

**Probing into  
Marine Life  
with**



**DNA Barcode  
in the Tropical  
Indo-Pacific**

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Marine Life  
with  
DNA Barcode  
in the Tropical  
Indo-Pacific**



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## Foreword

### Healthy oceans are essential for a healthy planet and a healthy future for all.

The ocean in the tropical Indo-Pacific holds vast environmental, social and economic significance, as it is home to the highest level of marine biodiversity and endemism in the world. However, it is under greatest threat in history as a result of climate change and unprecedented human activities.

I would congratulate on this new publication “Probing into Marine Life with DNA Barcode in the Tropical Indo-Pacific” as practical knowledge collection about our fascinating marine life. It demonstrated once again the importance to develop ocean knowledge and cooperation in safeguarding our marine biodiversity.

I am especially grateful for the generous support of the Government of Republic Korea. Through the UNESCO/Korean Funds-in-Trust (KFiT) funded project, the IOC Sub-Commission for the Western Pacific (WESTPAC) greatly enhanced the capacity of IOC Member States in the Western Pacific and adjacent areas for using the genetic method for species identification, and promoted the sharing of data and collection. I am thrilled that our countries in the region have started to apply this tool to their marine resource management and biodiversity conservation.

Science’s rightful place is in service of society. As part of the United Nations system, the IOC Sub-Commission for the Western Pacific (WESTPAC) spares no effort in catalyzing ocean science solutions to sustainable development. I deeply appreciate Prof. Youn-Ho Lee from the Korea Institute of Ocean Science and Technology, for his dedication and commitment to advancing ocean science and cooperation in the region. I would acknowledge the meaningful partnerships that have been established among individual scientists and various research institutions since the beginning of this effort.

**Wenxi Zhu**

Head  
IOC Sub-Commission for the Western Pacific  
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## Preface

**The coastal waters of the Tropical Indo-Pacific stand as the epicenter of world marine biodiversity, offering a plethora of biological resources crucial for the livelihoods of many people in the region.**

To ensure the sustainable use and conservation of these invaluable resources, it is imperative to compile and disseminate scientific information on their morphological and genetic characteristics, ecology, and distribution across the region. In this context, IOC Sub-Commission for the Western Pacific (WESTPAC) plays a pivotal role in promoting marine research and observations, fostering international collaboration among Member States, and interfacing the science and the policy.

The book, *Probing into the Marine Life with DNA barcode in the Tropical Indo-Pacific* is an outcome of the WESTPAC's multinational collaboration project, the "Enhance the Capacity for Species Identification and Genetic Analysis on Marine Organisms in the Coral Reef Ecosystems in the Western Pacific" (DRMREEF project). From 2013 to 2023, scientists from the Republic of Korea, Bangladesh, Indonesia, Malaysia, the Philippines, Thailand and Vietnam have actively participated in studying and compiling information on the diverse marine life in the Tropical Indo-Pacific region.

This book endeavours to document the morphological, ecological, and genetic features as well as the distributions of common fishes and invertebrates in the region. It includes photographs, illustrations of regional distribution patterns, and QR codes of DNA barcode sequences (COI or 16S gene sequences) for each species, facilitating a comprehensive understanding and objective identification. In total, the book provides information on 228 marine animals, including Fishes (115), Cnidarians (10), Molluscs (42), Arthropods (40), and Echinoderms (21). This information, obtained through the DRMREEF project, is also accessible on the WESTPAC Marine Biodiversity/Portal Site ([westpacmarbio.org](http://westpacmarbio.org)). For species where we were unable to obtain DNA barcode sequences, we cite the deposited sequences in GenBank.

We hope that this book enriches scientific knowledge of the diverse marine organisms in the Tropical Indo-Pacific and helps policymakers establish regional collaborative conservation measures and management plans for commercially exploited biological resources. For scientists and researchers, the book will serve as a valuable guide for species identification. We acknowledge the book's current limitation in covering a subset of the region's rich marine diversity and look forward to expanding its contents in subsequent studies.

We express our sincere gratitude to all the participants, assistants, and advisors as well as the funding agencies who have enabled and contributed to the publication of the book.

**On behalf of all respectful Authors and Assistants,**

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**Fish**







## *Glaucostegus younholeei* Habib & Islam, 2021

**Morphology** Body brownish or greyish with a narrowly wedge-shaped disc; relatively smaller in size (adult male less than 1000mm) a long narrow bluntly pointed snout (angle 31-40); broad oblique nostrils with a narrow anterior opening; nostrils about half of the mouth width, subequal to internasal width; anterior nasal flaps are slightly penetrating into internasal space, relatively large orbit in adults (diameter 8.19–11.62 in preorbital length, 2.25–2.69 in interorbital distance); rostral ridges are almost joined along their entire length; rough skin densely covered with small denticles, more coarsely granular on the dorsal surface than ventrally, enlarged between orbits and in a distinct band between nape and first dorsal fin; e. Tail longer, length 1.15–1.48 in disc length; dorsal fins narrowly spaced, interspace 1.32–2.11 in the base length of the first dorsal fin. Clasper length in adult males is 4.37–5.70 in total length.

**Ecology** Commonly found in marine; demersal and tropical environment.

**Distribution** Northern Bay of Bengal, Eastern Indian Ocean; Bangladesh; West Bengal, India.



Class	<a href="#">Elasmobranchii</a>
Order	<a href="#">Rhinopristiformes</a>
Family	<a href="#">Glaucostegidae</a>



Scan DNA Barcode  
MW431029 (COI),  
MW431030 (COI)



## *Gymnothorax favagineus* Bloch & Schneider, 1801

**Morphology** Size: to 1.8 m TL. Body serpentine shaped, white to yellowish; black spots on head, body, fins and interspaces forming a honeycomb pattern; almost black in some individuals; blotches influenced by habitat – less spots in clear coral reefs, than those in turbid waters; one of two largest Indo-Pacific morays.

**Ecology** Solitary. Reef flats, outer reef slopes of continental reefs at 1 - 50 m depth; often sheltered in crevices with cleaner wrasses or shrimps; carnivorous, on cephalopods and small fishes; large adults may be aggressive.

**Distribution** Indo-Pacific: Red Sea and East Africa to Papua New Guinea, Japan, Asia and south to Great Barrier Reef.

Class **Actinopterygii**

Order **Anguilliformes**

Family **Muraenidae**



Scan DNA Barcode  
JF493578 (COI)





### *Pisodonophis cancrivorus* (Richardson, 1848)

**Morphology** Size: to 108.0 cm TL. Slender fish with an elongated body and a pointed snout. Has long dorsal fin that runs from the head to the tail and a long anal fin that starts after the middle of the body. Has no pelvic fins, but it does have pectoral fins located behind the gills. Brown to olive-green body with small spots or speckles.

**Ecology** Occurs in lagoons and estuaries, entering freshwater. Often in tidal channels where loose groups congregate, and usually seen with just the head exposed. Solitary. Feeds on small fish, crustaceans, and cephalopods.

**Distribution** Indo-Pacific: Red Sea and East Africa to French Polynesia, north to the Ogasawara Islands, south to Australia.

