	80
<i>Metapenaeus affinis</i>	12	Morays	113, 145
<i>Metapenaeus brevicornis</i>	13	More	80, 82
<i>Metapenaeus monoceros</i>	13, 14	Morénésoce commun	151
<i>Metapenaeus stebbingi</i>	14	Mori	216, 293-295
<i>meyeni, Taeniurops</i>	104	<i>morrhua, Epinephelus</i>	199
<i>microdon, Lethrinus</i>	265	<i>mosis, Mustelus</i>	78
Milandre chicor	79	Mota	144
Milandre harpon	79	Motar	165
<i>militaris, Osteogeneiosus</i>	166	Mourine javanaise	107
Milkfish	115, 163	Moustached thryssa	159
Milk shark	86	<i>muciparus, Scorpaenodes</i>	185
Milkspotted puffer	336	<i>mucronata, Rhizophora</i>	3
<i>milvus, Aetomylaeus</i>	106	Mud spiny lobster	26
<i>mino, Batrachocephalus</i>	164	<i>Mugil cephalus</i>	297
<i>Minous dempsterae</i>	187	MUGILIDAE	133

MUGILOIDEI	133
Mulet à grandes écailles	293
Mulet à grosse tête	297
Mulet à tache bleue	296
Mulet dos vert	295
Mulet joue d'or	294
Mulet mopiro	295
Mulet otomebora	294
Mulet tade	294
Mullah	264-267
mullani, Polydactylus	281
Mullets	133, 293
MULLIDAE	130, 282
<i>Mulloidichthys flavolineatus</i>	282
<i>Mulloidichthys vanicolensis</i>	283
<i>multibarbata, Brotula</i>	172
<i>multibarbus, Choridactylus</i>	186
<i>multidens, Pristipomoides</i>	249
<i>multimaculatus, Pomadasys</i>	259
<i>multinotatus, Epinephelus cf.</i>	4, 199
Mundi	293-295
Mundsar	293, 295, 296
Mundsar swasso	328-330
MURAENESOCIDAE	114, 150
<i>Muraenesox bagio</i>	151
<i>Muraenesox cinereus</i>	151
MURAENIDAE	113, 145
Murba	293-297
Murbo	296
Murénésoce-dague	151
<i>muroadsi, Decapterus</i>	224
Murra	163
Murrant	177, 178, 302
Murri	163
Mus	55, 60
Mushk	74
Mush-ka	278
Mushka	273, 278
Mushuk	144
Mushuk pitan	105, 106
<i>Mustelus mosis</i>	78
<i>muticus, Eupleurogrammus</i>	312
MYCTOPHIDAE	117, 171
Myctophids	3
MYCTOPHIFORMES	113, 117
MYLIOBATIDAE	93
MYLIOBATIFORMES	92
<i>myops, Trachinocephalus</i>	171
<i>myriaster, Bothus</i>	324
<i>Myripristis botche</i>	181
<i>mystax, Thyrssa</i>	159
MYTILIDAE	37, 40
Myyah	55

N

Naira	261
Nambo	195, 196, 198, 199, 201, 202
Naram kak-kawan	226
<i>Narcine timlei</i>	96
NARCINIDAE	90, 96
<i>Narke dipterygia</i>	96
NARKIDAE	90, 96
Nar manger	75
Nar-mani	84
Narrow-barred Spanish mackerel	3, 316
<i>Naso brachycentron</i>	307
<i>Naso hexacanthus</i>	308
<i>Naso reticulatus</i>	308

<i>nasus, Nematalosa</i>	153
<i>natalensis, Lepidamia</i>	209
Natal tongue-fish	329
<i>Naucrates ductor</i>	226
<i>naucrates, Echeneis</i>	213
Nawar	262, 263, 289
<i>Nebrius ferrugineus</i>	77
<i>nebulosa, Echidna</i>	145
<i>nebulosus, Lethrinus</i>	266
Needlefishes	120, 175
Needlescaled queenfish	227
<i>Negaprion acutidens</i>	85
<i>neglecta, Coilia</i>	157
Neglected grenadier anchovy	157
<i>nehereus, Harpadon</i>	168
Nehra	260, 261
<i>neimani, Cheilopogon furcatus</i>	179
<i>Nemapteryx nenga</i>	165
<i>Nematalosa arabica</i>	153
<i>Nematalosa nasus</i>	153
<i>Nematopalaemon tenuipes</i>	22
NEMIPTERIDAE	129, 267
<i>Nemipterus</i>	129
<i>Nemipterus bipunctatus</i>	267
<i>Nemipterus japonicus</i>	268
<i>Nemipterus peronii</i>	268
<i>Nemipterus randalli</i>	268
<i>Nemipterus zysron</i>	269
<i>nenga, Nemapteryx</i>	165
<i>Neoepinnula</i>	137
<i>Neoepinnula orientalis</i>	311
<i>Neopomacentrus sindensis</i>	298
<i>Neotrygon kuhlii</i>	103
<i>Netuma bilineata</i>	166
<i>Netuma thalassina</i>	166
<i>Nibeas maculata</i>	277
<i>Nibeas soldado</i>	277
<i>nichofii, Aetomylaeus</i>	106
<i>nieuhofii, Triacanthus</i>	331
<i>niger, Macolor</i>	248
<i>niger, Odonus</i>	333
<i>niger, Parastromateus</i>	226
<i>nigrescens, Halichoeres</i>	299
<i>nigrescens, Laeops cf.</i>	5, 325
<i>nigricans, Makaira</i>	319
<i>nigricauda, Acanthurus</i>	307
<i>nigrimarginatus, Taenioides cf.</i>	303
<i>nigrofasciata, Seriolina</i>	229
Nila kakra	33
Nilam khaga	164
<i>nodifera, Porites</i>	3
NOMEIDAE	139, 320
Nonbanded whipfin mojarra	251
Notchedfin threadfin bream	268
<i>Nuchequula blochii</i>	236
<i>Nuchequula gerreoides</i>	236
<i>nufar, Cheimerius</i>	261
Numbfishes	90, 96
<i>nummifer, Antennarius</i>	174
Nurse sharks	71, 77

O

<i>obesus, Thunnus</i>	317
<i>obesus, Triaenodon</i>	87
Oblique-banded grouper	200
Oblique-banded snapper	250
Obliquebanded stingfish	187
Oblong ponyfish	234

<i>oblongus, Equulites</i>	234	<i>orientalis, Hirundichthys indicus</i>	180
<i>oblongus, Takifugu</i>	338	<i>orientalis, Neopinnula</i>	311
Obscure flathead	193	<i>orientalis, Sarda</i>	315
<i>obsoletus, Lethrinus</i>	266	<i>orientalis, Thenus</i>	29
<i>obtusata, Sphyræna</i>	310	Oriental sole	326
Obtuse barracuda	310	Ornate emperor	267
<i>obtusus, Glaucostegus</i>	99	Ornate spiny lobster	25
<i>occidentalis, Colletteichthys</i>	173	<i>ornatus, Hydrophis</i>	345
<i>occipitalis, Chelidoperca</i>	195	<i>ornatus, Lethrinus</i>	267
Ocean breams	238	<i>ornatus, Panulirus</i>	25
Oceanic puffer	337	<i>Ornithoteuthis volatilis</i>	63
Oceanic whitetip shark	82	Orphie carénée	175
Ocean sunfish	340	Orphie plate	175
Ocean sunfishes	143, 340	<i>orsini, Crambionella</i>	4
Ocean triggerfish	332	<i>Osteogeneiosus militaris</i>	166
<i>ocellata, Aulopareia</i>	303	<i>Ostichthys acanthorhinus</i>	181
Ocellated waspfish	186	<i>Ostorhinchus fasciatus</i>	209
<i>ocellatus, Aetobatus</i>	106	<i>Ostorhinchus fleurieu</i>	210
<i>octofasciatus, Hyporthodus</i>	201	<i>Ostorhinchus gularis</i>	210
OCTOPODA	53	OSTRACIIDAE	142, 335
OCTOPODIDAE	65	<i>Ostracion rhinorhynchus</i>	335
OCTOPOTEUTHIDAE	59	OSTREIDAE	38, 42
'Octopus' <i>cyanea</i>	66	<i>Otolithes cuvieri</i>	278
Octopuses	53, 65	<i>Otolithes ruber</i>	278
Octopus squids	59	<i>Otolithes</i>	130
<i>Octopus cf. vulgaris</i>	66	<i>Otolithoides biauritus</i>	278
<i>Odontamblyopus tenuis</i>	136	<i>Otolithoides pama</i>	279
ODONTASPIDIDAE	69, 73	Otomebora mullet	294
<i>Odonus niger</i>	333	<i>oualaniensis, Sthenoteuthis</i>	64
OGCOEPHALIDAE	119, 175	<i>oxyrinchus, Isurus</i>	75
<i>oligolinx, Rhizoprionodon</i>	86	<i>Oxyurichthys</i>	136
<i>olivacea, Scylla</i>	34	<i>oyena, Gerres</i>	252
<i>olivaceus, Lethrinus</i>	266	Oysters	38, 42
<i>olivaceus, Pomadasys</i>	259		
Olive grunt	259	P	
Oman bullhead shark	73	Paalari	256, 258
Oman cownose ray	107	Paaloo	260, 261
<i>omanensis, Champsodon</i>	300	Paa-sali	156
<i>omanensis, Diplodus</i>	262	Padan	158-160
<i>omanensis, Heterodontus</i>	73	Padni	158-160
<i>omanensis, Iago</i>	78	Pagas	73
<i>omanensis, Lepidotrigla</i>	189	<i>Pagellus affinis</i>	263
Oman gurnard	189	Pageot d'Arabie	263
Oman seabream	262	Pagre berda	260
Ombrine bronze	280	Painted spiny lobster	26
OMMASTREPHIDAE	63	Painted sweetlips	253
Onespot demoiselle	298	PALAEEMONIDAE	10
<i>Onigocia pedimacula</i>	192	Palaemonid shrimps	10, 21
<i>Onychoteuthis banksii</i>	62	Palari	152, 259
Oonth patal	214, 215	Pale-edged stingray	100
Opahs	118	PALINURIDAE	24, 25
OPHICHTHIDAE	114, 148	Palla	155, 156
OPHIDIIDAE	118, 172	Palli	152, 161, 162
OPHIDIIFORMES	118	Pal-low	295, 296
<i>Opisthopterus tardoore</i>	162	Pallow	296
Orangebanded stingfish	186	Palore	97
Orange dotted back	203	Palourde coq	46
Orangefin ponyfish	237	Palourde textile	47
Orangemouth anchovy	160	Palri	152
Orange mud crab	34	Palwar	155, 156
Orange-spotted grouper	196	Pama croaker	279
Orangespotted trevally	217	<i>pama, Otolithoides</i>	279
Orange-striped emperor	266	Pambi	87
<i>orbicularis, Cyclichthys</i>	339	<i>Pampus argenteus</i>	321
<i>orbicularis, Platax</i>	304	<i>Pampus chinensis</i>	321
<i>orbis, Tripteronodon</i>	304	Panchranga	65
RECTOLOBIFORMES	70	Pandasi	278
Oriental flying gurnard	188	<i>panthera, Torpedo cf.</i>	96
<i>orientalis, Brachirus</i>	326		

- Panther electric ray 96
pantherinus, Bothus 324
Panulirus homarus 25
Panulirus ornatus 25
Panulirus penicillatus 26
Panulirus polyphagus 26
Panulirus versicolor 26
Paphia (Protapes) gallus 46
Paphia textile 47
Paplet 290
Papri 100-105
Para 215, 216
Paracaesio 128
Paracaesio xanthura 248
Parachaeturichthys polynema 302
Paradise threadfin 282
paradiseus, Polynemus 282
PARALEPIDIDAE 117
PARALICHTHYIDAE 322, 140
Paranibea semiluctuosa 279
Parapenaeopsis (Mierspenaeopsis) hardwickii 14
Parapenaeopsis (Mierspenaeopsis) sculptilis 15
Parapenaeopsis (Parapenaeopsis) stylifera 15
Parapenaeus longipes 16
Parapercis alboguttata 301
Parapercis robinsoni 301
Paraplagusia bilineata 330
Parapterois macrura 183
Paras 294
Parascolopsis aspinosa 269
Parascolopsis boesemani 269
Parascolopsis eriomma 270
Parascolopsis townsendi 270
Parastromateus niger 226
Pari 290-292
parindicus, Thenus 29
Pari poplet 304
Parri 74, 178-181
Parrotfishes 134, 299
parsia, Chelon 294
Parupeneus cyclostomus 283
Parupeneus heptacanthus 283
Parupeneus indicus 284
Parupeneus macronemus 284
Parupeneus margaritatus 284
Parupeneus rubescens 285
Parupeneus trifasciatus 285
Pashant 160
Pastenague éventail 104
Pastenague plumetée 103
Pastenague queue à ruban 104
Pastenague violette 104
Pastinachus sephen 103
Patal 214-223, 232
Patapati 19
Patar 231, 232
Patas 16, 17
patoca, Chelonodontops 336
Pattar 216-221
Pavillon 291
Paychari 233-235
Pearly 284
Peau bleue 86
Pêche-madame arabe 211
Pêche-madame argenté 212
Pêche-madame camus 211
Pêche-madame diabolin 211
pectinata, Atrina 41
pedimacula, Onigocia 192
Pelagic stingray 104
Pelagic thresher 74
pelagicus, Alopias 74
pelagicus, Portunus 33
pelamis, Katsuwonus 314
Pelates quadrilineatus 203
Péliau chanos 212
Pellona ditchela 162
Pellonas 115
PEMPHERIDAE 130, 161
Pempheris malabarica 287
Pempheris russellii 288
PENAEIDAE 9, 12
Penaeid shrimps 9, 12
PENAEOID 9
Penaeus (Fenneropenaeus) indicus 16
Penaeus (Fenneropenaeus) merguensis 17
Penaeus (Fenneropenaeus) penicillatus 17
Penaeus (Marsupenaeus) japonicus 18
Penaeus (Marsupenaeus) pulchricaudatus 18
Penaeus (Melicertus) canaliculatus 18
Penaeus (Penaeus) monodon 19
Penaeus (Penaeus) semisulcatus 19
penicillatus, Penaeus (Fenneropenaeus) 17
Pennahia anea 279
Pen shells 37, 41
penicillatus, Panulirus 26
PENTACEROTIDAE 132, 292
pentagona, Favites 3
Pentaprion longimanus 253
Perch-like fishes 123
PERCIFORMES 123, 133-139
PERCOIDEI 123
Peregrine shrimp 14
perezi, Catostylus 4
peronii, Nemipterus 268
Perpeire à grandes écailles 325
Persian Gulf sea snake 344
petersi, Dinoperca 194
petimba, Fistularia 182
Petit diable 109
Petite encornet indien 60
Petite taupe 75
phaiya, Gerres 253
Phal 293, 294, 297
Phani 326, 327
Pha-pant 161, 162
Phappa 105
Phappo 105
Phar 297
Pha-ran 289
Pharan 304, 306-308
Pharaoh cuttlefish 55
Pharaoh's cardinal 207
pharaonis, Apogonichthyoides 207
pharaonis, Sepia 55
Pharra 293, 295-297
phasmatodes, Gymnothorax 146
PHOSICHTHYIDAE 117
Photani 280-282
Photopectoralis aureus 236
Photopectoralis bindus 237
Phulano 103
Physsa 157
Piant 295
Pichankara 65
Pickhandle barracuda 309
picta, Diagramma 253
pictus, Chaetodon 291

