FAO SPECIES IDENTIFICATION SHEETS
FOR FISHERY PURPOSES

EASTERN INDIAN OCEAN Fishing Area 57
and WESTERN CENTRAL PACIFIC Fishing Area 71

VOLUME I

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1974

FAO SPECIES IDENTIFICATION SHEETS

FOR FISHERY PURPOSES

EASTERN INDIAN OCEAN (Fishing Area 57)

and

WESTERN CENTRAL PACIFIC (Fishing Area 71)

Compiled by the Fishery Resources and Environment Division, FAO

Based on material prepared at the FAO/DANIDA Seminar on Fish Taxonomy in South East Asia held at the Phuket Marine Biological Center, Phuket, Thailand, b November to 8 December 1972

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VOLUME I

- Introductory material

- Bony Fishes: Families from A to C (in part)

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FAO SPECIES IDENTIFICATION SHEETS

Eastern Indian Ocean (Fishing Area 57)
Western Central Pacific (Fishing Area 71)

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Balistidae	T. Abe (Japan)	
Bothidae	J. Nielsen (Denmark)	
Carangidae	W. Chan (Hong Kong), F. Talbot (Australia), P. Sukhavisidh (Thailand)	W.F. Smith-Vaniz (U.S.A.): checking)
Centropomidae	P. Sukhavisidh (Thailand), D. Eggleston (New Zealand)	
Chanidae	D. Carlsson (Thailand/Denmark)	
Chirocentridae	P.J.P. Whitehead (U.K.)	
Clupeidae	P.J.P. Whitehead (U.K.)	
Coryphaenidae	N. Langham (Malaysia/U.K.)	
Cynoglossidae	A.G.K. Menon (India), S. Monkolprasit (Thailand)	
Drepanidae	W. Chan (Hong Kong), N. Lohakarn (Thailand)	
Elopidae	P.J.P. Whitehead (U.K.)	
Engraulidae	P.J.P. Whitehead (U.K.)	
Ephippidae	N. Lohakarn (Thailand)	
Formionidae	T. Abe (Japan), U. Bathia (Thailand)	
Gerreidae	G. KUhlmorgen-Hille (F.R. Germany)	
Glaucosomidae	D. Eggleston (New Zealand)	
Harpadontidae	T. Abe (Japan), D. Pathansali (Malaysia)	
Lactariidae	T. Wongratana (Thailand)	
Leiognathidae	G. KUhlmorgen-Hille (F.R. Germany)	
Lethrinidae	T. Abe (Japan), D. Pathansali (Malaysia)	
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Nemipteridae	D. Eggleston (New Zealand)	G. Allen (Australia): checking
Pentapodidae	W. Chan (Hong Kong)	
Polynemidae	A.G.K. Menon (India)	
Pomadasyidae	W. Chan (Hong Kong), F. Talbot (Australia), S. Sontirat (Thailand)	R.J. McKay (Australia): checking
Pomatomidae		P.J.P. Whitehead (U.K.)
Priacanthidae	D. Eggleston (New Zealand)	
Psettodidae	J. Nielsen (Denmark)	
Rachycentridae	D. Carlsson (Thailand/Denmark)	
Sciaenidae	W. Chan (Hong Kong), U. Bathia (Thailand), D. Carlsson (Thailand/Denmark)	E. Trewavas (U.K.): revision, addition of 17 species sheets
Scombridae	S. Chullarson, P. Sukhavisidh, S. Sontirat (Thailand), D. Eggleston (New Zealand)	B. Collette (U.S.A.): revision, addition of 11 species sheets
Serranidae	W. Chan (Hong Kong), D. Carlsson (Thailand/ Denmark), N. Lohakarn (Thailand)	J. Randall (U.S.A.): checking
Siganidae	J. Nielsen (Denmark)	D.J. Woodland (Australia): revision
Sillaginidae	N. Langham (Malaysia/U.K.)	R.J. McKay (Australia): revision

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Stromateidae	T. Abe (Japan), U. Bathia (Thailand)	
Synodontidae	T. Abe (Japan), D. Pathansali (Malaysia)	
Theraponidae	W. Chan (Hong Kong)	
Trichiuridae	P. Sukhavisidh (Thailand), D. Eggleston (New Zealand)	

Picture Guide to Families

Devised by P.J.P. Whitehead and W. Fischer

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FOREWORD

The first set of FAO Species Identification Sheets for Fishery Purposes (2 volumes) covered the bony fishes, sharks and rays, crustaceans and molluscs of the relatively well-known Mediterranean basin (FAO Fishing Area 37). The present series (4 volumes, bony fishes only), covers the immensely larger and faunistically richer Eastern Indian Ocean and Western Central Pacific, reaching southward to southern Australia (Fishing Areas 57 and 71). Included is the Indo-Australian archipelago, a region with the richest marine fauna of any part of the world. For those who have worked there, the need for some guide to commercial species is obvious.

It might be claimed that the issuing of Identification Sheets for such a region is premature since it will be many years before the taxonomy of certain groups of fishes is properly understood. However, the Sheets are in no respect final products. They constitute a working tool which, by the nature of the system adopted, can be continuously updated and augmented. Certainly, fishery projects in these two areas deserve what taxonomic help is available and, in particular, the benefit o£ recent work that has either not yet been published or is still buried in the specialist literature.

Hitherto it has been virtually impossible to correlate unequivocally the very considerable amount of fishery data collected in this region with particular species, genera or even in some cases families. The Species Identification Sheets should thus play a significant role in increasing the accuracy of the basic data obtained from resources surveys, or used in the compilation of fishery statistics, and in the planning of rational exploitation of fish stocks. They also provide a common framework of names and identifications for the exchange of information between fishery biologists, statisticians and economists.

This publication is the result of a fruitful cooperation between individual scientists, scientific institutions, projects operating in the area, regional fishery bodies, DANIDA and the Government of Thailand. Such collaboration is essential to the continued usefulness of the Sheets, their testing in the field and their subsequent revision.

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CONTENTS

	Colour of Sheets		Pages
VOLUME I			
EXPLANATORY NOTES TO THE FAO PROGRAMME OF SPECIES IDENTIFICATION SHEETS FOR FISHERY PURPOSES	yellow	Vol. I	1-5
INTRODUCTION TO THIS EDITION	yellow	Vol. I	7-8
USER'S GUIDE	pink	Vol. I	
BONY FISHES			
Technical Terms	blue	Vol. I	1-2
List of Families which include Fishes of Economic Interest	blue	Vol. I	1-3
Aid to Identification of Families of Economic Interest			
A. Conspicuous Characters	blue	Vol. I	1-3
B. Picture Guide to Families	blue	Vol. I	4-16
Family Sheets (in alphabetical order)	blue	Vols.I-IV	not pug.
Ariidae			
Ariommidae			
Balistidae			
Bothidae			
Carangidae			
Centropomidae			
Chanidae			
Chirocentridae			
Clupeidae			
Species Identification Sheets (under each Family)	white	Vols.I-IV	not pug.
INDEX TO SCIENTIFIC AND FAO ENGLISH NAMES	yellow	Vol. IV	1-18

FAO Sheets

Fishing Areas 57,71

EXPLANATORY NOTES TO THE FAO PROGRAMME ON SPECIES IDENTIFICATION SHEETS FOR FISHERY PURPOSES

Preamble

Under this programme, which is of world-wide scope, FAO is issuing a number of series of Identification Sheets arranged by regions (major fishing areas) and designed (a) to facilitate the identification of the world's principal commercial aquatic species, (b) to further the standardization of their names, and (c) to provide general information on their basic characteristics and exploitation.

Each regional series of sheets (in one or more volumes) will eventually lead toward a complete inventory of commercially important species found in a given fishing area (or areas). Although new sheets may be added and old sheets replaced (as a result of continuing research), the basic plan of the inventory will be maintained. It will serve as a permanent reference frame which will provide the basis for any classifications required for biological, statistical, or other purposes.

FAO is implementing this programme in close collaboration with the regional fishery bodies established in the various areas of the world and with the generous assistance of zoologists and fishery biologists actively engaged in research on the aquatic species occurring in these areas.

It is hoped that the use of this new work tool will contribute to the improvement of national and regional fishery statistics and will facilitate fishery resources survey work, sampling schemes and fishery activities in general.

Contents and Presentation

The Identification Sheet programme covers the following major groups of aquatic organisms:

seaweeds; echinoderms (sea urchins, sea cucumbers, etc.);
crustaceans (shrimps, prawns, lobsters, crabs, etc.);
molluscs (snails, bivalves, squids, octopuses, etc.);
sharks/rays; bony fishes; aquatic reptiles (turtles,
sea snakes); aquatic mammals (whales, dolphins, seals, etc.).

Other groups may be included in the future, e.g. sponges, tunicates, etc.

In areas containing very large numbers of commercially important species (e.g. the Indo-Pacific), special Family Sheets are prepared. Such sheets contain information on the principal family characters, the appearance of typical representatives (drawings), distinction from similar families, explanations of technical terms, a key to the genera, and a list of species found in the area.

The Species Identification Sheets each describe a single species and give information on its name (scientific and vernacular), its appearance (drawing), its diagnostic field characters, its distinction from similar species in the area (including those for which no identification sheets have been prepared), its range and habits (where known) and data on its fishery and utilization.

The sheets of a regional series are filed in one or more volumes (binders) and for ease of handling the major groups of organisms and the Index are separated by plastic sheets with tabs.

The paramount aim in the arrangement of the sheets has been to ensure that species in a regional series can be found easily without impairing the open-ended character of the system. Species are numbered within each genus (in chronological order of preparation of sheets on a world. basis), the genera are arranged alphabetically within families and the families are also arranged alphabetically within their major group. Higher taxonomic categories (Sub-orders, Orders, Classes) are omitted on the Identification Sheets, but are included in the Family Picture Guide where practicable (for example the higher classification of fishes still lacks general agreement).

Where the number of species in an area for which Identification Sheets are prepared is small, these species are listed in the Family Picture Guide. Elsewhere (e.g. in the Indo-Pacific sheets), the species list is kept separate.

Four types of paper are used for the sheets

(i) Light yellow: Introductory material and indexes

(ii) Blue: Major Group Information Sheets (or Family Sheets, where present)

(iii) Pink: User's guide

(iv) White: Species Identification Sheets

For each region, major groups are printed, where possible, as soon as they are completed. The loose-leaf system will enable further groups to be added to their relevant regional series.

FAO Species Identification Sheets are issued, depending on the areas, in one or more of the three working languages of the Organization (English, French, Spanish). Usually, the first version of sheets for any major fishing area will be a preliminary one intended to be periodically updated and, if necessary, re-edited after the sheets have been thoroughly tested in the field.

Areas Covered

The intention is to produce one or more volumes of sheets covering a single major fishing area, but in several cases two or more areas might be grouped together. The area breakdown is that of the FAO Classification of Major Fishing Areas for Statistical Purposes (see FAO Fisheries Circular No. 420, Rome, December 1972).

It is obvious that the limits of the major fishing areas adopted for statistical purposes (in many cases they coincide with the areas of existing regional fishery bodies) do not normally follow the natural faunistic boundaries as they are based on a number of other criteria and practical requirements (collection of fishery statistics, geographical divisions of the oceans and seas, areas of application of regional conventions, etc.).

Selection of Species

Each regional series of Identification Sheets is intended to include all species known to be of commercial importance occurring in the area(s). The selection is based on: (a) regional and national fishery statistics; (b) national lists of commercial species; (c) recommendations of fishery bodies and related working groups; and (d) experience of the authors of the sheets and other fishery biologists actively engaged in resources research within the area.

In some instances, particularly in areas which are little known or characterized by a large variety of edible aquatic organisms, the selection of species is difficult and may need to be updated as more information becomes available, or when certain species become more intensively exploited.

Pagination and Sheet Codes

The Species Identification Sheets are a flexible work tool, capable of periodical updating through additions and revisions. Such an open-ended system cannot be paged like a book; it must be used in the manner of a dictionary. At the same time, however, it is desirable that at least similar forms within a family are not widely separated. To satisfy these requirements, the following system of pagination and numbering has been adopted:

Introductory sections and index (see Contents): Each independent section is separately paged to avoid complete re-issue when only one section is revised.

(ii) Species Identification Sheets: These bear Sheet Codes (top right, recto) composed of three elements - an abbreviation for the family name, e.g. CLUP for Clupeidae; an abbreviation for the generic name, e.g. Duss for *Dussumieria;* and a serial number for the species within that genus, e.g. 1 for *Dusswnieria acuta.* Below the sheet number are written the year of preparation of the sheet and the corresponding fishing area and number.

(iii) Family Sheets (where present): These bear the abbreviation for the family name (top right, recto) and the fishing area and number.

This system enables sheets to be found, first by referring to the appropriate major group, then alphabetically by family and generic name, and finally by species number. The method is fully explained in the section User's Guide (pink sheet).

Names

The correct scientific name for the species is given above the drawing. This is followed by other but invalid scientific names (synonyms) and the authors who have established them. Usually these refer to species once considered different but now known to be identical; a colon between the scientific name and the name of a zoologist shows that the latter has used the scientific name in a sense different from that given by the original author.

The widespread use of vernacular or common names for commercial aquatic species, particularly in the fields of fish processing and marketing, demands that special attention be given to them. In view of the confusion in the use of such names in many fishing areas, the need for standardization and consistency must be strongly emphasized. It is a rather complex task and for this reason the vernacular names of the species in the first edition of any regional series of Identification Sheets may be missing, or when listed, subject to revision by national authorities and regional fishery bodies. Where possible, two kinds of vernacular species names are used on FAO Species Identification Sheets:

1. FAO species names: those used in the FAO Yearbook of Fishery Statistics and in the FAO Thesaurus of Species and Stocks. They have been selected on the basis of the following criteria:

   (a) each name must apply to one species only;

   (b) names must conform to FAO rules of spelling nomenclature;

   (c) English, French and Spanish names commonly used within the area are preferred if they conform with (a) and (b).

Many FAO species names are consistent with those used by regional fishery bodies, and it is hoped that they will ultimately become regional standard species names and will generally remain unchanged, although there may be instances where an alteration is unavoidable.

2. National species names: those vernacular species names officially adopted by a country. They always apply to individual species and should not be confused with common names assigned to statistical categories or with trade names applying to groups of species. Like the regional standard species names, national species names should remain unchanged as far as possible.

   The choice of national species names is the responsibility of national authorities. However, to ensure consistency, it is recommended that in selecting such names the following criteria be observed:

(a) each name should apply to a single species;

(b) each species should have only one official national name;

(c) the name should be selected, wherever possible, from among the "local names" most widely used within the country, and preference might be given to that closest or identical to the FAO name;

(d) if a local name applies to more than one species (often to a genus or a family), a second word, characterizing the species, might be added (e.g. "hunched" snapper, "olive-striped" snapper, etc.);

(e) if a local name for a species is not available, consideration should be given to the use of the FAO species name as the national one.

It is hoped that the progressive use of national species names in all official government documents will substantially contribute to the standardization of vernacular terminology within individual countries. It is recommended that national fishery authorities issue documents giving the scientific and national names and the local names in use within their country for each species included in the relevant regional series of Species Identification Sheets.

Illustrations and Maps

These include a drawing of each species and sketches showing characteristic features. The drawings are basically outlines of the species, in many cases omitting a great deal of detail. Where, for instance, the shape and number of scales or the colour pattern is not of prime importance for identification, they have been omitted or only shown on part of the body. Generally, the illustrations are based on figures already published in pertinent scientific literature.

The purpose of the maps is to give at a glance an idea of the range of the species within the fishing area. In cases where data are incomplete a certain generalization in the range is unavoidable. Being necessarily on a very small scale, the maps are of course limited in their use as a guide for detailed distribution patterns.

Fisheries Information

The catch data recorded in the area are largely based on fishery statistics supplied to FAO by member countries for inclusion in the FAO Yearbook of Fishery Statistics. The information on fishing gear and forms of utilization of the species is provided by the authors of the sheets and completed by FAO, taking into account the information available to the Organization from national or regional sources and from field projects.

Indexing

An essential feature of the Species Identification Sheets is the comprehensive Index because the sheets will be used as a source of information (on correct nomenclature, vernacular names, succint biological information, etc.), as well as for identifying specimens. Since page numbers could not be used for the Identification Sheets (if the system is to be an open-ended one), and since a taxonomic arrangement was impractical, the Index has been keyed to families and genera, both of which are found alphabetically within each major group. Those who wish to use a taxonomic arrangement should consult the introductory pages (blue) to each major group.

A system has been used in the Index by which it is possible to:

(i) determine to which major group, family and genus a name applies;

(ii) locate the relevant sheet or sheets from a given valid (or invalid) scientific, or vernacular name;

(iii) locate information given on a species for which no separate Identification Sheet is included in the series of sheets for the region.

The system is described on the first page of the Index.

Revision of Sheets

From time to time additional sheets or revised sheets will be prepared. These should be filed in the binders by using the alphabetical system under families and genera, and the numerical system under species.

Replacement sheets will be marked with the indication Rev.l, Rev.2, etc. immediately below the Sheet Code (top right, recto) and with their date of issue.

The Index should be amended by hand on the receipt of additional or revised sheets. If a number of such sheets are issued at one time, a printed addendum to the Index will also be produced; a revised index will be prepared when appropriate.

INTRODUCTION TO THIS EDITION

This 4 volume set of Identification Sheets includes 324 species belonging to 48 fish families of economic interest from the Eastern Indian Ocean and Western Central Pacific. Many more species undoubtedly enter fisheries and it is intended that Sheets for these, as well as for other economi cally important marine organisms (sharks and rays, crustaceans, molluscs, sea cucumbers, turtles, etc.) will be provided in the future. The covers of the volumes have therefore been designed to accommodate at least 200 additional sheets within the set and, if necessary, further covers will be issued.

Because of the very large number of families, genera and species to be dealt with, special Family Sheets have been provided giving a family diagnosis, distinctions from similar families, a key to genera and a list of all species believed to occur in the area. These should help both the field worker in identifications and the statistician who is often obliged to handle data at generic or even family level.

However, even the identification of fishes at family level can present serious problems, particularly amongst the numerous families of perch-like fishes. No satisfactory key exists, but the Aid to Identification (blue pages 5-19) offers some practical guidance.

The main features and scope of the FAO Species Identification Sheet Programme are outlined in the Explanatory Notes preceding this Introduction, but attention should be drawn to the following points:

Selection of Families and Species

Originally, the families and species to be included in the series of Identification Sheets were selected at the FAO/DANIDA Seminar on Fish Taxonomy (Phuket, Thailand, November/December 1972), but the list was considerably revised and increased subsequently in collaboration with ichthyologists, fishery biologists and statisticians. In the case of some families and of many species, an objective assessment of economic importance appears to be virtually impossible in the light of information presently available, and sheets will undoubtedly be required for many further species (see improvements).

Names

The scientific names used here have been based as far as possible on the most recent revisional works. As a result, some scientific names still widely used in fisheries within the area have had to be corrected, but alternative names (junior synonyms) can be easily retrieved from the Index. Each sheet also shows the English world-wide family and species names proposed for use by FAO and, if found acceptable, by the regional fishery bodies concerned.

There is considerable confusion with vernacular species names used within the region. In many cases a single species is known by 5 or more different English names, some of which are misleading in the sense that they associate the species with entirely different families. For this reason an attempt is made here to standardize vernacular names for families and then, where possible, to use this name as the second element in the vernacular species name, e.g., Threadfin breams for members of the Nemipteridae, with species Golden threadfin bream, Red threadfin bream, etc. In families containing very diverse genera, the second element is essentially a generic vernacular name, e.g. "hardtail scad", "Kuweh trevally", or "longfin cavalla" for members of the Carangidae.

National species names have been omitted as it is considered that proper official species names in national languages can only be assigned once reliable identifications of species can be made. It is hoped that the use of the Identification Sheets in field work will enable national fishery authorities to establish official national species names following the criteria outlined on pages 2 and 3 (yellow).

Figures and Sketches

Where possible, illustrations were prepared from actual material available at Phuket, but most had to be adapted from existing literature. Unfortunately it is not possible to quote here the large number of sources used for this purpose. Many of the figures and sketches have been simplified to show primarily those characters considered most valuable for the diagnosis of the species. Where colour is a very important character for field identification (e.g., families Lutjanidae, Nemipteridae and Leiognathidae), the authors have kindly provided coloured versions of the original species drawings. It is intended to prepare further colour plates for other families in the future.

Distribution Maps

Since the sheets have been designed for fishery purposes, it has been necessary to adopt existing fishery statistical areas rather than natural zoogeographic ones. Area 71 and the major part of area 57 comprise tropical waters, hence the main emphasis has been given to tropical species. Sheets for the temperate water species found only off southern Australian coasts will be made available in the future. The distribution maps are meant to give only a rough idea of the range of the species within the region, since in many cases reliable information is very scanty mainly due to unreliable identifications in the past.

Bibliography

A list of references relevant to fish families of economic interest from the region has not been included. It is intended to produce, once the series is complete, a list of up-to-date books and scientific papers relevant to the identification and the fisheries of the living marine resources occurring in the region.

Improvements

The Identification Sheets for Fishing Areas 57 and 71 are issued as provisional working documents which must be tested in the field before revised versions can be produced. Many of the families are in urgent need of revision, so that corrections or additions will doubtless become necessary as new information accumulates. Users are strongly urged to let FAO benefit from their experience with the Sheets by sending suggestions to the Editor. The regional fishery bodies concerned are encouraged to examine the proposed English vernacular names and to adopt them as standard regional family and species names. National fisheries administrations are urged to establish one national name for each of the species included in this series of Identification Sheets.

The Editor and Assistant Editor wish to express their sincere gratitude to the taxonomists who prepared the original drafts at Phuket and to those who so willingly collaborated in the revision and completion of the Sheets.

This work could not have been undertaken without the generous support of the Danish International Development Agency (DANIDA), the Thai Government, and the Directors and staff of the Phuket Marine Biological Center (Thai/Danish Cooperation). Its publication and diffusion was made possible by the UNDP/FAO South China Sea Fisheries Development and Coordinating Programme and the UNDP/FAO Indian Ocean Survey and Development Programme, which provided the necessary funds for printing.

The Editor also wishes to express his personal thanks to all those who have assisted with typing and proof-reading, and in particular to Mrs. J. Kwang-Salvatori and Miss M. Taylor.

USER'S GUIDE

While the sequence of families in the picture guide (blue paper) of any major group is governed primarily by similarity in appearance (to facilitate identification), the arrangement of Identification Sheets (white paper) by families and by genera within families is alphabetic - to ensure easy retrieval.

Information from the sheets can be retrieved in several ways, depending on the user's requirements. Essentially, two approaches can be followed:

1. Field identification

   (a) Check your specimen against the Aid to Identification (Conspicuous Characters and Picture Guide to Families). Special attention should be paid to the shape and position of fins. Fins should be pulled forward to show their shape when erect. General appearance and arrows indicating conspicuous features will help you decide which family (or families) the specimen most resembles.

   (b) Find the Identification Sheets belonging to the family from its alphabetical sequence by using the capital letters of the Sheet Code (top right margin).

   (c) Determine the species within the family by looking through all the Species Identification Sheets belonging to the family. In some cases, the figure alone may be sufficient, but it is recommended that the sections "Distinctive Characters" and "Distinguishing Characters of Similar Species Occurring in the Area" are always read to ensure correct identification. This may also lead to identification of species for which a sheet is not included.

2. Searching the Index

   (a) Scientific (valid or invalid) or vernacular names are included in a single index and can be found alphabetically. In the case of scientific names, both the genus and the species names are cross-indexed, e.g. *Lates calcarifer* and *calcarifer, Lates.* This will help on occasions when a species name is coupled in the literature with an unusual generic name.

   (b) The name in the Index is followed by symbols referring to the Sheet Code. Names for families and genera are followed by the family abbreviation only, while species names are followed by the family abbreviation, generic abbreviation and species number.

   (c) In the case of species names, first, locate the family from the family abbreviation; second, locate the genus from its abbreviation; third, locate the species from its number (see Note overleaf).

Example:

Lates calcarifer

CENTRP	Lat	1
Family (CENTROPOMIDAE)	Genus *(Lates)*	Species *(calcarifer)*

(d) Remember that both the Index and the Identification Sheets indicate whether a scientific name is valid or obsolete, although it will always lead to the correct Identification Sheet.

NOTE:

The coding system is world-wide. Gaps in sequence of species code numbers indicate that the missing number has already been allocated to a species occurring in another fishing area (i.e. SERRAN Epin 1, 2 and 3 used for Mediterranean species).

click for next page

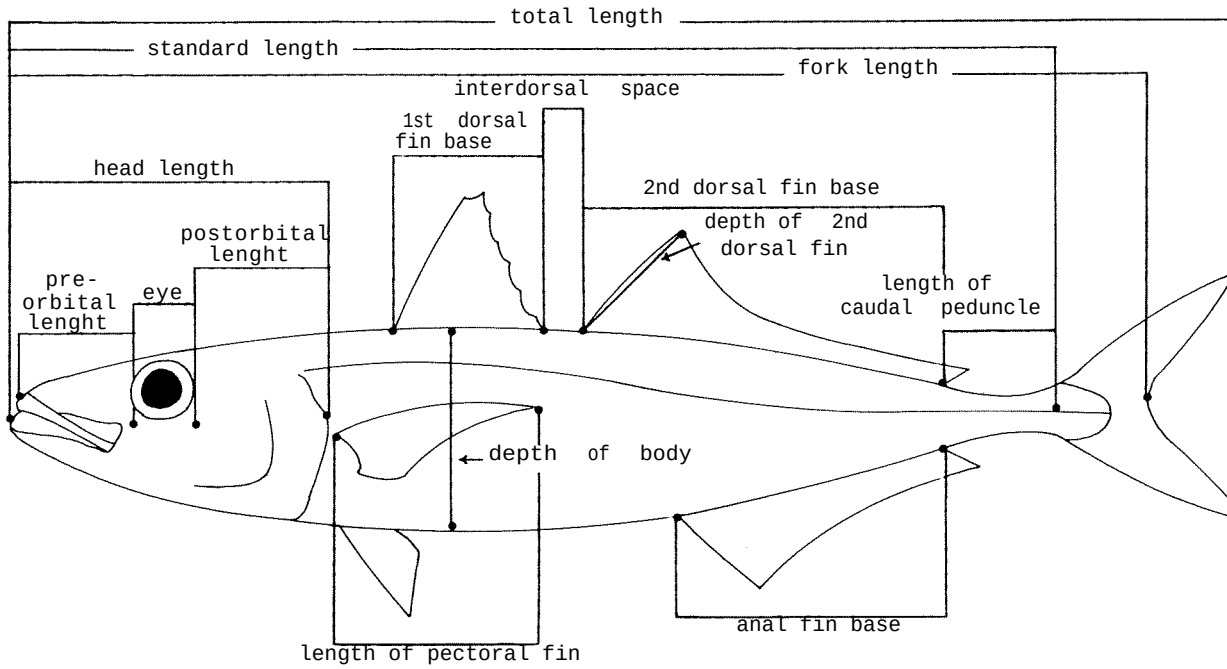
BONY FISHES

click for previous page

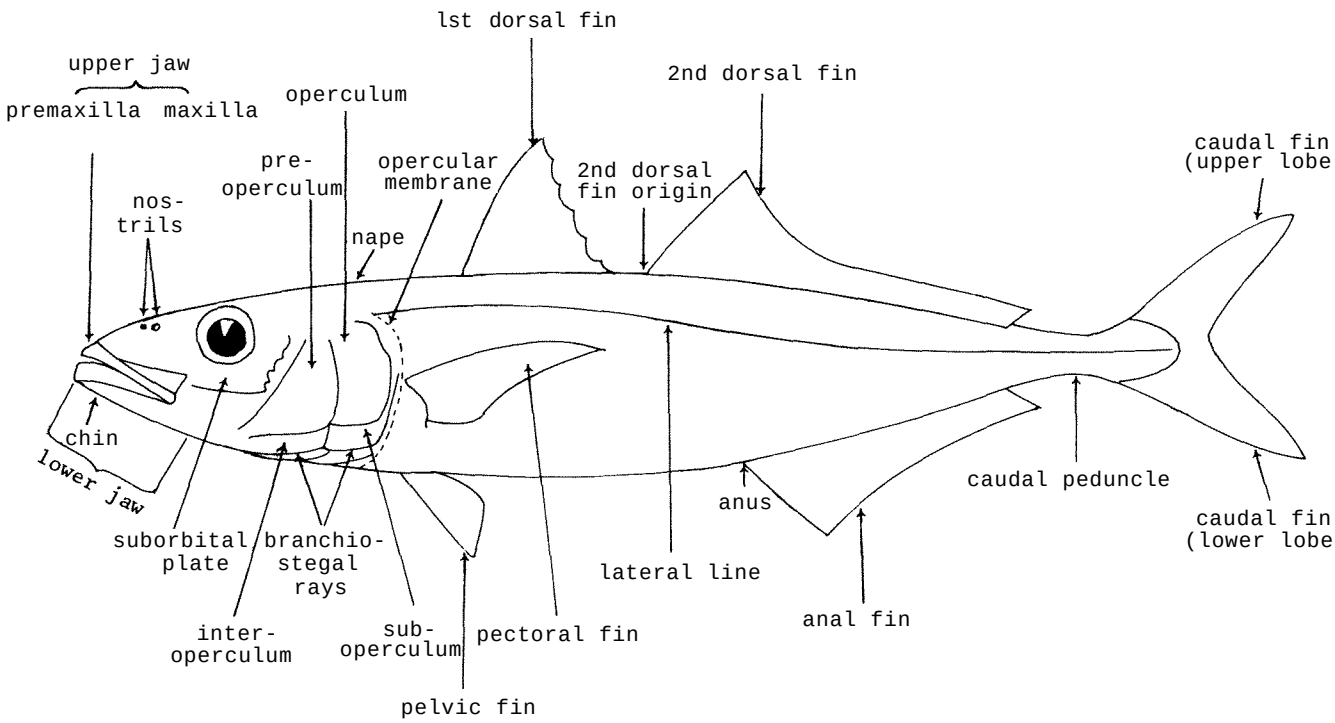
TECHNICAL TERMS

A. Principal Measurements Used

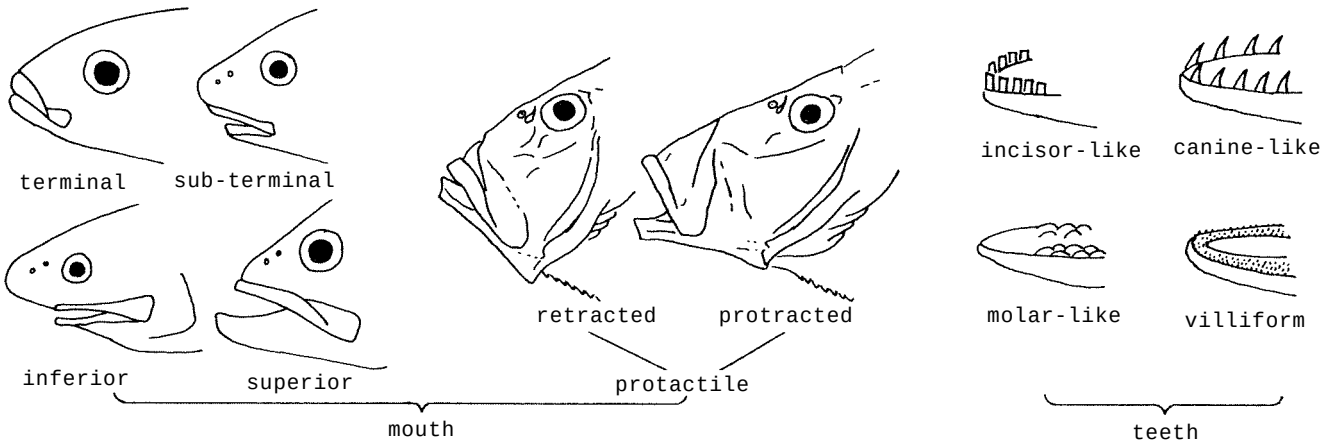
(shortest distance between the points marked: •)

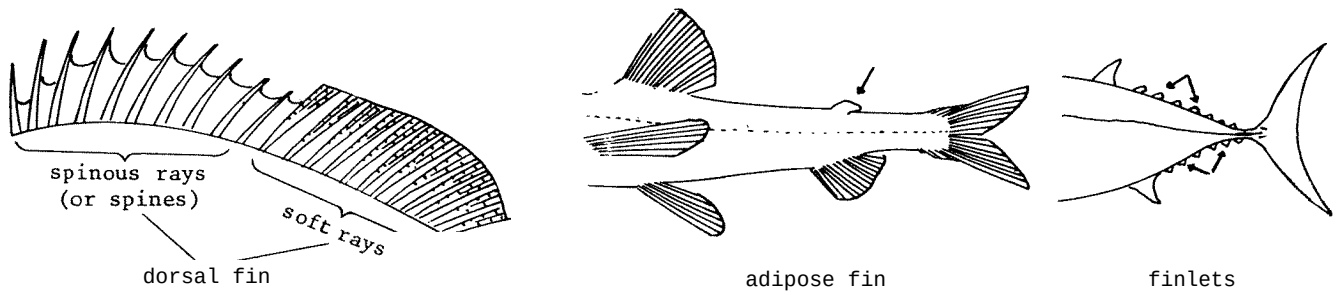


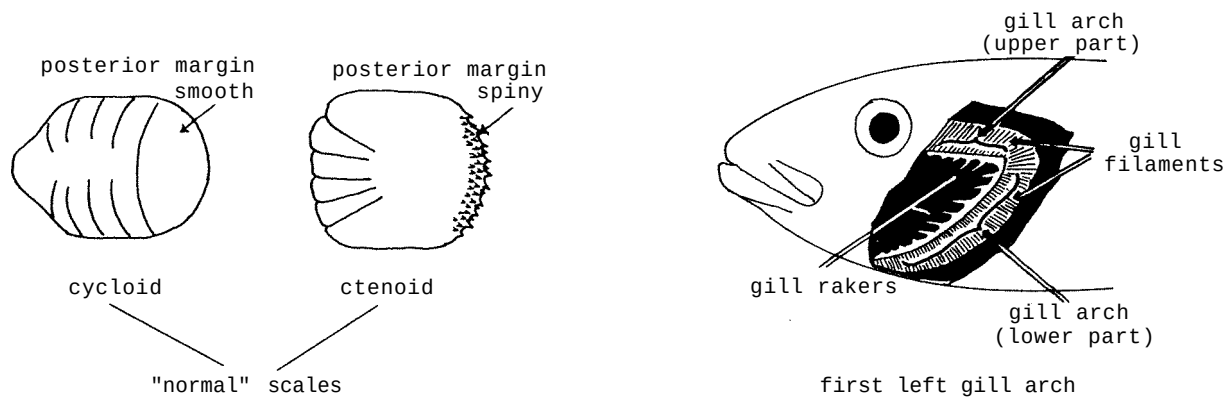
General Nomenclature of the External Morphology

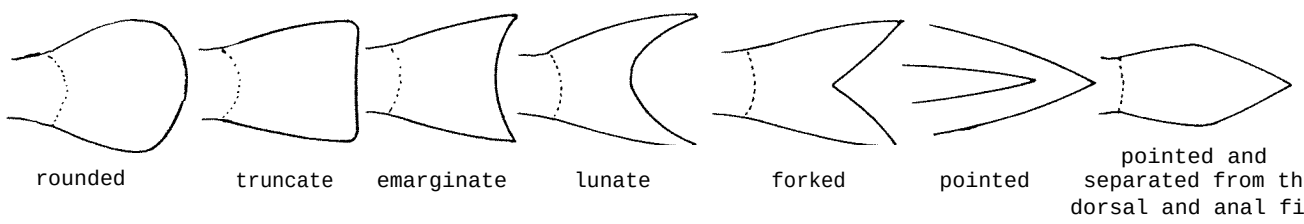


B. Details









caudal fin

FAO Sheets Fishing Areas 57,71

BONY FISHES

LIST OF FAMILIES WHICH INCLUDE FISHES OF ECONOMIC INTEREST
(Code numbers are given for those families for which Identification Sheets are included. Families restricted to temperate waters are marked with an asterisk)

Code	Family Name	Common Names used here
	Acanthuridae	Surgeonfishes
	Albulidae	Bonefishes
	*Aplodactylidae	
ARIID	Ariidae (Tachysuridae)	Sea catfishes
ARIOM	Ariommidae	Driftfishes
	*Ariommdae	Australian salmons
	Atherinidae	Silversides
BALIST	Balistidae (including Aluteridae, Monacanthidae)	Filefishes (Triggerfishes, Leatherjackets)
	Berycidae	Alfonsinos
	Belonidae	Needlefishes
BOTH	Bothidae	Lefteye flounders
	Branchiostegidae	Tilefishes
CARAN	Carangidae	Jacks (Scads, Trevallies, Crevalles, Runners, Cavallas, Horse mackerels, Pompanos)
CENTRP	Centropomidae (including Ambassidae, Chandidae, Latidae)	Sea perches (Cock-ups)
	Chaetodontidae	Butterflyfishes
CHAN	Chanidae	Milkfishes
	*Cheilodactylidae	Jackassfishes (Morwongs)
CHIROC	Chirocentridae	Wolfherrings
	*Chironemidae	
	Cirrhitidae	Hawkfishes
CLUP	Clupeidae (including Dorosomatidae, Dussumieriidae)	Herrings (Sardines, Shads, Gizzard shads, Ilishas)
	*Congiopodidae	Horsefishes
	Congridae	Conger eels
CORY	Coryphaenidae	Dolphinfishes (Dolphins)
CYNO	Cynoglossidae	Tongue soles
DREP	Drepanidae (here separated from Ephippidae)	Sicklefishes
ELOP	Elopidae	Tenpounders (Ladyfishes)
ENGR	Engraulidae (including Stolephoridae)	Anchovies
	*Enoplosidae	
EPHIP	Ephippidae (excluding Drepanidae, Platacidae)	Spadefishes
	Exocoetidae (excluding Hemirhamphidae)	Flyingfishes

FAO Sheets

BONY FISHES
(List of Families)

Fishing Areas 57,71

Code	Family Name	Common Names used here
	Fistulariidae	Cornetfishes
FORM	Formionidae (Apolectidae)	Black pomfrets
	Gadidae	Codfishes
	*Galaxiidae	
	Gempylidae	Snake mackerels
GERR	Gerreidae	Mojarras (Silver-biddies)
GLAUC	Glaucosomidae	Bigmouth breams
	Gobiidae	Gobies
	Gonorynchidae	Beaked salmons (Sand eels)
	Grammistidae	
HARP	Harpadontidae	Bombay-ducks
	Hemirhamphidae (here separated from Exocoetedae)	Halfbeaks
	Holocentridae	Squirrelfishes
	Istiophoridae	Billfishes (Sailfishes)
	Kuhliidae	Flagtails
	Kyphosidae	Sea chubs (Rudderfishes, Drummers)
	Labridae	Wrasses
LACT	Lactariidae	False trevallies (Milk trevallies)
	Lampridae	Opahs
	*Labridae	Tasmanian trumpeters
LEIOG	Leiognathidae (Equulidae)	Ponyfishes (Slipmouths)
LETH	Lethrinidae (excluding Monotaxidae)	Emperors (Scavengers)
	Lobotidae	Tripletails
LUT	Lutjanidae	Snappers (Jobfishes, Fusiliers)
	Macrouridae	Grenadiers (Rattails)
MEGAL	Megalopidae	Tarpons
	Menidae	
	Moridae	
MUGIL	Mugilidae	Grey mullets
MULL	Mullidae	Goatfishes
MURSOC	Muraenesocidae	Pike congers
	Muraenidae	Morays (Moray eels)
	Myctophidae	Lanternfishes
NEMIP	Nemipteridae (including Scolopsidae)	Threadfin breams (Monocle breams)
	Nomeidae	Man-of-war fishes
	Ophidiidae	Cusk-eels (Brotulas)
	Oplegnathidae	
	Pempheridae	Sweepers
	*Pentacerotidae	Armourheads
PENTAP	Pentapodidae	Large-eye breams
	Platacidae (here separated from Ephippidae)	Batfishes

FAO Sheets

BONY FISHES
(List of Families)

Fishing Areas 57,71

Code	Family Name	Common Names used here
	Platycephalidae	Flatheads
	Pleuronectidae	Righteye flounders
	Plotosidae	
POLYN	Polynemidae	Threadfins (Tasselfishes)
	Pomacentridae	
POMAD	Pomadasyidae (including Gaterinidae, Pristipomidae, Plectorhynchidae)	Grunts (Sweetlips)
POMAT	Pomatomidae	Bluefishes
PRIAC	Priacanthidae	Bigeyes (Bulleyes)
PSET	Psettodidae	Indian halibuts
RACH	Rachycentridae	Cobias (Sergeantfishes)
	*Salmonidae	Salmons (Trouts)
	Scaridae	Parrotfishes
	Scatophagidae	Scats
SCIAEN	Sciaenidae (including Otolithidae)	Croakers (Drums)
	Scomberesocidae	Sauries
SCOMBR	Scombridae (including Acanthocybiidae, Cybiidae, Gasterochismidae, Katsuwonidae, Scomberomoridae, Thunnidae)	Mackerels and Tunas
	Scorpaenidae	Scorpionfishes
SER	Serranidae (including Anthiidae, Cephalopholidae, Epinephelidae, Plectropomidae)	Groupers and Sea basses
SIGAN	Siganidae	Spinefeet (Rabbitfishes)
SILL	Sillaginidae	Sillagos (Whitings)
SOL	Soleidae (including Achiridae, Synapturidae)	Soles
SPARID	Sparidae (including Denticidae)	Seabreams (Porgies)
SPRY	Sphyraenidae	Barracudas
STROM	Stromateidae (Pampidae)	Pomfrets
SYNOD	Synodontidae	Lizardfishes
	Tetraodontidae	Puffers
THER	Theraponidae	Therapons (Therapon-perches)
TRICH	Trichiuridae (including Lepidopidae)	Hairtails (Cutlassfishes)
	Triglidae	Searobins (Gurnards)
	Uranoscopidae	Stargazers
	Xiphiidae	Swordfishes
	*Zeidae	Dories

FAO Sheets

Fishing Areas 57,71

BONY FISHES

AID TO IDENTIFICATION OF FISH FAMILIES OF ECONOMIC INTEREST

A. CONSPICUOUS CHARACTERS

Certain features will help to identify some, although not necessarily all, members of particular families. In parenthesis are given the page numbers of the Picture Guide and some additional features worth checking here first.

BODY

Long, cylindrical, eel-like: Anguillidae (5), Congridae (5), Muraenesocidae (5, teeth), Muraenidae (5, pectoral fins)

Strongly elongate, not eel-like: Belonidae (5, head), Chirocentridae (4, teeth), Fistulariidae (5, mouth), Gempylidae (5, teeth, finlets), Hemirhamphidae (5, head), Scomberesocidae (5, head), Trichiuridae (5, teeth)

Flattened, eyes on both sides: Drepanidae (11), Ephippidae (11), Formionidae (12), Leiognathidae (11, mouth), Menidae (11), Platacidae (11), Scatophagidae (11, anal fin), Stromateidae (12, pelvic fins)

Flattened, eyes on one side: Bothidae (15), Cynoglossidae (15, pectoral fins), Pleuronectidae (16), Psettodidae (16), Soleidae (16, pectoral fins)

HEAD

Lizard-like: Synodontidae (6)

Strongly flattened: Platycephalidae (13)

Very spiny: Berycidae (14), Holocentridae (14), Scorpaenidae (13, pectoral fins), Triglidae (13, pectoral fins)

MOUTH

Pointed beak: Belonidae (5), Hemirhamphidae (5), Istiophoridae (13, keels), Scomberesocidae (5, finlets), Xiphiidae (13, keels)

Tube-like: Fistulariidae (5)

Strongly protractile: Gerreidae (11), Leiognathidae (11), Zeidae (15, scutes)

Pores on chin: Pomadasyidae (8), Sciaenidae (8, anal fin)

TEETH

Fang-like: Chirocentridae (4, dorsal fin), Gempylidae (5, finlets), Muraenesocidae (5), Sphyraenidae (7), Trichiuridae (5)

Fused into plates: Oplegnathidae (10), Scaridae (14), Tetraodontidae (16)

Molar-like: Lethrinidae (8), Pentapodidae (8), Sparidae (8)

BARBELS

On chin only: Gadidae (7), Mullidae (7)

Around mouth: Ariidae (6), Gadidae (7), Plotosidae (6)

FINLETS

After dorsal and anal fins: Carangidae (12, anal fin), Gempylidae (5, teeth), Istiophoridae (13, mouth), Scomberesocidae (5), Scombridae (13, keels), Xiphiidae (13, mouth)

FAO Sheets

BONY FISHES
(Aid to Identification)

Fishing Areas 57,71

DORSAL FIN

Short, far back on body: Belonidae (5, mouth), Chirocentridae (4, teeth) Fistulariidae (5, mouth), Galaxiidae (6), Gonorynchidae (6), Hemirhamphidae (5, mouth), Scomberesocidae (5, finlets), Tetraodontidae (16, teeth)

Long, far forward on body: eel-like fishes (5), flat-fishes (15,16), Branchiostegidae (10), Congiopodidae (13, pectoral fins), Coryphaenidae (12), Gempylidae (5, finlets), Ophidiidae (7), Trichiuridae (5, teeth)

Joined to caudal fin: eel-like fishes (5), Cynoglossidae (15) Macrouridae (7), Plotosidae (6)

2 short dorsal fins, well separated from each other: Atherinidae (7), Mugilidae (7), Mullidae (7, barbels), Polynemidae (7, pectoral fins), Scombridae (13, finlets), Sphyraenidae (7)

With filamentous or elongate fin rays: Carangidae (12, anal fin), Clupeidae (4, scutes), Leiognathidae (11, mouth), Megalopidae (4), Nemipteridae (8), Pentapodidae (8), Priacanthidae (8), Sparidae (8, teeth), Zeidae (15, mouth)

Small adipose fin: Ariidae (6, barbels), Harpadontidae (6, caudal fin), Myctophidae (6, light organs), Salmonidae (6), Synodontidae (6, head)

PECTORAL FINS

Absent or very small: Cynoglossidae(15), Muraenidae (5), Soleidae (16)

Free upper ray(s) or filaments: Engraulidae (4, scutes), Nemipteridae (8)

Tips of lower rays free: Cheilodactylidae (10), Chironemidae (10), Cirrhitidae (9), Congiopodidae (13), Platycephalidae (13, head), Scorpaenidae (13, head)

Lower rays quite free: Polynemidae (7), Triglidae (13, head)

PELVIC FINS

Absent: eel-like fishes (5), Formionidae (12), Stromateidae (12), Trichiuridae (5, teeth), Xiphiidae (13)

Before pectoral fin base: Gadidae (7), Macrouridae (7), Moridae (7), Ophidiidae (7), Priacanthidae (8); Uranoscopidae (13)

Reduced to filaments: Ophidiidae (7),, Istiophoridae (13)

2 spines present: Siganidae (14)

ANAL FIN

Long, joined to caudal fin: eel-like fishes (5), Cynoglossidae (15), Engraulidae (4, scutes), Macrouridae (7), Plotosidae (6, barbels), Trichiuridae (5, teeth)

2 spines in fin: Branchiostegidae (10, dorsal fin), Formionidae (12, body), Polynemidae (7, pectoral fins), Pomatomidae (10), Rachycentridae (12), Sciaenidae (8, caudal fin), Sillaginidae (10)

2 detached spines before fin: Carangidae (12, scutes)

3 spines in fin: many families

4 spines in fin: Berycidae (14), Chaetodontidae (11), Holocentridae (14, head), Scatophagidae (11, body), Zeidae (15, mouth)

7 spines in fin: Siganidae (14)

FAO Sheets | BONY FISHES (Aid to Identification) | Fishing Areas 57,71

CAUDAL FIN

Tapering to a fine point: Engraulidae (4, scutes), Macrouridae (7), Trichiuridae (5, teeth)

Upper ray filamentous: Nemipteridae (8)

Middle rays extended: Fistulariidae(5, mouth), Harpadontidae (6)

Lateral line scales reaching hind margin: Harpadontidae (6), Polynemidae (7), Sciaenidae (8

KEELS

Sharp spines on caudal peduncle: Acanthuridae (14)

Low keels on caudal peduncle: Istiophoridae (13, mouth), Scombridae (13, finlets), Xiphiidae (13, mouth)

SCUTES

Along belly: Clupeidae (4), Engraulidae (4), Zeidae (15, mouth)

Along lateral line: Carangidae (12, anal fin), Formionidae (12)

LIGHT ORGANS

Along sides of body: Engraulidae (4, scutes), Myctophidae (6, adipose fin)

NOTE: The fishes with a general perch-like appearance are the most numerous and difficult to deal with. The following 11 characters are of some assistance:

More spines than soft rays in dorsal fin: Lethrinidae (8), Theraponidae (9)

Tips of soft parts of dorsal and anal fins reaching back beyond end of body: Lobotidae (9)

Soft part of dorsal fin much higher than spinous part: Cirrhitidae (9), Glaucosomidae (9), Oplegnathidae (10)

Filaments in fins: Nemipteridae (8)

Inner margin of pectoral fin attached to body: Priacanthidae (8)

Anal fin with only 2 spines: Sciaenidae (8)

Teeth fused in plates: Oplegnathidae (10), Scaridae (14)

Molar teeth in jaws: Pentapodidae (8), Sparidae (8)

Pores on chin: Pomadasyidae (8), Sciaenidae (8)

Scales absent on cheek: Lethrinidae (8)

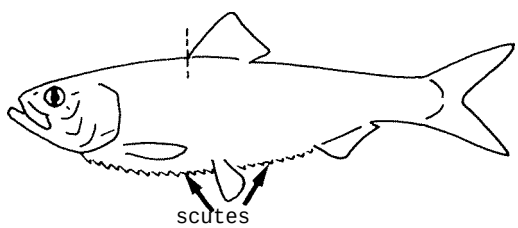
Scales reaching to tip of caudal fin: Sciaenidae (8)

B. PICTURE GUIDE TO FAMILIES

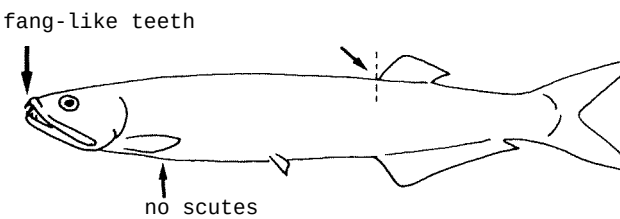
Based mainly on general appearance rather than on natural affinities. Arrows indicate conspicuous characters found in many or all members of a family. Where Identification Sheets are available the Family Code is given. Families restricted to temperate waters are marked with an asterisk. (Redrawn chiefly from Greenwood, Rosen, Weitzman and Myers, 1966).

HERRING-LIKE FISHES

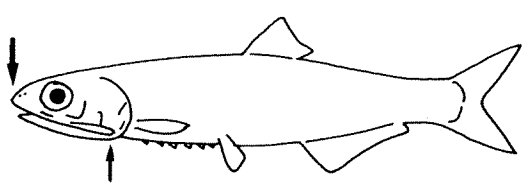
No fin spines; a single,short,dorsal fin;
pelvic fins well behind pectoral fins



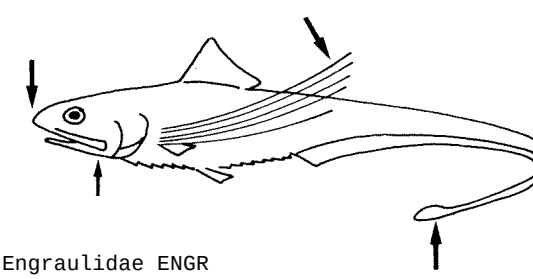
Clupeidae CLUP



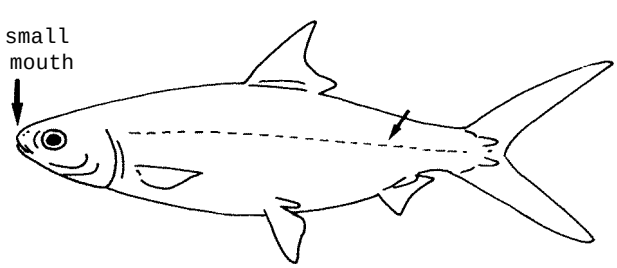
Chirocentridae CHIROC



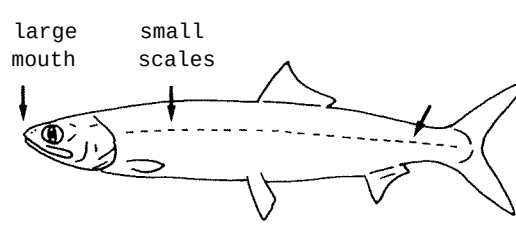
Engraulidae ENGR



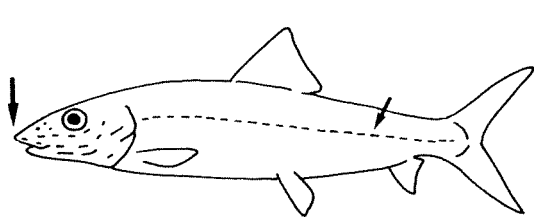
Engraulidae ENGR



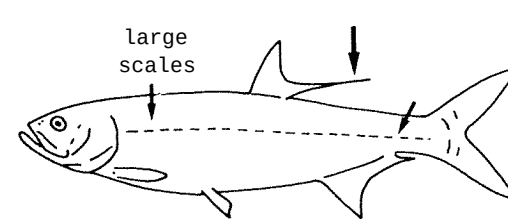
Chanidae CHAN



Elopidae ELOP



Albulidae



Megalopidae MEGAL

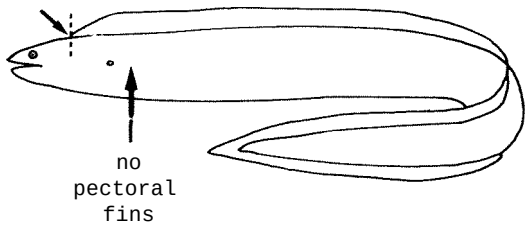
FAO Sheets

BONY FISHES
(Aid to Identification)

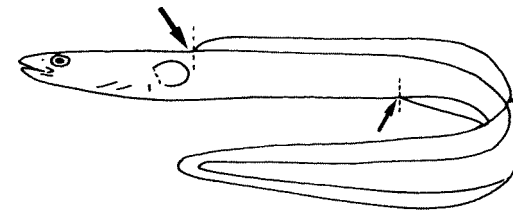
Fishing Areas 57,71

EEL-LIKE FISHES

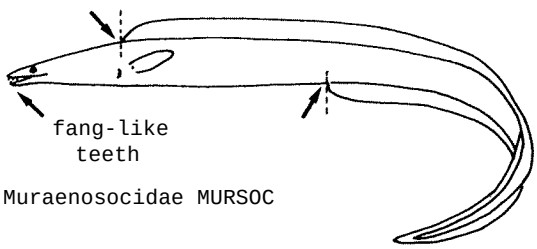
Scales minute or absent; no pelvic fins;
dorsal and anal fins joined posteriorly



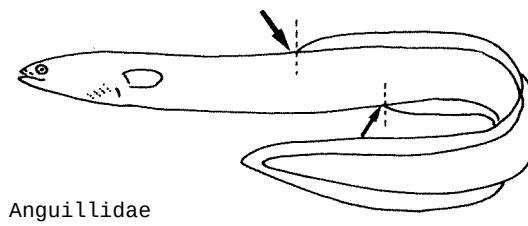
Muraenidae



Congridae



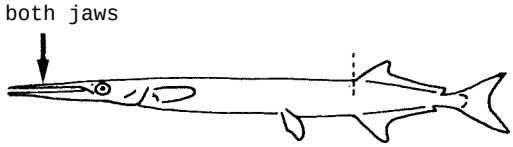
Muraenosocidae MURSOC



Anguillidae

OTHER STRONGLY ELONGATE FISHES

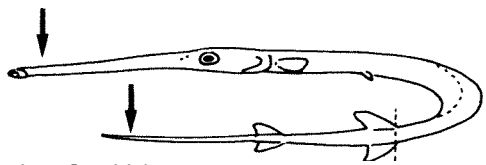
both jaws



Belonidae

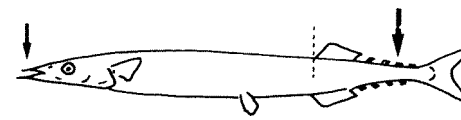
lower jaw

Hemirhamphidae



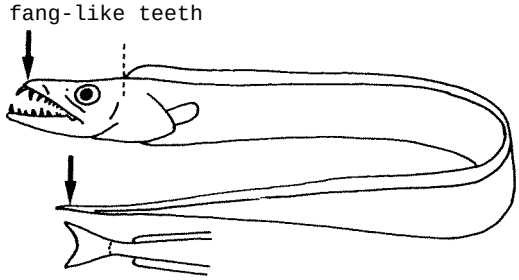
Fistulariidae

finlets



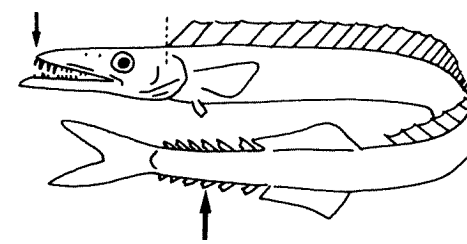
Scomberesocidae

fang-like teeth



Trichiuridae TRICH

fang-like teeth



Gempylidae

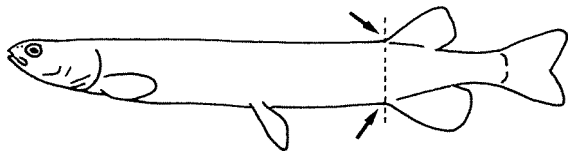
FAO Sheets

BONY FISHES
(Aid to Identification)

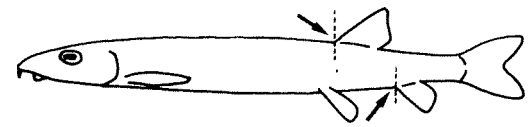
Fishing Areas 57,71

SALMON-LIKE FISHES

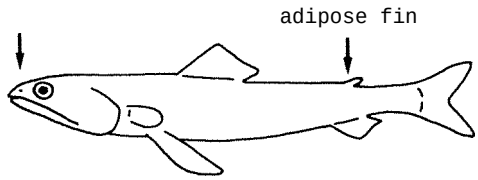
No fin spines; a single short dorsal fin, often plus adipose fin; pelvic fins well behind pectoral fins



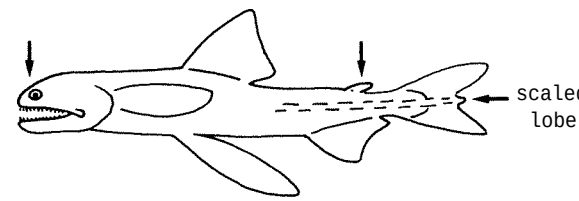
Galaxiidae *



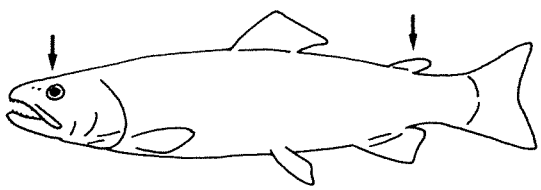
Gonorynchidae



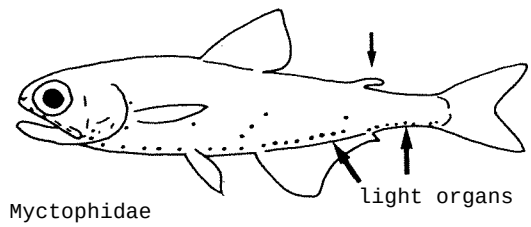
Synodontidae SYNOD



Harpadontidae HARP

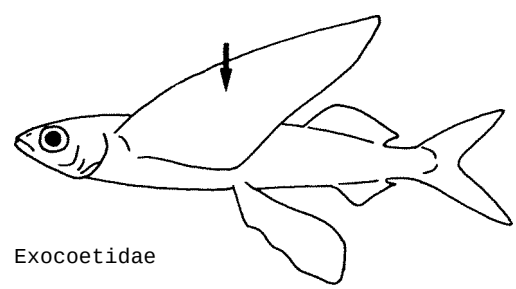


Salmonidae *



Myctophidae

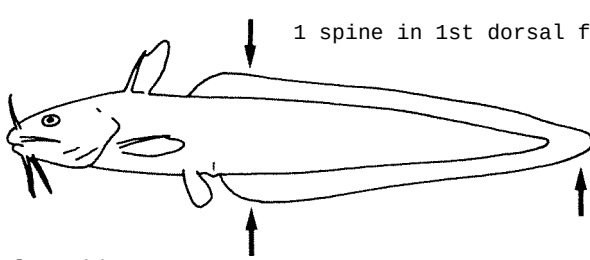
FLYING FISHES



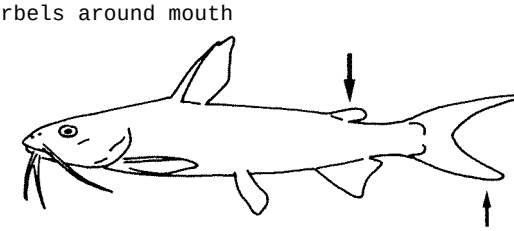
Exocoetidae

CATFISHES

1 spine in 1st dorsal fin; barbels around mouth



Plotosidae



Ariidae ARIID

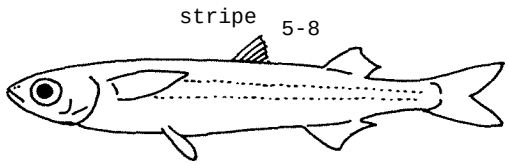
FAO Sheets

BONY FISHES
(Aid to Identification)

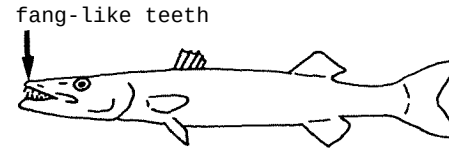
Fishing Areas 57,71

MULLETS, SILVERSIDES, ETC.~

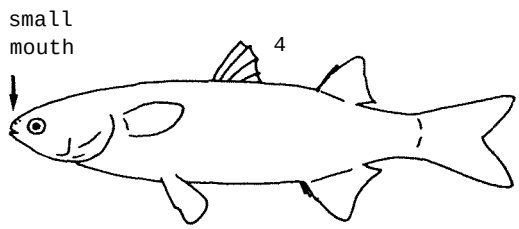
2 short dorsal fins; no strong fin spines



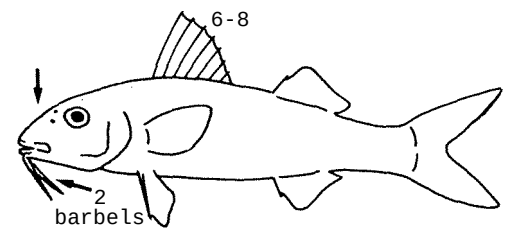
Atherinidae



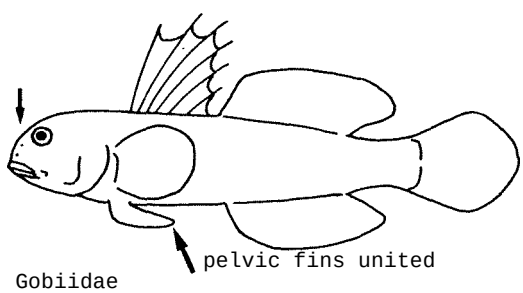
Sphyraenidae SPHY



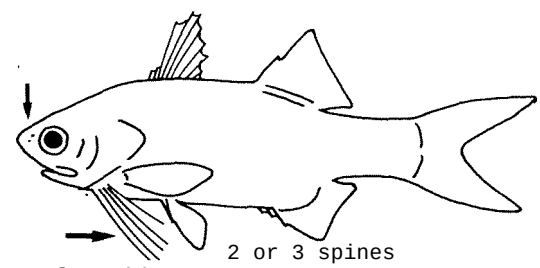
Mugilidae MUGIL



Mullidae MULL



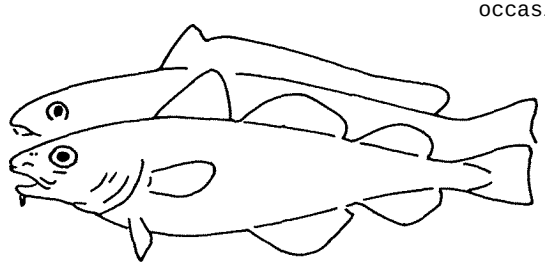
Gobiidae



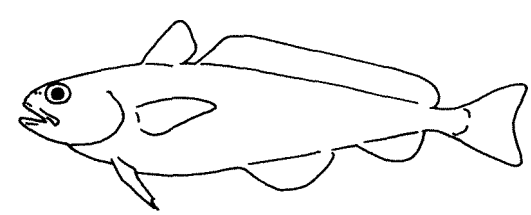
Polynemidae POLYN

COD-LIKE FISHES

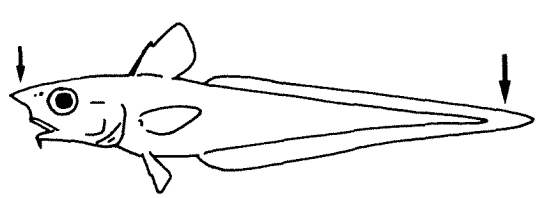
No sharp spines in fins; pelvic fins far forward,
sometimes merely a filament',- often barbels on chin,
occasionally on shout



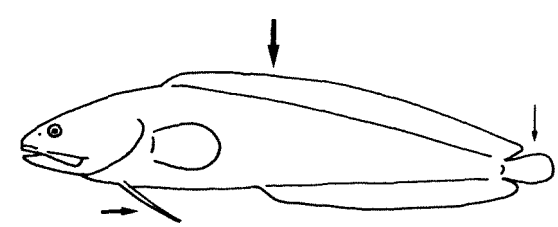
Gadidae



Moridae



Macrouridae



Ophidiidae

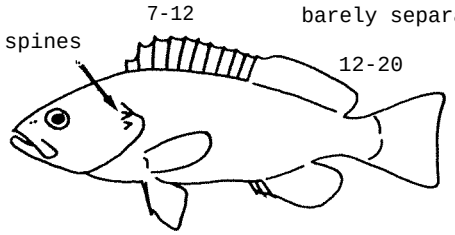
FAO Sheets

BONY FISHES
(Aid to Identification)

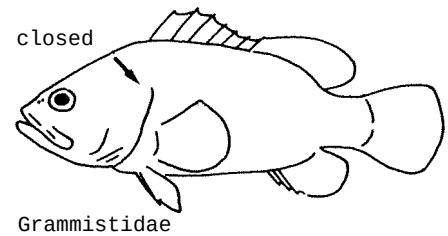
Fishing Areas 57,71

TYPICAL PERCH-LIKE FISHES

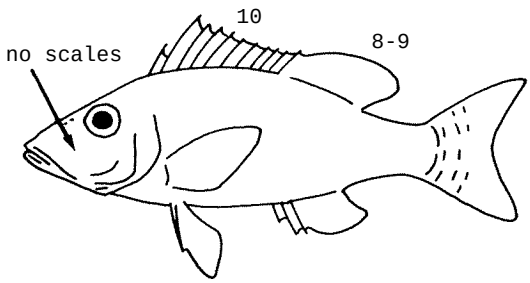
Dorsal fin with spinous and soft parts, the two usually barely separated; fin spines generally pungent



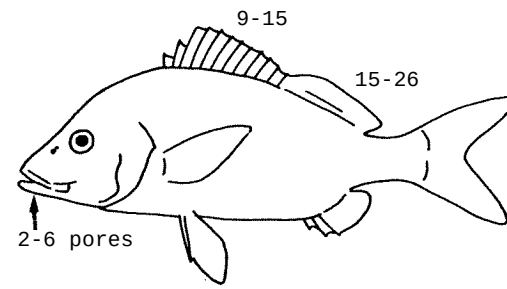
Serranidae SER



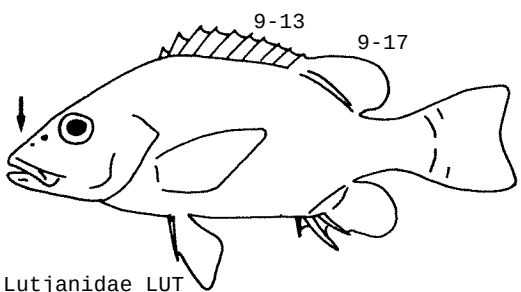
Grammistidae



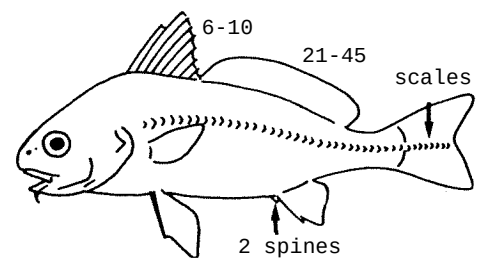
Lethrinidae LETH



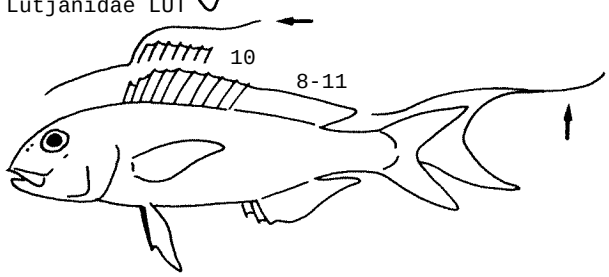
Pomadasydae POMAD



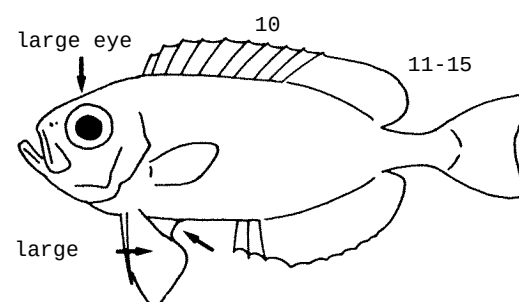
Lutjanidae LUT



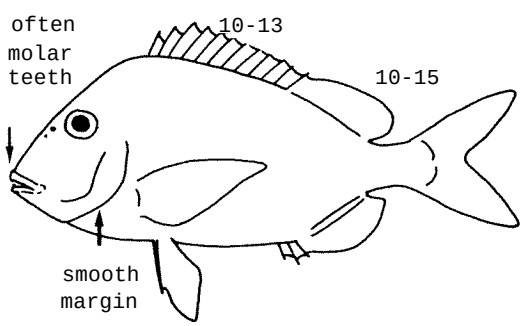
Sciaenidae SCIAEN



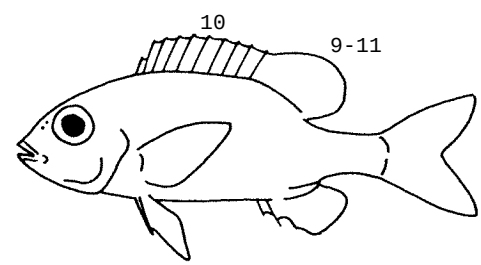
Nemipteridae NEMIP



Priancathidae PRIAC



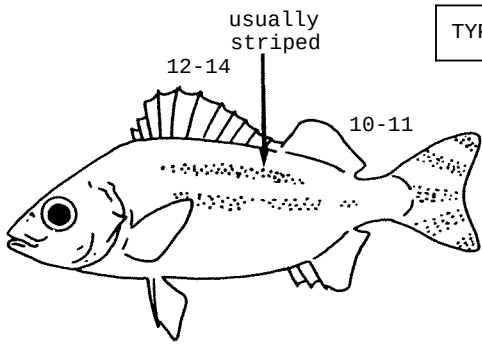
Sparidae SPARID



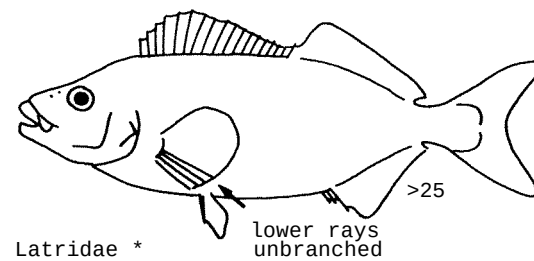
Pentapodidae PENTAD

TYPICAL PERCH-LIKE FISHES

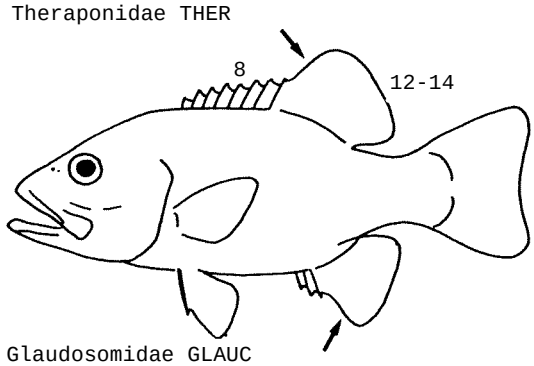
(Continued)



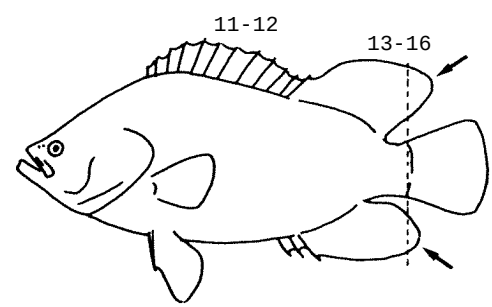
Theraponidae THER



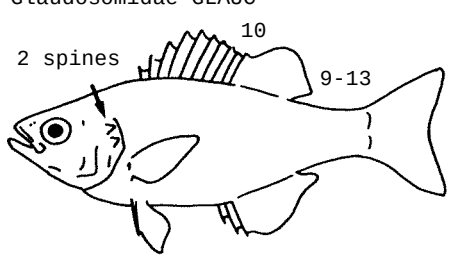
Latridae *



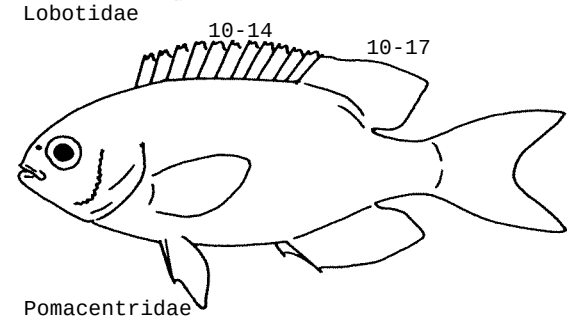
Glaudosomidae GLAUC



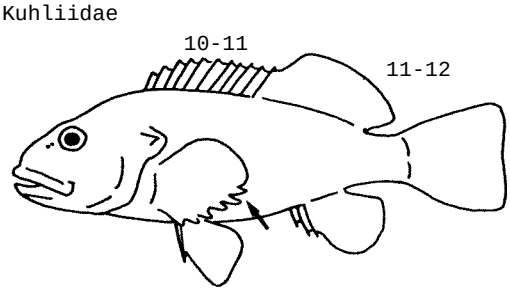
Lobotidae



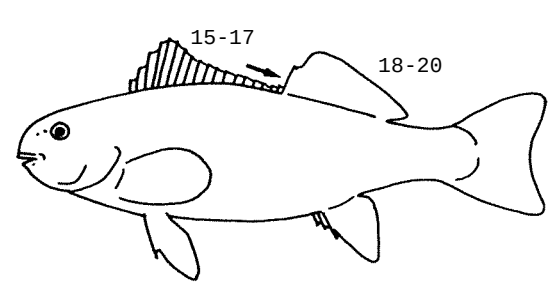
Kuhliidae



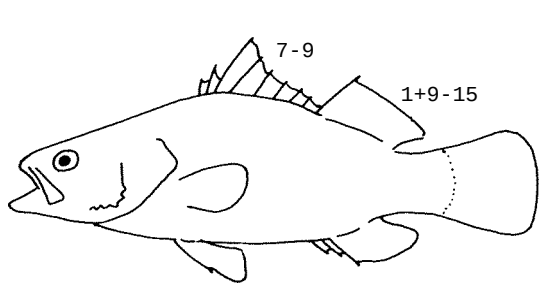
Pomacentridae



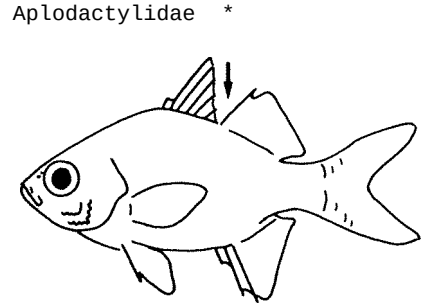
Cirrhitidae



Aplodactylidae *

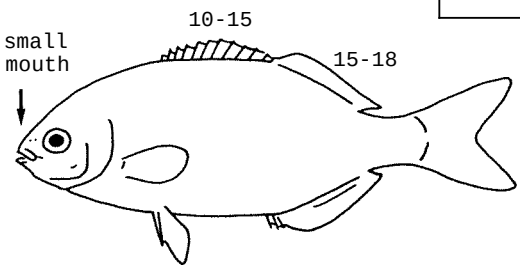


Centropomidae CENTRP

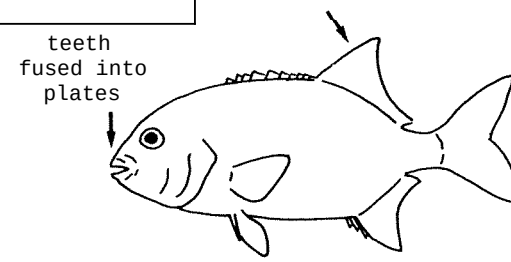


Centropomidae CENTRP

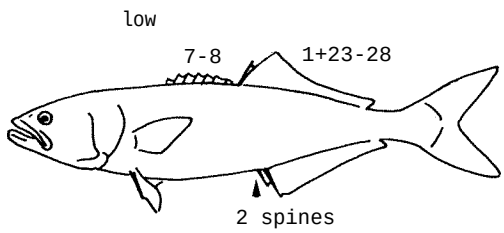
OTHER PERCH-LIKE FISHES



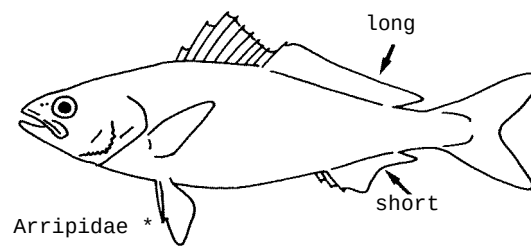
Kyphosidae



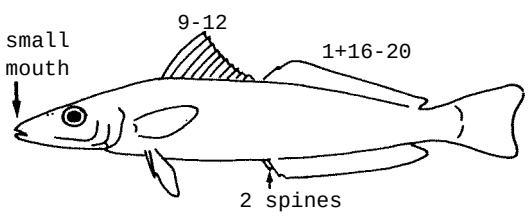
Oplegnathidae



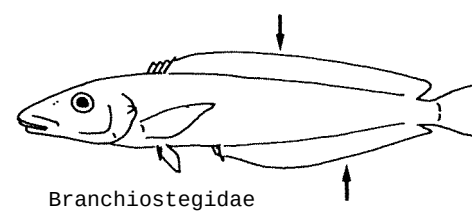
Pomatomidae POMAT



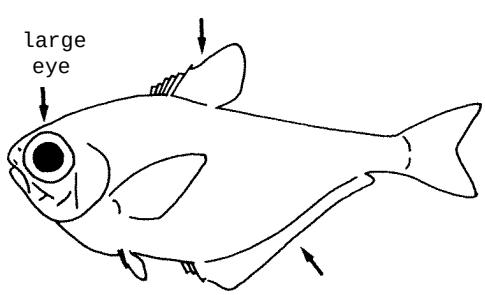
Arripidae *



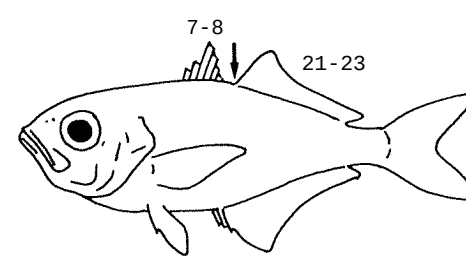
Sillaginidae SILL



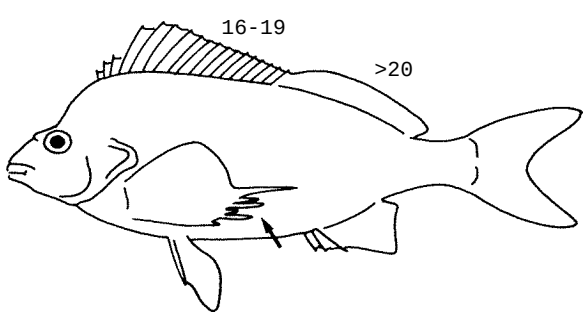
Branchiostegidae



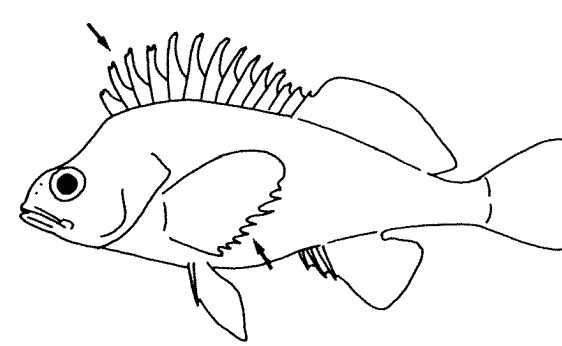
Pempheridae



Lactariidae LACT



Cheilodactylidae *



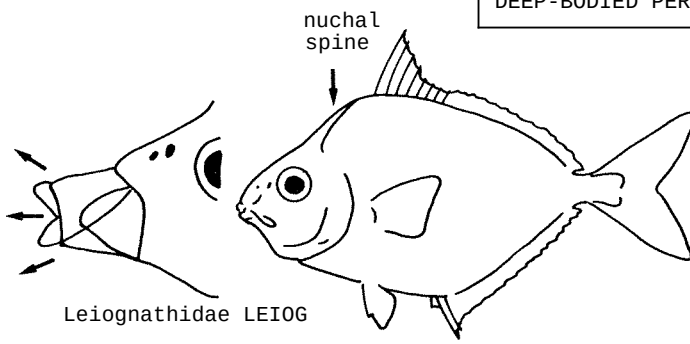
Chironemidae

FAO Sheets

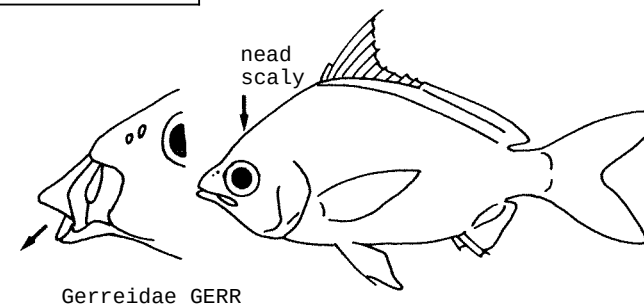
BONY FISHES
(Aid to Identification)

Fishing Areas 57,71

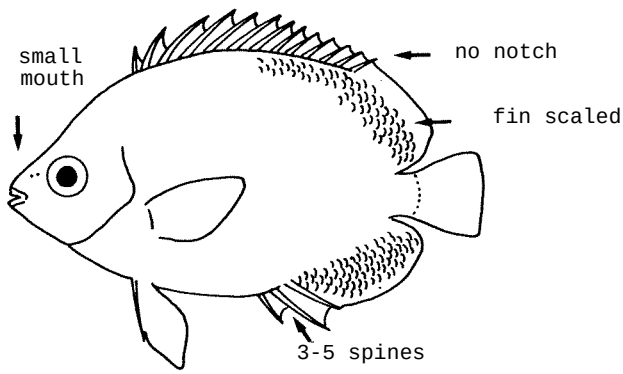
DEEP-BODIED PERCH-LIKE FISHES



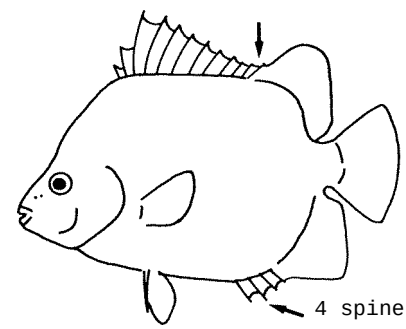
Leiognathidae LEIOG



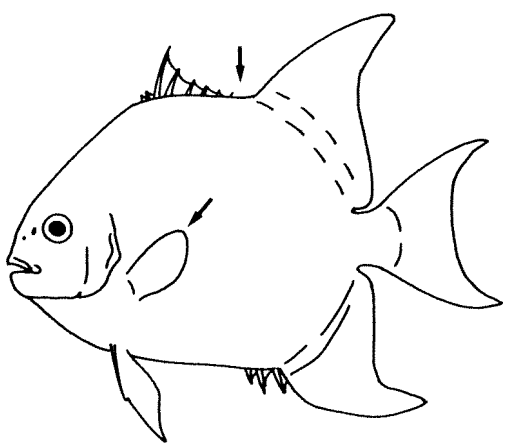
Gerreidae GERR



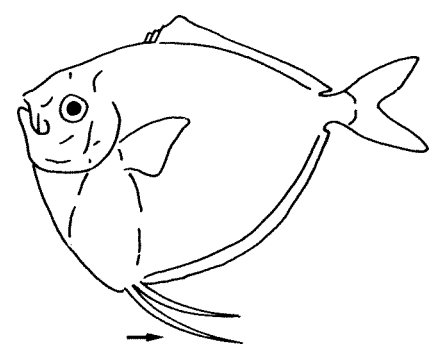
Chaetodontidae



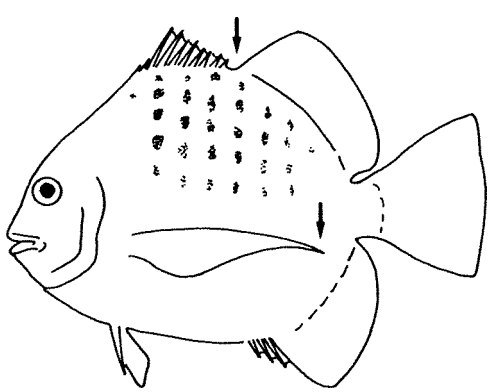
Scatophagidae



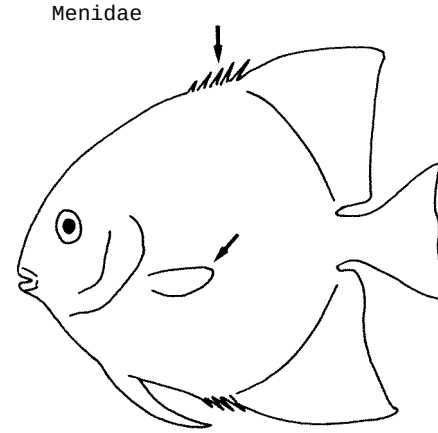
Ephippidae EPHIP



Menidae



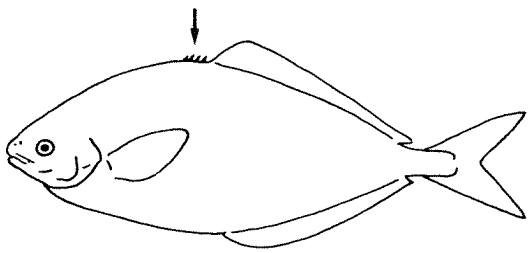
Drepanidae DREP



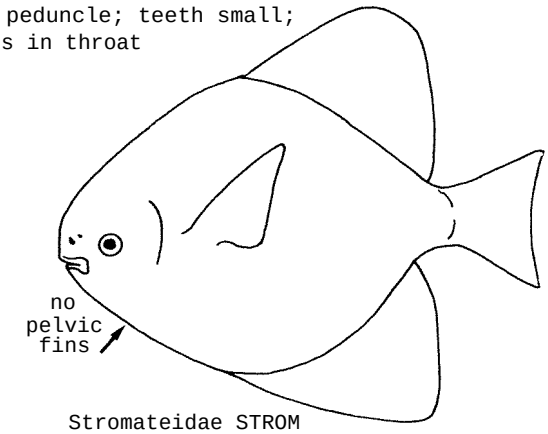
Platacidae

POMFRETS, BUTTERFISHES

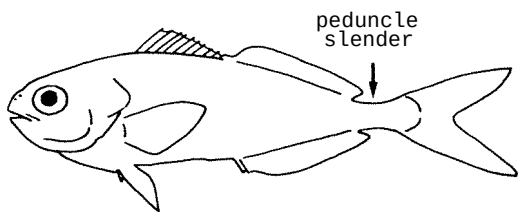
No hard keels on caudal peduncle; teeth small;
toothed sacs in throat



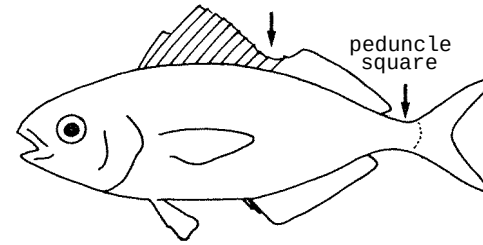
Stromateidae STROM



Stromateidae STROM

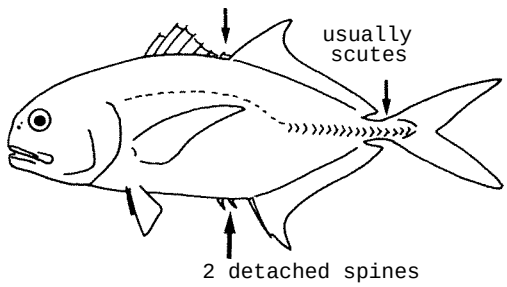


Nomeidae

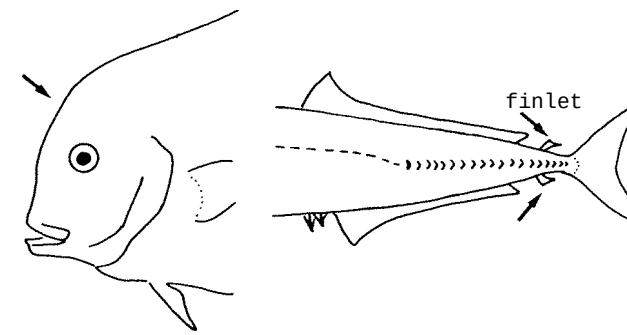


Ariommidae ARIOM

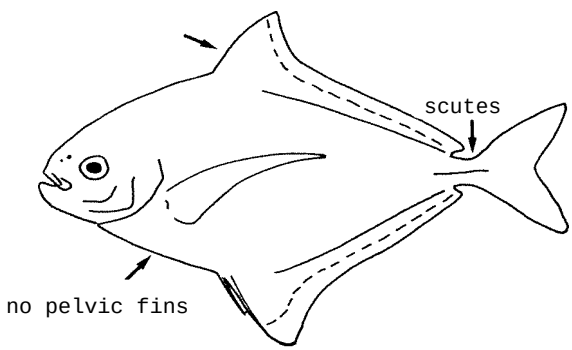
CARANGIDS, KINGFISHES, DOLPHINS, ETC.