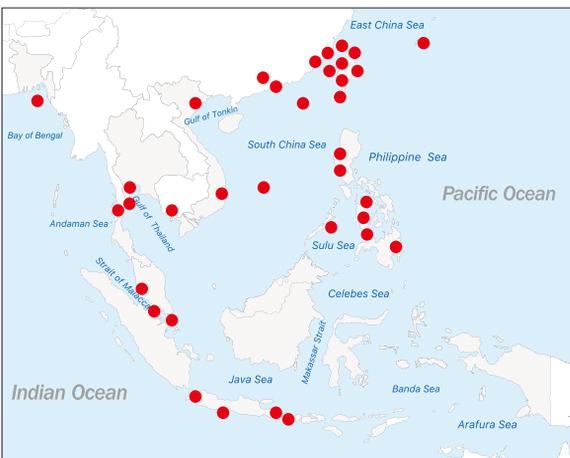
Class **Actinopterygii**

Order **Anguilliformes**

Family **Ophichthidae**



Scan DNA Barcode  
MW498742 (COI)





## ***Saurida micropectoralis*** Shindo & Yamada, 1972

**Morphology** Body elongated, cylindrical. Back and upper sides brown, lower sides and belly white. Nine to ten faint blotches along the lateral line, sometimes with traces of very indistinct cross-bars on the back. Upper edges of pectoral and caudal fins occasionally with faint black dots. The upper portion of the inner side of the pectoral fins dark. Adipose fin present.

**Ecology** Occurs in tropical to temperate marine and estuarine areas. Lives on rocky, coral, sandy, or muddy bottoms in shallow waters. Feeds on bottom-living invertebrates (particularly worms) and fishes.

**Distribution** Indo-West Pacific: Andaman and South China seas south to the Arafura Sea and northern Australia; northern Bay of Bengal.

Class **Actinopterygii**

Order **Aulopiformes**

Family **Synodontidae**



Scan DNA Barcode  
MW340700 (COI),  
MW340701 (COI)





## *Myripristis hexagona* (Lacepède, 1802)

**Morphology** Size: 30.0 cm TL. Body light red to yellowish; fins red, leading edges of soft dorsal, anal, caudal and pelvic fins, white; snout blunt; large eyes; rough scales.

**Ecology** In loose aggregations in caves, sometimes with other soldierfish. Sheltered coastal and offshore reefs, turbid areas of bays and lagoons at 3 to 40 m depth; nocturnal, hiding in caves or beneath ledges by day, feeding on plankton such as crab larvae at night.

**Distribution** Indo-Pacific: East Africa to Samoa, north to Ryukyu Islands, through Asia, south to Great Barrier Reef, New Caledonia, Palau.

Class **Actinopterygii**

Order **Holocentriformes**

Family **Holocentridae**



Scan DNA Barcode  
MK340664 (COI)





## *Sargocentron melanospilos* (Bleeker, 1858)

**Morphology** Size : 25.0 cm TL. Body orange-red to orange-yellow, silvery white stripes; black blotch at base of pectoral, soft dorsal, anal and caudal fins; small black spot on caudal-fin base; relatively large eyes for nocturnal feeding; preopercle spines (near gill-opening) are venomous.

**Ecology** Usually solitary, sometimes forms schools in deep water in oceanic locations. Seaward slopes at 5 - 90 m depth; inhabits crevices and caves on rocky reefs daytime, feeds at night mainly on crabs and shrimps.

**Distribution** Indo-Pacific: Red Sea, Zanzibar, Aldabra, Seychelles to Marshall Islands, Samoa, north to Taiwan, Japan, Ogasawara Islands, south to Southeast Asia, Great Barrier Reef, Chesterfield Islands.

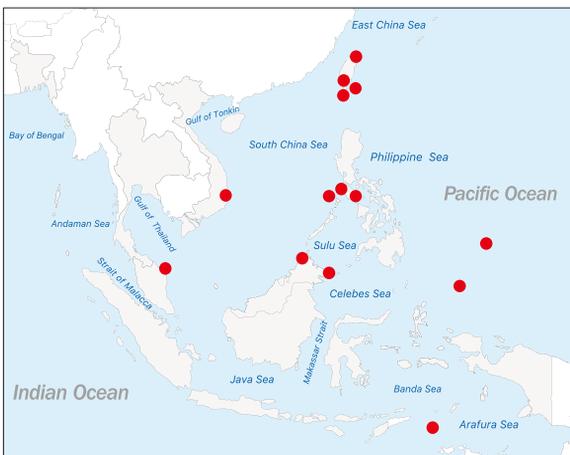
Class **Actinopterygii**

Order **Holocentriformes**

Family **Holocentridae**



Scan DNA Barcode  
HM034260 (COI)





## *Sargocentron rubrum* (Forsskal, 1775)

**Morphology** Standard length: 12.4 cm; Fin formula: D-XI,13; P1-14; P2-1,7; A-IV,9; C-V+IV,19-20 ; Branchiostegal rays : 8. Colour of body brownish red and silvery white stripes; a triangular streak of brownish red on cheek from eye to corner of preopercle. Dorsal fin red with white-tipped spines and a large quadrangular whitish blotch on each membrane; an elongate brown spot beneath soft portion of dorsal fin and a roundish blotch above base of soft portion of anal fin; upper and lower edges of caudal fin with red to brownish red band, with a very narrow bluish white margin. Body moderately deep. Head convex; snout short and blunt. Scale rows above lateral line to middle of spinous portion of dorsal fin.

**Ecology** Found in coastal reefs; silty reefs or wrecks in lagoons, bays, or harbors, may occur in aggregations; also found hidden in caves and cracks of rocks during the day. They come out at dusk to feed on small fish and invertebrates. Well known for sound production.

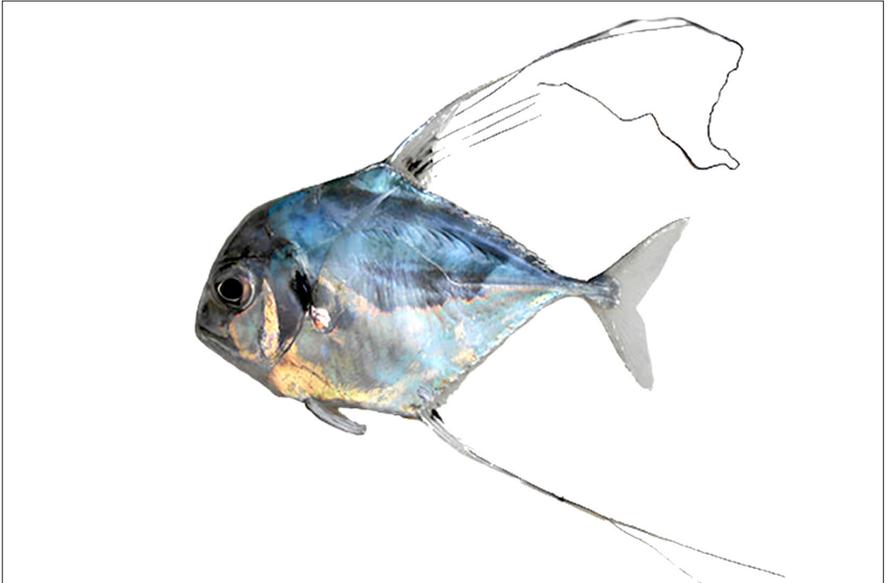
**Distribution** Indo-West Pacific: Red Sea to the Western Pacific where it ranges from southern Japan to New Caledonia, Vanuatu and New South Wales, Australia.



Class **Actinopterygii**  
Order **Holocentriformes**  
Family **Holocentridae**



Scan DNA Barcode  
MK340697 (COI),  
MK340698 (COI),  
MK340699 (COI)



### ***Alectis ciliaris*** (Bloch, 1787)

**Morphology** Body length is 24 cm; compressed body with pale blue to silver coloration. Mouth is positioned terminally and caudal fin is forked. Spines have extended filaments.