<i>pictus, Plectorhinchus</i>	255	Poisson-sabre dentu	311
Pieuvre	66	Poisson sabre manchot	312
Pigeye shark	80	Pokia	260
Pig-nosed pony-fish	237	Pokki	331-335
Pike congers	114, 150	Polat	294
Pilotfish	226	Polka-dot ribbonfish	172
PINGUIPEDIDAE	301, 135	<i>Polydactylus mullani</i>	281
<i>pinguis, Sphyaena</i>	310	<i>Polydactylus plebeius</i>	282
Pinjalo	248	<i>polylepis, Epinephelus</i>	200
<i>pinjalo, Pinjalo</i>	248	<i>polynema, Parachaeturichthys</i>	302
<i>Pinjalo pinjalo</i>	248	POLYNEMIDAE	130, 280
Pink ear emperor	265	<i>Polynemus paradiseus</i>	282
Pink worm goby	303	<i>polyphagus, Panulirus</i>	26
PINNIDAE	37, 41	<i>polystictum, Desmodema</i>	172
Pintadine à lèvres noire	40	POMACANTHIDAE	132, 292
Pipefishes	121	<i>Pomacanthus annularis</i>	292
Pishi	75-77	<i>Pomacanthus maculosus</i>	292
Pishik	78	POMACENTRIDAE	133, 297
<i>Pisodonophis boro</i>	148	<i>Pomadasy</i>	129
<i>Pisodonophis cancrivorus</i>	148	<i>Pomadasy aheneus</i>	256
Pitho	321	<i>Pomadasy argenteus</i>	257
Pithoo	290	<i>Pomadasy argyreus</i>	257
Pittan	101, 103-105	<i>Pomadasy commersonii</i>	257
Pittan-dumb	103	<i>Pomadasy furcatus</i>	258
<i>placenta, Placuna</i>	42	<i>Pomadasy kaakan</i>	258
<i>Placuna placenta</i>	42	<i>Pomadasy maculatus</i>	258
Placune ovale	42	<i>Pomadasy multimaculatus</i>	259
PLACUNIDAE	38, 42	<i>Pomadasy olivaceus</i>	259
<i>plagiotaenia, Carangoides</i>	220	<i>Pomadasy stridens</i>	259
Plaintail turkeyfish	184	POMATOMIDAE	125, 212
<i>planipes, Matuta</i>	35	<i>Pomatopus saltatrix</i>	212
<i>Platax</i>	136	Pomfrets	3, 127, 238
<i>Platax orbicularis</i>	304	Pompaneau africain	229
<i>Platax teira</i>	304	Pompaneau indien	231
<i>platurus, Hydrophis</i>	345	Pompaneau lune	230
<i>Platybelone argalus</i>	175	Pompaneau muscadin	230
Platycéphale indien	192	Pompaneau pierrot	230
PLATYCEPHALIDAE	123, 190	Pompano à quille noire	216
<i>Platycephalus indicus</i>	192	Pompano dolphinfish	232
<i>platypterus, Istiophorus</i>	319	Pompanos	126, 214
<i>platystomus, Plicofollis</i>	167	Pondicherry shark	81
<i>playfairi, Plectorhinchus</i>	255	Ponyfishes	127, 233
<i>plebeius, Polydactylus</i>	282	Poonchaari	157
<i>Plectorhinchus flavomaculatus</i>	254	Poonchar-karari	157
<i>Plectorhinchus gaterinus</i>	254	Poonshirin	74
<i>Plectorhinchus gibbosus</i>	254	Poonshrin	76, 77
<i>Plectorhinchus pictus</i>	255	Pootuk	162
<i>Plectorhinchus playfairi</i>	255	Popat	299, 300
<i>Plectorhinchus schotaf</i>	255	Poplet	290
<i>Plectorhinchus sordidus</i>	256	Porc-épine ballon	339
<i>Plectorhinchus vittatus</i>	256	Porc-épine bécard	339
PLEURONCTIFORMES	140	Porc-épine boubou	340
<i>Plicofollis dussumieri</i>	167	Porcupinefishes	339, 142
<i>Plicofollis layardi</i>	167	Porcupine ray	105
<i>Plicofollis platystomus</i>	167	Porgies	129, 260
PLOTOSIDAE	116, 168	<i>Porites nodifera</i>	3
<i>Plotosus limbatus</i>	168	PORTUNIDAE	31, 32
<i>Plotosus lineatus</i>	168	<i>Portunus pelagicus</i>	33
<i>plumbeus, Carcharhinus</i>	83	<i>Portunus sanguinolentus</i>	33
<i>Pocillopora damicornis</i>	3	<i>Portunus segnis</i>	33
<i>poecilura, Gymnura</i>	105	Potato grouper	201
Pointed sawfish	95	Poulpe de sables	65
Poisson-papier tarture	162	Poulpe tacheté	65
Poisson pierre gris	187	Pourpre carénée	51
Poisson pierre orangé	186	<i>praeustus, Carangoides</i>	220
Poisson pilote	226	<i>prashadi, Sepia</i>	56
Poisson sabre asbas	312	Prawns	5, 7
Poisson-sabre cimeterre	312	PRIACANTHIDAE	124, 204
Poisson sabre commun	313	<i>Priacanthus hamrur</i>	205

Priacanthus prolixus 205, 206
Priacanthus sagittarius 205
Prionace glauca 86
PRISTIDAE 90, 95
 PRISTIFORMES 90
PRISTIGASTERIDAE 115, 161
Pristipomoides filamentosus 249
Pristipomoides multidentis 249
Pristipomoides sieboldii 249
Pristipomoides zonatus 250
pristis, Pristis 95
Pristis pristis 95
Pristis zijsron 95
 Pronghorn spiny lobster 26
prolatus, Gymnothorax 146
prolixus, Priacanthus 205, 206
Protonibea diacantha 280
Psenopsis cyanea 320
Psettodes erumei 322
PSETTODIDAE 322, 140
Pseudanthias cf. conspicuus 202
Pseudanthias townsendi 202
Pseudobalistes fuscus 333
Pseudocarcharias kamoharai 74
PSEUDOCARCHARIIDAE 70, 74
PSEUDOCROMIDAE 124, 203
Pseudochromis aldabraensis 203
Pseudorhombus arsius 322
Pseudorhombus elevatus 323
Pseudorhombus javanicus 323
Pseudorhombus triocellatus 323
Pseudosynanceia melanostigma 188
pseudotaeniatus, Apogonichthyoides 207
pseudothyrsoides, Gymnothorax 146
Pseudotriacanthus strigilifer 331
Pterois mombasae 184
Pterois russelii 184
Pteroplatytrygon violacea 104
pterotum, Benthosema 2, 3, 171
Pterygotrigla arabica 190
Puerulus sewelli 27
 Pufferfishes 141
 Puffers 142, 336
 Pugnose ponyfish 237
pulchricaudatus, Penaeus (Marsupenaeus) 18
pulmo, Rhizostoma 4
punctata, Cociella 190
punctata, Drepane 289
punctatus, Gymnothorax 147
puncticeps, Cynoglossus 330
punctifer, Rhinobatos 99
 Purpleback flying squid 64
 Purple mud crab 34
puta, Terapon 204
putnamae, Sphyaena 310

Q

Qatil 318, 319
qenie, Sphyaena 311
quadrilineatus, Cynoglossus 328
quadrilineatus, Pelates 203
quadrimaculatus, Herklotsichthys 152
 Queen-fishes 126, 214
queketti, Jaydia 208
 Quinn 305
quinqulineatus, Lutjanus 246

R

Rabba 98, 99
 Rabbitfishes 137, 305
RACHYCENTRIDAE 125, 213
Rachycentron canadum 213
radiatus, Epinephelus 200
 Rainbow runner 225
 Rainbow sardine 156
 Rainbow sardines 115, 156
 Rainbow shrimp 15
 Rain-gar 278, 279
 Raingi 164, 166
RAJIDAE 92, 100
RAJIFORMES 91
ramani, Sepia 56
 Rama Rao's scorpionfish 185
ramaroi, Scorpaenopsis 185
randalli, Himantura cf. 4, 102
randalli, Nemipterus 268
 Randall's threadfin bream 268
 Rangan 278, 279
 Rani koi 290-292
 Ranzania 340
Ranzania laevis 340
Rastrelliger kanagurta 315
 Rawans 280-282
 Rays 3, 4
 Razorbelly scad 215
 Razor clams 38, 44
recens, Marcia 4, 45
 Redcoat 182
 Red cornetfish 182
 Redfin dwarf monocle bream 269
 Red mullets 130, 282
 Redtail butterflyfish 290
 Redtail prawn 17
 Red-toothed triggerfish 333
 Reef sea snake 345
 Reinhardt's cranch squid 59
Remora albescens 213
Remora australis 214
 Rémora commun 213
 Rémora des requins 214
remora, Remora 214
Remora remora 214
 Remoras 126, 213
 Renard à gros yeux 74
 Renard pélagique 74
 Requiem sharks 72, 79
 Requin aiguille gris 86
 Requin à joues blanches 81
 Requin à museau pointu 86
 Requin à nez rude 83
 Requin à pointes blanches du lagon 87
 Requin à queue tachetée 84
 Requin babosse 79
 Requin baleine 77
 Requin balestine 80
 Requin baliaï 81
 Requin bordé 82
 Requin bouledogne 82
 Requin-chabot camot 75
 Requin-chabot élégant 76
 Requin-chabot gris 76
 Requin crocodile 74
 Requin du Ganges 84
 Requin épée 87
 Requin gracile 80
 Requin grandes ailes 85
 Requin gris 83

Requin-hâ à gros yeux	78	Roshna prawn	21
Requin limon faucille	85	Rosy dwarf monocle bream	270
Requin-marteau halicorne	88	Rosy goatfish	285
Requin nourrice fauve	77	Rouget-barbet cinnabare	283
Requin océanique	82	Rouget-barbet double-tache	285
Requin pointes noires	83	Rouget-barbet indien	284
Requin sagrin	85	Rouget-barbet sellé	285
Requin soyeux	81	Rough flathead	191
Requin taureau	73	Rough-nose conger	149
Requin tigre commun	84	Round herrings	115
Requin tisserand	80	Round ribbontail ray	104
Requin zèbre	76	roxburghiana, Ceriops	3
reticularis, Gymnothorax	147	Rubberlips	253
Reticulate whipray	102	ruber, Otolithes	278
Reticulated leatherjacket	335	rubescens, Parupeneus	285
Reticulate unicornfish	308	rubrum, Sargocentron	182
reticulatus, Naso	308	Ruffs	139, 320
reversa, Amblyraja	100	Runners	126, 214
Reversed skate	100	russelii, Dendrophysa	274
Rhabdosargus haffara	263	russelii, Pterois	184
Rhabdosargus sarba	263	russelli, Decapterus	224
Rhina ancylostoma	99	russellii, Pempheris	288
RHINCODONTIDAE	71, 77	Rusty jobfish	239
Rhincodon typus	77	rutilans, Aphareus	239
RHINIDAE	91, 97		
RHINOBATIDAE	92, 98	S	
Rhinobatos cf. annandalei	4, 99	Saana	11-20, 22
Rhinobatos punctifer	99	Sackfish	311
Rhinoptera javanica	107	Sacura boulengeri	202
Rhinoptera jayakari	107	Saddleback silver-biddy	252
RHINOPTERIDAE	93, 107	Saddle grunt	258
rhinorhynchos, Ostracion	335	Safay patar	215
Rhizophora mucronata	3	Safi	225, 228, 229, 304-308
Rhizoprionodon acutus	86	sagittarius, Priacanthus	205
Rhizoprionodon oligolinx	86	Sagor catfish	165
Rhizostoma pulmo	4	sagor, Hexanematichthys	165
rhombea, Gazza	235	Sai	225
Rhomboid toothpony	235	Saik pishik	86
rhombus, Thysanoteuthis	64	Sail	97-99
RHYNCHOBATIDAE	91, 97	Sailfin armourhead	292
Rhynchobatus laevis	97	Sailfishes	139, 318
Rhynchoconger squaliceps	149	Sain-yon	227
Riami-hashoor	301	Sairi	144
Riami Kika	28	salalah, Acroteriobatus	98
Riami sang	145-147	Salalah guitarfish	98
Riami sarando	304	Salicoque des vases profondes	21
Ribbonfishes	118, 172	saltatrix, Pomatomus	212
Rice-paddy eel	148	SAMARIDAE	141, 325
Ridgeback shrimp	20	Samaris cristatus	325
Rishi	280-282	Samundri sanp	343-347
Rite à trois taches	323	Sana	11
Rite dentu	322	Sandbar shark	83
Rite javanais	323	Sandbird octopus	65
Rite targeur	323	Sand flounders	140, 322
rivoliانا, Seriola	229	Sandperches	135, 301
rivulatus, Lutjanus	246	Sand tiger shark	73
Roa jayakari	291	Sand tiger sharks	69, 73
robinsoni, Parapercis	301	Sang	148-151
robusta, Dendrophyllia	3	Sanglore	213
rochei, Auxis	313	Sangra	213
Rockcods	124, 195	sanguineus, Lutjanus	247
Rockfishes	121, 183	sanguinolentus, Portunus	33
rodericensis, Kumococius	191	Sankh	145-147
Rogadius serratus	192	San-po	225
Rohila	168	Sanpo	144
Rombou léopard	324	Santer seabream	261
Rombou oval	324	Sapna	334, 335
Rooster venus	46	Sapsap à deux taches	236
rosenbergii, Macrobrachium	22		