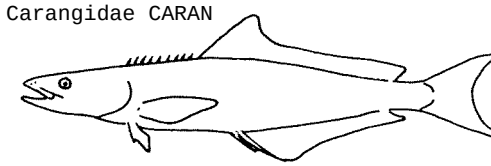
Carangidae CARAN



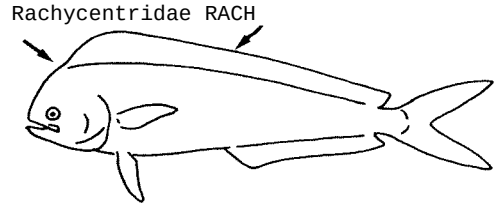
Carangidae CARAN



Formionidae FORM



Rachycentridae RACH



Coryphaenidae CORY

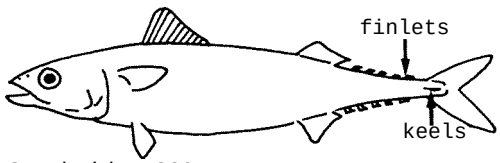
FAO Sheets

BONY FISHES
(Aid to Identification)

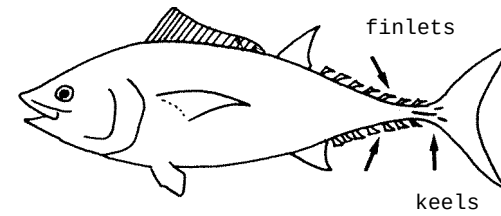
Fishing Areas 57,71

TUNA-LIKE FISHES

Hard keels on caudal peduncle;
finlets behind dorsal and anal fins



Scombridae SCOMBR



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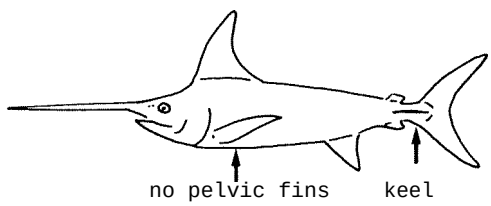
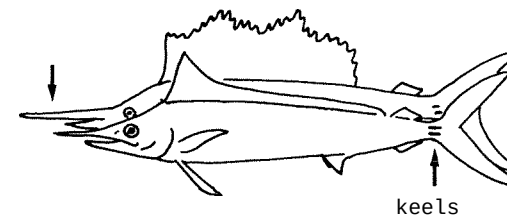


Xiphiidae

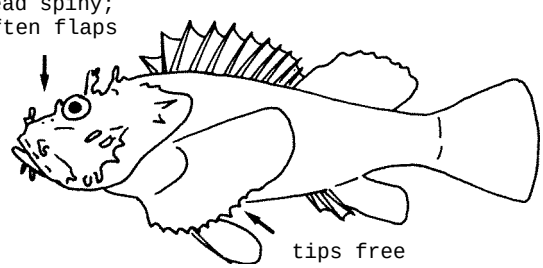


Istiophoridae

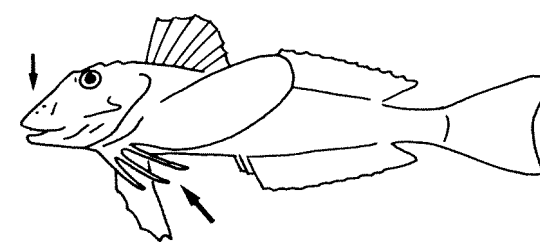
SCORPIONFISHES, FLATHEADS, ETC.

Bony ridge across cheek and/or eyes
on top of head

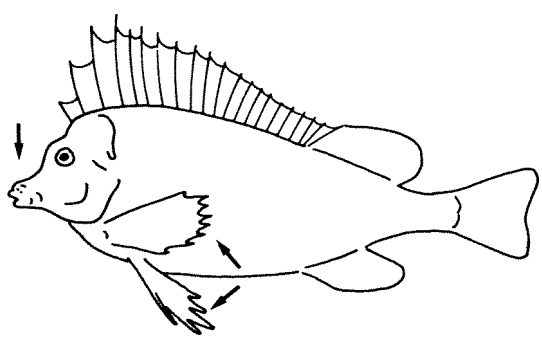
head spiny;
often flaps



Scorpaenidae

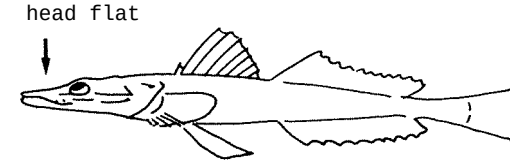


Triglidae



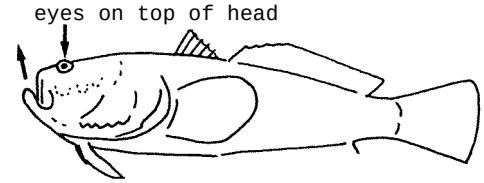
Congiopodidae

head flat



Platycephalidae

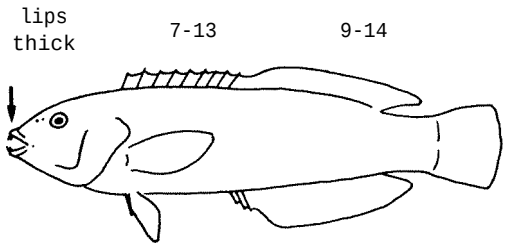
eyes on top of head



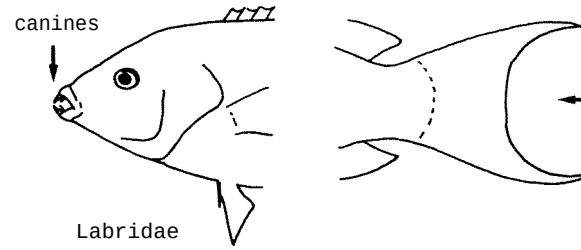
Uranoscopidae

WRASSES, PARROTFISHES

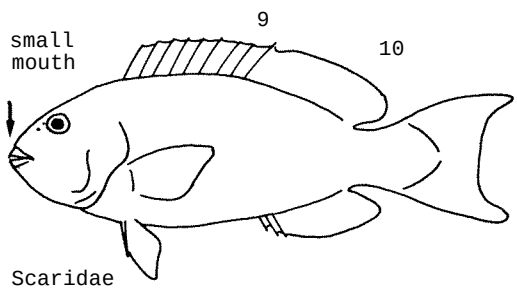
Lips thick or teeth fused into plates;
dorsal fin often single, low



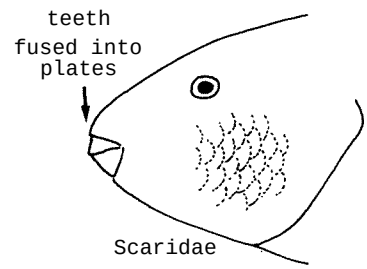
Labridae



Labridae



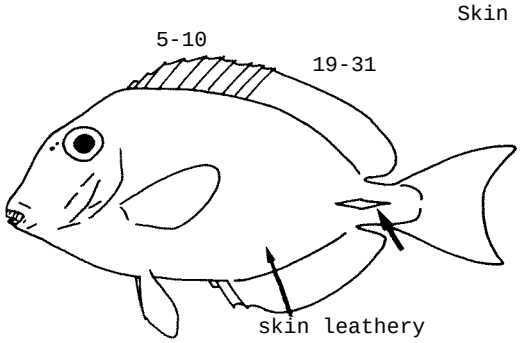
Scaridae



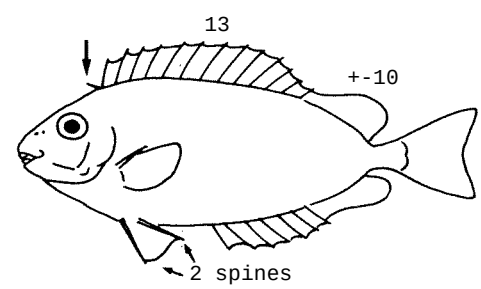
Scaridae

SURGEONFISHES, SPINEFEET

Skin leathery or slimy,
scales small



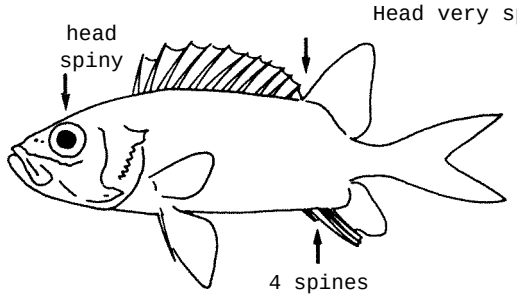
Acanthuridae



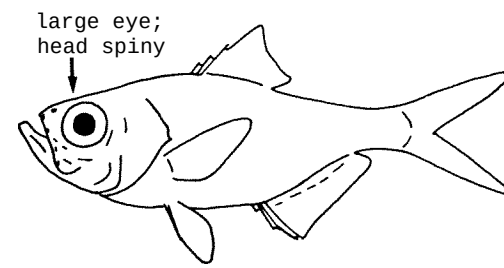
Siganidae SIGAN

SQUIRRELFISHES, ALFONSINOS

Head very spiny and scales rough

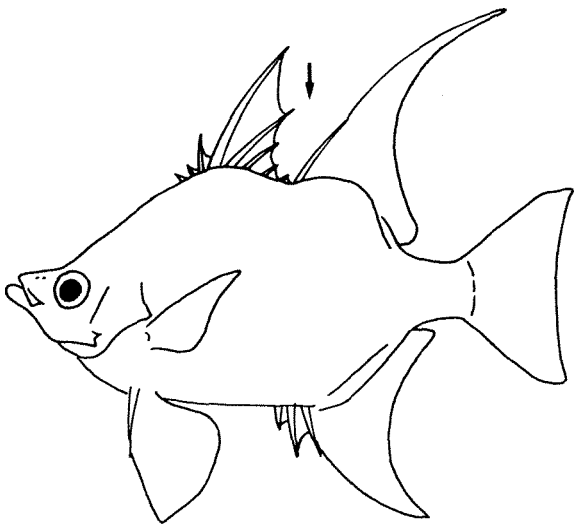


Holocentridae

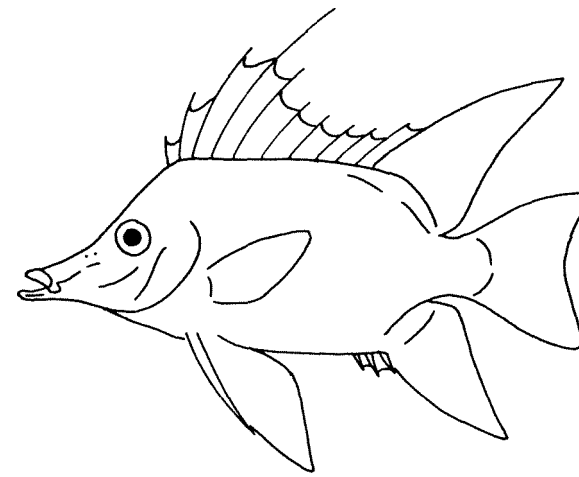


Berycidae

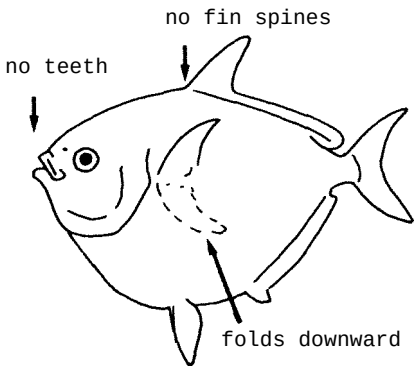
ODD-SHAPED FISHES



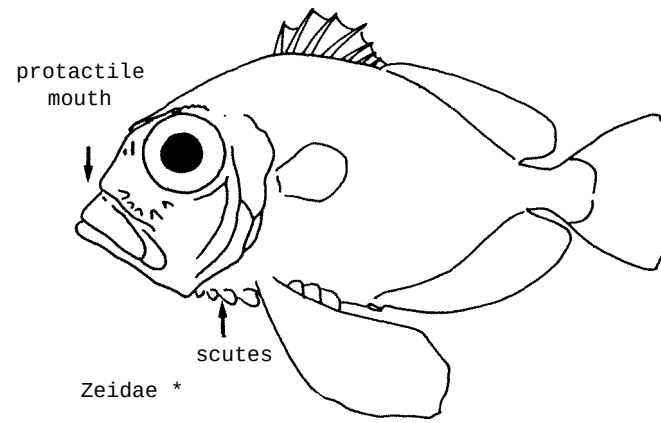
Enoplosidae *



Pentacerotidae



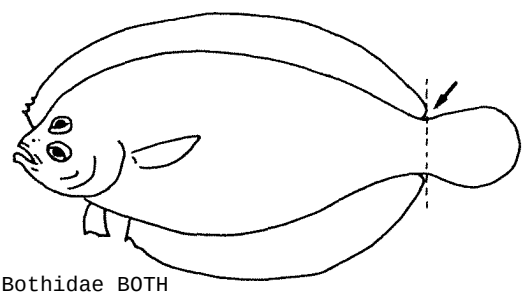
Lampridae



Zeidae *

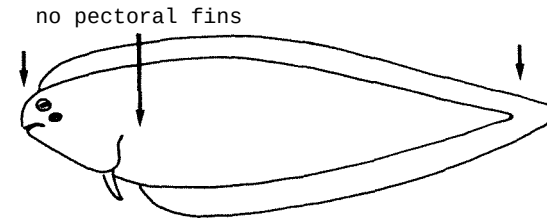
FLATFISHES

Body flattened, both eyes on same side



Bothidae BOTH

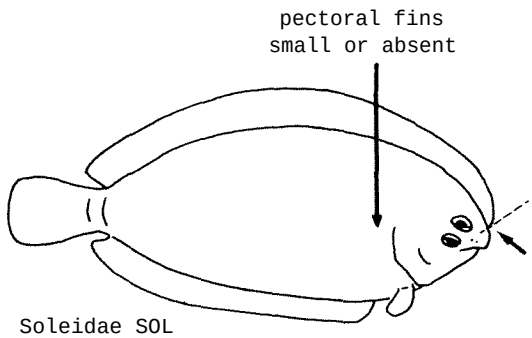
LEFT



Cynoglossidae CYNO

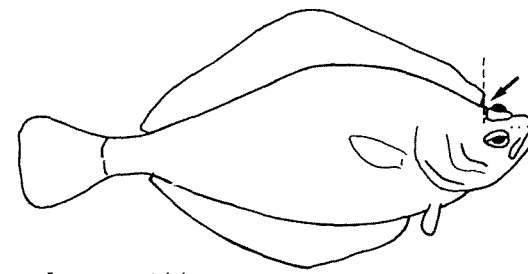
FLATFISHES

(Continued)



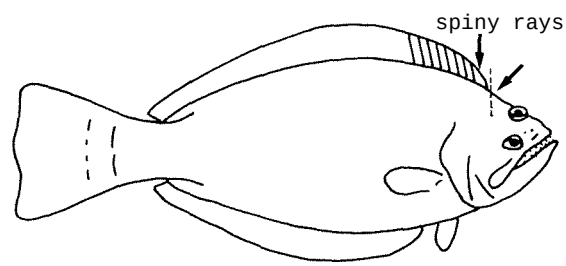
Soleidae SOL

RIGHT



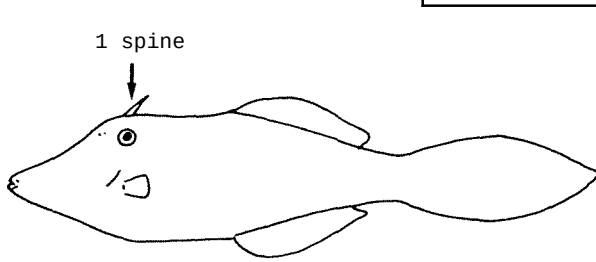
Pleuronectidae

RIGHT or LEFT

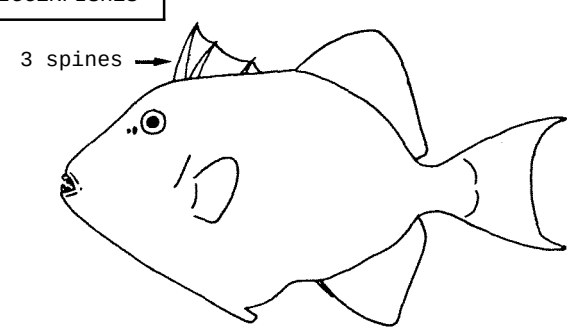


Psettodidae PSET

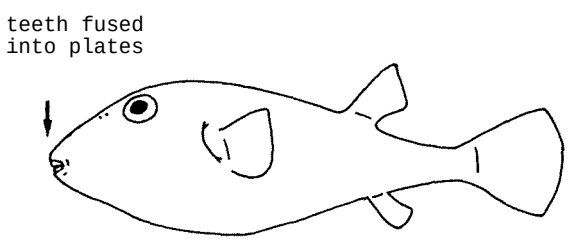
FLATFISHES, TRIGGERFISHES



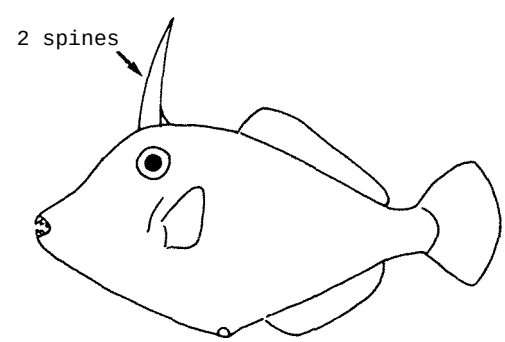
Balistidae BALIST



Balistidae BALIST



Tetraodontidae



Balistidae BALIST

click for next page

click for previous page

A

ARIID

1974

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

ARIIDAE

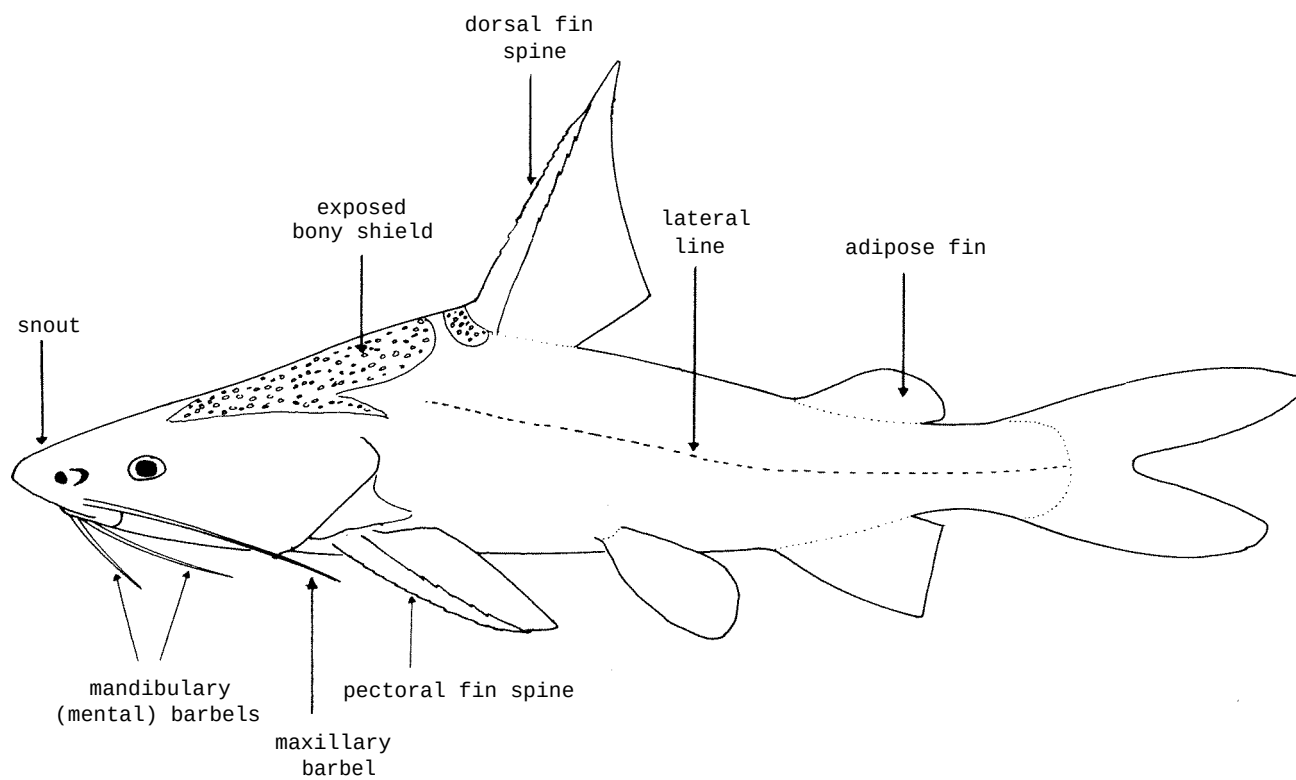
(often Tachysuridae in the literature)

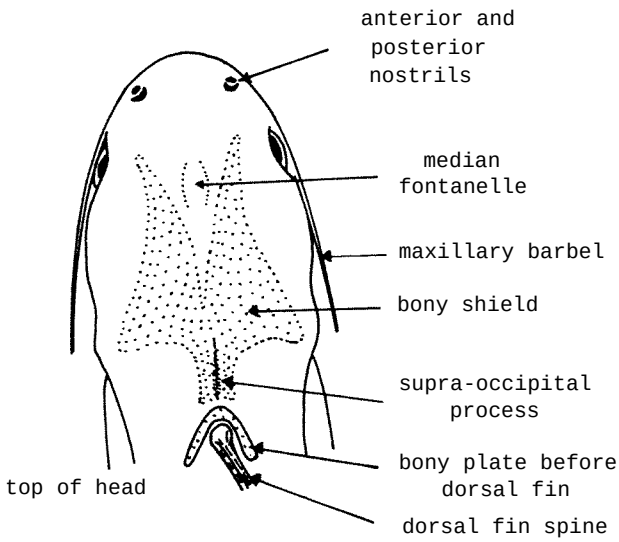
Sea catfishes

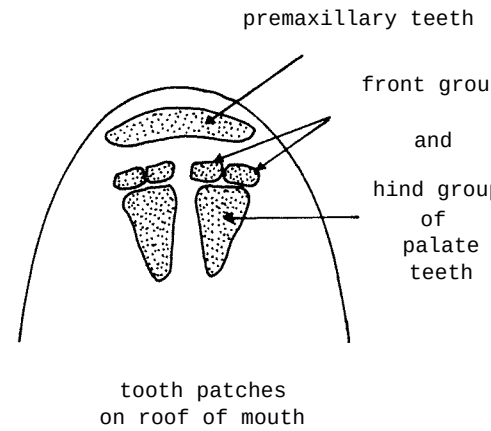
Medium- to large-sized fishes. Snout and head rounded to depressed, the mouth terminal to slightly inferior. Gill membranes free from isthmus to closely attached to isthmus. Teeth on palate and jaws fine, conical, granular, or molar-like and in bands or patches, or sometimes absent altogether. *Paired maxillary and mandibulary (or mental) barbels; usually both present,* but in some cases one or the other type of barbel absent. *Head covered by a strong bony shield* which is usually more or less visible beneath a thin skin (seldom completely obscured by thick tissue). *Scales absent;* lateral line complete. *Dorsal fin short, with a more or less serrated pungent spine* followed by 7 soft rays; *soft adipose fin present, opposite anal fin,* the latter short, with only 16 to 30 soft rays; *pectoral fins very low-set, close to ventral- profile, with a more or less serrated pungent spine;* pelvic fins with 6 soft rays (in females of certain species the innermost ray greatly modified and enlarged at maturity); caudal fin forked.

Colour: usually grey/blue, dark grey or dark brown on back and sides, tinged with silvery sheen; paler to white below.

Ariidae are found in schools or singly in marine, brackish or fresh waters. There is reason to believe that in all species the male practises oral incubation of the eggs, which are rather large and few in number.







SIMILAR FAMILIES OCCURRING IN THE AREA:

Chacidae,Clariidae Heteropneustidae and Plotosidae: adipose fin absent.

Siluridae: no spine in dorsal fin.

Schilbeidae: also have an adipose fin but the anterior and posterior nostrils are widely separated, the latter sometimes with a barbel (close together and without barbel in Ariidae).

Akysidae, Bagridae, Sisoridae (= Bagaridae): nasal barbels present (absent in Ariidae).

Amblycipitidae: gill membranes connected across, but free from the isthmus.

Key to Genera

1 a. Mandibulary barbels present

2 a. One pair of maxillary and two pairs of mandibulary barbels present

3 a. Teeth present on palate

4 a. Gill membranes free from isthmus and from each other; anal fin long, with 28 to 30 soft rays; anterior and pos terior nostrils separated by a distance equal to width of posterior nostril ..... *Doiichthys*

4 b. Gill membranes united to each other and to isthmus anteriorly; anal fin shorter, with 16 to 26 soft rays; anterior and posterior nostrils scarcely separated ..... *Arius*

3 b. No teeth on palate

5 a. Mouth opening wide, extending behind eye; a single series of closely set incisor-like (cutting edged) teeth in each jaw ..... *Ketengus*

5 b. Mouth opening small, ending before eye; conical, villiform, or molar-like, but no incisor-like teeth in jaws

6 a. A band of villiform teeth in each jaw; gill rakers short, few or moderate in number; gill membranes united, attached to isthmus with only a narrow free hind margin ..... *Hemipimelodus*

6 b. A narrow patch of conical teeth; few in number, on each side of jaws; 8 short gill rakers; gill membranes united, attached to isthmus with only a narrow free hind margin ..... *Tetranesodon*

6 c. Minute teeth in 1 or 2 series in jaws; more than 30 large gill rakers; gill membranes totally confluent with skin of isthmus, without free hind margin ..... *Nedystoma*

2 b. Only one pair of very small mandibulary barbels; no maxillary barbels ..... *Batrachocephalus*

1 b. No mandibulary barbels; only one pair of stiff bony maxillary barbels ..... *Osteogeniosus*

List of Species occurring in the Area
(Code numbers are given for those species for which Identification Sheets are included)

Arius acrocephalus		*Arius platystomus*	
Arius acutirostris		*Arius polystaphylodon*	
Arius argyropleuron		*Arius proximus*	
Arius armiger		*Arius sagor*	ARIID Ari 3
Arius australis		*Arius satparanus*	
Arius broadbenti		*Arius sciurus*	
Arius burmanicus		*Arius serratus*	
Arius caelatus	ARIID Ari 1	*Arius soLidus*	
Arius carinatus		*Arius sona*	
Arius coleloughi		*Arius spatula*	
Artius crossocheilus		*Arius stirlingi*	
Arius danielsi		*Arius stormi*	
Arius diguLensis		*Arius subrostratus*	
Arius dispar		*Arius tenuispinis*	
Artius doriae		*Arius thalassinus*	ARIID Ari 4
Arius dussumieri		*Arius truncatus*	
Arius falcarius		*Arius utik*	
Arius froggatti		*Arius venosus*	ARIID Ari 5
Arius gagora			
Arius goniaspis		*Batrachocephalus mino*	
Artius harmandi			
Arius jatius		*Doiichthys novaeguineae*	
Arius kanganamanensis			
Arius latirostris		*Hemipimelodus aaldereni*	
Artius leiotetocephalus		*Hemipimelodus bernhardi*	
Arius leptaspis		*Hemipimelodus borneensis*	
Artius leptonotacanthus		*Hemipimelodus crassilabris*	
Arius macracanthus		*Hemipimelodus intermedius*	
Arius macrocephalus		*Hemipimelodus macrocephalus*	
Arius macronotacanthus		*Hemipimelodus macrorhynchus*	
Arius macuLatus	ARIID Ari 2	*Hemipimelodus manillensis*	
Arius magatensis		*Hemipimelodus papillifer*	
Arius manillensis		*Hemipimelodus siamensis*	
Arius mastersi		*Hemipimelodus velutinus*	
Artius metanochir			
Arius macrocephalus		*Ketengus typus*	
Artius microstomus			
Arius nella		*Nedystoma dayi*	
Arius nenga			
Arius nox		*osteogeniosus militaris*	ARIID Ost 1
Artius nudidens			
Arius parvipinnis		*Tetranesodon conorhynchus*	

Many of the *Arius* species listed here are doubtful, but a full revision of the family is urgently needed before this can be resolved.

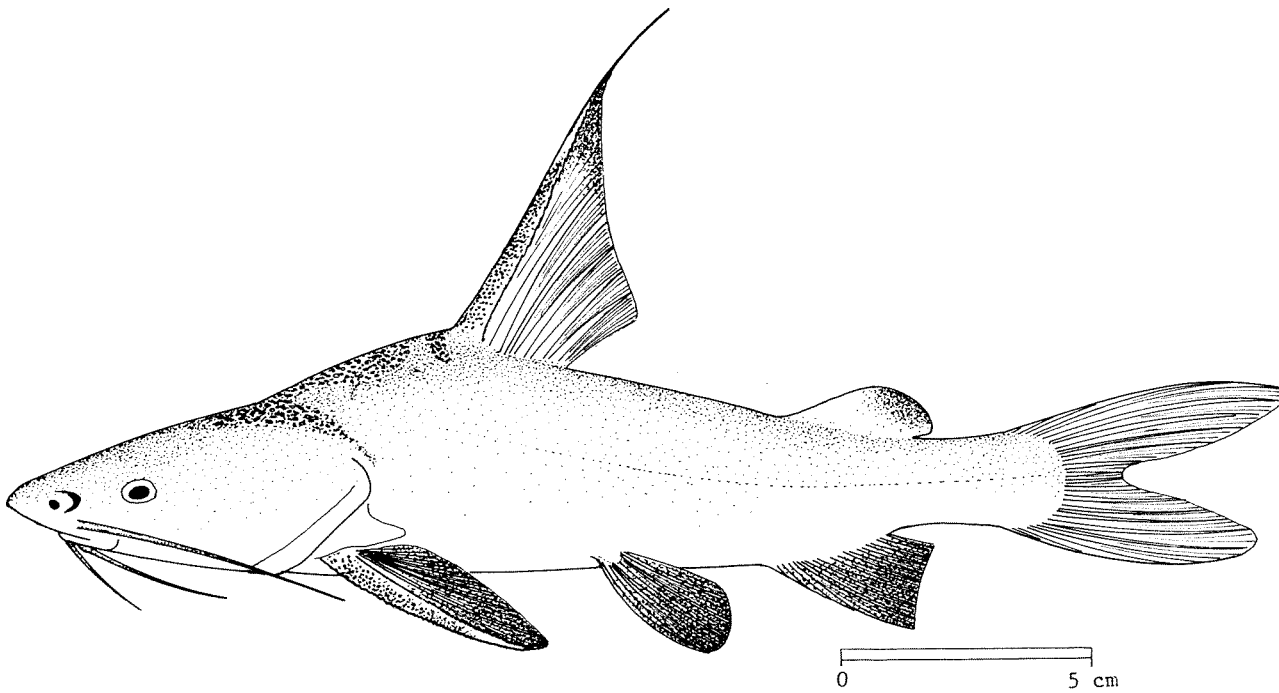
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARIIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Arius caelatus Valenciennes, 1840

SYNONYMS STILL IN USE: *Tachysurus caelatus* (Valenciennes, 1840)



VERNACULAR NAMES:

FAO: En - Engraved catfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body robust and elongate, head profile concave at nape, the supra-occipital process rising thereafter. Three pairs of barbels around mouth, the maxillary barbels extending to middle or to end of pectoral fin base. *Head shield strongly rugose and granulated; supra-occipital process short, about as long as broad,* with a median keel, its hind end concave. Teeth in jaws small and fine, *those in upper jaw (premaxillary teeth) in a long and narrow band, 8 to 10 times longer than broad; palate teeth in one patch on each side, small and fine, front margins of patches longest and convex,* separated from each other and from jaw teeth by a space somewhat less than their width. *Dorsal and pectoral fins with a very strong and thick, coarsely granulated spine; tip of dorsal spine produced into a long filament;* adipose fin rather large.

Colour: dark blue on top of head and back, whitish below, the whole with a metallic blue lustre. Tip of dorsal fin blackish, its filament black; pectoral, pelvic and anal fins dusky; caudal fin paler; *adipose fin either entirely black or bearing a large black blotch on upper half.* All barbels with blackish margins.

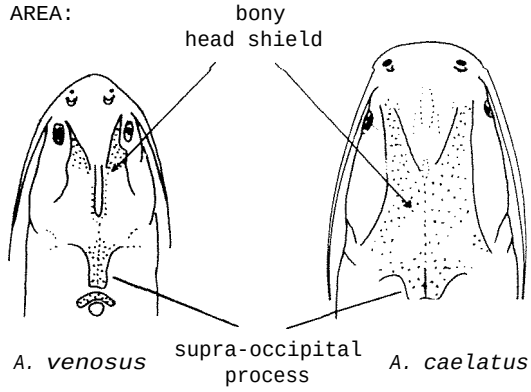
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

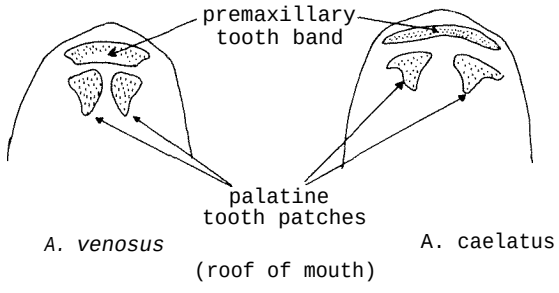
A. venosus: premaxillary baud of teeth only 4 to 5 times longer than broad, dorsal fin spine weaker and its tip without a long filament; also, supra-occipital process slightly longer than broad and head shield rather smooth.

Other *Arius* species: either have granular to molar-like teeth on palate or a different arrangement of the tooth patches.

Osteogeniosus militaris: only maxillary barbels present, and these stiff, not flexible.

Other catfishes: either an adipose fin (Chacidae, Clariidae, Heteropneustidae, Plotosidae), lack a dorsal spine (Sisoridae), possess nasal barbels (Akysidae, Bagridae, Sisoridae), have anterior and posterior nostrils widely separated (Schilbeidae), or have the gill membranes free from isthmus (Amblycipitidae).





SIZE:

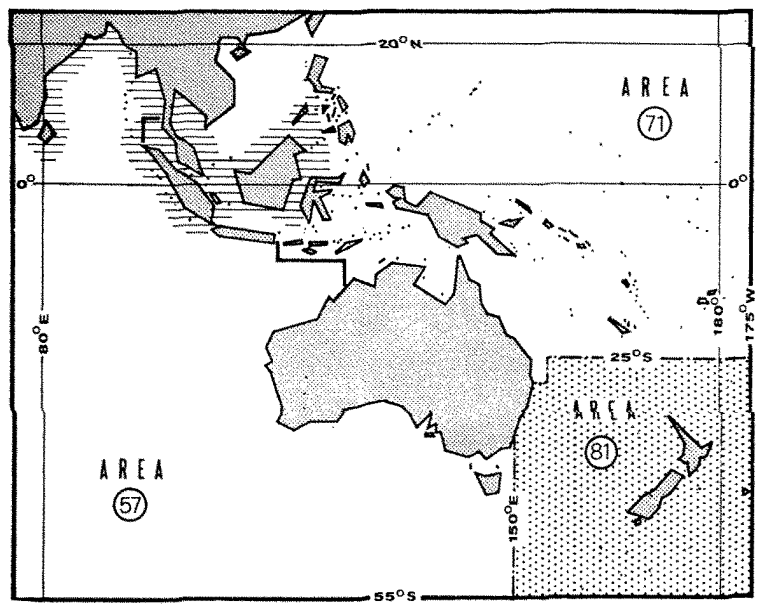
Maximum: 45 cm; common: 18 to 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

West coast of India to Indo-Australian archipelago, but not Philippines or Australia.

Found along all shores, throughout its range.

Feeds mainly on invertebrates and small fishes.



PRESENT FISHING GROUNDS:

Shore waters subjected to tidal influence around river mouths.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Ariidae in 1972 was:

area 57 (Eastern Indian Ocean): 8 400 tons (India only)
area 71 (Western Central Pacific): 1E) 100 tons (Philippines: 11 400 tons;
Malaysia: 4 700 tons)

Caught mainly with bamboo stake traps, shore seines, set bag nets and hooks and lines.

Marketed mostly fresh; also dried-salted.

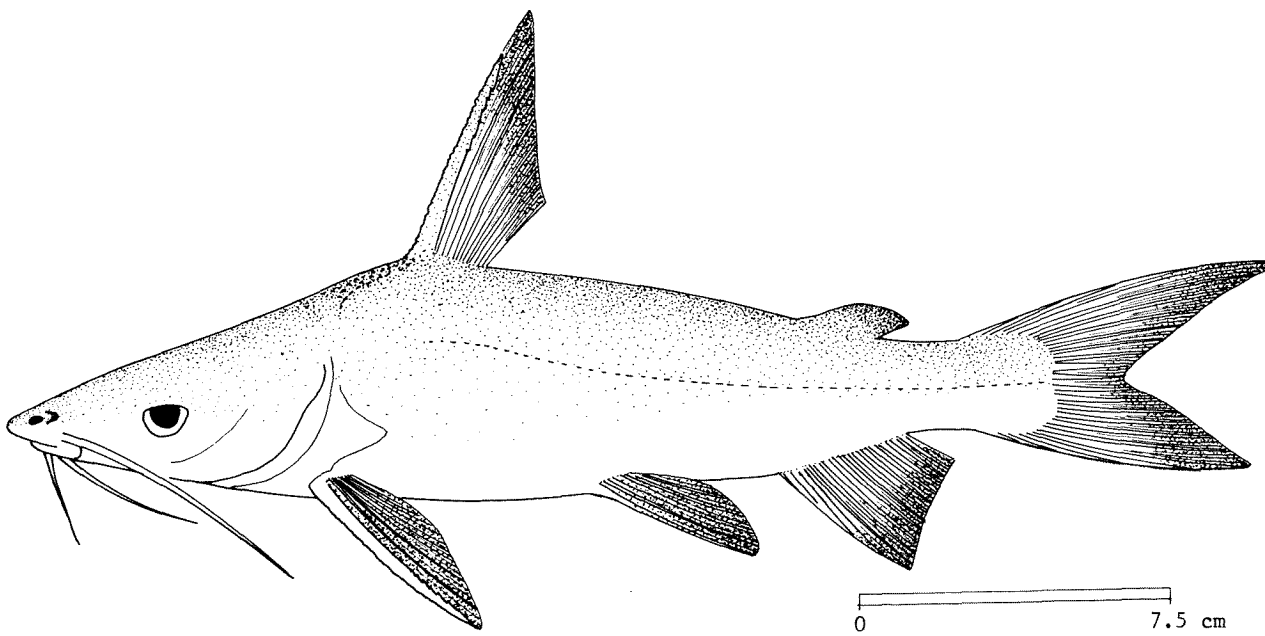
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARIIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Arius maculatus (Thunberg, 1792)

SYNONYMS STILL IN USE: *Tachysurus maculatus* (Thunberg, 1792)

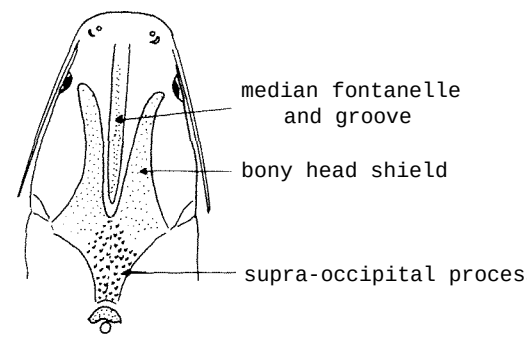


VERNACULAR NAMES:

FAO: En - Spotted catfish
Fr -
Sp -

DISTINCTIVE CHARACTERS:

Body elongate, head pointed, its profile sloping upward in a straight line to dorsal fin origin. Three pairs of barbels around mouth, maxillary barbel slender, reaching to base of pectoral fin, but much shorter in older fishes. Head shield somewhat rugose; *median fontanelle groove on top of head deep and long*, running from a short distance behind tip of snout to supra-occipital process, which is striated and granulated and a little longer than broad, its side borders almost parallel and straight. *Teeth on palate granular or molar-like, forming two semi-oval patches normally far behind premaxillary teeth (distance about 1 to 2 times the longest diameter of patch); size of patches may greatly vary with age;* in smaller fishes the developed



A. maculatus top of head

granular teeth on the patches are few and scattered, the patches being very small and far behind the jaw. Dorsal and pectoral fins with a strong spine; adipose fin small

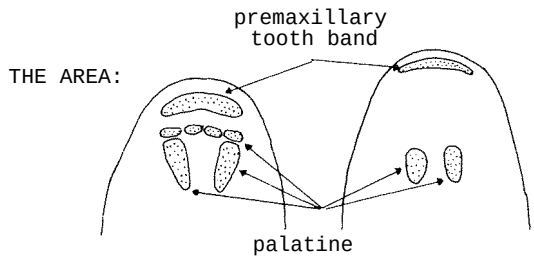
Colour: brown to blue above, sides grey and belly whitish with dusky spots, the whole with a silvery sheen. All fins black-tipped, pectoral and pelvic fins dusky above, adipose fin mainly blackish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

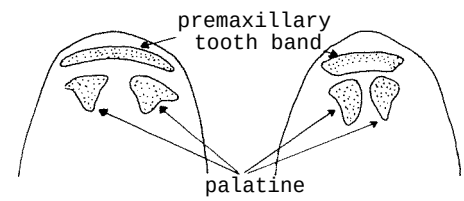
Other *Arius* species: usually have more than one tooth patch on each side of palate; if only a single patch (e.g. *A. venosus, A. caelatus*), then it lies close to premaxillary toothband.

Osteogeniosus militaris: only maxillary barbels present, and these stiff, not flexible.

Other catfishes: either lack an adipose fin (Chacidae, Clariidae, Heteropneustidae, Plotosidae), lack a dorsal spine (Sisoridae), possess nasal barbels (Akysidae, Bagridae, Sisoridae), have anterior and posterior nostrils widely separated (Schilbeidae), or have the gill membranes free from isthmus (Amblycipitidae).



A. thalassinus tooth patches *A. maculatus*



A. caelatus tooth patches *A. venosus*

SIZE:

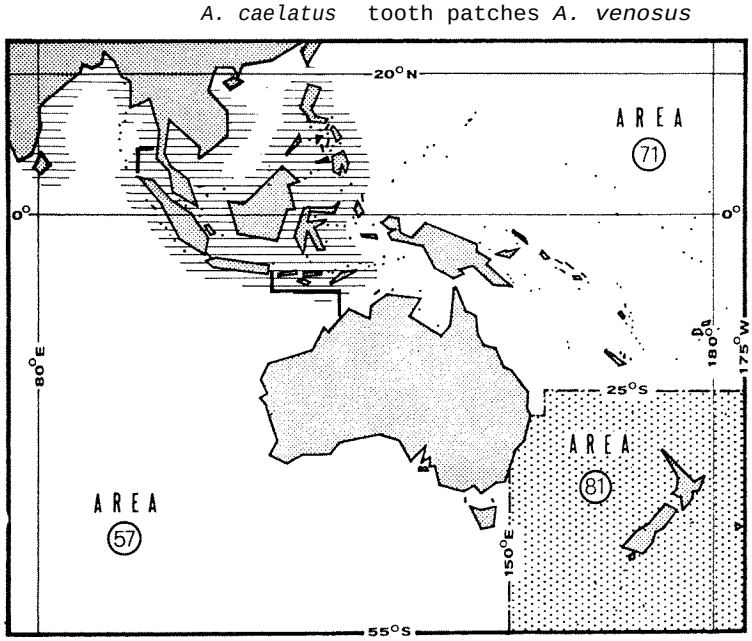
Maximum: 50 cm; common: 20 to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

East coast of India to Indo-Australian archipelago, but not Philippines or Australia.

Found in shore waters.

Feeds on invertebrates and small fishes.



PRESENT FISHING GROUNDS:

Shore waters and lower parts of rivers subjected to tidal influence.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Ariidae in 1972 was:

area 57 (Eastern Indian Ocean): 8 400 tons (India only)
area 71 (Western Central Pacific): 16 100 tons (Philippines: 11 400 tons; Malaysia: 4 700 tons)

Caught mainly with set bag nets, bamboo stake traps, also with hooks and lines.

Marketed mostly fresh.

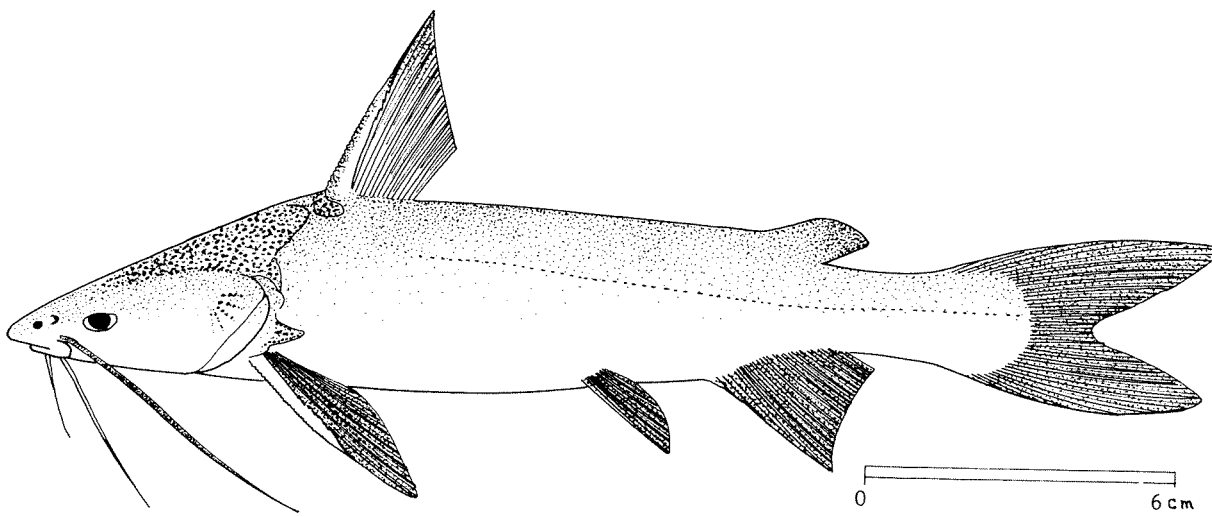
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARTIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Arius sagor (Hamilton - Buchanan, 1822)

SYNONYMS STILL IN USE: *Tachysurus sagor* (Hamilton - Buchanan, 1822)



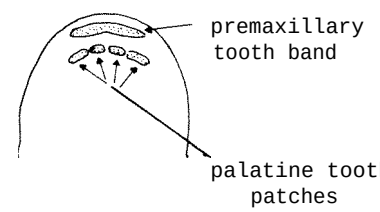
VERNACULAR NAMES:

FAO: En - Sagor catfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, *front half of body, particularly head, much depressed,* its hind half compressed. Three pairs of barbels around mouth, *maxillary barbels reaching at least to middle of pectoral fins.* Upper profile of head somewhat convex just in front of dorsal fin, but then straight to the rather short and round snout. Median fontanelle broad and flat. *Head shield rugose and very strongly granulated* in both young and large adults; *supra-occipital process large, subcircular posteriorly, broader than long; basal plate before dorsal spine distinctively large, butterfly-shaped. Teeth on palate small and cortical in a transverse series of patches arranged in one connected group or. each side,*



A. sagor

outer patches rounded and oval, longer than inner patches; inner patches separated by a very narrow space. Dorsal and pectoral fins each with a spine, *tips of spines with a filamentous elongation;* adipose fin of medium size.

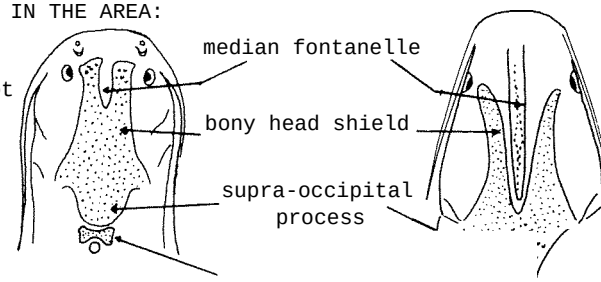
Colour: back and sides dark grey/blue, underside milky white; *usually silvery white or blue/green cross-bands on back and sides.* All fins dusky black, only soft part of dorsal fin lighter. *Maxillary barbels wholly blackish;* outer half or tip of other barbels blackish.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Arius* species: supra-occipital process not broadly rounded, basal plate in front of dorsal fin not butterfly-shaped and teeth on the palate not conical.

Osteogeniosus militaris: only maxillary barbels present, and these stiff, not flexible.

Other catfishes: either lack an adipose fin (Chacidae, Clariidae, Heteropneustidae, Plotosidae), lack a dorsal spine (Sisoridae), possess nasal barbels (Akysidae, Bagridae, Sisoridae), have anterior and posterior nostrils widely separated (Schilbeidae), or have the gill membranes free from isthmus (Amblycipitidae).



SIZE:

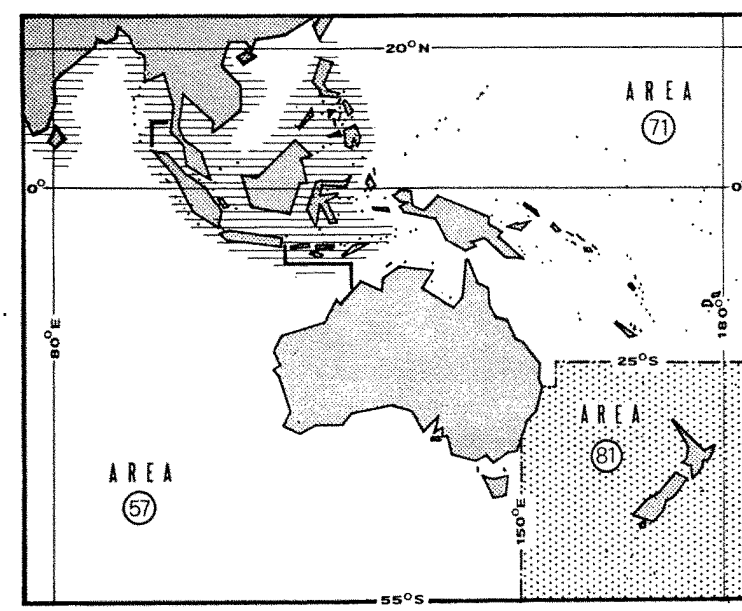
Maximum: 45 cm; common: 20 to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India to Indo-Australian archipelago, but not New Guinea or Australia.

Found along the coastline, mainly around river estuaries.

Feeds mainly on invertebrates and small fishes.



PRESENT FISHING GROUNDS:

Shore waters around estuaries and river waters subjected to tidal influence.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Ariidae in 1972 was:

area 57 (Eastern Indian Ocean): 8 400 tons (India only)
area 71 (Western Central Pacific): 16 100 tons (Philippines: 11 400 tons; Malaysia: 4 700 tons)

Caught mainly with set bag nets, shore seines and hooks.

Marketed mostly fresh.

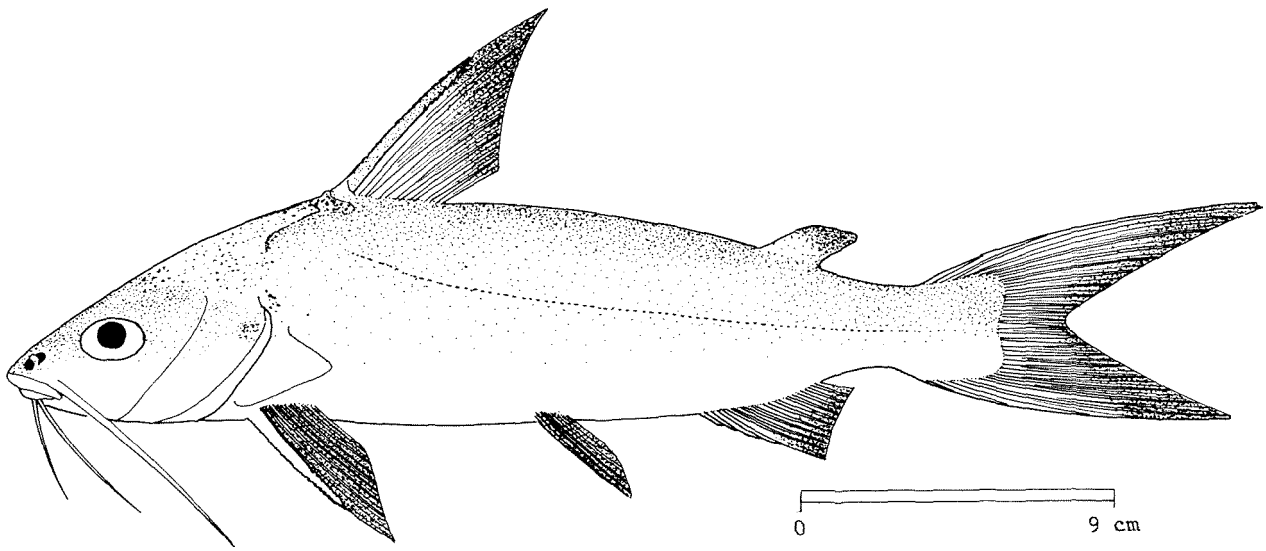
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARIIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Arius thalassinus (Rüppell, 1837)

SYNONYMS STILL IN USE: *Tachysurus thalassinus* (Rüppell, 1837)
Netuma thalassinus (Rüppell, 1837)



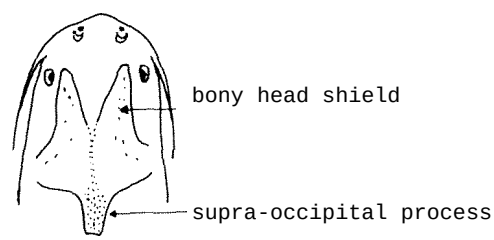
VERNACULAR CHARACTERS

FAO: ED - Giant catfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, robust; snout rather pointed projecting clearly beyond lower jaw. Dorsal profile before dorsal fin nearly straight and somewhat steep. Three pairs of barbels around mouth. Head shield weakly striated and granulated, its surface nearly smooth; *supra-occipital process about. 1 1/2 times longer than broad, its side borders almost parallel and straight. Teeth on palate fine, villiform, in three groups on each side, arranged in a large triangular patch, the base of which is* formed *by two small anterior groups, while the hind group is much larger, extending backward,* Dorsal and pectoral fins short, with a spine at front; adipose fin small.



A. thalassinus
top of head

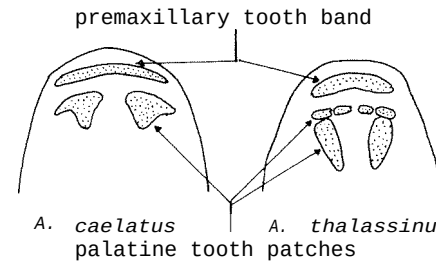
Colour: dark red/brown to blue/grey above, brown/white, densely pigmented below; the whole with a bronze or silvery lustre; numerous narrow, parallel, transverse iridescent cross-bands corresponding with lines of papillae. Dorsal, adipose, anal and caudal fins dark terminally, as also the upper surface of pectoral and pelvic fins.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Arius* species: palate teeth coarser, not forming a triangle of three rather close-set groups on each side.

Osteogeniosus militaris: only maxillary barbels present, and these stiff, not flexible.

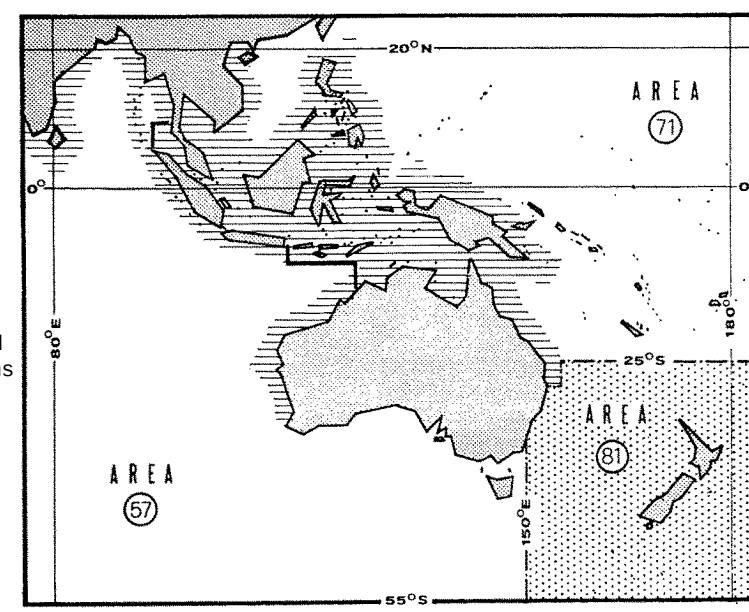
Other catfishes: either lack an adipose fin (Chacidae, Clariidae, Heteropneustidae, Plotosidae), lack a dorsal spine (Sisoridae), possess nasal barbels (Akysidae, Bagridae, Sisoridae), have anterior and posterior nostrils widely separated (Schilbeidae), or have the gill membranes free from isthmus (Amblycipitidae).



palatine tooth patches

SIZE:

Maximum: 150 cm; common: 25 to 70 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout western part of area except southern coasts of Australia.

A marine species often found in and around estuaries, but apparently rarely entering streams or rivers.

Feeds mainly on crustaceans, molluscs, other invertebrates and small fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout the area down to depths of 100 m.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORM OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Ariidae in 1972 was:

area 57 (Eastern Indian Ocean): 8 400 tons (India only)
area 71 (Western Central Pacific): 16 100 tons (Philippines: 11 400 tons; Malaysia: 4 700 tons)

Caught mainly with bottom trawls, bamboo stake traps, hooks and longlines.

Marketed mostly fresh; also made into various kinds of dried products; air bladders are dried.

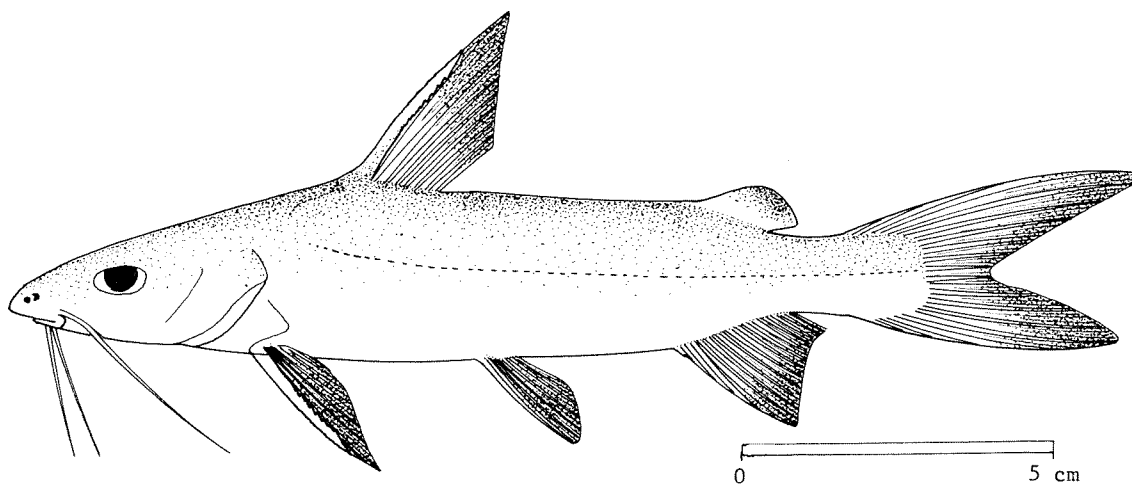
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARIIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Arius venosus (Valenciennes, 1840)

SYNONYMS STILL IN USE: *Tachysurus venosus* (Valenciennes,1840)



VERNACULAR NAMES

FAO: En - Veined catfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, dorsal profile sloping in a straight line to round snout. Three pairs of barbels around mouth, the maxillary barbels extending beyond base of pectoral fins or nearly so. *Head shield almost smooth;* median fontanelle narrow and short, reaching to median keel of *supra-occipital process,* which is *slightly longer than broad, its side borders straight and slightly convergent. Premaxillary toothband rather broad and slightly arched, 4 to 5 times longer than broad; teeth on palate fine,only one large sub-triangular group on each side, greatest length of each group about equal to curved front base, outer edge concave, the inner convex; both groups separated from each other and from jaw teeth by a space about 1/3 the breadth of jaw band.* Dorsal spine weak, its osseous part shorter than head length but higher than depth; adipose fin of medium size.

Colour: dark grey/blue above, white below, all fins generally hyaline, unpaired fins darker terminally, paired fins grey/black above, upper half of adipose fin spotted with black.

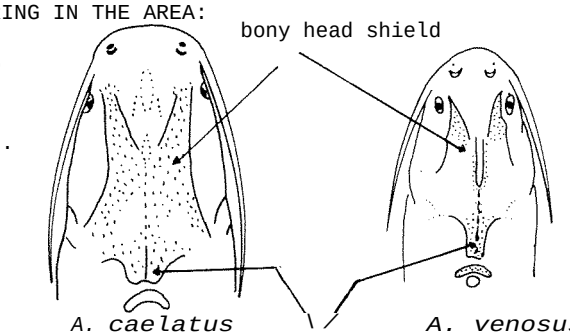
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

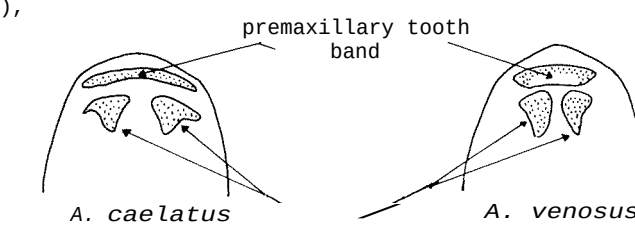
Arius caelatus: premaxillary toothband 8 to 10 times longer than broad, occipital process about as long as broad, head shield strongly rugose and granulated; also, a large black spot on adipose fin.

Other *Arius* species: either have granular to molar-like teeth on palate or a different arrangement of the tooth plates.

Osteogeniosus militaris: only maxillary barbels present, and these stiff, not flexible.

Other catfishes: either lack an adipose fin (Chacidae, Clariidae, Heteropneustidae, Plotosidae), lack a dorsal spine (Sisoridae), possess nasal barbels (Akysidae, Bagridae, Sisoridae), have anterior and posterior nostrils widely separated (Schilbeidae), or have the gill membranes free from isthmus (Amblycipitidae).





SIZE:

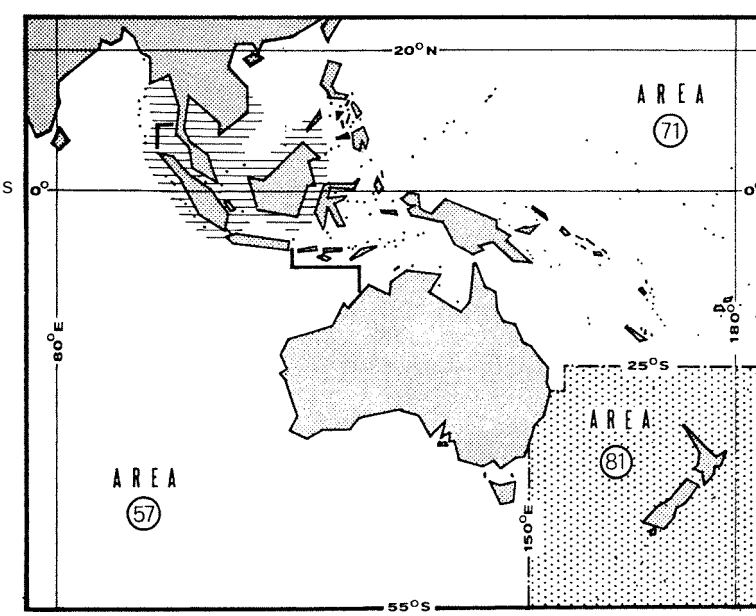
Maximum: 30 cm; common: 15 to 23 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Indo-Australian archipelago, but not Philippines or Australia; not found off coasts of India.

Found in coastal waters throughout its range.

Feeds mainly on invertebrates and small fishes.



PRESENT FISHING GROUNDS:

Along coastlines down to depths of about 10 m.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Ariidae in 1972 was:

area 57 (Eastern Indian Ocean): 8 400 tons (India only)
area 71 (Western Central Pacific): 16 100 (Philippines: 11 400 tons; Malaysia: 4 700 tons)

Mainly caught with bamboo stake traps and set bag nets.

Marketed mostly fresh.

ARIID ost 1

1974

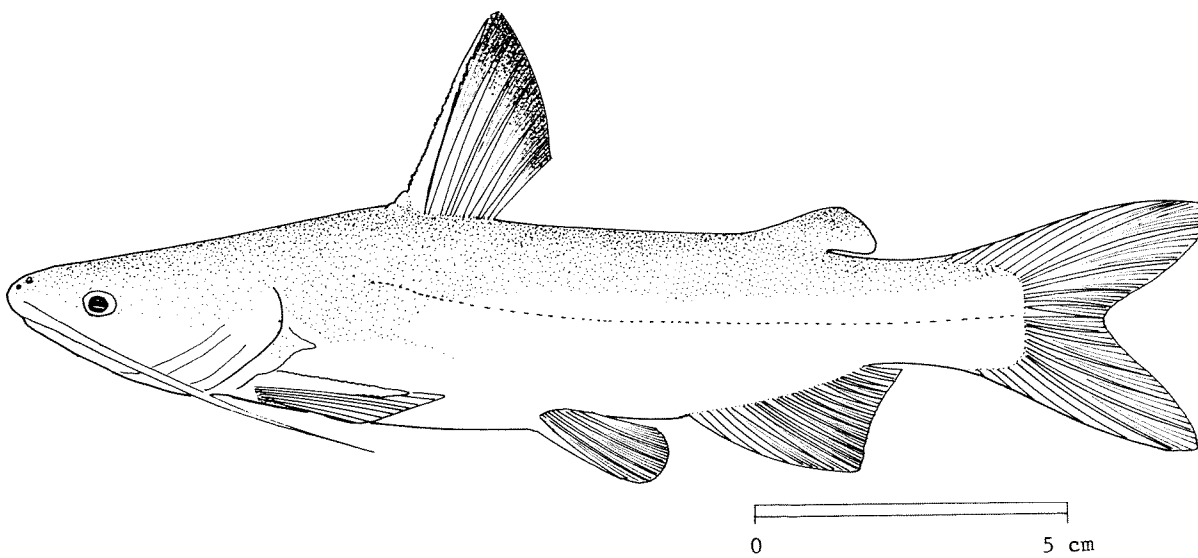
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARIIDAE

FISHING AREAS 57, 71
(E Ind. Ocean)
(W Cent. Pacific)

Osteogeniosus militaris (Linnaeus, 1758)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Soldier catfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, head strongly depressed. *Only one pair of very stiff and bony barbels* on upper jaw (extensions of the maxillae), their tips reaching to or beyond base of pectoral fin. *Head shield smooth, without granulations or rugose striae;* median fontanelle broad, not reaching base of supra-occipital bone which is narrow, more than twice longer than broad. Teeth on palate obtusely conical, in a longitudinal semi-oval patch on each side. Dorsal and pectoral fins with a strong spine at front; adipose fin medium-sized.

Colour: top of head and back intense dark blue with silvery reflections, belly silvery white, sparingly dotted with black. Fins greyish white, minutely spotted with black, tips of dorsal and adipose fin dark blue.

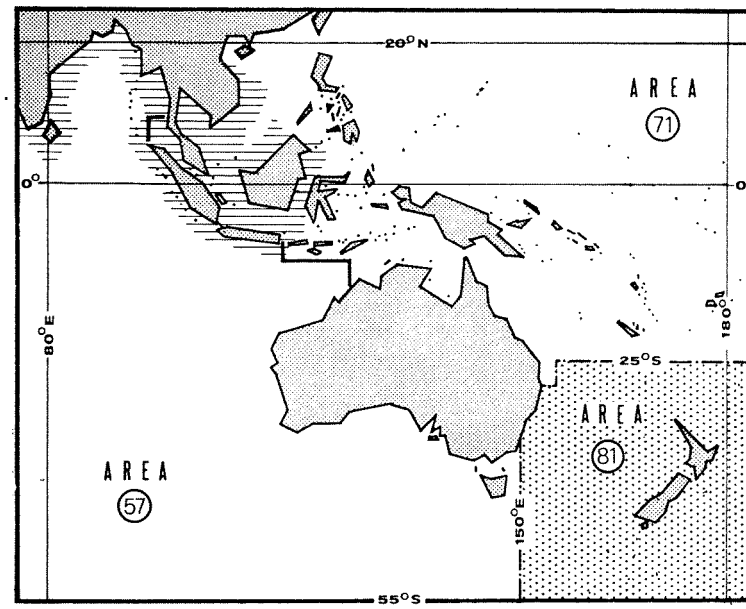
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Similar ariid species: barbels present on lower jaw, and all barbels soft and flexible.

Other catfishes: either lack an adipose fin (Chacidae, Clariidae, Heteropneustidae, Plotosidae), lack a dorsal spine (Sisoridae), possess nasal barbels (Akysidae, Bagridae, Sisoridae), have anterior and posterior nostrils widely separated (Schilbeidae), or have the gill membranes free from isthmus (Amblycipitidae).