**Ecology** Pelagic in neritic and oceanic waters, sometimes near the bottom. Small juveniles may be found near the shore; adults near bottom to depths of 60 m. Feed on sedentary or slow moving crustaceans and occasionally feed on small crabs and fishes Marine; reef-associated; depth range 60 - 100 m.

**Distribution** Worldwide in tropical seas primarily, but can extend to subtropical areas.

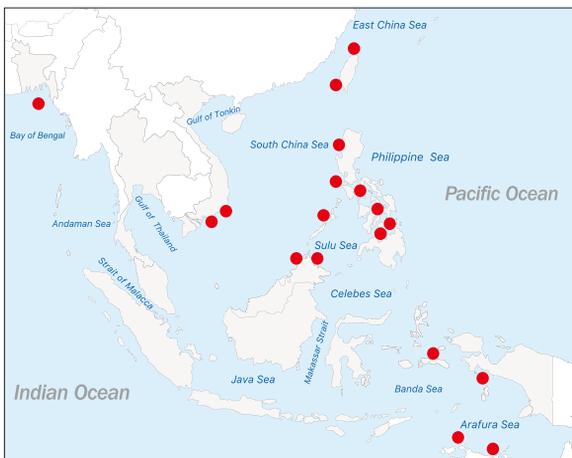
Class **Actinopterygii**

Order **Carangiformes**

Family **Carangidae**



Scan DNA Barcode  
MT076532.1 (COI)





### ***Megalaspis cordyla* (Linnaeus, 1758)**

**Morphology** Body elongate, slender, somewhat compressed. Adipose eyelid well developed and completely covering eye except for a vertical slit centered on pupil. Shoulder girdle (cleithrum) margin smooth without papillae. Straight part of lateral line much longer than curved part, entirely with large scutes. Body is silvery brownish-green dorsally, silvery white ventrally; a large black spot posteriorly on opercle.

**Ecology** Most species are well-camouflaged when swimming in open water. Mostly schooling species. Carnivorous and feed on a variety of prey, including fish, crustaceans, molluscs and other invertebrates.

**Distribution** Indo-West Pacific: East Africa to Japan and Australia; northern Bay of Bengal.

Class **Actinopterygii**

Order **Carangiformes**

Family **Carangidae**



Scan DNA Barcode  
MK340662 (COI)





## *Cynoglossus arel* (Bloch & Schneider, 1801)

**Morphology** Size: to 40.0 cm TL. Elongated, oblong-shaped body that is flattened from side to side. The head is small and pointed, with both eyes located on the same side of the head. The mouth is relatively large and oblique, with small teeth lining both jaws. The dorsal and anal fins are long and continuous with the caudal fin, which is rounded. Brownish-grey on the upper side and white on the underside.

**Ecology** Inhabits muddy and sandy bottoms of the continental shelf down to 125 m. Enters estuaries and tidal rivers. Benthic predator that feeds on a wide range of small invertebrates, such as crustaceans and worms.

**Distribution** Indo-West Pacific: Persian Gulf to Sri Lanka and Indonesia, north to southern Japan.

Class **Actinopterygii**

Order **Pleuronectiformes**

Family **Cynoglossidae**



Scan DNA Barcode  
MW498566 (COI)





### *Liachirus melanospilos* (Bleeker, 1854)

**Morphology** Size: to 15.0 cm SL. Oval, flat body with small head; small, slightly curved mouth; pectoral fin absent; pelvic and anal fins separated; caudal and anal fin separated; spines absent in fins; both eyes are on right side, blind eye is pale, sighted eye is light to dark brown; when growing from larve to adult, fish flattens and one eye migrates across the head next to the other eye.

**Ecology** singly or in pairs. Sheltered sandy coastal slopes, estuaries, seaward reefs at 3-20 m depth; often partially buried in substrate; demersal trawl bycatch; feeds upon small crustaceans and fish.

**Distribution** Indo-West Pacific: Lakshadweep through Asia-Singapore, Indonesia, Philippines, China, Taiwan, Japan and Australia.

Class **Actinopterygii**  
Order **Pleuronectiformes**  
Family **Soleidae**



Scan DNA Barcode  
MW041874 (COI)





***Chaetodon decussatus* (Cuvier, 1829)**

**Morphology** Color of body is ground brown mostly white, with 2 sets of diagonal blackish lines; entire posterior part of body, encompassing soft portions of dorsal and anal fin, blackish; head with a black bar from high on nape through eye; caudal fin yellow with a black bar in the middle, a clear posterior border, and a blackish submarginal band. Snout moderate to short; predorsal contour nearly straight. Lateral line incomplete. Caudal fin is truncate to slightly round.

**Ecology** Found on rich coral reefs, also on rubble and rocky areas. Many species form pairs, while some are solitary, others form schools. Their presence on a reef is used as an indicator of the health of corals.

**Distribution** Indo-West Pacific: Maldives, India, Sri Lanka, Andaman Sea and the westernmost portion of the Indo-Malayan Archipelago.

Class **Actinopterygii**

Order **Acanthuriformes**

Family **Chaetodontidae**



Scan DNA Barcode  
MK340600 (COI)





### ***Drepane longimana*** (Bloch & Schneider, 1801)

**Morphology** Colour of head and body is silvery with 4-10 vertical dark bars usually visible on dorsal part of the body from head to caudal-fin base. Body very deep, strongly compressed. Snout profile straight or concave; mouth terminal and protrusible, forming a downward-pointing tube when protruded. Pectoral fins long, falciform, reaching caudal peduncle.

**Ecology** Inhabit a variety of habitats including inshore on sand or mud bottoms, reefs, estuaries and harbours. Feed of benthic invertebrates, mainly crustaceans and worms.

**Distribution** Indo-West Pacific: Red Sea and East Africa to Indonesia, New Guinea and Philippines, north to Taiwan and Japan, south to northern Australia; including the Persian Gulf.

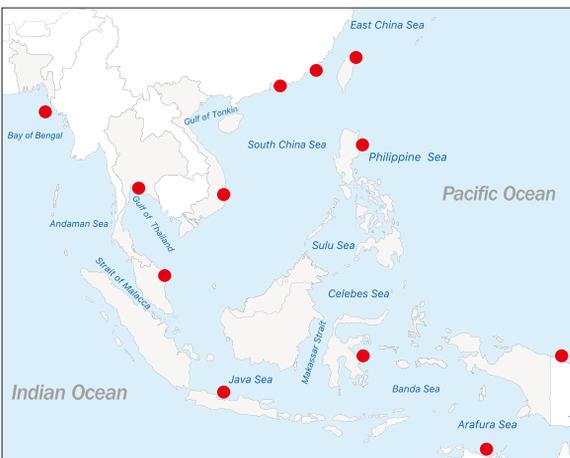
Class **Actinopterygii**

Order **Acanthuriformes**

Family **Drepaneidae**



Scan DNA Barcode  
MK340610 (COI),  
MK340611 (COI)





## ***Platax teira*** (Forsskål, 1775)

**Morphology** Colour of body is yellowish silver with 3 vertical black bands; pelvic fin yellow; a black blotch laterally on belly. Body orbicular, strongly compressed. Snout short, contour of frontal almost vertical in large adults. Five pores on each side of the lower jaw. Tricuspid teeth on jaws; middle cusp slightly larger than lateral cusps; a few teeth on vomer but palatines toothless.

**Ecology** Found in various shallow water habitats including estuaries, harbors, and coral reefs. Feeds on benthic invertebrates and fishes.

