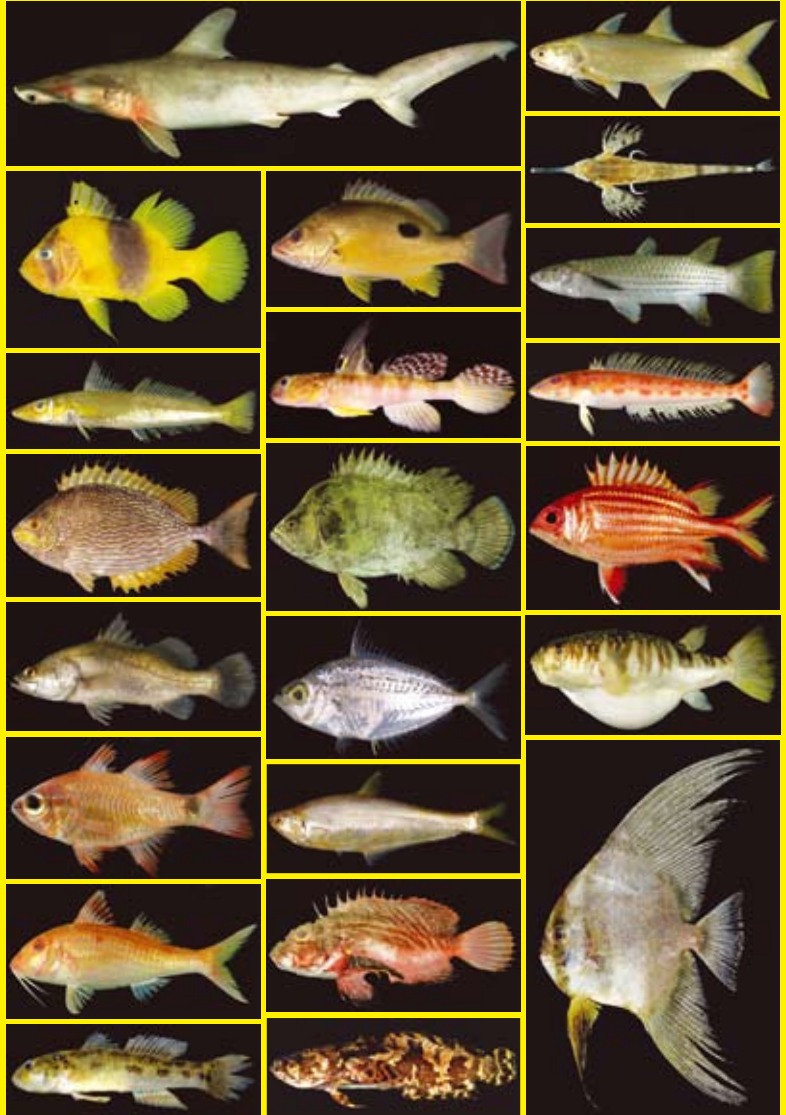


Fishes of Northern Gulf of Thailand

Edited by

Tomohiro Yoshida
Hiroyuki Motomura
Prachya Musikasinthorn
Keiichi Matsuura



National Museum of Nature and Science, Tsukuba
Research Institute for Humanity and Nature, Kyoto
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Photographed by Mizuki Matsunuma and Tomohiro Yoshida



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Preface

The Gulf of Thailand although relatively shallow with an average depth of 50 m, consists of a vast expanse of the Southeast Asian seas with approximately 350,000 km². During the last ice age in the Pleistocene, about 12,000 years ago, sea levels have been estimated as being about 100–150 m lower than at present, and the current Gulf of Thailand was then a part of Sundaland. This suggests that fishes currently occurring in the Gulf of Thailand have only relatively recently settled themselves in the Gulf from outside Sundaland. This has also led ichthyologists to hypothesize that no endemic and no unique fishes are distributed in the Gulf of Thailand. Hence, no comprehensive ichthyofaunal survey on the basis of voucher specimens in the Gulf has ever been carried out.

This shallow sea is important for Thailand's fisheries industry, with huge amounts of fishes caught from the Gulf on a daily basis. In terms of the Gulf's fisheries sustainability, it is important to know and record the fish diversity in order to protect the marine ecosystem and conserve the fisheries resources. During the International Training Program of the Japan Society for Promotion of Science, Tokyo (ITP of JSPS), two graduate students of Kagoshima University, Mr. Mizuki Matsunuma and Mr. Tomohiro Yoshida, and myself were provided with the opportunity to survey marine and estuarine fishes along the coast of northern Gulf of Thailand at the Kasetsart University for a total period of more than six months.

As a first step in understanding the fish diversity in the Gulf, this book provides color photographs of 372 commercial fish species belonging to 109 families collected from the Gulf of Thailand. Descriptions of morphology, coloration, size, and distribution are given for each species account. Editors and authors of this book hope that local fishermen, marine biologists, administrative officials, and lay people would find this book useful in helping to identify fishes up to species level.

Field surveys were mainly supported by ITP of JSPS. Collection building of specimens from the Gulf of Thailand was financially supported by Grants-in-Aid for Scientific Research (B, 24370041 and C, 23580259) from JSPS, a Grant-in-Aid for Young Scientists (B, 19770067) from the Ministry of Education, Science, Sports and Culture, Tokyo, JSPS Asian Core Program –Establishment of Research and Education Network on Coastal Marine Science in Southeast Asia, and the Coastal Area Capability Enhancement in Southeast Asia Project of the Research Institute for Humanity and Nature, Kyoto. Funds to publish this book were provided through grants from the National Museum of Nature and Science, Tsukuba, the Research Institute for Humanity and Nature, Kyoto, and the Kagoshima University Museum, Kagoshima.

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Introduction

By Tomohiro Yoshida

The Gulf of Thailand is surrounded by the Malay and Indochinese Peninsulas on the west, and north and east sides, respectively. It has an area of approximately 350,000 km² with an average depth of 50 m and a maximum depth of 85 m (Wattayakorn, 2005). It is unclear what this refers to the range that connects Kota Bharu, Malaysia from Baibun Cape, Vietnam. The diversity of marine fishes of the Gulf of Thailand is still unclear, although Satapoomin (2000) recently reported 241 species of coral reef-associated fishes from the Gulf.

The coastal environment of the Gulf is characterized by having long sandy beaches with only a few rocky or coral reefs. This is because it is strongly influenced by the large amount of fresh water discharge from two large rivers with wide estuaries, i.e., the Chao Phraya and Bang Pakong rivers. The coral reef ecosystem is well developed on islands, e.g., Samui islands, which are distant from the influences of river discharge, turbidity and siltation. These marine and coastal habitats are a vital support for a vast variety of marine and estuarine biota, including fishes.

We carried out field surveys of fishes in the Gulf in 2009–2012 to find out the diversity of marine and estuarine fishes of the area. As a result, 109 families (372 spp.) were recorded. Among these, 4 species including *Apogon fleurieu* (Lacepède, 1802) (family Apogonidae), *A. gularis* Fraser & Lachner, 1984 (Apogonidae), *Johnius heterolepis* Bleeker, 1873 (Sciaenidae) and *Thamnaconus hypargyreus* (Cope, 1871) (Monacanthidae) are recorded for the first time in the Gulf.

This field guide is produced based on the above surveys. It covers most of the diversity of coastal fishes occurring in marine and estuarine habitats, and commercial fishes sold at various fish markets and ports from the Gulf of Thailand.

Species reported in this book are based on voucher specimens collected and deposited at the Kagoshima University Museum to make them available for future scientific studies. We intend this book to be useful for the study and research of ichthyology and fishery sciences by researchers, students and local government administrators.

This project was supported by the International Training Program of the Japan Society for Promotion of Science (ITP of JSPS), the Research Institute for Humanity and Nature (RIHN), Research Laboratory of Ichthyology, Kasetsart University (RLIKU), the National Museum of Nature and Science (NSMT), and the Kagoshima University Museum (KAUM).

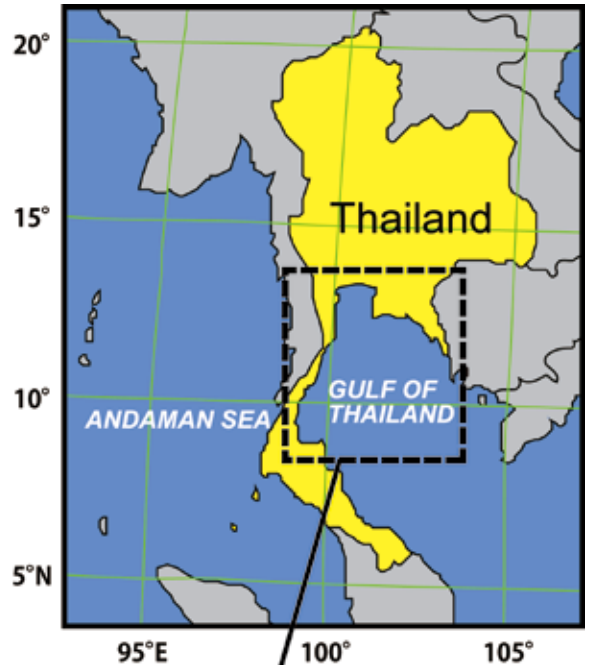
Collection Sites

Surveys of fishes in the Gulf of Thailand were made three times during the period between 2009 and 2012.

The first survey, carried out from August to October 2009, highlighted fishes in commercial trawl catches sold at local fish markets in Ang Sila, Bang Pakong and Samut Sakon. A small number of fishes were caught by beach-

seining at Bang Sean.

The second survey observed from October to December 2010, also highlighted fishes in commercial trawl catches sold at the same sites as in the first survey, and included another local fish market i. e. Samut Prakan.



Collection Sites

small number of fishes were also obtained from a fish landing port at Prachuap Khiri Khan. Additionally, we also used cast-nets and fishing to collect in estuaries at Prachuap Khiri Khan and Chang Island.

The third survey observed from June to August 2012, highlighted fishes in commercial trawl catches sold at the same sites as in the second survey. A small number of fishes were obtained from fish landing ports at Bang Sean, Prachuap Khiri Khan and Rayong.

The systematic arrangement of families generally follows Nelson (2006). Species in families are arranged in alphabetical order by species name. Each species record is based on voucher specimens. The photographs are cataloged at the Fish Image Database of Kagoshima University Museum (KAUM-II).

On figure legends of photographs of fish specimens which were obtained at ports or fish markets during the surveys, some sampling localities are shown as SS and SP in parentheses. SS and SP indicate Samut Sakon and Samut Prakan, respectively. Specimens obtained during the surveys are deposited at the Kagoshima University Museum (KAUM), Japan.



Samut Prakan



Ang Sila



Prachuap Khiri Khan



Bang Pakong



Samut Sakon



Rayong

Methods of Measurements and Counts

Methods of measurements and counts generally follow Nakabo (2002). For fin formulae, the number of spinous and soft fin rays are described by Roman numerals (I, II, III,), and Arabic numerals (1, 2, 3,), respectively. The unbranched soft rays are sometimes expressed in small Roman numerals (i, ii, iii,). Spinous fin rays are generally called spines. In the case of the dorsal or anal (sometimes pectoral or pelvic) fins containing spine and soft rays, the number of spines and soft rays are separated by a comma. When the dorsal (or anal) fin consists of two or more fins (i.e. first dorsal fin, second dorsal fin,), each fin is separated by a “+” sign. Gill rakers on the first gill arch on the right side of the body are used for counting. Number of gill rakers on the upper and lower limbs are separated by a “+” sign. When present, the one or more gill rakers between the limbs are included in the lower limb counts. Number of vertebrae includes the urostyle. Counts of abdominal and caudal vertebrae are separated by a “+” sign.

A – number of anal-fin rays.

BR – number of branchiostegal rays

D – number of dorsal-fin rays.

DW – disc width: extremities of the left and right pectoral fins.

DPC – number of dorsal procurrent caudal-fin rays.

FL – fork length: linear distance from most anterior point of head to bottom of concave margin of caudal fin.

GR – number of gill rakers.

LGR – number of gill rakers on lower limb.

LL – number of lateral line scales: number of scales on lateral line from the scale behind the posttemporal to the caudal-fin base.

LLp – number of pored scales on lateral line: only the number of pored scales on lateral line is counted.

LR – number of scales in longitudinal row: number of scales in longitudinal row from the dorsal end of the opercular membrane to the caudal-fin base.

MP – number of mandibular pores.

P₁ – number of pectoral-fin rays.

P₂ – number of pelvic-fin rays.

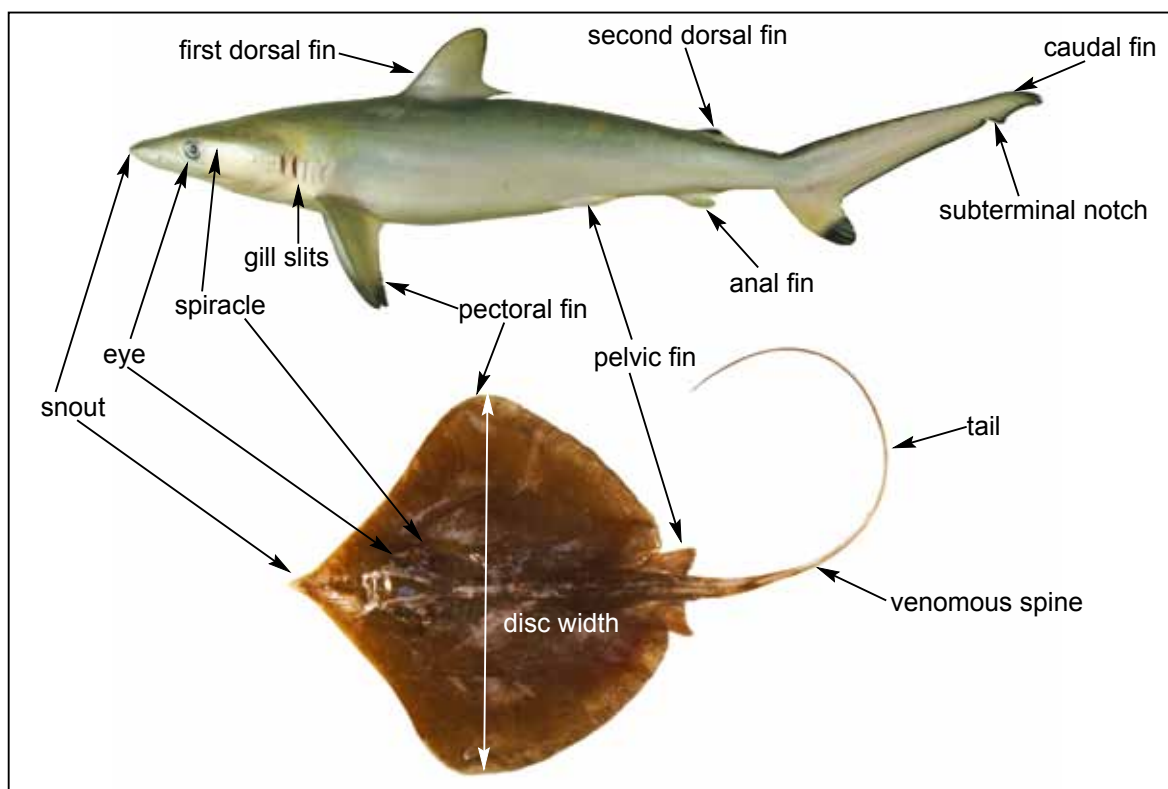
PDS – number of predorsal scales: number of scales on the dorsal midline from the origin of dorsal fin forward to occipital region.

PLp – preanal lateral-line pores: number of pores along lateral line behind gill opening to just above the anus.

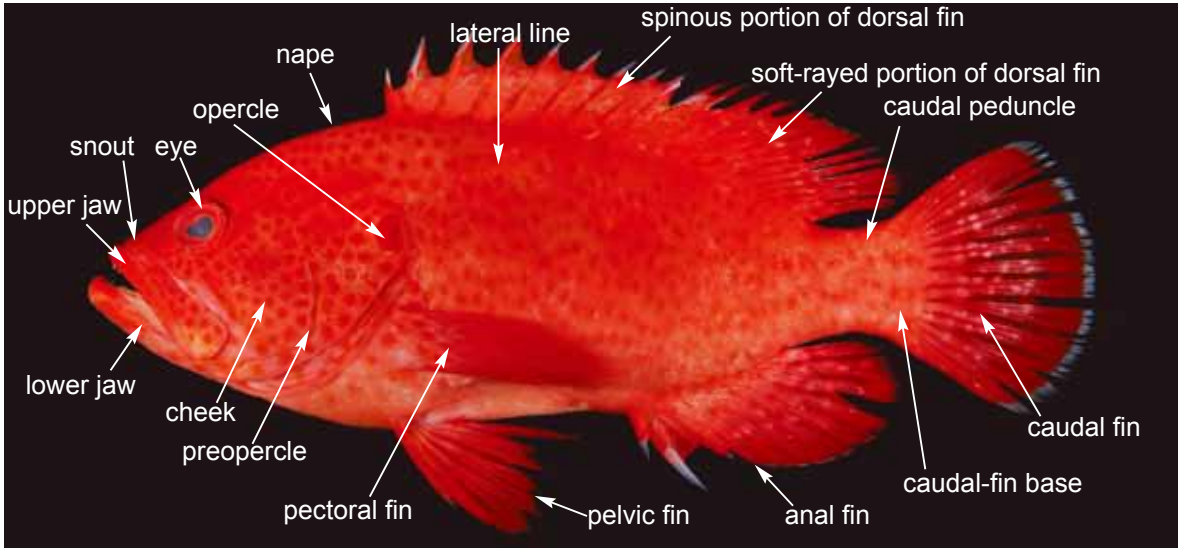
SL – standard length: linear distance from most anterior point of upper jaw (or snout) with mouth closed to caudal fin base (posterior end of hpurals, roughly where fold formed by bending caudal fin).

TL – total length: greatest linear distance between most anteriorly projecting part of head with mouth closed and farthest tip of caudal fin. All unspecified lengths are assumed to be total lengths.

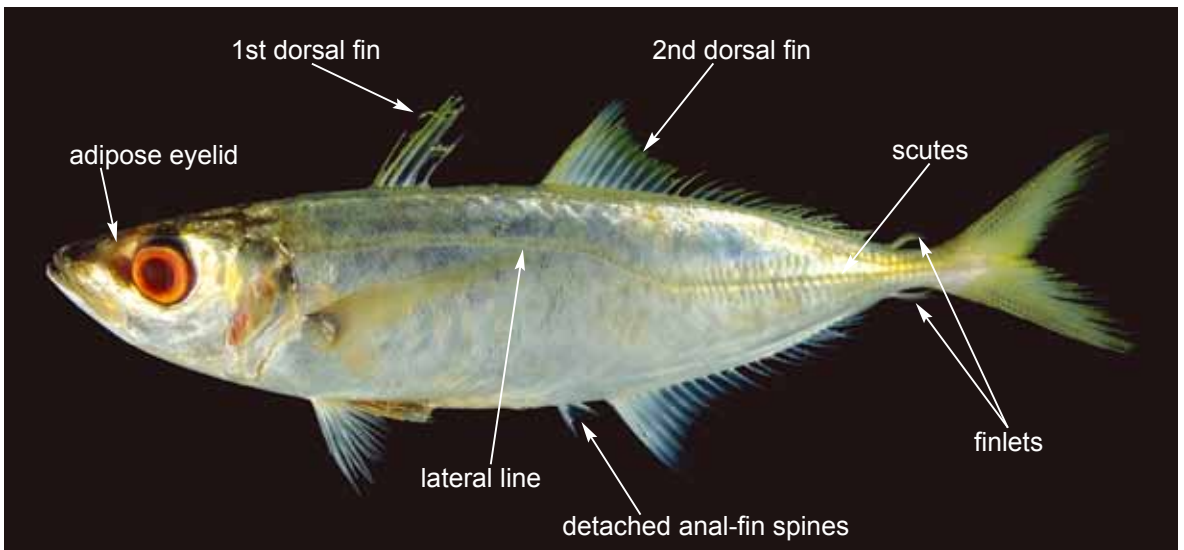
V – number of vertebrae.



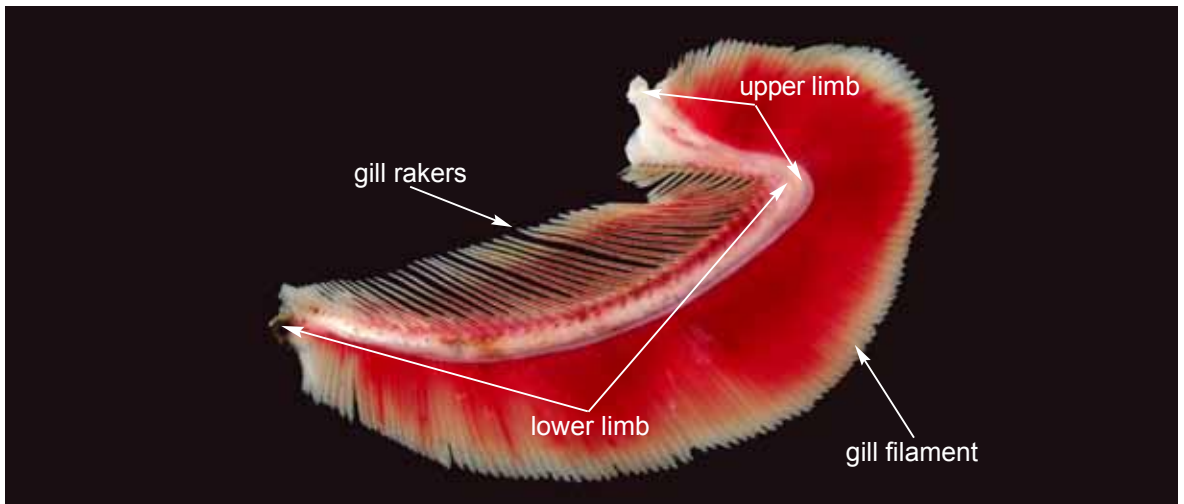
Body parts of elasmobranchs



Body parts of bony fish



Body parts of carangid



Gill arch of carangid

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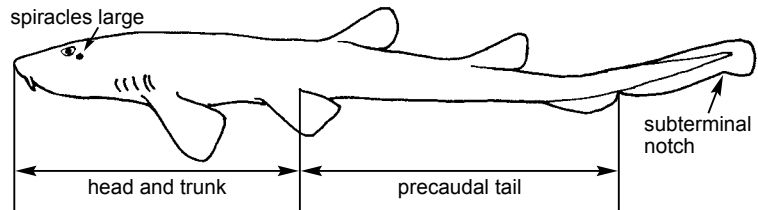
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HEMISCYLLIIDAE

Longtail Carpetsharks (Bamboosharks)

Small sharks; maximum size to about 130 cm; around 70 cm in most species. Body cylindrical, elongated; precaudal tail somewhat longer than head and trunk. Nostrils with barbels; nasoral grooves and circumnarial grooves present. Mouth small, subterminal (located well anterior to eye); teeth small, not blade-like, monocuspid, similar in both jaws. Eyes without nictitating eyelids. Spiracles large, situated behind and below eyes. Five small gill slits, the posterior 3 over the pectoral-fin base. Two dorsal fins, without spines; first dorsal-fin origin above or posterior to pelvic-fin base; second dorsal fin subequal and similar in shape as the first, well anterior to anal-fin origin; anal-fin base connected with caudal fin, with a deep notch between the fins; caudal fin strongly asymmetrical, with a strong subterminal notch.

Color: adults dark gray to light brown, plain; head and body with



numerous dark spots and faint bands in some species. Juveniles more intensely spotted, usually with black-edged saddlemarkings.

Remarks: occurring in tropical and subtropical coastal areas, from Madagascar to Japan and Australia. Bottom dwellers. Feed on polychaetes, crustaceans and small fishes. Oviparous.

Similar families occurring in the area: Hemiscylliidae is distinguished from other Indo-Pacific orectolobiform shark families in having an almost cylindrical body, a long precaudal tail (longer than head and body), second dorsal fin located anterior to anal fin,

and anal-fin base connected with lower lobe of caudal fin. Orectolobidae – nasal barbels numerous, branched; head and body with elaborate variegated pattern. Ginglymostomatidae and Stegostomatidae – no circumnarial grooves; caudal fin elongate, blade-like; precaudal tail shorter than head and trunk. Scyliorhinidae (carcharhini-form shark) – eyes with weakly differentiated nictitating lower eyelids; second dorsal fin located posterior to anal fin; anal-fin base not connected with lower lobe of caudal fin; head and body with light spots, dark blotches, bars, and saddles.

(B. M. Manjaji-Matsumoto)

Chiloscyllium punctatum Müller & Henle, 1838

Brownbanded Bambooshark

Body elongated, moderately stout, without lateral ridges. Nostrils subterminal on snout; mouth closer to eyes than snout tip. Dorsal fins larger than pelvic fins, with free posterior projections, posterior margins of dorsal fins straight or distinctly concave; anal-fin base shorter than caudal-fin lobe between lower origin and subterminal notch. **Color:** plain dark gray or with faint grayish bands; with dark transverse bands usually with a scattering of small dark spots in juveniles. **Size:** maximum length ca. 1 m. **Distribution:** Indo-West Pacific, from India to northern Australia, north to Japan. **Remarks:** inshore bottom dweller; very tenacious of life, can survive out of water for a long period (half a day); marketed fresh, or as fillets in fish markets of Sabah.

(B. M. Manjaji-Matsumoto)

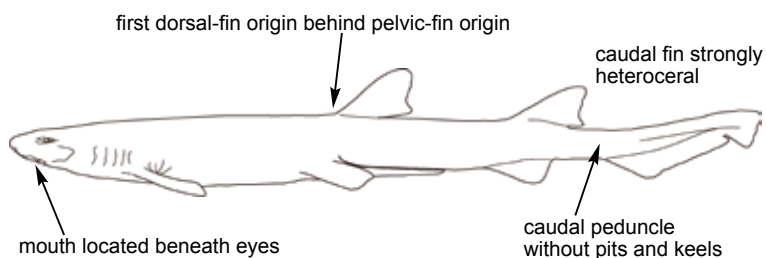


Chiloscyllium punctatum, KAUM-I. 47686, 14.1 cm TL
Gulf of Thailand (SS), 6 July 2012

SCYLIORHINIDAE

Catsharks

Small sized sharks; maximum size to about 70 cm; around 45 cm in most species. Body slender, elongated; tail very slender. Head small, depressed; snout short to moderately long; eyes with weakly differentiated nictitating lower eyelids; nostrils with or without nasoral or circumnarial grooves; mouth moderately large, subterminal (located below eye); teeth very small, numerous, with a single medial cusp and usually 1 or more cusplets on each side near the center of mouth; 5 small gill slits, the posterior 2 over the pectoral-fin base. Two dorsal fins, without spines, both fins of similar shape; first dorsal-fin origin above or posterior to pelvic-fin base; second dorsal-fin origin posterior to anal-fin origin; caudal fin strongly asymmetrical, with a strong subterminal notch. Caudal peduncle without lateral keels or precaudal pits. **Color:** head and body gray, brown, yellowish, or black, often



with light or dark spots and dark blotches, bars and saddles.

Remarks: occurring in tropical and subtropical areas. Bottom dwellers, ranging from shallow coastal waters to depths greater than 2,000 m. Feed on polychaetes, crustaceans and small fishes. Used for fishmeal, oil and lobster bait.

Similar families occurring in the area: Scyliorhinidae is distinguished from other Indo-Pacific carcharhiniform shark families in having a small

slender body, location of the last 2 gill slits behind pectoral-fin origin, the posterior position of the first dorsal fin, and the absence of keels or precaudal pits on the caudal peduncle. Also distinguishable from the superficially similar orectolobiform shark (Hemiscylliidae) by the presence of weakly differentiated nictitating lower eyelids; and anal-fin base not connected with lower lobe of caudal fin.

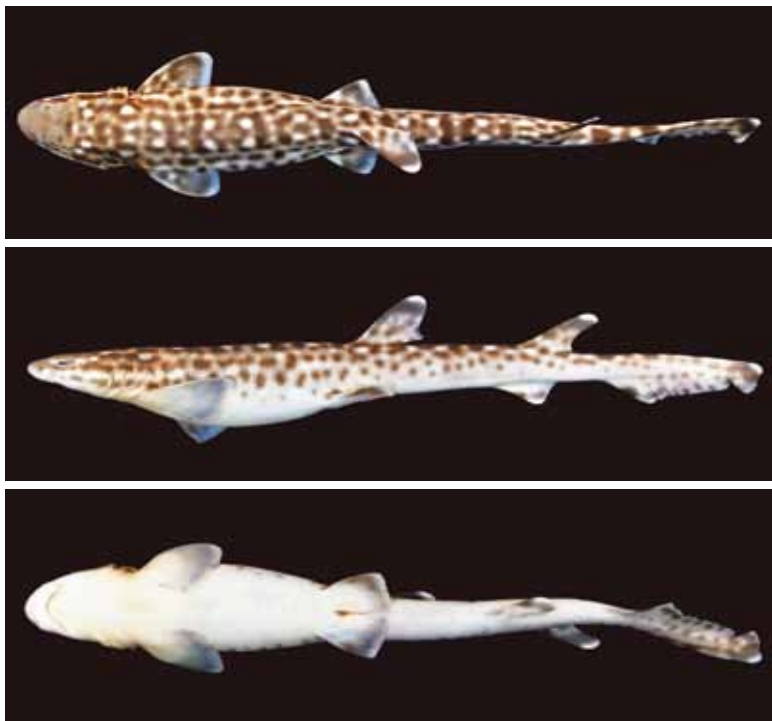
(B. M. Manjaji-Matsumoto)

Atelomycterus marmoratus (Bennett, 1830)

Coral Catshark

Body elongated, very slender. Nostrils subterminal on snout; nasoral grooves present; anterior nasal flaps greatly expanded, reaching mouth. Mouth large, located below eyes; labial furrows very long. Dorsal fins large, subequal in shape and size, angled rearwards. **Color:** adults and adolescents with marbled appearance; head and body with numerous light gray and white spots; saddles obsolete. Juveniles darker, head and body dark gray with pale vertical lines, black spots with pale margins along dorsal body. **Size:** maximum length 70 cm. **Distribution:** tropical Indo-West Pacific, from Pakistan to New Guinea and southern China and Taiwan. **Remarks:** a common, inshore bottom dweller, often found in crevices and holes on rocky reefs; oviparous; feed mainly on bony fishes; marketed fresh, or as fillets in fish markets of Sabah.

(B. M. Manjaji-Matsumoto)

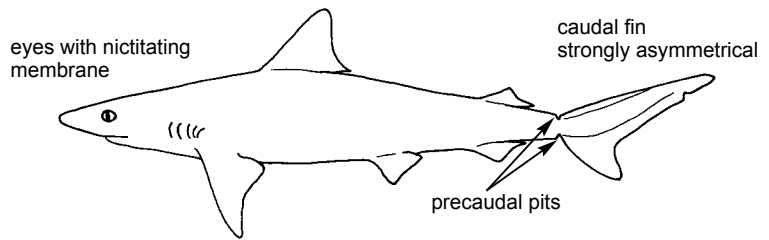


Atelomycterus marmoratus, KAUM-I. 32798, 51.7 cm TL
Gulf of Thailand (SP), 25 Oct. 2010

CARCHARHINIDAE

Whaler Sharks (Requiem Sharks)

Small to large sharks; maximum size 7.5 m; around 1–3 m in most species. Body cylindrical, weak lateral keels on caudal peduncle in some genera; precaudal tail much shorter than head and trunk. Head conical to depressed; snout very short to long; spiracles large. Nostrils without barbels, nasoral grooves or circumnarial grooves. Mouth usually large, arched, and extending well behind eyes; teeth small to large, blade-like, with a single cusp and cusplets variably developed; anterior teeth in upper jaw smaller than lateral teeth and not separated from them by smaller teeth. Eyes on sides of head, with developed nictitating lower eyelid. Spiracles usually absent. Five small to medium sized gill slits, the last 1 to 3 behind pectoral-fin origin. Two dorsal fins, without spines, the first larger than the second or subequal; first dorsal-fin base located above interspace between pectoral and pelvic-fin bases; anal fin moderately large; caudal fin strongly asymmetrical, much less than a half of total length, with an undulated dorsal margin, a strong subterminal notch, and a well-defined lower lobe; pre-



caudal pits well developed. Intestine with scroll valve, lacking spiral valve. **Color:** head and body gray, yellowish, or bluish dorsally, white or pale yellow ventrally, sometimes with prominent dark or light marking on fins.

Remarks: circumglobal in the tropic and temperate areas of Pacific, Atlantic, and Indian Oceans. Marine, occasionally in freshwater lakes or rivers. Typical predator, feed on almost all aquatic animals. Dominant in tropical waters; the larger species are dangerous to people.

Similar families occurring in the area: Carcharhinidae is distinguished from other Indo-Pacific carcharhiniform shark families in having a character combination of a long snout, spiracles, upper teeth with cusplets, lower teeth well differentiated from uppers, long labial furrows, and sec-

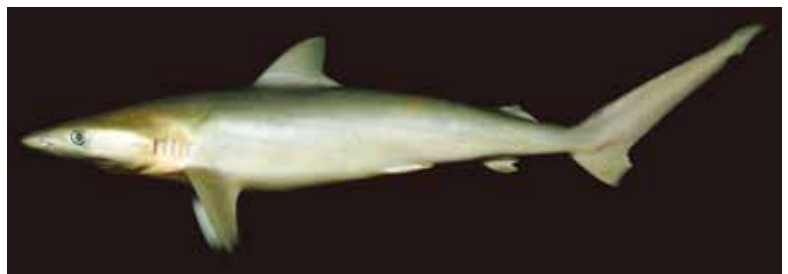
ond dorsal fin subequal to first dorsal fin, its origin anterior to that of the slightly smaller anal fin. Scyliorhinidae – head and body small, slender, location of the last 2 gill slits behind the pectoral-fin origin, the posterior position of the first dorsal fin, and the absence of keels or precaudal pits on the caudal peduncle. Triakidae – dorsal margin of caudal fin not undulated; precaudal pits absent; intestine with spiral valve. Hemigaleidae – intestine with spiral valve; spiracle present but minute; upper teeth with strong distal cusplets. Sphyrnidae – head hammer-shaped. Lamnidae (laminiform shark) – caudal peduncle with large lateral keels.

(B. M. Manjaji-Matsumoto & S. Kimura)

Carcharhinus sorrah Müller & Henle, 1839

Spot-tail Shark

Body slender. Snout long, moderately pointed. Upper teeth with oblique cusp, flanked on one side by strong cusplets; lower teeth narrow, oblique, serrated cusp, no cusplets. First dorsal fin with a narrow rounded apex, free rear tip moderately long. Second dorsal fin very low, inner margin extremely long (2.0–2.6 times fin height). Interdorsal ridge present. **Color:** grayish; second dorsal, pectoral and ventral tip of caudal fin strikingly black-tipped. **Size:** maximum length at least 160 cm; males and females mature at 90–115 cm and 95–118 cm respectively; size at birth 50–55 cm. **Distribution:** tropical waters of the



Carcharhinus sorrah, KAUM-I. 47428, 54.2 cm TL off Tha Chana (SP), 18 June 2012

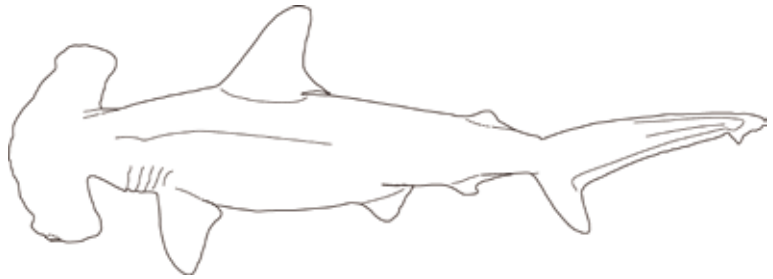
Indo-West Pacific, from southeastern Africa to northern Australia, Solomon Islands and Japan. **Remarks:** a common inshore and sometimes offshore species, on continental and insular shelves from close inshore and the surface down to at least 140 m depth.

Often on and around coral reefs, but also occurring on other bottom habitats. Viviparous, number of young 2 to 6. Common catch of the shark long-line and inshore gillnet fisheries. Used widely for its fins, meat, skin and cartilage. (B. M. Manjaji-Matsumoto)

SPHYRNIDAE

Hammerhead Sharks

Medium- to large-sized sharks; maximum size to about 600 cm; around 450 cm in most species. Body elongate, moderately slender. Head broad, its anterior portion flattened dorsoventrally and widely expanded laterally in "hammer" form, with the eyes at its outer edges; eyes with well-developed nictitating lower eyelids; teeth blade-like, monocuspid. Two dorsal fins, the first high and pointed, its base much shorter than caudal fin and anterior to pelvic-fin origin; caudal fin asymmetrical, with a strong subterminal notch and a small, but well-defined lower lobe. Caudal peduncle not strongly flattened dorsoventrally or widely expanded laterally, without longitudinal ridges but with precaudal pits. **Color:** gray to brassy.



head hammer-shaped;
eyes located at tips of lateral blades

Remarks: cosmopolitan in coastal tropical and warm temperate seas. Viviparous.

area: none. Not other shark family has the characteristic hammer-shaped head of the Sphyrnidae.

Similar families occurring in the

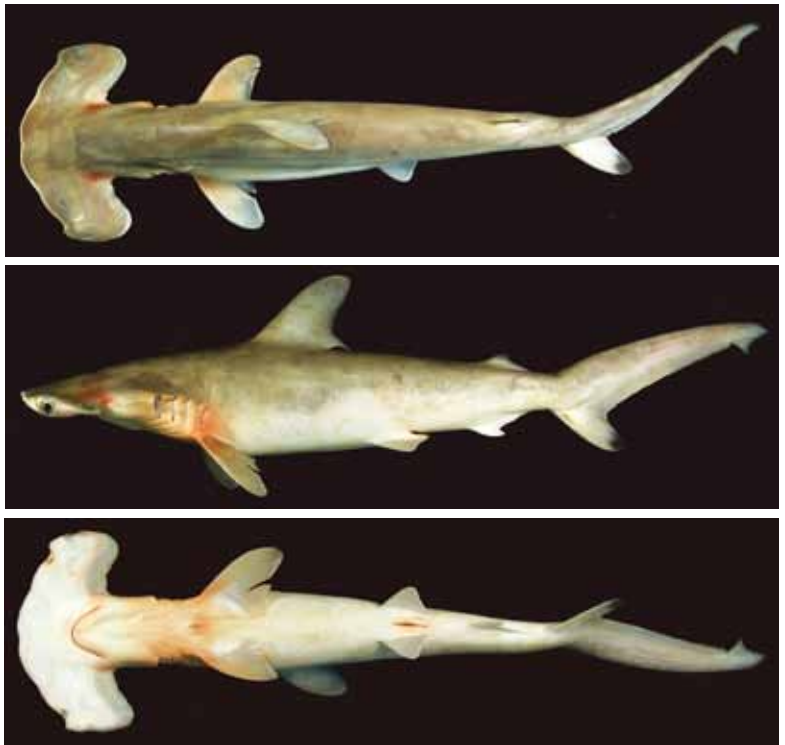
(B. M. Manjaji-Matsumoto)

Sphyrna lewini (Griffith & Smith, 1834)

Scalloped Hammerhead

Body elongate, laterally compressed. Head broad, hammer-shaped, anterior margin arched, indented at midline. Upper teeth triangular, anteriorly upright, posteriorly oblique. First dorsal fin tall, moderately falcate; second dorsal fin short with long rear tip and weakly concave posterior margin. Precaudal pit present, crescent-shaped. **Color:** plain gray to olivaceous; pectoral fins tip gray, black ventrally. **Size:** maximum length 350 cm. **Distribution:** cosmopolitan in all tropical and warm temperate seas. **Remarks:** occurs over continental and insular shelves and adjacent deep water, to 275 m depth; feed mainly on bony fishes and cephalopods, but also sharks and rays; potentially dangerous to humans.

(B. M. Manjaji-Matsumoto)

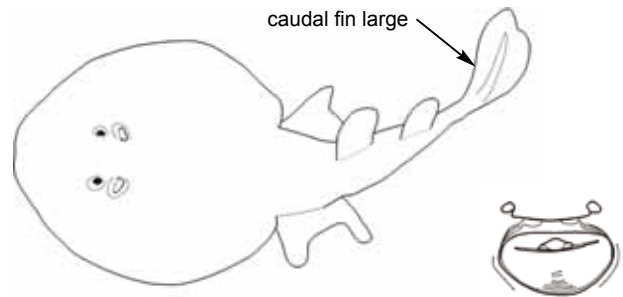


Sphyrna lewini, KAUM-I. 33215, 50.9 cm TL off Chantha Buri (SP), 30 Nov. 2010

NARCINIDAE

Numbfishes

Small to medium-sized batoids; maximum size between 15 and 66 cm, commonly less than 50 cm, in total length. Head, trunk, and greatly enlarged pectoral fins fully fused to form a strongly flattened oval, rounded to shovel-shaped disc; tail stout, shark-like; disc and tail of equal length or tail longer than disc length, tail also longer than disc width. Two dorsal fins, the first originating behind anterior half of total length, base varying from over rear halves of pelvic-fin bases to behind rear tips of pelvic fins and junction between trunk and tail, but well anterior to midlength of tail. Caudal fin large, subequal to pelvic fins, not shark-like. Five pairs of gill openings on ventral side of disc. Body entirely naked above and below, without dermal denticles or thorns. No stinging spines (stings). Mouth transverse and straight, without prominent knobs and depressions but with strong labial folds and a prominent groove around its periphery; anterior nasal flaps short, medially expanded and fused into a broad nasal curtain that slightly overlaps mouth; teeth and part of tooth bands remain exposed when mouth is closed, exposed tooth bands rounded to angular in outline. Large kidney-shaped electric or-



gans at bases of pectoral fins, visible through skin; no electric organs in tail. **Color:** dorsal surface varies from whitish, yellowish, brownish, grey-brown, greenish, reddish or black, usually white below but black in deep-water species; dorsal surface either unspotted or with small to large dark spots, blotches, bars or lines, or white spots and line, sometimes forming complex ocelli on pectoral fins.

Remarks: almost circumglobal distribution, inhabit inshore to deep-water warm-temperate to tropical continental and continental insular waters. Occur off sandy beaches and in muddy enclosed bays from the intertidal to a depth of 1,071 m.

Similar families occurring in the area: Narkidae – with a single dorsal fin or no dorsal fins; snout shorter; mouth with a shallow groove around

its periphery, antero-posteriorly elongate nostrils, nasal curtain narrow and longer, with numerous sensory pores; snout supported by a narrow, rod-like rostral cartilage. Torpedinidae – dorsal fins close together, first dorsal fin normally much larger than second; caudal fin much larger than dorsal fins; snout truncate, pectoral disc transversely elliptical and normally much greater in length and width than tail; mouth strongly arched and without labial folds or a peripheral groove. Hypnidae – spiracles with long papillae; pectoral disc longitudinally pear-shaped; mouth strongly arched and without labial folds or peripheral groove; teeth tricuspidate; tail, dorsal and caudal fins very small; caudal fin as high as dorsal fins. (B. M. Manjaji-Matsumoto)

Narcine brevilabiata

Bessednov, 1966

Shortlip Numbfish

Disc subcircular, thick and flabby; eyes raised, not embedded in skin; two subequal dorsal fins; mouth subequal to or only slightly narrower than width between lateral edges of nostrils; exposed part of tooth bands in jaws relatively broad. **Color:** disc brownish dorsally, with numerous dark spots, those on upper snout distinctly smaller than eye; 3–5 pairs of very large, dark blotches on disc; ventral surfaces of pelvic and pectoral fins often broadly dark edged. **Size:** to at least 32 cm total length. **Distribution:** South China Sea in the Northwest Pacific; possibly extends north to the East China and Yellow Seas. **Remarks:** de-



Narcine brevilabiata, KAUM-I. 32795, 23.6 cm TL
Gulf of Thailand (SP), 25 Oct. 2010

mersal on the inner continental shelf, to depths of 41–70 m. Biology largely unknown, presumably viviparous, with yolk-sac dependency. Mouth can

protrude as a tube to extract prey from the substrate.

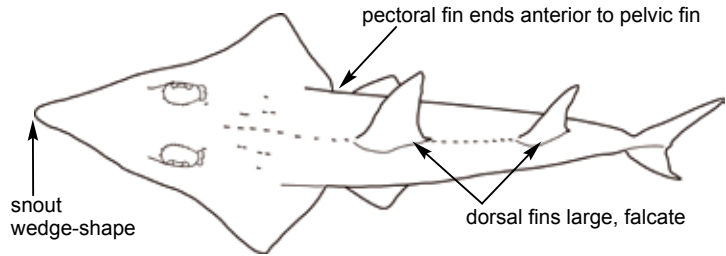
(B. M. Manjaji-Matsumoto)

RHYNCHOBATIDAE

Wedgefishes

Large shark-like batoids; maximum size 270 cm. Head and greatly enlarged pectoral fins fully fused to form a small pectoral disc; trunk thick, shark-like, tail long and stout. Head narrow and depressed; snout moderately elongated, angular and supported by a stout rostral cartilage; eyes and spiracles dorsolateral on head. Five pairs of gill openings on ventral side of disc. Body covered with small dermal denticles; enlarged denticles present on dorsal surface on orbits, and midline of trunk and tail. **Color:** yellowish, brownish, gray-brown, or greenish dorsally, white ventrally; dorsal surface with small to large white spots and sometimes dark spots on pectoral fins.

Remarks: a small group of inshore tropical batoids, from tropical



West Africa, and the Indo-West Pacific. Feed on polychaetes, crustaceans and small fishes. Ovoviviparous.

Similar families occurring in the area: Rhinidae – snout broadly rounded; no spiracular folds; mouth with prominent knobs and depressions; enlarged thorns present on dorsal surface on snout, orbits, shoulders, and midline of trunk. Rhinobatidae – pectoral fins

with origins in front of nostrils and with free rear tips posterior to pelvic-fin origin; lower lobe of caudal fin short. Pristidae – snout with a rostral saw; no thorns around eyes, on back, or on tail; dorsal surface plain, without spots or ocelli.

(B. M. Manjaji-Matsumoto)

Rhynchobatus australiae Whitley, 1939

Whitespotted Wedgefish

Snout bottle-shaped, constricted near tip; spiracles with two skin folds on posterior margin; first dorsal fin less than 1.5 times height of second (in adults), its origin slightly posterior to pelvic-fin origin. **Color:** disc gray or brown with inconspicuous white margin; adults with a faint (sometimes absent) black spot on each pectoral fin, spot diffused-edged in juveniles (less than 60 cm), diagonal row of three equidistant white spots usually above black pectoral spot. **Size:** maximum length 270 cm. **Distribution:** tropical Indo-West Pacific, from Taiwan to northern Australia, including the Philippines. **Remarks:** demersal on soft bottoms near the coast and sand patches on coral reefs, inshore to depths of at least 60 m; feeds on bottom crustaceans and molluscs; marketed fresh, fins prized for the sharkfin trade. Species listing in Rhynchobatidae follows Last & Stevens (2009) and Compagno



Rhynchobatus australiae, KAUM-I. 33214, 39.9 cm TL off Chantha Buri (SP), 30 Nov. 2010

& Last (2010). Listed in Rhinobatidae by Nelson (1994), and in Rhinidae by Compagno & Last (1999).

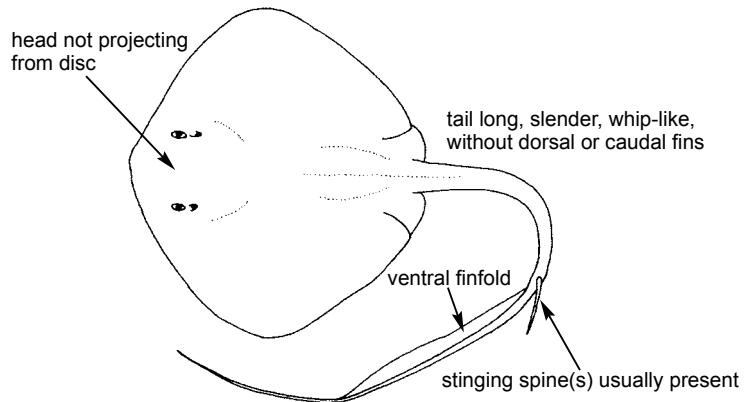
(B. M. Manjaji-Matsumoto)

DASYATIDAE

Stingrays

Small to very large batoids; maximum size 5 m in total length, 2 m in disc width. Head, trunk, and greatly enlarged pectoral fins fully fused to form a strongly flattened oval, circular, or rhomboidal disc; tail moderately depressed and or cylindrical, whip-like. Head not projecting from disc; eyes and spiracles dorsolateral on head. Five pairs of gill openings on ventral side of disc. Body usually with denticles, thorns, and tubercles on the dorsal surface of disc and tail. In most species, tail with 1–4 stinging spines (stings). **Color:** grayish brown or brownish green dorsally, paler ventrally; a few species with bluish, whitish, or blackish spots, rings, or reticulations.

Remarks: occur in marine, estuarine, and fresh-water habitat in temperate and tropical areas worldwide.



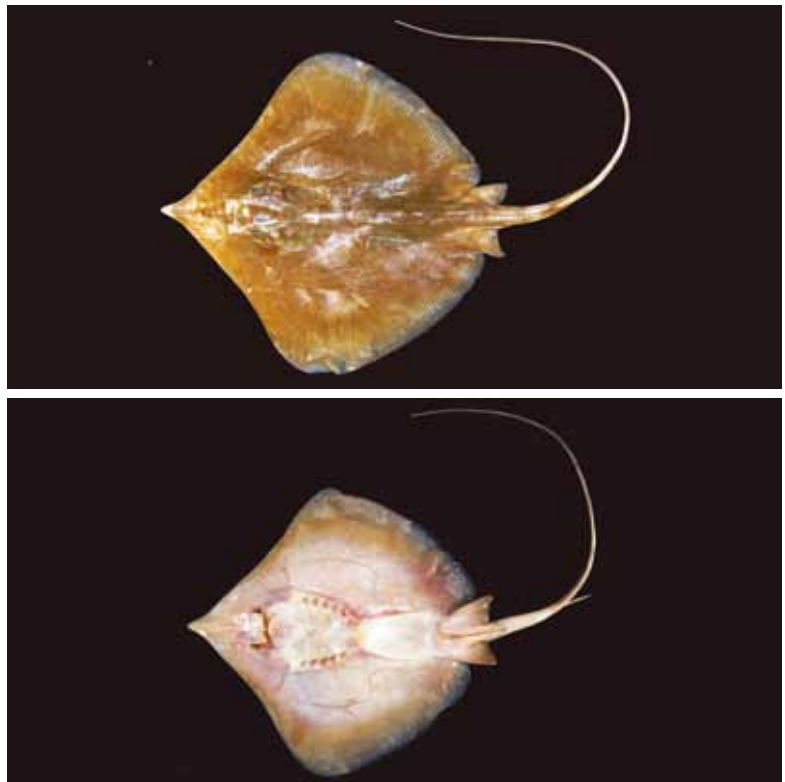
Similar families occurring in the area: Plesiobatidae – tail stout, with a long leaf-like caudal fin. Rajidae – tail not whip-like, with small posterior dorsal fins, and/or caudal fins; pelvic fins subdivided. Narcinidae – stout tail with dorsal and caudal fins. Gym-

nuridae – disc extremely broad (more than 1.5 times as broad as long), tail very short (shorter than $\frac{1}{2}$ disc width). Myliobatidae – head distinct from disc; pectoral apices angular, acute. (B. M. Manjaji-Matsumoto)

Dasyatis zugei (Müller & Henle, 1841)

Sharpnose Stingray

Disc with broadly rounded apices; tail relatively short, tapering in thickness beyond sting; weak dorsal skin fold on tail beyond sting; long, low ventral skin fold on tail; a few small thorns along midline of disc dorsally; row of small thorns on tail before sting in adults; snout very elongate; no oral papillae in mouth. **Color:** disc brownish dorsally; disc pale or dark edged ventrally. **Size:** maximum length 290 cm disc width. **Distribution:** Indo-West Pacific, from India to eastern Indonesia (Bali) and northwards to southern Japan. **Remarks:** demersal on insular and continental shelves, to depths of at least 40 m. viviparous, gives birth to litters of 1–10 pups; feeds on bottom crustaceans; marketed fresh. (B. M. Manjaji-Matsumoto)



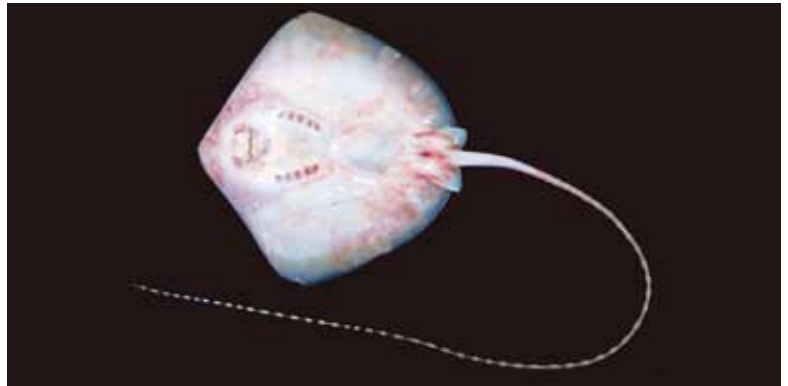
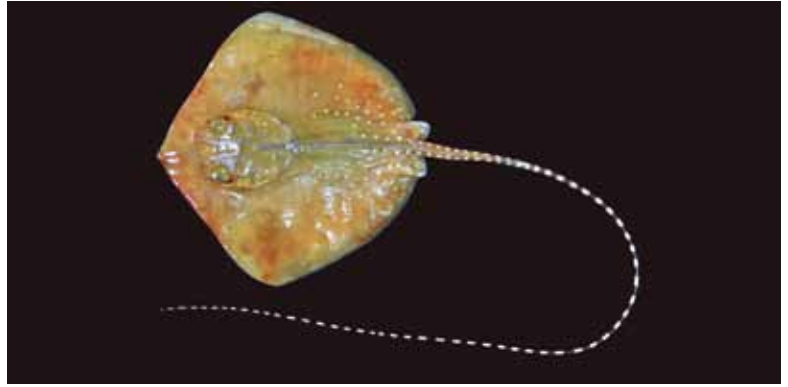
Dasyatis zugei, KAUM-I. 32797, 40.0 cm TL
Gulf of Thailand (SP), 25 Oct. 2010

Himantura gerrardi
(Gray, 1851)

Whitespotted Whipray

Disc quadrangular; tail long, whip-like, no skin folds on tail; widely spaced granular denticles on central disc (absent in small juveniles); central disc usually with 1–5 small thorns; tail lacking thorns; sting situated anteriorly on tail. **Color:** disc with numerous white spots (rarely plain grayish brown) dorsally; white ventrally; tail with alternating light and dark bands (rarely faint). **Size:** maximum length 85 cm disc width. **Distribution:** widespread in the Indo-West Pacific, from India to eastern Indonesia, north to Taiwan. **Remarks:** demersal on soft bottoms, from inshore to depths of at least 60 m; feeds primarily on small bottom crustaceans, but also small fishes; marketed fresh, the skin is valuable as leather.

(B. M. Manjaji-Matsumoto)



Himantura gerrardi, KAUM-I. 32744, 62.7 cm TL
Ang Sila, 23 Oct. 2010

Himantura walga
(Müller & Henle, 1841)

Dwarf Whipray

Disc almost oval; tail short, not whip-like (end bulbous in adult females); no skin folds on tail; narrow band of flat denticles on central disc in adults; mid-disc thorns absent or rudimentary; tail thorns very elongate, bases nearly half eye diameter in length; sting situated anteriorly on tail; snout broadly triangular. **Color:** grayish or brownish dorsally (without a pattern); whitish ventrally, sometimes with a yellowish gray posterior margin. **Size:** maximum length 240 cm disc width. **Distribution:** off Thailand, Malaysia and Indonesia. **Remarks:** demersal on insular and continental shelves, and occasionally in coastal embayments. Used for its meat, fresh and dried.

(B. M. Manjaji-Matsumoto)

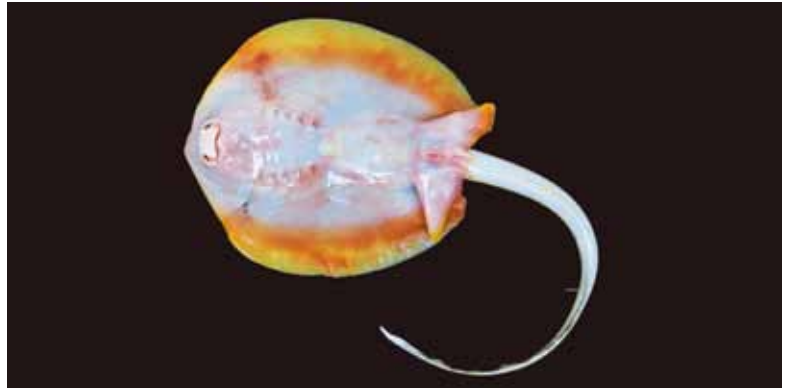
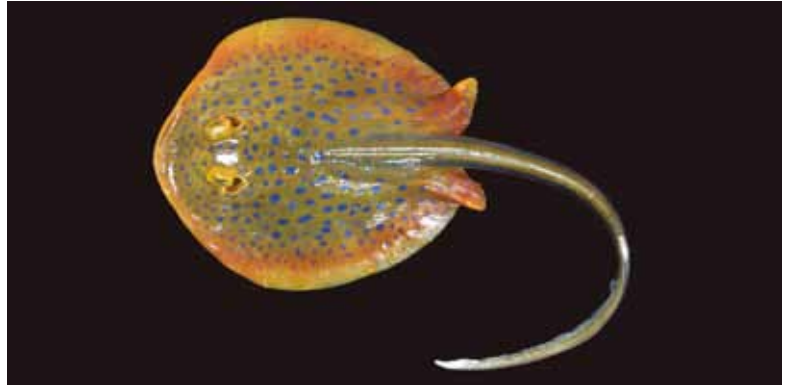


Himantura walga, KAUM-I. 32745, 37.6 cm TL
Ang Sila, 23 Oct. 2010

Taeniura lymma
(Forsskål, 1775)

Bluespotted Fantail Ray

Disc oval; tail base broad, tapering beyond sting; ventral skin fold on tail relatively deep, extending to tail tip; dorsal surface almost smooth to granular (denticles very small); 2 stings, located posteriorly on tail. **Color:** disc and tail brownish or orangish dorsally, disc with numerous bright blue spots, tail with blue stripe on each side before sting. **Size:** maximum size 350 cm disc width. **Distribution:** widespread in Indo-West Pacific, from southern Africa to the Solomon Islands, south to tropical Australia, and north to the Philippines and Vietnam. **Remarks:** dominant ray in coral reef habitats; occurs in inshore to depths of at least 20 m; feeds on molluscs, polychaetes and crustaceans; marketed fresh. (B. M. Manjaji-Matsumoto)

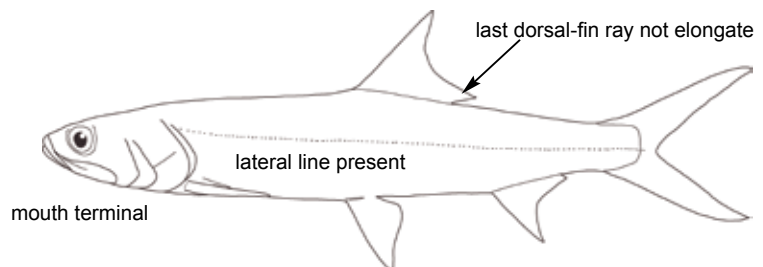


Taeniura lymma, KAUM-I. 32743, 48.8 cm TL
 Ang Sila, 23 Oct. 2010

ELOPIDAE

Ladyfishes

Medium to large sized (maximum 100 cm, commonly 50 cm) fishes, slender and moderately compressed. Mouth large, terminal; jaws subequal; posterior tip of upper jaw extending posterior margin of eye; a gular plate present between arms of lower jaw. Teeth small and granular. Branchiostegal rays numerous, approximately 27–35. Fins without spines; a dorsal fin begins slightly behind midbody, with 20–25 rays, the last ray not elongate; anal fin short with 13–18 rays, situated well behind base of dorsal fin; pectoral fins with 17–18 rays, set on side of body, near ventral outline; pelvic fins abdominal with 12–16 rays, below origin of dorsal fin; caudal fin deeply forked. Scales very small; usually 95–120 in lateral line. Vertebrae 63–79. **Color:** body silver, blue or greenish gray dorsally; fins sometimes with a faint yellow tinge.



Remarks: one genus (*Elops*) with about six species, two of which distributed in the Pacific Ocean. Coastal fishes found in lagoons, bays, and estuaries; commonly travelling in schools in open water; feeds on various fishes and crustaceans. Leptocephalus larva having developed caudal fin. Food fishes used as fresh, dried or salted one; also known as sport fishes.

Similar families occurring in the area: Elopidae different from other similar families in having gular plate, no scutes along midline of ventral,

large number of lateral line scales, much number of branchiostegal rays. Clupeidae – lateral line absent; gular plate absent; most species have scutes along midline of ventral. Megalopidae (*Megalops cyprinoides*) – scales much larger, about 30 to 40 in lateral line; last ray of dorsal fin elongate and filamentous. Albulidae (*Albula* spp.) – mouth inferior. Chanidae (*Chanos chanos*) – mouth smaller, gape not extending behind eye; gular plate absent; branchiostegal rays few (4 or 5). (M. Matsunuma)

Elops hawaiiensis Regan, 1909

Hawaiian Ladyfish

D 23–27; A 15–17; P₁ 17–18; P₂ 14–15; LL 93–100; BR 27–35; GR 7–8 + 13–15 = 20–23; V 68–70. Body elongate and slender. Mouth large and terminal; upper jaw extending beyond a vertical through posterior margin of eye; a gular plate present between arms of lower jaw. Scales very small. Dorsal fin large; without elongated lobe. Caudal fin deeply forked. **Color:** silvery sides, darker dorsally; fins yellowish. **Size:** commonly 50 cm. **Distribution:** widely distributed in the Indo-Pacific including the Hawaiian Islands. **Remarks:** found mainly coastal waters; larva to juveniles occurring estuaries, and mouth of river. Marketed fresh, dried, or salted.

(M. Matsunuma)



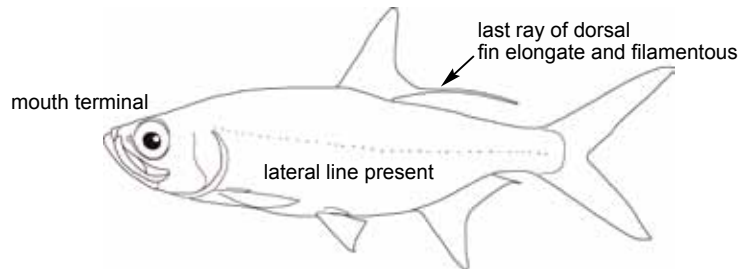
Elops hawaiiensis, KAUM-I. 33105, 28.0 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

MEGALOPIDAE

Tarpons

Medium to large sized (up to 2.4 m) fishes. Body moderately deep, compressed, deepest in middle, tapering toward both ends. Eye large. Mouth large, gape ending at level of posterior margin of eye; lower jaw projects beyond snout; a gular plate present between arms of lower jaw. Teeth small, granular. Branchiostegal rays numerous, 23–27. Gill rakers long and slender. Fins without spines; a dorsal fin at midbody with 13–21 rays, last ray elongate and filamentous; anal fin relatively long with 22–29 rays; pectoral fins set low on side of body near ventral margin; pelvic fins abdominal with 10 or 11 rays; caudal fin deeply forked. Scales large, about 40–50 in lateral line. **Color:** body silvery, bluish green dorsally.

Remarks: one genus (*Megalops*), with two species are known from worldwide, one of which (*M. cyprinoides*) distributed in the Indo-Pa-



cific. Coastal fishes found in lagoons, bays, and estuaries; commonly travelling in schools in open water; feeds on various fishes and crustaceans. Leptocephalus larva having forked caudal fin. Food fishes used as fresh, dried or salted one; also known as sport fishes.

Similar families occurring in the area: Megalopidae different from other similar families by having a gular plate, no scutes on ventral, fewer number of lateral line scales, much number of branchiostegal rays, last dorsal-fin ray elongate and filamentous. Elopidae (*Elops* spp.) – scales much

smaller, about 100 on lateral line; last dorsal-fin ray not elongate and filamentous. Albulidae (*Albula* spp.) – mouth inferior; last dorsal-fin ray not elongate and filamentous; scales smaller. Clupeidae – lateral line absent; gular plate absent; most species have scutes on midline of belly. Chanidae (*Chanos chanos*) – mouth smaller, gape not reaching beyond anterior part of eye; scales smaller; last dorsal-fin ray not elongate and filamentous; gular plate absent; fewer branchiostegal rays (4).

(M. Matsunuma)

Megalops cyprinoides (Broussonet, 1782)

Indo-Pacific Tarpon

D 16–20; A 23–31; P₁ 10–11; P₂ 14–15; LL 30–40; BR 23–27; GR 7–8 + 13–15 = 20–23; V 66–70. Body moderately deep and compressed. Mouth large and terminal; lower jaw projects beyond snout; a gular plate present between arms of lower jaw. Scales large. Dorsal fin large; with elongated lobe. Caudal fin deeply forked. **Color:** body silvery, darker dorsally; dorsal and caudal fins dark yellowish. **Size:** 80 cm SL. **Distribution:** Indo-Pacific, including the Red Sea, from the east coast of Africa to the Society Islands, north to southern Japan. **Remarks:** marketed fresh. (M. Matsunuma)



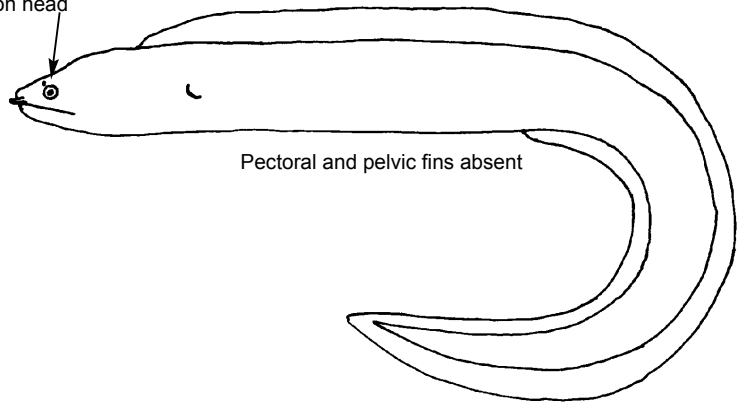
Megalops cyprinoides, KAUM-I. 47429, 33.0 cm SL off Tha Chana (SP), 18 June 2012

MURAENIDAE

Morays

Small to very large eels, maximum length attaining to 375 cm. Body elongate. Dorsal profile of head above and behind eye raised. Eye well developed. Snout short to elongate. Mouth large, gape usually extending behind posterior margin of eye. Posterior nostril high on head, above or before eye, a simple pore or in a tube. Gill openings restricted to small round hole or slit. Dorsal and anal fins variously developed, continuous with caudal fin around tail tip. Pectoral and pelvic fins absent. Lateral line pores absent on body except for 1 or 2 above and before gill opening. **Color:** variable, from nearly uniform to distinctive patterns of spots, blotches bars, and/or reticulations. **Remarks:** Muraenids usually known from tropical and subtropical seas, some species in or occasionally entering freshwater. Many are found in shallow waters, inhabiting rocks

Posterior nostril high on head



Pectoral and pelvic fins absent

and coral reef (some in mud bottom to depths of 500 m).

Similar families occurring in the area: Chlopsidae – posterior nostril low on snout or inside mouth. Ophich-

thidae – posterior nostril low on side of head, on lip, or opening inside mouth. Congridae – pectoral fin usually present. (H. Imamura)

Gymnothorax dorsalis (Seale, 1917)

V 154–163. Body moderately elongate. Teeth 2 rows anteriorly and 1 row posteriorly. Snout rounded. Dorsal-fin origin over or slightly anterior to gill opening. Anus before middle of body. **Color:** body brown; tip of tail black; gill opening pale. **Size:** maximum length 80 cm. **Distribution:** Western Pacific, including South China Sea, Malaysia, Taiwan and Hong Kong. **Remarks:** occurs in coastal waters. (T. Yoshida)



Gymnothorax dorsalis, KAUM-I. 33076, 46.1 cm TL
Prachuap Khiri Khan, 12 Nov. 2010

Gymnothorax herrei
Beebe & Tee-Van, 1933

V 129–144. Body moderately elongate. Teeth in the middle of premaxilla arranged in almost 1 row. Dorsal-fin origin over before gill opening. Anus at or near middle of body. Snout faintly rounded. **Color:** body pale white with 14–22 dark brown bars on body; gill opening pale. **Size:** maximum length 60 cm. **Distribution:** Indo-West Pacific, including Red Sea, South China Sea, and Philippines. **Remarks:** occurs in coral reef and rocky shore waters. (T. Yoshida)



Gymnothorax herrei, KAUM-I. 32949, 34.5 cm TL
 Ang Sila, 30 Oct. 2010

Gymnothorax minor
(Temminck & Schlegel, 1846)

V 129–144. Body moderately elongate. Single teeth row on lower jaw. Dorsal-fin origin over before gill opening. Anus at or near middle of body. Snout faintly rounded. **Color:** body pale white with 14–22 dark brown bars on body; gill opening pale. **Size:** maximum length 60 cm. **Distribution:** Western Pacific from Australia north to Japan. **Remarks:** occurs in coastal waters at depths of 67–175 m. (T. Yoshida)



Gymnothorax minor, KAUM-I. 33163, 47.2 cm TL
 Gulf of Thailand (SS), 25 Nov. 2010

Gymnothorax pseudothyrsoides
(Bleeker, 1852)

Highfin Moray

V 128–131. Body moderately elongate. Teeth in jaws moderately large canine in single row; usually with single median row of 3 intermaxillary canines. Dorsal fin rather high. Anus in about middle of body. **Color:** body pale yellowish, densely spotted with dark brown; spots clustering to form dark blotches larger than eye in about 4 irregular rows on body; juveniles with a white margin on fins. **Size:** maximum length 80 cm. **Distribution:** Indo-West Pacific, including Oman, India, Andaman Sea, southern Japan, Indonesia and Australia. **Remarks:** specimens mainly from tidepools. (H. Imamura)



Gymnothorax pseudothyrsoides, KAUM-I. 33142, 54.0 cm TL off Chantha Buri (SP), 22 Nov. 2010

Gymnothorax thyrsoideus
(Richardson, 1845)

White-eye Moray

V 125–137. Body moderately elongate. Teeth conical, 2 rows on side of upper jaw and front of lower jaw. Dorsal-fin origin about halfway between corner of mouth and gill opening. Anus at or near middle of body. **Color:** body whitish to pale yellowish, densely mottled with dark gray or brown; front half of head uniform dark purplish gray; dusky gray around gill opening. **Size:** maximum length 66 cm. **Distribution:** distributed in Indo-Pacific, except for Hawaiian Islands and Red Sea. **Remarks:** generally found on seaward reefs. (H. Imamura)



Gymnothorax thyrsoideus, KAUM-I. 33143, 46.9 cm TL off Chantha Buri (SP), 22 Nov. 2010

Uropterygius micropterus
(Bleeker, 1852)

Tidepool Snake Moray

V 111–120. Body moderately elongate. Two teeth rows on both jaws. Anus at or near middle of body. No pore adjacent to posterior nostril. Snout weakly pointed. **Color:** body pale white with numerous small brown spots on body; tip of tail black; gill opening pale. **Size:** maximum length 30 cm. **Distribution:** Indo-Pacific, from the east coast of Africa to Samoa, north to Japan. **Remarks:** inhabits shallow coral reef. (T. Yoshida)

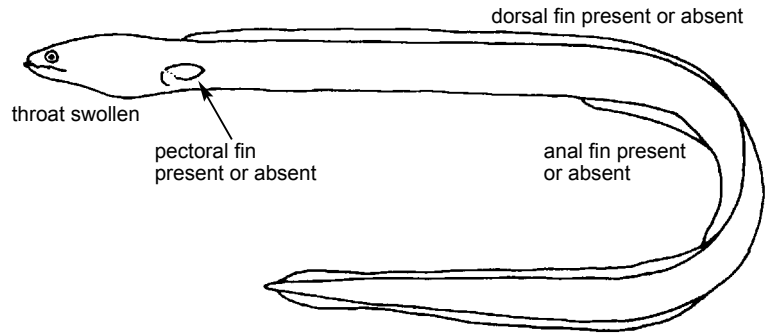


Uropterygius micropterus, KAUM-I. 33140, 46.3 cm TL
off Chantha Buri (SP), 22 Nov. 2010

OPHICHTHIDAE

Snake Eels and Worm Eels

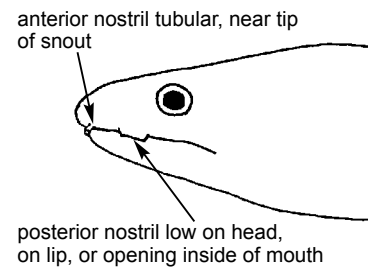
Marine fishes, some species in or occasionally entering freshwater. Body snake-like or worm-like, more or less rounded in cross section. Throat swollen. Eye usually small and just above mouth. Snout pointed. Anterior nostril tubular, near tip of snout. Posterior nostril low on head, on lip, or opening inside of mouth. Mouth moderate to large, terminal or inferior. Teeth variable in form, from fang-like to conical to molariform to villiform. Gill opening midlateral to completely ventral, round or slit-like. Dorsal, anal, pectoral and caudal fins present or absent; when caudal fin present, confluent with dorsal and anal fins, when absent, tip of tail often hard and pointed. Lateral line complete, usually with well developed pores on head and body. Scales absent. **Color:** highly variable, from uniform light or dark to various patterns of spots, stripes, or bars; usually darker dorsally than ventrally.



Remarks: ophichthyids occur in a wide variety of habitats from muddy estuaries to coral reefs to the midwater realm, from the shore to depths of 700–800 m or more, but most occur in less than 200 m.

Similar families occurring in the area: Muraenidae – posterior nostril high on head, above or before eye, a simple pore or in a tube. Muraenesocidae – throat not swollen.

(H. Imamura)



Myrophis microchir (Bleeker, 1864)

Ordinary Snake Eel

P₁ 9–12; PL_p 47–51; V 153–164. Body extremely elongate. Tip of snout rounded. Dorsal-fin origins behind pectoral fin. Pectoral fin is present. Tail tip pointed. **Color:** head and body whitish brown, darker dorsally. **Size:** maximum length about 39 cm. **Distribution:** Indo-West Pacific, including the Red Sea, from the east coast of Africa to Australia, north to Japan. **Remarks:** inhabits sandy substrates.

(T. Yoshida)



Myrophis microchir, KAUM-I. 22974, 34.2 cm TL
Bang Pakong, 31 Aug. 2009



Pisodonophis cancrivorus
(Richardson, 1848)

Longfin Snake Eel

P₁ 13–14; PL_p 55–60; V 153–162. Body extremely elongate. Mouth moderately large; teeth of upper and lower jaws, and vomer villiform, forming wide bands. Dorsal fin begins above pectoral fin; tip tail finless,

pointed; pectoral fin well developed. **Color:** head and body yellowish brown, darker dorsally; dorsal and anal fins dark brown. **Size:** maximum length about 100 cm. **Distribution:** Indo-West Pacific, including the Red

Sea, from the east coast of Africa east to French Polynesia, Australia north to southern Japan. **Remarks:** inhabits coastal waters of muddy bottom.

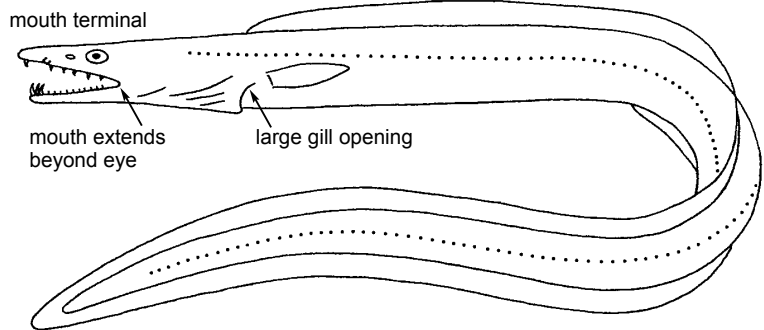
(M. Matsunuma)

Pisodonophis cancrivorus, KAUM-I. 32746, 66.2 cm TL
Ang Sila, 23 Oct. 2010

MURAENESOCIDAE

Pike Congers

Median to large sized (up to more than 1 m) marine fishes. Body moderately elongate, compressed along tail. Head moderate to moderately elongate. Eye well developed. Snout moderate to acute, projects somewhat beyond tip of lower jaw. Mouth large, gape ends behind posterior margin of eye; lips without fleshy flanges; tips of lower jaw with enlarged teeth that fit into a notch in underside of snout when mouth closed. Teeth large, prominent, sharp; multiserial on jaws; typically in 3 rows on vomer, with a median row of canines flanked on each side by a row of much smaller teeth. Anterior nostril tubular, on side of snout just behind tip; posterior nostril a simple opening in front of eye at approximately mid-eye level. Gill opening a large, oblique slit in front of and below pectoral fins; gill openings of the 2 sides nearly meet on ventral midline, interspace much smaller than length of gill opening. Dorsal and anal fins well developed. Lateral line complete, but usually opening through



a complex or branching system of multiple pores rather than a single pore per segment. Scales absent.

Color: brown or silver gray to black, lighter ventrally; vertical fins usually edged in black; no distinct patterns or markings.

Remarks: muraenesocids are found in tropical and subtropical coastal waters of worldwide, inhabit primarily on sand or mud bottoms. Commonly collected with bottom trawls.

Similar families occurring in the area: Congridae – underside of snout without a conspicuous notch; teeth on

vomer typically inconspicuous; gill openings not meeting across midline. Anguillidae – body covered with embedded scales; lower jaw projecting slightly. Ophichthidae – no caudal fin but tail tip pointed in most genera; throat swollen; a median frontal pore on head. Muraenidae – no pectoral fin; gill opening a small hole. Chlopsidae – gill opening a small hole; vomer teeth in 2 divergent rows; lateral line reduced; pectoral fins present or absent. (M. Matsunuma)

Muraenesox cinereus (Forsskal, 1775)

Daggertooth Pike Conger

D before anus 66–78; PLp 40–47; V 145–159. Body moderately elongate; head broader, interorbital width about 8 times in head length; anus before mid-body. Snout relatively blunt, not well pointed; mouth large, end of mouth slit behind posterior margin of eye; teeth almost canine like; vomer with a median series of compressed, strong canine teeth with 1 or 2 basal



Muraenesox cinereus, KAUM-I. 33101, 39.0 cm TL
Prachuap Khiri Khan, 13 Nov. 2010

cusps. Pectoral and caudal fins developed. **Color:** head and body uniformly brown; lighter ventrally; median fins blackish marginally; pectoral fin black; pores in lateral line and on head white. **Size:** maximum length about 80 cm. **Distribution:** Indo-West Pa-

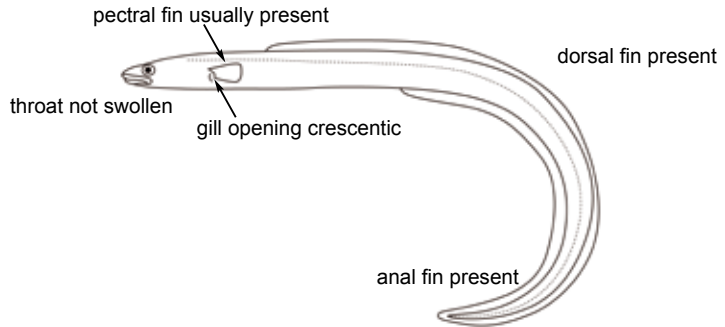
cific, from the Red Sea to Indonesia, northern Australia north to Japan. **Remarks:** inhabits coastal waters to depths of about 100 m. Feeds on benthic fishes and crustaceans.

(M. Matsunuma)

CONGRIDAE

Conger Eels and Garden Eels

Small to large sized marine fishes. Body moderately to extremely elongate, round in cross-section anteriorly, compressed posteriorly. Throat not swollen. Eye well developed. Snout variable, from long and pointed to short and pug-nosed; tip of snout usually extending at least slightly beyond tip of lower jaw. Mouth variable, gape usually ending at some point beneath eye; in most species tip of lower jaw fits into space behind intermaxillary tooth patch. Flanges on upper and lower lip present or absent. Gill opening a crescentic slit, just in front of pectoral fin. Dorsal and anal fins always present, confluent around tail; dorsal fin beginning over or slightly behind pectoral fins, always closer to pectoral fin than to anus. Pectoral fins usu-



ally present. Caudal fin sometimes reduced, but some rays almost always present. Lateral line complete. Scales absent. Anus usually located at anterior half to 3rd of TL. **Remarks:** Congrids are found in tropical to temperate seas worldwide, inhabit primarily on sand or mud bottoms from the coastline

to depths of 200 m or more. **Similar families occurring in the area:** Muranidae – pectoral fins absent. Muraesocidae – gill openings nearly meeting each other across ventral midline. Ophichthidae – throat swollen.

(H. Imamura)

Rhynchoconger ectenurus (Jordan & Richardson, 1909)

P₁ 11–13; PL_p 29–31; V 155–159.

Body moderately elongate. Tip of snout pointed. Dorsal-fin origins above pectoral fin. Intermaxillary tooth patch. **Color:** body white, darker dorsally, with a stripe extending from pectoral-fin base to caudal-fin base. Margins of dorsal and anal fin black.



Rhynchoconger ectenurus, KAUM-I. 47445, 32.0 cm TL
Gulf of Thailand (SS), 20 June 2012

Size: maximum length about 65 cm. **Distribution:** Western Pacific, including Gulf of Thailand from East China

Sea to Australia, north to Japan. **Remarks:** inhabits sandy substrates.

(T. Yoshida)

Uroconger lepturus (Richardson, 1845)

Slender Conger

P₁ 11–12; PL_p 42–45; V 180–206.

Body elongate, tail very long and tapering into pointed tip. Posterior nostril anterior to eye. Mouth large, end of mouth slit behind anterior margin of eye. Teeth almost canine like. Preopercular teeth in a single row posteriorly, extending far back on roof of mouth. Gill opening slit-shaped. Fin rays seg-



Uroconger lepturus, KAUM-I. 32841, 26.5 cm TL
Gulf of Thailand (SP), 25 Oct. 2010

mented. **Color:** body uniformly brownish. **Size:** attaining to 52 cm. **Distribution:** Indo-West Pacific, including the Andaman Sea, the Philip-

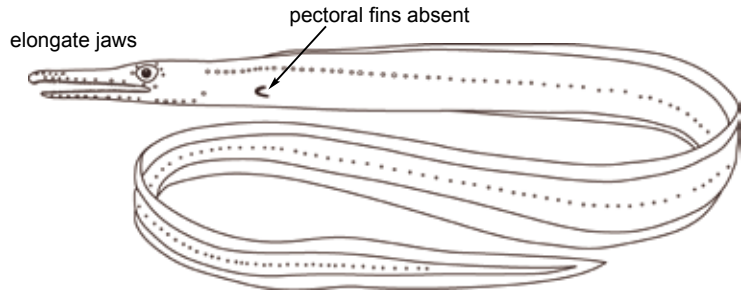
pinas and southern Japan. **Remarks:** occurring at depths of 18–760 m.

(H. Imamura)

NETTASTOMATIDAE

Duckbill Eels

Medium to large sized (up to 1 m) snake-like marine fishes. Body very elongate; anus before mid-body; tail slender, attenuate. Head slender. Eye well developed. Snout and jaws elongate, snout projects a variable distance beyond tip of lower jaw. Mouth large, gape extends to about rear margin of eye; no fleshy flange on upper or lower lip; some teeth visible when mouth closed; tip of lower jaw fits into depression behind intermaxillary tooth patch. Teeth generally small, conical, multiserial on jaws and vomer, some vomerine teeth enlarged but no species in the area has large fangs. Anterior nostril tubular, near tip of snout; posterior nostril variable in position, either in front of eye, on lip, on top of head, or on top of body behind head. Dorsal and anal fins present, confluent with caudal fin; dorsal fin begins over or slightly behind gill opening. Pectoral fins absent in all species occurring in the



area. Lateral line complete. Scales absent. **Color:** brown, lighter ventrally, without markings; dorsal and anal fins often edged in black, especially posteriorly.

Remarks: six genera with about 38 species. Found in moderate to deep water. Collected with bottom trawls, but no commercial importance.

Similar families occurring in the area: Congridae – posterior nostril located far forward on snout, closer to

anterior nostril than to eye; inner row of teeth on upper jaw separated from outer rows by a longitudinal toothless groove. Muraenesocidae – pectoral fins well developed. Ophichthidae – pectoral fins well developed; caudal fin absent with pointed tail tip, or present. Serrivomeridae – pectoral fins present. Nemichthyidae – pectoral fins present; anus located under or shortly behind pectoral fins.