SIZE:

Maximum: 35 cm; common: 20 to 25 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Northwestern part of area, but not to the Philippines, New Guinea or Australia.

Found in turbid waters of the shallower parts of the continental shelf.

Feeds mainly on bottom-living invertebrates and sometimes small fishes.

PRESENT FISHING GROUNDS:

Coastal waters over soft bottoms and in estuaries to depths of 45 m.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of Ariidae in 1972 was:

area 57 (Eastern Indian Ocean): 8 400 tons (India only)
area 71 (Western Central Pacific): 16 100 tons (Philippines: 11 400 tons; Malaysia: 4 700 tons)

Caught mainly with bamboo stake traps, set bag nets, shore seines and bottom trawls.

Marketed mostly fresh.

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1974

FAO SPECIES IDENTIFICATION SHEETS

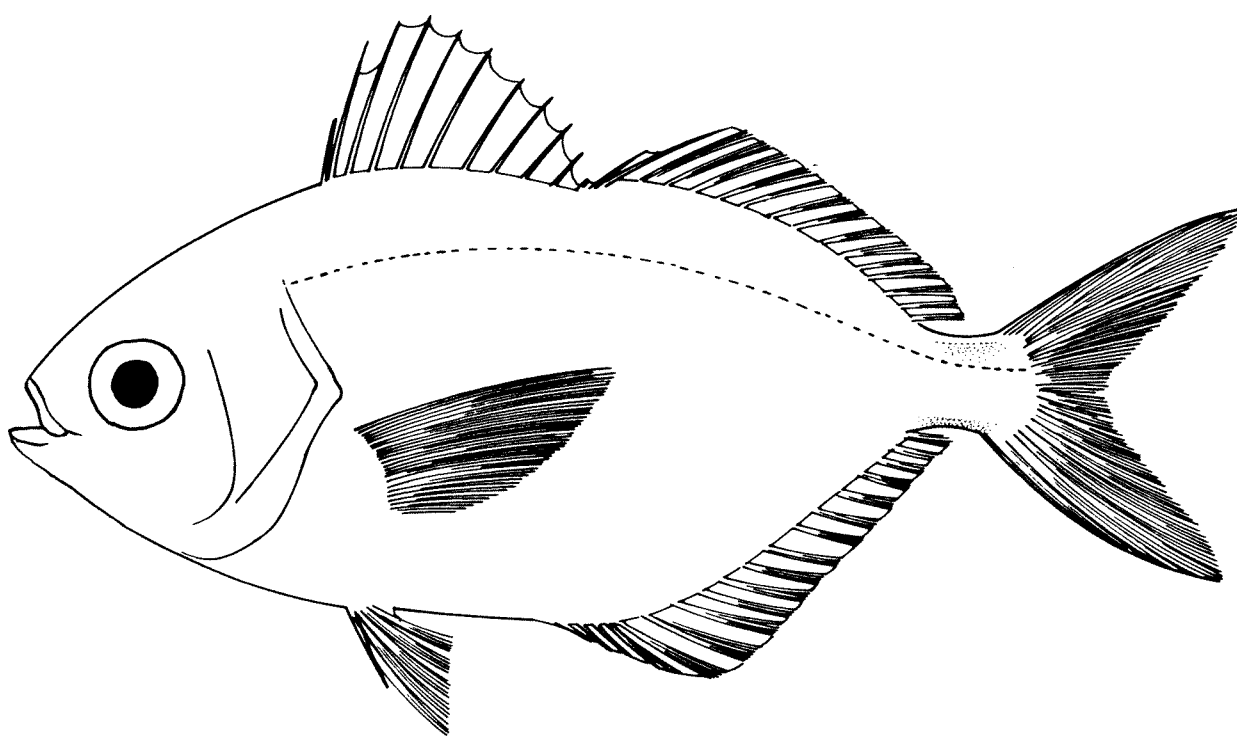
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

ARIOMMIDAE

Driftfishes

Body slender or moderately deep, rounded to compressed. Mouth small, jaw teeth minute; no teeth on roof or floor of mouth; toothed pharyngeal sacs present. 2 *distinct though scarcely separated dorsal fins,* the 1st with 11 to 12 long, slender spines, often folded into a groove; longest dorsal spine twice the length of the longest 2nd dorsal fin ray; 14 or 15 soft rays (rarely 13 or 16) in 2nd dorsal and anal fins. Pelvic fins thoracic, inserted below pectoral fins or behind. *Caudal peduncle square in cross-section,* its least depth less than 5% of standard length, with 2 *low fleshy lateral keels on each side near caudal fin base.* Scales cycloid (smooth), thin, easily detached.

Colour: silvery fishes, often with a purple tinge.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Nomeidae: caudal peduncle compressed, its least depth more than 5% of standard length and without lateral keels; usually more than 15 soft rays in 2nd dorsal and anal fins.

Amarsipidae: pelvic fins jugular (lying under throat).

Centrolophidae, Tetragonuridae: dorsal fin not, or hardly, divided into two parts, the anterior part with less than 10 short spines.

Key to Genera

Ariormna only

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Arioma indica ARIOM Ariom 1

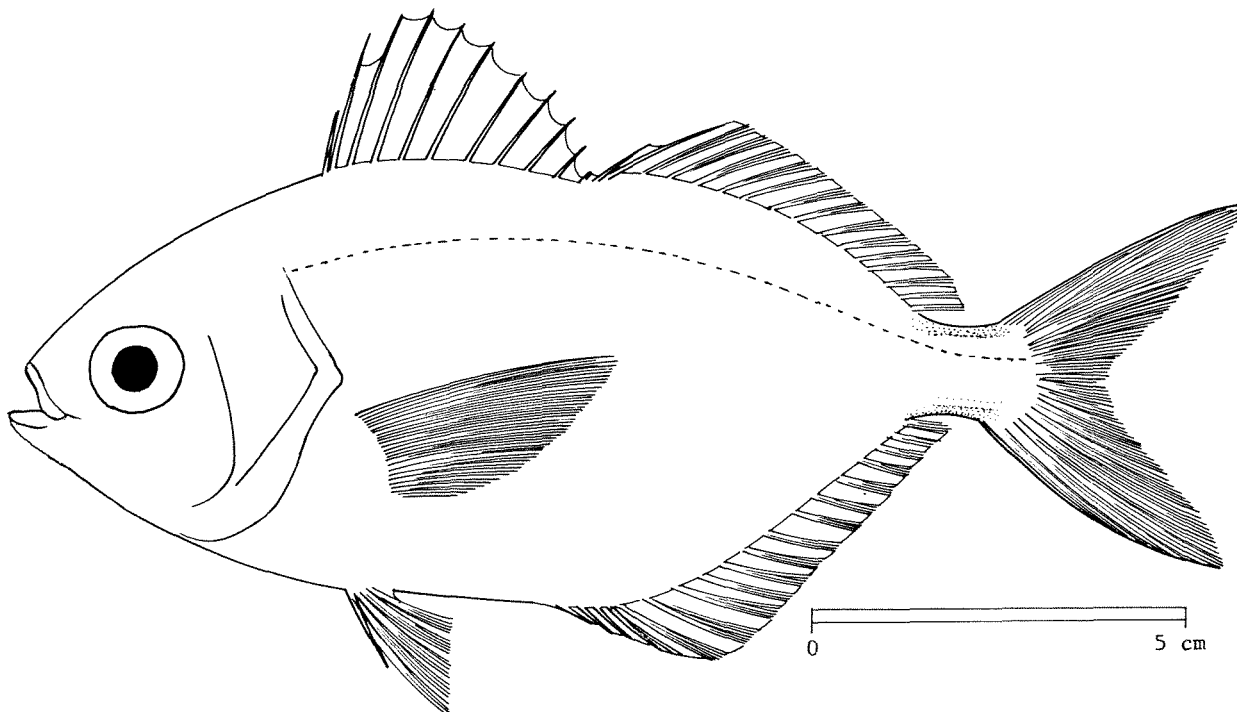
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ARIOMMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Ariomma indica (Day, 1870)

SYNONYMS STILL IN USE: *Psenes Indians* Day, 1870; Smith, 1949
Psenes extraneus Herre, 1948



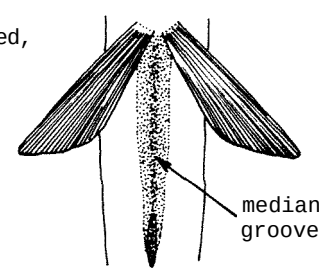
VERNACULAR NAMES:

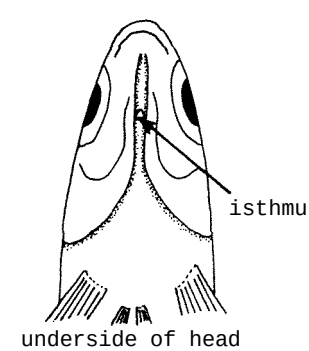
FAO: En - Indian driftfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval, rather compressed. Top of head rounded, without scales, head covered by thick adipose tissue. *Mouth small, teeth minute,* their bases covered by a membrane. Gill membranes not united to isthmus. *2 dorsal fins, scarcely separated,* the first with 11 to 12 long and slender spines; a median groove along belly for reception of folded pelvic fins. *Caudal peduncle square in cross-section, with 2 low fleshy keels on each side.* Scales cycloid (smooth), very thin and easily detached.



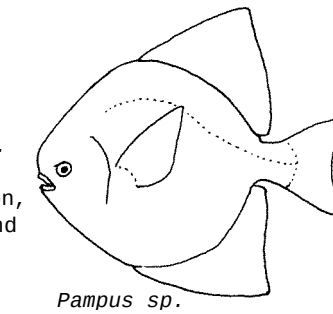


Colour: silvery with purple tinge; fins greyish.

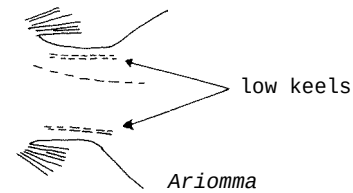
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Pampus argenteus, P. chinensis: much deeper bodied, dorsal fin single and no pelvic fins; dorsal and anal fins falcate anteriorly in *P. argenteus.*

Nomeid species: caudal peduncle compressed, not square in cross-section, and without fleshy keels; also, usually more than 15 soft rays in dorsal and anal fins.



Pampus sp.



Ariomma

SIZE:

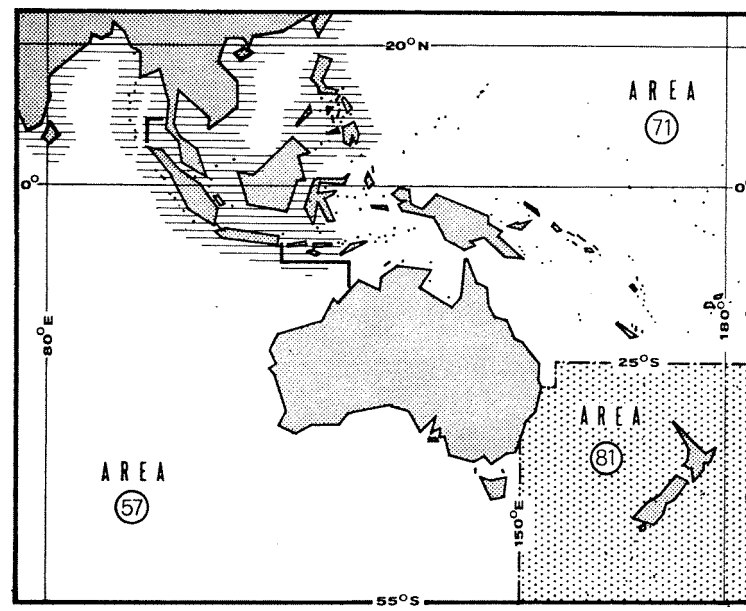
Maximum: about 23 cm;
common: 12 to 17 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India, Burma and Indonesia to Hong Kong, but not recorded from New Guinea or Australia; also, westward to South Africa and northward to Japan.

Inhabits waters over muddy bottoms of the continental shelf, down to about 100 m.

Feeds mainly on bottom-living animals.



PRESENT FISHING GROUNDS:

Trawling grounds, down to 100 to 120 m.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

A highly esteemed food fish, marketed mainly fresh; also dried-salted.

click for previous page

B

BALI

1974

FAO SPECIES IDENTIFICATION SHEETS

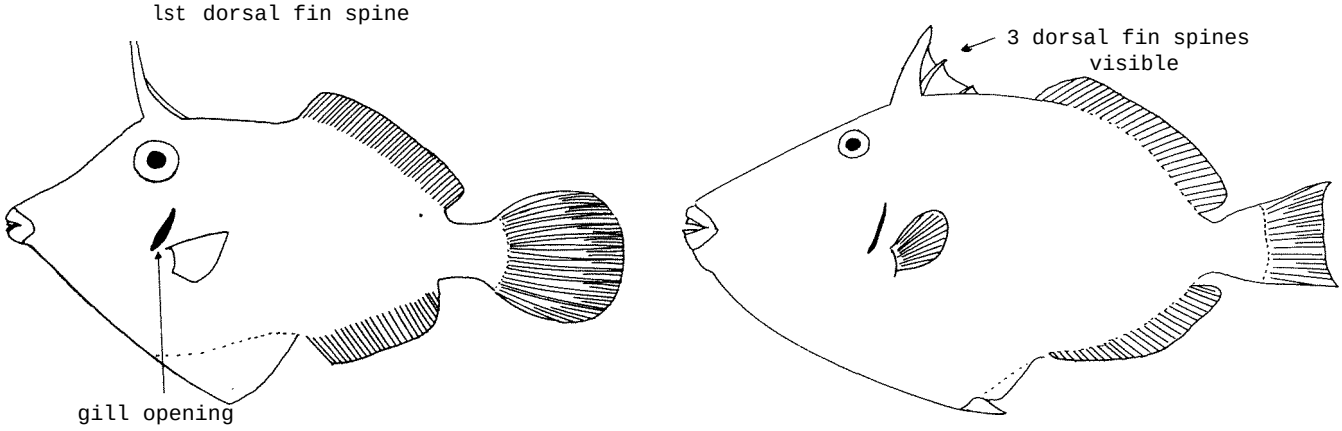
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

BALISTIDAE

Filefishes, triggerfishes, leatherjackets
(including Aluteridae and Monacanthidae of authors)

Small or medium-sized fishes, usually less than 40 cm in length, with usually deep, compressed *bodies encased in a tough armour of minute to moderate rough scales.* Mouth small, terminal, *teeth not fused together. First (spinous) dorsal fin reduced to 1 to 3 spines,* the first often capable of being locked by the second. *Pelvic fins absent or fused into a single rudimentary spine* or shield-like plate. Gill opening a small slit in front of pectoral fin base.

Colour: very variable, often with strikingly marked and vivid patterns.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Triodontidae, Tetraodontidae, Diodontidae, Molidae: have jaw teeth fused together into a single or pair of beak-like plates.

Triacauthodidae, Triacanthidae: pelvic fins always present (a long spine, sometimes with a soft ray).

Ostraciodontidae: body encased in a box-like armour and no spinous dorsal fin.

Key to Genera

1 a. No fleshy barbel on lower jaw.

2 a. Scales small or moderate but in regular rows; all soft fin rays branched (subfamily Balistinae)

3 a. Caudal peduncle deeper than wide (compressed) ..... *Balistes* (including the genera *Metichthys, Balistoides, Sufflamen, Odonus* and *Canthidermis* - revision needed)

3 b. Caudal peduncle round in cross-section ..... *Abalistes*

2 b. Scales small or minute, not in regular rows; all soft fin rays unbranched (subfamily Monacanthinae)

4 a. First dorsal fin spine erectile, locked by second spine (Fig. 1)

5 a. Plate-like pelvic fin spine present; anal fin with less than 40 fin rays

6 a. Mouth terminal, snout not elongated (Fig. 2) ..... *Monacanthus*

6 b. Mouth dorsal, snout elongated (Fig. 3) *Oxymonacanthus*

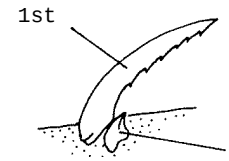
5 b. Bony pelvic plate or spine absent or nearly so; anal fin with more than 40 fin rays

7 a. Dorsal fin spine over eye centre (Fig. 4) *Alutera*

7 b. Dorsal fin spine on snout, in front of eye (Fig. 5) *Pseudaluteres*

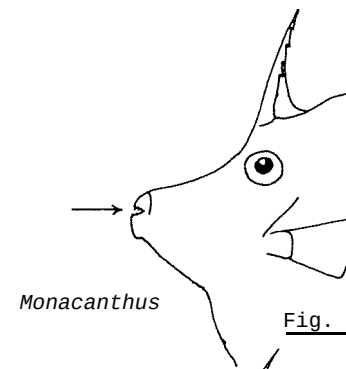
4 b. First dorsal fin spine not erectile; strong curved spines on caudal peduncle (Fig. 6) *Paratutarius*

1 b. Barbel on chin, snout pointed, mouth dorsal (Fig. 7); dorsal fin spine very feeble .... *Psilocephalus*



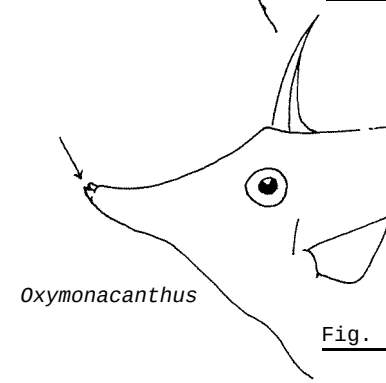
dorsal spines in *Monacanthus*

Fig. 1



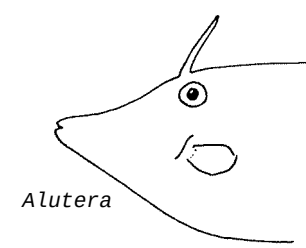
Monacanthus

Fig. 2



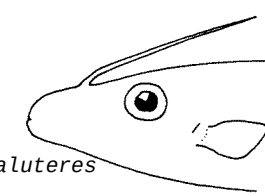
Oxymonacanthus

Fig. 3



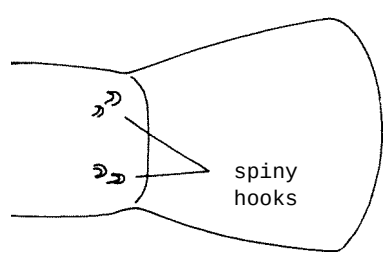
Alutera

Fig. 4



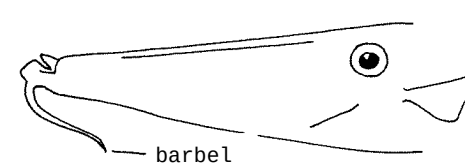
Pseudaluteres

Fig. 5



Psilocephalus

Fig. 7



Paratutarius

Fig. 6

FAO Sheets BALISTIDAE Fishing Areas 57,71

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Abalistes stellaris BALI Abal 1

Alutera monoceros BALI Alut 1
Alutera scripta

Balistes aculeatus
Balistes brevissimus
Balistes bursa
Balistes capistratus
Balistes chrysopterus
Balistes conspicillum
Balistes erythrodon
Balistes flavimarginatus
Balistes fraenatus
Balistes fuscus
Balistes garnoti
Balistes jacksonianus
Balistes radula
Balistes rectangulus
Balistes rotundatus
Balistes ringens
Balistes undulatus
Balistes verrucosa
Balistes vetula
Balistes vidua
Balistes viridescens
Balistes wittensis

Monacanthus chinensis
Monacanthus cheirocephalus
Monacanthus cryptodon
Monocanthus curtorhynchus
Monocanthus hajam
Monocanthus macrurus
Monocanthus melanocephalus
Monocanthus nematophorus
Monocanthus nemurus
Monocanthus nigrolineatus
Monocanthus nitens
Monocanthus sandwichiensis
Monocanthus scopas
Monocanthus septemclassiensis
Monocanthus spinosissimus
Monocanthus sulcatus
Monocanthus tormentosus

Oxymonacanthus longirostris

Pseudatuteres nasicornis

Paralutarius prionurus

Psilocephalus barbatus

BALI Abal 1

1974

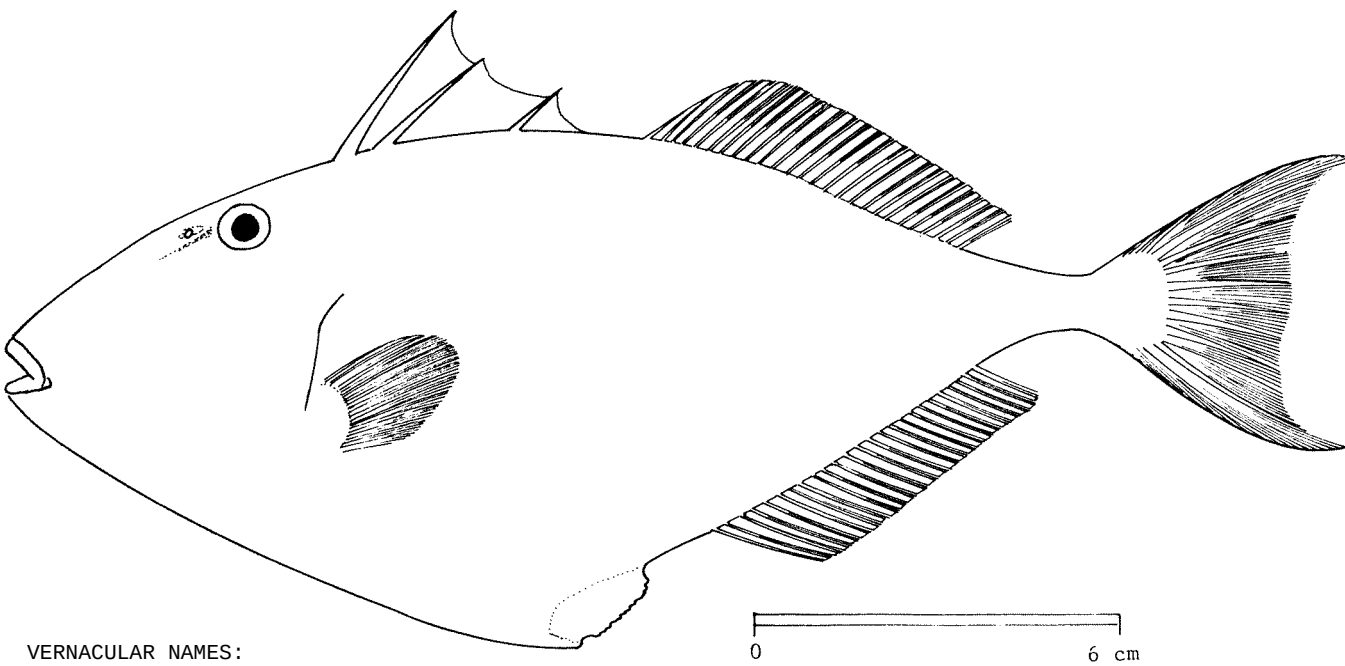
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BALISTIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Abalistes stellaris (Bloch & Schneider, 1801)

FAMILY: *Balistes stellatus* Günther, 1868



VERNACULAR NAMES:

FAO: En - Starry triggerfish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body deep and compressed, *with leathery armour of scales in regular rotes.* A small groove in front of eye; cheek covered with scales and some enlarged scales behind gill opening. Mouth small, teeth not fused to form a beak. *First dorsal fin with 3 stout spines,* the first being locked erect by the second; soft *dorsal and anal fin rays branched;* upper and lower lobes of caudal fin filamentous in large adults; *caudal peduncle almost round in cross-section* (sometimes depressed, its width greater than its depth).

Colour: grey dashed with olive green; three large white blotches on back and numerous small blue spots; belly white; 3 to 4 yellow lines from mouth to pectoral fin base. Pectoral fins yellow with a dark base; other fins banded with black, yellow and olive.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Balistes species *(sensu lato):* caudal peduncle laterally compressed (oval in cross-section; almost round or wider than deep in *B. stellaris).*

Other balistid species: scales irregularly placed on body and soft fin rays not branched; also, a chin barbel present in *Psilocephalus.*

SIZE:

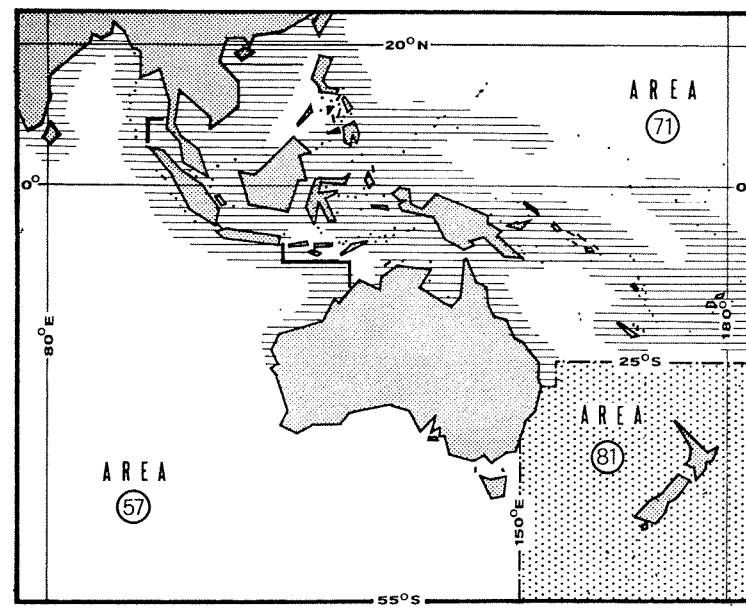
Maximum: 60 cm; common: 30 to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to northern coasts of Australia; also, westward to East Africa and northward to Japan.

Shallow waters down to 90 m.

Feeds on bottom fauna.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed fresh; flesh resembles chicken.

BALI Alut 1

1974

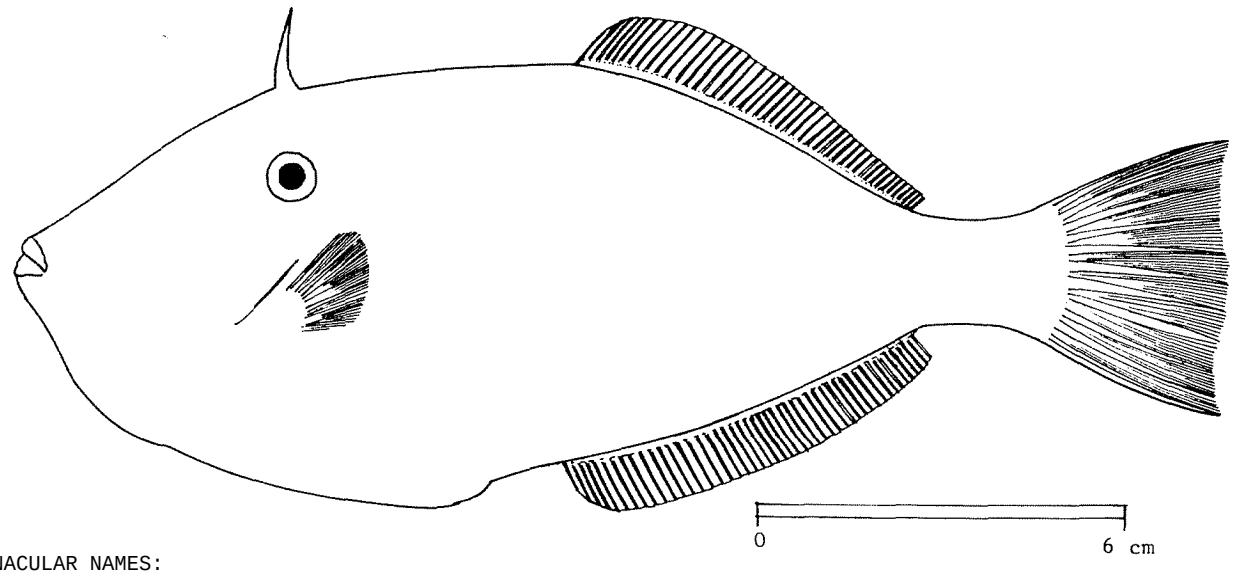
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BALISTIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Alutera monoceros (Linnaeus, 1758)

SYNONYMS STILL IN USE: *Aluteres monoceros*: misspelling



VERNACULAR NAMES:

FAO: En - Unicorn filefish
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body deep and compressed, *with Leathery armour of small irregular scales*. Mouth small, teeth not fused into a beak. First dorsal fin above eye centre, *a single spine visible.*, the second spine (minute) hidden; *soft dorsal and anal fin rays not branched*, 46 to 50 and 47 to 52 fin rays respectively; pelvic fins merely a flap of skin, but no bony plate or shield; caudal fin much shorter than snout.

Colour: uniform light grey, with scattering of dark brown dots on back; fins yellow.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Alutera scripta: caudal fin longer (longer than snout; shorter than snout in *A. moroceros*).

Balistes (sensu lato) and *Abalistes* species: regular scale rows on body and a second dorsal fin spine evident.

Other balistid species: fewer dorsal and anal fin rays (46 to 50 and 47 to 52 in *A. monoceros*).

SIZE:

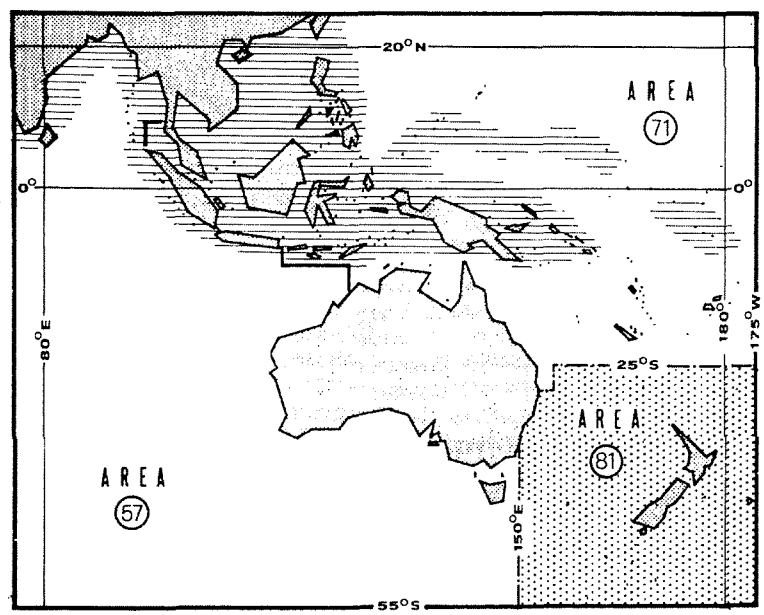
Maximum: 50 cm; common: 30 to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area, but not to Australian coasts; also, westward to East Africa and northward to South China Sea.

Coastal waters down to 50 m.

Feeds on small animals.



PRESENT FISHING GROUNDS:

Coastal waters.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with trap nets and bottom trawls.

Marketed fresh; highly valued as food.

BOTH

1974

FAO SPECIES IDENTIFICATION SHEETS

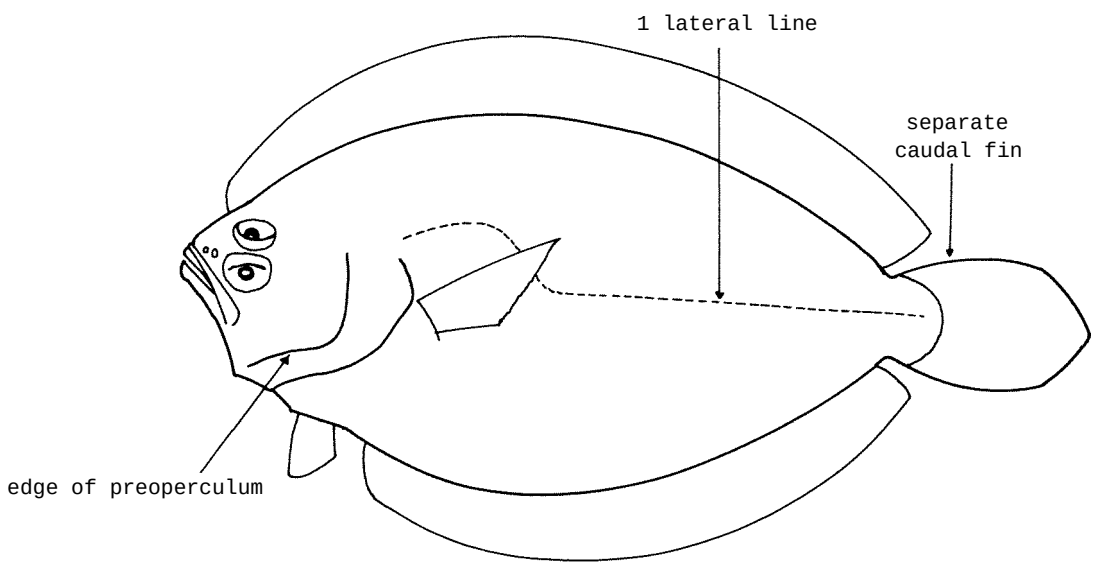
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

BOTHIDAE

Lefteye flounders

Flatfishes with *eyes on left side of body;* spines sometimes present before eyes in males. Mouth asymmetrical, teeth present in jaws, sometimes caniniform. *Preoperculum exposed, its hind margin free and visible.* Pectoral fins present; pelvic fins present, that on eyed side the larger in some genera; dorsal fin origin above or in front of lower eye; caudal fin free from dorsal and anal fins. A single lateral line, sometimes forked behind upper eye, sometimes faint or absent on blind side.

Colour: eyed side brown, often with spots, blotches or ring-like markings; blind side pale.



SIMILAR FAMILIES OCCURRING IN THE AREA:

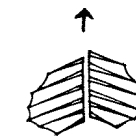
Psettodidae: dorsal fin with spinous rays, its origin behind upper eye; eyes on right side of body.

Pleuronectidae and Soleidae: both eyes on right side of body.

Cynoglossidae: margin of preoperculum not free, hidden beneath skin; caudal fin joined to dorsal and anal fins.

Key to Genera

1 a. Pelvic fin bases short; that of blind side almost as long as that of eyed side (Fig. 1) (subfamily Paralichthinae)



pelvic fins seen from below (arrows point towards head)

Fig. 1

2 a. Length of head about 2 1/2 times in standard length; diameter of eyes 4 times in length of head ..... *Cephalopsetta*

2 b. Length of head at least 3 times in standard length; diameter of eyes more than 4 times in length of head

3 a. Lateral line absent on blind side; maxilla more than 3 times in length of head ..... *Taeniopsetta*

3 b. Lateral line equally developed on both sides; maxilla less than 3 times in length o£ head

4 a. Dorsal and anal fin rays not scaled; teeth in bands in both jaws ..... *Tephrineetes*

4 b. Dorsal and anal fin rays more or less scaled; teeth in one row in both jaws

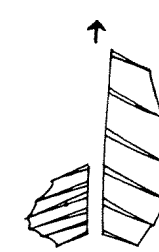
5 a. Lateral line without distinct branch above upper eye ..... *Paratichthys*

5 b. Lateral line with distinct branch above upper eye, reaching dorsal fin at 7th to 12th rays

6 a. Scales small, more than 58 in lateral line ..... *Pseudorhombus*

6 b. Scales large, less than 50 in lateral line ..... *Tarphops*

1 b. Pelvic fin base of eyed side normally much longer than that of blind side (Fig. 2) (subfamily Bothinae)



pelvic fins seen from below (arrows point towards head)

Fig. 2

7 a. Mouth small; maxilla 3.4 to 4.6 times in length of head; hardly any teeth on eyed side of jaws ..... *Laeops*

7 b. Mouth larger; teeth on both sides of jaws

8 a. Maxilla less than twice in length of head; lower jaw very prominent ..... *Chascanopsetta*

8 b. Maxilla more than twice in length of head; lower jaw not prominent

9 a. Lateral line equally developed on both sides; 3 prominent blotches forming a triangle on eyed side ..... *Grammatobothus*

9 b. Lateral line absent or feebly developed on blind side

10 a. Eyes close together, separated by a bony ridge or narrow, concave space, equally developed in males and females

11 a. Scales of eyed side cycloid (smooth) or feebly ctenoid ..... *Arnoglossus*

11 b. Scales of eyed side strongly ctenoid (rough to touch) ..... *Psettina*

10 b. Eyes separated by a more or less concave space, larger in males (Fig. 3)

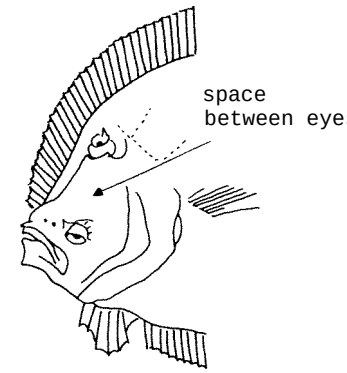


Fig. 3

12 a. Distance between eyes equal to 1/2 to 1 eye diameter; males without distinct spines on snout ..... *Parabothus*

12 b. Distance between eyes equals more than eye diameter; males with distinct spine(s) on snout

13 a. Scales o£ eyed side strongly ctenoid (rough to touch) ..... *Crossorhombus*

13 b. Scales of eyed side feebly ctenoid

14 a. Lateral line with a forked branch behind upper eye ..... *Bothus*

14 b. Lateral line without a forked branch behind upper eye ..... *Engyprosopon*

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Arnoglossus aspilos aspilos
Arnoglossus aspilos praeteritus
Arnoglossus elongatus
Arnoglossus fisoni
Arnoglossus intermedius
Arnoglossus maculipinnis
Arnoglossus polyspilus
Arnoglossus tapeinosoma
Arnoglossus tenuis
Arnoglossus maitei

Bothus assimilis
Bothus bleekeri
Bothus brunneus
Bothus confertus
Bothus mancus
Bothus myriaster
Bothus obliquioculatus
Bothus pantherinus BOTH Both 1
Bothus tchangi
Bothus variegatus

Cephalopsetta ventrocellatus

Chascanopsetta lugubris
Chascanopsetta prognathus

Crossorhombus azureus
Crossorhombus valderostratus

Engyprosopon bleekeri
Engyprosopon cocosensis
Engyprosopon fijiensis
Engyprosopon filimanus
Engyprosopon grandisqucanis BOTH Engy 1
Engyprosopon latifrons
Engyprosopon macrolepis
Engyprosopon maldivensis
Engyprosopon mogkii
Engyprosopon xystrias

Grarnnatobothus kremphi
Grammatobothus pennatus
Grammatobothus polyophthalmus BOTH Gram 1

Laeops guentheri
Laeops macrophthalmus
Laeops nigrescens
Laeops parviceps

Parabothus mathensis
Parabothus potylepsis

Paralichthys olivaceus

Psettina brevirictis
Psettina profunda

Pseudorhombus annulatus
Pseudorhombus argus
Pseudorhombus arsius BOTH Pseud 7
Pseudorhombus cinnamoneus
Pseudorhombus ctenosquamis
Pseudorhombus diplospilus
Pseudorhombus dupliciocellatus BOTH Pseud 2
Pseudorhombus elevatus BOTH Pseud 3
Pseudorhombus javanicus BOTH Pseud 4
Pseudorhombus levisquamis
Pseudorhombus malayanus BOTH Pseud 5
Pseudorhombus megalops
Pseudorhombus micrognathus
Pseudorhombus neglectus
Pseudorhombus oligodon BOTH Pseud 6
Pseudorhombus pentophthalmus
Pseudorhombus quinquocetlatus BOTH Pseud 7
Pseudorhombus spinosus
Pseudorhombus triocellatus

Tarphops oligolepis

Taeniopsetta oceltata

Tephrinectes sinensis

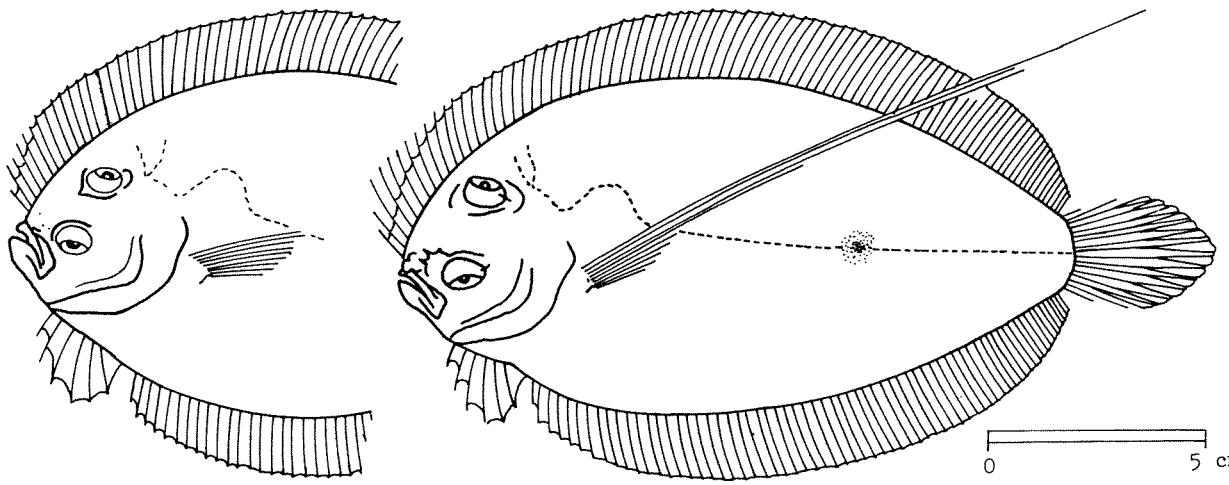
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Bothus pantherinus (Rüppell, 1828)

SYNONYMS STILL IN USE: None



female male

VERNACULAR NAMES:

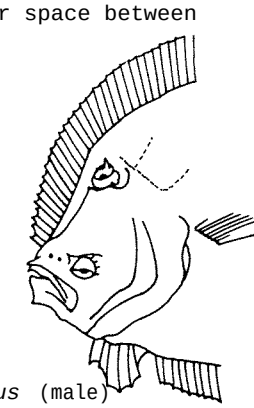
FAO: En - Leopard flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat, *upper profile of head convex. Both eyes on left side, separated by a wide space* (larger than one eye diameter). Upper jaw about 3 times in length of head, ending below front edge of lower eye. Teeth in 2 or more rows. Gill rakers 6 to 8 on lower part of first arch. *Pelvic fin base of blind side much shorter than that of eyed side. All scales on eyed side ctenoid* (rough to touch); 80 to 92 scales in lateral line. Males with spines near eyes, a larger space between eyes and much longer pectoral fin rays than females.

Colour: eyed side brown with paler and darker markings; *generally a large dark blotch midway along straight part of lateral line.*



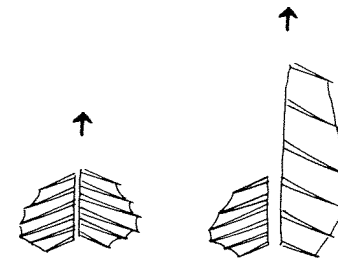
Bothus mancus (male)

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Bothus mancus: 9 to 11 rakers on lower branch of first gill arch (6 to 8 in *B. pantherinus)* and upper profile of head concave.

Other *Bothus* species: no dark blotch midway on straight part of lateral. line; also, a different number of gill rakers (6 to 8 in *B. pantherinus),* and/or cycloid (smooth) scales on eyed side, and/or upper head profile not convex.

Other genera of flatfishes: pelvic fin base of blind side almost equal in length to that of eyed side, and/or space between eyes smaller than one eye diameter, and/or lateral line not forked behind upper eye.



pelvic fins seen from below
(arrows point towards head)

Pseudornombus, Paralichthys, etc.

Bothus, Engyprosopon etc.

SIZE:

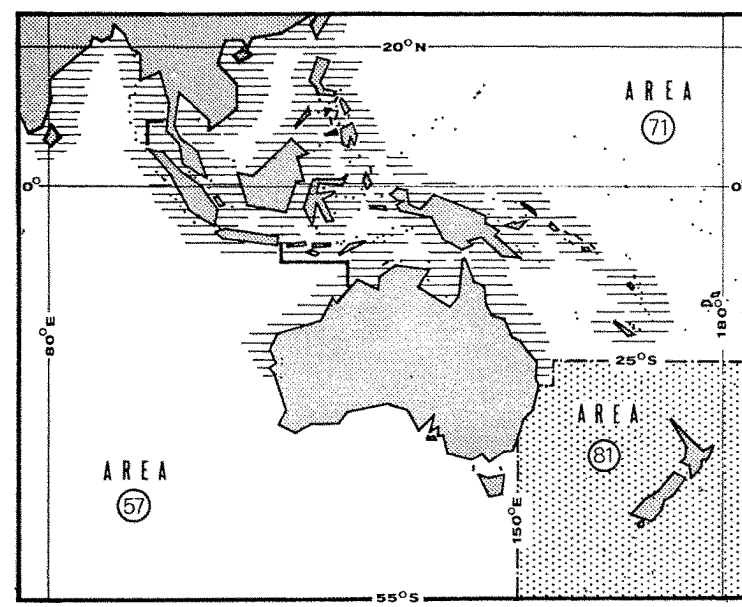
Maximum: about 25 cm; common: 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of warmer waters of area, including New Guinea and northern half of Australia; also, westwards to East Africa and eastwards to Hawaii.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals:



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

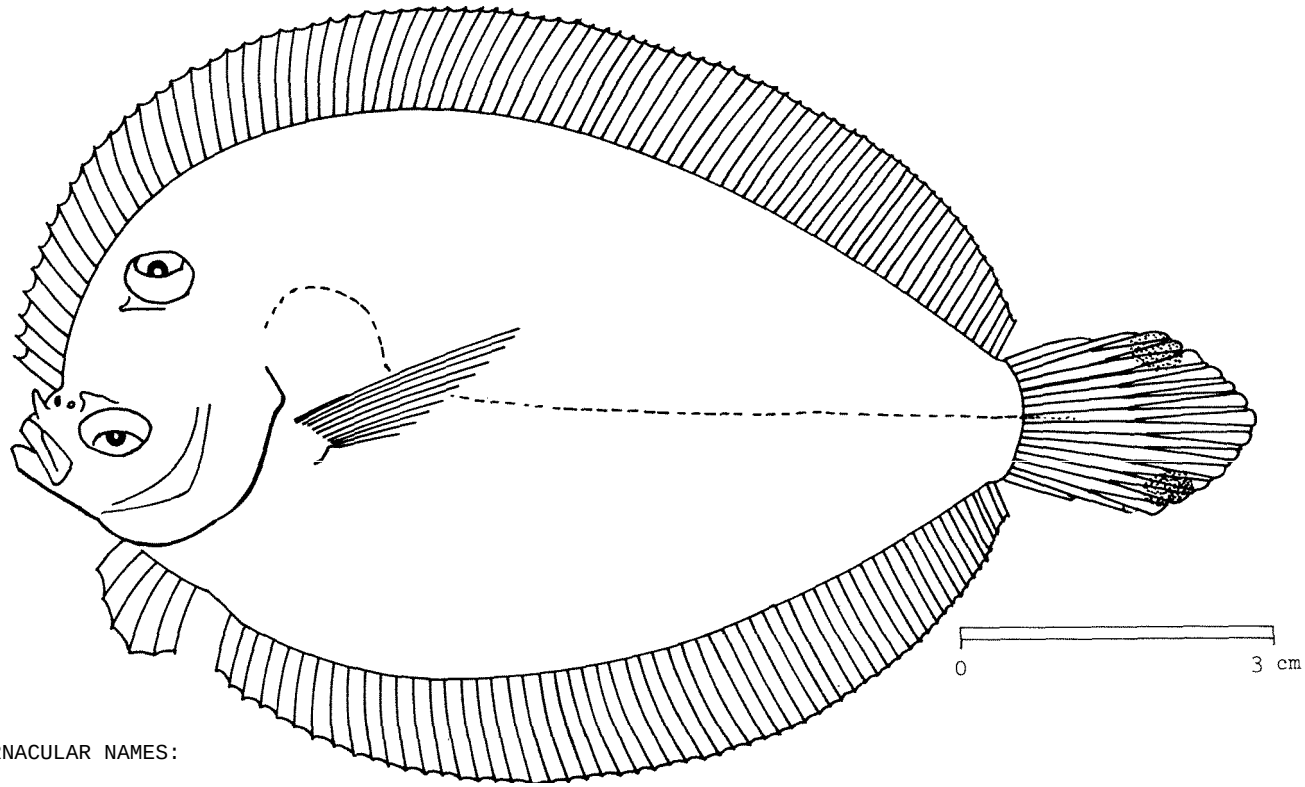
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent, Pacific)

Engyprosopon grandisquamis (Temminck & Schlegel, 1846)

SYNONYMS STILL IN USE: *Bothus poecilurus* (Bleeker, 1852)



VERNACULAR NAMES:

FAO: En - Largescale flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat. *Both eyes on Left side,* in adults separated by a more or less concave space (wider than one eye diameter). Upper jaw more than 2.5 times in length of head, ending just in front of lower eye. Gill *rakers 5 to 7 on Lower part of first gill arch. Pelvic fin base of blind side mach shorter than that of eyed side.* Lateral line curved above pectoral fin and absent from head; scales of eyed side feebly ctenoid (rough to touch); 36 to 48 scales in lateral line. Adult males have spines on snout and near eyes, and a larger space between eyes than females.

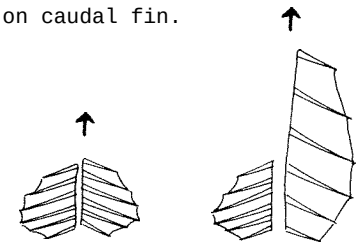
Colour: eyed side brown; *caudal fin with two large, dark spots*. Dorsal, anal and caudal fins usually with small brown spots.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Engyprosopon xistryans: 14 rakers on lower branch of first gill arch (5 to 7 in *E. grandisquamis).*

Other *Engyprosopon* species: lack the 2 distinct spots on caudal fin.

Other flatfish genera: pelvic fin base of blind side almost equal in size to that of eyed side, and/or space between eyes less than one eye diameter, and/or scales not strongly ctenoid (very rough to touch) and/or lateral line present on head.



pelvic fins seen from below

(arrows point towards head)

Pseudorhomhus *Engyprosopon*
Paraliehthys *Bothus*

SIZE:

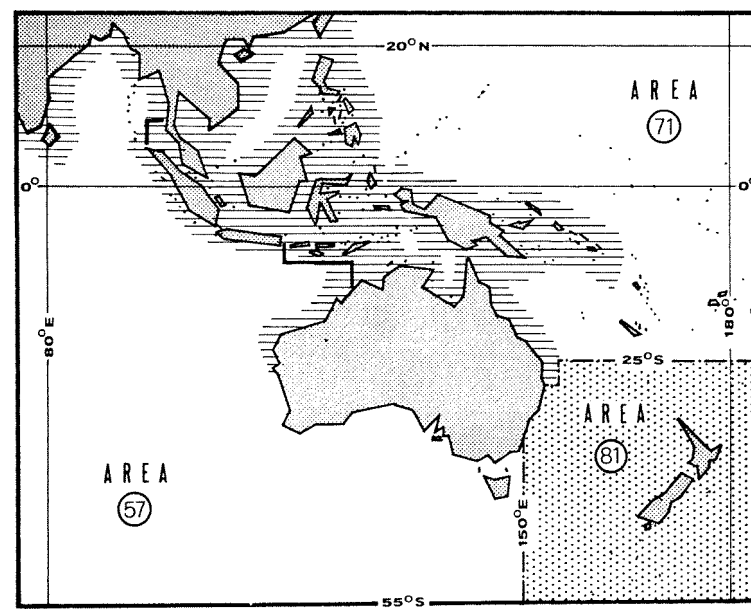
Maximum: about 15 cm; common 10 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of warmer waters of area including new Guinea and northern half of Australia; also westwards to East Africa.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught. mainly with bottom trawls.

Marketed mostly fresh.

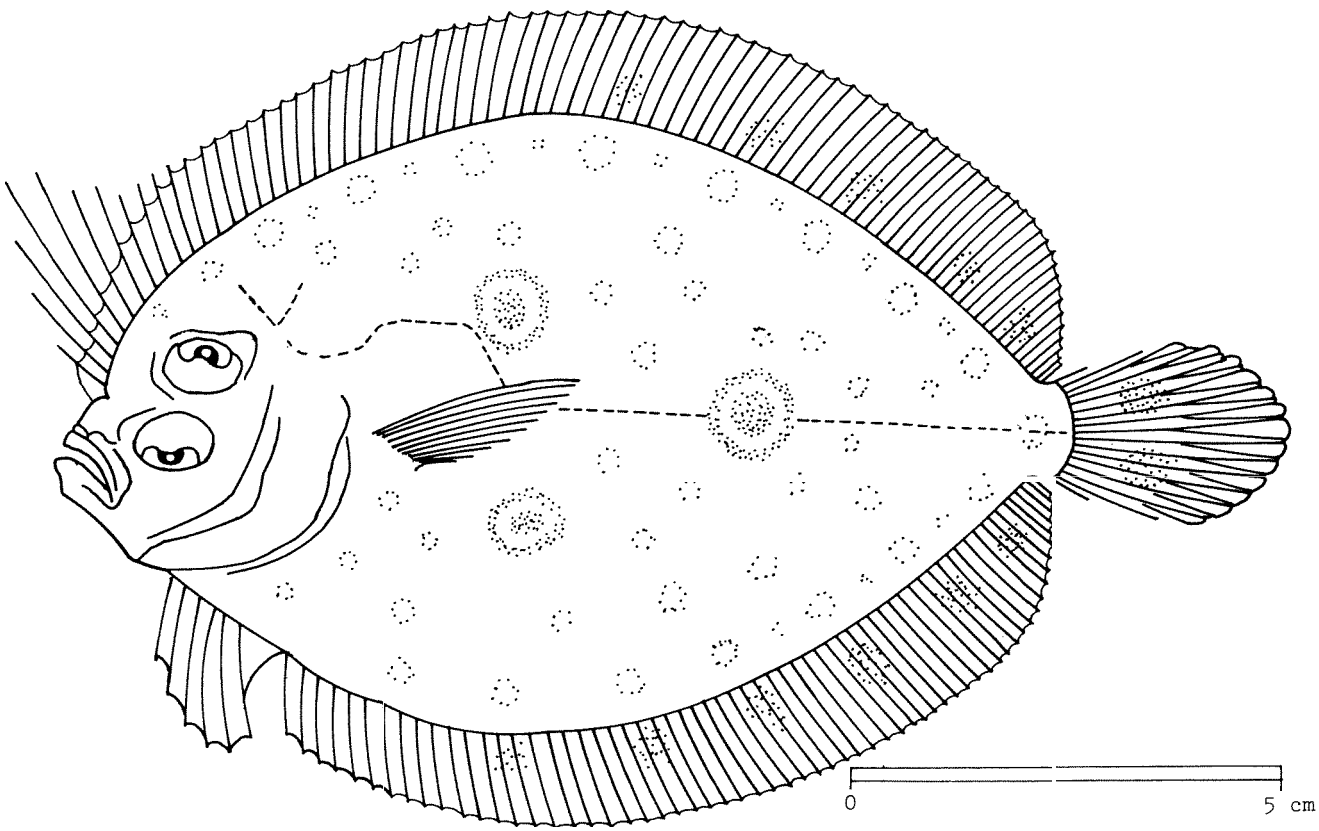
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent, Pacific)

Grammatobothus polyophthalmus (Sleeker, 1866)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Threespot flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat, its depth 1.5 to 1.7 times in standard length. Upper profile of head more or less deeply notched. Both eyes on left side, with only a narrow space between them. Upper jaw ending in front of lower eye. *Dorsal fin with 2nd to 5th or 6th rays somewhat prolonged; anal fin with 61 to 68 rays; pelvic fin base of blind side somewhat shorter than that of eyed side.* Lateral line equally developed on both sides, forked above upper eye.

Colour: eyed side brown with 3 prominent black blotches each surrounded by a dark ring. Head, body and fins with numerous small markings.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Grammatobothus pennatus: 72 to 76 rays in anal fin, a more slender body (its depth 1.8 to 2,0 in standard length) and 2nd to 4th dorsal fin rays elongated (2nd to 5th or 6th rays elongated in G, *polyophthalmus).*

Other flatfish genera: pelvic fin base of blind side about equal in length to that of eyed side and/or lateral line not equally developed on both sides.

SIZE:

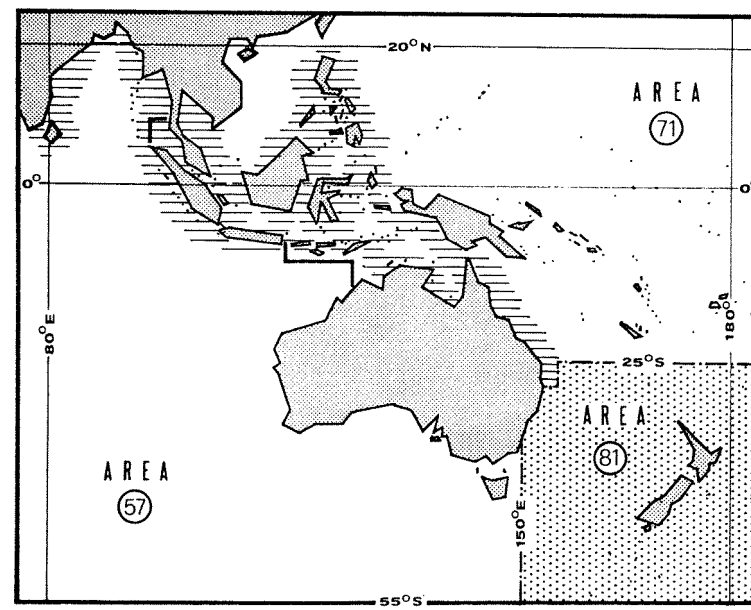
Maximum: about 20 cm; common: 10 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Northwestern part of area (but not off coasts of China or northern coast of New Guinea), southward to northeastern coast of Australia.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-liying animals



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

BOTH Pseud 1

1974

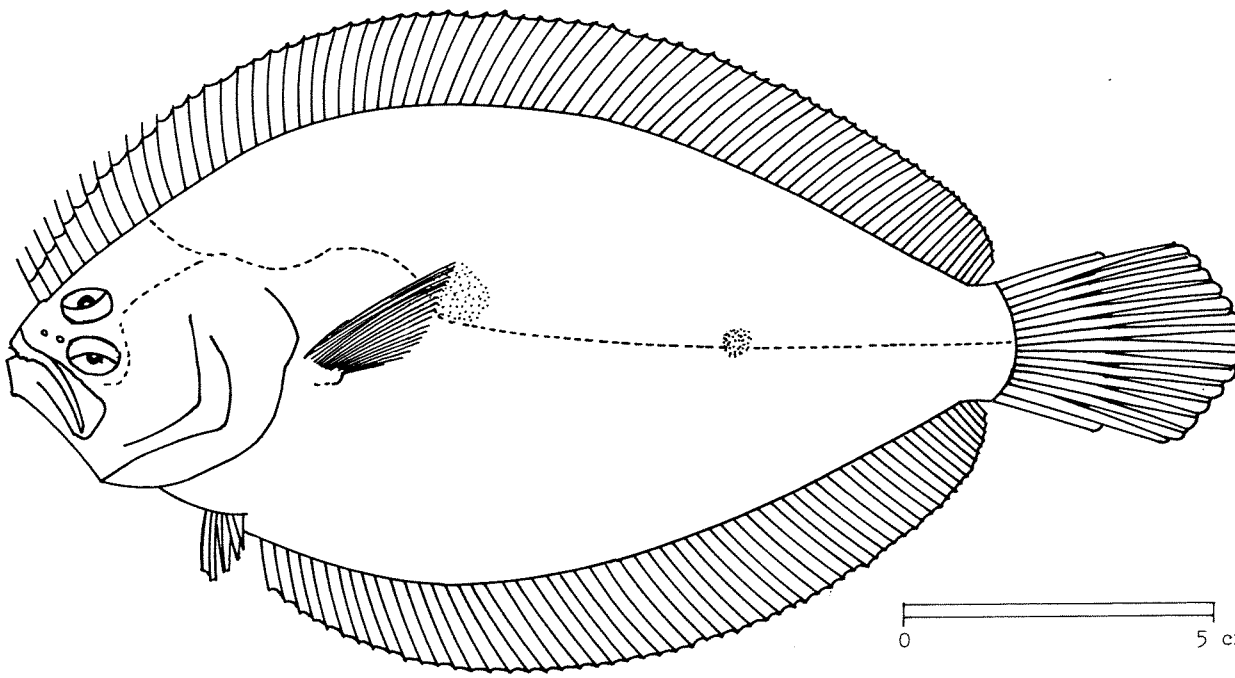
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent, Pacific)

Pseudorhombus arsius (Ham. Buch., 1822)

SYNONYMS STILL IN USE: *Pseudorhombus polyspilus*



VERNACULAR NAMES

FAO: En - Largetooth flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat. *Both eyes on left side.* Upper jaw ending below posterior edge of lower eye. Gill rakers pointed, longer than broad. Canine teeth present, 6 *to 23 in lower jaw of blind side.* Dorsal fin origin in front of upper eye; *pelvic fin base of blind side almost equal to length to that of eyed side.* Lateral line curved above pectoral fin, forming 2 branches on head, the upper ending between 8th to 12th dorsal fin rays. *Scales cycloid* (smooth) *on blind side.*

Colour: eyed side with a varying pattern of brown spots and blotches, but always *a larger blotch on anterior end of straight part of lateral line and a smaller blotch halfway to caudal fin base.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

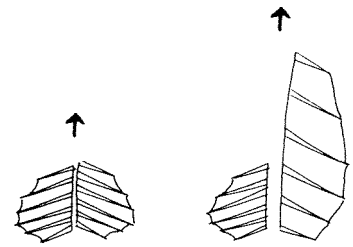
Pseudorhombus malayanus: scales ctenoid (rough to touch) on blind side.

Pseudorhombus javanicus: teeth smaller and more numerous (15 to 25 in lower jaw of blind side; 5 to 13 in *P. arsius*)

Pseudorhombus negleetus: dorsal fin origin above front edge of upper eye (in front of upper eye in *P. arsius).*

Other *Pseudorhombus* species: lack the 2 distinctive blotches along straight part of lateral line

Other flatfish genera: pelvic fin base of blind side much shorter than that of eyed side and/or no forked lateral line on head reaching to dorsal profile.



pelvic fins seen from below
(arrows point toward head)

Pseudorhombus *Bothus, Engyporosopon, etc.*

SIZE:

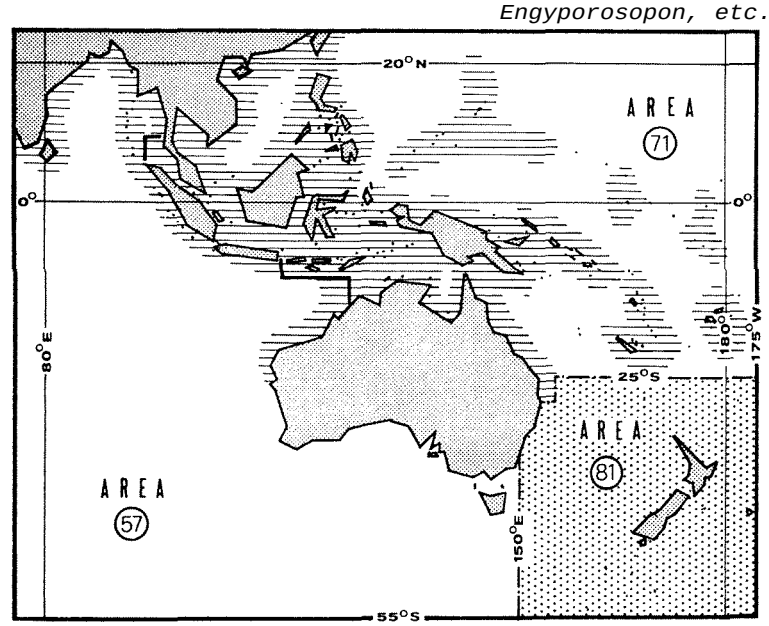
Maximum: about 35 cm; common: 20 to 30 am.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Australia; also, westward to East Africa.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORAS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

BOTH Pseud 2

1974

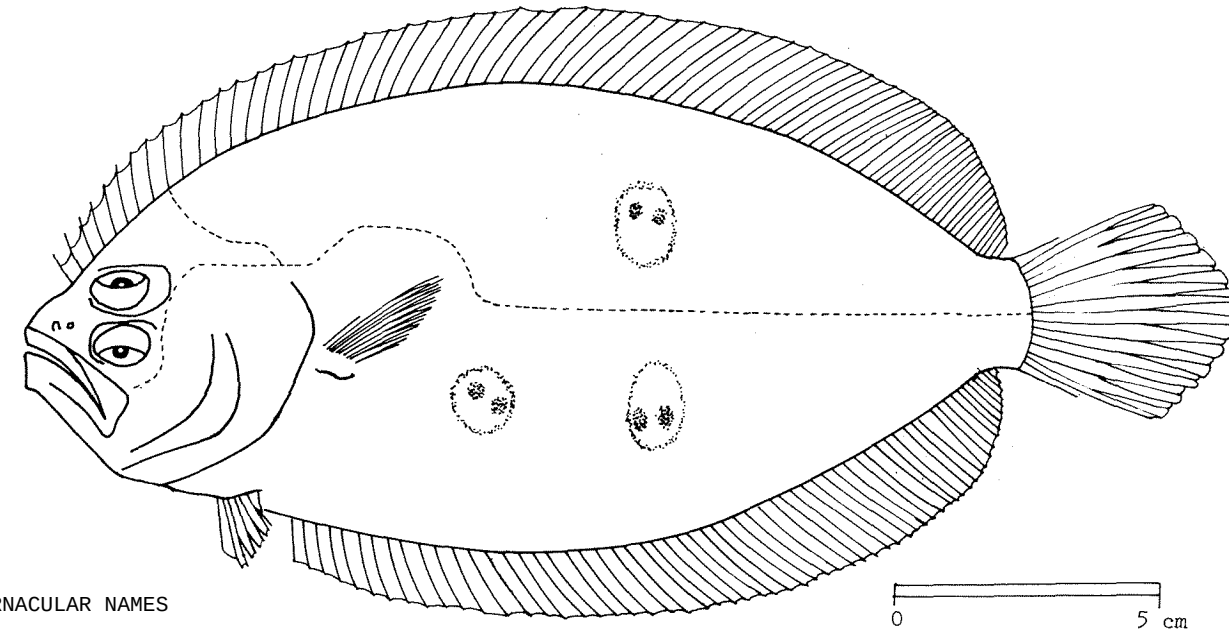
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pseudorhombus dupliciocellatus Regan, 1905)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES

FAO: En - Ocellated flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat with a notch in upper profile of head. *Both eyes on* left *side.* Upper jaw ending below middle of lower eye. Gill *rakers short, as broad as long. 13 to 22 teeth in lower jaw of blind side. Pelvic fin base of blind side almost equal in length to that of eyed side.* Lateral line curved above pectoral fin, forming 2 branches on head, the upper ending between 8th to 9th dorsal fin rays. *Scales etenoid (rough to touch) on eyed side.*

Colour: eyed side brown, with numerous darker spots and rings. *Eyed side with 3, rarely 4, large paired spots, each pair surrounded by a ring of white spots. When 4, these pairs of spots form a square.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

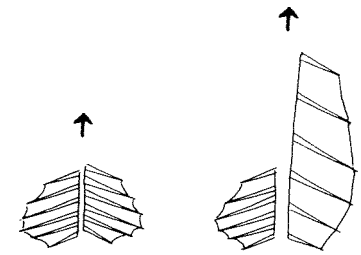
Pseudorhombus diplospilus: 4 to 8 teeth in lower jaw of bline side (13 to 22 in *P. dupliciocellatus);* also, canines stronger.

Pseudorhombus spinosus: scales cycloid (smooth) on both sides.

Pseudorhombus quinquocellatus and *P. triocellatus:* gill rakers longer than broad.

Other *Pseudorhombus* species: either less than 3, or more than 4, conspicuous blotches above and below lateral line .

Other flatfish genera: pelvic fin base of blind side much shorter than that of eyed side and/or no forked lateral line on head reaching to dorsal profile.



pelvic fins seen from below (arrows point toward head)

Pseudorhombus *Bothus, Eugyprosopon* etc.

SIZE:

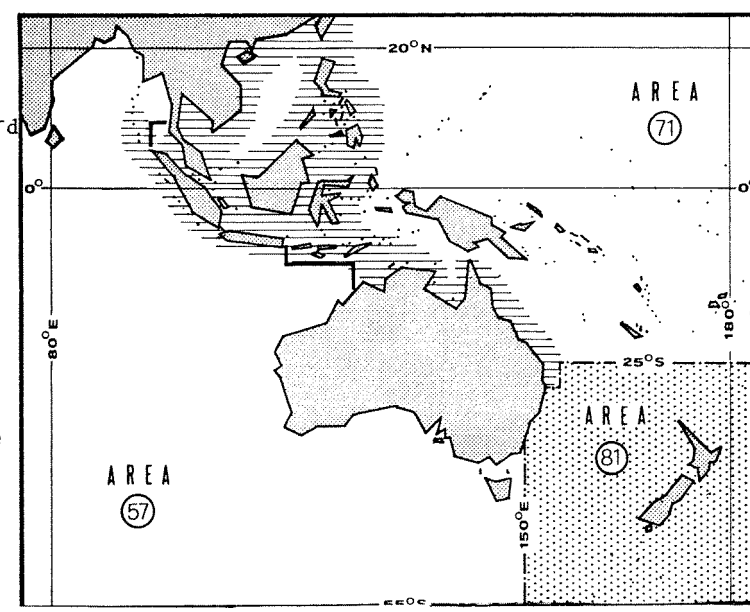
Maximum: about 40 cm; common: 20 to 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

From the Nicobar Islands thrpugh most of the Indo-Australian archipelago, northward to Japan and southward to northeastern coast of Australia.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

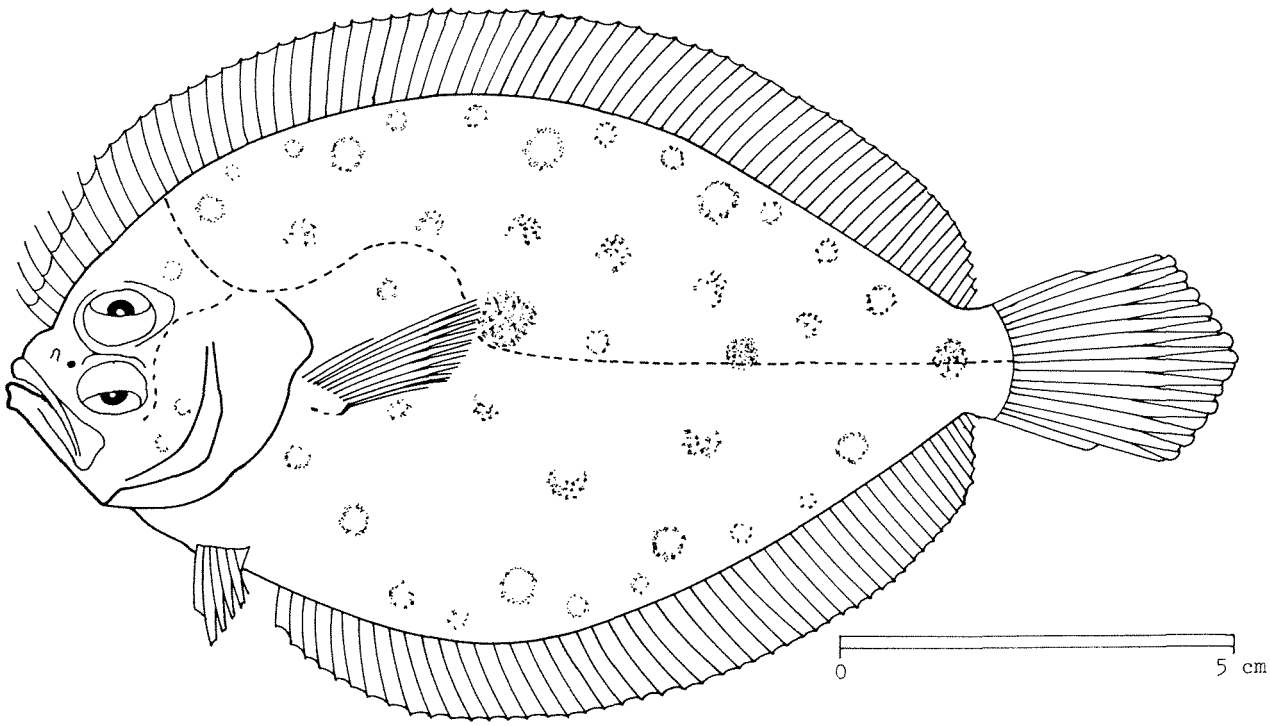
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pseudorhombus elevatus Ogilby, 1912

SYNONYMS STILL IN USE: *Pseudorhombus affinis* Weber, 1913



VERNACULAR NAMES:

FAO: En - Deep flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

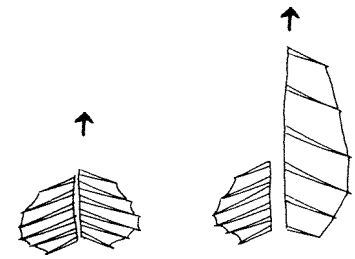
Body oval and flat, its depth 1.8 to 2.0 times in standard length. *Both eyes on left side.* Upper jaw ending below middle of lower eye. Gill rakers long and slender, ll to 15 on lower part of first gill arch. *Pelvic fin base of blind side almost equal in length to that of eyed side.* Lateral line curved above pectoral fin and forming 2 branches on head, the upper ending between 9th to 11th dorsal fin rays. Scales ctenoid (rough to touch) on eyed side and cycloid (smooth) on blind side.

Colour: eyed side brown with numerous blotches arranged in 5 irregular rows along body, and 3 *large distinct blotches along straight part of lateral line;* often 2 additional smaller blotches, one above curve of lateral line and the other below tip of pectoral fin.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other *Pseudorhombus* species: lack the 3 large, distinct blotches along straight part of lateral line.

Other flatfish genera: pelvic fin base of blind side much shorter than that of eyed side and/or no forked lateral line on head reaching to dorsal profile.



pelvic fins seen from below (arrows point towards head

Pseudorhombus *Bothus, Engyprosopon,* etc.

SIZE:

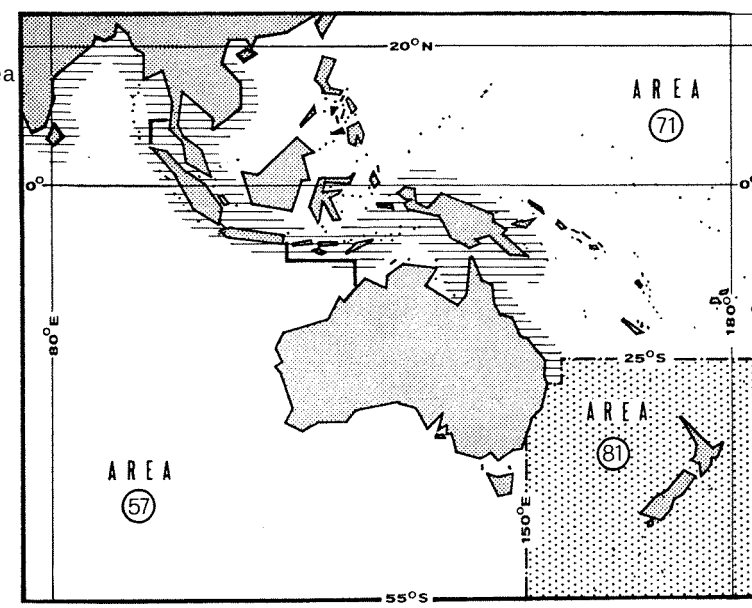
Maximum: about 20 cm; common: 10 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area (not to Borneo, Celebes, Philippines or coasts of China), southward to northeastern coasts of Australia; also, westward to Red Sea.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

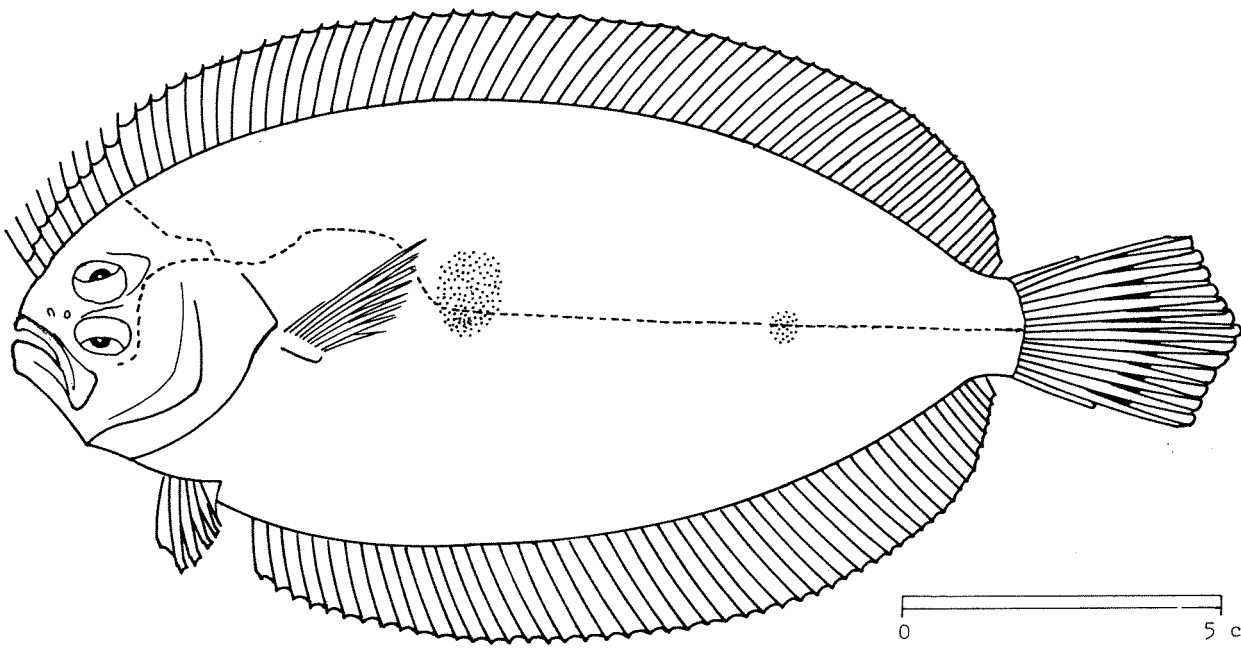
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pseudorhombus javanicus (Bleeker, 1853)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Javan flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat, its depth more than twice in standard length. *Both eyes on left side.* Upper jaw ending below middle of lower eye. *15 to 25 teeth in lower jaw of blind side. Dorsal fin origin well in advance of upper eye; pelvic fin base of blind side almost equal in length to that of eyed side.* Lateral line curved above pectoral fin and forming 2 branches on head,the upper ending between 9th to 11th dorsal fin rays. Scales of eyed side mostly ctenoid (rough to touch) on anterior half and mostly cycloid (smooth) on posterior half; *scales of blind side cycloid.*

Colour: eyed side brown, with darker spots and blotches. A large, round blotch at anterior end *of straight part of lateral line and a smaller blotch halfway to caudal fin base.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

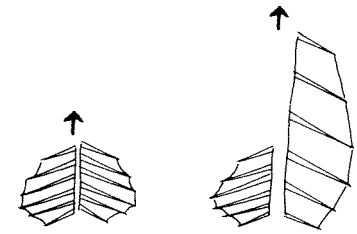
Pseudorhombus arsius: teeth larger, 6 to 13 in lower jaw of blind side (15 to 25 in *P. javanicus).*

Pseudorhombus malayanus: scales ctenoid (rough to touch) on blind side.

Pseudorhombus neglectus: dorsal fin origin above front edge of upper eye (in front of upper eye in *P. javanicus).*

Other *Pseudorhombus* species: lack the 2 conspicuous blotches along straight part of lateral line.