**Distribution** Indo-West Pacific: Red Sea and East Africa to Papua New Guinea, north to the Ryukyu Islands, south to Australia; Persian Gulf, northern Bay of Bengal.

Class **Actinopterygii**

Order **Acanthuriformes**

Family **Ephippidae**



Scan DNA Barcode  
MK340675 (COI),  
MK340676 (COI)





### ***Gazza minuta*** (Bloch, 1795)

**Morphology** Body length 12 cm, colour silvery with vermiculations irregular yellow on dorsal side up to midlateral; dorsal, pectoral and pelvic fins colorless; dorsal fin spinous membrane margin black; anal fin anterior yellow. Nuchal spine on nape. Mouth pointing forward when protracted. Head and breast scaleless. Scales minute.

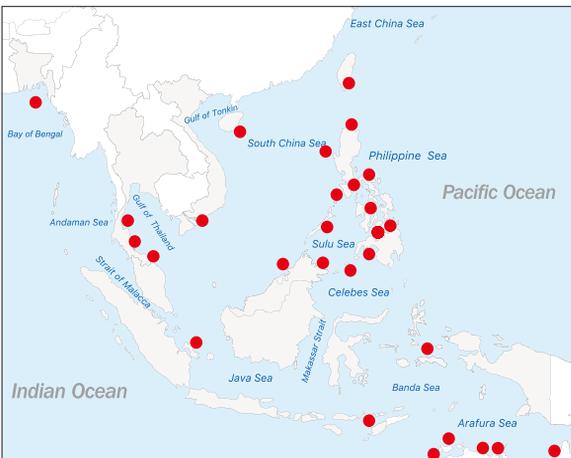
**Ecology** Marine; brackish; demersal; depth range 10 - 110 m; tropical; found in shallow inshore coastal waters over silty bottoms; young enters mangrove estuaries or silty reef areas; searches for prey using a protruding pipette-like mouth or by sieving potential food through their gill rakers; feeds on small fishes, shrimps, other crustaceans, and polychaetes.

**Distribution** Indo-Pacific: Red Sea and the east African coast to Australia and Tahiti, north to the Ryukyu Islands.

Class	Actinopterygii
Order	Acanthuriformes
Family	Leiognathidae



Scan DNA Barcode  
MT941437.1 (COI)





## *Leioognathus equula* (Forsskål, 1775)

**Morphology** Body length 10 cm; body very deep, compressed, with a strongly humped back; mouth pointing downward when protracted; colour of adults, back greyish, belly silvery and many parallel close-set faint bars on back; usually a dark brown saddle on caudal peduncle; axil of pectoral fins grey to black; margin of soft dorsal fin black; both caudal-fin lobes with broad dusky margins; pectoral, pelvic, and anal fins colourless to yellowish.

**Ecology** Marine; freshwater; brackish; demersal; amphidromous; depth range 10 - 110 m; tropical; found in river mouths and muddy inshore areas, often in mangrove areas; adults are coastal inhabitants found on soft bottoms, usually between depths of 10-70 meters; juveniles are commonly found in mangrove estuaries and tidal creeks, sometimes entering the lower reaches of freshwater streams; adults move in schools; active by day; feed on polychaetes, small crustaceans, and small fishes.

**Distribution** Indo-West Pacific: Red Sea, Persian Gulf and East Africa (including Reunion, Comoros, Seychelles, Madagascar and Mauritius) to Fiji, north to the Ryukyu Islands, south to Australia.

Class **Actinopterygii**

Order **Acanthuriformes**

Family **Leioagnathidae**



Scan DNA Barcode  
LC569708.1 (COI)





## *Chaetodontoplus mesoleucus* (Bloch, 1787)

**Morphology** Size: to 18 cm TL. Blue lips against its yellow face; black vertical band running through eye; a cinereous area to the rear of the head which extends into a black area, speckled with yellow pattern; caudal fin yellow, dorsal and anal fins with blue margin, pelvic fins white.

**Ecology** Forms small groups. Continental shelf reefs > 20 m depth; feeds on sponges, tunicates, and filamentous algae, non-migratory; protogynous hermaphrodite, female initially and dominant ones changing to males.

**Distribution** Indo-West Pacific: Japan to Indo-Malay Archipelago, Sri Lanka and east to Papua New Guinea. Reported from Mentawai Islands.

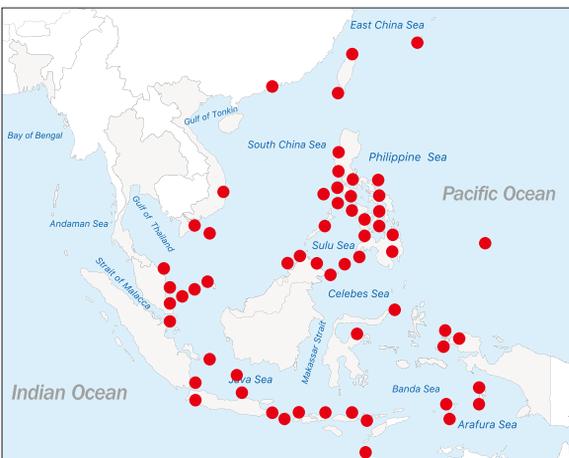
Class **Actinopterygii**

Order **Acanthuriformes**

Family **Pomacanthidae**



Scan DNA Barcode  
MZ421927 (COI)





## *Pomacanthus annularis* (Bloch, 1787)

**Morphology** Size: 45.0 cm TL. Color transformation from juvenile to adult; juveniles dark blue/black with alternating light blue and white vertical stripes; adults orange-yellow body with horizontal brilliant blue stripes from the pectoral-fin base area, towards dorsal fin. Two similar blue stripes run horizontally across face; has a yellow tail, blue ring above the operculum; adult caudal fin white with bright yellow margin, transparent in juveniles.

**Ecology** Adults in pairs inside caves and wrecks, juveniles in very shallow inshore habitats. Coastal reefs at 1 - 60 m depth; feeds on zooplankton, sponges and tunicates; protogynous hermaphrodite.

**Distribution** Indo-West Pacific: East Africa, throughout Indo-Malay Archipelago, New Guinea to New Caledonia, and north to southern Japan.

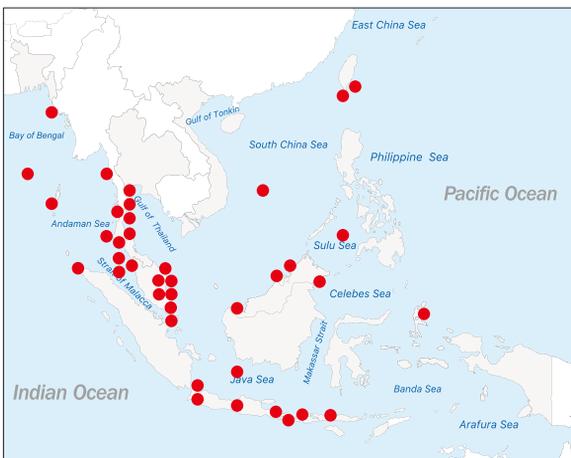
Class **Actinopterygii**

Order **Acanthuriformes**

Family **Pomacanthidae**



Scan DNA Barcode  
FJ583875 (COI)





### *Siganus canaliculatus* (Park, 1797)

**Morphology** Size: to 40.0 cm TL. Elongated and laterally compressed body with a pointed snout and a small mouth. Greenish-yellow to brownish coloration with white spots on its body.