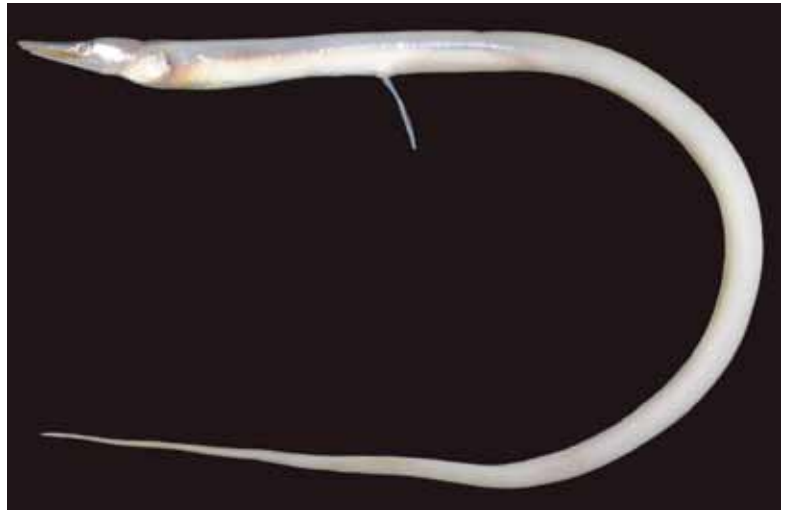
(M. Matsunuma)

Saurenehelys cancrivora

Peters, 1864

Slender Sorcerer

PLp 29–39; V 211. Body extremely elongated; head slender; tail very long. Posterior nostril front of eye at mid-eye level. Mouth large, end of maxilla extending beyond posterior margin of eye. Teeth small conical on both jaw, premaxilloethmoid, vomer and pterygoid. Dorsal fin behind gill opening. **Color:** body semi-transparent; a narrow silver band on head from snout to opercle; tail brackish. **Size:** maximum length about 70 cm. **Distribution:** West Pacific. **Remarks:** according to Klausewitz & Zajoz (2000), *Chlopsis fierasfer* Jordan & Snyder, 1901 is junior synonym of *S. cancrivora*. Collected with bottom trawls. (M. Matsunuma)

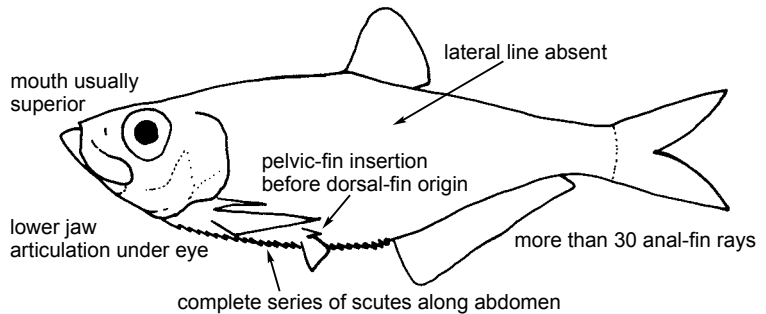


Saurenehelys cancrivora, KAUM-I. 24080, 43.2 cm TL
Gulf of Thailand (SS), 5 Oct. 2009

PRISTIGASTERIDAE

Longfin Herrings

Moderate to large fishes (maximum length 55 cm SL, usually 20–25 cm SL), with compressed, elongated or deep body. Mouth usually superior or terminal in some species; upper jaw with 2 supramaxillae; lower jaw articulation under eye; teeth on jaws small or minute, canines only in a western Atlantic species, *Chirocentron bleekermanus*. Eyelids with broad vertical opening in middle. Branchiostegals 6. Fins without spines; dorsal fin single, short (absent in Indo-West Pacific species, *Raonda russeliana*), situated near midpoint of body; anal fin long, 30–92 rays; pectoral fins moderate or large; pelvic fins with 6 or 7 rays, situated before dorsal fin origin, but absent in some genera; caudal fin forked. Body covered with cycloid scales; a complete series of scutes along abdomen; lateral line absent. **Color:** bluish green dorsally, blight silver laterally and ventrally. **Remarks:** schooling fishes found in coastal areas of tropical and subtropical seas; some species entering estu-



aries, and a few species restricted to freshwater. Food fishes used as fresh, dried, or salted ones. **Similar families occurring in the area:** Pristigasteridae different from other similar families in having lower jaw articulation under eye, pelvic fins inserting before dorsal-fin origin, long anal fin with more than 30 rays, a complete series of scutes along abdomen, and no lateral line. Elopidae – lateral line present; no abdominal scutes; gular plate present; numerous branchiostegal rays (more than 20). Megalopidae – lateral line present, no abdominal scutes; gu-

lar plate present; numerous branchiostegal rays (more than 20). Albulidae – lateral line present; no abdominal scutes; gular plate present. Chirocentridae – body highly compressed and elongate; no abdominal scutes; jaws with developed fanglike canine teeth. Clupeidae – pelvic fins inserting just below dorsal fin origin; anal fin short with less than 28 rays. Engraulidae – snout pig-like and projecting; jaw articulation well behind eye. Chanidae – lateral line present; no abdominal scutes; branchiostegal rays few (4 or 5). (S. Kimura)

Ilisha kampeni

(Weber & de Beaufort, 1913)

Kampen's Ilisha

A 38–46; P₂ 6–7; LGR 20–24. Body moderately slender its depth 24 to 32 % of standard length. Abdomen usually with keeled scutes from isthmus to anus; 19–21 prepelvic and 8 postpelvic scutes, 27–29 in total number. Eye large; lower jaw projecting, mouth directed obliquely upward; upper jaw reaching posteriorly to a point between verticals through anterior margin and center of pupil; no toothed hypomaxilla between posterior tip of premaxilla and blade of maxilla; jaw teeth small or minute (usually with distinct gap at center of upper jaw). Gill rakers short and thick. Dorsal-fin origin at midpoint of body, anal-fin origin equal with vertical through bases of posterior dorsal-fin rays, pectoral-fin length 15–17% of standard length, pelvic fin usually small in ad-



Ilisha kampeni, KAUM-I. 47366, 13.8 cm SL
Ang Sila, 8 June 2012

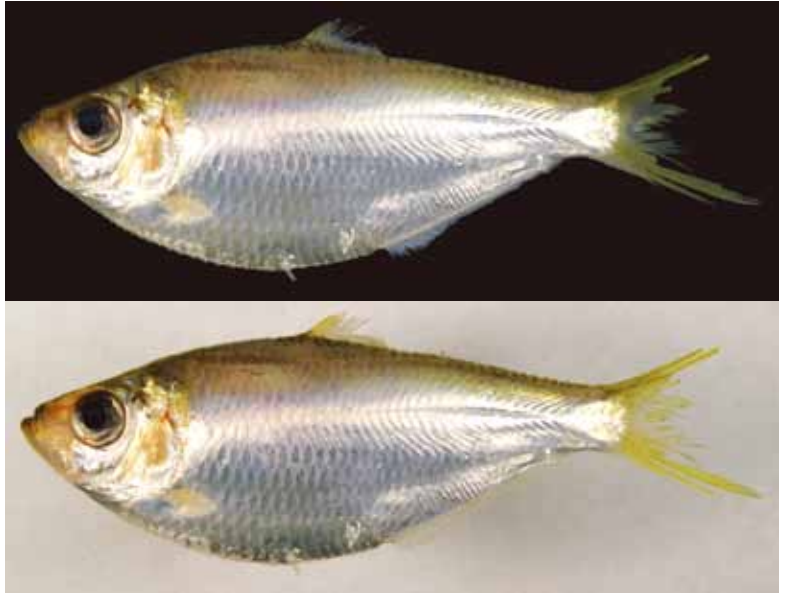
vance of vertical through dorsal-fin origin. Vertical striae on scales not continuous, but with distinct gap across center of scale. Swim bladder with 2 tubes passing posteriorly into muscles on either side of hemal spines. **Color:** body silver and no distinctive patterns. **Size:** maximum standard length 15 cm, perhaps more. **Distribution:** Indo-West Pacific, off eastern

coasts of India, Indonesia (Jakarta, Java, Kalimantan, Sulawesi), Thailand (Gulf of Thailand). Records of this species from the Arabian Sea (Seshagiri Rao, 1975) need confirmation. **Remarks:** Marine, pelagic, coastal, but also entering rivers and tolerating water of low salinity. Feeds on planktonic crustaceans and fishes, also amphipods. (S. Ishikawa)

Ilisha melastoma
(Bloch & Schneider, 1801)

Indian Ilisha

D 17–18; A 35–48; P₁ 15–17; P₂ 6–7; LGR 21–25. Body compressed, moderately deep (body depth 33–42 % SL); abdomen sharply keeled with prepelvic (usually 17–21) and postpelvic (usually 8–9) scutes (usually 25–30 in total). Mouth superior, lower jaw obliquely upward; upper jaw reaching a vertical through anterior margin of eye; no toothed hypomaxilla between posterior tip of premaxilla and blade of maxilla; shaft of maxilla without distinct lobe or flange between posterior tip of premaxilla and blade of maxilla. Swimbladder with 2 tubes passing posteriorly into muscles on either side of haemal spines. Scales cycloid; vertical striae continuous or overlapping. Caudal-fin lobes without extended tips, not lunate. **Color:** blue-green dorsally, silvery ventrally. **Size:** maximum 17 cm SL. **Distribution:** Eastern Indian Ocean (from Malabar coast of India to western Indonesia) and West Pacific (southern China, in-



Ilisha melastoma, KAUM-I. 32855, 10.3 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

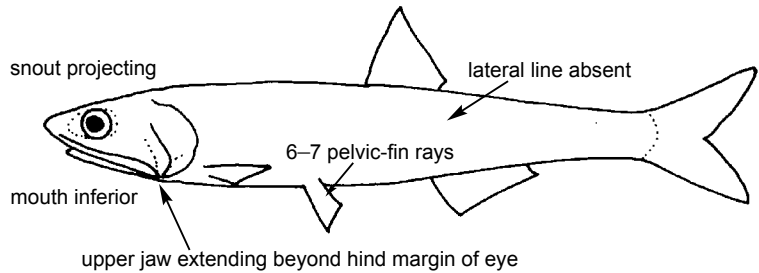
cluding Taiwan, Vietnam, Thailand, Malaysia, and western Indonesia). **Remarks:** found in coastal waters and estuaries. Marked fresh, dried, or boiled. (S. Kimura)

ENGRAULIDAE

Anchovies

Small to medium-sized fishes (mostly less than 20 cm, some larger) with silver-colored, fusiform or slender body. Mouth inferior; snout projecting beyond tip of lower jaw; jaw articulation well behind eye; upper jaw with 2 supra-maxillae; teeth on jaws absent or minute, rarely with canines. Fins without spines; dorsal fin short and single, situated near mid-point of body, far forward in *Coilia*; anal fin mostly short, less than 25 rays, but long in some (to over 100 rays); pectoral fins set low on body; pelvic fins abdominal usually with 7 rays; caudal fin deeply forked, but small and pointed in some. Body covered with cycloid scales; scutes often present along abdomen; lateral line absent.

Remarks: schooling fishes found in marine coastal areas, mostly feeding on small planktonic animals and plants. Small but important food fish-



es used as fresh, dried, or salted ones, taken by beach seine and other variety of nets. Regionally some species have great contribution to local catches.

Similar families occurring in the area: Engraulidae different from other clupeoid families in having projecting and pig-like snout, slender lower jaw, and jaw articulation well behind eye. Chirocentridae – body highly compressed and elongate; no abdominal

scutes; jaw articulation below eye; jaws with developed fang-like canine teeth. Clupeidae – snout not pig-like and projecting; jaw articulation anterior to below eye. Pristigasteridae – snout not pig-like and projecting; lower jaw projecting; jaw articulation anterior to vertical below eye.

(S. Kimura)

Coilia lindmani Bleeker, 1857

Lindman's Grenadier Anchovy

DI, 8–9; A 80 or more; P₁ vi + 9–11, P₂ i + 6; LGR 30–34 (rarely 29). Body long and tapering; Abdomen rounded anterior to pelvic fins with complete series of keened scutes from basal part of isthmus to anus; 13–15 prepelvic and 20–25 postpelvic scutes, 34–40 in total number. A small spine-like scute anterior to dorsal fin origin. Branchiostegal rays 10–11 (rarely 9 or 12). Maxilla long, reaching posteriorly to or beyond vertical through base of first pectoral-fin ray. Two supramaxillae present. Jaw teeth small. Gill rakers fairly short, their serrae not clumped. Dorsal fin far forward, beginning in first third of body length. Anal fin long, posteriormost fine ray joined to



Coilia lindmani, KAUM-I. 47486, 18.2 cm SL
Bang Pakong, 23 June 2012

caudal fin. Caudal fin very small. Isthmus covered with approximate 3 scales at its base. Anterior part of scales on flanks with many longitudinal striae. **Color:** body yellowish silver, brown dorsally; fins pale to deep yellow. **Size:** maximum standard length 20 cm. **Distribution:** Western

Central Pacific (Vietnam, Thailand, Indonesia at southeastern part of Sumatra and Kalimantan including eastern Malaysian part). **Remarks:** fish found in riverine and coastal waters, but fish habit strictly in estuaries rather than in fresh water. (S. Ishikawa)

Encrasicholina heteroloba
(Rüppell, 1837)

Shorthead Anchovy

D 14–16 (2 unbranched with 11–13 branched fin rays); A 16–18 (2 unbranched and 14–16 branched rays); P₁ 13–15; P₂ 7; LGR 22–30 (usually 23–27). Body nearly cylindrical; abdomen rounded with 4–6 (mostly 5) sharp needle-like prepelvic scutes; no postpelvic scutes; no spine on prepelvic scutes. Posterior fontanelles (on top of head near occiput) remain open in adults. Maxilla tip longer than deep. Isthmus muscle short, not reaching anteriorly to posterior border of branchial membrane but preceded by a small bony plate on urohyal between branchial membranes. Preopercular canal present only on preopercle. No predorsal spine-like scute. Origin of anal fin slightly posterior to vertical through base of posteriormost dorsal-fin ray. Scales moderate, about 39–43



Encrasicholina heteroloba, KAUM-I. 22950, 6.9 cm SL
Bang Pakong, 31 Aug. 2009

in lateral series. **Color:** pale cream-colored (when scales lost) with a dull silver-grey band on flank, with distinct blue upper edge (when alive); dorsum beige. **Size:** maximum standard length 8 cm, probably much longer. **Distribution:** widespread Indo-Pacific from Red Sea, East Africa to at least northern Madagascar, eastward to Bay of Bengal, Gulf of Thailand, and Indonesia, northward to southern Japan; southward to Cape York, Queensland,

and Palau, Caroline Islands to Kosrae, and eastward to Samoa. **Remarks:** Marine, pelagic and schooling inshore. Breeds throughout the year around full moon. Caught mainly with purse seines, beach seine and fish traps often using light, also incidentally with bottom trawls. Forms bulk of “*Stolephorus*” catches in Singapore, Thailand, and the Philippines. (S. Ishikawa)

Encrasicholina punctifer
Fowler, 1938

Buccaneer Anchovy

D 14–15 (3 unbranched with 11–12 branched fin rays); A 16–17 (3 unbranched with 13–14 branched fin rays); P₁ 14–16; LGR 23–27. Body nearly cylindrical; abdomen rounded, with 3–6 (usually 4 or 5, rarely 2 or 7) sharp needle-like prepelvic scutes; no spine on prepelvic scute. Posterior fontanelles (on top of head near occiput) remain open in adults. Maxilla tip blunt, scarcely projecting posteriorly beyond second supramaxilla, not reaching to anterior branchial membrane but preceded by small fleshy knob on urohyal between branchial membranes. Preopercular canal present only on preopercle. Origin of anal fin posterior to vertical through base of posteriormost dorsal-fin ray. Scales moderate, about 39–43 in lateral se-



Encrasicholina punctifer, KAUM-I. 22921, 5.8 cm SL
Bang Pakong, 31 Aug. 2009

ries. **Color:** body pale cream (when scales lost), with a bright silver lateral stripe along flanks. **Size:** maximum standard length 8.5 cm (to 13 cm total length). **Distribution:** very widespread Indo-Pacific from the Persian Gulf and Red Sea, but not Madagascar, to India probably Myanmar, Gulf of Thailand, Indonesia, northern Australia to at least Brisbane in the east, and as far eastward as Tahiti, also Phil-

ippines, southern Japan and Hawaii. **Remarks:** Marine, pelagic and schooling inshore, but also oceanic and found hundreds of miles from land. Caught mainly with purse seines, beach seine and bamboo-stake traps often using light, also incidentally with bottom trawls. Forms bulk of “*Stolephorus*” catches in the Philippines. Considered the most attractive anchovy for bait.

(S. Ishikawa)

Setipinna melanochir
(Bleeker, 1849)

Dusky-hairfin Anchovy

A 48–53 (3 unbranched and 45–50 branched rays); P₁ 14–15; LGR 9–12. Body compressed; abdomen with complete series of keeled scutes from isthmus to anus; 21–26 prepelvic and 8–10 postpelvic scutes, 30–35 in total number; A small spine-like scute just anterior to dorsal-fin origin. Mouth slightly oblique, jaws slender; lower jaw slightly projecting beyond tip of snout. First supramaxilla absent; second supramaxilla relatively small, rounded. Jaw teeth small, even absent. Gill rakers fairly stout, their serrae moderately large, spiky, but not distinctly clumped. Dorsal fin moderately long, its origin slightly posterior to body midpoint, between vertical through bases of third to fifth anal-fin rays. Anal-fin long, its origin anterior to vertical through base of dorsal-fin origin. Pectoral filament short or even absent, never reaching posteriorly even to anus. Scales moderate, 45–51



Setipinna melanochir, KAUM-I. 32908, 15.9 cm SL
Bang Pakong, 30 Oct. 2010

in lateral series; striae on anterior part of scales with many radii. **Color:** dorsum brown or blue, flanks silvery; gill cover and main part of pectoral and pelvic fins often dusky or jet black; other fins pale to bright yellow; posterior margins of dorsal and caudal fins blackish. **Size:** maximum standard length 23 cm, commonly between 18–19 cm. **Distribution:** Western Central Pacific (Thailand, south of Java, including rivers, e.g. Chao Praya and

Mekong in Thailand and the Rokan, Kapuas and Barito in Indonesia). **Remarks:** Marine, estuarine and fresh water; sometimes found 310 km from sea or even more in the Mekong River. Caught mainly with beach seine and bamboo-stake traps, also incidentally with bottom trawls. Marketed fresh, dried, dried-salted, or made into fish sauce and fish balls. (S. Ishikawa)

Setipinna taty
(Valenciennes, 1848)

Scaly Hairfin Anchovy

A 48–60; P₂ 7; LGR 17–21 (usually 18–20). Body deep and strongly compressed; abdomen with complete series of keeled scutes from isthmus to anus; 20–29 (usually 22–27) prepelvic and 9–14 (usually 11 or 12) postpelvic scutes, 32–40 (usually 33–39) in total number; a predorsal spine-like scute present. Mouth nearly horizontal, jaws slender; first supramaxilla absent; second supramaxilla relatively small, rounded. Dorsal-fin origin anterior to mid-body midpoint, slightly anterior to vertical through anal-fin origin; anal fin long; pectoral fin with first fin ray filamentous, its tip reaching posteriorly to base of 23rd to posteriormost anal-fin ray; caudal fin well forked,



Setipinna taty, KAUM-I. 32919, 11.4 cm SL
Bang Pakong, 30 Oct. 2010

upper lobe truncated. Scales cycloid, present on dorsal and anal fins; longitudinal scale rows about 40–48. **Color:** body yellowish silver, brown dorsally; fins pale to deep yellow, caudal fin with black margin. **Size:** commonly 10 cm, maximum length 14 cm.

Distribution: Western Central Pacific, from Gulf of Thailand south to Indonesia. **Remarks:** schooling fish found in coastal waters, often entering estuaries. Marketed fresh or dried. (M. Matsunuma)

Stolephorus dubiosus
Wongratana, 1983

Thai Anchovy

D 14–15; A 18–20; P₁ 12; P₂ 7; LGR 25–31 (usually 26–28). Body somewhat deep, compressed; abdomen rounded with 4–7 (usually 6–7) small needle-like prepelvic scutes, but no postpelvic scutes; pelvic scute with a spine; a small predorsal spine-like scute present. Posterior tip of maxilla pointed, extending to or beyond posterior border of preopercle; posterior border of preopercle rounded. Isthmus muscle reaching to and beyond gill membrane. Anal fin short, its origin situated below middle of dorsal-fin base; caudal fin large and forked. Scales cycloid; longitudinal scale rows about 34–38. **Color:** body semi-translucent, with a broad silver stripe



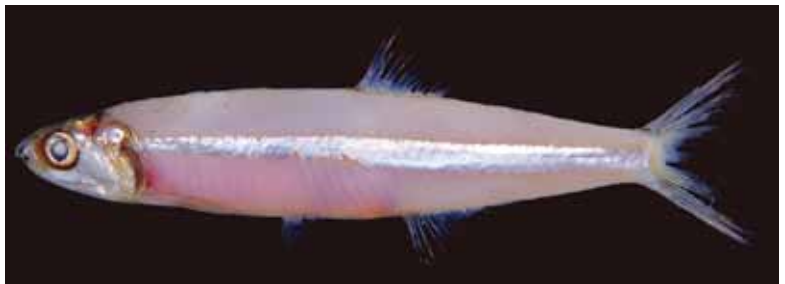
Stolephorus dubiosus, KAUM-I. 32921, 6.6 cm SL
Bang Pakong, 30 Oct. 2010

midlaterally; a double pigment line on dorsum posterior to dorsal fin. **Size:** maximum ca. 7.5 cm SL. **Distribution:** eastern Indian Ocean (northern part of Bay of Bengal) and West Pacific (Gulf of Thailand to Java). **Remarks:** schooling fish found in coastal waters and estuaries. (M. Matsunuma)

Stolephorus indicus
(van Hasselt, 1823)

Indian Anchovy

D 15–17; A 19–21; P₁ 15–17; P₂ 7; LGR 20–28. Body slender, round in cross-section; abdomen with 3–5 small needle-like prepelvic scutes, but no postpelvic scutes; pelvic scute without spine; no predorsal spine-like scute; posterior tip of maxilla pointed, extending to or slightly beyond anterior border of preopercle; posterior border of preopercle convex and rounded. Isthmus muscle tapering and reaching to gill membrane. Pelvic fins inserting well before vertical through dorsal fin origin; anal fin short, its origin situated at vertical through middle of dorsal fin base; caudal fin large and forked. Scales cycloid; longitudinal scale rows about 40. **Color:** body translucent, yellowish dorsally, with a



Stolephorus indicus, KAUM-I. 22908, 10.9 cm SL
Bang Pakong, 31 Aug. 2009

broad silver stripe midlaterally; head silver. **Size:** commonly 12 cm, maximum length 15 cm. **Distribution:** widely distributed in the Indo-Pacific, including the Red Sea, from the east coast of Africa to Samoa and Tahiti. **Remarks:** schooling fish found in coastal waters, often entering estuaries. (M. Matsunuma)

Stolephorus waitei
Jordan & Seale, 1926

Spotty-face Anchovy

D 15–17 (3 unbranched with 12–14 branched fin rays); A 19–23 (3 unbranched with 16–20 branched fin rays); P₁ 13–14; LGR 19–25 (usually 20 or 21). Body somewhat compressed; abdomen with 5–7 (rarely 4) small needle-like prepelvic scutes; no postpelvic spine-like scute; pelvic scute without spine. Posterior frontal fontanelles (on top of head) remaining open in adults. Maxilla tip pointed, reaching to posterior border of preopercle; maxilla extending well beyond second supramaxilla. Isthmus muscle tapering evenly anteriorly to posterior border of branchial membrane. Posterior border of preopercle almost always convex, rounded. Branches of preopercular canal extending onto opercle. Anal-fin short, its origin at vertical through posterior part of dorsal-fin base. Pelvic-fin tips only rarely reaching posteriorly to ver-



Stolephorus waitei, KAUM-I. 33061, 7.9 cm SL
 Prachuap Khiri Khan, 12 Nov. 2010

tical through dorsal-fin origin. Scales moderate, about 36–37 in lateral series. **Color:** body pale with numerous black spots below level of eye and on tip of lower jaw and underside of snout; a dark patch posterior to occiput. **Size:** maximum standard length 9.4 cm, usually between 6–7 cm. **Distribution:** Western Pacific (Thailand, Java Sea, the Philippines, Irian Jaya if not also Papua New Guinea; northeast coast of Australia south to Caloundra, Queensland) and eastern Indian Ocean (from Cochin and southern tip of India

to Myanmar, Sumatra, and Java). **Remarks:** Coastal, pelagic and schooling. Geographical overlap with and similarity to *Stolephorus insularis* casts doubts on several earlier studies of “insularis”. A very common species, so probably contributes to catches of *Stolephorus*. Caught mainly with purse seine, beach seine and fish traps often using light; also incidentally with bottom trawls. Marketed fresh, dried, dried-salted, or made into fish sauce and fish balls as used as bait.

(S. Ishikawa)

Thryssa hamiltoni
Gray, 1835

Hamilton's Thryssa

D 13–15; A 32–45 (usually 35–37); P₁ 12–13; P₂ 7; LGR 11–15 (usually 12–14). Body somewhat deep, compressed; abdomen with 15–20 (usually 16–19) prepelvic and 9–12 (usually 10–11) postpelvic keeled scutes, 26–31 (usually 27–29) in total number; a small predorsal spine-like scute present. Teeth in jaws small or minute, not canine-like. Posterior tip of maxilla pointed, extending to or beyond slightly posterior border of operculum. Anal fin long, its origin situated posterior to dorsal-fin base; upper pectoral-fin ray not extended as a filament. Scales cycloid; longitudinal scale rows 41–46. **Color:** body silvery white, grayish brown above, with a



Thryssa hamiltoni, KAUM-I. 23199, 12.3 cm SL
 Gulf of Thailand (SS), 8 Sept. 2009

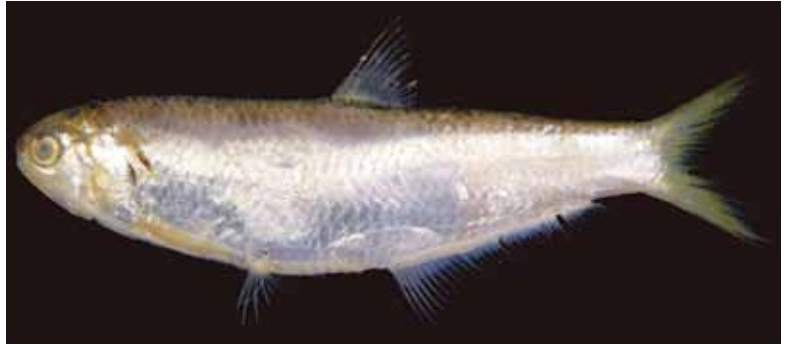
dark blotch of horizontal wavy black lines on shoulder just posterior to upper part of gill opening; dorsal, pectoral, and pelvic fins yellowish; caudal fin yellow; anal fin whitish. **Size:** maximum ca. 20 cm SL. **Distribution:**

Indo-West Pacific, from Persian Gulf to northern Australia, north to Taiwan and Ogasawara Is., Japan. **Remarks:** occurring in inshore waters and estuaries. Marketed fresh, dried, dried-salted. (S. Kimura)

Thryssa setirostris
(Broussonet, 1782)

Longjaw Thryssa

D 12; A 32–39 (usually 35–38); P₂ 7; LGR 10–12. Body somewhat deep, compressed; abdomen with 16–18 prepelvic and 9–10 postpelvic keeled scutes, 25–28 in total number; a small predorsal spine-like scute present. Teeth in jaws small or minute, not canine-like. Maxilla very long, reaching posteriorly at least to tip of pectoral fins, usually to pelvic-fin base, or even to anal-fin origin. Anal fin long, its origin at or posterior to vertical through end of dorsal-fin base; upper pectoral-fin ray not extended as a filament. Scales cycloid; longitudinal scale rows 41–46 (usually 41–44). **Color:** body silvery white, brownish dorsally; a diffuse patch of horizontal



Thryssa setirostris, KAUM-I. 23425, 10.4 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

wavy gray or charcoal lines on shoulder posterior to upper part of gill opening; dorsal and caudal fins dusky to deep yellow, borders charcoal; anal fin deep yellow or white; pectoral and pelvic fins pale yellow. **Size:** maximum length 18 cm. **Distribution:** In-

do-West Pacific, from the Gulf of Oman east to Vanuatu, northern Australia north to Taiwan. **Remarks:** schooling fish mostly found in close inshore, entering bays and estuaries. Marketed fresh, dried, dried-salted.

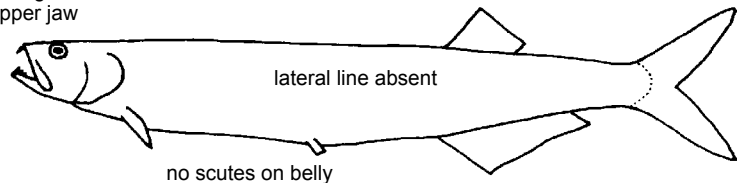
(M. Matsunuma)

CHIROCENTRIDAE

Wolf Herrings

Medium to large-sized silvery fishes; maximum size about 1 m SL. Body elongate and strongly compressed; no pelvic scutes. Two fang-like teeth on upper jaw; a series of canine teeth on lower jaw. Eyes relatively small, with eyelids completely covering eyes. Gill rakers 17–22; branchiostegal rays 8. No spinous fin rays; dorsal-fin with 16–19 rays, its origin just above anal-fin origin, its base shorter than anal-fin base; anal fin with 30–35 rays; caudal fin deeply forked; pelvic fins small, abdominal, with 6–7 rays. Scales small cycloid; lateral line absent. No pyloric caeca; spiral valve present in intes-

2 fang-like teeth on upper jaw



tine. Total vertebrae 69–75.

Color: dark bluish green dorsally, blight silver laterally and ventrally.

Remarks: occurring in coastal area of Indo-West Pacific, from South Africa to Japan and Australia. Feeds on fishes. A single genus, *Chirocentrus*, with two species.

Similar families occurring in the area: Elopidae and Chanidae – no fanglike teeth; lateral line present. Engraulidae, Pristigasteridae, and Clupeidae – no fang-like teeth; scutes usually present on belly.

(S. Kimura)

Chirocentrus dorab
(Forsskål, 1775)

Dorab Wolf-herring

D 16–18; A 29–36; P₁ 13–16; P₂ 6; GR 1–4 + 10–16. Body elongate, strongly compressed, belly sharp; pectoral fin short, 11–13% SL. Mouth large, directed upward; both jaws with large canine teeth anteriorly. Scales cycloid, very small. **Color:** dark blue-green dorsally, silvery ventrally; black marking on the upper part of dorsal fin; caudal fin blackish. **Size:** maxi-



Chirocentrus dorab, KAUM-I. 33043, 26.0 cm SL
Prachuap Khiri Khan, 9 Nov. 2010

mum 1 m SL, commonly 30–50 cm SL. **Distribution:** widely distributed in Indo-West Pacific from Red Sea and South Africa to Solomon Is., north

to southern Japan. **Remarks:** occurring in inshore waters. Feeds on small fishes, crustaceans, squids, etc. Marketed fresh.

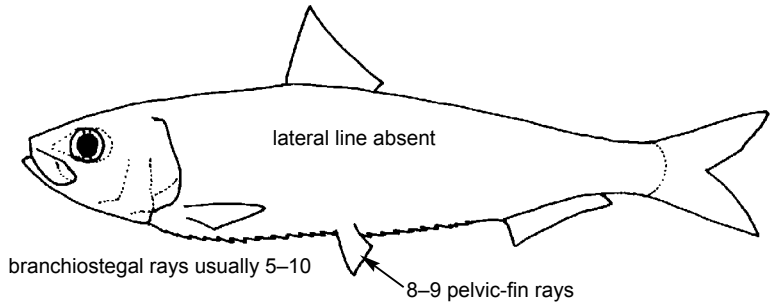
(S. Kimura)

CLUPEIDAE

Herrings (Sardines)

Small to medium-sized fishes (mostly 10 to 20 cm, some exceeding 50 cm) with silver-colored fusiform body, compressed or oval in cross-section. Mouth terminal or somewhat superior except for members of Dorosomatinae with mouth fully inferior; upper jaw mostly with 2 supramaxillae; jaw articulation always anterior to vertical below eye; teeth on jaws mostly absent or minute, sometimes with canines. Fins without spines; dorsal fin single, situated near midpoint of body; anal fin short less than 28 rays; pectoral fins set low on body; pelvic fins abdominal with 8 or 9 rays; caudal fin deeply forked. Body covered with cycloid scales; a series of scutes along abdomen; lateral line absent. **Color:** typically blue-green dorsally, silvery on flanks; with variable darker markings including spot behind gill cover, spots along flanks, spot at dorsal-fin origin, and dark pigmentation on part of dorsal, pectoral, anal, and caudal fins.

Remarks: schooling fishes found in marine coastal areas, mostly feeding on small planktonic animals and



plants. Small but important food fishes used as fresh, dried, or salted ones, taken by beach seine and other variety of nets. Regionally some species have great contribution to local catches.

Similar families occurring in the area: Clupeidae different from other similar families in having jaw articulation before vertical through eye, mostly 2 supramaxillae, pelvic fins inserting below short dorsal fin, short anal fin less than 28 rays, a series of scutes along abdomen, and no lateral line. Elopidae – lateral line present; no abdominal scutes; gular plate present; numerous branchiostegal rays (more than 20). Megalopidae – lateral line present,

no abdominal scutes; gular plate present; numerous branchiostegal rays (more than 20). Albulidae – lateral line present; no abdominal scutes; gular plate present. Chirocentridae – body highly compressed and elongate; no abdominal scutes; jaws with developed fang-like canine teeth. Pristigasteridae – pelvic fins inserting anterior to vertical through dorsal fin origin; anal fin long more than 30 rays. Engraulidae – snout pig-like and projecting; jaw articulation well behind eye. Chanidae – lateral line present; no abdominal scutes; branchiostegal rays few (4 or 5).

(S. Kimura)

Anodontostoma chacunda (Hamilton, 1822)

Chacunda Gizzard Shad

D 17–19; A 19–20; P₁ 15–16; P₂ 8; LGR 54–96; V 41–43. Body very deep, almost oval, strongly compressed (40–50% SL in specimens > 10 cm SL); belly keeled with scutes (ca. 28). Mouth inferior; upper jaw with a distinct median notch. Opercle smooth, without bony striae. Longest lower gill rakers shorter than corresponding gill filaments. Shoulder girdle (cleithrum) margin without fleshy outgrowths. Last dorsal-fin ray not filamentous. Scales cycloid with denticulation along posterior margin; a median series of predorsal scales present. **Color:** body silvery, darker dorsally; occiput to nape yellowish or gold; a large black spot behind gill opening.



Anodontostoma chacunda, KAUM-I. 33086, 10.1 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

Size: maximum ca. 18 cm SL. **Distribution:** widely distributed in Indo-West Pacific from the Persian Gulf to New Caledonia. **Remarks:** found in

inshore waters and estuaries, feeds on zoo- and phytoplanktons. Marketed fresh, dried, or dried-salted.

(S. Kimura)

Dussumieria elopsoides
Bleeker, 1849

Slender Rainbow Sardine

D 18–21; A 15–17; P₁ 14–15; P₂ 8; LGR 21–32. Body elongated, cylindrical, slender (16–22% SL); belly rounded without prepelvic or postpelvic scutes. Premaxillae rectangular; branchiostegal rays numerous (13–18). Scales cycloid with numerous tiny radiating striae posteriorly. **Color:** dark blue-green dorsally, silvery ventrally, with a narrow lateral band of silvery gray and gold extending from upper operculum to caudal-fin base. **Size:** maximum ca. 20 cm SL. **Distri-**



Dussumieria elopsoides, KAUM-I. 23353, 15.4 cm SL
Bang Pakong, 22 Sept. 2009

bution: Indo-West Pacific. **Remarks:** pelagic, inshore fish. Feeds on planktonic crustaceans and small fishes. Marketed fresh, dried, or dried-salted. (S. Kimura)

Escualosa thoracata
(Valenciennes, 1847)

White Sardine

D 16; A 18–19; P₁ 12–13; P₂ 7; LGR 27–40. Body somewhat deep (27–37% SL), compressed; belly strongly keeled with 17–19 (mostly 18) prepelvic and 10–12 (mostly 11) postpelvic scutes (28–30, mostly 29, in total). Upper jaw rounded, without distinct median notch or cleft; 2 supramaxilla present. Opercle smooth, without bony radiating striae. Shoulder girdle (cleithrum) margin without fleshy outgrowths. **Color:** body semi-translucent with broad silvery midlateral stripe; inner edges of caudal fin broadly darkish. **Size:** maximum ca. 10 cm SL.



Escualosa thoracata, KAUM-I. 33062, 7.3 cm SL
Prachuap Khiri Khan, 12 Nov. 2010

Distribution: widely distributed in Indo-West Pacific from the Persian Gulf to northeastern Australia, north to Vietnam and Philippines. **Remarks:** schooling fish found in coastal, inshore waters. (S. Kimura)

Hilsa kelee
(Cuvier, 1829)

Kelee Shad

D 18; A 20–22; P₂ 8; LGR 100–175. Body very deep and strongly compressed; abdomen with sharply-keeled 15–17 prepelvic and 12–14 postpelvic scutes, 27–31 (usually 28–30) in total number. Mouth terminal; upper jaw with a distinct median notch. Opercle smooth, without bony striae. Gill rakers fine and numerous, those on inner arches curled outward; Shoulder girdle (cleithrum) margin without fleshy outgrowths. Frontoparietal striae (on top of head) numerous, 8–14. Last dorsal-fin ray not filamentous. Scales cycloid with denticulation along posterior margin; vertical striae overlapping at center of scale present. **Color:** body silvery, blue-green dorsally; occiput to



Hilsa kelee, KAUM-I. 47386, 13.2 cm SL
Gulf of Thailand (SS), 13 June 2012

nape yellowish or gold; a black spot behind gill opening. **Size:** commonly 15–18 cm, maximum 25 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in inshore waters and estuaries, feeds on zoo- and phytoplanktons. Marketed fresh, dried, or dried-salted. (M. Matsunuma)

Sardinella albella
(Valenciennes, 1847)

White Sardinella

D 17–19; A 18–19; P₁ 14–15; P₂ 8; LGR 41–68. Body somewhat compressed, but variable from slender to moderately deep (body depth 25–40 %SL); abdomen keeled with prepelvic and postpelvic scutes; total number of scutes 29–33 (usually 30–32); pelvic scute with ascending arms. Second supramaxilla symmetrical and paddle-shaped; opercle smooth without radiating bony striae; posterior border of gill opening with 2 fleshy outgrowths. Anal fin short with 2 posteriormost rays enlarged. Scales cycloid; vertical striae discontinuous, not meeting at center; posterior part with a few perforations and somewhat produced posteriorly; longitudinal scale rows usually 41–43. **Color:** body silvery, blue-green dorsally; a dark spot at dorsal-



Sardinella albella, KAUM-I. 23114, 11.0 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

fin origin; dorsal fin pale yellow; tips of dorsal and caudal fins blackish. **Size:** commonly 10 cm, maximum 14 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** schooling fish found in reef-associated coastal waters. Marketed fresh, dried, dried-salted.

(M. Matsunuma)

Sardinella gibbosa
(Bleeker, 1849)

Goldstripe Sardinella

D 17–20; A 17–21; P₁ 14–17; P₂ 8; LGR 45–60. Body moderately slender (body depth 25–40% SL); abdomen keeled with prepelvic and postpelvic scutes; total number of scutes 32–34; pelvic scute with ascending arms. Second supramaxilla symmetrical and paddle-shaped; opercle smooth without radiating bony striae; posterior border of gill opening with 2 fleshy outgrowths. Anal fin short with 2 posteriormost rays enlarged. Scales cycloid; vertical striae discontinuous, not meeting at center; posterior part with numerous small perforations; longitudinal scale rows 43–47. **Color:** body silvery, blue-green dorsally, with a thin golden midlateral line; a dark spot at dorsal-fin origin; margins of dorsal and caudal fins blackish. **Size:**



Sardinella gibbosa, KAUM-I. 22991, 8.8 cm SL
Gulf of Thailand (SS), 3 Sept. 2009

commonly 15 cm, maximum 17 cm SL. **Distribution:** widely distributed in Indo-West Pacific from East African coasts to eastern Australia, north to Taiwan. **Remarks:** schooling fish found in coastal waters. Marketed fresh, dried, dried-salted, boiled.

(M. Matsunuma)

Tenualosa toli
(Valenciennes, 1847)

Toli Shad

A 18–20; P₂ 8 (1 unbranched with 7 branched fin rays); LGR numerous (60–100). Body moderately deep, compressed, a moderately large herring-like fish; abdomen with 28–30 (17 or 18 prepelvic and 11–13 postpelvic) fairly sharply-keeled scutes; pelvic scute with ascending arms. Mouth terminal; upper jaw with distinct median notch. Two supramaxillae present and well developed. Maxilla reaching to a point between verticals through center and posterior margin of eye. No fleshy outgrowths on posterior margin of gill opening. Opercle smooth without bony striae. Inner arches of gill raker more or less straight, not curled outward. Dorsal-fin origin distinctly anterior to mid-point of body; last dorsal-fin ray not elongated. Anal-fin short, situated well posterior to vertical through dorsal-fin base; 2 posteriormost anal-fin rays not enlarged. Pelvic-fin insertion at vertical through bases of middle dorsal-fin rays. Caudal fin relatively short, 31 to 34% of standard length;



Tenualosa toli, KAUM-I. 32998, 14.1 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

deeply-forked but upper and lower lobes not attenuated. Scales moderate, 37–42 in lateral series, without perforations posteriorly. **Color:** blue-green on back, silvery on flanks; at most, a diffuse dark mark behind gill opening, but no other spots on flank. **Size:** Maximum standard length 50 cm, commonly, between 30–40 cm. **Distribution:** Indo-West Pacific from eastern and western coasts (also river) of India, Andaman Sea, Indonesia to Java Sea, Gulf of Thailand, and South China Sea. **Remarks:** Marine, coastal pe-

lagic, schooling, and freshwater for breeding, but younger fish breed in tidal zone of rivers. More data needed. Biology similar to that of *Tenualosa ilisha*, so, especially at juvenile stages, not always distinguished from *T. ilisha* catches. Caught mainly with fish traps, fishing weirs, drifted or fixed gill nets in estuaries and river during the upstream spawning migration. Seine nets and bag nets clasp nets and cast nets are also used. Marketed fresh, dried, dried-salted, boiled or made into fish balls. (S. Ishikawa)

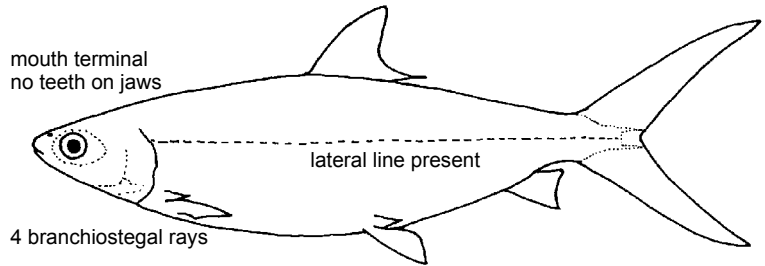
CHANIDAE

Milkfish

This family represented by a single species; see the following species account.

Similar families occurring in the area: Megalopidae – a bony gular plate present between arms of lower jaw; last dorsal-fin ray filamentous; scales large, 30–40 in lateral line. Elopidae – mouth much larger; a bony gular plate present between arms of lower jaw. Mugilidae – 2 dorsal fins; pectoral fins set high on body; no lateral line. Clupeidae – size much smaller; usually 6 or 7 bran-

mouth terminal
no teeth on jaws



4 branchiostegal rays

chiostegal rays (only 4 in *Chanos*); toral fins in 2 parts, lower part with no lateral line; scutes usually present along belly. Polynemida – mouth large, subterminal; 2 dorsal fins; pec-

(M. Matsunuma)

Chanos chanos (Forsskål, 1775)

Milkfish

D 13–17; A 9–11; P₂ 9–11; LL 75–91; GR 147–160 + 107–165. Body elongate, moderately compressed; no scutes along velly. Eye covered by adipose tissue. Mouth small, terminal, without teeth; lower jaw with small tubercle at tip, fitting into a notch in upper jaw; no bony gular plate between arms of lower jaw. Branchiostegal rays 4. Dorsal situated on about midpoint of body; anal fin short, close to caudal fin; caudal fin large and deeply forked, with scale flaps at base in adults; pectoral and pelvic fins with axillary scales. Scales small and smooth. **Color:** silver laterally and ventrally, olive-green or blue dorsally; dorsal, anal, and caudal fins with dark margin. **Size:** commonly 70–100 cm SL, maximum 1.5 m SL. **Distribution:** widely distributed in tropical and subtropical Indo-Pacific. **Remarks:** occurring marine and brackish. Important food fish; marketed fresh, dried, canned, and smoked.

(M. Matsunuma)

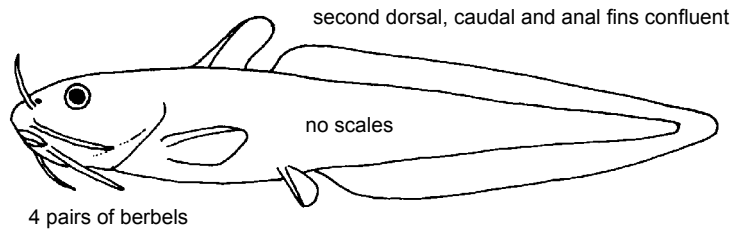


Chanos chanos, KAUM–I. 33027, 10.1 cm SL
Prachuap Khiri Khan, 11 Nov. 2010

PLOTOSIDAE

Eeltail Catfishes (Eel Catfishes)

Small to medium-sized (commonly less than 40 cm, some up to 100 cm) catfishes. Body elongate, tapering posteriorly; without scales or bony plates. Lateral line complete, running along middle of body and extending nearly to caudal-fin base. A dendritic organ, located along ventral midline of body just anterior to anal-fin origin and posterior to anus, found in all marine, and some fresh-water species. Mouth surrounded with barbels in 4 pairs; 1 pair between widely separated anterior and posterior nostrils; 1 pair at corner of mouth and 2 pairs on lower jaw. Teeth present on jaws, except on upper jaw of some fresh-water species. Palate with teeth, often molariform; molariform teeth sometimes found in lower jaw. Dorsal and pectoral fins located just posterior of head, each with a pungent serrated spine at leading edge; fin spines venomous and capable of producing painful sting; anal fin long and continuous with rounded or pointed caudal fin; dorsal series of procurrent caudal-fin



rays consists of elongate rays which, in marine species, extend the fin anteriorly to at least vertical line at anal-fin origin, thus forming a second dorsal fin that is continuous with caudal fin; dorsal adipose fin absent.

Color: body tan, brown, or black; lighter ventrally; sometimes with light stripes along side of body, extending onto head.

Remarks: found in fresh, brackish, and marine waters of tropical and subtropical regions of the Indo-Pacific; freshwater species restricted to Australia and New Guinea. Venomous, but marketed mostly fresh and locally may be important.

Similar families occurring in the area: Plotosidae different from all other catfish families in having a dendritic organ (marine species), and caudal fin confluent with dorsal procurrent caudal, and anal fins. Ariidae – caudal fin forked; adipose fin present; anal fin short and not confluent with caudal fin; nasal barbel absent. Other freshwater catfish families (Siluridae, Clariidae and Heteropneustidae) – dorsal and pectoral fins with no pungent serrated spine at anterior edge; anal fin not confluent with caudal fin. (M. Matsunuma)

Plotosus canius

Hamilton, 1822

Gray Eel Catfish

DI, 4–5; DPC 130–140; A 106–118. Body somewhat elongate, body depth more than 15% SL. Anterior nostril situated dorsal to upper lip, opening directed anteriorly. Gill membranes narrowly attached across isthmus. Nasal and maxillary barbels long, reaching at least to pectoral-fin base. Origin of dorsal procurrent caudal fin inserting vertical posterior to pelvic fin base. **Color:** head and body uniformly dark brown except for paler abdomen. **Size:** maximum length ca. 1.5 m. **Distribution:** Indo-West Pacific from western coast of India to New Guinea



Plotosus canius, KAUM-I. 24008, 17.7 cm SL
Bang Saen, 1 Oct. 2009

and northern Australia, north to central Phillipines. **Remarks:** found in estuaries and lagoons, usually entering to rivers. Juveniles forming dense schools. Feeds on crustaceans, mollusks, and fishes. Marketed fresh.

(S. Kimura)

Plotosus lineatus
(Thunberg, 1787)

Striped Eel Catfish

D I, 4; DPC 89–111; A 68–80; P₁ I, 10–12; P₂ 10–13; GR 6–8 + 20–23 = 27–31. Body somewhat elongate; body depth more than 15% SL; anterior nostril situated dorsal to upper lip, opening directed anteriorly; gill membranes narrowly attached across isthmus; nasal and maxillary barbels short, reaching to or slightly beyond posterior margin of eye; origin of dorsal procurrent caudal fin inserting vertical above pelvic-fin base. **Color:** head and body dark brown, whitish ventrally; 2 or 3 narrow pale-yellow longitudinal stripes on body, of which 2 extending onto head; barbels dark brown; dendritic organ yellowish brown. **Size:** commonly 20 cm, maximum 30 cm. **Distribution:** widely distributed in the Indo-West Pacific, from the Red Sea and east coast of Africa to Samoa, northern Australia north to southern Japan. **Remarks:**



Plotosus lineatus, KAUM-I. 32996, 25.8 cm SL
 Gulf of Thailand (SS), 3 Nov. 2010

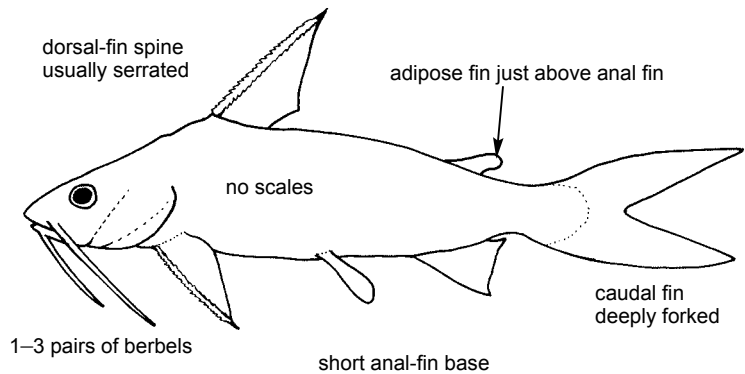
found in coastal waters, often entering estuaries. Juveniles forming dense ballshaped schools, adults solitary or occurring in small schools. Each serrate spine of dorsal and pectoral fins venomous and highly dangerous.

(M. Matsunuma)

ARIIDAE

Sea Catfishes

Medium to large sized marine and freshwater catfishes; maximum size about 1.8 m. Body elongated, robust; head depressed but tail compressed. Bony shield dorsally on head usually visible, with a dorsomedian groove, extending posteriorly to nuchal bone; snout pointed or rounded anterior and posterior nostrils close together; mouth terminal or inferior; one, two, or three pairs of barbells present around the mouth, no nasal barbells; jaw teeth small, arranged into narrow or broad bands; palatal teeth on small or large patches; gill membranes joined together and attached isthmus anteriorly; branchiostegal rays 5–7. Dorsal fin with a long, robust, usually serrated spine followed by 7 branched rays; a very small spinelet or buckler present prior to dorsal spine; anal fin with 14–36 soft rays; caudal fin deeply forked with 15 (7+8) principal rays; pectoral fins low on the sides of body with a usually long and serrated spine and 7–13 branched rays; pelvic fins abdominal with 6 branched rays; adipose fin present just above anal fin. Body naked; lateral line well developed.



Color: body dark, brownish dorsally, silvery ventrally; adipose fin with a black spots in some species.

Remarks: occurring in tropical to temperate marine, estuarine, and freshwater areas of the world, usually found in coastal and estuarine habitats, abundant in mangrove areas and large river estuaries. Omnivorous, usually feed on crustaceans, mollusks, and fishes. Males incubating the fertilized eggs in his mouth cavity. Food fish.

Similar families occurring in the area: Ariidae is distinguished from other Indo-Pacific catfish families in

having a long, usually serrated dorsal fin spine, deeply forked caudal fin, short-based anal fin, adipose fin just above anal fin, naked body, and no nasal barbells. Plotosidae – caudal fin confluent with long-based anal fin; no adipose fin; nasal barbells present. Bagridae (freshwater) – nasal barbells present. Siluridae and Clariidae (both freshwater) – nasal barbells present; no dorsal fin spine; long-based anal fin. Pangasidae (freshwater) – long-based anal fin.

(S. Kimura)

Arius maculatus (Thunberg, 1792)

Spotted Catfish

D I, 7; A 19–23; P₁ I, 9–10; P₂ 6; GR 5–7 + 11–14; free vertebrae 41–44. Body elongated, compressed; head depressed; head shield and supraoccipital process weakly striated and granulated; dorsomedian head groove narrower and deeper posteriorly; snout rounded; palatal teeth small conical with blunt tip or molariform, on a single pair of oval patches, located well posterior to upper oral valve; inner gill rakers present on all gill arches; lateral line bifurcates behind caudal fin base. **Color:** body silvery, brownish green dorsally; all fins somewhat brownish;



Arius maculatus, KAUM-I. 23388, 14.5 cm SL
Bang Pakong, 22 Sept. 2009

adipose fin pale with a prominent dark marking. **Size:** maximum length 50 cm. **Distribution:** Vietnam, Gulf of Thailand, Pacific coasts of Peninsular

Thailand and Malaysia, Borneo, Sumatra, and Java. **Remarks:** inhabits coastal waters and estuaries.

(S. Kimura)

Arius oetik

Bleeker, 1846

Lowly Catfish

D I, 6–7; A 15–19; P₁ I, 10–11; P₂ 6; GR 4–6 + 9–12. Body elongated, compressed. Head depressed; head shield smooth anteriorly, somewhat granulated posteriorly; dorsomedian groove short, not reaching anteriorly to level of posterior margin of eye. Snout prominent. Palatal teeth short, conical, tips blunt or sharp, on a single pair of small triangular patches, located just posterior to upper oral valve. Inner gill rakers present on all gill arches. Lateral line bifurcates behind caudal fin base. **Color:** body silvery; brownish dorsally; all fins somewhat dusky; adipose fin pale without dark marking. **Size:** maximum length 23 cm SL. **Distribution:** Andaman Sea, Gulf of Thailand through Malay Peninsula and Sumatra to Java and Kalimantan. **Remarks:** inhabits coastal waters and estuaries.

(S. Kimura)

Cryptarius truncatus

(Valenciennes, 1840)

Spoonsnouted Catfish

D I, 6–7; A 20–25; GR 8–9. Body elongated, compressed. Head strongly depressed; head shield smooth anteriorly, rugose to granular posteriorly; head venulose laterally. Snout truncate or obtuse. Palatal teeth short and conical in small oval, widely-separated patches, one on each side of palate. Three pairs of barbels. Gill opening restricted, closed across isthmus from just below pectoral-fin base, although margin of gill cover free. **Color:** body greenish yellow or bluish above, creamy yellow below; dorsal and caudal fins with dark margins, adipose fin pale. **Size:** maximum length about 42 cm. **Distribution:** Thailand, Indonesia (Sumatra, Java, and Kalimantan), and Malaysia. **Remarks:** inhabits estuaries and lower reaches of rivers.

(S. Kimura)

Hexanemichthys sagor

(Hamilton, 1822)

Sagor Sea Catfish

D I, 7; A 16–19; P₁ I, 11; P₂ 6; GR 12–18; V 53–55. Body elongated,



Arius oetik, KAUM-I. 32756, 15.3 cm SL
Ang Sila, 23 Oct. 2010



Cryptarius truncatus, KAUM-I. 23935, 23.3 cm SL
Bang Pakong, 30 Sept. 2009



Hexanemichthys sagor, KAUM-I. 33059, 19.3 cm SL
Prachuap Khiri Khan, 11 Nov. 2010

compressed; head broad, depressed; head shield striated; supraoccipital hemispherical in adults, its apex convex; dorsomedian head groove short; palatal teeth conical, tips sharp, on 2 pairs of patches; inner patches smaller than outer; barbells flattened, strap-like; inner gill rakers absent on the anterior 2 gill arches; pectoral-fin spine

longer than dorsal-fin spine. **Color:** body silvery, blue-brownish dorsally; several golden green vertical stripes on body; adipose fin pale. **Size:** maximum length 45 cm SL. **Distribution:** Indo-West Pacific, from Pakistan to Borneo and Java. **Remarks:** inhabits coastal waters and estuaries.

(S. Kimura)

Ketengus typus
Bleeker, 1847

Largemouthed Catfish

D I, 5–6; A 19–21; P₁ I, 7–8; GR 15; V 47–49. Body elongated, compressed posteriorly. Snout rounded; head shield striate and moderately granular. Mouth inferior, its opening wide, extending behind eye. Single series of incisor-like, compressed teeth in each jaw; teeth blunt or with a central tip; no teeth on palate. Three pairs of very short barbels, equal to or shorter than eye diameter. Gill rakers present on hind aspect of all gill arches. **Color:** body dark greenish brown above, silvery white below. **Size:** maximum length about 24 cm. **Distribution:** Andaman Islands, Malay Peninsula, Thailand, and Indonesia (Sumatra, Java, Madura, and Kalimantan). **Remarks:** inhabits coastal areas, estuaries and lower reaches of rivers. The genus monotypic. (S. Kimura)



Ketengus typus, KAUM-I. 32924, 6.9 cm SL
Bang Pakong, 30 Oct. 2010

Osteogeneiosus militaris
(Linnaeus, 1758)

Soldier Catfish

D I, 6; A 19–22; P₁ I, 9–10; GR 10–11; V 51–53. Body elongated, compressed posteriorly. Head strongly depressed; head shield covered with smooth skin. Snout truncate. Mouth inferior. Single band of fine teeth in jaws; palatal teeth conical with blunt tips, grouped into 2 large longitudinal, semi-oval or elliptical patches, one each side nearer palate margins, inner margin of patches concave. A single pair of barbels long and stiff, extending to or beyond pectoral-fin base. **Color:** body metallic dark blue above, silvery white below; dorsal-fin margin and adipose fin blackish. **Size:** maximum length 31 cm SL. **Distribution:** from India to Malay Peninsula, Thailand, and Indonesia (Sumatra, Java, and Kalimantan). **Remarks:** inhabits coastal areas, estuaries and lower reaches of rivers. The genus monotypic. (S. Kimura)



Osteogeneiosus militaris, KAUM-I. 33184, 10.6 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

Plicofollis argyropleuron
(Valenciennes, 1840)

Longsnouted Catfish

D I, 6; A 14–21; P₁ I, 10–12; GR 10–16; V 48–51. Body elongated,

compressed posteriorly. Head depressed, elongated; head shield striate or sharply granular; supraoccipital process narrow, keeled. Snout truncate. Mouth small, subterminal or somewhat inferior. Granular teeth in 2 patches on each side of palate, longitudinally arranged, posterior patches oblong-ovate, parallel or with long axes slightly converging distally.

Three pairs of barbels. No gill rakers on hind aspect of first 2 gill arches. **Color:** body metallic dark gray above, silvery white below. **Size:** maximum length 50 cm FL. **Distribution:** from east coast of India to eastern Australia, Thailand, and Indonesia. **Remarks:** inhabits coastal areas and estuaries.

(S. Kimura)



Plicofollis argyropleuron, KAUM-I. 32927, 9.5 cm SL
Bang Pakong, 30 Oct. 2010

BAGRIDAE

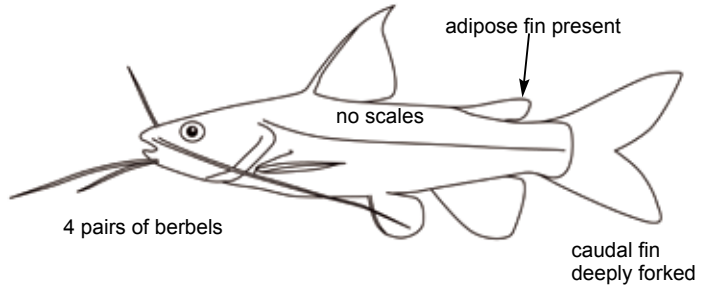
Bagrid Catfishes

Medium to large size fresh water catfishes; maximum size about 1.5 m. Body elongated. Dorsal fin II spines with 6–7 soft rays. Adipose fin present. Pectoral-fin spine serrated. Four pairs of barbels present around the mouth and nasal. Body naked; lateral line complete. Caudal fin forked.

Color: body tan, brown, or black.

Remarks: occurring in fresh water, and sometimes estuarine area. Some species often treated as aquarium fish.

Similar families occurring in the area: Ariidae – no nasal barbels present. Plotosidae – caudal fin



confluent with long-based anal fin; no adipose fin; lateral line incomplete. Siluridae and Clariidae (both freshwa-

ter) – no dorsal-fin spine; long-based anal fin. (T. Yoshida)

Mystus velifer

Ng, 2012

D II, 7; A 12–14; P₁ 8; P₂ 6; GR 22–29. Body elongated, compressed. Head shield covered with skin. Snout somewhat rounded. Mouth subterminal; oral teeth small and viliform, in irregular rows on all tooth-bearing surfaces. Four pairs of barbels; maxillary barbel long and slender, extending beyond caudal-fin base. Lateral line complete. Caudal fin deeply forked; adipose-fin base subequal to anal-fin base in length. **Color:** body greenish yellow above, pale below; maxillary barbel dasky. **Size:** maximum length 13.6 cm SL. **Distribution:** from lower Mekong River drainage (upstream to the Tonlé Sap) westwards and southwards to Songkhla Lake in Peninsula Thailand. **Remarks:** the species having been confused with *Mystus wolffii* (Bleeker, 1851). Inhabits lower reaches of rivers and estuaries. (S. Kimura)

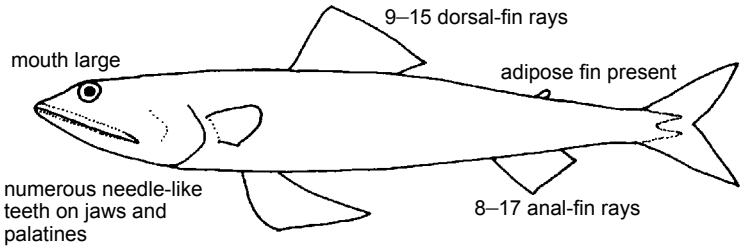


Mystus velifer, KAUM-I. 32749, 5.8 cm SL
Bang Pakong, 23 Oct. 2010

SYNODONTIDAE

Lizardfishes

Small to medium-sized marine fishes; maximum size about 70 cm, commonly 20–40 cm. Body slender, cylindrical, and moderately elongated. Mouth large; hind tip of upper jaw extending well beyond hind margin of eye; a single supramaxilla small or absent; numerous needle-like teeth on jaws and palatines; branchiostegal rays 12–18. No spinous fin rays; dorsal fin located about midpoint of body, 9–15 rays; anal fin posterior to dorsal fin base, 8–17 rays; caudal fin forked, 19 principal rays; pelvic fins close together, 8–9 rays; adipose fin present above anal fin. Cycloid scales present at least on the posterior half of body and along lateral line. **Color:** body usually



brown or reddish with variable markings. Peritoneum either pale with several black spots, or black.

Remarks: occurring in tropical to temperate marine and estuarine areas, usually found on rocky, coral, sandy, or muddy bottoms in shallow waters. Feed on small fishes and crustaceans.

Similar families occurring in the area: Aulopidae – two supramaxillae

present; hind tip of upper jaw not or slightly extending beyond hind margin of eye. Bathysauridae – head depressed conspicuously; branchiostegal rays 8–13; adipose fin present or absent; pelvic fin rays 8. Chlorophthalmidae – a single elongate supramaxilla present; hind tip of upper jaw not extending beyond center of eye.

(S. Kimura)



Saurida tumbil (Bloch, 1795)

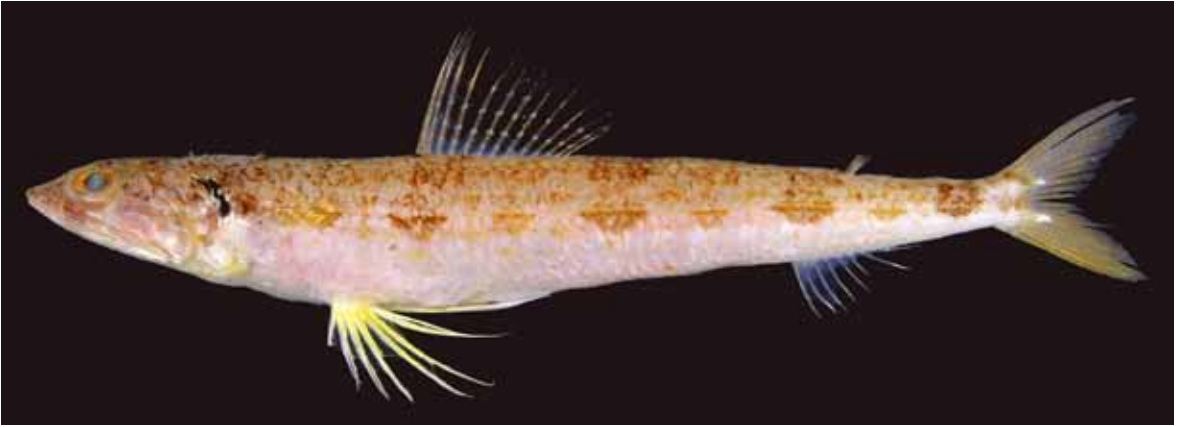
Greater Lizardfish

D 11–13; A 10–11; P₁ 13–16; P₂ 9; LL 59–65; PDS 16–19; V 56–61. Body subcylindrical, elongate. Head and caudal peduncle somewhat depressed; mouth large; numerous small teeth exposed on side of jaws when mouth closed; palatine teeth arranged in two bands on each side of roof of mouth; palatine teeth on the outer

bands in 3 or 4 rows anteriorly. Outermost ray of pelvic fin subequal to innermost ray. Pectoral fin short, its posterior tip not or only just reaching to insertion of pelvic fin. **Color:** body light brown dorsally, silvery white ventrally; pectoral fin and lower lobe of caudal fin dusky; upper margin of

Saurida tumbil, KAUM-I. 33018, 13.9 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

pose fin with a black marking. **Size:** maximum length about 25 cm SL. **Distribution:** widely distributed in the Indo-West Pacific from east coast of Africa, Red Sea to eastern Australia. **Remarks:** found in shallow coastal sandy or muddy bottoms. Feeds on fishes, crustaceans, and squids. Marketed fresh. (S. Kimura)



Synodus tectus
(Cressey, 1981)

Tectus Lizardfish

D 13–14; A 9–10; P₁ 12–13; P₂ 8; PLS 55–57; PDS 13–15; V 54–56. Body fusiform, elongate, caudal peduncle slightly compressed. Head somewhat depressed; mouth large; anteriormost palatine teeth longer than more posterior teeth. Outermost ray of pelvic fin distinctly shorter than innermost ray; anal fin base shorter than dorsal fin

base; pectoral fin short, its posterior tip not reaching a line between origins of pelvic and dorsal fins. **Color:** body light brown dorsally, silvery white ventrally; with about 8 brown saddle-like patches extending laterally, forming diamond-shaped patches at level of the lateral line; a black spot on upper edge of opercle, divided dorsally into 3 or 4

Synodus tectus, KAUM-I. 23296, 12.9 cm SL
Gulf of Thailand (SS), 10 Sept. 2009

separate finger-like branches; 9–11 peritoneal spots. **Size:** maximum length 17 cm SL. **Distribution:** West Pacific from northern Australia to Taiwan. **Remarks:** found in shallow coastal sandy or muddy bottoms. (M. Matsunuma)



Trachinocephalus myops
(Forster, 1801)

Bluntnose Lizardfish

D 11–14; A 13–18; P₁ 11–13; P₂ 8; LL 51–61; V 54–55. Body fusiform, elongate; snout very short; mouth large; palatine with a row of teeth. Outermost ray of pelvic fin distinctly shorter than innermost ray; anal fin base longer than dorsal fin base; pectoral fin short. **Color:** body with alter-

nating narrow dark-edged pale blue and yellow stripes; a large black spot at upper end of gill opening; about 5 yellow stripe on dorsal fin; adipose and anal fins with yellow margin; pelvic fin with a yellow stripe basally; caudal fin yellow. **Size:** maximum length about 25 cm SL. **Distribution:**

Trachinocephalus myops, KAUM-I. 32810, 12.6 cm SL
Gulf of Thailand (SS), 25 Oct. 2010

circumglobal in tropical and subtropical seas except for Eastern Pacific. **Remarks:** found in shallows to 400 m on sandy bottom. (M. Matsunuma)

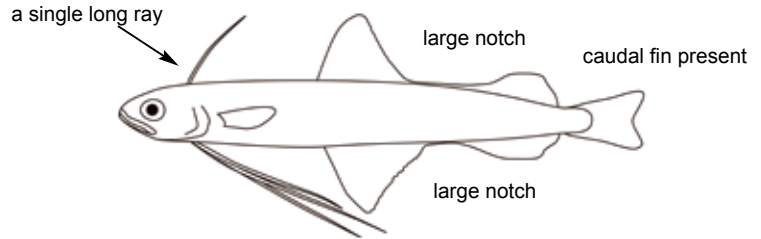
BREGMACEROTIDAE

Codlets

Small sized (up to 12 cm SL). Body moderately elongate. Two dorsal fin well separated; 1st dorsal fin with 1 elongate soft ray, second dorsal fin with large notch in the middle. Dorsal and anal fins long. Pelvic fin 5 rays, outer three rays are very long filaments. No chin barbel. Swim bladder not in contact with auditory capsules.

Color: head and body silvery, darkened dorsally.

Remarks: chiefly inhabit ma-



rine, but also found in brackish water area in some species. Pelagic in coastal and oceanic waters, mostly restricted to the upper 300 m of the water

column.

Similar families occurring in the area: none. (T. Yoshida)

Bregmaceros pseudolanceolatus Torii, Javonillo & Ozawa, 2004

False lance codlet

D 1 + 58–64; A 58–67; P₁ 18–22; P₂ 5; LL 68–77. Body moderately elongate. Head relatively short; eye large. Snout rounded. First dorsal-fin ray elongate. Second dorsal and anal fins with large notch in the middle. Origin of dorsal fin above origin of anal fin. Dorsal- and anal-fin bases long. Pelvic fin 5 rays, outer three rays produced into very long filaments. **Color:** head and dorsal half of trunk black; opercle and lower half of trunk silver, most of pectoral fin black; anterior and posterior lobes of second dorsal and anal fins black. **Size:** maximum length 10 cm SL. **Distribution:** Indo-West Pacific, including Taiwan, East China Sea, Gulf of Thailand, Timor Sea, Arafura Sea, and Bay of Bengal. **Remarks:** occurs in coastal water.

(T. Yoshida)



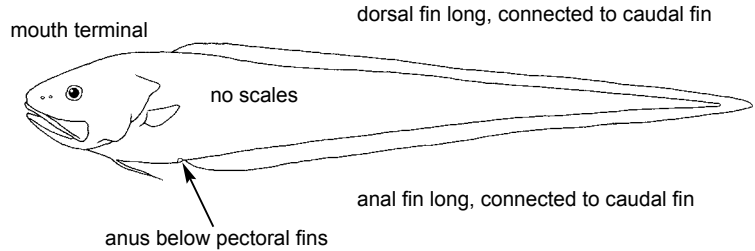
Bregmaceros pseudolanceolatus, KAUM-I. 33169, 7.6 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

CARAPIDAE

Pearlfishes

Small to medium-sized fishes, rarely reaching 50 cm TL. Body elongate and compressed or subcylindrical. Eye diameter subequal to snout length in adults. Supramaxilla absent. Mouth terminal, often with strong teeth. No spines on opercle. Scapula and coracoid fused; upper distal radial of pectoral fins enlarged; hyomandibula with large foramen. Dorsal and anal fins long, connected to caudal fin; dorsal fin rays shorter than opposing anal fin rays; highly modified first dorsal fin ray in larvae. Pelvic fin with a soft ray, or without ray. Scales absent. Anus located below pectoral fins.

Remarks: occurs in shallow to moderately deep waters. Usually pe-



agic in larvae and benthic in adults; free-living adults in some species; commensals in body cavity of invertebrates, primarily holothurians (sea cucumbers), in most species when adults. A bycatch in some sea cucumber fish-

eries, but no importance to fisheries. **Similar families occurring in the area:** Ophidiidae – body scales present; anus located behind posterior tip of pectoral fin. (H. Motomura)

Encheliophis homei (Richardson, 1846)

Silver Pearlfish

P₁ 17–21; P₂ 0; V 116–128; Body elongate, compressed; head depth slightly greater than body depth. Mouth moderate; maxilla free from cheek, movable; villiform teeth on jaws, without fangs. Dorsal fin origin posterior to anal fin origin; pectoral fin relatively long, its length subequal to upper jaw length. Anus located anterior to vertical through at pectoral fin base. Swimbladder without ridges an intrinsic constriction. **Color:** body translucent; cheek and abdomen silvery; side of jaws with some blackish pigment. **Size:** maximum length 19 cm. **Distribution:** widely distributed in the Indo-Pacific, from Madagascar east to Society Islands, and northern Australia north to southern Japan. **Remarks:** commensal in sea cucumbers. (M. Matsunuma)



Encheliophis homei, KAUM-I. 47676, 10.0 cm SL
Gulf of Thailand (SS), 6 July 2012

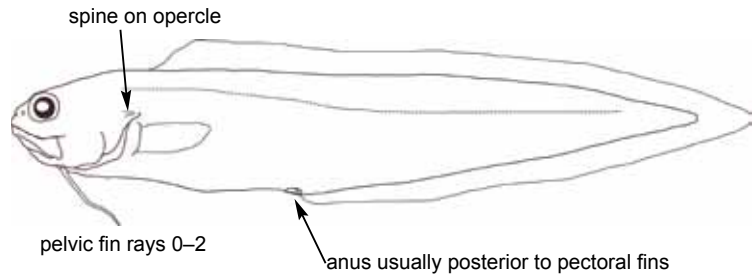
OPHIDIIDAE

Cusk Eels

Median to large-sized marine fishes, reaching 200 cm. Body moderately elongate. Anterior nostril placed midway between upper lip and posterior nostril. Teeth usually small, densely distributed, and blunt-tipped. Supramaxilla present. Very seldom less than 7 long gill rakers on anterior gill arch. A well developed spine on opercle usually present. Dorsal and anal fins long, joined to caudal fin. Dorsal fin rays normally longer than opposing anal fin rays. Pelvic fin rays 0–2. Scales present; lateral line present or absent. Anus placed posterior to pectoral fins except in species with prolonged pectoral fins.

Color: very variable, some with horizontal or vertical bars and eyespots.

Remarks: most of species occurs pelagically at great depths; the



few shallow water species are cryptic. Usually no commercial importance.

Similar families occurring in the area: Carapidae – scales absent; anal-fin rays longer than opposing dorsal-fin rays; anus placed below pectoral fins. Bythitidae – anterior nostril placed immediately above upper lip; very seldom

more than 7 long gill rakers on anterior gill arch. Macrouridae – pelvic fins well separated from each other, with more than 2 rays. Gadidae and Moridae – pelvic fins well separated from each other; dorsal and anal fins not joined to caudal fin.

(M. Matsunuma)

Sirembo jerdoni (Day, 1888)

Brownbanded Cuskeel

D 89–95; A 64–68; P₁ 22–24; P₂ 1. Body relatively elongate, compressed, but not attenuate; snout bluntly rounded; eyes well developed. Dorsal and anal fins long, joined to caudal fin; pelvic fins closed to each other, located below level of posterior margin of eye. No spines on preopercle; spine on opercle short, not reaching posterior margin of opercle. Scale cycloid. **Color:** body silvery white, with 3–4 broad, oblique bands on head and anterior body, connecting over the pre-dorsal and head to the other side; several brown blotch on dorsal and caudal fins; anal fin with a brown stripe basally, blackish marginally. **Size:** commonly 10 cm SL. **Distribution:** Indo-West Pacific, including the Red Sea, Bay of Bengal, Western Australia, Gulf



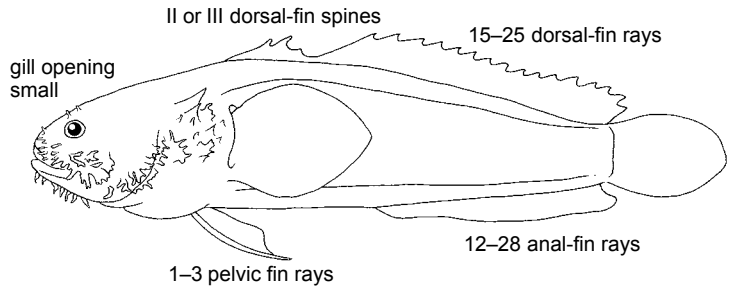
Sirembo jerdoni, KAUM-I. 33231, 13.5 cm SL off Chantha Buri (SP), 30 Nov. 2010

of Thailand, Philippines, and South and East China Sea. **Remarks:** found in moderate to deep waters at depths of 57–99 m. (M. Matsunuma)

BATRACHOIDIDAE

Toadfishes

Small to medium-sized fishes. Head broad in dorsal view and depressed, often with barbels and fleshy tentacles around jaws. Mouth large, terminal, and slightly protrusible. Opercle and subopercle with spines. Glandular tissue present in opercle and pectoral fin axil. Gill opening small, restricted to sides of body. Dorsal fin with II or III spines and 15–25 soft rays; soft rays longer than anal-fin soft rays. Anal fin with 12–28 soft rays. Pelvic fin with I spine and 1–3 soft rays. Caudal fin rounded. Pectoral fin large, broadbased, and rounded. Body with scales or naked; lateral line single or multiple. **Color:** body color variable; usually brownish dorsally and posteriorly, often with spots, sad-



dles, bars or other markings.

Remarks: Occurs from littoral areas to deep waters, often in estuaries; in sediment or in crevices.

Similar families occurring in the area: Uranoscopidae – gill opening

wide, free from isthmus. Pelvic fins with I spine and 5 soft rays. Lophiidae – first dorsal-fin spine modified into an angling apparatus.

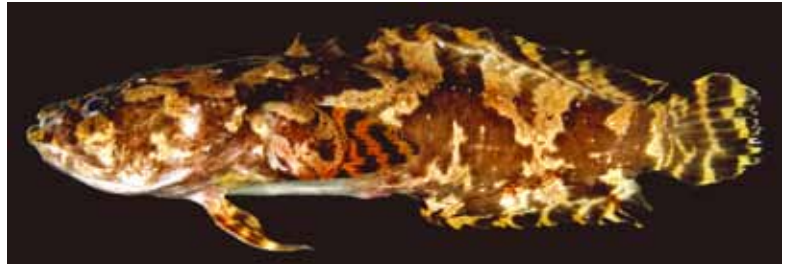
(H. Motomura)

Allenbatrachus grunniens (Linnaeus, 1758)

Grunting Toadfish

D III, 18–22; A 16–17; P₁ 20–22. Body elongate, slightly compressed-posteriorly. Tentacles on anterior part of orbit and posterior end of maxilla simple, pointed distally. Eyes oriented laterally; eye diameter less than snout length and interorbital width. Lower jaw terminal, projecting beyond upper jaw. Pointed teeth on jaws, vomer and palatines. Gill slit extending from upper three-fourths to four-fifths of pectoral-fin base. No pore at pectoral-fin axil. **Color:** body and fins grayish to brownish or blackish, mottled with pale or dark irregular blotches. **Size:** maximum length 19.1 cm SL. **Distribution:** known from estuarine areas of the Ganges River east to the Philippines and eastern Indonesia, including the Gulf of Thailand. **Remarks:** occurs in coastal waters and estuaries over sandy and muddy bottoms.

(H. Motomura)



Allenbatrachus grunniens, KAUM-I. 33203, 8.6 cm SL
Bang Pakong, 26 Nov. 2010

Allenbatrachus reticulatus
(Steindachner, 1870)

D III, 18–20; A 16–17; P₁ 20–22. Body elongate, slightly compressed posteriorly. Head large, broad and depressed. Teeth on jaws, vomer, and palatines all blunt and rounded. Anterior orbital cirrus with 4 or more rounded tips. Lower jaw terminal, projecting beyond upper. Eye diameter less than snout length and interorbital width. Pore absent in inner side of upper portion of pectoral-fin base (axil). Gill slit restricted from one half to four fifths of pectoral-fin base. **Color:** body including head dark brown, crossed by four irregular dark blotches. all fins banded by dark brown bands with yellowish color between bars. **Size:** attains at least about 15 cm SL. **Distribution:** known from marine and estuarine areas around Singapore, Sumatra, Myanmar and the Gulf of Thailand. **Remarks:** usually found in shallow coastal areas including estuaries. (P. Musikasinthorn)



Allenbatrachus reticulatus, KAUM-I. 23454, 14.8 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

Batrachomoeus trispinosus
(Günther, 1861)

Three-spined Frogfish

D III, 21–24; A 17–20; P₁ 21–23. Body elongate, slightly compressed posteriorly. Head large (length 0.9–1.0 in length of anal fin base), broad and depressed. Strong conical teeth on mandible and palate, mostly in one series. Pore present in inner side of upper portion of pectoral-fin base (axil). Gill slit covering more than four fifths of pectoral-fin base. **Color:** body including head pale brown with irregular dark brown blotches and transverse bars on body. Pectoral, pelvic and caudal fins with series of dark transverse bars with yellowish orange between bars. **Size:** attains at least about 26 cm SL. **Distribution:** known from marine and estuarine areas from northern Australia, New Guinea and The Indo-Australian Archipelago to the Gulf of Thailand. **Remarks:** usually found in shallow coastal areas including estuaries. (P. Musikasinthorn)



Batrachomoeus trispinosus, KAUM-I. 23320, 17.2 cm SL
Gulf of Thailand (SS), 10 Sept. 2009

ANTENNARIIDAE

Frogfishes

Small to moderate fishes, largest species attaining to over 50 cm; most species less than 20 cm. Body short, deep, globose, slightly compressed. Mouth large, strongly oblique to vertical; villiform teeth on jaws and palatines. Gill opening, below or behind pectoral-fin base, with a small pore. Dorsal fin with III spines and 10–16 soft rays; spinous portion of fin widely separated from soft-rayed portion; first spine free from rest of fin, nearly always with a well-developed terminal bait (esca); second and third spines covered by thick skin. Anal fin with 6–10 soft rays. Caudal fin rounded. Pectoral fin with 6–14 rays, elongate, leg-like. Pelvic fin with I spine and 5 soft rays. Body covered with loose skin, naked or with denticles.

Color: extremely variable, often closely matching that of surroundings; changing color within a few

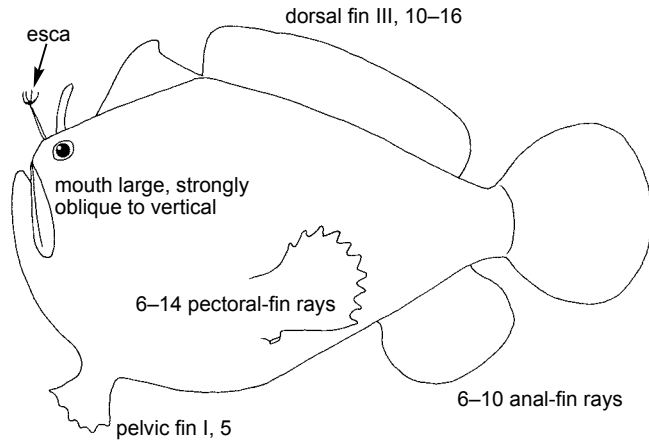
weeks in some species.

Remarks: most species inhabiting on bottom in shallow waters; one species pelagic, clinging in floating algae. Feeds on fishes, sometimes large fishes longer than themselves; also cannibalistic. Released eggs embedded in a

single, large, buoyant gelatinous mass; floating on water surface.

Similar families occurring in the area: families with an esca not occur in shore waters in the area.

(H. Motomura)



Antennarius hispidus (Bloch & Schneider, 1801)

Shaggy Angler

D I+I+I, 11–13; A 7; P₁; 10–11; P₂; I, 5; C 9. Body globose, compressed. Gill opening below pectoral-fin base. The esca is a slender axial rod with many filaments. Illicium is shorter than second dorsal fin spine. Second and third dorsal fin spine curved. **Color:** body usually yellowish brown with elongate black spots and bands on body and fins; narrow black elongate bands radiating from eye. **Size:** maximum length 19 cm. **Distribution:** widely distributed in Indo-West Pacific from east coast of Africa to Fiji, and southern Japan south to northern Australia. **Remarks:** usually found on sandy bottom. (T. Yoshida)



Antennarius hispidus, KAUM-I. 23455, 11.6 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

Antennarius nummifer
(Cuvier, 1817)

Spotfin Frogfish

D I+I+I, 12–13; A 7–8; P₁ 10–11; P₂ I, 5; C 9. Body globose, compressed. Gill opening below pectoral-fin base. First dorsal-fin spine with a fleshy tentacle; base of the spine behind upper jaw symphysis; second spine without membrane posteriorly; illicium short, subequal in length to second dorsal-fin spine. Posterior end of dorsal fin not broadly connected by membrane to caudal peduncle. Pectoral-fin rays unbranched. **Color:** body red, pink, orange, yellow, tan, or brown, with a large black spot at dorsal-fin base. **Size:** maximum length 13 cm. **Distribution:** widely distributed in the Indo-Pacific, from east coast of Africa east to the Hawaiian and Marquesas Islands, and also from islands of the eastern Atlantic. **Remarks:** usually found on reefs in shallow waters to a depth of 293 m. (H. Motomura)



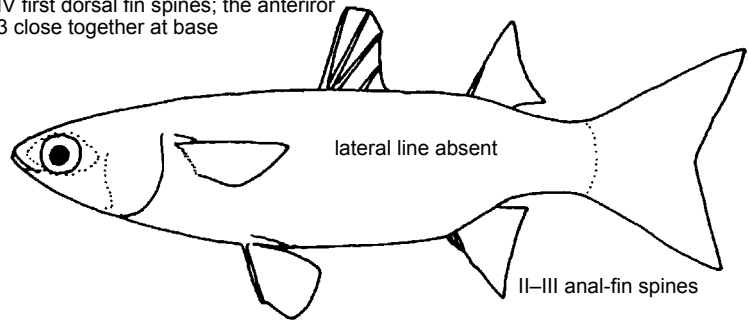
Antennarius nummifer, KAUM-I. 24060, 5.9 cm SL
Gulf of Thailand (SS), 5 Oct. 2009

MUGILIDAE

Mulletts

Medium to large sized (up to 100 cm) moderately slender fishes. Body subcylindrical, compressed posteriorly; lateral line absent. Head subcylindrical, flattened dorsally in many species; eyes often partly covered by well-developed adipose eyelid; mouth moderately small, terminal or inferior; teeth minute or absent. Two dorsal fins well separated from one another; first dorsal fin with IV pungent spines, the anterior three close together at base; second dorsal fin with I spine and usually 9–10 soft rays; anal fins with II–III spines and 7–12 soft rays; pectoral fins high on side of body; pelvic fins subabdominal, with I spine and 5 rays; caudal fin lunate, emarginate or nearly truncate. Scales cycloid or ctenoid, moderately large; enlarged axillary scales usually present at base of pectoral and pelvic fins. **Color:** head and

IV first dorsal fin spines; the anterior 3 close together at base



body more or less silvery, darkened dorsally; fins transparent, dusky or yellowish.

Remarks: fast swimming fishes; inhabits coastal waters (usually to depths of 20 m) including estuaries; often enter freshwater areas and lagoons. Frequently schooling. Feed on detritus or small organisms. Many species are important to fisheries, caught by various nets (e.g., seines, cast nets,

and gill nets) and usually marketed fresh, frozen, salted or boiled; roe may be also marketed; often used as live bait in tuna fishing. Generic assignment follows Senou (2002) and Ghasemzadeh et al. (2004).

Similar families occurring in the area: Atherinidae – first dorsal fin with III–VIII flexible spines, anterior three spines separate at base; a single anal-fin spine. (K. Shibukawa)

Ellochelon vaigiensis (Quoy & Gaimard, 1825)

Squaretail Mullet

D IV + 7–9; A III, 8; P₁ 15–18; LR 25–29. Body moderately robust (depth usually 20–27% of SL), compressed posteriorly; no elongate scale (axillary scale) above pectoral-fin base. Head wider than deep, flattened dorsally; adipose eyelid poorly developed; hind tip of maxilla exposed when mouth closed. Second dorsal and anal fins pointed but not falcate; caudal fin truncate. Scales ctenoid. Pyloric caeca much divided, up to 23 in about 2 bunches. **Color:** head and body silvery, darkened dorsally; 5–6 indistinct, dusky longitudinal stripes on body; pectoral fin entirely black; anal and caudal fins yellowish. **Size:** 60 cm SL, commonly to 35 cm TL. **Distribution:** Indo-Pacific. **Remarks:** found in shallow coastal waters, and enters estuaries. Marketed fresh and salted.

(K. Shibukawa & S. Tafzilmeriam)



Ellochelon vaigiensis, KAUM–I. 47409, 21.7 cm SL
Ang Sila, 15 June 2012

Moolgarda cunnesius
(Valenciennes, 1836)

Longarm Mullet

D IV + 9; A III, 9; P₁ 15–17; LR 37–43; LGR 62–75. Body elongate, relatively robust. Head deeper than wide, dorsally flattened. Second dorsal and anal fins weakly scaled, with scales only on anterior and basal parts. Maxillary slightly curved downwards and anterior edge of preorbital weakly concave. Scale cycloid. Adiposed eyelid less developed, usually covering as rim around eye. 18 or less circumpectuncular scales. Caudal fin forked. **Color:** body greenish gray on back, flanks and abdomen silvery. Second dorsal and anal fin with black margin. A conspicuous black spot at origin of pectoral fin. **Size:** attains about 14 cm SL. **Distribution:** Indo-Pacific. **Remarks:** usually caught by locals by casting nets around seashore including estuaries. Marketed fresh.

(P. Musikasinthorn)



Moolgarda cunnesius, KAUM-I. 33073, 11.9 cm SL
Prachuap Khiri Khan, 12 Nov. 2010

Paramugil parmatus
(Cantor, 1849)

Broadmouthed Mullet

D IV + 9; A III, 9; P₁ 13–15; LR 24–26. Body deep (depth at usually 32–42% of SL), compressed posteriorly. Head wider than deep, flattened dorsally; adipose eyelid poorly developed; hind tip of maxilla exposed when mouth closed. Second dorsal and anal fins pointed but not falcate; caudal fin emarginate. Scales ctenoid. **Color:** head and body silvery, greenish or olive brown dorsally; 5–6 indistinct, dusky longitudinal stripes on body; margin of caudal fins slightly darkish. **Size:** 30 cm. **Distribution:** Andaman Sea, Eastern Indian Ocean, and Western Pacific. **Remarks:** found in shallow coastal waters, and enters estuaries and rivers. (K. Shibukawa)

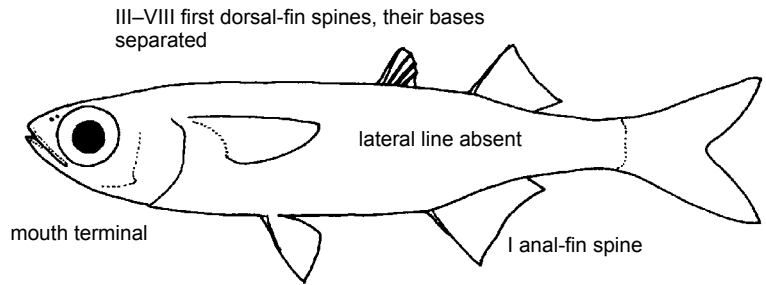


Paramugil parmatus, KAUM-I. 22938, 9.3 cm SL
Bang Pakong, 31 Aug. 2009

ATHERININIDAE

Silversides

Small to medium sized marine and freshwater fishes; maximum size about 20 cm in the area, commonly 5–10 cm. Body slender cylindrical or somewhat compressed with round belly. Eyes large; interorbital area flat; mouth small and terminal; hind tip of upper jaw not extending to posterior margin of eye. Two dorsal fins well separated, the first with III to VIII flexible spines separated each other at base; the second dorsal and anal fins with a single spine followed by soft rays (D₂ I, 7–13; A I, 8–21); caudal fin forked; pectoral fins high on the sides of body with 10–19 rays; pelvic fins abdominal to subabdominal with I, 5. Scales cycloid, relatively large; lateral line absent. **Color:** body greenish or greenish brown dorsally, silvery ventrally; a broad silvery (black in preserved specimens) stripe on the side of body.