Other genera o£ flatfishes: pelvic fin base of blind side much shorter than that of eyed side and/or no forked lateral line on head reaching to dorsal profile.



pelvic fins seen from below (arrows point towards head)

Pseudorhombus *Bothus, Engyprosopon, etc.*

SIZE:

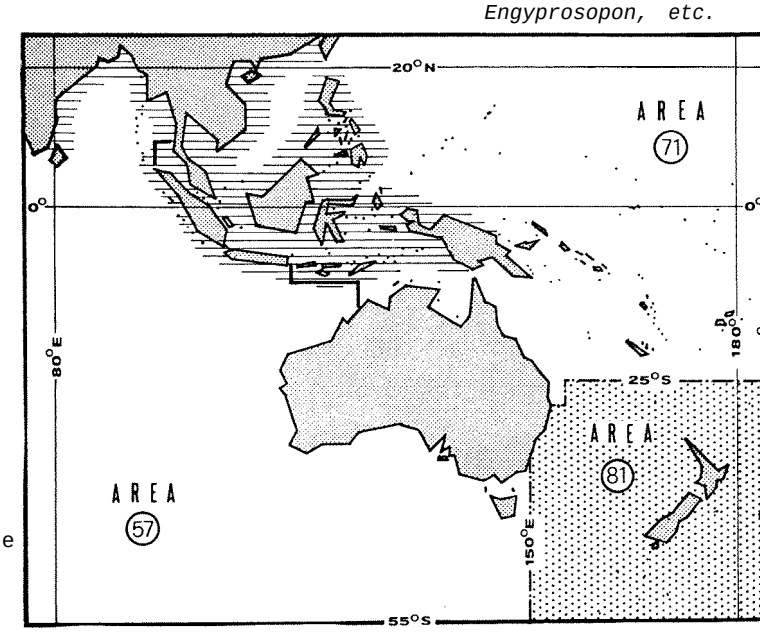
Maximum: about 25 cm; common: 10 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northwestern part of area, but not to eastern New-Guinea or Australia.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

BOTH Pseud 5

1974

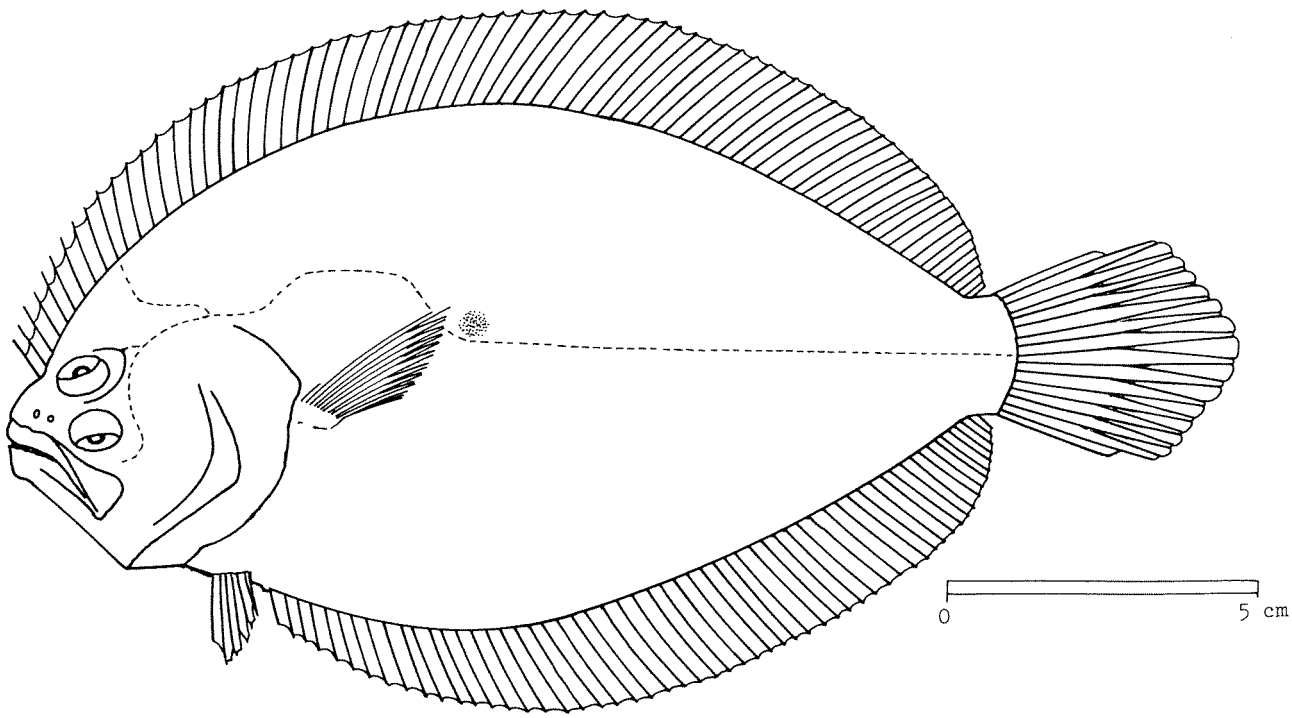
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pseudorhombus malayanus Bleeker, 1866

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

En - Malayan flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat. *Both eyes on Left side.* Upper jaw ending below hind margin of lower eye. Gill rakers pointed, longer than broad; 8 to 10 on lower branch of first gill arch. Dorsal fin with 71 to 77 rays, *its origin well in advance of upper eye; pectoral fin of blind side Less than twice in length of head; pelvic fin base of blind side almost equal in length to that of eyed side.* Lateral line curved above pectoral fin and forming 2 branches on head, the upper ending between 9th to llth dorsal fin rays. *Scales on both sides etenoid* (rough to touch).

Colour: eyed side brown,with or without indistinct groups of small white spots near lateral line. A *dark blotch anteriorly on straight part of lateral Line;* sometimes a smaller blotch halfway to caudal fin base.

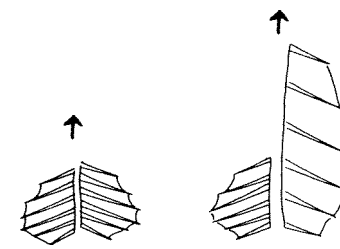
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Pseudorhombus oligodon: pectoral fin on blind side short (more than twice in length of head); also, 78 to 82 dorsal fin rays (71 to 77 in P. malayanus).

Pseudorhombus arsius, P. neglectus and P. javanicus: scales cycloid (smooth) on blind side; also, dorsal fin origin above front margin of upper eye (*P. neglectus*) and 12 to 15 gill rakers on lower part of first arch (*P. javanicus).*

Other *Pseudorhombus* species: no blotches on body or more than 2 blotches along lateral line.

Other flatfish genera: pelvic fin base of blind side much shorter than that of eyed side and/or no forked lateral line on head reaching to dorsal profile.



pelvic fins seen from below
(arrows point towards head)

Pseudorhombus *Bothus, Engyprosopon,* etc.

SIZE:

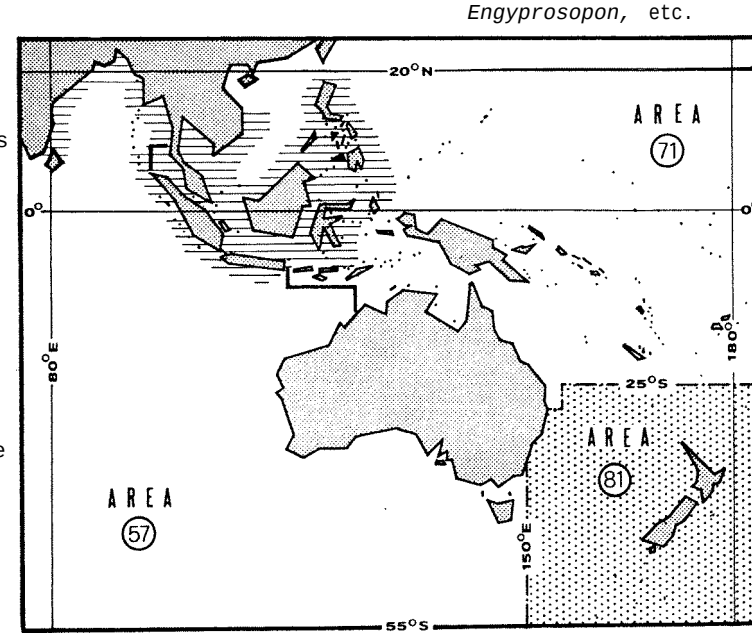
Maximum: about 25 cm; common: 10 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

From east coast of India to the Celebes and the Philippines, but not to South China, New Guinea or Australia.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

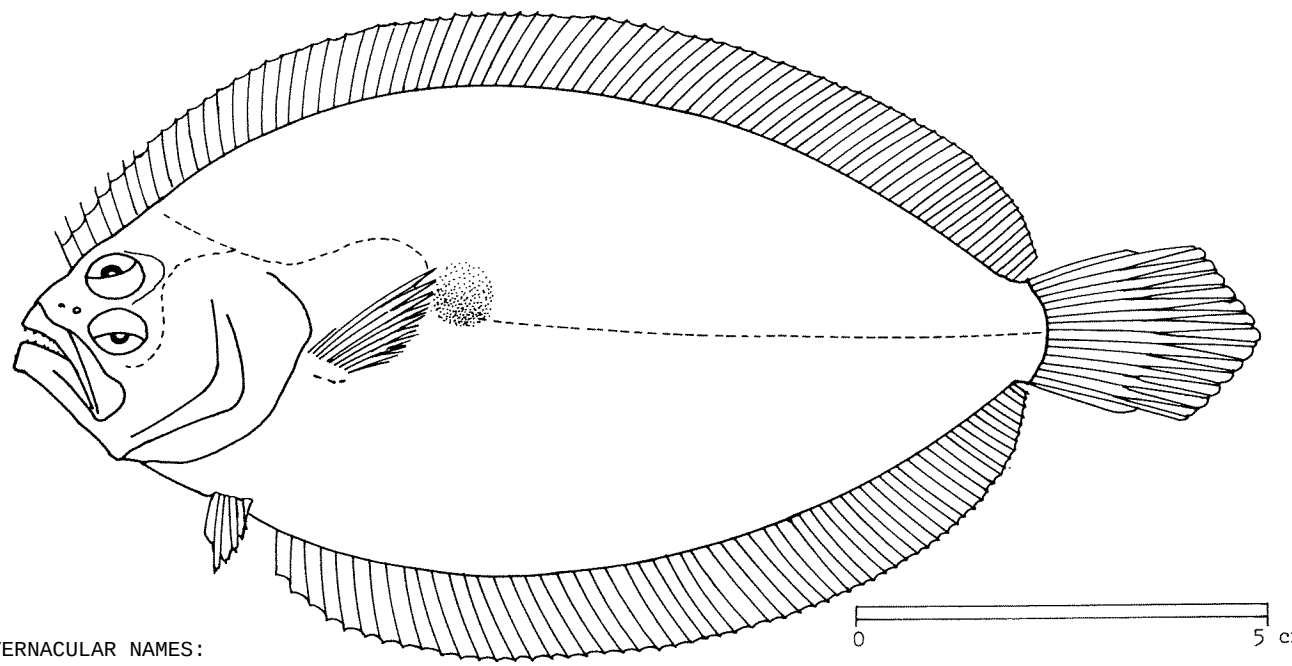
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pseudorhombus oligodon (Bleeker, 1854)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Roughscale flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat. *Both eyes on left side.* Upper jaw ending below posterior half of lower eye. Gill rakers pointed, longer than broad. Dorsal fin with 78 to 82 rays; *pectoral fin of blind side more than twice in length of head; pelvic fin base of blind side almost equal in length to that of eyed side.* Lateral line curved above pectoral fin and forming 2 branches on head, the upper ending between 7th to 9th dorsal fin ray. Scales on both sides ctenoid (rough to touch).

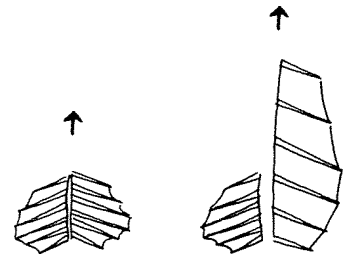
Colour: eyed side brown, with a varying pattern of darker blotches and rings, but always *1 large, dark blotch at anterior end of straight part of lateral Line.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Pseudorhombus malayanus: pectoral fin longer on blind side (less than twice in head length); also, 71 to 77 dorsal fin rays.

Other *Pseudorhombus species*: no blotches or more than 1 blotch on straight part of lateral line and/or cycloid scales (smooth).

Other flatfish genera: pelvic fin base of blind side much shorter than that of eyed side and/or no forked lateral line on head reaching to dorsal profile.



pelvic fins seen from below
(arrows point towards head)

Pseudorhombus *Bothus, Engyprosopon,* etc.

SIZE:

Maximum: about 25 cm; common: 10 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

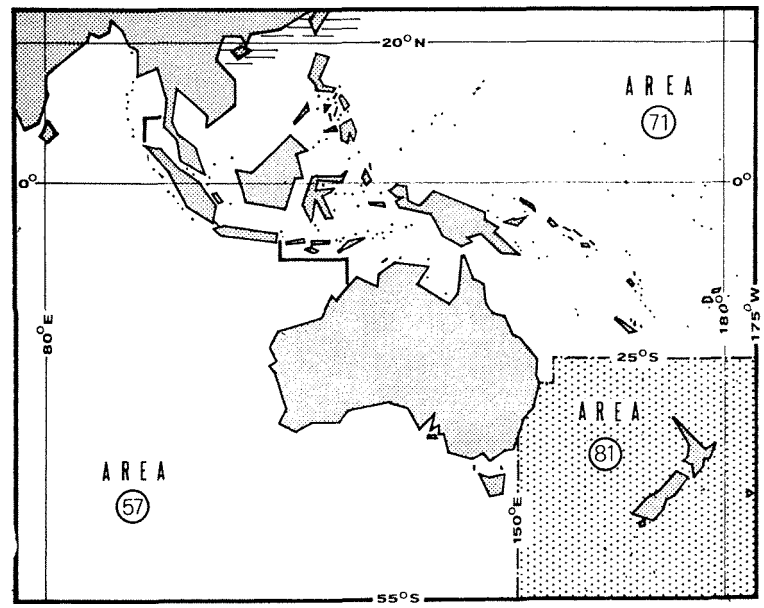
Coasts of China, Japan and Taiwan.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.

PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

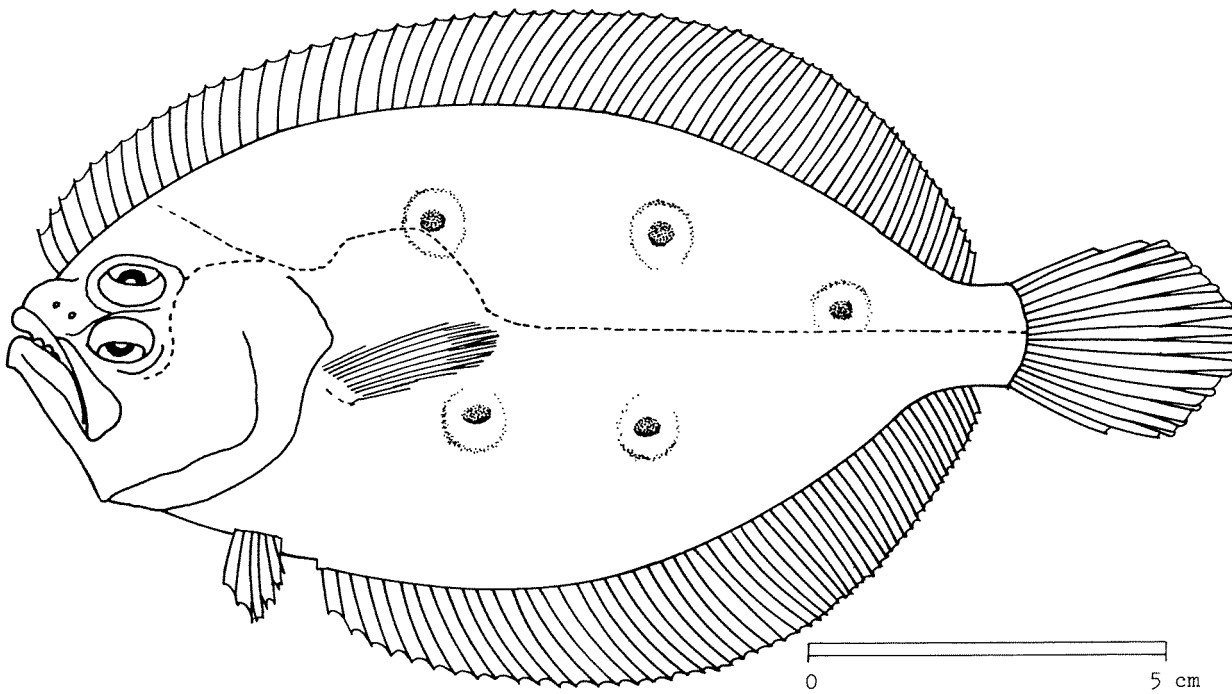
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: BOTHIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pseudorhombus quinquocellatus Weber & de Beaufort, 1929

SYNONYMS STILL IN USE: None



VERNACULAR NAMES

FAO: En - Fivespot flounder
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body oval and flat. *Both eyes on left side.* Upper jaw ends below posterior half of lower eye. *Gill rakers pointed, Longer than broad; 9 to 70 gill rakers on lower branch of first gill arch. Dorsal fin origin well in advance of upper eye; pelvic fin base of blind side almost equal in Length to that of eyed side.* Lateral line curved above pectoral fin and forming 2 branches on head, the upper ending at 8th fin ray.

Colour: eyed side brown *with 5 blotches, each surrounded by a brown ring;* incomplete rings scattered over body.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

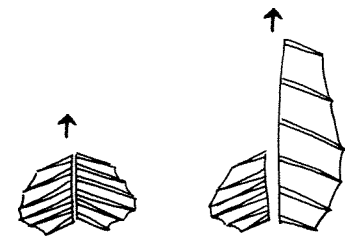
Pseudorhombus pentophthalmus: 15 to 18 gill rakers on lower branch of first gill arch (9 to 10 in *P. quinquocellatus).*

Pseudorhombus dupliciocellatus: gill rakers as long as broad (longer than broad and pointed in *P. quinquocellatus).*

Pseudorhombus argus: dorsal fin origin above front edge of upper eye (well in advance in *P. quinquocellatus).*

Other *Pseudorhombus* species: lack the 5 distinct blotches on body.

Other flatfish genera: pelvic fin base of blind side much shorter than that of eyed side and/or no forked lateral line on head reaching to dorsal profile.



pelvic fins seen from below
(arrows point towards head)

Pseudorhombus *Bothus,*
Engyprosopon etc.

SIZE:

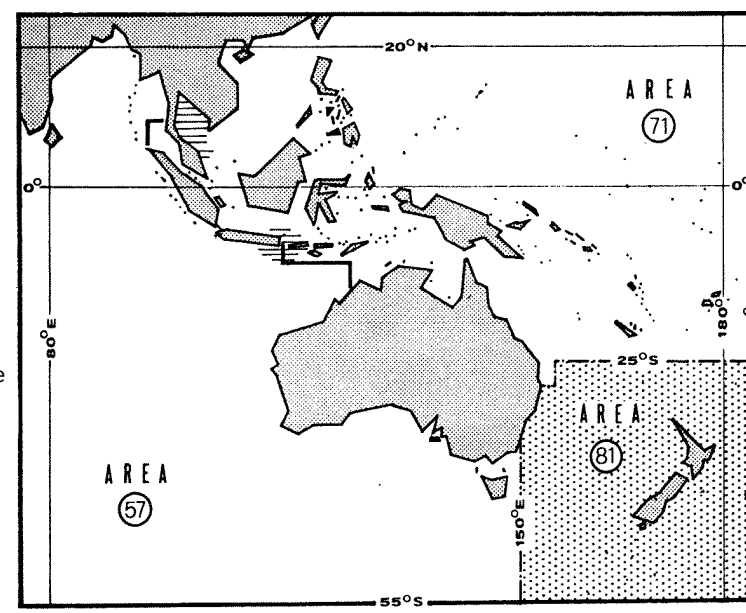
Maximum: about 20 cm; common: 10 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Known from the Strait of Madura and Gulf of Thailand only.

Inhabits the shallower muddy and sandy bottoms of the continental shelf.

Feeds on bottom-living animals.



PRESENT FISHING GROUNDS:

Muddy and sandy trawling grounds of the continental shelf.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls.

Marketed mostly fresh.

C_1

CARAN

1974

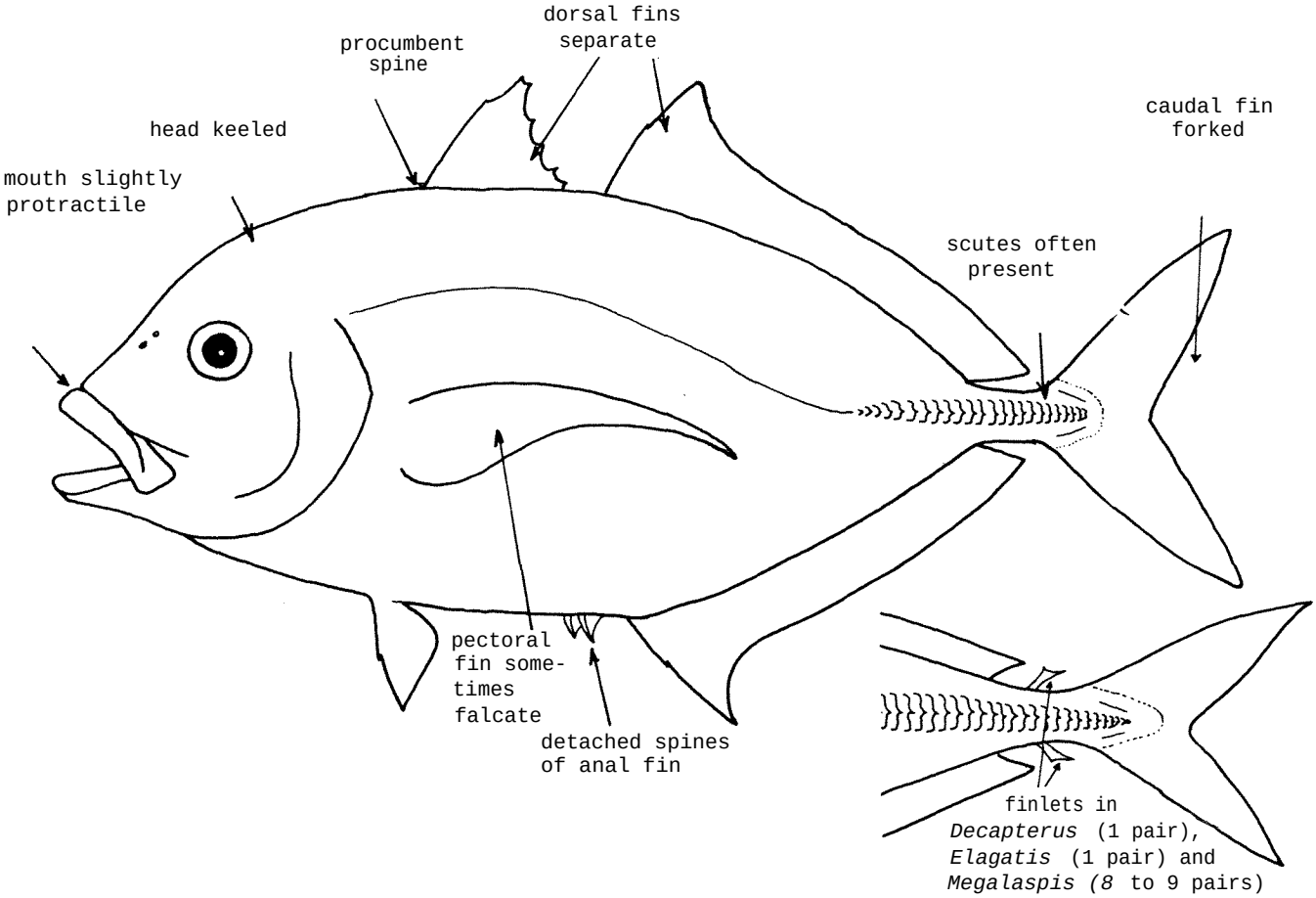
FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

CARANGIDAE

Jacks, cavallas, crevalles, pompanos, queenfishes, runners, scads, trevallies

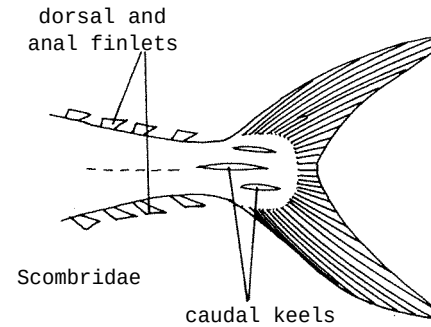
Body greatly or moderately compressed, varying from deep rhomboid to slender and elongate; caudal peduncle slender. Head compressed, usually keeled dorsally. Mouth slightly protractile; teeth in jaws usually small, either in a single series or in a villiform band; vomer, palatines and pterygoids (on roof of mouth) usually toothed, becoming smooth with age. Gill openings wide; gill membranes usually not united, free from isthmus; 6 branchiostegal rays. Gill rakers usually moderate-sized, occasionally either stumps or very long. Opercular bones thin, smooth, closely fitting; preoperculum not connected with infraorbital bones, its hind edge smooth in adults, but with 3 to 4 spines in small juveniles. 2 *more or less separate dorsal fins;* spinous dorsal fin short-based, with slender or short spines (sometimes disappearing with age) usually connected by a membrane, folding into a groove and often preceded by a procumbent (forward-pointing) spine; *soft dorsal fin with a long base. Pectoral fins either long and falcate, or shorter and non-falcate. Anal fin preceded by 2 detached spines, at least in the young, its base long, equal to or shorter than that of soft dorsal fin.* Posterior parts of soft dorsal and anal fins forming 1 to 7 finlets in some species. *Caudal fin deeply forked.* Scales small, thin and cycloid (smooth), sometimes absent. *Lateral line arched anteriorly, becoming straight posteriorly. Scutes usually present along straight portion of lateral line, but sometimes also along curved portion; scutes entirely absent in some species.*

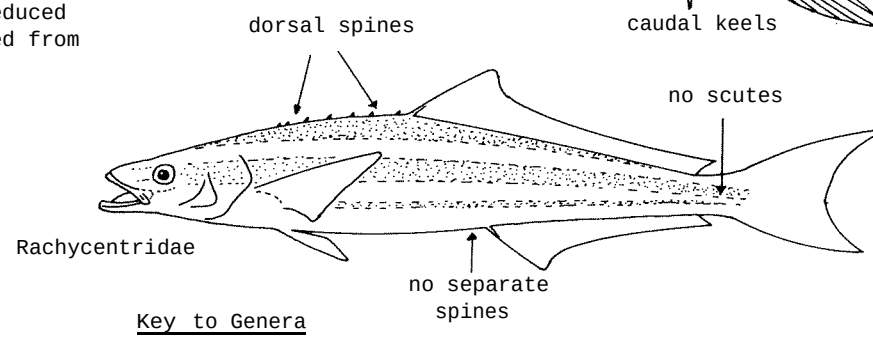


SIMILAR FAMILIES OCCURRING IN THE AREA:

Scombridae, Gempylidae: no scutes on hind part of lateral line, but 2 to 3 keels usually present on each side of caudal peduncle, first 2 anal spines not detached from rest of fin and base of 1st dorsal fin longer than that of 2nd; also, usually several detached finlets behind dorsal and anal fins (rarely found in Carangidae).

Rachycentridae: no scutes on caudal peduncle, dorsal fin spines much reduced and first 2 anal spines not detached from rest of fin.





Key to Genera

1 a. At least some scutes present along lateral line; pectoral fins long and sickle-shaped; anal fin base about equal in length to soft dorsal fin base

2 a. Scutes present along entire lateral line ..... *Traehurus*

2 b. Scutes present only on posterior part of lateral line (Fig. 1)

3 a. One or more finlets behind soft dorsal and anal fins

4 a. A single dorsal and anal finlet (Fig. 2) .... *Decapterus*

4 b. 8 to 9 dorsal and anal finlets ..... *Megalaspis*

3 b. No detached finlets behind soft dorsal and anal fins

5 a. Scales small but visible, not embedded in skin; 7 to 8 dorsal fin spines, connected by a membrane; none of dorsal or anal fin rays as long as body

6 a. A groove along belly (accommodating pelvic fins, anus and anal fin spines (Fig. 3) ..... *Atropus*

6 b. No groove along belly

7 a. Gill rakers long and feathery, reaching into mouth ..... *Ulua*

7 b. Gill rakers normal, not reaching into mouth

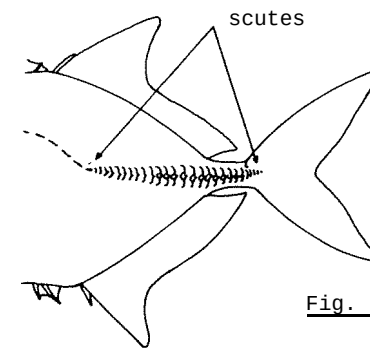


Fig. 1

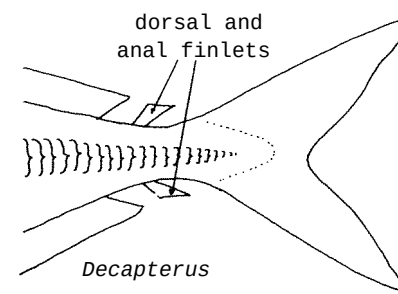


Fig. 2

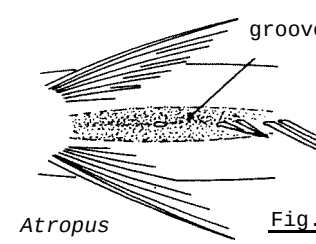


Fig. 3

8 a. Teeth present in both jaws

9 a. Teeth present on roof of mouth (vomer and palatines)

10 a. Adipose tissue of eye covering all but central slit (Fig. 4a) ..... *Atule*

10 b. Adipose tissue leaving anterior half of eye exposed (Fig. 4b)

11 a. A deep furrow on lower part of gill opening (Fig. 5) ..... *Selar*

11 b. No furrow on lower part of gill opening

12 a. Jaw teeth in a single series (except cluster at tip of upper jaw), none enlarged; scutes prominent; breast scaled ..... *Alepes*

12 b. Jaw teeth fine, villiform, in bands in both jaws, outer row only occasionally enlarged; scutes often weakly developed; breast rarely fully scaled, often naked ..... *Carangoides*

12 c. Jaw teeth in a band in upper jaw, outer row enlarged; a single series in lower jaw, with 2 to 4 anterior canines; scutes prominent; breast rarely naked ..... *Caranx*

9 b. No teeth on roof of mouth (vomer, palatines); jaw teeth sharp and curved ..... *Uraspis*

8 b. No teeth in upper jaw

13 a. A single series of minute teeth in lower jaw; rudimentary teeth on tongue ..... *Selaroides*

13 b. No teeth in either jaw; lips papillose ..... *Gnathanodon*

5 b. Scales not visible, embedded in skin; dorsal spines less than 7, small, not connected by a membrane; anterior dorsal and anal fin rays at least as long as body (Fig. 6) ..... *Alectis*

1 b. No scutes along lateral line; pectoral fins short, not sickle-shaped

14 a. Soft dorsal and anal fin bases about equal in length (Fig. 7)

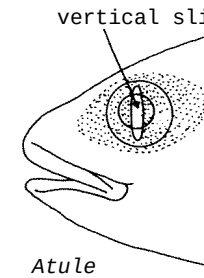


Fig. 4a

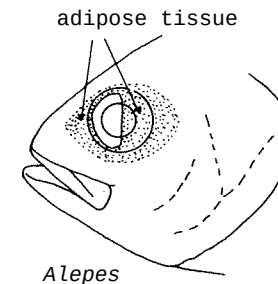


Fig. 4b

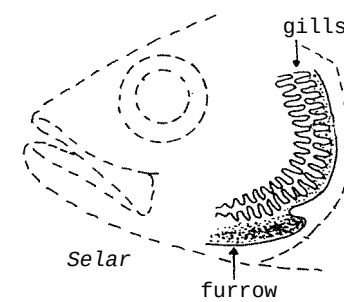


Fig. 5

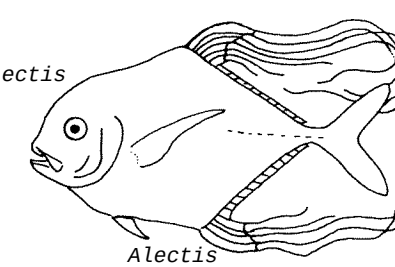


Fig. 6

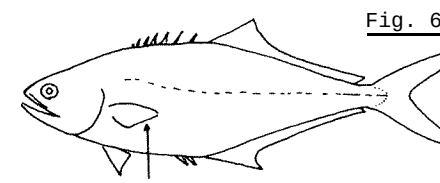


Fig. 7

15 a. Body slender, soft dorsal and anal fins not strongly falcate (Fig. 8a) scales elongate or needle-like ... *Scomberoides*

15 b. Body deep, soft dorsal and anal fins strongly falcate (Fig. 8b) scales circular ..... *Trachinotus*

14 b. Anal fin base much shorter than soft dorsal fin base

16 a. A two-rayed finlet behind dorsal and anal fins (Fig. 9) ..... *Elagatis*

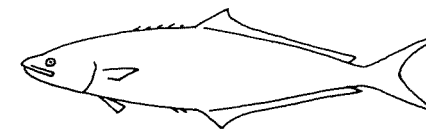
16 b. No finlets behind dorsal and anal fins

17 a. 5 to 7 dorsal fin spines, connected by a membrane

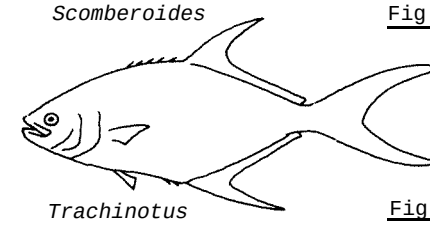
18 a. Gill rakers knob-like; snout less than twice eye diameter ..... *Seriolina*

18 b. Gill rakers normal;, snout twice eye diameter ..... *Seriola*

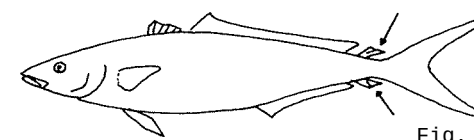
17 b. 4 to 5 dorsal fin spines, not connected by a membrane in adults .....*Naucrates*



Scomberoides Fig. 8a



Trachinotus Fig. 8b



Elagatis Fig. 9

* The family is in urgent need of revision and the key given here must be considered tentative.

List of Species occurring in the Area *
(Code numbers are given for those species
for which Identification Sheets are included)

Alectis ciliaris		*Elagatis bipinnulatus*	CARAN Elag 1
Alectis indicus	CARAN Alec 1		
		Gnathanodon speciosus	CARAN Gnath 1
Alepes dieddaba	CARAN Alep 1		
Alepes kalla			
Alepes melanoptera	CARAN Alep 2	*Megalaspis cordyla*	CARAN Megal 1
Atropus atropus	CARAN Atrop 1	*Naucrates ductor*	
Atule mate			
		Scomberoides commersonianus	CARAN Scom 1
		Scomberoides lysan	
Carangoides auroguttatus		*Scomberoides tata*	
Carangoides chrysophrys	CARAN Carang 1	*Scomberoides tol*	
Carangoides ciliarius	CARAN Carang 2		
Carangoides coeruleopinnatus			
Carangoides dinema		*Selar hoops*	CARAN Selar 1
Carangoides equuta	CARAN Carang 3	*Selar crumenophthalmus*	CARAN Selar 2
Carangoides ferdau	CARAN Carang 4		
Carangoides fulvoguttatus			
Carangoides gilberti		*Selaroides leptolepis*	CARAN Selard I
Carangoides gymnostethus			
Carangoides jordani			
Carangoides malabaricus	CARAN Carang 5	*Seriola dumerili*	
Carangoides nitidus		*Seriola purpurascens*	
Carangoides oblongus			
Carangoides ophthalmotaenia			
Carangoides plagiotaenia		*Seriolina nigrofasciata*	CARAN Seriol 1
Carangoides praeustus			
Carangoides sexfasciatus			
Carangoides uii		*Trachinotus baillonii*	
		Trachinotus blochii	CARAN Trachn 2
		Trachinotus botla (T. russelii)	
Caranx bucculentus			
Caranx carangus			
Caranx celetus		*Trachurus declivis*	
Caranx cynodon		*Trachurus maccullochi*	
Caranx ignobilis	CARAN Caranx 1	*Trachurus novaehollandiae*	
Caranx lessoni			
Caranx melarripygus	CARAN Caranx 2		
Caranx sansun		*Ulua mentalis*	CARAN Ulua 1
Caranx sexfasciatus	CARAN Caranx 3		
Caranx stellatus			
Caranx tille	CARAN Caranx 4	*Uraspis guptae*	
		Uraspis helvolus	
		Uraspis secundus	
Decapterus kurroides			
Decapterus macareltus			
Decapterus macrosoma	CARAN Deca 1		
Decapterus maruadsi	CARAN Deca 2		

* Many of the genera are in great need of revision and this list must be considered tentative.

CARAN Alec 1

1974

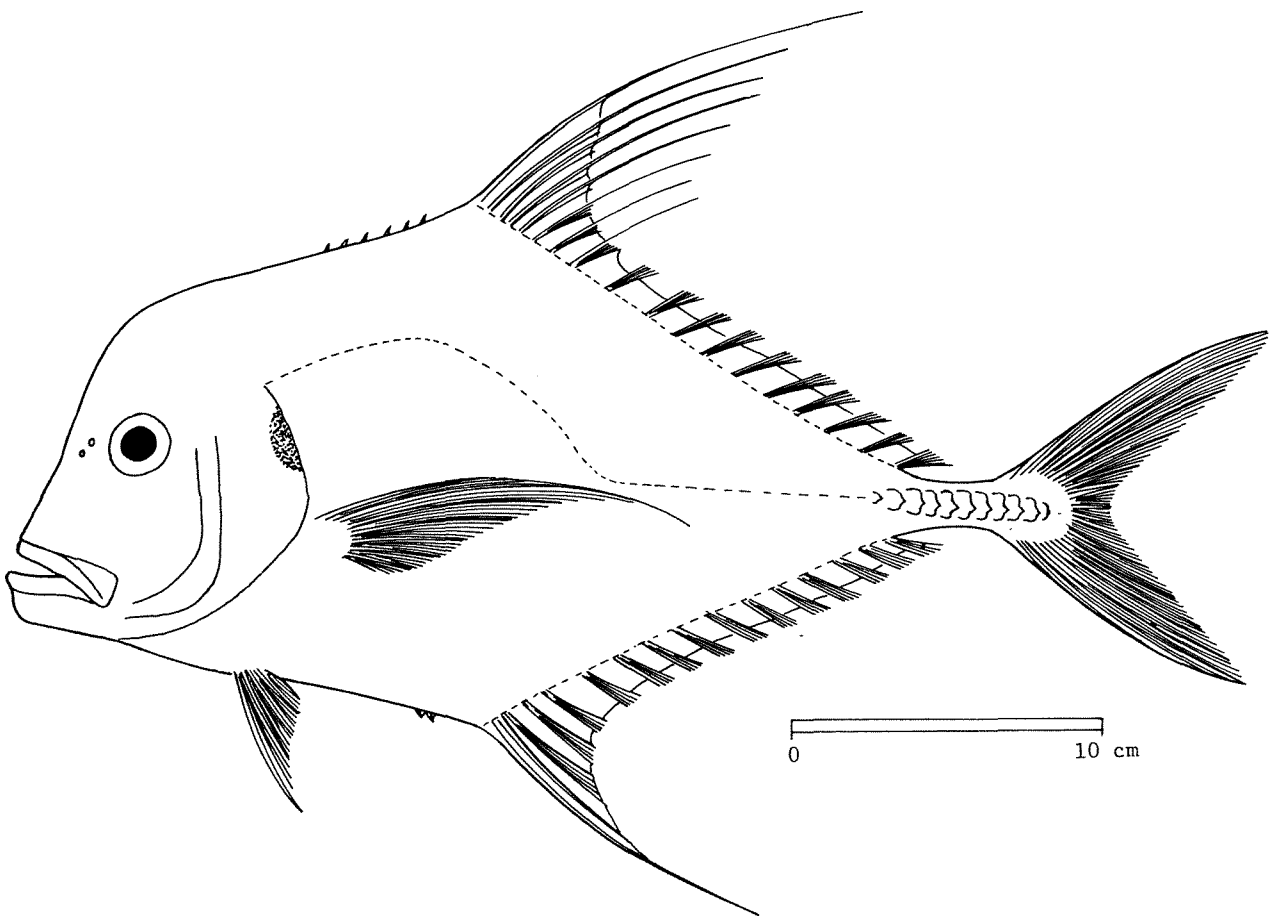
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Alectis indicus (Rüppell, 1828)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Threadfin trevally
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An extremely deep-bodied, highly compressed carangid. Head profile almost vertical, with a marked hump above eyes. Eye diameter 3..8 to 4.3 times in head length and 1.4 to 1.7 times in sub-orbital space. Upper jaw reaching to below front edge of eye or middle of eye. Teeth in both jaws in villiform bands; minute teeth on tongue, vomer and palatines (roof of mouth). 16 to 18 short, stout gill rakers on lower limb of lst arch. Ist dorsal fin with 6 spines (embedded in skin in large specimens); 2nd dorsal fin with 1 spine and 18 to 19 soft rays. Dorsal fin base slightly longer than anal fin base; *dorsal and anal fins elongate anteriorly, with filamentous rays, especially in juveniles.*

Pectoral fins long and falcate. Pelvic fins also falcate in large fishes. *Anal fin with 2 detached spines* (embedded in skin in adults) and 1 spine and 16 soft rays. *Scales minute, deeply embedded and inconspicuous.* Lateral line anteriorly with a strong, irregular arch, becoming straight under 9th to 12th dorsal fin rays; 5 *to 12 feeble scutes.*

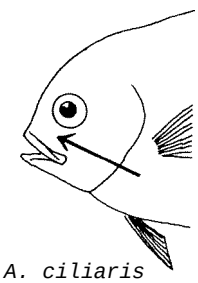
Colour: pale to dark blue above, silvery white below; a dark spot on upper edge of operculum in adults; fins pale in large adults; juveniles with elongate parts of dorsal and anal fins and pelvic fins with dusky tips.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

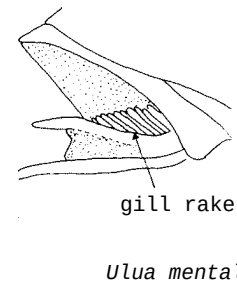
Alectis ciliaris: eye diameter equal to or only slightly smaller than distance between eye and upper jaw.

Ulua mentalis: head profile much less arched and gill rakers elongate, visible in mouth.

Carangoides ciliarius: also has filamentous dorsal and anal fin rays, but 7 to 8 dorsal fin spines (6 in *Alectis)* and scales visible (embedded in skin in *Alectis).*



A. ciliaris



Ulua mentalis

Other carangid species: either have scales visible and 7 to 8 dorsal fin spines, or lack scutes on lateral line.

Other very deep-bodied and compressed fishes: no scutes on caudal peduncle.

SIZE:

Maximum: 100 cm; common: 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

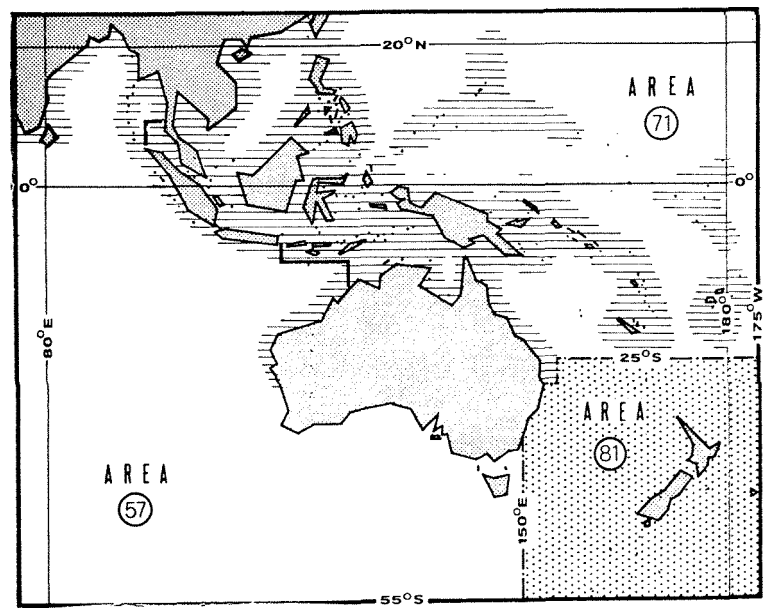
Throughout most warm coastal waters of area.

Inhabits shallow coastal areas.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia 4 900 tons)

Caught mainly with gill nets and traps.

Marketed mostly fresh; also dried-salted.

CARAN Alep 1

1974

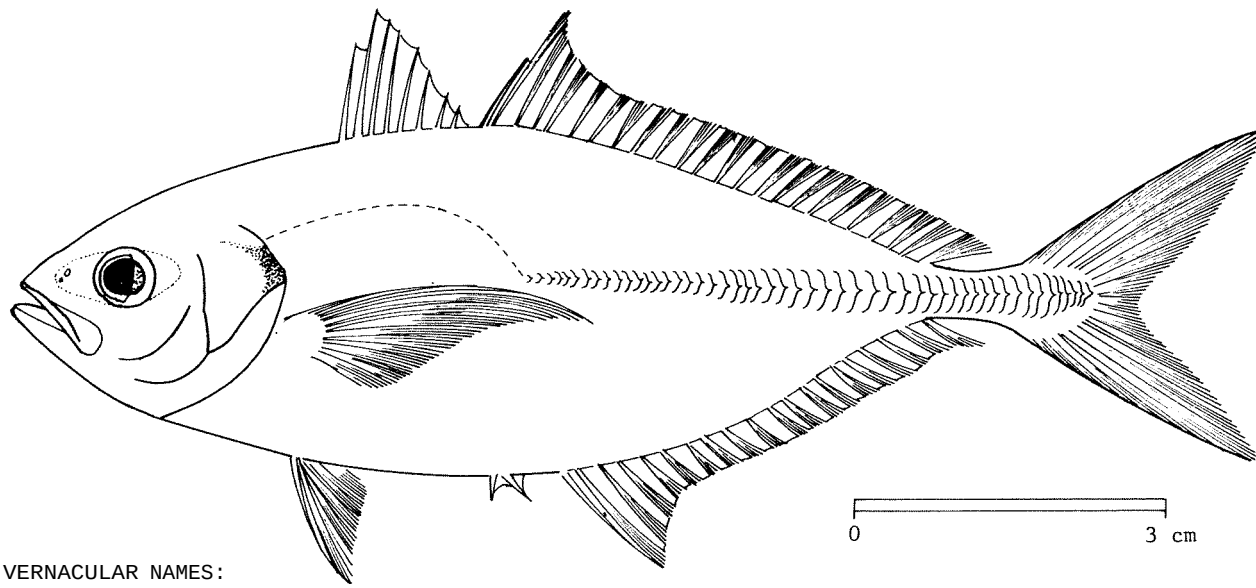
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Alepes djeddaba (Forsskål, 1775)

SYNONYMS STILL IN USE: *Atule djeddaba* (Forsskål, 1775)



VERNACULAR NAMES:

FAO: En - Djeddaba crevalle
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A compressed, oblong carangid. *Dorsal and ventral profiles equally and evenly convex. Eye diameter 3.5 to 4.0 times in head length.* Maxilla reaching to below anterior third of eye. *Teeth in a single series in each jaw;* vomer and palatines (roof of mouth) toothed. Gill rakers 27 to 31 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; 2nd dorsal fin with 1 spine and 23 to 25 soft rays. Anal and dorsal fin bases nearly equal in length. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 18 to 20 soft rays. Breast scaled. *Lateral line strongly arched anteriorly, arched portion a little shorter than half the length of straight portion; the latter beginning under 2nd to 4th rays of 2nd dorsal fin; 33 to 51 scutes, the deepest 9 to 10 times in body depth.*

Colour: green/blue above, silvery white below; a dusky spot on upper edge of gill cover; *fins pale yellow, especially caudal fin.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

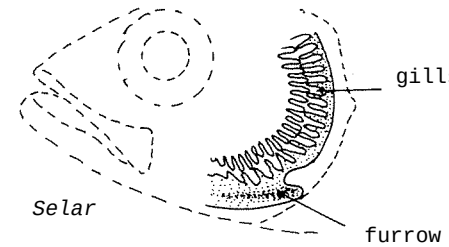
Alepes melanoptera: spinous dorsal fin black (pale in *A. dieddaba).*

Alepes kalla: straight part of lateral line beginning below 4th to 6th soft dorsal fin rays (below 2nd to 4th fin rays in *A. dieddaba).*

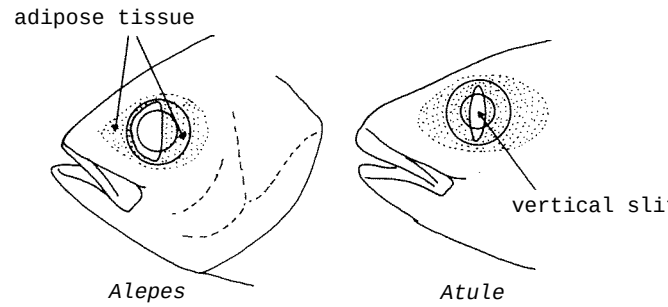
Selar species: a deep furrow on lower margin of gill opening (visible when gill cover lifted).

Atule mate: adipose tissue covering all but central slit of eye (anterior half of eye exposed in *Alepes*); also, last ray of soft dorsal and anal fins somewhat resembling a finlet, but not separate from rest of fin.

Other carangid genera: either lack scutes (e.g. *Trachinotus),* or scales embedded (Alectis), or possess finlets *(Decapterus, Megalaspis),* or jaw teeth enlarged and in more than one series in upper jaw *(Caranx).*



Selar



Alepes *Atule*

SIZE:

Maximum: 18 cm; common: 12 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

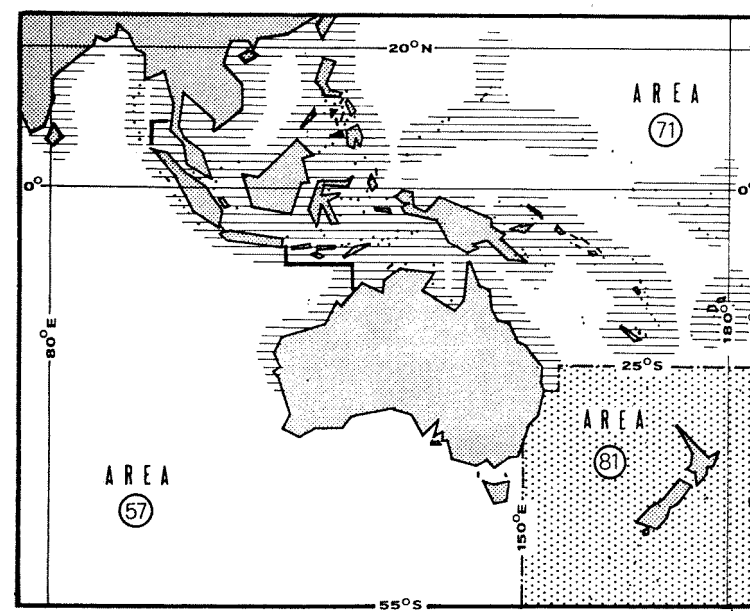
Throughout most warm coastal waters of area.

Inhabits shallow coastal waters.

Feeds on small crustaceans.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with bottom trawls, purse seines and traps.

Marketed mostly fresh.

CARAN Alep 2

1974

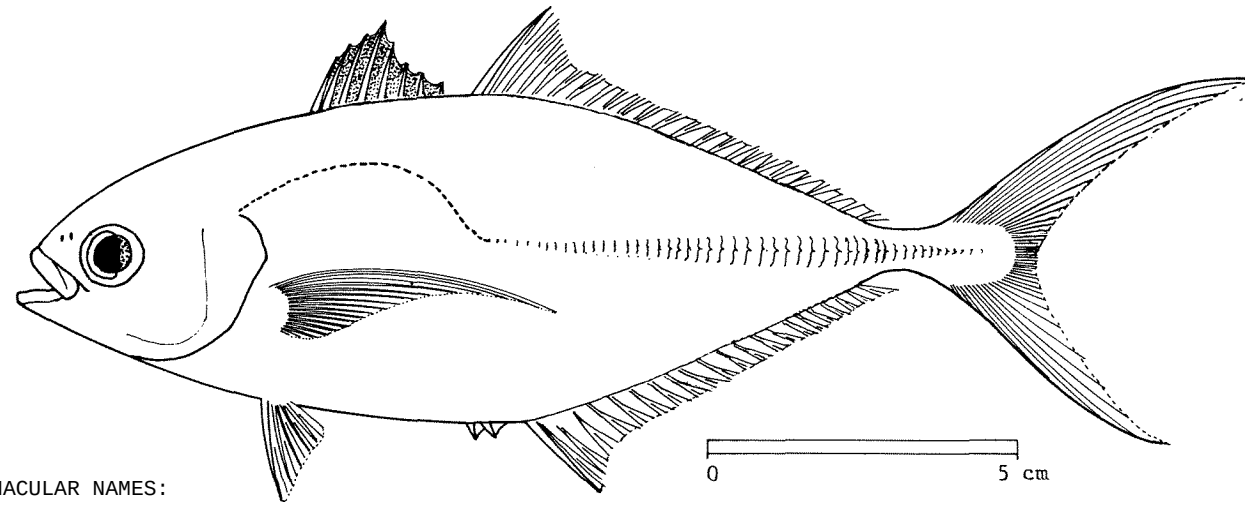
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Alepes melanoptera Swainson, 1839

SYNONYMS STILL IN USE: *Atule malam* Bleeker, 1851
Atule pectoralis Chu & Cheng, 1958



VERNACULAR NAMES:

FAO: En - Blackfin crevalle
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An oblong, moderately compressed carangid. *Dorsal and ventral profiles equally and evenly convex. Eye diameter 4.0 to 4.5 times in head length.* Upper jaw reaching to below anterior part of eye. *Teeth in a single series in each jaw;* vomer and palatines (roof of mouth) toothed. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; 2nd dorsal fin with 1 spine any 23 to 24 soft rays. Anal fin base shorter than 2nd dorsal fin base. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 20 to 21 soft rays. Breast fully scaled. *Lateral line strongly arched anteriorly, arched portion half the length of straight portion, the latter beginning under 2nd to 4th rays of 2nd dorsal fin; 48 to 56 scutes present, deepest scute 9 to 10 time. in body depth.*

Colour: blue/green above, silvery below; *spinous dorsal fin distinctly black;* other fins pale yellow; juveniles with a number of dusky bands from back to midl+ine of body.

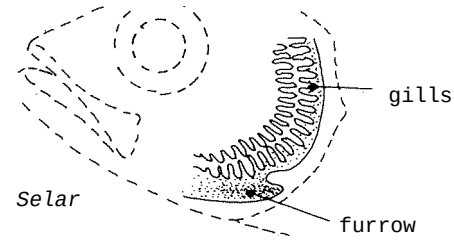
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

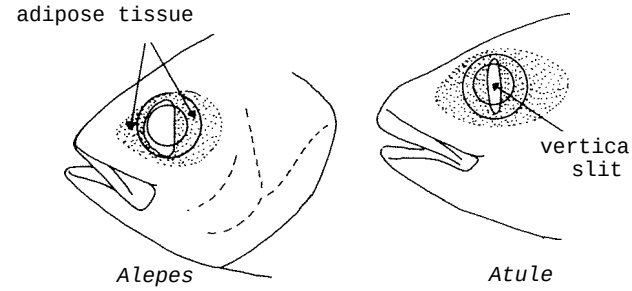
Alepes djeddaba and *A. kalla*: spinous dorsal fin pale (black in *A. melanoptera*).

Selar species: a deep furrow on lower margin of gill opening (visible when gill cover lifted).

Atule mate: adipose tissue covering all but central slit of eye (anterior half of eye exposed in Alepes); also, last ray of dorsal and anal fins somewhat resembling a finlet, but not separate from rest of fin.

Other carangid genera: either lack scutes (e.g. *Trachinotus*), or scales embedded *(Alectis),* or possess finlets (*Decapterus, Megalaspis*), or jaw teeth enlarged and in more than one series in upper jaw *(Caranx).*





SIZE:

Maximum: 30 cm; common: 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

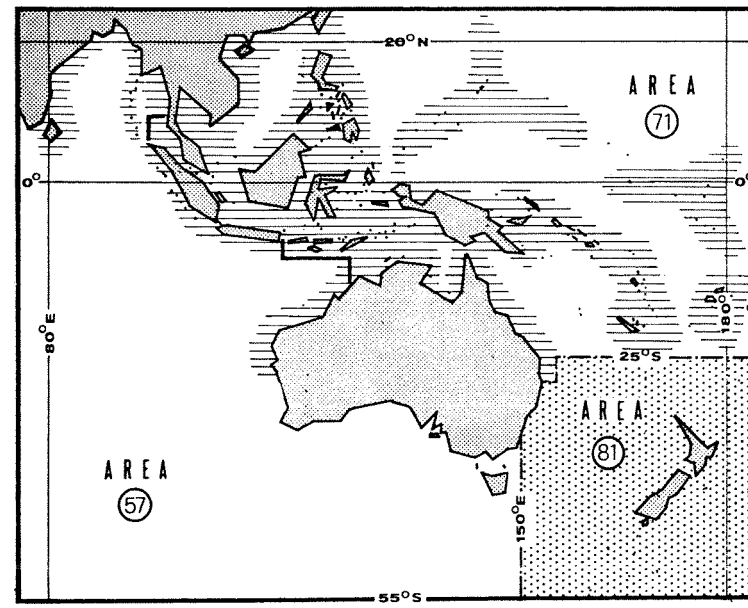
Throughout most warm coastal waters of area.

Inhabits shallow coastal waters.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with bottom trawls, traps and purse seines.

Marketed mostly fresh.

CARAN Atrop 1

1974

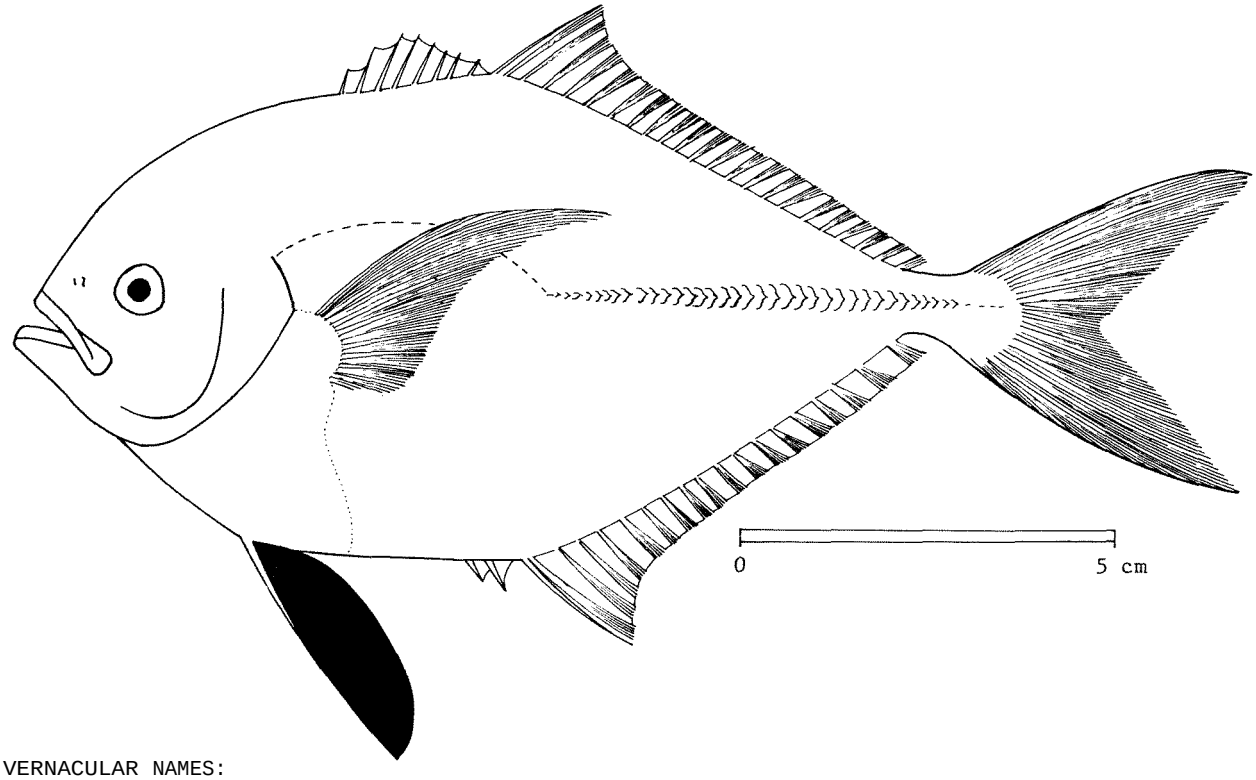
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Atropus atropus (Bloch & Schneider, 1801)

SYNONYMS STILL IN USE: None



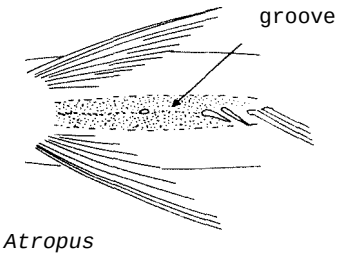
VERNACULAR NAMES:

FAO: En - Kuweh trevally
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A deeply ovate, strongly compressed carangid. Profile of head above eye strongly convex. *A deep groove between bases of anal and pelvic fins, accommodating anus, pre-anal spines and pelvic fins.* 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; 2nd dorsal fin with 1 spine and 22 soft rays. Pectoral fins falcate. *Anal fin with 2 detached spines* in abdominal grooves, followed by 1 normal spine and 18 soft rays. Weak scutes along straight part of lateral line, the latter much longer than anterior arched portion.



Atropus
(viewed from below)

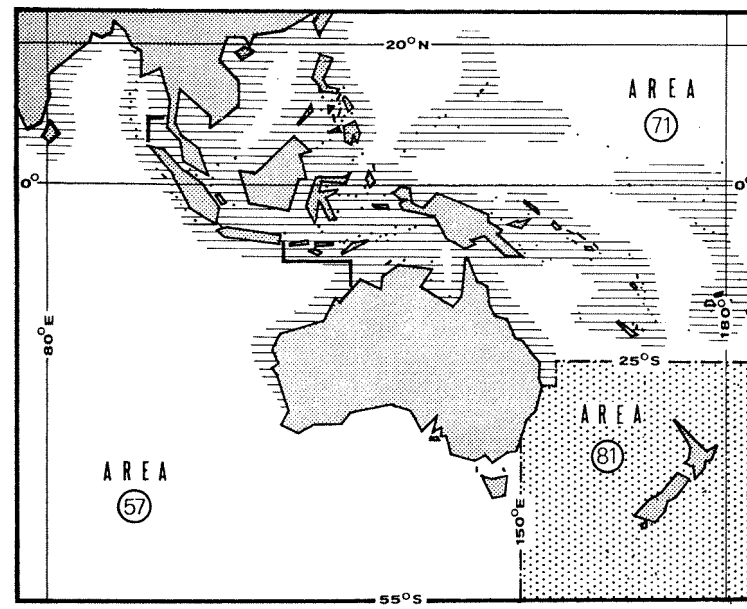
Colour: blue/green above, silvery white below; pelvic fins black, other fins pale or light yellow.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other carangid genera: lack deep groove along belly.

SIZE:

Maximum: 30 cm; common: 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits coastal areas of various marine habitats.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with bottom trawls and traps.

Marketed mostly fresh.

CARAN Carang 1

1974

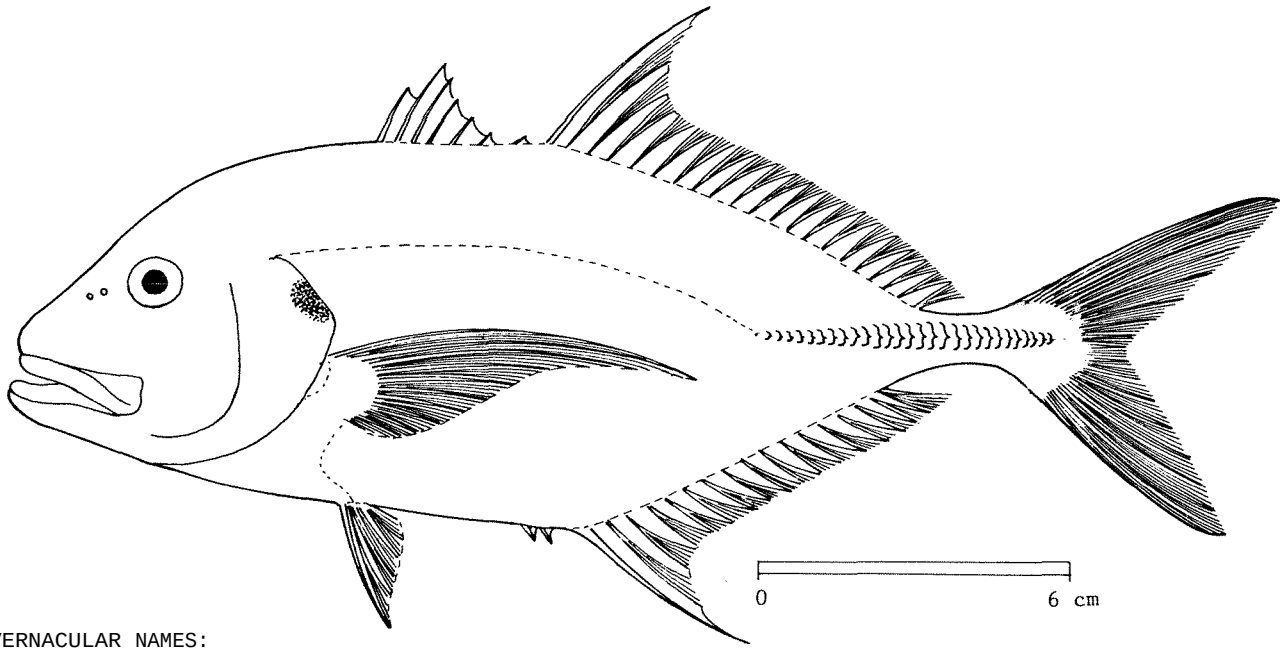
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Carangoides chrysophrys Valenciennes, 1833

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Longnose cavalla
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A compressed, ovoid carangid. Head profile smoothly convex at nape but straight anteriorly. Eye diameter 4.5 to 5.0 times in head length and twice in snout length. Upper jaw reaching to below front 1/4 of eye. Teeth in jaws in villiform bands; a few outer teeth may be enlarged; minute teeth on vomer and palatines (roof of mouth) and tongue. *Gill rakers 16 on lower limb of 1st arch.* 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; *2nd dorsal fin with 1 spine and 19 to 20 soft rays;* 1st dorsal fir. ray 0.9 to 1.7 times in head length. Dorsal and anal fin bases nearly equal. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 15 to 16 soft rays. *Breast naked from anterior third of pelvic fin up to and including base of pectoral fin and forward to isthmus.* Anterior part of lateral line forming a long, low arch, much longer than straight portion, becoming straight under 12th to 14th soft dorsal fin rays; 17 *to 26 feeble scutes.*

Colour: green/blue above, silvery white below; a black spot on gill cover; fins pale.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

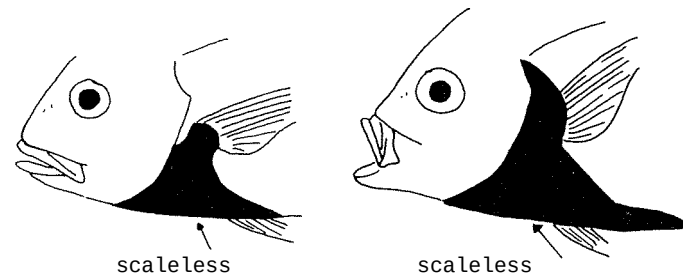
Carangoides malabaricus: head profile more strongly arched, 20 to 23 soft dorsal fin rays and 17 to 18 soft anal fin rays (19 to 20 and 15 to 16 in C. *chrysophrys);* also, scaleless patch on breast extending dorsally to lateral line (only to pectoral fin base in *C. chrysophrys).*

Carangoides ciliarius: head profile strongly arched, with hump at nape, anterior lobes of dorsal and anal fins produced and filamentous, other fin rays filamentous in large fishes; also, gill rakers 20 to 23 on lower part of 1st gill arch (16 in C. *chrysophrys).*

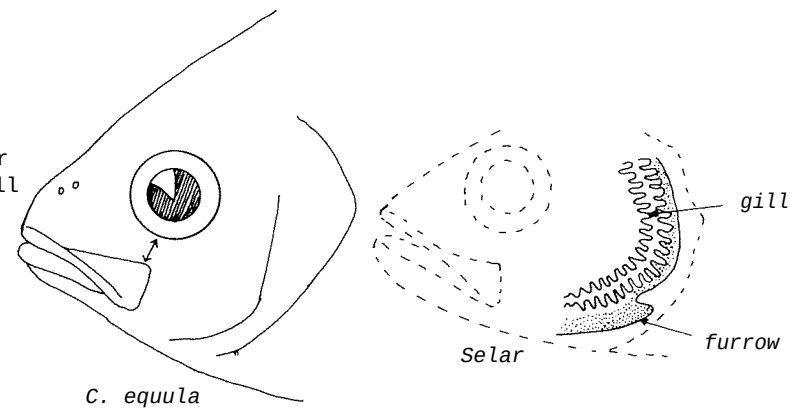
Carangoides equula: eye much larger (3.5 times in head length; 4.5 to 5.0 times in *C. chrysophrys)* and less than 1 eye diameter from mouth.

Caranx species: enlarged conical teeth in jaws and large, strong scutes along straight portion of lateral line.

Other carangid genera: either lack scutes *(Trachinotus,* etc.), or scales embedded in skin *(Alectis),* or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow present on lower margin of gill opening *(Selar).*



C. chrysophrys *C. malabaricus*



C. equula

SIZE:

Maximum: 60 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

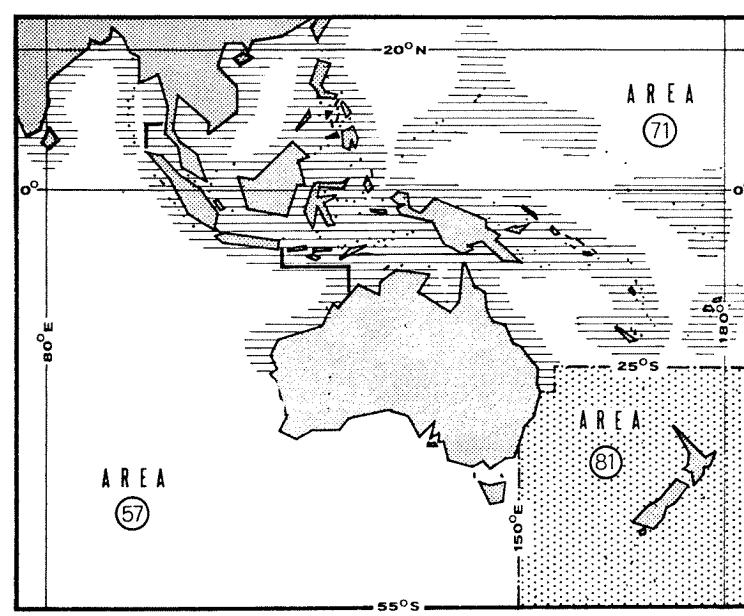
Throughout most warm coastal waters of area.

Inhabits shallow coastal waters down to 60 m; juveniles occur in inshore areas.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with bottom trawls, gill nets and traps.

Marketed mostly fresh; also dried-salted.

CARAN Carang 2

1974

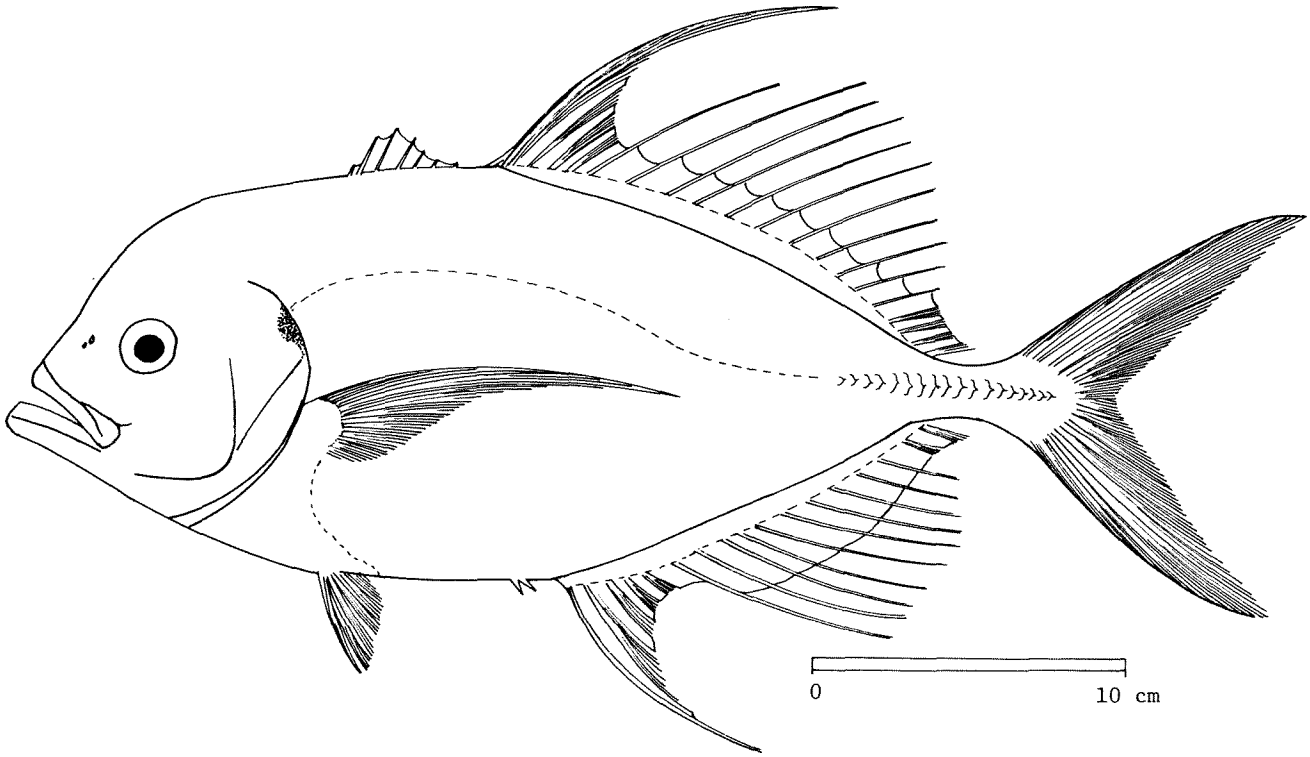
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Carangoides ciliarius (Rüppell, 1830)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Longfin cavalla
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An ovate, strongly compressed carangid. Head profile steep, with a slight notch before eye and a hump at nape. Teeth in jaws in villiform bands; teeth present on vomer and palatines (roof of mouth). Gill rakers 20 to 23 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; *2nd dorsal fin with 1 spine and 20 to 21 soft rays; 1st dorsal fin ray 0.5 to 0.7 times in head length.* Anal and dorsal fin bases subequal; dorsal and anal fins elongate anteriorly, forming falcate lobes (specimens larger than 26 cm have soft dorsal and anal fin rays filamentous). Pectoral fins long and falcate. *Anal fin with 2 detached spines followed by 1 spine and 16 to 17 soft rays.* Breast naked to behind pelvic fin and up to and including base of pectoral fin; *15 to 20 feeble scutes on straight portion of lateral line, which starts below 13th dorsal fin ray;* curved portion moderately arched, 1/4 longer than posterior straight portion.

Colour: blue above, silvery below; occasional darker bands across body in juveniles; fins pale or yellow; black spot on operculum.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Carangoides malabaricus: 20 to 23 soft dorsal fin rays, 17 to 18 soft anal fin rays (20 to 21 and 16 to l7 in *C. ciliarius*); also, scaleless patch on breast extending dorsally to lateral line (to pectoral fin base in C. *ciliarius)* and fin rays never filamentous.

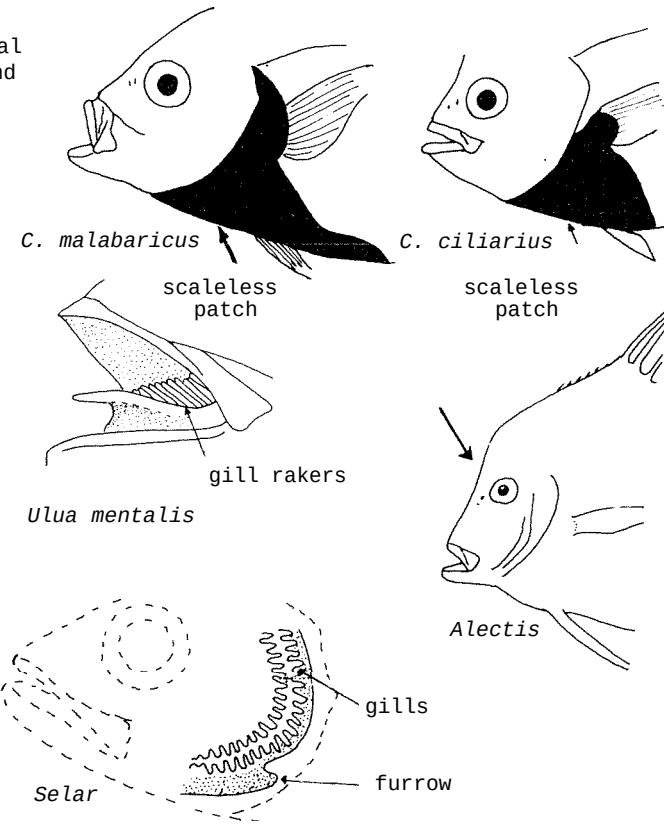
Carangoides chrusophrus: gill rakers,16 on lower branch of the lst arch (20 to 23 in *C. ciliarius),* and a straight profile in front of eye, without prominent hump at nape.

Caranx species: enlarged conical teeth in jaws and large, strong,scutes along straight portion of lateral line.

Ulua mentalis: gill rakers long and feathery, reaching into mouth; also, an angulate, heavy lower jaw.

Aleetis species: head profile even steeper; also, scales embedded in skin.

Other carangid genera: either lack scutes *(Traehinotus,* etc.), or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow present on lower margin of gill opening *(Selar).*



SIZE:

Maximum: 60 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

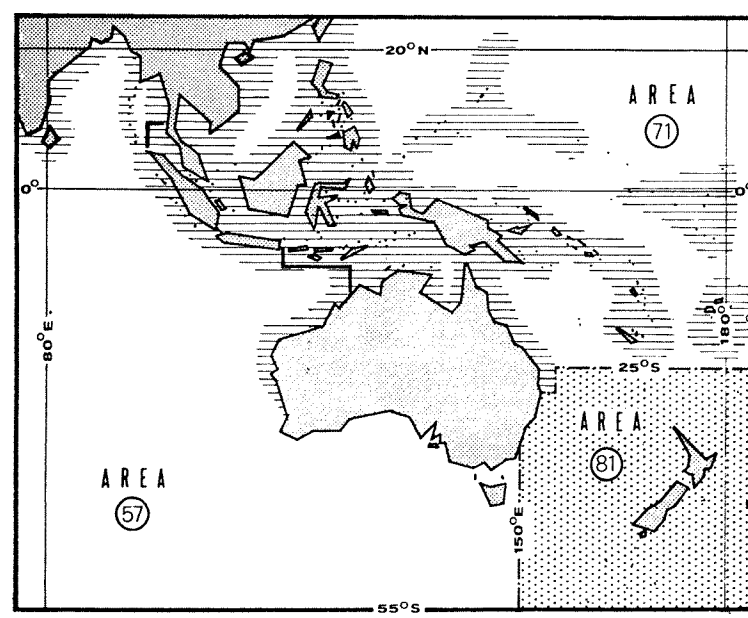
Throughout most warm coastal waters of area.