**Ecology** Adults inhabit inshore, algae reefs, estuaries and in large lagoons with algae-rubble habitats. Mainly common on rocky substrates. Juveniles form very large schools in shallow bays and coral reef flats; school size reduces with size, with adults occurring in groups of 20 individuals or so. Herbivorous, feed on benthic algae and to some extent on seagrass.

**Distribution** Indo-West Pacific: Persian Gulf, Gulf of Oman, Pakistan, India, Sri Lanka, Burma, Thailand, Singapore, Malaysia, Indonesia, Papua New Guinea, Philippines, Cambodia, Viet Nam, south China, Taiwan and Western Australia. Also known from Ryukyu Islands; Palau and Yap in Micronesia and Melanesia.

Class **Actinopterygii**

Order **Acanthuriformes**

Family **Siganidae**



Scan DNA Barcode  
MK777523 (COI)





## *Siganus fuscescens* (Houttuyn, 1782)

**Morphology** Body length 13 cm; colour olive green or brown above, silvery below; frequently with a dark patch below origin of lateral line; adults become mottled when frightened; slender, pungent, venomous spines; forked tail ;

**Ecology** Marine; brackish; reef-associated; oceanodromous; inhabits algal and seagrass flats and shallow lagoon and coastal reefs; forms schools; mainly diurnal; juveniles feed on filamentous algae while adults feed on leafy algae and seagrasses; commonly found in large estuaries.

**Distribution** Western Pacific: southern Korea, southern Japan, Ogasawara Islands, Taiwan, southern China, Malaysia, Singapore, Thailand, Andaman Islands, Indonesia, Philippines, Yap, Palau, Pohnpei (Caroline Islands), Solomon Islands, Papua New Guinea, Vanuatu, New Caledonia, and Australia.

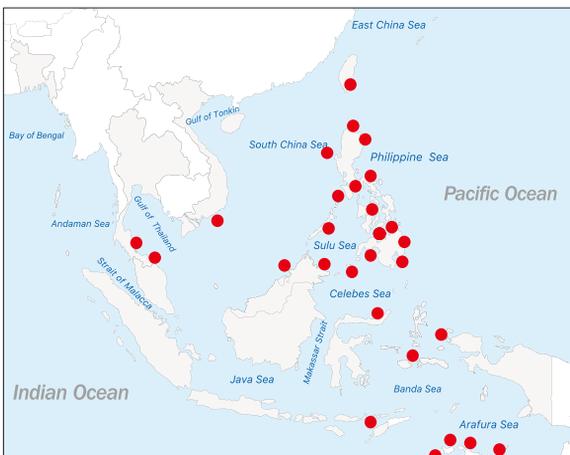
Class **Actinopterygii**

Order **Acanthuriformes**

Family **Siganidae**



Scan DNA Barcode  
KJ013060.1 (COI)





## *Siganus guttatus* (Bloch, 1787)

**Morphology** Size: to 42.0 cm TL. Laterally compressed body, oval-shaped and elongated, with a pointed snout and a small mouth. Greenish-yellow to brownish with numerous bright orange spots on its body. These spots become more prominent as the fish matures.

**Ecology** Inhabits turbid inshore reefs among mangroves; tolerates or even prefers low salinities. Fry settles in seagrass beds around river mouths and adults enter and leave rivers with the tide, but also found on the drop-offs of inshore fringing reefs down to 6 m. Schools throughout life; school size for adults around 10 or 15. Feeds on benthic algae.

**Distribution** Eastern Indian Ocean and Western Pacific: Andaman Islands, Thailand, Malaysia, Singapore, Indonesia (including Papua), Viet Nam, Ryukyus, southern and eastern China, Taiwan, South China Sea, Philippines, and Palau.

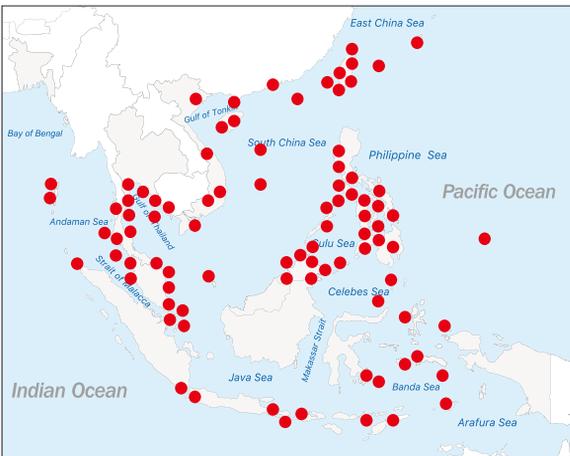
Class **Actinopterygii**

Order **Acanthuriformes**

Family **Siganidae**



Scan DNA Barcode  
MK777527 (COI)





## *Siganus javus* (Linnaeus, 1766)

**Morphology** Colour dark bronze on dorsal half, becoming paler ventrally; many blue spots on head and dorsal half of body; silvery blue undulating lines on ventral half of body. Body relatively deep. Soft parts of dorsal and anal fins moderately high, longest anal-fin ray sub-equal to longest anal-fin spine. Caudal fin slightly concave.

**Ecology** Dwells on bottom in shallow coastal waters. Some species are found in coral reefs, mangroves and seagrass beds. They are primarily herbivorous.

**Distribution** Indo-Pacific: Persian Gulf, Gulf of Oman, Pakistan, India, Bangladesh, Sri Lanka, Myanmar, Andaman Islands, Thailand, Viet Nam, southern China, Malaysia, Indonesia, Philippines, Australia, New Guinea, Vanuatu and New Caledonia.

Class **Actinopterygii**

Order **Acanthuriformes**

Family **Siganidae**



Scan DNA Barcode  
MK340716 (COI)





## *Kyphosus cinerascens* (Forsskål, 1775)

**Morphology** Dorsal fin spines somewhat short, weak; longest dorsal spine; anterior part of dorsal fin and anal fin soft-rayed portions well elevated with growth, longest dorsal and anal soft rays clearly longer than longest dorsal spine; base of spinous portion of dorsal fin equal to or a little longer than that of soft-rayed portion.

**Ecology** Found in rocky and coral reefs in tropical and temperate waters. Herbivorous, primarily feeding on benthic algae. Schooling, sometimes in a group of mixed species of other kyphosids.

**Distribution** Indo-Pacific: Red Sea and East Africa to the Hawaiian, Line and Tuamoto islands, north to southern Japan, south to Australia; northern Bay of Bengal.

Class **Actinopterygii**

Order **Centrarchiformes**

Family **Kyphosidae**



Scan DNA Barcode

**MK340627 (COI)**,

**MK340628 (COI)**





## *Terapon theraps* Cuvier, 1829

**Morphology** Size: to 30.0 cm SL. Oblong and moderately compressed body. Its body is dusky dorsally and silvery white ventrally; dark brown horizontal stripes on body; caudal fin with medial rays pigmented and upper lobe of caudal fin with dark tip.

**Ecology** Adults inhabit coastal waters. Often found in brackish waters. Juveniles with floating weeds, often far offshore. Feeds mainly on small fishes, crustaceans, and mollusks.

**Distribution** Indo-West Pacific: East Africa, Madagascar, Seychelles, Red Sea, Arabian Peninsula, Persian Gulf to India and Andaman Islands; and southeast Asia. Reaches south to the Arafura Sea and northern Australia.