Remarks: occurring in tropical to temperate marine, estuarine, and freshwater areas; usually found in beaches and seagrass areas. Eggs with entangling filaments on chorion.

Similar families occurring in the area: Atherinidae is distinguished from the following similar families in having round belly, anus located behind pelvic fin base, 2 dorsal fins, first dorsal-fin spines separated each other

at base, and a single anal fin spine. Engraulidae – hind tip of upper jaw extending beyond posterior margin of eye; a single dorsal fin; no spines in fins. Isonidae – body compressed with keeled belly. Mugilidae – first dorsal fin with IV spines, anterior 3 spines close together at base; II or III anal fin spines. Phallostethidae – anus anterior, located under head.

(S. Kimura)

Atherinomorus duodecimalis (Valenciennes, 1835)

Tropical Silverside

D V–VI + I, 8–11; A I, 11–14 (usually I, 12–13); P₁ 14–17; LR 35–38; LGR 20–25. Body slender; somewhat compressed. Mouth small, upper jaw just reaching to a vertical through front margin of eye or slightly beyond it; ascending process of premaxilla short and broad; dentary with a tubercle at the posterior end; preopercle notched. Anus situated in front of pelvic-fin tips. Hind margin of lateral scales entire. **Color:** greenish gray dorsally; a narrow (less than 1 scale width) silvery longitudinal band on side; one or two rows of dark spots usually present below midlateral band. **Size:** maximum length about 10 cm. **Distribution:** East Indian Ocean and West Pacific, from Sri Lanka to New Caledonia. **Remarks:** occurring in beaches and seagrass area. (S. Kimura)



Atherinomorus duodecimalis, KAUM-I. 24171, 6.4 cm SL
Bang Saen, 1 Oct. 2009

Atherinomorus lacunosus
(Forster, 1801)

Wide-banded Hardyhead Silverside

D IV–VII + I, 9–11; A I, 12–16; P₁ 15–18; LR 40–44; LGR 18–24; V 20–25 + 18–22 = 41–45. Body rather stout, deep; anus near or usually beyond pelvic-fin tips; mouth large, upper jaw reaching to or slightly beyond a vertical through front margin of pupil; ascending process of premaxilla short and broad; upper margin of the dentary almost flat distally, without a distinct tubercle at the posterior end; posterior margin of lateral scales usually entire, but sometime crenulated. **Color:** body greenish tan dorsally; a broad (ca. 1.5 scale width) silvery longitudinal band on side. **Size:** maximum length about 14 cm SL. **Distribution:** almost entire Indo-Pacific, from East Africa to Tonga. **Remarks:** occurring in beaches, sometimes entering estuaries. The genus *Atherinomorus* is characterized by having a short and blunt ascending process and



Atherinomorus lacunosus, KAUM–I. 23420, 8.9 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

a low and wide lateral process of the premaxilla. Seven species of *Atherinomorus* (*A. aetholpis*, *A. crenolepis*, *A. duodecimalis*, *A. endrachtensis*, *A. lacunosus*, *A. pinguis*, and *A. regina*) are distributed in the West Pacific coasts of Southeast Asian countries. Of these, *A. endrachtensis*, *A. lacunosus*, and *A. pinguis* differ from the remaining four species by lacking a tubercle at the posterior end of dentary. Although *A. lacunosus* closely resem-

bles *A. pinguis* in general morphology, the former is distinguished from the later in having a wider midlateral band (the lower margin reaching to almost the center of the fourth scale row at level of the anal fin origin vs. the lower margin reaching to the ventral end of the third scale row in the later) and more numerous midlateral scales (40–44 vs. 38–41). *Atherinomorus endrachtensis* has 33–35 midlateral scales. (S. Kimura)

Hypoatherina valenciennesi
(Bleeker, 1853)

Sumatran Silverside

D IV–VII + I, 8–10; A I, 10–13; P₁ 14–16; LR 40–46; LGR 22–26. Body elongated, compressed, somewhat deep (body depth 16–18% SL). Mouth small, upper jaw just reaching to a vertical through front margin of eye or slightly beyond it; ascending process of premaxilla moderately long and slender; dentary notably elevated posteriorly; preopercle notched. Anus situated in front of pelvic fin tips. Hind margin of lateral scales obviously crenulated. **Color:** greenish gray dorsally, whitish below; a narrow (less than 1 scale width) silvery longitudinal band on side, not extending to caudal fin; one or two rows of dark spots usually present below midlateral band. **Size:** maximum length about 11 cm SL. **Distribution:** widely distributed in eastern Indian Ocean and West Pacific, from India to New Hebrides Is,



Hypoatherina valenciennesi, KAUM–I. 33125, 6.8 cm SL
Bang Pakong, 19 Nov. 2010

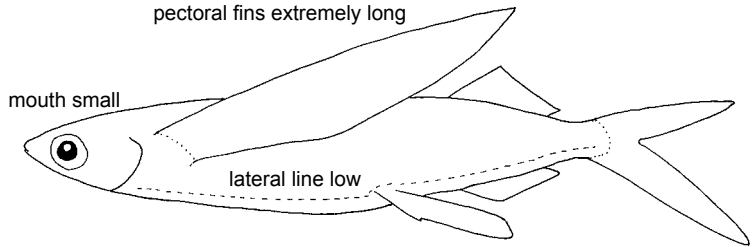
north to Japan and Korea. **Remarks:** occurring in beaches, seagrass and mangrove areas, and estuaries.

(S. Kimura)

EXOCOETIDAE

Flyingfishes

Medium sized (up to about 40 cm) marine fishes. Body elongate, cylindrical; flattened ventrally in some species. Head short; snout blunt, shorter than eye in all Western Central Pacific species. Mouth small; jaws of equal size; teeth on jaws absent or very small. Gill rakers well developed; upper pharyngeal bones of third gill arches close together, but not fused into a single plate. Fin spines absent; dorsal and anal fins set equally far back on body, their bases short and opposed; pectoral fins high on sides, strikingly long, always extending beyond dorsal-fin origin; pelvic fins abdominal in position, and greatly enlarged in many, but not all, species; caudal fin deeply forked, its lower lobe longer than the upper. Scale large, cycloid; lateral line pres-



ent on lower body. Young stages (to about 10 cm) quite different in appearance from adults, with pectoral fins shorter, dorsal fin often higher than in adults, color patterns variable, and spots and bars often developed; single or paired chin barbels conspicuous in many species. **Color:** dark dorsally, pale laterally and ventrally; pectoral fins in some species with dark spots or pale stripes; dorsal fin in some species with black pigment.

Remarks: inhabits surface waters of open ocean as well as neritic and inshore areas. Important food fish.

Similar families occurring in the area: Hemiramphidae – pectoral fins short to medium length, never reaching dorsal-fin origin; lower jaw much longer than upper jaw, except in some genera; body more elongate; upper pharyngeals of third arch fused, forming a single plate.

(M. Matsunuma)

Cypselurus naresii (Günther, 1889)

Pharao Flyingfish

D 10–12; A 7–9; P₁ 14–15; P₂ 6; GR 7–8 + 15–16 = 22–23; PDS 28–32; LL 45–48. Body elongate. Mouth small; lower jaw projecting. Lateral line without pectoral branch. Eye large. Dorsal-fin origin over before anal-fin origin; pectoral-fin long; caudal fin well-forked, length of lower lobe longer than upper lobe. **Color:** body silver, pale blue dorsally; dorsal and anal fin pale; pectoral fin dusky; caudal-fin black. **Size:** maximum 30 cm SL. **Distribution:** widely distributed in the Indo-West Pacific. **Remarks:** pelagic in neritic and oceanic surface waters.

(T. Yoshida)



Cypselurus naresii, KAUM-I. 33236, 14.5 cm SL off Chantha Buri (SP), 30 Nov. 2010

Cypselurus poecilopterus
(Valenciennes, 1847)

Yellowing Flyingfish

D 11–13; A 7–9; P₁ 14–16; P₂ 6; GR5–7 + 16–17 = 21–24; PDS 25–28; LL 45–48. Body elongate. Mouth small; lower jaw projecting. Lateral line without pectoral branch. Dorsal fin origin over before anal-fin origin; pectoral fin long; caudal fin well-forked, length of lower lobe longer than upper lobe. **Color:** body silver, blue dorsally; dorsal and anal fin pale; inner surface of pectoral fin with some black blotch; caudal fin black. **Size:** maximum 27 cm SL. **Distribution:** Indo-West Pacific, from the east coast of Africa to Australia, north to Japan. **Remarks:** pelagic in nearitic surface water. (T. Yoshida)



Cypselurus poecilopterus, KAUM-I. 22924, 10.8 cm SL
Bang Pakong, 31 Aug. 2009



Oxyporhamphus micropterus micropterus, KAUM-I. 23354, 11.2 cm SL
Bang Pakong, 22 Sept. 2009

Oxyporhamphus micropterus micropterus
(Valenciennes, 1847)

Bigwing Halfbeak

D 13–15; A 14–16; P₁ 11–13; P₂ 6; GR 7–9 + 21–26 = 28–34; PDS 28–33. Body elongate. Mouth small. Lateral line with pectoral branch. Dorsal fin large, its origin just above anal-fin origin; pectoral fin short, its posterior tip not reaching origin of anal-fin base; caudal fin well-forked, length of lower lobe longer than upper lobe. **Color:** body silver; dorsal fin black; pectoral fin with large black area; pelvic and caudal fin dusky. **Size:** maximum 17 cm SL. **Distribution:** widely distributed in the Indo-West Pacific. **Remarks:** pelagic in surface waters. (T. Yoshida)



Parexocoetus mento, KAUM-I. 33180, 9.8 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

Parexocoetus mento
(Valenciennes, 1847)

African Sailfin Flyingfish

D 9–11; A 10–12; P₁ 12–14; P₂ 6; PDS 23–26. Body elongate, cylindrical.

cal. Mouth small and terminal; both jaws of equal length; teeth on jaws noticeable (conspicuous to the touch). Lateral line with pectoral branch. Dorsal fin large, its origin well before anal fin origin; pectoral fin long, its posterior tip reaching end of anal fin base, with an uppermost ray unbranched; caudal fin well forked, length of lower lobe much longer than upper lobe. **Color:** body silver, green to blue dor-

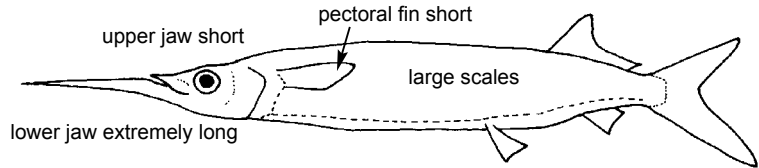
sally; dorsal fin uniformly pale; pectoral fins with pale oblique cross band, no dark spots; no black spot on pelvic fin **Size:** maximum 10 cm SL. **Distribution:** widely distributed in Indo-West Pacific, from Red Sea and East Africa to Marshall, Fiji, and Queensland, north to southern Japan. **Remarks:** pelagic in neritic surface waters, never spread to the open sea.

(M. Matsunuma)

HEMIRAMPHIDAE

Halfbeaks

Small to medium sized (up to 45 cm) elongate fishes with long, javelin-like lower jaw, projecting far beyond upper jaw. Body elongate and compressed; lateral line running along ventral margin of body with a branch to origin of pectoral fin. Lower jaw usually long and javelin-like, whereas upper jaw short and triangular; eyes large; several rows of small teeth on jaws; gill rakers 0–78. Dorsal and anal fins positioned at posterior part of body; dorsal fin with 8–25 soft rays; anal fin with 8–19 soft rays; no isolated finlets behind dorsal and anal fins; pectoral fin usually short, with 7–14 soft rays; pelvic fins abdominal, with 6 rays;



caudal fin rounded, truncate, emarginated or deeply forked. Scales moderately large, cycloid. **Color:** head and body silvery, darkened dorsally; tip of lower jaw tinged with red or orange in many species; fins hyaline, often with blackish markings.

Remarks: surface-swimming fishes, chiefly found in marine and brackish waters, whereas some in freshwaters. Omnivorous, feed on floating sea-

grass pieces, insects, crustaceans, and small fishes. Large species commonly esteemed as food fish, caught by seine and gill nets; some freshwater species often treated as aquarium fish.

Similar families occurring in the area: Belontiidae – usually both jaws elongate; scale small. Exocoetidae – pectoral fin very large; jaws short.

(K. Shibukawa)

Hemiramphus archipelagicus Collette & Parin, 1978

Jumping Halfbeak

D 12–15; A 10–13; P₁ 10–13; GR 6–8 + 19–24 = 25–32. Body elongate, sub-cylindrical. Lower jaw greatly prolonged, beak-like (broken in photographed specimen); upper jaw short and triangular, without scale; pre-orbital ridge (bony ridge behind nostril) absent. Dorsal fin without developed anterior lobe; pectoral fins relatively short, not reaching posterior nasal pit when folded forward; caudal fin rounded forked, lower lobe longer



Hemiramphus archipelagicus, KAUM-I. 23055, 16.3 cm SL
Gulf of Thailand (SS), 3 Sept. 2009

than upper lobe. **Color:** body silvery white, dark bluish dorsally; a dark stripe with black upper margin on laterally; no vertical bars on body side; beak dark with a bright red fleshy tip; caudal fin dusky yellow, tip of dorsal-

fin lobe with some yellow. **Size:** maximum about 23 cm SL. **Distribution:** western Indian Ocean and western Central Pacific. **Remarks:** found in coastal waters. (M. Matsunuma)

Hyporhamphus limbatus (Valenciennes, 1846)

Congaturi Halfbeak

D 13–16; A 13–16; P₁ 10–12; GR 23–37; PDS 30–38. Body elongate, stick-like. Origin of dorsal fin above anal-fin origin. Dorsal and anal fins situated in posterior portion of body. Anterior portion of dorsal and anal fins covered with scales. Lower jaw beak-like and greatly prolonged, equal to, or longer than head length. Upper jaw scaly, triangular-shape and short (width 0.6 to 0.8 times in its length). Preorbital distance 1.3 to 2.1 times in diameter of orbit and 0.75 to 1.2 times



Hyporhamphus limbatus, KAUM-I. 32928, 9.5 cm SL
Bang Pakong, 30 Oct. 2010

in length of upper jaw. preorbital ridge (bony ridge between nasal opening and eye) present; posterior branch to preorbital lateral-line canal absent. Caudal fin emarginate. **Color:** body greenish above, white ventrally, with the silvery lateral stripe widening posteriorly. Tip of beak reddish. **Size:** at-

tains about 22 cm TL. **Distribution:** Indo-West Pacific from the Persian Gulf to China along the mainland coast of Asia. **Remarks:** inhabits around water surface and enters estuaries and even freshwater habitats. Marketed fresh and dried.

(P. Musikasinthorn)

Hyporhamphus quoyi
Valenciennes, 1847

Quoy's Halfbeak

D 14–17; P₁ 11–13; A 13–17; PDS 36–43. Body elongate, subcylindrical. Lower jaw javelin-like, its length up to half of head length; width of upper jaw wider than its length; tip of upper jaw rounded (rather than pointed); bony ridge between eye and nasal fossa. Base of dorsal fin subequal to anal-fin base; dorsal- and anal-fin rays not modified; pelvic fin abdominal; caudal fin forked. Dorsal surface of upper



Hyporhamphus quoyi, KAUM-I. 33178, 14.7 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

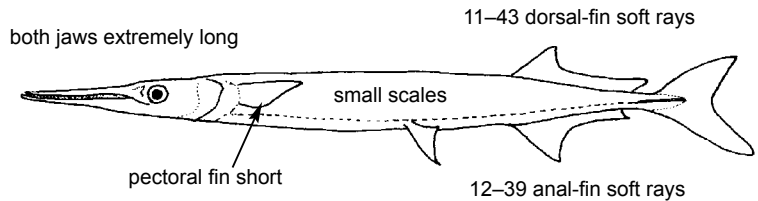
jaw with scales. **Color:** greenish gray dorsally, silvery ventrally; narrow longitudinal bluish silver stripe on mid-lateral body; tip of lower jaw red. **Size:** 31 cm SL. **Distribution:** Indo-

West Pacific. **Remarks:** found in protected bays, and frequently enters estuaries. Schooling fish, feeds on small crustaceans. Esteemed as food fish. Oviparous. (K. Shibukawa)

BELONIDAE
Needlefishes

Medium to large sized (up to 2 m) elongate fishes. Body elongate, with both jaws extended into long beaks filled with sharp teeth; nostrils in a pit anterior to eyes. No spines in fins; dorsal fin single with 11–43 rays; anal fin with 12–39 rays; dorsal and anal fins posterior in position; pelvic fins located in abdominal position, with 6 rays; pectoral fins short with usually 10–20 rays; caudal fin variable, rounded to forked. Scales small, cycloid; lateral line running down from pectoral-fin origin and then along ventral margin of body.

Color: these fishes live at the surface and are protectively colored for this mode of life by being green



or blue on back and silvery white on lower sides and belly; usually, a dusky or dark blue stripe along sides; tip of lower jaw frequently red or orange.

Remarks: mostly found in marine, but some species occur in freshwater. Carnivorous, feeding largely on small fish. Many species are important for fisheries; caught by casting or trolling surface or near-surface lures.

Similar families occurring in the area: Hemiramphidae – only the lower jaw prolonged or neither jaw prolonged and lacking the needle-sharp teeth that stud the upper and lower jaws of needlefishes. Sphyraenidae – jaws pointed but not prolonged into a beak; 2 dorsal fins, the first spiny; pelvic fins in thoracic position.

(M. Matsunuma)

Ablennes hians
(Valenciennes, 1846)

Flat Needlefish

D 23–26; A 24–28; P₁ 13–15; PDS 340–430; V 87–93. Body elongate, greatly compressed laterally; no caudal peduncle keel; lateral line without pectoral branch; jaws greatly elongate, studded with small sharp teeth; gill rakers absent. Dorsal and anal fins with high falcate lobes anteriorly; origin of dorsal fin posterior to anal fin origin; pectoral fin falcate; caudal fin



Ablennes hians, KAUM-I. 33044, 35.4 cm SL
Prachuap Khiri Khan, 9 Nov. 2010

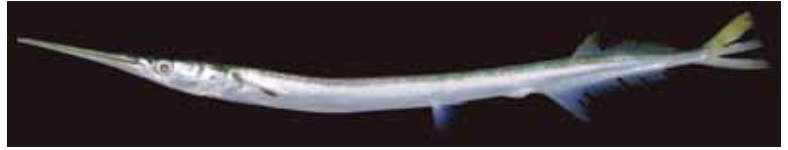
deeply forked, lower lobe much longer than upper lobe. **Color:** body silvery white, bluish green dorsally; an indistinct dark blue stripe along sides; about 12–14 prominent dark vertical bars on sides; tip of lower jaw red;

scales and bones green. **Size:** maximum 120 cm TL. **Distribution:** widely distributed in tropical to warmtemperate waters in worldwide. **Remarks:** found in offshore surface waters. Marketed fresh. (M. Matsunuma)

Strongylura leiura
(Bleeker, 1850)

Banded Needlefish

D 17–21; A 23–25; P₁ 10–11; PDS 130–180. Body elongate, laterally compressed. Upper and lower jaws extended into long beaks with numerous sharp teeth. Gill rakers absent. Scale small, cycloid and easily detached. Origin of dorsal fin over seventh to tenth ray of anal fin. Bases of dorsal and anal fins covered with scales. Caudal peduncle without lateral keels. Caudal fin emarginate. **Color:** top of head and back greenish with a silver stripe along sides widening posteriorly, lower sides and



Strongylura leiura, KAUM-I. 22963, 24.4 cm SL
Bang Pakong, 31 Aug. 2009

ventral surface white. Pelvic fins whitish. Pectoral fins with a distal dark spot, tip of fins yellow when fresh. Tips of dorsal and anal-fin lobes yellowish, some black pigmentation along middle of fins. Caudal fin dark with a yellowish tinge to upper lobe. **Size:** attains about 73 cm TL. **Distribution:** Indo-West

Pacific from South Africa east along the coasts of Africa, Pakistan, India and Sri Lanka to the western Central Pacific.

Remarks: usually seeks for small fish near water surface. Found in coastal areas including estuaries throughout Thai waters. Marketed fresh.

(P. Musikasinthorn)

Strongylura strongylura
(van Hasselt, 1823)

Spottail Needlefish

D 12–15; A 15–18; P₁ 10–12; PDS 100–130; V 59–65. Body elongate, belly rounded; no caudal peduncle keel; lateral line with pectoral branch; jaws greatly elongate, studded with sharp teeth; gill rakers absent. Dorsal and anal fins with moderate lobes anteriorly; origin of dorsal fin posterior to anal fin origin; pectoral fin not falcate; caudal fin rounded or truncate. **Color:** body silvery white, grayish to greenish dor-



Strongylura strongylura, KAUM-I. 22930, 16.8 cm SL
Bang Pakong, 31 Aug. 2009

sally; no markings on body sides; caudal fin with a prominent round black spot basally. **Size:** 40 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in coastal areas and mangrove.

(M. Matsunuma)

Tylosurus acus melanotus
(Bleeker, 1850)

Keel-jawed Needlefish

D 24–27; A 22–24; P₁ 11–13; PDS 280–310. Body elongate, rounded in cross-section. Upper and lower jaws extended into long beaks with numerous sharp teeth. Canine-like teeth on posterior part of upper jaw directed vertically. Gill raker absent. A conspicuous appendage sometimes present at tip of lower jaw. Anterior part of dorsal fin with a low lobe (10.5–13.3 times in body length). Scale small, cycloid and easily detached. A distinct black lateral



Tylosurus acus melanotus, KAUM-I. 47455, 28.8 cm SL
Gulf of Thailand (SS), 20 June 2012

keel on caudal peduncle. Caudal fin deeply forked. **Color:** body dark bluish above, silvery white below. Juvenile with elevated black lobe in posterior portion of dorsal fin. **Size:** attains about 90 cm TL. **Distribution:** temperate to tropical regions of Indo-West Pacific

from South Africa through the Central and South Pacific. **Remarks:** found around offshore and seashore where it seeks for small fishes near water surface. Marketed fresh.

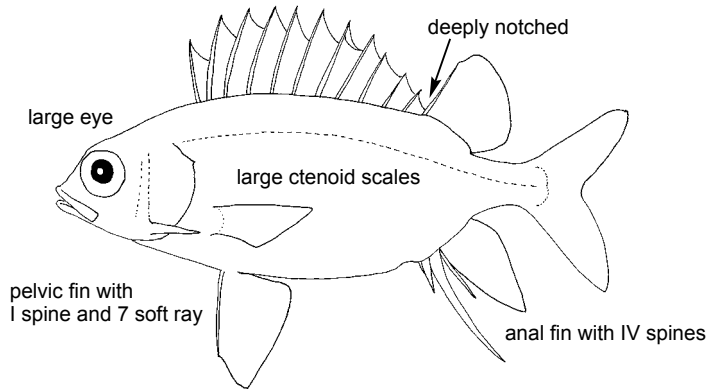
(P. Musikasinthorn)

HOLOCENTRIDAE

Soldierfishes

Medium sized (up to 45 cm SL) marine fishes. Body ovate to moderately elongate, compressed. Head with ridges and mucous channels dorsally; edges of external bones of head serrate or with spines; eye very large; mouth moderately large, terminal or with lower jaw projecting; 2 supramaxillae; small villiform teeth in bands in jaws and on roof of mouth (on vomer, palatines, and for some species on ectopterygoids). Dorsal fin base long, with IX–XIII stout spines and 12–17 soft rays; deeply notched between spinous and soft portions or between last 2 dorsal fin spines; anal fin with IV spines, the third stoutest and often longest, and 7–16 soft rays; caudal fin forked with 18 or 19 principal caudal rays; pelvic fins with I spine and 7 soft rays. Large and very rough ctenoid scales; lateral line complete with 25–56 pored scales.

Color: usually reddish or pink; scale on body sides often lighter or



silvery white, thus forming longitudinal bands; black pigment somewhat present on opercular membrane or as markings in fins; fins with yellow or white markings.

Remarks: mostly found in shallow coastal waters. Feeds on large zooplankton, benthic invertebrates, and small fishes. Some species of *Sargocentron* having the preopercular spine with venomous.

Similar families occurring in the area: none. The serrate bony edges and spines on head, in combination with the large eyes, the very long base on spinous portion of dorsal fin, the presence of IV anal spines and 7 pelvic soft rays, readily distinguishes the squirrelfishes and soldierfishes from other fish families occurring in the area. (U. Satapoomin)

Myripristis hexagona (Lacepède, 1802)

Doubletooth Soldierfish

D XI, 13–15; A IV, 11–14; P₁ 14–16; LLp 25–29; GR 12–17 + 24–34. Body moderately deep; corner of preopercle without a sharp spine; lower jaw prominently projecting; 2 pairs of tooth patches anteriorly on lower jaw just outside gape; vomerine teeth in a broad V-shaped patch; numerous small scales in ventral part of axil of pectoral fins. **Color:** scales of body silvery to white, the edges dark red to reddish brown; a board red band from upper end of gill opening to axil of pectoral fin, enclosing opercular membrane which is darker red or reddish brown; iris red, sometimes with a blackish blotch above and below pupil; spinous dorsal fin light red and whitish basally, broadly bright red distally; soft dorsal, anal, and caudal fins pale red, the distal part of the lobes of these fins more red than the proximal



Myripristis hexagona, KAUM-I. 32872, 13.9 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

part. **Size:** maximum length about 20 cm. **Distribution:** Indo-Pacific: East Africa to Samoa, north to the Ryukyu Islands, south to the Great Barrier Reef and New Caledonia. **Remarks:** a

reef-associate species found in moderately shallow water to the depth of 40 m. Feeds at night, mainly on zooplankton. (U. Satapoomin)

Myripristis robusta

Randall & Greenfield, 1996

Robust Soldierfish

D X-I, 14; A IV, 12–13; P₁ 15; LL_p 28; GR 10 + 20–22 = 30–32. Body oblong. Body deep, 2.1–2.2 in SL. Interorbital very narrow, 5.7–5.9 in head. Lower jaw slightly to moderately projecting when mouth closed; 2 pairs of tooth patches at front of lower jaw outside mouth. Inner pectoral axil without small scales. **Color:** red dorsally, the scale edges darker red; side of body pale orange-yellow to yellowish white, edge of scales orange-red; opercular margin black extending nearly to level of lower edge of eye; spinous dorsal fin red; soft dorsal, anal, and caudal fins red with white leading edges and a bright red area distally on lobes, a small blackish blotch at lobe tips; pectoral fins light red, pelvic fins light red with white leading edge; peritoneum black. **Size:** maximum total length about 22 cm. **Distribution:** currently known from Papua New Guinea, the Philippines,



Myripristis robusta, KAUM-I. 32959, 12.2 cm SL off Chantha Buri (SP), 1 Nov. 2010

and the Gulf of Thailand. **Remarks:** occurs on sheltered reefs, around isolated rock/coral outcrops on silty sand and rubble bottom, in 30–45m. (U. Satapoomin)

Myripristis violacea

Bleeker, 1851

Violet Soldierfish

D X-I, 13–16; A IV, 12–14; P₁ 14–15; LL_p 27–29; GR 12–16 + 26–32 = 38–48. Body moderately deep, 2.2–2.5 in SL. Interorbital moderately broad, 3.6–4.1 in head. Mouth terminal or lower jaw slightly projecting when mouth closed; single pair of tooth patches at front of lower jaw outside mouth. Lower part of inner pectoral axil with small scales. **Color:** silvery to silvery pink, scales dorsally on body with dark brown to nearly black edges; opercular margin dusky red; outer part of spinous dorsal fin red to red-orange, the basal part translucent whitish, tinged with red; soft dorsal, anal, and caudal fins red, the lobe tips broadly bright red, with a narrow white leading edge; pectoral fins pale red, pelvic fins pink with white leading edge. **Size:** maximum total length about 23 cm, commonly to 18 cm. **Distribution:** Indo-Pacific,



Myripristis violacea, KAUM-I. 33139, 11.0 cm SL off Chantha Buri (SP), 22 Nov. 2010

from the coast of East Africa to French Polynesia and the Line Islands. **Remarks:** reef-associated species, found in shallow protected waters of bays, lagoons, and outer refs in 1–30 m. (U. Satapoomin)

Ostichthys japonicus
(Cuvier, 1829)

Japanese Soldierfish

D XII, 12–14; A IV, 10–12; P₁ 16–17; LL_p 28–30; GR 7–10 + 12–14. Body oblong. Dorsal profile of head convex. Anterior end of nasal bones of adults or subadults without a forward-directed spine. Premaxillary groove broadly V-shaped, no spine at corner of preopercle notably larger than spinules along entire margin. Scales above lateral line to middle of spinous portion of dorsal fin 3.5. **Color:** edges of scales red, the centers silvery pink; spinous portion of dorsal fin mottled light red and whitish; remaining fins with light red rays and pale membranes; iris red. **Size:** maximum length about 45 cm. **Distribution:** West Pacific, from southern Japan, Fiji and Tuvalu to Australia; also known from the Andaman Sea. **Remarks:** mostly caught by hook-and-line in the depth range of 90–195 m. (U. Satapoomin)



Ostichthys japonicus, KAUM-I. 23147, 11.3 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

Sargocentron rubrum
(Forsskål, 1775)

Redcoat

D XI, 12–14; A IV, 8–10; P₁ 13–15; LL 34–38; GR 6–8 + 9–12. Body moderately deep; dorsal profile of head convex; snout short and blunt; corner of preopercle with a sharp spine; nasal fossa without spinules; first suborbital bone with 1 or 2 short lateral spines near upper margin. Last dorsal fin spine shortest; second anal fin spine very strong; caudal fin forked with slightly rounded tips. Scale rows above lateral line to middle of spinous portion of dorsal fin 2.5; cheek with 5 oblique rows of scales. **Color:** body with alternate stripes of silvery white and brownish red; a triangular streak of brownish red on cheek; often a concentration of pigment forming an elongate brown spot beneath soft portion of dorsal fin and a roundish blotch above base of soft portion of anal fin; pelvic fin spine white with red membrane; upper and lower edges of cau-



Sargocentron rubrum, KAUM-I. 33046, 12.4 cm SL
Prachuap Khiri Khan, 9 Nov. 2010

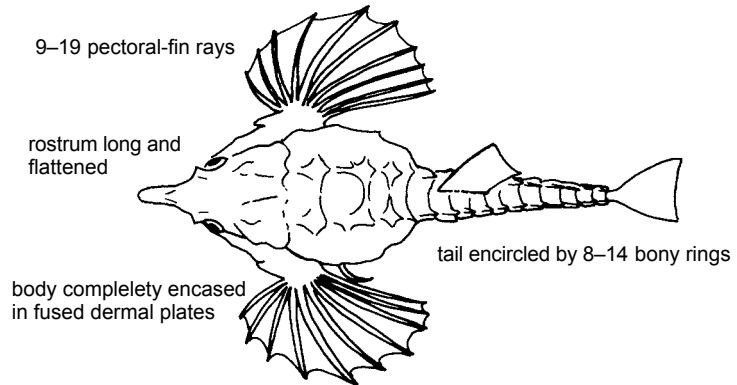
dal fin brownish red; rest of caudal fin and soft portions of dorsal and anal fins yellowish; no dark spot on pectoral fin axil. **Size:** maximum length 32 cm SL. **Distribution:** Indo-West Pa-

cific, from the Red Sea to New Caledonia and New South Wales of Australia, north to southern Japan. **Remarks:** found in protected habitats of shallow waters. (M. Matsunuma)

PEGASIDAE

Seamoths (Seadragons)

Small fishes (to 18 cm); body broad and depressed, completely encased in fused dermal plates; tail encircled by 8–14 bony rings. Mouth small and inferior; toothless; rostrum long and flattened arising from a fusion of the nasals. Gill opening restricted to a small hole on dorsolateral surface behind head; gill filaments lobe-like and with tufts. Dorsal and anal fins short, spineless and usually with 5 soft rays each. Pectoral fins large, wing-like, inserted horizontally, with 9–19 unbranched, soft or spinous soft rays; pectoral-fin rays interconnected by broad, transparent membranes. Pelvic fins thoracic, tentacle-like, with 1 spine and 2–3 unbranched soft rays. Caudal fin with 8 unbranched rays. Swim bladder absent. Vertebrae 19–22. **Color:** highly variable, capable of rapid color changes to match substrata; head and body light to dark brown, olive-brown, reddish-brown, or almost black; dorsal and lateral



body surface often with reticulations or mottled lines; pectoral fins with broad white margin and small brown spots; unpaired fins with small brown spots in irregular rows.

Remarks: Benthic, found on sand, gravel or muddy bottoms. They apparently “walk” over bottom with the aid of tentacular pelvic fins. Feed on minute zoobenthos with extremely

protrusible snout.

Similar families occurring in the area: Dactylopteridae – head large, snout blunt, body covered with scutelike scales, not encased in fused bony plates, tail not encased in bony rings; pectoral fins extremely large, with 28–37 rays. (U. Satapoomin)

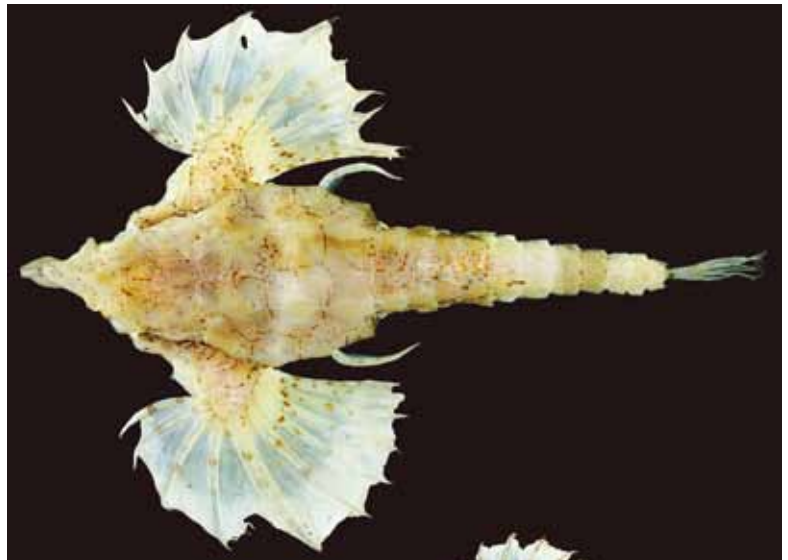
Pegasus laternarius

Cuvier, 1816

Brick Seamoth

D 5; A 5; P₁ 10–12. Rostrum relatively short (more developed in males); 4 pairs of dorsolateral body plates; 5 pairs of ventrolateral body plates; dorsal surface of head and body relatively smooth, lacking deep pits; 11 tail rings; dorsal surface of last tail ring lacking spine. Pectoral fin large, fan-like; 5th ray stout, thicker than other rays. Pelvic-fin spine and first ray forming an elongate, tentacular structure. **Color:** variable, dull to bright yellow or blue, with dark brown reticulations or mottled on dorsal and lateral surfaces; pectoral fin hyaline, with numerous brown spots on its rays. **Size:** 8 cm. **Distribution:** Sri Lanka, Indonesia (Flores and Bali), South China Sea, and north to southern Japan. **Remarks:** found on sand or silt bottoms in shallow waters.

(M. Matsunuma)



Pegasus laternarius

KAUM-I. 47680, 6.1 cm SL
Gulf of Thailand (SS), 6 July 2012



Pegasus laternarius

KAUM-I. 47679, 4.7 cm SL
Gulf of Thailand (SS), 6 July 2012

Pegasus volitans
Linnaeus, 1758

Longtail Seamoth

D 5; A 5; P₁ 9–12. Body elongated; rostrum long; 4 pairs of dorsolateral body plates; 5 pairs of ventrolateral body plates; dorsal surface of head and body relatively smooth, lacking deep pits; 12 tail rings; dorsal surface of last tail ring lacking spine. Pectoral fin large, fan-like; 5th ray stout, thicker than other rays. Pelvic-fin spine and first ray forming an elongate, tentacular structure. **Color:** variable, brown or olive to brownish black dorsally and laterally, lighter ventrally; pectoral fin hyaline, with numerous brown spots. **Size:** 11 cm. **Distribution:** Indo-west Pacific, ranging from east coast of Africa and Persian Gulf east to Australia, and north to southern Japan. **Remarks:** found on sand or silt bottoms in shallow waters.

(M. Matsunuma)



Pegasus volitans, KAUM-I. 47411, 8.8 cm SL
 Ang Sila, 15 June 2012



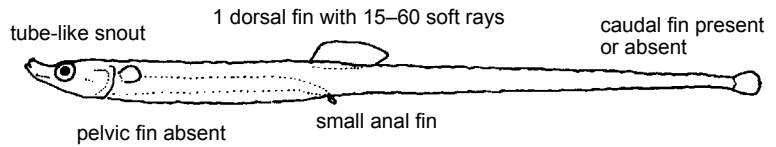
Pegasus volitans, KAUM-I. 47412, 8.5 cm SL
 Ang Sila, 15 June 2012

SYNGNATHIDAE

Pipefishes (Seahorses)

Usually small fishes (4–50 cm TL). Body typically slender and elongate, without scales, encased in a series of bony rings. Head either along same axis as rest of body (subfamily Syngnathinae), or bent in ventral direction from main body axis (subfamily Hippocampinae). Snout generally long and tubular; mouth small, toothless, located at tip of snout. Gill openings reduced to a pore in the opercular membrane. Branchiostegal rays 1–3. No spines in fins; pelvic fin absent, other fins variously present or absent; a single dorsal fin, usually with 15–60 soft rays; anal fin small, with 2–6 rays; caudal fin, if present, with 8–10 rays; pectoral fins usually with 10–23 rays. Some species develop dermal appendages along body, head, and snout. No lateral line.

Color: variable with the species, generally adapted to the preferred habitat; species living on seagrass, sand, and coral rubble usually have



gray, green, brown, or black ground color with various patterns; coral-reef species sometimes colorful with white, yellow, orange, blue, red, and black stripes and bands; fins usually transparent; caudal fin sometimes with colorful patterns.

Remarks: usually live in coastal marine waters; some are found in estuarine waters, and only a few in fresh water; marine species found in various habitats. Feed on minute benthic and planktonic fauna, preferably microcrustaceans, by sucking into a tubular snout. Males have a brood pouch in which the eggs are laid and where they are fertilized and incubated. Mostly no or minor importance as food, but some

species are for the aquarium fishes or used as medicine on Asian markets.

Similar families occurring in the area: Aulostomidae – larger, reaching 80 cm TL; body compressed and scaly; distinct separate dorsal fin spines, followed by a normal second dorsal fin; caudal fin well developed; lateral line present. Fistulariidae – larger, over 100 cm TL; body depressed rather than compressed; with minute prickles and linear row of scutes; caudal fin forked with a distinct elongate filament. Solenostomidae – body short, compressed, with large stellate bony plates; 2 separate dorsal fins.

(M. Matsunuma)



Halicampus grayi Kaup, 1856

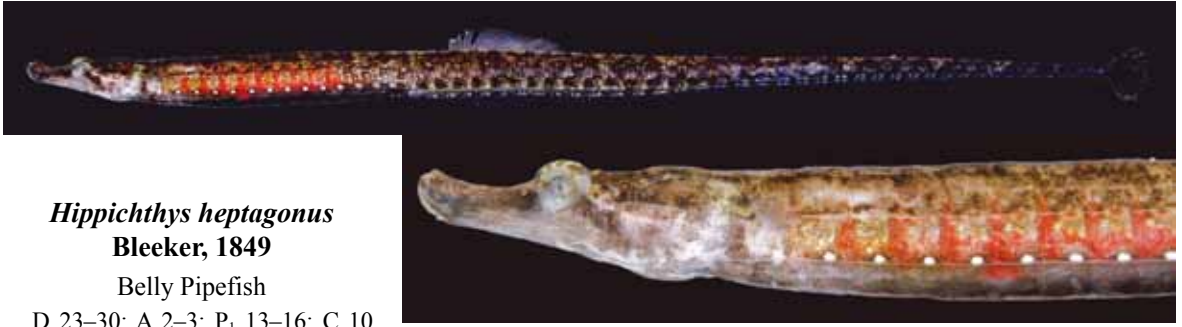
Gray's pipefish

D 19–22; A 3–5; P₁ 15–20; C 10. Trunk rings 17–18; tail rings 32–37. Body elongated; snout relatively short (2.0–2.6 in head length); superior trunk and tail ridges discontinuous; inferior trunk and tail ridges discontinuous, lateral trunk ridge confluent with inferior tail ridge; subdorsal rings arched dorsally; body with poorly developed dermal flaps or lacking. **Color:** brownish, with 10–14 diffuse dark bars. **Size:** 20 cm. **Distribution:** Gulf

of Aden, Sri Lanka, and Australia north to southern Japan. **Remarks:** found on sandy silt bottoms in shallow waters to 100 m depth.

(M. Matsunuma)

Halicampus grayi, KAUM-I. 47690, 18.0 cm SL
Gulf of Thailand (SS), 6 July 2012



Hippichthys heptagonus
Bleeker, 1849

Belly Pipefish

D 23–30; A 2–3; P₁ 13–16; C 10. Trunk rings 14–15; tail rings 36–42. Body elongated; snout relatively short (1.9–2.8 in head length); superior trunk and tail ridges discontinuous; inferior trunk and tail ridges continuous; head and body lacking dermal flaps. **Color:** variably tan to dark brown, usually lacking distinct marking; dorsum and side of body plain, mottled, or with diffuse pale bars. **Size:** 15 cm.

Hippichthys heptagonus, KAUM-I. 23391, 10.9 cm SL
Bang Pakong, 22 Sept. 2009

Distribution: Indo-west Pacific, ranging from east coast of Africa to Solomon Islands, and north to southern Japan. **Remarks:** found in estuaries, lower reaches of coastal rivers, and mangroves. (M. Matsunuma)

Hippocampus trimaculatus
Leach, 1814

Longnose Seahorse

D 18–22; P₁ 16–19. Caudal fin absent; pectoral and anal fins present; trunk rings 11, tail rings 38–43; coronet low, poorly developed; lacking dermal flap on head and body. **Color:** tan to orange, or black, usually with dark spots on dorsolateral surfaces of first, fourth and seventh trunk rings. **Size:** 22 cm. **Distribution:** Indo-west Pacific, ranging from Oman east to Tahiti, and Australia north to Japan. **Remarks:** found on rocky or sandy bottoms in depths of 6–22 m.

(M. Matsunuma)



Hippocampus trimaculatus, KAUM-I. 47410, 14.1 cm SL
Ang Sila, 15 June 2012



Trachyrhamphus longirostris

Kaup, 1856

Straightstick Pipefish

D 26–30; A 4; P₁ 16–19; C 9. Trunk rings 21–24; tail rings 42–53. Body very elongated; snout moderately long (1.9–2.1 in head length); superior trunk and tail ridges discontinuous; inferior trunk and tail ridges discontinu-

ous; median dorsal snout ridge serrated with numerous small spines; head and body lacking dermal flaps. **Color:** tan to brown, usually lacking distinct marking; sometimes with 12–13 diffuse dark bars on lateralis. **Size:** 33

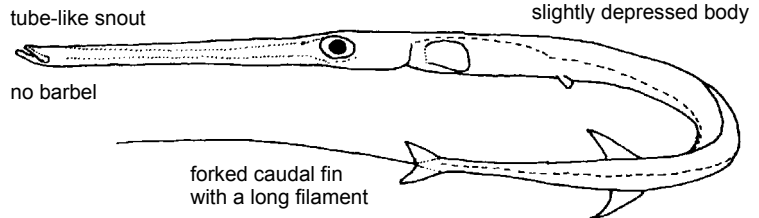
cm. **Distribution:** Indo-west Pacific, ranging from east coast of Africa to Solomon Islands, and north to southern Japan. **Remarks:** found in estuaries, lower reaches of coastal rivers, and mangroves. (M. Matsunuma)

Trachyrhamphus longirostris, KAUM-I. 23855, 27.9 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

FISTULARIIDAE

Cornetfishes

Large elongate marine fishes, reaching 2 m TL. Body extremely elongate and slightly depressed. Mouth small, with a long tubular snout; teeth in jaws small. Dorsal and anal fins short based and opposite, with 14–17 soft rays; pectoral fins with 13–17 soft rays; pelvic fins small and abdominal, with 6 soft rays. Lateral line arched, running anteriorly along back, then bending downward on side and continuing posteriorly onto an elongate filament produced by the middle 2 caudal-fin rays; lateral line composed of tube-shaped ossifications that gradually take the form of long bony shields sometimes bearing sharp spines. Body covered with rows of small spi-



nules in some species; a row of elongate bony plates may be present along dorsal and ventral midlines of body just anterior to dorsal and / or anal fin.

Color: red to orange-brown above and silvery below or brownish olive above, lighter below, with a series of blue spots on back and snout.

Remarks: no importance in commercial fisheries, but usually caught

with trawls.

Similar families occurring in the area: Aulostomidae – no caudal fin filament; barbel present on lower jaw; distinct separate spines anterior to soft dorsal fin. Syngnathidae – smaller; body covered with armor; anal fin reduced or absent.

(M. Matsunuma)



Fistularia petimba

Lacepède, 1803

Red Cornetfish

D 14–16; A 14–15; P₁ 15–17. Body extremely elongate, slightly depressed; snout prolonged and tubular, posttemporal ridge with large well developed antrorse serrations. A row of elongate bony plates embedded in skin along midline of back anterior to dorsal fin; posterior lateral line ossifications end-

ing in a sharp spine. Caudal fin forked with long whip-like tail filament. **Color:** head and body red to orange-brown dorsally, silver laterally and ventrally; median fins orangish. **Size:** commonly 100 cm, maximum 200 cm TL. **Distribution:** widely distributed in Atlantic, Indian, and western Pacif-

ic oceans, including Hawaii. **Remarks:** found in coastal waters over soft bottoms, usually at depths greater than 10 m. Marketed fresh, dried salted, or smoked; also reduced to fish-meal. (M. Matsunuma)

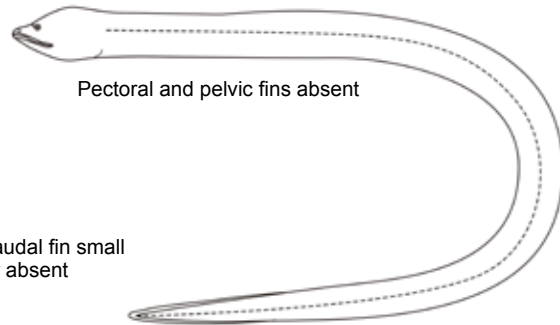
Fistularia petimba, KAUM-I. 33132, 39.3 cm SL
off Chantha Buri (SP), 22 Nov. 2010

SYNBRANCHIDAE

Swamp Eels

Medium to large sized fishes (maximum size about 100 cm TL). Body very elongate, eel-like. Mouth large. Gill membranes united. Gill opening small as slit or pore under head or throat (except *Macrotrema* has normal size gill opening). Eye small or vestigial (some species functionally blind with eyes sunken below skin). Anterior and posterior nostrils widely separated. Dorsal and anal fin vestigial. Pectoral and pelvic fins absent. Caudal fin small, vestigial or absent. Swim bladder absent. Vertebrae 98–188. **Color:** body including head brownish, pinkish, purplish or bright red.

Remarks: occurring in freshwater, estuarine and marine habitats. Many species have burrowing habits, some species are cave-dwelling.



Most species are capable of air-breathing. Food fish.

Similar families occurring in the area: Anguillidae, Colocongridae, Derichthyidae, Muraenesocidae, Myrocongridae, Congridae and Carapi-

dae – dorsal, anal and pectoral fins present. Moringuidae, Muraenidae, Nettastomatidae, Ophichthidae and Synphobranchidae – dorsal and anal fins clearly present.

(P. Musikasinthorn)



Macrotrema caligans (Cantor, 1849)

V 100–103. Body very elongate, worm-like. Snout relatively pointed in lateral view. Scale absent. Eye greatly reduced, sunken below skin. Origin of dorsal fin opposite of anal opening. Pectoral and pelvic fins absent. Caudal fin small, separated by notch from dorsal and anal fins with 9–15 rays. Gill opening wide. Gill membrane extending up to midside of body. Posterior nares anterior to eyes. Upper lip exposed. **Color:** body including head pinkish, pinkish purple or bright red. **Size:** attains about 24 cm SL. **Distribution:** known from freshwater, estuarine and marine habitats of Thailand (the Bang Pakong River, Songkhla Lake),



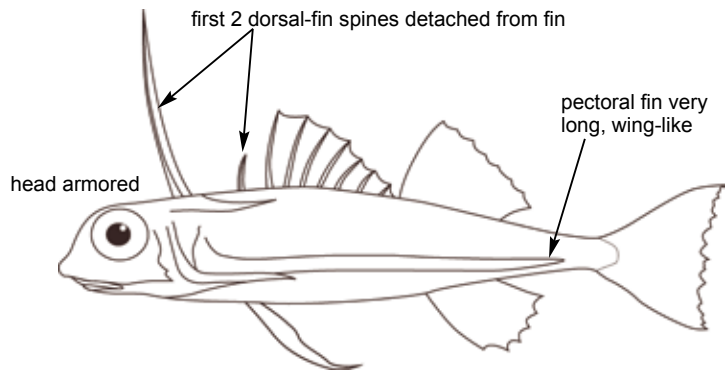
Macrotrema caligans, KAUM-I. 23809, 23.9 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

Peninsula Malaysia (Penang) and Singapore. **Remarks:** known only from few specimens. Biology of this epige-an (mud-living) species is poorly known. (P. Musikasinthorn)

DACTYLOPTERIDAE

Flying Gurnards

Moderate sized fishes. Body elongate, not strongly compressed; head large, heavily armored; eyes large; interorbital remarkably wide. Preopercle with a prominent elongate spine. Gill opening restricted, fused to isthmus. Spinous and soft-rayed portions of dorsal fin separated by a deep notch; first or anterior 2 spines separated from remainder of fin; dorsal fin with VII or VIII total spines and 8 or 9 soft rays. Anal fin without spines and with 6 or 7 soft rays. Caudal fin emarginate. Pectoral fins remarkably large, horizontal, divided into 2 portions; anterior portion with 5–7 short rays, posterior portion with 25–31 long rays, tip reaching to caudal fin base in adults. Pelvic fins with 1 spine and 4 soft rays. Body scales scute-like, forming prominent keels.



Swimbladder divided into 2 halves. **Color:** variable, from brownish to reddish, usually with spots or blotches. Upper surface of pectoral fin usually bluish, with some markings characterized for each species.

Remarks: found on sandy bottom in tropical and subtropical waters.

Similar families occurring in the area: Triglidae – lower pectoral fin rays free. (H. Motomura)

Dactyloptena gilberti Snyder, 1909

Flateared Helmet Gurnard

D I + I + V + I, 8; A 6–7; P₁ 28–32; P₂ I, 4. Body moderately elongate. Second dorsal fin spine separated from third to seventh spines. Interorbital space extremely wide, its width 18–23% of standard length. Granular projections on snout arranged in a row; snout wide and rounded. Posttemporal spine well developed, but flat against body. **Color:** pectoral fin with numerous dark spots and a large black blotch on middle of ray; blue spots and lines inside the middle black blotch and posterior margin of fin. **Size:** maximum total length 22 cm. **Distribution:** distributed in the Indo-West Pacific, from the Arabian Peninsula to Japan, but not southern Southeast Asia or Australia. **Remarks:** generally found on mud-sand bottom at depths of 20–71 m. (H. Motomura)



Dactyloptena gilberti
KAUM-I. 23786, 10.1 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

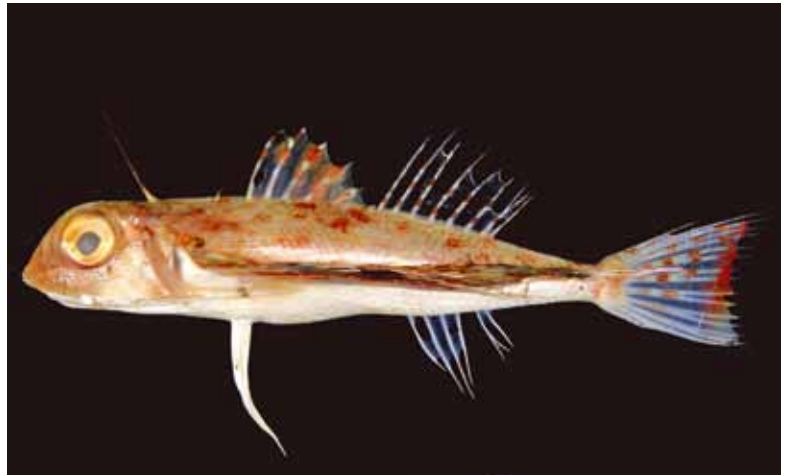


Pectoral fin of *Dactyloptena gilberti*

Dactyloptena orientalis
(Cuvier, 1829)

Oriental Helmet Gurnard

D I + I + V + I, 8; A 6–7; P₁ 27–30; P₂ I, 4–5. Body moderately elongate. Second dorsal fin spine separated from third to seventh spines. Interorbital space wide, its width 13–15% of standard length. Snout wide and somewhat pointed. Preopercular spine not extending further posteriorly than posttemporal spine. **Color:** pectoral fin with numerous dark spots scattered on entire fin, except for white ray tips; margin of middle portion of ray black with numerous short blue lines in adults. A large dark ocellus on pectoral fin in juveniles. **Size:** maximum total length 40 cm. **Distribution:** widely distributed in the Indo-Pacific, from the east coast of Africa and the Red Sea to the Hawaii and Tuamotu Archipelago. **Remarks:** generally found on sand bottom in shallow coastal waters.
 (H. Motomura)



Dactyloptena orientalis
 KAUM-I. 23787, 9.5 cm SL
 Gulf of Thailand (SS), 24 Sept. 2009



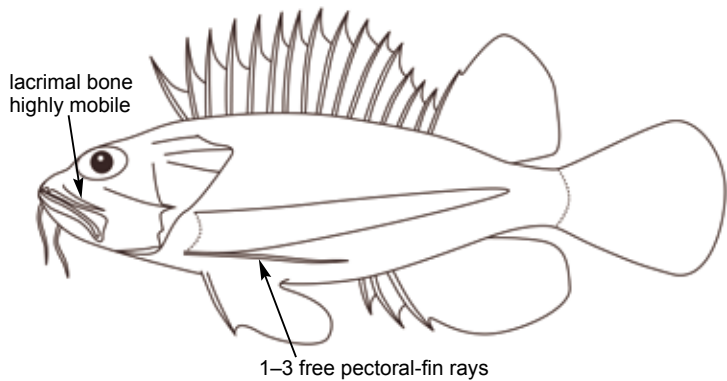
Pectoral fin of *Dactyloptena orientalis*

APISTIDAE

Waspfishes

Moderate sized fishes. Body elongate, moderately compressed. Dorsal fin with VIII–XV spines and 7–10 soft rays; spines strong, venomous. Anal fin with III spines and 6–8 soft rays. Caudal fin rounded. Pectoral fins long, greater than head length; lower 1–3 rays detached or separated from upper part of fin. Pelvic fins with I spine and 5 soft rays. Lacrimal bone highly mobile. Depth of second suborbital bone subequal to length of the bone; second suborbital bone broadly connected to preopercle. Preopercular spines well developed.

Color: head and body silver, yellowish, brownish or grayish, not strongly mottled with spots or blotches.



Remarks: found on sandy or muddy bottom in river mouth and in-shore waters; body partially buried under the soft substrate. Dorsal, anal, and pelvic fin spines venomous.

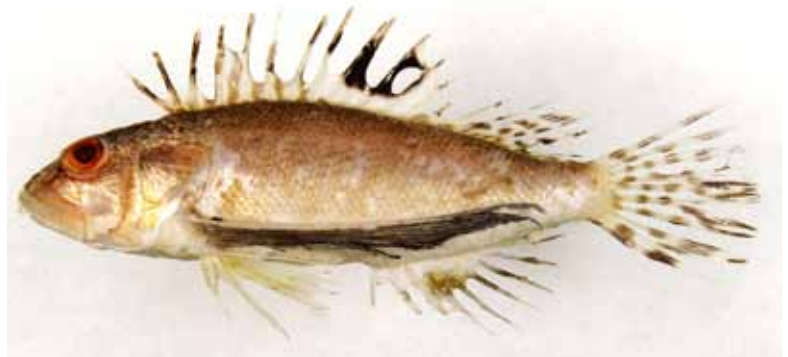
Similar families occurring in the area: families with free pectoral fin rays and the mobile lacrimal bone not occur in the area. (H. Motomura)

Apistus carinatus

(Bloch & Schneider, 1801)

Ocellated Waspfish

D XIV–XV, 8–10; A III, 7–8; P₁ 11–12; P₂ I, 5. Body moderately elongate, compressed. Lateral surface of head densely covered with numerous denticulations. Interorbital space 10.0–16.6 in head length. Ventralmost pectoral-fin ray separate from rest of fin. **Color:** body brownish dorsally, whitish ventrally. Spinous portion of dorsal fin with a large black blotch posteriorly; soft-rayed portion grayish, reticulated, with white margin. Inside and outside of pectoral fin yellowish and blackish respectively. Pelvic fin whitish to grayish. Anal fin grayish, with black band submarginally, white band marginally. Color pattern of caudal fin similar to that of soft-rayed portion of dorsal fin. **Size:** maximum standard length 12.5 cm. **Distribution:** widely distributed in the Indo-West Pacific, from South Africa to Japan and Australia. **Remarks:** taken over fine sandy bottom at depths of less than 60 m. (H. Motomura)

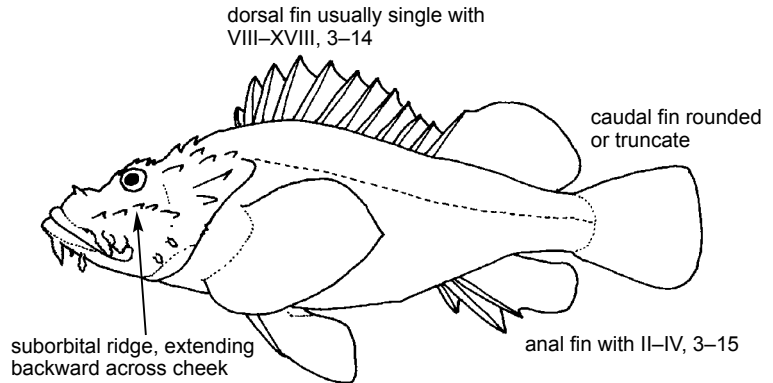


Apistus carinatus, KAUM-I, 32821, 10.0 cm SL
Gulf of Thailand (SS), 25 Oct. 2010

SCORPAENIDAE

Scorpionfishes

Small to relatively large fishes. Body usually weakly compressed; head moderate to large; eyes and mouth small to large. Numerous conical or villiform teeth on jaws. Branchiostegal rays 7, rarely 6. Gill rakers usually short to moderate, with spinous points on each raker. All species with a suborbital ridge, extending backward across cheek and usually firmly bound to preopercle; the ridge with spines in some species. Numerous spines on head in most species; numerous tentacles on head and boy in some species. Dorsal fin with VIII–XVIII spines and 3–14 soft rays; spines strong, venomous in most species. Anal fin with II–IV spines and 3–15 soft rays. Caudal fin rounded or truncate. Pectoral fins usually large. Pelvic fins with I spine and 4 or 5 soft rays. Lateral line with 4–54 pored scales. **Color:** highly variable, from blackish to reddish, usually with spots or blotches; barred or mottled color patterns in most species.



Remarks: found on or near bottom from inshore shallow waters to depths of about 1200 m; entering into freshwater in some species; pelagic or semipelagic occurring offshore in depths of 200–800 m in some species. Well camouflaged and ambush predators, feeding mainly on arthropods and fishes. Dorsal, anal, and pelvic fin spines venomous in most species. Ovoviviparous or viviparous.

Similar families occurring in the area: Platycephalidae – head highly depressed; ventral margin of lacrimal smooth, without distinct spines; two dorsal fins well separated. Aploactinidae – fin rays usually unbranched; head with comparatively blunt spines. Serranidae – no suborbital ridge attaching to preopercle; large canine teeth in jaws in many species. (H. Motomura)

Brachypterois serrulata (Richardson, 1846)

Sawcheek Scorpionfish

D XIII, 10; A III, 5; P₁ 15; P₂ I, 5; LR 44–49. Body oblong moderately compressed. Maxilla scaled. Mandible with serrated ridges (developed in males). Head ridges strongly serrated, but mid-lateral maxilla ridge almost always lacking spine. Longest dorsal-fin spine shorter than maximum body depth. Pectoral fin relatively long, its tip extending beyond level of anal-fin origin but not reaching caudal-fin base; with 6–8 branched rays. **Color:** body reddish brown, with 6 broad vertical blackish bands; a large blackish blotch on lower portion of opercle. **Size:** maximum standard length 9.9 cm. **Distribution:** northwestern Pacific, ranging from the South China



Brachypterois serrulata, KAUM-I. 47468, 8.7 cm SL
Gulf of Thailand (SS), 20 June 2012

Sea north to Japan. **Remarks:** found on sandy bottoms in shallow waters to 100 m depth; mostly caught by bottom trawl. (M. Matsumura)

Neomerinthe procurva
Chen, 1981

Curvedspine Scorpionfish

D XII, 10; A III, 5; P₁ 19; P₂ I, 5. Body oblong, moderately compressed. Interorbital region scaled. Posterior lacrimal spine well developed, directed posteroventrally. Lateral lacrimal spine present. Three suborbital spines. No median ridge on lateral surface of maxilla. **Color:** body color variable, blackish to reddish, and variously blotched dorsally. **Size:** maximum standard length 14 cm. **Distribution:** distributed in the eastern Indian and western Pacific Oceans, from India to Japan. **Remarks:** usually taken by trawl; no depth data available.

(H. Motomura)

Neomerinthe rotunda
Chen, 1981

Round Scorpionfish

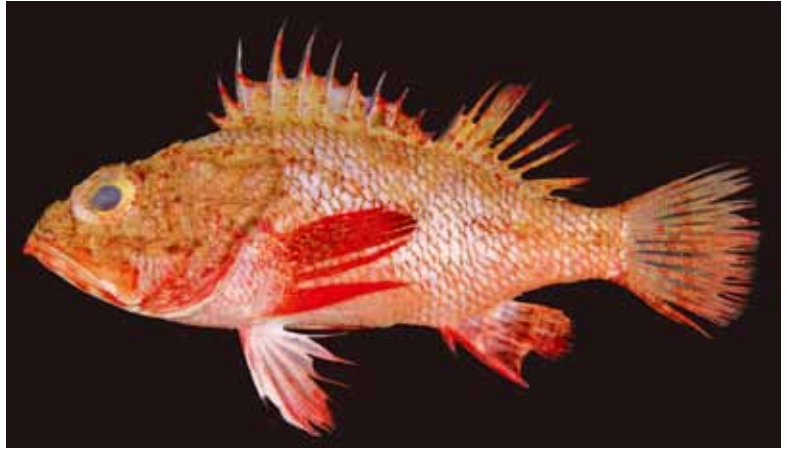
D XII, 9; A III, 5; P₁ 18–19; P₂ I, 5. Body oblong, moderately compressed. Head profile rounded. Interorbital region scaled. Posterior lacrimal spine well developed, directed posteroventrally. Lateral lacrimal spine usually absent. Three suborbital spines. A well developed median ridge present on lateral surface of maxilla. **Color:** body color usually reddish, but variable from pinkish to reddish, and variously blotched dorsally. Fins reddish with spots and/or blotches. **Size:** maximum standard length about 10 cm. **Distribution:** widely distributed in the Indo-West Pacific. **Remarks:** *Neomerinthe rotunda* is most likely to be a junior synonym of *N. erostris* (Alcock, 1896). Usually taken by bottom trawl.

(H. Motomura)

Parapterois heterura
(Bleeker, 1856)

Blackfoot Firefish

D XIII, 9; A II, 7; P₁ 19; P₂ I, 5; LR 42–50. Body relatively elongated, strongly compressed posteriorly. Head ridges strongly serrated; coronal and parietal ridges usually continuous. Longest dorsal-fin spine extremely longer than maximum body depth. Pectoral fin long, its tip extending beyond level of anal-fin origin but not reaching caudal-fin base; with 7–10 branched rays. Upper and lower caudal-fin rays elongated. **Color:** body



Neomerinthe procurva, KAUM-I. 32974, 8.0 cm SL
off Chantha Buri (SP), 1 Nov. 2010



Neomerinthe rotunda, KAUM-I. 23301, 9.2 cm SL
Gulf of Thailand (SS), 10 Sept. 2009



Parapterois heterura, KAUM-I. 23796, 13.1 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

reddish orange, with 6 broad vertical reddish brown bands; pelvic fin black with numerous bluish white spots. **Size:** maximum standard length 18 cm. **Distribution:** allopatry distributed in east coast of South Africa and

western Pacific, including northwestern Australia, South China Sea, northward to southern Japan. **Remarks:** found on sandy or muddy bottoms in shallow waters to 100 m depth; mostly caught by bottom trawl. (M. Matsunuma)

Pterois russelii
Bennett, 1831

Plaintail Firefish

D XIII, 10–11; A III, 7–8; P₁ 12–14; P₂ I, 5; LR 69–86. Body oblong, compressed; eye high set, broadly separated from suborbital ridge. Coronal and tympanic spines absent. Longest dorsal-fin spines subequal to body depth; membranes of spinous portion incised nearly to base of fin. All pectoral-fin rays unbranched; membranes of upper rays strongly incised nearly to base of ray; each membrane reaching ray tip. Scales cycloid. **Color:** body red with about 12 dark reddish bars; ventral surface of mandible and chest without markings; soft-rayed portion of dorsal and anal fins, and caudal fin pale red, without markings; pectoral fin rays with narrow black to reddish brown bands; numerous small white spots on inner surface of pectoral fin and pelvic fin membrane. **Size:** maximum length



Pterois russelii, KAUM-I. 33154, 13.0 cm SL
 off Chantha Buri (SP), 22 Nov. 2010

about 20 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found on sandy bottoms among corals in shallow waters. (M. Matsunuma)

Pterois volitans
(Linnaeus, 1758)

Red Lionfish

D XIII, 11; A II, 7; P₁ 14–15; P₂ I, 5; LR 81–109. Body oblong and relatively compressed. Head ridges strongly serrated; usually lacking coronal and tympanic spines. Longest dorsal-fin spine almost equal to maximum body depth. Pectoral fin long, its tip extending beyond level of anal-fin origin but not reaching caudal-fin base; fin membrane strongly incised; all rays unbranched through life. **Color:** variable reddish to blackish, with numerous narrow reddish brown to black bands on body sides; numerous black spots on soft-rayed portions of dorsal and anal fins, and caudal fin. **Size:** maximum standard length 28 cm. **Distribution:** western Australia and Pacific. **Remarks:** found on rocky or coral reefs; introduced into the Caribbean Sea. (M. Matsunuma)



Pterois volitans, KAUM-I. 24093, 24.8 cm SL
 Gulf of Thailand (SS), 5 Oct. 2009

Scorpaenopsis neglecta
Heckel, 1837

Yellowfin Scorpionfish

D XII, 9; A III, 5; P₁ 16–18; P₂ I, 5; LLp 20–22; LR 42–45; GR 4–5 + 8–10. Nape and anterior body highly arched, giving a humpback appearance. Interorbital space broad, its width 3.8–4.4 in head length. Orbit diameter 1.7–2.0 in snout length. Supraorbital and suborbital ridges serrated. Upper posttemporal spine simple. Upper opercular spine divided into two or more spines. **Color:** body color highly variable, strongly mottled with yellowish to reddish and grayish blotches. Axil of pectoral fins with black spots. **Size:** maximum standard length 18.3 cm. **Distribution:** eastern Indian Ocean and the western Pacific Ocean, ranging from India east to Japan, Indonesia and Australia. **Remarks:** occurs in shallow rocky and coral reefs. (H. Motomura)



Scorpaenopsis neglecta, KAUM-I. 33150, 9.8 cm SL off Chantha Buri (SP), 22 Nov. 2010

Scorpaenopsis venosa
(Cuvier, 1829)

Smallscale Scorpionfish

D XII, 9; A III, 5; P₁ 15–18; P₂ I, 5; LLp 22–23; LR 47–54; GR 4–5 + 8–11. Body elongate, slightly compressed posteriorly. Interorbital space narrow, its width 6.5–7.6 in head length. Upper posttemporal and upper opercular spines simple. Occipital pit deep, quadrangular. Third or fourth dorsal fin spine longest, its length 2.2–2.4 in head length. **Color:** body color variable, mottled with dark gray to brownish blotches. **Size:** maximum standard length 17.5 cm. **Distribution:** widely distributed mainly on the continental shelves in the Indo-West Pacific, from South Africa east to southern Japan and northern Australia. **Remarks:** occurs in rocky and coral reefs less than 100 m depth.

(H. Motomura)



Scorpaenopsis venosa, KAUM-I. 23155, 15.1 cm SL Gulf of Thailand (SS), 6 Sept. 2009

TETRAROGIDAE

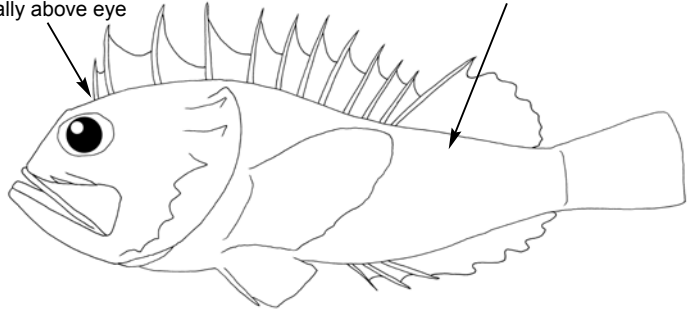
Waspfishes

Small to medium-sized fishes. Body usually strongly compressed; head moderate to large; eyes and mouth small to large. Numerous conical or villiform teeth on jaws. Ventralmost pectoral fin rays not detached or separated. Lacrimal bone highly mobile. Skinny sensory canal between pterotic and preopercle absent. Suborbital stay usually not forming wide connection to preopercle. Anterior dorsal proximal pterygiophores sutured to neurocranium and supracarinalis anterior absent. **Color:** highly variable, from blackish to reddish, usually with spots or blotches; barred or mottled color patterns in most species.

Remarks: found on bottom from

dorsal fin origin
usually above eye

body naked or with cycloid scales



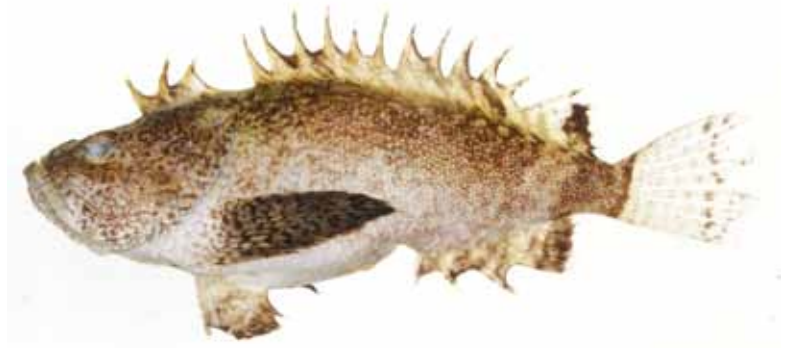
inshore shallow waters to deep waters; one species lives in freshwater rivers. Dorsal, anal, and pelvic fin spines venomous in most species. This family was formerly included in the family Scorpaenidae.

Similar families occurring in the area: Aploactinidae – fin rays usually unbranched. Body covered with modified, prickly scales. Synanceiidae – skin at gill opening broadly connected to isthmus. (H. Motomura)

Vespicola trachinoides (Cuvier, 1829)

Goblinfish

D XIII–XVI, 3–5; A III, 3–4. Body oblong, compressed. Head profile pointed. Lacrimal with two spines. Anterior three spines forming a nearly separate fin; dorsal fin origin well behind eye. Eye small, orbit diameter 6–9% of standard length. Caudal fin rounded. **Color:** body mottled with black and greenish yellow blotches. Caudal fin translucent with an indistinct vertical dark band. Soft-rayed portions of dorsal and anal fins with a broad black band. **Size:** maximum standard length 5.8 cm. **Distribution:** distributed in the eastern Indian and western Pacific Oceans, from Myanmar to China and Indonesia. **Remarks:** found on sandy and broken shell bottoms. (H. Motomura)

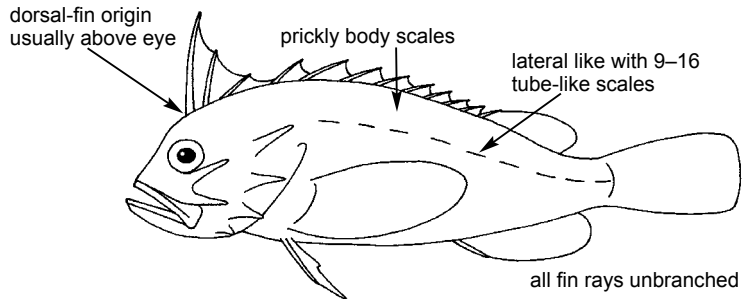


Vespicola trachinoides, KAUM-I. 24071, 5.8 cm SL
Gulf of Thailand (SS), 5 Oct. 2009

APLOACTINIDAE

Velvetfishes

Small marine fishes usually under 5 cm. Body usually compressed. Head usually with knoblike lumps. Eye small to relatively large. Snout often prominent. Mouth moderate to large. Upper and lower jaws with small conical teeth. Palatine always lacking tooth. Vomerine teeth present or absent. Gill rakers usually small or moderate; 0–6 on upper limb of first gill arch and 3–11 on lower. Anterior isthmus with fleshy extension in most species. All fin rays unbranched. Dorsal fin origin above eye or almost so, except in *Adventor* and *Peristrominus*. Dorsal fin with 9–16 spines and 7–16 soft rays; first 3–5 spines usually appear segregated, either elevated or largely without membrane connection with the rest of the spinous dorsal. Anal fin usu-



ally with 0–5 weak or blunt spines and 5–16 soft rays. Pelvic fin with 1 spine and usually 2 or 3 soft rays (rarely 1). Lateral line with 9–16 tube-like scales. Body scales modified to prickly scales (but some without scales). **Color:** body usually brown, reddish brown, or greenish.

Remarks: aploactinids usually known from the shallow sea bottom,

often found between or under vegetation or rocks. Most species well camouflaged. With no commercial importance.

Similar family occurring in the area: Scorpaenidae – pectoral fin with 1 spine and 5 soft rays. Tetrarogidae – anterior isthmus lacking fleshy extension. (H. Imamura)

Acanthosphex leurynnis (Jordan & Seale, 1905)

Wasp-spine Velvetfish

D III, IX–X, 7–9; A I–II, 6–8; P₁ 9–10; P₂ I, 2; LLp 9 (10 in total, 1 on base of caudal fin). Body notably compressed. Lachrymal with 2 strong spines. Preopercle having 4 spines; lowermost small. Vomerine teeth present. Gill membrane broadly united to isthmus. Dorsal fin origin above near middle of eye. First dorsal spine stout and strong. Membrane between 3rd and 4th dorsal spines deeply concaved. Head and body lacking scales, except for tube-like lateral line scales. **Color:** body and head brownish or creamish, having or lacking brown spots; posterior margin of caudal fin clear; pectoral fin with dark band posteriorly. **Size:** maximum standard length about 2.1 cm. **Distribution:** Indo-West Pacific, including southeast India, South China Sea, Gulf of Thailand and Australia. **Remarks:** benthic species, inhabiting inshore, seagrass and soft bottom. (H. Imamura)

Xenaploactis asperrima (Günther, 1860)

Dusky Velvetfish

D III, X, 9; A I, 10; P₁ 13–14; P₂ I, 3; LLp 10–11. Body notably elevated behind head. Lachrymal with 2 strong



Acanthosphex leurynnis, KAUM-I. 33110, 5.5 cm SL
Gulf of Thailand (SS), 18 Nov. 2010



Xenaploactis asperrima, KAUM-I. 23811, 4.7 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

spines. Preopercle having 5 rather strong spines. Dorsal fin origin above posterior border of eye. First 3 dorsal spines close together, widely separated from 4th. Head and body covered with modified scales. **Color:** body and head

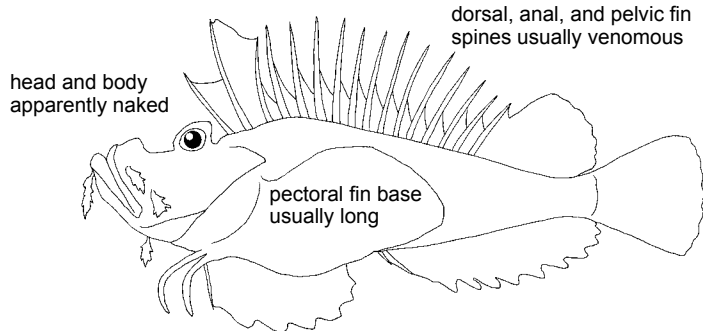
pale brown, having many small white and brown spots; caudal fin with a narrow darker band posteriorly. **Size:** attains about 4 cm SL. **Distribution:** Indo-West Pacific, including Gulf of Thailand. (H. Imamura)

SYNANCEIIDAE

Stonefishes

Small to large-sized fishes. Body shape variable; head moderate to large; eyes and mouth small to large. Skin at gill openings broadly connected to isthmus. Suborbital stay becoming wider posteriorly. Lower pectoral fin rays free in some species. Head and body, except for lateral line, without exposed scales. **Color:** highly variable, from blackish to reddish, usually with spots or blotches; barred or mottled color patterns in most species. Inside of pectoral fin with various color markings.

Remarks: found on bottom from inshore shallow waters to relatively deep waters. Dorsal, anal, and pelvic



fin spines highly venomous in most species.

Similar families occurring in the area: Scorpaenidae – skin at gill

opening not broadly connected to isthmus. Aploactinidae – body covered with modified, prickly scales. (H. Motomura)

Choridactylus multibarbus Richardson, 1848

Threefinger Scorpionfish

D XII–XIV, 8–9; A II, 8–9; P₁ 12; GR 9–11. Body oblong, moderately compressed. Head relatively small. Interorbital space wide, its width equal to 1.5 times orbit diameter. No teeth on vomer and palatines. Three lower pectoral fin rays free and detached from remainder of fin; uppermost pectoral fin ray not filamentous in adults.

Color: body yellowish to brownish, with a yellow to reddish marking on shoulder. Inside of pectoral fin with about five oblong white areas, surrounded by black or brown pigment and usually with white specks in axil. **Size:** maximum standard length 10.3 cm. **Distribution:** widely distributed in the Indo-West Pacific, from the Red Sea east to China and the Philippines. **Remarks:** occurs in coastal waters. A highly venomous species.

(H. Motomura)



Choridactylus multibarbus
KAUM-I. 23805, 5.1 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

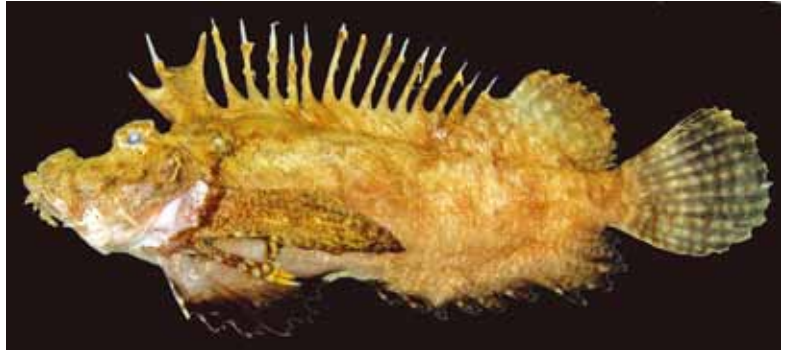


Pectoral fin of *Choridactylus multibarbus*

Inimicus cuvieri
(Gray, 1835)

Longsnout Stinger

D XVII–XVIII, 8–9; A II, 11–13; GR 8–11. Body oblong, moderately compressed. Head relatively small. Orbit only slightly elevated. Snout length usually equal to or longer than postorbital length. Interspinous membrane from fourth rewards less than one fourth spine height. Lower pectoral fin rays free and detached from remainder of fin; no filamentous upper pectoral fin rays in adults. **Color:** body brown or grayish brown dorsally, paler ventrally. Head usually with minute black spots. Inner surface of pectoral fin without distinctive pattern, mostly solid brown, without spots. **Size:** maximum standard length 19.5 cm. **Distribution:** distributed in the Andaman



Inimicus cuvieri, KAUM-I. 33000, 9.5 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

Sea and the western Pacific, from the Philippines south to northern Australia. **Remarks:** occurs on sandy or mud-sand bottom less than 50 m depth. A highly venomous species.

(H. Motomura)

Minous monodactylus
(Bloch & Schneider, 1801)

Gray Stingfish

D IX–XI, 10–12; A II, 7–10; GR 11–16. Body oblong, moderately compressed. Posterior lacrimal spine much longer than anterior lacrimal spine. Posterior tip of pectoral fin reaching level of middle of anal-fin base. Dorsal-fin spines moderately strong; first dorsal-fin spine equal to or longer than second spine. **Color:** body reddish to grayish brown, lacking distinct markings. Inner surface of pectoral fin reddish brown, lacking distinct markings. Caudal fin reddish brown with two white vertical bands. **Size:** maximum standard length 8 cm. **Distribution:** Indo-west Pacific, ranging from east coast of Africa and Red Sea to New Caledonia, and northward to Japan. **Remarks:** found on sandy or mud-sand bottoms less than 55 m.

(M. Matsunuma)



Minous monodactylus
KAUM-I. 32782, 6.3 cm SL
Ang Sila, 23 Oct. 2010



Pectoral fin of *Minous monodactylus*

Minous pictus
Günther, 1880

Painted Stinger

D X–XII, 11–13; A II, 9–11; GR 13–17. Body oblong, moderately compressed. Posterior lacrimal spine much longer than anterior lacrimal spine. Posterior tip of pectoral fin reaching a vertical through middle of anal fin base. Dorsal fin spines moderately strong; first dorsal fin spine shorter than second spine. **Color:** body reddish brown without distinct bands or spots. Inner surface of pectoral fin reddish brown with yellowish irregular bands between rays, the band becoming wider posteriorly, forming a broad marginal band. Caudal fin pale, without dark markings. **Size:** maximum standard length 12 cm. **Distribution:** widely distributed in the tropical western Pacific Ocean. **Remarks:** occurs in depths of 27–90 m.

(H. Motomura)



Minous pictus
 KAUM-I. 33224, 9.6 cm SL
 off Chantha Buri (SP), 30 Nov. 2010



Pectoral fin of *Minous pictus*

Minous trachycephalus
(Bleeker, 1855)

Striped Stingfish

D X–XI, 8–10; A II, 7–9; GR 10–13. Body oblong, moderately compressed. Posterior lacrimal spine much longer than anterior lacrimal spine. Posterior tip of pectoral fin reaching level of middle of anal-fin base. Dorsal-fin spines moderately strong; first dorsal-fin spine much shorter than second spine. **Color:** body reddish to grayish brown, lacking distinct markings. Inner surface of pectoral fin gray to black, pale yellow dorsomarginally; with numerous pale yellow spots, forming hexagonal pattern. Caudal fin gray with numerous minute dark flecks on rays. **Size:** maximum standard length 6.6 cm. **Distribution:** Sri Lanka, Indonesia, South China Sea, Philippines, and northward to Taiwan. **Remarks:** found on sandy or mud-sand bottoms in depths of 11–46 m.

(M. Matsunuma)



Minous trachycephalus
 KAUM-I. 23829, 4.4 cm SL
 Gulf of Thailand (SS), 25 Sept. 2009



Pectoral fin of *Minous trachycephalus*

Trachicephalus uranoscopus
(Bloch, 1801)

Stargazing Stonefish

D XI–XIII, 12–14; A II, 12–15; P₁ 14–15; P₂ I, 5; GR 2–3 + 5. Body elongate; mouth strongly upturned; eyes on dorsal surface of depressed head. Skin at gill openings broadly connected to isthmus. Head spines poorly developed; lacrimal with 2 or 3 short spines; preopercle with 4 blunt spines. Lower pectoral-fin rays not free from upper rays. All soft rays of fins unbranched. Teeth on jaws and vomer, but none on palatines. Lateral line present, but indistinct. **Color:** head, trunk and fins grayish to blackish, with poorly defined whitish spots or blotches scattered on lateral surface of body, pectoral and caudal fins, and base of anal fin. Distal margins of soft-rayed portions of dorsal and anal fins yellowish white; posterior margin of caudal fin white. **Size:** maximum length 8 cm SL. **Distribution:** distributed in the Indo-West Pacific, from India to southern China and northern Australia. **Remarks:** occurs in shallow inshore waters over mud bottoms, sometimes in estuaries.

(H. Motomura)



Trachicephalus uranoscopus, KAUM-I. 47391, 8.4 cm SL
Gulf of Thailand (SS), 13 June 2012

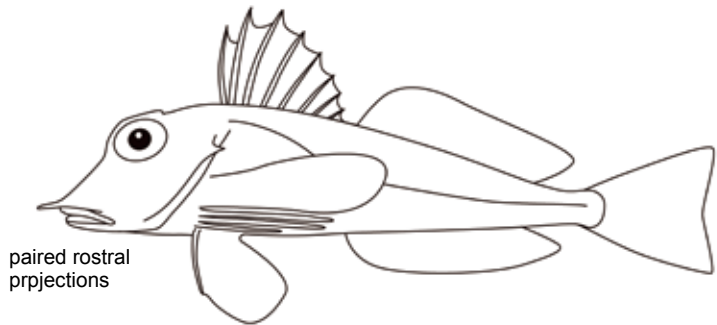
TRIGLIDAE

Gurnards

Small to large marine fishes, maximum size about 1 m. Body elongate, head with paired rostral projections. Eye large. Two dorsal fins, first one with VII–XI spines and second one with 10–23 soft rays; anal fin with 0–I spine and 11–23 soft rays; pelvic fin with I spine and 5 soft rays; caudal fin forked. Pectoral fin with 2–3 free rays.

Color: Body reddish or brownish, with dark spots on lateral surface body; pectoral fin dark sometimes background with white spots or green margin.

Remarks: inhabit the continen-



paired rostral prpjctions

tal shelf and insular areas from shallow water to 500 m.

Similar families occurring in

the area: Dactylopteridae – no free pectoral-fin rays. (T. Yoshida)

Pterygotrigla tagala (Herre & Kauffman, 1952)

Striped Stingfish

D VII, 11; A 11; P₁ 13; P₂ I, 5; GR 0–1 + 8–12. Body moderately elongate. Head large. Opercular spine long and slender; rostral spines short and strong. Eye large, about equal to snout length. Posterior tip of pelvic fin extending anal-fin origin. Pectoral fin long, reaching the middle of anal-fin base. Caudal fin forked. **Color:** upper body reddish white with some dark green to yellow spots; body silver ventrally. Dorsal fin reddish white; second dorsal fin with 9 spots in the middle. Pelvic, anal, and caudal fins pinkish white. Inner surface of pectoral fin with about ten oblong white spots, surrounded by black. **Size:** maximum standard length 10.9 cm. **Distribution:** West-Pacific, including South China Sea and Chesterfield Islands. **Remarks:** found in the continental shelf at depths of 95–119 m.

(T. Yoshida)



Pterygotrigla tagala
KAUM-I. 23813, 9.9 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

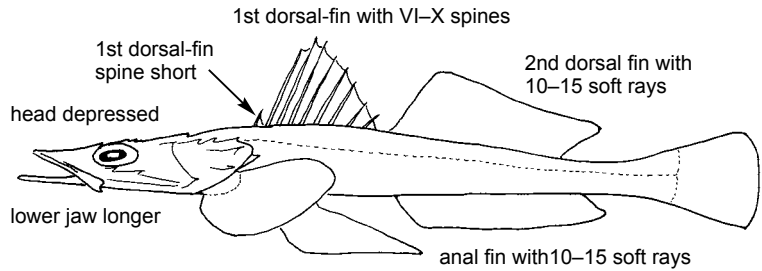


Pectoral fin of *Pterygotrigla tagala*

PLATYCEPHALIDAE

Flatheads

Small to large marine fishes, usually ranging from 7 to 50 cm, a few attaining to 70cm or greater. Body elongate. Head moderately or strongly depressed, usually armed by many spines and ridges. Eye small to relatively large. Snout prominent. Mouth large, lower jaw longer than upper. Teeth present on upper and lower jaws, vomer and palatine. Gill rakers few, relatively short or mere stubs. Gill membrane free from isthmus. Two dorsal fins well separated; 1st dorsal fin with VI–X spines, first short, isolated or scarcely connected to second; second dorsal fin with 10–15 soft rays. Anal fin with 10–15 soft rays; no spines present. Pelvic fin with 1 spine and 5 soft rays. Lateral line complete, with about 30 to more than 100 scales. Upper surface



of body covered by ctenoid scales and lower by cycloid.