- Sapsap dentu 234
 Sapsap fil 234
 Sapsap voile orange 237
 Sara kangho 175, 176
 Saram 226, 227
 Saram aanam 226
 Saram gazdani 226
 Saram kainchan 227
 Sarando 289
sarba, Rhabdosargus 263
 Sar commun du Cap 262
Sarda orientalis 315
 Sardine arc-en-ciel 156
 Sardine arc-en-ciel gracile 156
Sardinella albella 153
Sardinella gibbosa 154
Sardinella longiceps 154
Sardinella melanura 154
 Sardinellas 3, 114, 151
Sardinella sindensis 155
 Sardinelle blanche 153
 Sardinelle dorée 154
 Sardinelle indienne 154
 Sardinelle queue noire 154
 Sardines 114, 151
Sargocentron rubrum 182
 Sargue doré 263
 Sari kangha 182
 Sari kunghi 177, 178
 Sarum aalari 227
sathete, Strophidon 147
Saurida gracilis 172
Saurida longimanus 169
Saurida sp. 4, 170
Saurida tumbil 169
Saurida undosquamis 170, 271
 Sauteur carsia 227
 Sauteur leurre 227
 Sauteur sabre 227
 Sauteur talang 226
 Savalai hairtail 312
savala, Lepturacanthus 312
 Sawfishes 90, 95
 Sawmaxilla scorpionfish 183
 Sawtooth barracuda 310
 Say-hi aal 227
 Say-sari 296, 297
 Scabbardfishes 138, 311
scaber, Grammoplites 191
 Scads 3, 4, 126, 214
 Scalloped hammerhead 88
 Scalloped spiny lobster 25
 Scalybreast gurnard 189
 Scaly dwarf monocle bream 270
 Scaly whipray 101
SCARIDAE 134, 299
Scarus arabicus 299
Scarus ghobban 299
Scarus zufar 300
SCATOPHAGIDAE 136, 305
Scatophagus argus 305
Scats 136, 305
schistosus, Hydrophis 346
schlegelii, Erythrocles 238
schotaf, Plectorhinchus 255
SCIAENIDAE 130, 272
Scoliodon laticaudus 87
Scolopsis 129
Scolopsis bimaculata 270
Scolopsis ghanam 271
Scolopsis taeniata 271
Scolopsis torquatus 271
Scolopsis vosmeri 272
Scomber australasicus 315
Scomberoides 126
Scomberoides commersonnianus 226
Scomberoides lysan 227
Scomberoides tala 227
Scomberoides tol 227
Scomberomorus 138
Scomberomorus commerson 316
Scomberomorus guttatus 316
Scomberomorus koreanus 316
Scomberomorus lineolatus 317
SCOMBRIDAE 138
SCOMBROIDEI 137
SCORPAENIDAE 121, 183
SCORPAENIFORMES 121
Scorpaenodes investigatoris 184
Scorpaenodes muciparus 185
Scorpaenopsis lactomaculata 185
Scorpaenopsis ramaroi 185
 Scorpionfishes 121, 183
 Scribbled leatherjacket filefish 334
scriptus, Aluterus 334
sculptilis, Parapenaeopsis (Mierspenaeopsis) 15
SCYLIORHINIDAE 71, 77
Scylla olivacea 34
SCYLLARIDAE 23, 24, 28
Scyllarides tridacnophaga 28
Scylla serrata 32
Scylla tranquebarica 34
 Seabasses 124, 195
 Seabreams 4, 129, 260
 Sea catfishes 3, 116, 163
 Seachubs 131, 288
 Seahorses 121
 Sea mussels 37, 40
 Sea perches 123, 193
 Searobins 123, 189
SEA SNAKES 4, 341
sebae, Lutjanus 247
 Secretive sole 326
Secutor cf. insidiator 4, 237
Secutor interruptus 237
 Seem 223, 224, 228, 315
 Seep 41
 Seerfishes 138, 313
 Seeri 217, 280-282
 Seerin 183-190
 Seerol 98, 99
 Seerole 97
segnis, Portunus 33
seheli, Moolgarda 296
 Seiche capuchon 56
 Seiche étoilée 57
 Seiche grandes mains 54
 Seiche kobi 55
 Seiche pharaon 55
 Seiche trident 57
 Sélar à bande dorée 228
 Sélar aile noire 216
 Sélar coulisou 228
Selar crumenophthalmus 228
 Sélar harangule 216
Selaroides leptolepis 228
 Sélar queue jaune 217
 Sélar subari 215

<i>semiluctuosa, Paranibea</i>	279	Siah-e-tighlum	226
<i>semisulcatus, Penaeus (Penaeus)</i>	19	Siah-ho	279
<i>sephen, Pastinachus</i>	103	Siaho	280
<i>Sepia inermis</i>	58	Siah patar	214
<i>Sepia kobeiensis</i>	55	Siah pithoo	226
<i>Sepia latimanus</i>	54	Siah pushat	226
<i>Sepia pharaonis</i>	55	sialis, Apogonichthyoides	207
<i>Sepia prashadi</i>	56	Siari	280, 281, 282
<i>Sepia ramani</i>	56	Sicilian comb-finned squid	63
<i>Sepia stellifera</i>	57	Sicklefin devilray	109
<i>Sepia trygonina</i>	57	Sicklefin lemon shark	85
<i>Sepiella inermis</i>	58	Sicklefishes	131, 289
SEPIIDAE	40, 54	Sickle pomfret	238
SEPIOIDEA	52	sicula, Ctenopteryx	63
<i>Sepioteuthis lessoniana</i>	60	Sid	80
SERGESTIDAE	9, 11	Sida	80
Sergestid shrimps	9, 11	sieboldii, Pristipomoides	249
Serin	173, 300	SIGANIDAE	137, 305
<i>Seriola</i>	126	Sigan pintade	305
<i>Seriola dumerili</i>	228	Siganus canaliculatus	305
<i>Seriola rivoliana</i>	229	Siganus javus	305
Sérieole amourez	229	Siganus luridus	306
Sérieole couronnée	228	sihama, Sillago	212
Sérieole limon	229	Silky shark	81
<i>Seriolina nigrofasciata</i>	229	SILLAGINIDAE	125, 211
<i>Serpent marin jaune</i>	345	Sillaginopodys chondropus	211
<i>Serpenton de rizières</i>	148	Sillaginopsis domina	211
SERRANIDAE	124, 195	Sillago arabica	211
<i>serrata, Scylla</i>	34	Sillagos	125, 211
Serrated flathead	192	Sillago sihama	212
<i>serratus, Rogadius</i>	192	SILURIFORMES	116
<i>serrulifer, Brachypterois</i>	183	Silverbiddies	128, 251
<i>setifer, Xiphasia</i>	135, 301	Silver grunt	257
<i>setigerus, Lophiomus</i>	173	Silver harpadon	169
<i>setirostris, Thryssa</i>	159	Silver moony	290
<i>sewelli, Puerulus</i>	27	Silver pomfrets	140, 321
<i>sexfasciatus, Caranx</i>	222	Silver sillago	212
Shadow driftfish	320	Silver-stripe round herring	155
Shads	114, 151	Silver tripodfish	331
Shaggy angler	174	similis, Filimanus	281
Shaher bano	297, 298	Sin croaker	276
Sharks	3, 4, 68	sindensis, Hyporhamphus	178
Shark sucker	214	sindensis, Neopomacentrus	298
Sharksuckers	126, 213	sindensis, Sardinella	155
Sharpear enope squid	58	Sind halfbeak	178
Sharpfin barracuda	308	Sind sardinella	155
Sharpnose hammer croaker	275	singhalensis, Uroteuthis (Photololigo)	62
Shazada	165	Singhara	166
sheim, Acanthopagrus	261	sinuspersici, Torpedo	97
Shid	80	sirishai, Ilisha	161
Shikki	101, 103, 104	Siroe	97-99
Shiny bird squid	63	Sisi mayyah	60
Shishi mayya	60	Skates	92, 100
Shokiar	166	Skinnycheek lanternfish	171
Shoor	211, 212	Skipjack tuna	314
Shortbill spearfish	320	Sleek unicornfish	308
Shortfin mako	75	Sleeper rays	90, 96
Shortfin scad	223	Slender bambooshark	76
Short-nosed tripodfish	331	Slender conger	150
Short pelvic flounders	140, 322	Slender giant moray	147
Short sea snake	343	Slender mola	340
Short-tooth cardinalfish	206	Slender plain moray	146
Shovelnose sea catfish	164	Slender rainbow sardine	156
Showkiar	163, 167	Slender red scad	224
Shrimps	3, 4, 5, 7	Slender threadfin bream	269
Shrimp scad	215	Slipmouths	127, 233
Shumala	260	Slipper cupped oyster	43
Si-agosh	165	Slipper lobsters	24, 28
Siah Dhotar	256	Sliteye shark	85

- Small-headed sea snake 344
 Smallhead hairtail 312
 Smallscaled grouper 200
 Small-scaled terapon 204
 Smallscale grubfish 301
 Smallspeckled dart 230
 Smallspeckled grunter 257
 Small-toothed conger 149
 Small toothed jobfish 239
 Smalltooth emperor 265
 Smelt-whittings 125
smithvanizi, Decapterus cf. 5, 224
 Smooth blaasop 337
 Smooth dwarf monocle bream 269
 Smoothnose wedgefish 97
 Smoothtail mobula 109
 Snaggletooth shark 79
 Snake eels 114, 148
 Snakefish 171
 Snake mackerels 137, 311
 Snappers 128, 239
 Snowflake moray 145
 Snubnose emperor 264
 Snubnose pompano 230
Snyderina guentheri 186
 Sobaity seabream 264
 Soda 33
solandri, Acanthocybium 138, 313
soldado, Nibea 277
 Soldier catfish 166
 Soldier croaker 277
 Soldierfishes 120, 181
 Sole 322-325, 328-330
Solea elongata 327
 Sole de Commerson 327
 Sole d'orient 326
 Sole élancée 327
SOLEIDAE 326, 141
Solen dactylus 4, 44
SOLENIDAE 38, 44
Solenocera choprai 20
Solenocera crassicornis 21
Solenocera hextii 21
SOLENERIDAE 10, 20
 Solenoceric shrimps 10, 20
 Soles 141, 326
 Sole zèbre 327
 Soli 326, 327
 Somali ghora 318
 Sonab 229-231
 Sonaf 229-231, 238
sona, Hemiaris 164
 Sonam 229-231
 Sona sea catfish 164
sonnerati, Cephalopholis 195
 Sooli 272, 273
 Sorapi 86
 Sorapi pishik 86
 Sordid rubberlip 256
sordidus, Abudedefduf 298
sordidus, Plectorhynchus 256
 Sor-duff 246
 Sore kiddi 20, 21
 Sore mahi 181, 182, 269-271
 Soroo 261
sorrah, Carcharhinus 84
Sorsogona melanoptera 193
Sorsogona prionota 193
 Spadefishes 136, 304
 Spadenose shark 87
spadiceus, Lagocephalus 338
 Spangled emperor 266
 Spare royal 261
 Spare sobaity 264
SPARIDAE 129, 260
Sparidentex hasta 264
Sparidentex jamalensis 264
 Spearfishes 139, 318
 Spear shrimp 14
specious, Gnathanodon 225
 Speckled sandperch 301
 Speckled shrimp 13
 Speckled tonguesole 330
speculiger, Hirundichthys 181
speigleri, Moolgarda 296
 Speigler's mullet 296
Sphyaena acutipinnis 308
Sphyaena barracuda 309
Sphyaena forsteri 309
Sphyaena jello 309
Sphyaena obtusata 310
Sphyaena pinguis 310
Sphyaena putnamae 310
Sphyaena qenie 311
SPHYRAENIDAE 137, 308
 SPHYRAENOIDEI 137
Sphyrna lewini 88
Sphyrna mokarran 88
SPHYRNIDAE 72, 87
 Spider prawn 22
spilostylus, Cyclichthys 339
 Spindle croaker 276
 Spinefoots 137, 305
 Spineless cuttlefish 58
 Spinesnout squirrelfish 181
 Spinetail mobula 108
spinifer, Argyrops 261
 Spinner shark 80
 Spinycheek grouper 197
 Spinycheek lanternfish 171
 Spiny flathead 191
 Spiny flatheads 123, 190
 Spiny lobsters 24, 25
 Spiny puffers 142, 339
 Spiny turbot 322, 140
spiralis, Hydrophis 346
 Spiral ivory whelk 4, 51
spirata, Babylonis 4, 51
 Spotbase burrefish 339
 Spotbelly batfish 304
 Spotfin cardinal 208
 Spotfin flathead 191
 Spotfin flyingfish 179
 Spotfin frogfish 174
 Spot-fin porcupinefish 340
 Spottail needlefish 176
 Spot-tail shark 84
 Spottail sleeper ray 96
 Spotted catfish 163
 Spotted croaker 280
 Spotted eagleray 106
 Spotted flathead 190
 Spotted guitarfish 99
 Spotted scat 305
 Spotted sicklefish 289
 Spotted yellofin seabream 261
 Spotwing gurnard 190
Spratelloides delicatulus 155