Class **Actinopterygii**

Order **Centrarchiformes**

Family **Terapontidae**



Scan DNA Barcode  
MW498825 (COI)





### *Lutjanus decussatus* (Cuvier, 1828)

**Morphology** Body length 15 cm; body moderately deep; preopercular notch and knob poorly developed; vomerine tooth patch crescentic, without a medial posterior extension; colour generally whitish, with a 'checker-board' pattern on upper half of sides, with dark brown bars and stripes, surrounding rectangular, whitish 'windows'; horizontal brown stripes 5-6, 2 on lower half of sides; caudal fin base with large black spot. .

**Ecology** Marine; reef-associated; depth range 2 - 35 m; adults inhabit both inshore and offshore coral reefs where they occur singly or in schools; small juveniles on shallow protected reef flats.

**Distribution** Indo-West Pacific: southern India and Sri Lanka to New Guinea, north to the Ryukyu Islands.

Class **Actinopterygii**

Order **Lutjaniformes**

Family **Lutjanidae**



Scan DNA Barcode  
KU682547.1 (COI)



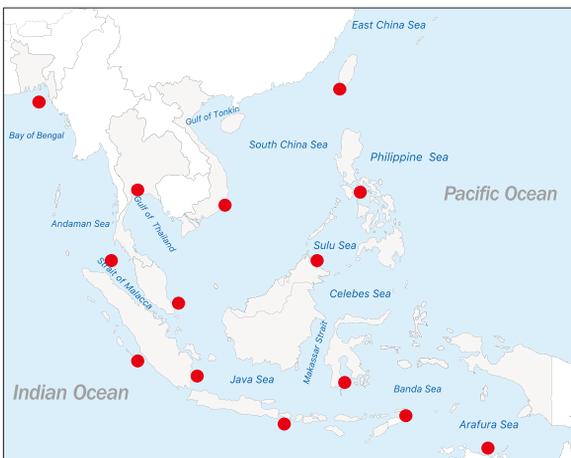


## *Lutjanus erythropterus* Bloch, 1790

**Morphology** Body reddish or brownish in colour. Head region contain a brownish band that extend to the base of the dorsal fin. Dorsal fin grey colour with a brown anterior margin. Pectoral fin brownish. Pelvic and anal fin grey colour. Caudal fin brown and caudal peduncle contain a large black mark surrounded by creamy white border. Body large, elongated and laterally compressed. Dorsal profile of head steeply sloped. Head large in comparison with body. Nostril rounded. Barble absent. Lateral line single, complete and curved. Eye dorsal in position. Dorsal fin single, large and spine present. Fifth dorsal spine is the longest. Caudal fin truncate.

**Ecology** Adults inhabit trawling grounds and reefs. They are present over shoals, rubble, corals, large epibenthos, hard or sandy mud substrates and offshore reefs. Feed on small fish, crustaceans, cephalopods and other benthic invertebrates. Most species are active at night.

**Distribution** Indo-West Pacific: Persian Gulf, Gulf of Oman and Chagos Archipelago east to Philippines and Samoa, north to Ryukyu Islands (Japan) and southern Japan, south to Western Australia, Queensland; northern Bay of Bengal.



Class **Actinopterygii**

Order **Lutjaniformes**

Family **Lutjanidae**



Scan DNA Barcode  
MK340640 (COI),  
MK340641 (COI)



## *Lutjanus fulviflamma* (Forsskål, 1775)

**Morphology** Body length 15 cm; body moderately deep; preopercular notch and knob poorly developed; vomerine tooth patch triangular or diamond-shaped, with a medial posterior extension; caudal fin truncate to slightly emarginate; colour of back and upper sides brown, lower sides whitish or light brown and belly whitish to yellow, usually a series of 6-7 yellow stripes on the sides and a prominent black spot at level of lateral line, below base of anterior part of soft portion of dorsal fin.

**Ecology** Marine; brackish; reef-associated; depth range 3 - 35 m; adults inhabit coral reefs, usually in schools on coastal reefs and in deep lagoons; often in large aggregations; juveniles are sometimes found in mangrove estuaries or in the lower reaches of freshwater streams; feed mainly on fishes, shrimps, crabs and other crustaceans; neither anterolateral glandular groove nor venom gland is present.

**Distribution** Indo-Pacific: Red Sea, Persian Gulf and East Africa to Samoa, north to the Ryukyu Islands, south to Australia.

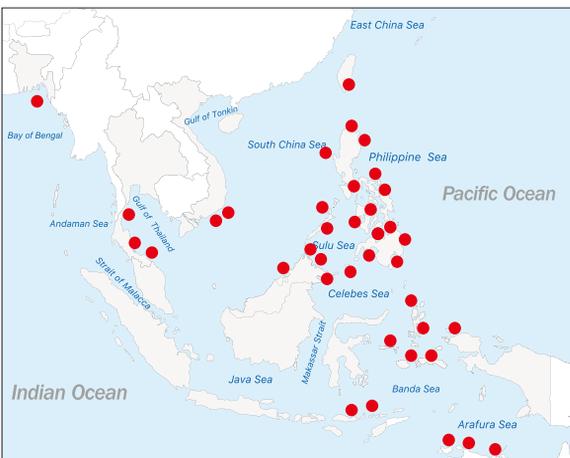
Class [Actinopterygii](#)

Order [Lutjaniformes](#)

Family [Lutjanidae](#)



Scan DNA Barcode  
OQ386577.1 (COI)





## *Lutjanus indicus* Allen, White & Erdmann, 2013

**Morphology** Colour of back and upper side brownish; lower sides and belly pink to whitish with a silvery sheen; a black spot, sometimes faint, is on the lateral line below the anterior portions of the soft dorsal fin; adults from the Indian Ocean usually with 7 or 8 narrow golden brown stripes on the sides; juveniles from the Western Pacific whitish with 4 black stripes on the sides and with a round black spot on upper back. Body moderately deep. Anterodorsal profile of head steeply to moderately sloped; preorbital width about equal to, or slightly less than eye diameter. Posterior profile of dorsal and anal fins rounded; caudal fin truncate. Scale rows on back rising obliquely above lateral line.

**Ecology** They are a common group of fishes on reef habitats. Juveniles of some species are on inshore reefs and among sea-grass meadows. Some species are found in deep reef habitats.

**Distribution** Indian Ocean: northern continental margin of the Indian Ocean including western Thailand, Myanmar, Andaman Islands, Sri Lanka, India, Gulf of Oman and Arabian Gulf.

Class [Actinopterygii](#)

Order [Lutjaniformes](#)

Family [Lutjanidae](#)



Scan DNA Barcode  
MK340661 (COI)





## *Lutjanus lutjanus* Bloch, 1790

**Morphology** Body length 12 cm; dorsal profile of head gently sloped. Preorbital bone very narrow, much less than eye diameter; preopercular notch and knob poorly developed; scale rows on back rising obliquely above lateral line; generally silvery white, with a broad yellow stripe running along the side from the eye to the caudal fin base; a series of faint narrow yellow horizontal lines is on the lower half of the body. The fins are pale yellow to whitish.

**Ecology** Marine; reef-associated; depth range 0 - 96 m; tropical; adults inhabit offshore coral reefs and trawling grounds; trawled to depth of almost 100 m. Frequently encountered in large schools with other *Lutjanus* species; feed on fishes and crustaceans.