Color: usually dark above and pale below; the dark colors with various shades of brown, gray or black.

Remarks: platycephalids known from less than 300 m, most found at less than 100 m and inhabiting on the mud, sand, rocky shore and coral reef. Many species excellent for eating.

Similar family occurring in the area: Plectrojeniidae and Bembridae – lower jaw shorter than or equal to upper jaw. Parabembridae – anal fin with 3 spine. Holpichthyidae – head and body extremely depressed and lateral line with bony plates. Percophidae – head without spines and ridges. (H. Imamura)

Cociella punctata (Cuvier, 1829)

Spotted Flathead

D I–VIII or IX + 10–12; A 11–12; P₁ 19–22; P₂ I, 5; LLp 50–56; GR 5–7 (in total, usually 6). Body elongate. Head moderately depressed. Suborbital ridge with 3 spines. Eye without ocular flaps. Iris lappet simple and semi-circular. Teeth on vomer in 2 separate patches. Interopercular flap present. Cheek region lacking skinny sensory tubes. Lateral line scales with single opening to exterior. **Color:** body and head reddish, grayish or brown above, whitish below, frequently with 5–6 dark bands crossing dorsal surface; 1st dorsal fin with broad submarginal dark band; second dorsal fin with small dark spots; anal and pelvic fins dusky; caudal fin usually with a broad dark band posteriorly or dark spots and horizontal streaks; pectoral fin spotted on upper half, dusky on lower.



Cociella punctata, KAUM-I. 23407, 12.0 cm SL
Bang Pakong, 22 Sept. 2009

Size: maximum length about 35 cm. **Distribution:** widespread in Indo-West Pacific; Vanuatu to Papua New Guinea, north to Taiwan, through Indonesia to Thailand, Pakistan, the Red

Sea, and South Africa. **Remarks:** occurring frequently shallow coastal waters at depths to 30 m or less. Young to juvenile stages utilize mangrove habitat. (H. Imamura)

Elates ransonnettii
(Steindachner, 1876)

Dwarf Flathead

D VI + 12–14 (usually 13); A 12–14 (usually 13); P₁ 19–22; P₂ I, 5; LLp 83–107. Body slender and elongate. Head moderately depressed. Preopercle with 1 long spine. Eye without ocular flaps. Iris lappet absent. Teeth on vomer in 2 separate patches. Interopercular flap absent. Cheek region lacking skinny sensory tubes. Caudal fin concaved posteriorly; upper lobe with an elongate ray. Lateral line scales with single opening to exterior. **Color:** body and head pale brown, with a series of small brownish spots along body sides; 1st and 2nd dorsal, and caudal fins with dark spots; anal fin pale. **Size:** maximum length about 19 cm. **Distribution:** widespread in West Pacific, including Philippines, Indonesia, Malaysia and Australia. **Remarks:** taken from sandy and muddy bottoms in 5–53 m depths. (H. Imamura)



Elates ransonnettii, KAUM-I. 32822, 14.4 cm SL
Gulf of Thailand (SS), 25 Oct. 2010



Grammoplites knappi, KAUM-I. 33077, 17.4 cm SL
Prachuap Khiri Khan, 12 Nov. 2010

Grammoplites knappi

Imamura & Amaoka, 1994

Smallspined Flathead

D I + VII–VIII + 0–I + 11–12 (usually 12); A 12; P₁ 20–22; P₂ I, 5; LLp 51–54. Body elongate. Head moderately depressed. Suborbital ridge usually with 4 or more spines. Eye large, without ocular flaps. Iris lappet simple and broad. Interorbit narrow. Teeth on vomer in 2 separate patches. Interopercular flap absent. Cheek region lacking skinny sensory tubes. Lateral line scales with spine and single opening to exterior. **Color:** body and head brownish above, whitish below, with about 4 dark bands crossing dorsal surface; 1st dorsal and pelvic fins dusky; 2nd dorsal fin with small dark spots; pectoral fin with dark spots forming several vertical bands; caudal fin often with 2 dark bands posteriorly. **Size:** maximum length about 30 cm, commonly to 25 cm. **Distribution:** South China Sea and Johore Shoals. **Remarks:** taken by trawls to about 32 m depth. (H. Imamura)



Inegocia japonica, KAUM-I. 22867, 14.4 cm SL
Ang Sila, 31 Aug. 2009

Inegocia japonica
(Cuvier, 1829)

Japanese Flathead

D I + VIII + 11–13; A 11–13; P₁ 19–21; P₂ I, 5; LLp 51–55. Body elongate.

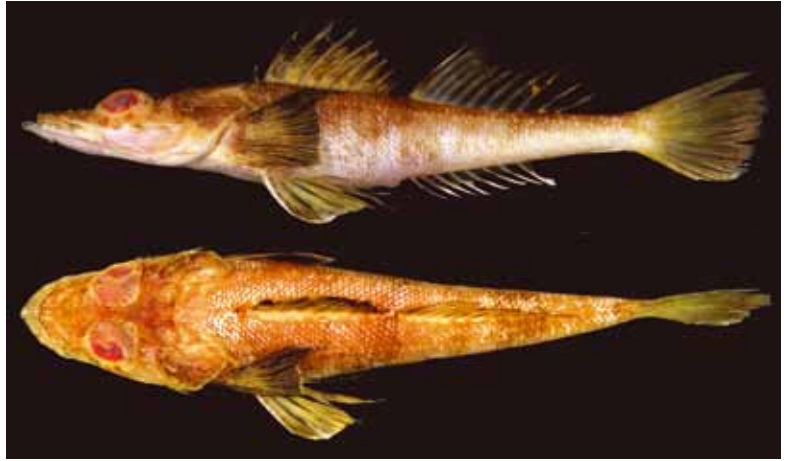
Head moderately depressed. Suborbital ridge with 2 spines. Eye without ocular flaps. Iris lappet long and branched. Teeth on vomer in 2 separate patches. Finger-like interopercular flap present. Cheek region lacking skinny sensory tubes. Lateral line scales with 2 openings to exterior. **Color:** body and head grayish or brown above, whitish below, with 6 obscure dark bands crossing dorsal

surface; 1st and 2nd dorsal, pectoral, pelvic and caudal fins with dark spots; anal fin dusky posteriorly in smaller specimens or entirely in larger specimens. **Size:** maximum length about 25 cm. **Distribution:** widespread in Indo-West Pacific, ranging from Sri Lanka to northern Australia and to southern Japan. **Remarks:** occurring in muddy or sandy bottom to depths of 85 m. (H. Imamura)

Kumococius rodericensis
(Cuvier, 1829)

Spiny Flathead

D I-VIII or IX + 11–12 (usually 11); A 11–13 (usually 12); P₁ 19–22; P₂ I, 5; LLp 50–54. Body elongate. Head moderately depressed. Suborbital ridge with many spines. Preopercle with 3 spines; uppermost longest, reaching nearly to or just past opercular margin. Eye without ocular flaps. Iris lappet simple or slightly bilobed. Teeth on vomer in 2 separate patches. Finger-like interopercular flap present. Cheek region lacking skinny sensory tubes. Pectoral fin concaved posteriorly. Lateral line scales with 1 opening to exterior. **Color:** body and head brownish above, whitish below, with about 5 dark bands crossing dorsal surface; pectoral fin dark brown, with a clear or pale area in center. **Size:** maximum length about 25 cm. **Distribution:** widespread in Indo-



Kumococius rodericensis, KAUM-I. 32984, 14.1 cm SL off Chantha Buri (SP), 1 Nov. 2010

West Pacific, including Gulf of Oman, southern Japan and Australia. **Remarks:** occurring in muddy or sandy bottom at depths of 18–130 m.

(H. Imamura)

Platycephalus indicus
(Linnaeus, 1758)

Bartail Flathead

D I-VII–VIII + 13; A 13; P₁ 18–20; P₂ I, 5; LLp 68–82. Body elongate. Head strongly depressed. Spines on dorsal surface of head obscure in adults. Preopercle with 2 spines. Eye without ocular flaps. Iris lappet simple elongated lobe. Teeth on vomer in single band. Finger-like interopercular flap present. Cheek region lacking skinny sensory tubes. Single short spine between first and second dorsal fins present or absent. Lateral line scales with single opening to exterior. **Color:** body and head covered by many small spots, whitish below; 1st and 2nd dorsal, pectoral and pelvic fins with dark spots; anal fin pale; caudal fin with 2 horizontal dark bands,



Platycephalus indicus, KAUM-I. 22969, 24.3 cm SL Bang Pakong, 31 Aug. 2009

single yellow blotch near middle of fin. **Size:** maximum length about 50 cm. **Distribution:** widespread in Indo-West Pacific. Population in the eastern Mediterranean is migrant. **Remarks:** occurring muddy or sandy shallow coastal waters. Records from Japan and Korea are doubtful.

(H. Imamura)

Rogadius pristiger
(Cuvier, 1829)

Thorny Flathead

D I-VIII + 10–12 (usually 11); A 10–12 (usually 11); P₁ 20–24 (usually 22–23); P₂ I, 5; LLp 49–55. Body elongate. Head moderately depressed. Single ocular spine present. Suborbital ridge with fine serrations. Preopercle with 4 spines, including one strong antrorse lowermost spine. Eye without ocular flaps. Iris lappet bilobed. Teeth on vomer in 2 separate patches. Interopercular flap absent. Cheek region with well developed skinny sensory tubes. Lateral line scales with two opening to exterior. **Color:** body and head brownish above, whitish below; 3–4 dusky bands crossing back. First dorsal fin with submarginal blackish band. Second dorsal fin with many dark brownish spots. Pectoral and pelvic fins with many small dark spots. Caudal fin with a broad dusky submarginal band and a narrow white margin. **Size:** maximum length about 21 cm. **Distribution:** widespread in



Rogadius pristiger, KAUM-I. 32985, 12.6 cm SL
off Chantha Buri (SP), 1 Nov. 2010

Indo-West Pacific, including Madagascar, Red Sea, Andaman Sea, Philippines, northwestern Australia, Papua New Guinea and New Caledonia. **Remarks:** occurring over mud and sand bottoms at depths to about 80 m.

(H. Imamura)

Rogadius tuberculatus
(Cuvier, 1829)

D I-VIII or IX + 10–12; A 10–12; P₁ 19–22; P₂ I, 5; LLp 47–54. Body elongate. Head moderately depressed. Dorsal surface of head with spines and tubercles. Two to 6 preocular spines present. Suborbital ridge with fine serrations. Lower half of preopercle roughly serrated, lacking the antrorse spine. Eye without ocular flaps. Iris lappet scalloped. Teeth on vomer in 2 separate patches. Interopercular flap absent. Cheek region with well developed skinny sensory tubes. Lateral line scales with two opening to exterior. Scales on anterior portion of body with one or more spines. **Color:** body and head light brown above, whitish below; body with several indistinct brown bands dorsally; dorsal fins with many brownish spots; pectoral fin with many irregular brownish bands, posterior portion of pectoral fin blackish except for upper; pelvic fin with irregular brownish spots; caudal fin



Rogadius tuberculatus, KAUM-I. 23057, 8.0 cm SL
Gulf of Thailand (SS), 3 Sept. 2009

dusky. **Size:** maximum length about 15 cm. **Distribution:** widespread in Indo-West Pacific. **Remarks:** occurring mud and sand to a depth of ca. 80 m.

(H. Imamura)

Suggrundus macracanthus
(Bleeker, 1869)

Largespined Flathead

D I-VIII + 11–12 (usually 12); A 12–13 (usually 12); P₁ 20–23; P₂ I, 5; LLp 50–55. Body elongate. Head moderately depressed. Suborbital ridge with many spines. Eye without ocular flaps. Iris lappet bilobed in adults, crenate in juveniles. Teeth on vomer in 2 separate patches. Interopercular flap present. Cheek region partially covered by skinny sensory tubes. Uppermost preopercular spine beyond the posterior margin of opercle. Lateral line scales with 2 openings to exterior. **Color:** body and head brown above, whitish below, with about 7 obscure dark bands crossing dorsal surface in some; 1st dorsal fin dusky, with black blotches; 2nd dorsal fin with small brown spots; anal fin pale, a few dark streaks on posterior rays; caudal fin with yellowish marking; pectoral fin grayish below, with dark spots above; pelvic grayish. **Size:**



Suggrundus macracanthus, KAUM-I. 23172, 15.8 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

maximum length about 26 cm, commonly to 18 cm. **Distribution:** widespread in Indo-West Pacific, ranging from southern India and Sri Lanka to Taiwan and to Coral Sea. **Remarks:** occurring in muddy or sandy bottom to depths to 132 m. (H. Imamura)

Thysanophrys chiltonae
Schultz, 1966

Longsnout Flathead

D I-VII–VIII + 11–12 (usually 11); A 12; P₁ 19–22; P₂ I, 5; LLp 50–54. Body elongate. Head moderately depressed. Suborbital ridge with many spines. Eye without ocular flaps. Iris lappet with short branches. Teeth on vomer in 2 separate patches. Interopercular margin incised, forming a broad lobe. Cheek region completely covered by skinny sensory tubes. Lateral line scales with 2 openings to exterior. **Color:** body light tan mottled with numerous white spots, white below, with about 5–7 brown bands crossing back; 1st dorsal fin with a large black submarginal blotch; 2nd dorsal fin with alternating white and brown spots on rays; anal fin pale; caudal fin with rows of small white spots separating 2–3 dark bands; pectoral fin white below, with several small brown blotches in middle and a series of blackish



Thysanophrys chiltonae, KAUM-I. 23171, 12.2 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

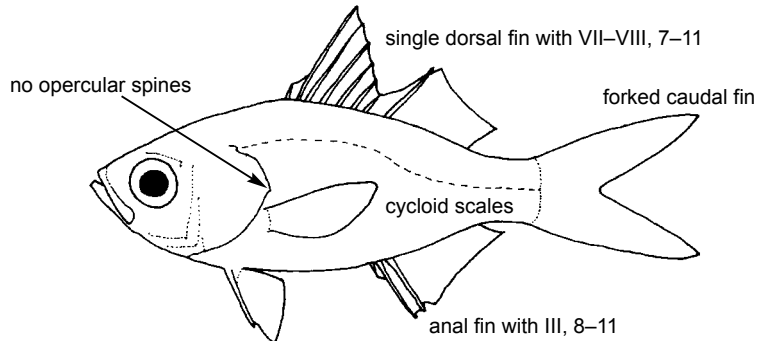
blotches above; pelvic fin with a prominent blackish blotch near base. **Size:** maximum length about 22 cm, commonly to 16 cm. **Distribution:** widespread in Indo-West Pacific, ranging from Red Sea to southern Japan and to Marquesas Islands, including Malaysia, Indonesia, northern Australia, and Mariana and Marshall Islands. **Remarks:** inhabits sand area adjacent to coral reefs to a depth of ca. 38 m. (H. Imamura)

AMBASSIDAE

Perchlets (Glassfishes)

Small to moderate sized (up to 12 cm), oblong and compressed fishes. Lateral line continuous or interrupted at midway. Head compressed; eyes large; lower jaw subequal or projecting beyond upper jaw; spines or serrations on various parts of head (e.g., round of eye, snout, and margins of preopercle and interopercle); no opercular spine; villiform teeth on jaws and roof of buccal cavity; branchiostegals 6. Dorsal fin single, deeply notched before last spine, with VII or VIII spines and 7–11 soft rays; anal fin with III spines and 8–11 soft rays; pectoral fin with 11–17 soft rays; pelvic fin I, 5; caudal fin forked. Scales cycloid, moderately large and thin, and usually easy to be deciduous. Vertebratae 24–25.

Color: subtranslucent or opaque, with silvery head and belly; fins hya-



line, usually with black streaks and/or blotches on dorsal and caudal fins, tinged with yellow in some species.

Remarks: found in freshwaters, brackish estuaries, mangroves, and shallow coastal water; usually forming aggregations, and feed on small crustaceans, insects, and fishes. Minor importance in fisheries, often

marketed as dried and salted; some freshwater species treated as popular aquarium fish.

Similar families occurring in the area: Apogonidae – two separate dorsal fins; II anal-fin spines.

(K. Shibukawa)

Ambassis kopsii Bleeker, 1858

Singapore Glassy Perchlet

D VII + I, 10–11; A III, 8–9; P₁ 14; LLS 26–28; PDS 8–11. Body deep, compressed; lateral line continuous. Single supraorbital spine (= posteriorly-directed spine at dorsoposterior margin of orbit); hind margin of preopercle smooth; 2 scale rows on cheek. **Color:** body semitransparent, head and belly silvery; a large black spot at distal tip of first dorsal fin; pelvic fin and anterior part of anal fin tinged with yellow. **Size:** 10.2 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent coastal waters.

(K. Shibukawa)



Ambassis kopsii, KAUM-I. 24022, 6.6 cm SL
Bang Sean, 1 Oct. 2009

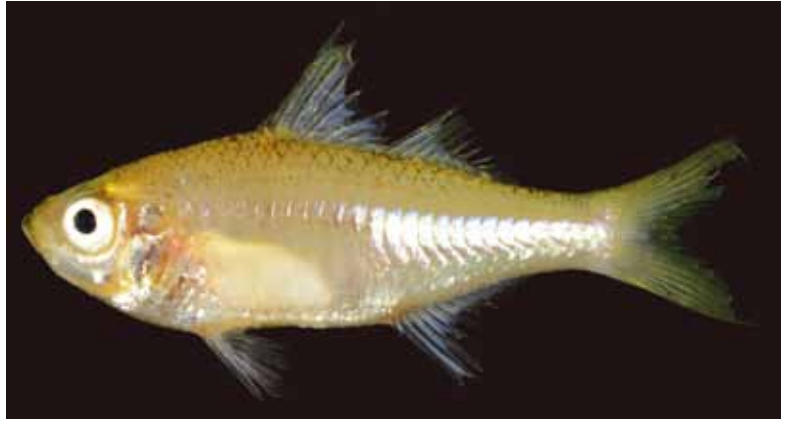
Ambassis vachellii
Richardson, 1846

Vachell's Glass Perchlet

D VII + I, 9; A III, 9; P₁ 14–16; LL 10–13 + 12–14; LR 27–28. Body oblong, compressed; lateral line interrupted at midway, anterior and posterior series with 10–13 and 12–14 scales, respectively. Some or more (most frequently 3–5) supraorbital spines (posteriorly-directed spines at dorsoposterior margin of orbit); hind and ventral margins of preopercle with serrate; 2 or more scale rows on cheek.

Color: body semitransparent, head and belly silvery; dorsal fins hyaline, exclusive of membrane between 2nd and 3rd spines of first dorsal fin blackish; caudal fin often tinged with yellow. **Size:** 5.5 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in bays, brackish estuaries and tidal creeks, especially mangroves.

(K. Shibukawa)



Ambassis vachellii, KAUM-I. 32922, 5.2 cm SL
 Bang Pakong, 30 Oct. 2010

Parambassis wolffii
(Bleeker, 1850)

Duskyfin Glassy Perchlet

D VIII + I, 10–11; A III, 9–10; LLS 43–46. Body very deep, compressed; lateral line continuous; scales small. Single supraorbital spine (= posteriorly-directed spine at dorsoposterior margin of orbit); hind margin of preopercle with small serrae; 7–10 scale rows on cheek. Second spine of anal fin greatly enlarged, much longer than third spine. **Color:** head and body pale grayish or silvery. **Size:** 20 cm. **Distribution:** Mekong and Chao Phraya basins to Malay Peninsula, Sumatra and Borneo. **Remarks:** found in lower reaches of large rivers.

(K. Shibukawa)

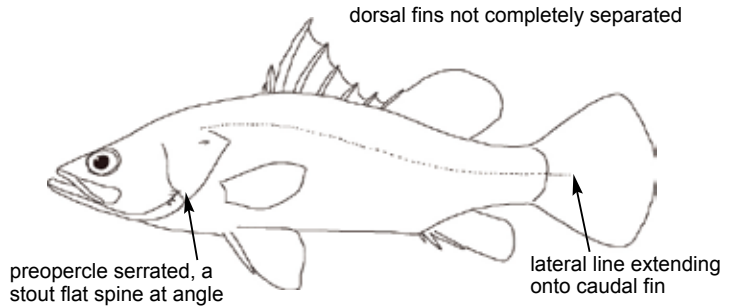


Parambassis wolffii, KAUM-I. 32748, 7.0 cm SL
 Bang Pakong, 23 Oct. 2010

LATIDAE

Lates

Medium to large sized (up to 2 m TL) percoid fishes. Body elongate, compressed; dorsal profile behind eyes concave or convex. Eyes medium sized, relatively close to tip of snout and dorsal profile. Preopercle with serrated posterior or ventral margins and a stout flat spine at angle; opercle with small flat spine; serrated supracleithrum exposed, near beginning of lateral line. Snout rounded. Mouth large, almost horizontal. Teeth small, in villiform bands on upper and lower jaws, vomer, and palatines (may be present on tongue). Dorsal fin deeply incised between spiny and soft portions; but not completely separated or, if separated, with one or two isolated spines present between them; with VII–IX spines and 10–14 soft rays. Anal fin with III spines and 7–9 soft rays. Pelvic fin with axillary scale, and I spine and 5 soft rays. Pectoral



fin with 16 or 17 rays and spiny flap just above fin base. Caudal fin rounded. Scales large, ctenoid; covering bases of caudal, soft dorsal, and anal fins; lateral-line scales 45–50, extending onto caudal fin in 1 or 3 series. Vertebrae 11 + 14 = 25. Branchiostegal rays 7. **Color:** adults greenish or silvery gray to brown, juveniles with stripes; eyes with characteristic red reflection.

Remarks: occurring coastal ma-

rine and estuarine to fresh-water habitats. Important and popular food fish.

Similar families occurring in the area: Serranidae – preopercle usually without large flat spines or serrations; opercle with 3 flat spines; lateral line not extending onto caudal fin. Mronidae – opercle with 2 spines; pelvic fins without axillary scale; lateral line not extending onto caudal fin.

(M. Matsunuma)

Lates calcarifer (Bloch, 1790)

Barramundi

D VII–IX, 10–11; A III, 7–8; P₁ 17–18; LL_p 54–57; LGR 16–17; V 25. Body moderately deep, elongate, and compressed; dorsal profile of head concave anteriorly; snout and jaws pointed; lower edge of preopercle with 3 or 4 (rarely more) large flat triangular spines; anterior and posterior nostrils close together near eye; mouth large, posterior tip of maxilla extending beyond eye. Dorsal fin deeply incised before last dorsal-fin spine; 3rd anal fin spine longest; caudal fin rounded. Scales firmly fixed, ctenoid; lateral line extending onto caudal fin. **Color:** silver with olive-gray or gray-blue bakes; eyes brown to golden; juveniles brown to grayish brown with 3 white stripes on head and scattered



Lates calcarifer, KAUM-I. 33104, 16.0 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

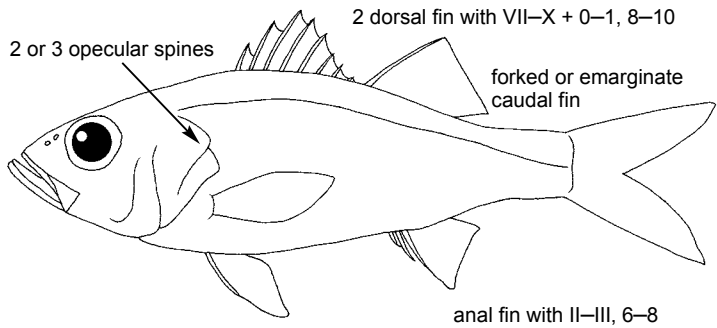
white patches on body sides. **Size:** maximum over 2 m TL. **Distribution:** widely distributed in the Indo-West Pacific, from the Persian Gulf to Papua New Guinea and northern Austra-

lia, north to China. **Remarks:** found in coastal marine and estuarine waters. Feeds on fishes and some crustaceans. (M. Matsunuma)

ACROPOMATIDAE

Temperate Ocean-basses

Small to medium-sized fishes, up to about 40 cm. Body elongate, moderately compressed. Eyes large, its diameter greater than snout length. Mouth subterminal; lower jaw slightly projecting; jaws usually with canine teeth; lateral surface of maxilla not covered with scales. Opercle usually with 2 or 3 spines. Gill membranes free from isthmus. Branchiostegal rays 7. Usually two dorsal fins; first fin with VII–X spines, and second fin with 0 or I spine and 8–10 soft rays. Anal fin with II or III spines and 6–8 soft rays. Caudal fin forked, sometimes emarginate. **Color:** body pink, reddish, whitish, silver, brownish or blackish; darker dorsally, paler ventrally. **Remarks:** occurs in relatively



deep waters at depths of about 20–700 m; demersal, usually over soft bottoms. **Similar families occurring in the area:** Apogonidae – anal fin with 8–18

soft rays. Opercle with a single spine. Lactariidae – second dorsal fin with 19–23 soft rays. Anal fin with 25–28 soft rays. (H. Motomura)

Acropoma japonicum Günther, 1859

Glowbelly

D VII + I + I, 10; A III, 7; P₁ 15–16; P₂ I, 5; LLp 43–45; GR 5–8 + 15–18. Body moderately elongate. Head large; lower jaw projecting. Eye large, about equal to snout length. Base of anal fin shorter than base of second dorsal fin. Caudal fin forked. **Color:** head and dorsal half of trunk yellowish pink; opercle and lower half of trunk silver. Pelvic and anal fins pale with many small black pigments. **Size:** maximum length 14 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** inhabits sandy bottom. Marketed fresh. (T. Yoshida)



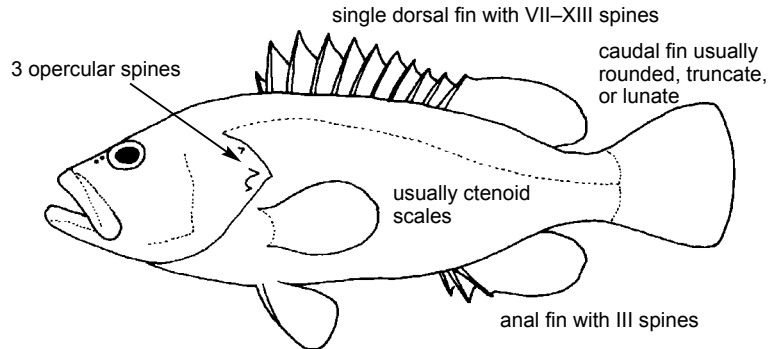
Acropoma japonicum, KAUM-I. 23089, 12.7 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

SERRANIDAE

Groupers (Sea Basses, Fairy Basslets)

Body variable in shape, from deep-bodied to elongate and little compressed to notably compressed. Opercle bearing 3 flat spines; posterior margin of preopercle nearly always serrate or with 1–4 spines. Mouth large, terminal; maxilla exposed when mouth closed; lower jaw usually projecting; bands of small, slender teeth in jaws; canines usually present at front of jaw and sometimes at side; small teeth present on vomer and palatines of most species; no molar or incisiform teeth. Opercular membrane separate, with 7 branchiostegal rays. Dorsal fin single or may be notched, with IV–XIII spines and 9–25 soft rays; anal fin with III (rarely II) spines and 6–24 soft rays; caudal fin rounded to lunate in shape with 12–15 branched rays; pelvic fins with I spine and 5 soft rays, no scaly axillary pelvic process. Scales small to moderate, adherent, ctenoid (or secondarily cycloid). A single complete lateral line, extending on caudal fin less than $\frac{1}{2}$ length of middle caudal fin rays.

Color: variable with patterns of light or dark stripes, spots, vertical or



diagonal bars, or nearly plain.

Remarks: benthic or bottom-oriented fishes, usually found on coral reefs or rocky substrata; most species occur on continental or insular shelves in depths less than 200 m. All are predaceous, the larger species feeding mainly on fishes, crustaceans, and cephalopods, while the smaller ones feed on zooplankton. Most species are protogynous hermaphrodites.

Similar families occurring in the area: Latidae – lateral line extends to rear margin of caudal fin; opercle with a single flat spine. Lutjanidae – no spines on opercle; scaly axillary process at base of pelvic fins

usually well developed. Haemulidae – no teeth on vomer or palatines; no spines on opercle. Sparidae – jaws with incisiform and/or molariform teeth; no spines on opercle; edge of preopercle smooth. Lobotidae – no spines on opercle; no teeth on vomer or palatines. Kuhliidae – rear edge of opercle forming only 2 flat points; branchiostegal rays 6; scaly sheath at bases of dorsal and anal fins. Acropomatidae – rear edge of opercle forming 2 flat points, or the lowest point developed as a cluster of sharp spines; several distinct, spaced canines along lower jaw.

(H. Motomura)

Cephalopholis boenak (Bloch, 1790)

Chocolate Hind

D IX, 15–17; A III, 8; P₁ 16–17; P₂ I, 5; LLp 46–51; GR 7–9 + 14–17. Body moderately elongate; body depth less than head length, 2.6–3.0 in SL. Head length 2.3–2.7 in SL. Teeth on palatines. Dorsal-fin membranes distinctly incised between spines. Caudal fin rounded. Pectoral fin middle rays longest, its length 1.3–1.6 in head length. Longest pelvic-fin soft ray length 1.7–2.2 in head length. No sclae on maxilla; no auxiliary scales on body. **Color:** body dark brown, often dark reddish brown, usually with 7 or 8 dark bars on body. Black spot between upper and middle opercular spines. **Size:** maximum length 26 cm. **Distribution:** widely distributed in the Indo-



Cephalopholis boenak, KAUM-I. 32963, 14.9 cm SL off Chantha Buri (SP), 1 Nov. 2010

West Pacific, from east coast of Africa east to New Caledonia, including southern Japan and northern Australia.

Remarks: usually found on silty dead

reefs in protected waters in depths of 4 to 64 m. Feeds mainly on crustaceans. Common in the area.

(H. Motomura & Y. Yusuf)

Cephalopholis formosa
(Shaw, 1812)

Bluelined Grouper

D IX, 15–17; A III, 7–8; P₁ 16–18; LLp 47–51; GR 7–10 + 15–18. Body moderate; its depth 2.5–2.9 in SL. Caudal fin rounded; pectoral fins short, 1.6–1.8 in head length. Snout largely scaled; maxilla partially scaled; scales on abdomen ctenoid. **Color:** dark brown to yellowish brown, with irregular dark blue lines on head, body and fins; snout, lips, and ventral part of head and chest with small dark blue spots. **Size:** maximum length about 34 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in shallow coastal waters with dead coral, rocky or silty reefs; depth range 10–30 m. (Y. Yusuf)



Cephalopholis formosa, KAUM-I. 47682, 13.1 cm SL
Gulf of Thailand (SS), 6 July 2012

Cephalopholis sonnerati
(Valenciennes, 1828)

Tomato Hind

D IX, 14–16; A III, 9; P₁ 18–20; P₂ I, 5; LLp 66–80; GR 7–9 + 14–16. Body relatively deep; body depth greater than or subequal to head length, 2.3–2.7 in SL. Head length 2.5–2.7 in SL. Dorsal-fin membranes distinctly incised between spines. Caudal fin rounded. Pectoral fin middle rays longest, its length, subequal to longest pelvic-fin ray, 1.5–1.7 in head length for specimens of 15–40 cm length. **Color:** body generally pale reddish to yellowish brown, with small brownish red or dark brown spots on head and fainter spots on body and fins. **Size:** maximum length 57 cm. **Distribution:** widely distributed in the Indo-Pacific. **Remarks:** usually found on coral reefs in lagoon and outer reef, depths of 10 to 150 m.

(H. Motomura & Y. Yusuf)



Cephalopholis sonnerati, KAUM-I. 32801, 13.6 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Diploprion bifasciatum
Cuvier, 1828

Barred Soapfish

D VIII, 13–16; A II, 12–13; P₁ 17–18; P₂ I, 5; LLp 71–76; GR 9–10 + 20–22. Body deep, compressed; body depth greater than head length, 2.0–2.4 in SL. Preopercular, subopercular and interopercular margins serrated. Caudal fin rounded. Posterior tip of depressed pelvic fin extending beyond anal fin origin. Scales mainly ctenoid, not deep-



Diploprion bifasciatum, KAUM-I. 33108, 10.8 cm SL
Gulf of Thailand (SS), 18 Nov. 2010

ly embedded. **Color:** body yellow with a black bar through eye and a broad one in middle of body continuing onto posterior two thirds of spinous portion of dorsal fin. **Size:** maximum length 25

cm. **Distribution:** Indo-West Pacific. **Remarks:** found in coral reefs and adjacent habitats in depths of 5–50 m. Secret skin toxin under stress.

(H. Motomura & Y. Yusuf)

Epinephelus areolatus
(Forsskål, 1775)

Areolate Grouper

D XI, 15–17; A III, 7–8; P₁ 17–19; LLp 49–53; GR 8–10 + 14–16. Body moderately elongate; depth 2.8–3.3 in SL. Caudal fin slightly convex in juvenile, truncate or emarginate in adults; pectoral fins relatively long, 1.5–1.8 in head length, longer than pelvic fins. Scales on body ctenoid, except for thorax and ventrally on abdomen; maxilla with very small scales. **Color:** head, body and fins pale gray, with numerous close-set roundish to polygonal brown to yellowish brown spots; pectoral fin pale, with small dark spots; caudal fin with distinct white straight margin. **Size:** 40 cm. **Distribution:** Indo-West Pacific. **Remarks:** usually found in rocky reefs, dead coral, or alcyonarians; depth range 6–200 m. (Y. Yusuf)



Epinephelus areolatus, KAUM-I. 32830, 9.8 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Epinephelus bleekeri
(Vaillant, 1878)

Duskytail Grouper

D XI, 16–18; A III, 8–9; P₁ 17–19; LLp 49–53; GR 9–11 + 15–18. Body elongate; its depth 3.0–3.5 in SL. Preopercle with 2–9 enlarged serrate at the angle. Caudal fin truncate to slightly convex. Scales on body ctenoid except for nape, thorax, and ventrally on abdomen; maxilla with very small scales. **Color:** brownish to purplish gray, with numerous small orange-yellow spots on head, body, dorsal fin, and upper third of caudal fin; lower two-thirds of caudal fin dark purplish gray, with white margin. **Size:** maximum length 76 cm. **Distribution:** Indo-West Pacific. **Remarks:** occurs on silty coastal reef areas, but is not known from well developed coral reefs; depth to 50 m. Marketed fresh. (Y. Yusuf)



Epinephelus bleekeri, KAUM-I. 32962, 13.0 cm SL
off Chantha Buri (SP), 1 Nov. 2010

Epinephelus heniochus
Fowler, 1904

Bridled Grouper

D IX, 14–15; A III, 8; P₁ 16–18; P₂ I, 5; LLp 54–60; GR 7–9 + 14–16. Body depth 2.7–3.2 in SL; interorbital area slightly convex; dorsal head profile distinctly convex; preopercle angular, with 2–4 large spines; upper edge of operculum approximately straight; maxilla usually reaching to or slightly



Epinephelus heniochus, KAUM-I. 32828, 10.6 cm SL
off Chantha Buri (SP), 25 Oct. 2010

past a vertical at rear edge of eye; lower edge of maxilla with a step-like bend in adults; canines at front of jaws well developed; midlateral part of lower jaw with 2 rows of teeth. **Color:** head and body pale brown dorsally, shading to whitish or pale pink ventrally; faint dark brown stripe from eye to end of operculum, another darker stripe from

lower edge of eye to subopercle and a third from edge of preorbital to interopercle; dorsal, pectoral, and caudal fins hyaline grayish yellow. **Size:** maximum length 43 cm. **Distribution:** western Pacific. **Remarks:** often found on soft bottom, rather than rocky areas; depth range 40–235 m. (Y. Yusuf)

Epinephelus quoyanus
(Valenciennes, 1830)

Longfin Grouper

D XI, 16–18; A III, 8; P₁ 16–19; LLp 48–52; GR 6–8 + 14–16. Body depth 2.8–3.2 in SL; serrae at corner of preopercle enlarged. Caudal fin rounded; pelvic fins not reaching or just reaching anus. Scales on body ctenoid; maxilla naked or with a few very small scales. **Color:** body whitish, with numerous large dark brown to black spots on head, body and fins; chest with 2 dark brown bands joining below pectoral fin bases; ventral edge of anal and caudal fins and leading edge of pelvic fins with white line and blackish submarginal band. **Size:** maximum length about 40 cm. **Distribution:** the Andaman Sea and western Pacific. **Remarks:** usually found on inshore silty reefs; less than 50 m. The enlarged fleshy pectoral fins appear to be related to its habit of sitting on the substrate, with its pectoral fins in contact with the bottom. (Y. Yusuf)



Epinephelus quoyanus, KAUM-I. 33145, 14.7 cm SL
off Chantha Buri (SP), 22 Nov. 2010

Epinephelus sexfasciatus
(Valenciennes, 1828)

Sixbar Grouper

D XI, 14–16; A III, 8–9; P₁ 17–19; LLp 46–51; GR 7–8 + 13–15. Body depth 2.7–3.2 in SL; anterodorsal head profile convex; preopercle with 2–4 greatly enlarged serrae at angle. Caudal fin rounded; pectoral fins not fleshy; pelvic fins not reaching to anus. Scales on body ctenoid except anterodorsally above lateral line, on thorax, and abdomen; maxilla naked. **Color:** head and body pale brownish gray, with 5 dark brown bars; scattered with pale spots may be present on body, and some faint small brown spots are often visible on the edges of the dark bars; soft dorsal, caudal, and anal fins with dark brown spots, pectoral fins grayish or dusky orange-red; jaws and ventral parts of the head sometimes pale reddish brown. **Size:** maximum length about 28 cm. **Distribution:** the Andaman Sea and western Pacific. **Remarks:** usually found on silty sand or muddy bottoms at depths of 10–80 m. (Y. Yusuf)



Epinephelus sexfasciatus, KAUM-I. 32829, 14.5 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Plectropomus maculatus
(Bloch, 1790)

Spotted Coralgroupers



Plectropomus maculatus, KAUM-I. 23795, 13.7 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

D VII–VIII, 10–12; A III, 8; P₁ 15–17; P₂ I, 5; LLp 83–97; LGR 6–9. Body elongate; its depth 2.9–3.9 in SL. Head length 2.7–3.1 in SL. Gill raker at angle of first gill arch longer than longest gill filament. Ventral margin of preopercle with 3 large spines. Opercle with 3 flat spines, upper and lower spines covered by skin. Anterior and posterior nostrils subequal in size. Anal fin spines weak; first and second spines covered by skin.

Caudal fin emarginate. **Color:** body and fins brown to orange-red, with numerous small dark-edged blue spots; no spots on pectoral and pelvic fins. **Size:** maximum length about 125 cm. **Distribution:** known from the western Pacific, including Southeast Asia, northern Australia, and the Solomon Islands. **Remarks:** found on coral reefs less than 50 m depth. (H. Motomura)

Triso dermopterus
(Temminck & Schlegel, 1842)

Oval Grouper

D IX, 18–21; A III, 9–12; P₁ 18–20; P₂ I, 5, LL 67–76; GR 8–9 + 16–18. Body oval, compressed; its depth 2.4 to 2.7 in SL; pectoral fins asymmetrical, a well-developed scaly flap of skin joining upper pectoral-fin rays to body, caudal fin truncate to emarginate and the corners rounded; caudal fin with 8 branched rays and 10 procurrent rays in upper part and, 7 branched rays and 10 procurrent rays in lower part. Dorsal head profile distinctly convex and has a strongly oblique mouth and a projecting lower jaw. Very small ctenoid scales covering the head and body. **Color:** Dark brown to violet-black with darker fins. Smaller individuals may have a fine white margin on the upper part of the caudal fin. **Size:** maximum total length at least 68 cm. **Distribution:** Anti-tropical (anti-equatorial) in its distribution, in the eastern Indian Ocean and western Pacific. In Northern Hemisphere known from Korea, Japan, Hong Kong, and Fujian (China) and Taiwan. Northern Gulf of Thailand is probably the southernmost distribution of the species in the Northern Hemisphere. In Southern Hemisphere can be found off the coast of Western Australia and off eastern Australia. **Remarks:** usually found on rocky or soft bottom



Triso dermopterus, KAUM-I. 24095, 24.4 cm SL
Gulf of Thailand (SS), 5 Oct. 2009

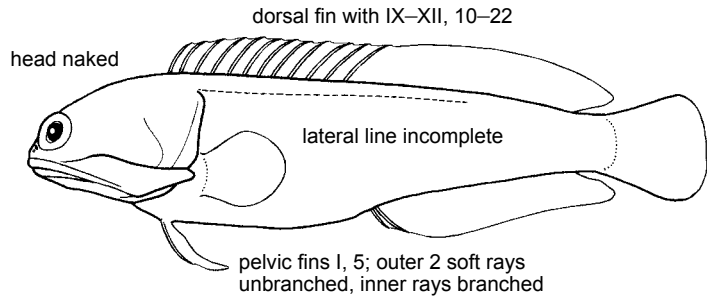
(silty sand or mud) at depths of 22 to 103 m. Juveniles feed on zooplankton in the water column. (Y. Yusuf)

OPISTOGNATHIDAE

Jawfishes

Generally small-sized (most less than 12 cm total length), moderately elongate fishes. Head bulbous. Eye relatively large, oriented dorsolaterally. Mouth large, posterior margin of maxilla extending well beyond eye. Dorsal fin with IX to XII spines and 10 to 22 soft rays; shallowly notched between spinous and soft-rayed portions. Anal fin with II or III spines and 10 to 20 soft rays. Caudal and pectoral fins rounded. Pelvic fins with I spine and 5 soft rays; outer 2 soft rays unbranched and stout, inner rays branched and weaker. Lateral line incomplete, usually ending below about middle of dorsal fin; lateral line tubes or canals usually embedded in skin; scales cycloid.

Color: mottled with various



shades of brown in most species.

Remarks: Occurs in shallow waters to depths of 30 m on sandy substrates in most species, from depths exceeding 200 m in some species. Inhabiting in burrows and usually found with only their heads protruding from the burrow. Living in small colonies

in most species, but solitude in some species. All species are mouth brooders. **Similar families occurring in the area:** Pelvic fin characters (see above description) distinguish Opistognathidae from all other families

(H. Motomura & U. Satapoomin)

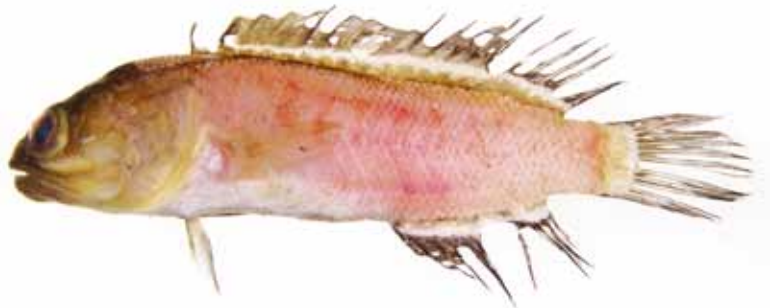
Opistognathus macrolepis

Peters, 1866

Bigscale Jawfish

D XI, 12; A II, 11; P₁ 20; P₂ I, 5; GR 10 + 19–21. Body elongate. Mouth large, upper jaw short. A single row of spaced teeth around both jaws. Two opercular spines. Caudal and pectoral fins rounded. **Color:** head and body brownish. Dorsal and anal fins with a brownish basal band, white median band, and black margin. Caudal fin black. **Size:** 7 cm SL. **Distribution:** Indo-Pacific, from east coast of India to Gulf of Thailand and Gulf of Carpentaria. **Remarks:** found on the continental shelf; over silt bottom.

(T. Yoshida)

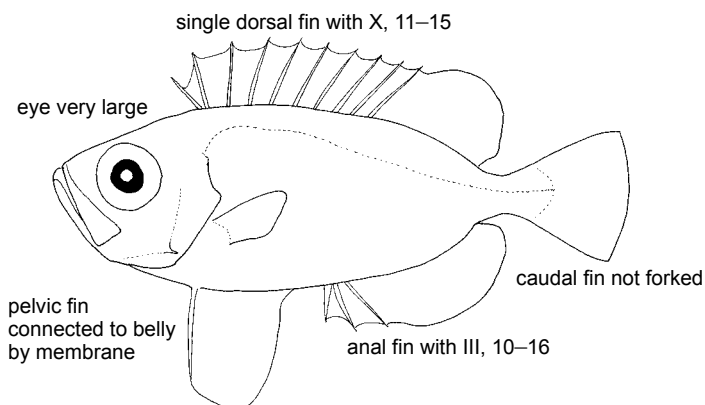


Opistognathus macrolepis, KAUM-I. 23824, 6.8 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

PRIACANTHIDAE

Bigeyes

Medium sized (up to 36 cm) marine fishes. Body deep, laterally compressed. Eye extremely large (about 1/2 head length); upturned mouth. Weak spine on posterior opercle and prominent to remnant spine at angle of preopercle. Branchiostegal rays 6. Total gill rakers on first gill arch 17–32. Dorsal fin single, with X spines and 11–15 soft rays; spinous and soft-rayed portions of fin continuous, relatively short to long, soft-rayed portion broadly rounded to broadly pointed. Anal fin with III spines and 10–16 soft rays; soft-rayed portion of fin relatively short to long and broadly rounded to broadly pointed. Caudal fin rounded, emarginate, or lunate, with 16 principal rays. Pectoral fin with 17–21 rays. Pelvic fins with I spine and 5 soft rays, broadly attached to belly by membrane and positioned in advance of pectoral fins. Head and body mostly covered with extremely adherent, rough, spiny scales. **Color:** head and body generally reddish, sometimes with silvery blotches or, in some species, occasionally a pattern of red and sil-



ver-white bars; fins reddish to dusky or black, occasionally yellowish in some species; some species with dark spots or speckling on fin membranes.

Remarks: occurring near coral reefs or rock formations but occasionally in more open areas at depths of 5–400 m, or deeper. Not important in most fisheries but some species occasionally common in trawl catches of southeast Asian waters.

Similar families occurring in the area: Holocentridae – opercular margin with spines; spinous and soft

portions of dorsal fin separated; anal fin with IV spines; pelvic fin with a spine and usually 7 soft rays and not attached to belly by membrane; caudal fin deeply forked with 18–19 rays. Berycidae – dorsal fin with short base, only IV–VII spines; anal fin with IV spines; pelvic fin with 7–13 rays; caudal fin deeply forked. Pempheridae – dorsal-fin with short base, IV or V spines and 8 or 9 soft rays; anal fin with very long base, III spines and 22 or more soft rays.

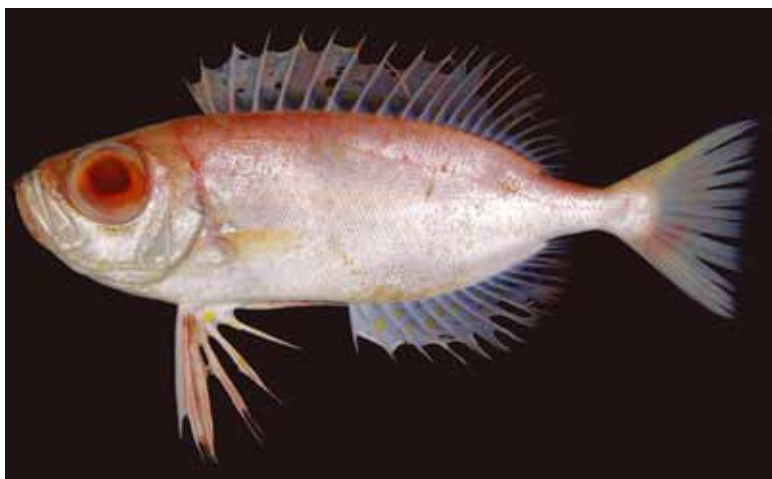
(M. Matsunuma)

Priacanthus macracanthus

Cuvier, 1829

Brownspot Bigeye

D X, 12–14; A III, 13–14; P₁ 18–19; LLp 72–82. Body relatively deep, ovate and compressed; anterior profile slightly asymmetrical, protruding lower jaw tip above midline of body; One strong spine at angle of preopercle. Caudal fin generally truncate. Scales modified; with posterior field elevated as a separate flange with spinules both on surface and posterior edge. **Color:** pinkish silver, reddish dorsally; fins pinkish; dorsal, anal and pelvic fins with numerous rusty yellow or yellowish brown spots, being equal to 1/2 of pupil diameter. **Size:** maximum length 35 cm. **Distribution:** widespread in the Indo-West Pacific. **Remarks:** found in around the sandy and rocky shore or open sandy bottom. Marketed fresh, dried, salted, and as fish balls. (M. Matsunuma)



Priacanthus macracanthus, KAUM-I. 23145, 14.2 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

Priacanthus tayenus
Richardson, 1846

Purplespot

D X, 12–14; A III, 13–14; P₁ 18–19; LLp 72–82. Body moderately deep, laterally compressed. A strong spine at angle of preopercle. Caudal fin truncate but becoming very lunate in some males. Scales modified; scales of mid-lateral region with elevated posterior field reduced and lacking spinules in larger specimens. **Color:** pinkish silver, reddish dorsally; fins pinkish; pelvic fins with numerous small deep purple to inky black spots in membrane. **Size:** maximum length 29 cm. **Distribution:** the Andaman Sea and West Pacific. **Remarks:** found in around the sandy and rocky shore or open sandy bottom. (M. Matsunuma)



Priacanthus tayenus, KAUM-I. 32803, 16.7 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Pristigenys nipponia
(Cuvier, 1829)

Japanese Bigeye

D X, 10–11; A III, 9–10; LLp 31–39; GR 7–8 + 16–20. Body deep, with large scales. Large eyes. Dorsal-, pelvic-, and anal-fin spines strong. posterior tip of pelvic fin extending beyond anal-fin origin when depressed. Lower jaw projecting. **Color:** body red to reddish orange, with 5 vertical white bars on lateral surface of body. Fins pinkish to reddish orange. **Size:** maximum length 18 cm SL. **Distribution:** Western Pacific from Australia to Japan. **Remarks:** found on sandy bottom at depths of 80–200 m.

(T. Yoshida)



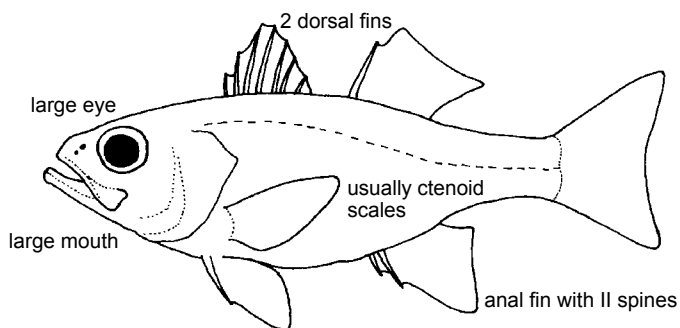
Pristigenys nipponia, KAUM-I. 23133, 11.2 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

APOGONIDAE

Cardinalfishes

Small sized (up to about 20 cm) compressed and oblong or moderately elongate fishes. Eyes large; mouth large, oblique with variable dentition; a single opercular spine. Scales usually ctenoid, but cycloid in some groups and absent in *Gymnapogon* and *Paxton*; lateral line continuous, incomplete or absent in some groups. Two separated dorsal fins, the first with VI–VIII spines and the second with one spine and 8–14 soft rays (except for *Paxton* having a single dorsal fin); anal fin with II spines (except for *Paxton* with a single spine) and 8–18 soft rays; pelvic fin I, 5; caudal fin forked, emarginate, truncate, or rounded.

Color: variable with patterns of



colored stripes, reticulation, spots, vertical or diagonal bars, or nearly plain.

Remarks: chiefly inhabit marine coastal waters, but also found in fresh and brackish water areas in some

groups.

Similar families occurring in the area: Ambassidae – a single dorsal fin but deeply notched, III anal-fin spines.

(K. Shibukawa)

Apogon cavitensis (Jordan & Seale, 1907)

Caviti Cardinalfish

D VII + I, 9; A II, 8; LL 24. Body oblong, moderately deep and compressed; lateral line well developed. Snout moderately pointed. Posterior margin of preopercle serrated. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin emarginate. **Color:** head and body pinkish, with narrow yellow stripe on back; yellow to bronze stripe with silvery white margins on mid-laterally; small black spot (much smaller than pupil) on front middle of caudal fin, which is smaller than pupil diameter; fins subtranslucent. **Size:** 8 cm SL. **Distribution:** western Pacific from Australia to Philippines. **Remarks:** found in silty coastal reefs to 20 m. (M. Matsunuma)

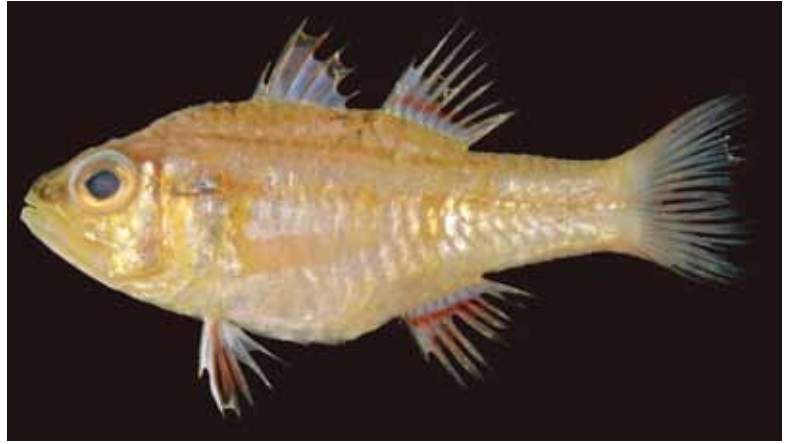


Apogon cavitensis, KAUM-I. 47678, 6.3 cm SL
Gulf of Thailand (SS), 6 July 2012

Apogon fasciatus
(White, 1790)

Broadbanded Cardinalfish

D VII + I, 9; A II, 8; P₁ 15–16 (usually 16); LL 24–25; GR 2–4 + 10–14. Body oblong, moderately deep and compressed; lateral line well developed, extending posteriorly to caudal-fin base. Snout moderately pointed. Posterior margin of preopercle serrated. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin emarginate. **Color:** body pinkish, with two black stripes on body sides, the upper stripe extending from snout to the dorsal portion of the caudal-fin base, the lower stripe from snout extending onto caudal-fin margin; lower stripe (middle stripe) without extensional bar on lower margin; fins semi-translucent to pinkish; second dorsal



Apogon fasciatus, KAUM-I. 33023, 7.9 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

and anal fins with an indistinct reddish brown stripe basally. **Size:** 5 cm SL. **Distribution:** widely distributed in the Indo-West Pacific, from the east coast of Africa to eastern Australia north to southern Japan. **Remarks:** found in coastal waters at depths of 2–128 m. (M. Matsunuma)

Apogon fleurieu
(Lacepède, 1802)

Flower Cardinalfish

D VII+I, 9; A II, 8; P₁ 13–15; LL 24. Body oblong, moderately deep and compressed; lateral line well developed, extending posteriorly to caudal-fin base. Snout moderately pointed. Posterior margin of preopercle serrated. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin emarginate. **Color:** body bronze dorsally, bright yellow orange ventrally; a large black spot (in young) or broad black band (in adult), not broadened dorsally and ventrally, at posterior part of caudal peduncle; 2 bright blue longitudinal lines from snout to operculum, as well as a similar-colored oblique line along upper jaw; a small black spot on each lateral-line scales; fins reddish. **Size:** 11 cm SL. **Distribution:** Indo-Pacific. **Remarks:** inhabits coral or rocky reefs. Very similar to *A. aureus* (Lacepède, 1802), sometimes treated as a junior synonym of *A. fleurieu*, has a distinct black bar (broadened dorsally and ventrally, forming hourglassshaped, in adult) forming a ring around base of caudal fin. (K. Shibukawa)



Apogon fleurieu, KAUM-I. 47756, 7.1 cm SL
Prachuap Khiri Khan, 21 July 2012

Apogon gularis

Fraser & Lachner, 1984

D VI + I, 9; A II, 8; P₁ 14–15 (usually 14); P₂ I, 5; LL 25; GR 5–7 + 16–19. Body oblong, moderately compressed; lateral line well developed, extending to caudal fin base. No enlarged caninoid teeth on jaws. Caudal fin emarginate. Anus located just behind pelvic-fin origin. **Color:** body silvery pink; many yellow pigments on snout; a horizontal black stripe from the snout to the eye, some black pigments on caudal-fin base. **Size:** 6 cm SL. **Distribution:** Indo-West Pacific, including Red Sea, Persian Gulf, Gulf of Oman, east to Andaman Sea and the Philippines. **Remarks:** occurs in coastal waters at depths of 60–290 m. This species is recorded for the first time from the Gulf of Thailand.

(T. Yoshida)



Apogon gularis, KAUM-I. 23849, 4.2 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

Apogon nigrocineta

(Smith & Radcliffe, 1912)

D VII + I, 9; A II, 8; P₁ 14; LL 24; GR 3 + 14. Body oblong, moderately deep and compressed; lateral line well developed, extending posteriorly to caudal-fin base. Snout moderately pointed. Posterior margin of preopercle serrated. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin emarginate. **Color:** body plain light purplish brown; brown to black stripe on snout, from tip of lower jaw extending upper jaw to anterior margin of eye; a vertical dark bar on caudal fin base, with small black spot (much smaller than pupil) on middle; anterior distal margin of first dorsal fin reddish brown to black; second dorsal and anal fins with narrow reddish brown to black stripe basally; caudal fin reddish. **Size:** 9 cm SL. **Distribution:** Western Central Pacific. **Remarks:** found in coral and rocky reefs.

(M. Matsunuma)



Apogon nigrocineta, KAUM-I. 33069, 6.6 cm SL
Prachuap Khiri Khan, 12 Nov. 2010

Apogon pleuron

Fraser, 2005

D VII + I, 9; A II, 8; P₁ 15–16 (usually 15); LL 24–25; GR 3–5 + 13–17. Body oblong, moderately deep and compressed; lateral line well developed, extending posteriorly to caudal-fin base. Snout moderately pointed. Posterior margin of preopercle serrated. No enlarged caninoid teeth on

jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin emarginate. **Color:** body pinkish, with two black stripes on body sides, the upper stripe extending from snout to dorsal portion of caudal-fin base, the lower stripe from snout extending

onto caudal-fin margin; lower stripe (middle stripe) with about 5–9 narrow vertical bars on lower edge. **Size:** 5 cm SL. **Distribution:** eastern Indian Ocean and West Central Pacific. **Remarks:** found in coastal waters at depths of 3–91 m.

(M. Matsunuma)



Apogon pleuron, KAUM-I. 33081, 6.9 cm SL
Prachuap Khiri Khan, 12 Nov. 2010

Apogon poecilopterus
Cuvier, 1828

Pearly-finned Cardinalfish

D VII + I, 9; A II, 8; P₁ 14–17; LL 27–29. Body oblong, moderately deep and compressed; lateral line well developed, extending posteriorly to caudal-fin base. Snout moderately pointed. Posterior margin of preopercle smooth. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin truncate. **Color:** head and body gray, darkened dorsally, shading to silvery gray ventrally; several faint horizontal wavy lines on side of body; gill chamber and first gill arch dusky; distal part of first dorsal fin dusky; second dorsal fin with some series of small blackish gray spots; distal edge of caudal fin dusky. **Size:** 11 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in inshore areas with sandy or muddy bottom. Belonging to subgenus *Jaydia*. (K. Shibukawa)



Apogon poecilopterus, KAUM-I. 47729, 9.8 cm SL
Rayong, 13 July 2012

Apogon semilineatus

Temminck & Schlegel, 1842

D VII + I, 9; A II, 8; P₁ 14; LL 27; GR 6–7 + 16–19 = 23–26. Body oblong, moderately deep and compressed; lateral line well developed, extending to caudal-fin base. No enlarged caninoid teeth on jaws. Caudal fin emarginate. **Color:** body light pink, with two black stripes; one from snout to opercular margin through eye; the other from snout to end of second dorsal-fin base; black spot on caudal-fin base. **Size:** 11 cm SL. **Distribution:** Western Pacific **Remarks:** inhabits rocky reef. (T. Yoshida)



Apogon semilineatus, KAUM-I. 23143, 9.4 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

Apogon smithi
(Kotthaus, 1970)

D VII + I, 9; A II, 8; P₁ 15–17; LL 26–28; GR 3–5 + 10–13 = 13–17. Body oblong, lateral line well developed, extending to caudal-fin base. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin rounded. **Color:** body silvery white; body with 4–6 blackish bars; distal half of first dorsal fin black; blackish band



Apogon smithi, KAUM-I. 33233, 8.9 cm SL
off Chantha Buri (SP), 30 Nov. 2010

along the base of second dorsal fin; pelvic and anal fins pale. **Size:** 10 cm SL. **Distribution:** eastern Indian Ocean and West Central Pacific. **Remarks:** *Apogon smithi* is similar to *A. truncatus*,

but the former differs in having no stripe on the anal fin (vs. dark stripe along middle of anal fin)(Gon, 1997). Found on sandy and muddy bottoms. Belonging to subgenus *Jaydia*. (T. Yoshida)

Apogon striatodes

Gon, 1997

D VII + I, 9; A II, 8; P₁ 15–16; LL 27; GR 4–5 + 12–14 = 16–19. Body oblong, lateral line well developed, extending to caudal-fin base. No enlarged caninoid teeth on jaws. Caudal fin rounded. **Color:** head and body silvery white; body with 7–11 blackish bars; dorsal and caudal fins pale black; distal half of anal fin black. **Size:** 6 cm SL. **Distribution:** west coast of Thailand, Gulf of Thailand, Hong Kong, Philippines. **Remarks:** belonging to subgenus *Jaydia*.

(T. Yoshida)



Apogon striatodes, KAUM-I. 47706, 8.9 cm SL
Rayong, 11 July 2012

Apogon truncatus

Bleeker, 1854

Flagfin Cardinalfish

D VII + I, 9; A II, 8; P₁ 16–17; LL 25; GR 1 + 10. Body oblong, moderately deep; lateral line well developed, extending posteriorly to caudal-fin base. Snout blunt. Posterior margin of preopercle serrated. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; caudal fin rounded. **Color:** body silvery white, darkish dorsally; 4–6 indistinct dark bars on body sides; a dark bar on cheek; distal half of 1st dorsal fin black; 2nd dorsal fin white, with black stripe marginally, a black stripe on middle; anal fin white with a black stripe on basally; caudal fin with black margin, white submarginally, yellowish basally. **Size:** 12 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in sandy mud bottoms at depths of 50–80 m. Belonging to subgenus *Jaydia*. (M. Matsunuma)



Apogon truncatus, KAUM-I. 47703, 8.1 cm SL
Rayong, 11 July 2012

Apogonichthyoides niger

(Döderlein, 1883)

D VII + I, 9; A II, 8; P₁ 15; LLp 26; GR 2 + 8. Body oblong, deep and compressed; lateral line well developed, extending posteriorly to caudal fin base. Snout blunt. Posterior margin of preopercle serrated. No enlarged caninoid teeth on jaws. Base of anal fin subequal to base of second dorsal fin in length; posterior tip of pelvic fin extending beyond anal fin origin when depressed; caudal fin slightly emarginate. **Color:** head and body dusky



Apogonichthyoides niger, KAUM-I. 33210, 5.4 cm SL
Ang Sila, 26 Nov. 2010

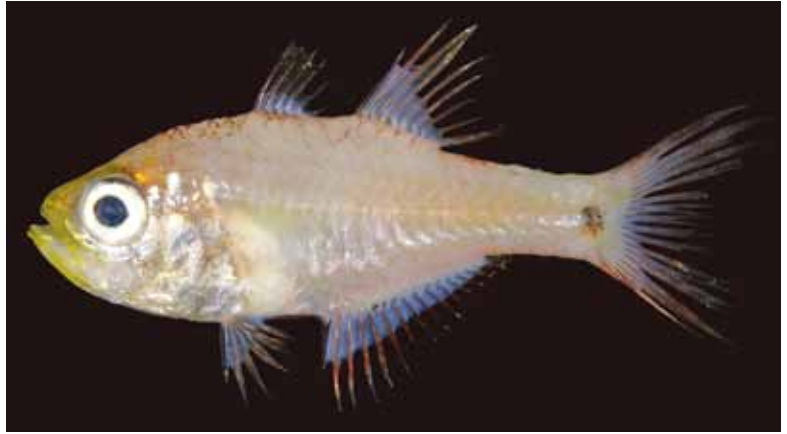
gray, darker dorsally; eye pale yellow. **Size:** 10 cm SL. **Distribution:** West Central Pacific. **Remarks:** Fraser & Allen (2010) placed this species in ge-

nus *Apogonichthyoides*, previously treated as synonym of *Apogon*.

(M. Matsunuma)

Archamia bleekeri
(Günther, 1859)

D VI + I, 9; A II, 15–17; P₁ 14; LL 28–29; GR 5–7 + 15–18. Body oblong, moderately deep and compressed; lateral line well developed, extending to caudal-fin base. No enlarged caninoid teeth on jaws. Caudal fin emarginate. Anal-fin base longer than 2nd dorsal-fin base. **Color:** body silvery pink; many yellow pigments on head; black spot on caudal-fin base. **Size:** 6 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found on reefs, and sandy and muddy bottoms at 3–21 m. (T. Yoshida)



Archamia bleekeri, KAUM-I. 33033, 6.0 cm SL
Prachuap Khiri Khan, 8 Nov. 2010

Archamia fucata
(Canton, 1849)

Orangelined Cardinalfish

D VI + I, 9; A II, 15–17; P₁ 13–15; LLp 25. Body oblong, moderately deep and compressed; lateral line well developed, extending posteriorly to caudal fin base. Snout moderately pointed. Posterior margin (at least posteroventral corner) of preopercle serrated. No enlarged caninoid teeth on jaws. Base of anal fin longer than base of second dorsal fin in length; caudal fin emarginate. Scaly sheath developed around base of anal fin. **Color:** body translucent gray with a large black spot (near eye-sized) at caudal fin base; 20–23 narrow, curved oblique orange lines on body; fins largely transparent. **Size:** 7 cm SL. **Distribution:** Indo-Pacific. **Remarks:** inhabits coral and rocky reefs. (K. Shibukawa)

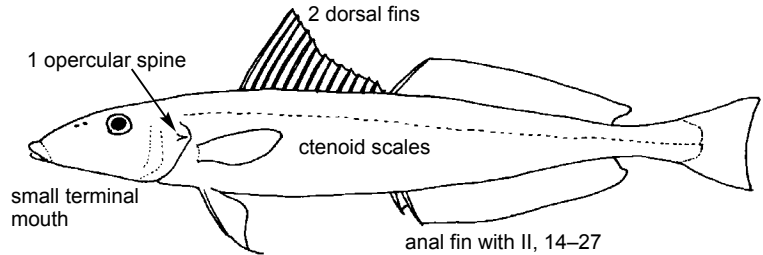


Archamia fucata, KAUM-I. 47698, 7.8 cm SL
Rayong, 11 July 2012

SILLAGINIDAE

Sillago (Smelt, Whitings)

Moderate-sized (up to 70 cm) elongate perciform fishes. Opercle with small sharp spine; lower part of preopercle horizontal. Snout long and conical. Mouth small, terminal; end of upper jaw sliding below preorbital bone. Teeth villiform, in broad bands; small teeth on roof of mouth restricted to anterior part of vomer, none on palatines. Two separate dorsal fins, the first with 9–12 slender spines; the second with I spine and 16–27 soft rays; anal fin long, with II weak spines and 14–27 soft rays; caudal fin emarginate. Scales small, ctenoid; lateral line slightly arched. Swimbladder absent or vestigial to highly complex with various extensions.



Color: silvery to sandy gray or green, sometimes with black spots on body and pectoral fin base.

Remarks: bottom-dwelling, schooling fishes; found in inshore brackish estuaries and shallow coastal waters.

Similar families occurring in the

area: Branchiostegidae – a single continuous dorsal fin; mouth large with fleshy lips. Pinguipedidae – dorsal fin spines short; spinous dorsal fin sometimes joined to soft dorsal fin; pelvic fin base in advance of pectoral fin base. (M. Matsunuma)

Sillago aeolus

Jordan & Evermann, 1902

Oriental Sillago

D XI + I, 18–20; A II, 17–19; LL 67–72. Body elongate, subcylindrical, covered with ctenoid scales. First pelvic-fin ray normal, not thickened club-like structure; caudal fin slightly forked with rounded tips. Swimbladder with 3 rudimentary anterolateral extensions instead of 4; no divided posterior extension. **Color:** body silvery, with scattered dark brown elongate blotches on body sides; pelvic fin yellowish; caudal fin dusky. **Size:** 30 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in coastal inshore waters. (M. Matsunuma)



Sillago aeolus, KAUM-I. 24036, 13.6 cm SL
Gulf of Thailand (SS), 3 Oct. 2009

Sillago sihama (Forsskål, 1775)

Silver Sillago

D XI + I, 20–23; A II, 21–23; LL 66–72. Body elongate, subcylindrical. First pelvic-fin ray normal; caudal fin truncate to almost rounded. Swimbladder with 2 anterior extensions extending forward and diverging to terminate on each side of the basioccipital; 2 lateral extensions commence anteriorly; 2 posterior tapering extensions of the swimbladder project into caudal region. **Color:** body silvery, brownish



Sillago sihama, KAUM-I. 32990, 13.8 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

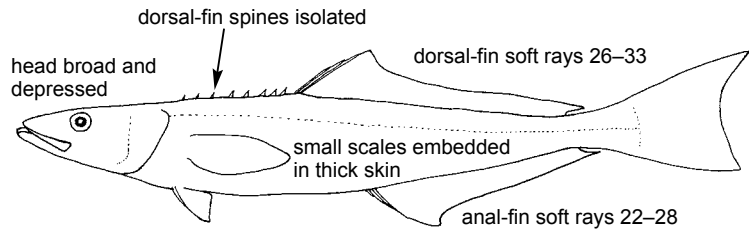
dorsally; no markings on body sides; pelvic fin yellow; distal margin of anal fin broadly yellow; caudal fin brownish. **Size:** 30 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in inshore coastal waters. (M. Matsunuma)

RACHYCENTRIDAE

Cobia

This family represented by a single species; see the following species account.

Similar families occurring in the area: Echeneidae – dorsal fin spines absent. Sucking disc present. Carangidae – II detached spines in front of anal fin. (H. Motomura)



Rachycentron canadum (Linnaeus, 1766)

Cobia

D VII–IX, 26–33; A II–III, 22–28; P₁ 21–22; P₂ I, 5. Body elongate, subcylindrical, body depth 5.6–8.0 in standard length. Head broad and depressed; sucking disc absent. Dorsal fin spines short, not connected by a membrane; longest dorsal fin soft rays shorter than longest anal fin soft rays. Caudal fin truncate in young, progressively more emarginate with growth.

Pectoral fins pointed, becoming more falcate with growth. Scales small, embedded in thick skin; lateral line slightly wavy anteriorly. **Color:** body grayish to blackish dorsally, whitish to grayish ventrally, with a pale gray stripe from front of snout through eye to upper caudal peduncle and a faint dark stripe on lower side of trunk.

Size: maximum total length about 2 m. **Distribution:** circumglobal in tropical to warm temperate seas, except for the eastern Pacific. **Remarks:** semipelagic, but also found over shallow coral and rocky reefs, occasionally in estuaries. Occurs more in continental than insular waters.

(H. Motomura)

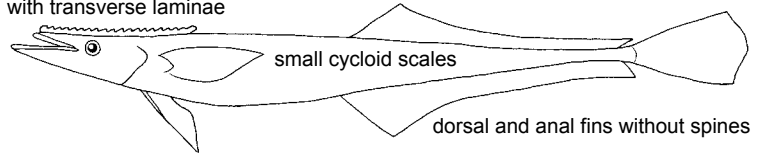
Rachycentron canadum, KAUM-I. 32837, 26.3 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

ECHENEIDAE

Remoras

Medium-sized (up to 90 cm), elongate and fusiform fishes. Head wide, depressed; a transversely laminated, oval-shaped cephalic disc. Opercle without spines. 8–11 branchiostegal rays. Dorsal fin with 18–45 soft rays. Anal fin with 18–41; dorsal and anal fin bases long, lacking spines. Caudal fin slightly forked, emarginate, or slightly rounded in adults; with elongate median caudal fin filament in juveniles of some species. Pectoral fin with 18–32 rays. Pelvic fin with 1 spine and 5 soft rays. Scales small, cycloid, usually embedded in skin. No swimbladder. **Color:** body brown, grayish to

oval-shaped cephalic disc with transverse laminae



black, sometimes whitish, with light and dark longitudinal stripes on trunk.

Remarks: attaching to other fishes, cetaceans, sea turtles, whales, or dolphins with a sucking disc on head; a great preference or specificity toward certain hosts in some species. Feeds on parasitic copepods attached to a host and food scraps dropped by

the host. No commercial importance, but some species are taken in coastal fisheries along with other fishes and sold in local markets.

Similar families occurring in the area: no other family of fishes has a sucking disc on dorsally on the head. (H. Motomura)



Echeneis naucrates
Linnaeus, 1758

Sharksucker

D 34–42; A 31–41; P₁ 21–24; P₂ I, 5; LGR 11–16. Body elongate, body depth 8–14 in standard length. Sucking disc large, with 18–28 laminae. Caudal fin lanceolate in young, middle rays elongate and filamentous; almost truncate in adults, with upper and lower lobes longer than middle rays.

Pectoral fins pointed. **Color:** body gray to blackish, with a white-edged black stripe from tip of lower jaw to caudal fin base. Upper and lower margins of fins whitish in juveniles. Pectoral fins blackish. Pelvic fins grayish to whitish. **Size:** maximum standard length about 1 m. **Distribution:** cir-

Echeneis naucrates, KAUM-I. 33131, 32.9 cm SL off Chantha Buri (SP), 22 Nov. 2010

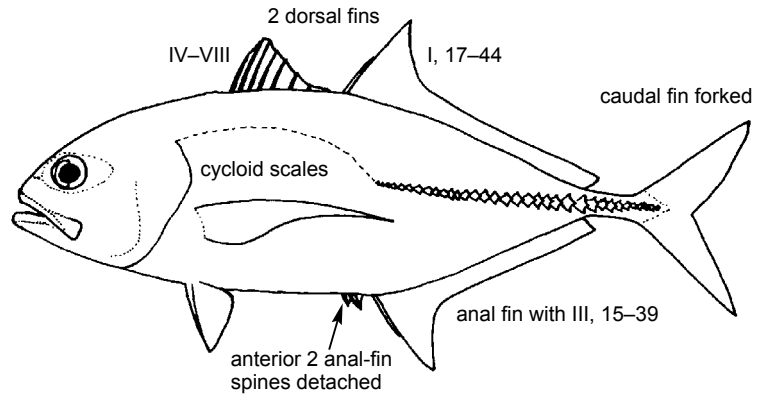
cumglobal in tropical to warm temperate seas, except for Pacific coast of America. **Remarks:** attaching temporarily to a wide variety of hosts such as sharks, sea turtles and ships. Often found free-swimming and occurring inshore waters. (H. Motomura)

CARANGIDAE

Jacks (Scads, Trevallies)

Medium to large sized marine fishes; maximum size about 2 m. Body shape extremely variable, ranging from elongate and fusiform to deep and strongly compressed. Adipose eyelid developed in some species; jaw teeth small, villiform, or absent in some species. Two dorsal fins, the first with IV–VIII spines (obsolete or embedded in adult of some species) and the second with one spine and 17–44 soft rays; anal fin usually with III spines, the anterior two (rarely only one) detached from the rest of the fin (becoming embedded in adults of some species), and 15–39 soft rays; caudal fin forked; pectoral fin usually long, extending beyond a vertical through second dorsal-fin origin except for some species; pelvic fin I, 5. Scales small cycloid in most species; scutes present and prominent on the lateral line in most species, but reduced in some species and absent in some genera. Vertebral counts 24–27.

Color: body silvery, darker (brownish or greenish) dorsally, paler



ventrally; dark bars or spots on body, and/or yellowish fins in some species.

Remarks: occurring in tropical to temperate marine, estuarine, and sometimes freshwater areas. Almost all species having commercial importance.

Similar families occurring in the area: Carangidae is distinguished from the following similar families in having 2 detached anal fin spines (sometimes completely embedded in adults in

several genera), and enlarged scutes usually along at least posterior lateral line. Centrolophidae and Lactariidae – no detached anal fin spine; no scutes in the lateral line. Scombridae – dorsal-fin spines IX–XXVII; no detached anal fin spine; no scutes in the lateral line. Stromateid genus *Pampus* very similar to *Parastromateus niger* in body shape, but the former lacking a lateral keel of scutes at caudal peduncle. (S. Kimura)

Alectis ciliaris (Bloch, 1787)

African Pompano

D IV–VII (embedded) + I, 18–20; A II (embedded) + I, 15–17; GR 4–6 + 12–17 = 18–22; V 10 + 14. Body deep, strongly compressed, diamond shaped in juvenile, becoming more elongated with growth; profile of forehead to nape rounded; anterior soft rays of dorsal and anal fins very long, filamentous in juveniles; pelvic fins elongated in juveniles; body superficially naked, scales minute and embedded where present; straight part of lateral line with scutes (8–30) only posteriorly. **Color:** body silvery bluish or grayish dorsally, silvery white ventrally; 5 chevron-shaped blackish bands on body in juveniles; a black blotch at base of anterior soft portion of dorsal fin. **Size:** maximum length about 150 cm. **Distribution:** world-



Alectis ciliaris, KAUM-I. 32817, 13.2 cm SL
Gulf of Thailand (SS), 25 Oct. 2010

wide in tropical seas. **Remarks:** occurring in coastal waters; feeds mainly on fishes and crustaceans. (S. Kimura)

Alectis indicus
(Rüppell, 1830)

Indian Threadfish

D V–VI (embedded) + I, 18–20; A II (embedded) + I, 15–17; GR 7–11 + 21–26 = 29–37; V 10 + 14. Body deep, strongly compressed, diamond shaped in juvenile, becoming more elongated with growth; profile of forehead to nape somewhat angular; anterior soft rays of dorsal and anal fins very long, filamentous in juveniles; pelvic fins elongated in juveniles; body superficially naked, scales minute and embedded where present; straight part of lateral line with scutes (6–13) only posteriorly. **Color:** body silvery greenish or grayish dorsally, silvery white ventrally; dark bands on body in juveniles; anal fin yellowish. **Size:** maximum length about 160 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to New Guinea, north to southern Japan. **Remarks:** occurring in coastal waters; feeds mainly on fishes, squids, and crustaceans.

(S. Kimura)

Alepes djedaba
(Forsskål, 1775)

Shrimp Scad

D VIII + I, 23–26; A II + I, 18–21; GR 10–14 + 25–33 = 35–47; V 10 + 14. Body oblong, compressed; dorsal and ventral profiles almost equally convex; snout pointed; adipose eyelid well developed on posterior half of eye; a single row of small slender teeth on both jaws; straight part of lateral line almost entirely with scutes (39–51 following 0–3 cycloid scales), longer than curved part (31–36 cycloid scales + 0–3 scutes). **Color:** body silvery blue dorsally, silvery white ventrally; a distinct black spot on upper margin of opercle. **Size:** maximum length about 40 cm. **Distribution:** widely in Indo-Pacific, from East Africa to Hawaii, north to southern Japan, south to Australia. **Remarks:** occurring in coastal waters; feeds mainly on crustaceans and small fishes.

(S. Kimura)

Alepes kleinii
(Bloch, 1793)

Banded Scad

D VIII + I, 23–26; A II + I, 19–22; GR 9–12 + 27–32 = 38–44. Body



Alectis indicus, KAUM–I. 32875, 14.0 cm SL
Gulf of Thailand (SS), 27 Oct. 2010



Alepes djedaba, KAUM–I. 47352, 13.0 cm SL
Ang Sila, 8 June 2012



Alepes kleinii, KAUM–I. 32717, 8.5 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

oval, strongly compressed; ventral profile more convex than dorsal profile. Snout pointed; adipose eyelid well developed on posterior half of eye; upper jaw with a band of minute teeth; lower jaw with a single row of small conical teeth except 2 rows anteriorly. Straight part of lateral line entirely with scutes (35–45), longer than curved part. **Color:** body silvery green

dorsally, silvery white ventrally; a large black spot on upper margin of opercle; caudal fin yellowish especially in juvenile. **Size:** maximum length about 20 cm. **Distribution:** Indo-West Pacific, from Pakistan to Papua New Guinea and Australia. **Remarks:** occurring in coastal waters. Feeds mainly on planktonic crustaceans and fishes.

(S. Kimura)

Alepes melanoptera
(Swainson, 1839)

Blackfin Scad

D VIII + I, 23–26; A II + I, 18–21; GR 7–9 + 17–24 = 24–30; V 10 + 14. Body deep, compressed; dorsal and ventral profiles almost equally convex; snout rounded; adipose eyelid well developed on posterior half of eye; a single row of small slender curved teeth on both jaws; straight part of lateral line almost entirely with scutes (49–69 following 0–4 cycloid scales), longer than curved part (31–50 cycloid scales + 0–2 scutes). **Color:** body silvery blue or green dorsally, silvery white ventrally; a large black spot on upper margin of opercle; first dorsal fin black. **Size:** maximum length about 25 cm. **Distribution:** Indo-West Pacific, from the Persian Gulf to western Indonesia, north to southern China. **Remarks:** occurring in inshore waters; feeds mainly on shrimps and copepods. (S. Kimura)



Alepes melanoptera, KAUM-I. 33065, 11.8 cm SL
Prachuap Khiri Khan, 12 Nov. 2010



Alepes vari, KAUM-I. 33091, 18.0 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

Alepes vari
(Cuvier, 1833)

Herring Scad

D VIII + I, 23–27; A II + I, 20–23; GR 9–12 + 23–27 = 32–38; V 10 + 14. Body oblong, compressed; dorsal and ventral profiles almost equally convex; snout pointed; adipose eyelid well developed on posterior half of eye; a single row of small slender curved teeth on both jaws; straight part of lateral line almost entirely with scutes (48–69 following 0–7 cycloid scales), longer than curved part (42–50 cycloid scales + 0–2 scutes). **Color:** body silvery blue or green dorsally, silvery white ventrally; a diffuse dark spot on upper margin of opercle. **Size:** maximum length about 50 cm. **Distribution:** widely in Indo-West Pacific, from Red Sea to northern Australia, north to southern Japan. **Remarks:** occurring in shallow waters; feeds mainly on shrimps and fishes. (S. Kimura)



Atropus atropus, KAUM-I. 47765, 10.6 cm SL
Prachuap Khiri Khan, 21 July 2012

Atropus atropus
(Bloch & Schneider, 1801)

Cleftbelly Trevally

D VIII + I, 19–22; A II + I, 17–18; GR 8–11 + 19–23 = 29–34; V 10 + 14. Body deep, ovate, strongly compressed; nape strongly convex; a deep mid-

ventral groove on belly, accommodating pelvic fins and anal-fin spines; adipose eyelid not developed; upper jaw with a narrow band of small teeth, lower jaw with a single series of small teeth; central rays of second dorsal and anal fins produced into filaments in adult male; pelvic fins long; straight part of lateral line entirely with scutes

(31–37), longer than curved part. **Color:** body bluish green dorsally, silvery ventrally; pelvic fins black. **Size:** maximum length about 50 cm. **Distribution:** Indo-West Pacific, from Arabian Gulf to Philippines, north to southern Japan. **Remarks:** occurring in shallow waters; feeds mainly on shrimps and copepods. (S. Kimura)

Atule mate
(Cuvier, 1833)

Yellowtail Scad

D VIII + I, 22–25; A II + I, 18–21; GR 10–13 + 24–31 = 36–44; V 10 + 14. Body elongate oval, moderately compressed; dorsal and ventral profiles almost equally convex; snout pointed; adipose eyelid well developed and completely covering eye except for a vertical slit centered on pupil; shoulder girdle (cleithrum) margin smooth; last rays of dorsal and anal fins about twice as long as penultimate rays and more separated; straight part of lateral line almost entirely with scutes (36–49), shorter than curved part. **Color:** body silvery olive-green dorsally, silvery white ventrally; a black spot posteriorly on opercle; caudal fin yellow. **Size:** maximum length



Atule mate, KAUM-I. 23464, 14.8 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

about 30 cm. **Distribution:** widely in Indo-Pacific, from East Africa to Hawaii. **Remarks:** occurring in schools at depths to about 50 m. (S. Kimura)

Carangoides hedlandensis
(Whitley, 1934)

Bumpnose Trevally

D VIII + I, 19–22; A II + I, 16–18; GR 6–11 + 14–17 = 20–27; V 10 + 14. Body deep, strongly compressed; dorsal contour of forehead convex, with “bump” on interorbital space; breast widely naked to pectoral fin base and behind insertion of pelvic fins, but naked area not extending above pectoral fin base; second dorsal- and anal-fin soft rays produced into filaments in adult males; straight part of lateral line shorter than curved part, with 17–29 weak scutes posteriorly. **Color:** body silvery blue-gray or green-gray dorsally, silvery white ventrally; a black spot on upper margin of opercle; caudal fin yellowish. **Size:** maximum length about 30 cm. **Distribution:** widely in Indo-Pacific, from South Africa to Samoa, north to southern Japan. **Remarks:** occurring in coastal waters. (S. Kimura)



Carangoides hedlandensis, KAUM-I. 47427, 18.2 cm SL
off Tha Chana (SP), 18 June 2012

Carangoides malabaricus
(Bloch & Schneider, 1801)

Malabar Trevally

D VIII + I, 20–23; A II + I, 17–19; GR 7–12 + 21–27 = 32–38; V 10 + 14. Body ovate, strongly compressed; dorsal profile more strongly convex than ventral profile; naked area of breast very wide, extending dorsally beyond pectoral fin base and posteriorly beyond insertion of pelvic fins, usually extending to anal-fin origin; straight part of lateral line shorter than curved part, with 19–36 weak scutes posteriorly. **Color:** body silvery blue-gray dorsally, silvery white ventrally, dark or black blotch on upper margin of opercle. **Size:** maximum length about 60 cm. **Distribution:** widely in Indo-West Pacific, from South Africa to northern Australia, north to southern Japan. **Remarks:** occurring in coastal waters. (S. Kimura)



Carangoides malabaricus, KAUM-I. 32969, 16.2 cm SL off Chantha Buri (SP), 1 Nov. 2010

Carangoides praeustus
(Bennett, 1830)

Brownback Trevally

D VIII + I, 21–24; A II + I, 18–20; GR 9–11 + 22–26 = 32–37. Body elongated, compressed, somewhat slender; dorsal and ventral profiles almost equally convex. Small conical teeth irregularly arranged in a row on both jaws; vomerine tooth patch arrowheadshaped with a long posterior extension. Breast usually scaled completely; straight part of lateral line with 4–12 scales followed by 23–34 scutes. **Color:** body silvery blue-gray dorsally, silvery white ventrally; tip of anterior rays of second dorsal fin jet-black distally with white margin; caudal fin yellow. **Size:** maximum length about 22 cm. **Distribution:** Indo-West Pacific, from Persian Gulf to Philippines and Indonesia. **Remarks:** occurring in coastal waters. (S. Kimura)



Carangoides praeustus, KAUM-I. 23463, 10.7 cm SL Gulf of Thailand (SS), 24 Sept. 2009

Caranx sexfasciatus
Quoy & Gaimard, 1825

Bigeye Trevally

D VIII + I, 19–22; A II + I, 14–17; GR 6–8 + 15–19 = 21–25; V 10 + 15. Body oblong, compressed; dorsal profile moderately convex anteriorly, ventral profile slightly convex; adipose eyelid developed on posterior half of eye; posterior end of upper jaw extending to or beyond posterior mar-



Caranx sexfasciatus, KAUM-I. 33089, 20.8 cm SL Prachuap Khiri Khan, 13 Nov. 2010

gin of eye; breast completely scaled; straight part of lateral line almost entirely with scutes (27–36). **Color:** body silvery yellowish-green dorsally, silvery white ventrally; small black opercular spot; anal and caudal fins yellowish; scutes dark or black. **Size:**

maximum length about 120 cm. **Distribution:** widely in Indo-Pacific and tropical eastern Pacific Ocean. **Remarks:** found in coastal waters; juveniles occurring in brackish waters; feeds mainly on fishes and crustaceans. (S. Kimura)

Decapterus russelli
(Rüppell, 1830)

Indian Scad

D VIII + I, 27–32 + 1; A II + I, 24–28 + 1; GR 10–14 + 30–39 = 41–53; V 10 + 14. Body elongate, slender, cylindrical; adipose eyelid well developed and completely covering eye except for a vertical slit centered on pupil; posterior end of maxilla almost truncate; predorsal scaled area not reaching to level of center of eye; shoulder girdle (cleithrum) margin with 2 small papillae; a single detached finlet in dorsal and anal fins; straight part of lateral line usually entirely with scutes (30–40), but rarely a few cycloid scales anteriorly. **Color:** body bluish gray dorsally, silvery ventrally; a black spot posteriorly on opercle. **Size:** maximum length about 30 cm SL. **Distribution:** widely in Indo-West Pacific, from East Africa to eastern Australia, north to southern Japan. **Remarks:** inhabit in inshore waters up to 100 m depth.