Inhabits coastal waters and coral and rocky reefs; juveniles occur in shallow inshore areas.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with bottom trawls, gill nets and traps.

Marketed mostly fresh; also dried-salted.

CARAN Carang 3

1974

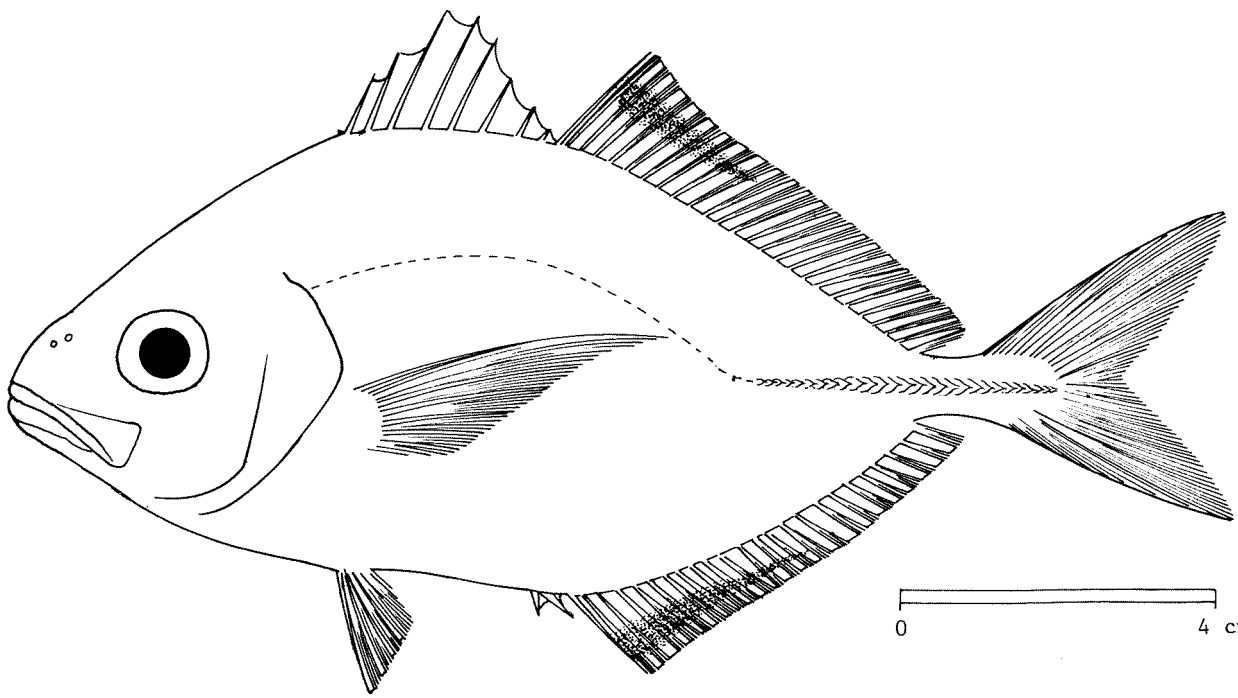
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Carangoides equula (Temminck & Schlegel, 1842)

SYNONYMS STILL IN USE: *Carangoides acutus* Kotthaus, 1974



VERNACULAR NAMES:

FAO: En - Whitefin cavalla
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A deep-bodied, much compressed carangid. Head profile almost straight. Eye diameter 3.5 times in head length. Upper jaw reaching to below anterior half of eye. Teeth in both jaws in villiform bands. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; 2nd dorsal. fin with 1 spine and about 25 soft rays. Pectoral fins long and falcate. Anal and dorsal fin bases about equal in length. *Anal fin with 2 detached spines,* followed by 1 spine and 23 soft rays. *Breast fully sealed.* Anterior part of lateral line strongly arched, becoming straight under 13th soft dorsal fin ray, arched portion much longer than straight portion.

Colour: blue/green above, silvery below; soft dorsal and anal fins yellow but dusky black below *fin margin on anterior half of fins, and chalky white anterior tips;* caudal and pelvic fins yellow; vertical bands present on body, sometimes vague.

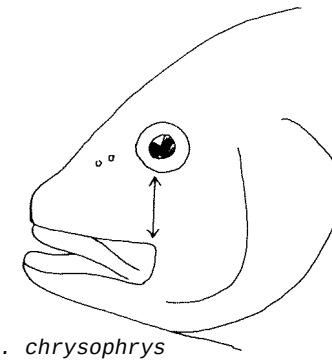
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA

Carangoides chrysophrys: eye much smaller (diameter 4.5 to 5.0 times in head length; 3.5 times in *C. equula)* and more than 1 eye diameter from mouth.

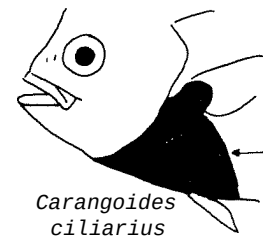
Other *Carangoides* species: head profile usually steeper and more convex; also, dorsal and anal fins not so distinctively coloured and scales often absent on breast.

Caranx species: enlarged conical teeth in jaws and large, strong scutes along straight portion of lateral line.

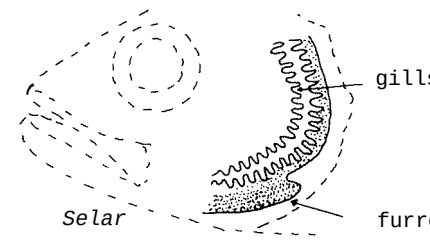
Other carangid genera: either lack scutes *(Trachinotus,* etc.), or scales embedded in skin *(Alectis),* or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow on lower margin of gill opening *(Selar).*



C. chrysophrys



Carangoides ciliarius



SIZE:

Maximum: 22 cm; common: 16 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

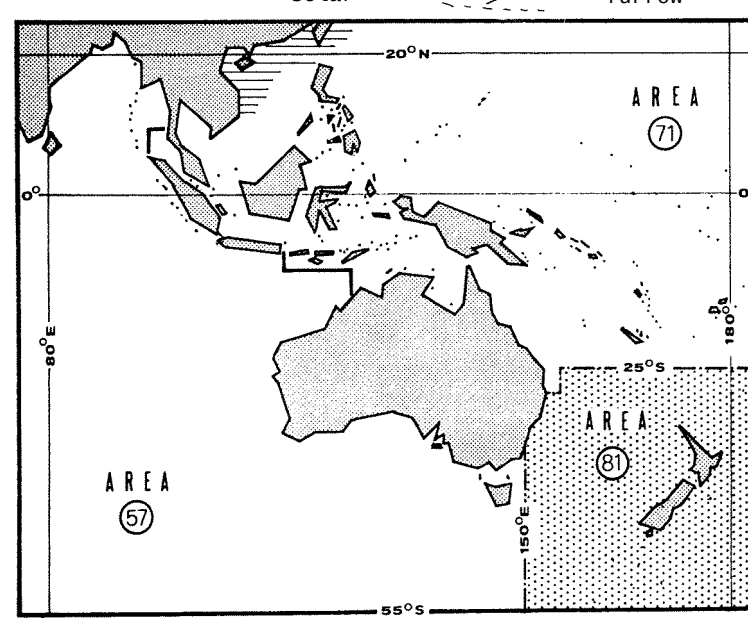
Confined to the northern parts of the South China Sea, and the East China Sea.

Inhabits coastal offshore areas down to 100 m, primarily over mud.

Feeds on small crustaceans and fishes.

PRESENT FISHING GROUNDS:

Offshore areas throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught only with bottom trawls.

Marketed mostly fresh.

CARAN Carang 4

1974

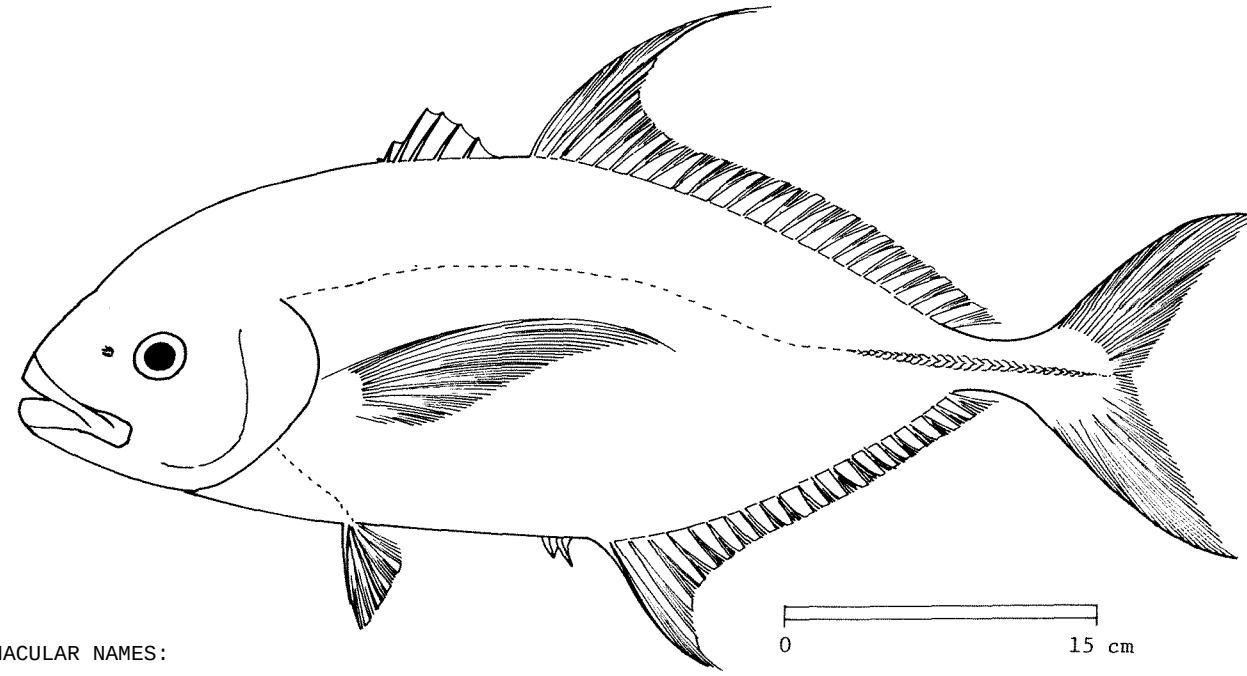
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Carangoides ferdau (Forsskål, 1775)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Ferdau's cavalla
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An oblong, compressed carangid. Head profile evenly convex. Eye low-set, at level of snout tip. Teeth in jaws in villiform bands; vomer and palatines (roof of mouth) toothed. Gill rakers 18 to 19 on lower limb of 1st gill arch. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 7 normal spines; 2nd dorsal fin falcate, with 1 spine and 25 to 29 soft rays. Pectoral fins falcate. *Anal fin falcate, with 2 detached spines,* followed by 1 spine and 21 to 23 soft rays. *Breast with a triangular scaleless area from pelvic fin to halfway between the isthmus and pectoral fin base. Lateral line arched anteriorly, straight part shorter than arched portion, commencing below posterior third of 2nd dorsal; 24 to 26 feeble scutes on lateral line.*

Colour: blue on back, silvery white on sides; fins green or dusky purple with a white edge to anal and caudal fins; juveniles with darker vertical cross-bars.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Carangoides equula: dorsal and anal fins not falcate, breast fully scaled.

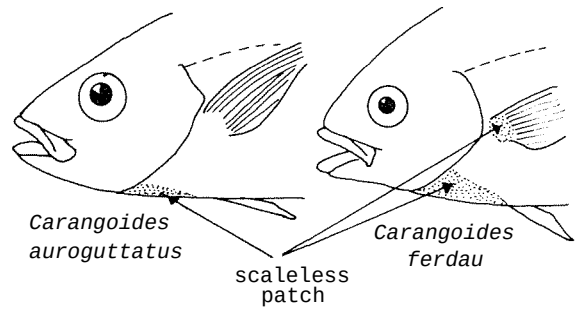
Carangoides jordani: gill rakers 32 to 33 (18 to 19 in C. *ferdau);* also, 29 to 32 soft dorsal fin rays and 24 to 26 soft anal fin rays (25 to 29 and 21 to 23 in *C. ferdau*).

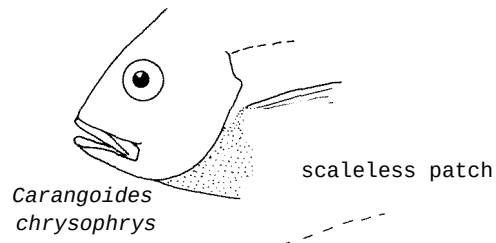
Other *Carangoides* species: scaleless patch on breast either extends to pectoral base (or beyond), or reaches at most only 1/3 distance to pectoral base.

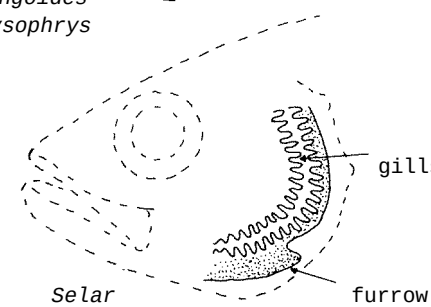
Caranx ignobilis: smaller scaleless area on breast (as in *Carangoides auroguttatus);* also, only 16 to 17 soft anal fin rays (21 to 23 in *C. ferdau).*

Caranx species: breast usually fully scaled, enlarged conical teeth in jaws and large, strong scutes along straight portion of lateral line.

Other carangid genera: either lack scutes *(Trachinotus,* etc.), or scales embedded *(Alectis),* or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow on lower margin of gill opening *(Selar).*







SIZE:

Maximum: 70 cm; common: 50 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

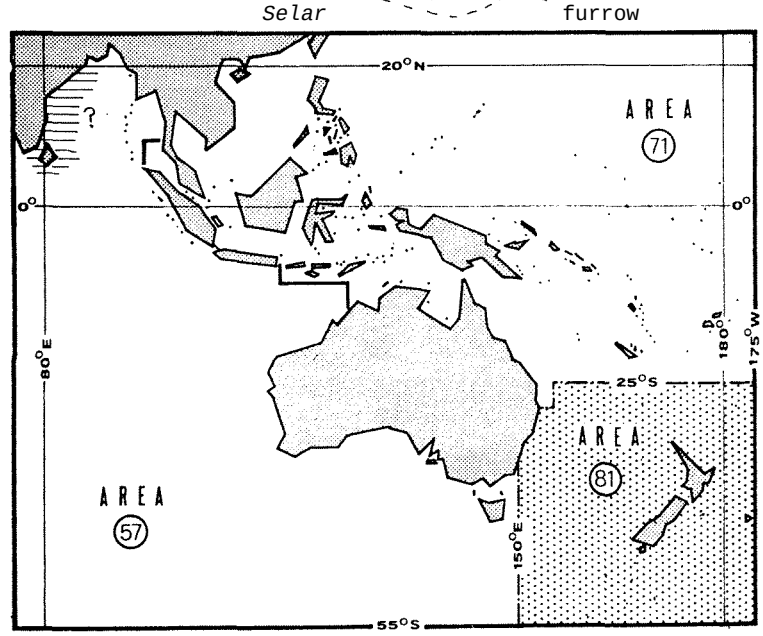
Records unreliable; possibly in western part of area, but perhaps replaced by *C. jordani* in Indonesia and western Pacific; confused with *C. nitida* in western Indian Ocean.

Inhabits coral and rocky reefs down to 60 m.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with gill nets, handlines and traps.

Marketed mostly fresh; also dried-salted.

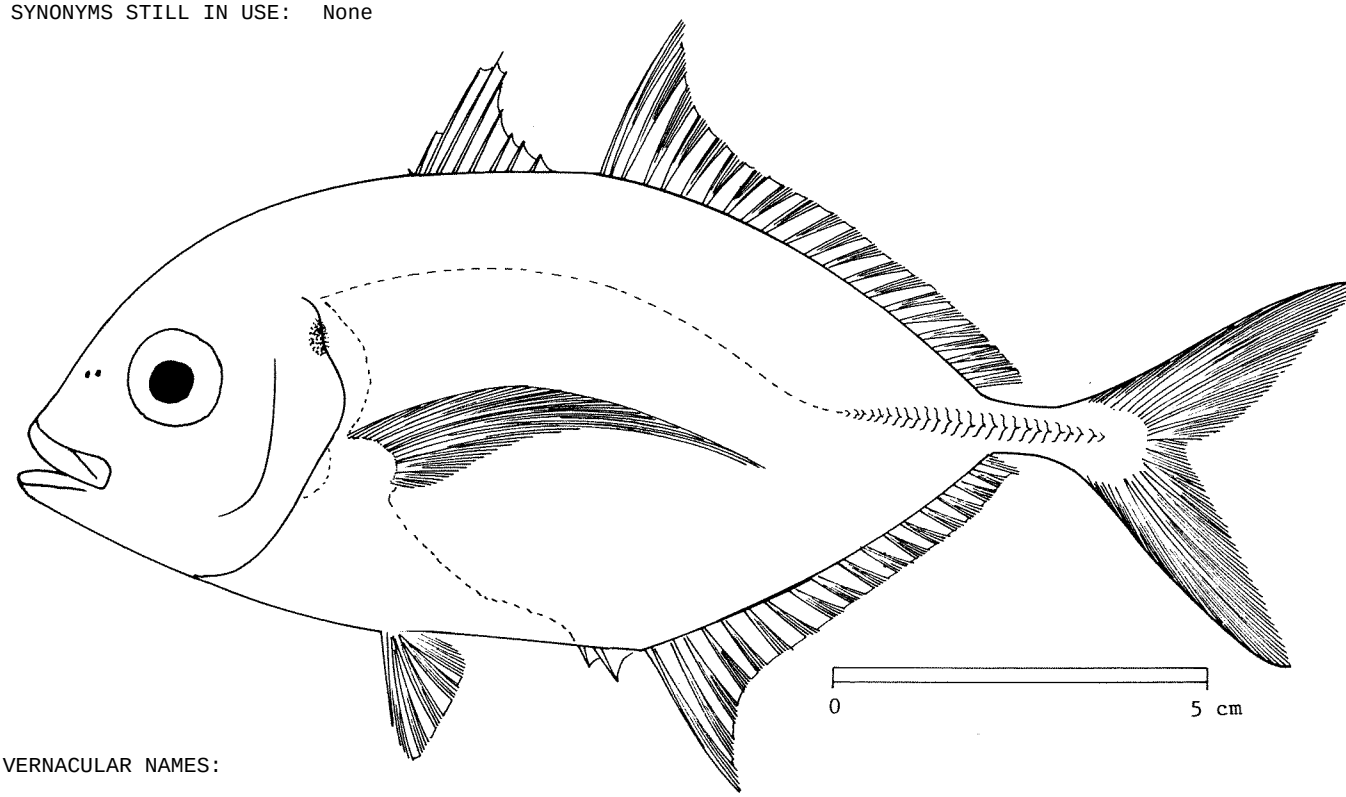
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Carangoides malabaricus (Bloch & Schneider, 1801)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Malabar cavalla
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A deep-bodied, much compressed carangid. Head profile steep, forming a notch in front of eye, particularly when mouth is open. *Eye diameter 2.4 to 4.0 times in head length, less than half length of snout.* Upper jaw reaching to below front border of eye. Teeth in jaws in villiform bands, outer teeth somewhat enlarged; vomer and palatines (roof of mouth) and tongue toothed. Gill rakers 23 to 26 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; *2nd dorsal fin with 1 spine and 20 to 23 soft rays;* 1st dorsal fin ray 0.8 to 1.8 times in head length. Dorsal and anal fin bases equal. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 17 to 18 soft rays. *Belly and breast naked, posteriorly to anus anteriorly to head and up to lateral line.* Lateral line anteriorly forming a long low arch, twice as long as straight portion, the latter beginning under 13th to 14th soft dorsal fin rays; 10 *to 28 feeble scutes.*

Colour: green/blue above, silvery white below; a black blotch on gill cover; fins pale yellow, some dark.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

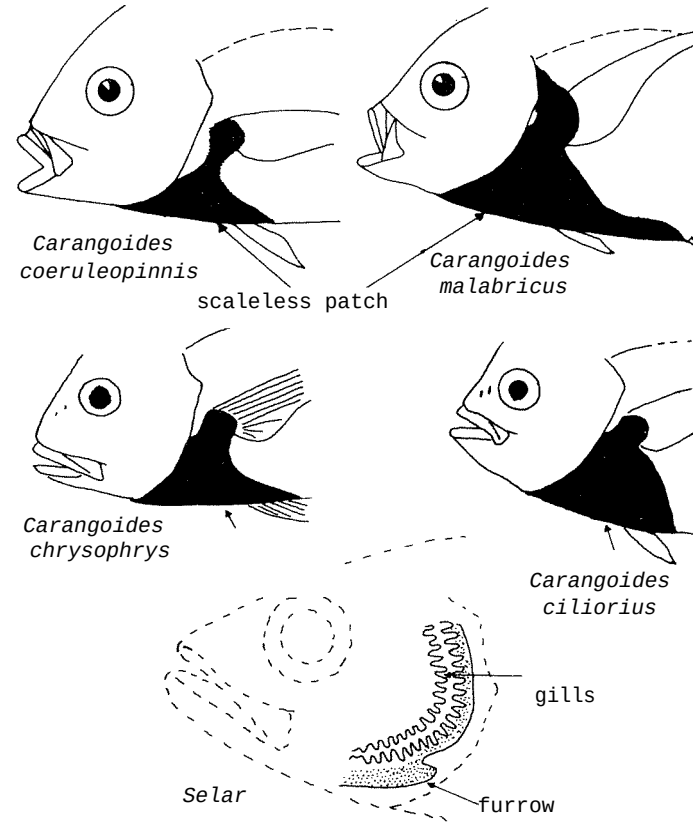
Carangoides coeruleopinnatus: scaleless area on breast not extending above level of pectoral fin base; also, 15 to 18 gill rakers on lower part of 1st arch (23 to 26 in *C. malabaricus).*

Carangoides chrysophrys: anterior head profile less strongly arched, 19 to 20 soft dorsal fin rays and 15 to 16 soft anal fin rays (20 to 23 and 17 to 18 in *C. malabaricus*); also, scaleless patch on breast extending dorsally only to the pectoral fin base (to lateral line in *C. malabaricus*).

Carangoides ciliarius: 20 to 21 soft dorsal fin rays, 16 to 17 soft anal fin rays (20 to 23 and 17 to 18 in *C. malabaricus);* also, scaleless patch on breast not reaching dorsally beyond pectoral fin base and dorsal and anal fin rays filamentous in large fishes

Caranx species: enlarged conical teeth in jaws and large, strong scutes along straight portion of lateral line.

Other carangid genera: either lack scutes *(Trachinotus,* etc.), or scales embedded *(Alectis),* or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow on lower margin of gill opening *(Selar).*



SIZE:

Maximum: 60 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

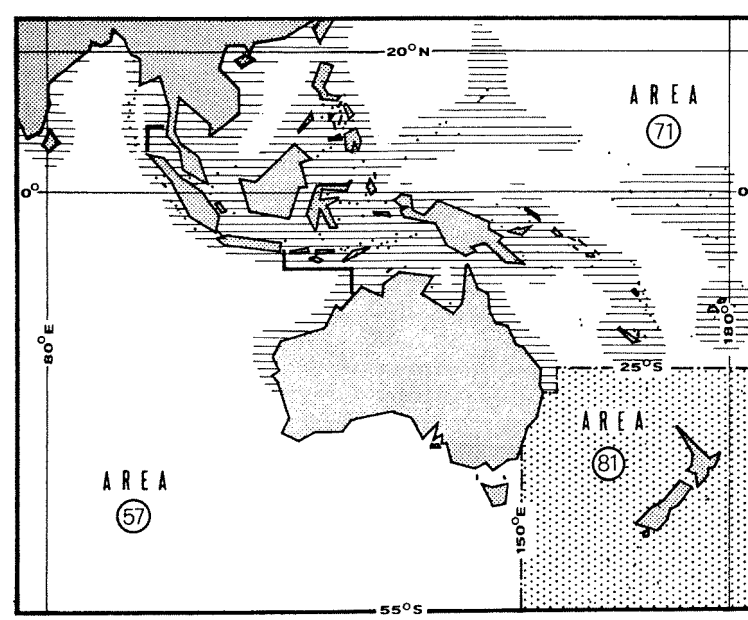
Throughout most warm coastal waters of area.

Inhabits coastal waters and coral and rocky reefs; juveniles inhabit shallow inshore areas.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with bottom trawls, gill nets and traps.

Marketed mostly fresh; also dried-salted.

CARAN Caranx 1

1974

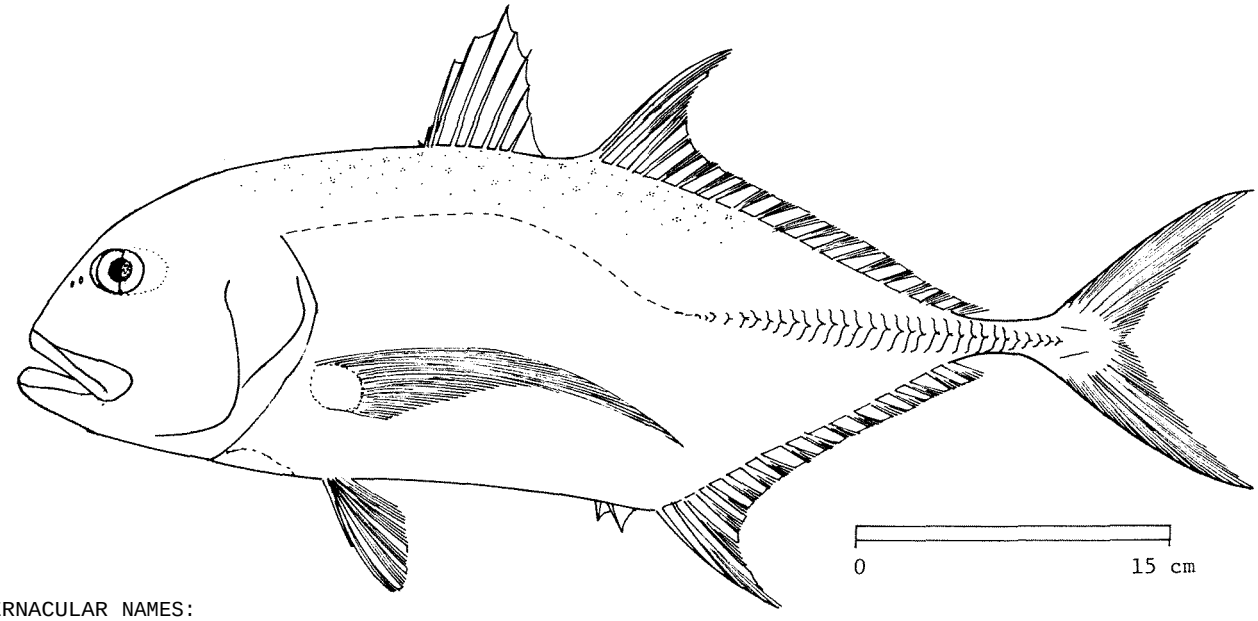
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Caranx ignobilis (Forsskål, 1775)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Yellowfin jack
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A deep-bodied, slightly compressed robust carangid. Head profile steep and strongly curving above eye; body profile from lower jaw to anal fin nearly straight. Eye diameter 3.3 (10 cm-fish) to 7.5 (115 cm-fish) times in head length. Upper jaw reaching to below posterior eye margin. *Upper jaw with an outer row of strong conical teeth, widely spaced in adults, and an inner band of villiform teeth; lower jaw with a single row of strong conical teeth;* fine teeth on tongue, vomer and palatines (roof of mouth). Gill rakers 11 to 16 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; 2nd dorsal fin with 1 spine and 19 to 20 soft rays; 1st dorsal fin ray 1.4 to 1.7 times in head length. Base of anal fin shorter than that of dorsal fin. Pectoral fins falcate. *Anal fin with 2 detached spires,* followed by 1 spine and 16 to 17 soft rays. *Breast with a small naked patch anterior to pelvic* fins and another naked area at base of pectoral fins. *Lateral line moderately arched anteriorly, joining straight portion below 6th to 7th soft dorsal fin ray, straight portion somewhat shorter than arched portion; 28 to 30 scutes.*

Colour: head and body dusky above, silvery below; larger specimens with small, fine black dots on body, head and operculum; dorsal fins dusky with tip of 1st ray white, anal fin dusky or yellow with tip of 1st ray white; in large specimens males markedly darker than females.

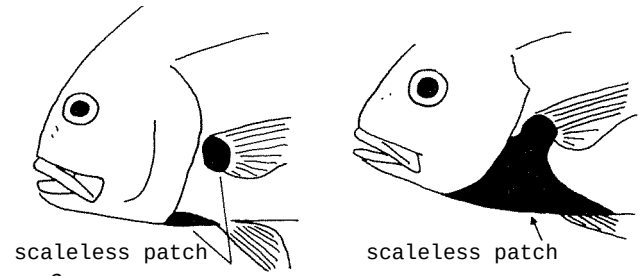
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

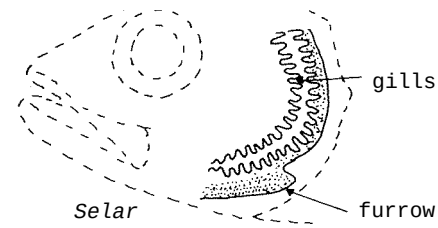
Caranx celetus: soft anal fin rays 18 to 19 and gill rakers 18 to 20 (16 to 17 and 11 to 16 in *C. ignobilis).*

Other *Caranx* species: breast fully scaled.

Carangoides species: jaw teeth usually not enlarged, scutes less strongly developed and breast with a moderate or large scaleless area.

Other carangid genera: either lack scutes *(Traehinotus,* etc.), or scales embedded in skin *(Alectis),* or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow present on lower margin of gill opening *(Selar).*





SIZE:

Maximum: 115 cm; common: 60 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

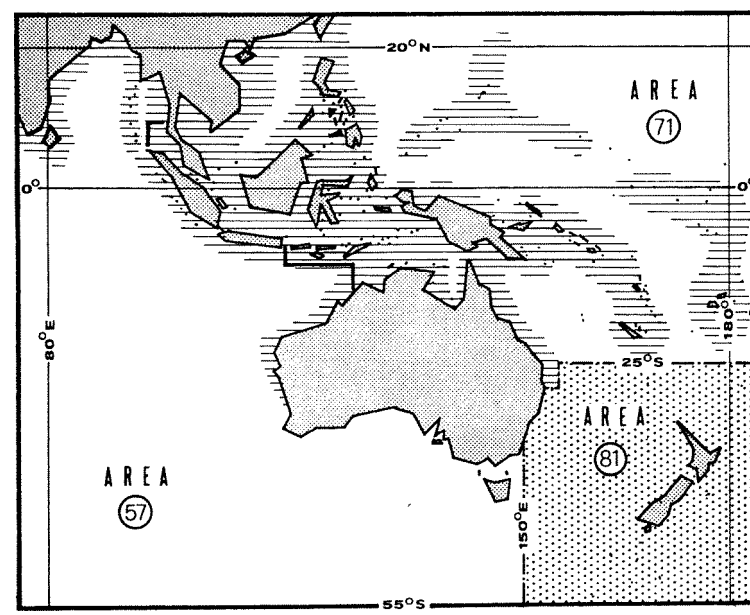
Throughout most warm coastal waters of area.

Inhabits coral and rocky reefs.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORM OF UTILIZATION:

Separate statistics are not reported for this species. Malaysia reports a statistical category *"Caranx* species" (1972: 5 700 tons). The total. reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with gill nets and handlines.

Marketed mostly fresh.

CARAN Caranx 2

1974

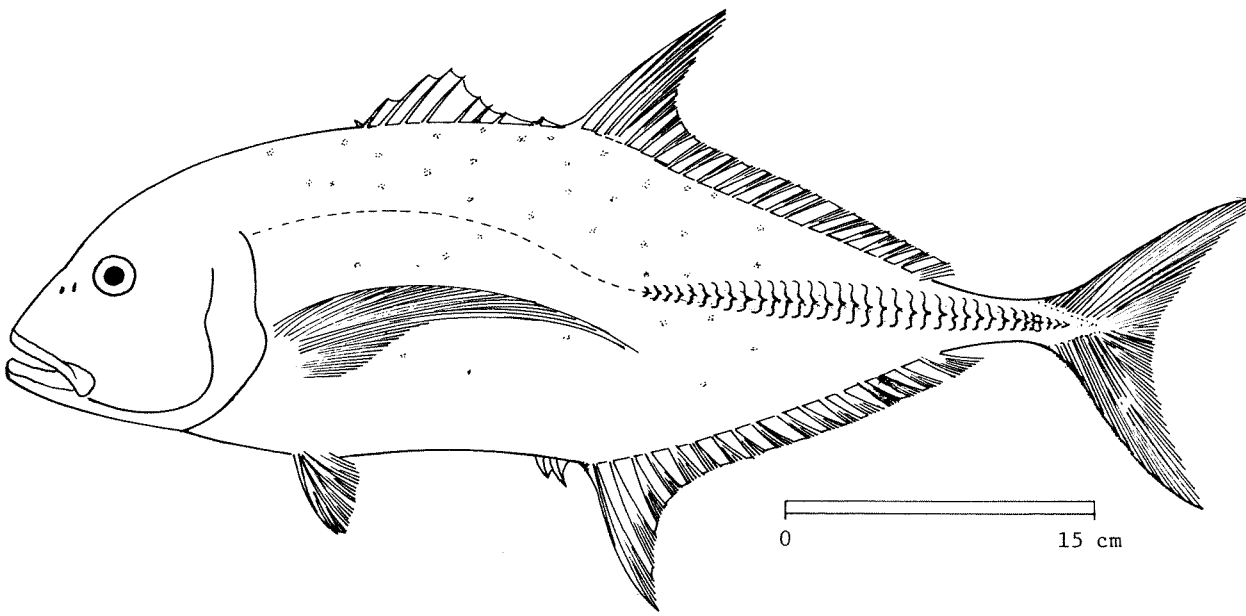
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Caranx melampygus Valenciennes, 1833

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Bluefin jack
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An oblong, strongly compressed carangid. Head profile fairly steep, sharply curved above eye in adult, becoming straight on back; ventral profile straight. Eye diameter 4.0 to 8.3 times in head length (decreasing with age); length of snout 2.3 to 3.2 times in head length. *Upper jaw reaching to below front edge of pupil in juveniles and to front edge of eye in adults. Teeth in upper jaw large, conical, bordering an inner band of fine teeth; lower jaw with a single row of large conical teeth;* minute villiform teeth on tongue, vomer and palatines (roof of mouth). Gill rakers 17 to 21 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; 2nd dorsal fin with 1 spine and 20 to 24 soft rays. Soft anal land dorsal fin bases approximately equal. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 19 to 20 soft rays. *Breast fully scaled.* Lateral line moderately arched, becoming straight below 3rd dorsal fin ray. *Curved part of lateral line somewhat shorter than straight part*; 30 to 40 scutes, the largest 8 to 9 times in body depth.

Colour: body green/blue, darker above, silvery below; tips of dorsal and anal fins white; *black spots on back and upper sides and on dorsal and anal fins.*

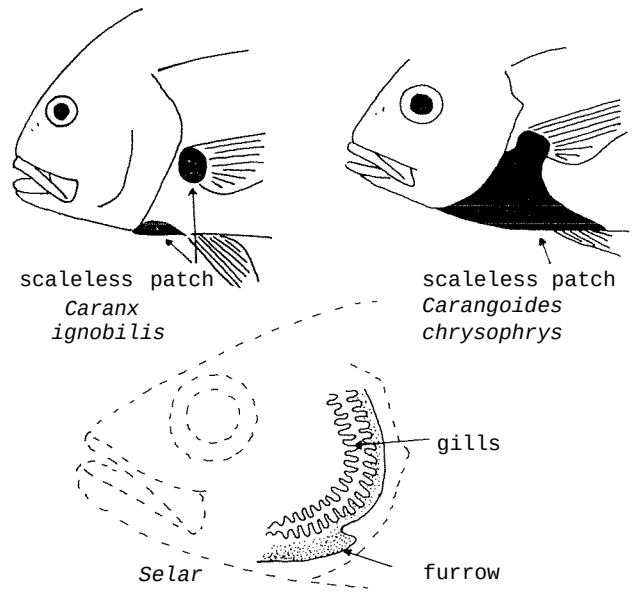
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Caranx ignobilis and *C. celetus:* a scaleless area on breast; also, gill rakers 11 to 16 in *C. ignobilis* (17 to 21 in C. *melampygus).*

Other *Caranx* species: usually have less than 19 soft anal rays and upper jaw reaching to posterior margin of eye or pupil (to anterior margin in C. *melampygus).*

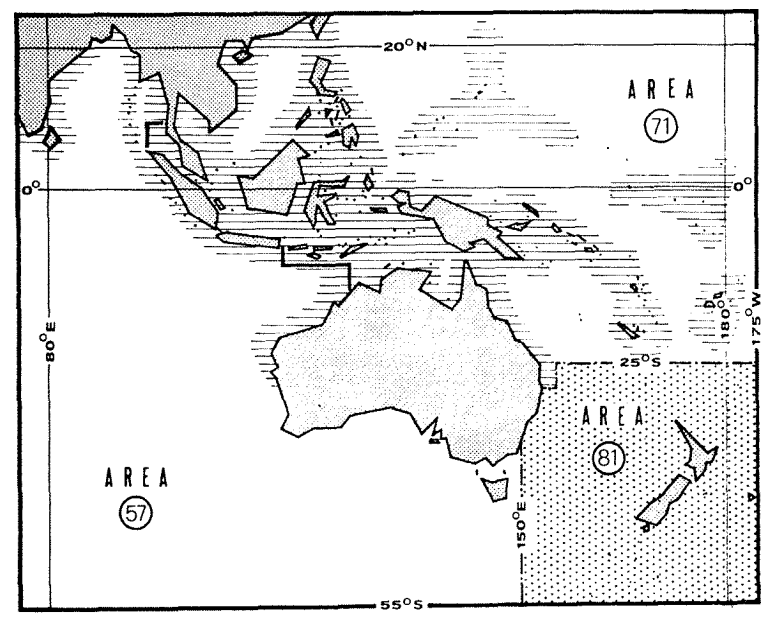
Carangoides species: jaw teeth usually not enlarged, scutes less strongly developed and breast with a moderate or large scaleless area.

Other carangid genera: either lack scutes *(Trachinotus,* etc.), or scales embedded in skin *(Alectis),* or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow present on lower margin of gill opening *(Selar).*



SIZE:

Maximum: 100 cm; common: 60 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits coral and rocky reefs.

Feeds on invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORKS OF UTILIZATION

Separate statistics are not reported for this species. Malaysia reports a statistical category *"Caranx* species" (1972: 5 700 tons). The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tens (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with gill nets and handlines.

Marketed mostly fresh; also dried-salted.

CARAN Caranx 3

1974

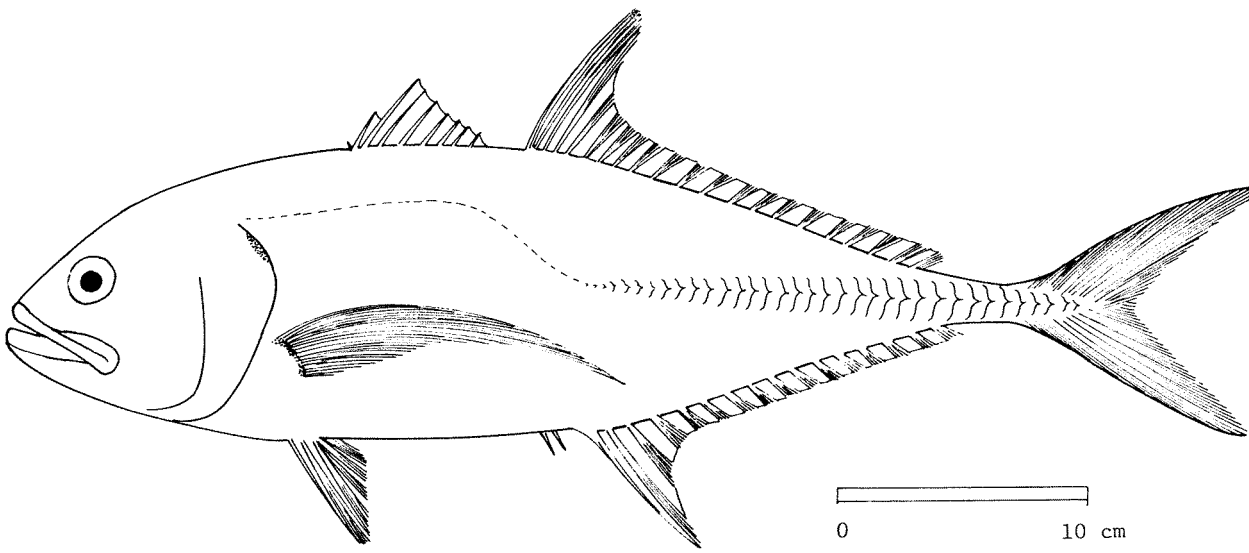
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Caranx sexfasciatus Quoy & Gaimard, 1824

SYNONYMS STILL IN USE: *Caranx elacate* (Jordan & Evermann, 1933)



VERNACULAR NAMES:

FAO: En - Dusky jack
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

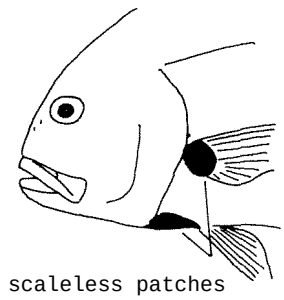
An oblong, moderately compressed carangid; upper and lower body profiles about equal. *Eye diameter 3.4 to 5.1 times in head length. Upper jaw reaching to below posterior margin of pupil or eye. Teeth in upper jaw with 1 outer row of conical teeth and an inner band of fine teeth; lower jaw with a single row of conical teeth;* fine teeth on vomer and palatines (roof of mouth). Gill rakers 16 to 18 on lower limb of lst arch. lst dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 8 normal spines; 2nd dorsal fin with 1 spine and 18 to 21 soft rays. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 14 to 16 soft rays. *Breast fully scaled; lateral linE strongly arched anteriorly, joining the straight portion under 2nd to 5th soft dorsal fin rays; 24 to 34 scutes on straight portion.*

Colour: dusky grey above, silvery below; sometimes with a yellowish tinge; in adults, soft dorsal fin and anal fin dusky with white-tipped lobes,caudal fin dusky, other fins pale; a dark spot on upper edge of gill cover.

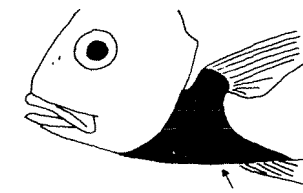
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA

Caranx ignobilis and *C. celetes:* small scaleless patch on breast and at base of pectoral fins; also, lobe of soft dorsal fin not white-tipped in adults.

Caranx melampygus and *C. tille*: gill rakers 11 to 16 on lower limb of 1st arch (16 to 18 in *C. sexfasciatus);* also, upper jaw reaching to front margin of pupil or eye in *C. melampygus* and 16 to 18 soft anal fin rays in C. *tille* (14 to 16 in *C. sexfasciatus).*



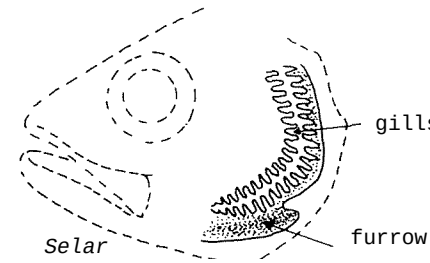
scaleless patches
Caranx ignobilis



scaleless patch
Carangoides chrysophrys

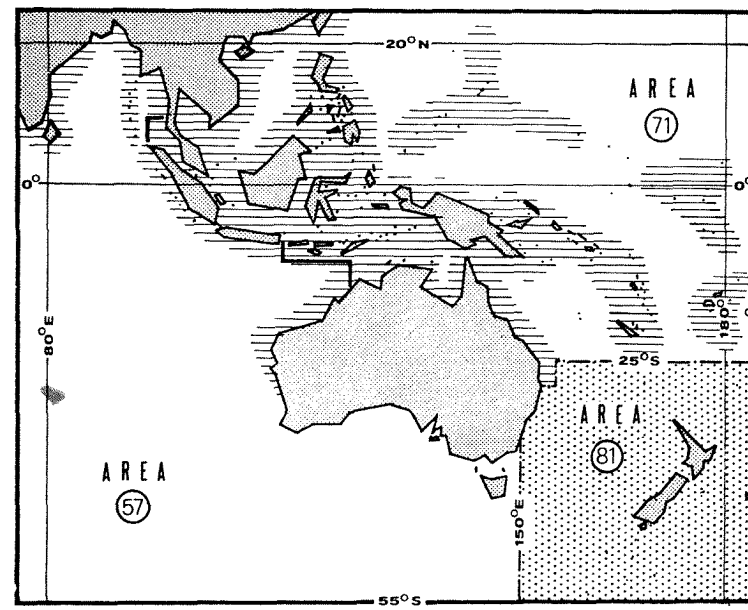
Carangoides species: jaw teeth usually not enlarged, scutes less strongly developed and breast with at least a moderate scaleless area.

Other carangid genera: either lack scutes *(Traehinotus,* etc.), or scales embedded in skin *(Alectis),* or dorsal and anal finlets present *(Decapterus,* etc.) or deep furrow present on lower margin of gill opening *(Selar).*



SIZE:

Maximum: 80 cm; common: 50 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits shallow waters of coral and rocky reefs.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, NIAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported by India only (1972: 8 500 tons); Malaysia reports a statistical category *"Caranx* species" (1972: 5 700 tons). The total reported catch of miscellaneous unspecified carangids in 1.972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with handlines, gill nets and purse seines.

harketed mostly fresh; also dried-salted.

CARAN Caranx 4

1974

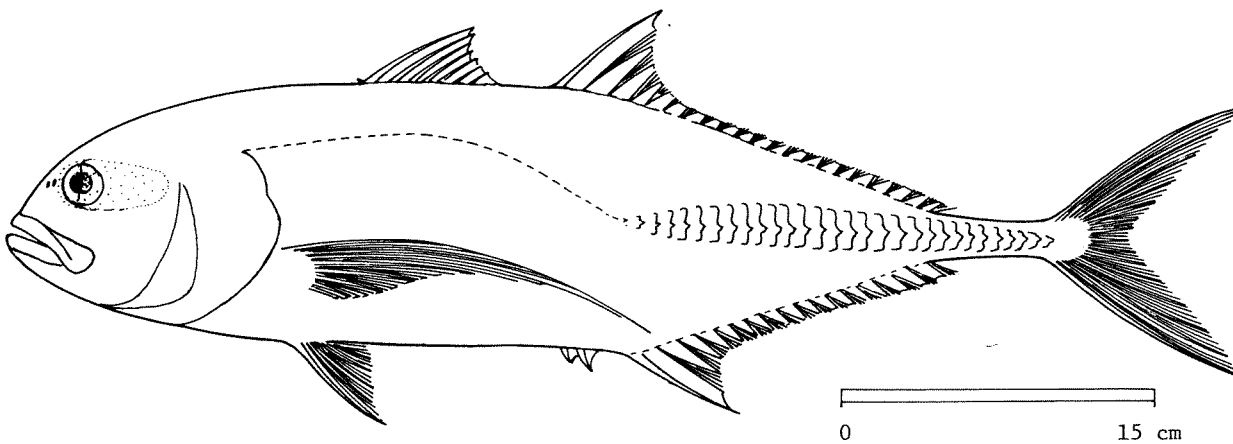
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Caranx tille Valenciennes, 1833

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Tille jack
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An oblong, moderately compressed carangid. Head profile strongly arched. Eye diameter 5.7 to 6.5 times in head length. Upper jaw reaching to below posterior margin of eye. Teeth; in upper, jaw with 1 outer row of conical teeth and an inner band of fine teeth; lower jaw with a single row of conical teeth; fine teeth on vomer and palatines (roof of mouth). Gill rakers 11 to 15 on lower limb of lst arch. lst dorsal fin with 1 forward-pointing spine (partially embedded in skin) and 7 to 8 spines; 2nd dorsal fin with 1 spine and 19 to 21 soft rays. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 16 to 18 soft rays. Breast fully scaled; *lateral line strongly arched anteriorly, becoming straight below 5th to 6th soft dorsal fin rays; 28 to 37 strong scutes on straight portion of lateral line.*

Colour: dusky blue/green above, silvery blue or yellow/green below; dorsal fins dusky grey; anal fin pale at base, with dusky margin, tip of lobe white; pectoral fins pale with a black axillary patch; a black patch on edge of operculum.

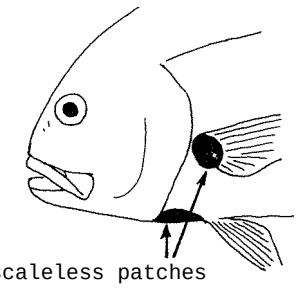
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Caranx ignobilis and C. celetus: a scaleless area on breast; also, gill rakers 18 to 20 in C. celetus (11 to 15 in C. tille).

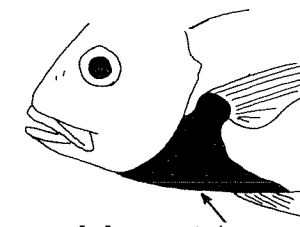
Caranx melampygus and *C. sexfasciatus*: gill rakers 16 or more; also, upper jaw reaching to front border of eye or pupil in *C. melampygus* (to hind border of pupil or eye in *C. tille*) and lobe of soft dorsal fin white in *C. sexfasciatus* adults.

Carangoides species: jaw teeth usually not enlarged, scutes less strongly developed and breast with moderate or large scaleless area.

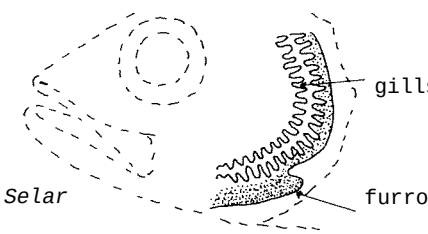
Other carangid genera: either lack scutes (*Trachinotus*, etc.), or scales embedded in skin (*Alectis*), or dorsal and anal finlets present (*Decapterus*, etc.) or deep furrow present on lower margin of gill opening *(Selar).*



scaleless patches
C. ignobilis



scaleless patch
Carangoides chrysophrys



SIZE:

Maximum: 70 cm; common: 50 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

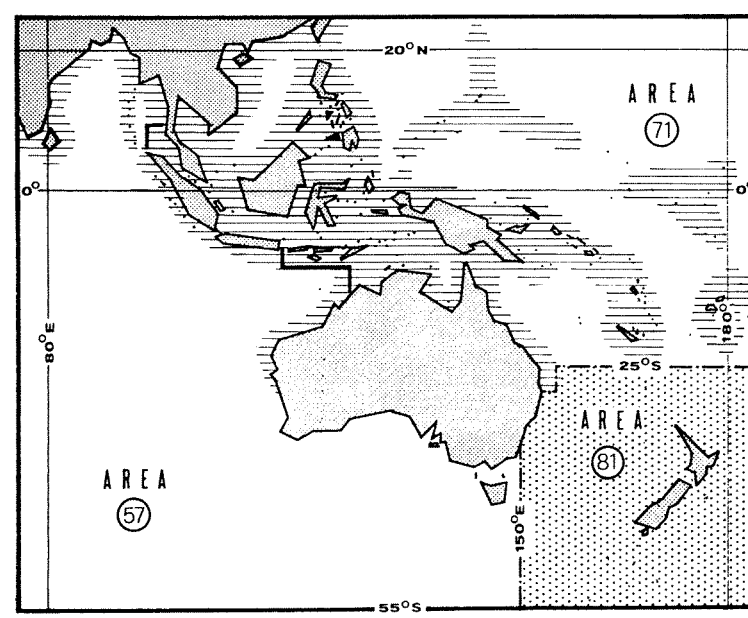
Throughout most warm coastal waters of area.

Inhabits shallow waters of coral and rocky reefs.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION

Separate statistics are not reported for this species. Malaysia reports a statistical category "Caranx species" (1972: 5 700 tons). The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with handlines, gill nets and purse seines.

Marketed mostly fresh; also dried-salted.

CARAN Deca 1

1974

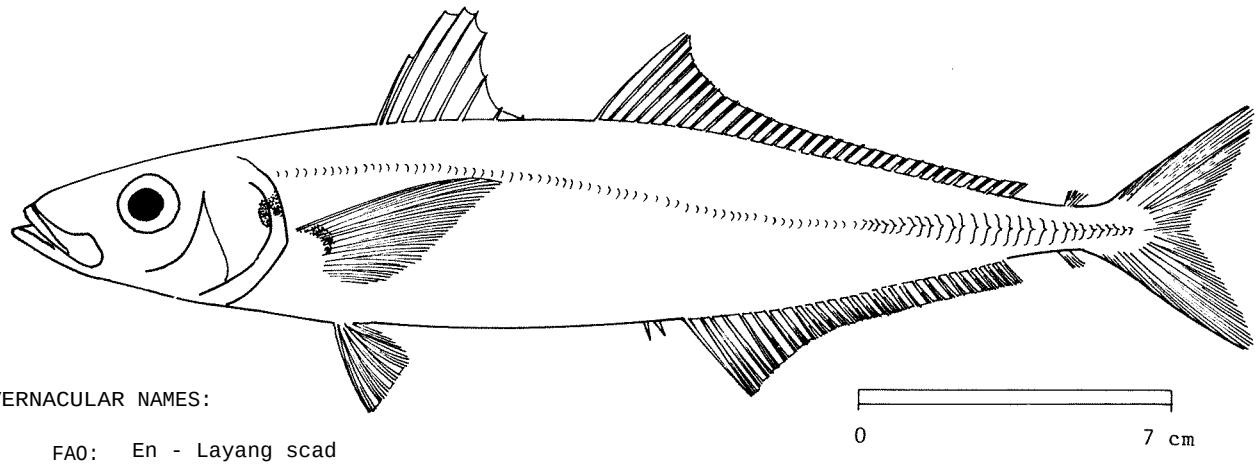
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Decapterus macrosoma Bleeker, 1851

SYNONYMS STILL IN USE: *Decapterus lajang* Bleeker, 1851



VERNACULAR NAMES:

FAO: En - Layang scad
Fr -
Sp -

NATIONAL:

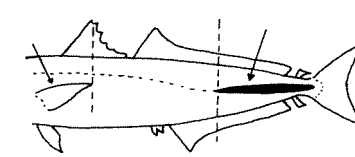
DISTINCTIVE CHARACTERS:

An elongate, fusiform, moderately compressed carangid. Depth of body 5.5 to 6.0 times in standard length. *Upper jaw reaching to below front margin of eye*. Teeth in jaws in a single series, those of upper jaw confined to anterior end of jaw; vomerine teeth in a transverse strip; palatines toothed. 1st dorsal fin with 8 spines; 2nd dorsal fin with 1 spine and 34 to 35 soft rays. *Pectoral fins not falcate, tips reaching to below posterior spines of 1st dorsal fin. Anal fin with 2 detached spines,* followed by 1 spine and 28 to 30 soft rays. *A single finlet present behind dorsal and anal fins. Lateral line only slightly arched, becoming straight below 15th soft dorsal fin ray;* curved portion much longer than straight portion; *25 to 30 small, weak scutes;* height of largest scutes distinctly less than eye diameter.

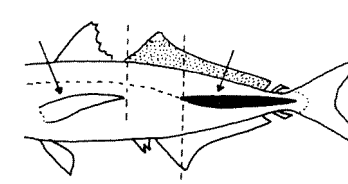
Colour: blue/green above,-silvery white below; fins pale yellow.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Decapterus maruadsi: a white tip to apex of soft dorsal fin, a deeper body, its depth 3.7 to 4.0 times in standard length (5.5 to 6.0 in *D. macrosoma),* a longer, falcate pectoral fin reaching to below origin of 2nd dorsal fin, and the straight portion of the lateral line beginning below about the middle of the 2nd dorsal fin.



D. macrosoma

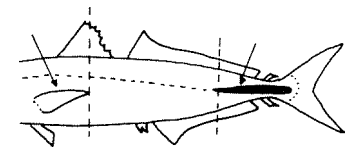


D. maruadsi

Decapterus kurroides: caudal and soft dorsal fins light red, pupil green.

Decapterus macarellus: no teeth on palatines.

Elagatis bipinnulatus: no scutes along lateral line; also, blue and yellow bands along body.



D. macarellus

Other carangid genera: have either no finlets behind dorsal and anal fins, or more than one *(Megalaspis).*

Scombridae, Gempylidae: usually more than 1 dorsal and anal finlet; also, first 2 anal spines not detached from rest of fin, no scutes on lateral line, but keels usually present on each side of caudal peduncle and base of lst dorsal fin longer than that of 2nd.

SIZE:

Maximum: 30 cm; common: 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

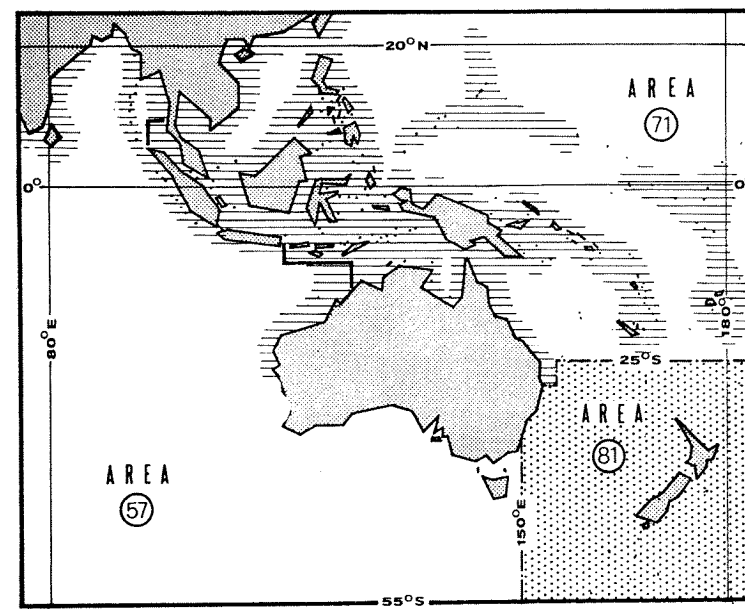
Throughout most warm coastal waters of area.

Inhabits coastal waters.

Feeds on small invertebrates.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The Philippines report a statistical category *"Decapterus* and *Selar"* species (1972: 340 000 tons). The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with purse seines and bottom trawls.

Marketed mostly fresh; also dried-salted.

CARAN Deca 2

1974

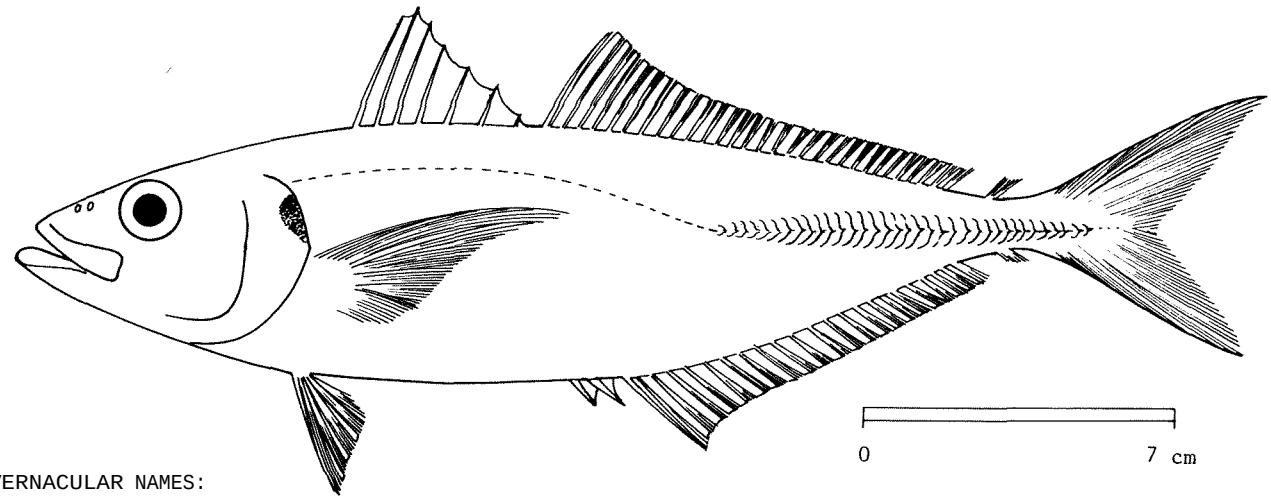
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Deeapterus maruadsi (Temminck & Schlegel, 1842)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Round scad
Fr -
Sp -

NATIONAL:

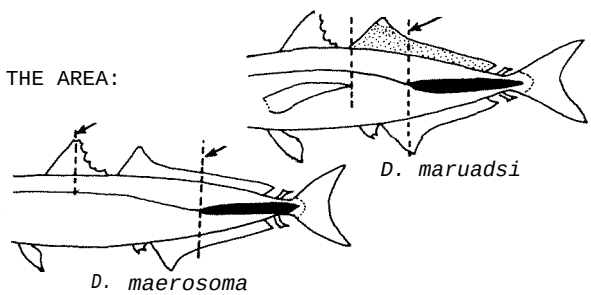
DISTINCTIVE CHARACTERS:

An elongate, fusiform, moderately compressed carangid. Depth of body 3.7 to 4.0 times in standard length. *Upper jaw reaching to just below front margin of eye*. Teeth in jaws in a single series, those of upper jaw confined to anterior end of jaw; vomerine teeth in a transverse strip; palatines toothed. lst dorsal fin with 7 to 8 spines; 2nd dorsal fin with 1 spine and 32 to 33 soft rays. *Pectoral fins falcate, tips reaching to below origin of 2nd dorsal fin. Anal fin with 2 detached spines,* followed by 1 spine and 28 to 29 soft rays. A *single finlet behind dorsal and anal fins. Lateral line slightly arched, becoming straight below 12th to 13th dorsal fin rays;* curved portion longer than straight portion; 32 to 38 moderate scutes; height of largest scutes about 3/4 of eye diameter.

Colour: green to blue/green above, silvery white below; dorsal, pectoral and caudal fins pale yellow; *anterior apex of 2nd dorsal fin white;* a black spot on edge of operculum; pupil black.

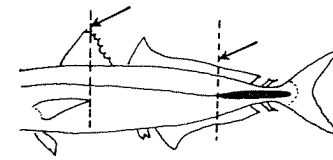
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Decapterus maerosoma: pectoral fin much shorter, reaching to below posterior spines of 1st dorsal fin, body much more slender and less compressed, its depth 5.5 to 6.0 in standard length (3.7 to 4.0 in *D. maruadsi*), and the straight portion of the lateral line beginning below the posterior half of the 2nd dorsal fin.



Decapterus kurroides: caudal and soft dorsal fins light red, pupil green.

Decapterus macarellus: pectoral fin short, reaching only to below posterior spines of lst dorsal fin; also, body more slender, its depth 5.5 times in standard length (3.7 to 4.0 in *D. maruadsi),* and lateral line almost straight.



D. macarellus

Elagatis bipinnulatus: no scutes along lateral line; also, blue and yellow bands along body.

Other carangid genera: have either no finlets behind dorsal and anal fins or more than one *(Megalaspis).*

Scombridae, Gempylidae: usually more than 1 dorsal and anal finlet; also, first 2 anal spines not detached from rest of fin, no scutes on lateral line, but keels usually present on each side of caudal peduncle and base of 1st dorsal fin longer than that of 2nd.

SIZE:

Maximum: 35 cm; common: 25 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

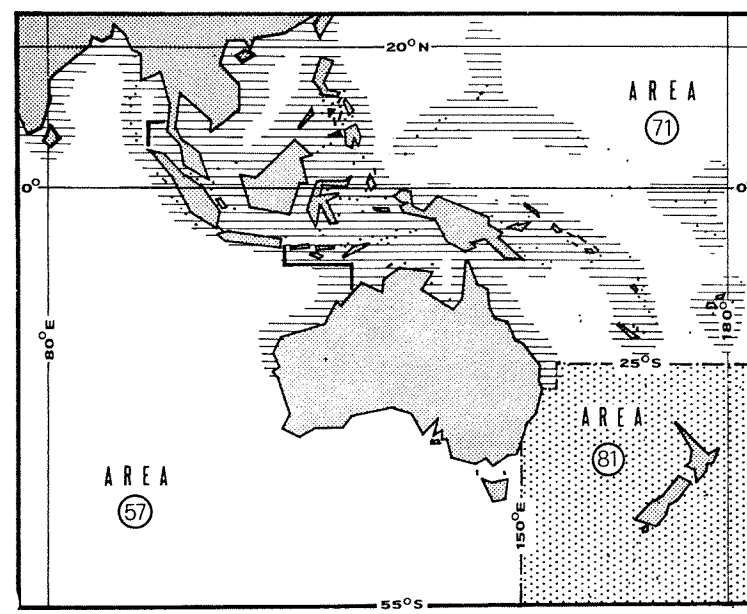
Throughout most warm coastal waters of area.

Inhabits coastal waters, normally down to 20 m.

Feeds on pelagic and bottom-living animals.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The Philippines report a statistical category *"Decapterus* and *Selar"* species (1972: 340 000 tons). The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with purse seines and bottom trawls.

Marketed mostly fresh; also dried-salted and used as fish bait.

CARAN Elag 1

1974

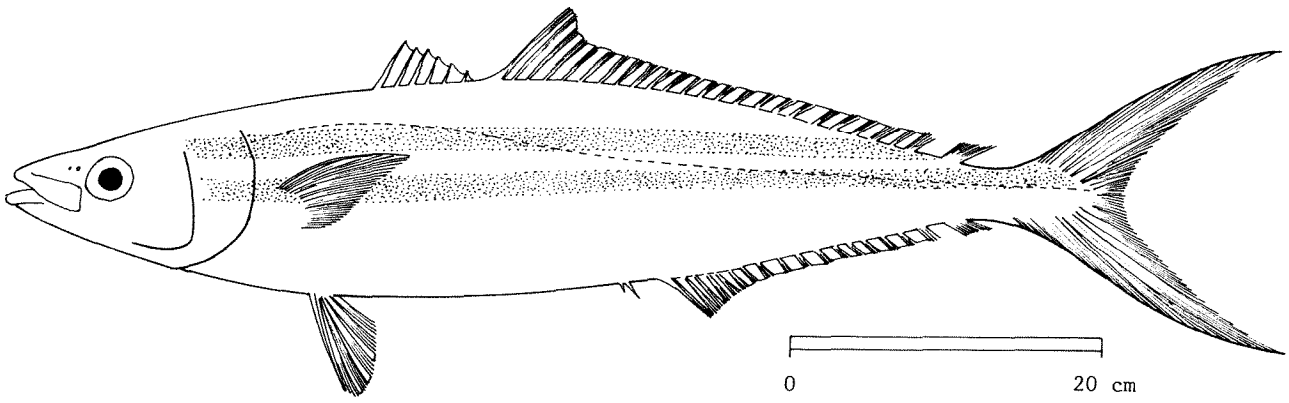
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Elagatis bipinnulatus (Quoy & Gaimard, 1824)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Rainbow runner
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An elongate, almost fusiform carangid, with pointed head. Eye diameter 6.0 times in head length. *Upper jaw not reaching to below eye.* Bands of small villiform. teeth in jaws; minute teeth on vomer and palatines (roof of mouth) and tongue. Gill rakers 25 to 26 on lower limb of 1st arch. *1st dorsal fin with 6 spines;* 2nd dorsal fin with 1 spine and 24 to 27 soft rays. *Anal fin base much shorter than soft dorsal fin base. One 2-rayed finlet present behind anal and dorsal fins. Pectoral fins not falcate, shorter than head. Anal fin with 2 detached spines,* followed by 1 spine and 15 to 17 soft rays. Breast scaled. Lateral line slightly arched anteriorly; *no scutes present.*

Colour: blue/green above, silvery white below; *two parallel blue bands on sides with a yellow band between them; fins yellow; bands may disappear after death.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Decapterus species: scutes present on posterior part of lateral line; also, no blue and yellow bands on body.

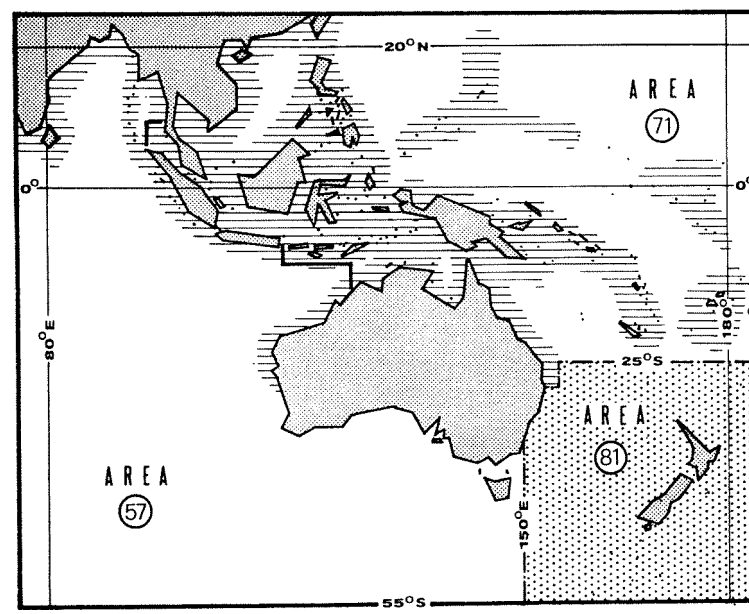
Megalaspis species: 8 to 9 finlets behind dorsal and anal fins.

Other carangid genera: have either no finlets behind dorsal and anal fins, or more than one *(Megalaspis, Scomberoides);* also, rarely so slender.

Rachycentron canadus: no finlets behind dorsal and anal fins.

SIZE:

Maximum: 90 cm; common: 60 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits coral and rocky reefs.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with handlines, gill nets and traps.

Marketed mostly fresh.

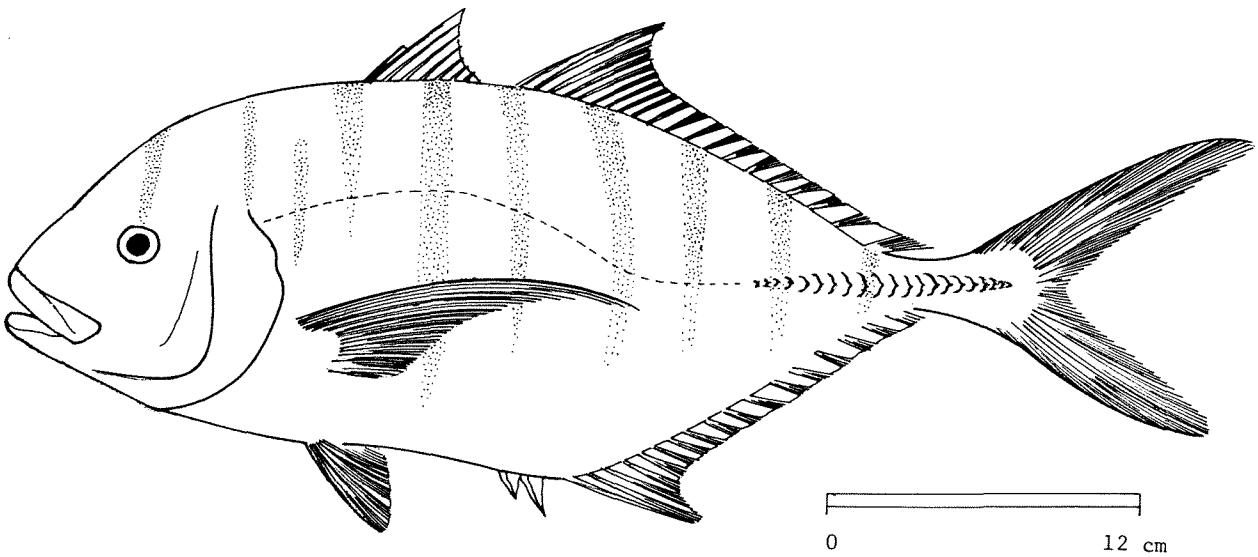
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Gnathanodon speciosus (Forsskål, 1775)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Golden toothless trevally
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A deep-bodied, compressed carangid. Head profile steep, with slight indentation in front of eye. Eye small, its diameter 4.5 to 5.6 times in head length. Upper jaw reaching to below front margin of eye, or front margin of pupil in young. *No teeth in jaws* in fish longer than 8 cm; lips papillose; no teeth on vomer and palatines (roof of mouth); tongue rough, with fine denticles. Gill rakers 20 on lower limb of 1st arch. 1st dorsal fin with a forward-pointing spine (not visible in adults) and 7 to 8 spines; 2nd dorsal fin with 1 spine and 18 to 21 soft rays. Anal and dorsal fin bases approximately equal. *Pectoral fins falcate, longer than head length. Anal fin with 2 detached spines,* followed by 1 spine and 16 soft rays. *Breast scaled.* Lateral line moderately curved, becoming straight under 8th soft dorsal fin ray; curved part slightly longer than straight part; *17 to 25 feeble scutes.*

Colour: *fish of 30 cm. in length are yellow with dark vertical bars; larger fish are paler with black patches and faint cross-bars on sides.*

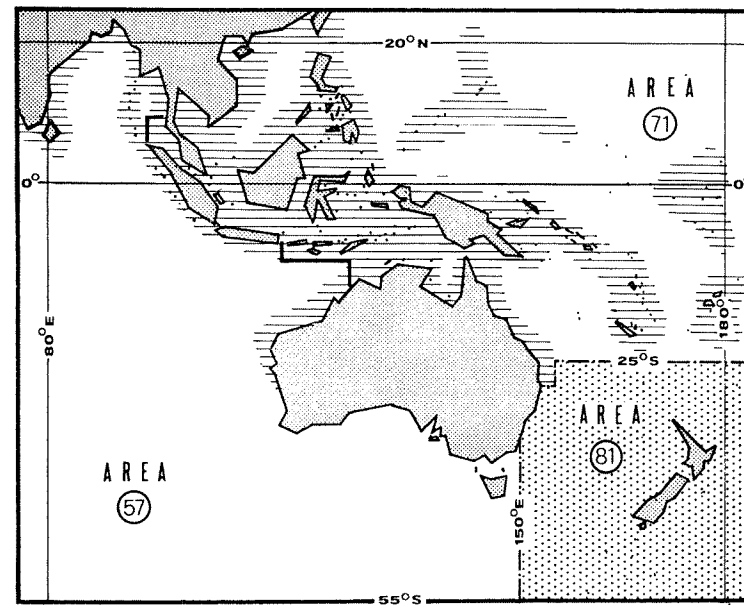
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Selaroides leptolepis: minute teeth in lower jaw and no dark vertical bars on body but a distinctive yellow band; also, gill rakers 26 (20 in *Gnathanodon).*

All other carangid species: have at least some small teeth in upper jaw; also, scutes absent in some genera *(Nauerates, Trachinotus,* etc.), or finlets present behind dorsal and anal fins *(Secapterus,* etc.).

SIZE:

Maximum: 100 cm; common: 50 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits shallow coastal waters and coral and rocky reefs.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with gill nets and traps.

Marketed mostly fresh; also dried-salted.

CARAN Megal l

1974

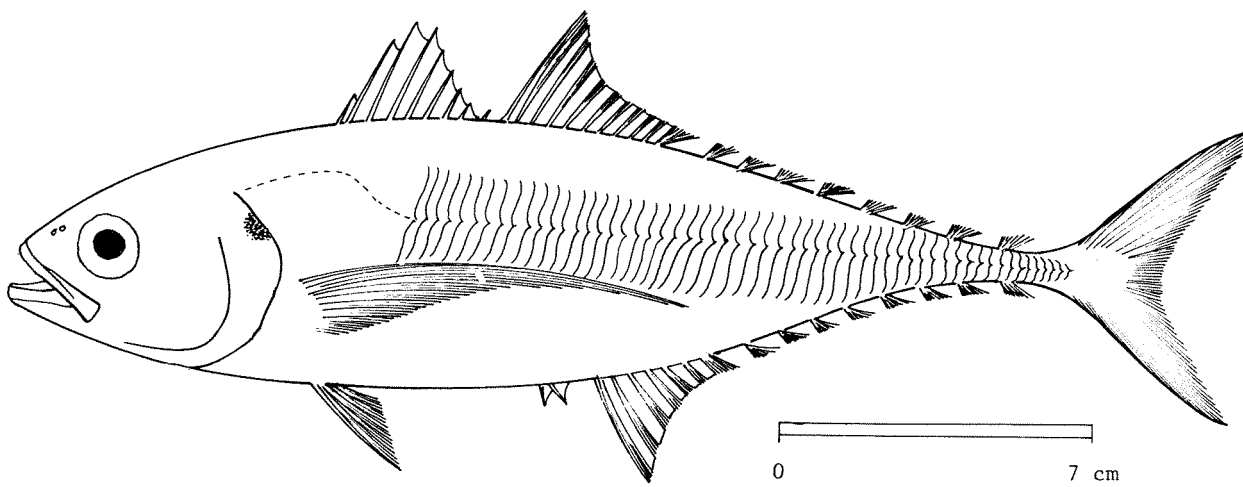
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Megalaspis cordyla (Linnaeus, 1758)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Hardtail scad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An elongate, fusiform, slightly compressed carangid, its depth 3.8 to 4.0 times in standard length. Teeth present in jaws and on vomer and palatines (roof of mouth) and tongue, those in upper jaw in a band, those in lower jaw in a single series. 1st dorsal fin with 8 to 9 spines; *2nd dorsal fin with 1 spine and 10 soft rays and 8 to 9 finlets. Anal fin with 2 detached spines,* followed by 1 spine, 10 soft rays and 6 to 8 finlets. Lateral line strongly curved anteriorly, becoming straight below the 6th to 7th spines of 1st dorsal fin. 53 to 58 tall, strong, pungent, keeled scutes; *height of largest scute twice eye diameter. Caudal peduncle hard and strong.*

Colour: blue/green above, silvery white below; a black spot on posterior edge of operculum; dorsal, pectoral and caudal fins dusky grey.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Elagatis and *Decapterus* species: a single finlet only behind soft dorsal and anal fins.

Scomberoides species: scutes absent on posterior part of body.

Other carangid genera: lack finlets, body often deep, caudal peduncle not so slender.

Scombridae and Gempylidae: no scutes on hind part of lateral line, but keels usually present on each side of caudal peduncle; also, first 2 anal spines not separate from rest of fin and base of lst dorsal fin longer than that of 2nd.

SIZE:

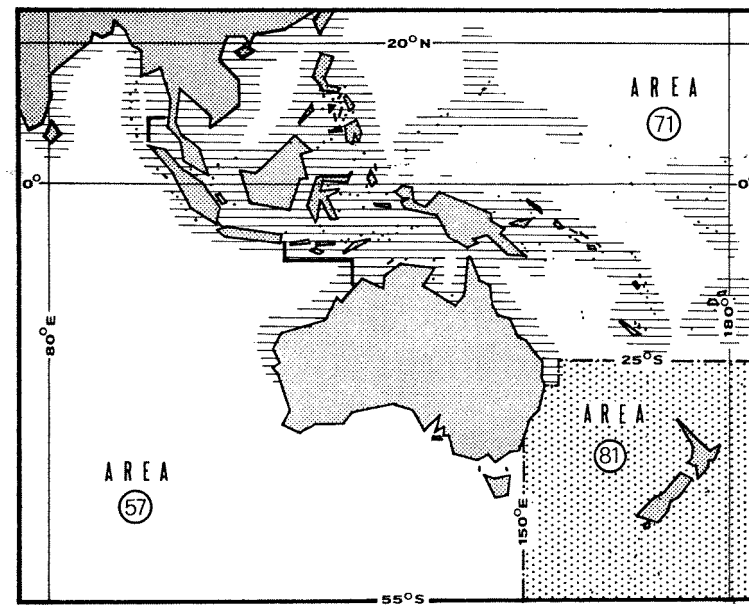
Maximum: 40 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits coastal waters down to 60 m.