**Distribution** Indo-West Pacific: East Africa to the Solomon Islands, north to southern Japan, Australia and Tonga.

Class [Actinopterygii](#)

Order [Lutjaniformes](#)

Family [Lutjanidae](#)



Scan DNA Barcode  
OQ387485.1 (COI)





***Lutjanus monostigma* (Cuvier, 1828)**

**Morphology** Body length 10 cm; Body moderately deep to somewhat slender; preopercular notch and knob poorly developed; vomerine tooth patch crescentic, without a medial posterior extension; caudal fin truncate to slightly emarginate; scale rows on back rising obliquely above lateral line; colour generally whitish to pinkish with dusky scale margins; grey or brown on upper back and dorsal portion of head, a black spot, sometimes faint or absent, on back below anterior soft dorsal-fin rays (in juveniles, the spot is round and gradually shrinking and becoming horizontally elongate with increased growth); fins yellowish.

**Ecology** Marine; brackish; reef-associated; depth range 1 - 60 m; tropical; adults inhabit coral reef areas, usually close to shelter in the form of caves, large coral formations and wreckage; usually solitary; occasionally occurring in small groups; feeds mainly on fishes and benthic crustaceans, primarily crabs at night.

**Distribution** Indo-Pacific: East Africa to the Marquesas and Line islands, north to the Ryukyu Islands, south to Australia.

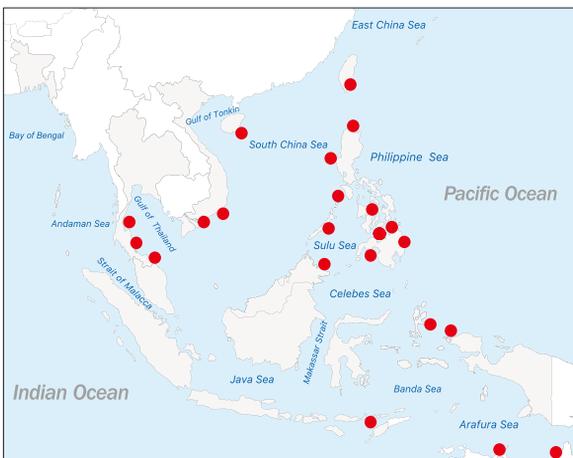
Class **Actinopterygii**

Order **Lutjaniformes**

Family **Lutjanidae**



Scan DNA Barcode  
KC970399.1 (COI)





## *Lutjanus quinquelineatus* (Bloch, 1790)

**Morphology** Size: to 38.0 cm TL. Body generally bright yellow, including fins, with five blue stripes; often a black spot on rear of body between second and third stripes touching the lateral line but mostly above it; maximum reported age: 31 years.

**Ecology** Adults frequently in large aggregations (> 100) at 30-40 m depth; juveniles solitary in shallow protected bays with algae and rubble substrates; Feed mainly on fishes and crustaceans; a commercial and game fish.

**Distribution** Indo-West Pacific: Persian Gulf, Gulf of Oman to Fiji, north to Japan, through Southeast Asia, Australia. Has been referred to as *Lutjanus spilurus* (synonym).

Class **Actinopterygii**

Order **Lutjaniformes**

Family **Lutjanidae**



Scan DNA Barcode  
MG002624 (COI)





## *Lutjanus rivulatus* (Cuvier, 1828)

**Morphology** Dorsal side is brownish and ventral side blackish. Head with numerous blue and yellow wavy line. Body with 5 brown transverse bars. A chalky white spot present just below the anterior part of the dorsal soft rays. Dorsal fin black with a black lower margin. Pectoral and pelvic fin blackish. Anal fin is also black with a lower white margin and caudal fin dark in colour. Body large, elongated and laterally compressed. Dorsal profile of head steeply sloped. Mouth large, oblique and terminal. Lip large and fleshy. Scale ctenoid, scale rows on back rising obliquely above lateral line. Nostril rounded. Lateral line single, complete and curved.

**Ecology** Juveniles of some species are on inshore reefs and among seagrass meadows. Some species are found in deep reef habitats.

**Distribution** Indo-Pacific: East Africa to Tahiti, north to southern Japan, south to Australia.

Class **Actinopterygii**

Order **Lutjaniformes**

Family **Lutjanidae**



Scan DNA Barcode  
 MK340658 (COI),  
 MK340659 (COI),  
 MK340660 (COI)





### ***Lutjanus sebae*** (Cuvier, 1816)

**Morphology** Body length 14 cm; colour generally red or pink, darker on the back; fins are red except the pectorals which is pink. Juveniles and small adults have a dark red band from first dorsal spine through eye to tip of snout; a 2nd band from mid-dorsal fin to pelvic fin; a 3rd from base of last dorsal spine to caudal peduncle; large adults become uniformly red.

**Ecology** Marine; brackish; reef-associated; depth range 5 - 180 m; tropical; adults occur in the vicinity of coral or rocky reefs, often over adjacent sand flats and gravel patches; juveniles are frequently commensal with sea urchins; form schools of similar-sized individuals or are solitary; feed on fishes, crabs, stomatopods, other benthic crustaceans and cephalopods.

**Distribution** Indo-West Pacific: southern Red Sea and East Africa to New Caledonia, north to southern Japan, south to Australia.

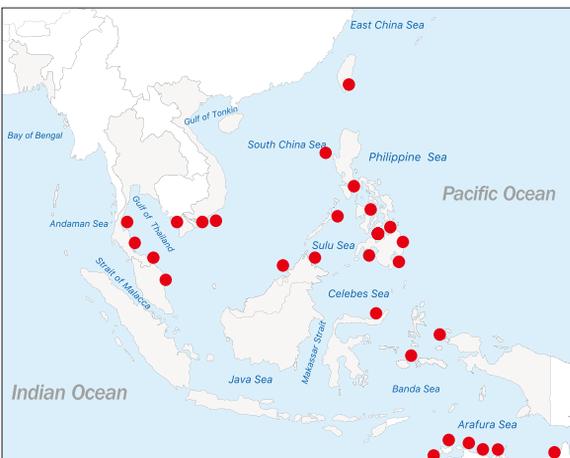
Class **Actinopterygii**

Order **Lutjaniformes**

Family **Lutjanidae**



Scan DNA Barcode  
OQ386404.1 (COI)





## *Cephalopholis boenak* (Bloch, 1790)

**Morphology** Body length 18 cm; brown body color with 7 pale brown vertical bands over the body; dorsal fin is spinous; dorsal, anal and caudal fin are brown to black in color with white tips; pectoral fins are black; pelvic fins are brown; mouth is terminally located; caudal fin is rounded.

**Ecology** Inhabiting coral reef anemone and in silty dead reefs in protected waters; also taken in trawls to depths of 64 m; feeds mainly on crustaceans. Courtship and pair spawning are common.

**Distribution** Indo-Pacific: Red sea, East Africa, Indonesia, Hawaii, north to southern Japan, Australia.

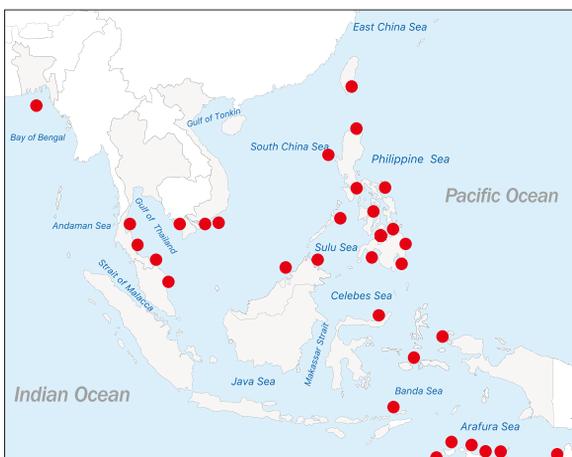
Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
MH707703.1 (COI)





### *Cromileptes altivelis* (Valenciennes, 1828)

**Morphology** Colour white to light greenish brown with scattered round black spots on head, body, and fins, with body spots generally larger than those on head and fins; about 9 large roundish dusky blotches, with some extending partly into base of dorsal and anal fins. Body moderately deep. Small eyes. Small in size. Concave dorsal profile of head; anterior part of the head as compared to the elevated postorbital part; absence of canine teeth, except for a very small pair at the front of the upper jaw. Slit-like posterior nostril. Rounded caudal fin.