<i>Spratelloides gracilis</i>	155	<i>suppositus, Grammolites</i>	191
Squale bouclé	73	<i>supravittatus, Upeneus</i>	287
<i>squaliceps, Rhynchoconger</i>	149	Surgeonfishes	137, 306
SQUALIFORMES	69	<i>surinamensis, Lobotes</i>	251
Squaretail mullet	295	Surmai	316, 317
Squids	3, 53	<i>suttoni, Cheilopogon</i>	179
Squirrelfishes	120, 181	Sutton's flyingfish	179
Stargazers	134, 300	Swach	280
Starry cuttlefish	57	Swasso	324-327
Starry triggerfish	332	Sweepers	130, 287
Star shell	51	Sweetlips	129, 253
<i>stebbingi, Metapenaeus</i>	14	Swimming crabs	31, 32
<i>Stegostoma fasciatum</i>	76	Swordfish	138, 318
STEGOSTOMATIDAE	71, 76	Swordtip squid	61
<i>steindachneri, Taractichthys</i>	238	SYGNATHIFORMES	121
Stellate puffer	336	<i>Synagrops adeni</i>	194
<i>stellatus, Abalistes</i>	332	SYNANCEIIDAE	122, 186
<i>stellatus, Arothron</i>	336	<i>synapturoides, Zebrias cf.</i>	4, 327
<i>stellifera, Sepia</i>	57	SYNGNATHIDAE	121
<i>Stephanolepis diaspros</i>	335	SYNGNATHINAE	121
STERNOPTYCHIDAE	116	SYNODONTIDAE	117, 168
<i>Sthenoteuthis oualaniensis</i>	64	<i>Synodus indicus</i>	170
Stingrays	92, 100	<i>Synodus macrops</i>	170
<i>stokesii, Hydrophis</i>	347		
Stoke's sea snake	347	T	
<i>Stolephorus commersonnii</i>	157	Taan-tah	277
<i>Stolephorus indicus</i>	157	Taan-tar	259
<i>stoliczkae, Epinephelus</i>	200	<i>tade, Chelon</i>	294
STOMIIFORMES	116	Tade mullet	294
Stonefishes	122, 186	<i>taeniata, Scolopsis</i>	271
Streaked seerfish	317	<i>Taenioides nigrimarginatus</i>	303
Streaked spinefoot	305	<i>taeniola, Gavialiceps</i>	150
<i>striata, Jaydia</i>	208	<i>Taeniura lymma</i>	104
<i>striatula, Ilisha</i>	162	<i>Taeniurops meyeri</i>	104
<i>stridens, Pomadasys</i>	259	<i>tagal, Ceriops</i>	3
<i>stridulans, Metapenaeopsis</i>	12	Tagan	297
<i>strigilifer, Pseudotriacanthus</i>	331	Taikairi	262
Striped bonito	315	Tailagi seem	228, 231
Striped eel catfish	168	Tailago	85
Striped grouper	198	Tailago pishik	86
Striped marlin	319	Taileyed goby	302
Striped piggy	259	Taint pharra	295, 296
Striped ponyfish	233	<i>Takifugu oblongus</i>	338
Striped threadfin	282	Takora	96
STROMATEIDAE	140, 321	<i>talabonoides, Congresox</i>	150
STROMATEOIDEI	139	<i>talamparoides, Carangoides</i>	221
Strong spine silver-biddy	253	Talang queenfish	226
<i>Strongylura leiura</i>	176	<i>tala, Scomberoides</i>	227
<i>strongylura, Strongylura</i>	176	<i>talboti, Apogon cf.</i>	206
<i>Strongylura strongylura</i>	176	Talsa	280-282
<i>Strophidon sathete</i>	147	Tangs	137, 306
<i>stylifera, Parapenaeopsis (Parapenaeopsis)</i>	15	Tang's snapper	240
<i>styliferus, Exopalaemon</i>	21	Taningia danae	59
Sua	272-280	Taning's octopus squid	59
Suachi	280	Tankori	96
Suati	280	<i>Taractichthys steindachneri</i>	238
<i>subrostratus, Arius</i>	164	<i>tarapacana, Mobula</i>	109
<i>subviridis, Liza</i>	295	Tardoore	162
Suddo	95	<i>tardoore, Opisthopterus</i>	162
Sufaid kangra	279	Tarli	153-155
Sufaid poplt	321	Tarpon Indo-Pacific	144
<i>Sufflamen fraenatum</i>	333	Tarpons	113, 144
Sukkan	279	Tassergal	212
Sulemani	144, 163	Taupe bleu	75
<i>sulphureus, Upeneus</i>	286	<i>taurus, Carcharias</i>	73
Sulphur goatfish	286	Tawny nurse shark	77
Sumandar palla	156	Teet pharan	293
<i>sumatranus, Hemiaris</i>	165	<i>teira, Platax</i>	304
<i>supercilius, Alopias</i>	74		

<i>temminckii</i> , <i>Lamiopsis</i>	85	Tigertooth croacker	278
Tenpounder	144	Tighlum	321
Tenpounders	113, 144	Tikari	33
<i>Tentoriceps cristatus</i>	312	Tiki kakara	33
<i>Tenualosa ilisha</i>	155	Tikka kissi	262
<i>Tenualosa toli</i>	156	Tikki pishi	77
<i>tenuipes</i> , <i>Nematopalaemon</i>	22	Tikki wari kissi	262
<i>tenuis</i> , <i>Odontamblyopus</i>	136	Tiklo	233-235
<i>Terapon jarbua</i>	203	<i>tille</i> , <i>Caranx</i>	223
<i>Terapon puta</i>	204	Tille trevally	223
<i>Terapon theraps</i>	204	<i>timlei</i> , <i>Narcine</i>	96
TERAPONTIDAE	124, 203	Tinji	312, 313
<i>tetradactylum</i> , <i>Eleutheronema</i>	280	Tintle	260-262
Tétraodon-lièvre doré	338	Tip-puch	262
TETRAODONTIDAE	142	Titan cardinalfish	210
TETRAODONTIFORMES	141	Toadfishes	119, 173
<i>Tetrapturus</i>	139	Toli shad	156
<i>Tetrapturus angustirostris</i>	320	<i>tol</i> , <i>Tenualosa</i>	156
TETRAROGIDAE	122	<i>tol</i> , <i>Scomberoides</i>	227
<i>Tetrosomus gibbosus</i>	335	Tomato hind	195
TEUTHOIDEA	53	<i>tonggol</i> , <i>Thunnus</i>	318
<i>textile</i> , <i>Paphia</i>	47	Tonguesoles	141, 328
Textile venus	47	Tont	274, 277
<i>thalassina</i> , <i>Netuma</i>	166	Toora	335, 336
<i>Thalassoma lunare</i>	133, 134	Tooro	336-338, 340
<i>thazard</i> , <i>Auxis</i>	314	Tooru	335, 336
Thazard-bâtard	313	Tooth-ponies	127, 233
Thazard cirrus	317	Tooth ponyfish	234
Thazard coréen	316	Toro-gallo	167
Thazard ponctué indo-pacifique	316	TORPEDINIDAE	91, 96
Thazard rayé indo-pacifique	316	TORPEDINIFORMES	90
<i>Thenus indicus</i>	28	<i>Torpedo cf. panthera</i>	96
<i>Thenus orientalis</i>	29	<i>Torpedos</i>	91, 96
<i>Thenus parindicus</i>	29	Torpedo scad	225
<i>theraps</i> , <i>Terapon</i>	204	<i>Torpedo sinuspersici</i>	97
Thinspine sea catfish	167	<i>torquatus</i> , <i>Scolopsis</i>	271
Thonine orientale	314	Tota	299, 300
Thon albacore	317	<i>townsendi</i> , <i>Parasclopsis</i>	270
Thon mignon	318	<i>townsendi</i> , <i>Pseudanthias</i>	202
Thon obèse	317	Townsend's anthias	202
<i>thoracata</i> , <i>Escualosa</i>	152	<i>Trachinocephalus myops</i>	171
Threadfin breams	3, 129, 267	TRACHINOIDEI	134
Threadfins	130, 280	<i>Trachinotus</i>	126
Threadfin sea catfish	163	<i>Trachinotus africanus</i>	229
Three-pore moray	145	<i>Trachinotus baillonii</i>	230
Three-spot swimming crab	33	<i>Trachinotus blochii</i>	230
Three spotted flounder	323	<i>Trachinotus botla</i>	230
Thresher sharks	70, 74	<i>Trachinotus mookalee</i>	231
<i>Thryssa dayi</i>	158	TRACHIPTERIDAE	118, 172
<i>Thryssa dussumieri</i>	158	<i>Trachurus indicus</i>	231
<i>Thryssa hamiltonii</i>	158	<i>Trachysalambria aspera</i>	20
<i>Thryssa malabarica</i>	159	<i>tranquebarica</i> , <i>Scylla</i>	34
<i>Thryssa mystax</i>	159	Trevallies	126, 214
<i>Thryssa setirostris</i>	159	TRIACANTHIDAE	141, 331
<i>Thryssa vitrirostris</i>	160	<i>Triacanthus biaculeatus</i>	331
Thumbprint emperor	265	<i>Triacanthus nieuhoffii</i>	331
Thumbprint monocle bream	270	<i>Triaenodon obesus</i>	87
Thunnus	138	TRIAKIDAE	72, 78
<i>Thunnus albacares</i>	317	TRICHIURIDAE	138, 311
<i>Thunnus obesus</i>	317	<i>Trichiurus lepturus</i>	313
<i>Thunnus tonggol</i>	318	<i>tridacnophaga</i> , <i>Scyllarides</i>	28
Thuri	178-181	Trident cuttlefish	57
<i>thurstoni</i> , <i>Mobula</i>	109	<i>trifasciatus</i> , <i>Parupeneus</i>	285
THYSANOTEUTHIDAE	64	Triggerfishes	142, 332
<i>Thysanoteuthis rhombus</i>	64	TRIGLIDAE	123, 189
Tida	331	<i>triocellatus</i> , <i>Pseudorhombus</i>	323
Tidda	335, 336	Triplecross lizardfish	170
Tiger cardinalfish	208	Tripletail	251
Tiger shark	84	Tripletails	128, 251

Tripod épineux	331
Tripodfishes	141, 331
Tripodin nez court	331
<i>Tripterodon</i>	136
<i>Tripterodon orbis</i>	304
Tropical two-wing flyingfish	180
Trout sweetlips	255
<i>truncata, Jaydia</i>	209
<i>trygonina, Sepia</i>	57
<i>Trypauchen vagina</i>	303
<i>tukula, Epinephelus</i>	201
<i>tumbil, Saurida</i>	169
Tum kairo	83
Tunas	3, 138, 313
Turban shells	49
TURBINIDAE	49, 50
Turbo couronné	50
<i>Turbo marmoratus</i>	50
Turbot épineux-indien	322
Turbo vert	50
Tuskfishes	133, 299
Twinbar cardinalfish	207
Twoblotch ponyfish	236
Twospot red snapper	241
Two-tone goatfish	285
<i>Tylosurus acus</i>	176
<i>Tylosurus acus melanotus</i>	176
<i>Tylosurus crocodilus</i>	177
<i>typus, Histiopterus</i>	292
<i>typus, Rhincodon</i>	77

U

<i>uarnak, Himantura</i>	102
Ulbuk	313, 314
Ulla-lainduk	148
Ul-lus	314
Ulo-la	257
<i>umbratilis, Aseraggodes cf.</i>	326
<i>Umbrina canariensis</i>	280
<i>undosquamis, Saurida</i>	170, 271
<i>undulosus, Epinephelus</i>	201
Unicorn cod	172
Unicornfishes	137, 306
Unicorn leatherjacket filefish	334, 335
Unicorn sole	326
<i>unimaculata, Chrysiptera</i>	298
<i>Upeneus guttatus</i>	285
<i>Upeneus heemstra</i>	286
<i>Upeneus moluccensis</i>	286
<i>Upeneus sulphureus</i>	286
<i>Upeneus supravitatus</i>	287
<i>Upeneus vittatus</i>	287
URANOSCOPIDAE	134, 300
<i>Uranoscopus dollfusi</i>	300
<i>Uraspis helvola</i>	231
<i>uraspis, Uraspis</i>	232
<i>Uraspis uraspis</i>	232
Urbi	169-171
<i>Uroconger cf. lepturus</i>	150
<i>Urogymnus asperrimus</i>	105
<i>Uroteuthis (Photololigo) duvaucelii</i>	61
<i>Uroteuthis (Photololigo) edulis</i>	61
<i>Uroteuthis (Photololigo) singhalensis</i>	62
<i>ushiei, Dasyatis</i>	100
Ushtar patar	214, 215
Uthar	101

V

<i>vagina, Trypauchen</i>	303
<i>vaigiensis, Abudedefduf</i>	297
<i>vaigiensis, Ellochelon</i>	295
<i>vaigiensis, Kyphosus</i>	289
<i>vanicolensis, Mulloidichthys</i>	283
Variable-lined fusilier	250
Variable torpedo ray	97
<i>vari, Alepes</i>	216
<i>varilineata, Caesio</i>	250
VENERIDAE	39, 44
Ventral-barred moray	147
<i>ventrocellata, Cephalopsetta</i>	322
Venus clams	39, 44
Vénus marbrée	45
Verrue bronzée	278
Verrue tigre	278
<i>versicolor, Panulirus</i>	26
<i>vevillum, Atrina</i>	41
Vieille ananas	195
Vielle d'Arabie	195
<i>Vinciguerria</i>	117
<i>violacea, Pteroplatytrygon</i>	104
Violon crépuscule	203
Viperfishes	116
Viperine sea snake	347
<i>viperinus, Hydrophis</i>	347
<i>virescens, Aprion</i>	239
<i>vitrostris, Thyryssa</i>	160
<i>vitta, Lutjanus</i>	247
<i>vittatus, Plectorhinchus</i>	256
<i>vittatus, Upeneus</i>	287
Vivaneau à cinq bandes	246
Vivaneau a queue noir	243
Vivaneau à raies bleues	244
Vivaneau à raies jaunes	245
Vivaneau bourgeois	247
Vivaneau chien rouge	241
Vivaneau cramoisi	242
Vivaneau des mangroves	241
Vivaneau du Bengale	241
Vivaneau encrier	242
Vivaneau flamme	240
Vivaneau gros yeux	245
Vivaneau job	239
Vivaneau malabar	246
Vivaneau maori	246
Vivaneau pagaie	243
Vivaneau plat	248
Vivaneau queue	245
Vivaneau rouillé	239
Vivaneau rubis	240
Vivaneau strié	242
Vivaneau tête	247
Vivaneau tête	247
Vivaneau tidents	239
Vivaneau verrue	240
Vivaneau zibelou	244
Vivanette queue jaune	248
Voilier indo-pacifique	319
<i>volatilis, Ornithoteuthis</i>	63
<i>volitans, Exocoetus</i>	180
<i>vosmeri, Scolopsis</i>	272
<i>vulgaris, Octopus cf.</i>	66

W

Wahoo	138, 313
Wan-nag	321
Warna mush-ka	278

Warook 80
 Wasp fishes 122, 186
 Wasp scorpionfishes 122, 186
 Wavy-lined grouper 201
 Weakfishes 130, 272
 Weasel sharks 72, 79
 Wedgefishes 91, 97
 Western kuruma prawn 18
 Whale shark 71, 77
 Whalesucker 214
 Whipfin ponyfish 234
 Whipfin silver-biddy 251
 Whitebarred rubberlip 255
 White-blotched grouper 199
 Whiteblotched scorpionfish 185
 Whitecheek monole bream 272
 Whitecheek shark 81
 Whitefin wolf-herring 160
whitelegii, Cubiceps **320**
 Whitemouth jack 232
 White sardine 152
 White sardinella 153
 White seabream 262
 Whitespotted filefish 334
 Whitespotted octopus 65
 Whitespotted whipray 101
 White-spotted spinefoot 305
 White suckerfish 213
 Whitetip reef shark 87
 Whitetongue jack 231
 Windowpane oyster 42
 Windowpane shells 38, 42
 Winghead shark 87
 Witch prawn 18
 Wolf-herrings 115, 160
 Worm eels 114, 148
 Worook 82

Wrasses 133, 299

X

xanthopterus, Acanthurus **307**
xanthura, Paracaesio **248**
Xiphasia setifer **135, 301**
Xiphias gladius **318**
XIPHIIDAE **138, 318**
 XIPHIODEI 138
Xyrichtys **134**

Y

Yellowback grunt 256
 Yellowbar angelfish 292
 Yellowbelly sea snake 345
 Yellowfin goatfish 283
 Yellowfin hind 195
 Yellowfin surgeonfish 307
 Yellowfin tuna 317
 Yellow moon crab 35
 Yellow sea snake 346
 Yellow shrimp 13
 Yellowspotted trevally 219
 Yellow-spotted triggerfish 333
 Yellowstreaked snapper 245
 Yellowstriped goatfish 287
 Yellowstripe goatfish 282
 Yellowstripe scad 228
 Yellowtail blue snapper 248
 Yellowtail scad 217