(S. Kimura)



Decapterus russelli, KAUM-I. 33135, 17.6 cm SL off Chantha Buri (SP), 22 Nov. 2010



Gnathanodon speciosus, KAUM-I. 32932, 4.3 cm SL Ang Sila, 30 Oct. 2010

Gnathanodon speciosus
(Forsskål, 1775)

Golden Trevally

D VII–VIII + I, 18–21; A II + I, 15–17; GR 7–9 + 19–22 = 27–30; V 10 + 14. Body oblong, somewhat deep; compressed; both jaws without teeth in adults, a few feeble teeth on lower jaw in juveniles; lips fleshy and remarkably thick; breast completely scaled; straight part of lateral line with scutes (17–26) posteriorly, shorter than curved part. **Color:** body silvery yellow with 7–11 black vertical bands, usually alternating broad and narrow in juveniles and young adults; the first band oblique through eye; all fins yellow, caudal fin tips black. **Size:** maximum length about 120 m. **Distribution:** widely in Indo-Pacific from East Africa to Tuamotu Islands, including Hawaii, and tropical eastern Pacific Ocean, from Mexico to Peru. **Remarks:** occurs in deep lagoon and seaward reefs; feeds mainly on crustaceans and small fishes. (S. Kimura)

Megalaspis cordyla
(Linnaeus, 1758)

Torped Scad

D VIII + I, 9–11 + 7–9; A II + I, 8–10



Megalaspis cordyla, KAUM-I. 33026, 15.5 cm SL Prachuap Khiri Khan, 7 Nov. 2010

+ 6–8; GR 8–11 + 18–22 = 26–32; V 10 + 14. Body elongate, somewhat compressed; caudal peduncle depressed; adipose eyelid well developed and completely covering eye except for a vertical slit centered on pupil; shoulder girdle (cleithrum) margin smooth without papillae; several detached finlets in dorsal and anal fins; straight part of lateral line entirely with large scutes (51–59), much longer than

curved part; scutes on caudal peduncle forming a lateral keel. **Color:** body silvery brownish-green dorsally, silvery white ventrally; a large black spot posteriorly on opercle. **Size:** maximum length about 80 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to Fiji, north to southern Japan. **Remarks:** pelagic, schooling fish; feeds mainly on fishes. (S. Kimura)

Parastromateus niger
(Bloch, 1795)

Black Pomfret

D IV–V + I, 40–45; A II + I, 35–39; GR 5–7 + 13–16; V 10 + 14. Body deep, rhomboidal, strongly compressed; dorsal and anal profiles equally much convex; mouth small, terminal; a single row of small conical teeth on both jaws; spinous portion of dorsal fin and detached anal-fin spines embedded, not seen in adults; pelvic fins absent in young and adults (> 10 cm FL), present at jugular anterior to pectoral-fin base in juvenile; straight part of lateral line much shorter than curved part, with 8–19 weak scutes. **Color:** body dark brown or black uniformly. **Size:** maximum length about 75 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to northern Australia. **Remarks:** inhabits coastal waters with muddy bottom; feeds on zooplankton. (S. Kimura)



Parastromateus niger, KAUM-I. 32832, 10.9 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Scomberoides commersonianus
Lacepède, 1801

Talang Queenfish

D VI–VII + I, 19–21; A II + I, 16–19; GR 0–3 + 7–12 = 8–15; V 10 + 16. Body oblong, somewhat deep, strongly compressed; no caudal peduncle groove; posterior tip of upper jaw extending well beyond a vertical through posterior margin of eye in adults; two rows of small conical teeth and 1–2 symphyseal canines on lower jaw; body covered with broadly lanceolate scales; no scutes along lateral line. **Color:** body blue-greenish gray dorsally, silvery white ventrally, with a series of 6–8 dusky roundish blotches dorsolaterally in adults; dorsal and caudal fins uniformly dusky; anal and pelvic fins whitish in young. **Size:** maximum length about 120 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to Australia. **Remarks:** inhabit shallow coastal waters to offshore areas; feeds on mainly fishes. (S. Kimura)



Scomberoides commersonianus, KAUM-I. 32684, 15.0 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

Scomberoides tala
(Cuvier, 1832)

Needlescaled Queenfish

D VI–VII + I, 19–21; A II + I, 16–19; GR 0–3 + 7–12 = 8–15; V 10 + 16. Body oblong, somewhat deep, strongly compressed; no caudal peduncle



Scomberoides tala, KAUM-I. 23461, 12.9 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

groove; posterior tip of upper jaw extending well beyond a vertical through posterior margin of eye in adults; two rows of small conical teeth and 1–2 symphyseal canines on lower jaw; body covered with broadly lanceolate scales; no scutes along lateral line. **Color:** body blue-greenish gray dorsally, silvery white ventrally, with a series of 6–8 dusky roundish blotches

dorsolaterally in adults; dorsal and caudal fins uniformly dusky; anal and pelvic fins whitish in young. **Size:** maximum length about 120 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to Australia. **Remarks:** inhabit shallow coastal waters to offshore areas; feeds on mainly fishes. (S. Kimura)

Scomberoides tol
(Cuvier, 1832)

Barred Queenfish

D VI–VII + I, 19–21; A II + I, 18–22; GR 4–7 + 17–20 = 21–26; V 10 + 16. Body slender, strongly compressed; posterior tip of upper jaw not reaching to a vertical through posterior margin of eye in adults; dentary with 2 teeth rows separated by a shallow groove in adults, teeth in both rows almost same sized; body covered with slender, needle-like scales; no scutes along lateral line. **Color:** body blue-greenish gray dorsally, silvery white ventrally, with a series of 5–8 oblong dark blotches laterally in adults; lobe of second dorsal fin black. **Size:** maximum length about 60 cm. **Distribution:** widely in Indo-Pacific, from East Africa to Fiji, north to southern Japan, south to northern Australia. **Remarks:** found in coastal waters; feeds on mainly fishes.

(S. Kimura)



Scomberoides tol, KAUM–I. 32794, 13.6 cm SL
Chang Island, 25 Oct. 2010



Selar boops, KAUM–I. 47452, 16.0 cm SL
Gulf of Thailand (SS), 20 June 2012

Selar boops
(Cuvier, 1833)

Oxeye Scad

D VIII + I, 23–25; A II + I, 19–21; GR 8–12 + 25–29; V 10 + 14. Body elongated and compressed; eye very large; adipose eyelid well developed and completely covering eye except for a vertical slit centered on pupil; shoulder girdle (cleithrum) margin with upper (small) and lower (large) papillae; dorsal and anal fins without detached finlets; straight part of lateral line almost entirely covered by relatively large scutes (37–46), longer than curved part. **Color:** body blue-green dorsally, silvery white ventrally, with a narrow yellow longitudinal stripe from border of opercle to caudal peduncle. **Size:** maximum length about 25 cm FL. **Distribution:** Indo-West Pacific, from Pakistan to Solomon Islands; East Atlantic (Portugal). **Remarks:** feeds mainly on planktonic or benthic crustaceans. (S. Kimura)



Selaroides leptolepis, KAUM–I. 32716, 8.1 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

Selaroides leptolepis
(Cuvier, 1833)

Yellowstripes Scad

D VIII + I, 24–26; A II + I, 20–23; GR 10–14 + 27–32 = 40–46; V 10 + 14. Body oblong, compressed; adi-

pose eyelid well developed on posterior half of eye; no teeth on upper jaw, a single row of minute teeth on lower jaw; shoulder girdle (cleithrum) margin smooth without papillae; dorsal and anal fins without finlets; straight part of lateral line with 13–25 cycloid scales followed by 24–29 relatively small scutes. **Color:** body metallic blue-green dorsally, silvery white ven-

trally, with a broad longitudinal yellow stripe from upper margin of eye to caudal peduncle; upper opercle with a prominent black spot. **Size:** maximum length about 22 cm. **Distribution:** Indo-West Pacific, from Persian Gulf to eastern Australia. **Remarks:** inhabits soft bottom area at depths shallower than 50 m. (S. Kimura)

Seriolina nigrofasciata
(Rüppell, 1829)

Blackbanded Trevally

D VII–VIII + I, 30–37; A II + I, 15–18; GR 4–10; V 11 + 13. Body elongate, slightly compressed; posterior tip of upper jaw broadly rounded, reaching to a vertical through posterior margin of eye; teeth on both jaws minute, forming a broad band; gill rakers on first gill arch consisting mostly of rudiments; caudal peduncle with fleshy lateral keel and dorsal and ventral grooves; no scutes. **Color:** body dark brown, paler below, with 5–7 black oblique bands dorsolaterally; tips of dorsal and anal fin lobes whitish. **Size:** maximum length about 70 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to Australia, north to southern Japan. **Remarks:** found mainly in offshore reefs; feeds on benthic fishes, crustaceans and cephalopods. (S. Kimura)



Seriolina nigrofasciata, KAUM–I. 47433, 24.8 cm SL off Tha Chana (SP), 18 June 2012

Ulua mentalis
(Cuvier, 1833)

Whitemouth Jack

D VIII + I, 21–22; A II + I, 17–18; GR 23–27 + 51–61 = 74–86; V 10 + 14. Body deep, strongly compressed; dorsal profile strongly convex in adults; breast widely naked to pectoral fin base and insertion of pelvic fins; teeth on both jaws small, pointed in a single row in adults, or in an irregular row or a narrow band in juveniles; posterior 2 or 3 spines in first dorsal fin and detached anal fin spines usually embedded; straight part of lateral line almost entirely with 24–39 scutes. **Color:** body silvery blue-green dorsally, silvery white ventrally; juveniles with 7–8 dark bands laterally. **Size:** maximum length 1 m. **Distribution:** widely in Indo-West Pacific, from South Africa to northeastern Australia, north to southern Japan. **Remarks:** occurring in shallow coastal waters. (S. Kimura)



Ulua mentalis, KAUM–I. 33130, 31.7 cm SL off Chantha Buri (SP), 22 Nov. 2010

Uraspis uraspis
(Günther, 1860)

Whitemouth Jack

D VIII + I, 25–30; A II + I, 17–22; GR 5–7 + 13–16 = 18–22; V 10+14. Body ovate, somewhat deep, compressed; dorsal profile more strongly convex than ventral profile. Lower

jaw projecting in adults, gill rakers very long, entering into mouth. Breast widely naked to pectoral fin base and behind insertion of pelvic fins. Straight part of lateral line entirely with 26–38 scutes. **Color:** body silvery bluish black dorsally, metallic dark brown ventrally; oral cavity black except white tongue, roof and floor of mouth.

Uraspis uraspis, KAUM–I. 47432, 15.4 cm SL off Tha Chana (SP), 18 June 2012

Size: maximum length 28 cm FL. **Distribution:** widely distributed in Indo-Pacific, from Red Sea to Hawaii, north to southern Japan, south to northern Australia. **Remarks:** occurring in continental shelf. Feeds on crustaceans and cephalopods. Marketed fresh. (S. Kimura)

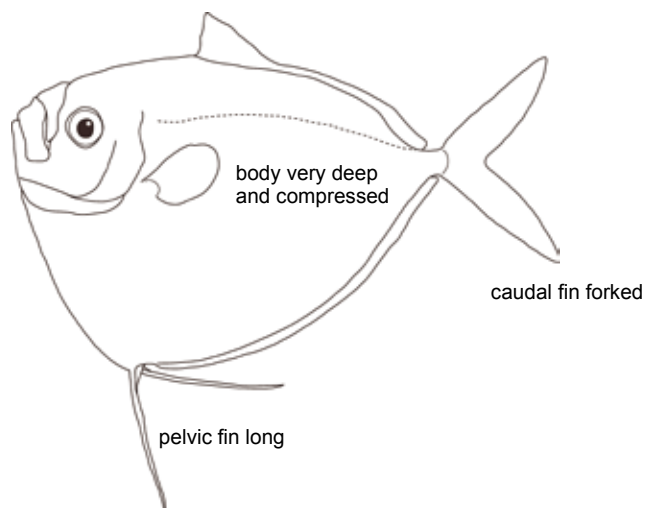


MENIDAE

Moonfish

This family represented by a single species; see the following species account.

Similar families occurring in the area: none. No other fishes have a combination of characters such as body very deep, almost triangular, extremely compressed; long dorsal and anal fin bases; thin, flexible and rudimental dorsal fin spines; extremely long pelvic fin, the first 2 soft rays fused. (M. Matsunuma)



Mene maculata

(Bloch & Schneider, 1801)

Moonfish

D III–IV + 40–45; A 30–33; P₁ 15; P₂ I, 5; GR 6–8 + 23–25. Body very deep, almost triangular, extremely compressed; breast sharp-edged; covered with minute scales, invisible to the naked eye. Mouth small, almost vertical, protrusible; villiform bands in jaws. Dorsal fin long-based, and low posteriorly; spines thin and flexible. Anal fin long-based, commencing at point of insertion of pelvic fins, uniformly very low. Caudal fin deeply forked. Pectoral fins shorter than head length. Pelvic fins inserted slightly in front of pectoral fins, first 2 soft rays fused and greatly elongated. **Color:** upper sides deep metallic blue, remainder silvery, with a row of round to ovoid, dark slaty-blue spots above and below lateral line, sometimes a few additional spots above and below these rows; pelvic fins with a trace of blue, other fins hyaline or slightly dusky. **Size:** commonly 20 cm, maximum 30 cm. **Distribution:** Indo-West Pacific from the east coast of Africa east to Melanesia, Australia north to Japan. **Remarks:** found in coastal waters to depths of 200 m. Marketed fresh and dried. (M. Matsunuma)

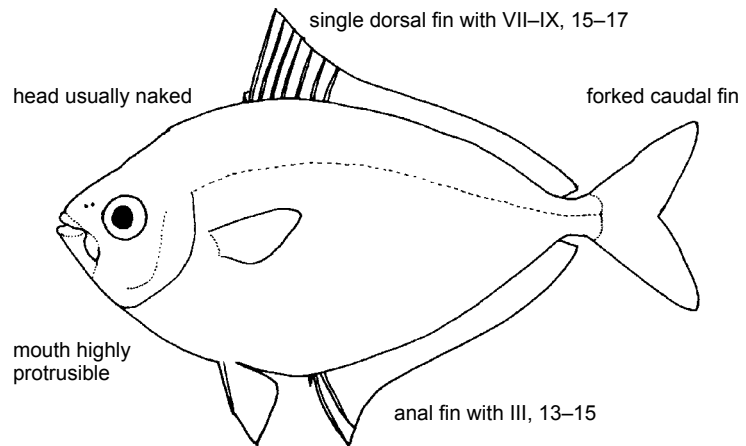


Mene maculata, KAUM-I. 32870, 11.9 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

LEIOGNATHIDAE

Slipmouths (Ponyfishes)

Small to medium-sized marine and brackish fishes; maximum size about 25 cm. Body slimy and deep, ovate, strongly compressed, except a few species. Head usually naked (cheek scales present in some species) with bony ridges on dorsal surface, a median bony ridge (crest) on nape; mouth small, highly protrusible; no pseudobranchiae; gill membranes united with isthmus. Unique light organ encircling the posterior part of esophagus. A single dorsal fin, lacking a distinct notch, with VII–IX spines (usually VIII) and 15–17 (usually 16) soft rays; anal fin usually with III spines and 13–15 (usually 14) soft rays; caudal fin forked; pelvic fin I, 5. Scales small cycloid easily shed. Vertebral counts 22–24. **Color:** body generally silver; dark vertical bars or yellow spots on body, a black blotch on top of dorsal fin, yellow vertical fin margins in some species.



Remarks: occurring in tropical to temperate marine and estuarine areas. The generic names follow Kimura et al. (2008a, b, c).

Similar families occurring in the area: Leiognathidae is distinguished from the following similar families in having strongly protrusible mouth,

naked head (except cheek in some species), and small cycloid scales on body. Carangidae – 2 dorsal fins; mouth not highly protrusible. Gerreidae – scales large; head scaled; scaly sheath along the bases of dorsal and anal fins well developed.

(S. Kimura)

Equulites oblongus (Valenciennes, 1835)

Oblong Ponyfish

D VIII, 16; A III, 13–14 (usually 14); P₁ 16–19; LL 52–63; GR 4–6 + 12–15 = 17–20; V 10 + 14. Body oblong, compressed; body depth 35–46% SL; dorsal profile more strongly convex than ventral profile; mouth protruding downwards; ventral profile of lower jaw slightly concave; small slender teeth on both jaws; cheek naked; breast completely scaled laterally with narrow naked area ventrally; second dorsal- and anal-fin spines not distinctly elongated. **Color:** body brownish silver dorsally, brilliant silvery-white ventrally; irregular oblique dark lines dorsolaterally on body; dorsal, anal and caudal fins yellowish. **Size:** maximum length about 10 cm SL. **Distribution:** widely in Indo-West



Equulites oblongus, KAUM-I. 23384, 6.6 cm SL
Bang Pakong, 22 Sept. 2009

Pacific, from Mauritius to Australia.

Remarks: usually found in shallow waters; feeds on small crustaceans and polychaetes. (S. Kimura)

Equulites stercorarius
(Evermann & Seale, 1907)

Slender Ponyfish

D VIII, 16; A III, 14; P₁ 16–18; LL 58–61; GR 5–6 + 11–14 = 16–20. Body elongate, moderately compressed; body depth 30–36% SL; mouth protruding downwards; profile of lower jaw almost straight; a single row of small slender teeth on jaws; retrorse spines of dorsal- and anal-fin pterygiophores embedded; cheek, breast, and belly completely scaled. **Color:** body brownish dorsally, silvery-white ventrally; black blotch on snout; dark irregular oblique lines indistinctly on dorsolateral body surface; dorsal and anal fins with yellow bands. **Size:** maximum length about 12 cm. **Distribution:** found in Philippines, Vietnam, Thailand, Malaysia, and Indonesia. **Remarks:** inhabits soft bottom area at depths shallower than 50 m.

(S. Kimura)



Equulites stercorarius, KAUM-I. 32768, 9.8 cm SL
Ang Sila, 23 Oct. 2010

Eubleekeria jonesi
(James, 1971)

Yellowlined Ponyfish

D VIII, 16; A III, 14–15 (usually 14); P₁ 16–19; LL 50–61; GR 5–7 + 21–24 = 24–31; V 10 + 14. Body deep, ovate, strongly compressed; dorsal and ventral profiles similarly convex; lower margin of eye located above level of mouth gape; mouth protruding downwards; ventral profile of lower jaw almost straight; small slender teeth on both jaws; cheek naked; breast almost completely scaled; semicircular naked area on nape. **Color:** head and body almost uniformly silvery-white; tip of snout dark; lateral line scales prominent yellow but easily fade out; distal half of fin membranes between second and fifth spines of dorsal fin with a somewhat pale black blotch. **Size:** maximum length about 14 cm SL. **Distribution:** Indo-West Pacific, from Mauritius to Indonesia, northward to Hainan Island, China, south to Australia. **Remarks:** usually found in muddy bottoms in shallow waters.

(S. Kimura)



Eubleekeria jonesi, KAUM-I. 47761, 8.2 cm SL
Prachuap Khiri Khan, 21 July 2012

Gazza minuta
(Bloch, 1795)

Toothpony

D VIII, 16; A III, 13–14 (usually 14); P₁ 14–19; LL 52–69; LGR 13–18; V 10 + 14. Body oval, compressed, somewhat elongated; mouth protruding forwards, not downwards, with distinct canine teeth on both jaws; a long narrow anterodorsal extension of subocular silvery region, proximal contact only with orbit; pelvic-fin tips not reaching to origin of anal fin when appressed; scaled area of anterior dorso-lateral surface of body extending anteriorly beyond a vertical through posterior tip of sensory canal on temporal; breast completely naked. **Color:** body bluish silver dorsally, brilliant silvery-white ventrally; anal fin yellowish distally; caudal fin yellowish with faintly black margin. **Size:** maximum length about 16 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to northern Australia, north to southern Japan. **Remarks:** feeds on benthic animals and small fishes. (S. Kimura)



Gazza minuta, KAUM-I. 47794, 8.3 cm SL
Prachuab Khirikhan, 23 July 2012

Nuchequula blochii
(Valenciennes, 1835)

Shining Ponyfish

D VIII, 16; A III, 14; P₁ 16–20; LL 50–58; GR 5–6 + 11–15 = 20–23; V 10+14. Body oblong, somewhat elongate, compressed; dorsal and ventral profiles almost equally convex. Mouth protruding downwards, with small slender teeth on both jaws; ventral profile of lower jaw slightly concave. Cheek naked; breast completely scaled. Second anal fin spine slightly elongated. **Color:** body brownish silver dorsally, brilliant silvery-white ventrally; a black or dark large blotch on nape; 4 dark broken lines dorsolaterally on body, the third along lateral line; a dark marking on tip of anterior dorsal fin; dorsal, anal, and caudal fins faintly yellowish. **Size:** maximum length about 8 cm SL. **Distribution:** Andaman Sea and Gulf of Thailand. **Remarks:** found in muddy bottoms of coastal inshore waters. *Leiognathus pan* is a synonym. (S. Kimura)



Nuchequula blochii, KAUM-I. 32699, 5.7 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

Nuchequula longicornis
Kimura, Kimura & Ikejima, 2008

Longspine Ponyfish

D VIII, 16–17 (usually 16); A III, 14; P₁ 18–19; LL 54–58; GR 5–6 + 16–17 = 22–23; V 10 + 14. Body deep, oval, compressed; dorsal and ventral profiles equally convex; mouth protruding downward; a narrow band of small, slender, villiform teeth in both jaws; minute, sparse, slender projections on the upper oral valve; cheek naked; no naked area on nape; breast naked; second dorsal-fin spine elongated, extending beyond the base of fifth soft ray when fin appressed; second anal-fin spine not elongated, not reaching to the base of fifth soft ray when fin appressed. **Color:** body almost uniformly silver; a distinct dark blotch on the nape; a yellow marking on the abdomen between base of pectoral fin and origin of anal fin. **Size:** maximum length about 80 cm SL. **Distribution:** West Pacific, from Gulf of Thailand to Java. (S. Kimura)



Nuchequula longispinis, KAUM-I. 23239, 12.0 cm SL
Gulf of Thailand (SS), 9 Sept. 2009

Leiognathus equulus
(Forsskål, 1775)

Common Ponyfish

D VII–VIII, 16–17 (usually VIII, 16); A III, 13–14 (usually 14); P₁ 19–22; LL 54–68; GR 4–7 + 13–18 = 19–24; V 10 + 14. Body extremely deep, compressed, hump-back shaped; mouth protruding downwards; small slender teeth on both jaws; profile of lower jaw strongly concave; supraorbital ridge serrated; cheek, breast, and belly completely naked; second dorsal- and anal-fin spines slightly elongated, but not filamentous; retrorse spines of dorsal and anal-fin pterygiophores strong and exposed. **Color:** body blue-grayish silver dorsally, brilliant silvery white ventrally; dorsolateral body with 17–22 narrow dark vertical lines. **Size:** maximum length about 30 cm. **Distribution:** widely in Indo-West Pacific, from East Africa to Fiji, north to southern Japan and south to northern Australia. **Remarks:** inhabits shallow coastal areas, usually entering into estuaries; feeds chiefly on polychaetes, small crustaceans, and small fishes. (S. Kimura)

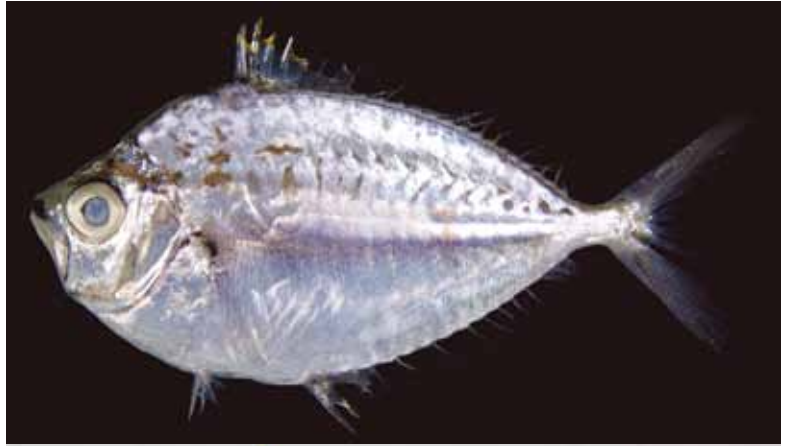


Leiognathus equulus, KAUM-I. 23904, 7.9 cm SL
Mouth of Thachin River, 28 Sept. 2009

Photopectoralis bindus
(Valenciennes, 1835)

Orangefin Ponyfish

D VIII, 15–16 (usually 16); A III, 14; P₁ 15–19; LL 51–88; GR 4–7 + 16–20 = 21–27; V 10 + 14. Body rounded, disk-like, strongly compressed; ventral profile similarly convex as, or more strongly convex than ventral profile; mouth protruding forwards; a single row of small conical teeth in both jaws; ventral profile of lower jaw almost straight or slightly concave; cheek naked; breast almost completely scaled laterally with narrow naked area ventrally. **Color:** body brownish silver dorsally, brilliant silvery-white ventrally; irregular oblique dark lines and/or dark vermiculation dorsolaterally on body; spinous portion of dorsal fin dark orange to yellow distally, anterior anal fin yellowish distally. **Size:** maximum length about 10 cm SL. **Distribution:** Indo-West Pacific, from Red Sea to New Caledonia, north to southern Japan. **Remarks:** usually found in muddy bottoms of coastal in-shore waters. (S. Kimura)



Photopectoralis bindus, KAUM-I. 23386, 5.6 cm SL
Bang Pakong, 22 Sept. 2009

Secutor hanedai
Mochizuki & Hayashi, 1989

Hanedai's Ponyfish

D VIII, 16; A III, 14; P₁ 15–18; GR 5–7 + 17–20 = 22–26; V 10 + 14. Body oblong, compressed; ventral profile more strongly convex than dorsal profile; mouth protruding upwards; minute teeth on both jaws; ventral profile of lower jaw slightly concave; cheek and breast naked; lateral line incomplete, number of scale pockets along lateral line to caudal-fin base 60–70; scale rows above and below lateral line 16–22 and 42–53, respectively. **Color:** body silvery brownish green dorsally, brilliant silvery-white ventrally; 9 or 10 vertical series of dark bars or blotches dorsolaterally on body. **Size:** maximum length about 10 cm. **Distribution:** western and eastern coasts of Malay Peninsula, Gulf of Thailand, Sumatra, Java, and Borneo. **Remarks:** usually found in muddy bottoms in shallow waters. (S. Kimura)



Secutor hanedai, KAUM-I. 32772, 7.3 cm SL
Ang Sila, 23 Oct. 2010

Secutor indicus
Monkolprasit, 1973

Dots-and-dashes Ponyfish

D VIII, 16; A III, 14; P₁ 16–18; LGR 20–21; V 10 + 14. Body oblong, somewhat elongated, compressed; ventral profile more strongly convex than dorsal profile; mouth protruding upwards; minute teeth on both jaws; ventral profile of lower jaw concave; cheek naked; breast naked ventrally; lateral line incomplete, number of scale pockets along lateral line to caudal-fin base 87–111; scale rows above and below lateral line 18–22 and 39–48, respectively. **Color:** body silvery brownish dorsally, brilliant silvery-white ventrally; about 15 irregular vertical dark markings consisted of dots and dashes dorsolaterally on body. **Size:** maximum length about 10 cm. **Distribution:** West Pacific Ocean, from Gulf of Thailand to New Guinea, north to southern Japan. **Remarks:** usually found in muddy bottoms in shallow waters. (S. Kimura)



Secutor indicus, KAUM-I. 23383, 7.6 cm SL
Bang Pakong, 22 Sept. 2009

Secutor megalolepis
Mochizuki & Hayashi, 1989

Bigscaled Ponyfish

D VIII, 16; A III, 14; P₁ 15–16; LL 43–49; GR 4–6 + 16–20 = 21–25; V 10+14. Body disk-like, strongly compressed; ventral profile more strongly convex than dorsal profile. Mouth protruding upwards, with minute teeth on both jaws; ventral profile of lower jaw almost concave. Cheek and breast completely scaled. **Color:** body silvery brownish dorsally, brilliant silvery-white ventrally; about 10 series of vertical dark bars or blotches dorsolaterally on body. **Size:** maximum length about 6 cm SL. **Distribution:** found in Vietnam, Thailand, Malaysia, Indonesia, northern Australia, and Okinawa, Japan. **Remarks:** usually found in muddy bottoms in shallow coastal waters and estuary. Marketed fresh or dried. (S. Kimura)

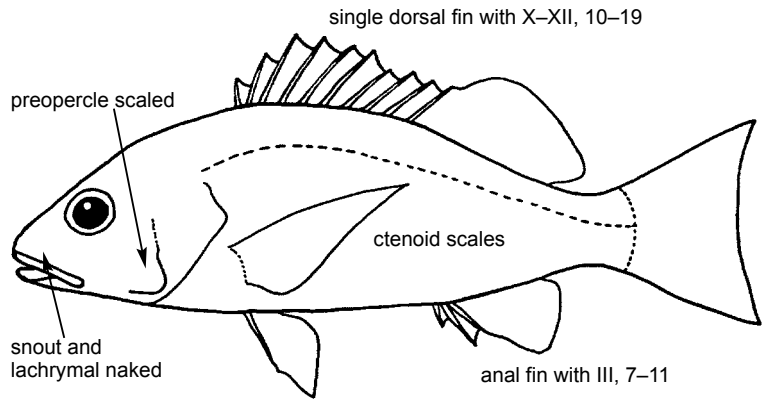


Secutor megalolepis, KAUM-I. 23410, 4.2 cm SL
Ang Sila, 22 Sept. 2009

LUTJANIDAE

Snappers

Typical perch-like fishes, body symmetrical and moderately compressed, oblong in shape (size to 160 cm). Eye usually restrained; premaxilla usually moderately protrusible; mouth terminal and fairly large; maxilla upward for most or all of its length under lachrymal when mouth closed; supramaxilla absent. Jaws with conical teeth and usually with more or less distinct enlarged canines; teeth in jaws not fused together; pterygoids usually toothless; teeth typically well-developed on those bones; molar teeth absent in jaw; teeth in jaws not incisor-like, usually in several rows or a band; teeth in jaws variable-conical or molariform. Scales present on most part of head; cheek and operculum scaly; lips usually not fleshy; maxilla with or without scales; snout, lachrymal, and lower jaw naked; opercular spines 2; no chin pores. Dorsal fin single, continuous or slightly notched, spinous portion sometimes deeply incised posteriorly where it joins soft portion with X–XII spines and 10–19 soft rays; anal fin with III spines and 7–11 soft rays; pectoral-fin rays 14–19; pelvic fins with I spine and 5 soft rays, originating just behind pectoral-fin base. Caudal peduncle moderately long and high caudal fin shape variable frequently truncate, emarginated or lunate with 17 fin rays. Lateral line continuous without an abrupt bend. Pelvic axillary process usually well-developed. Gill membranes not united; preoper-



cular margin usually serrated with conical notch; branchiostegal rays 7. Vertebrae 24 (10 + 14).

Color: highly variable; mainly from red through yellow to blue; often with blotches, lines, or other patterns.

Remarks: Lutjanidae are found in tropical and subtropical areas of the Atlantic, Indian and Pacific Oceans. They are mainly marine inhabitants, although they are known to enter estuaries and freshwater. They are generally demersal swimmers, extending down to depths of about 500 m. Active predators, mostly nocturnal, feeding on crustaceans, mollusks, and fishes; while several are planktivores.

Similar families occurring in the area: Caesionidae – mouth small; premaxillae extremely protrusible; teeth small and minute; caudal fin deeply forked, with pointed lobes. Haemulidae – scales present on snout and

lachrymal, those in lachrymal often embedded; preoperculo mandibular canal lateral system opening under chin through median longitudinal groove or enlarged pores or both; usually no teeth on vomer and palatines; vertebrae 26 or 27. Lethrinidae – opercular membranes broadly united to each other; preopercular margin typically smooth; branchiostegal rays 6; soft rays in dorsal fin 9 or 10; no teeth on vomer or palatines; most species lack scales on cheek; lips frequently fleshy. Nemipteridae – preopercular margin typically smooth; soft rays in dorsal fin 9; soft rays in anal fin usually 7, rarely 8; branchiostegal rays 6; no teeth on vomer or palatines. Sparidae – preopercular margin typically smooth; branchiostegal rays 6; teeth in jaws variable, onical, incisiform, or molariform.

(S. Tafzilmeriam S. A. K.)

Lutjanus lutjanus
(Bloch, 1790)

Bigeye Snapper

D X, 13; A III, 8; P₁ 15; P₂ I, 5; LLp 48–50; GR 6–8 + 17–19. Body fusiform, slender; its depth 2.9 to 3.3 times in standard length. Interorbital space flat and less than eye diameter. Head and body covered with small adhesive ctenoid scales. Scale rows on back rising obliquely above lateral line. Large terminal and slightly protractile mouth with thick lips. Vomerine tooth patch triangular, with a medial posterior extension. Preopercular margin finely denticulated, with preopercular notch. Lateral line running parallel to dorsal profile. Caudal fin truncate or slightly emarginated. **Color:** upper back golden brown; a broad yellow to brownish stripe from eye to caudal-fin base; yellow horizontal lines (1 per scale row) on lower half of body, and similar lines running obliquely above lateral line; fins yellowish. **Size:** maximum length about 30 cm. **Distribution:** widespread in the Indo-West Pacific. **Remarks:** inhabits offshore coral reefs and trawling grounds to depths of at least 90 m. Frequently seen in large schools (over 100 individuals). (S. Tafzilvermeriam)



Lutjanus lutjanus, KAUM-I. 32826, 11.3 cm SL
Gulf of Thailand (SP), 25 Oct. 2010



Lutjanus madras, KAUM-I. 33013, 12.3 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

Lutjanus madras
(Valenciennes, 1831)

Indian Snapper

D X–XI, 13–14; A III, 8–9; P₁ 16–17; LLp 47–50; GR 6–7 + 12–15. Body fusiform, somewhat slender, its depth 2.6–3.1 in SL. Anterodorsal profile of head moderately to gently sloped; preorbital width about equal to 2/3 of eye diameter; preopercular notch and knob poorly developed.

Posterior profile of dorsal and anal fins angular; caudal fin truncate or slightly emarginate. Scale rows on back rising obliquely above lateral line. **Color:** upper back brownish; sides whitish with a series of fine yellow horizontal lines; fins yellow except pelvic fins frequently white or

faintly yellow. **Size:** maximum length about 30 cm, commonly to 20 cm. **Distribution:** Indian Ocean and West Pacific: Seychelles to New Guinea and the Philippines. **Remarks:** often misidentified as *L. lutjanus*.

(U. Satapoomin)

Lutjanus malabaricus
(Bloch & Schneider, 1801)

Humpback Red Snapper

D X, 14; A III,8; P₁ 17; P₂ I, 5; GR 25–30; LGR 15–20. Body deep, compressed, its depth 2.2–2.5 times in standard length. Preorbital bone broad, much wider than eye diameter, preopercular notch and knob well developed, vomerine tooth band lacking a medial posterior extension, tongue smooth, without teeth. Scale rows on back rising obliquely both above and below the lateral line. Caudal fin distinctly forked with rounded lobes.

Color: body uniformly dark red in adults, darker on back and upper portion of head, an orange hue on lower part of opercle and in pectoral-fin axil, fins red or frequently dark brown to blackish, soft part of dorsal fin, anal and caudal fins with a narrow white margin, juveniles with a large round black spot at base of caudal fin. **Size:** maximum total length about 50 cm, commonly to 35cm. **Distribution:** Indo-Pacific. **Remarks:** inhabits coral reefs. Depth distribution ranges from about 6 to at least 30 m.

(S. Tafzilmeriam)



Lutjanus malabaricus, KAUM-I. 33134, 10.3 cm SL off Chantha Buri (SP), 22 Nov. 2010



Lutjanus russellii
(Bleeker, 1849)

Russell's Snapper

D X, 14; A III, 8; P₁ 15; P₂ I, 5; LLp 47–50; GR 6–7 + 7–11. Body moderately deep, elongated and compressed, its depth 2.6–2.8 in standard length. Anterodorsal profile of head steeply to moderately sloped; preorbital width about equal to, or slightly less than eye diameter. Body covered with small, adhesive, ctenoid scales. Dorsal and anterior part of head scaleless. Scale rows on back rising obliquely above lateral line. Large, terminal and slightly protractile mouth with thick lips. Preopercular notch and knob poorly developed. Caudal fin truncate or slightly emarginate. **Color:** body reddish-brown; a black spot, sometimes faint, on the lateral line below the anterior portion of the soft dorsal fin; adults from Malaysia usually with 6 dark yellow stripes on sides; juveniles,



Lutjanus russellii, KAUM-I. 32952, 12.6 cm SL Rayong, 31 Oct. 2010

whitish with 4 black stripes on sides and with a round black spot on upper back. **Size:** maximum length about 45 cm, commonly to 26 cm. **Distribution:** Western Pacific. **Remarks:** in-

habits inshore rocky and coral reefs; to a depth of 80 m. Juveniles often found in mangrove areas. (S. Tafzilmeriam)

Lutjanus sebae
(Cuvier, 1816)

Emperor Red Snapper

D XI, 15–17; A III, 10; P₁ 17; P₂ I, 5; LLp 46–49; GR 6–7 + 10–12. Body deep. Soft portions of dorsal and anal fins pointed. Vomerine tooth patch crescentic or triangular, without a medial posterior extension. Caudal fin slightly forked. **Color:** body white with 3 red bands on lateral surface of body; 1st band from snout to origin of 1st dorsal fin spine; 2nd band from base of pelvic fin to middle of dorsal-fin spines; 3rd band from lower edge of caudal fin to origin of last dorsal-fin spine. Upper part of caudal-fin lobe red. Pelvic fins dark red. **Size:** maximum length to at least 100 cm. **Distribution:** widely in Indo-West Pacific, east coast of Africa to Australia. **Remarks:** occurs in coral and rocky reefs.

(T. Yoshida)



Lutjanus sebae, KAUM-I. 23087, 12.1 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

Lutjanus vitta
(Quoy & Gaimard, 1824)

Brownstripe Redsnapper

D X, 13; A III, 8; P₁ 15; P₂ I, 5; LLp 49–51; GR 6–7 + 9–12. Body moderately deep to relatively slender; its depth 2.6 to 3 times in standard length. Preorbital width about equal to eye diameter; preopercular notch and knob poorly developed. Scales present on cheek, preoperculum and operculum. Head and body covered with small, ctenoid scales. Soft-rays of dorsal and anal fins with scaly sheath. Scale rows on back rising obliquely above lateral line. Large, terminal and slightly protractile mouth with thick lips. Preopercular margin finely serrated with preopercular notch. Caudal fin emarginated. **Color:** dorsal region of body yellowish with a dark brown to blackish stripe on the middle of the side from eye to upper half of caudal



Lutjanus vitta, KAUM-I. 32966, 15.7 cm SL
off Chantha Buri (SP), 1 Nov. 2010

peduncle. A longitudinal dark stripe originating behind eye and ends at upper base of caudal fin. Fins yellowish except pelvic fin. **Size:** maximum length about 31 cm, juvenile with

lengths of 16 to 24 cm. **Distribution:** Indo-West Pacific. **Remarks:** inhabits vicinity of coral reefs.

(S. Tafzilmeriam)

Pinjalo pinjalo
(Bleeker, 1850)

Pinjalo

D XI 14–15; A III, 9–10; P₁ 17–19; LLp 48–51; GR 6–8 + 16–18. Body moderately deep, laterally compressed. Dorsal profile of head convex. Dorsal fin continuous without a notch between spinous and soft portions. Eye large, about equal to snout length. Caudal fin deeply emarginated. **Color:** head and dorsal half of trunk reddish pink to yellowish pink; opercle and lower half of trunk silvery white; pectoral fin pink; dorsal, pelvic, anal and caudal fins yellowish. **Size:** maximum standard length 46 cm. **Distribution:** widely distributed in the Indo-West Pacific. **Remarks:** inhabits offshore coral reefs and rocky bottoms. Marketed fresh or dried-salted.

(T. Yoshida)



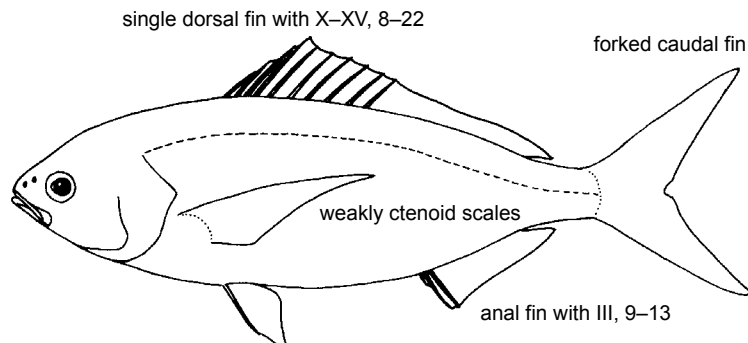
Pinjalo pinjalo, KAUM-I. 23794, 12.6 cm SL
 Gulf of Thailand (SS), 25 Sept. 2009

CAESIONIDAE

Fusiliers

Medium sized (up to 50 cm) marine fishes. Body oblong to fusiform, moderately compressed; longitudinal axis from tip of snout to middle of caudal fin passing through center of eye. Eye moderately large, its diameter longer than snout length. Mouth small and highly protrusible. Dentition variously reduced; small or minute conical teeth; premaxilla, vomer, and palatines with or without teeth. Dorsal fin with X–XV slender weak spines and 8–22 soft rays; anal fin with III spines and 9–13 soft rays; pelvic fin with I spine and 5 soft rays; pectoral fin with 16–24 rays; caudal fin distinctly forked, with pointed lobes. Branchiostegal rays 7. Scales moderate to small, weakly ctenoid; lateral line scales 45–88; scale rows on body running horizontally; dorsal and anal fins with scales in most species. **Color:** sides with or without longitudinal stripes; caudal fin either without markings, with blackish blotch on tips of lobes, or with a longitudinal blackish streak in middle of each lobe; axil of pectoral fins black.

Remarks: found mostly on coral reefs; occur near the surface to



depths of 60 m. Feed by picking zooplankton. Major importance in coral-reef fisheries.

Similar families occurring in the area: Lutjanidae – closely allied to Caesionidae and difficult to distinguish from Caesionidae on the basis of any single external character, but most members of Lutjanidae having a deeper body, the eye well above the horizontal axis of the body, and lacking a strongly forked caudal fin; those lutjanid genera with the horizontal passing near the center of eye either having scale rows running obliquely upward, fewer than 9 anal fin rays, no

scales on dorsal and anal fins, or the caudal fin much less deeply forked. Nemipteridae – eye above horizontal axis in most species; 9 dorsal and 7 or 8 anal fins soft rays. Lethrinidae – eye always above horizontal axis of body; base of soft part of dorsal fin generally shorter than base of spinous part; 8–10 anal fin soft rays; usually enlarged canines in front of jaws, sometimes lateral molars. Emmelichthyidae – superficially similar but caught in deep water; maxilla fully scaly; dorsal fin with IX spines and usually 12 soft rays.

(M. Matsunuma)

Caesio caerulea Lacepède, 1801

Blue-and-gold Fusilier

D X, 14–16; A III, 12–13; P₁ 19–22; LLp 57–65. Body fusiform and elongate. A single postmaxillary process; small conical teeth on jaws, vomer, and palatines. Scale rows above lateral line 8–10; dorsal and anal fins scaly; the scale rows on spinous part of dorsal fin horizontal; supratemporal band of scales often interrupted at dorsal midline by a V-shaped scaleless zone; 3–5 scales on cheek; 22–25 predorsal scales. **Color:** upper body bluish, lower body white to pale bluish; a single yellow stripe from above the eye, running along the body and above lateral line, to upper caudal peduncle. **Size:** maximum length about 35 cm. **Distri-**



Caesio caerulea, KAUM-I. 23422, 16.2 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

bution: Indo-West Pacific. **Remarks:** inhabits coastal areas, primarily around coral reefs to depths of around 40 m.

(U. Satapoomin)

Caesio cuning
(Bloch, 1791)

Redbelly Yellowtail Fusilier

D X, 14–16; A III, 10–12; P₁ 17–20; LL 45–51. Body fairly deep and compressed. A single postmaxillary process; small conical teeth in jaws, vomer and palatines. Scale rows above lateral line 7–9; supratemporal band of scales confluent at dorsal midline; 4–5 scales on cheek; predorsal scales 20–26; dorsal and anal fins scaly, the dorsal fin with about 1/2 of its greatest spinous height covered with scales; supratemporal band of scales confluent at dorsal midline. **Color:** head and body bluish white, pinkish ventrally; posterior portion of back, upper caudal peduncle, and caudal fin yellow; axil and upper base of pectoral fin black; dorsal fin yellow posteriorly and grayish blue anteriorly; pelvic and anal fins reddish. **Size:** maximum length 50 cm. **Distribution:** Indo-West Pacific. **Remarks:** inhabits coastal areas to the depth of 60 m.

(M. Matsunuma)



Caesio cuning, KAUM-I. 47439, 15.3 cm SL
off Tha Chana (SP), 18 June 2012



Dipterygonotus balteatus, KAUM-I. 33004, 7.6 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

Dipterygonotus balteatus
(Valenciennes, 1830)

Mottled Fusilier

D XII–XV, 8–11; A III, 9–11; P₁ 17–19; LL 68–80. Body slender, fusiform, elongate, and moderately compressed. Two postmaxillary processes; small conical teeth on dentary and vomer; premaxilla and palatines without teeth. Scales above lateral line to origin of dorsal fin 9–11; scales below lateral line to origin of anal fin 15–18; usually 6–9 scale rows on cheek; predorsal scales usually 29–34; dorsal and anal fins without scales. **Color:** body brownish bronze dorsally, silvery white ventrally; with a thin, straight, tan stripe about 1 scale wide from orbit to caudal fin, above lateral line; above and parallel to this stripe 2 thin, irregular, and usually interrupted stripes of same color; caudal fin tan to pinkish. **Size:** maximum length 14 cm. **Distribution:** Indo-West Pacific. **Remarks:** feeds on zooplankton. Marketed fresh.

(M. Matsunuma)

Pterocaesio chrysozona
(Cuvier, 1830)

Goldband Fusilier



Pterocaesio chrysozona, KAUM-I. 32973, 9.2 cm SL
off Chantha Buri (SP), 1 Nov. 2010

D X–XI, 14–16; A III, 11–12; P₁ 17–20; LL 64–69. Body fusiform, elongate, and moderately compressed. Two postmaxillary processes; small conical teeth in jaws, vomer, and palatines. Scales above lateral line to origin of dorsal fin 7–9; scales below lateral line to origin of anal fin 14–16; predorsal scales usually 23–26; dorsal and anal fins scaly, dorsal fin with about 1/2 of its greatest spinous height covered with scales. **Color:** body light blue to brownish dorsally, white to

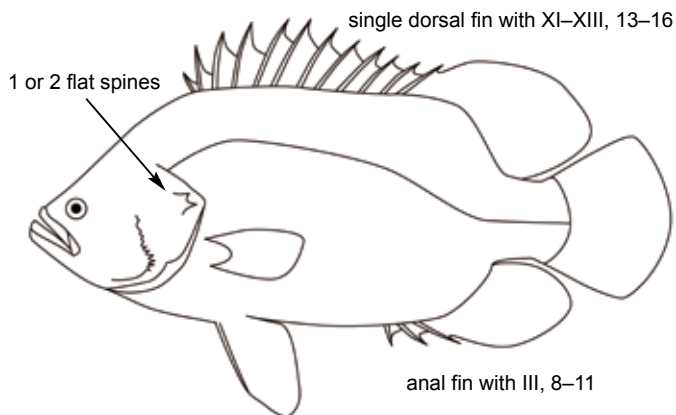
pinkish ventrally; a bright yellow band directly below lateral line for most of its length, from behind eye to base of caudal fin, 2 to 3 scales wide anteriorly, tapering to 1 scale in width on caudal peduncle where it is above lateral line; a less conspicuous yellow stripe along dorsal midline; dorsal fin slightly dusky distally; tips of caudal-fin lobes black. **Size:** maximum length 21 cm. **Distribution:** Indo-West Pacific. **Remarks:** schooling fish found in coral reefs.

(M. Matsunuma)

LOBOTIDAE

Tripletails

Moderately deep bodied and compressed (size to over 1 m). Head length shorter than body depth; profile of head from eye, generally concave. Preopercle finely to coarsely serrate; opercle with 1 or 2 flat spines. Mouth terminal to slightly superior, extending to anterior or middle portion of eye; in jaws, an outer row and an inner band of smaller teeth; roof of mouth without teeth. Single dorsal fin with XI to XIII spines and 13 to 16 soft rays. Anal fin with III spines and 8 to 11 soft rays, soft-rayed portion of second dorsal and anal fin broadly rounded and extending beyond base of caudal fin, resulting in the appearance of a single 3-lobed fin. Scales ctenoid, 42 to 70 in lateral line. **Color:** yellowish, brownish, greenish and/or sometimes mottled, or whitish with 4 to 10 dark brownish bars.



Remarks: coastal and estuarine, some entering fresh water; some associated with floating objects well out to sea. Carnivorous.

Similar families occurring in the area: Serranidae – 3 flat spines on upper part of opercle. Haemulidae

– presence of chin pores. Lutjanidae – truncate, emarginate, or forked caudal fin, the usual absence of an enlarged second dorsal-fin spine and teeth usually present on vomer and palatines.

(S. Tafzilmeriam S. A. K.)

Lobotes surinamensis

(Bloch, 1790)

Tripletail

D XII, 15–16; A III, 11; P₁ 15; P₂ I, 5; LLp 51–52. A compressed, deep-bodied perch-like fish with the dorsal and anal fins rounded and symmetrical with the tail appearing as a single three-lobed fin. Interorbital space narrow, profile head concave; eye relatively small; no subocular shelf visible externally; mouth large, slightly oblique, upper jaw protractile; maxilla not slipping under preorbital bone when mouth closed; no teeth on roof of mouth; preopercle with strong dentitions along its margin. Pectoral fins shorter than pelvic fins. **Color:** body yellowish, brownish to greenish gray. Dorsal, caudal, anal and pelvic fins with an orange, dark brown and greenish gray stripe. Pectoral fin yellow. The young are often bright yellowish, becoming darker with age. **Size:** maximum to 110 cm; common to 50 cm;



Lobotes surinamensis, KAUM-I. 47379, 17.8 cm SL
Gulf of Thailand (SS), 13 June 2012

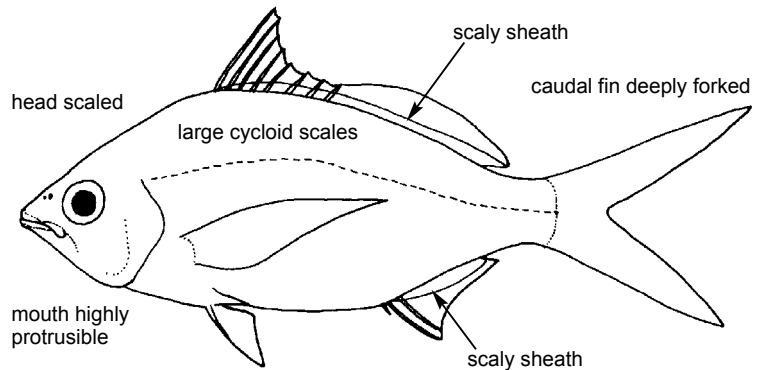
world game record 19.2 kg. **Distribution:** throughout the Western Central Atlantic. **Remarks:** in littoral zone of all warm seas. (S. Tafzilmeriam)

GERREIDAE

Mojarra

Small to medium sized marine and brackish fishes; maximum size about 40 cm. Body compressed, depth variable, oblong to rhomboidal. Head scaled; mouth small, highly protrusible; teeth on jaws small, brush-like; gill membrane free from isthmus. A single dorsal fin, lacking a distinct notch, with IX–X spines and 9–17 soft rays; anal fin usually with II–IV spines and 6–18 soft rays; scaly sheath along bases of dorsal and anal fins; pelvic fin I, 5; caudal fin deeply forked. Scales thin, cycloid, moderately large, but deciduous. Vertebral counts 24. **Color:** body generally brilliant silver, with dark vertical bars or spots on body in some species.

Remarks: occurring in tropical to temperate marine and estuarine areas. Feed mainly on benthic animals.



Similar families occurring in the area: Gerreidae is distinguished from the following similar families in having strongly protrusible mouth, scaled head, moderately large cycloid scales on body, and scaly sheath along the bases of dorsal and anal fins. Haemulidae, Lutjanidae, and Sparidae – mouth not highly protrusible. (S. Kimura)

Gerres chrysops

Iwatsuki, Kimura & Yoshino, 1999

Gold sheen Silverbiddy

D IX, 10 (rarely X, 9); A III, 7; P₁ 16; LLp 33–36; GR 4–6 + 7–8. Body deep, compressed, anterodorsal profile sharply ascending. Posterior tip of maxilla reaching almost to below anterior margin of pupil. Second dorsal-fin spine not elongated; pectoral fins reaching beyond anus, to just before level of anal fin origin. Scales moderately deciduous, 3–4 scales between base of fifth dorsal-fin spine and lateral line. **Color:** body brilliant gold above, silvery white below; all fins yellow; lower tip of caudal fin white. **Size:** maximum length 8.3 cm SL. **Distribution:** restrictedly found in the Gulf of Thailand. **Remarks:** very common fish around the northern Gulf of Thailand. (S. Kimura)



Gerres chrysops, KAUM-I. 32696, 7.4 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

Gerres erythrouros
(Bloch, 1791)

Deepbody Silverbidddy

D IX, 10; A III, 7; P₁ 15–16; LL 35–38; GR 4–5 + 8–9. Body deep, compressed; anterodorsal profile almost straight. Dorsal- and anal-fin spines strong; second dorsal-fin spine longer than the third; second anal-fin spine robust, nearly the same in length of anal-fin base; caudal fin short, deeply forked, tips broadly rounded. **Color:** body brownish silver dorsally, brilliant silver ventrally, with indistinct dark longitudinal stripes along scale rows above and 4–6 rows immediately below lateral line; often 4–11 indistinct vertical narrow dark bars on side of body; anal and pelvic fins yellow. **Size:** maximum length about 37 cm. **Distribution:** Indo-Pacific, from western India to Micronesia. **Remarks:** inhabits soft bottom. Juveniles often observed in estuarine waters. Caught by bottom set nets and bottom trawls. Marketed fresh or dried and salted.

(S. Kimura & S. Tafzilmeriam)



Gerres erythrouros, KAUM-I. 47421, 9.7 cm SL
Ang Sila, 15 June 2012

Gerres filamentosus
Cuvier, 1829

Whipfin Mojarra

D IX, 10; A III, 7; P₁ 15–16; LL 43–46 (usually 44–45); GR 4–6 + 8. Body deep, compressed, anterodorsal profile somewhat convex. Second dorsal-fin spine very long and filamentous, reaching slightly beyond base of last dorsal-fin ray; anal-fin spines generally robust, third longest; caudal fin deeply forked, lobes pointed. Preopercle with 3 scale rows; 4 ½–5 ½ scales between 5th dorsal fin spine base and lateral line. **Color:** body brownish silver dorsally, brilliant silver ventrally, with vertical rows of indistinct dark ovoid spots laterally in adults and sub-adults; all fins tinged with tan, caudal fin with a blackish margin. **Size:** maximum length about 32 cm. **Distribution:** widely distributed in tropical Indo-Pacific, from eastern coast of Africa to Micronesia. **Remarks:** inhabits sandy or muddy bottoms in



Gerres filamentosus, KAUM-I. 32735, 14.7 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

coastal areas to depths of at least 50 m. Marketed fresh or dried, sometime used in making fish crackers. Caught mainly by beach seines and bottom trawls. (S. Kimura & S. Tafzilmeriam)

Gerres macracanthus
Bleeker, 1854

Longspined Silverbiddy

D IX, 10; A III, 7; P₁ 15; LLp 41–44. Body relatively slender and compressed. Usually 4 ½ scale rows between 5th dorsal-fin spine base and lateral line; 5 ½ or 6 ½ scales above lateral line, 9 ½ or 10 ½ scales below. Second dorsal-fin spine elongated and filament; 2nd and 3rd anal-fin spines short. Caudal fin deeply forked. **Color:** body silvery with usually 6–10 (rarely up to 14 as faint bands in larger specimens) indistinct vertical dark bands on body; pectoral, pelvic, and anal fins yellowish. **Size:** maximum total length 20 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in coastal waters to depths of at least 30 m. (S. Tafzilmeriam)



Gerres macracanthus, KAUM-I. 22985, 8.4 cm SL
Gulf of Thailand (SS), 3 Sept. 2009

Gerres oyena
(Forsskål, 1775)

Common Silverbiddy

D IX, 10; A III, 7; P₁ 15–17; LL 35–40; GR 3–6 + 8–9 (usually 8). Body oblong, compressed, anterodorsal profile convex. Posterior tip of maxilla extending beyond anterior margin of eye. Second dorsal-fin spine not elongated; pectoral fins short, not reaching to anal-fin origin. Scales mostly absent on premaxillary groove; scale rows above lateral line 4. **Color:** body silvery, sometime with faint dark vertical bands laterally; tip of dorsal and caudal fins with black margins; a row of small dusky spots on dorsal-fin membrane near base; anal and pelvic fins yellowish. **Size:** maximum length about 25 cm. **Distribution:** Indo-Pacific. **Remarks:** inhabits inshore, especially soft bottom area at depths shallower than 30 m.

(S. Kimura & S. Tafzilmeriam)



Gerres oyena, KAUM-I. 32733, 12.5 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

Pentaprion longimanus
(Cantor, 1849)

Longfin Silverbiddy

D IX–X, 14–15; A V–VI, 12–13; P₁ 17; LLp 44–48; GR 6 + 12–13. Body oblong, compressed; dorsal and ventral profiles almost equally convex. Posterior tip of maxilla reaching almost to below anterior margin of eye. Second dorsal-fin spine not elongated; anal-fin base longer than base of soft



Pentaprion longimanus, KAUM-I. 47436, 9.0 cm SL
off Tha Chana (SP), 18 June 2012

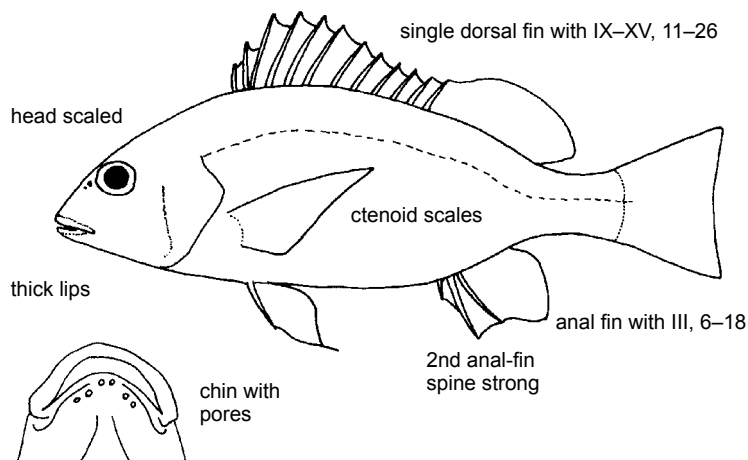
portion of dorsal fin; caudal fin deeply forked. Scales deciduous. **Color:** body silvery, pale brown dorsally; all fins whitish; caudal fin tinged with yellow. A longitudinal silvery band along lateral mid-line of head and body. **Size:** maximum length about 20

cm. **Distribution:** Indo-West Pacific from western India to Papua New Guinea, north to Okinawa, Japan, south to northern Australia. **Remarks:** inhabits inshore areas, on muddy-sand bottoms. Feeds on small benthic invertebrates. (S. Kimura)

HAEMULIDAE

Sweetlips (Grunts)

Medium-sized (up to 120 cm), oblong and compressed fishes. Lateral line continuous. Head almost entirely scaled, exclusive of lips, chin and tip of snout; mouth small or moderate in size, subterminal; lips thick in *Plectorhinchus*; chin with distinct pores; hind margin of lachrymal not exposed; opercle with a single spine; teeth conical, forming narrow band in each jaw; teeth on outermost row of jaws enlarged, but not canine-like; palatine toothless; branchiostegals 7. A single dorsal fin with IX–XV strong spines (second spine usually very strong) and 11–26 soft rays; anal fin with III spines and 6–18 soft rays; pelvic fin below base of pectoral fin, with I spine and 5 soft rays; caudal fin truncate or emarginated in adults, rounded in juveniles. Scales small and ctenoid. Vertebrae 26–27. **Color:** highly variable, appearing characteristic pattern (e.g., banded and spotted) in each species; in many species, juveniles strikingly differ from adult in color.



Remarks: inhabit coastal waters including reefs, bays, and estuaries, down to about 80 m. Carnivorous, feed on small benthic invertebrates or fishes. Esteemed as food fish, caught by spear, line, and various nets; marketed fresh or salted.

Similar families occurring in the area: Lutjanidae – suborbital area

naked; palatine usually toothed. Lethrinidae – no scales on preopercle; dorsal fin with 9–10 soft rays. Nemipteridae – no pores on chin; hind margin of lachrymal exposed. Sparidae – suborbital area naked; preopercular margin not serrated.

(H. Motomura & K. Shibukawa)

Diagramma picta picta (Thunberg, 1792)

Yellow-spotted Slatey

D IX–X, 20–26; A III, 7; P₁ 16–18; LLp 55–74; GR 17–23. Body deep and compressed. Profile of snout steep; lips fleshy; chin with six pores; lower jaw without longitudinal groove at midline. **Color:** varying much by size; large adult silvery gray, with or without dusky spots; subadult pale gray with numerous bright yellow or dusky spots or lines on head, body and fins; juvenile with broad longitudinal black bands on body. **Size:** commonly 45 cm, maximum 100 cm. **Distribution:** Indo-West Pacific. **Remarks:** inhabits rocky and coral reefs and sandy bottoms. Nocturnal, forming small aggregations by day and dispersing at night for feeding; feeds on small benthic invertebrates. Johnson et al. (2001) regarded it as a valid subspecies. (K. Shibukawa)

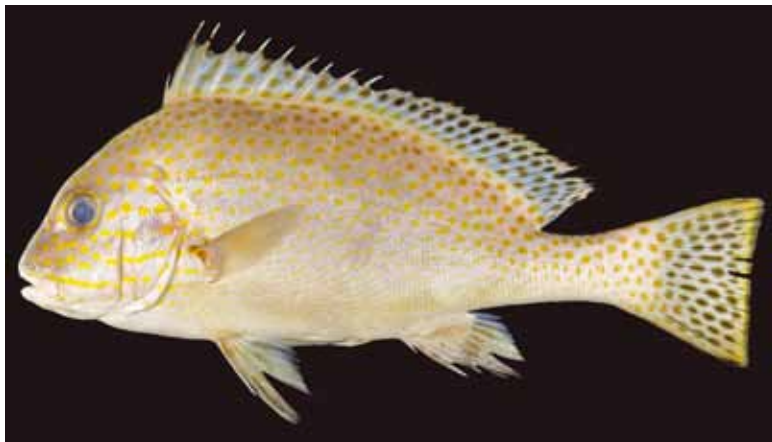


Diagramma picta picta, KAUM-I. 32802, 22.2 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Plectorhinchus gibbosus
(Lacepède, 1802)

Harlequin Sweetlip

D XIII–XIV, 15–17; A III, 7–8; P₁ 16–18; P₂ I, 5; LLp 46–55; GR 8–10 + 18–20. Body deep, compressed. Lip fleshy, greatly swollen with age. Chin with 6 pores; no median pit; not covering barbels or papillae. Caudal fin rounded in juveniles, rounded to truncate in adults. **Color:** body dark gray. Centers of scales paler than edges. No distinct spots or blotches on fins. **Size:** maximum about 75 cm. **Distribution:** widely distributed in the Indo-West Pacific, from South Africa east to the Samoa Islands, and southern Japan south to New South Wales, Australia. **Remarks:** generally found in silty reef areas, young penetrating estuarine habitats. (H. Motomura)

Pomadasys argenteus
(Forsskål, 1775)

Silver Grunt

D XII, 13–14; A III, 7; P₁ 16–18; P₂ I, 5; LLp 47–49. Body deep, compressed; head blunt. Lip fleshy, greatly swollen with age. Chin with 2 pores and a median pit. Circumpeduncular scales 21 or 22; 5 scales between lateral line and dorsal-fin origin. Caudal fin emarginate. **Color:** in adults, body silvery with dark blotches on dorsal fin and numerous scattered dark brown to blackish spots on body side. Juveniles with body pale brownish, lighter below, back with irregular longitudinal streaks on alternate scale rows; dorsal fin with dusky membranes; a dark spot on gill cover. **Size:** commonly 40 cm, maximum 60 cm. **Distribution:** Indo-West Pacific from the Red Sea to Melanesia, northern Australia north to southern Japan. **Remarks:** found in coastal inshore waters in open bays and estuaries. Marketed fresh. (M. Matsunuma)

Pomadasys maculatus
(Bloch, 1793)

Saddle Grunt

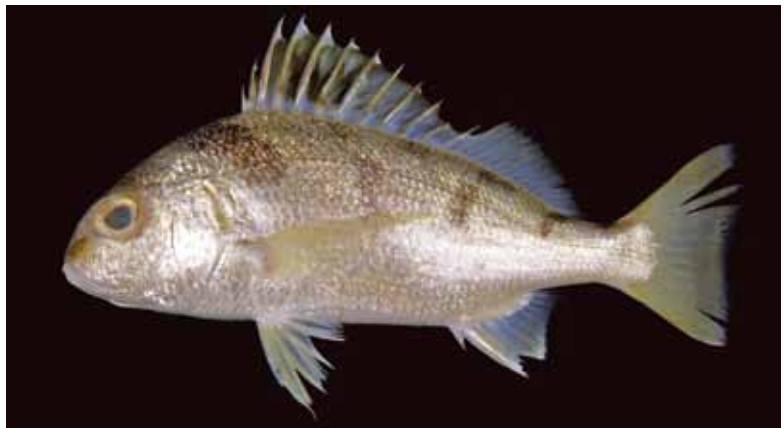
D XII, 13–14; A III, 7; P₁ 17; P₂ I, 5; LLp 50–52; GR 5–6 + 13–15. Body moderately elongate, compressed. Chin with two pores and a median pit. Posterior portion of maxilla slightly covered or not covered by lacrimal laterally in western Pacific population; largely covered by lacrimal in Indian



Plectorhinchus gibbosus, KAUM-I. 32864, 18.8 cm SL
Gulf of Thailand (SS), 27 Oct. 2010



Pomadasys argenteus, KAUM-I. 33218, 19.4 cm SL
off Chantha Buri (SP), 30 Nov. 2010



Pomadasys maculatus, KAUM-I. 23872, 13.9 cm SL
Gulf of Thailand (SS), 26 Sept. 2009

Ocean population. Caudal fin slightly emarginate. **Color:** body silver with a large black blotch across nape, extending downward to below lateral line; three broken black blotches on upper half of trunk. A large dark blotch on membrane centrally between second

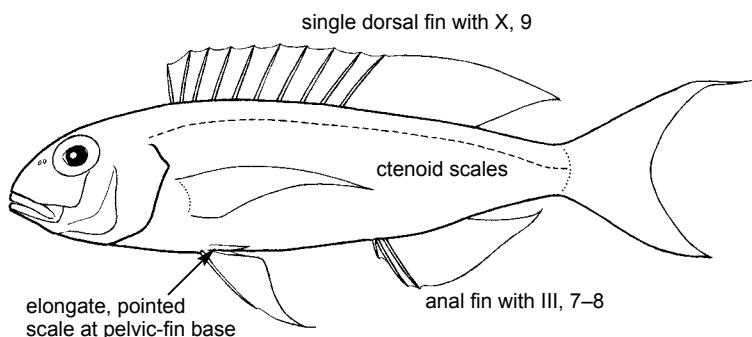
and seventh dorsal-fin spines. **Size:** maximum length 59.3 cm. **Distribution:** Indo-West Pacific. **Remarks:** occurs in coastal inshore waters in open bay and estuaries to depths of less than 110 m. (H. Motomura)

NEMIPTERIDAE

Threadfin Breams and Monocle Bream

Medium sized (up to 35 cm), moderately elongate fishes. Head compressed; eyes moderately large; jaws subequal, or upper jaw slightly beyond lower jaw; hind margin of suborbital bone exposed; branchiostegal rays 6. Single dorsal fin with X spines and 9 soft rays; anal fin with III spines and 7–8 soft rays; pectoral fin more or less falcate, with 14–19 soft rays (uppermost 2 rays unbranched); pelvic fin with I spine and 5 soft rays; caudal fin emarginated, lunate or forked, with filamentous tip on each or both lobes in many species. Scales ctenoid; cheek and operculum scaled; a pair of elongate, pointed scales at base of pelvic fin. **Color:** pinkish, yellowish, grayish, or brownish dorsally, turned to silvery ventrally, with various-colored vertical bands or longitudinal stripes on head and body in many species.

Remarks: found in coral reefs and coastal to offshore shelf waters



with sandy or muddy bottoms, down to about 300 m depth. Carnivorous, feed on small fishes, crustaceans, cephalopods, and polychaetes. Estimated as food fish in many species; marketed fresh, dried and salted, or minced for fish balls or fish cakes.

Similar families occurring in the area: Caesionidae – dorsal fin with X–XV spines and 8–22 soft rays; anal fin with III spines and 9–13 soft rays;

no elongated, pointed scales at base of pelvic fin. Haemulidae – dorsal fin with IX–XIV spines and 11–26 soft rays. Lethrinidae – anal fin with III spines and 8–10 soft rays; no scales on preopercle in *Lethrinus* (scaly in other genera). Lutjanidae – no elongate and pointed scales at base of pelvic fin.

(K. Shibukawa & H. Motomura)

Nemipterus balinensoides (Popta, 1918)

Dwarf Threadfin Bream

D X, 9; A III, 7; P₂ I, 5; GR 15–17. Body elongate, compressed; body depth 3.8–4.4 in SL. Posterior margin of suborbital and lower preopercular margin not serrated; suborbital spine absent. Suborbital depth 4.1–6.7 in eye diameter. Ventral margin of orbit extending below a horizontal line through snout tip and upper base of pectoral fin. First 2 dorsal-fin spine separated by a membrane; membranes between dorsal-fin spines not strongly incised. Upper lobe of caudal fin not filamentous. Pectoral fin not reaching a vertical through anus. Three transverse scale rows on preopercle. **Color:** body pinkish dorsally, silvery ventrally. A distinct yellow spot above upper pectoral-fin base. Dorsal fin pinkish to yellowish, with greenish-yellow to purple margin. Anal fin



Nemipterus balinensoides, KAUM-I. 23277, 7.9 cm SL
Gulf of Thailand (SS), 10 Sept. 2009

translucent white. Pelvic fins pale yellow. Caudal fin pale yellowish-pink; tip of upper lobe purple. **Size:** maximum standard length 12.5 cm. **Distribution:** western Pacific, including Thailand, Indonesia, Philippines, and New Caledonia. **Remarks:** usually occurs on sandy or muddy bottoms at depths of 30 to 80 m. (H. Motomura)

Nemipterus furcosus
(Valenciennes, 1830)

Forktailed Threadfin Bream

D X, 9; A III, 7; P₁ 16–18; P₂ I, 5; GR 7–10. Body moderately elongate, compressed; body depth 3–3.9 in SL. Snout length equal to or greater than eye diameter. Suborbital spine absent; 4–6 transverse scale rows on preopercle. Ventral margin of orbit tangent to or above just reaching or not reaching a horizontal line through snout tip and upper base of pectoral fin. Pectoral fin reaching to or just short of a vertical through anus; pelvic fins short, reaching to or short of a vertical through anus; caudal fin deeply forked; upper lobe of the fin pointed, not produced. **Color:** body pinkish dorsally, silvery ventrally. Nine indistinct reddish saddle bars on back; forming a reddish spot behind origin of lateral line. Dorsal fin



Nemipterus furcosus, KAUM-I. 32989, 13.2 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

pale rosy, sometimes with yellowish tinge, outer margin darker pink; a yellow stripe submarginally. Anal fin bluish white, with row of transparent or faint yellowish spots near base. Caudal fin pale rosy, with yellow tinge; lower

margin of fin white; posterior tip of upper lobe red. **Size:** maximum length 20 cm SL. **Distribution:** eastern Indian Ocean and West Pacific. **Remarks:** occurs on sand and mud bottoms in depths of 8–110 m. (M. Matsunuma)

Nemipterus hexodon
(Quoy & Gaimard, 1824)

Ornate Threadfin Bream

D X, 9; A III, 7; P₁ 15–18; P₂ I, 5; GR 11–17. Body moderately elongate, compressed. Posterior margin of suborbital and lower preopercular margin not serrated; suborbital spine absent. Ventral margin of orbit not reaching a horizontal line through snout tip and upper base of pectoral fin. Enlarged canines anteriorly in upper and lower jaws. First 2 dorsal-fin spines separated by a membrane. Upper lobe of caudal fin slightly rounded. Pectoral fin not extending beyond a vertical through anal fin origin. Three transverse scale rows on preopercle. **Color:** body pinkish dorsally, silvery ventrally, with 6–8 pale yellow stripes below lateral line. A red, ovoid spot below lateral line origin, bordered below by bright yellow. **Size:** maximum length 21 cm SL. **Distribution:** the Andaman Sea and West Pacific. **Remarks:** usually occurs on sandy or muddy bottoms at depths of 10 to 80 m. (H. Motomura)



Nemipterus hexodon, KAUM-I. 33116, 14.0 cm SL
Gulf of Thailand (SS), 18 Nov. 2010

Nemipterus marginatus
(Valenciennes, 1830)

Red Filament Threadfin Bream

D X, 9; A III, 7; P₁ 16; P₂ I, 5; GR 12. Body moderately elongate, compressed. Posterior margin of suborbital and lower preopercular margin not serrated; suborbital spine absent. Ventral margin of orbit above a horizontal line through snout tip and upper base of pectoral fin. Pectoral and pelvic fins long; caudal fin forked, upper lobe produced into a short filament. Three transverse scale rows on preopercle.

Color: body pinkish dorsally, silvery ventrally; with a broad yellow stripe, divided above pectoral fin, from below lateral line origin to upper part of caudal peduncle; a second yellowish-orange stripe from above base of pectoral fin to lower part of caudal pe-



Nemipterus marginatus, KAUM-I. 33051, 10.0 cm SL
Prachuap Khiri Khan, 9 Nov. 2010

duncle; a reddish spot below and just behind lateral line origin; caudal fin including filament, reddish, its median rays yellowish. **Size:** maximum length

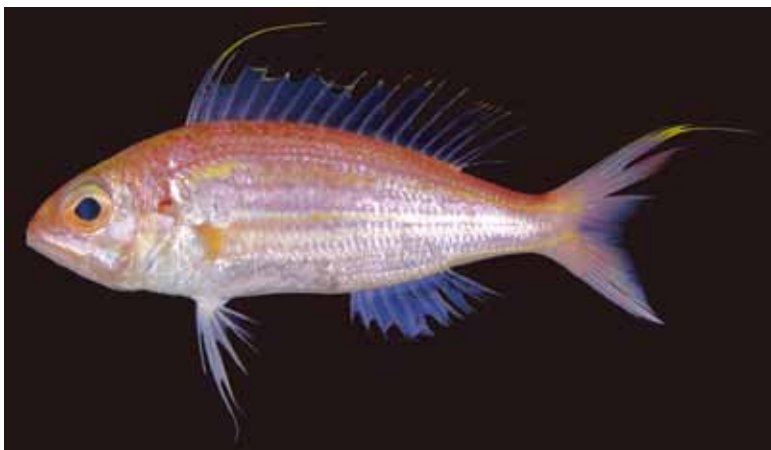
15 cm SL. **Distribution:** West Pacific. **Remarks:** found on sand or mud bottoms in depths of 12 to 70 m.

(M. Matsunuma)

Nemipterus nematophorus
(Bleeker, 1854)

Doublewhip Threadfin Bream

D X, 9; A III, 7; P₂ I, 5; GR 12–15. Body elongate, compressed; body depth 2.9–3.5 in standard length. Posterior margin of suborbital and lower preopercular margin not serrated; suborbital spine absent. Suborbital depth 1.4–2.6 in eye diameter. Ventral margin of orbit reaching a horizontal line through snout tip and upper base of pectoral fin. First 2 dorsal-fin spine almost fused, not separated by a membrane; first spine prolonged; membranes between dorsal-fin spines not strongly incised. Upper lobe of caudal fin filamentous. Pectoral fin reaching a vertical through between anus and anal-fin origin. Three transverse scale rows on preopercle. **Color:** body pinkish dorsally, silvery ventrally, with yellow longitudinal stripes below lateral line and a distinct yellow blotch at anterior lateral line. Dorsal fin



Nemipterus nematophorus, KAUM-I. 23223, 10.9 cm SL
Gulf of Thailand (SS), 9 Sept. 2009

translucent white, with yellow margin. Pelvic and anal fins white. Pectoral fin translucent white. Caudal fin pinkish white; tip of upper lobe yellow. **Size:** maximum standard length 20 cm. **Distribution:** Indo-Malay Artipelago,

from Bay of Bengal to Indonesia, Philippines, and southern China. **Remarks:** usually occurs on sandy or muddy bottoms at depths of less than 50 m. Taken by bottom trawl and gill net. (H. Motomura)

Nemipterus tambuloides
(Bleeker, 1853)

Fivelined Threadfin Bream

D X, 9; A III, 7; P₁ 16; P₂ I, 5; GR 6–8. Body moderately elongate, compressed; body depth 3.2 to 3.6 in SL. Posterior margin of suborbital and lower preopercular margin not serrated; suborbital spine absent. Ventral margin of orbit tangent to or just above a horizontal line through snout tip and upper base of pectoral fin. Pectoral and pelvic fins long; caudal fin deeply forked, tip of upper lobe pointed. Three transverse scale rows on preopercle. **Color:** body pinkish dorsally, silvery ventrally, 5 well-defined yellow stripes along body. Dorsal fin translucent pink, with yellow margin; a narrow yellow stripe just above base fin. Anal fin translucent bluish white with pale yellow stripe near base of fin. Caudal fin bright rosy, upper tip yellow. **Size:** maximum length 23 cm SL. **Distribution:** the Andaman Sea and West Central Pacific. **Remarks:** usually occurs on sand or mud bottoms in depths of 50 to 70 m.

(M. Matsunuma)



Nemipterus tambuloides, KAUM-I. 32968, 14.7 cm SL
off Chantha Buri (SP), 1 Nov. 2010

Pentapodus setosus
(Valenciennes, 1830)

Butterfly Whiptail

D X, 9; A III, 7; P₁ 15; P₂ I, 5; LL 46–48; GR 16–17. Body moderately elongate, fusiform; snout length greater than eye diameter. Scales on top of head reaching forward to or in front of middle of eyes; six transverse scale rows on preopercle; lower limb of preopercle naked. Pelvic fins short, not reaching level of anus; caudal fin forked, upper lobe produced into a very long trailing filament. **Color:** body whitish, pale brownish dorsally; a yellow stripe from behind eye, gradually arching on back and terminating in a black spot on upper caudal peduncle; a narrow blue line running through yellow stripe, this line convergent



Pentapodus setosus, KAUM-I. 23439, 16.4 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

with a blue line from origin of anal fin, both lines meeting at an acute angle behind black spot on caudal peduncle; 2 bluish stripes across snout, first from middle of eye to tip of snout, second from upper lip to lower margin of eye.

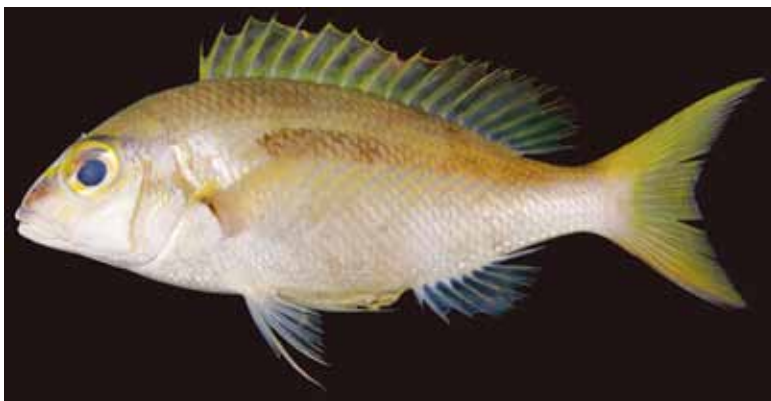
Dorsal fin pale blue, with yellow margin; caudal fin pinkish, filament pinkish brown. **Size:** maximum length 17.5 cm SL. **Distribution:** West Central Pacific. **Remarks:** found in offshore waters. (M. Matsunuma)

Scolopsis monogramma
(Cuvier, 1830)

Monogrammed Monocle Bream

D X, 9; A III, 7; P₁ 16–17; P₂ I, 5; LL 36–39. Body relatively deep, compressed; body depth 2.4–3.8 in SL. Suborbital margin with a large backwardly pointing spine; no antrorse spine just below eye; lower limb of preopercle scaled. Pelvic fin reaching to anus when depressed; caudal fin forked or lunate, upper lobe a little longer than lower lobe or produced into a short filament. **Color:** head and body grayish dorsally, silvery ventrally; dusky midlateral stripe on body; some sky blue streaks on head. **Size:** commonly 18 cm SL. **Distribution:** the Andaman Sea and West Pacific. **Remarks:** found in coastal waters with sandy or muddy bottom around coral reefs in depths to 50 m.

(K. Shibukawa)



Scolopsis monogramma, KAUM-I. 47684, 16.5 cm SL
Gulf of Thailand (SS), 6 July 2012

Scolopsis taenioptera
(Cuvier, 1830)

Lattice Monocle Bream

D X, 9; A III, 7; P₁ 17–18; P₂ I, 5; LL 45–48. Body relatively deep, compressed; body depth 2.7–3.1 in SL. Suborbital with a large backwardly pointing spine; no antrorse spine just below eye; external edge of maxilla smooth; lower limb of preopercular naked. Pelvic fin reaching to anus when depressed; caudal fin forked or lunate, upper lobe not produced into a filament. **Color:** head and body grayish dorsally, silvery ventrally; orange or red spot at upper part of pectoral fin base. **Size:** commonly 15 cm, maximum 20 cm SL. **Distribution:** the Andaman Sea and West Pacific. **Remarks:** found in offshore waters with sandy or muddy bottom in depths to 50 m.

(K. Shibukawa)



Scolopsis taenioptera, KAUM-I. 32805, 21.3 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Scolopsis vosmeri
(Bloch, 1792)

Whitecheek Monocle Bream

D X, 8–9; A III, 7; P₁ 18–19; P₂ I, 5; LL 41–44; GR 11–12. Body deep, compressed; depth 2–2.6 in SL. Suborbital with a large backwardly-pointed spine; no antrorse spine just below eye; external edge of maxilla smooth. Pectoral fin short, not reaching to level of anus; pelvic fin reaching to or be-



Scolopsis vosmeri, KAUM-I. 47683, 12.0 cm SL
Gulf of Thailand (SS), 6 July 2012

yond anus when depressed; caudal fin forked. Scales on top of head extending forward to between level of snout and anterior nostril; lower limb of preopercle scaled. **Color:** head and body brownish, paler ventrally; distinct, broad white vertical bar on head. **Size:**

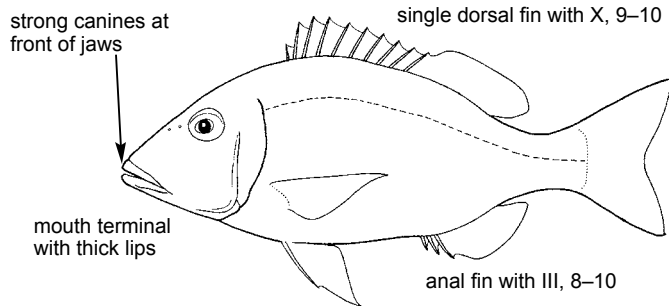
16 cm SL, commonly 15 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in offshore or coastal waters with sandy or muddy bottom around coral reefs. Caught by traps and trawls; marketed fresh.

(K. Shibukawa)

LETHRINIDAE

Emperors

Medium to large sized (up to 100 cm), oblong and compressed fishes. Body compressed, covered with ctenoid scales; lateral line continuous. Cheek scales absent in *Lethrinus*, whereas present in the other genera; mouth terminal with relatively thick lips; strong canines at front of jaws; either conical or molariform teeth on sides of jaws; no teeth on roof of mouth; branchiostegals 6. A single dorsal fin with X spines and 9–10 soft rays; anal fin with III spines and 8–10 soft rays; pectoral fin with 13–15 soft rays; pelvic fin below base of pectoral fin, with I spine and 5 soft rays; caudal fin emarginated or forked. Scales ctenoid, moderate in size. Vertebrae 24. **Color:** head and body silvery, gray, and light or reddish brown, frequently mottled, spot-



ted or striped with dusky, blue, yellow or red. **Remarks:** commonly found in coastal waters around coral and rocky reefs, seagrass beds and mangroves. Carnivorous, feeds on various organisms, e.g., fishes, mollusks, crustaceans, polychaetes, and sea urchins. Esteemed as food fish, caught by handline, traps and trawls.

Similar families occurring in the area: Haemulidae – chin with distinct pores; scales on cheek. Lutjanidae – teeth on roof of mouth; scales on cheek. Sparidae – usually more spines in dorsal fin; scales on cheek
(H. Motomura & K. Shibukawa)

Gymnocranius elongatus Senta, 1973

Forktail Large-eye Bream

D X, 10; A III, 10; P₁ 14; P₂ I, 5; LLp 47–48. Body oblong, compressed; its depth 2.2–2.4 in SL. Outer surface of maxilla smooth. Ventral margin of orbit intersected by line from tip of snout to middle of caudal-fin fork. Sides of jaws with canines and villiform teeth. Cheek with 4–6 transverse scale rows; inner surface of pectoral fin axil not covered with scales. Caudal fin strongly forked, with pointed tips; median rays distinctly shorter than eye diameter. **Color:** body silvery, sometimes slightly brownish dorsally; about 8 transverse brown bars on sides; first bar through eye and across cheek. Fins mainly clear to yellow-orange; a narrow brown bar often across pectoral-fin base; caudal fin margins and tips often deep red. **Size:** maximum length about 35 cm. **Distribu-**



Gymnocranius elongatus, KAUM-I. 33217, 18.9 cm SL
off Chantha Buri (SP), 30 Nov. 2010

tion: eastern Indian Ocean and western Pacific Ocean. **Remarks:** occurs in coastal and shelf waters at depths between about 50 and 100 m. Caught mostly with bottom trawls.

(M. Matsunuma)

Gymnocranius griseus
(Temminck & Schlegel, 1843)

Gray Large-eye Bream

D X, 10; A III, 10; P₁ 14; P₂ I, 5; LLp 46–48. Body oblong, compressed; its depth comparatively deep, about 1.9–2.2 in SL. Outer surface of maxilla smooth. Ventral margin of orbit above horizontal line through snout tip and middle of caudal fin fork. Sides of jaws with canines and villiform teeth. Cheek with 4 transverse scale rows; inner surface of pectoral fin axil not covered with scales. Caudal fin moderately forked, with pointed tips; median rays slightly greater than eye diameter. **Color:** body silvery; frequently with a diffuse to vivid pattern of 5 to 8 narrow dark bars on side; first bar through eye and across cheek. Fins mainly clear to yellowish; a narrow brown bar often across pectoral-fin base. **Size:** maximum length about 35 cm. **Distribution:** distributed in the eastern Indian



Gymnocranius griseus, KAUM-I. 23440, 13.9 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

Ocean and the western Pacific from southern Japan to western Australia. **Remarks:** occurs in continental shelf and coastal inshore waters at depths between about 20 and 80 m. Caught mostly with bottom trawls. (H. Motomura)

Lethrinus lentjan
(Lacepède, 1802)

Pink Ear Emperor

D X, 9; A III, 8; P₁ 13; P₂ I, 5; LLp 46–47. Body moderately deep; its depth 2.5–2.8 in SL. Dorsal profile of snout around straight. No scales on cheek; inner surface of pectoral-fin base scaled or naked; 6 longitudinal scale rows (including small scales beneath dorsal-fin base) between lateral line and base of middle dorsal-fin spine. **Color:** body grayish dorsally, silvery ventrally; whitish spot at center of each scale on body; posterior margin of opercle red; base of pectoral fin sometimes with red marking; caudal fin mottled. **Size:** 52 cm. **Distribution:** Indo-West Pacific **Remarks:** found in lagoons, coral reefs and seagrass beds; juveniles enter estuaries and mangrove swamps. Carnivorous, feeds on crustaceans, mollusks, polychaetes and fishes. Esteemed as food fish. (K. Shibukawa)



Lethrinus lentjan, KAUM-I. 23235, 17.6 cm SL
Gulf of Thailand (SS), 9 Sept. 2009

SPARIDAE

Seabreams or Porgies

Medium to large sized (up to 100 cm) fishes, with body oblong, moderately deep and compressed. Head large, often with a steep upper profile; mouth subhorizontal and slightly protrusible, upper jaw never reaching reaching a vertical line through middle of eye; hind tip of premaxilla overlapping maxilla; jaw teeth well developed, differentiated into either conical, or flattened, and often rounded; vomer and palatines toothless. Gill rakers variable, 7–20 on lower limb of first gill arch. Dorsal fin single, with X–XIII spines and 9–17 soft rays, the spiny and soft portions not separated by a notch; anal fin with III spines and 7–15 soft rays; pectoral fins usually long and pointed; pelvic fin with I spine and 5 soft rays, and an axillary scale at base; caudal fin moderately deeply emarginate or forked. Scales cycloid or weakly ctenoid.