Feeds on small crustaceans and fishes.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons;
Malaysia: 4 900 tons)

Caught mainly with bottom trawls, purse seines and traps.

Marketed mostly fresh.

CARAN Scom l

1974

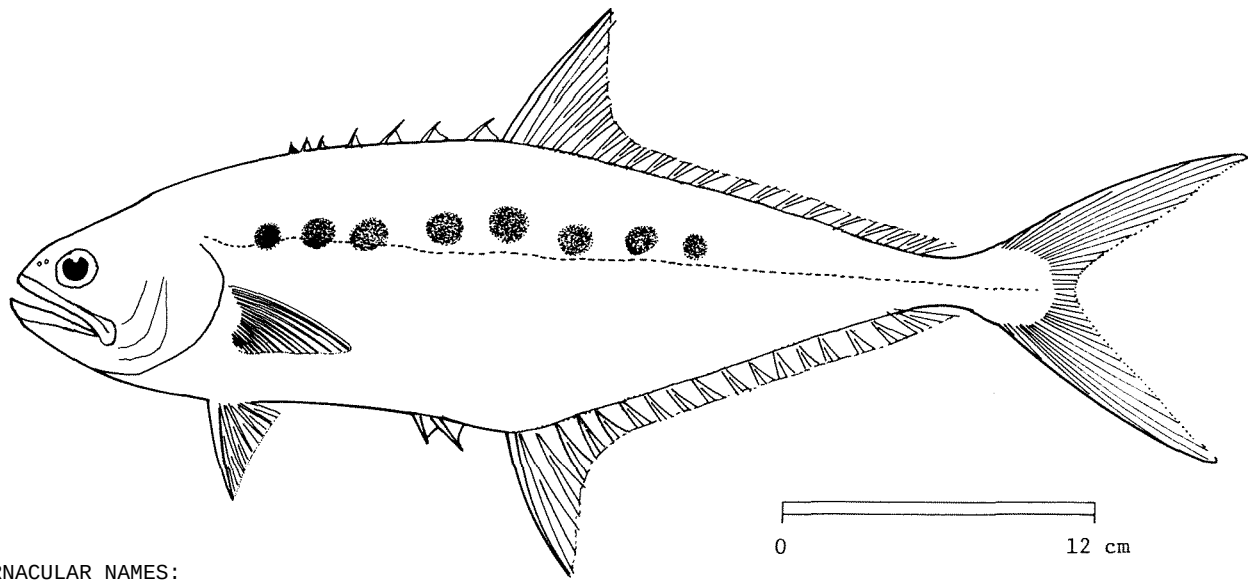
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Scomberoides commersonianus Lacepède, 1802

SYNONYMS STILL IN USE: *Chorinemus lysan* (not of Forsskål): Day, 1878; Weber & de Beaufort, 1931



VERNACULAR NAMES:

FAO: En - Talang queenfish
Fr -
Sp -

NATIONAL:

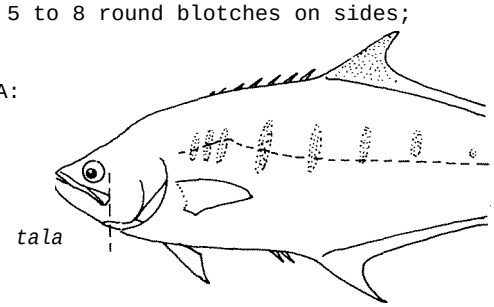
DISTINCTIVE CHARACTERS:

A compressed, elongate carangid, with a blunt snout and a depression over eye. Eye diameter 4.5 to 6.0 times in head length and about equal to snout. *Upper jaw reaching well beyond eye.* Upper jaw with an outer row of conical teeth and an inner band of villiform teeth; lower jaw with 2 rows of conical teeth separated by a groove; minute teeth on tongue, vomer and palatines (roof of mouth). Gill rakers 7 to 12 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (becoming embedded with age) and 6 to 7 normal spines; 2nd dorsal fin with 1 spine and 19 to 21 soft rays. *Dorsal and anal fin bases approximately equal in length; dorsal and anal fins with 7 to 8 rays, finlet-like but not* fully *separated. Pectoral fins short, not falcate. Anal fin with 2 detached spines,* followed by 1 spine and 16 to 19 soft rays. *Scales small and lanceolate, partly embedded;* breast scaled. *Lateral line slightly wavy anteriorly, straight over most of its length; no scutes present.*

Colour: dusky green above, silvery or golden yellow below; 5 to 8 round blotches on sides; *soft dorsal fin evenly dusky,* not abruptly pigmented distally.

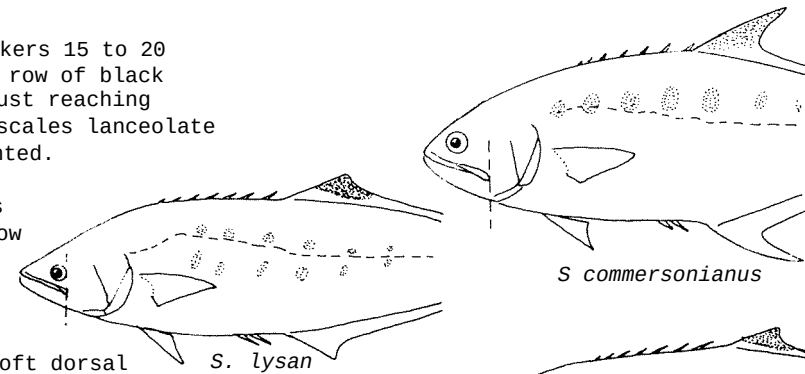
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Scomberoides tala: oval blotches on side of body and upper jaw reaching only a little beyond vertical from posterior margin of eye.



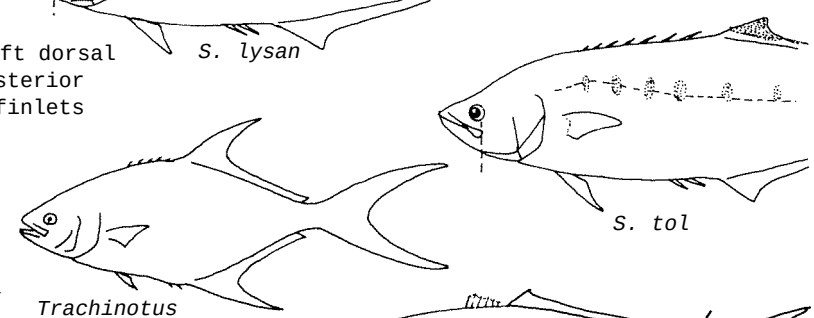
Scomberoides lysan: lower gill rakers 15 to 20 (7 to 12 in *S. cormersonianus),* a double row of black spots on side of body, upper jaw only just reaching vertical from posterior margin of eye, scales lanceolate and tip of 2nd dorsal fin sharply pigmented.

Scomberoides tol: lower gill rakers 17 to 20, upper jaw not reaching to below hind margin of eye, scales needle-like and tip of 2nd dorsal fin sharply pigmented.

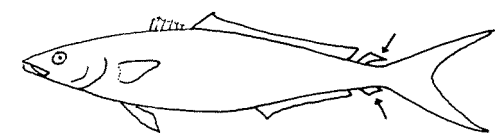


Trachinotus species: body deep, soft dorsal and anal fins strongly falcate; also, posterior dorsal and anal fin rays not resembling finlets and head profile steep.

Other carangid genera: either anal fin base much shorter than soft dorsal fin base (*Elagatis, Seriola,* etc.) or scutes present on posterior part of lateral line *(Caranx, Decapterus,* etc.).



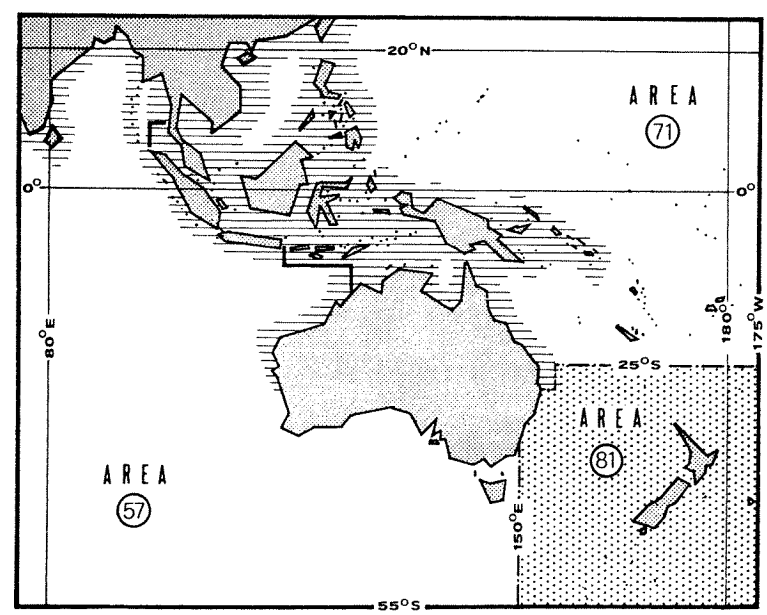
Scombridae, Gempylidae: first 2 anal spines not detached from rest of fin, dorsal and anal finlets distinctly separated from each other and base of lst dorsal fin longer than that of 2nd.



Rachycentridae: first 2 anal spines not detached from rest of fin.

SIZE:

Maximum: 100 cm; common: 50 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Restricted to neritic waters near continental shelf.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AI.D PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with gill nets and traps.

Marketed mostly fresh; also dried-salted.

CARAN Selar 1

1974

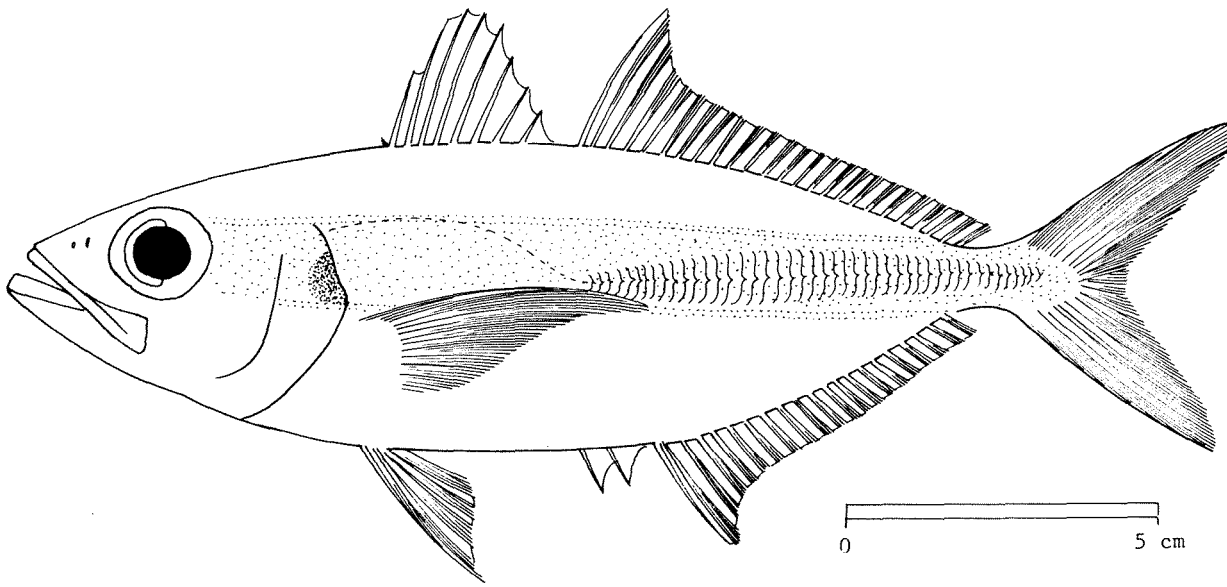
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Selar boops (Valenciennes, 1833)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Oxeye scad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

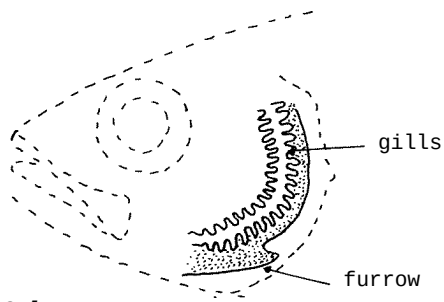
An oblong, moderately compressed carangid. Eye large, its diameter 3 times or less in head length. *A deep furrow on lower margin of gill opening. Teeth in a single series in each jaw* preceded by a band anteriorly; vomer and palatines (roof of mouth) toothed. Gill rakers about 23 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (not always visible) and 8 normal spines; 2nd dorsal fin with 1 spine and 24 to 25 soft rays. Dorsal and anal fin bases equal. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 20 to 21 soft rays. *Lateral line moderately curved anteriorly, becoming straight before origin of soft dorsal fin;* 44 to 46 scutes, beginning below origin of soft dorsal fin; *largest scute 4 times in body depth.*

Colour: *blue/green above with a broad golden band; silvery or golden yellow below*; black spot on edge of gill cover; dorsal, anal and caudal fins with a dusky fringe and white tips anteriorly to dorsal and anal fins.

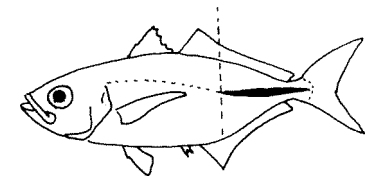
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

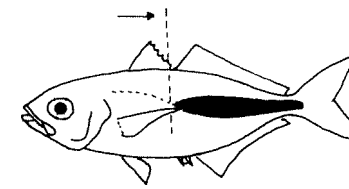
Selar crumenophthalmus: 32 to 38 scutes (44 to 46 in *S. boops),* beginning below middle of soft dorsal fin, the largest about 9 to 10 times in body depth (about *4* times in *S. boops).*

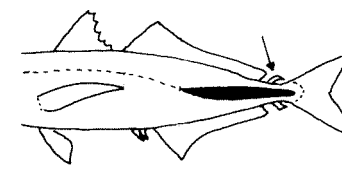
Other carangid genera: lack deep furrow on lower margin of gill opening; also, scutes sometimes absent *(Scomberoides,* etc.), or finlets present behind dorsal and anal fins *(Decapterus, Megalaspis)* or body much deeper (some *Caranx, Carangoides,* etc.)



Selar


Selar crumenophthalmus


Selar boops


Decapterus

SIZE:

Maximum: *25* cm; common: 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

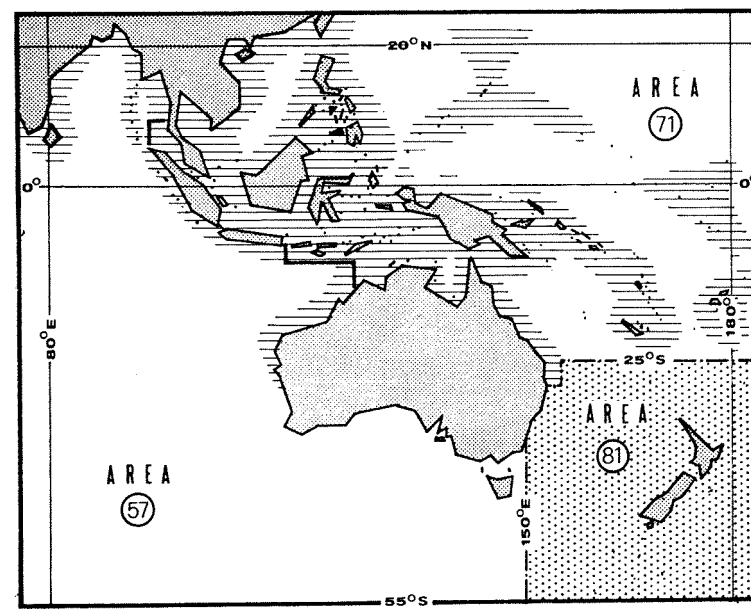
Throughout most warm coastal waters of area.

Inhabits coastal areas and coral and rocky reefs.

Feeds on invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The Philippines report a statistical category *"Decapterus* and *Selar"* species (1972: 340 000 tons). The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: *4* 900 tons)

Caught mainly with bottom trawls and traps.

Marketed mostly fresh.

CARAN Selar 2

1974

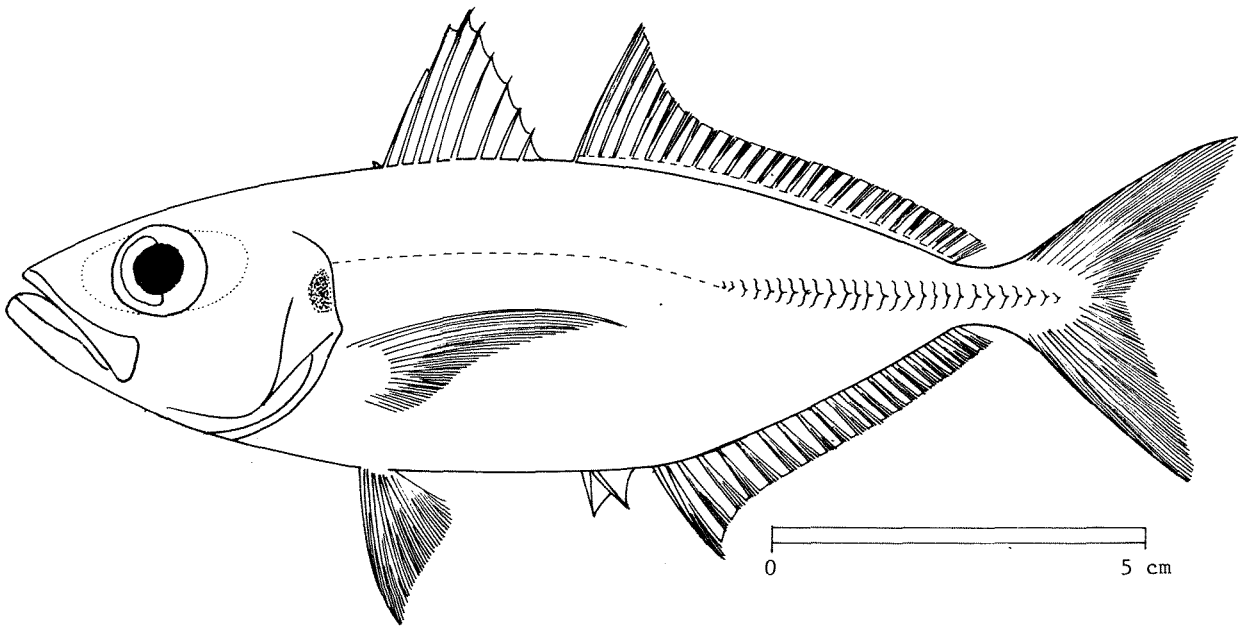
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Selar crumenophthalmus (Bloch, 1793)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Bigeye scad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

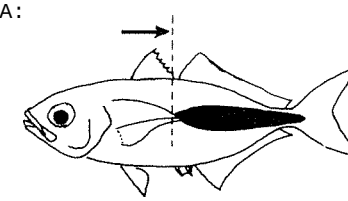
An oblong, moderately compressed carangid. Eye large, its diameter 3 times or less in head length. *A deep furrow on Lower margin of gill opening. Teeth in both jaws in a single series*; vomer and palatines (roof of mouth) toothed. Gill rakers 23 to 27 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (not always visible) and 8 normal spines; 2nd dorsal fin with 1 spine and 24 to 26 soft rays. Dorsal and anal fin bases equal. Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 21 to 23 soft rays. *Lateral Line slightly curved anteriorly, becoming straight below middle of soft dorsal fin;* 32 to 38 scutes, beginning below middle of soft dorsal fin; *Largest scute 9 to 10 times in body depth.*

Colour: green/blue on back, silvery white below; gill cover with a dark brown spot; fins pale.

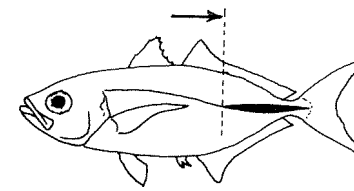
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Selar hoops: 44 to 46 scutes (32 to 38 in *S. crumenophthalmus),* beginning below origin of soft dorsal fin, the largest about *4* times in body depth (about 9 to 10 times in *S. crumenophthalmus*).

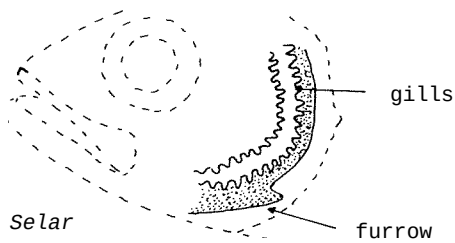
Other carangid genera: lack deep furrow on lower margin of gill opening; also, scutes sometimes absent *(Scomberoides,* etc.), or finlets present behind dorsal and anal fins (Deeapterus, Megalaspis) or body much deeper (some *Caranx, Carangoides,* etc.).



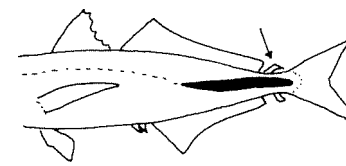
Selar hoops



Selar crumenophthalmus



Selar



Deeapterus

SIZE:

Maximum: 30 cm; common: 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

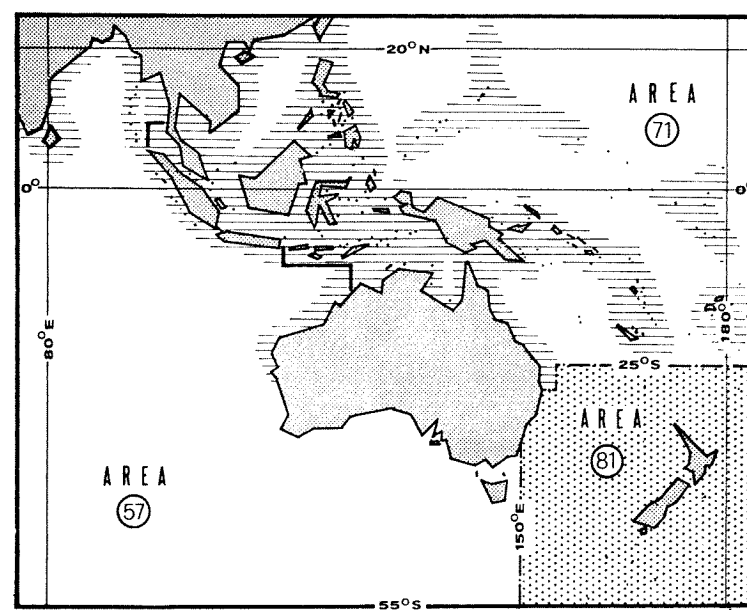
Throughout most warm coastal waters of area.

Inhabits coastal areas down to 80 m.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The Philippines report a statistical category *"Deeapterus and Selar"* species (1972: 340 000 tons). The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: *4* 900 tons)

Caught mainly with bottom trawls and traps.

Marketed mostly fresh.

CARAN Selard 1

1974

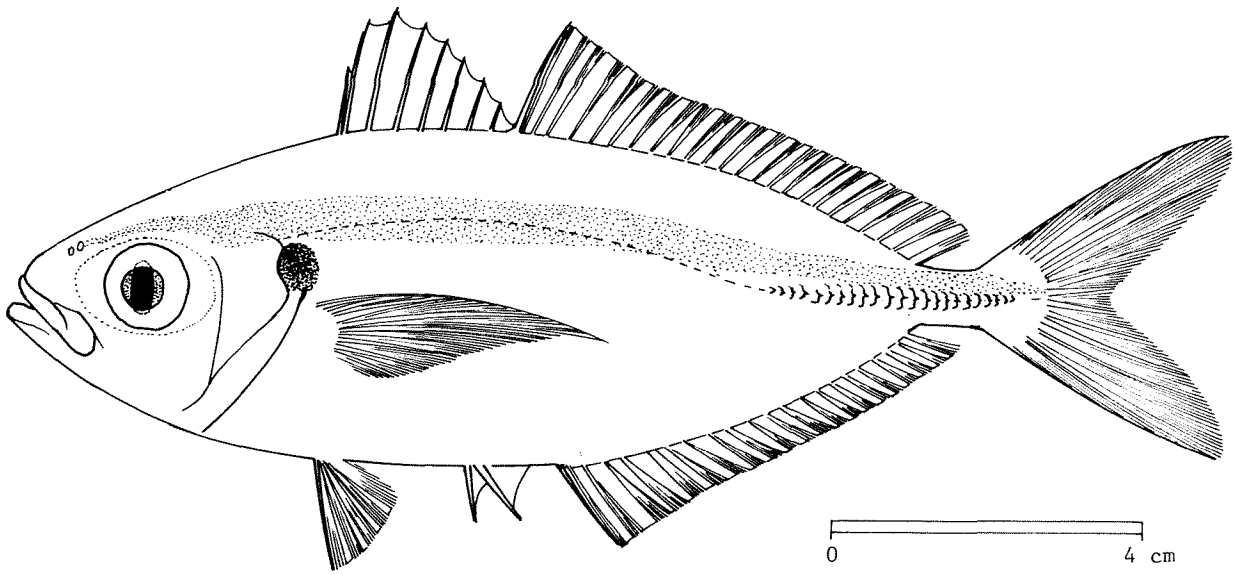
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Selaroides leptolepis Valenciennes, 1833

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Yellowstripe trevally
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An oblong, compressed carangid, with upper and lower profiles equally convex. Eye large, its diameter 3.2 to 3.5 times in head length. Upper jaw reaching to below front border of eye. No *teeth in upper jaw* or on vomer and palatines (roof of mouth); minute teeth in a single series in lower jaw and some rudimentary teeth on tongue. Gill rakers 26 on lower limb of 1st arch. 1st dorsal fin with 8 spines; 2nd dorsal fin with 1 spine and 25 soft rays. *Dorsal and anal fin bases nearly equal.* Pectoral fins falcate. *Anal fin with 2 detached spines,* followed by 1 spine and 20 soft rays. *Breast covered by small but conspicuous scales.* Lateral line scarcely arched, becoming straight below 16th soft dorsal fin ray; *straight portion 113 of lateral line;* 25 to 34 weak scutes.

Colour: *a golden yellow lateral band from eye to caudal fin;* back green and blue, lower sides silvery; a dusky spot on operculum; fins yellowish.

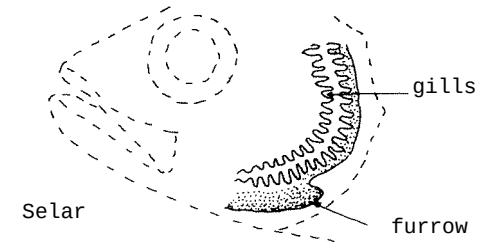
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

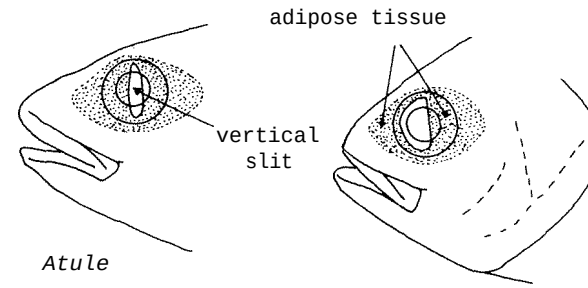
Selar species: lower margin of gill opening with a deep furrow; also, teeth present in upper jaw.

Atule mate: only carangid species with adipose tissue of eye covering all but a vertical slit; also, teeth present in upper jaw.

Gnathanodon: teeth absent also in lower jaw; also, dark vertical bars on body and 20 gill rakers (26 in *Selaroides*).

Other carangid genera: teeth present in both jaws: also, scutes absent in some genera (*Naucrates, Traehinotus.* etc.) or finlets present behind dorsal and anal fins (*Decapterus*, etc.).





SIZE:

Maximum: 20 cm; common: 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

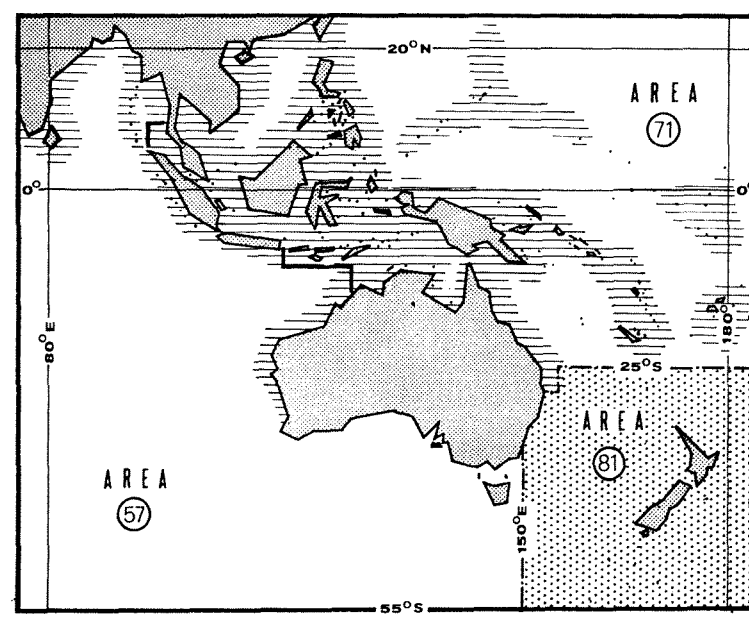
Throughout most warm coastal waters of area.

Inhabits shallow coastal areas.

Feeds on crustaceans and presumably also on small fishes.

PRESENT FISHING GROUNDS:

Coastal waters throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported only by Malaysia (1972: 6 400 tons). The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with purse seines; also with traps.

Marketed mostly fresh; also dried-salted.

CARAN Seriol 1

1974

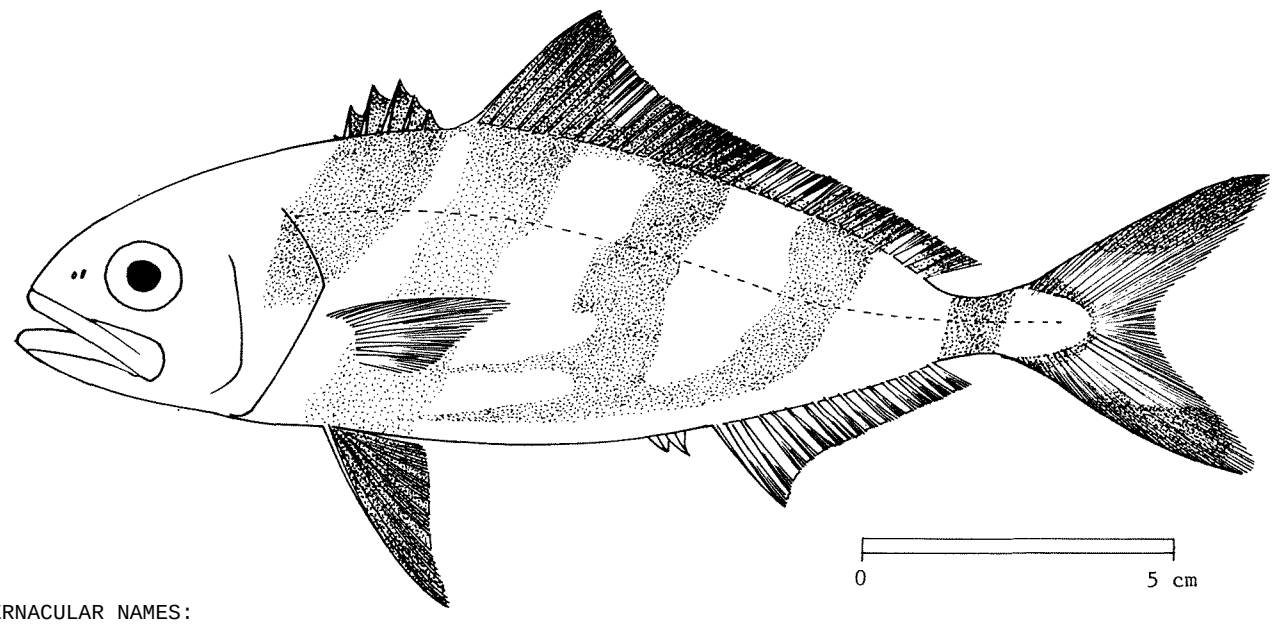
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING ARIAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Seriolina nigrofasciata (Rüppell, 1828)

SYNONYMS STILL IN USE: *lonichthys nigrofasciata* (Rüppell, 1828)



VERNACULAR NAMES:

FAO: En - Black-banded trevally
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

An oblong, moderately compressed earangid. Head profile steep in front of eye, becoming convex above eye. Eye diameter 4.0 times in head length (smaller in adults), approximately equal to snout length. Upper jaw reaching beyond vertical from posterior margin of pupil. Bands of villiform teeth in jaws; villiform teeth on vomer and palatines (roof of mouth) and tongue. *Gill rakers not normal, reduced to small knobs; 5 knobs on lower limb of 1st arch.* 1st dorsal fin with 1 forward-pointing spine (not always visible) and 5 to 7 normal spines; 2nd dorsal fin with 1 spine and 31 to 34 soft rays. *Anal fin base about half length of dorsal fin base. Pectoral fins shorter than length of head, not falcate. Anal fin with 2 detached spines,* followed by 1 spine and about 16 soft rays. Breast scaled. Lateral line rising slightly above pectoral fin then dropping in a straight line to caudal peduncle; *no scutes in adults.*

Colour: *ground colour dusky olive brown or dusky grey above* and silvery grey below; 6 *dusky black oblique bands inclining forward on body and head, disappearing with age;* fins brown; tips of dorsal and anal fins white.

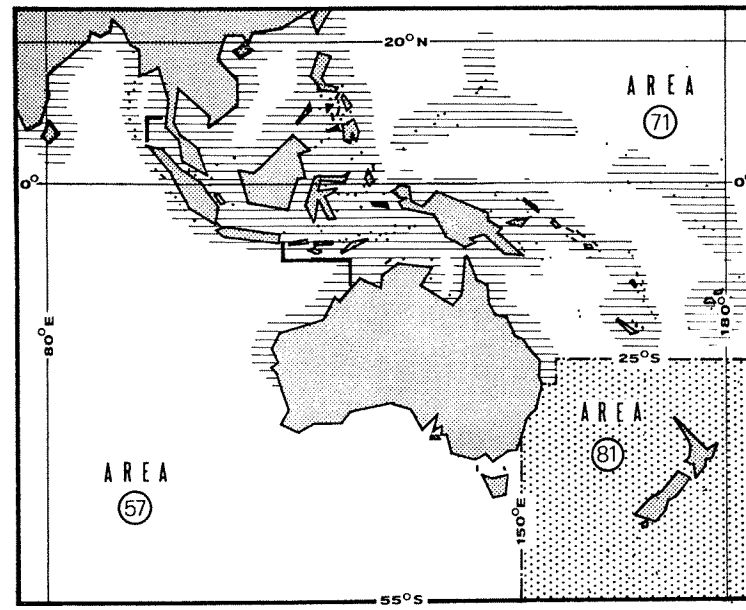
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA

Seriola species: gill rakers normal and snout long (about twice eye diameter; equal to or less than eye diameter in Seriolina).

Other carangid genera: gill rakers normal, or scutes present on posterior part of lateral line *(Caranx, Carangoides,* etc.), or detached finlets present behind dorsal and anal fins *(Elagatis,* etc.) or only 4 to 5 dorsal spines, not connected by membrane (*Plaucrates*).

SIZE:

Maximum: 60 cm; common: 40 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits coastal areas.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with bottom trawls, bottom longlines and traps.

Marketed mostly fresh.

CARAN Trachn 2

1974

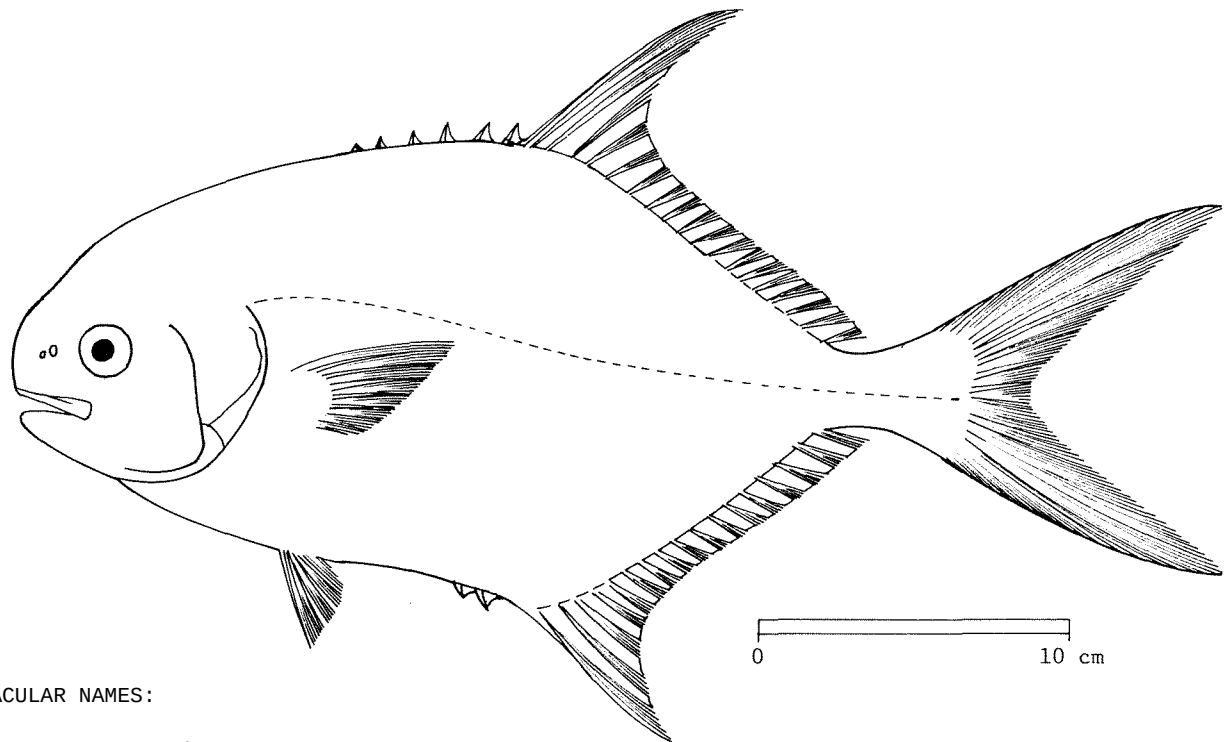
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Trachinotus blochii (Lacepède, 1802)

SYNONYMS STILL IN USE: *Trachinotus falcatus* (non Linnaeus): Klausewitz & Nielsen, 1965
Trachinotus ovatus (non Linnaeus): Günther, 1860



VERNACULAR NAMES:

FAO: En - Snubnose pompano
Fr -
Sp -

NATIONAL:

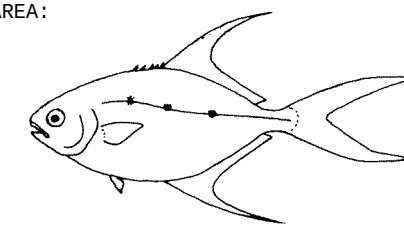
DISTINCTIVE CHARACTERS:

A deep-bodied, compressed carangid, its depth about twice in standard length. Head profile smoothly rounded, snout blunt. Eye diameter 3.2 to 4.0 times in head length. Upper jaw reaching to below front edge of eye or pupil. *Jaw teeth* small, villiform, *absent in adults;* villiform teeth on vomer and palatines (roof of mouth). Gill rakers 8 to 9 on lower limb of 1st arch. 1st dorsal fin with 1 forward-pointing spine (not visible in adults) and 6 normal spines; 2nd dorsal fin with 1 spire and 18 to 20 soft rays. Soft dorsal and anal fin bases more or less equal. *Pectoral fin short, not falcate, less than length of head. Anal fin with 2 detached spines,* followed by 1 spine and 16 to 17 soft rays. *Dorsal, anal and caudal fins become increasingly falcate with age.* Scales on breast, head almost naked. Curved portion of lateral line short, only about 1/3 length of lateral line; no *scutes present.*

Colour: market specimens golden yellow; in life back blue, sides silver, the two colours separated by a vague stripe of orange/pink; dorsal lobe and base of fin dusky, the rest yellow; anal fin yellow, its lobe orange/red.

DISTINGUISHING CHARACTERS OF SLMILAR SPECIES OCCURRING IN THE AREA:

Trachinotus botla (T. russelii of authors): 11 to 14 gill rakers and 20 to 21 soft anal fin rays (8 to 9 and 16 to 17 in T. *blochii);* also, 3 to 4 large dark blotches on sides of body.

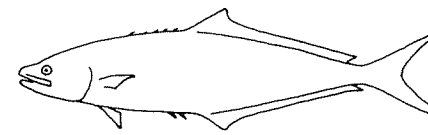


Trachinotus bailloni

Trachinotus baillonii: 16 gill rakers and 22 to 24 soft anal fin rays; also, 2 to 5 small black spots along lateral line.

Scomberoides species *(Chorinemus* of authors): body much more elongate, lobes of soft dorsal and anal fins not strongly falcate and scales elongate or needle-like.

Other carangid genera: either anal fin base much shorter than soft dorsal fin base *(Elagatis, Seriola,* etc.) or scutes present on posterior part of lateral line *(Caranx, Carangoides,* etc.).



Scomberoides

SIZE:

Maximum: 80 cm; common: 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

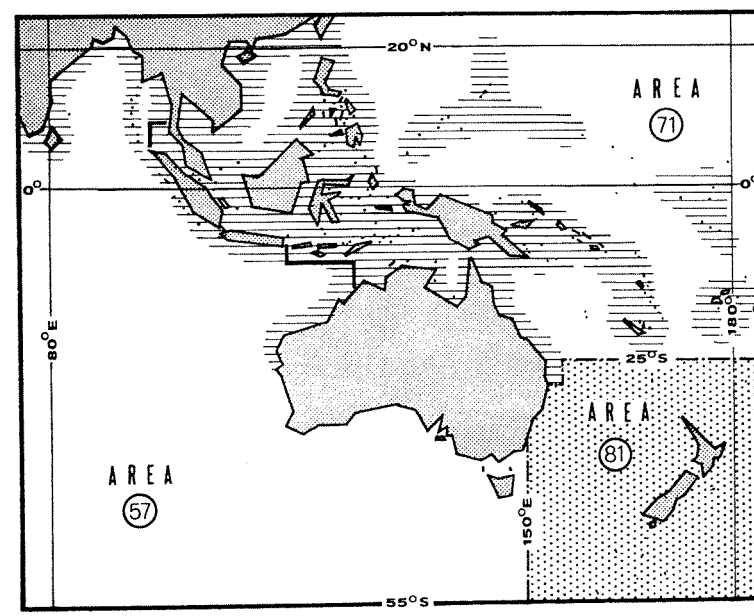
Throughout most warm coastal waters of area.

Inhabits shallow coastal areas and coral and rocky reefs.

Feeds on crustaceans.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCFES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with gill nets and traps.

Marketed mostly fresh.

CARAN Ulua 1

1974

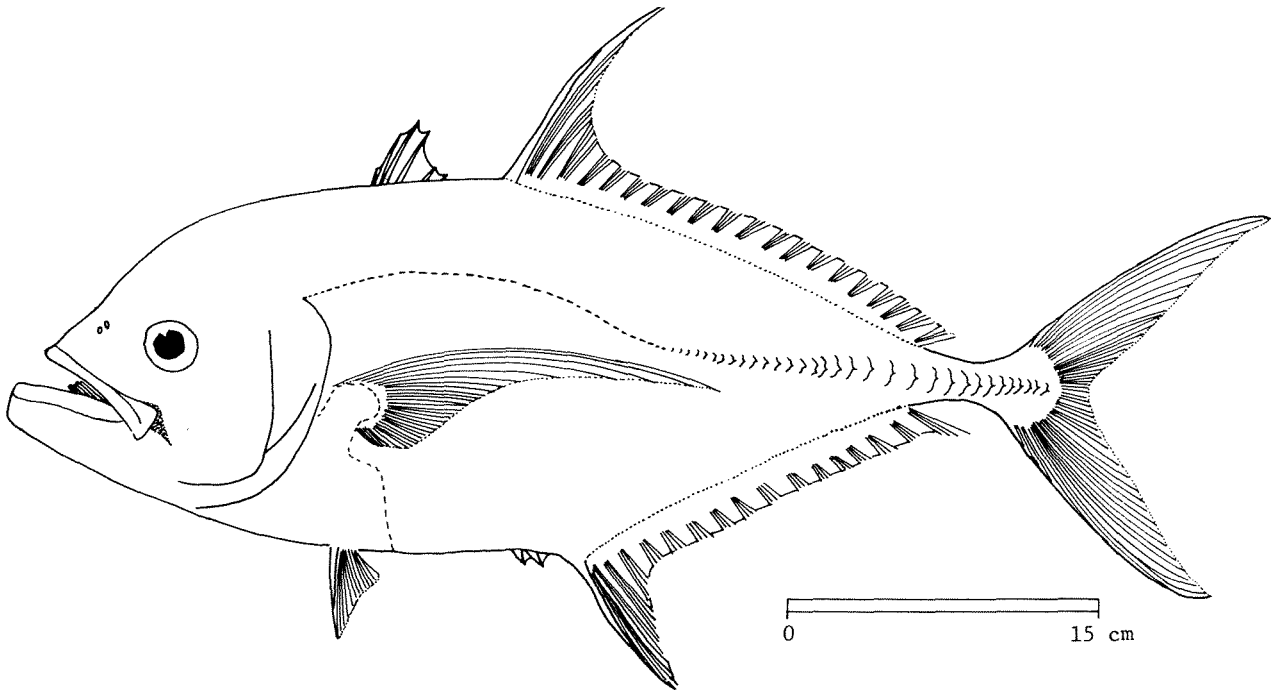
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CARANGIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Ulua mentalis Ehrenberg in Valenciennes, 1833

SYNONYMS STILL IN USE: *Ulua mandibularis* (Macleay, 1883)



VERNACULAR NAMES:

FAO: En - Cale-cale trevally
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A deep-bodied, strongly compressed carangid. Head profile strongly arched above eye, especially in *large adults. Lower jaw deep, increasingly projecting beyond upper jaw* in *larger fishes.* Upper jaw reaching to below middle of eye, sometimes only to pupil. A single row of minute teeth in jaws: fine teeth on vomer and palatines (roof of mouth), none on tongue. *Gill rakers numerous and extremely long and feathery, projecting into mouth alongside tongue; 50 to 59 gill rakers on lower limb of 1st arch.* 1st dorsal fin with 6 to 8 spines; 2nd dorsal fin with 1 spine and 20 to 21 soft rays. Dorsal fin base a little longer than anal fin base; soft dorsal and anal fins elevated anteriorly. *Pectoral fins falcate, extending to middle of anal fin base. Anal fin with 2 detached spines,* followed by 1 spine and 17 to 18 soft rays. *Breast naked from behind base of pelvic fins to pectoral fins*. Lateral line moderately arched, joining straight portion under 8th to 11th soft dorsal fin rays curved anterior portion slightly shorter than straight portion; 29 to 33 scutes present.

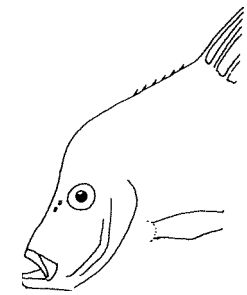
Colour: blue/green above, silvery white below; a black patch behind corner of mouth; lower jaw *white.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

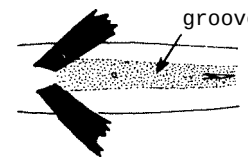
Aleetis species: gill rakers shorter and fewer and head profile very steep; also, anterior soft dorsal and anal fin rays filamentous and scales embedded in skin.

Caranx and *Carangoides* species: gill rakers shorter and fewer; also, lower jaw less heavy, not projecting in large adults.

Other carangid species: gill rakers shorter and fewer; also, either scutes not present *(Traehinotus,* ect.) or body slender, or distinct groove along belly *(Atropus)* or dorsal and anal finlets present *(Decapterus, Megalaspis).*



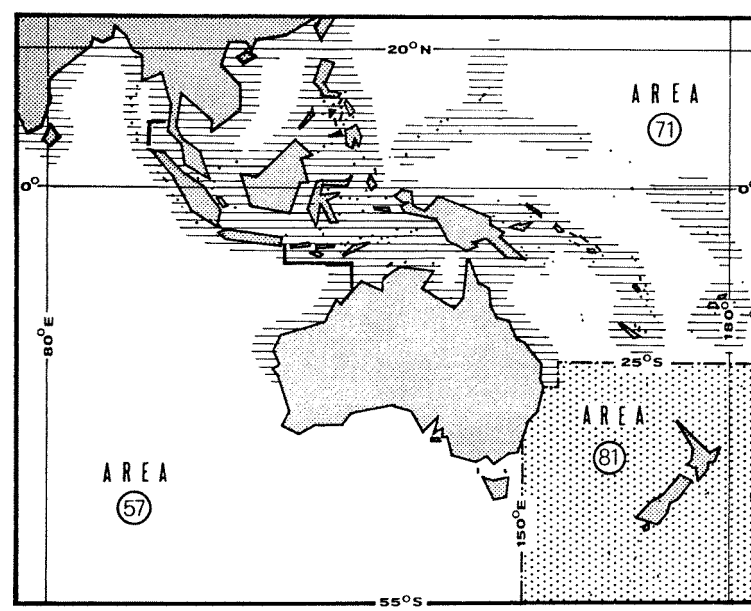
Aleetis



Atropus

SIZE:

Maximum: 100 cm; common: 60 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most warm coastal waters of area.

Inhabits shallow coastal areas.

Feeds on crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of miscellaneous unspecified carangids in 1972 was:

area 57 (Eastern Indian Ocean): 1 400 tons (India only)
area 71 (Western Central Pacific): 31 700 tons (Philippines: 26 800 tons; Malaysia: 4 900 tons)

Caught mainly with gill nets and traps.

Marketed mostly fresh; also dried-salted.

CENTRP

1974

FAO SPECIES IDENTIFICATION SHEETS

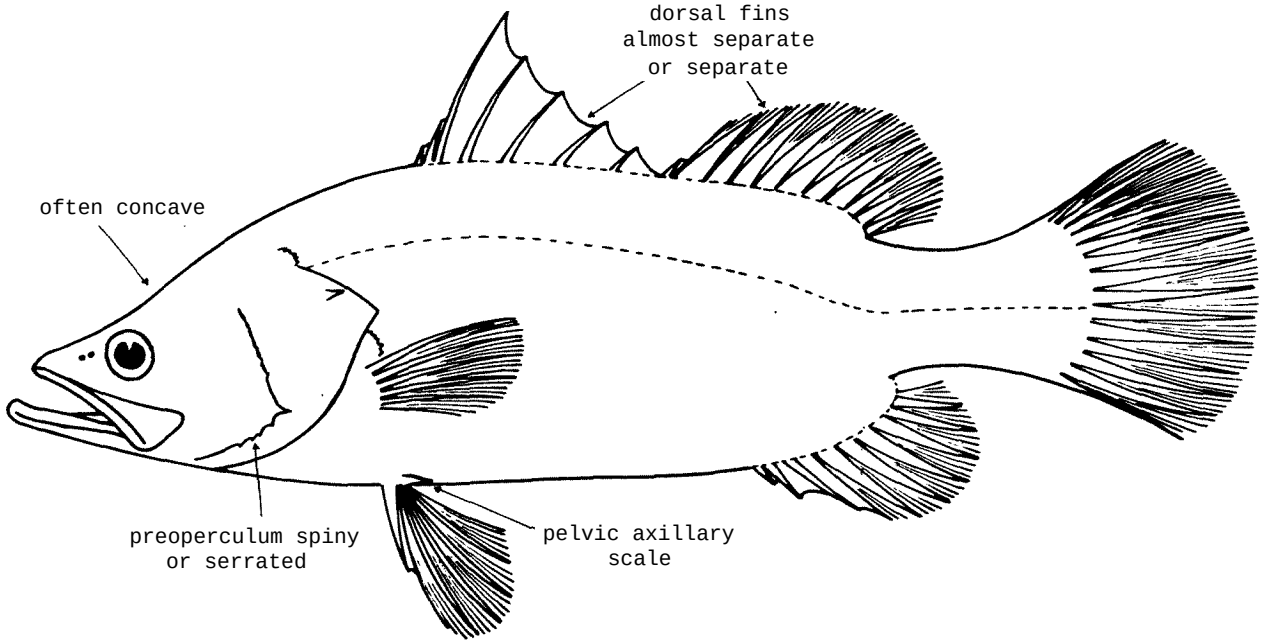
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

CENTROPOMIDAE

Seaperches
(including AMBASSIDAE)

Body elongate or oblong, compressed, usually with convex dorsal profile *(often concave at nape). Mouth moderate or large,* jaws equal or with lower longer than upper; *teeth small,* in narrow or villiform bands on jaws, vomer and palatines, sometimes also on tongue (exceptionally the outer series of jaw teeth enlarged and canine-like). *Pre-operculum with a serrated posterior border or with two ridges; serrated or spine/ below;* operculum with or without spine. Dorsal fin either partly or wholly separated into two, with 7 to 9 strong spines in front, followed by 1 spine and 9 to 15 soft rays; pelvic fins below pectoral fins, with a strong spine and 5 soft rays; an axillary scale present in some genera; anal fin short, with 3 spines and b to 17 soft rays. Scales usually moderate or large, deciduous in some cases.

Colour: *Ambassis* species are usually silvery and somewhat translucent; *Lates* and *Psammoperca* species are usually dark grey or green above and silvery below.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Sciaenidae: have only 2 spines in anal fin.

Lethrinidae: have a continuous and not deeply notched dorsal fin.

Serranidae: *Lateolabrax japonieus,* the only species which could be confused with commercially important Centropomidae in the area (*Lates calcarifer and Psammoperca waigiensis*), has a forked tail (rounded in *Lates* and *Psammoperea)* and spots on upper sides.

Key to Genera

1 a. Pelvic fins with axillary scale; caudal fin rounded

2 a. Upper jaw reaching to below eye ..... *Psammoperca*

2 b. Upper jaw reaching behind eye ..... *Lates*

1 b. Pelvic fins without axillary scale; caudal fin forked ... *Ambassis*

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Ambassis agrammus
Ambassis apogonoides
Ambassis buruensis
Ambassis buton
Ambassis commersonii
Ambassis confinis
Ambassis gigas
Ambassis gymnocephalus
Ambassis interrupta
Ambassis kopsi
Ambassis macrotepis
Ambassis miops
Ambassis natua
Ambassis papuensis
Ambassis reticulata
Ambassis safgha
Ambassis urotaenia
Ambassis wolfii

Lates calcarifer CENTRP Lat 1

Psarrmoperca waigiensis

(The generic names *Chanda, Hamittonia, Bogoda, Pseudambassis,* etc. have been used for species of *Ambassis,* but this group of species is badly in need of revision.)

CENTRP Lat 1

1974

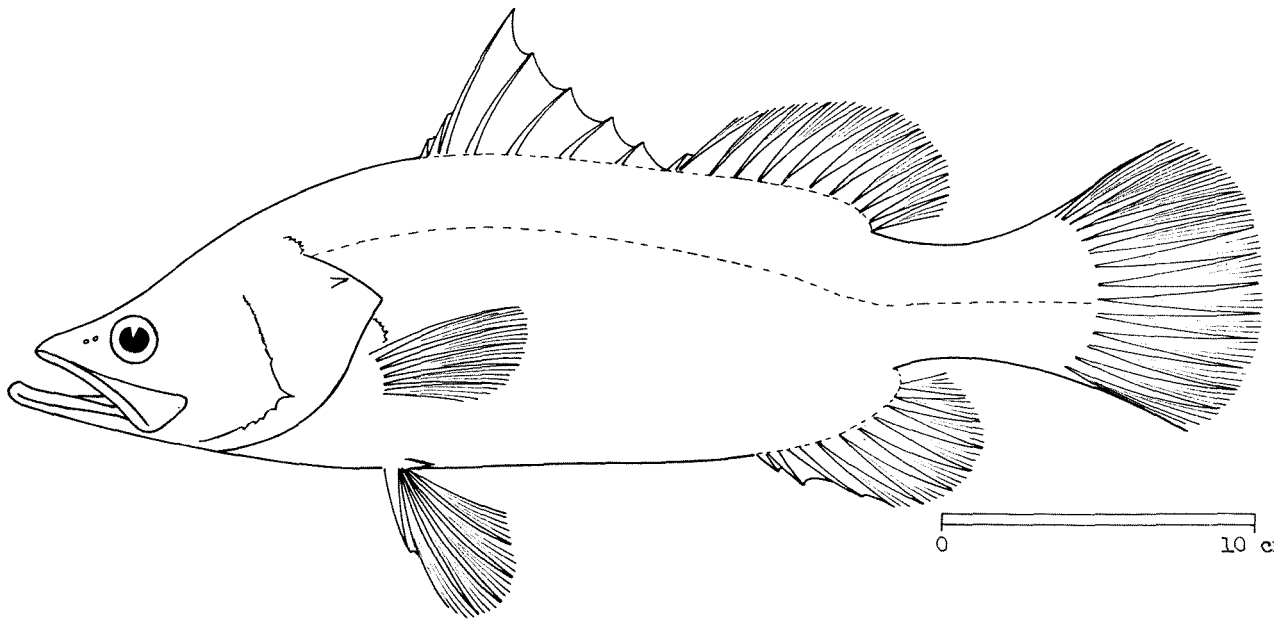
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CENTROPOMIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Lates calcarifer (Bloch, 1790)

SYNONYNE STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Giant seaperch
Fr -
SP -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, compressed, with a deep caudal peduncle. *Head pointed, with concave dorsal profile becoming convex in front of dorsal fin. Mouth large, slightly oblique, upper jaw reaching to behind eye;* teeth villiform, no canines present. *Lower edge of pre-operculum with a strong spine; operculum with a small spine* and with a serrated flap above origin of lateral line. Dorsal fin with 7 to 9 spines and 10 to 11 soft rays; *a very deep notch almost dividing spiny from soft part of fin*; pectoral fin short and rounded, several short, strong serrations above its base; dorsal and anal fins both have scaly sheaths; anal fin rounded, with 3 spines and 7 to 8 soft rays; caudal fin rounded. Scales large, ctenoid (rough to touch).

Colour: two phases, either olive brown above with silver sides and belly (usually juveniles) or green/blue above and silver below. No *spots or bars present on fins or body.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Psammoperca Waigiensis: lower edge of operculum smooth, tongue with patch of small teeth (no teeth on tongue in *L. calcarifer)* and upper jaw reaching to below eye (behind eye in *L. calcarifer).*

Lateolabrax japonicus: black spots on the body and fins, a slightly forked tail, dorsal fin with 13 to 14 spines, the 4th spine longest (3rd spine longest in *L. calcarifer).*

Ambassis species: caudal fin forked; also, no axillary scale at base of pelvic fin.

SIZE:

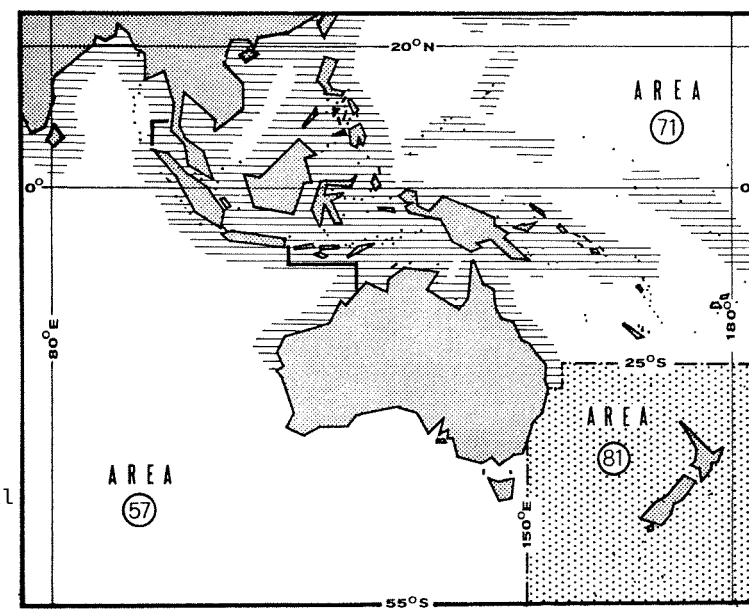
Maximum: 200 cm; common: 25 to 100 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to Queensland (Australia); also, westward to East Africa.

Coastal waters, estuaries and lagoons, including brackish waters. Usually occurs at depths of 10 to 40 m.

Feeds on fish and crustaceans.



PRESENT FISHING GROUNDS:

Caught in estuaries and coastal waters, down to 40 m. Catch rates often show seasonal fluctuation, e.g. in Hong Kong much of the catch is landed in winter when the fish congregate off the mouth of the Pearl.River.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with bottom trawls, handlines, bottom gillnets and traps; also esteemed as an exciting sport fish.

Marketed mostly fresh.

CHAN

1974

FAO SPECIES IDENTIFICATION SHEETS

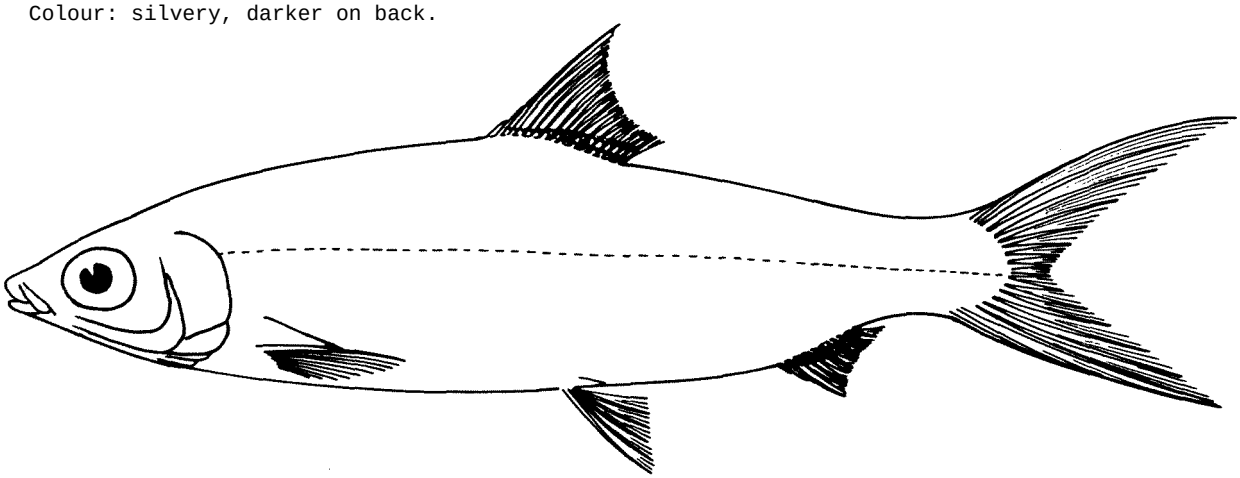
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

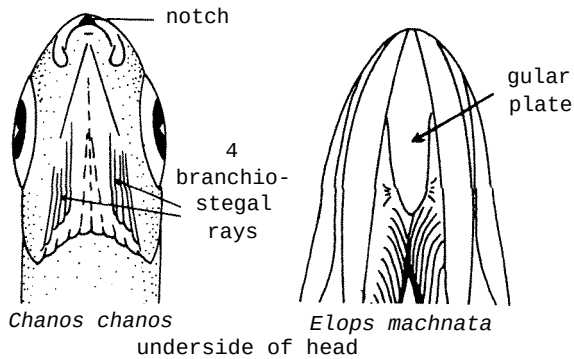
CHANIDAE

Milkfishes

Body elongate, moderately compressed, without scutes along belly. Adipose (fatty) tissue covering eye. 4 branchiostegal rays. *Maxilla short, not reaching back beyond eye centre; lower jaw with symphysial tubercle.* Supramaxillae not present. *No gular plate* (small bony plate between arms of lower jaw). Dorsal and anal fins with basal sheath of scales; large axillary scales at base of pectoral and pelvic fins; caudal fin deeply forked. Scales small, cycloid (smooth); lateral line present.

Colour: silvery, darker on back.





Chanos chanos *Elops machnata*

underside of head

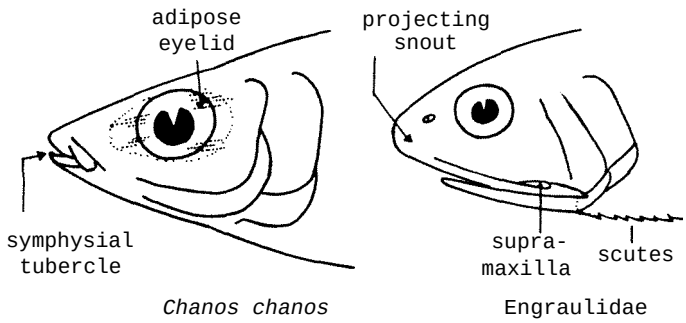
SIMILAR FAMILIES OCCURRING IN THE AREA:

Clupeidae: usually have abdominal scutes; also, no lateral line and more than 4 branchiostegal rays (except *Hyperlophus,* which has predorsal scutes).

Megalopidae: have a gular plate, large scales and last dorsal ray prolonged into a filament.

Elopidae: have a gular plate, a long maxilla (reaching far behind eye) and supramaxillae in upper jaw.

Engraulidae: have a pig-like snout, keeled scutes on belly, 1 or 2 supramaxillae in upper jaw and no lateral line.



Chanos chanos Engraulidae

FAO Sheets CHANIDAE Fishing Areas 57,71

Key to Genera

Chanos only

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Chanos chanos CHAN Chan 1

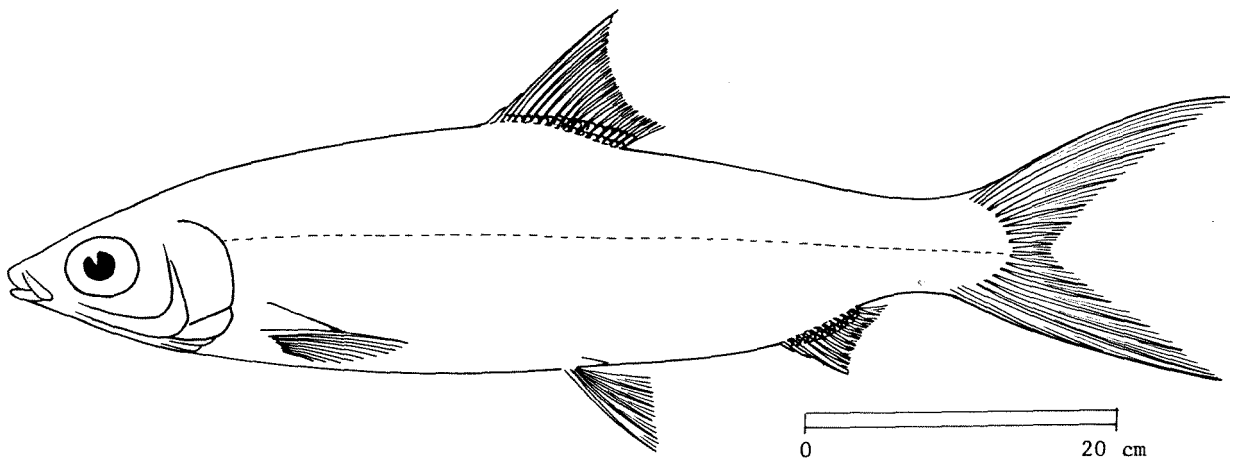
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CHANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Chanos chanos (Forsskå1)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Milkfish
Fr -
SP -

NATIONAL:

DISTINCTIVE CHARACTERS:

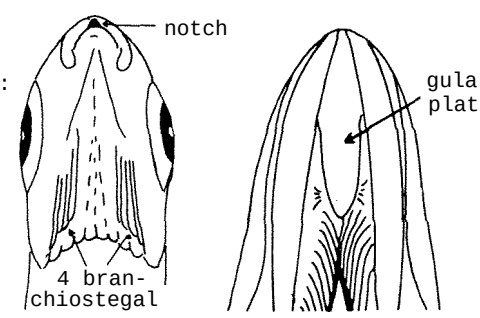
Body elongate, moderately compressed, with no scutes along belly. 4 *branchiostegal rays. Mouth small, transverse, without teeth;* upper jaw slightly projecting, with no supramaxillae; lower jaw with a small symphysial tubercle at tip, fitting into a notch. No *gular plate.* Dorsal fin at mid point of body with 13 to 17 soft rays; anal fin short, with 9 to 11 soft rays, close to caudal fin; pectoral and pelvic fins with large axillary scales; caudal fin deeply forked. Scales small, cycloid (smooth); lateral line present.

Colour: back olive green, sides silvery. Dorsal, anal and caudal fins with black margin. Inside of pectoral and pelvic fins dark.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Clupeidae: abdominal scutes present; also, no lateral line and more than 4 branchiostegal rays (except *Hyperlophus,* which has pre-dorsal scutes).

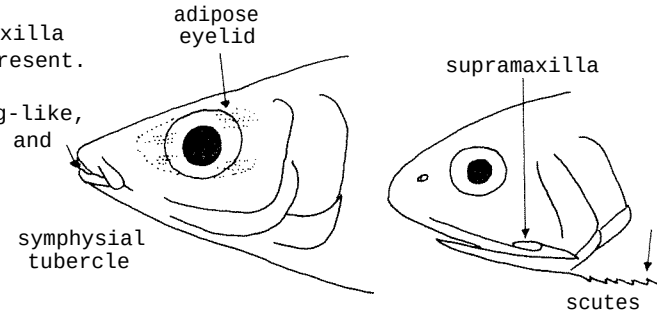
Megalops cyprinoides: a gular plate present, but scales very large and last dorsal ray prolonged into a filament.



Chanos chanos *Elops machnata*
underside of head

Elops machnata: a gular plate present but maxilla long (reaching far behind eye) and supramaxillae present.

Species of Engraulidae (anchovies): snout pig-like, keeled scutes on belly, supramaxillae in upper jaw and no lateral line.



Chanos chanos Engraulidae

SIZE:

Maximum: 180 cm; common: about 100 cm.

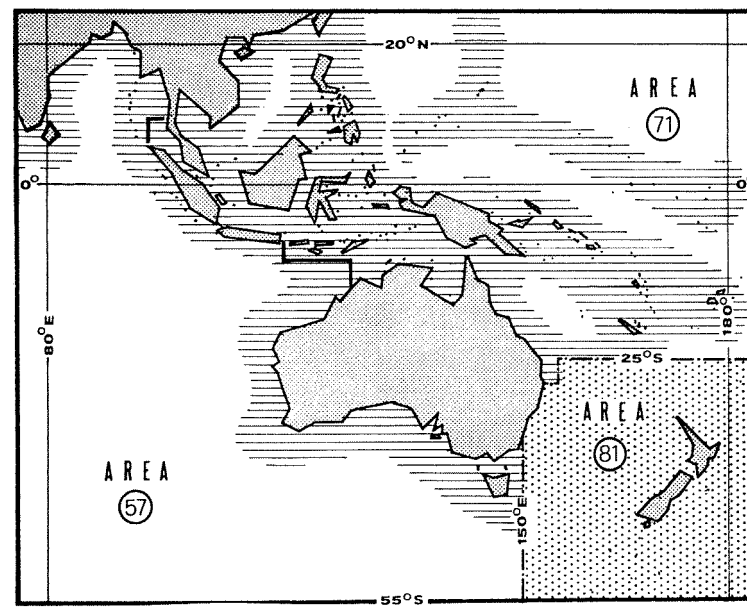
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout entire area; also found throughout Indo-Pacific.

Found in coastal waters, entering estuaries, rivers and lakes.

Feeds on bottom invertebrates

For further details, see FAO Species Synopsis No. FB/54 (1960).



PRESENT FISHING GROUNDS:

Shallow waters of the continental shelf; also largely cultured in tanks and ponds (the larvae being brought in from the sea for this purpose).

CATCFfS, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported by the Philippines only (1972: 98 900 tons).

Caught mainly with scoop nets, drag nets, set nets and traps.

Marketed fresh, smoked, canned or frozen.

CHIROC

1974

FAO SPECIES IDENTIFICATION SHEETS

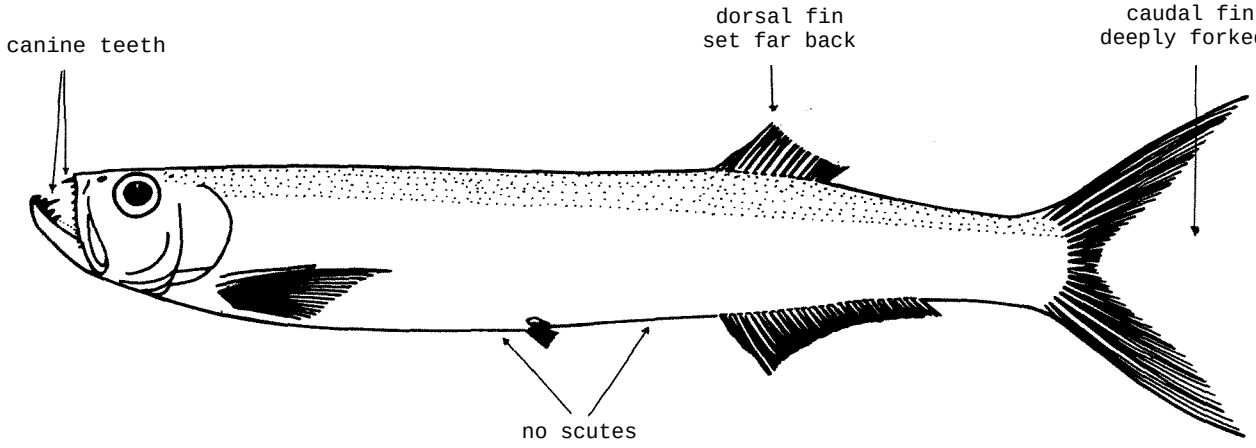
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

CHIROCENTRIDAE

Wolf-herrings

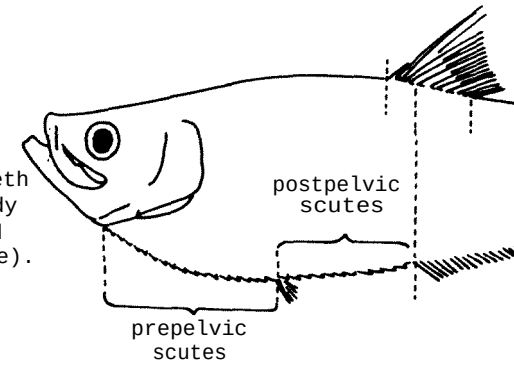
Very elongate, highly compressed fishes resembling the Clupeidae (herrings, sardines) but *without scutes along belly. Large canine teeth in both jaws.* No spiny rays in fins; a single dorsal fin set well behind midpoint of body; pectoral fins set low on body; pelvic fins about equidistant between pectoral base and anal origin; anal fin origin below anterior dorsal fin base; *caudal fin deeply forked.*

Colour: blue/green on back, sides silvery.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Other fishes of similar appearance usually lack canine teeth in jaws; also, some have scutes along belly (Clupeidae) or body tapering to a point *(Trichiuridae),* or dorsal fin more advanced (Engraulidae), or two dorsal fins and body rounded (Sphyraenidae).



Key to Genera

Chirocentrus only

List of Species occurring in the Area
(Code numbers are given for those species
for which Identification Sheets are included)

Chirocentrus dorab CHIROC Chiroc 1

Chirocentrus nudus CHIROC Chiroc 2

CHIROC Chiroc 1

1974

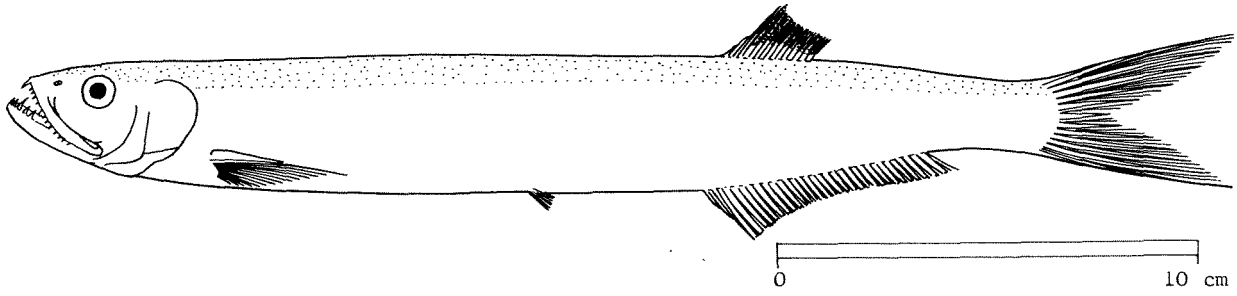
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CHIROCENTRIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Chirocentrus dorab (Forsskål, 1775)

SYNONYMS STILL IN USE: *Chirocentrus hypselosoma* Bleeker, 1852



VERNACULAR NAMES:

FAO: En - Dorab wolf-herring
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, strongly compressed, belly sharp but without scutes; scales very small, easily shed. *Dorsal and anal fins set far back on body;* pelvic fins very small. *Large canine teeth* in both jaws, note especially two canine teeth on pre-maxillae (front part of upper jaw) pointing forward. Anal fin origin about under that of dorsal fin; anal fin base twice or more than twice length of dorsal fin base.

Colour: blue/green on back, flanks silvery; *upper part of dorsal fin black.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

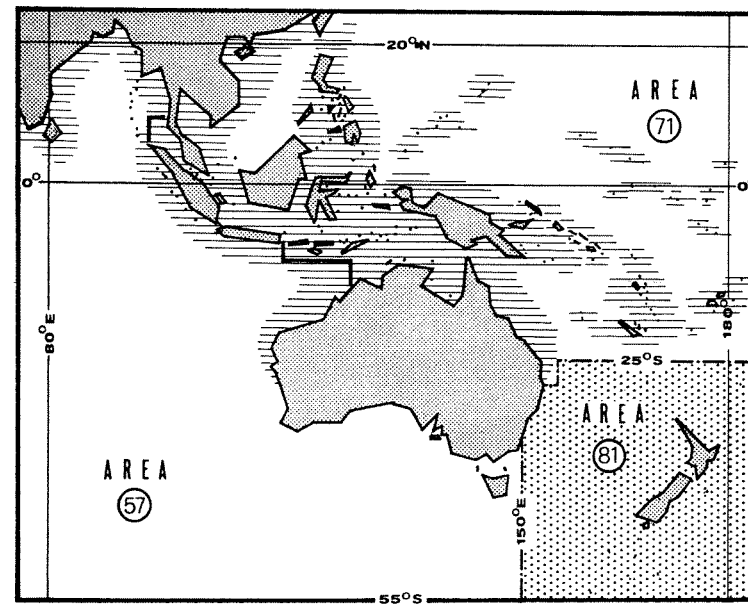
Chirocentrus nudus: pectoral fin length 13 to 18% of standard length (11 to 13% in *C. dorab*) and head depth at eye 10 to 13% of standard length (8 to 117 in C. *dorab);* dorsal fin white or colourless.

Clupeidae: scutes present along belly.

Trichiuridae: body tapering to a point.

SIZE:

Maximum: about 100 cm;
common: about 30 to 50 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout whole of northern part of area and tropical Australian waters; also, westward to East Africa and northward to Japan.

Coastal waters, pelagic, from the shore to about 120 m; common but -not abundant.

Predator, probably feeding on small fishes, crustaceans.

PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

C. *dorab* and C. *nudus* are usually included in a single statistical category. The total reported catch of wolf-herrings,in 1972 was:

area 57 (Eastern Indian Ocean): 4 500 tons (India only)
area 71 (Western Central Pacific): 4 200 tons (Malaysia: 4 100 tons;
Singapore: 100 tons)

Caught with fish traps, gill nets and bottom trawls.

Marketed fresh and made into fish balls.