Z

Zahmay swasso 328-330
 Zahro 97-99
 Zaid 78
 Zangi sar 318, 319
 Zardag 317
 Zarkao 226, 228, 229
 Zarkaok 228, 229
 Zarkaowk 226
 Zarkawak 229
 Zebra shark 71, 76
Zebrias cf. synapturoides **4, 327**
zijson, Pristis **95**
zonatus, Pristipomoides **250**
zufar, Scarus **300**
zugei, Dasyatis **100**
zysson, Nemipterus **269**

LIST OF COLOUR PLATES

PLATE I

1. PENAEIDAE: *Penaeus (Fanneropenaeus) merguensis*
2. PENAEIDAE: *Penaeus (Penaeus) semisulcatus*
3. PENAEIDAE: *Penaeus (Parapenaeopsis) styliifera*
4. PALINURIDAE: *Panulirus homarus*
5. PALINURIDAE: *Panulirus polyphagus*
6. PORTUNIDAE: *Charybdis smithii*
7. PORTUNIDAE: *Charybdis feriatu*
8. PORTUNIDAE: *Portunus sanguinolentus*

PLATE II

9. ECHINORHINIDAE: *Echinorhinus cf. brucus*
10. HETERODONTIDAE: *Heterodontus omanensis*
11. ALOPIDAE: *Alopias pelagicus*
12. ALOPIDAE: *Alopias superciliosus*
13. LAMNIDAE: *Isurus oxyrinchus*
14. HEMISCYLLIDAE: *Chiloscyllium griseum*
15. RHINCODONTIDAE: *Rhincodon typus*
16. TRIAKIDAE: *Iago omanensis*
17. TRIAKIDAE: *Mustelus mosis*
18. HEMIGALEIDAE: *Hemipristis elongata*

PLATE III

19. CARCHARHINIDAE: *Carcharhinus amblyrhynchoides*
20. CARCHARHINIDAE: *Carcharhinus falciformis*
21. CARCHARHINIDAE: *Carcharhinus cf. limbatus*
22. CARCHARHINIDAE: *Carcharhinus macloiti*
23. CARCHARHINIDAE: *Carcharhinus longimanus*
24. CARCHARHINIDAE: *Carcharhinus sorrah*
25. CARCHARHINIDAE: *Negaprion acutidens*
26. CARCHARHINIDAE: *Rhizoprionodon acutus*
27. CARCHARHINIDAE: *Rhizoprionodon oligolinx*
28. SPHYRNIDAE: *Sphyrna lewini*

PLATE IV

29. NARKIDAE: *Narke dipterygia*
30. NARCINIDAE: *Narcine timlei*
31. TORPEDINIDAE: *Torpedo cf. panthera*
32. TORPEDINIDAE: *Torpedo sinuspersici*
33. RHYNCHOBATIDAE: *Rhynchobatus laevis*
34. RHINOBATIDAE: *Acroteriobatus salalah*
35. RHINOBATIDAE: *Glaucostegus cf. granulatus*
36. RHINOBATIDAE: *Glaucostegus halavi*

PLATE V

37. RHINOBATIDAE: *Glaucostegus obtusus*
38. RHINOBATIDAE: *Rhinobatos cf. annandalei*
39. RHINOBATIDAE: *Rhinobatos punctifer*
40. RHINOBATIDAE: *Rhinobatos punctifer* (colour variant)

41. DASYPATIDAE: *Dasyatis ushie*
42. DASYPATIDAE: *Himantura gerrardi*

PLATE VI

43. DASYPATIDAE: *Himantura imbricata*
44. DASYPATIDAE: *Himantura leoparda*
45. DASYPATIDAE: *Himantura cf. randalli*
46. DASYPATIDAE: *Himantura uarnak*
47. DASYPATIDAE: *Pastinachus sephen*
48. DASYPATIDAE: *Taeniurops meyeri*

PLATE VII

49. GYMURIDAE: *Gymnura poecilura*
50. MYLIOBATIDAE: *Aetobatus ocellatus*
51. MYLIOBATIDAE: *Aetobatus milvus*
52. MYLIOBATIDAE: *Aetobatus nichofi*
53. MYLIOBATIDAE: *Rhinoptera javanica*
54. MYLIOBATIDAE: *Rhinoptera jayakari*
55. MOBULIDAE: *Mobula eregoodootenkee*
56. MOBULIDAE: *Mobula kuhlii*

PLATE VIII

57. ELOPIDAE: *Elops machnata*
58. ALBULIDAE: *Albula argentea*
59. MURAENIDAE: *Gymnothorax favagineus*
60. MURAENIDAE: *Gymnothorax phasmatodes*
61. MURAENIDAE: *Gymnothorax prolatus*
62. MURAENIDAE: *Gymnothorax pseudothyrsoides*
63. MURAENIDAE: *Gymnothorax sp.*
64. MURAENIDAE: *Gymnothorax sp.*

PLATE IX

65. MURAENIDAE: *Strophidon sathete*
66. CONGRIDAE: *Ariosoma gnanadossi*
67. CONGRIDAE: *Rhynchoconger squaliceps*
68. CONGRIDAE: *Uroconger cf. lepturus*
69. MURAENESOCIDAE: *Gavialiceps taeniola*
70. MURAENESOCIDAE: *Muraenesox cinereus*
71. CLUPEIDAE: *Anodontostoma chacunda*
72. CLUPEIDAE: *Escualosa thoracata*

PLATE X

73. CLUPEIDAE: *Hilsa kelee*
74. CLUPEIDAE: *Sardinella melanura*
75. ENGRAULIDAE: *Coilia dussumieri*
76. ENGRAULIDAE: *Thryssa setirostris*
77. DUSSUMIERIDAE: *Dussumieria acuta*
78. CHIROCENTRIDAE: *Chirocentrus dorab*

79. CHANIDAE: *Chanos chanos*
 80. ARIIDAE: *Arius arius*
 81. ARIIDAE: *Batrachocephalus mino*
 82. *Harpadon* sp.

PLATE XI

83. SYNODONTIDAE: *Saurida longimanus*
 84. SYNODONTIDAE: *Saurida tumbil*
 85. SYNODONTIDAE: *Saurida* sp.
 86. MYCTOPHIDAE: *Benthoosema pterotum*
 87. BELONIDAE: *Ablennes hians*
 88. HEMIRAMPHIDAE: *Hemiramphus far*
 89. HOLOCENTRIDAE: *Myripristis botche*
 90. HOLOCENTRIDAE: *Sargocentron rubrum*
 91. SCORPAENIDAE: *Pterois russellii*
 92. SCORPAENIDAE: *Scorpaenodes investigatoris*

PLATE XII

93. APISTIDAE: *Apistus carinatus*
 94. SYNANCEIIDAE: *Choridactylus multibarbus*
 95. SYNANCEIIDAE: *Minous monodactylus*
 96. TRIGLIDAE: *Pterygotrigla arabica*
 97. ACROPOMATIDAE: *Acropoma japonicum*
 98. SERRANIDAE: *Cephalopholis sonnerati*
 99. SERRANIDAE: *Chelidoperca occipitalis*
 100. SERRANIDAE: *Epinephelus erythrurus*

PLATE XIII

101. SERRANIDAE: *Epinephelus* cf. *multinotatus*
 102. SERRANIDAE: *Epinephelus polylepis*
 103. SERRANIDAE: *Epinephelus radiatus*
 104. SERRANIDAE: *Pseudanthias* cf. *conspicuus*
 105. TERAPONTIDAE: *Terapon jarbua*
 106. TERAPONTIDAE: *Terapon theraps*
 107. PRIACANTHIDAE: *Cookeolus japonicus*
 108. PRIACANTHIDAE: *Priacanthus hamrur*

PLATE XIV

109. PRIACANTHIDAE: *Priacanthus sagittarius*
 110. APOGONIDAE: *Apogon* cf. *talboti*
 111. APOGONIDAE: *Apogon* cf. *maculipinnis*
 112. APOGONIDAE: *Lepidamia omanensis*
 113. CARANGIDAE: *Alectis ciliaris*
 114. CARANGIDAE: *Alectis indica*
 115. CARANGIDAE: *Alepes djedaba*
 116. CARANGIDAE: *Alepes kleini*

PLATE XV

117. CARANGIDAE: *Atropus atropus*
 118. CARANGIDAE: *Carangoides armatus*
 119. CARANGIDAE: *Carangoides bajad*
 120. CARANGIDAE: *Carangoides chrysophrys*

121. CARANGIDAE: *Carangoides coeruleopinnatus*
 122. CARANGIDAE: *Carangoides hedlandensis* (male)
 123. CARANGIDAE: *Carangoides hedlandensis* (female)
 124. CARANGIDAE: *Carangoides praeustus*

PLATE XVI

125. CARANGIDAE: *Caranx heberi*
 126. CARANGIDAE: *Caranx lugubris*
 127. CARANGIDAE: *Caranx sexfasciatus*
 128. CARANGIDAE: *Decapterus russelli*
 129. CARANGIDAE: *Decapterus* cf. *smithvanizi*
 130. CARANGIDAE: *Elagatis bipinnulata*
 131. CARANGIDAE: *Megalaspis cordyla*
 132. CARANGIDAE: *Parastromateus niger*

PLATE XVII

133. CARANGIDAE: *Scomberoides commersonianus*
 134. CARANGIDAE: *Scomberoides tala*
 135. CARANGIDAE: *Scomberoides tol*
 136. CARANGIDAE: *Selar crumenophthalmus*
 137. CARANGIDAE: *Selaroides leptolepis*
 138. CARANGIDAE: *Seriola dumerili*
 139. CARANGIDAE: *Seriola rivoliana*
 140. CARANGIDAE: *Seriolina nigrofasciata*
 141. CARANGIDAE: *Trachinotus africanus*
 142. CARANGIDAE: *Trachinotus baillonii*

PLATE XVIII

143. CARANGIDAE: *Trachinotus botla*
 144. CARANGIDAE: *Trachinotus mookalee*
 145. CARANGIDAE: *Trachurus indicus*
 146. CARANGIDAE: *Uraspis uraspis*
 147. LEIOGNATHIDAE: *Leiognathus equula*
 148. LEIOGNATHIDAE: *Gazza minuta*
 149. LEIOGNATHIDAE: *Karalla daura*
 150. LEIOGNATHIDAE: *Secutor* cf. *insidiator*

PLATE XIX

151. LUTJANIDAE: *Aprion virescens*
 152. LUTJANIDAE: *Lutjanus argentimaculatus*
 153. LUTJANIDAE: *Lutjanus caeruleolineatus*
 154. LUTJANIDAE: *Lutjanus erythropterus*
 155. LUTJANIDAE: *Lutjanus fulviflamma*
 156. LUTJANIDAE: *Lutjanus indicus*
 157. LUTJANIDAE: *Lutjanus johnii*
 158. LUTJANIDAE: *Lutjanus lutjanus*

PLATE XX

159. LUTJANIDAE: *Lutjanus lemmiscatus*
 160. LUTJANIDAE: *Lutjanus lemmiscatus* (juvenile)
 161. LUTJANIDAE: *Pinjalo pinjalo*
 162. LUTJANIDAE: *Pristipomoides filamentosus*

163. CAESIONIDAE: *Caesio varilineata*
 164. LOBOTIDAE: *Lobotes surinamensis*
 165. GERREIDAE: *Gerres infasciatus*
 166. GERREIDAE: *Gerres limbatus*

PLATE XXI

167. HAEMULIDAE: *Diagramma picta*
 168. HAEMULIDAE: *Diagramma picta* (juvenile)
 169. HAEMULIDAE: *Plectorhinchus flavomaculatus*
 170. HAEMULIDAE: *Plectorhinchus gaterinus*
 171. HAEMULIDAE: *Plectorhinchus gibbosus*
 172. HAEMULIDAE: *Plectorhinchus pictus*
 173. HAEMULIDAE: *Plectorhinchus schotaf*
 174. HAEMULIDAE: *Plectorhinchus aheneus*

PLATE XXII

175. HAEMULIDAE: *Plectorhinchus aheneus* (juvenile)
 176. HAEMULIDAE: *Pomadasy commersonii*
 177. HAEMULIDAE: *Pomadasy furcatus*
 178. HAEMULIDAE: *Pomadasy kaakan*
 179. HAEMULIDAE: *Pomadasy kaakan* (juvenile)
 180. HAEMULIDAE: *Pomadasy maculatus*
 181. HAEMULIDAE: *Pomadasy olivaceus*
 182. HAEMULIDAE: *Pomadasy stridens*

PLATE XXIII

183. SPARIDAE: *Acanthopagrus arabicus*
 184. SPARIDAE: *Acanthopagrus berda*
 185. SPARIDAE: *Crenidens indicus*
 186. SPARIDAE: *Cheimerius nufar*
 187. SPARIDAE: *Diplodus capensis*
 188. SPARIDAE: *Pagellus affinis*
 189. SPARIDAE: *Rhabdosargus sarba*
 190. SPARIDAE: *Sparidentex jamalensis*

PLATE XXIV

191. LETHRINIDAE: *Lethrinus microdon*
 192. LETHRINIDAE: *Lethrinus nebulosus*
 193. LETHRINIDAE: *Lethrinus ornatus*
 194. NEMIPYTERIDAE: *Nemipterus japonicus*
 195. NEMIPYTERIDAE: *Parasclopsis aspinosa*
 196. NEMIPYTERIDAE: *Parasclopsis boesemani*
 197. NEMIPYTERIDAE: *Scolopsis taeniata*
 198. NEMIPYTERIDAE: *Scolopsis torquatus*

PLATE XXV

199. NEMIPYTERIDAE: *Scolopsis vosmeri*
 200. SCIAENIDAE: *Argyrosomus heinii*
 201. SCIAENIDAE: *Argyrosomus japonicus*
 202. SCIAENIDAE: *Atrobucca alcocki*
 203. SCIAENIDAE: *Daysciaena albida*
 204. SCIAENIDAE: *Johnius amblycephalus*

205. SCIAENIDAE: *Johnius belangerii*
 206. SCIAENIDAE: *Johnius borneensis*

PLATE XXVI

207. SCIAENIDAE: *Johnius carouna*
 208. SCIAENIDAE: *Johnius carutta*
 209. SCIAENIDAE: *Johnius dussumieri*
 210. SCIAENIDAE: *Johnius macrorhinus*
 211. SCIAENIDAE: *Nibea maculata*
 212. SCIAENIDAE: *Otolithes cuvieri*
 213. SCIAENIDAE: *Otolithes ruber*
 214. SCIAENIDAE: *Otolithoides biauritus*