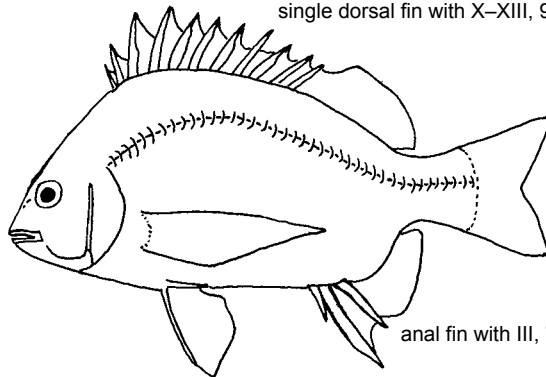
Color: overall color highly variable, from pinkish or reddish to yellowish or grayish, often with silvery

or golden reflections, often with dark or colored spots, stripes, or bars.

Remarks: inhabits tropical and temperate coastal waters; occasionally found in estuaries. Most seabreams are excellent food fish and are of notable commercial importance.

Similar families occurring in the area: Haemulidae – edge of preopercle serrate; suborbital space scaled; ; no molar teeth. Lutjanidae – edge of preopercle usually serrated, and of-

single dorsal fin with X–XIII, 9–17



anal fin with III, 7–15

ten excavated to accommodate a bony knob; no molar or incisor-like teeth. Lobotidae – edge of preopercle strongly toothed; no molar teeth; dorsal, anal and caudal fins rounded. Lethrinidae – posterior tip of maxilla overlapping premaxilla; 8–11 soft dorsal-fin rays (9–17 in Sparidae); incisor-like teeth never present.

(M. Matsunuma)

Acanthopagrus pacificus

Iwatsuki, Kume & Yoshino, 2010

Pacific Seabream

D XI, 11; A III, 8; P₁ 15; LL_p 42–46. Body deep and moderately compressed; mouth slightly oblique; lips thick; 6 canines anteriorly in upper jaw, 6 in lower jaw; ventral edge of anterior two infraorbitals straight in juveniles, but a moderately curved concavity in adults. Second anal-fin spine robust, clearly longer than 3rd; caudal fin slightly forked, with rounded lobes. Scale rows between 5th dorsal fin spine base and lateral line 3½; front edge of predorsal fin scaly area on head slightly convex, without small scales. **Color:** head and body silvery gray, whitish ventrally; pectoral fin hyaline or somewhat dusky dorsally; other fins dusky. **Size:** 45 cm SL. **Distribution:** West Central Pacific, from the Ryukyu Islands south to northern Australia. **Remarks:** found in shallow coastal waters; juvenile entering lower reaches of rivers. (M. Matsunuma)



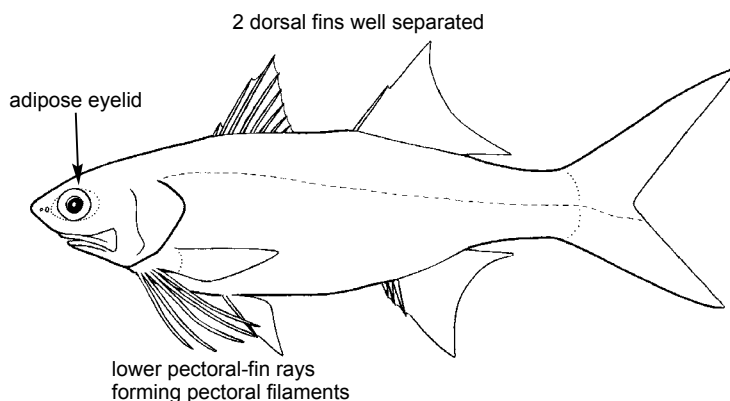
Acanthopagrus pacificus, KAUM-I. 32902, 18.0 cm SL
Bang Pakong, 30 Oct. 2010

POLYNEMIDAE

Threadfins

Body elongate to moderately deep, compressed; size from about 10 to 200 cm. Snout obtusely conical, overhanging. Adipose eyelid covering eye. Mouth ventral, near-horizontal and large; lip on upper jaw absent or poorly-developed; maxilla extending beyond level of posterior margin of eye; supramaxilla absent. Teeth villiform in broad bands on jaws, vomer, palatines and ectopterygoids (vomerine teeth absent in some species); canine, molariform or incisoriform teeth absent. 7 branchiostegal rays, one ray present on epiphyal.

Two well-separated dorsal fins; first dorsal fin with 7 or 8 spines; second dorsal fin with a spine and 11 to 18 soft rays. Anal fin with 2 or 3 spines and 10 to 18 soft rays. Pectoral fins divided into an upper part with 12 to 19 rays joined by membrane and a lower part with 3 to 16 separate soft rays (pectoral filaments). Pelvic fins with a spine and 5 soft rays. Caudal fin deeply forked. Scales weakly



ctenoid, extending onto head; scales covering most of dorsal, pectoral, anal and caudal fins; lateral line extending onto posterior margin of caudal fin; trisegmental pterygiophores absent. Vertebrae 10 precaudal and 14 or 15 caudal; supraneural bones 0 to 3. **Color:** silvery, golden or brown. A large black spot at anterior lateral line or several longitudinal dark stripes in some species.

Remarks: taken over sandy or muddy bottoms in tropical and subtropical coastal, brackish and freshwater. Feeds mainly on crustaceans and small fishes. Some species hermaphrodites.

Similar families occurring in the area: pectoral fin and filament characters (see above description) distinguish Polynemidae from all other families. (H. Motomura)

Eleutheronema tetradactylum (Shaw, 1804)

Fourfinger Threadfin

D VIII + I, 13–15; A III, 14–16; P₁ 15–19 + 4 filaments; P₂ I, 5; LLp 71–80; GR 6–18. Body elongate, moderately compressed. Posterior margin of maxilla extending well beyond a vertical through posterior margin of adipose eyelid. Upper jaw length 5.9–7.1 in standard length. Anterior parts of lower jaw with small teeth extending onto lateral surface, adjacent portion of lip absent; tooth plate extension onto lateral surface of lower jaw 11.1–14.3 in standard length; vomer with deciduous tooth plates on both sides, except in juveniles. Longest pectoral filament not reaching origin of anal fin. Swimbladder absent. **Color:** upper sides of head and trunk with slight darkish silver tinge, becoming lighter on lower sides. Anterior margins of

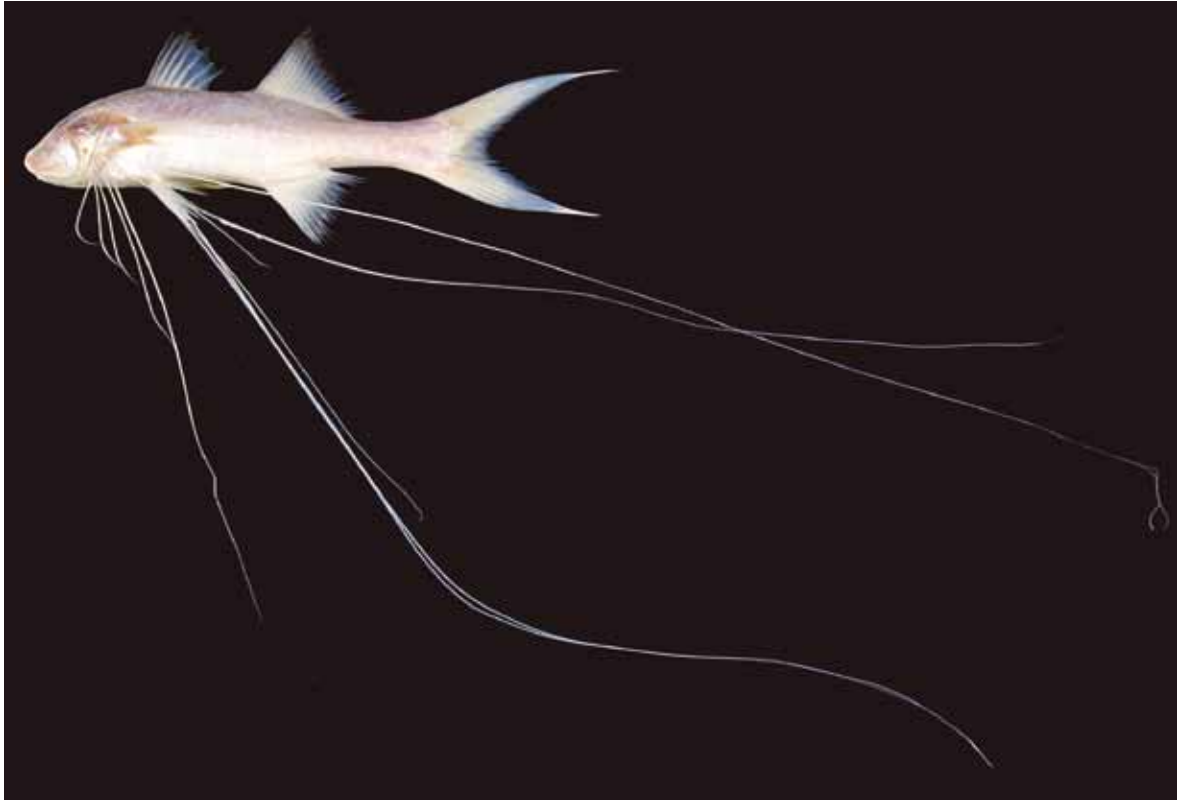


Eleutheronema tetradactylum, KAUM-I. 32955, 18.6 cm SL
Rayong, 31 Oct. 2010

first and second dorsal fins blackish, remaining parts translucent and slightly blackish, respectively; pectoral fin vivid yellow (dusky yellow in large specimens over ca. 350 mm standard length). **Size:** maximum total length about 200 cm. **Distribution:** distributed in the Indo-West Pacific, from the

Persian Gulf east to Papua New Guinea and northern Australia. **Remarks:** generally occurs on continental shelves on muddy and sandy substrata, and frequently enters brackish waters, especially as juveniles. Sex changing male to female with growth.

(H. Motomura)



Polynemus aquilonaris
Motomura, 2003

Northern Paradise Fish

D VIII + I, 15–19; A III, 11–13; P₁ 15–17; P₁ filaments 7; P₂ I, 5; LLP 80–86; GR 25–29. Body elongate, compressed. Snout pointed; occipital profile nearly straight. Posterior margin of maxilla extending well beyond level of posterior margin of adipose eyelid. Depth of posterior margin of maxilla slightly less than eye diameter; lip on lower jaw well developed, dentary teeth restricted to dorsal surface; teeth villiform in broad bands on vomer, palatines and ectopterygoids.

Posterior margin of preopercle serrated. First pectoral filament shortest, not reaching to level of posterior tip of pelvic fin; sixth pectoral filament, usually longest, its length 260 to 371% of standard length, extending well beyond posterior tips of caudal-fin lobes. Caudal fin deeply forked, upper and lower caudal-fin lobes not filamentous. **Color:** body greyish silver dorsally, silver ventrally. Pectoral fin translucent; base of pectoral filaments white, becoming blackish on posterior

tips. Base and posterior margin of pelvic fin white, remaining parts translucent. **Size:** maximum standard length at least 16 cm. **Distribution:** the Chao Phraya River system (Thailand), Mekong River system below the Khone waterfalls of Laos (Cambodia, southernmost of Laos and southern Viet Nam). **Remarks:** occurs on sandy or muddy bottoms in freshwater rivers and estuaries. Feeds on crustaceans, small fishes, and benthic organisms.

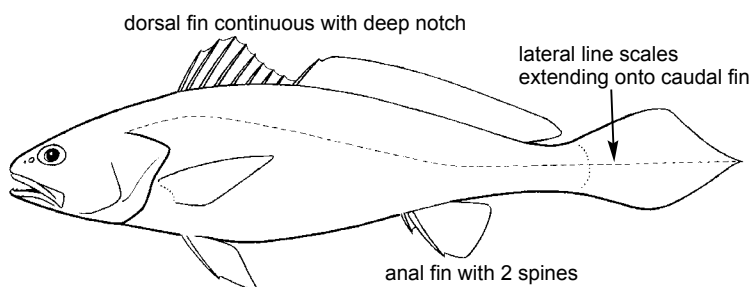
(H. Motomura)

Polynemus aquilonaris, KAUM-I. 23381, 9.7 cm SL
Bang Pakong, 22 Sept. 2009

SCIAENIDAE

Croakers

Small to large fishes, reaching 200 cm standard length. Body moderately elongate, compressed. Body, except snout tip, completely covered with scales. Enlarged teeth always form outer series in upper jaw, inner series in lower jaw; vomer and palatines without teeth. Dorsal fin continuous, with deep notch between anterior and posterior portions; with VIII to X spines anteriorly and I spines and 21 to 44 soft rays posteriorly; base of posterior portion much longer than anal fin base. Anal fin with II spines and 6 to 12 soft rays. Caudal fin emarginate to pointed, never deeply forked. Pelvic fins with I spine and 5 soft rays. Lateral line scales extending to posterior margin of caudal fin. Swimbladder well developed with thick wall, with horn-



like, tube-like, or arborescent appendages. **Color:** variable from silvery to black; with spots and dark bands in some species.

Remarks: occurs in coastal waters, estuaries and rivers. No records from oceanic island groups distantly separated from a continental shelf. Usually found over muddy or sandy

bottoms.

Similar families occurring in the area: the following combination of characters distinguish Sciaenidae from all other families: anal fin with II spines and lateral line scales extending to posterior margin of caudal fin. (H. Motomura)

Aspericorvina jubata (Bleeker, 1855)

Prickly Croaker

D XI, 22–25; A II, 7–9; P₂ I, 5; LGR 6–9. Body moderately deep. No barbel on chin. Snout profile rounded. Larger teeth in outer row and smaller teeth in inner row on upper jaw; villiform teeth on lower jaw. Ctenoid scales, with 5–6 strong spines posteriorly on each scale, covering on head, anterodorsal portion of body, throat, and abdomen; cycloid scales on remaining parts of body. Swimbladder carrot-shaped, with about 16 pairs of appendages. **Color:** body light gray dorsally, silver ventrally. Opercle with large dark blotch. Dorsal fin translucent white, with dark yellow margin. Pectoral fin translucent yellow with scattered melanophores. Pelvic and anal fins whitish. Caudal fin yellowish white. **Size:** maximum standard length 16 cm. **Distribution:** distributed in the Gulf of Thailand, Sumatra, and Borneo. **Remarks:** occurs in shallow coastal waters, estuaries, and rivers.

(H. Motomura)



Aspericorvina jubata, KAUM-I. 22948, 9.9 cm SL
Bang Pakong, 31 Aug. 2009

Bahaba polykladiskos
(Bleeker, 1852)

Spine Bahaba

D XI, 27–30; A II, 7; P₂ I, 5; LGR 7–8. Body relatively elongate, with slender caudal peduncle. No barbel on chin. Snout profile somewhat pointed. Posterior margin of maxilla extending beyond vertical through middle of eye; larger teeth in outer row and smaller teeth in inner row on upper jaw. Cycloid scales covering on snout and cheek; ctenoid scales on remaining parts of body; caudal fin thickly covered with small scales. Swimbladder carrot-shaped, with one pair of extremely long and simple appendages at anterior end of swimbladder. **Color:** body gray dorsally, silver ventrally. Dorsal, pectoral, pelvic, and anal fins translucent white. Caudal fin yellowish white. **Size:** maximum standard length 40 cm. **Distribution:** distributed in Thailand, Cambodia, Vietnam, and Borneo. **Remarks:** occurs in shallow coastal waters and estuaries.

(H. Motomura)



Bahaba polykladiskos, KAUM-I. 23358, 7.9 cm SL
Bang Pakong, 22 Sept. 2009



Boesemania microlepis, KAUM-I. 32752, 10.6 cm SL
Bang Pakong, 23 Oct. 2010

Boesemania microlepis
(Bleeker, 1858)

Boeseman Croaker

D X–XI, 27–34; A II, 7; P₂ I, 5; LGR 7–12. Body moderately deep, with slender caudal peduncle. No barbel on chin. Larger teeth in outer row and smaller teeth in inner row on upper jaw; larger teeth in inner row on lower jaw. Second anal-fin spine strong and long, its length nearly half of head length. Cycloid scales covering on snout and cheek; ctenoid scales on remaining parts of body. Caudal fin pointed, thickly covered with small scales. Swimbladder carrot-shaped, with pair of anteriorly directed appendages and 5–6 pairs of posteriorly directed appendages. **Color:** body brown dorsally, yellowish silver ventrally. Pectoral fin translucent yellow, with scattered melanophores; other fins yellowish white. **Size:** maximum standard length about 100 cm. **Distribution:** distributed in Vietnam, Laos, Cambodia, Thailand, Malaysia, and Indonesia (Sumatra). **Remarks:** occurs in estuaries and rivers.

(H. Motomura)



Dendrophysa russelli, KAUM-I. 32692, 8.4 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

Dendrophysa russelli
(Cuvier, 1829)

Goatee Croaker

D XI, 25–28; A II, 7; P₂ I, 5; LGR 8–10. Body relatively deep. Mouth inferior; posterior margin of maxilla not extending beyond a vertical through posterior margin of orbit. A pointed barbel on chin. Swimbladder carrot-shaped, with about 14–17 pairs of fan-like appendages along its sides; first pair entering head beyond transverse septum. **Color:** body gray dorsally, white ventrally. A dark brown broad

band on nape. Opercle with a deep blue blotch. Spinous portion of dorsal fin faintly edged with black. **Size:** maximum standard length 25 cm. **Distribution:** distributed in the eastern Indian Ocean and the western central Pacific Ocean, from the Bay of Bengal east to southern China, the Philippines and eastern Indonesia. **Remarks:** occurs in coastal waters and estuaries.

(H. Motomura)

Johnius amblycephalus
(Bleeker, 1855)

Bearded Croaker

D XI, 23–26; A II, 7; P₂ I, 5; LGR 6–9. Body moderately elongate. A stiff, blunt barbel on chin. Teeth differentiated into large and small in upper jaw, villiform teeth only in lower jaw. Second to fifth dorsal fin spines prolonged. Scales on head and body cycloid; small scales covering soft-rayed portions of dorsal and anal fins. Swimbladder hammershaped, with 14 or 15 pairs of arborescent appendages along its sides, first pair entering head beyond transverse septum and sending a palmate branch to the front of pectoral arch. **Color:** body black or dark brown dorsally, whitish or cream yellow ventrally; prolonged spinous portion of dorsal fin black distally. **Size:** maximum standard length about 25



Johnius amblycephalus, KAUM-I. 23187, 13.7 cm SL
Gulf of Thailand (SS), 8 Sept. 2009

cm. **Distribution:** Indo-West Pacific, from Pakistan east to southern China and northeastern Australia. **Remarks:** occurs in shallow coastal waters and estuaries. (H. Motomura)

Johnius carouna
(Cuvier, 1830)

Caroun Croaker

D XI, 26–30; A II, 7; P₂ I, 5; LGR 10–12. Body moderately deep. No barbel on chin. Snout profile rounded. Larger teeth in outer row and smaller teeth in inner row on upper jaw; villiform teeth on lower jaw. Cycloid scales covering on snout, cheek, and throat; ctenoid scales on remaining parts of body; small scales covering soft-rayed portions of dorsal and anal fins. Swimbladder hammer-shaped, with 14 or 15 pairs of arborescent appendages. **Color:** body light gray dorsally, silver ventrally. Opercle yellowish. Upper pectoral fin yellowish with scattered melanophores; lower fin translucent white. Anterior pelvic fin pale yellow, remaining part whitish. Lower margins of anal and caudal fins yellowish; remaining parts whitish. **Size:** maximum standard length about 25 cm. **Distribution:** distributed in the Indo-West Pacific, from India east to Borneo and southern China. **Remarks:** occurs in shallow coastal waters and estuaries. (H. Motomura)



Johnius carouna, KAUM-I. 22946, 8.2 cm SL
Bang Pakong, 31 Aug. 2009

Johnius heterolepis

Bleeker, 1873

Largescale Croaker

D XI–XII, 25–28; A II, 7; P₂ I, 5; LGR 9–11. Body moderately deep. No barbel on chin. Snout profile pointed. Larger teeth in outer row and smaller teeth in inner row on upper jaw; villiform teeth on lower jaw. Scales on flank larger than pored lateral-line scales; cycloid scales covering on snout, cheek, and anterior half of opercle; ctenoid scales on remaining parts of body; small scales covering soft-rayed portions of dorsal and anal fins. Swimbladder hammer-shaped, with 14 pairs of arborescent appendages. **Color:** body grayish to yellowish gray dorsally, yellowish silver ventrally. Opercle blackish. Pectoral and caudal



Johnius heterolepis, KAUM–I. 32691, 12.3 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

fins yellowish. Anterior portions of pelvic and anal fins yellowish, remaining parts whitish. **Size:** maximum standard length about 15 cm. **Distribution:** previously known only from Malaysia and Indonesia; the pho-

tographed specimen may represent the first record of the species from northern Gulf of Thailand. **Remarks:** occurs in shallow coastal waters.

(H. Motomura)

Otolithes ruber

(Bloch & Schneider, 1801)

Tigertooth Croaker

D X–XI, 26–30; A II, 7; P₂ I, 5; LGR 8–11. Body slender, cylindrical. Snout not swollen or projecting, its dorsal profile rising evenly to dorsal fin origin. Posterior margin of maxilla reaching a vertical through posterior margin of orbit. No barbels on chin. Teeth differentiated into large and small in both jaws, with 1 or 2 pairs of strong canines at front of one or both jaws. Scales cycloid, but a few ctenoid on lower part of caudal peduncle. Swimbladder carrot-shaped with 32–36 pairs of fan-like appendages along sides, each appendage lodged beside bladder and none widely lapping dorsal surface of bladder wall, first pair not entering head. **Color:** body brownish dorsally, silvery with a golden sheen on middle and ventrally, often with oblique dark streaks dorsally. Pectoral, pelvic, and anal fins reddish or light brown. **Size:** maximum standard length 70 cm. **Distribution:** widely distributed in the Indo–West Pacific, from South Africa east to southern China and northeastern Australia. **Remarks:** occurs in shallow coastal waters to depths of 40 m. Feeds mainly on prawns and fishes. (H. Motomura)



Otolithes ruber, KAUM–I. 32687, 14.8 cm SL
Gulf of Thailand (SS), 22 Oct. 2010



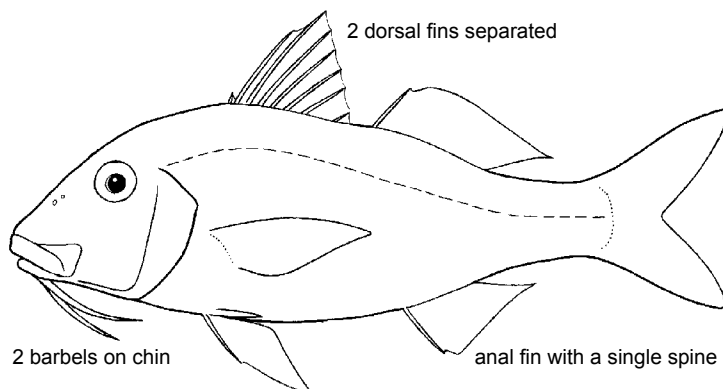
Otolithes ruber, KAUM–I. 23113, 7.5 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

MULLIDAE

Goatfishes

Body symmetrical, moderately elongate and compressed with eyes on opposite sides of head (size to 50 cm). Head moderately depressed. Mouth small and protractile with inferior lower jaw; a pair of barbels on chin; the cleft slightly oblique; small conical teeth in jaws, either in villiform bands or in 1 or 2 rows. Scales finely ctenoid and body completely scaly. Two well-separated dorsal fins, the first with VII–VIII slender spines (first spine often very small); the second fin with 9 soft rays (first unbranched); anal fin with I spine and 6–7 soft rays; caudal fin deeply forked; pectoral fins with 13–18 soft rays; pelvic fins with I spine and 5 soft rays; pectoral fins usually short with 13 to 18 rays; caudal fin deeply forked with 13 branched rays. Lateral line complete, following the contour of back, with 27–38 pored scales. Gill membrane with 3–4 branchiostegals, pseudobranchiae present, a single flat spine posteriorly on opercular margin of preopercular smooth.

Color: ground color often whit-



ish to light red; most species with distinctive black, brown, red, or yellow markings; median fins often with stripes or oblique bands.

Remarks: inhabit shallow seas, on open sand or mud bottoms. Carnivorous, feeding on a wide variety of small animals, especially crustaceans and worms. The barbels, with chemosensory receptors, are actively moved over or into the sediment to find food organisms.

Similar families occurring in the

area: Polymixiidae – the only other family with a pair of long barbels on chin; the species occur in deep water, about 200–400 m. Distinguished from Mullidae by the following combination of characters: a single, unnotched dorsal fin with IV–VI spines; anal fin with III–IV spines; barbels inserted well behind tip of lower jaw.

(S. Tafzilmeriam S. A. K.)

Parupeneus heptacanthus (Lacepède, 1802)

Cinnabar Goatfish

D VIII + 9; A I, 6; P₁ 15–17; P₂ I, 5; LLp 27–28; GR 6–7 + 20–23. Body moderately elongate, its depth 3–3.55 times in standard length. Chin with 2 moderately long slender barbels, reaching beyond rear edge of preopercle. Anterodorsal profile of head convex. Posterior end of maxilla evenly convex. Mouth small with a single row of stout conical teeth on jaws, teeth large; teeth absent on vomer and palatines. Opercle with a small flat spine. Scales ctenoid. First dorsal fin with groove at the base, 1st spine very small. Caudal fin forked. **Color:** body brownish yellow to light red dorsally, silvery white ventrally; a small reddish brown spot beneath the lateral line under the rear of the first dorsal fin; dorsal fin with 2–3 black or dark orange



Parupeneus heptacanthus, KAUM-I. 33221, 17.2 cm SL off Chantha Buri (SP), 30 Nov. 2010

stripes; anal, pelvic and pectoral fins pale yellow; caudal fin with dark-orange cross stripes. **Size:** maximum total length about 37 cm, commonly to 25 cm. **Distribution:** Indo-Pacific. **Re-**

marks: occurs singly or in small groups, over muddy, sandy, rubble, or seagrass bottoms of lagoon and seaward reefs, usually below 15 m.

(S. Tafzilmeriam)

Upeneus sulphureus
Cuvier, 1829

Sulpher Goatfish

D VIII + 9; A I, 7–8; P₁ 14–17; LL 33–36; GR 8–9 + 19–21. Body moderately elongate. Chin with 2 short barbels, 1.4–1.9 in head length. Lachrymal region lacking preorbital scales. Both jaws, vomer and palatines with teeth. Second dorsal and anal fins with scaled area basally. **Color:** body silvery greenish or pink dorsally, shading to silver on side and ventrally, with 2 narrow, brassy yellow stripes on side of body; 1st dorsal fin broadly tipped with black; caudal fin lacking dark cross bands. **Size:** reaching to ca. 20 cm. **Distribution:** Indo-West Pacific, including east coast of Africa, Indo-Malayan region, Japan, Australia and Fiji. **Remarks:** generally found on mud substrata at depths of 20–60 m.

(H. Imamura)



Upeneus sulphureus, KAUM-I. 33094, 12.2 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

Upeneus sundaicus
(Bleeker, 1855)

Ochreband Goatfish

D VIII + I, 9; A I, 6; P₁ 14; P₂ I, 5; LLp 31–32; GR 4–6 + 19–22. Body moderately elongate and slender, its depth 3.55 to 4 times in standard length. Interorbital flat. Chin with 2 barbels which usually reach or extend slightly posterior to rear margin of preopercle. Opercle with small and weak spines. Mouth small, viliform teeth in a narrow band in jaws, on palatines and in 2 small patches on vomer. Scales large, ctenoid. Spinous of rays first dorsal fin acute, higher than second dorsal fin, 1st spine minute, the 2nd longest and strongest. Caudal fin forked. **Color:** body light reddish-brown dorsally, silvery white ventrally. One yellow stripe on body from eye to caudal peduncle. Dorsal fin with pale orange stripes; no bars on



Upeneus sundaicus, KAUM-I. 32900, 10.2 cm SL
Ang Sila, 30 Oct. 2010

caudal-fin lobe, caudal fin brownish-yellow with dusky lower lobe; pectoral fins pale yellow; pelvic and anal fins yellowish; barbels yellow; peritoneum pale. **Size:** commonly to 13 cm.

Distribution: South China Sea, Indian Ocean and northwestern Australia. **Remarks:** found in mud or salty sand substrata at depth of 3–20 m.

(S. Tafzilmeriam)

Upeneus tragula

Richardson, 1846

Freckled Goatfish

D VIII + 9; A I, 7; P₁ 13–14; P₂ I, 5; LLp 28–30; GR 5–7 + 15–18. Body elongate, its depth 3.9–4.25 times in standard length. Chin with 2 slender barbels, usually not reaching rear margin of preopercle. Mouth small with villiform teeth in a narrow band in jaws, on palatines, and in 2 small patches on vomer. Opercle with small and weak spines. Scales large, ctenoid; present on side of snout. Spinous rays of first dorsal fin acute, higher than second dorsal fin, 1st spine minute, the 2nd longest and strongest. Pelvic fins equal to pectoral fins. Caudal fin forked. **Color:** highly variable in colour, from red, to irregular dots and blotches on body; 3 dark blotches on first dorsal and 2 dark blotches on second dorsal; a dark reddish brown to blackish stripe from snout through behind eye to base of caudal fin; head and body above stripe brownish to greenish gray, flecked with small dark reddish brown or blackish spots; dorsal, pelvic, anal and both caudal-fin lobes with brown blackish stripes sep-



Upeneus tragula, KAUM-I. 33049, 11.0 cm SL
Prachuap Khiri Khan, 9 Nov. 2010

arated by narrow white stripes; barbels usually yellow; peritoneum whitish. **Size:** maximum total length about 33 cm, commonly to 25 cm. **Distribution:** Indo-West Pacific. **Remarks:** found over sand and mud bottoms

near coral reefs, to a depth of 40 m; also common in estuaries. Generally solitary, but forms small to moderately large aggregations at all sizes.

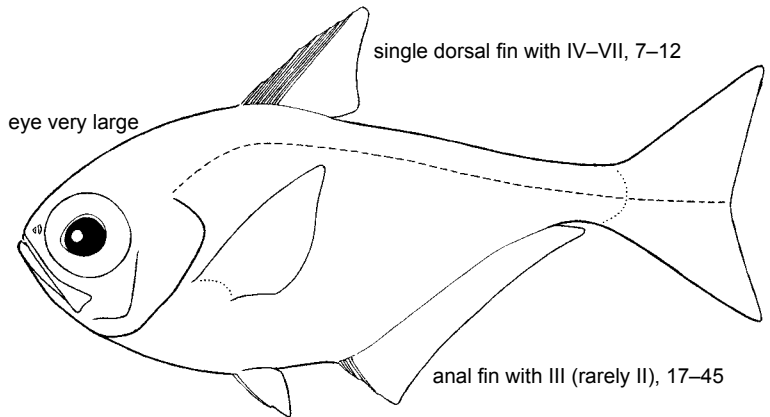
(S. Tafzilveriam)

PEMPHERIDAE

Sweepers

Small to moderate sized (to 30 cm) marine fishes. Body compress, very deep (*Pempheris*) or slender (*Parapriacanthus*). Eye very large. Snout short. Maxilla broad, reaching to below pupil. Teeth small, in band in jaws, on palatine, and in V-shaped patch on vomer. Gill rakers long, usually 25–31. Dorsal fin single, with IV–VII graduated spines and 7–12 soft rays. Anal fin with III (rarely II) spines and 17–45 soft rays. Pelvic fin with I spine and 5 soft rays. Lateral line scales usually 40–82. Scales vary from ctenoid and adherent to cycloid and deciduous. **Color:** variable (e.g., silvery, pinkish, yellowish and brownish).

Remarks: usually seen by day in aggregations in caves or beneath



ledges, dispersing at night to feed independently on zooplankton.

Similar family occurring in the

area: Berycidae – pelvic fin with 7–13 soft rays. (H. Imamura)

Pempheris oualensis Cuvier, 1831

Copper Sweeper

D VI, 9–10 (usually 9); A III, 36–45; P₁ 16–18 (usually 17); LL 54–79; GR 7–10 + 19–26. Body very deep at origin of dorsal fin, strongly tapering to narrow caudal peduncle; body depth about 1.9–2.4 in standard length; pre-pelvic area narrow and keeled. Base of anal fin very long; caudal fin slightly forked. Body covered by ctenoid scales except for chest with cycloid; 5–6 scale rows between lateral line and dorsal fin base. **Color:** body bronze, darker dorsally; dorsal fin with a dark leading edge that expands distally to produce dark tips on the first 2 or 3 soft rays; base and axil of pectoral fin dark to black. **Size:** maximum length 18 cm. **Distribution:** eastern Indian Ocean and western Pacific, from northern Australia to the Philippines, east to Micronesia. **Remarks:** found in coastal rocky reefs.

(M. Matsunuma)

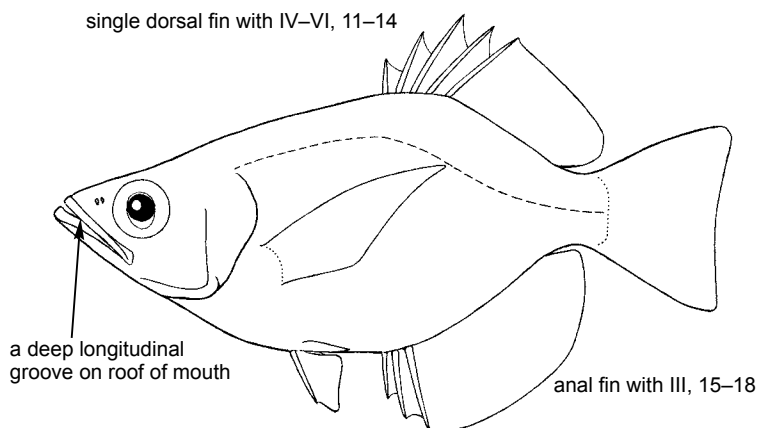


Pempheris oualensis, KAUM-I. 47444, 10.7 cm SL
Gulf of Thailand (SS), 20 June 2012

TOXOTIDAE

Archerfishes

Small to medium sized fishes (to about 50 cm). Body oval or rhomboidal-shaped and moderately compressed. Eye large, diameter nearly equal to snout length. Mouth moderately large, protractile, with lower jaw protruding; angle of jaw oblique, maxilla slender, scaly and without a supplemental bone. Fine villiform teeth on jaws, vomer, and palatines; a deep longitudinal groove on roof of mouth, which is converted to a tube when tongue is pressed against it. First gill arch with 2–8 gill rakers on lower limb. Dorsal fin single with IV–VI spines and 11–14 soft rays; anal fin with III spines and 15–18 soft rays; pelvic fins with I spine and 5 soft rays; pectoral fins with 11–15 rays; caudal fin truncate to slightly emarginate. Scales moderate to relatively large and ctenoid, covered head and median fins. **Color:** most species silvery white with a pattern



of dark bars, large spots, or irregular stripes on sides. **Remarks:** inhabit mangrove shores, estuaries, and fresh waters, always in shallow depths. Exhibit impressive hunting techniques in which they use jets of water to knock aerial insects into the water where they can be eaten.

Similar families occurring in the area: Pempheridae – snout blunt, dorsal-fin base short, positioned above pectoral fins; anal fin long, usually with more than 30 soft rays; occur in marine rather than estuarine and fresh-water habitats.

(U. Satapoomin)

Toxotes chatareus (Hamilton, 1822)

Spotted Archerfish

D IV–VI, 12–14; A III, 15–17; P₁ 11–14; LLp 29–37; LGR 5–7. Body shape rhomboid, moderately compressed. Eye large. Mouth moderately large, protractile, with lower jaw protruding; longitudinal axis from tip of snout to caudal fin passing through center of eye. Dorsalfin spines usually V, fourth spine usually the longest. Scales in lateral line usually 29–32; horizontal scale rows above lateral line 3–5, below lateral line 9–11. **Color:** silvery white with 6 or 7 variably-shaped blotched along the sides of body; caudal fin pale yellowish; anal fin pale basally, outer half of the fin blackish. **Size:** maximum length about 50 cm, rarely exceeding 35 cm. **Distribution:** Eastern Indian Ocean and western Pacific, from Sri Lanka and India to New Guinea and northern Australia. **Remarks:** inhabits mangrove shores, estuaries, and fresh waters. Feeds on terrestrial insects. (U. Satapoomin)

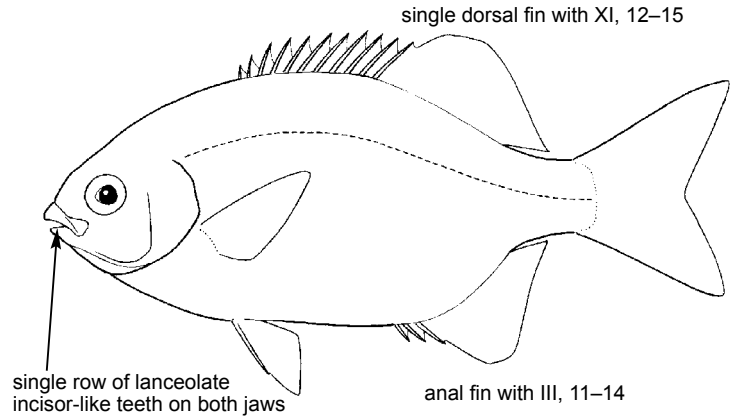


Toxotes chatareus, KAUM-I. 33199, 8.5 cm SL
Bang Pakong, 26 Nov. 2010

KYPHOSIDAE

Sea Chubs (Rudder Fishes)

Medium-sized fishes (to 75 cm); body oblong or elliptical, moderately compressed. Head small. Snout short. Posteroventral corner of preopercle serrate. Opercle with 2 small, weak retrorse spines. Eye moderately small, its diameter shorter than snout length. Mouth small and terminal, single row of lanceolate incisor-like teeth on both jaws; minute canine-like teeth in 2 or 3 rows medial to incisor-like teeth; palatines, vomer, and tongue with a band of villiform teeth. Preorbital narrow, covering little of maxilla; maxilla barely reaching eye. Dorsal fin continuous, beginning above origin of pelvic fins, with XI spines and 12 to 15 soft rays; anal fin beginning slightly behind middle of body, with III spines and 11 to 14 soft rays; pectoral fins bluntly pointed posteriorly, with 16 to 20 rays, slightly longer than pelvic fins; pelvic fins beginning a little behind pectoral-fin base; caudal fin more or less forked, with pointed



lobes. Scales ctenoid and not deciduous, extending onto most of soft portions of dorsal and anal fins and proximal part of caudal fin. **Color:** dull olive or silvery black, lighter below; distinct longitudinal lines on sides.

Remarks: occurs on rocky and coral reefs in tropical and temperate waters. Herbivorous, feeding pri-

marily on benthic algae. Schooling, sometimes in a group of mixed species of other kyphosids.

Similar families occurring in the area: Sparidae – molar teeth often present; pectoral fins long. Lethrinidae – head much larger; lateral teeth conical or molar-like; pectoral fins long. (U. Satapoomin)

Kyphosus cinerascens (Forsskål, 1775)

Blue Sea Chub

D XI, 11–13 (usually 12); A III, 10–12 (usually 11); P, 18; LLP 49–52; GR 7–9 + 19–22 = 26–31. Body ovate, compressed. Snout short, subequal to or shorter than eye diameter; dorsal contour of snout slightly steep. Mouth terminal; teeth incisor-like. Base of spinous portion of dorsal fin longer than base of soft rayed portion; soft rayed portion of fin well elevated, anterior soft rays clearly longer than longest dorsal fin spine; anterior soft rayed portion of anal fin well elevated, similar to soft rayed portion of dorsal fin; caudal fin slightly forked with pointed lobes. Nine to twelve (usually 10 or 11) scales between lateral line and dorsal fin origin; 17–21 (usually 18–20) scales between lateral line to anal fin origin. **Color:** body bluish dorsally, dusky grayish ventrally, with several bluish brown longitudinal lines on flank, large specimens (about



Kyphosus cinerascens, KAUM-I. 23875, 13.9 cm SL
Gulf of Thailand (SS), 26 Sept. 2009

40 cm SL) uniformly dusky or dark blue dorsally; head with 2 oblique brown or bluish brown bands; one through eye, the other one below eye; dorsal and anal fins dark blue, margin of soft portion with darker band; pectoral fins silver blue near base, distal half slightly darker. **Size:** commonly

40 cm; maximum 50 cm TL. **Distribution:** widespread in the Indo-West Pacific, including the Red Sea, from South Africa east to Australia; north to southern Japan. **Remarks:** inhabits coastal areas, primarily coral and rocky reefs, often occurring on inner reefs. Herbivorous. (M. Matsunuma)



Kyphosus vaigiensis, KAUM-I. 23873, 15.9 cm SL
Gulf of Thailand (SS), 26 Sept. 2009

Kyphosus vaigiensis
(Quoy and Gaimard, 1825)

Brassy Chub

D X–XI, 13–15; A III, 12–13; P₁ 18–20; LLp 51–55; GR 8–10 + 21–24. Body ovate, compressed. Snout short; dorsal contour of snout steep. Mouth terminal; maxilla barely reaching to eye level; teeth incisor-like, fixed, in a single row on both jaws. Gill rakers on first gill arch usually 9 on upper limb, usually 22 or 23 on lower limb. Dorsal fin usually with XI spines, the sixth or seventh spines longest, and usually with 14 soft rays; anterior soft-rayed portion not elevated, a little shorter or

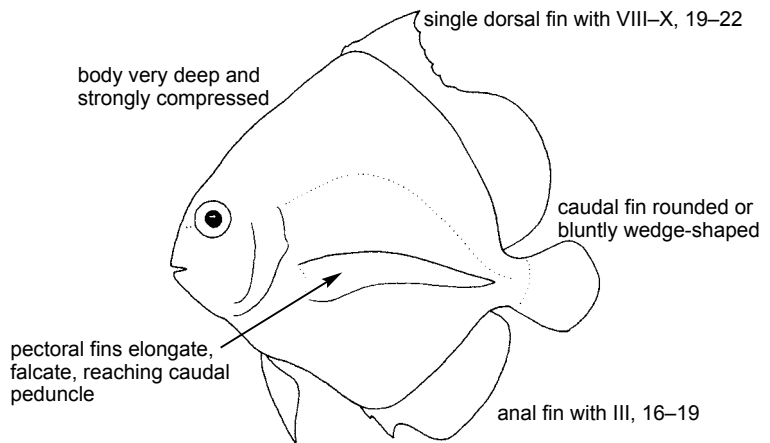
as long as longest dorsal-fin spine; anal fin usually with 13 soft rays, anterior portion not elevated; pectoral fins usually with 19 soft rays; caudal fin shallowly forked with pointed lobes. Pored scales in lateral line usually 52 or 53; scales above lateral line 11–14 (usually 12 or 13); scales below lateral line 18–21 (usually 18 or 19). **Color:** body bluish brown dorsally, silver ventrally, with several olive brown or yellow longitudinal lines on flank; head with 2 oblique olive brown

bands; dorsal and anal fins dark blue, margin of soft portion with darker band. **Size:** maximum length about 60 cm, commonly to 40 cm. **Distribution:** Indo-West Pacific, from South Africa and Red Sea to Easter Islands. **Remarks:** inhabits coastal areas, primarily in coral and rocky reefs, occasionally forming schools with other kyphosid fishes. Mainly herbivorous, feeding chiefly on seaweeds and associated invertebrates. (U. Satapoomin)

DREPANIDAE

Sicklefishes

Body oval and strongly compressed (up to 50 cm). Interorbital, preorbital, and broad preopercular flange naked; opercle scaly dorsally; ventral edge of preopercle serrate in juveniles. Mouth highly protrusible, forming a downward-pointing tube when protruded; jaws with bands of setiform teeth; no teeth on roof of mouth; maxilla exposed posteriorly, no supramaxilla. Branchiostegal membranes joined to isthmus; branchiostegal rays 6. A single dorsal fin, with VIII–X spines and 19–22 soft rays; anal fin with III spines and 16–19 soft rays; caudal fin rounded or bluntly wedge-shaped (almost truncate in large adults); pectoral fins elongate, falciform, reaching caudal peduncle, with 16–18 rays; pelvic fins with I spine, 5 soft rays, and a fleshy axillary process. Scales small, finely ctenoid, extending onto top of head and base of median fins; lateral line complete, strongly curved over pectoral fin; lateral-line scales 48–55. Vertebrae 10 + 14 = 24. **Color:**



silvery gray above, silverywhite below, with dusky spots or gray vertical bars.

Remarks: inhabits a variety of habitats including sand or mud bottoms, coral reefs, estuaries and harbours. Mostly caught with trawls.

Similar families occurring in the area: Chaetodontidae and Pentacerotidae – mouth not highly pro-

trusible; no notch between spinous and soft-rayed portions of dorsal fin. Ephippidae – pectoral fins short, not reaching past anal-fin base; mouth not protrusible. Scatophagidae – IV anal-fin spines; head profile concave. Monodactylidae – mouth not highly protrusible; pectoral fins shorter than head; eye centered on horizontal axis through mouth. (M. Matsunuma)

Drepane punctata (Linnaeus, 1758)

Spotted Sicklefish

D VIII–X, 20–22; A III, 16–19; P₁ 16–18; LL_p 46–50; GR 5 + 10–11. Body oval and strongly compressed, its depth 1.2–1.3 in SL. Mouth highly protrusible, forming a downward-pointing tube when protruded. Caudal fin rounded or bluntly wedged-shaped (almost truncate in large adults); pectoral fins elongate, falciform, reaching caudal peduncle. Large adults with a bump or bony knob on interorbital region, a result of hyperostosis of frontal bones. **Color:** generally silvery with a greenish tinge on upper half of body; 5–10 series of black spots arranged in vertical lines on dorsal part of body from below dorsal fin to caudal peduncle. **Size:** maximum length about 40 cm. **Distribution:** temperate and tropical Indo-West Pacific, from Red Sea and east coast of Africa to New Guinea, Samoa, and northern Australia, north to southern Japan. **Remarks:**



Drepane punctata, KAUM–I. 32897, 12.9 cm SL
Ang Sila, 30 Oct. 2010

occurs in inshore habitats, such as sand or mud bottoms, reefs and estuar-

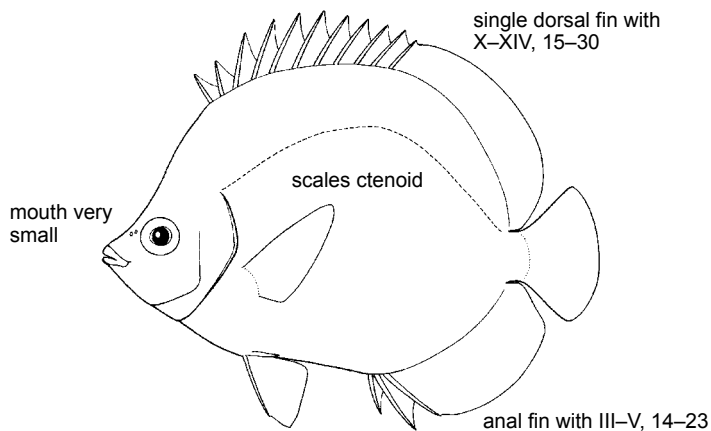
ies. Feeds on benthic invertebrates.

(M. Matsunuma)

CHAETODONTIDAE

Butterflyfishes

Small sized (up to 30 cm) marine fishes, with body deep and highly compressed. Head short; preopercle smooth. Eye moderately small, near located on longitudinal axis from tip of snout to middle of caudal fin. Snout highly variable, very short to extremely elongate. Mouth small, terminal, protractile; teeth bristle-like, curved, arranged in rows or bands across jaws; vomer and palatines without teeth. Branchiostegal rays 6 or 7. Gill rakers short. A single dorsal fin, usually with X–XIV strong, stout spines and 15–30 soft rays; no notch between spinous and soft rayed portions of dorsal fin. Anal fin with III–V strong, stout spines and 14–23 soft rays: interspinous membranes deeply incised; margin usually rounded but sometimes angular. Pectoral fin with 13–15 rays. Pelvic fin with I stout spine and 5 soft rays. Caudal fin rounded to slightly emarginate. Scales ctenoid, covering head, body, and median fins; scaly axillary process at upper base of pelvic fins; number of lateral line scales variable, 20–90. Vertebrae 11 + 13.



Color: most species very brightly colored with complex and varied color patterns; many species with a dark ocellate “false-eye” spot on posterior portion of body.

Remarks: generally found on coral reefs, usually in shallow water above depths of 20–30 m. Feed on coral polyps, colonial sea anemones, tentacles of tubeworms, small crustaceans, zooplankton, and algae. No importance in commercial fisheries; but

commonly treated as an aquarium fish.

Similar families occurring in the area: Pomacanthidae – a strong spine at angle of preopercle; most of conspicuous species larger and more colorful. Scatophagidae – dorsal fin with a deep notch; IV anal fin spines; mouth not protractile. Zanclidae – strongly produced snout, bony supraocular projections, and only VII dorsal fin spines. (Y. Yusuf)

Heniochus acuminatus (Linnaeus, 1758)

Longfin Bannerfish

D XI, 23–27; A III, 16–19; P₁ 16–17; LLp 49–52. Body very deep; snout moderate, pointed. Lateral line complete. Fourth dorsal-fin spine greatly elongate, filamentous, often exceeding length of body. Caudal fin truncate to slightly rounded. **Color:** overall white, with 2 broad, oblique, black bands on sides, the first continuous with black pelvic fins and the second from middle of spinous portion of dorsal fin to posterior half, but not extending anteriorly to longest soft ray of anal fin; soft dorsal and caudal fins yellow; snout and interorbital largely blackish. **Size:** maximum length about 20 cm. **Distribution:** Indo-Pacific, from East Africa to Hawaii and Society Islands. **Remarks:** inhabits coral reefs at depths of 2–40 m. Occurs singly, in pairs or in small aggregations. Omnivorous. (U. Satapoomin)



Heniochus acuminatus, KAUM-I. 33216, 10.4 cm SL
off Chantha Buri (SP), 30 Nov. 2010

Parachaetodon ocellatus
(Cuvier, 1831)

Ocellate Coralfish

D VI–VII, 28–30; A III, 18–20; P₁ 14–15; LR 39–46. Body rounded, almost circular; its depth 1.3–1.4 in SL. Dorsal fin triangular in shape and first soft ray at apex. **Color:** head and body pearly white, with five dusky to orange bands; the first band through the eye orange, with black edges; an ocellated black spot in fourth body band; band on caudal peduncle with a silver anterior margin; upper portion of dorsal fin mostly yellow. **Size:** maximum length about 17 cm. **Distribution:** eastern Indian Ocean and western Pacific, from Sri Lanka eastward throughout the Indo-Malayan region, and the Great Barrier Reef northward to the Ryukyu Islands, Japan. **Remarks:** inhabits lagoons and coral reefs at depths of 3 to 50 m. Occurs in pairs on flat sand or silty bottoms on coastal reefs. Adults school over open muddy substrates in deep water; juveniles sometimes in large lagoons with seagrasses in depths of about 5 m or more. (Y. Yusuf)

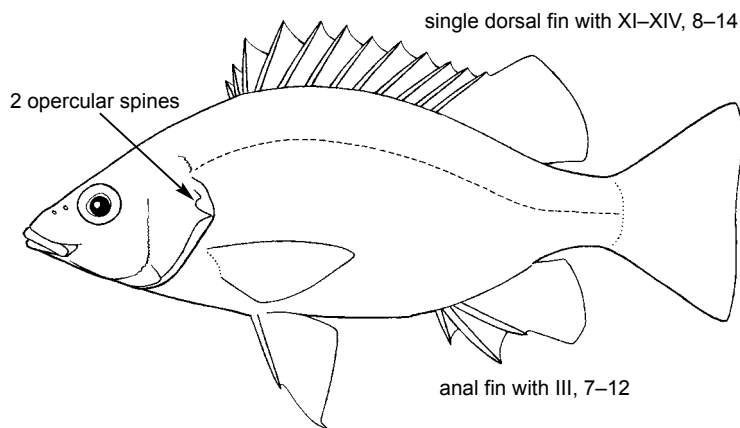


Parachaetodon ocellatus, KAUM-I. 32808, 11.1 cm SL
 Gulf of Thailand (SP), 25 Oct. 2010

TERAPONTIDAE

Grunters (Tigerperches)

Small to medium-sized (to 35 cm) perch-like fishes. Body oblong and slightly to moderately compressed. Mouth moderate, protractile, upper jaw not extending beyond center of orbit; jaw teeth usually in villiform bands, shape of teeth conical, flattened, or tricuspidate; vomer and palatines toothless in adults of most species. Opercle bearing 2 spines, the lower one larger and stronger; posttemporal bone exposed and expanded posteriorly, with posterior margin serrate in some species. Dorsal fin single, notched, with XI–XIV spines and 8–14 soft rays; anal fin with III and 7–12 soft rays; pelvic fins inserted behind base of pectorals, with I spine and 5 soft rays; caudal fin usually emarginate. Scales adherent, finely ctenoid; lateral line single and complete, reaching on caudal fin. **Color:** body tan or light gray, often silvery in life with various dark



markings; most marine species with 3 or more dark, straight or downwardly curved longitudinal stripes on body; some with dark transverse bands on lobes of caudal fin. **Remarks:** marine terapontids inhabit inshore marine and brackish waters, with some species also entering hypersaline and fresh

waters. **Similar families occurring in the area:** Serranidae – mouth large, with upper jaw typically reaching to below vertical through posterior margin of eye; caudal fin typically rounded; 3 strong spines on opercle. Kuhliidae – dorsal fin with X spines. (M. Matsunuma)

Pelates quadrilineatus (Bloch, 1790)

Fourlined Terapon

D XII–XIII, 9–11; A III, 9–10; LLp 66–75; GR 16–18 + 22–27. Body oblong and compressed laterally. Preopercle serrate; lower opercular spine stronger and longer, but not extending beyond margin of opercular lobe; posttemporal bone not expanded or exposed posteriorly, covered with skin and scales. **Color:** body silvery white, grayish dorsally; 4–6 narrow dark brown or black horizontal stripes on body; spinous portion of dorsal fin with a black blotch dorsally on membranes between third to seventh dorsal-fin spines; a large black blotch on side of body posterior to nape; lobes of caudal fin without prominent transverse black stripes. **Size:** maximum length about 30 cm, commonly to 20 cm. **Distribution:** Indo-West Pacific: Red Sea and East Africa to New Guinea, northern Australia north to Japan. **Remarks:** often found in brackish waters. Feeds on small fishes and invertebrates. (M. Matsunuma)



Pelates quadrilineatus, KAUM-I. 32878, 10.6 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

Pelates sexlineatus
(Quoy & Gaimard, 1824)

Sixlined Terapon

D XI–XII, 9–11; A III, 9–11; P₁ 14–15; LLp 76–87; GR 6–7 + 14–15 (20–22). A small species; body oblong, slightly compressed. Preopercle serrate; lower opercular spine stronger and longer, extending nearly to margin of opercular lobe; posttemporal bone not exposed posteriorly, covered with skin and scales. Teeth, tricuspidate with cusps of nearly equal size, arranged in bands in each jaw. **Color:** body grayish to bluish dorsally, silver to silvery white ventrally; 5 to 8 narrow, dark brown or black horizontal stripes on body, the midlateral stripe extending onto caudal-fin base; a blotch of variable intensity on side of body posterior to nape; caudal fin with dark border. **Size:** maximum total length about 32 cm, commonly between 18 and 24 cm. **Distribution:** Singapore to Australia in the east and south; northwards to China and Okinawa (Japan). **Remarks:** marine inshore water. Feeds on invertebrates and small fishes. (U. Satapoomin)



Pelates sexlineatus, KAUM–I. 22859, 10.6 cm SL
Ang Sila, 31 Aug. 2009

Terapon jarbua
(Forsskål, 1775)

Jarbus Terapon

D XI–XII, 9–11; A III, 7–10; LLp 75–100; GR 6–8 + 12–15. Body oblong and moderately compressed. Preopercle strongly serrate, particularly at angle; lower opercular spine very long and strong, extending distinctly beyond margin of opercular lobe; posttemporal bone expanded, exposed and serrate posteriorly. Caudal fin emarginate. **Color:** body silvery white, grayish dorsally; 3 or 4 dark brown or black downwardly curved longitudinal stripes on body; spinous portion of dorsal fin with a blackish blotch dorsally on membranes between third and sixth spines; both caudal-fin lobes with dark tips and a transverse band. **Size:** maximum length about 35 cm. **Distribution:** Indo-Pacific: East Africa to Samoa, north to southern Japan, south to Australia. **Remarks:** found over shallow sandy bottoms, in the vicinity of river mouths; enters estuaries and rivers.

(M. Matsunuma)



Terapon jarbua, KAUM–I. 32677, 9.0 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

Terapon puta
Cuvier, 1829

Small-scaled Terapon

D XI–XII, 9–11; A III, 8–9; LLp 70–85; GR 7–9 + 18–24. A small-sized species; body elongate and laterally compressed. Preopercle strongly serrate, with large spine at angle; lower opercular spine very long and strong, extending distinctly beyond margin of opercular lobe; posttemporal bone expanded, exposed and serrate posteriorly. Caudal fin emarginate. **Color:** body light gray or brown dorsally, tan or silvery white ventrally; 4 straight, narrow dark brown longitudinal stripes on body; spinous portion of dorsal fin with a blackish blotch dorsally between third or fourth and seventh or eighth spines; soft portion of dorsal fin with a black blotch along top of anterior rays; both caudal fin lobes with dark tips and a transverse band. **Size:** maximum length about 15 cm, commonly between 11 and 13 cm.



Terapon puta, KAUM–I. 32766, 8.4 cm SL
 Ang Sila, 23 Oct. 2010

Distribution: Indo-West Pacific: East Africa to New Guinea and Vanuatu, and north to Philippines. **Remarks:** inhabits inshore waters, sometimes entering brackish and freshwater and mangrove areas. Feeds on small fishes and invertebrates. (M. Matsunuma)

Terapon theraps
Cuvier, 1829

Largescaled Terapon

D XI–XII, 9–11; A III, 7–9; P₁ 14–15; LLp 46–56; GR 6–8 + 14–17. Body oblong, moderately compressed. Preopercle serrate, the serrations largest at angle; lower opercular spine very long and strong, extending distinctly beyond margin of opercular lobe; posttemporal bone expanded, exposed and serrate posteriorly. Spinous part of dorsal fin strongly arched and deeply notched; penultimate spine about half length of ultimate spine. Caudal fin emarginate with rounded lobes. **Color:** body dusky dorsally, silvery white ventrally; 4 dark brown horizontal stripes on body; spinous part of dorsal fin with a black blotch dorsally on fin membranes between third and seventh spine; caudal fin with medial rays pigmented; upper lobe of caudal fin with dark tip; both lobes of caudal fin with a dark, trans-



Terapon theraps, KAUM–I. 32972, 8.6cm SL
 off Chantha Buri (SP), 1 Nov. 2010

verse band. **Size:** maximum length about 30 cm. **Distribution:** Indo-Pacific, from East Africa and Red Sea to Solomon Islands, northern Australia north to Japan. **Remarks:** found in inshore waters, sometimes entering brackish waters. (M. Matsunuma)

CEPOLIDAE

Bandfishes

Small to medium (up to 40 cm) elongate marine fishes. Body moderately to noticeably elongate fishes with compressed, tapering body and lanceolate caudal fin. Head short, with blunt snout. Eyes relatively large and high on head. Mouth large, oblique; upper jaw broad at end, without supramaxilla, and extending to below posterior margin of eye; a single row of slender, slightly curved teeth in jaws with an inner cluster of teeth at symphysis in some species. Dorsal fin continuous, with 0 to IV flexible spines and 21 to 89 segmented rays; anal fin with 0 or I spine and 13 to 102 segmented rays; caudal fin lanceolate, middle 9 to 15 rays branched; pelvic fins positioned below or slightly anterior to pectoral fins, with I spine and 5 segmented rays; outermost segmented pelvic-fin ray unbranched or weakly branched, 4 inner rays distinctly branched. Lat-

dorsal fin with 0–IV spines and 21–89 soft rays

caudal fin lanceolate



pelvic fins below
pectoral fins

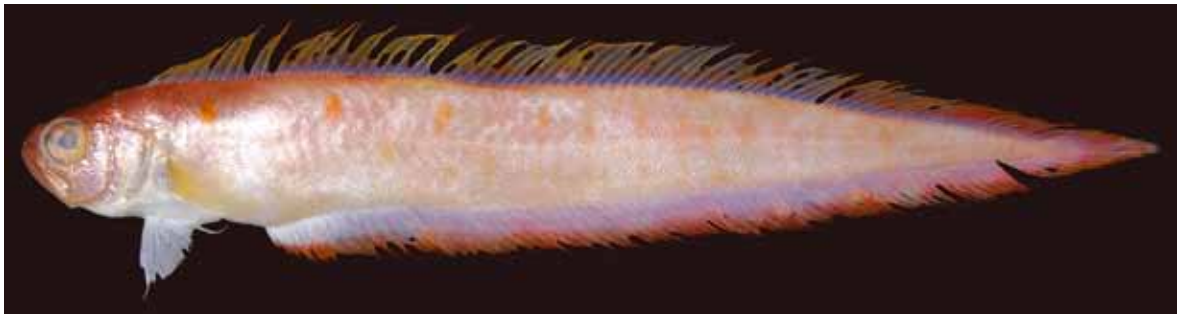
anal fin with 0 or I spine and 13–102 soft rays

eral line high on body, close to dorsal-fin base, terminating posteriorly near end of fin; lateral-line tubes or canals on scales not embedded in skin. Scales cycloid (smooth) or with crenulate margins, relatively large to minute. **Color:** in life red or pink; most species have a distinctive dark stripe on the membrane (usually hidden) connecting the premaxillary and maxillary bones of the upper jaw.

Remarks: relatively uncommon fishes taken by trawls in shallow to

deep depths (to at least 475 m). Occurring on level bottom, sand or mud substrates.

Similar families occurring in the area: the combination of a lanceolate tail, large oblique mouth, and the arrangement of the pelvic-fin rays, consisting of I spine and 5 segmented rays (the outermost ray unbranched or weakly branched and the inner 4 branched), will distinguish the bandfishes from all other families. (M. Matsunuma)



Acanthocepola abbreviata (Valenciennes, 1835)

Yellowspotted Bandfish

D 64–75; A 63–76; P₁ 16; P₂ I, 5; V 12 + 44–48. Body well elongate and compressed. Head short, with blunt snout; eyes large and high on head; mouth large, oblique; preopercular margin with spines; cheeks scaly. Pelvic fin origin situated slightly anterior to pectoral fin; caudal fin pointed, joined to dorsal and anal fins; 8–10 rays branched. **Color:** head and body

pale pink, reddish dorsally; body with about 4–5 orange spots (same as pupil size) on dorsoanteriorly and about 11–13 indistinct orange vertical bars posteriorly, from mid-point of body to caudal fin base. Dorsal and anal fins reddish yellow, whitish basally; no black markings on dorsal fin; pectoral fin translucent tinged with reddish; pelvic fin white; posterior tip of cau-

dal fin dark red to black. **Size:** maximum length about 30 cm. **Distribution:** eastern Indian Ocean and West Pacific from the Gulf of Oman to northwestern Australia, north to the Philippines. **Remarks:** inhabits mud or sand bottoms of coastal waters. Caught mostly with bottom trawls.

(M. Matsunuma)

Acanthocepola abbreviata, KAUM-I. 23820, 17.0 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

CICHLIDAE

Cichlids

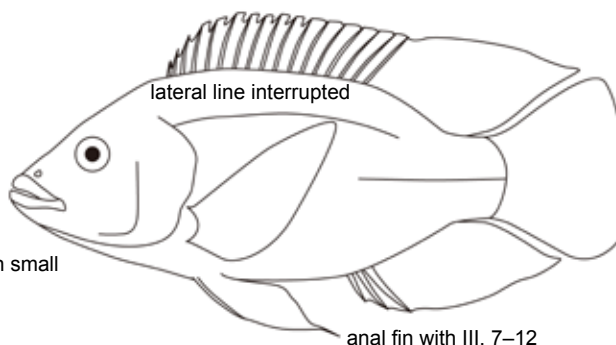
Medium sized fishes, maximum size about 60 cm. Body compressed, depth variable, oblong to rhomboidal. Single nostril on each side of head. Dorsal fin continuous, with XIII–XIX spines and 10–16 soft rays; anal fin with III spines and 7–12 soft rays; pelvic fins with I spine and 5 soft rays; caudal fin rounded or slightly emarginated. Lateral line interrupted with 26–40 scales.

Color: highly variable; often with bars or blotches on side.

Remarks: found in blackish water or freshwater streams. Frequently utilized as aquarium fish.

Similar families occurring in

single dorsal fin with XIII–XIX, 10–16



mouth small

anal fin with III, 7–12

the area: Pomacanthidae – a long, strong spine at the corner of preopercle. Pomacentridae – II anal fin spines. (T. Yoshida)

Oreochromis mossambicus (Peters, 1852)

Mozambique Tilapia

D XV–XVIII, 11–14; A III, 10–11; LL 30–32; LGR 14–20. Body compressed and deep. Single dorsal fin with moderately long base. Only a single nostril on each side of head. Breeding males with enlarged jaws. Jaws with 3–5 rows of slender teeth, bicuspid in outer row. **Color:** body of adults with silvery olive to deep blue gray. Dorsal and caudal fins with red margins. Caudal fin without distinct narrow vertical bars. Breeding males turn deep greyish black with white lower head and throat. In juveniles, a large ocellus-like marking present at posterior portion of dorsal fin. **Size:** attains about 30 cm SL. **Distribution:** exotic species. Introduced and established in warm temperate to tropical regions in many countries of the world. Naturally distributed in Southeastern Africa. **Remarks:** found in lower river reaches, estuaries, lakes and marshes. well established in brackish water environments in many Southeast Asian countries including Thailand. Food fish. Presumed hybrid individuals possessing intermediate morphology between *O. niloticus* often encountered in brackish water environments in Thailand. Introduced to Thailand in 1851 from Penang, Malaysia. (P. Musikasinthorn)



Oreochromis mossambicus, KAUM-I. 23914, 16.4 cm SL
Mouth of Thachin River, 28 Sept. 2009

Oreochromis niloticus
(Linnaeus, 1758)

Nile Tilapia

D XV–XVII, 10–13; A III, 9–12; LL 30–34; LGR 20–26. Body compressed and moderately deep. Single dorsal fin with moderately long base. Only a single nostril on each side of head. Jaws with 3 to 6 row of teeth. **Color:** body gray with several vertical bars on body side (sometimes indistinct in adults). Several oblique bars on dorsal and anal fins. Caudal fin with several distinct narrow vertical bars. Breeding males with red flush to head, lower body, dorsal and caudal fins. In juveniles, a large ocellus-like marking present at posterior portion of dorsal fin. **Size:** attains about 40 cm SL. **Distribution:** exotic species. Introduced and established in warm temperate to tropical regions of many countries in the world. Naturally distributed in northern and eastern Africa. **Remarks:** found in rivers, lakes and marshes. widely established in freshwater environments in south and southeast Asia. Tolerant to brackish water. Introduced to Thailand in 1965 from Japan. One of the most popular food fishes in Indochina including Thailand. (see also remarks in *O. mossambicus*). (P. Musikasinthorn)



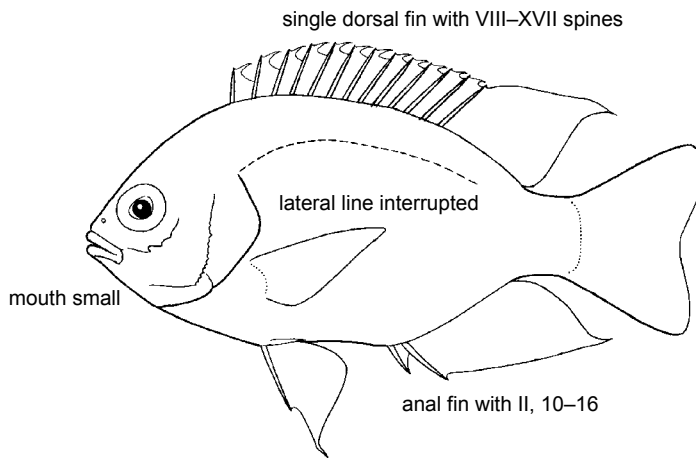
Oreochromis niloticus, KAUM-I. 47481, 8.9 cm SL
 Bang Pakong, 23 June 2012

POMACENTRIDAE

Damselfishes and Anemonefishes

Small to medium-sized fishes, usually less than 20 cm. Body compressed, ovate to almost circular, covered with ctenoid scales usually extending onto fins; dorsal fin continuous with VIII–XVII spines and no notch; anal fin with II spines and 10–16 soft rays; caudal fin emarginated to forked or lunate. Lateral line interrupted; anterior part of pored scales more or less parallel with dorsal profile and usually ending below soft portion of dorsal fin; posterior part comprising several pits or obscure pores along mid-lateral caudal peduncle; snout usually short and blunt; mouth small, slightly protrac-tile; teeth conical or compressed, uniserial or in 2 or more rows; no teeth on palatine.

Color: highly variable; mainly from pale through yellowish, orange, reddish or bluish to blackish; sometimes with blotches, bands, spots, or



other patterns.

Remarks: found in coastal waters such as bays, coral reefs and rocky shores, and often enter brackish estuaries or freshwater streams. Frequently utilized as aquarium fish.

Similar families occurring in the area: Pomacanthidae – a long, strong spine at the corner of preopercle. Chaetodontidae – elongate, somewhat tube-like snout.

(K. Shibukawa)

Abudefduf vaigiensis (Quoy & Gaimard, 1825)

Indo-Pacific Sergeant

D XIII, 12–14; A II, 11–13; P₁ 16–20; LL_p 19–23. Body deep and compressed. Posterior margin of preopercle smooth. Suborbital scaled, with entire ventral margin. Teeth on jaws uniserial, incisor-like. Caudal fin forked; no conspicuous projecting spine-like rays at upper and lower edges of caudal-fin base. **Color:** ground color pale, gradually darkened dorsally on head, with a broad yellow patch on anterodorsal part of body; 5 blackish bars (slightly narrower than paler interspaces) from nape to caudal-fin base; caudal fin transparent or heavily tinged with black (but no pale leading edges). **Size:** 17 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in shallow coral or rocky reefs. (K. Shibukawa)



Abudefduf vaigiensis, KAUM-I. 33133, 10.3 cm SL off Chantha Buri (SP), 22 Nov. 2010

Pristotis obtusirostris
(Günther, 1862)

Gulf Damselfish

D XIII, 12–13; A II, 12–14; P₁ 17–18; LL_p 19–20. Body depth 2.5–2.8 in SL. Posterior margin of preopercle and subopercle serrated. Both jaws with uniserial teeth. Caudal fin forked without filamentous lobes; no conspicuous projecting spine-like rays at upper and lower edges of caudal-fin base. **Color:** body pale gray to bluish with blue spots on each scale; a small black spot at base of upper pectoral rays. **Size:** 14.0 cm TL. **Distribution:** Indo-West Pacific: Red Sea and Persian Gulf to New Guinea, northern Australia north to Ryukyu Islands, Japan. **Remarks:** inhabits flat sandy or rubble bottoms around patch reefs of lagoons and trawling grounds; depth range 2–80 m. Adults often forming small groups out in the open on sandy substrate, swimming well-above bottom; juveniles often entering shallow estuaries; rare in the area. (Y. Yusuf)

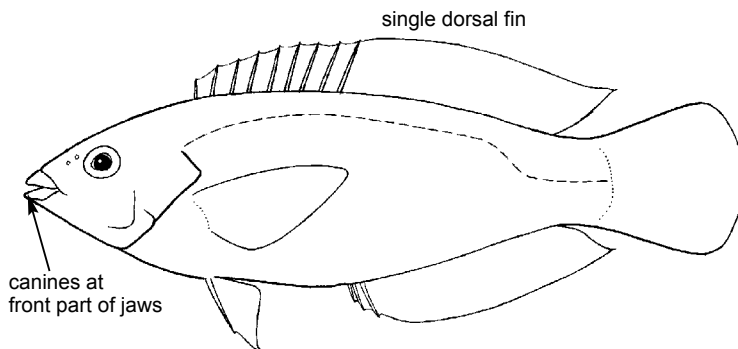


Pristotis obtusirostris, KAUM-I. 33008, 9.0 cm SL
 Gulf of Thailand (SS), 3 Nov. 2010

LABRIDAE

Wrasses

A diverse group of fishes varying in body shape and size (usually 20 cm); body slightly to extremely compressed. Mouth terminal, slightly to extremely protrusible, usually with prominent lips; maxilla not exposed on cheek; teeth in jaws usually separate and caniniform, the anteriormost 1 or 2 pairs typically enlarged and often directed forward; pharyngeal jaws strong with pharyngeal teeth either sharp, conical, or broad and molariform. A single, long-base dorsal fin in most species, with VIII–XXI spines (usually less than XV) and 6–21 soft rays; anal fin with II–VI spines (often III) and 7–18 soft rays. Scales cycloid and highly variable in size among species; head never fully scaly; lateral line interrupted or continuous. **Color:** most species with bright and intricate color patterns, including stripes, bars, spots, blotches, and ocelli. Most species change color



and sex with growth, from an initial phase (IP) of females, the latter able to change sex into an often brilliantly colored terminal male phase (TP).

Remarks: most common in shallow waters in a variety of habitats such as coral reefs, rocky reefs, sand, seagrass, and algae, but rarely found in muddy areas. Wrasses are diurnal with diverse feeding habits, including

benthic invertebrates, fishes, coral mucus, zooplankton, ectoparasites, and algae.

Similar families occurring in the area: Scaridae – mouth not protrusible; teeth in jaws coalesced at base or fused into a bony, parrot-like beak, except a few species; lips continuous with facial skin, without an indentation. (U. Satapoomin)

Halichoeres bicolor (Bloch & Schneider, 1801)

Brown-striped Wrasse

D IX, 11–12; A III, 12; P_i 14–15; LLp 27–28. Body elongate; snout pointed; anterior teeth in upper and lower jaws enlarged to form canines; snout, cheek, opercle, and behind eye naked, scales on nape nearly reaching to a vertical at posterior edge of orbit; lateral line complete; caudal fin rounded. **Color:** ground color of body pale brown to olive in adults, greenish in small juveniles; two brownish black (in juveniles) or reddish brown (in adults) longitudinal stripes on side of body, the upper along back, the lower at mid-lateral from the edge of opercle to caudal fin base. Head with a reddish brown band, edged with blue, on side of snout from mouth to front edge of eye; an upward curved band on cheek below eye; a vertically elongate dark brown spot just behind eye followed by a single (in juveniles) or a pair (in adults) of horizontally elongate spots



Halichoeres bicolor, KAUM-I. 24005, 10.4 cm SL
Bang Sean, 1 Oct. 2009

(as double thick dashes). Dorsal and anal fins pinkish gray, each with 2 longitudinal series of pale to yellowish spots on soft rayed portion; in adult males elongate black spot, leaded anteriorly with bright yellow marking, present between 5th and 8th dorsal fin spines; in juveniles an ocellated black spot present between 1st and 3rd dorsal spines. Caudal fin with several ir-

regular vertical rows of pale yellow spots; an ocellated black spot slightly above the middle of caudal fin base is distinct in juveniles. **Size:** maximum length about 12 cm. **Distribution:** Indo-Malayan region to Sri Lanka. **Remarks:** found in inshore, usually silty habitat on sand or mud near shallow reefs and seagrass beds.

(U. Satapoomin)

Iniistius evides
(Jordan & Richardson, 1909)

Blackspot Razorfish

D IX, 12; A III, 12; P₁ 12; LLp 19–20 + 4–5; GR 18–19. Body deep, compressed, width about 3 in body depth. Dorsal profile of head strongly convex in front of eye; snout nearly vertical, anterior edge thin. Mouth small, lower jaw slightly projecting, a pair of large, slender, recurved, laterally flaring canines at front of each jaw extending well beyond lips when mouth closed. Origin of dorsal fin above posterior edge of orbit; dorsal fin deeply incised between 2nd and 3rd spines; first two dorsal spines flexible and curved, not longer than longest dorsal soft rays; caudal fin rounded. Lateral line interrupted; small scales on cheek in about 9 irregular oblique rows, with about 8 scales in upper row, narrowing to 2 in lowermost row behind corner of mouth. **Color:** generally gray to pale yellowish, shading to white ventrally;



Iniistius evides, KAUM-I. 23437, 16.6 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

white-edged black spot over 8th lateral-line scale and 1 to 4 scales above, but not reaching dorsal edge of body; yellowish patch on anterior side, from hind part of gill opening to above pectoral-fin region; fins pale yellowish.

Size: maximum total length about 19 cm. **Distribution:** East coast of Malay Peninsula to southern Japan (Ryukyu Islands). **Remarks:** found in open sand areas near reefs in depths as shallow as 5 m. (U. Satapoomin)

Iniistius trivittatus
(Randall & Cornish, 2000)

Triplebar Razorfish

D IX, 12; A III, 12; P₁ 12; LLp 19–20 + 4–5; GR 14–16. Body deep, very compressed, width 3.0–3.5 in body depth. Dorsal profile of head strongly convex in front of eye; snout nearly vertical, anterior edge a sharp ridge; chin also with a sharp anterior ridge. Mouth small, lower jaw slightly projecting, a pair of long slender slightly incurved canines at front of each jaw extending well beyond lips with mouth closed. Origin of dorsal fin above posterior edge of orbit; dorsal fin incised between 2nd and 3rd spines; dorsal spines slender and flexible, 1st and 2nd spines not longer than longest dorsal soft rays; caudal fin rounded. Lateral line interrupted; head naked, except for 2–3 scales dorsally on opercle and a broad zone of small scales on cheek in about 8 irregular oblique rows. **Color:** body



Iniistius trivittatus, KAUM-I. 33158, 13.7 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

pale yellowish gray, whitish ventrally; 3 blackish bars on upper half of body; a median pale blue line on forehead; a pink margin on dorsal and anal fins and dorsal edge of caudal fin. **Size:** maximum total length about 16 cm.

Distribution: presently known from South China Sea, north to Hongkong and Taiwan, south to east coast of Malay Peninsula. **Remarks:** found on sandy bottoms in coastal waters. (U. Satapoomin)

Leptojulius lambdastigma
Randall & Ferraris, 1981

D IX, 12–13; A III, 11–12; P₁ 13; LLp 27; GR 16–20. Body slender; head pointed; dorsal profile of head nearly straight, nape slightly convex; snout relatively long; eye small. Mouth terminal, slightly oblique; front of jaws with 2 pairs of large canines; a prominent canine tooth posteriorly on upper jaw. Lateral line complete; body covered with large cycloid scales, head and bases of fins except for caudal fin naked. Caudal fin rounded; first pelvic fin ray elongate, especially in large male. **Color:** body and head pale pink, whitish ventrally; yellow stripe on body side extending from upper lip to caudal-fin base, via eye; a large V-shaped black marking on nape. Dorsal fin pale orange; upper half of soft-rayed portion of fin pale blue, with a broad pale yellow band submarginally; lower portion of dorsal fin with a



Leptojulius lambdastigma, KAUM-I. 33230, 12.5 cm SL
 off Chantha Buri (SP), 30 Nov. 2010

row of yellow blotches with a pale blue margin on membranes anteriorly, forming a zigzag stripe posteriorly. Anal fin pale orange, dusky yellow distally, with a thin light blue margin; a row of yellow spots along base. Pectoral and pelvic fins translucent. Caudal fin white, pale blue distally, black-

ish marginally, numerous scattered yellow spots. **Size:** maximum length about 14 cm. **Distribution:** Western Central Pacific including Taiwan, Philippines, and Gulf of Thailand. **Remarks:** found in coastal waters of sand bottoms. (M. Matsunuma)

Xiphocheilus typus
Bleeker, 1856

Bluebanded Wrasse

D XII, 8; A III, 10; P₁ 15–17; LLp 29. Body slender; dorsal profile of head convex, head and snout blunt. Jaws prominent; upper jaw with 2 widely separated prominent anterior canines; 1 or 2 pair large curved canines on upper jaw posteriorly; lower jaw also with 2 large anterior canines. Pelvic fin short, reaching anus only in large specimens; caudal fin slightly rounded to double emarginate in adults. Lateral line complete; bases of dorsal and anal fins naked; 7–10 large predorsal scales, extending in front of dorsal fin to center of eye; cheek and opercle scaled. **Color:** head and body olive-green dorsally, orange or pinkish laterally; sides with numerous narrow oblique blue bands; head with 4 or 5 narrow blue bands or stripes outlined with yellow-orange;



Xiphocheilus typus, KAUM-I. 23090, 10.4 cm SL
 Gulf of Thailand (SS), 6 Sept. 2009

dorsal fin blue with 2 or 3 narrow orange or pink stripes; anal fin yellow-orange with numerous narrow blue bands basally; caudal fin yellow-orange with about 5–8 narrow blue bands; pectoral fins transparent to orangish with a blue band on base.

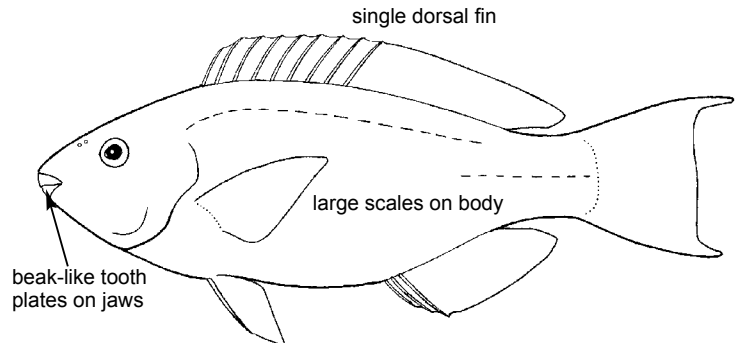
Size: maximum length about 12 cm. **Distribution:** eastern Indian Ocean and western Pacific. **Remarks:** inhabits coral reefs at depths of 35 to 85 m. Caught mostly with bottom trawls.

(M. Matsunuma)

SCARIDAE

Parrotfishes

Medium to large sized (up to 120 cm) fishes. Body oblong, moderately deep. Head generally bluntly rounded anteriorly. Teeth in jaws usually fused to form a pair of beak-like plates in each jaw, but a few species have free, imbricate, incisor-like teeth; small, isolated, projecting teeth (canines) occur in some species on outer sides of upper jaw; pharyngeal dentition strong consisting of interdigitating paired upper pharyngeals with rows of elongate molariform teeth; these teeth bear against the elongate molariform teeth on the surface of the single lower pharyngeal bone. Dorsal fin with IX slender, flexible spines and 10 soft rays; anal fin with III flexible spines and 9 soft rays; pectoral fins with 2 unbranched rays and 11–14 branched rays; pelvic fins with I spine and 5 soft rays; caudal fin with 11 branched rays, varying from rounded to lunate with produced caudal fin lobes. Scales large, cycloid, usually 22–24 on lateral line; 1–4 rows of scales on cheek; 2–8 median predorsal scales. **Color:** most species very colorful;



may exhibit striking sexual dichromatism. Most species are protogynous hermaphrodites (maturing first as females, then sexually transforming into males), this sexual transformation is usually accompanied by change in color phase. In species where 2 adult color phases are known the first is termed "initial phase" (IP), the second "terminal phase" (TP).

Remarks: parrotfishes are most often found on or in vicinity of coral reefs, and usually most abundant in shallow waters to a depth of 30 m. Herbivorous, usually scraping algae

from dead coral substrates. Bits of rock eaten with the algae are crushed into sand and ground with the algae to aid in digestion, making parrotfish some of the most important producers of sand on coral reefs.

Similar families occurring in the area: the beak-like plates of most scarids, in addition to features such as large smooth scales and often bright colors, usually preclude parrotfishes being confused with any other fish family. (M. Matsunuma)

Scarus ghobban Forsskål, 1775

Yellowscale Parrotfish

D IX, 10; A III, 9; P₁ 15–16 (usually 15); PDS 5–7 (6). Teeth fused to form dental plates; dental plates relatively smooth; lips covering more than half of dental plates; large adults with 1–3 canine teeth on side at rear of upper dental plate; usually 3 rows of scales on cheek; caudal fin slightly emarginate in small initial-phase fish to lunate in large terminal males. **Color:** initial phase dull orange yellow, centers of scales bluish; 5 irregular blue bars often present on body; fins yellowish. Terminal males green dorsally, scales rimmed with salmon pink, shading to pale green ventrally with pale salmon pink bar on each scale; head green



Scarus ghobban, KAUM-I. 47426, 20.0 cm SL off Tha Chana (SP), 18 June 2012

dorsally, shading to pale salmon on cheek and chin, with 2 transverse blue bands on chin and 3 narrow irregular green bands extending posteriorly from eye. **Size:** maximum length

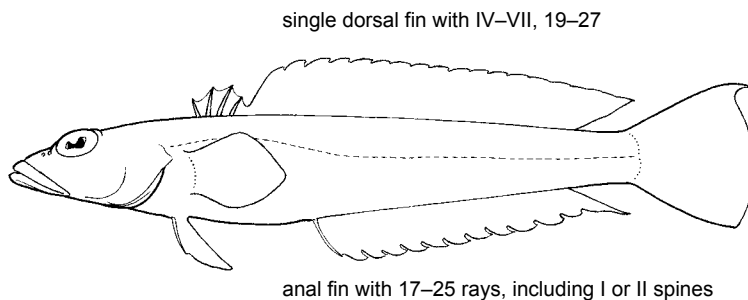
about 75 cm. **Distribution:** widespread Indo-Pacific and tropical eastern Pacific. **Remarks:** found on coral reefs to at least 30 m depth.

(M. Matsunuma)

PINGUIPEDIDAE

Sandperches

Small to large-sized fishes. Body elongate, cylindrical anteriorly (except *Prolatilus*, having rather deeper body). Eye moderate. Snout slender. Teeth small, in band in jaws. Vomer with V-shaped tooth patch (teeth absent in *Prolatilus*). Palatine teeth present or absent. Gill membranes united, free from isthmus. Dorsal fin single, with 4–7 short spines and 19–27 soft rays. Anal fin with 17–25 rays, including 1 or 2 weak spines anteriorly. Caudal fin usually with 15 branched rays. Pelvic fin with 1 spine and 5 soft rays. Vertebrae 30–37. Several species of *Parapercis* have been shown to be protogynous hermaphrodites (thus females change to males). **Color:** variable (e.g., dark, pale brownish, and reddish), many



species with distinct and characteristic markings; some change in the color pattern with the sex change is usually known in *Parapercis*.

Remarks: five genera are known

from the world; only *Parapercis* is distributed in the area.