CHIROC Chiroc 2

1974

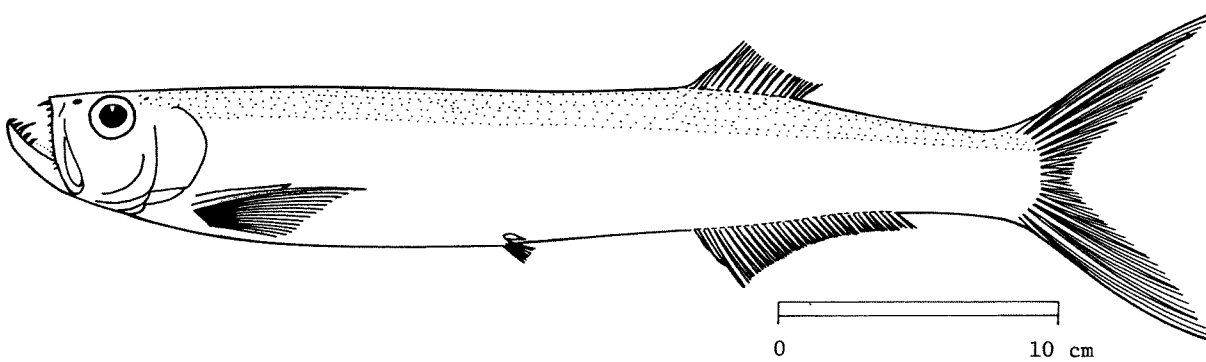
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CHIROCENTRIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Chirocentrus nudus Swainson, 1839

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Whitefin wolf-herring
Fr -
SP -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, strongly compressed, belly sharp but without scutes; scales very small, deciduous. *Dorsal and anal fins set far back on body;* pelvic fins very small. *Large canine teeth* in both jaws, note especially two large canine teeth on pre-maxillae (front part of upper jaw) pointing forward. Anal fin origin only slightly behind that of dorsal; anal fin base twice or more than twice length of dorsal fin base.

Colour: blue/green on back, flanks silvery; *dorsal fin entirely white or colourless.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

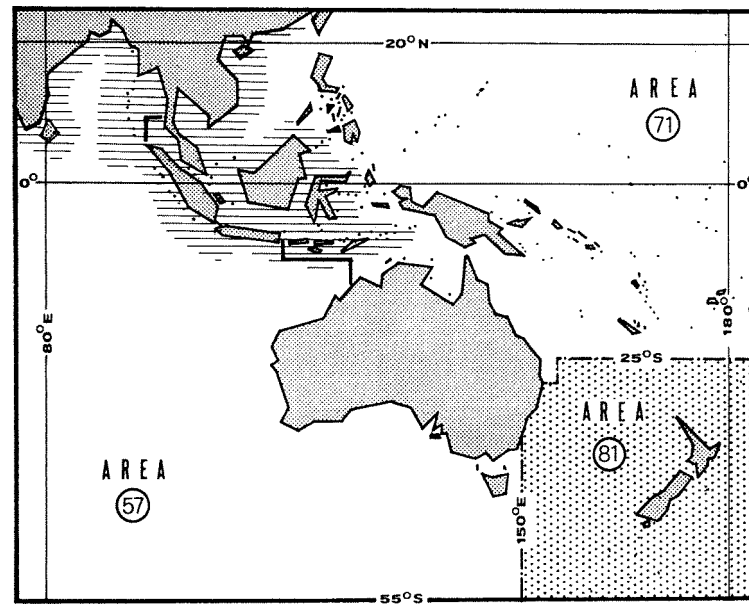
Chirocentrus dorab: pectoral fin length 11 to 137 of standard length (13 to 187 in *C. nudus)* and head depth at eye 8 to 117 of standard length (10 to 137 in C. *nudus);* also, upper part of dorsal fin black.

Clupeidae: scutes present along belly.

Trichiuridae: body tapering to a point.

SIZE:

Maximum: about 100 cm; common: 30
common: 30 to 50 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, but perhaps not to Australian coasts; also, westward to East African coasts and northward to Canton.

Coastal waters, pelagic; common but not abundant.

Predator, probably feeding on small fishes, crustaceans.

PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

C. dorab and C. nudus are usually included in a single statistical category. The total reported catch of wolf-herrings in 1972 was:

area 57 (Eastern Indian Ocean): 4 500 tons (India only)
area 71 (Western Central Pacific): 4 200 tons (Malaysia: 4 100 tons;
Singapore: 100 tons)

Caught with fish traps, gill nets and bottom trawls.

Marketed fresh and made into fish balls.

CLUP
1974

FAO SPECIES IDENTIFICATION SHEETS

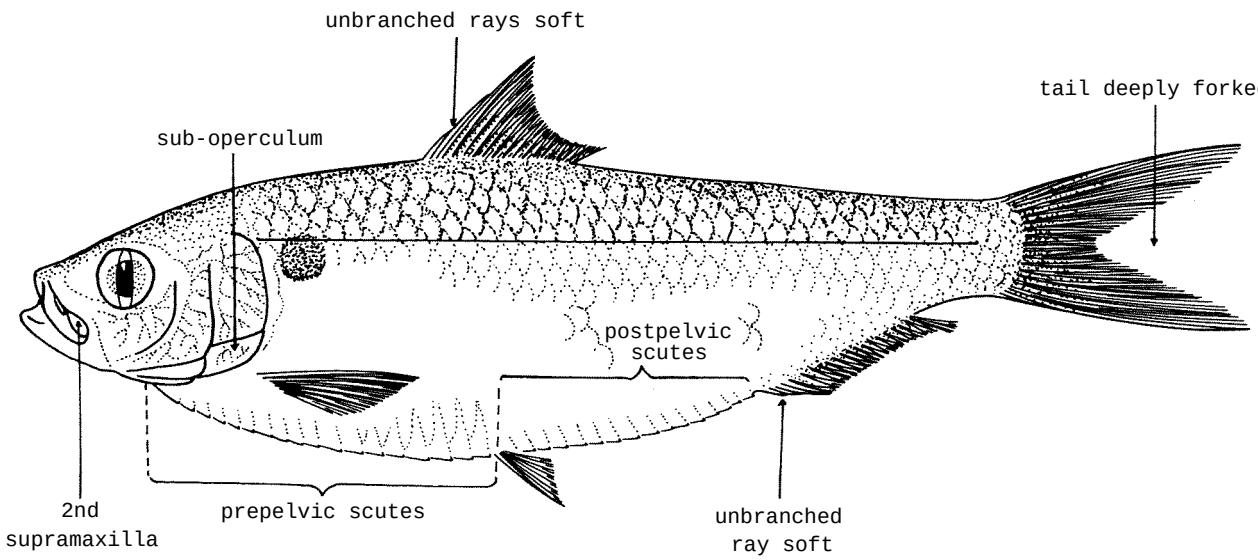
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

CLUPEIDAE

Herrings, sardines, shads, gizzard shads, etc.

Small silvery fishes, mostly 15-25 cm, usually with fusiform, sub-cylindrical bodies but sometimes quite strongly compressed; *scutes present along belly* in most genera (absent in *Dussumieria, Spratelloides).* Lower jaw short but deep, giving *typical clupeid mouth shape* (except inferior mouth in gizzard shads and pointed mouth in *Dussumieria). No spiny rays in fins; a single dorsal fin,* usually short and at midpoint of body; pectoral fins set low on body; pelvic fins about equidistant between pectoral fin base and anal fin origin; anal fin often short (less than 30 rays) but sometimes very long (40-60 rays, e.g. *Ilisha, Opisthopterus*); *caudal fin always deeply forked*. Scales always cycloid (smooth to touch) but often shed rather easily; *no lateral line.*

Colour: usually blue/green on back and silvery on flanks; darker markings include spot behind gill cover *(Anodontostoma),* spots along flanks *(Sardinella sirm),* spot at dorsal origin (some *Sardinella* spp.) and dark pigmentation on all or part of dorsal, pectoral, anal and caudal fins.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Engraulidae: have long upper jaw, 'underslung' lower jaw and pig-like snout.

Atherinidae: have two dorsal fins and no scutes.

FAO Sheets

CLUPEIDAE

Fishing Areas 57,71

Key to Sub-Families

1 a. Branchiostegal rays 14-19; no scutes, belly smooth ..... DUSSUMIERIINAE

1 b. Branchiostegal rays 4-8 (Fig. 1); scutes present (except for Spratelloidinae and some Pellonulinae)

2 a. Anal fin short (less than 30 rays)

3 a. Mouth terminal, lower jaw not flared outward at corners (Fig. 2); last dorsal ray not filamentous

4 a. Upper jaw without median notch (Fig. 3)

5 a. Two supramaxillae (Fig. 4)

6 a. Scutes absent SPRATELLOIDINAE

6 b. Scutes present ..... CLUPEINAE

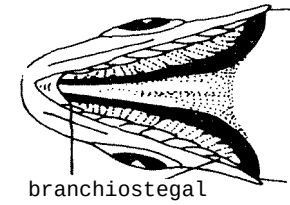
5 b. A single (posterior) supramaxilla ..... PELLONULINAE

4 b. Upper jaw with distinct notch at centre (Fig. 5) ..... ALOSINAE

3 b. Mouth inferior, lower jaw flared at corners (Fig. 6); last dorsal ray often filamentous ..... DOROSOMATINAE

2 b. Anal fin long (more than 30 rays); lower jaw very prominent ..... PRISTIGASTERINAE

Head seen from below



branchiostegal rays

Fig. 1

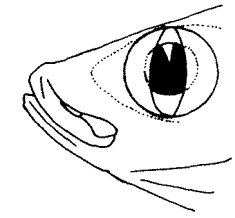


Fig. 2

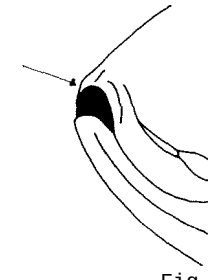
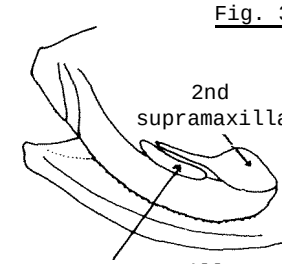


Fig. 3



Key to Genera

DUSSUMIERIINAE (round herrings)

1 a. Pelvic fins under dorsal fin base; 2 supramaxillae; anal rays 14-19 ..... *Dussumeria*

1 b. Pelvic fins behind dorsal fin base; 1 supramaxilla; anal rays 9-13 ..... *Etrumeus*

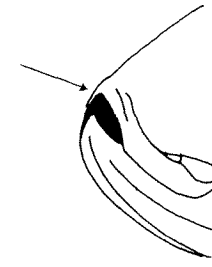


Fig. 3

SPRATELLOIDINAE

Spratelloides only

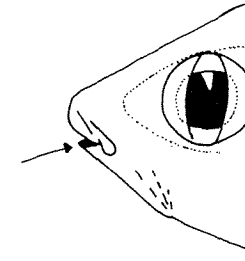


Fig. 6

CLUPEINAE (sardines, sardinellas, herrings, sprats)

1 a. Operculum smooth

2 a. Gill opening with two fleshy outgrowths; pelvic fin rays 8-9

3 a. Frontoparietal striae (on top of head) few (3-6) (Fig. 7); lower portion of paddle-shaped 2nd supra maxilla longer than upper (Fig. 9) ... *Herklotsichths*

3 b. Frontoparietal striae many (7-14) (Fig. 8); lower portion of paddle-shaped 2nd supramaxilla equal to upper (Fig. 10) ..... *Sardinella*

2 b. Gill opening smoothly rounded; pelvic fin rays 7

4 a. 2nd supramaxilla large, rectangular; silver stripe on flanks ..... *Escualosa*

4 b. 2nd supramaxilla paddle-shaped; flanks silvery ..... *Sprattus*

1 b. Operculum with radiating bony striae ..... *Sardinops*

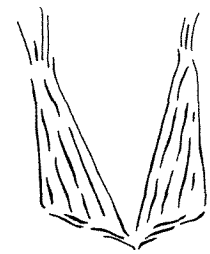


Fig. 7 - *Herklotsichthys* frontoparietal striae

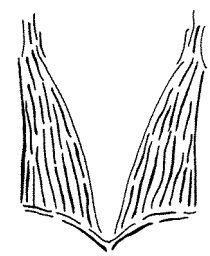


Fig. 8 - *Sardinella* frontoparietal striae

PELLONULINAE

1 a. Belly with strongly keeled scutes

2 a. No scutes on back before dorsal fin

3 a. Anal fin entire, last 2 rays not forming separate finlet; jaw teeth small ..... *Clupeoides*

3 b. Anal fin with last 2 rays forming a separate finlet

4 a. Jaw teeth small; upper jaw less than head length ..... *Corica*

4 b. Jaw teeth enlarged, canines in both jaws; upper jaw half head length ..... *Clupeichthys*

2 b. Scutes present on back before dorsal fin

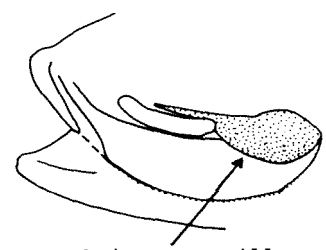
5 a. Pelvic fin with 8 rays; 8 branchiostegal rays ..... *Potamalosa*

5 b. Pelvic fin with 7 rays; 4 branchiostegal rays ..... *Hyperlophus*

1b. Pre-pelvic scutes present only (6-9), barely apparent

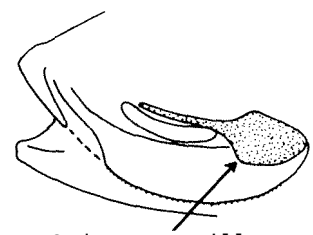
4 a. Pelvic base well behind dorsal fin origin; gill rakers 24-27 ..... *Dayella*

4 b. Pelvic base below or before dorsal fin origin; gill rakers 26-30 ..... *Fhirava*



2nd supramaxilla

Fig. 9 *Herklotsichthys*



2nd supramaxilla

Fig. 10 - *Sardinella*

ALOSINAE (shads, river shads)

1 a. Scales large, 40-50 in lateral series ..... *Xilsa*

1 b. Scales very small, 80-120 in lateral series ..... *Gudusia*

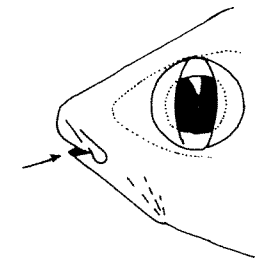


Fig. 11

DOROSOMATINAE (gizzard shads)

1 a. Last dorsal ray filamentous

2 a. Mouth inferior, dentary strongly flared outward at corners (Fig. 11); gill rakers of 1st arch half or less than length of gill filaments ..... *Nematalosa*

2 b. Mouth almost terminal, dentary not strongly flared outward at corners (Fig.12); gill rakers of 1st arch at least three-quarters length of gill filaments

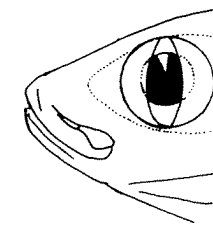


Fig. 12

3 a. Post-pelvic scutes usually 11-12; pre-dorsal scutes present (along back in front of dorsal fin) ..... *Clupanodon*

3 b. Post-pelvic scutes usually 14-16; no pre-dorsal scutes ..... *Konosirus*

1 b. Last dorsal ray not filamentous

4 a. Maxilla with tip slightly expanded and curved downward; paired pre-dorsal scales overlapping in midline *Goniatosa*

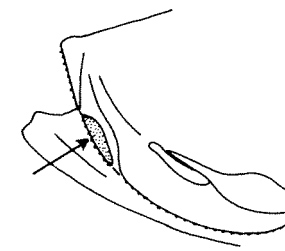


Fig. 13

4 b. Maxilla straight, its tip tapering; median series of pre-dorsal scales ..... *Anodontostoma*

PRISTIGASTERINAE (ilishas, pellonas)

1 a. Toothed hypomaxilla present (Fig. 13) ..... *Pellona*

1 b. Toothed hypomaxilla absent (Fig. 14)

2 a. Pelvic fins presence ..... *Ilisha*

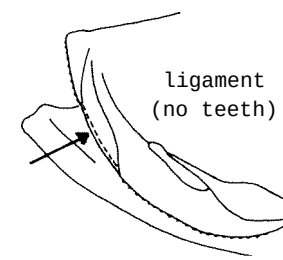


Fig. 14

2 b. Pelvic fins absent

3 a. Dorsal fin present; maxilla tip rounded ..... *Opisthopterus*

3 b. Dorsal fin absent; maxilla tip pointed ..... *Raconda*

List of Species occurring in the Area
(Families in capital letters; code numbers are given
for those species for which Identification Sheets are included)

DUSSUMIERIINAE

Dussumieria acuta	CLUP Duss 1
Etrumeus teres	

SPRATELLOIDINAE

Spratelloides delicatulus	
Spratelloides gracilis	

CLUPEINAE

EscuaLosa thoracata	
Herklotsichthys dispilonotus	
Herklotsichthys punetatus	CLUP Herk 1
Hyperlophus vittatus	
Hyperlophus translueidus	
Potamalosa richmondia	
Sardinella albella	CLUP Sardl 6
Sardinella aurita	
Sardinella brachysoma	CLUP Sardl 5
Sardinella cLupeoides	
Sardinella dayi	
Sardinella fimbriata	CLUP Sardl 7
Sardinella gibbosa	CLUP Sardl 8
Sardinella jussieui	
Sardinella leiogaster	CLUP Sardl 10
Sardinella longiceps	CLUP Sardl 3
Sardinella melanura	CLUP Sardl 4
Sardinella sindensis	
Sardinella sirm	CLUP Sardl 9
Sardinella zunasi	
Sardinops sagax neopilchardus	CLUP Sardop 1
Sprattus bassensis	

PELLONULINAE

Clupeoides borneensis	
Corica soborna	
Clupeichthys goniognathus	
Dayella malabarica	
Ehirava fluviatilis	

ALOSINAE

Hilsa Ilisha	CLUP Hils 2
Hilsa kelee	CLUP Hils 1
Hilsa macrum	CLUP Hils 3
Hilsa reevesi	
Hilsa toli	CLUP Hils 4
Gudusia chapra	
Gudusia variegata	

DOROSOMATINAE

Nematalosa arabiea	
Nematalosa come	
Nematalosa erebi	
Nematalosa galatheae	
Nematalosa japonica	
Nematalosa nasus	CLUP Nem 1
Nematalosa vlcaninghi	
Clupanodon thrissa	
Konosirus punctatus	
Gonialosa manmina	
Gonialosa modesta	
Anodontostoma chacunda	CLUP Anod 1
Anodontostoma chanpole	

PRISTIGASTERINAE

Pellona ditchela	CLUP Pell 1
Ilisha elongata	CLUP Ilish 2
Ilisha macrogaster	
Ilisha megaloptera	CLUP Ilish 4
Ilisha melastoma	CLUP Ilish 3
Ilisha pristigaatroides	CLUP Ilish 1
Ilisha sladeni	
Opisthopterus tardoore	CLUP Opis 1
Opisthopterus valenciennesi	
Raconda russeliana	

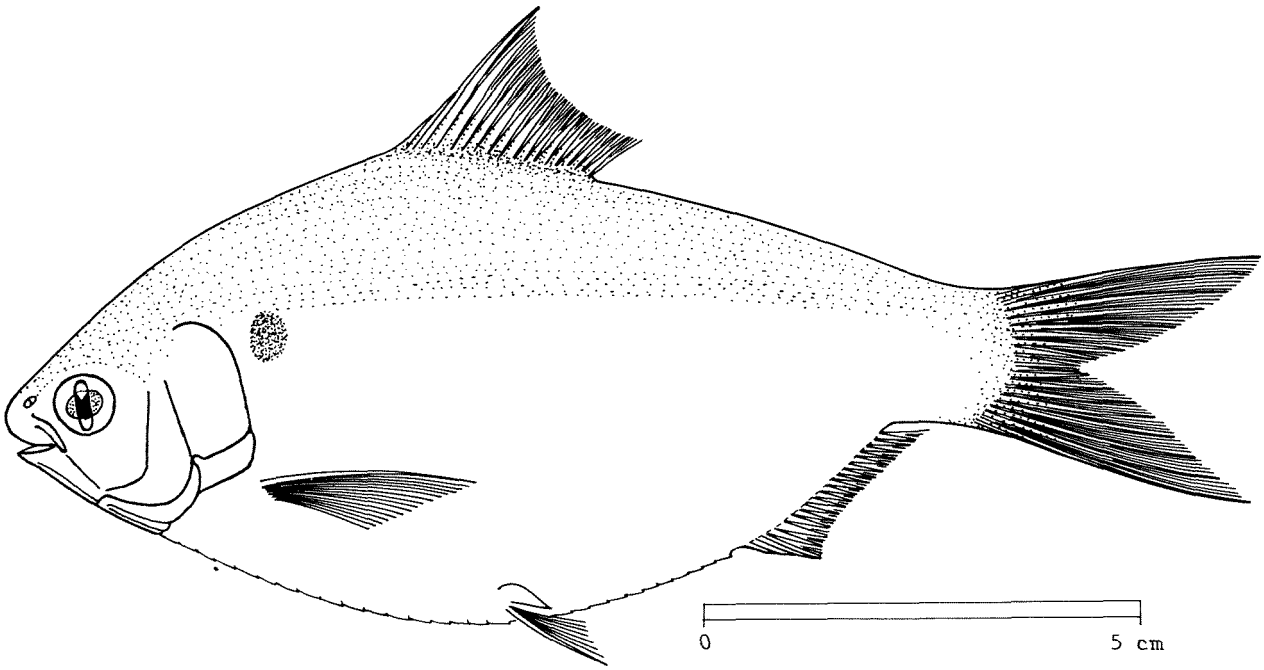
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Anodontostoma Chacunda (Ham. Buch., 1822)

SYNONYMS STILL IN USE: *Dorosoma Chacunda:* Weber & de Beaufort, 1913
Gonostoma javanicus Hyrtl, 1855



VERNACULAR NAMES:

FAO: En - Chacunda gizzard-shad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body deep, almost oval, compressed, its depth 2.1 to 3.1 times in standard length; belly rounded and with scutes. Dorsal fin origin before midpoint of body; *Last dorsal ray not filamentous; pelvic* fins below anterior part of dorsal fin base; anal fin short (about 20 rays). Gill rakers fine but less than 100 on lower arch. *Mouth inferior, maxilla straight, thin and tapering.* A median series of predorsal scales.

Colour: *a dark spot on shoulder, otherwise flanks silvery.*

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

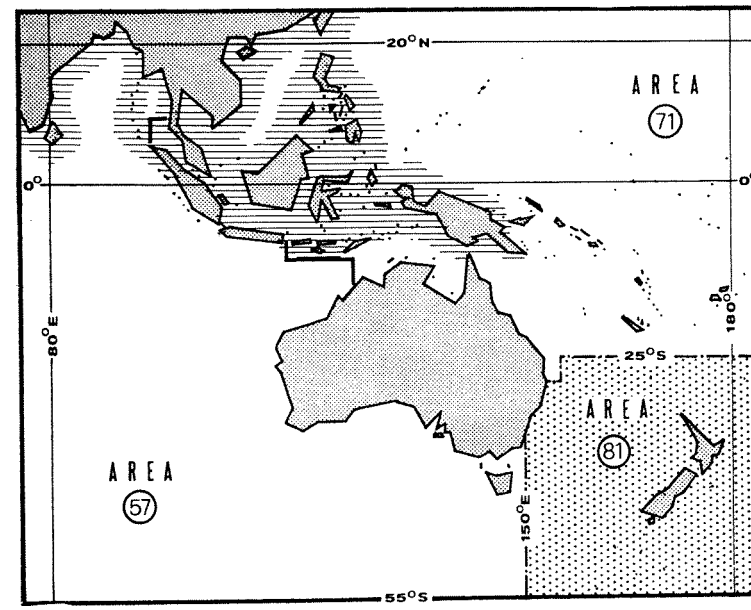
Anodontostoma chanpole: 15 dorsal fin rays (17 to 18 in *A. Chacunda*) and 19 transverse scales (12 to 13 in *A. Chacunda*).

Gonialosa species: maxilla tip curved downward and expanded.

Nematalosa species: last dorsal ray filamentous.

SIZE:

Maximum: 17 cm; common: about 14 cm.



GEOGRAPHICAL DISTRIBUTICN AND BEHAVIOUR:

Throughout most of northern part of area, possibly to northern tip of Australia; also, westward to Persian Gulf and northward to Hainan.

Inhabits coastal waters; pelagic.

Feeds on detritus.

PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported by Malaysia only (1972: 800 tons).

Caught with purse seines, lift nets and set nets.

Marketed fresh, dried, dried-salted, boiled or made into fish meal.

CLUP Duss 1

1974

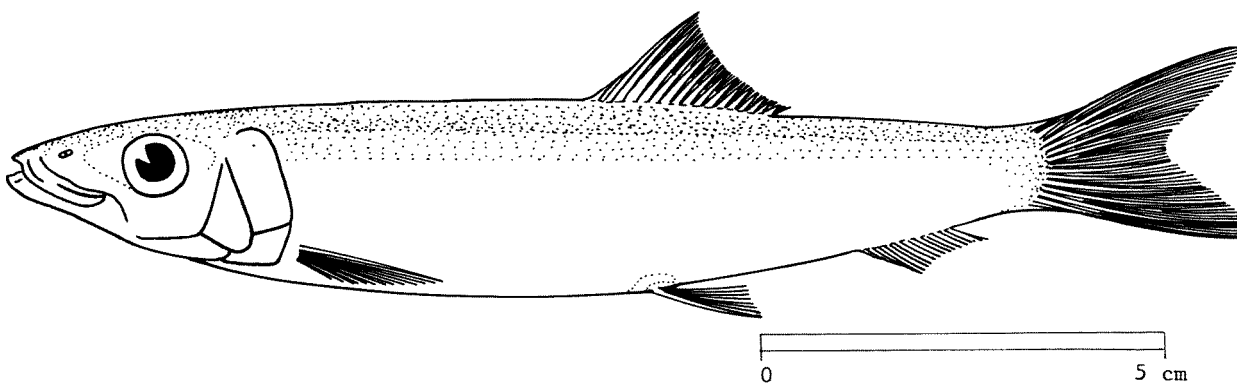
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Dussumieria acuta Valenciennes, 1847

SYNONYMS STILL IN USE:
Dussumieria elopsoides Bleeker, 1850
Dussumieria hasselti Bleeker, 1850
Dussumieria productissima Chabanaud, 1933
Etrumeus (Montalbania) albulina Fowler, 1934



VERNACULAR NAMES:

FAO: En - Rainbow sardine
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

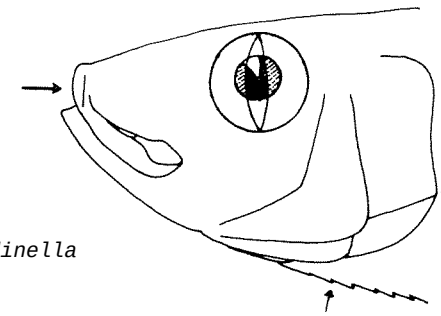
Body elongate, cylindrical; belly rounded, without scutes (except for plate-like W-shaped pelvic scute). Dorsal fin just behind centre point of body; anal fin base very short, well behind dorsal fin base; pelvic fin below middle of dorsal fin base. Premaxillae rectangular (not triangular) giving *distinctive appearance to mouth;* branchiostegal rays numerous (14 to 19).

Colour: irridescent blue/green on back, flanks beginning gold and fading to silver.

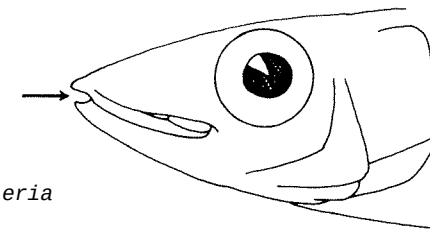
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Round-bodied Clupeidae *(Sardinella* species): scutes along belly and normal clupeid mouth (premaxillae triangular).

Etrumeus species: pelvic fin base behind dorsal fin base and only 9 to 13 anal rays (14 to 19 in Dussumieria).



Sardinella



Dussumieria

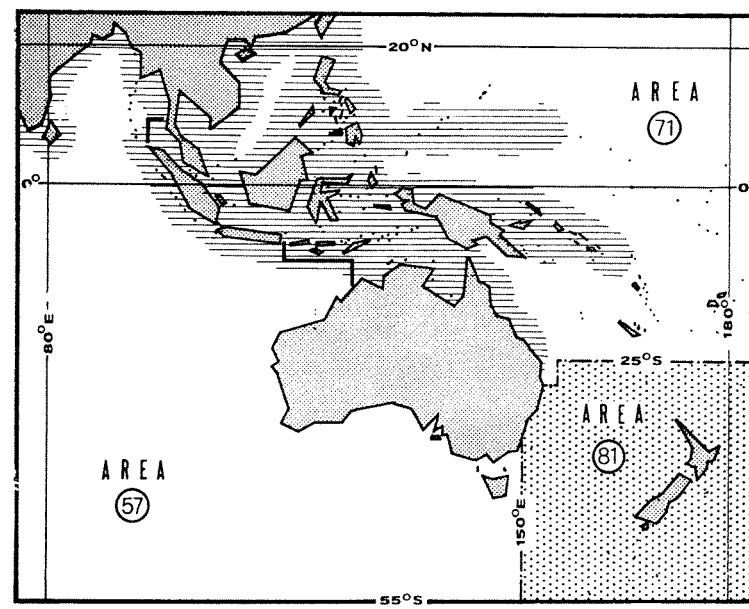
SIZE:

Maximum: 20 cm; common: 10 to 15 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area to northern tip of Australia; also, westward to East Africa and Madagascar and northward to Foochow.

Inhabits coastal waters; pelagic. Very abundant off Indian coasts.



PRESENT FISHING GROUNDS:

Caught throughout its range (especially off India).

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with set nets, beach seines and purse seines.

Marketed fresh, dried, dried-salted or made into fish balls or fish meal.

CLUP Herk 1

1974

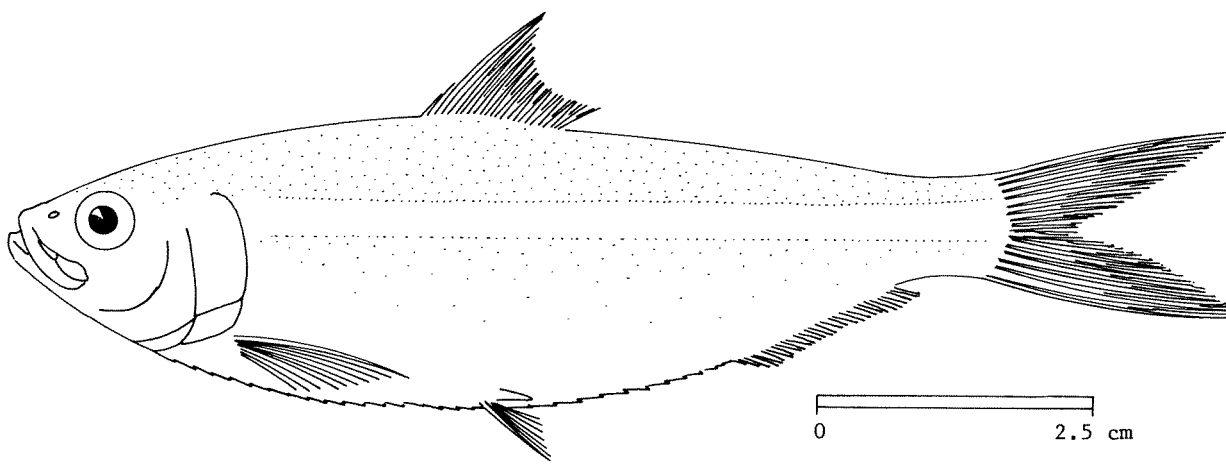
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent, Pacific)

Herklotsichthys punctatus (Rüppell, 1837)

SYNONYMS STILL IN USE:
Harengula punctata (Rüppell, 1837)
Harengula moluccensis Bleeker, 1853
Harengula kunzei Bleeker, 1856
Harengula ovalis: Fowler, 1941



VERNACULAR NAMES:

FAO: En - Spotted herring
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Fairly compressed body, its depth 3.0 to 4.5 times in standard length; *belly sharp with keeled scutes* (17 to 18 before pelvic fin base, 11 to 14 behind). Top of head with 3 to 6 longitudinal *fronto-parietal stripe. Lower part of 2nd supromaxilla longer than upper.* Lower gill rakers 29 to 38.

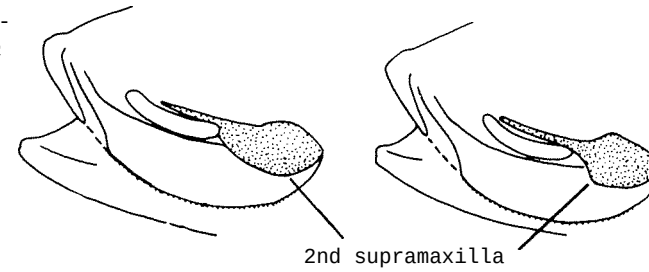
Colour: two forms, possibly distinct species. *Form A: an orange midlateral line, an orange spot on shoulder* and yellow/orange on base of dorsal fin, with a black patch on anterior 10 dorsal fin rays. Form B: *an electric blue midlateral stripe,* dorsal fin grey with at most a yellow tinge.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

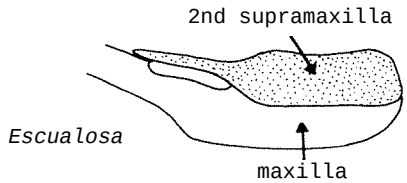
Herklotsichthys dispilonotus: two black saddle-like blotches on back.

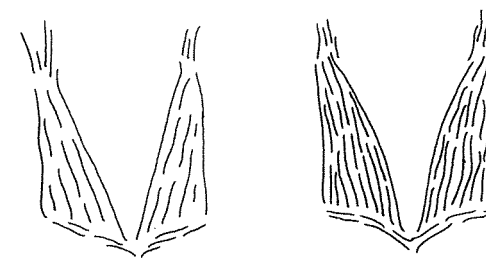
Sardinella species: 2nd supramaxilla paddle-shaped, upper and lower parts about equal in size; also, 7 to 14 frontoparietal striae.

Escuolosa thoracata: a silver stripe along sides; also, 2nd supramaxilla rectangular.



Herklotsichthys *Sardinella*





Herklotsichthys *Sardinella*
frontoparietal striae on top of head

SIZE:

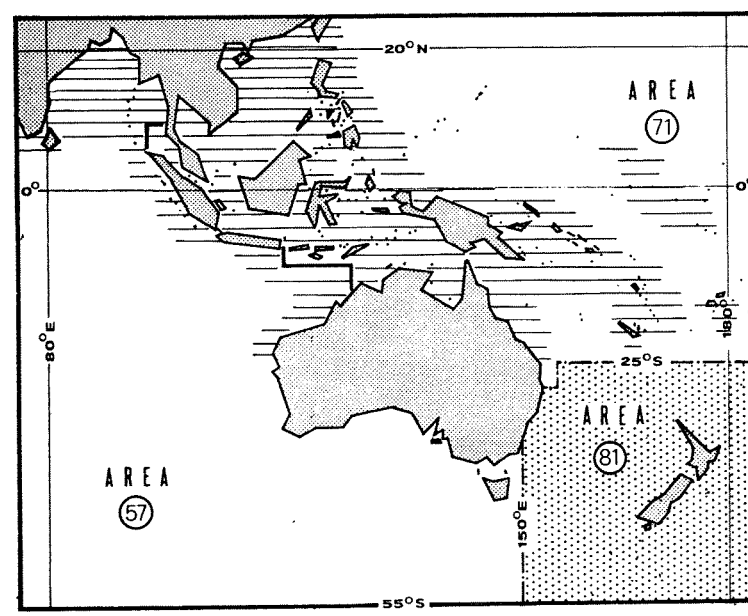
Maximum: 14 cm; common: 10 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout whole of northern part of area and southward to warm waters of Australia; also, westward to East Africa.

Inhabits coastal waters, in schools.

Feeds on small planktonic organisms.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported for the Philippines only (1972: 3 800 tons).

Caught mainly with purse seines, lift nets and set nets.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Hils 1

1974

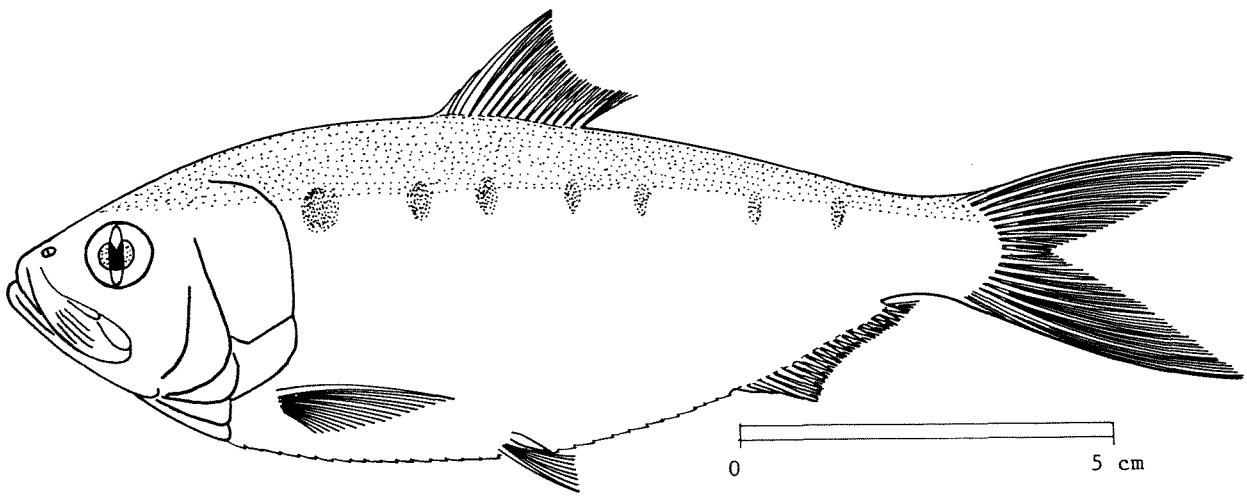
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Hilsa kelee (Cuvier, 1829)

SYNONYMS STILL IN USE:
Macrura kelee: Fouler, 1941
Macrura brevis (Sleeker, 1848)
Hilsa kanagurta (Sleeker, 1852)
Hilsa brachysoma (Sleeker, 1853)
Clupea (Alosa) platygaster: Weber & de Beaufort, 1913



VERNACULAR NAMES:

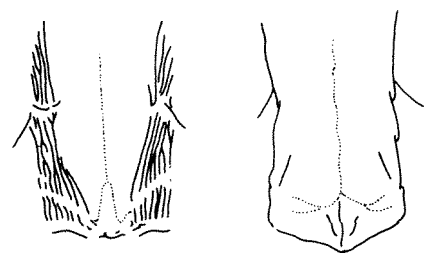
FAO: En - Kelee shad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body strongly compressed, its depth 2.4 to 3.0 times in standard length; belly with sharply keeled scutes. Dorsal fin origin a little before midpoint of body; anal fin base fairly short (20 to 22 fin rays) and lying well behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Upper jaw with distinct median notch when seen from front. Gill rakers very fine and numerous* (100 to 150 on lower part of gill arch). *Frontoparietal striae on top of head numerous.*

Colour: back blue/green, flanks silvery. Black spot behind operculum, followed by 3 to 7 similar spots along flanks.



Hilsa kelee *Hilsa ilisha*

frontoparietal striae
on top of head

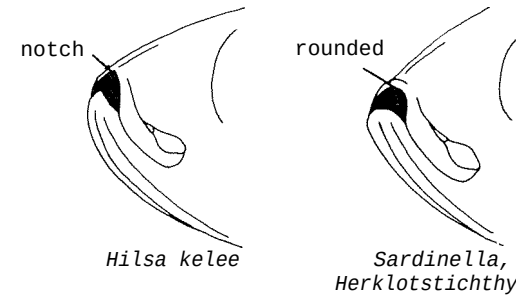
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

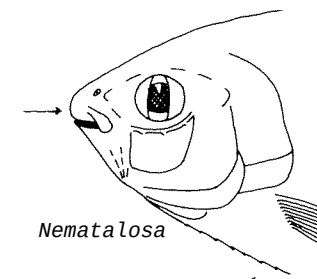
Other species of *Hilsa:* top of head without striated area (frontoparietal striae) whereas many striae in *H. kelee.*

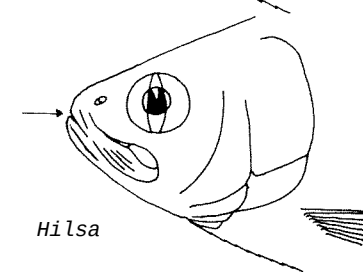
Sardinella, Herklotstichthys species: upper jaw rounded when seen from front (distinct notch in *H. kelee),* and if deep-bodied, they usually have less than 100 gill rakers (100 to 150 in *H. kelee).*

Gudusia species: entirely from freshwaters; very many small scales (80 to 120 in lateral series; 40 to 50 in *Hilsa).*

Gizzard shads *(Nematalosa, Clupanodon, Konosirus* species): last dorsal ray a long filament (short in *Hilsa)* and mouth inferior (terminal in *Hilsa).*







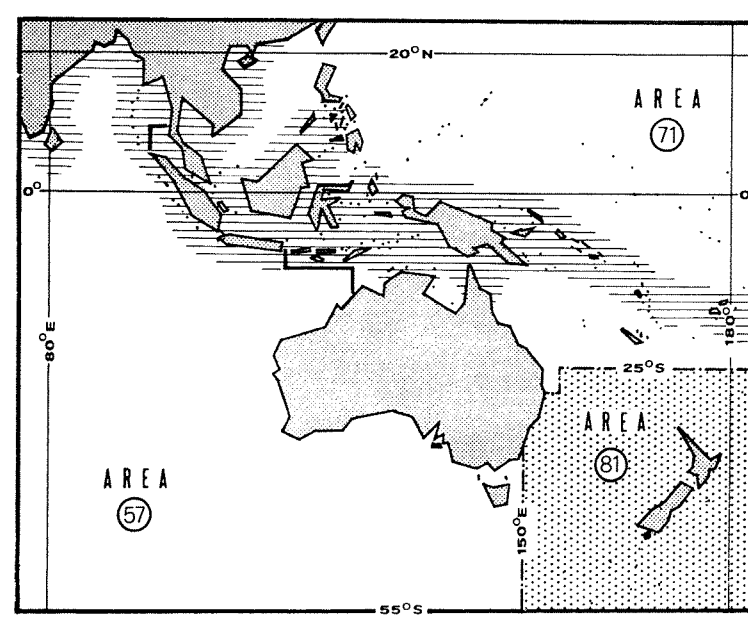
SIZE:

Maximum: 25 cm; common: 15 to 17 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, possibly to northern tip of Australia; also, westward to East Africa.

Inhabits coastal waters; pelagic; not abundant.



PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with set nets and beach seines.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

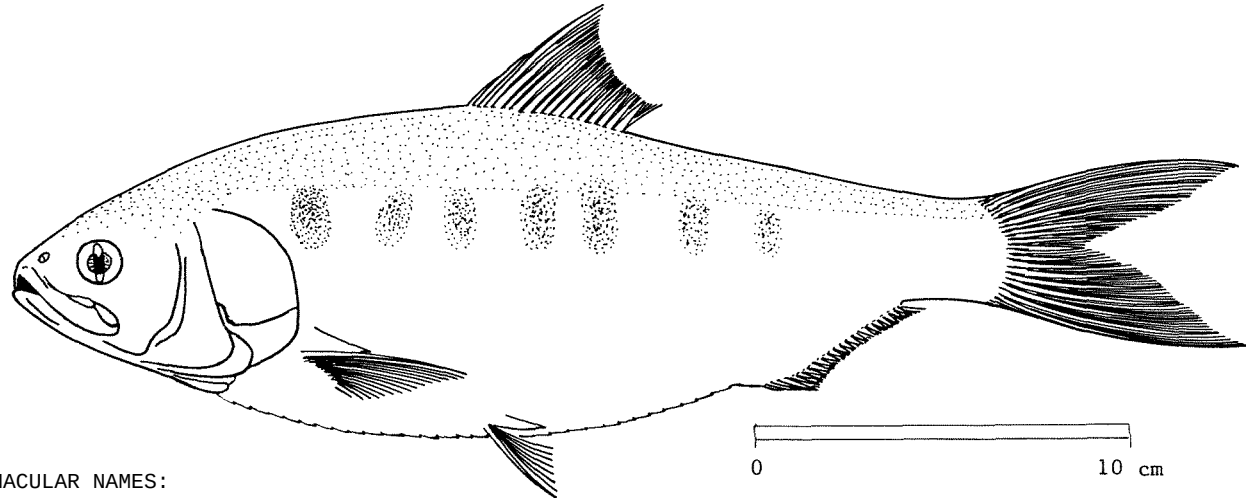
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Hilsa ilisha (Ham. Buch., 1822)

SYNONYMS STILL IN USE: *Tenualosa ilisha* (Ham. Buch., 1822)
Hilsa palasah (Cuvier, 1829)



VERNACULAR NAMES:

FAO: En - Hilsa shad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body fusiform, its depth 2.5 to 3.2 times in standard length; *belly with fairly sharply keeled scutes.* Dorsal fin origin at about midpoint of body; anal fin fairly short (20 to 23 rays) and lying well behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Upper jaw with dis tinct median notch when seen from front. Gill rakers very fine and numerous (120 to 200 on lower part of gill arch). Top of head without pair of striated frontoparietal areas. Caudal fin as long as head.*

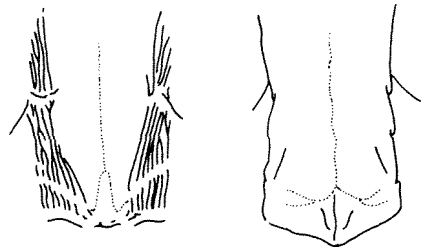
Colour: back blue/green, flanks silvery. A series of black blotches along flanks which may disappear in larger adults.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Hilsa reevesi: operculum broader, its lower edge contained less than twice in operculum height (more than twice in *H. ilisha).*

Hilsa maerura, H. toli: caudal fin much longer (longer than head; about equal to head in *H. ilisha).*

Hilsa kelee: striated frontoparietal areas present on top of head (only a few ridges covered by thick skin in *H. ilisha*, also *H. macrura*, *H. toli*).

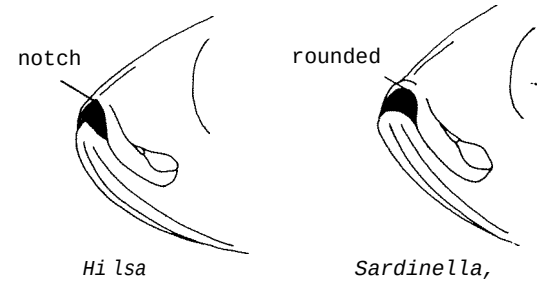


Hilsa kelee
frontoparietal striae
on top of head

Hilsa ilisha

Sardinella, Herklotsichthys species: upper jaw rounded when seen from front (distinct notch in *Hilsa),* and if deep-bodied usually have less than 100 gill rakers (120 to 200 in H. Ilisha).

Gudusia species: entirely from freshwaters; very many small scales (80 to 120 in lateral series; 40 to 50 in *Hilsa).*



Hilsa *Sardinella, Herklotsichthys*

SIZE:

Maximum: 60 cm; common: 30 to 36 cm.

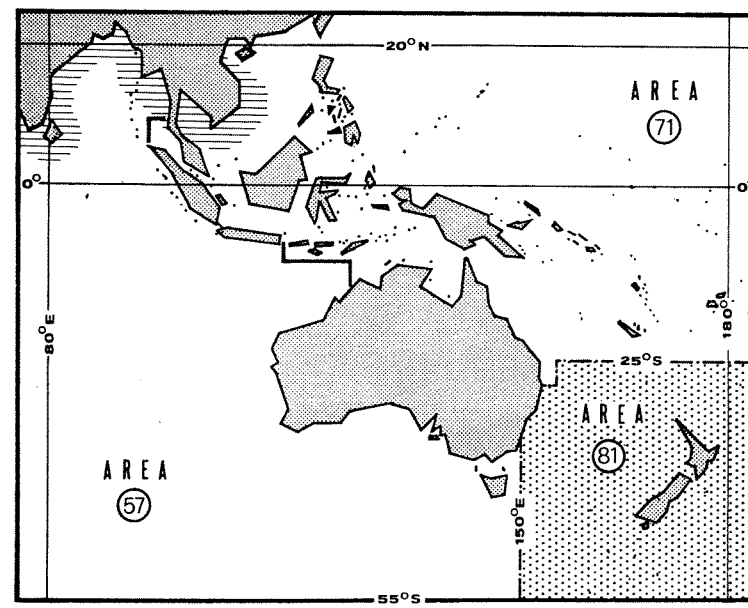
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India to Vietnam; also, westward to Persian Gulf.

Inhabits coastal waters, estuaries and rivers.

Ascends rivers to breed.

For further information see FAO Species Synopsis FB/S25, 1963.



PRESENT FISHING GROUNDS:

Estuaries and rivers, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of diadromous *Hilsa* species in 1970 was:

area 57 (Eastern Indian Ocean): 5 700 tons (India: 3 700 tons; Pakistan: 2 000 tons)
area 71 (Western Central Pacific): 1 700 tons (Malaysia only)

Caught with fishing weirs and drift gill nets in estuaries and rivers during upstream migration.

Marketed fresh, dried and dried-salted.

CLUP Hils 3

1974

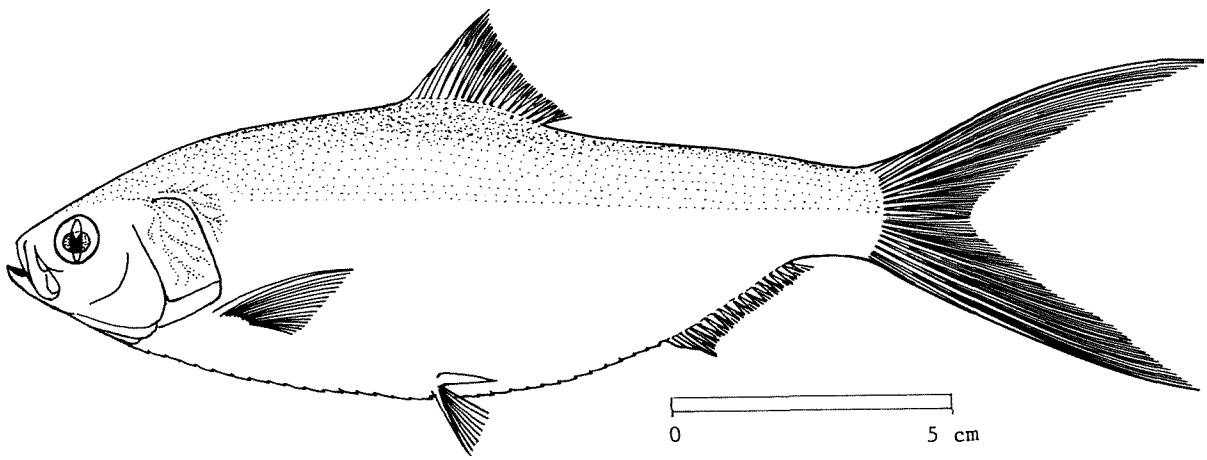
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Hilsa macrura (Bleeker, 1852)

SYNONYMS STILL IN USE: *Clupea (Alosa) macrura*: Weber & de Beaufort, 1913
Macrura macrura: Fowler, 1941



VERNACULAR NAMES:

FAO: En - Longtail shad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body fusiform, its depth 2.6 to 3.0 times in standard length; *belly with fairly sharply keeled scutes.* Dorsal fin origin a little before midpoint of body; anal fin fairly short (20 rays) and lying well behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Upper jaw with dis tinct median notch when seen from front; maxilla not reaching to vertical from eye centre.* Gill rakers fine and numerous (60 to 80 on lower part of gill arch). Top *of head without pair of striated frontoparietal areas. Caudal fin almost twice Length of head.*

Colour: blue/green on back, silvery below, but with no spots on flanks.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

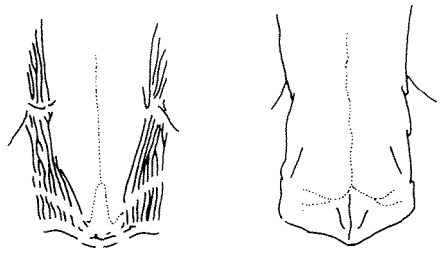
Hilsa toli: hind margin of sub-operculum rounded (almost rectangular sub-operculum in *H. macrura)* and longer maxilla (to vertical from eye centre or beyond; not to eye centre in *H. macrura).*

Hilsa ilisha, H. reevesi: caudal fin shorter (as long as head; longer than head in *H. macrura, H. toli).*

Hilsa kelee: striated frontoparietal areas on top of head present (only a few ridges covered by thick skin in *H. macrura,* also *H. ilisha, H. toll).*

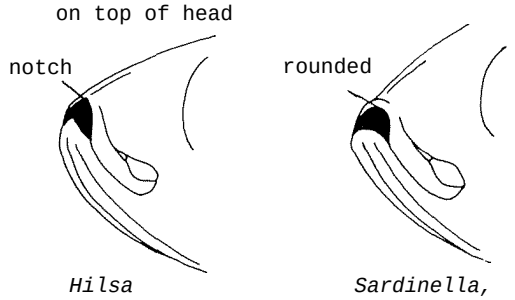
Sardinella, Herklotsichthys species: upper jaw rounded when seen from front (distinct notch in *Hilsa).*

Gudusia species: entirely from freshwaters; very many small scales (80 to 120 in lateral series; 40 to 50 in *Hilsa).*



Hilsa kelee
frontoparietal striae
on top of head

Hilsa ilisha



Hilsa

Sardinella, Herklotsichthys

SIZE:

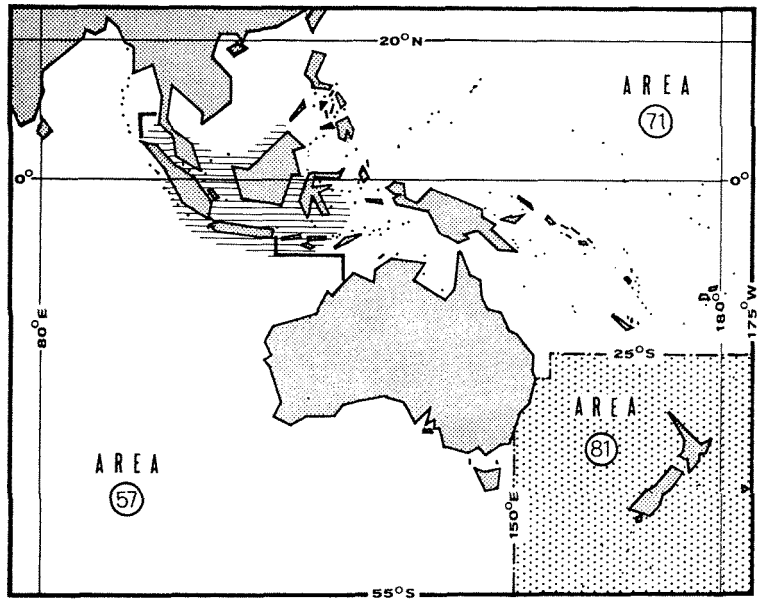
Maximum: 52 cm; common: 18 to 22 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Malaysia and Indonesia.

Inhabits coastal waters, estuaries and rivers.

Ascends rivers to breed.



PRESENT FISHING GROUNDS:

Estuaries and rivers of Indonesia; said to form the object of important fisheries at the mouths of some rivers in Borneo, Malacca and Sumatra.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of diadromous *Hilsa* species in 1970 was:

area 57 (Eastern Indian Ocean): 5 700 tons (India: 3 700 tons; Pakistan: 2 000 tons)
area 71 (Western Central Pacific): 1 700 tons (Malaysia only)

Caught with stake traps in Malaya; also with gill nets and trawl nets.

Marketed fresh, dried and dried-salted.

CLUP Hils 4

1974

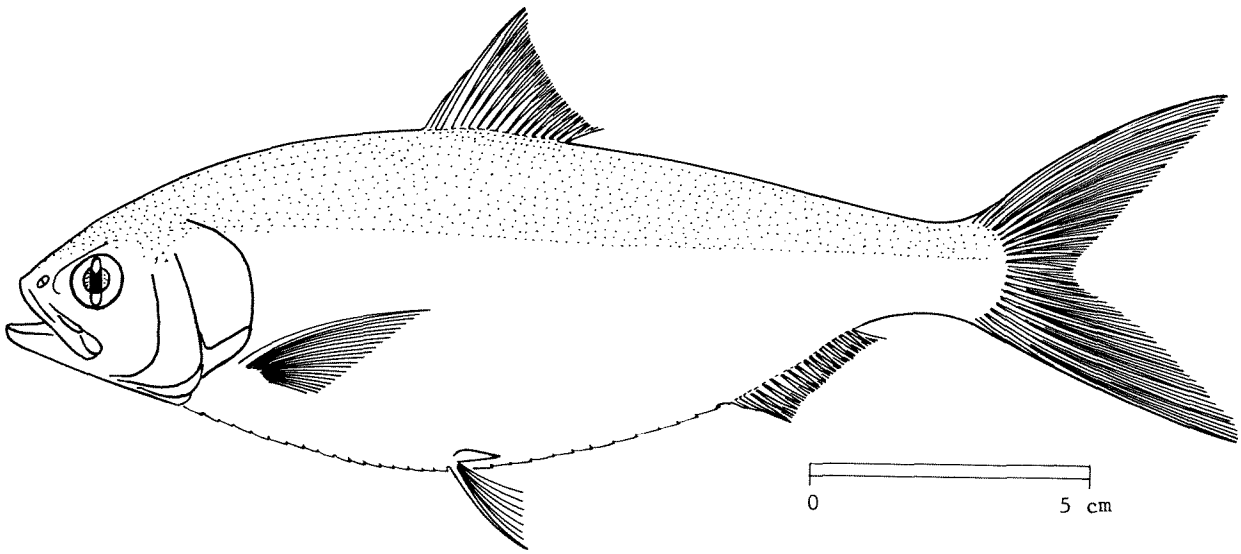
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Hilsa toli (Valenciennes, 1847)

SYNONYMS STILL IN USE: *Clupea (Alosa) toli:* Weber & de Beaufort, 1913
Alausa ctenolepis Bleeker, 1852
Macrura sinensis: Fowler, 1941
Tenualosa sinensis: Munro, 1955



VERNACULAR NAMES:

FAO: En - Toli shad
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body fusiform, its depth 2.5 to 3.1 times in standard length; *belly with fairly sharply keeled scutes.* Dorsal fin origin a little before midpoint of body; anal fin fairly short (18 to 20 rays) and lying well behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Upper jaw with distinct notch when seen from front; maxilla reaching to vertical from eye centre or beyond.* Gill rakers fine and numerous (70 to 95 on lower part of gill arch). *Top of head without striated frontoparietal areas. Caudal fin somewhat longer than head.*

Colour: blue/green on back, silvery on flanks.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

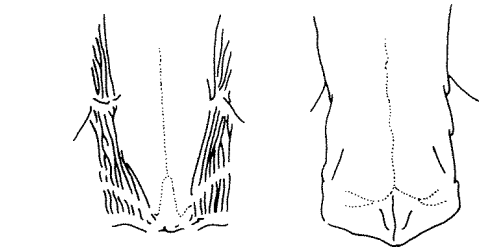
Hilsa macrura: sub-operculum almost rectangular (hind margin rounded in *H. toli*) and maxilla shorter (not reaching to vertical from eye centre; to eye centre or beyond in *H. toli).*

Hilsa ilisha, H. reevesi: caudal fin shorter (as long as head; longer than head in *H. toli, H. macrura).*

Hilsa kelee: striated frontoparietal areas present on top of head (only a few ridges covered by thick skin in *H. toli, H. macrura, H. ilisha*).

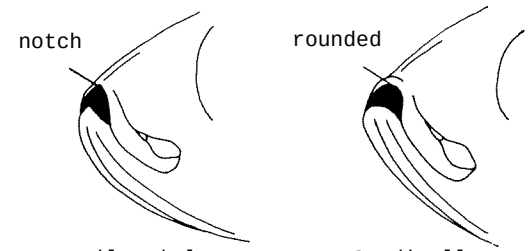
Sardinella, Herklotsichthys species: upper jaw rounded when seen from front (distinct notch in *Hilsa).*

Gudusia species: entirely from freshwaters; very many small scales (80 to 120 in lateral series; 40 to 50 in *Hilsa).*



Hilsa kelee frontoparietal striae on top of head

Hilsa ilisha



Hilsa kelee

Sardinella, Herklotsichthys

SIZE:

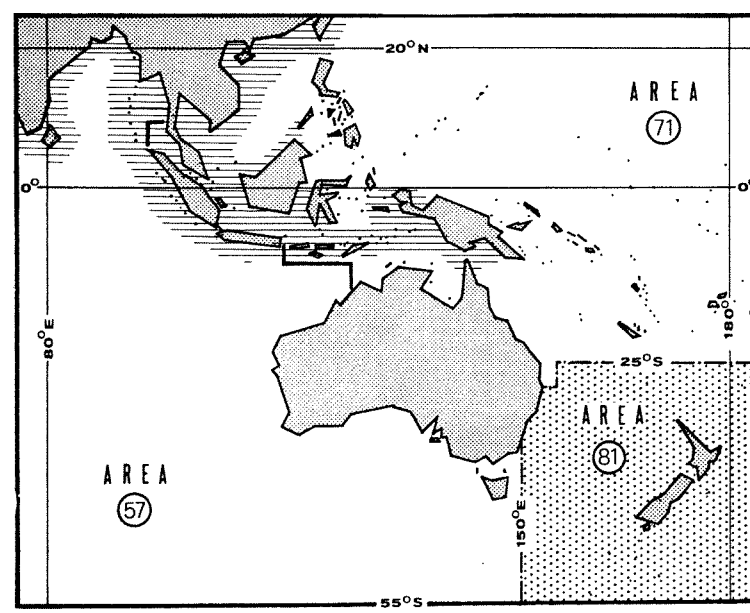
Maximum: 50 cm; common: 30 to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India, Indo-Australian archipelago and northward to Hong Kong, possibly to Taiwan.

Inhabits coastal waters, estuaries and rivers.

Ascends rivers to breed.



PRESENT FISHING GROUNDS:

Estuaries and rivers, throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species: The total reported catch of diadromous *Hilsa* species in 1970 was:

area 57 (Eastern Indian Ocean): 5 700 tons (India: 3 700 tons; Pakistan: 2 000 tons)
area 71 (Western Central Pacific): 1 700 tons (Malaysia only)

Caught in estuaries and rivers during upstream migration with drift gill nets.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Ilish 1

1974

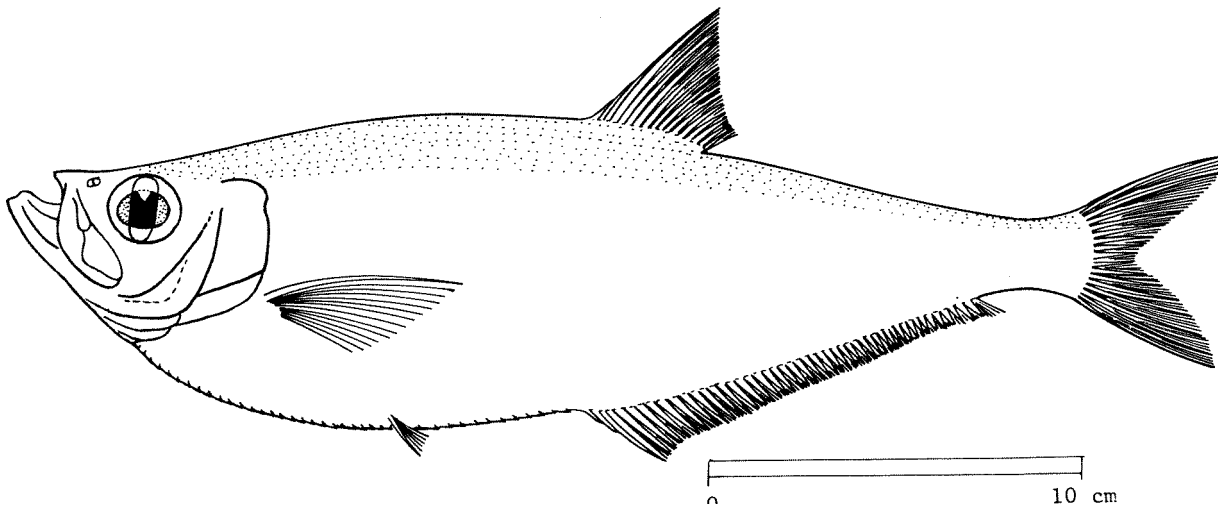
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Ilisha pristigastroides (Bleeker, 1852)

SYNONYMS STILL IN USE: *Pellona amblyuropterus* (Bleeker, 1852)



VERNACULAR NAMES:

FAO: En - Javan ilisha
Fr -
Sp -

NATIONAL:

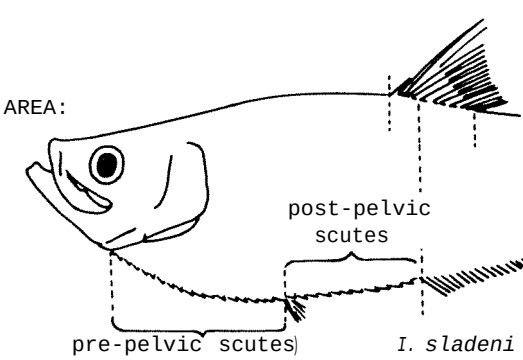
DISTINCTIVE CHARACTERS:

Body fairly deep and compressed, its depth about 3.3 times in standard length; belly with strongly keeled scutes *(pre-pelvic scutes* 26). Dorsal fin short, its origin behind midpoint of body; pelvic fins very small and well before dorsal fin origin; *anal fin long (47 to 50 rays), its origin under anterior part of dorsal fin base.* Head of moderate size, its length about 4.5 times in standard length; *lower jaw very prominent.*

Colour: blue/green on back, flanks silvery, fins hyaline.

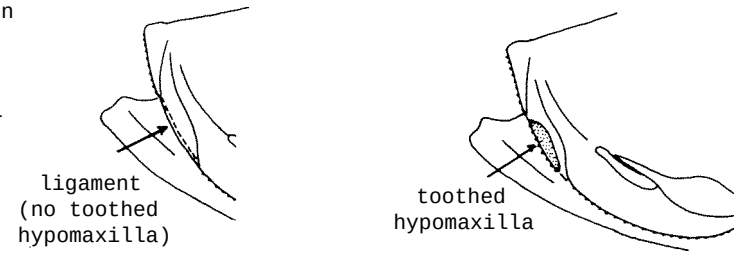
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Ilisha sladeni: body more slender (depth 3.8 to 4.5 times in standard length; about 3.3 times in *I. pristigastroides)* and fewer pre-pelvic scutes (23 to 24; 26 in I. *pristigastroides).*



Other species of *Ilisha:* anal fin origin below posterior part of dorsal fin base.

Pellona species: a toothed hypomaxilla present in upper jaw (can be felt with fingernail; a soft ligament in *Ilisha* species).



Ilisha *Pellona*

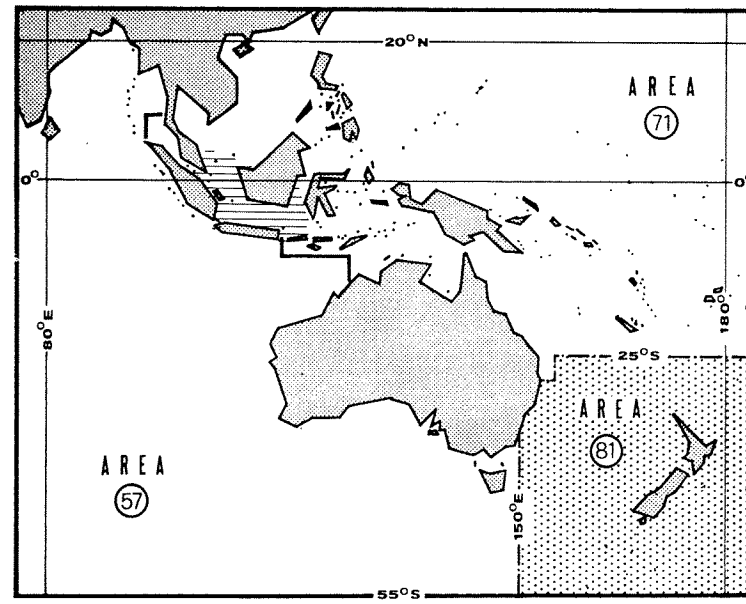
SIZE:

Maximum: 38 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Java, Sumatra, Singapore and Borneo; but possibly more widespread.

Inhabits estuaries and rivers.



PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with lift nets and set nets.

Marketed fresh, dried and dried-salted.

CLUP Ilish 2

1974

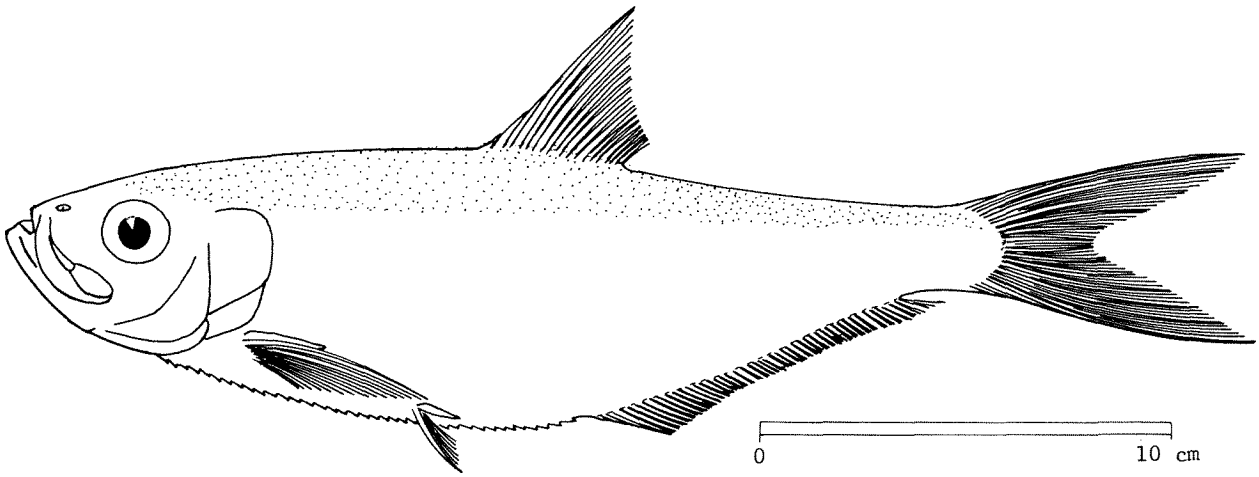
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Ilisha elongata (Bennett, 1830)

SYNONYMS STILL IN USE: *Pellona elongata:* Weber & de Beaufort, 1913
Ilisha affinis (Gray, 1830)
Ilisha abnormis Richardson, 1846



VERNACULAR NAMES:

FAO: En - Elongate ilisha
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body compressed but *fairly slender, its depth 3.4 to 4.1 times in standard Length;* belly with *strongly keeled scutes (total 35 to 39).* Dorsal fin short, its origin behind midpoint of body; pelvic fins very small and well before dorsal fin origin; *anal fin long (43 to 50 rays), its origin below posterior part of dorsal fin base.* Head of moderate size, its length 4.2 to 4.5 times in standard length; *Lower jaw very prominent.*

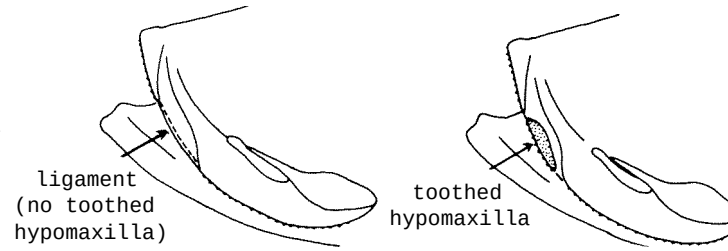
Colour: back blue/green, flanks silvery.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Ilisha melastoma, I. megaloptera, I. macrogaster: body deeper (depth less than 3.3 times in standard length; 3.4 to 4.1 in *I. elongata*); usually 27 to 34 scutes (35 to 39 in *I. elongata*).

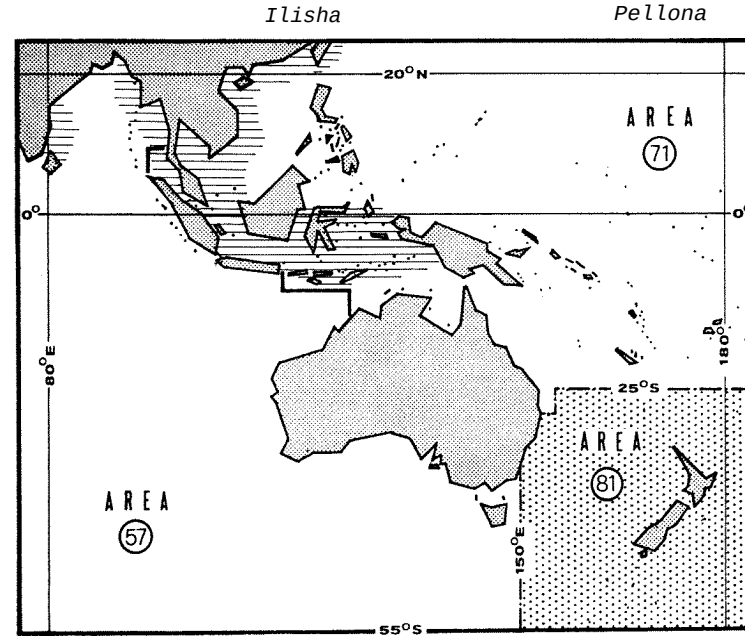
Ilisha pristigastroides: anal fin origin below anterior half of dorsal fin base.

Pelona species: toothed hypomaxilla present in upper jaw (can be felt with fingernail; a soft ligament in *Ilisha* species).



SIZE:

Maximum: 40 cm; common: 30 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Burma to New Guinea; westward to Pondicherry (eastern coast of India: single record) and northward to Japan.

Inhabits coastal waters; probably not abundant.

PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with purse seines, beach seines, gill nets, lift nets, trap nets and bottom trawls.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Ilish 3

1974

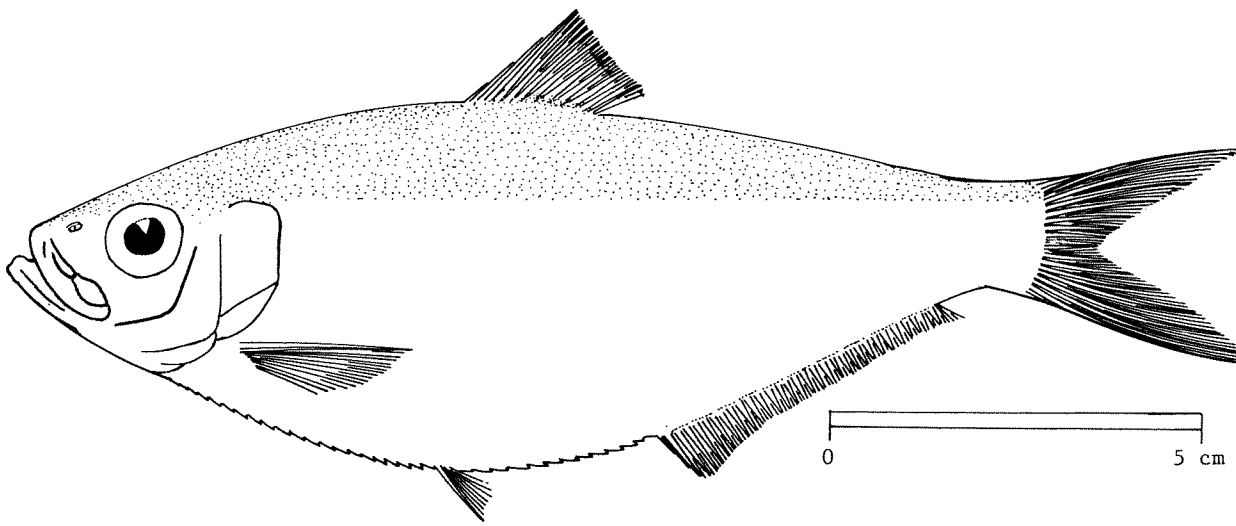
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Ilisha melastoma (Schneider, 1801)

SYNONYMS STILL IN USE: *Ilisha motius* (Ham. Buch., 1822)
Ilisha indices (Swainson, 1839)
Pellona indices (Swainson, 1839)
Pellona brachysoma Bleeker, 1852



VERNACULAR NAMES

FAO: En - Indian ilisha
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body compressed, *very deep, its depth 2.4 to 2.7 times in standard length;* belly with *strongly keeled scutes (total 27 to 32).* Dorsal fin short, its origin before midpoint of body; pelvic fins very small and a little before dorsal fin origin; *anal fin long (37 to 47 rays), its origin below posterior part of dorsal fin base.* Head of moderate size, its length 3.6 to 3.8 times in standard length; l*ower jaw very prominent.*

Colour: back blue/green, flanks silvery.

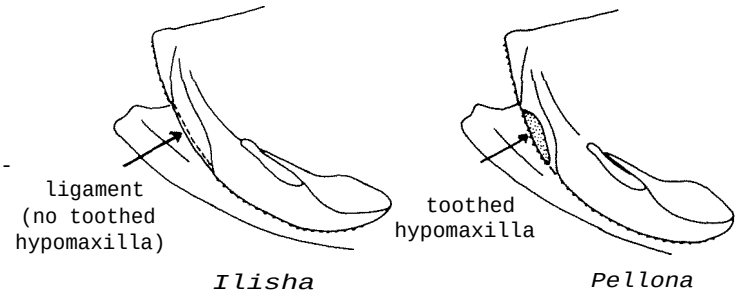
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Ilisha macrogaster (Borneo only): more scutes (total 36; 27 to 32 in *I. melastoma*).

Ilisha elongata, I. megaloptera: body more slender (depth 3.4 to 4.1 times in standard length *in I. elongata;* 2.8 to 3,3 in *I. megaloptera*; but 2.4 to 2.7 in *I. melastoma*).

Ilisha pristigastroides: anal fin origin below anterior half of dorsal fin base (below posterior half in *I. melastoma*).

Pellona species: toothed hypomaxilla present in upper jaw (can be felt with fingernail; a soft ligament in *Ilisha* species).



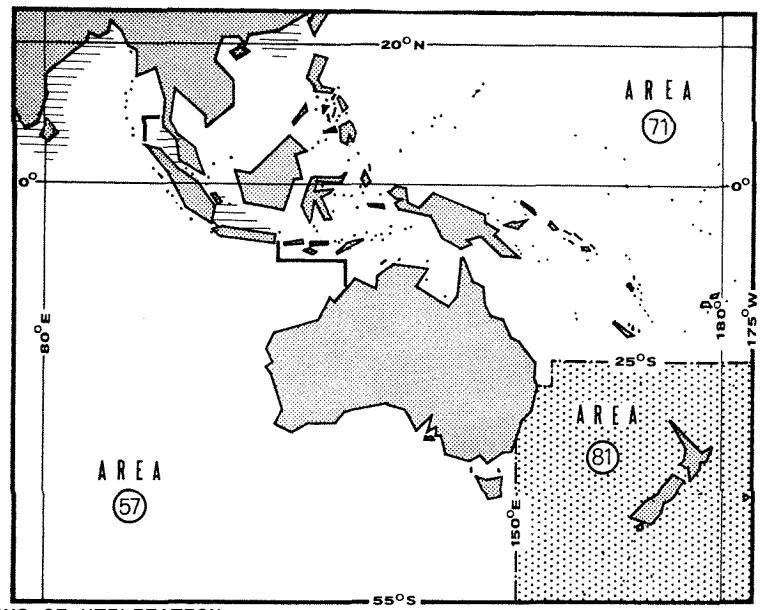
SIZE:

Maximum: 18 cm; common: 14 to 16

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India, Penang, Batavia and Hong Kong (probably more widespread); also, westward to Persian Gulf.

Inhabits coastal waters; probably not abundant.



PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION

Separate statistics are not reported for this species.