PLATE XXVII

215. SCIAENIDAE: *Paranibea semiluctuosa*
 216. SCIAENIDAE: *Pennahia anea*
 217. SCIAENIDAE: *Protonibea diacantha*
 218. SCIAENIDAE: *Protonibea diacantha* (juvenile)
 219. SCIAENIDAE: *Umbrina canariensis*
 220. POLYNEMIDAE: *Eleutheronema tetradactylum*
 221. POLYNEMIDAE: *Polydactylus mullani*
 222. POLYNEMIDAE: *Polydactylus plebeius*

PLATE XXVIII

223. MULLIDAE: *Mulloidichthys vanicolensis*
 224. MULLIDAE: *Parupeneus heptacanthus*
 225. MULLIDAE: *Parupeneus indicus*
 226. MULLIDAE: *Parupeneus rubescens*
 227. MULLIDAE: *Upeneus guttatus*
 228. MULLIDAE: *Upeneus moluccensis*
 229. MULLIDAE: *Upeneus supravittatus*
 230. PEMIPHERIDAE: *Pempheris malabarica*

PLATE XXIX

231. PEMIPHERIDAE: *Pempheris russellii*
 232. KYPHOSIDAE: *Kyphosus bigibbus*
 233. KYPHOSIDAE: *Kyphosus cinerascens*
 234. KYPHOSIDAE: *Kyphosus vaigiensis*
 235. DREPANEIDAE: *Drepane punctata*
 236. MONODACTYLIDAE: *Monodactylus argenteus*

PLATE XXX

237. CHETODONTIDAE: *Chaetodon collaris*
 238. CHETODONTIDAE: *Chaetodon pictus*
 239. POMACANTHIDAE: *Pomacanthus annularis*
 240. POMACANTHIDAE: *Pomacanthus maculosus*
 241. CEPOLIDAE: *Acanthocephala indica*
 242. MUGILIDAE: *Liza subviridis*

PLATE XXXI

243. MUGILIDAE: *Ellochelon vaigiensis*
 244. MUGILIDAE: *Moolgarda perusii*

245. MUGILIDAE: *Mugil cephalus*
 246. POMACENTRIDAE: *Abudefduf bengalensis*
 247. POMACENTRIDAE: *Abudefduf sordidus*
 248. POMACENTRIDAE: *Abudefduf sindensis*
 249. SCARIDAE: *Scarus ghobban* (initial phase)
 250. SCARIDAE: *Scarus ghobban* (terminal phase)

PLATE XXXII

251. SCARIDAE: *Scarus zufar* (initial phase)
 252. SCARIDAE: *Scarus zufar* (terminal phase)
 253. PINGUIPEDIDAE: *Parapercis robinsoni*
 254. CALLIONYMIDAE: *Callionymus margaretae*
 255. GOBIIDAE: *Boleophthalmus dussumieri*
 256. GOBIIDAE: *Aulopareia ocellata*
 257. EPHIPPIDAE: *Platax teira*
 258. EPHIPPIDAE: *Platax teira* (juvenile)

PLATE XXXIII

259. EPHIPPIDAE: *Tripteron orbis*
 260. SCATOPHAGIDAE: *Scatophagus argus*
 261. SIGANIDAE: *Siganus canaliculatus*
 262. SIGANIDAE: *Siganus javus*
 263. SIGANIDAE: *Siganus luridus*
 264. ACANTHURIDAE: *Acanthurus mata*
 265. ACANTHURIDAE: *Acanthurus monroviae*
 266. ACANTHURIDAE: *Acanthurus nigricauda*

PLATE XXXIV

267. ACANTHURIDAE: *Acanthurus xanthopterus*
 268. ACANTHURIDAE: *Naso hexacanthus*
 269. ACANTHURIDAE: *Naso reticulatus*
 270. SPHYRAENIDAE: *Sphyraena barracuda*
 271. SPHYRAENIDAE: *Sphyraena jello*
 272. SPHYRAENIDAE: *Sphyraena pinguis*
 273. SPHYRAENIDAE: *Sphyraena putnamae*
 274. GEMPYLIDAE: *Neoepinnula orientalis*

PLATE XXXV

275. TRICHIURIDAE: *Lepturacanthus savala*
 276. SCOMBRIDAE: *Acantocybium solandri*
 277. SCOMBRIDAE: *Auxis rochei*
 278. SCOMBRIDAE: *Euthynnus affinis*
 279. SCOMBRIDAE: *Katsuwonus pelamis*
 280. SCOMBRIDAE: *Rastrelliger kanagurta*
 281. SCOMBRIDAE: *Sarda orientalis*
 282. SCOMBRIDAE: *Scomber australasicus*

PLATE XXXVI

283. SCOMBRIDAE: *Scomberomorus commerson*
 284. SCOMBRIDAE: *Scomberomorus commerson* (juvenile)
 285. SCOMBRIDAE: *Scomberomorus guttatus*
 286. SCOMBRIDAE: *Scomberomorus koreanus*
 287. SCOMBRIDAE: *Thunnus cf. albacares*

288. SCOMBRIDAE: *Thunnus tonggol*
 289. XIPHIDAE: *Xiphias gladius*
 290. ISTIOPHORIDAE: *Istiophorus platypterus*

PLATE XXXVII

291. NOMEIDAE: *Cubiceps whiteleggi*
 292. ARIOMMATIDAE: *Ariomma indicum*
 293. STROMATEIDAE: *Pampus argenteus*
 294. PSETTODIDAE: *Psettodes erumei*
 295. PARALICHTHYIDAE: *Cephalopsetta ventrocellata*
 296. PARALICHTHYIDAE: *Pseudorhombus elevatus*
 297. BOTHIDAE: *Crossorhombus azureus* (male, eyed side)
 298. BOTHIDAE: *Crossorhombus azureus* (male, blind side)

PLATE XXXVIII

299. BOTHIDAE: *Laeops cf. nigrescens*
 300. BOTHIDAE: *Aesopia cornuta*
 301. SOLEIDAE: *Brachirus orientalis*
 302. SOLEIDAE: *Solea elongata*
 303. SOLEIDAE: *Dagetichthys commersonnii*
 304. SOLEIDAE: *Zebrias cf. synapturoides*
 305. CYNOGLOSSIDAE: *Cynoglossus arel*
 306. CYNOGLOSSIDAE: *Cynoglossus carpenteri*

PLATE XXXVIX

307. CYNOGLOSSIDAE: *Cynoglossus puncticeps*
 308. TRIACANTHIDAE: *Pseudotriacanthus strigilifer*
 309. TRIACANTHIDAE: *Triacanthus nieuhoftii*
 310. BALISTIDAE: *Abalistes stellatus*
 311. BALISTIDAE: *Canthidermis macrolepis*
 312. BALISTIDAE: *Canthidermis maculata*
 313. BALISTIDAE: *Odonus niger*
 314. BALISTIDAE: *Pseudobalistes fuscus*

PLATE XL

315. BALISTIDAE: *Sufflamen fraenatum*
 316. MONACANTHIDAE: *Aluterus monoceros*
 317. MONACANTHIDAE: *Aluterus scriptus*
 318. MONACANTHIDAE: *Cantherines dumerilii*
 319. MONACANTHIDAE: *Stephanolepis diaspros*
 320. OSTRACIIDAE: *Ostracion rhinorhynchus*
 321. OSTRACIIDAE: *Tetrasomus gibbosus*
 322. OSTRACIIDAE: *Lactoria cornuta*

PLATE XLI

323. TETRAODONTIDAE: *Arothron stellatus*
 324. TETRAODONTIDAE: *Chelonodontops patoca*
 325. TETRAODONTIDAE: *Lagocephalus guentheri*
 326. TETRAODONTIDAE: *Takifugu oblongus*
 327. DIODONTIDAE: *Cylichthys orbicularis*
 328. DIODONTIDAE: *Cylichthys spilostylus*
 329. DIODONTIDAE: *Diodon holocanthus*
 330. MOLIDAE: *Ranzania laevis*

PLATE XLII

331. ELAPIDAE: *Hydrophis curtus*
331. ELAPIDAE: *Hydrophis cyanocinctus*
331. ELAPIDAE: *Hydrophis gracilis*
331. ELAPIDAE: *Hydrophis viperinus*
331. ELAPIDAE: *Hydrophis schistosus*
331. ELAPIDAE: *Hydrophis spiralis*