Similar family occurring in the area: Percophidae – 2 dorsal fins present. (H. Imamura)

Parapercis alboguttata (Günther, 1872)

Bluenose Sandperch

D V, 22; A I, 19; P₁ 17–19; LLp 57–60. Body cylindrical, caudal peduncle slender. Three pairs of canine teeth on lower jaw anteriorly. Palatine teeth absent. Third dorsal spine longest. Spinous dorsal connected by membrane to 1st soft ray near base. **Color:** body pale red dorsally, whitish ventrally; 2 longitudinal rows of indistinct light red blotches on body, ending in 2 distinct dark red spots on caudal-fin base; snout light blue with oblique yellow lines. **Size:** maximum length about 27 cm. **Distribution:** Indo-West Pacific, including the Arabian Gulf, South China Sea, Indonesia, Philippines and northwestern Australia. **Remarks:** usually taken by trawling at depths from 50 to 120 m. (H. Imamura)



Parapercis alboguttata, KAUM-I. 23793, 20.2 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

Parapercis filamentosa
(Steindachner, 1878)

Threadfin Sandperch

D V, 22; A I, 18; P₁ 16; LLp 58–59. Body cylindrical. Three pairs of canine teeth on lower jaw anteriorly. Palatine teeth absent. Middle dorsal spines longest. Membrane from spinous dorsal connected by membrane to 1st soft ray near base. First few dorsal soft rays greatly elongated. **Color:** body light brown dorsally with 6 faint V-shaped brown markings, whitish ventrally; pelvic fin dusky; upper caudal fin base with a dark spot. **Size:** maximum total length about 18 cm. **Distribution:** West Pacific, including Singapore, Thailand, Hainan, Java and Borneo, Malaysia. (H. Imamura)



Parapercis filamentosa, KAUM-I. 33177, 9.8 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

Parapercis xanthozona
(Bleeker, 1849)

Yellowbar Sandperch

D V, 21; A I, 17; P₁ 17; LLp 56–60. Body cylindrical, caudal peduncle slender. Three pairs of canine teeth on lower jaw anteriorly. Palatine teeth usually absent. Third and/or fourth dorsal spine longest. Spinous dorsal connected by membrane to 1st soft ray nearly at level of last spine tip. **Color:** body pale brown; 1 longitudinal row of paler band and 9 brownish vertical bars on body; cheek with oblique white lines in males; caudal fin with a white marking. **Size:** attains about 23 cm. **Distribution:** Indo-West Pacific, including Japan, South China Sea, Philippines and northeastern Australia. (H. Imamura)

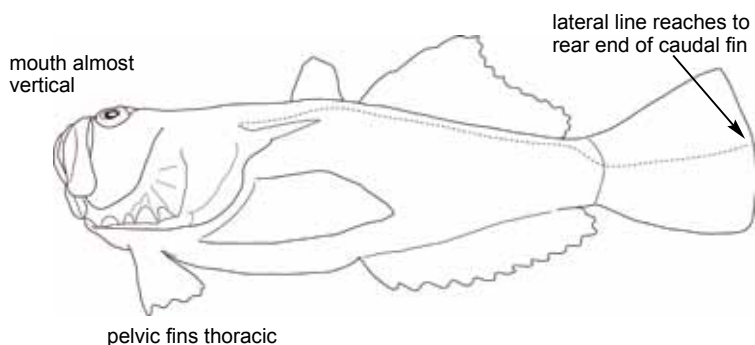


Parapercis xanthozona, KAUM-I. 23431, 12.2 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

URANOSCOPIDAE

Stargazers

Medium sized (up to 65 cm) marine fishes. Body moderately elongate, depressed anteriorly or compressed. Head massive, nearly cube-shaped, flattened dorsally, rounded anteriorly; dorsal and lateral surfaces of head almost entirely encased in sculptured bones. Eyes directed dorsally or dorsolaterally, placed on or near top of head. Infraorbital bones dilated. Interorbital space noticeably broad, anterodorsal part of skull deeply scooped backward (interorbital fossa). Mouth large, protractile, almost vertical; jaws, prevomer, and palatines toothed; a pair of pockets on anterior roof of mouth (between premaxillae and prevomer). A peculiar dermal appendage present at central tip of respiratory valve inside lower jaw in *Uranoscopus* and young of *Genyagnus*. Branchiostegals 6. First gill arch with gill teeth instead of typical gill rakers; pseudobranchiae present. Membranes of anal, pelvic, and pectoral fins fleshy and thickened. Dorsal fin single with 0–IV rudimentary spines and 12–20 soft rays or divided with IV or V weak spines and 13 or



14 soft rays; anal fin with 13–19 soft rays; caudal fin subtruncate, with 10 or 11 branched rays; pectoral fin broad, “squarish”, or knife-shaped, with 13–25 rays; pelvic fin close together, situated on throat and in advance of pectoral fins, with I non-visible weak spine and 5 segmented rays. Body naked or covered with adherent, cycloid scales almost embedded under the skin; lateral line complete, reaching onto caudal fin margin. **Color:** generally brownish dark with dark or pale spots or mottling on body.

Remarks: stargazers are noctur-

nal and during the day bury their body into sand or mud, with only the eyes and mouth cleft protruding from the substrate. Caught mostly with bottom trawls.

Similar families occurring in the area: Batrachoididae – gill openings small, restricted to sides of body (gill openings wide in Uranosco-pidae); pelvic fins with I distinct spine and 5 soft rays (with I non-visible weak spine and 5 soft rays in Urano-scopidae). Champsodontidae – body smaller, more compressed; caudal fin forked. (M. Matsunuma)

Uranoscopus cognatus Cantor, 1849

Twospined Yellowtail Stargazer

D III + 14–15; A 13–14; P₁ 16–17. Body moderately elongate; head massive; short cirri on eye; respiratory valve inside lower jaw with a thread-like appendage. Preopercle with 4 spines on lower edge; supracleithrum not forming distinct spine at rear end; 2 basipterygial processes. **Color:** head and body brown dorsally, finely mottled and stippled dark brown; dusky white laterally, white ventrally. First dorsal fin black; second dorsal fin translucent, rays tinged with blowfish; pectoral fin translucent; posterior half of fin yellow with white margin; pel-



Uranoscopus cognatus, KAUM-I. 32820, 11.3 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

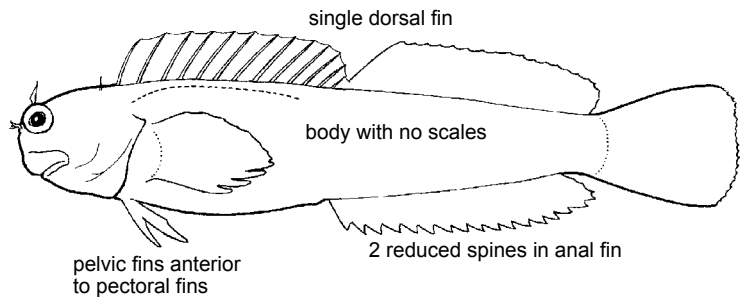
vic fin white; caudal fin pale yellow, dusky distally. **Size:** maximum length about 22 cm. **Distribution:** eastern Indian Ocean and West Pacific from In-

dia east to northern Australia, south to the Philippines. **Remarks:** caught mostly with bottom trawls in depths of 50–250 m. (M. Matsunuma)

BLENNIIDAE

Blennies (Combtooth Blennies, Sabertooth Blennies)

Small, scaleless, often elongate fishes (most species much less than 15 cm). Head usually blunt, often with cirri on eyes, nasal openings, nape, and/or cheeks; gill openings continuous across lower surface of head or restricted to small opening on each side of head. Upper jaw not protractile; teeth incisor-like in single row in each jaw, often very fine and loosely attached; canine teeth occasionally present; no teeth in palatines; vomerine teeth present or absent. Dorsal fin continuous or notched, usually with more segmented rays than spines (III–XVII flexible spines and 9–119 segmented soft rays); anal fin with II spines, often indistinguishable; segmented caudal fin rays 10–14; pelvic fins in advance of pectoral fins, pelvic fin spine not visible externally, soft rays fewer than 5, sometimes deformed or absent. **Color:** very variable, dull to brilliant, full spectrum; often mottled, with irregular vertical bands or stripes, some species almost uniform.



Remarks: mostly bottom dwelling species in sea and estuaries, usually at depths much less than 20 m, mostly among rocky, oyster, or coral reefs, often in tide pools. Feeding on a mixed diet of algae and benthic invertebrates; some are planktivores, and some are specialized to feed on skin or fins of larger fishes, with mimic as cleaner. **Similar families occurring in the area:** Clinidae – body with fine, embedded cycloid scales; scales with radii in all fields; many more dorsal fin spines than segmented rays; jaw

teeth in more than 1 row. Tripterygiidae – body with ctenoid scales; dorsal fin clearly divided into 3 parts; many more dorsal fin spines than rays; jaw teeth in more than 1 row. Gobiidae and Eleotridae – body usually scaly; pelvic fins usually with I spine and 5 soft rays; dorsal fin in 2 well-separated sections, the spinous portion with less than VIII spines, the segmented ray portion with I spine at beginning.

(K. Shibukawa & H. Imamura)

Omobranchus ferox (Herre, 1927)

D XI–XIII, 20–23; A II, 20–26; P₁ 13; P₂ I, 2. Body elongate and compressed. No cirri on head. Fleshy crest on top head absent in both sexes. Gill opening narrow, restricted on side of head. Dorsal fin continuous, without distinct notch between spinous and segmented-ray portions. Caudal fin usually with 13 segmented rays, all of them unbranched. **Color:** head and body olive green, typically with several vague dusky bars on body; a short, narrow vertical black band just behind eye (preceded by white vertical line when alive or fresh); a dusky spot frequently found around end of dorsal fin in male. **Size:** 6 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in mangrove swamps and estuaries.

(K. Shibukawa)



Omobranchus ferox, KAUM-I. 24002, 5.0 cm SL
Bang Sean, 1 Oct. 2009

Omobranchus punctatus
(Valenciennes, 1836)

Muzzled Blenny

D XI–XIII, 19–24; A II, 22–26; P₁ 13; P₂ I, 2. Body elongate and compressed. No cirri on head. Fleshy crest on top head absent in both sexes. Gill opening narrow, restricted on side of head. Dorsal fin continuous, without distinct notch between spinous and segmented-ray portions. Caudal fin usually with 13 segmented rays, all of them unbranched. **Color:** ground color of head and body brownish olive; head with broad dusky vertical bands; body with several irregular, horizontal dusky lines anteriorly. **Size:** 9 cm. **Distribution:** Indo-Pacific; also introduced to Western Atlantic. **Remarks:** found in mangrove swamps, brackish estuaries and adjacent waters.

(K. Shibukawa)



Omobranchus punctatus, KAUM-I. 24004, 6.4 cm SL
Bang Sean, 1 Oct. 2009

Plagiotremus spilistius
Gill, 1865

Slender Fangblenny

D X, 58–60; A II, 55–57; P₁ 12. Body greatly elongate, eel-like. Snout rounded; mouth inferior; gill opening restricted, extending ventrally to a level of base of upper pectoral-fin rays. Dorsal fins continuous, with no distinct notch between spinous and segmented-ray portions. Pelvic fins absent in adult. Caudal fin with 11 segmented rays (all unbranched); outer lobes of caudal fin elongate and filamentous. **Color:** body yellowish brown, with two longitudinal series of small dark spots; a small black spot at upper part of pectoral-fin base; dorsal and anal fins dusky, with numerous small black spots. **Size:** 16.4 cm SL. **Distribution:** South China Sea and Gulf of Thailand. **Remarks:** caught with trawls from sandy or sandy-mud bottom.

(K. Shibukawa)



Plagiotremus spilistius, KAUM-I. 23807, 9.6 cm SL
Gulf of Thailand (SS), 25 Sept. 2009



Plagiotremus spilistius, KAUM-I. 23808, 12.6 cm SL
Gulf of Thailand (SS), 25 Sept. 2009



Xiphasia setifer, KAUM-I. 23459, 40.9 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

Xiphasia setifer
Swainson, 1839

Hairtail Snakeblenny

D XIII–XIV, 105–119; A II, 107–119; P₁ 12–14; P₂ I, 3; V 15–16 + 105–119 = 121–135. Body extremely elongate,

ribbon-like. No cirri, tentacles or crest on head. A large canine tooth on each side of lower jaw anteriorly. Gill opening restricted to side of head. Origin of dorsal fin over anterior part of eye. Caudal fin rounded, continuous with dorsal and anal fins, the middle 2 rays elongated as filament in males; no caudal-fin rays branched. **Color:** body light brown with 24–28 broad brown bars on body, extending into

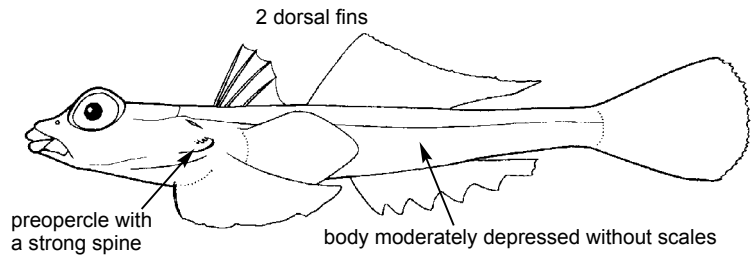
dorsal fin; a black spot or ocellus usually present distally in dorsal fin between 5th and 7th dorsal spines; margin of dorsal fin broadly blackish. **Size:** attaining to ca. 55 cm. **Distribution:** Indo-West Pacific, including the Red Sea, Andaman Sea, southern Japan, Great Barrier Reef and New Caledonia. **Remarks:** inhabits muddy bottoms in bays and shallow waters.

(H. Imamura)

CALLIONYMIDAE

Dragonets

Small to moderate-sized (up to 45 cm), depressed benthic fishes. Body elongate, depressed or sub-cylindrical. Head usually wide and well depressed, triangular when seen from above in many species; gill opening restricted to a small dorsal or sublateral pore; preopercle with a strong spine; no spines on opercle and subopercle; jaw with villiform teeth; no teeth on roof of mouth; upper jaw greatly protractile. Two dorsal fins, comprising spinous (with III–V spines; rarely absent) and soft (with 7–10 soft rays) portions; anal fin with 6–10 soft rays; pelvic fins thoracic, with 1 spine and 5 soft rays. No scales on head and body. **Color:** highly variable, but dull sandy-colored in many species, e.g., head and body grayish or brownish dorsally, whitish ventrally, mottled and/or



spotted with paler colored spots; some have entirely reddish body (especially in deep-water species) or several vivid color with complex patterns on head, body and fins.

Remarks: found in seagrass beds, bays, coral reefs, estuaries, and shelf waters, and commonly found on sandy or muddy bottoms. Locally utilized as food fish.

Similar families occurring in the

area: Eleotridae – usually no preopercular spine; gill opening wide; scales on body. Gobiidae – usually no preopercular spine; pelvic fins fused medially one another in many species; gill opening wide. Platycephalidae – mouth large, lower jaw projecting beyond upper jaw; short spines, serrae and/or bony tubercles on the head; gill opening wide; scales on body. (K. Shibukawa)

Calliurichthys japonicus (Houttuyn, 1782)

Japanese Longtail Dragonet

D IV + 9; A 8; P₁ 18–21. Head and body compressed. A pair of small bony bumps on dorsal surface of head behind eye. Preopercular spine slender and straight, with several serrae along its dorsal margin. Transverse canal branch connecting opposite lateral line canals present on caudal peduncle. Anterior two spine of first dorsal fin elongate and filamentous in large male. All but posteriormost one segmented rays of second dorsal fin unbranched. Caudal fin very long. **Color:** head and body light grayish brown dorsally, pale ventrally; a distinct black spot between third and fourth



Calliurichthys japonicus, KAUM-I. 33151, 12.8 cm SL off Chantha Buri (SP), 22 Nov. 2010

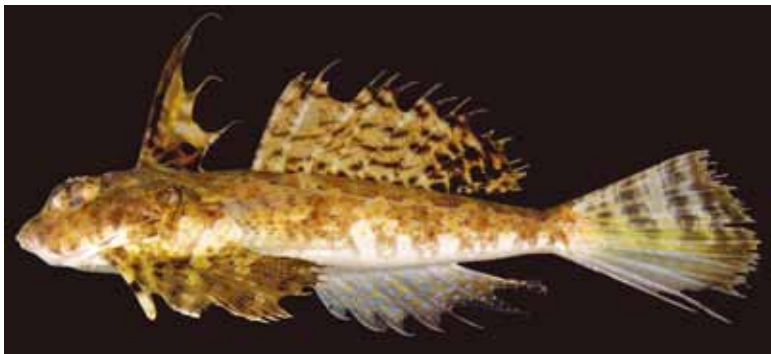
spine of first dorsal fin; a broad sub-marginal black stripe on anal fin. **Size:** attaining to ca. 55 cm. **Distribution:** West Pacific. **Remarks:** inhabits sandy-mud bottoms at the depths of 10–200 m. Generic assignment follows Nakabo (1982). (K. Shibukawa)

Dactylopus dactylopus
(Valenciennes, 1837)

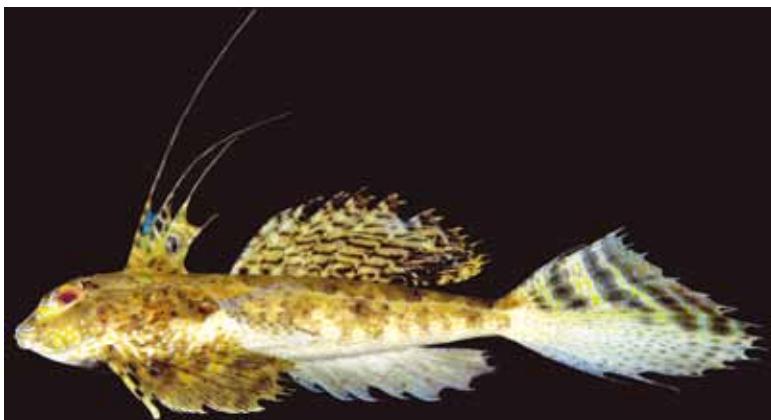
Fingered Dragonet

D IV + 8; A 7; P₁ 19. Body subcylindrical or slightly compressed posteriorly. No transverse canal branch connecting opposite lateral line canals on caudal peduncle. Dorsal fin spines elongate and filamentous in male. All rays of second dorsal fin branched. Spine and first ray of pelvic fin connected together, free from other rays.

Color: head and body grayish brown brownish dorsally, pale ventrally; numerous pale and dusky spots on body. **Size:** 25 cm SL. **Distribution:** eastern Indian Ocean and West Pacific. **Remarks:** inhabits sandy-mud bottoms in shallow coastal waters, particularly seagrass beds. (K. Shibukawa)



Dactylopus dactylopus, KAUM-I. 32981, 9.5 cm SL off Chantha Buri (SP), 1 Nov. 2010



Dactylopus dactylopus, KAUM-I. 33232, 12.5 cm SL off Chantha Buri (SP), 30 Nov. 2010

Repomucenus belcheri recurvispinnis
(Li, 1966)

Concave Dragonet

D IV + 9; A 9; P₁ 17–21. Head and body compressed. Preopercular spine straight, with several serrae along its dorsal margin. Transverse canal branch connecting opposite lateral line canals present on caudal peduncle. No filamentous spine of first dorsal fin in both sexes. All but posterior-most one segmented rays of second dorsal fin unbranched. Caudal fin moderate in size. **Color:** head and body light grayish brown dorsally, pale ventrally; lower side of body with a series of short, wavy vertical dusky lines in large male; anal fin with submarginal black stripe in male, a series of black blotches in female. **Size:** 22 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** the generic assignment tentatively follows Nakabo (1982; for *R. belcheri*). Fricke (1983, 2002) treated this as subspecies of *Callionymus belcheri* Richardson, 1844.

(K. Shibukawa)



Repomucenus belcheri recurvispinnis, KAUM-I. 23839, 9.8 cm SL Gulf of Thailand (SS), 25 Sept. 2009

Repomucenus filamentosus
(Valenciennes, 1837)

Blotchfin Dragonet

D IV + 9; A 9; P₁ 15–20. Body depressed; transverse canal branch connecting opposite lateral line canals on dorsal part of caudal peduncle. Head depressed; distal tip of preopercular spine not inwardly curved. All rays of second dorsal and anal fins unbranched, except for last rays divided to the base; first dorsal-fin spine long, filamentous and free from the rest of the fin in male, while not filamentous in female. **Color:** head and body brown dorsally, whitish ventrally; a series of black spots on midlateral body; anal fin whitish, may be blackened distally; caudal fin with large black spots. **Size:** 15 cm. **Distribution:** Indo-West Pacific; immigrated from Red Sea to eastern Mediterranean through Suez Canal (Fricke, 2001). **Remarks:** found on sandy bottoms. Generic assignment follows Nakabo (1982). (K. Shibukawa)



Repomucenus filamentosus, KAUM-I. 24067, 12.1 cm SL
Gulf of Thailand (SS), 5 Oct. 2009



Repomucenus meridionalis, KAUM-I. 33164, 11.8 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

Repomucenus meridionalis
(Suwardji, 1965)

Highfin Dragonet

D IV + 8–9; A 9; P₁ 19–22. Body depressed; transverse canal branch connecting opposite lateral line canals on dorsal part of caudal peduncle. Head depressed; distal tip of preopercular spine inwardly curved; in addition to the distal tip, only a single dorsal point on preopercular spine. All rays of second dorsal and anal fins unbranched, except for last rays divided to the base; first dorsal-fin spine greatly elongate, with a filamentous tip. **Color:** head and body brown dorsally, whitish ventrally; a series of indistinct black spots on midlateral body; first dorsal fin whitish, with many irregular diagonal dusky lines; anal fin blackish, with a narrow whitish distal margin; caudal fin with small black spots. **Size:** 15 cm. **Distribution:** Western Pacific. **Remarks:** found on sandy or muddy bottoms. (K. Shibukawa)



Repomucenus planus, KAUM-I. 33167, 8.7 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

Repomucenus planus
(Ochiai, 1955)

Japanese Darter Dragonet

D IV + 9; A 9; P₁ 18–22. Head and body compressed. Preopercular spine with 3–6 serrae along its dorsal margin and curved posteriormost tip. Transverse canal branch connecting opposite lateral line canals present on caudal peduncle. First dorsal fin small, without filamentous spine in both sexes. All but posteriormost one segment-

ed rays of second dorsal fin unbranched. **Color:** head and body light yellowish brown dorsally, pale ventrally, with numerous, dense dark brown dots; first dorsal fin largely blackish in female; many white spots on second dorsal fin in male. **Size:** 10 cm SL. **Distribution:** West Pacific. **Remarks:** inhabits sandy bottoms in shallow coastal waters. The generic assignment follows Nakabo (1982). (K. Shibukawa)

(K. Shibukawa)

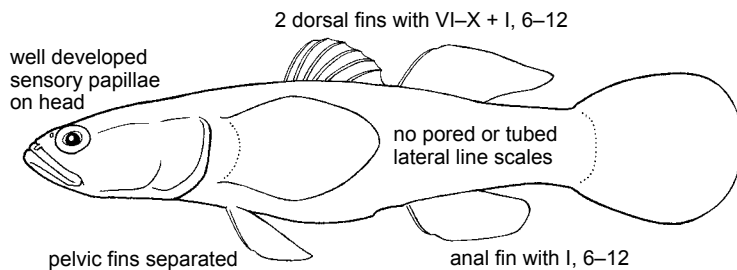
ELEOTRIDAE

Sleepers

Small to moderate sized fishes (up to ca. 85 cm, commonly to 20 cm), bottom-oriented fishes. Body moderately elongate, more or less compressed posteriorly; no pored or tubed lateral-line scales on body. Teeth usually conical, forming some or more rows in each jaw; sensory-papillae rows well developed on head (and few on body and caudal fin); branchiostegals 6. Two dorsal fins, first one with VI–X flexible spines, second one with I spine and 6–12 soft rays; pelvic fins separated, innermost or preceding rays longest; pelvic fin usually with I spine and 5 soft rays.

Color: highly variable, typically blackish or grayish brown with dusky mottles, whereas some species has brilliant color with e.g., bright yellow and/or red spots.

Remarks: typically found in fresh and brackish waters, whereas



some found in coral reefs. Carnivorous. Large species often esteemed as food fish; some freshwater colorful species often treated as aquarium fish.

Similar families occurring in the area: Blenniidae – single dorsal fin; teeth incisor-like, forming single row in each jaw. Callionymidae – preopercle with a strong spine; no scales on body; gill opening restricted to a small dorsal or dorsolateral pore. Gobiidae – pelvic fins fused medially one another

in many species; five branchiostegal rays. Platycephalidae – many short spines or bony tubercles on head; no spines on second dorsal and anal fins. Ptereleotridae – bottom-oriented, free swimming fishes, with elongate (but not eel-like) and compressed head and body; five branchiostegal rays. Tripterygiidae – three dorsal fins.

(K. Shibukawa)

Butis butis (Hamilton, 1822)

Duckbill Sleeper

D VI + I, 8; A I, 8; P₁ 18–19; LR 29–31; PDS 25–33. Body elongate, subcylindrical and compressed posteriorly. Head depressed. Snout elongate and depressed, duck-bill shaped. Lower jaw prominent. Bony edge with serrae on interorbital area around dorsal margin of eye. Pelvic fins widely separated. Cheek, operculum and interorbital with ctenoid scales; scales present between eye and interorbital bony ridge; small auxiliary scale between large body scales. **Color:** head and body blackish brown, with numerous black, orange and pale dots; base of pectoral fin with a distinct large black spot edged with two vivid red spots dorsoventrally. **Size:** 14.5 cm TL. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and mangrove swamps.

(K. Shibukawa)



Butis butis, KAUM-I. 33190, 8.6 cm SL
Bang Pakong, 26 Nov. 2010

Butis humeralis
(Valenciennes, 1837)

Flathead Gudgeon

D VI + I, 8; A I, 8; P₁ 18–20; LR 29–31; PDS 25. Body elongate, subcylindrical and compressed posteriorly. Head depressed; snout elongate and depressed, duck-bill shaped; bony interorbital serration around dorsal margin of eye; lower jaw protruding beyond upper jaw; teeth on outer row not enlarged. Pelvic fins widely separated. Cheek, operculum and interorbital with ctenoid scales; scales present between eye and interorbital bony ridge; small auxiliary scale between large body scales. **Color:** blackish brown, with indistinct mottles; base of pectoral fin with a distinct large black spot, edged with two vivid red spots dorso-ventrally. **Size:** 10.7 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent coastal waters. (K. Shibukawa)



Butis humeralis, KAUM-I. 33213, 12.2 cm SL
Bang Pakong, 26 Nov. 2010



Butis koilomatodon, KAUM-I. 24012, 6.1 cm SL
Bang Saen, 1 Oct. 2009

Butis koilomatodon
(Bleeker, 1849)

Mud Sleeper

D VI + I, 8; A I, 8; P₁ 21–22; LR 25–28; PDS 11–15. Body relatively short, subcylindrical and compressed posteriorly. Head slightly depressed. Lower jaw prominent. Bony edge with serrae on interorbital area around dorsal margin of eye. Pelvic fins widely separated. Cheek and operculum with ctenoid scales; no scales on interorbital area. **Color:** body blackish brown, with indistinct 4–5 broad dusky oblique bands; typically pectoral-fin base with a distinct black spot. **Size:** 7.5 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in mangrove swamps, brackish estuaries and adjacent coastal waters with muddy bottoms. (K. Shibukawa)



Prionobutis microps, KAUM-I. 33192, 14.5 cm SL
Bang Pakong, 26 Nov. 2010

Prionobutis microps
(Weber, 1907)

Small-eyed Loter

D VI + I, 8; A I, 8; P₁ 18–19; LR 21–22; PDS 35. Body elongate, subcylindrical and compressed posteriorly. Head depressed; snout relatively short, not duck-bill shaped; bony interorbital serration around dorsal margin of eye; lower jaw protruding be-

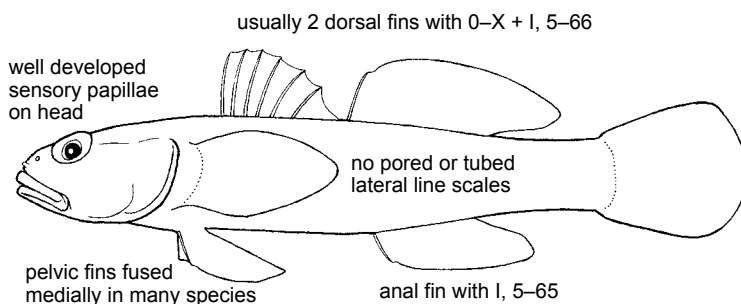
yond upper jaw; a row of barbel-like papillae on ventral surface of each side of lower jaw. Pelvic fins widely separated. Head totally scaled. **Color:** head and body blackish brown; fins dusky, usually with rows of blackish blotches. **Size:** 23 cm. **Distribution:** Papua New Guinea, northern Australia and Gulf of Thailand. **Remarks:** found in brackish estuaries.

(K. Shibukawa)

GOBIIDAE

Gobies

Small to moderate-sized (up to ca. 60 cm, commonly to 10 cm), bottom-oriented fishes. Body shape highly variable, but, typically, moderately elongate and more or less compressed posteriorly; no pored or tubed lateral-line scales on body. Teeth typically conical (flattened and incisor-like in some genera), forming a single to several rows in each jaw; minute sensory papillae well developed on head (and few on body and caudal fin), forming transverse or longitudinal rows; five branchiostegal rays. Usually two dorsal fins, first one with 0–X flexible spines, second one usually with I spine and 5–66 soft rays; anal fin usually with I flexible spine and 5–65 soft rays; pectoral fin with 12–65 soft rays; dorsal- and anal-fin spines usually narrow and flexible; pelvic fins fused medially by frenum (between spines) and connecting membrane (between innermost rays), exclusive of several coral reef genera with separated ones; pelvic fin usually with I spine and 4–5 soft rays. Scales cycloid or ctenoid (with peripheral cteni only),



minute to moderately large in size. **Color:** highly variable.

Remarks: found in various habitats from torrential freshwater rivers to shelf waters (to depth of ca. 500 m), but most common in brackish waters and shallow coastal waters. Large species may be esteemed as food fish; several freshwater species may be treated as aquarium fish.

Similar families occurring in the area: Blenniidae – single dorsal fin (may be deep notch developed between spinous and soft portions); teeth incisor-like, forming single row in each jaw; pelvic fins separated.

Callionymidae – preopercle with a strong spine; no scales on body; gill opening restricted to a small dorsal or dorsolateral pore; pelvic fins separated. Eleotridae – pelvic fins separated; six branchiostegal rays. Platycephalidae – many short spines or bony tubercles on head; pelvic fins separated. Ptereleotridae – bottom-oriented, freeswimming fishes, with elongate (but not eel-like) and compressed body and separated pelvic fins; mouth almost vertical in many species. Tripterygiidae – three dorsal fins; pelvic fins separated.

(K. Shibukawa)

Acentrogobius caninus (Valenciennes, 1837)

Tropical Sand Goby

D VI + I, 9; A I, 9; P_I 18; LR 26–27; PDS 16. Body moderately elongate and compressed. Head slightly compressed. Jaws subequal. Gill opening not extending anteriorly to a vertical through posterior margin of preopercle. Single or some enlarged caninoid teeth on each side of lower jaw. Tongue truncate. Pelvic fins united medially; frenum present. Scales ctenoid, excluding those on nape, pectoral base and breast cycloid; no scales on cheek; operculum may be scaled. Sensory canals and pores present on head; longitudinal pattern of sensory-



Acentrogobius caninus, KAUM-I. 32776, 8.0 cm SL
Ang Sila, 23 Oct. 2010

papillae rows on cheek, some rows multiple. **Color:** large ovoid black spot just above dorsalmost of gill opening; four midlateral dusky spots on body. **Size:** 13 cm TL. **Distribu-**

tion: Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent coastal waters with sandy-mud bottom. (K. Shibukawa)

Acentrogobius viridipunctatus
(Valenciennes, 1837)

Spotted Green Goby

D VI + I, 10; A I, 9–10; P₁ 19–20; LR 33–35; PDS 27–33. Body moderately elongate and compressed. Head slightly compressed. Jaws subequal. Gill opening extending anteriorly to a vertical through posterior margin of preopercle. Single or some enlarged caninoid teeth on each side of lower jaw. Tongue truncate. Pelvic fins united medially; frenum present. Scales ctenoid, excluding those on head, nape, pectoral base and breast cycloid; upper part of cheek and operculum scaled. Sensory canals and pores present on head; distinct transverse sensory-papillae rows on cheek. **Color:** head and body grayish brown, with numerous bright light green or blue spots (faded immediately after death); L-shaped dusky marking below eye. **Size:** 12 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent coastal waters with sandy-mud bottoms.

(K. Shibukawa)



Acentrogobius viridipunctatus, KAUM-I. 33103, 7.1 cm SL
Prachuap Khiri Khan, 13 Nov. 2010



Arcygobius baliurus, KAUM-I. 33119, 6.8 cm SL
Gulf of Thailand (SS), 18 Nov. 2010

Arcygobius baliurus
(Valenciennes, 1837)

Isthmus Goby

D VI + I, 9–10; A I, 8–9; P₁ 15–19; LR 22–27; PDS 8–11. Body moderately elongate and compressed. Head subcylindrical or somewhat compressed; lower jaw slightly projecting beyond upper jaw; gill opening broad, extending anteriorly to below eye. Pelvic fins fused medially; frenum present. Scales on body ctenoid; predorsal area, cheek and dorsal part of operculum with large cycloid scales. Sensory canals and pores present on head; numerous transverse rows of sensory papillae on cheek. **Color:** head and body beige or grayish brown dorsally, paler ventrally, with indistinct dusky mottles; a conspicuous black spot, as large as pupil, at caudal-fin base. **Size:** 10.2 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent bays with muddy bottoms. Isthmogobius, previously used as the generic name for this species, is not available (Larson & Wright, 2003).

(K. Shibukawa)



Aulopareia unicolor, KAUM-I. 32920, 5.6 cm SL
Bang Pakong, 30 Oct. 2010

Aulopareia unicolor
(Valenciennes, 1837)

Greenspot Goby

D VI + I, 10; A I, 9; P₁ 18–19; LR 30–32; PDS 23–25. Body moderately elongate and compressed. Head subcylindrical; lower jaw projecting beyond upper jaw. No elongate and filamentous dorsal-fin spines; pelvic fins united medially; frenum present. Scales ctenoid, excluding those on

nape, pectoral base and breast cycloid; head naked, except for occipital area and upper part of operculum with cycloid scales. Sensory canals and pores present on head; longitudinal pattern of sensory-papillae rows on cheek. **Color:** body dark grayish brown with many bright pale-green spots; a small black spot at upper part of caudal-fin base. **Size:** 11 cm. **Distribution:** Western Pacific. **Remarks:** found in brackish estuaries. (K. Shibukawa)

Boleophthalmus boddarti
(Pallas, 1770)

Boddart's Goggle-eyed Goby

D V + 24–26; A 24–26; P₁ 17–21; LR 61–79; PDS 25–35. Body elongate, compressed. Head subcylindrical; snout rounded; gape near horizontal; jaws extending well beyond a vertical through posterior margin of eye; gill opening not extending anteriorly to a vertical line through posterior margin of preopercle; tongue adnated to floor of buccal cavity; uniserial row of teeth on each jaws, in addition to a single enlarged canine-like teeth internal to anterior margin of lower jaw. Pelvic fins united medially; frenum present. Cycloid scales on head and body; snout and chin naked. Sensory canals and pores present on head; reduced longitudinal pattern of sensory papillae rows on cheek. **Color:** head and body beige or brownish gray, slightly paler ventrally; a series of 6–7 oblique dusky bars on dorsal half of body; numerous bright sky blue dots scattered on head, body and dorsal fins. **Size:** 13.5 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found on exposed mudflats in protected bays and estuaries. (K. Shibukawa)

Drombus triangularis
(Weber, 1909)

Brown Drombus

D VI + I, 9–10; A I, 8; P₁ 16–17; LR 30–31; PDS 12–19. Body moderately elongate and compressed. Head slightly depressed. Lower jaw projecting beyond upper jaw. Gill opening not reaching anteriorly to a vertical through preopercular margin. Pelvic fins united medially; frenum present. Scales ctenoid, excluding nape, breast, pectoral-fin base and predorsal area with cycloid scales; head naked. Sensory canals and pores present on head; distinct transverse pattern of sensory-papillae rows on cheek. **Color:** head and body dusky with irregular mottles; yellow triangular spot at uppermost of pectoral base. **Size:** 5 cm. **Distribution:** Indo-West Pacific. **Remarks:** found in mangrove swamps and brackish estuaries with rubbles. (K. Shibukawa)

(K. Shibukawa)



Boleophthalmus boddarti, KAUM-I. 33186, 9.9 cm SL
Bang Pakong, 26 Nov. 2010



Drombus triangularis, KAUM-I. 24014, 4.4 cm SL
Bang Sean, 1 Oct. 2009



Glossogobius aureus, KAUM-I. 47485, 16.7 cm SL
Bang Pakong, 23 June 2012

Glossogobius aureus
Akihito & Meguro, 1975

Golden Flat-head Goby

D VI + I, 9; A I, 8–9; P₁ 18–21; LR 31–34; PDS 22–27. Body elongate and compressed. Head slightly depressed. Lower jaw prominent. Gill opening reaching anteriorly to, or a little beyond, a vertical through posterior margin of preopercle. Anterior margin of tongue notched. Pelvic fins united medially; frenum present. Scales ctenoid, excluding predorsal area, breast, belly and pectoral-fin

base and operculum with cycloid scales. Sensory canals and pores present on head; longitudinal pattern of sensory papillae on cheek. **Color:** head and body light yellowish brown, darkened dorsally; body with midlateral series of five dusky blotches, as well as many faint irregular dusky lines and spots dorsally. **Size:** 20 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in lower reaches of large rivers, mangroves, brackish estuaries and adjacent shallow coastal waters with sandy-mud bottoms. (K. Shibukawa)

(K. Shibukawa)

Myersina crocatus
(Wongratana, 1975)

Yellow-markings Shrimpgoby

D VI + I, 10; A I, 9; P₁ 16–18; LR 65–78; PDS 0. Body moderately elongate and compressed. Head compressed; lower jaw projecting beyond upper jaw; gill opening extending anteriorly beyond a vertical through preopercular margin. Spines of first dorsal fin variably elongate, third and fourth spine longest; pelvic fins united medially; frenum present. No scales on head; body scales cycloid. Sensory canals and pores present on head; transverse pattern of sensory-papillae rows on cheek. **Color:** head and body pale gray or beige, darkened dorsally, sometimes with a horizontal dusky stripes from eye to caudal peduncle; many yellow spots scattered on head and pectoral-fin base; male with horizontal orange lines on body, whereas female has many narrow oblique or vertical whitish bars on body. **Size:** 8.5 cm SL. **Distribution:** Andaman Sea and West Pacific. **Remarks:** found on muddy bottoms; symbiotically associated with alpheid shrimps. (K. Shibukawa)



Myersina crocatus, KAUM-I. 23825, 7.2 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

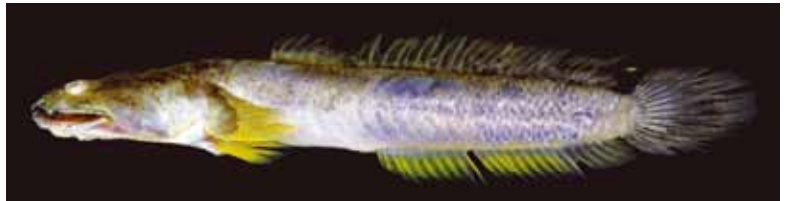


Myersina filifer, KAUM-I. 23194, 10.4 cm SL
Gulf of Thailand (SS), 8 Sept. 2009

Myersina filifer
(Valenciennes, 1837)

Filamentous Shrimpgoby

D VI + I, 10; A I, 9; P₁ 17–19; LR 79–101; PDS 0. Body moderately elongate and compressed. Head compressed; lower jaw projecting beyond upper jaw; gill opening extending anteriorly beyond a vertical through preopercular margin. Spines of first dorsal fin elongate, middle spines longest; pelvic fins united medially; frenum present. No scales on head; body scales cycloid. Sensory canals and pores present on head; transverse pattern of sensory-papillae rows on cheek. **Color:** head and body pale gray or beige, darkened dorsally; many small pale-blue spots on cheek and operculum; 6 dusky saddle-like blotches on body; a conspicuous black spot at anterior part of first dorsal fin. **Size:** 10 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in protected bays with sandy-mud bottoms; symbiotically associated with alpheid shrimps. Generic assignment follows Winterbottom (2002). (K. Shibukawa)



Oxudercus dentatus, KAUM-I. 23369, 7.5 cm SL
Bang Pakong, 22 Sept. 2009

Oxudercus dentatus
Eydoux & Souleyet, 1850

Brown Drombus

D VI + 24–27; A 24–27; P₁ 20–24; LR 59–66; PDS 0–22. Body elongate and compressed. Head depressed. Eyes small, dorsal on head. Jaws nearly horizontal, large, extending well beyond a vertical through posterior margin of eye. A single slender fang-like tooth around anterior tip of each side of upper jaw. Dorsal fins continuous; dorsal and anal fins not connected

to caudal fin. Caudal fin rounded or nearly lanceolate, slightly shorter than head. Pelvic fins fused medially, frenum present. Scales on head and body cycloid. **Color:** head and body beige, grayish brown, tinged with blue posteriorly; fins transparent or grayish, often tinged with yellow; a small black spot at distal part of posterior-most of dorsal fin. **Size:** 9.3 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in intertidal mudflats.

(K. Shibukawa)

***Parachaeturichthys polynema*
(Bleeker, 1853)**

Taileyed Goby

D VI + I, 9–10; A I, 9; P₁ 20–21; LR 28–30; PDS 12–13. Body moderately elongate and compressed. Head subcylindrical; jaws subequal; numerous short barbels on ventral surface of head. No elongate and filamentous dorsal-fin spines; pelvic fins united medially; frenum present. Scales ctenoid, excluding those on head, nape, pectoral base and breast cycloid; cheek and operculum totally scaled. Sensory canals and pores present on head; longitudinal pattern of sensory-papillae rows on cheek. **Color:** body beige, darkened dorsally; a conspicuous large ocellus (as large as eye) at upper part of caudal fin. **Size:** 12 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in bays with sandy-mud bottoms. (K. Shibukawa)



Parachaeturichthys polynema, KAUM-I. 33120, 6.6 cm SL
Gulf of Thailand (SS), 18 Nov. 2010

***Pseudapocryptes elongatus*
(Cuvier, 1816)**

Elongate Mudskipper

D V + 29–33; A 28–31; P₁ 17–21; LR 150–275; PDS 56–113. Body elongate and compressed. Head subcylindrical. Eyes small, dorsal on head. Jaws nearly horizontal, small, not reaching to a vertical through posterior margin of eye. Dorsal fins continuous; dorsal and anal fins not connected to caudal fin. Caudal fin lanceolate, subequal to, or slightly longer than, head. Pelvic fins fused medially, frenum present. Scales on head and body minute cycloid. **Color:** head and body grayish brown or beige dorsally, pale ventrally; 6–7 diagonal, short saddle-like dusky bars on dorsum; caudal fin with numerous blackish dots. **Size:** 18.7 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent intertidal mudflats. (K. Shibukawa)



Pseudapocryptes elongatus, KAUM-I. 47361, 14.8 cm SL
Ang Sila, 8 June 2012



Scartelaos histophorus, KAUM-I. 47357, 9.5 cm SL
Bang Pakong, 8 June 2012

***Scartelaos histophorus*
(Valenciennes, 1837)**

Bearded Mudskipper

D V + 25–27; A 24–27; P₁ 19–21. Body elongate, compressed. Head slightly subcylindrical; dermal cup-like process developed beneath eye; each side of ventral surface of head with a row of barbels; an unpaired bar-

bel at ventral surface of lower jaw near symphysis; single row of conical teeth on each jaw, in addition to a pair of enlarged caninlike teeth internal to lower jaw symphysis; tongue entirely adnated to floor of buccal cavity. First dorsal fin elongate and falcate; pelvic fins fused medially; frenum present. Scales on body small cycloid, partially embedded. Sensory canals and pores

on head. **Color:** head and body grayish, with several narrow, vague dusky vertical bars especially on middle of body; caudal fin with 3–5 vertical rows of dusky spots. **Size:** 10.5 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found on intertidal mudflats in estuaries and bays.

(K. Shibukawa)

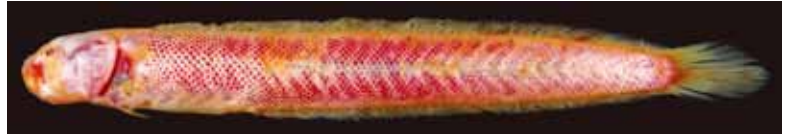
Taenioides gracilis
(Valenciennes, 1837)

Bearded Eel Goby

D VI, 42–52; A41–51; P₁ 12–18; LR 0; PDS 0. Body greatly elongate, eel-like. Head subcylindrical. Head, body and vertical fins enveloped by thick, rubbery dermal covering. No scales on head and body. Distinct cutaneous ridges on head. Typically a single median and three pairs of short, fleshy barbels on ventral surface of lower jaw. Eye reduced, minute. Teeth on outermost row of jaws enlarged, slender fang-like. Dorsal and anal fins confluent with caudal fin. Pelvic fins fused medially. Sensory canals and pores absent on head. **Color:** head and body grayish pink; vertical fins dull yellowish orange, dusky basally. **Size:** 31 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent coastal waters with muddy bottoms. (K. Shibukawa)



Taenioides gracilis, KAUM-I. 47358, 9.2 cm SL
Bang Pakong, 8 June 2012



Trypauchen vagina, KAUM-I. 33095, 16.9 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

Trypauchen vagina
(Bloch & Schneider, 1801)

Pink Worm Goby

D VI, 40–50; A39–47; P₁ 15–20; LR 80–115; PDS 0. Body very elongate and compressed. Head compressed. A pouch-like cavity just above operculum. Eye reduced, difficult to be discerned from external view. Dorsal and anal fins confluent with caudal fin. Pelvic fins fused medially, but connecting membrane between innermost rays emarginated posteriorly; frenum low. Scales on body cycloid; head naked. Sensory canals and pores absent on head; numerous sensory papillae scattered on cheek. **Color:** head and body entirely reddish. **Size:** 15 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in bays and brackish estuaries with muddy bottom.

(K. Shibukawa)



Yongeichthys nebulosus, KAUM-I. 33161, 9.8 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

Yongeichthys nebulosus
(Forsskål, 1775)

Shadow Goby

D VI + I, 9; A I, 9; P₁ 17–18; LR 25–28; PDS 0. Body moderately elongate, compressed. Head slightly compressed; jaws subequal; gill opening not extending anteriorly to a vertical through preopercular margin. Pelvic fins united medially; frenum present. Scales ctenoid, excepting those on breast and pectoral-fin base cycloid;

head naked. Sensory canals and pores present on head; longitudinal pattern of sensory-papillae rows on cheek, some rows multiple; aggregation of sensory papillae just behind chin. **Color:** body pale gray or pale brown, with two dusky saddles and three large dusky midlateral spots. **Size:** 10 cm SL. **Distribution:** Indo-West Pacific. **Remarks:** found in brackish estuaries and adjacent coastal waters with sandy-mud bottoms. (K. Shibukawa)

EPHIPPIDAE

Spadefishes (Batfishes)

Medium sized (up to 20 cm) marine fishes. Body deep, orbicular and strongly compressed. Head short, its length shorter than half of body depth; interorbital region and anterior part of head naked and head covered with scales. Mouth small, rear end of upper jaw not reaching vertical through anterior edge of eye; upper jaw not protrusible; jaws covered with bands of slender setiform or compressed teeth. Dorsal fin single or deeply notched before soft-rayed part, with V–IX spines and 19–38 soft rays; anal fin with III spines and 15–27 soft rays; pectoral fins rounded and usually shorter than head; caudal fin truncate or wedge shaped. Scales large and smooth, or small and ctenoid. Lateral line complete.

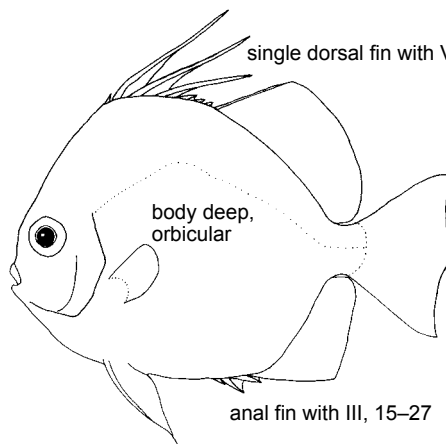
Color: adults silvery, silvery blue-green, or yellowish silvery; frequently with vertical dark bars.

Remarks: occurring in various shallow water habitats including estuaries, harbors, and coral reefs. Mar-

keted fresh but with small commercial importance.

Similar families occurring in the area: Drepanidae – upper jaw greatly protrusible; pectoral fins elongate reaching posterior part of anal fin base. Chaetodontidae – dorsal fin with VI–XVII spines and 14–34 soft rays; anal fin with III–V spines and 15–24 soft

single dorsal fin with V–IX, 19–38



anal fin with III, 15–27

rays. Monodactylidae – pelvic fins rudimentary or absent. Scatophagidae – dorsal fin notched or divided to base before soft rayed part, with XI or XII spines and 15–18 soft rays; anal fin with IV spines and 13–17 soft rays.

(K. Matsuura)

Ephippus orbis (Bloch, 1787)

Spadefish

D IX, 19–20; A III, 15–17; P₁ 18–19; LL 39–43. Body orbicular, strongly compressed, head length less than half of body depth. Mouth small, upper jaw not reaching posteriorly vertical through anterior edge of eye; upper jaw not protrusible; jaws covered with bands of slender incisiform teeth. Preopercle distinctly serrate with a wide naked margin. Single dorsal fin with a deep notch before soft rayed part; pectoral fins shorter than head. Scales relatively large and smooth. Lateral line complete. **Color:** head and body silvery blue-green; 4 to 5 vertical dark bars frequently on body; fins dusky. **Size:** maximum size 20 cm. **Distribution:** tropical regions of the Indo-West Pacific from India to Indonesia, north to southern Japan. (K. Matsuura)



Ephippus orbis, KAUM-I. 33107, 10.0 cm SL
Gulf of Thailand (SS), 18 Nov. 2010

Platax teira
(Forsskål, 1775)

Spotbelly Batfish

D V-VI, 29-34; A III, 21-26; P₁ 16-28; LL 56-66; GR 9+11. Body orbicular, strongly compressed. Snout short, contour of frontal almost vertical in large adults. Five pores on each side of lower jaw. Tricuspid teeth on jaws; middle cusp slightly larger than lateral cusps; a few teeth on vomer but palatines toothless. **Color:** body yellowish silver with 3 vertical black bands; pelvic fin yellow; a black blotch laterally on belly. **Size:** maximum length 70 cm. **Distribution:** Indo-West Pacific. **Remarks:** occurring in inshore waters. (S. Kimura)



Platax teira, KAUM-I. 23947, 13.2 cm SL
Bang Pakong, 30 Sept. 2009

SCATOPHAGIDAE

Scats

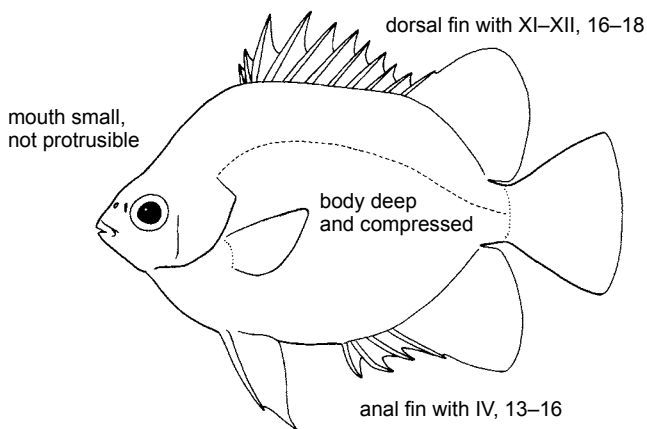
Body greatly compressed, reaching to 32 cm. Dorsal profile of head steeply ascending to dorsal fin origin; snout rounded. Mouth small, terminal; jaws not protrusible; villiform teeth in several rows on jaws. Eye relatively large, its diameter slightly shorter than snout length. Dorsal fin with XI or XII spines and 16–18 soft rays; first dorsal fin spine procumbent; a deep notch between spinous and soft portions of dorsal fin. Anal fin with IV spines and 13–16 soft rays. Pectoral fin with 16 or 17 soft rays. Caudal fin rounded in juveniles, truncate or slightly emarginated in adults. Head and body covered with small cycloid scales. **Color:** head and body greenish or silvery with many black spots or bars.

Remarks: occurring in estuaries, harbors, and lower reaches of rivers. Marketed fresh but with small com-

mercial importance.

Similar families occurring in the area: Chaetodontidae – lacking a deep notch between spinous and soft parts of dorsal fin; jaws protrusible. Drepanidae – anal fin with III spines;

jaws protrusible; pectoral fins elongate, reaching beyond anal fin origin. Pomacanthidae – preopercle with a strong, backwardly pointed spine; no deep notch between spinous and soft parts of dorsal fin. (K. Matsuura)



Scatophagus argus (Bloch, 1788)

Spotted Scat

D XI, 16–18; A IV, 14–15; P₁ 16. Body quadrangular, strongly compressed. Dorsal profile of head steeply ascending to dorsal fin origin; snout rounded. Mouth small, terminal; jaws protrusible; villiform teeth in several rows on jaws. Teeth villiform, making several rows on jaws. Eye relatively large, its diameter slightly shorter than snout length. **Color:** ground color of head and body greenish; juveniles with a few large round blotches being almost equal to eye in size, or with 5–6 wide dark, vertical bars; adults with less distinct dark blotches or markings. **Size:** maximum size 35 cm. **Distribution:** tropical regions of Indo-West Pacific from southern India and Sri Lanka eastward to Tahiti, and northward to southern Japan. (K. Matsuura)



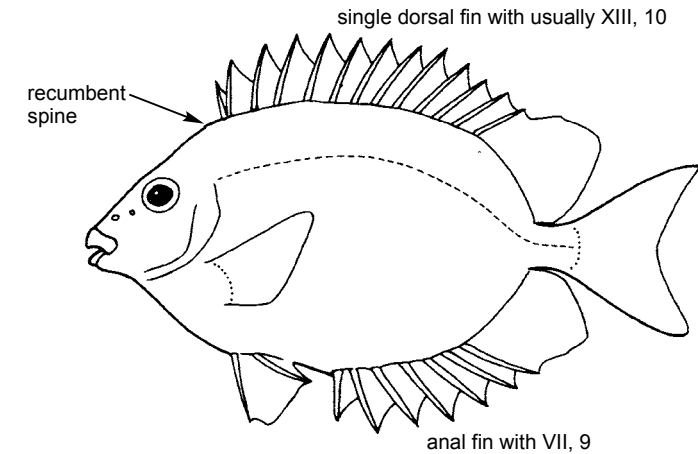
Scatophagus argus, KAUM-I. 32674, 8.4 cm SL
Gulf of Thailand (SS), 22 Oct. 2010

SIGANIDAE

Rabbitfishes

Body oval, strongly compressed, reaching to 55 cm. Mouth small, terminal; jaws not protrusible; a single row of compressed, incisiform teeth on jaws. Dorsal fin with XIII spines and 10 soft rays, preceded by embedded, recumbent spine. Anal fin with VII spines and 9 soft rays. Pelvic fins with an inner and outer spines and separated 3 soft rays. Fin spines with a pair of grooves containing venom glands. Body covered with small, cycloid scales. **Color:** species inhabiting coral reefs having bright color with reticulations and markings, and other species with drab mottled pattern.

Remarks: dwelling on bottom in shallow coastal waters. Some species found in coral reefs and others in mangroves and seagrass beds. Pri-



marily herbivorous. Caught by bottom trawlers, traps, set nets and by spear. Marketed fresh.

Similar families occurring in the

area: Acanthuridae and Chaetodontidae – 1 spine and 5 soft rays in pelvic fins. (K. Matsuura)

Siganus canaliculatus (Park, 1797)

Whitespotted Spinefoot

D XIII, 10; A VII, 9; P₁ 16–17; P₂ I, 3, I. Body oblong, compressed, relatively slender, its depth 2.3–2.8 in SL. Last anal-fin spine 1.2–1.5 in longest anal-fin spine; soft parts of dorsal and anal fins low, longest dorsal-fin ray 0.7–1.0 in longest dorsal-fin spine; caudal fin almost emarginate in specimens < 10 cm SL, forked in larger fish. **Color:** highly variable, but body ground color dark olive green or brownish gray dorsally, silvery white ventrally; numerous pearly blue to whitish spots on nape and body. **Size:** maximum size about 25 cm, commonly to 20 cm. **Distribution:** Persian Gulf to Indonesia, northern Australia, Vietnam, Thailand, and Malaysia. **Remarks:** inhabits shallow coastal waters. Feeds mainly on seaweeds. (S. Kimura)



Siganus canaliculatus, KAUM-I. 32833, 13.4 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

Siganus fuscescens
(Houttuyn, 1782)

Mottled Spinefoot

D XIII, 10; A VII, 9; P₁ 15–17. Body oval, relatively slender, its depth 2.3–2.9 in SL. Last anal-fin spine 1.3–1.5 in longest anal-fin spine. Soft parts of dorsal and anal fins low, longest dorsal fin ray 0.5–1 times in longest dorsal fin spine. Caudal fin slightly concave in individuals smaller than 10 cm SL, and becoming more concave with growth. **Color:** greatly variable, but body ground color olive green or light brown on sides and back, silvery on ventral half; many small light blue spots scattered on head and body. **Size:** maximum size 40 cm, commonly to 25 cm. **Distribution:** western coast of Malay Peninsula and West Pacific from Thailand eastward to New Caledonia, northward to the Ryukyu Islands, and southward to northern Australia. (K. Matsuura)



Siganus fuscescens, KAUM-I. 33093, 15.3 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

Siganus guttatus
(Bloch, 1787)

Orangespotted Spinefoot

D XIII, 10; A VII, 9; P₁ 15–17. Body oval, strongly compressed, its depth 1.8–2.3 in SL. Snout short, dorsal profile of head steep anteriorly, somewhat concave above eye. Fifth to eighth dorsal-fin spine longest. Last anal-fin spine longest, longer than longest dorsal-fin spine. Caudal fin emarginate but moderately forked in large adults. Scales minute. **Color:** many large to medium-sized orange to bronze spots scattered laterally on body with a bright yellow spot at base of last few dorsal-fin rays. **Size:** maximum length about 40 cm, commonly to 25 cm. **Distribution:** Andaman Sea and western Pacific. **Remarks:** inhabits shallow coastal waters, often in brackish waters especially sea grass and mangrove areas. Marketed fresh. (S. Kimura)



Siganus guttatus, KAUM-I. 32873, 11.2 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

Siganus javus
(Linnaeus, 1766)

Streaked Spinefoot

D XIII, 10; A VII, 9; P₁ 15–17. Body relatively deep, its depth 2.0–2.3 in SL. Last dorsal fin spine 1.2–1.6 in fourth to sixth spine. Except for short first spine, all anal-fin spines similar in length. Soft parts of dorsal and anal fins moderately high, longest anal-fin ray subequal to longest anal-fin spine. Caudal fin slightly concave. **Color:** dark bronze on dorsal half, becoming paler ventrally; many gun-metal blue spots on head and dorsal half of body; silvery blue undulating lines on ventral half of body. **Size:** maximum size 50 cm, commonly to 30 cm. **Distribution:** Indo-West Pacific from the Persian Gulf through the Malay Peninsula eastward to Vanuatu, northward to the Philippines, and southward to northern Australia. (K. Matsuura)



Siganus javus, KAUM-I. 32965, 16.5 cm SL
off Chantha Buri (SP), 1 Nov. 2010

Siganus virgatus
(Valenciennes, 1835)

Doublebarred Spinefoot

D XIII, 10; A VII, 9; P₁ 16–17. Body oval, strongly compressed, its depth 1.8–2.3 in SL. Snout moderate, dorsal profile of head convex. Fifth to seventh dorsal-fin spine longest. Third or fourth anal-fin spine usually longest. Caudal fin emarginate. **Color:** a dark brown band running from nape through eye to chin; another from fourth to fifth dorsal-fin spine bases to pectoral fin base; these dark bands containing light blue small spots and short lines; posterior to second band, orange to yellow dorsally with light blue spots, silver white ventrally. **Size:** maximum length about 33 cm, commonly 20 cm. **Distribution:** eastern Indian Ocean and western Pacific, from southern India to northern Australia, north to southern Japan. **Remarks:** inhabits shallow coastal waters, around coral reefs. Juveniles often enter mangrove areas.

(S. Kimura)



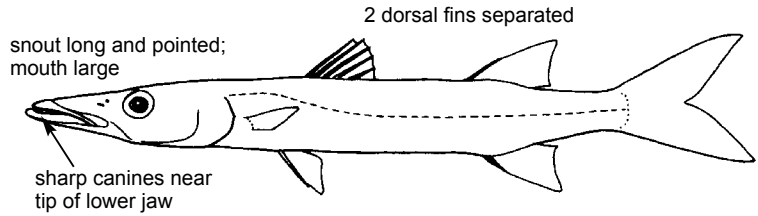
Siganus virgatus, KAUM-I. 32871, 12.6 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

SPHYRAENIDAE

Barracudas

Body elongate, slightly compressed, reaching to 170 cm. Head long; snout pointed. Mouth horizontal, large; lower jaw projecting; large, sharp flattened or conical teeth on jaws; usually 1 or 2 canine teeth on tip of lower jaw. Gill rakers, if present, as short spinules, 1 or 2 at angle of gill arch. Two short dorsal fins, widely separated; the first with IV spines located above or slightly behind pelvic fins; the second with I spine and 9 soft rays. Anal fin with II spines and 7–9 soft rays. Caudal fin deeply forked. **Color:** gray to blue, or light brown dorsally, with silvery reflections, paler or white ventrally.

Remarks: carnivorous pike-like, pelagic to demersal fishes in tropical



and temperate seas. Most of members of the Sphyraenidae found in coastal areas but also in the surface of open seas or down to depths of 100 m. Caught by handlines, gill nets, set nets or trawls. Marketed fresh, also dried-salted.

Similar families occurring in the area: Atherinidae and Mugilidae – having 2 separate dorsal fins and silver body, but having a short snout and small mouth without canine teeth. (K. Matsuura)

Sphyraena jello Cuvier, 1829

Pickhandle Barracuda

D V + I, 9; A II, 7–9; P₁ 14–15; GR 0; LLp 130–140. Body elongate, subcylindrical. Snout long, pointed; posterior tip of maxilla reaching just below anterior margin of eye. First gill arch with rough platelets but lacking distinct spine. Last ray of second dorsal fin not elongate in comparison with penultimate ray; caudal fin typically forked in all stages, without a pair of lobes at posterior margin; pelvic-fin insertion anterior to first dorsal-fin origin. **Color:** body brownish dorsally, silvery white ventrally, with many dark bars crossing lateral line, each bar oblique in upper half, but almost vertical in lower half. Caudal fin yellow without white tips. **Size:** maximum length 125 cm, commonly to 80 cm. **Distribution:** widely distributed in Indo-West Pacific, from East Africa and Red Sea to New Caledonia and Vanuatu. **Remarks:** inhabits coastal waters, estuaries, and inner lagoon.

(S. Kimura)

Sphyraena obtusata Cuvier, 1829

Obtuse Barracuda

D V + I, 9–10 (usually 9); A II, 9; P₁



Sphyraena jello, KAUM-I. 47413, 18.3 cm SL
Ang Sila, 15 June 2012



Sphyraena obtusata, KAUM-I. 47757, 15.1 cm SL
Prachuap Khiri Khan, 21 July 2012

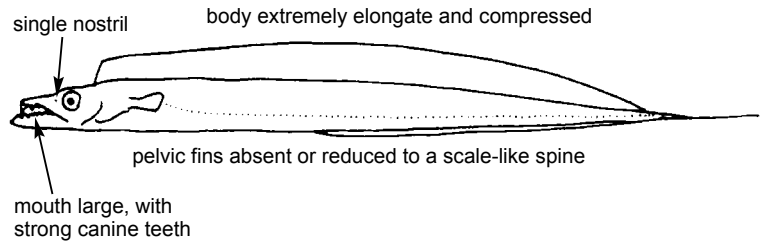
11–13; P₂ I, 5; GR 2; LLp 78–85. Body elongate, subcylindrical. Snout long, pointed; posterior tip of maxilla just reaching to or extending beyond anterior nostril. Posterior tip of opercle rounded, obtuse above level of pectoral-fin base. Caudal peduncle low, moderately compressed. Pelvic-fin origin anterior to origin of first dorsal fin. Scales on body cycloid, highly deciduous; scales above lateral line 5–7.5; scales below lateral line 8.5–9.5. **Color:** head and body dark green dorsally, silvery-white ventrally.

Two indistinct yellow to brown longitudinal stripes laterally on body. Caudal fin yellow with greenish base. **Size:** maximum length 55 cm. **Distribution:** widely distributed in Indo-West Pacific, from East Africa and Red Sea to Papua New Guinea, north to Japan. This species invaded to eastern Mediterranean. **Remarks:** inhabits shallow coastal waters. Marketed fresh, salted and dried. *Sphyraena flavicauda* Rüppell is a junior synonym of *S. obtusata* (see Doiuchi & Nakabo, 2005). (S. Kimura)

TRICHIURIDAE

Cutlassfishes

Body remarkably elongate and compressed, ribbon-like, with a tapered tail or small forked caudal fin (up to over 2 m). A single nasal opening on each side of head. Mouth large, jaws not protractile, lower jaw extends anterior to upper jaw. Teeth extremely strong, fang-like in anterior part of upper jaw and sometimes in anterior part of lower jaw. Dorsal fin low and long, beginning shortly behind eye, its anterior spinous part shorter than posterior soft part, 2 parts continuous mostly or interrupted by a shallow notch sometimes. Anal fin low or reduced to short spinules. Caudal fin either small and forked or absent. Pectoral fins short and low in position. Pelvic fins reduced to a scale-like spine (plus a rudimentary ray in *Benthodesmus*) or completely absent (in *Trichiurus* and *Lepturacanthus*). Preanal length less than 1/2



standard length. Lateral line single. Scales absent.

Color: body generally metallic silvery or more or less brown in *Aphanopus* and *Lepidopus*; pectoral fin semi transparent; dorsal and anal fins sometimes tinged with pale yellow. Usually no distinct marks or blotches on body.

Remarks: benthopelagic on continental shelves and slopes and un-

derwater rises, from the surface to a depth of about 2 000 m, found in tropical to warm-temperate waters. Excellent eating, although the flesh is scanty. Marketed mostly fresh or salted, sometimes also frozen.

Similar families occurring in the area: Gempylidae – double nostrils on each side of head; 2 dorsal fins. (M. Matsunuma)



Trichiurus lepturus
Linnaeus, 1758

Largehead Hairtail

D III, 124–138; A II, 105–108; P₁ 10–12. Body extremely elongate and strongly compressed, ribbon-like, tapering to a point posteriorly. Eye large; mouth large, with a dermal process at tip of each jaw; 2 or 3 pairs of enlarged fangs with barbs near tip of upper jaw, and another pair near tip of lower jaw, a single series of sharp, compressed lateral teeth in both jaws, minute teeth on palatines. Lower hind

margin of gill cover concave. Dorsal fin high and long, without a notch between spinous and soft parts; pectoral fin rather short, but extend beyond lateral line; caudal and pelvic fins absent. No scales on body. **Color:** fresh specimens steel blue with silvery reflection, pectoral fins semi-transparent, other fins sometimes tinged with pale yellow hyaline in fresh, especially strong yellow just after death. **Size:** maxi-

imum length about 1.8 m. **Distribution:** considered as a cosmopolitan species of tropical and temperate waters. **Remarks:** basically offshore waters, and occurs in somewhat deeper coastal area, but often collected even in mangrove or estuary basin and to a depth of ca. 150 m depth.

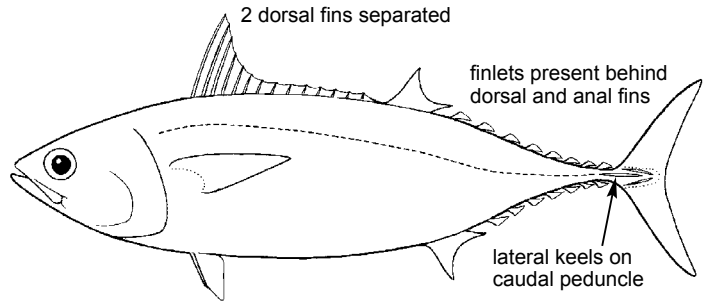
(M. Matsunuma)

Trichiurus lepturus, KAUM-I. 33185, 31.2 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

SCOMBRIDAE

Mackerels and Tunas

Medium to large sized marine fishes, maximum size over 5 m. Body relatively elongate and fusiform, moderately compressed. Snout pointed, upper jaw not protrusible. Caudal peduncle slender with 2 or more lateral keels on each side. Two dorsal fins, the first usually short based with IX–XXVII spines, separated from or apparently contiguous to the second. Finlets (5–12 each) present behind second dorsal and anal fins. Caudal fin deeply forked. Pectoral fins inserted high on body. Pelvic fins relatively small with I spine and 5 soft rays, located below pectoral fins. Body covered with small to medium cycloid scales or a corselet developed on area behind head and pectoral fins. Lateral line present. **Color:** body dark blue or



dark green dorsally, silvery white ventrally. Usually dark vertical or longitudinal bands and/or spots on sides.

Remarks: typical pelagic fishes; smaller fishes usually inhabits inshore waters; large tunas, *Thunnus*, transoceanic migrants. Important food fishes.

Similar families occurring in the area: Carangidae – dorsal-fin spines

III–VIII; II detached anal-fin spines; scutes developed along posterior part of lateral line in most species. Gempyliidae – body dark brown to brown dorsally without distinct marks or blotches; no keels on caudal peduncle except *Lepidocybium*.

(S. Kimura)

Auxis thazard (Lacepède, 1800)

Frigate Tuna

D XI–XII + 10–12; A 12–14; P₁ 22–25; GR 38–42. Body fusiform, somewhat deep, compressed. Jaws with small conical teeth. Caudal peduncle with a large lateral keel and caudal-fin base with 2 small keels. Two dorsal fins well separated by a wide interspace. Seven to 8 finlets both dorsally and ventrally on caudal peduncle. A large flap between pelvic fins (interpelvic process). Body naked except for corselet which becoming steeply narrower below interspace between dorsal fins. **Color:** head and body dark blue dorsally, silvery white ventrally. A blue-black spot on upper gill cover separated from blue-black area on dorsum of head. Dark blue vermiculate



Auxis thazard, KAUM-I. 47407, 24.2 cm SL
Ang Sila, 15 June 2012

markings or stripes dorsolaterally on posterior body. **Size:** maximum length 65 cm FL. **Distribution:** Circumglobal in tropical and temperate seas, including Red Sea and Hawaiian Islands, but not the eastern Pacific.

Remarks: closely related species

Auxis eurydorax Collette & Aadland, 1996 distributed restrictedly in the eastern Pacific. The species was originally described as a subspecies of *A. thazard*.
(S. Kimura)

Rastrelliger brachysoma
(Bleeker, 1851)

Short Mackerel

D VIII–XI + 12; A I, 12; P₁ 19–20; LGR 30–48. Body moderately deep, compressed. Head equal to or less than body depth. Maxilla covered by lacrimal bone. Adipose eyelid well developed. Gill rakers very long, visible when mouth is opened. Caudal fin base with 2 small lateral keels. Two dorsal fins widely separated. Anal fin spine rudimentary. Five dorsal and 5 anal finlets. Pectoral fins short; a small single flap between pelvic fins (interpelvic process). Body covered with small scales. **Color:** head and body bluish green dorsally, silverywhite ventrally. First dorsal and caudal fins yellowish. **Size:** maximum length 35 cm FL. **Distribution:** tropical waters of central Indo-West Pacific, from Andaman Sea to Fiji, north to Philippines. **Remarks:** found in neritic waters. Feeds on microzooplanktons and phytoplanktons. Marketed fresh, dried, salted, and smoked. (S. Kimura)



Rastrelliger brachysoma, KAUM–I. 33019, 12.6 cm SL
Gulf of Thailand (SS), 3 Nov. 2010



Rastrelliger kanagurta, KAUM–I. 47708, 17.3 cm SL
Rayong, 11 July 2012

Rastrelliger kanagurta
(Cuvier, 1816)

Indian Mackerel

D VIII–XI + 11–13; A I, 11–12; P₁ 19–22; LGR 30–46. Body slightly deep, compressed. Head longer than body depth. Maxilla covered by lacrimal bone. Adipose eyelid well developed. Gill rakers very long, visible when mouth is opened. Caudal fin base with 2 small lateral keels. Two dorsal fins widely separated. Anal fin spine rudimentary. Five or six dorsal and anal finlets. Pectoral fins short; a small single flap between pelvic fins (interpelvic process). Body covered with small scales. **Color:** head and body bluish green dorsally, silverywhite ventrally. One or two rows of small, dark spots dorsolaterally on body. First dorsal, caudal and pectoral fins yellowish. **Size:** maximum length 35 cm, commonly to 25 cm FL. **Distribution:** widely distributed in Indo-West Pacific, from South Africa and Red Sea to Samoa, north to southern Japan. **Remarks:** found in coastal waters. Feeds on macrozooplanktons. Marketed fresh, dried, salted, and smoked. (S. Kimura)



Scomberomorus commerson, KAUM–I. 47470, 26.0 cm SL
Gulf of Thailand (SS), 20 June 2012

Scomberomorus commerson
(Lacepède, 1800)

Narrowbarred Spanish Mackerel

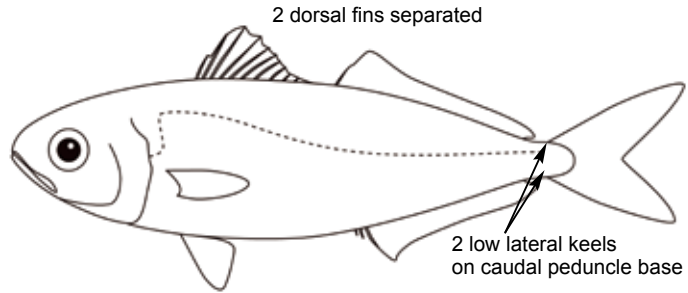
D XV–XVIII + 15–20; A 16–21; P₁ 21–24; GR 0–2 + 1–8 = 1–8, V 19–20 + 23–27 = 42–46. Body elongate, strongly compressed. Upper jaw reaching to or extending slightly beyond posterior margin of eye. Teeth on jaws strong with finely serrated edge. Caudal peduncle with a large lateral keel and caudal-fin base with 2 small keels. Two dorsal fins scarcely separated. Eight to 11 dorsal and 7–12 anal

finlets. Pectoral fins short, pointed. Body covered with small scales. A single lateral line abruptly bent downward below posterior end of dorsal-fin base. **Color:** head and body bluish silver dorsally, silvery-white ventrally. Many vertical dark bars on body. **Size:** maximum length 220 cm, commonly to 90 cm FL. **Distribution:** widely distributed in Indo-West Pacific, from South Africa and Red Sea to Fiji, north to Japan. **Remarks:** found in coastal waters. Feeds on fishes. Marketed mainly fresh. (S. Kimura)

ARIOMMATIDAE

Ariomatids

Small to medium-sized (to 78 cm) fishes. Body deep, compressed, or more rounded, elongate body; flesh firm and oily; skin thin, mucous canal system well-developed beneath skin. Caudal peduncle short and slender, not compressed; with 2 low lateral keels on each side near caudal-fin base. Head moderately large, compressed. Opercle very thin, delicate. Eye large. Mouth small and terminal, upper jaw not protractile, almost totally covered by lacrimal (preorbital) bone when mouth closed; teeth absent from palatines and vomer. Gill rakers slender and numerous, about 20 to 30 on first gill arch. Branchiostegal rays 6. Two distinct dorsal fins, almost connected; first dorsal fin with X to XIII; second dorsal fin much lower than first dorsal fin, usually with I spine and 13 to 16 soft rays. Anal fin with I to III and 13 to 18 soft rays, similar to second dorsal fin in shape but with shorter base. Caudal fin deeply forked. Pelvic-fin



origin below or behind pectoral-fin insertion. Lateral line on upper half of body. Scales large, cycloid, thin, very deciduous, top of snout naked to above eye, sharply demarcated from predorsal scales. Vertebrae 29 to 32.

Color: silvery, with opalescent tinges; slightly darker on back.

Remarks: Occur in large demersal schools on the continental shelf and slope to depths of at least 750 m. Appear to feed on small pelagic invertebrates.

Similar families occurring in the

area: Carangidae – a large mouth, I to II separate spines preceding anal fin, spinous dorsal fin lower than soft dorsal fin and many have scutes on caudal peduncle. Centrolophidae – a single dorsal fin; spinous much lower than soft dorsal fin; caudal keels absent; branchiostegal rays 7. Nomeidae – caudal peduncle deep and compressed; caudal keels absent; teeth present on palate. (S. Tafzilmeriam)

Ariomma indicum (Day, 1871)

Indian Ariomma

D X–XII + I, 14–15; A III, 14–15; P₁ 21–24; P₂ I, 5; GR 23; V 31. Body firm, moderately deep (more than 40% standard length), slightly compressed. Caudal peduncle slender, not compressed, almost square in cross-section with a very low keel (mostly indistinct) at base of each caudal-fin lobe. Snout blunt and rounded; mouth very small, terminal, upper jaw not protractile, almost totally covered by lacrimal (preorbital) bone when mouth closed. Eye moderately large. Jaw teeth small, cusps at tip minute. Two dorsal fins, almost joined at bases; first dorsal fin originating over or slightly before pectoral-fin base; spines long and slender, delicate, about twice length of longest soft rays. Anal fin similar in shape to second dorsal fin. Caudal fin deeply forked. Pelvic fins short. Scales small, cycloid and extremely deciduous. Lateral line located on upper side, following dor-



Ariomma indicum, KAUM-I. 32825, 12.9 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

sal profile but not extending onto caudal peduncle. **Color:** silvery but slightly more brownish dorsally; young with darker patches and blotches on side, fading or absent in adults; first dorsal fin and margin of caudal fin dark; dark vertical band through mid-eye. **Size:** maximum standard length about 25 cm, commonly to 18

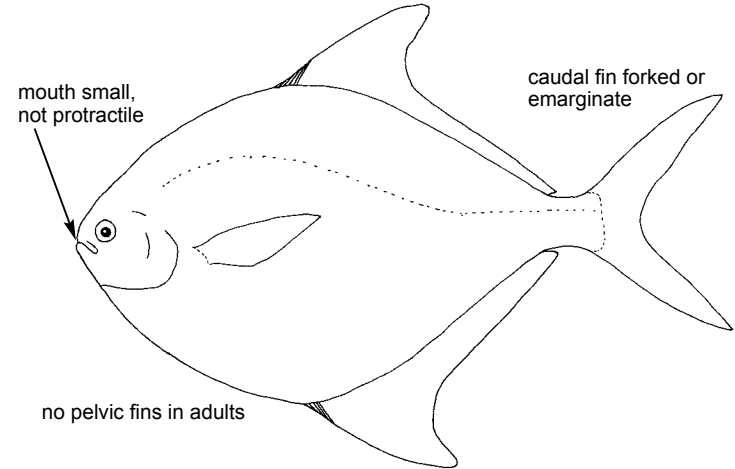
cm. **Distribution:** Eastern Africa, along the continental margin of the northern Indian Ocean, eastward to Japan and the Gulf of Carpentaria, Australia. **Remarks:** mainly demersal in small schools on the continental shelf in depths below 50 m but occasionally caught on the upper continental slope to 300 m. (S. Tafzilmeriam)

STROMATEIDAE

Butterfishes

Medium sized (up to 60 cm) marine fishes. Body strongly deep and compressed. Snout short, blunt. Mouth small, terminal or slightly inferior, not protractile. Teeth on jaws uniserial, small and flattened with 3 minute cusps. No teeth on vomer or palatines. Gill membranes joined to breast (*Pampus*) or not usually connected to isthmus (*Peprilus* and *Stromateus*). Branchiostegal rays 5 or 6. Caudal peduncle short and compressed with no scutes or keels. Dorsal fin single, anal fin similar in shape to dorsal fin. Caudal fin forked or emarginate. Pectoral fins long. Pelvic fins absent in adults. Body covered with small cycloid scales. Lateral line single dorsolaterally on body. **Color:** body silvery white, dark brownish in some species.

Remarks: coastal fishes, feeds mainly on zooplanktons. Three genera, *Pampus* (Indo-West Pacific), *Peprilus* (western Atlantic and eastern Pacific), and *Stromateus* (Atlantic and eastern Pacific). Important



food fishes.

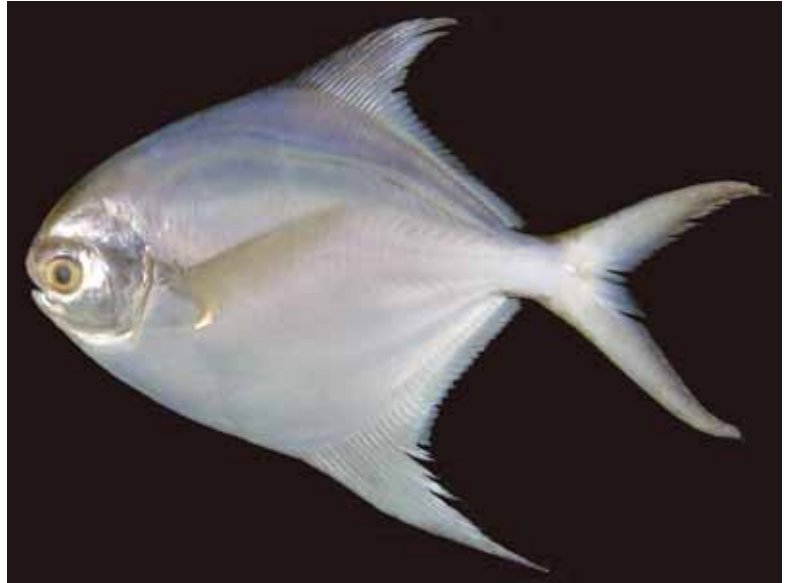
Similar families occurring in the area: Carangidae – *Parastromateus niger*, very similar in shape to *Pampus*, having small scutes along posterior

part of lateral line; gill membrane not united to isthmus. Centrophidae – pelvic fins present; 7 branchiostegals. Nomeidae – 2 dorsal fins; pelvic fins present. (S. Kimura)

Pampus argenteus (Euphrasen, 1788)

Silver Pomfret

D V–X + 37–43; A V–X + 34–43; P₁ 24–27; GR 10–13; V 34–37. Body oval, strongly compressed. Gill opening short, slit-like. Gill rakers very small, vestigial. Anterior dorsal and anal fins falcate. Caudal fin deeply forked, lower lobe often extended. Sensory canal area on temporal extending backward along lateral line. **Color:** head and body dark brownish silver dorsally, silvery white ventrally. Anal and caudal fins yellowish. **Size:** maximum length 60 cm. **Distribution:** Indo-West Pacific, from Persian Gulf to Indonesia. **Remarks:** found in coastal waters over muddy bottom. Marketed fresh. (S. Kimura)

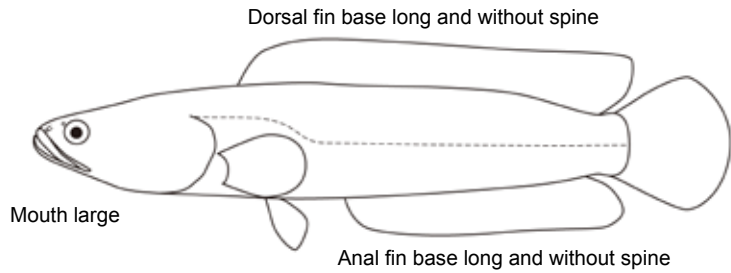


Pampus argenteus, KAUM–I. 32755, 14.4 cm SL
Ang Sila, 23 Oct. 2010

CHANNIDAE

Snakeheads

Medium to large sized fishes (maximum size about 130 cm TL). Body elongate. Head depressed. Eye large. Dorsal and anal fin bases long and entirely soft-rayed. Pelvic fin present or absent. Mouth large with well-developed teeth on both upper and lower jaws. Caudal fin rounded to somewhat truncated. Suprabranchial (air-breathing) organ present. **Color:** highly variable, body including head from brownish, dark brown to dark blue with bands, blotches or spots (including ocelli) in various colors (e.g., red, orange, yellow, gold, blue, black).



Remarks: Carnivorous. Feeds on all smaller animals including insects, crustaceans, fish and frogs. Many species utilized as important food fishes in East and southern Asia. Some species utilized as aquarium fishes. **Similar families occurring in the area:** None. (P. Musikasinthorn)

Channa lucius (Cuvier, 1831)

D 37–41; A 25–30; P₁ 16–19; LL 57–70. Body elongate, cylindrical and somewhat compressed. Body depth and width greatest at insertion of anal fin. Head depressed and somewhat conical. Snout pointed in dorsal view. A patch of small scales present at chin region (gular scales). Dorsal and anal-fin bases long. Pelvic fin length more than 50% of pectoral fin length. Large canine-like teeth on vomer and palatine. **Color:** body dark brown with a row of several irregular dark blotches on lateral side of body. Many small black spots scattered on ventral side of body. A large irregular black blotch at posterior portion of gill cover. In juveniles, two bold black longitudinal bands run from tip of snout to the middle of the caudal fin. **Size:** attains about 40 cm SL. **Distribution:** known from Indochina including Malay Peninsula and insular southeast Asia (Sumatra, Borneo and Java). **Remarks:** usually found in freshwater habitats but occasionally caught in tidal river reaches in the flooded (rainy) season. Marketed fresh and dried. (P. Musikasinthorn)



Channa lucius, KAUM-I. 23370, 5.7 cm SL
Bang Pakong, 22 Sept. 2009



Channa striata, KAUM-I. 23941, 4.2 cm SL
Bang Pakong, 30 Sept. 2009

Body depth and width greatest at insertion of anal fin and pectoral fin, respectively. Head depressed and moderately wide. Snout rounded in dorsal view. Gular scales absent at chin region. Dorsal and anal-fin bases long. Pelvic fin length more than 50% of pectoral fin length. No large canine-like teeth on vomer and palatine. **Color:** body dark brown above, extending into irregular dark bands below. Pectoral fins without spots or bands. Juveniles have black markings (sometimes forming ocelli) at posterior end of dor-

sal fin. **Size:** attains about 60 cm SL. **Distribution:** known from Pakistan through Southeast Asia east to Yunnan, southern China. Introduced and established in subtropical and tropical islands including Taiwan, New Guinea, the Philippines and Sulawesi, Indonesia. **Remarks:** one of the most important and popular freshwater food fishes in southeast Asia. Usually found in freshwater habitats but occasionally caught in tidal river reaches in the flooded (rainy) season. Marketed fresh and dried. (P. Musikasinthorn)

Channa striata (Bloch, 1793)

Striped Snakehead

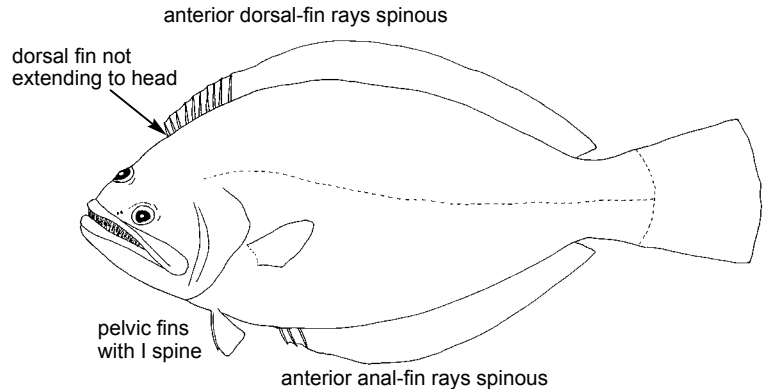
D 38–47; A 23–29; P₁ 15–19; LL 50–61. Body elongate and cylindrical.

PSETTODIDAE

Spiny Turbots

Marine flatfishes in middle size, maximum size ca. 80 cm. Body oval, caudal peduncle deeper than its length. Eyes on right or left side of head. Mouth large, extending well beyond posterior margin of lower eye. Teeth on jaws large canines, many with barbed tips; vomer and palatine with teeth. Margin of preopercle distinct, not covered with skin. Dorsal fin origin well posterior to upper eye. Anterior rays of dorsal and anal fins spinous. Pelvic fin with 1 spine and 5 soft rays, nearly symmetrically placed on each sides of midventral line. Caudal fin with 15 branched rays, separated from dorsal and anal fins. Lateral line on both sides of body, only slightly curved above pectoral fin. Weak ctenoid scales covering both sides of body. Vertebrae usually 10 + 14=24. **Color:** ocular side brownish, blind side pale brown.

Remarks: single genus, *Psettodes*, with one species (*P. erumei*) from Indo-West Pacific and two (*P.*



belcheri Bennett, 1831 and *P. bennettii* Steindachner, 1870) from western Africa. Occurring in coastal waters. Food fish.