Caught with purse seines, beach seines, lift nets, trap nets and bottom trawls.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Ilish 4

1974

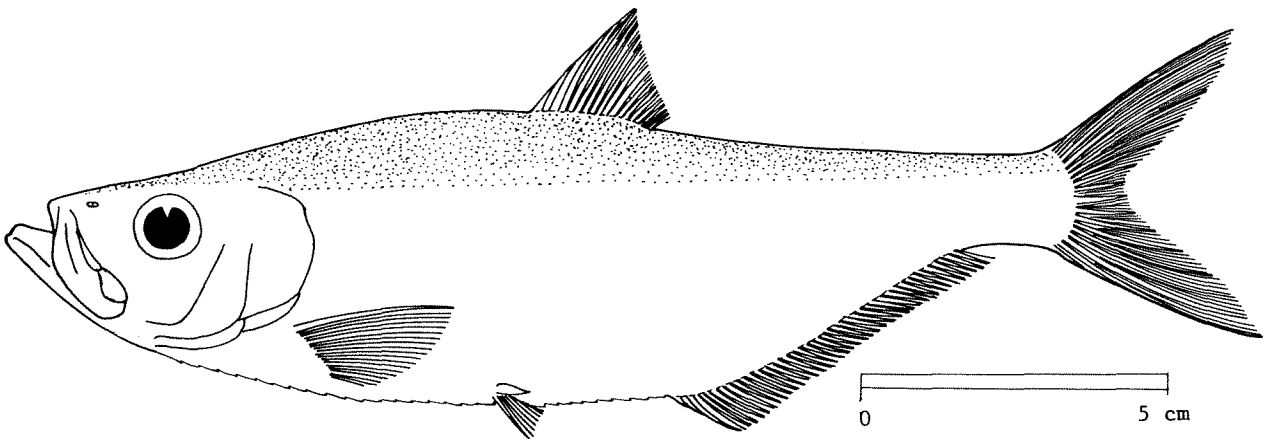
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Ilisha megaloptera (Swainson, 1839)

SYNONYMS STILL IN USE: *Ilisha macrophthalma* (Swainson, 1838)(nomen oblitum)
Ilisha filigera (Valenciennes, 1847)
Pellona dussurnieri Valenciennes, 1847
Pellona xanthoptera Bleeker, 1851



VERNACULAR NAMES:

FAO: En - Bigeye ilisha
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body compressed, fairly deep, its depth 2.8 to 3.3 *times in standard length;* belly with *strongly keeled scutes (total* 30 *to* 34, rarely 36). Dorsal fin short, its origin a little before midpoint of body; pelvic fins very small and a little before dorsal fin origin; *anal fin long (total* 43 *to* 52 *rays), its origin below posterior part of dorsal fin base.* Head of moderate size, its length 3.7 to 4.0 times in standard length; lower jaw very prominent.

Colour: back blue/green, flanks silvery.

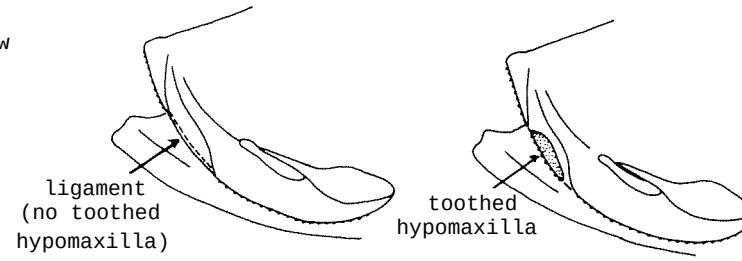
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Ilisha macrogaster, I. melastoma: body deeper (depth 2.4 to 2.7 times in standard length; 2.8 to 3.3 times in *I. megaloptera*).

Ilisha elongata: body more elongate (depth 3.4 to 4.1 times in standard length); also more scutes (total 35 to 39; usually 30 to 34 in *I. megaloptera*).

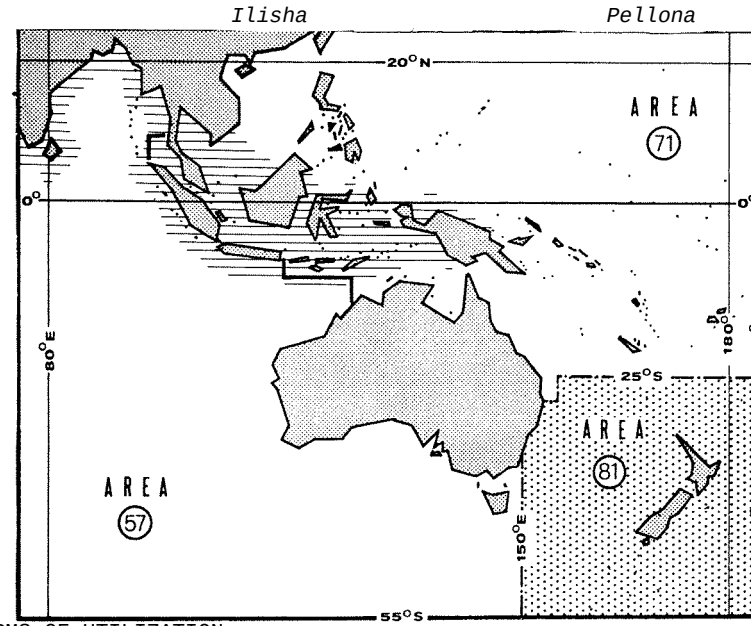
Ilisha pristigastroides: anal fin origin below anterior part of dorsal fin base (below posterior part in *I. megaloptera*).

Pellona species: toothed hypomaxilla present in upper jaw (can be felt with finger-nail; a soft ligament in *Ilisha*).



SIZE:

Maximum: 24 cm; common: 18 to 20 cm



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India to New Guinea, also southern part of South China Sea.

Inhabits coastal waters; probably not abundant.

PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with purse seines, beach seines, lift nets, trap nets and bottom trawls.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Nem 1
1974

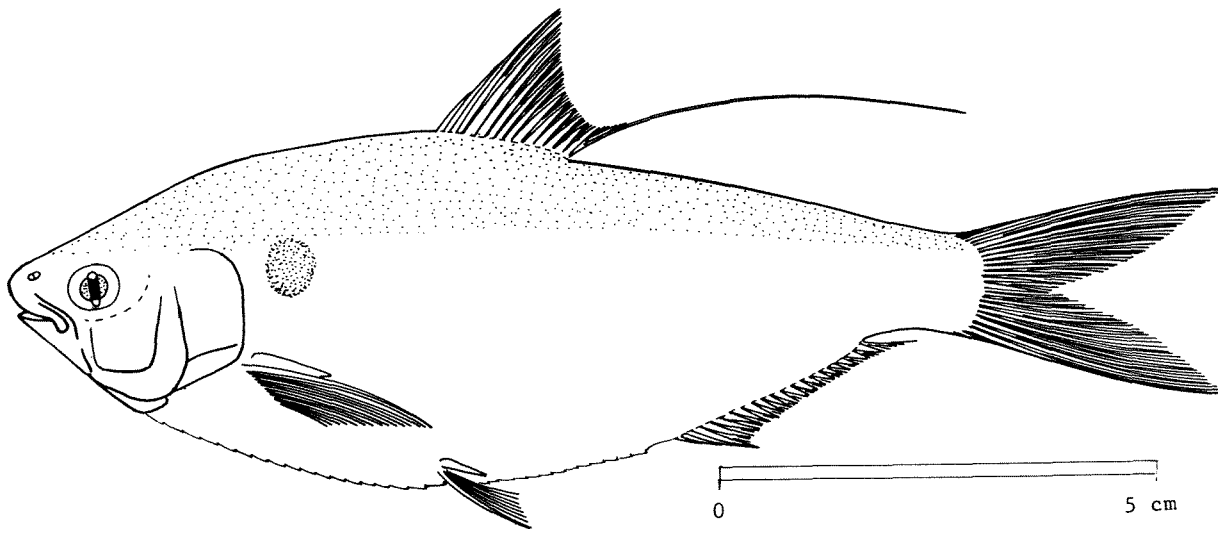
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Nematalosa nasus (Bloch, 1795)

SYNONYMS STILL IN USE: *Dorosoma nasus:* Weber & de Beaufort, 1913



VERNACULAR NAMES:

FAO: En - Bloch's gizzard-shad
Fr -
Sp -

NATIONAL:

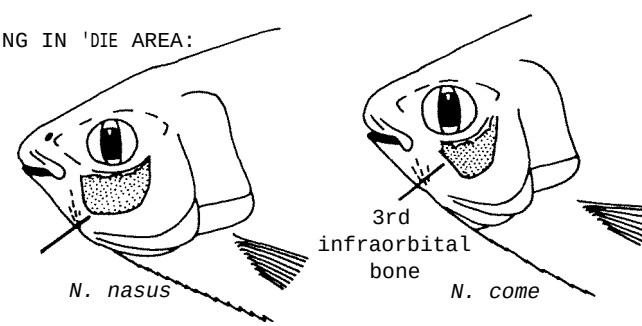
DISTINCTIVE CHARACTERS:

Body oval, deep, its depth 2.3 to 2.6 times in standard length; belly rounded with scutes. Dorsal fin origin a little before midpoint of body, *Last dorsal ray filamentous;* anal fin fairly short (18 to 22 rays) and lying behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. Gill rakers numerous (more than 200 on lower part of gill arch), their length less than half of corresponding gill filaments on anterior arch. *Mouth inferior, Lower jaw flared laterally. 3rd infraorbital Large, its anterior border rising almost vertically from lower jaw articulation.* Paired predorsal scales overlapping in midline.

Colour: blue/brown on back, flanks silvery, dark patch on shoulder.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN 'DIE AREA:

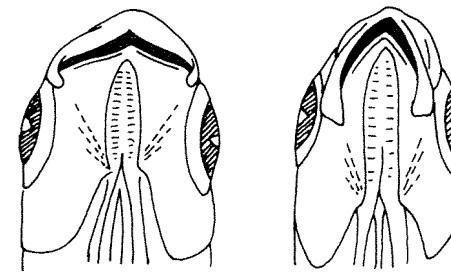
All other *Nematalosa* species: 3rd infraorbital little expanded, its lower border oblique or horizontal, not reaching to lower jaw articulation and leaving exposed a triangular or trapezoidal space (3rd infraorbital greatly expanded and rising almost vertically from above lower jaw articulation in *N. nasus*).



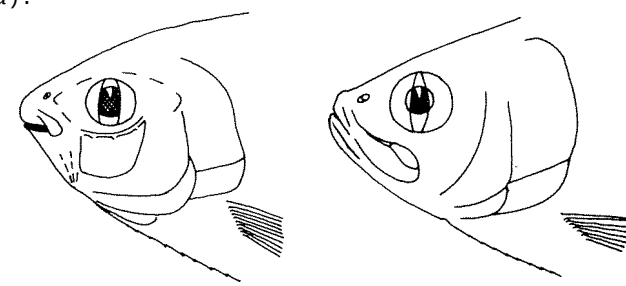
Clupanodon, Konosirus species: gill rakers of 1st arch at least 3/4 the length of corresponding gill filaments (gill rakers 1/2 or less the length of corresponding filaments in *Nematalosa* species); also lower jaw not strongly flared laterally when viewed from below (strongly flared in *Nematalosa).*

Anodontostoma species: last dorsal ray normal (a long filament in *Nematalosa* species).

All other clupeid species: mouth more or less terminal (distinctive mouth in *Nematalosa* species) and last dorsal ray normal (filamentous in *Nematalosa*).



Nematalosa *Clupanodon*
underside of head



Nematalosa *Hilsa*

SIZE:

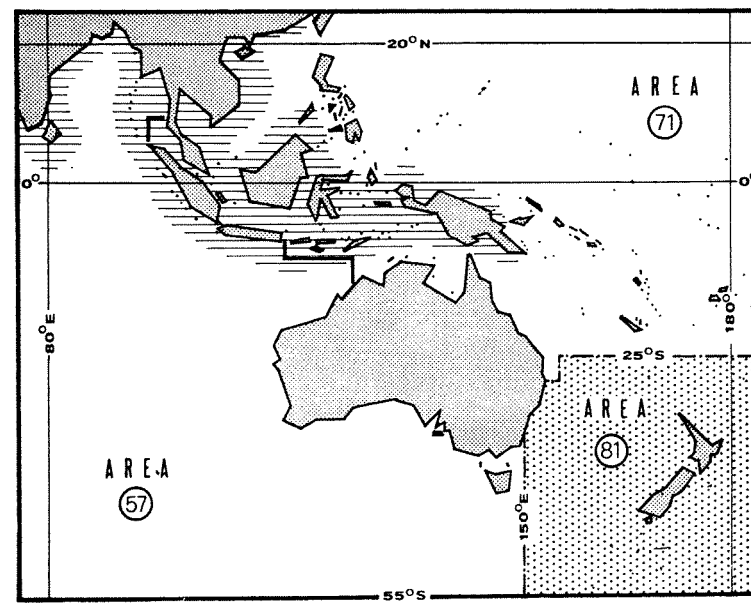
Maximum: 23 cm; common: 13 to 14 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area; northward to Hong Kong.

Inhabits coastal waters; pelagic.

Feeds on detritus.



PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with set nets and purse seines.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Opis 1

1974

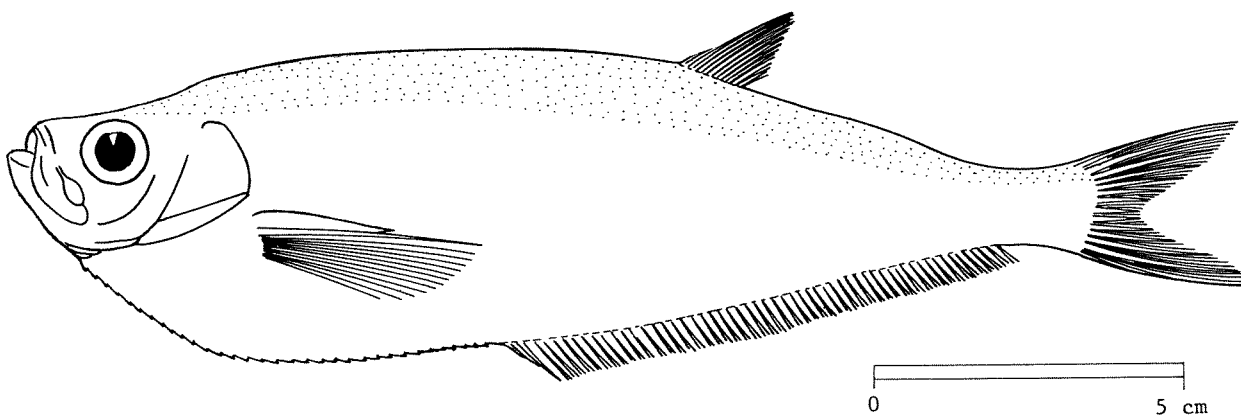
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Opisthopterus tardoore (Cuvier, 1829)

SYNONYMS STILL IN USE: *Opisthopterus indicus* (Swainson, 1839)
Opisthopterus tartoor (Valenciennes, 1847)
Opisthopterus macrognathos Bleeker, 1866



VERNACULAR NAMES:

FAO: En - Tardoore
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate and strongly compressed, its depth 3.0 to 3.5 times in standard length; belly with strongly keeled scutes (total about 30). Top of head concave, *mouth directed upward. Dorsal fin short, its origin much behind midpoint of body; pelvic fins absent; anal fin very long (total 57 to 60 rays), its origin well before dorsal fin origin; pectoral fin longer than head. Lower jaw very prominent.*

Colour: back blue/green, flanks silvery.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

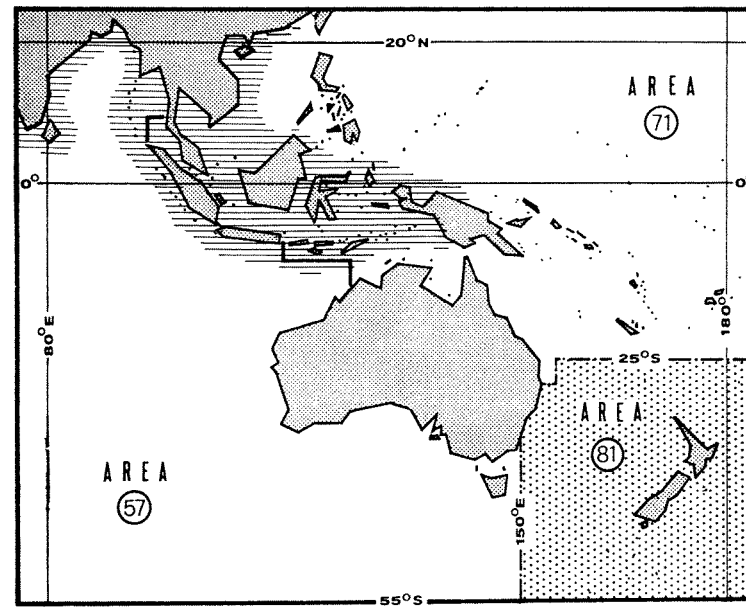
Opisthopterus valenciennesi: pectoral fin shorter than head (longer than head in *O. tardoore*).

Ilisha, Pellona species: pelvic fins present (absent in *Opisthopterus*).

Raeonda species: pelvic and dorsal fins absent.

SIZE:

Maximum: 22 cm; common: 18 to 20 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India to New Guinea, and possibly north to Hong Kong.

Inhabits coastal waters; pelagic; probably not abundant.

PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with lift nets, gill nets and set nets.

Marketed fresh, dried, dried-salted, boiled or made into fish balls or fish meal.

CLUP Pell 1

1974

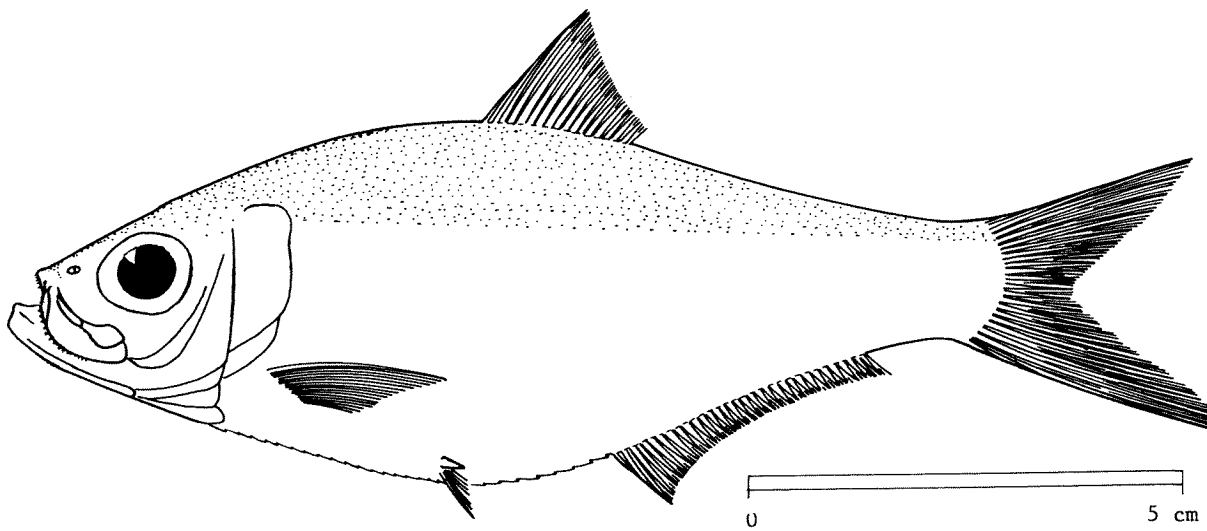
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Pellona ditchela Valenciennes, 1847

SYNONYMS STILL IN USE: *Pellona hoeveni* Bleeker, 1852



VERNACULAR NAMES:

FAO: En - Indian pellona
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

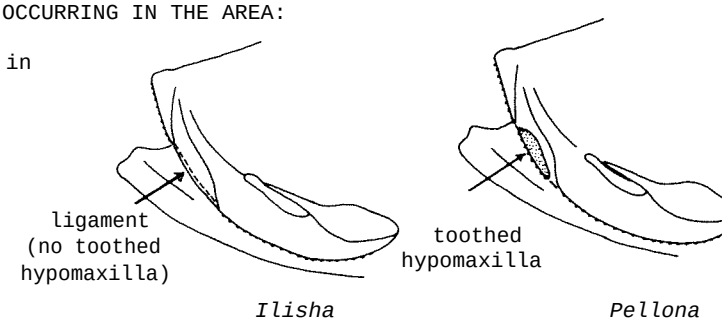
Body fairly deep and compressed, its depth about 2.8 times in standard length; belly with strongly keeled scutes (pre-pelvic scutes 19). Dorsal fin base short, its origin at about midpoint of body; pelvic fins before dorsal fin origin; *anal fin fairly Long (36 rays),* its origin a little behind dorsal fin base. Head large, its length about 3.5 times in standard length; *eye large, about 3 times in head; lower jaw very prominent; toothed hypomaxilla present in upper jaw.*

Colour: blue/brown on back, flanks silvery, fins hyaline.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Ilisha species: no toothed hypomaxilla in upper jaw (small toothed hypomaxilla can be felt with finger-nail in *Pellona* species).

Opisthopterus species: anal fin much longer (50 to 70 rays; 30 to 40 in *Pellona);* pelvic fins absent.



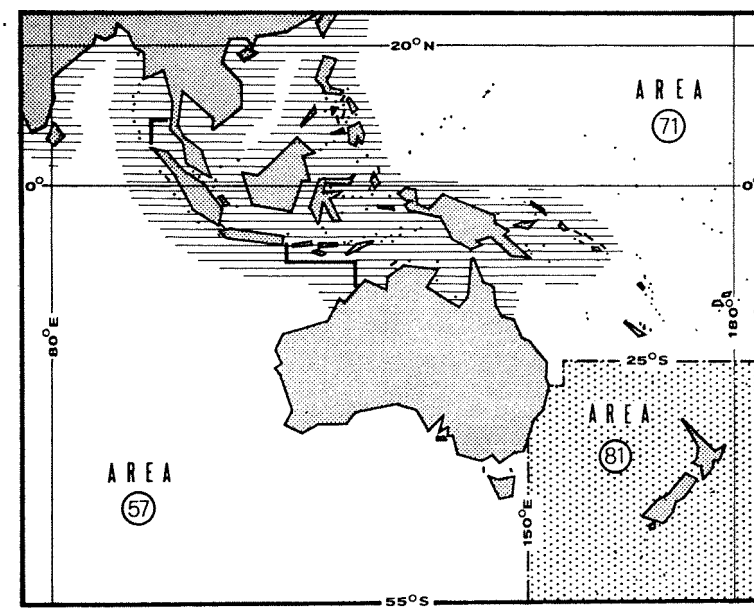
SIZE:

Maximum: 20 cm; common: about 14 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area to northern tip of Australia; also, westward to East Africa and northward to Taiwan.

Inhabits coastal waters; pelagic.



PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics for this species are reported by Malaysia only (1972: 1 300 tons).

Caught mainly with purse seines and beach seines.

Marketed fresh, dried, dried-salted, boiled, or made into fish meal or fish balls.

Clup Sardl 3
1974

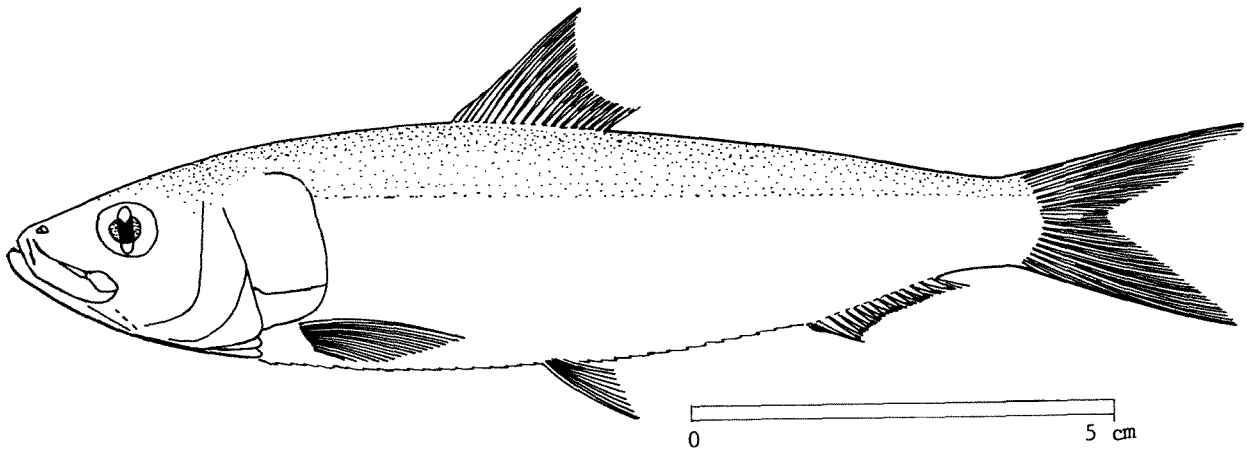
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinella longiceps Valenciennes, 1847

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Indian oil-sardinella
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, cylindrical; belly rounded, with scutes but without prominent keel. Dorsal fin origin nearer to snout than to caudal fin base; anal fin base short and well behind dorsal fin base; pelvic fins below middle of dorsal fin base. *Head very long, about 3 times in standard length. Pelvic fin with 9 rays.* Gill rakers fine and numerous, more than 130 on lower part of gill arch.

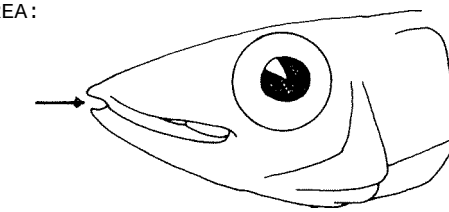
Colour: blue/green on back, flanks silvery.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

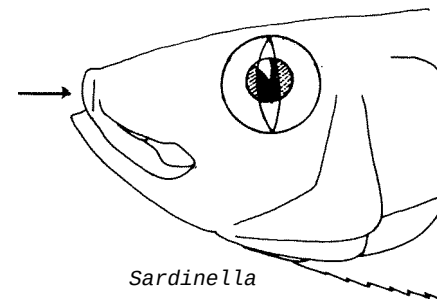
Sardinella aurita: head shorter (3.6 to 4.0 times in standard length; 2.9 to 3.5 times in *S. longiceps*); absent from Indian Ocean.

All other *Sardinella* species: only 8 pelvic rays and less than 130 gill rakers on lower part of gill arch.

Dussumieria acuta: no scutes along belly, 8 pelvic rays and characteristic mouth shape.



Dussumieria



Sardinella

SIZE:

Maximum: 20, possibly 23 cm; common: about 10 to 15 cm.

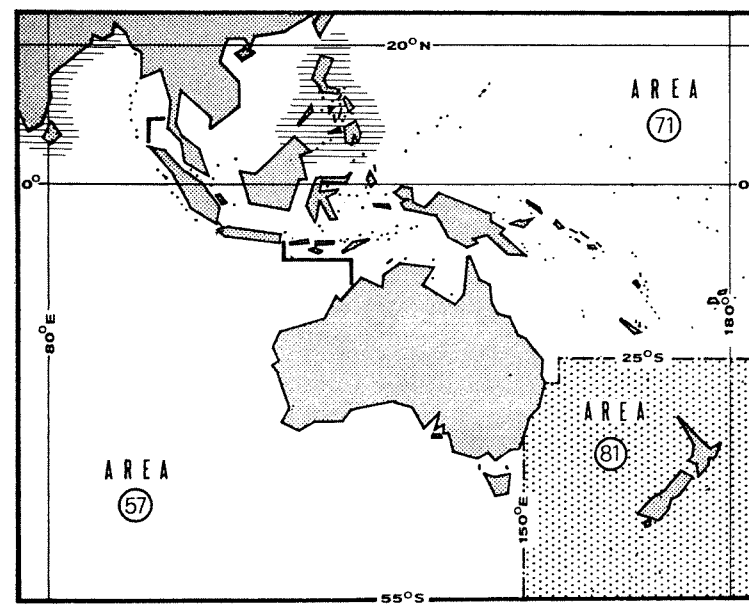
GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Coasts of India, North Borneo and Philippines (not recorded from Thailand, Malaysia, Cambodia, Vietnam and Australia); also, westward to East Africa.

Inhabits coastal waters; pelagic; Very abundant off Indian coasts.

Feeds on plankton, especially diatoms.

For further information see FAD Species Synopsis CB/S 15.



PRESENT FISHING GROUNDS:

Caught throughout its range; important Indian fishery.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

The total reported catch in 1972 was:

area 57 (Eastern Indian Ocean): 1 100 tons (Bangla Desh: 1 000 tons)
area 71 (Western Central Pacific): 76 400 tons (Philippines only)

Caught with beach seines, boat seines, drift nets, gill nets and purse seines.

Marketed fresh, dried, dried-salted, boiled and made into fish meal and fish balls.

CLUP Sardl *4*

1974

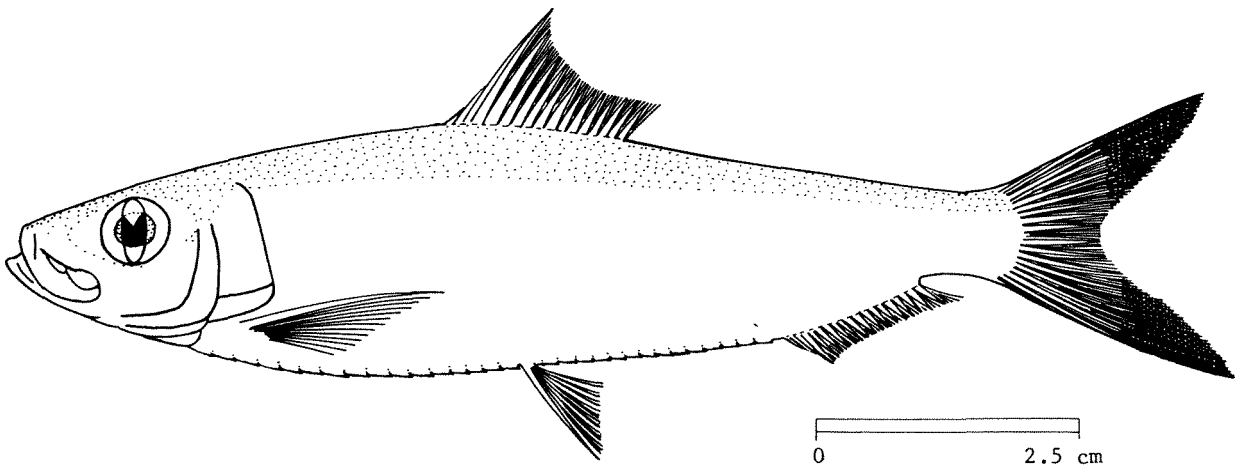
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinella melanura (Cuvier, 1829)

SYNONYiYMS STILL IN USE: *Clupea (Harengula) melanura:* Weber & de Beaufort, 1913
Harengula vittata (Valenciennes, 1847)
Herklotsichthys vittatus (Valenciennes, 1847)
Clupea (Harengula) atricauda (Günther, 1868)



VERNACULAR NAMES:

FAO: En - Blacktip sardinella
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

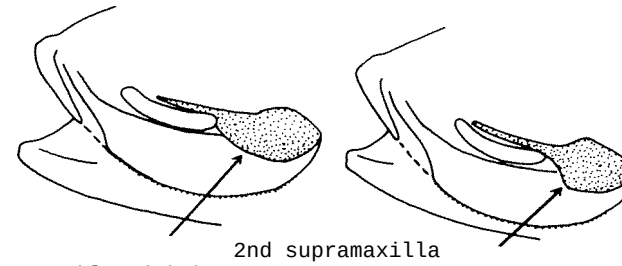
Body fusifom, a little compressed; belly sharp with keeled scutes. Dorsal fin origin slightly before midpoint of body; anal fin base short and lying far behind dorsal fin base; pelvic fins below anterior half of dorsal fin. Lower gill rakers 45 to 68.

Colour: back blue/green, flanks silvery. *Tips of caudal fin black* (never black in other species of *Sardinella*).

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

All other *Sardinella* species: no black caudal tips (at most dusky).

Herklotsichthys species: lower portion of paddle-shaped 2nd supramaxilla longer than upper (about equal in *Sardinella*), and only 3 to 6 frontoparietal striae on top of head (7 to 14 striae in *Sardinella).*

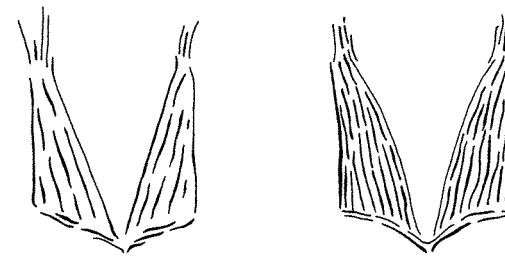


2nd supramaxilla

Herklotsichthys *Sardinella*

SIZE:

Maximum: 15 cm; common: 12 cm.



Herklotsichthys *Sardinella*

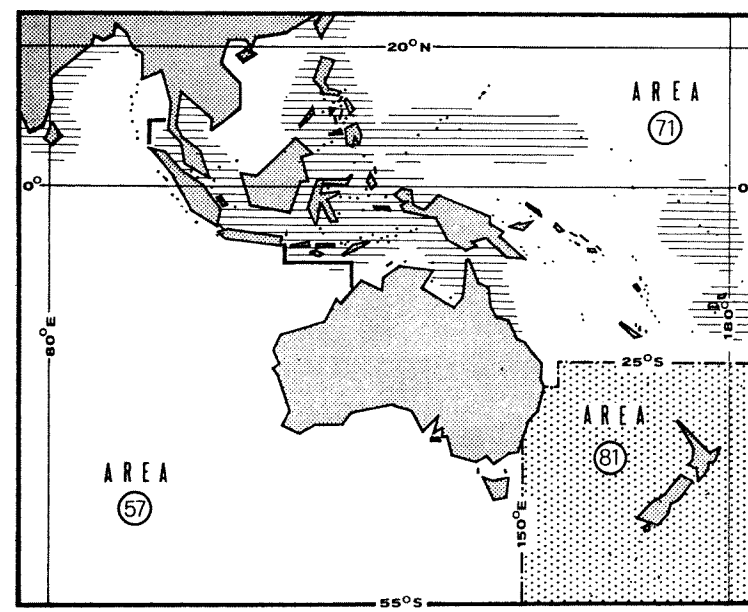
frontoparietal striae on top of head

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, including northern tip of Australia, northward to Taiwan; also, westward to East Africa.

Inhabits coastal waters; pelagic.

Feeds on small planktonic organisms.



PRESENT FISHING GROUNDS:

Caught throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with purse seines, lift nets and set nets.

Marketed fresh, dried, dried-salted, boiled, or made into fish meal of fish balls.

CLUP Sardl 5

1974

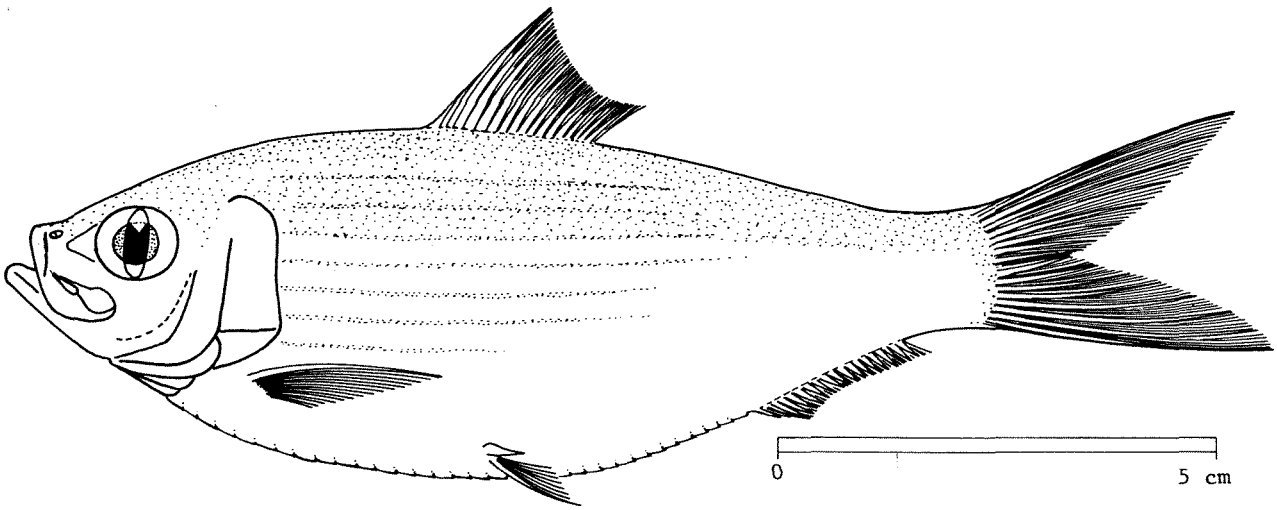
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinella brachysoma Bleeker, 1852

SYNONYMS STILL IN USE: C*lupea (Harengula) brachysoma*: Weber & de Beaufort, 1913
Sardinella hypselosoma Bleeker, 1855



VERNACULAR NAMES:

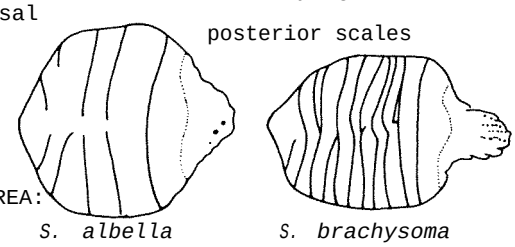
FAO: En - Deepbody sardinella
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Deep compressed body, *its depth 2.6 to 3.3 times in standard Length; belly sharp with keeled scutes.* Dorsal fin origin slightly before midpoint of body; anal fin base short and lying far behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Lower gill rakers 54 to 65. Scales strongly fimbriated posteriorly.*

Colour: back blue/green, flanks silvery.

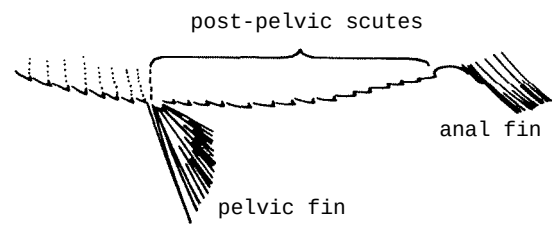


DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

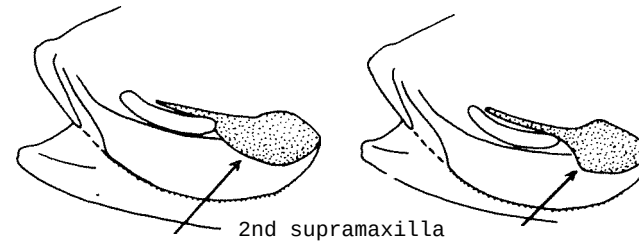
Sardinella melanura: caudal tips black.

Sardinella albella, S. fimbriata: only 4 to 5 vertical striae (interrupted at centre) on posterior scales (numerous continuous or overlapping striae on posterior scales in *S. brachysoma).*

Sardinella gibbosa: 15 to 16 (rarely 14 or 17 to 18) post-pelvic scutes (12 to 14 in *S. brachysoma* and in *S. albella, S. fimbriata, S. melanura).*



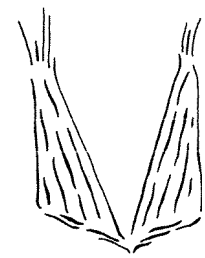
Herklotsichthys species: lower portion of paddle-shaped 2nd supramaxilla longer than upper (about equal in *Sardinella),* and only 3 to 6 frontoparietal striae on top of head (7 to 14 striae in *Sardinella).*



Herklotsichthys *Sardinella*

SIZE:

Maximum: 17 cm; common: 13 to 14 cm.

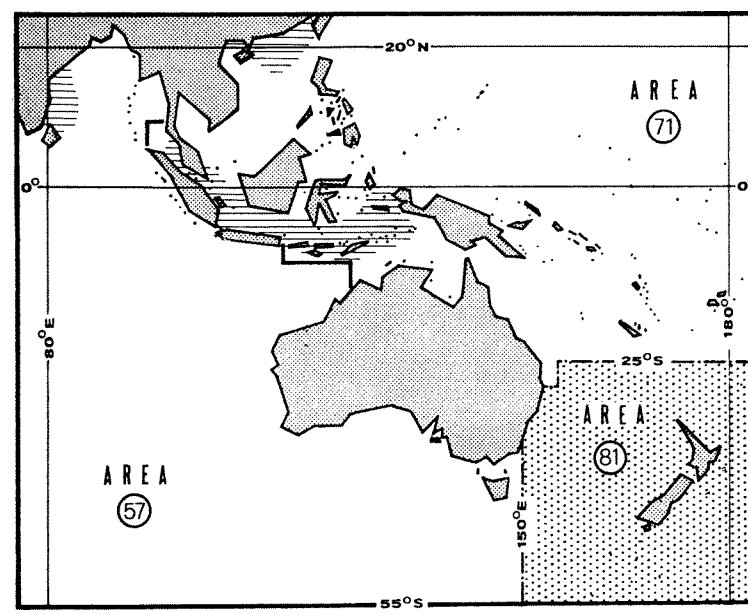


Herklotsichthys *Sardinella*
frontoparietal striae on top of head

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Eastern coasts of India, Indonesia, and Hong Kong.

Inhabits coastal waters; pelagic.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with purse seines, lift nets and set nets.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Sardl 6
1974

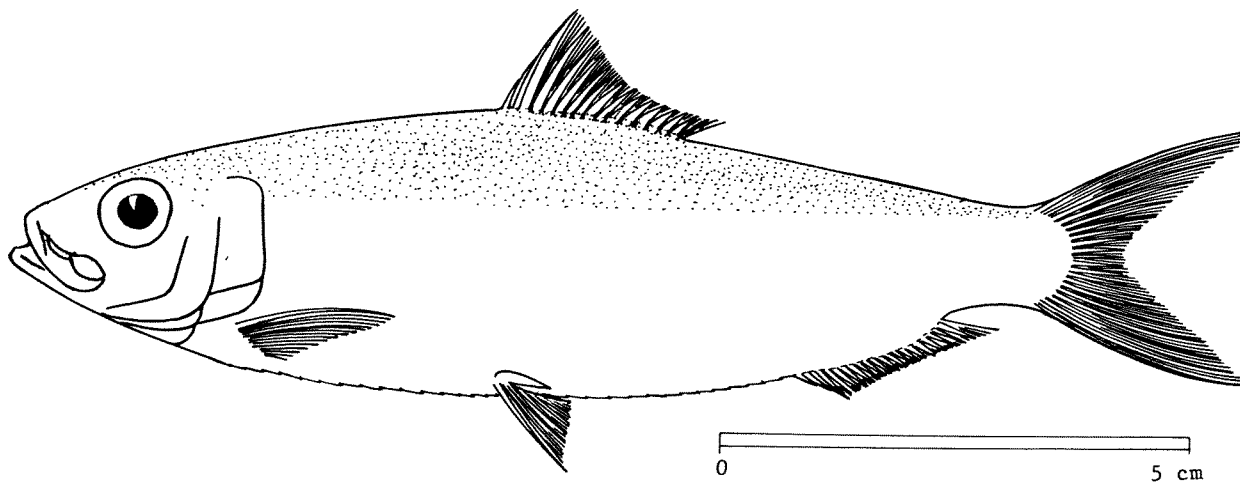
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinella albella (Valenciennes, 1847)

SYNONYMS STILL IN USE: *Clupalosa bulan* Bleeker, 1849
Harengula bulan: Fowler, 1941
Sardinella perforata (Cantor, 1850)



VERNACULAR NAMES:

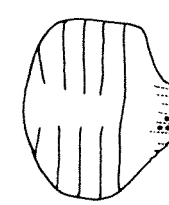
FAO: En - White sardinella
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Fusiform, compressed body, *its depth 2.8 to 3.0 times in standard Length; belly sharp with keeled scutes.* Dorsal fin origin slightly before midpoint of body, anal fin base short and lying far behind dorsal fin base, pelvic fins below anterior part of dorsal fin base. *Lower gill rakers 47 to 62. Anterior scales perforated and fimbriated at posterior margin.*

Colour: back blue/green, flanks silvery.

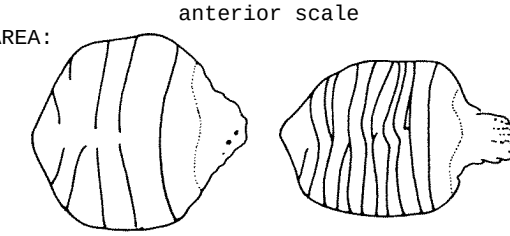


S. albella
anterior scale

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Sardinella melanura: caudal tips black.

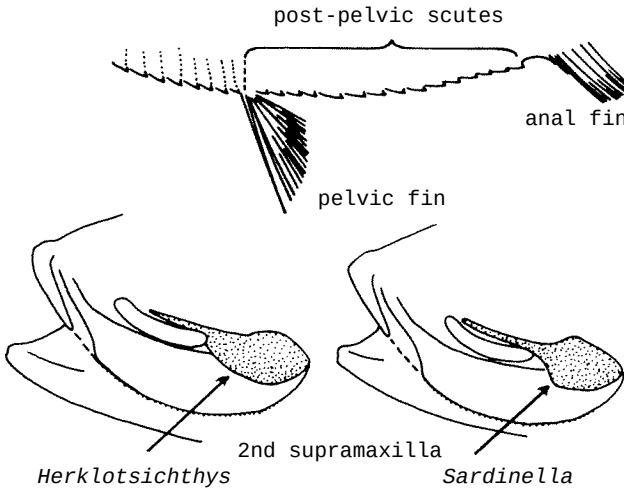
Sardinella brachysoma, S. zunasi: numerous vertical scale striae that overlap at centre of scale on posterior scales (only 4 to 5 striae, interrupted at centre of scale on posterior scales of *S. albella*).

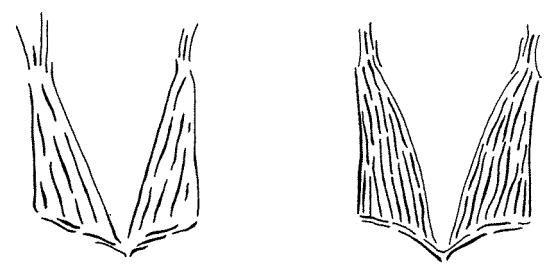


S. albella *S. brachysoma*
posterior scales

Sardinella gibbosa: 15 to 16 (rarely 14 or 17 to 18) post-pelvic scutes (12 to 14 in S. *brachysoma, S. melanura, S. fimbriata).*

Herklotsichthys species: lower portion of paddle-shaped 2nd supramaxilla longer than upper (about equal in *Sardinella),* and only 3 to 6 frontoparietal striae on top of head (7 to 14 striae in Sardinella).





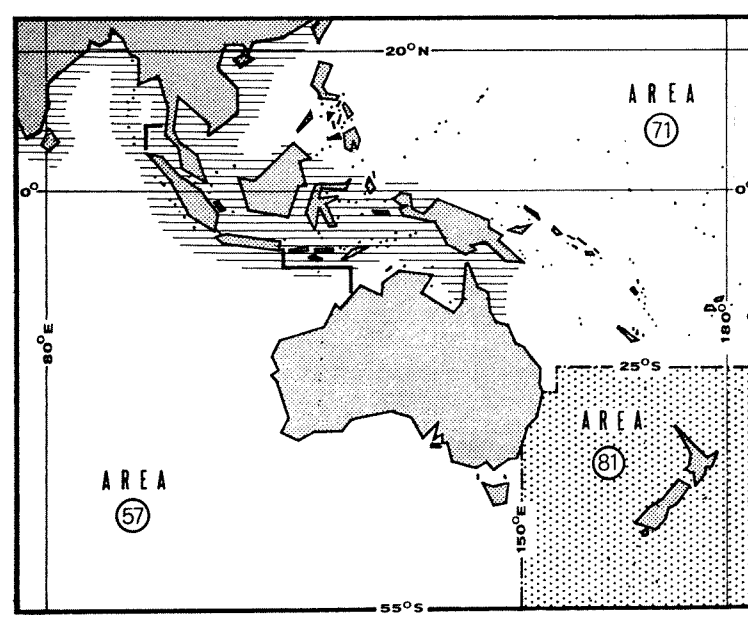
SIZE:

Maximum: 13 cm; common: 7 to 8 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, northward to Taiwan; possibly southward to northern tip of Australia; also, westward to Red Sea.

Inhabits coastal waters; pelagic.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with purse seines, lift nets and set nets.

Marketed fresh, dried, dried-salted and made into fish balls.

CLUP Sardl 7

1974

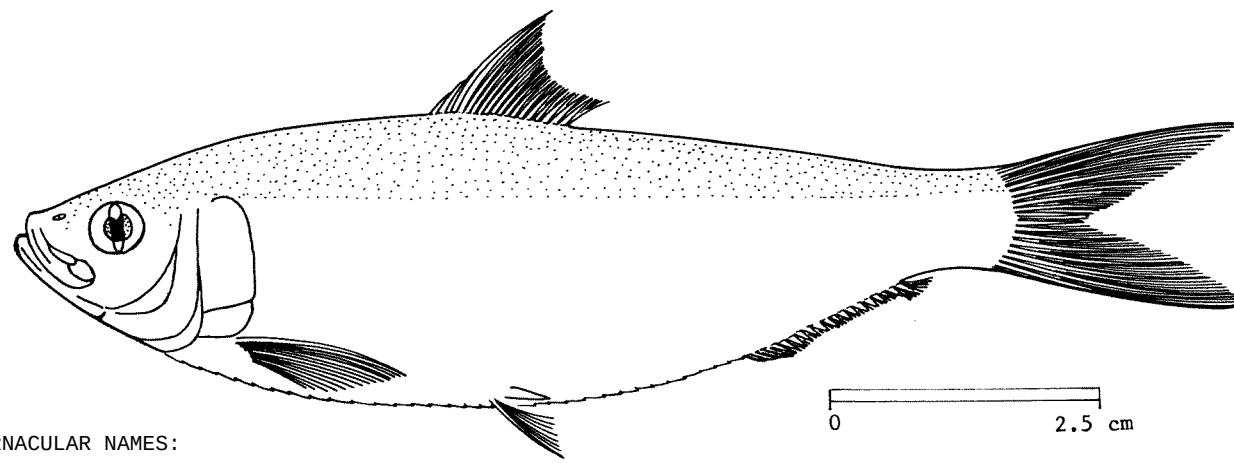
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Oceans)
(W Cent. Pacific)

Sardinella fimbriata (Valenciennes, 1847)

SYNONYMS STILL IN USE: *Clupea (Harengula) fimbriata*: Weber & de Beaufort, 1913



VERNACULAR NAMES:

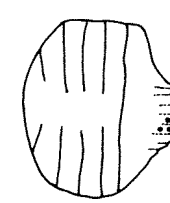
FAO: En - Fringescale sardinella
Fr -
Sp -

NATIONAL:

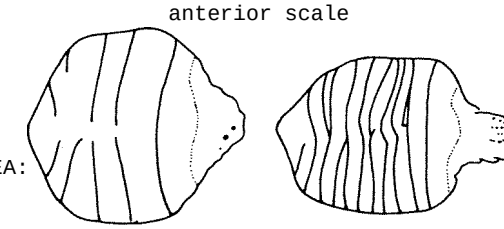
DISTINCTIVE CHARACTERS:

Fusiform, compressed body, *its depth 3.0 to 3.6 times in standard length; belly sharp with keeled scutes.* Dorsal fin origin slightly before midpoint of body; anal fin base short and lying far behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Lower gill rakers 60 to 81. Anterior scales perforated and fimbriated at posterior margin.*

Colour: back blue/green, flanks silvery.



S. fimbriata
anterior scale



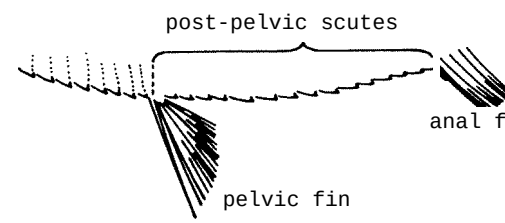
S. albella *S. brachysoma*
posterior scales

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

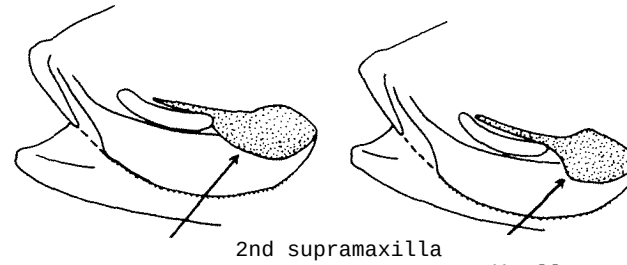
Sardinella melanura: caudal tips black.

Sardinella brachysoma, S. zunasi: numerous vertical scale striae that overlap at centre of scale on posterior scales (only 4 to 5 striae, interrupted at centre of scale on posterior scales of S. *fimbriata).*

Sardinella gibbosa: 15 to 16 (rarely 14 or 17 to 18) post-pelvic scutes (12 to 14 in S. *fimbriata* and in *S. brachysoma, S. melanura, S. albella).*

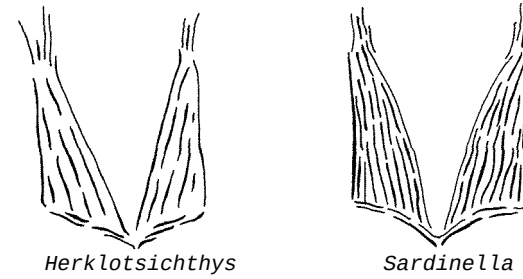


Herklotsichthys species: lower portion of paddle-shaped 2nd supramaxilla longer than upper (about equal in *Sardinella),* and only 3 to 6 frontoparietal striae on top of head (7 to 14 striae in *Sardinella).*



2nd supramaxilla

Herklotsichthys *Sardinella*

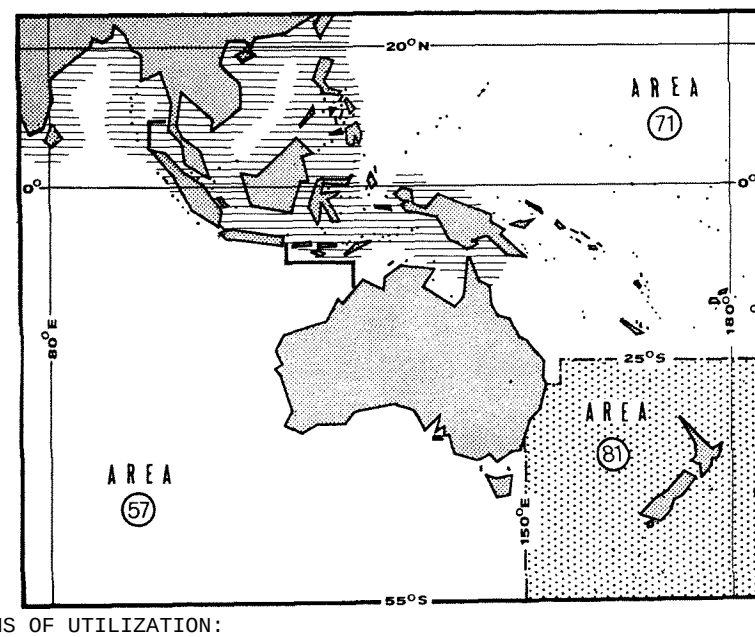


Herklotsichthys *Sardinella*

frontoparietal striae on top of head

SIZE:

Maximum: 16 cm; common: about 12 cm.



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, possibly to northern tip of Australia, northward to Taiwan; also, westward to Red Sea.

Inhabits coastal waters; pelagic.

PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with purse seines, lift nets and set nets.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Sardl 8

1974

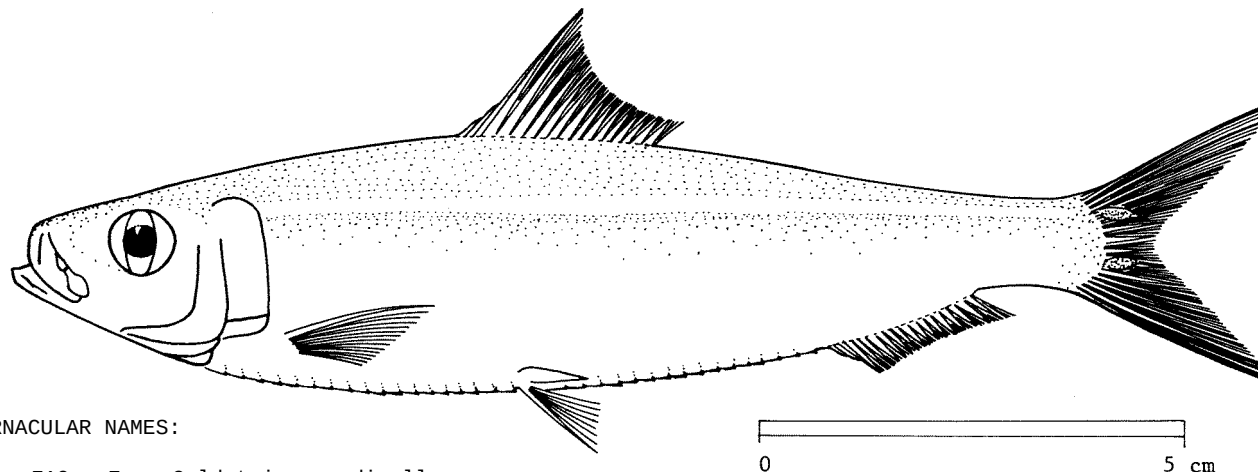
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinella gibbosa (Bleeker, 1849)

SYNONYMS STILL IN USE: *Sardinella jussieu* (Lacepède, 1803) *(nomen dubium)*
Sardinella tembang (Bleeker, 1851)



VERNACULAR NAMES:

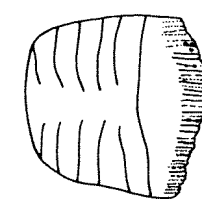
FAO: En - Goldstripe sardinella
Fr -
Sp -

NATIONAL:

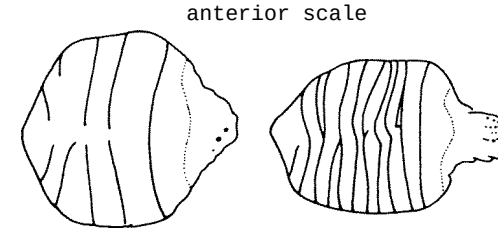
DISTINCTIVE CHARACTERS:

Body fusiform, a little compressed, *its depth* 3.6 *to* 4.1 *times in standard Length; belly sharp with keeled scutes; post-pelvic scutes 15 to* 16 (rarely 14 or 17 to 18). Dorsal fin origin slightly before midpoint of body, anal fin base short and lying far behind dorsal fin base, pelvic fins below anterior part of dorsal fin base. *Lower gill rakers* 43 *to* 63. *Anterior scales with a few perforations and fimbriated at posterior margin.*

Colour: blue/green above and silvery on flanks, separated by a *narrow yellow horizontal Line;* black spot at bases of anterior dorsal rays.



S. gibbosa
anterior scale

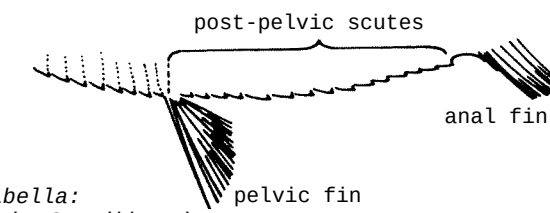


S. albela *S. brachysoma*
posterior scales

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

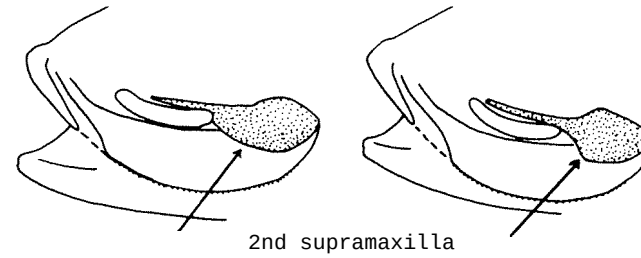
Sardinella melanura: caudal tips black.

Sardinella brachysoma, S. zunasi: numerous vertical scale striae that overlap at centre of scale (only 4 to 5 striae, interrupted at centre of scale on posterior scales of *S. gibbosa).*



Sardinella fimbriata, S. brachysoma, S. melanura, S. albella: 12 to 14 post-pelvic scutes (15 to 16, rarely 14 or 17 to 18 in *S. gibbosa):*

Herklotsichthys species: lower portion of paddle-shaped 2nd supramaxilla longer than upper (about equal in *Sardinella); only 3 to 6 fronto* parietal striae on top of head (7 to 14 striae in *Sardinella).*

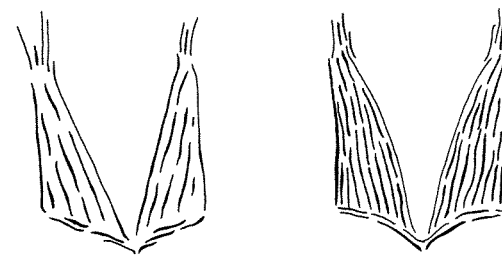


2nd supramaxilla

Herklotsichthys *Sardinella*

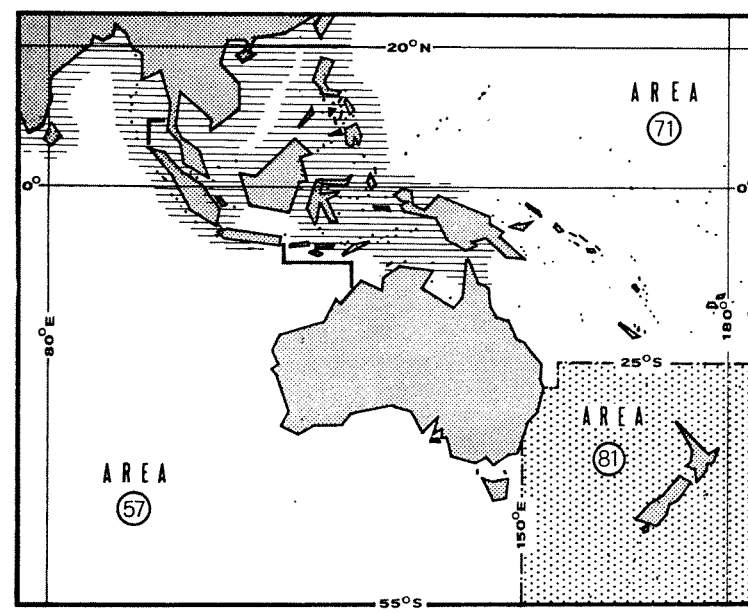
SIZE:

Maximum: 18.5 cm; common: about 15 cm.



Herklotsichthys *Sardinella*

frontoparietal striae on top of head



GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area, possibly to northern tip of Australia; northward to Taiwan; also, westward to East Africa.

Inhabits coastal waters; pelagic.

PRESENT FISHING GROUNDS:

Throughout its range, and especially in India, also in Thailand.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with purse seines, lift nets and set nets.

Marketed fresh, dried, dried-salted, boiled or made into fish balls.

CLUP Sardl 9

1974

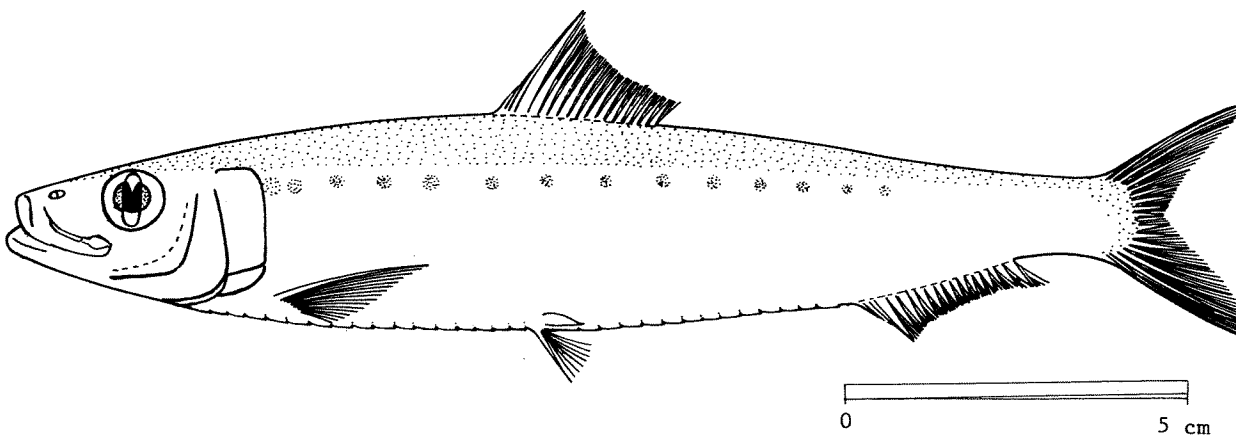
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinella sirm (Walbaum, 1792)

SYNONYMS STILL IN USE: *Clupea (Amblygaster) sirm*: Weber & de Beaufort, 1913
Sardinella leiogastroides Bleeker, 1854
Clupea (Harengula) pinguis: Weber & de Beaufort, 1913



VERNACULAR NAMES:

FAO: En - Spotted sardinella
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Body elongate, *sub-cylindrical, its depth 4.1 to 5.2 times in standard length; belly rounded, scutes present but not strongly keeled.* Dorsal fin origin a little before midpoint of body; anal fin base short and lying far behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Lower gill rakers 36 to 42.* Maxilla reaching to vertical from anterior margin of eye.

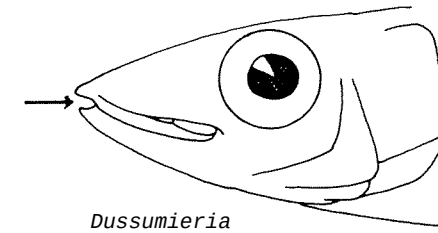
Colour: blue/green above and silvery on flanks, with *10 to 20 golden spots on flanks which* become black or may disappear after death.

DIFFERENTIAL CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

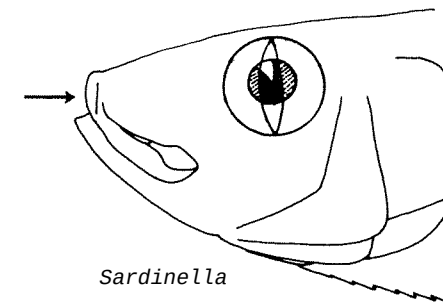
Sardinella clupeoides, S. leiogaster: no spots on flanks; only 26 to 30 or 31 to 36 gill rakers on lower part of gill arch; in *S. leiogaster* a black dorsal fin (also in *S. clupeoides*).

Sardinella longiceps: 9 pelvic rays and more than 130 gill rakers on lower part of gill arch.

Dussurnieria acuta: no scutes present along belly; a characteristic pointed mouth.



Dussumieria



Sardinella

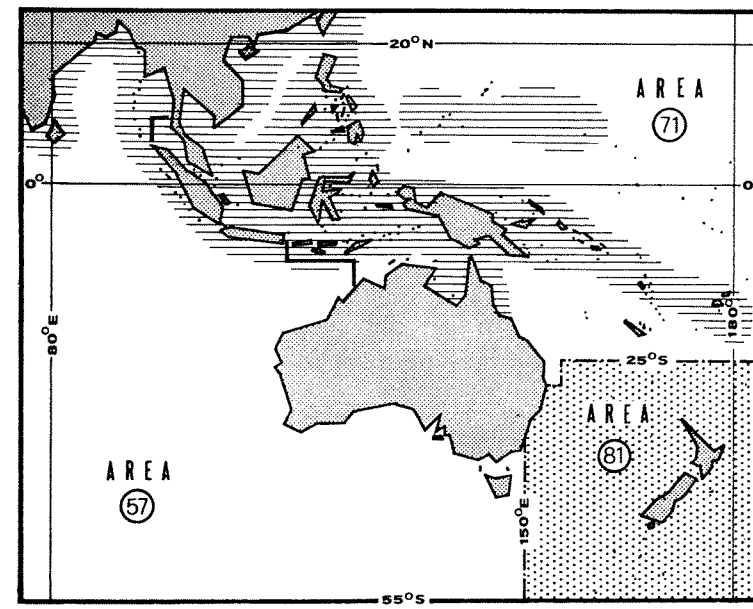
SIZE:

Maximum: 23 cm; common: 17 to 18 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area and possibly to northern tip of Australia; also, westward to East Africa and northward to Okinawa.

Inhabits coastal waters; pelagic.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FOIW OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with encircling gill nets, purse seines and bamboo stake traps.

Marketed fresh, dried, dried-salted or made into fish balls.

CLUP Sardl 10

1974

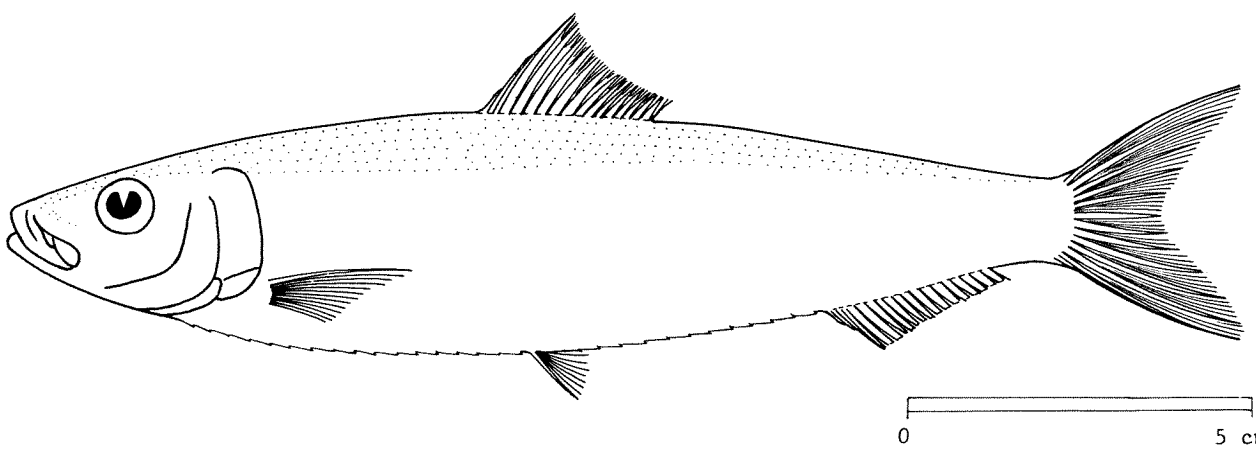
FAD SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinella leiogaster Valenciennes, 1847

SYNONYMS STILL IN USE: *Clupea (Amblygaster) leiogaster:* Weber & de Beaufort, 1913



VERNACULAR NAMES:

FAO: En - Smoothbelly sardinella
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

Elongate, *sub-cylindrical body, its depth 4.1 to 4.5 times in standard length; belly rounded, scutes present but not strongly keeled.* Dorsal fin origin equidistant between snout and caudal fin base; anal fin base short and lying far behind dorsal fin base; pelvic fins below anterior part of dorsal fin base. *Lower gill rakers 31 to 36*. Maxilla not reaching to vertical from anterior margin of eye.

Colour: blue/green above and silvery below, *without spots on flanks; dorsal fin black* (or dusky when fully extended).

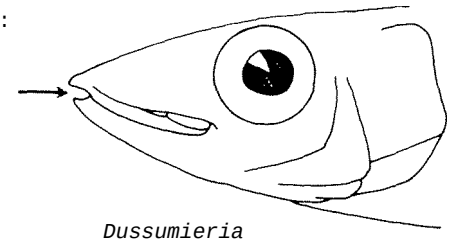
DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

S. clupeoides: 26 to 30 gill rakers on lower part of gill arch (31 to 36 in *S. leiogaster*); body depth 3.5 to 4.1 times in standard length (4.1 to 4.5 in *S. leiogaster).*

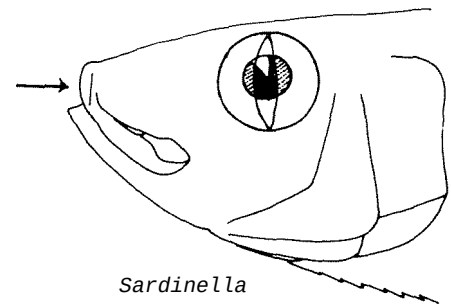
S. sirm: spots present on flanks, more gill rakers (36 to 42), and dorsal fin not black.

Sardinella longiceps: 9 pelvic fin rays and more than 130 gill rakers on lower part of gill arch.

Dussumieria acuta: no scutes along belly and a characteristic pointed mouth.



Dussumieria



Sardinella

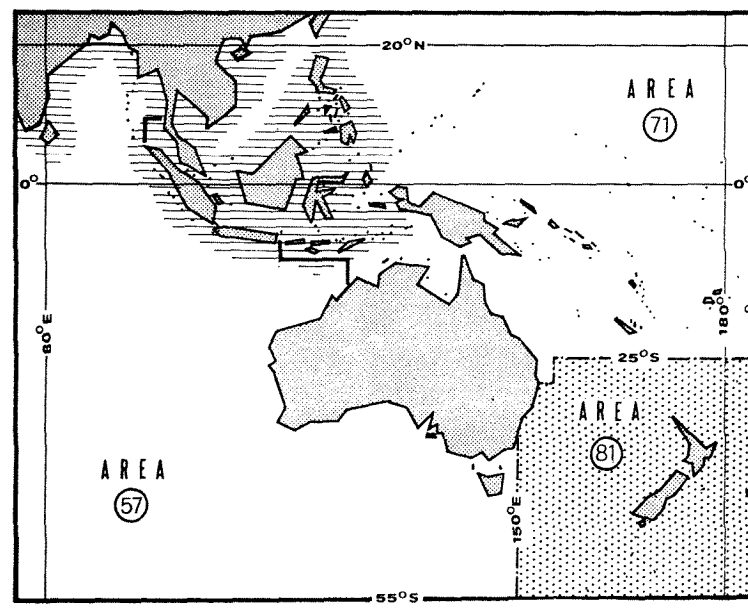
SIZE:

Maximum: 26 cm; common: 19 to 24 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout most of northern part of area; also, westward to East Africa.

Inhabits coastal waters; pelagic.



PRESENT FISHING GROUNDS:

Throughout its range.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION

Separate statistics are not reported for this species.

Caught mainly with purse seines and set nets.

Marketed fresh, dried, dried-salted, boiled, or made into fish balls.

CLUP Sardop 1

1974

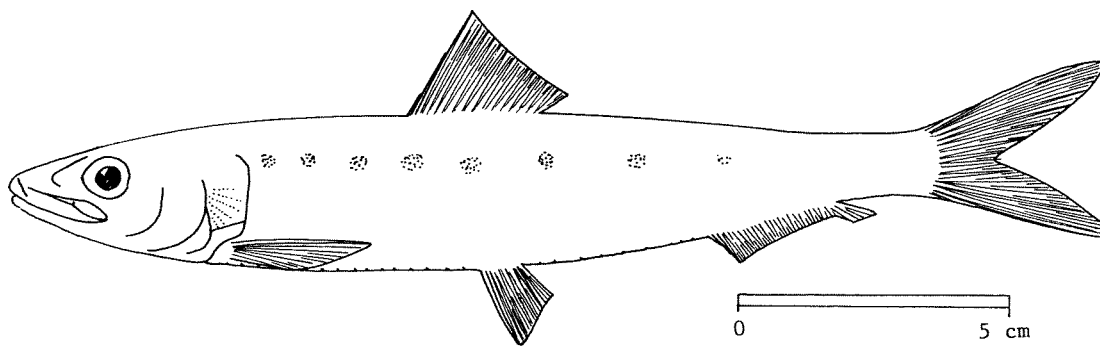
FAO SPECIES IDENTIFICATION SHEETS

FAMILY: CLUPEIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

Sardinops sagax neopilchardus (Steindachner, 1879)

SYNONYMS STILL IN USE: *Sardinops neopilchardus* (Steindachner, 1879)



VERNACULAR NAMES:

FAO: En - Australian pilchard
Fr -
Sp -

NATIONAL:

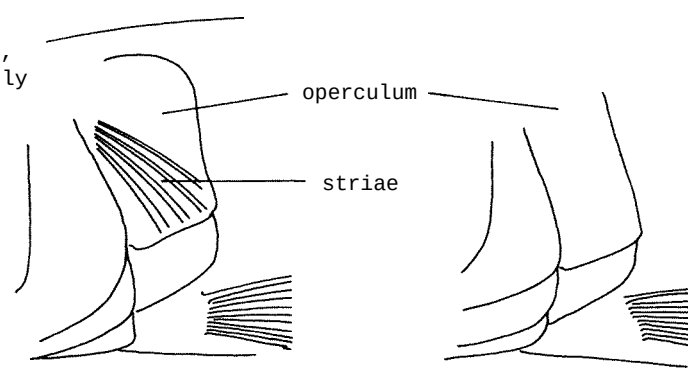
DISTINCTIVE CHARACTERS:

Body elongate, rather round in cross-section, belly with inconspicuous scutes. *Operculum with distinct radiating bony striae.* Dorsal fin at about midpoint of body; anal fin short, its last two rays longer than those in front.

Colour: upper parts olive or dark green, *flanks silvery with a series of up to 15 small dark spots,* sometimes with a second or even third row below.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

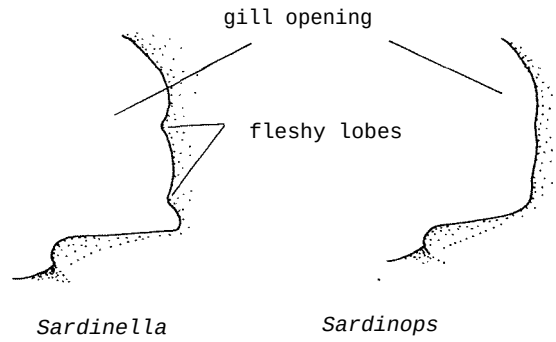
Sardinella species: operculum smooth, at most covered by radiating canals in skin; also, hind margin of gill opening irregular, not evenly rounded.



Sardinops *Sardinella*

Etrumeus teres: no scutes along belly, operculum without radiating bony striae; also, 14 to 15 branchiostegal rays (about 7 in *Sardinops).*

Other clupeid species: operculum smooth and scutes on belly usually sharply keeled; also, spots present along flanks only in deep-bodied species.



SIZE:

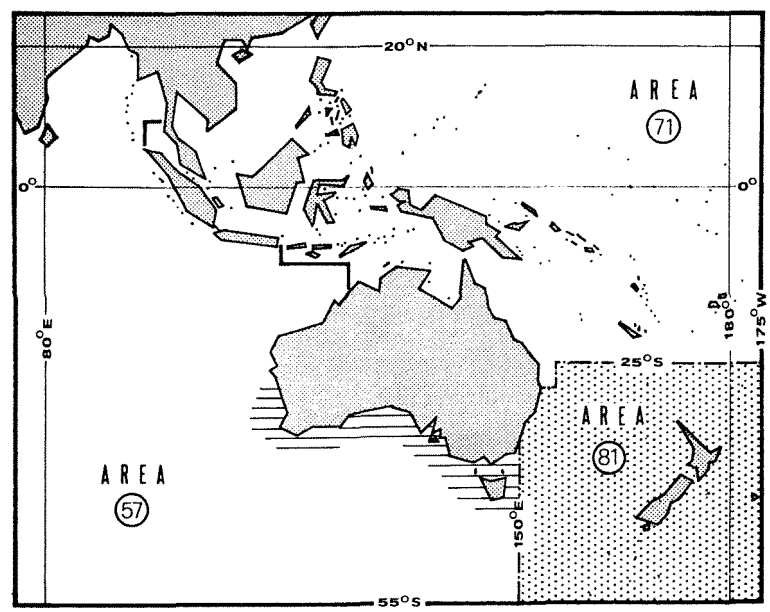
Maximum: 28 cm; common 15 to 18 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Southern coasts of Australia, including Tasmania; also, eastward to New Zealand.

Inhabits coastal waters, often abundant, sometimes in vast schools.

Feeds on small plankton organisms.



PRESENT FISHING GROUNDS:

Throughout its range, especially Victoria, but also New South Wales and Western Australia.

CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with hoop nets, purse seines, lamparas and beach seines in Victoria.

Marketed mostly fresh.

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