COLOUR PLATES

PLATE I



1. PENAEIDAE *Parapenaeopsis (Parapenaeopsis) stylifera*
(Photo: H.B. Osmany)



2. PENAEIDAE *Penaeus (Fanneropenaeus) merguensis*
(Photo: P.L. Fanning)



3. PENAEIDAE *Penaeus (Penaeus) semisulcatus*
(Photo: H.B. Osmany)



4. PALINURIDAE *Panulirus homarus*
(Photo: H.B. Osmany)



5. PALINURIDAE *Panulirus polyphagus*
(Photo: H.B. Osmany)



6. PORTUNIDAE *Charybdis smithii*
(Photo: P.L. Fanning)



7. PORTUNIDAE *Charybdis feriatus*
(Photo: M. Moazzam)



8. PORTUNIDAE *Portunus sanguinolentus*
(Photo: P.L. Fanning)

PLATE II



9. ECHINORHINIDAE *Echinorhinus* cf. *brucus*
(Photo: P.N. Psomadakis)



10. HETERODONTIDAE *Heterodontus omanensis*
(Photo: H.B. Osmany)



11. ALOPIDAE *Alopias pelagicus*
(Photo: M. Moazzam)



12. ALOPIDAE *Alopias superciliosus*
(Photo: R. Bonfil)



13. LAMNIDAE *Isurus oxyrinchus*
(Photo: M. Moazzam)



14. HEMISCYLLIDAE *Chiloscylium griseum*
(Photo: H.B. Osmany)



15. RHINCODONTIDAE *Rhincodon typus* (juvenile)
(Photo: M. Moazzam)



16. TRIAKIDAE *Iago omanensis*
(Photo: P.N. Psomadakis)



17. TRIAKIDAE *Mustelus mosis*
(Photo: P.N. Psomadakis)



18. HEMIGALEIDAE *Hemipristis elongata*
(Photo: H.B. Osmany)

PLATE III



19. CARCHARHINIDAE *Carcharhinus amblyrhynchoides*
(Photo: H.B. Osmany)



20. CARCHARHINIDAE *Carcharhinus falciformis*
(Photo: H.B. Osmany)



21. CARCHARHINIDAE *Carcharhinus* cf. *limbatus*
(Photo: H.B. Osmany)



22. CARCHARHINIDAE *Carcharhinus macloti*
(Photo: H.B. Osmany)



23. CARCHARHINIDAE *Carcharhinus longimanus*
(Photo: H.B. Osmany)



24. CARCHARHINIDAE *Carcharhinus sorrah*
(Photo: M. Moazzam)



25. CARCHARHINIDAE *Negaprion acutidens*
(Photo: H.B. Osmany)



26. CARCHARHINIDAE *Rhizoprionodon acutus*
(Photo: H.B. Osmany)



27. CARCHARHINIDAE *Rhizoprionodon oligolinx*
(Photo: H.B. Osmany)



28. SPHYRNIDAE *Sphyrna lewini*
(Photo: M. Moazzam)

PLATE IV



29. NARKIDAE *Narke dipterygia*
(Photo: P.N. Psomadakis)



30. NARCINIDAE *Narcine timlei*
(Photo: P.N. Psomadakis)



31. TORPEDINIDAE *Torpedo* cf. *panthera*
(Photo: H.B. Osmany)



32. TORPEDINIDAE *Torpedo sinuspersici*
(Photo: H.B. Osmany)



33. RHYNCHOBATIDAE *Rhynchobatus laevis*
(Photo: H.B. Osmany)



34. RHINOBATIDAE *Acroteriobatus salalah*
(Photo: H.B. Osmany)



35. RHINOBATIDAE *Glaucostegus* cf. *granulatus*
(Photo: P.N. Psomadakis)



36. RHINOBATIDAE *Glaucostegus halavi*
(Photo: P.N. Psomadakis)

PLATE V



37. RHINOBATIDAE *Glaucostegus obtusus*
(Photo: P.N. Psomadakis)



38. RHINOBATIDAE *Rhinobatos* cf. *annandalei*
(Photo: P.N. Psomadakis)



39. RHINOBATIDAE *Rhinobatos punctifer*
(Photo: P.N. Psomadakis)



40. RHINOBATIDAE *Rhinobatos punctifer* (colour variant)
(Photo: M. Moazzam)



41. DASYATIDAE *Dasyatis ushiei*
(Photo: P.N. Psomadakis)



42. DASYATIDAE *Himantura gerrardi*
(Photo: H.B. Osmany)

PLATE VI



43. DASYATIDAE *Himantura imbricata*
(Photo: H.B. Osmany)



44. DASYATIDAE *Himantura leoparda*
(Photo: P.N. Psomadakis)



45. DASYATIDAE *Himantura* cf. *randalli*
(Photo: P.N. Psomadakis)



46. DASYATIDAE *Himantura uarnak*
(Photo: H.B. Osmany)



47. DASYATIDAE *Pastinachus sephen*
(Photo: H.B. Osmany)



48. DASYATIDAE *Taeniurops meyeni*
(Photo: H.B. Osmany)

PLATE VII



49. GYMNURIDAE *Gymnura poecilura*
(Photo: H.B. Osmany)



50. MYLIOBATIDAE *Aetobatus ocellatus*
(Photo: H.B. Osmany)



51. MYLIOBATIDAE *Aetobatus milvus*
(Photo: H.B. Osmany)



52. MYLIOBATIDAE *Aetobatus nichofii*
(Photo: H.B. Osmany)



53. MYLIOBATIDAE *Rhinoptera javanica*
(Photo: H.B. Osmany)



54. MYLIOBATIDAE *Rhinoptera jayakari*
(Photo: H.B. Osmany)



55. MOBULIDAE *Mobula eregoodootenkee*
(Photo: H.B. Osmany)



56. MOBULIDAE *Mobula kuhlii*
(Photo: P.N. Psomadakis)

PLATE VIII



57. ELOPIDAE: *Elops machnata*
(photo: M. Moazzam)



58. ALBULIDAE: *Albula argentea*
(photo: H.B. Osmany)



59. MURAENIDAE: *Gymnothorax favagineus*
(photo: J.E. Randall)



60. MURAENIDAE: *Gymnothorax phasmatodes*
(photo: Divers Reef Karachi)



61. MURAENIDAE: *Gymnothorax prolatus*
(photo: H.B. Osmany)



62. MURAENIDAE: *Gymnothorax pseudothyrsoides*
(photo: H.B. Osmany)



63. MURAENIDAE: *Gymnothorax* sp.
(photo: Divers Reef Karachi)



64. MURAENIDAE: *Gymnothorax* sp.
(photo: P.N. Psomadakis)

PLATE IX



65. MURAENIDAE: *Strophidon sathete*
(photo: H.B. Osmany)



66. CONGRIDAE: *Ariosoma gnanadossi*
(photo: P.N. Psomadakis)



67. CONGRIDAE: *Rhynchoconger squaliceps*
(photo: H.B. Osmany)



68. CONGRIDAE: *Uroconger cf. lepturus*
(photo: P.N. Psomadakis)



69. MURAENESOCIDAE: *Gavialiceps taeniola*
(photo: H.B. Osmany)



70. MURAENESOCIDAE: *Muraenesox cinereus*
(photo: H.B. Osmany)



71. CLUPEIDAE: *Anodontostoma chacunda*
(photo: H.B. Osmany)



72. CLUPEIDAE: *Escualosa thoracata*
(photo: H.B. Osmany)

PLATE X



73. CLUPEIDAE: *Hilsa kelee*
(photo: H.B. Osmany)



74. CLUPEIDAE: *Sardinella melanura*
(photo: H.B. Osmany)



75. DUSSUMIERIIDAE: *Dussumieria acuta*
(photo: P.L. Fanning)



76. ENGRAULIDAE: *Coilia dussumieri*
(photo: H.B. Osmany)



77. ENGRAULIDAE: *Thyssa setirostris*
(photo: H.B. Osmany)



78. CHIROCENTRIDAE: *Chirocentrus dorab*
(photo: M. Moazzam)



79. CHANIDAE: *Chanos chanos*
(photo: M. Moazzam)



80. ARIIDAE: *Arius arius*
(photo: H.B. Osmany)



81. ARIIDAE: *Batrachocephalus mino*
(photo: H.B. Osmany)



82. SYNODONTIDAE: *Harpadon* sp.
(photo: H.B. Osmany)

PLATE XI



83. SYNODONTIDAE: *Saurida longimanus*
(photo: H.B. Osmany)



84. SYNODONTIDAE: *Saurida tumbil*
(photo: H.B. Osmany)



85. SYNODONTIDAE: *Saurida* sp.
(photo: H.B. Osmany)



86. MYCTOPHIDAE: *Benthosema pterotum*
(Photo: H.B. Osmany)



87. BELONIDAE: *Ablennes hians*
(Photo: M. Moazzam)



88. HEMIRAMPHIDAE: *Hemiramphus far*
(Photo: P.N. Psomadakis)



89. HOLOCENTRIDAE: *Myripristis botche*
(Photo: H.B. Osmany)



90. HOLOCENTRIDAE: *Sargocentron rubrum*
(Photo: P.N. Psomadakis)



91. SCORPAENIDAE: *Pterois russelii*
(photo: M. Moazzam)



92. SCORPAENIDAE: *Scorpaenodes investigatoris*
(Photo: P.N. Psomadakis)

PLATE XII



93. APISTIDAE: *Apistus carinatus*
(Photo: H.B. Osmany)



94. SYNANCEIIDAE: *Choridactylus multibarbus*
(Photo: P.N. Psomadakis)



95. SYNANCEIIDAE: *Minous monodactylus*
(Photo: H.B. Osmany)



96. TRIGLIDAE: *Pterygotrigla arabica*
(Photo: H.B. Osmany)



97. ACROPOMATIDAE: *Acropoma japonicum*
(Photo: H.B. Osmany)



98. SERRANIDAE: *Cephalopholis sonnerati*
(Photo: H.B. Osmany)



99. SERRANIDAE: *Chelidoperca occipitalis*
(Photo: H.B. Osmany)



100. SERRANIDAE: *Epinephelus erythrurus*
(Photo: P.N. Psomadakis)

PLATE XIII



101. SERRANIDAE: *Epinephelus* cf. *multinotatus*
(Photo: H.B. Osmany)



102. SERRANIDAE: *Epinephelus polylepis*
(Photo: P.N. Psomadakis)



103. SERRANIDAE: *Epinephelus radiatus*
(Photo: H.B. Osmany)



104. SERRANIDAE: *Pseudanthias* cf. *conspicuus*
(Photo: H.B. Osmany)



105. TERAPONTIDAE: *Terapon jarbua*
(Photo: P.L. Fanning)



106. TERAPONTIDAE: *Terapon theraps*
(Photo: H.B. Osmany)



107. PRIACANTHIDAE: *Cookeolus japonicus*
(Photo: H.B. Osmany)



108. PRIACANTHIDAE: *Priacanthus hamrur*
(Photo: H.B. Osmany)

PLATE XIV



109. PRIACANTHIDAE: *Priacanthus sagittarius*
(Photo: H.B. Osmany)



110. APOGONIDAE: *Apogon* cf. *talboti*
(Photo: H.B. Osmany)



111. APOGONIDAE: *Apogonichthyoides* cf. *maculipinnis*
(Photo: H.B. Osmany)



112. APOGONIDAE: *Lepidamia natalensis*
(Photo: H.B. Osmany)



113. CARANGIDAE: *Alectis ciliaris* (juvenile)
(Photo: H.B. Osmany)



114. CARANGIDAE: *Alectis indica*
(Photo: H.B. Osmany)



115. CARANGIDAE: *Alepes djedaba*
(Photo: M. Moazzam)



116. CARANGIDAE: *Alepes kleini*
(Photo: H.B. Osmany)

PLATE XV



117. CARANGIDAE: *Atropus atropus*
(Photo: H.B. Osmany)



118. CARANGIDAE: *Carangoides armatus* (female)
(Photo: H.B. Osmany)



119. CARANGIDAE: *Carangoides bajad*
(Photo: H.B. Osmany)



120. CARANGIDAE: *Carangoides chrysophrys*
(Photo: H.B. Osmany)



121. CARANGIDAE: *Carangoides coeruleopinnatus*
(Photo: H.B. Osmany)



122. CARANGIDAE: *Carangoides hedlandensis* (male)
(Photo: P.N. Psomadakis)



123. CARANGIDAE: *Carangoides hedlandensis* (female)
(Photo: P.N. Psomadakis)



124. CARANGIDAE: *Carangoides praeustus*
(Photo: H.B. Osmany)

PLATE XVI



125. CARANGIDAE: *Caranx heberi*
(Photo: H.B. Osmany)



126. CARANGIDAE: *Caranx lugubris*
(Photo: M. Moazzam)



127. CARANGIDAE: *Caranx sexfasciatus*
(Photo: H.B. Osmany)



128. CARANGIDAE: *Decapterus russelli*
(Photo: H.B. Osmany)



129. CARANGIDAE: *Decapterus* cf. *smithvanizi*
(Photo: H.B. Osmany)



130. CARANGIDAE: *Elagatis bipinnulata*
(Photo: M. Moazzam)



131. CARANGIDAE: *Megalaspis cordyla*
(Photo: M. Moazzam)



132. CARANGIDAE: *Parastromateus niger*
(Photo: P.L. Fanning)

PLATE XVII



133. CARANGIDAE: *Scomberoides commersonianus*
(Photo: H.B. Osmany)



134. CARANGIDAE: *Scomberoides tala*
(Photo: H.B. Osmany)



135. CARANGIDAE: *Scomberoides tol*
(Photo: H.B. Osmany)



136. CARANGIDAE: *Selar crumenophthalmus*
(Photo: P.. Psomadakis)



137. CARANGIDAE: *Selaroides leptolepis*
(Photo: P.L. Fanning)



138. CARANGIDAE: *Seriola dumerili*
(Photo: H.B. Osmany)



139. CARANGIDAE: *Seriola rivoliana*
(Photo: M. Moazzam)



140. CARANGIDAE: *Seriolina nigrofasciata*
(Photo: H.B. Osmany)



141. CARANGIDAE: *Trachinotus africanus*
(Photo: H.B. Osmany)



142. CARANGIDAE: *Trachinotus baillonii*
(Photo: P.N. Psomadakis)

PLATE XVIII



143. CARANGIDAE: *Trachinotus botla*
(Photo: P.N. Psomadakis)



144. CARANGIDAE: *Trachinotus mookalee*
(Photo: H.B. Osmany)



145. CARANGIDAE: *Trachurus indicus*
(Photo: H.B. Osmany)



146. CARANGIDAE: *Uraspis uraspis*
(Photo: P.N. Psomadakis)



147. LEIOGNATHIDAE: *Leiognathus equula*
(Photo: H.B. Osmany)



148. LEIOGNATHIDAE: *Gazza minuta*
(Photo: H.B. Osmany)



149. LEIOGNATHIDAE: *Karalla daura*
(Photo: H.B. Osmany)



150. LEIOGNATHIDAE: *Secutor cf. insidiator*
(Photo: H.B. Osmany)

PLATE XIX



151. LUTJANIDAE *Aprion virescens*
(Photo: H.B. Osmany)



152. LUTJANIDAE *Lutjanus argentimaculatus*
(Photo: H.B. Osmany)



153. LUTJANIDAE *Lutjanus caeruleolineatus*
(Photo: H.B. Osmany)



154. LUTJANIDAE *Lutjanus erythropterus*
(Photo: H.B. Osmany)



155. LUTJANIDAE *Lutjanus fulviflamma*
(Photo: H.B. Osmany)



156. LUTJANIDAE *Lutjanus indicus*
(Photo: H.B. Osmany)



157. LUTJANIDAE *Lutjanus johnii*
(Photo: H.B. Osmany)



158. LUTJANIDAE *Lutjanus lemniscatus*
(Photo: P.N. Psomadakis)

PLATE XX



159. LUTJANIDAE *Lutjanus lemniscatus* (juvenile)
(Photo: H.B. Osmany)



160. LUTJANIDAE *Lutjanus lutjanus*
(Photo: P.L. Fanning)



161. LUTJANIDAE *Pristipomoides filamentosus*
(Photo: H.B. Osmany)



162. LUTJANIDAE *Pinjalo pinjalo*
(Photo: H.B. Osmany)



163. CAESIONIDAE *Caesio varilineata*
(Photo: P.N. Psomadakis)



164. LOBOTIDAE: *Lobotes surinamensis*
(Photo: M. Moazzam)



165. GERREIDAE *Gerres infasciatus*
(Photo: P.N. Psomadakis)



166. GERREIDAE *Gerres limbatus*
(Photo: H.B. Osmany)

PLATE XXI



167. HAEMULIDAE *Diagramma picta*
(Photo: H.B. Osmany)



168. HAEMULIDAE *Diagramma picta* (juvenile)
(Photo: H.B. Osmany)



169. HAEMULIDAE *Plectorhinchus flavomaculatus*
(Photo: H.B. Osmany)



170. HAEMULIDAE *Plectorhinchus gaterinus*
(Photo: H.B. Osmany)



171. HAEMULIDAE *Plectorhinchus gibbosus*
(Photo: H.B. Osmany)



172. HAEMULIDAE *Plectorhinchus pictus*
(Photo: H.B. Osmany)



173. HAEMULIDAE *Plectorhinchus schotaf*
(Photo: H.B. Osmany)



174. HAEMULIDAE *Pomadasys aheneus*
(Photo: P.N. Psoadakakis)

PLATE XXII



175. HAEMULIDAE *Pomadasys aheneus* (juvenile)
(Photo: H.B. Osmany)



176. HAEMULIDAE *Pomadasys commersonnii*
(Photo: H.B. Osmany)



177. HAEMULIDAE *Pomadasys furcatus*
(Photo: H.B. Osmany)



178. HAEMULIDAE *Pomadasys kaakan*
(Photo: P.N. Psomadakis)



179. HAEMULIDAE *Pomadasys kaakan* (juvenile)
(Photo: H.B. Osmany)



180. HAEMULIDAE *Pomadasys maculatus*
(Photo: H.B. Osmany)



181. HAEMULIDAE *Pomadasys olivaceus*
(Photo: H.B. Osmany)



182. HAEMULIDAE *Pomadasys stridens*
(Photo: H.B. Osmany)

PLATE XXIII



183. SPARIDAE *Acanthopagrus arabicus*
(Photo: P.N. Psomadakis)



184. SPARIDAE *Acanthopagrus berda*
(Photo: H.B. Osmany)



185. SPARIDAE *Cheimerius nufar*
(Photo: H.B. Osmany)



186. SPARIDAE *Crenidens indicus*
(Photo: H.B. Osmany)



187. SPARIDAE *Diplodus capensis*
(Photo: H.B. Osmany)



188. SPARIDAE *Pagellus affinis*
(Photo: H.B. Osmany)



189. SPARIDAE *Rhabdosargus sarba*
(Photo: H.B. Osmany)



190. SPARIDAE *Sparidentex jamalensis*
(Photo: S.A. Amir)

PLATE XXIV



191. LETHRINIDAE *Lethrinus microdon*
(Photo: P.N. Psomadakis)



192. LETHRINIDAE *Lethrinus nebulosus*
(Photo: H.B. Osmany)



193. LETHRINIDAE *Lethrinus ornatus*
(Photo: H.B. Osmany)



194. NEMIPTERIDAE *Nemipterus japonicus*
(Photo: P.N. Psomadakis)



195. NEMIPTERIDAE *Parascalopsis aspinosa*
(Photo: H.B. Osmany)



196. NEMIPTERIDAE *Parascalopsis boesemani*
(Photo: H.B. Osmany)



197. NEMIPTERIDAE *Scolopsis taeniata*
(Photo: H.B. Osmany)



198. NEMIPTERIDAE *Scolopsis torquatus*
(Photo: P.N. Psomadakis)

PLATE XXV



199. NEMIPTERIDAE *Scolopsis vosmeri*
(Photo: H.B. Osmany)



200. SCIAENIDAE *Argyrosomus heinii*
(Photo: H.B. Osmany)



201. SCIAENIDAE *Argyrosomus japonicus*
(Photo: P.N. Psomadakis)



202. SCIAENIDAE *Atrobucca alcocki*
(Photo: H.B. Osmany)



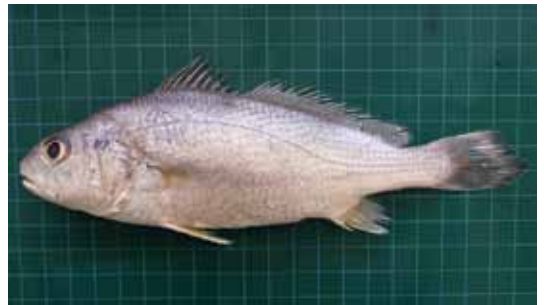
203. SCIAENIDAE *Daysciaena albida*
(Photo: H.B. Osmany)