Similar family occurring in the area: Psettodidae differs from all other flatfish families in having dorsal fin origin well posterior to upper eye, and anterior rays of dorsal and anal fin spinous. Citharidae – lateral line highly arched above pectoral fin. Paralichthyidae – pelvic fin with-

out spine; lateral line highly arched above pectoral fin. Bothidae – pelvic fin without spine; origin of pelvic fin on eyed side anterior to that on blind side; lateral line highly arched above pectoral fin. Samaridae – pelvic fin on blind side absent. Soleidae – pelvic fin without spine; origin of pelvic fin on eyed side anterior to that on blind side. Cynoglossidae – caudal fin continuous with dorsal and anal fins. (H. Imamura)

Psettodes erumei

(Bloch & Schneider, 1801)

Indian Halibut

D IX–XI, 38–45; A I, 33–43; P₁ 14–16; P₂ I, 5; LL 61–77. Body oval, strongly compressed. Eyes on right or left side of head. Mouth large, extending well beyond posterior margin of lower eye. Teeth on jaws large canines; vomer and palatine with small conical teeth. Anterior rays of dorsal and anal fin spinous. Caudal fin separated from dorsal and anal fins. Lateral line on both sides of body, only slightly curved above pectoral fin. Scales on small, weakly ctenoid on both sides of body. **Color:** eyed side generally brownish or grayish, sometimes with 4 or 5 broad dark cross bands; dorsal, anal, posterior portion of caudal in darker; blind side pale brown. **Size:** maximum total length about 60 cm,



Psettodes erumei, KAUM–I. 32876, 13.8 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

most commonly 20–40 cm. **Distribution:** Indo-West Pacific, from South Africa and Red Sea to northern Australia, north to Taiwan. **Remarks:** found on sandy and muddy bottoms. Marketed fresh. (H. Imamura)

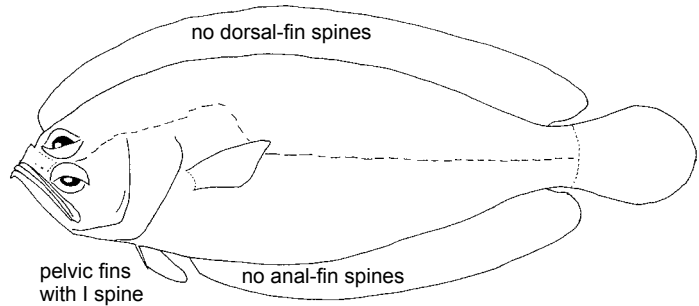


Psettodes erumei
KAUM–I. 33172, 12.8 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

CITHARIDAE

Largescale Flounders

Marine flatfishes in small size, maximum size less than 40 cm. Body elliptical strongly compressed. Eyes on left side of head in some species, on right side in others. Mouth moderate or somewhat large. Small and slender teeth on jaws. Margin of preopercle distinct, not covered with skin. Dorsal fin origin anterior to eyes. Anterior rays of dorsal and anal fins not spinous. Pelvic fin with 1 spine and 5 soft rays, fin bases on both sides short. Caudal fin with 13–15 branched rays, separated from dorsal and anal fins. Lateral line usually present on both sides of body, with high arch above pectoral fin. Body scales large; ctenoid scales on eyed side, weakly ctenoid or cycloid scales on blind side. **Color:** eyed side with some spots on body and fins; blind side whitish.



Remarks: five genera, *Brachypleura*, *Citharoides*, *Citharus*, *Lepidoblepharon* and *Paracitharus*, are known from Indo-West Pacific. Usually found on sandy or muddy-sandy bottoms. Food fish.

Similar family occurring in the area: Psettodidae – dorsal fin origin well posterior to upper eye; anterior rays of dorsal and anal fin spinous;

lateral line slightly curved above pectoral fin. Paralichthyidae – pelvic fin without spine. Bothidae – pelvic fin without spine; origin of pelvic fin on eyed side anterior to that on blind side. Samaridae – pelvic fin on blind side absent. Soleidae – pelvic fin without spine. Cynoglossidae – caudal fin continuous with dorsal and anal fins. (H. Imamura)

Brachypleura novaezeelandiae (Günther, 1862)

Widemouth Largescale Flatfish

D 65–77; A 41–50; P₁ 11–13 (eyed side), 10–13 (blind side); P₂ I, 5; LL 28–33; GR 5–6 + 7–10. Body elliptical, strongly compressed. Both eyes on right side of body. Head 2.2–2.7 in SL. Mouth large, arched, reaching to or beyond center of lower eye, but not reaching to posterior margin of lower eye. Some anterior rays of dorsal fin elongate in males, not in females. Caudal fin rounded posteriorly. Lateral line usually present on both sides of body, with high arch above pectoral fin. Body scales large; ctenoid scales on eyed side, weakly ctenoid or cycloid scales on blind side. **Color:** eyed side of body yellowish or yellowish brown; dorsal, anal and caudal fins



Brachypleura novaezeelandiae, KAUM-I. 23819, 9.2 cm SL
Gulf of Thailand (SS), 25 Sept. 2009

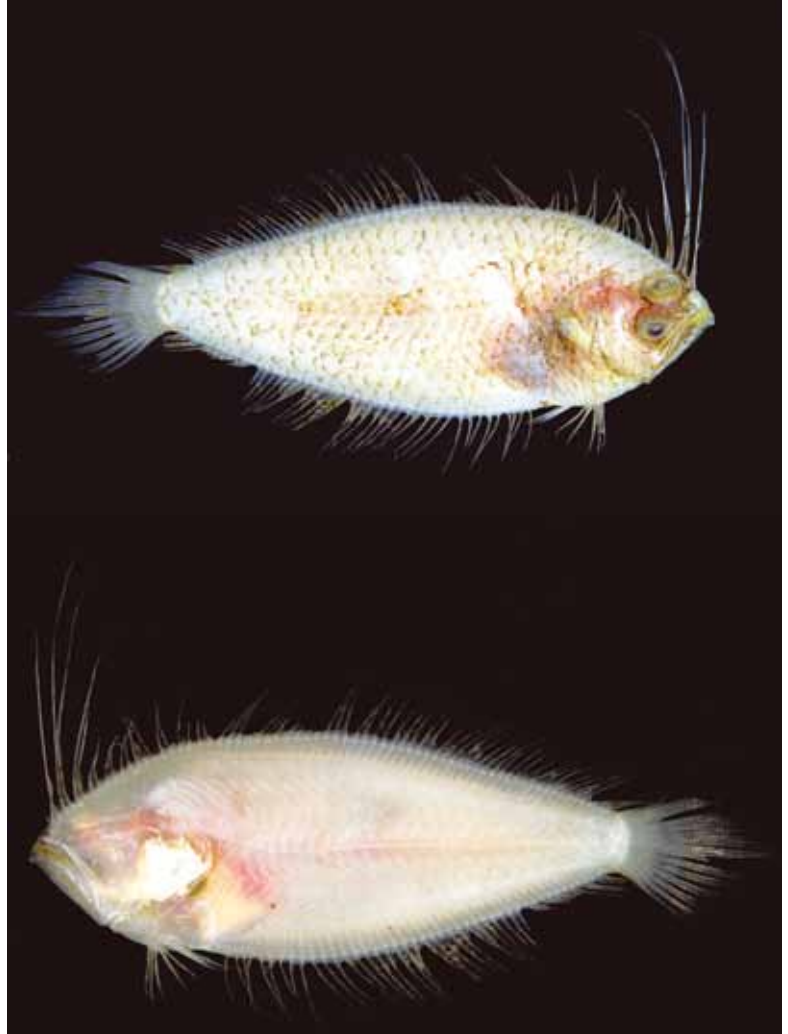
paler than body, with dark spots; blind side of body whitish. **Size:** maximum total length 14 cm. **Distribution:** Indo-West Pacific, including Maldiv Islands, Andaman Sea, and northern

area of South China Sea. **Remarks:** found on sandy and muddy bottoms, at depths of 18 to 73 m. Marketed fresh. (H. Imamura)

Lepidoblepharon ophthalmolepis
Weber, 1913

Scale-eyed Flounder

D 65–70; A 45–48; P₁ 11–12 (eyed side), 11 (blind side); P₂ I, 5; LL 28–33; GR 4–7 + 10–11. Body elliptical, strongly compressed. Both eyes on right side of body. Head 3.0–3.3 in SL. Mouth large, arched, extending below middle of lower eye. Dorsal surface of eye with scales. Anterior rays of dorsal fin not elongate in both males and females. Caudal fin rounded posteriorly. Lateral line present on both sides of body, with high arch above pectoral fin. Body scales large; ctenoid scales on eyed side, cycloid scales on blind side. **Color:** eyed side of body brownish; blind side of body whitish; no distinct dark spot near bases of last dorsal and anal fin rays. **Size:** maximum total length 29 cm. **Distribution:** West Pacific, including southern Japan, Korean Peninsula, Philippines and Gulf of Thailand. **Remarks:** known from depths of 121 to 240 m. Apparently not marketed. (H. Imamura)



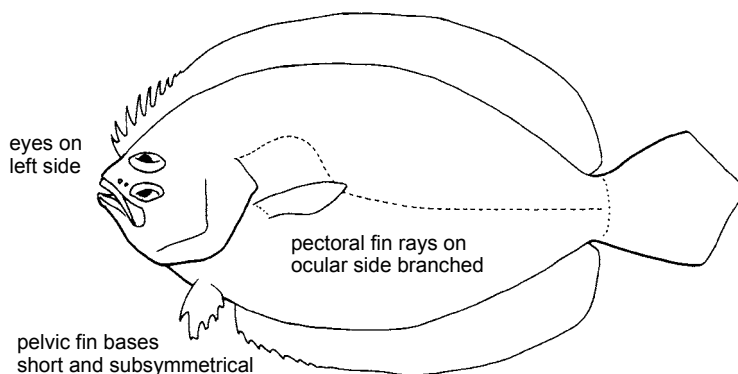
Lepidoblepharon ophthalmolepis, KAUM-I. 33226, 8.9 cm SL
off Chantha Buri (SP), 30 Nov. 2010

PARALICHTHYIDAE

Sand Flounders

Body elliptical to oval, strongly compressed, reaching to 40 cm. Head large, 3.0–4.4 in SL. Mouth rather large. Teeth uniserial on both jaws. Eyes on left side of head, separated by a bony ridge. Margin of preopercle distinct, not covered with skin. Dorsal fin origin anterior to eyes. Anterior rays of dorsal and anal fins not spinous. Pelvic fin without spines; pelvic fin bases on both sides short, subequal and subsymmetrical in position. Caudal fin separated from dorsal and anal fins. Lateral line equally developed on both sides of body, with high arch above pectoral fin and supratemporal branch, running upward to anterior part of dorsal fin. Body scales large; ctenoid scales on eyed side, weakly ctenoid or cycloid scales on blind side. **Color:** body brownish or light greenish with dark spots or rings.

Remarks: most species known



from shallow sandy and muddy bottoms of continental shelf; some species from brackish waters near river mouths.

Similar family occurring in the area: Psettodidae – dorsal fin origin well posterior to upper eye; anterior rays of dorsal and anal fin spinous; pelvic fin with one spine; lateral line

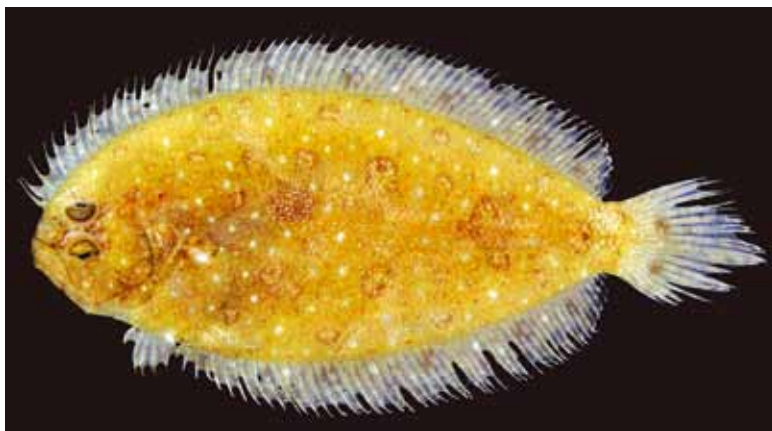
slightly curved above pectoral fin. Citharidae – pelvic fin with one spine. Bothidae – origin of pelvic fin on eyed side anterior to that on blind side. Samaridae – pelvic fin on blind side absent. Soleidae – eyes on left side of head. Cynoglossidae – caudal fin continuous with dorsal and anal fins. (H. Imamura)

Pseudorhombus arsius (Hamilton, 1822)

Large-tooth Flounder

D 71–84; A 53–62; P₁ 12–13 (eyed side); LL 69–81. Body oval. Head 3.3–3.6 in SL; upper profile of head with a slight notch anterior to upper eye. Upper jaw extending to below posterior margin of lower eye. Several pairs of moderately large canine teeth in anterior part of both jaws. Scales ctenoid on eyed side, cycloid on blind side. **Color:** body greenish or light brown; a dark blotch at junction of straight and curved parts of lateral line; a smaller blotch halfway to caudal fin base. **Size:** maximum standard length 45 cm, commonly to 30 cm. **Distribution:** widespread in Indo-West Pacific, from eastern coast of Africa eastward to Australia and Fiji. **Remarks:** found from shallow muddy-sandy or muddy bottoms from coastal areas to river mouths.

(H. Imamura)



Pseudorhombus arsius, KAUM-I. 23188, 12.3 cm SL
Gulf of Thailand (SS), 8 Sept. 2009

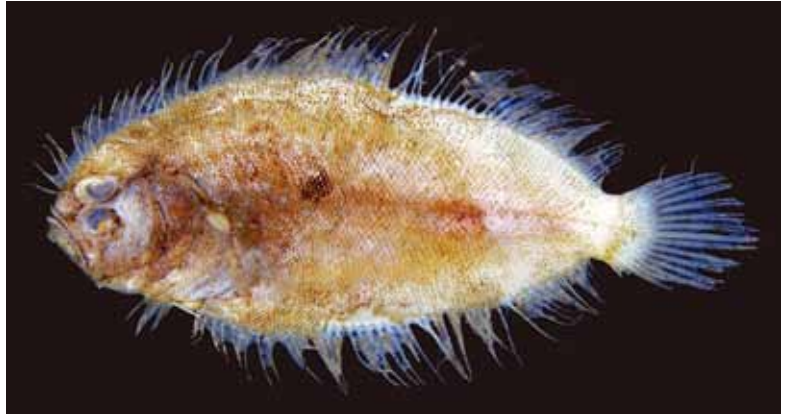
Pseudorhombus javanicus
(Bleeker, 1853)

Javan Flounder

D 67–76; A 51–56; P₁ 11–12 (eyed side); LL 66–74. Body oval. Head 3.2–3.6 in SL; upper profile of head without notch anterior to upper eye. Upper jaw extending to below middle of lower eye. Teeth on both jaws small, with slightly enlarged teeth anteriorly. Scales ctenoid on anterior part, and dorsal and ventral margins of body of eyed side; those on other areas of eyed side and blind side cycloid.

Color: body brownish, with a distinct, large dark blotch at junction of straight and curved parts of lateral line, and a smaller blotch on middle of straight section of lateral line. **Size:** maximum standard length 35 cm, commonly to 20 cm. **Distribution:** Indo-West Pacific, from eastern coast of India eastward to western New Guinea and to southern China. **Remarks:** found from shallow waters on mud and sand bottoms of continental shelf.

(H. Imamura)



Pseudorhombus javanicus, KAUM-I. 22895, 10.1 cm SL
Ang Sila, 31 Aug. 2009

Pseudorhombus oligodon
(Bleeker, 1854)

Roughscale Flounder

D 78–82; A 61–64; P₁ 12–13 (eyed side), 11–12 (blind side); LL 80–90. Body oval. Head 3.5–3.8 in SL; upper profile of head with a shallow notch anterior to upper eye. Upper jaw extending to below middle or posterior part of lower eye. Scales small, ctenoid on both sides of body. Lateral line well developed on both sides of body. **Color:** eye side of body greenish brown, with a dark blotch at junction between straight and curved portions of lateral line; 2 dark spots below base of pectoral fin; blind side of body yellowish white. **Size:** maximum SL 30 cm, commonly 10–20 cm. **Distribution:** West Pacific, from Japan to South China Sea. **Remarks:** found from mud and sand bottoms of continental shelf in 30–40 m depth.

(H. Imamura)



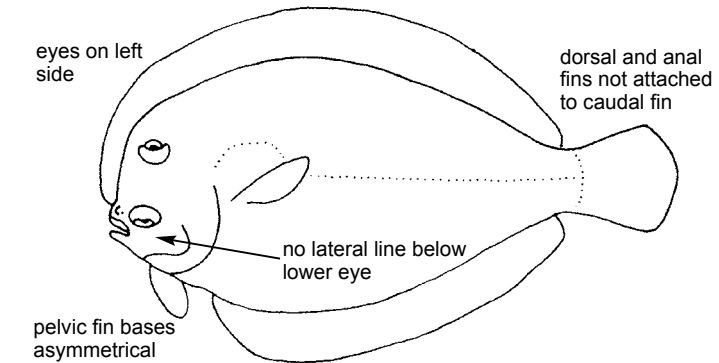
Pseudorhombus oligodon, KAUM-I. 47766, 11.2 cm SL
Prachuap Khiri Khan, 21 July 2012

BOTHIDAE

Lefteye Flounders

Marine flatfishes. Body elliptical to oval, strongly compressed, reaching to 88 cm. Mouth small to large. Eyes on left side of head. Interorbital width variable; males of some species with wider interorbit than female. Margin of preopercle distinct, not covered with skin. Dorsal fin origin above or ahead of anterior margin of upper eye. Anterior rays of dorsal and anal fins not spinous. Pelvic fin without spines; pelvic fin of eyed side on midventral line with origin anterior to origin of pelvic fin of blind side; pelvic fin of blind side above midventral line. Caudal fin separated from dorsal and anal fins. Lateral line on eyed side highly arched above pectoral fin; lateral line absent below lower eye. **Color:** eyed side of body brownish, usually with spots, blotches, or rings; blind side of body whitish, but dark colored in some species.

Remarks: usually found on san-



dy and muddy bottoms, but some species on rocky or coral reefs. Feeds on small fishes, crustaceans, gastropods and other benthic animals. Twenty genera. Food fish.

Similar family occurring in the area: Psettodidae – dorsal fin origin well posterior to upper eye; anterior rays of dorsal and anal fin spinous; pelvic fin with one spine; lateral line

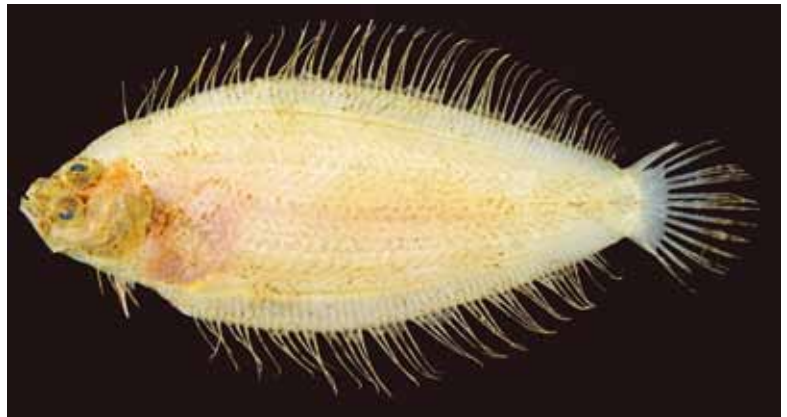
slightly curved above pectoral fin. Citharidae – pelvic fin with one spine. Paralichthyidae – pelvic fin bases on both sides short, subequal and subsymmetrical in position. Samaridae – pelvic fin on blind side absent. Soleidae – eyes on left side of head. Cynoglossidae – caudal fin continuous with dorsal and anal fins.

(H. Imamura)

Arnoglossus aspilos (Bleeker, 1851)

Spotless Lefteye Flounder

D 80–84; A 59–64; P₁ 11–12 (eyed side); LL 46–48. Body rather deep. Head 3.7–4.1 in SL; upper profile of head with a notch anterior to eyes. Eyes separated by a space less than half eye diameter. Upper jaw extending slightly beyond anterior margin of lower eye. Teeth on jaws small and uniserial. Body scales ctenoid on eyed side, cycloid on blind side. **Color:** body finely mottled brown with small blackish spots on rays of median fins; the largest spot on each outer branched rays of caudal fin. **Size:** attains 8.5 cm. **Distribution:** Indo-West Pacific, including Oman, Arabian Gulf, Indonesia, Singapore and Gulf of Thailand. (H. Imamura)

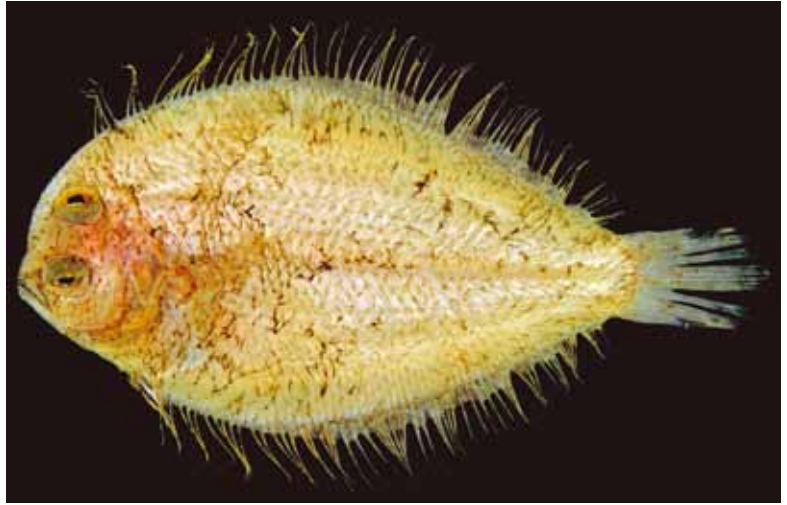


Arnoglossus aspilos, KAUM-I. 32787, 6.4 cm SL
Ang Sila, 23 Oct. 2010

Engyprosopon grandisquama
(Temminck & Schlegel, 1846)

Largescale Flounder

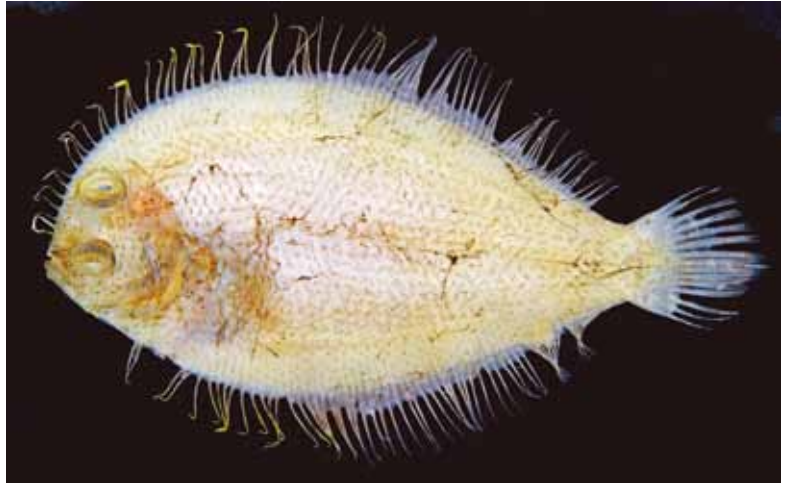
D 80–91; A 57–69; P₁ 10–13 (eyed side); LL 41–48. Body oval. Head 3.5–4.2 in SL; upper profile of head with a slight concavity anterior to upper margin of lower eye. Single strong rostral spine near snout in males, absent or feeble in females. Upper jaw extending to below anterior portion of lower eye. Teeth on upper jaw biserial, those on lower jaw uniserial. Scales large, with short ctenii on eyed side, cycloid on blind side. **Color:** eyed side light brown, many dark spots and rings irregularly scattered on it; caudal fin with a pair of large prominent jet-black blotches. **Size:** maximum standard length about 11 cm, commonly to 8 cm. **Distribution:** Indo-West Pacific, including East Africa, southern Japan and northern Australia. **Remarks:** found from mud and sand bottoms of continental shelf, at depths of 10–100 m. (H. Imamura)



Engyprosopon grandisquama, KAUM-I. 33173, 6.8 cm SL
Gulf of Thailand (SS), 25 Nov. 2010

Engyprosopon longipelvis
Amaoka, 1969

D 79–83; A 60–64; P₁ 11–12 (eyed side), 8–10 (blind side); LL 37–42; GR 0 + 6–7. Body elliptical. Head 3.5–3.9 in SL. Snout obtuse, strongly protruding. Single strong rostral spine on snout in males, absent or feeble in females. Interorbit shallowly concave, wider in males than in females. Upper jaw extending to below anterior 1/3 or middle of lower eye. Teeth on upper jaw biserial, those on lower jaw uniserial. Scales rather large, with feeble ctenii on eyed side, cycloid on blind side. **Color:** eyed side of body light brown; all fins irregularly scattered blackish spots; blind side of body milky white. **Size:** maximum SL about 7 cm. **Distribution:** only from southern Japan, West Pacific. **Remarks:** found from sandy-muddy bottoms shallower than 30 m. (H. Imamura)

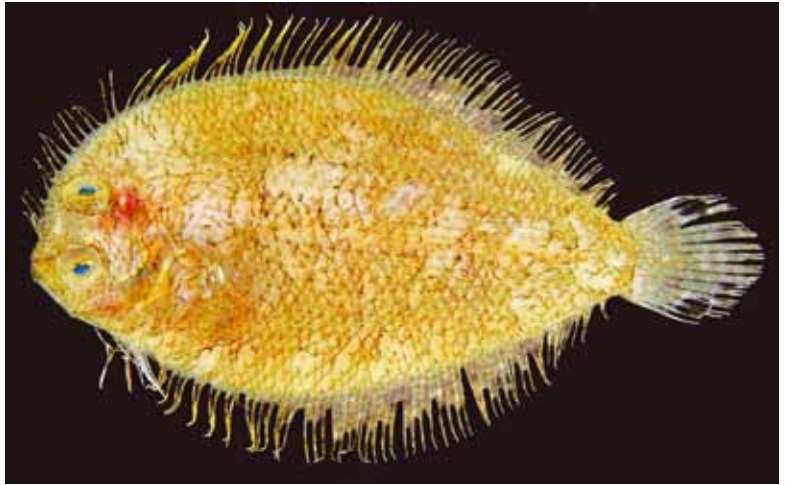


Engyprosopon longipelvis, KAUM-I. 22898, 6.4 cm SL
Ang Sila, 31 Aug. 2009

Engyprosopon multisquama
Amaoka, 1963

D 83–96; A 62–73; P₁ 9–11 (eyed side), 9–10 (blind side); LL 45–50; GR 0 + 5–8. Body rather deep. Head 4.0–4.8 in SL. Snout short. Single strong rostral spines on snout in males, absent or feeble in females. Interorbit wider in males than in females. Upper jaw extending to slightly beyond anterior margin of pupil of lower eye. Teeth on upper jaw biserial, those on lower jaw uniserial. Scales large, slightly ctenoid on eyed side, cycloid on blind side. **Color:** eyed side of body pale grayish green; all fins irregularly scattered blackish spots; blind side of body light gray in males, milky white in females; caudal fin with a pair of large prominent jet-black blotches. **Size:** maximum SL about 14 cm. **Distribution:** only from southern Japan, West Pacific. **Remarks:** found from sandy-muddy bottoms from 20 to 40 m.

(H. Imamura)



Engyprosopon multisquama, KAUM-I. 23826, 6.5 cm SL
 Gulf of Thailand (SS), 25 Sept. 2009

Grammatobothus polyophthalmus
(Bleeker, 1865)

Manye-eyed Flounder

D 77–86; A 61–71; P₁ 14–17 (eyed side); LL 75–77. Body oval. Head 3.5–4.0 in SL; upper profile of head with a deep notch anterior to interorbital region. Upper jaw reaching to or slightly beyond below anterior portion of lower eye. Teeth on both jaws uniserial. 2nd to 10th dorsal fin rays elongate in both sexes, longer in males than females. Pectoral fin elongate in males. Lateral line on both sides of body. Scales on eyed side ctenoid, those on blind side cycloid. **Color:** eyed side pale brownish, with 3 large and prominent dark ocelli, 1 each above and below pectoral fin, 1 on middle of strait section of lateral line. **Size:** maximum total length about 21 cm, most specimens about 17 cm. **Distribution:** Indo-West Pacific, including India, Ryukyu Islands, Philippines and northwestern Australia. **Remarks:** inhabits on mud, sand and rubble bottoms at depths of 0–90 m.

(H. Imamura)



Grammatobothus polyophthalmus, KAUM-I. 32823, 12.3 cm SL
 Gulf of Thailand (SP), 25 Oct. 2010

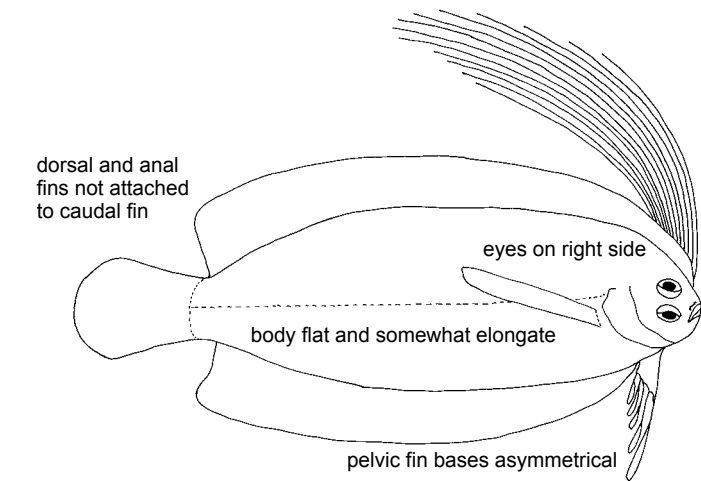
SAMARIDAE

Crested Flounders

Marine flatfishes, maximum size smaller than 22 cm. Body elliptical to somewhat oval, strongly compressed. Mouth small, reaching to almost anterior margin of upper eye. Eyes on right side of head. Margin of preopercle distinct, not covered with skin. Dorsal fin origin anterior to anterior margin of upper eye. Anterior rays of dorsal and anal fins not spinous. Pectoral fin present on eyed side but absent on blind side. Pelvic fins symmetrical, without spines. Caudal fin separated from dorsal and anal fins. Lateral line well developed or rudimental. **Color:** eyed side of body brownish, usually with spots, blotches, or rings; blind side of body whitish.

Remarks: known from tropical and subtropical regions in Indo-Pacific, primarily deeper waters. Three genera, *Plagiopsetta*, *Samaris* and *Samariscus*, with about 20 species.

Similar family occurring in the area: Psettodidae – dorsal fin origin



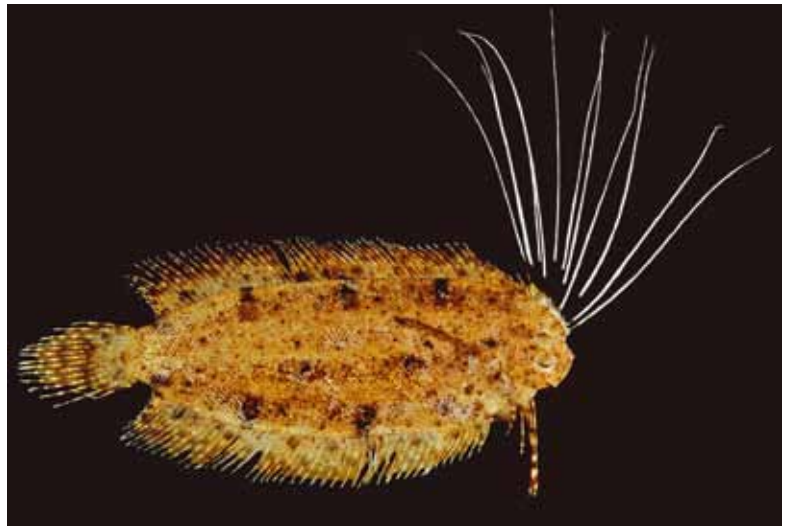
well posterior to upper eye; anterior rays of dorsal and anal fin spinous; pelvic fin with one spine; lateral line slightly curved above pectoral fin. Citharidae – pelvic fin with one spine. Paralichthyidae – eyes on left side of head, pelvic fin bases on both sides

short, subequal and subsymmetrical in position. Bothidae – eyes on left side of head. Soleidae – preopercle without free margin. Cynoglossidae – eyes on left side of head; preopercle without free margin; pectoral fins absent. (H. Imamura)

Samaris cristatus Gray, 1831

Cockatoo Righteye Founder

D 71–85; A 49–60; P₁ 4 (eyed side); LL 60–80. Body elliptical. Head 3.8–5.3 in SL; upper profile of head with a slight notch anterior to upper eye. Mouth small; upper jaw extending to below anterior portion of lower eye. Both jaws with small villiform teeth in band. Anterior 12 or 13 rays greatly elongate and filamentous. Pectoral fin on eyed side somewhat elongate. Pelvic fin on eyed side continuous with anal fin by membrane. Lateral line present only on eyed side. Scales on eyed side ctenoid, those on blind side feebly ctenoid or cycloid. **Color:** eyed side pale brownish, with a series of obscure dark blotches along dorsal and ventral margins of body; blind side whitish. **Size:** maximum length 22 cm. **Distribution:** Indo-West Pacific, from southeastern Africa to New



Samaris cristatus, KAUM-I. 33219, 13.2 cm SL off Chantha Buri (SP), 30 Nov. 2010

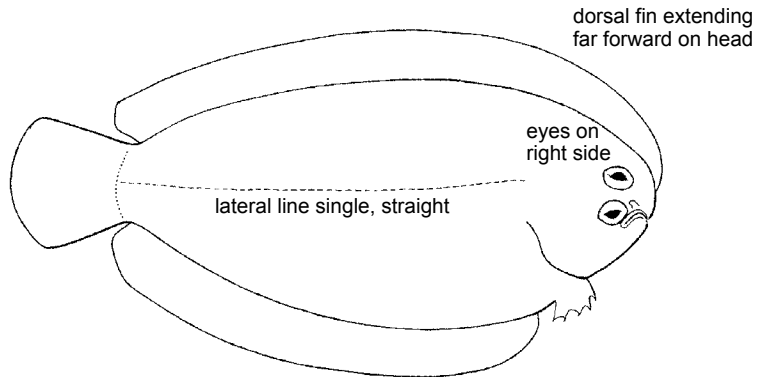
Caledonia, north to Japan and south to northern Australia. **Remarks:** found from mud and sand bottoms.

(H. Imamura)

SOLEIDAE

Soles

Marine flatfishes (excepting one species entering rivers in Africa), reaching to 32 cm. Body somewhat elongate to oval, strongly compressed. Mouth small and asymmetrical, terminal or slightly inferior. Eyes on right side of head. Preopercle without free margin, embedded in skin. Dorsal fin origin anterior to upper eye. Anterior rays of dorsal and anal fins not spinous. Pectoral fins sometimes absent; when present, eyed side pectoral fin usually longer than blind side pectoral fin. Pelvic fins without spines, sometimes asymmetrical, either free or fused with anal fin. Caudal fin separated from or fused with dorsal and anal fins. Lateral line single, running straight on body, sometimes branched on head. **Color:** highly variable according to substratum, uniformly dull brown to strikingly colored with scattered black spots or blotches or dark cross bands on eyed side of body; usually



uniformly yellowish or white on blind side of body.

Similar family occurring in the area: Soleidae differs from all other flatfish families, except for Cynoglossidae, in lacking free preopercular margin. Psettodidae – dorsal fin origin well posterior to upper eye; anterior rays of dorsal and anal fin spinous; pelvic fin with one spine; lateral line

slightly curved above pectoral fin. Citharidae – pelvic fin with one spine. Paralichthyidae, Bothidae and Cynoglossidae – eyes on left side of head.

Remarks: inhabits muddy and sandy bottom in coastal areas. About 35 genera with about 130 species.

(H. Imamura)

Aseraggodes filiger Weber, 1913

D 73; A 50; P₂ 4 (eyed side); LL ca. 76. Body elliptical. Head 4.3 in SL. Mouth small, curved. Snout blunt. Eyes attached with each other. First dorsal fin ray somewhat elongate. Pectoral fins absent. Pelvic fin separated from anal fin. Caudal fin separated from dorsal and anal fins. **Color:** eyed side pale brown, with several dark blotches including many paler small spots; blind side uniformly white, without blotches or spots. **Size:** attains 11 cm. **Distribution:** known only from Gulf of Thailand, Indonesia and Philippines, West Pacific.

(H. Imamura)



Aseraggodes filiger, KAUM-I. 32788, 7.6 cm SL
Ang Sila, 23 Oct. 2010

Aseraggodes kobensis
(Steindachner, 1896)

D 64–74; A 45–55; C 17–19; LL 53–71. Body elliptical. Eyes small, close together. Anterior nasal tube short, not reaching anterior rim of lower eye, when tube depressed posteriorly. Mouth small, slightly curved. Pectoral fins absent on both sides. Pelvic fin separated from anal fin. Caudal fin separated from dorsal and anal fins. **Color:** eyed side uniformly pale brown; blind side uniformly paler, somewhat dusky. **Size:** attains 10 cm SL. **Distribution:** West Pacific, from southern Japan to South China Sea.
(H. Imamura)



Aseraggodes kobensis, KAUM-I. 33227, 7.3 cm SL
off Chantha Buri (SP), 30 Nov. 2010

Brachirus panoides
(Bleeker, 1851)

D 82; A 63; LL 90–100. Body rather deep. Mouth small, slightly curved. Eyes narrowly separated. Pectoral fins rudimentary. Pelvic fin separated from anal fin. Caudal fin continuous with dorsal and anal fins. Scales ctenoid on eyed side. **Color:** body of eyed side brown, with several vertical lines formed by small blackish dots; dorsal and ventral margins of body, and dorsal and anal fins on eyed side with numerous small dark spots; body of blind side white. **Size:** attains 20 cm. **Distribution:** known only from Thailand and Indonesia, West Pacific. **Remarks:** found along bottom in estuaries and in lower courses of rivers.
(H. Imamura)



Brachirus panoides, KAUM-I. 33187, 13.9 cm SL
Bang Pakong, 26 Nov. 2010

Liachirus melanospilos

(Bleeker, 1854)

Darkspotted Sole

D 59–62; A 42–47; LL 57–65. Body oval, 2.1–2.4 in SL. Head 3.9–4.2 in SL. Mouth small, slightly curved. Eyes separated by a scaly interorbital space. Pectoral fins absent. Pelvic fin separated from anal fin. Caudal fin separated from dorsal and anal fins. Scales on both sides small cycloid. **Color:** eyed side light to dark brown with scattered darker dots and blotches; blind side pale. **Size:** attaining to 7.5 cm SL. **Distribution:** Indo-West Pacific, including South China Sea, southern Japan and Australia. **Remarks:** inhabits on mud and sand bottoms around 100 m depth.

(H. Imamura)

Pardachirus pavoninus

(Lacepède, 1802)

Peacock Sole

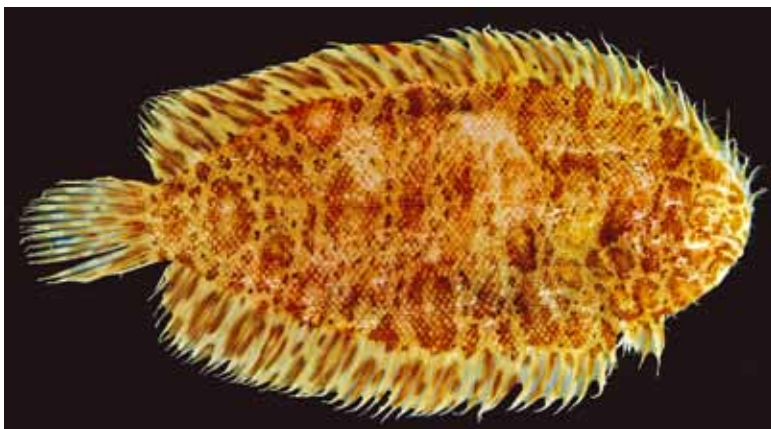
D 66–70; A 50–53; LL 75–82. Body oval. Mouth strongly curved, cleft reaching to anterior margin of lower eye. Eyes separated by a scaly interorbital space. Pectoral fins absent. Pelvic fin separated from anal fin. Caudal fin separated from dorsal and anal fins. Lateral line distinct, straight, single. Series of toxin glands with pores along bases of dorsal and anal fin rays. **Color:** eyed side reddish brown, densely spotted on head, body and fins; spots in various sizes and shapes, bordered by a dark rim and some with a blackish spot in center. **Size:** maximum total length about 22 cm, commonly 10–15 cm. **Distribution:** widespread tropical Indo-West Pacific, including southern Japan, Philippines and Australia. **Remarks:** inhabits on sandy bottoms of coral reef areas, at depths of about 40 m. (H. Imamura)

Solea ovata

Richardson, 1846

Ovate Sole

D 65; A 47. Body ovate. Mouth small, curved. Eyes separated by a small concave interorbital space. Pectoral fin on eyed side about twice as long as that on blind side. Pelvic fins present on both sides. Caudal fin separated from dorsal and anal fins. Scales ctenoid on both sides. **Color:** body and fins on eyed side olive or brown



Liachirus melanospilos, KAUM-I. 47702, 9.0 cm SL
Rayong, 11 July 2012



Pardachirus pavoninus, KAUM-I. 32877, 19.6 cm SL
Gulf of Thailand (SS), 27 Oct. 2010



Solea ovata, KAUM-I. 23207, 7.3 cm SL
Gulf of Thailand (SS), 8 Sept. 2009

with spots and black blotches; deep black blotches on outer two-thirds of pectoral fins. **Size:** maximum total length about 10 cm, commonly 8–9 cm. **Distribution:** Indo-West Pacific,

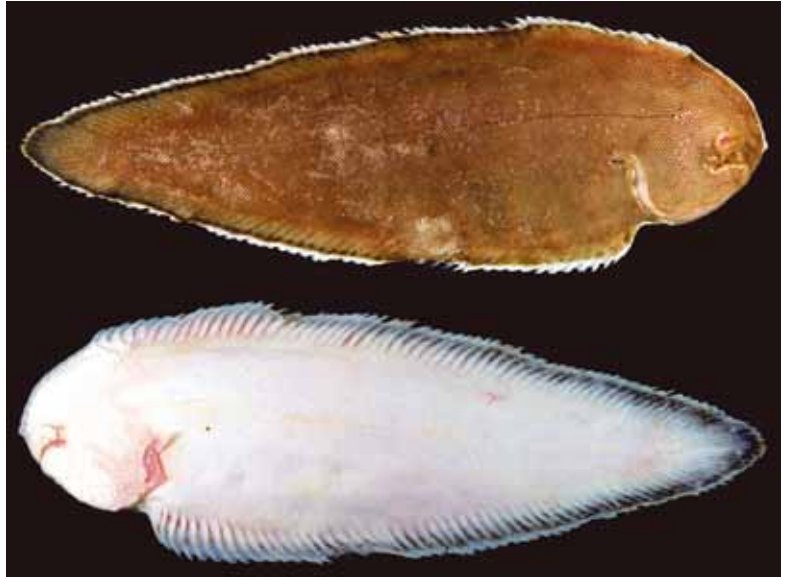
including Pakistan, New Guinea, Gulf of Thailand, Indonesia, Philippines and China. **Remarks:** found from shallow sand or mud bottoms in coastal waters. (H. Imamura)

Synaptura commersonii
(Lacepède, 1802)

Commerson's Sole

D 70–83; A 59–65; C 12; LL 124–172. Body elongate, tapering posteriorly. Mouth curved. Eyes separated by a small concave interorbital space. Pectoral fins symmetrical in size. Pelvic fins short and bases asymmetrical in position. Caudal fin continuous with dorsal and anal fins. Scales ctenoid on eyed side, cycloid on blind side. **Color:** body on eyed side gray or brown; dorsal, anal and caudal fins dusky towards edges of both sides and with a conspicuous white margin; right pectoral fin dusky. **Size:** maximum total length about 32 cm, commonly 20–30 cm. **Distribution:** Indo-West Pacific, including Pakistan, Gulf of Thailand, Borneo and Indonesia. **Remarks:** inhabits mainly sand or mud bottoms in coastal waters.

(H. Imamura)



Synaptura commersonii, KAUM-I. 33012, 22.0 cm SL
Gulf of Thailand (SS), 3 Nov. 2010

Zebrias quagga
(Kaup, 1858)

Zebra Sole

D 60–75; A 50–62. Body elliptical. Mouth small, terminal, slightly curved. Eyes contiguous, each with a short tentacle. Pectoral fins well developed. Pelvic fin separated from anal fin. Caudal fin continuous with dorsal and anal fins. Scales ctenoid. **Color:** eyed side cream or beige with 11–12 brown single or double crossbands, slightly wider than interspaces; body pattern continued onto dorsal and anal fins; caudal fin cream with elongate black blotches. **Size:** maximum length 15 cm. **Distribution:** Indo-West Pacific, including Red Sea, Persian Gulf, Malaysia, Thailand, China and Australia. **Remarks:** found from mud and sand bottoms in shallow coastal waters.

(H. Imamura)



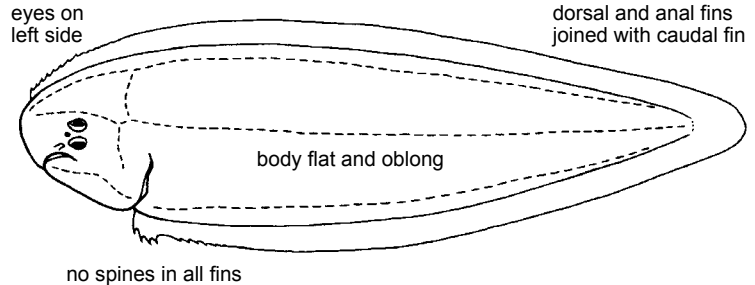
Zebrias quagga, KAUM-I. 47762, 10.2 cm SL
Prachuap Khiri Khan, 21 July 2012

CYNOGLOSSIDAE

Tonguesoles

Marine flatfishes (some species entering freshwater), reaching to 40 cm. Body tongue shaped, strongly compressed. Mouth small, subterminal and asymmetrical, reaching posteriorly below lower eye. Eyes on left side of head. Posterior margin of preopercle strongly attached to opercle, without free margin and embedded in skin. Dorsal fin reaching far forward on head. Anterior rays of dorsal and anal fins not spinous. Pectoral fins absent. Usually only pelvic fin on blind side present. Caudal fin separated fused with dorsal and anal fins. Scales small, ctenoid or cycloid. **Color:** variable even in a species, usually brownish or grayish, often variably marked with spots, blotches or cross bands on eyed side of body; usually uniformly yellowish or whitish on blind side of body.

Remarks: commonly found on muddy bottoms and other substrates, from tide pools to deep waters on



continental shelves and slopes. Marketed fish. Includes 3 genera and about 130 species.

Similar family occurring in the area: Cynoglossidae differs from all other flatfish families in this area, except for Soleidae, in having caudal fin fused with dorsal and anal fins, and lacking free preopercular margin. It is also separable from most flatfishes

in lacking pectoral fins. Psettodidae – dorsal fin origin well posterior to upper eye; anterior rays of dorsal and anal fin spinous; pelvic fin with one spine; lateral line slightly curved above pectoral fin. Citharidae – pelvic fin with one spine. Samaridae and Soleidae – eyes on right side of head.

(K. Matsuura)

Cynoglossus arel (Bloch & Schneider, 1801)

Largescale Tonguesole

D 116–130; A 85–98; P₂ 4; LL 56–70 (midlateral line); V 50–57. Body elongate, strongly compressed. Snout long, obtusely pointed. Mouth small, reaching to or beyond posterior margin of lower eye. Both eyes on left side of head; interorbital space narrow with scales. Caudal fin usually with 10 rays. Scales large, ctenoid on eyed side, cycloid on eyeless side. Two lateral lines on eyed side of body; upper one along dorsal-fin base, lower one midlaterally on body; none on eyeless side. **Color:** eyed side of body almost uniformly brownish; eyeless side of body whitish. **Size:** maximum length 40 cm. **Distribution:** Indo-West Pacific, from Red Sea to Indonesia excluding New Guinea, north to southern Japan. **Remarks:** inhabits sandy and muddy bottoms. Marketed fresh or dried. (S. Kimura)



Cynoglossus arel, KAUM-I. 23049, 15.2 cm SL
Gulf of Thailand (SS), 3 Sept. 2009

Cynoglossus bilineatus
(Lacepède, 1802)

Fourlined Tonguesole

D 107–113; A 80–88; C usually 12; LL 88–96 (midlateral line). Body elongate, 3.5–4.5 in SL. Mouth moderate, extending beyond lower eye. Eyes small, slightly larger than interorbital space. Two lateral lines on each side of body; upper one along dorsal fin base, lower one midlaterally on body. Scales ctenoid on eyed side and cycloid on blind side. **Color:** eyed side of body pale brown; blind side of body whitish. **Size:** maximum length 40 cm. **Distribution:** Indo-West Pacific, from Persian Gulf to New Guinea, north to southern Japan, south to Australia. **Remarks:** inhabits sandy and muddy bottoms at depths of 13 to ca. 400 m.

(H. Imamura)



Cynoglossus bilineatus, KAUM-I. 32754, 10.5 cm SL
Bang Pakong, 23 Oct. 2010

Cynoglossus cynoglossus
(Hamilton, 1822)

Bengal Tonguesole

D 94–104; A 72–79; C 10; LL 70–80. Body elongate, strongly compressed. Snout rounded; rostral hook short. Two lateral lines on eyed side of body, none on blind side. Scales on both sides of body ctenoid. **Color:** eyed side of body uniformly brown-gray, with indistinct dark markings. **Size:** maximum 20 cm, commonly to 15 cm. **Distribution:** tropical Indo-West Pacific from Pakistan eastward to Indonesia, northward to the Philippines; not found in New Guinea or northern Australia. **Remarks:** found on muddy and sandy bottoms in shallow waters, including estuaries and brackish waters; marketed fresh or frozen, also dried-salted.

(K. Matsuura)



Cynoglossus cynoglossus, KAUM-I. 22897, 9.3 cm SL
Ang Sila, 31 Aug. 2009

Cynoglossus lingua
Hamilton, 1822

Long Tonguesole

D 126–138; A 97–114; C usually 10; LL 90–101 (midlateral line). Body very elongate, 4.5–5.9 in SL. Mouth moderate, extending well beyond posterior margin of lower eye. Eyes separated by narrow interorbital space. Two lateral lines present on eyed side of body; upper one along dorsal fin base, lower one midlaterally on body. Lateral lines absent on blind side of body. Scales comparatively large, ctenoid on eyed side and cycloid on blind side. **Color:** eyed side of body reddish brown, sometimes with irregular brown-black



Cynoglossus lingua, KAUM–I. 33092, 25.0 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

patches, with a large black blotch on opercular region. **Size:** maximum total length about 40 cm. **Distribution:** Indo-West Pacific, including Red Sea, Gulf of Thailand, Philippines and In-

donesia. **Remarks:** inhabits mainly shallow sandy and muddy bottoms on inner continental shelf, often entering estuaries. (H. Imamura)

Cynoglossus puncticeps
(Richardson, 1846)

Speckled Tonguesole

D 90–100; A 72–78; C 10 (usually); LL 78–99 (midlateral line). Body elongate. Angle of jaws not reaching posteriorly beyond vertical through posterior margin of lower eye. Eyes with a narrow interorbital space. Two lateral lines present on eyed side of body; upper one along dorsal fin base, lower one midlaterally on body. Lateral lines absent on blind side of body. Scales ctenoid on both sides of body. **Color:** eyed side of body yellow brown, with very distinct irregular dark brown blotches, often forming irregular cross bands. **Size:** maximum total length about 18 cm, commonly 8–10 cm. **Distribution:** Indo-West Pacific, including Gulf of Thailand, Australia, New Guinea, Philippines and Taiwan. (H. Imamura)



Cynoglossus puncticeps, KAUM–I. 33098, 11.3 cm SL
Prachuap Khiri Khan, 13 Nov. 2010

Paraplagusia blochii
(Bleeker, 1851)

Bloch's Tonguesole

D 99–105; A 76–82; C 8; LL 75–83 (midlateral line). Body elongate, 3.6–3.8 in SL. Mouth extending to below posterior margin of lower eye. Eyes small, separated by a scaly interorbital space about equal to eye diameter.



Paraplagusia blochii, KAUM–I. 23387, 9.9 cm SL
Bang Pakong, 22 Sept. 2009

Two lateral lines present on eyed side of body; lateral lines absent on blind side of body. Scales ctenoid on eyed side and weakly ctenoid on blind side. **Color:** eyed side of body brown; scale

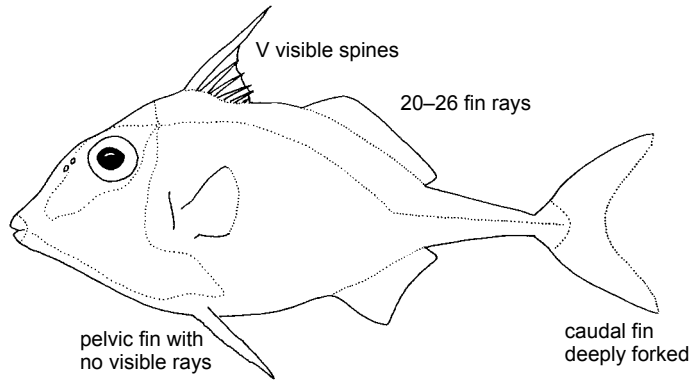
centers paler than edges. **Size:** maximum length 22 cm. **Distribution:** Indo-West Pacific, including Oman, India, Indonesia and Philippines.

(H. Imamura)

TRIACANTHIDAE

Triplespines

Small fishes less than 30 cm, with moderately elongate, strongly compressed body covered by moderately thick skin with numerous minute scales. Mouth small and terminal; teeth in an outer series of about 10 heavy incisors in each jaw, internally to which are several molariform teeth, usually 4 in upper jaw and 2 in lower jaw. Gill opening a moderately short vertical slit in front of pectoral-fin base. Dorsal fin spine VI (usually only V visible, the sixth rudimentary), dorsal-fin rays 20 to 26; caudal fin deeply forked; pelvic fins with I large spine and no visible rays; most dorsal-, anal, and pectoral-fin rays branched. Caudal peduncle distinctly tapering to a narrow transversely indented region just in front of caudal-fin base, where the peduncle is wider than deep. Lateral line inconspicuous. **Color:** generally



silvery, with upper half of body dusky, with or without darker blotches.

Remarks: benthic, occurring usually on flat, sandy or weed-covered bottoms. Feed on bottom invertebrates. Marketed but not commercially important.

Similar families occurring in the

area: Triacanthodidae – caudal fin not deeply forked, rounded to almost truncate; caudal peduncle not distinctly tapered, deeper than wide; dorsal-fin rays 12 to 18 (20 to 26 in Triacanthidae). (K. Matsuura)

Pseudotriacanthus strigilifer (Cantor, 1849)

Long-spined Tripodfish

D XI + 20–24; A 13–17; P₁ 12–15. Pelvis distinctly tapered posteriorly. Second dorsal spine more than half of first dorsal spine. **Color:** Body silvery gray with several golden bronze blotches; membrane between first and second dorsal spines pale but black distally; second dorsal, anal, pectoral and caudal fins pale. **Size:** maximum 25 cm. **Distribution:** widely distributed in tropical Indo-West Pacific from Gulf of Oman eastward to Indonesia. **Remarks:** occurring in sandy and muddy bottom at depths of 10–60 m. (K. Matsuura)



Pseudotriacanthus strigilifer, KAUM-I. 23862, 13.2 cm SL
Gulf of Thailand (SS), 26 Sept. 2009

Triacanthus biaculeatus
(Bloch, 1786)

Shortnosed Tripodfish

D VI + 21–26; A 17–22; P₁ 12–16. Pelvis not distinctly tapered to a point posteriorly. Dorsal profile of head from first dorsal-fin spine to above eye slightly convex. **Color:** dorsal half of body silvery light brown, ventral half silvery white; a large black blotch beneath spiny dorsal-fin base which continues over most spiny dorsal-fin membrane; soft dorsal and anal fins pale; pectoral and caudal fins yellow. **Size:** maximum length 30 cm. **Distribution:** widespread in Indo-West Pacific, from Persian Gulf eastward through Bay of Bengal to eastern Australia, northward to southern Japan. **Remarks:** coastal and estuarine waters, on sandy or muddy flat; feeds on benthic invertebrates. (K. Matsuura)



Triacanthus biaculeatus, KAUM-I. 32906, 14.2 cm SL
Bang Pakong, 30 Oct. 2010

Tripodichthys blochi
(Bleeker, 1852)

Longtail Tripodfish

D VI + 20–24; A 15–19; P₁ 13–15. Scale covered ventral surface of pelvis distinctly tapered to a point posteriorly. Second dorsal spine much less than half the length of first dorsal spine. Pelvis between bases of pelvic spines narrow (1.4–3.0% SL), the width 7.2–12.4 (usually about 9 or 10) times in length of pelvis. Dorsal rays modally 22 and anal rays modally 17. **Color:** dorsal half of body silvery light brown, ventral half silvery white; several irregular dark yellow markings on side of body; spiny dorsal fin membrane pale; basal part of spiny dorsal fin yellowish orange; soft dorsal, anal and pectoral fins pale; caudal fin light yellow. **Size:** 15 cm. **Distribution:** known from China and countries in Southeast Asia, a stray found from southern Japan. **Remarks:** coastal and estuarine shallow waters at depths of 0–40 m; usually found on sandy or muddy flat; feeds on benthic invertebrates. (K. Matsuura)

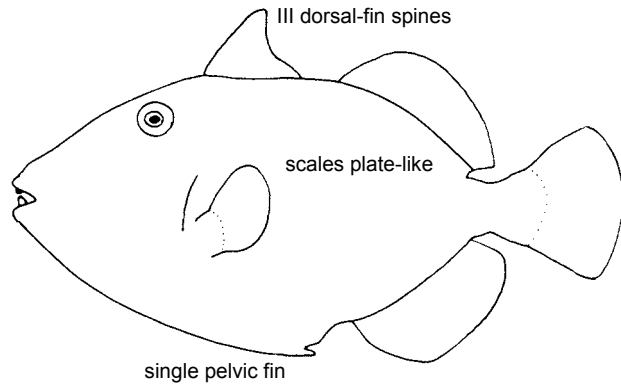


Tripodichthys blochi, KAUM-I. 33127, 8.2 cm SL
Bang Sean, 19 Nov. 2010

BALISTIDAE

Triggerfishes

Small or medium-sized fishes, up to 80 cm in total length, with deep, moderately compressed body encased with very thick, tough skin with large scale plates easily discernible as individual units, scales above pectoral-fin base in many species enlarged, forming a flexible tympanum. Gill opening a relatively short vertical to oblique slit in front of pectoral-fin base; mouth small and usually more or less terminal; teeth heavy, 8 in outer series of upper jaw and lower jaw. Three dorsal-fin spines, the second spine more than one half of the length of the first; the first spine capable being locked in an upright position of erection by the second; most dorsal, anal and pectoral-fin rays branched; pelvic fins and spines rudimentary, represented by a series of 4 pairs of enlarged scales encasing the end of pelvis. Lateral line inconspicuous. **Color:** variable and many species having bright color markings



on head and body.

Remarks: most species benthic, occurring in coral and rocky reefs from the coastline to a depth of 100 m; some species (e.g. *Canthidermis*) pelagic in open water. Feed on bottom invertebrates, but also zooplankton (e.g. *Melichthys indicus* and *Odonus niger*). High valued as food in many handline fisheries.

Similar families occurring in the area: Monacanthidae – two dorsal-fin spines, only the first of which is long and prominent; body more laterally compressed; fewer and less massive teeth in jaws; scales shagreen-like, with individual basal plates small and not readily distinguishable from one another to the unaided eye. (K. Matsuura)

Abalistes stellatus (Anonymous, 1798)

Starry Triggerfish

D III + 26–27; A 24–26; P₁ 14–15 (usually 14). Scales enlarged above pectoral-fin base and just behind gill opening to form a flexible tympanum. A groove in front of eye. Mouth terminal. Caudal peduncle depressed, wider than deep. **Color:** grayish brown to olivaceous on back, with small pale blue or yellow spots dorsally and large yellow spots ventrally; 3 large white blotches on back, disappearing in large specimens. **Size:** 60 cm. **Distribution:** widespread in Indo-West Pacific, from East Africa to northern Australia, north to southern Japan. **Remarks:** occurring on sand, sponge, and weed bottoms to depths of 100 m. Similar to *Abalistes filamentosus* Matsuura & Yoshino, 2004 but distinguished by lacking produced caudal fin rays. Feeds on marine invertebrates. (K. Matsuura)

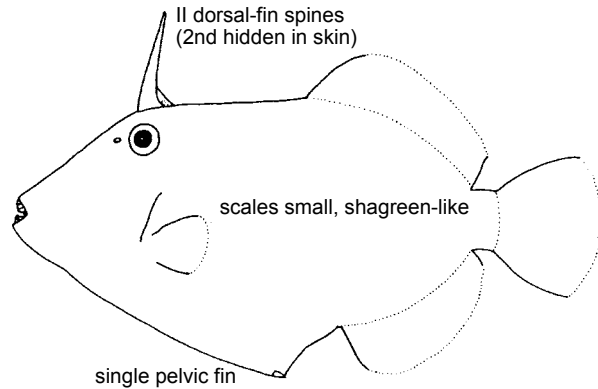


Abalistes stellatus, KAUM-I. 23441, 10.3 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

MONACANTHIDAE

Filefishes

Small or medium-sized fishes, usually less than 20 cm (but up to 50 cm for some species of *Aluterus*), with deep, highly compressed body covered by thin but rough or shagreen-like skin with minute scales not individually easily discernible to the unaided eye. Mouth small and usually more or less terminal or slightly supraterminal; teeth only moderately heavy, 6 in an outer series in upper jaw and 6 or fewer in the lower. Gill opening a relatively short, vertical to oblique slit in front of pectoral-fin base. Two (sometimes 1) dorsal-fin spines, second spine not more than 1/3 the length of first; first spine usually capable of being locked in an upright position of erection by the second; dorsal-, anal- and pectoral-fin rays unbranched; pelvic fin and spines rudimentary or absent, represented by a series of 3 or fewer pairs of enlarged scales encasing end of pelvis, or segments of indeterminate number, or entirely absent. Scales



above pectoral-fin base unmodified, not forming a tympanum. Lateral line inconspicuous or only slightly apparent. **Color:** variable, drab brown, gray, or greenish, but often with strikingly marked and vivid patterns.

Remarks: found in shallow coral and rocky reefs, seagrass beds, and sandy-muddy bottoms in depths of 10 to over 200 m. Feed on coral polyps, epiphytes attached to seagrass, or

other marine invertebrates. Marketed fresh.

Similar families occurring in the area: Balistidae – III spines in first dorsal fin; skin tough but not shagreen-like, individual scales distinct, usually forming prominent, oblique rows. Triacanthidae – VI spines (usually only V spines visible) in first dorsal fin; pair of strong pelvic-fin spines. (K. Matsuura)

Aluterus monoceros (Linnaeus, 1758)

Unicorn Leatherjacket

D II + 45–51; A 47–53; P₁ 14–15. Body elongate, strongly compressed. Dorsal profile of head slightly convex. Gill opening short oblique slit below eye extending antero-ventrally beyond anterior margin of eye. Dorsal spine above eye, very long and fragile; broken frequently in collected specimens. Soft part of dorsal fin opposite to anal fin. Caudal fin shorter than snout. **Color:** body grayish with many irregular dark lines and dots; dorsal-, anal- and pectoral-fin rays yellow; caudal fin dark. **Size:** 76 cm. **Distribution:** circum tropical; in West Pacific known from west coast of peninsular Malaysia eastward to the Solomon Islands,



Aluterus monoceros, KAUM-I. 32814, 14.5 cm SL
Gulf of Thailand (SP), 25 Oct. 2010

northward to the Ryukyu Islands. **Remarks:** forming large schools in coastal waters. (K. Matsuura)

Anacanthus barbatus
Gray, 1830

Bearded Leatherjacket

D II + 48–50; A 58–62; P₁ 8–10; Vertebrae 7 + 23–24 = 30–31. Body extremely elongate, depth at anal-fin origin 8.3–10 in SL. A well-developed barbell on chin, its length longer than pectoral-fin length. First dorsal spine short and feeble, originating over posterior part of eye. Bases of second dorsal and anal fins long. Caudal fin greatly elongate, its length 1.5–2.2 in SL. **Color:** body brown with whitish



Anacanthus barbatus, KAUM-I. 47383, 18.3 cm SL
Gulf of Thailand (SS), 13 June 2012

stripe along dorsal edge of body from mouth to caudal-fin base; dark brown stripe from snout to posterior part of body; ventral half of head and body whitish yellow covered with brown reticulations; chin barbell blackish brown; caudal fin dark brown. **Size:**

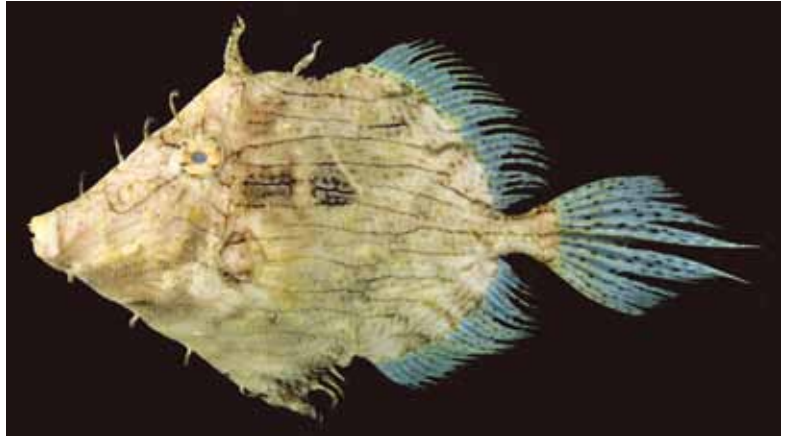
maximum 30 cm. **Distribution:** widely distributed in tropical Indo-West Pacific from India eastward to northern Australia. **Remarks:** occurring on muddy bottom at depths 2–20 m.

(K. Matsuura)

Chaetodermis penicilligerus
(Cuvier, 1816)

Prickly Leatherjacket

D II + 25–26; A 23–24; P₁ 12–13. Body deep; dorsal profile of head ascending from mouth to dorsal spine. Body covered with many fleshy filaments. Pelvic terminus prominent, composed of 3 segments of encasing scales, movable dorso-ventrally. Scales on body relatively large with a backwardly curved spine. Dorsal spine with many fleshy filaments, located above gill opening. Caudal fin rhomboidal. **Color:** light brown with many longitudinal black lines on side of body; fin rays of dorsal, anal and caudal fins with many black spots. **Size:** 31 cm. **Distribution:** tropical eastern Indian Ocean and West Pacific from west coast of Malaysia eastward to northern Australia, northward to southern Japan. **Remarks:** collected from rocky reefs and sandy-muddy bottom, usually from depths shallower than 200 m; feeds on marine invertebrates. (K. Matsuura)

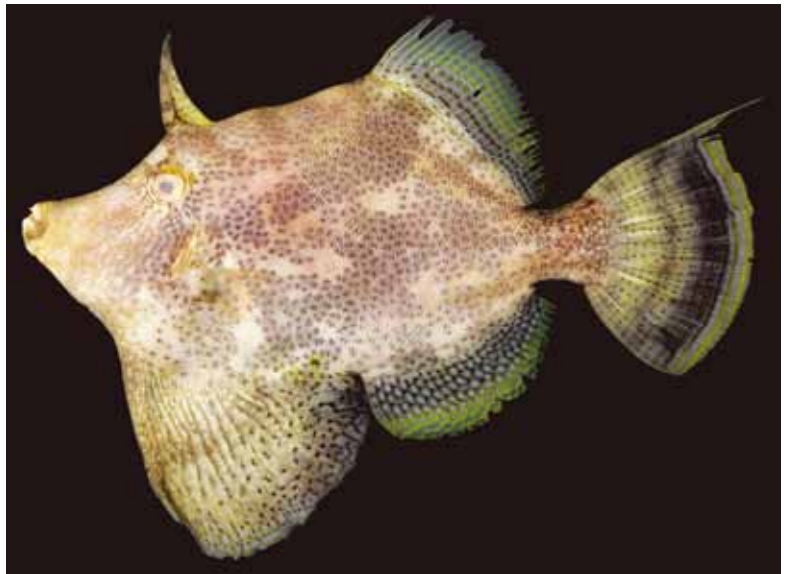


Chaetodermis penicilligerus, KAUM-I. 33148, 16.9 cm SL
off Chantha Buri (SP), 22 Nov. 2010

Monacanthus chinensis
(Osbeck, 1765)

Fanbellied Leatherjacket

D II + 28–30; A 27–30; P₁ 12. Body deep; dorsal profile of head concave, ascending from mouth through eye to soft dorsal fin. Pelvic terminus prominent, composed of 3 segments of encasing scales, movable dorso-ventrally; ventral flap very large. Upper caudal fin rays produced into a filament. **Color:** body light brown with many irregular dark brown blotches. **Size:** 38 cm. **Distribution:** west coast of Malay Peninsula and tropical West



Monacanthus chinensis, KAUM-I. 32940, 14.1 cm SL
Ang Sila, 30 Oct. 2010

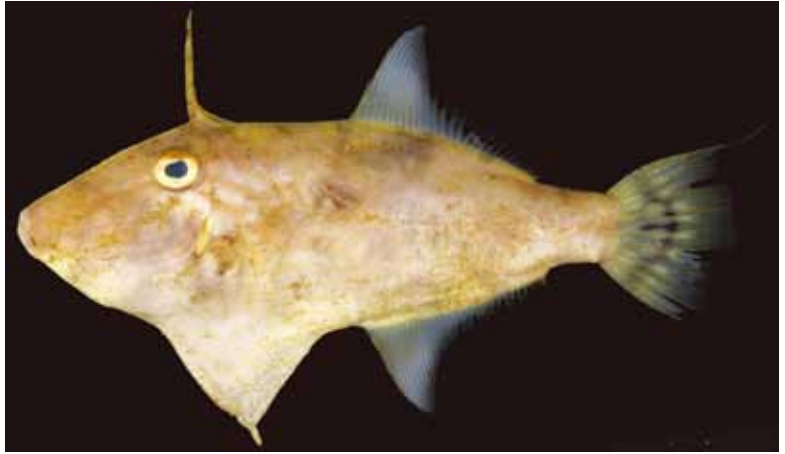
Pacific from Thailand eastward to sea grass bed and rocky reefs in shallow waters. **Remarks:** occurring in (K. Matsuura)

***Paramonacanthus choirocephalus*
(Bleeker, 1852)**

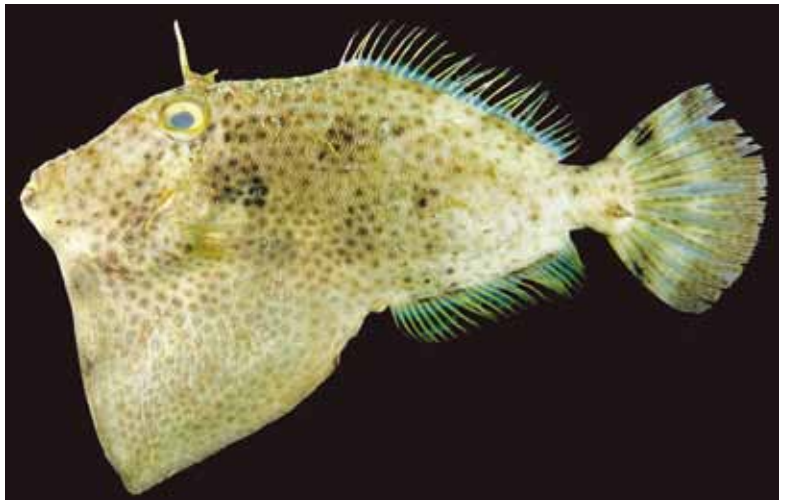
Pig Faced Leatherjacket

D II + 27–31; A 28–32; P₁ 11–13 (usually 12). Body relatively elongate, strongly compressed. Body depth at anal-fin origin 1.7–3.0 in SL. Dorsal profile of snout slightly convex or straight in male, concave or straight in female and juvenile. Encasing scales of pelvic fin movable. Caudal fin convex; second uppermost ray elongate and filamentous in male. **Color:** body pale yellowish or light brownish with dark brown blotches; dark brown circular to elliptical blotch on midside of body, bisected diagonally by posterior abdominal branch of lateral line: second dorsal, anal and pectoral fins pale; caudal fin pale with two broad, curved, transverse bands. **Size:** maximum 12 cm. **Distribution:** Thailand, Philippines, Indonesia, Australia and New Guinea. **Remarks:** found in shallow waters on flat sandy and silty bottom.

(K. Matsuura)



Paramonacanthus choirocephalus, KAUM-I. 32935, 8.2 cm SL
Ang Sila, 30 Oct. 2010



Pseudomonacanthus macrurus, KAUM-I. 47471, 17.6 cm SL
Gulf of Thailand (SS), 20 June 2012

***Pseudomonacanthus macrurus*
(Bleeker, 1856)**

Strap-weed Filefish

D II + 29–30; A 27–30; P₁ 11–12. Body relatively elongate, strongly compressed. Body depth at anal-fin origin 2.5–2.8 in SL. Dorsal profile of snout slightly concave. Encasing scales of pelvic fin immovable. Caudal fin rounded, its length 3.1 in SL. First dorsal spine originating over posterior half of eye. **Color:** body yellowish brown with many black or dark brown spots; caudal fin with 2 transverse dark brown bands; second dorsal, anal and pectoral fins pale. **Size:** maximum 23 cm. **Distribution:** seas in SE Asia northward to southern Japan. **Remarks:** color highly variable depending on surroundings; occurring on reef flats, lagoons and seagrasses.

(K. Matsuura)



Thamnaconus hypargyreus, KAUM-I. 23169, 10.8 cm SL
Gulf of Thailand (SS), 6 Sept. 2009

***Thamnaconus hypargyreus*
(Cope, 1871)**

Lesser-spotted Leatherjacket

D II + 32–36; A 32–33; P₁ 13–14. Body elliptical, strongly compressed. Dorsal profile of snout slightly convex. Encasing scales of pelvic fin immovable. Caudal fin rounded. First dorsal spine originating over posterior

half of eye. **Color:** body light brown with many rounded yellowish brown blotches; caudal fin light yellow with dark posterior margin; second dorsal, anal and pectoral fins yellow. **Size:** maximum 25 cm. **Distribution:** warm waters in West Pacific from central Ja-

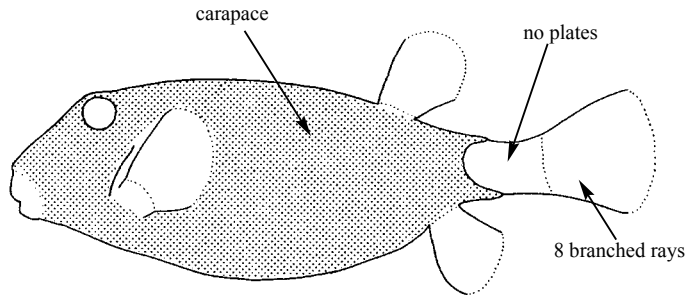
pan southward through South China Sea to northern Australia. **Remarks:** usually found depths shallower than 90 m but occasionally occurring deeper than 200 m. This species is recorded for the first time from the Gulf of Thailand.

(K. Matsuura)

OSTRACIIDAE

Boxfishes

Small to medium-sized fishes, never more than 45 cm, with wide body nearly completely enclosed in a carapace or cuirass formed of enlarged, thickened scale plates, usually hexagonal in shape and firmly sutured to one another (less so on cheek to allow for breathing movements). The carapace has openings for the mouth, eyes, gill slits, and fins, and for the flexible caudal peduncle; it is either triangular (flat on bottom and sharp-crested above) or rectangular in shape, although sometimes relatively pentangular. Mouth small, terminal, with fleshy lips; teeth moderate, conical, usually less than 15 in each jaw. Gill openings relatively short, vertical to oblique slits in front of pectoral-fin bases. Spiny dorsal fin absent; most dorsal-, anal- and pectoral-fin rays branched; pelvic fins absent. Scale-plates often with surface granulations and sometimes prolonged into prominent carapace spines around eye or along the



ventrolateral or dorsal surfaces of the body; scales above pectoral-fin base like the scales of rest of body. Lateral line inconspicuous. **Color:** variable, with general ground colors ranging from gray to bluish and greenish or, to yellowish and brown, usually with darker or lighter lines, bars, spots, or reticulations. **Remarks:** occurring on rocky and coral reefs and over

sand, weed, or sponge-covered bottoms to depths of 100 m. Secreting a substance when distressed that is highly toxic, both to other fishes and themselves in enclosed areas such as aquarium tanks. **Similar families occurring in the area:** No other fishes enclosed in a bony shell.

(K. Matsuura)

Lactoria cornuta (Linnaeus, 1758)

Longhorn Cowfish

D 8–9; A 9; P₁ 10–11. A pair of sharp, strong horns about twice eye diameter in length projecting anteriorly from front of head. A second pair of horns extending posteriorly from postero-ventral corner of carapace. Caudal fin greatly elongate, one half to two-thirds of carapace length. **Color:** body yellowish brown with light blue spots on sides; dorsal, anal, and pectoral fins pale; caudal fin yellowish with light blue spots. **Size:** maximum 50 cm, commonly to 30 cm. **Distribution:** widely distributed in tropical Indo-West Pacific from East Africa eastward to Marquesas Islands, north to southern Japan. **Remarks:** occurring in weedy areas near rocks or reefs.

(K. Matsuura)



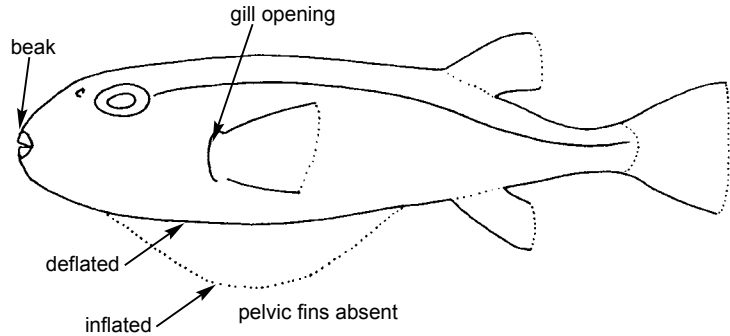
Lactoria cornuta, KAUM-I. 23448, 15.6 cm SL
Gulf of Thailand (SS), 24 Sept. 2009

TETRAODONTIDAE

Puffers

Small to moderate-sized fishes, most species less than 30 cm, with a heavy blunt body capable of rapid inflation by intake of water (or air). Head large and blunt; jaws modified to form a beak of 4 heavy, powerful teeth, 2 above and 2 below. Gill openings without distinct opercular cover, appearing as simple slits anterior to the pectoral fin; eyes located high on head. Dorsal and anal fins located far posteriorly bearing no spines, but 7 to 15 soft rays; caudal fin usually truncate to slightly rounded; pelvic fins absent. Typical scales absent, but most species are partially covered with tiny prickles or spinules, and many species have small fleshy tabs or lappets on the dorsal and/or lateral surfaces. **Color:** most species are mottled, variegated, or barred on the upper and lateral surfaces, often with spots of various sizes and colors; ventral surfaces are almost always unpigmented.

Remarks: occurring in tropical



and temperate seas, most frequently in shallow inshore waters, sometimes entering brackish and fresh waters, but a few species are pelagic. The viscera, skin, and blood of most species are poisonous; in some species even the flesh is poisonous. Laymen are strongly recommended not to eat puffers, although connoisseurs like to con-

sume puffers in licensed restaurants in some countries (e.g., Japan).

Similar families occurring in the area: Diodontidae – head and body covered with strong elongate spines; 1 tooth plate in each jaw.

(K. Matsuura)

Chelonodon patoca (Hamilton, 1822)

Milkspotted Puffer

D 10; A 8; P₁ 15–16. A patch of spinules on back from behind interorbital nearly to dorsal fin and another on throat and abdomen. Nasal organ in the form of a depression with slightly raised margin expanded before and behind into a pair of elongate flaps. **Color:** greenish-gray to brown on back with large round to ovate white spots, a broad yellow band running from chin to lower caudal-fin base. **Size:** maximum to 20 cm. **Distribution:** tropical eastern Indian Ocean including India and Sri Lanka and West Pacific from Thailand to French Polynesia, northward to southern Japan and southward to northern Australia; usually found inshore, frequently in brackish waters. **Remarks:** occurring commonly in mangrove areas.

(K. Matsuura)

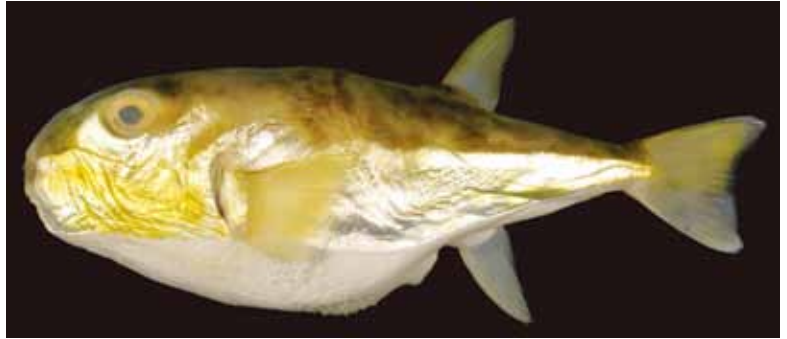


Chelonodon patoca, KAUM-I. 47350, 8.9 cm SL
Gulf of Thailand (SS), 8 June 2012

Lagocephalus lunaris
(Bloch & Schneider, 1801)

Rough Golden Puffer

D 12–13; A 11–12; P₁ 16–17. A patch of spinules on back reaching to dorsal-fin origin; belly covered with spinules. Nasal organ with 2 openings. Caudal fin concave. **Color:** dorsal half of body grayish light brown, side silvery white, and belly white; caudal fin white in the ventral lobe and dark yellow in the dorsal lobe. **Size:** 35 cm. **Distribution:** tropical Indo-West Pacific from East Africa to northern Australia; found recently from southern Japan. **Remarks:** strongly toxic and frequently confused with other species of *Lagocephalus* such as *L. gloveri* Abe & Takita, 1983 and *L. spadiceus* (Richardson, 1845). (K. Matsuura)



Lagocephalus lunaris, KAUM-I. 32896, 12.9 cm SL
Gulf of Thailand (SS), 27 Oct. 2010

Lagocephalus suezensis
Clark & Gohar, 1953

Suez Puffer

D 10–12; A 9–10; P₁ 14–16. A patch of spinules on back from between snout to dorsal-fin origin, belly covered with spinules. Nasal organ with 2 openings. Caudal peduncle depressed, wider than deep. **Color:** dorsal half of body light brown with many irregularly shaped brown dots and lines, side silvery white and belly white; dorsal, anal and pectoral fins pale; caudal fin white in the ventral lobe, yellow in the dorsal lobe. **Size:** 20 cm. **Distribution:** topical Indo-West Pacific from Red Sea to northern Australia, northward to southern Japan. **Remarks:** frequently confused with *Lagocephalus sceleratus* (Gmelin, 1789) but distinguished from it by lacking many small black spots on back and by having fewer fin-ray counts (in *L. sceleratus*, dorsal-fin rays 12–13, anal-fin rays 10–12, and pectoral-fin rays 16–17). Probably toxic. (K. Matsuura)



Lagocephalus suezensis, KAUM-I. 33204, 6.9 cm SL
Ang Sila, 26 Nov. 2010

Takifugu oblongus
(Bloch, 1786)

Lattice Blaasop

D 13; A 11; P₁ 16. Body relatively elongate covered with spinules. Nos-

trils with 2 openings. **Color:** body brown dorsally, white ventrally; many transverse white bands on back from snout to caudal peduncle. **Size:** maximum to 40 cm. **Distribution:** tropical

Indo-West Pacific from East Africa eastward to Australia, north to southern East China Sea. **Remarks:** caught by trawl in shallow waters.

(K. Matsuura)



Takifugu oblongus, KAUM-I. 33113, 13.2 cm SL
Gulf of Thailand (SS), 18 Nov. 2010

Tetraodon biocellatus
Tirant, 1885

Eyespot Pufferfish

D 13–15; A 11–13; P₁ 22. Body relatively elongate, elliptical in cross section, covered by many spinules. **Color:** Dorsal half of body dark brown covered with many small white spots; irregular yellow lines and small blotches on dorsal side of body; ventral half of body white; large black ocellus on dorsal-fin base edged with yellow line; small black ocellus on caudal-fin base edge with yellow line; all fins pale. **Size:** maximum 8 cm. **Distribution:** Borneo, Malaysia and



Tetraodon biocellatus, KAUM-I. 23380, 5.0 cm SL
Bang Pakong, 22 Sept. 2009

Indochina. **Remarks:** The photographed specimen was collected from a fish market near the mouth of Ban-pakong River where many brackish water fishes occurred. (K. Matsuura)

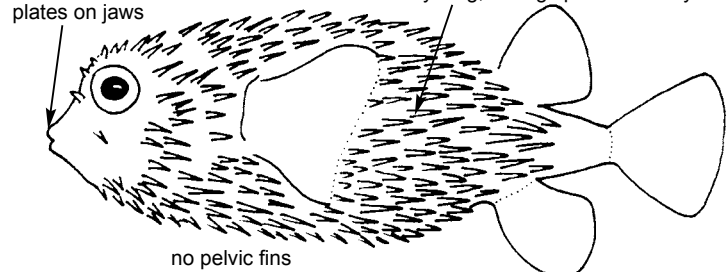
DIODONTIDAE

Porcupinefishes

Small or medium-sized fishes (up to 100 cm). Body capable of great inflations, covered with strong spines which may be quite long. Mouth large, wide, and terminal; teeth fused to form a strong, beak-like plate without a median suture dividing left and right halves. Gill opening a relatively small, vertical slit just in front of pectoral-fin base. Dorsal and anal fins without spines, placed far back on body; most fin rays branched; no pelvic fins. Lateral line inconspicuous. No normal scales. **Color:** background color light tan to brown, but frequently gray; usually overlain with dark brown to black spots, bars and/or blotches; belly white,

2 beak-like tooth plates on jaws

many long, strong spines on body



no pelvic fins

frequently with yellow overtone. **Remarks:** found in shallow coral and rocky reefs, seagrass beds, and sandy-muddy bottoms in depths of 10 to over 200 m. Feed on coral polyps, epiphytes attached to seagrass, or other marine invertebrates. Marketed fresh.

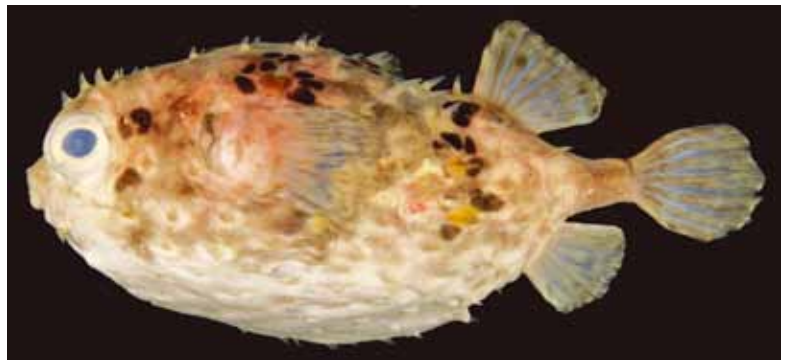
Similar families occurring in the area: no other families having the following combination of characters: large spines on body, no pelvic fins, inflatable body, teeth fused into a single beak-like plate.

(K. Matsuura)

Cyclichthys orbicularis
(Bloch, 1785)

Birdbeak Burrfish

D 11–13; A 10–12; P₁ 18–21. Body rounded with many 3 rooted, non-erectile spines; a small movable spine below and behind corner of mouth. **Color:** head and body brown dorsally, white ventrally; black spots on back and side; all fins pale. **Size:** 16 cm. **Distribution:** tropical Indo-West Pacific from East Africa eastward to New Caledonia, southward to northern Australia, northward to southern Japan. **Remarks:** found in coral and rocky reefs and sandy bottom; usually occur-



Cyclichthys orbicularis, KAUM-I. 32983, 10.8 cm SL
off Chantha Buri (SP), 1 Nov. 2010

ring in depths shallower than 40 m.

(K. Matsuura)

Diodon holocanthus
Linnaeus, 1758

Longspined Porcupinefish

D 13–15; A 13–15; P₁ 20–24. Long erectile spines on head and body; 12–16 spines from snout to dorsal-fin base; those on forehead usually longest, none on caudal peduncle. Nasal organ a short hollow tube with 2 openings near tip. **Color:** dorsal side of body light grayish brown with many black spots, white ventrally; wide brown bars or blotches at eye level, mid-back above pectoral- and dorsal-fin bases; fins without spots. **Size:** maximum 38 cm. **Distribution:** circumglobal in tropical and warm temperate seas. **Remarks:** similar to *Di-*



Diodon holocanthus, KAUM-I. 32862, 13.3 cm SL
 Gulf of Thailand (SS), 27 Oct. 2010

odon liturosus Shaw, 1804 but distinguished from it by no white edges around brown bars or blotches on body. (K. Matsuura)

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