204. SCIAENIDAE *Johnius amblycephalus*
(Photo: P.N. Psomadakis)



205. SCIAENIDAE *Johnius belangerii*
(Photo: H.B. Osmany)

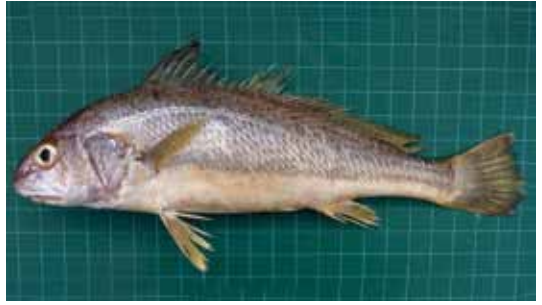


206. SCIAENIDAE *Johnius borneensis*
(Photo: P.N. Psomadakis)

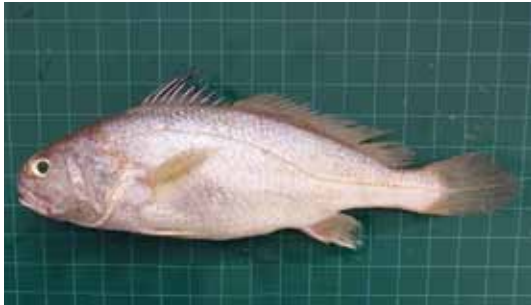
PLATE XXVI



207. SCIAENIDAE *Johnius carouna*
(Photo: P.N. Psomadakis)



208. SCIAENIDAE *Johnius carutta*
(Photo: P.N. Psomadakis)



209. SCIAENIDAE *Johnius dussumieri*
(Photo: P.N. Psomadakis)



210. SCIAENIDAE *Johnius macrorhinus*
(Photo: H.B. Osmany)



211. SCIAENIDAE *Nibea maculata*
(Photo: H.B. Osmany)



212. SCIAENIDAE *Otolithes cuvieri*
(Photo: H.B. Osmany)



213. SCIAENIDAE *Otolithes ruber*
(Photo: H.B. Osmany)



214. SCIAENIDAE *Otolithoides biauritus*
(Photo: H.B. Osmany)

PLATE XXVII



215. SCIAENIDAE *Paranibea semiluctuosa*
(Photo: H.B. Osmany)



216. SCIAENIDAE *Pennahia anea*
(Photo: H.B. Osmany)



217. SCIAENIDAE *Protonibea diacantha*
(Photo: H.B. Osmany)



218. SCIAENIDAE *Protonibea diacantha* (juvenile)
(Photo: H.B. Osmany)



219. SCIAENIDAE *Umbrina canariensis*
(Photo: H.B. Osmany)



220. POLYNEMIDAE *Eleutheronema tetradactylum*
(Photo: H.B. Osmany)



221. POLYNEMIDAE *Polydactylus mullani*
(Photo: H.B. Osmany)



222. POLYNEMIDAE *Polydactylus plebeius*
(Photo: H.B. Osmany)

PLATE XXVIII



223. MULLIDAE *Mulloidichthys vanicolensis*
(Photo: P.N. Psomadakis)



224. MULLIDAE *Parupeneus heptacanthus*
(Photo: H.B. Osmany)



225. MULLIDAE *Parupeneus indicus*
(Photo: H.B. Osmany)



226. MULLIDAE *Parupeneus rubescens*
(Photo: H.B. Osmany)



227. MULLIDAE *Upeneus guttatus*
(Photo: H.B. Osmany)



228. MULLIDAE *Upeneus moluccensis*
(Photo: P.N. Psomadakis)



229. MULLIDAE *Upeneus supravittatus*
(Photo: H.B. Osmany)



230. PEMPHERIDAE *Pempheris malabarica*
(Photo: P.N. Psomadakis)

PLATE XXIX



231. PEMIPHERIDAE *Pempheris russellii*
(Photo: H.B. Osmany)



232. KYPHOSIDAE *Kyphosus bigibbus*
(Photo: P.N. Psomadakis)



233. KYPHOSIDAE *Kyphosus cinerascens*
(Photo: P.N. Psomadakis)



234. KYPHOSIDAE *Kyphosus vaigiensis*
(Photo: H.B. Osmany)



235. DREPANEIDAE *Drepane punctata*
(Photo: H.B. Osmany)



236. MONODACTYLIDAE *Monodactylus argenteus*
(Photo: P.N. Psomadakis)

PLATE XXX



237. CHETODONTIDAE *Chaetodon collar*
(Photo: H.B. Osmany)



238. CHETODONTIDAE *Chaetodon pictus*
(Photo: H.B. Osmany)



239. POMACANTHIDAE *Pomacanthus annularis*
(Photo: H.B. Osmany)



240. POMACANTHIDAE *Pomacanthus maculosus*
(Photo: H.B. Osmany)



241. CEPOLIDAE *Acanthocepola indica*
(Photo: H.B. Osmany)



242. MUGILIDAE *Ellochelon vaigiensis*
(Photo: H.B. Osmany)

PLATE XXXI



243. MUGILIDAE *Liza subviridis*
(Photo: H.B. Osmany)



244. MUGILIDAE *Moolgarda perusii*
(Photo: H.B. Osmany)



245. MUGILIDAE *Mugil cephalus*
(Photo: P.N. Psomadakis)



246. POMACENTRIDAE *Abudedefduf bengalensis*
(Photo: H.B. Osmany)



247. POMACENTRIDAE *Abudedefduf sordidus*
(Photo: P.N. Psomadakis)



248. POMACENTRIDAE *Neopomacentrus sindensis*
(Photo: H.B. Osmany)



249. SCARIDAE *Scarus ghobban* (initial phase)
(Photo: J.E. Randall)



250. SCARIDAE *Scarus ghobban* (terminal phase)
(Photo: P.N. Psomadakis)

PLATE XXXII



251. SCARIDAE *Scarus zufar* (initial phase)
(Photo: P.N. Psomadakis)



252. SCARIDAE *Scarus zufar* (terminal phase)
(Photo: H.B. Osmany)



253. PINGUIPEDIDAE *Parapercis robinsoni*
(Photo: H.B. Osmany)



254. CALLIONYMIDAE *Callionymus margaretae*
(Photo: H.B. Osmany)



255. GOBIIDAE *Boleophthalmus dussumieri*
(Photo: H.B. Osmany)



256. GOBIIDAE *Aulopareia ocellata*
(Photo: H.B. Osmany)



257. EPHIPPIDAE *Platax teira*
(Photo: M. Moazzam)



258. EPHIPPIDAE *Platax teira* (juvenile)
(Photo: M. Moazzam)

PLATE XXXIII



259. EPHIPPIDAE *Tripteron orbis*
(Photo: H.B. Osmany)



260. SCATOPHAGIDAE *Scatophagus argus*
(Photo: P.N. Psomadakis)



261. SIGANIDAE *Siganus canaliculatus*
(Photo: P.N. Psomadakis)



262. SIGANIDAE *Siganus javus*
(Photo: M. Moazzam)



263. SIGANIDAE *Siganus luridus*
(Photo: P.N. Psomadakis)



264. ACANTHURIDAE *Acanthurus mata*
(Photo: H.B. Osmany)



265. ACANTHURIDAE *Acanthurus monroviae*
(Photo: P.N. Psomadakis)



266. ACANTHURIDAE *Acanthurus nigricauda*
(Photo: H.B. Osmany)

PLATE XXXIV



267. ACANTHURIDAE *Acanthurus xanthopterus*
(Photo: H.B. Osmany)



268. ACANTHURIDAE *Naso hexacanthus*
(Photo: H.B. Osmany)



269. ACANTHURIDAE *Naso reticulatus*
(Photo: H.B. Osmany)



270. SPHYRAENIDAE *Sphyaena barracuda*
(Photo: H.B. Osmany)



271. SPHYRAENIDAE *Sphyaena jello*
(Photo: H.B. Osmany)



272. SPHYRAENIDAE *Sphyaena pinguis*
(Photo: H.B. Osmany)



273. SPHYRAENIDAE *Sphyaena putnamae*
(Photo: M. Moazzam)



274. GEMPYLIDAE *Neopinnula orientalis*
(Photo: H.B. Osmany)

PLATE XXXV



275. TRICHIURIDAE *Lepturacanthus savala*
(Photo: H.B. Osmany)



276. SCOMBRIDAE *Acanthocybium solandri*
(Photo: M. Moazzam)



277. SCOMBRIDAE *Auxis rochei*
(Photo: M. Moazzam)



278. SCOMBRIDAE *Euthynnus affinis*
(Photo: H.B. Osmany)



279. SCOMBRIDAE *Katsuwonus pelamis*
(Photo: M. Moazzam)



280. SCOMBRIDAE *Rastrellinger kanagurta*
(Photo: H.B. Osmany)



281. SCOMBRIDAE *Sarda orientalis*
(Photo: H.B. Osmany)



282. SCOMBRIDAE *Scomber australasicus*
(Photo: H.B. Osmany)

PLATE XXXVI



283. SCOMBRIDAE *Scomberomorus commerson*
(Photo: P.L. Fanning)



284. SCOMBRIDAE *Scomberomorus commerson* (juvenile)
(Photo: H.B. Osmany)



285. SCOMBRIDAE *Scomberomorus guttatus*
(Photo: M. Moazzam)



286. SCOMBRIDAE *Scomberomorus koreanus*
(Photo: H.B. Osmany)



287. SCOMBRIDAE *Thunnus* cf. *albacares*
(Photo: M. Moazzam)



288. SCOMBRIDAE *Thunnus tonggol*
(Photo: H.B. Osmany)



289. XIPHIIDAE *Xiphias gladius*
(Photo: M. Moazzam)



290. ISTIOPHORIDAE *Istiophorus platypterus*
(Photo: M. Moazzam)

PLATE XXXVII



291. NOMEIDAE *Cubiceps whiteleggi*
(Photo: H.B. Osmany)



292. ARIOMMATIDAE *Ariomma indicum*
(Photo: H.B. Osmany)



293. STROMATEIDAE *Pampus argenteus*
(Photo: H.B. Osmany)



294. PSETTODIDAE *Psettodes erumei*
(Photo: M. Moazzam)



295. PARALICHTHYIDAE *Cephalopsetta ventrocellata*
(Photo: H.B. Osmany)



296. PARALICHTHYIDAE *Pseudorhombus elevatus*
(Photo: H.B. Osmany)



297. BOTHIDAE *Crossorhombus azureus* (male, eyed side)
(Photo: H.B. Osmany)



298. BOTHIDAE *Crossorhombus azureus* (male, blind side)
(Photo: H.B. Osmany)

PLATE XXXVIII



299. BOTHIDAE *Laeops* cf. *nigrescens*
(Photo: H.B. Osmany)



300. SOLEIDAE *Aesopia* *cornuta*
(Photo: H.B. Osmany)



301. SOLEIDAE *Brachirus* *orientalis*
(Photo: H.B. Osmany)



302. SOLEIDAE *Solea* *elongata*
(Photo: H.B. Osmany)



303. SOLEIDAE *Dagetichthys* *commersonii*
(Photo: H.B. Osmany)



304. SOLEIDAE *Zebrias* cf. *synapturoides*
(Photo: H.B. Osmany)



305. CYNOGLOSSIDAE *Cynoglossus* *arel*
(Photo: H.B. Osmany)



306. CYNOGLOSSIDAE *Cynoglossus* *carpenteri*
(Photo: H.B. Osmany)

PLATE XXXIX



307. CYNOGLOSSIDAE *Cynoglossus puncticeps*
(Photo: P.N. Psomadakis)



308. TRIACANTHIDAE *Pseudotriacanthus strigilifer*
(Photo: H.B. Osmany)



309. CYNOGLOSSIDAE *Triacanthus nieuhofii*
(Photo: H.B. Osmany)



310. BALISTIDAE *Abalistes stellatus*
(Photo: H.B. Osmany)



311. BALISTIDAE *Canthidermis macrolepis*
(Photo: H.B. Osmany)



312. BALISTIDAE *Canthidermis maculata*
(Photo: H.B. Osmany)



313. BALISTIDAE *Odonus niger*
(Photo: H.B. Osmany)



314. BALISTIDAE *Pseudobalistes fuscus*
(Photo: H.B. Osmany)

PLATE XL



315. BALISTIDAE *Sufflamen fraenatum*
(Photo: H.B. Osmany)



316. MONACANTHIDAE *Aluterus monoceros*
(Photo: H.B. Osmany)



317. MONACANTHIDAE *Aluterus scriptus*
(Photo: M. Moazzam)



318. MONACANTHIDAE *Cantherhines dumerilii*
(Photo: H.B. Osmany)



319. MONACANTHIDAE *Stephanolepis diaspros*
(Photo: H.B. Osmany)



320. OSTRACIIDAE *Ostracion rhinorhynchos*
(Photo: M. Moazzam)



321. OSTRACIIDAE *Tetrasomus gibbosus*
(Photo: H.B. Osmany)



322. OSTRACIIDAE *Lactoria cornuta*
(Photo: H.B. Osmany)

PLATE XLI



323. TETRAODONTIDAE *Arothron stellatus*
(Photo: H.B. Osmany)



324. TETRAODONTIDAE *Chelonodontops patoca*
(Photo: H.B. Osmany)



325. TETRAODONTIDAE *Lagocephalus guentheri*
(Photo: H.B. Osmany)



326. TETRAODONTIDAE *Takifugu oblongus*
(Photo: P.N. Psomadakis)



327. DIODONTIDAE *Cyclichthys orbicularis*
(Photo: H.B. Osmany)



328. DIODONTIDAE *Cyclichthys spilostylus*
(Photo: H.B. Osmany)



329. DIODONTIDAE *Diodon holocanthus*
(Photo: H.B. Osmany)



330. MOLIDAE *Ranzania laevis*
(Photo: H.B. Osmany)

PLATE XLII



331. ELAPIDAE *Hydrophis curtus*
(Photo: H.B. Osmany)



332. ELAPIDAE *Hydrophis cyanocinctus*
(Photo: H.B. Osmany)



333. ELAPIDAE *Hydrophis gracilis*
(Photo: H.B. Osmany)



334. ELAPIDAE *Hydrophis schistosus*
(Photo: H.B. Osmany)



335. ELAPIDAE *Hydrophis spiralis*
(Photo: H.B. Osmany)



336. ELAPIDAE *Hydrophis viperinus*
(Photo: H.B. Osmany)

This field guide covers the major resource groups likely to be encountered in the fisheries of Pakistan. This includes shrimps, lobsters, crabs, bivalves, gastropods, cephalopods, sharks, batoid fishes, bony fishes, and sea snakes. Each resource group is introduced by a general section on technical terms and measurements pertinent to that group and an illustrated guide to orders and families of the group. The more important species are treated in detail with accounts providing scientific nomenclature, FAO names in English and French (where available), local names used in Pakistan, diagnostic features, one or more illustrations, maximum size, and notes on fisheries and habitat. The guide is fully indexed and a list of further literature is appended. Finally, 42 colour plates are presented.

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