**Ecology** They live in coastal and offshore reef habitats. Benthic or bottom-orientated fishes, usually found on coral reefs or rocky substrata; most species occur on continental or insular shelves. All are predaceous, mainly feeding on fish, crustaceans, and cephalopods, while the smaller ones feed on zooplankton.

**Distribution** Western Pacific: southern Japan to Palau, Guam, New Caledonia and southern Queensland, Australia. Eastern Indian Ocean: Nicobar Islands to Broome, northern Bay of Bengal, Western Australia.

Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
GU673954 (COI)





## *Epinephelus areolatus* (Forsskål, 1775)

**Morphology** Body length 31 cm; anal fin of adults rounded to slightly angular; midlateral part of lower jaw with 2 rows of teeth; caudal fin truncate or slightly emarginate in adults; colour pale, covered with numerous close-set brown, brownish yellow or greenish yellow spots ; pectoral fins with small dark spots on the rays; posterior edge of caudal fin with a distinct white margin.

**Ecology** Marine; reef-associated; depth range 6 - 200 m; tropical; usually found in seagrass beds or on fine sediment bottoms near rocky reefs, dead coral, soft corals, in shallow continental shelf waters; probably spawn during restricted periods and form aggregations when doing so; feed on fish and benthic invertebrates, primarily prawns and crabs.

**Distribution** Indo-Pacific: Red Sea and the Persian Gulf to Natal, South Africa and east to Fiji, north to Japan, south to the Arafura Sea and northern Australia. and Tonga.

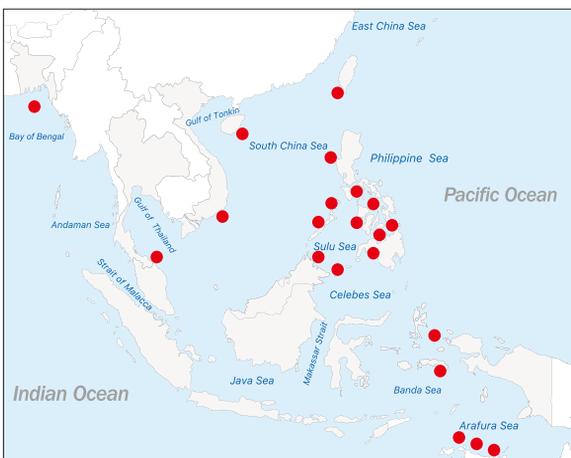
Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
FJ237755.1 (COI)





## *Epinephelus fasciatus* (Forsskål, 1775)

**Morphology** Body length 35 cm; preopercle rounded, rear edge serrate; caudal fin slightly to moderately rounded; colour variable, ranging from pale greenish gray to pale reddish yellow to scarlet; body often with 5-6 faint dark bars, the last on peduncle.

**Ecology** Marine, brackish, reef associated, depth range usually 20 - 45m; tropical; also occurs in protected bays and lagoons as shallow as 4 m, but found down to a depth of 160m; feeds night and day on brachyuran crabs, fishes, shrimps, galatheid crabs; stomatopods, fish, ophiuroids, and octopus; exhibits a combination of simultaneous and sequential hermaphroditism. Smaller individuals within a social group are simultaneous hermaphrodites, while the largest often lose female function and reproduce exclusively as male.

**Distribution** Indo-Pacific: Red sea to South Africa, and eastward to the Pitcairn Group, North to Japan and Korea, south to the Arafura Sea and southern Queensland, Australia.

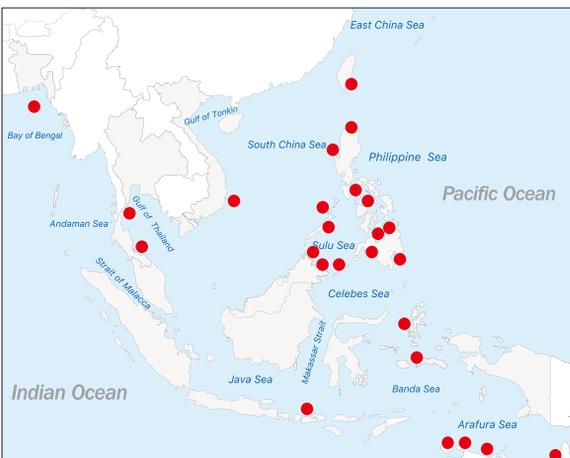
Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
MK777617.1 (COI)





## *Epinephelus merra* Bloch, 1793

**Morphology** Body length 25 cm; preopercle rounded or sub-angular, the serrae at angle enlarged; midlateral part of lower jaw with 2-4 rows of teeth; caudal fin rounded; head, body, and fins pale, are covered with close-set (sometimes coalesced), dark brown or reddish brown spots, the interspaces forming an irregular pale reticulum; pectoral fins are covered with distinct small black spots, largely confined to the rays (the best diagnostic colour character of this species).

**Ecology** Marine; reef-associated; depth range 0 - 50 m. A solitary fish, in coastal and offshore reefs usually in less than 20 m depth; also very common in shallow lagoon and semi-protected seaward reefs; feed on crustaceans and fishes; needs verification if species is poisonous.

**Distribution** Indo-Pacific: South Africa to French Polynesia. Not known from the Red Sea, Persian Gulf, nor Asian mainland.

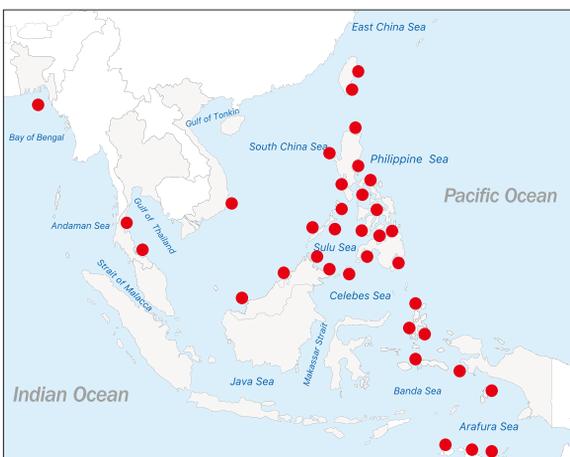
Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
JQ431721.1 (COI)





## *Epinephelus ongus* (Bloch, 1790)

**Morphology** Body length 20 cm; head pointed; preopercle rounded, serrate small and mostly covered by skin; 2-4 rows of small teeth at midlateral part of lower jaw; caudal fin rounded; pectoral fins large and fleshy; colour of body brown, with numerous small white spots; horizontally elongate and tend to form wavy white lines in adults, several round or irregular pale blotches (eye-sized or larger) usually superimposed over small white spots, head brown, with numerous small white spots dorsally behind eyes; .

**Ecology** Marine; brackish; reef-associated; depth range 20 - 60 m; tropical; inhabits inner coastal and lagoon reefs, also in brackish waters where it occurs in ledges and caves; adults usually found deeper than 20 m; solitary and often cryptic; feeds on crustaceans and small fishes.

**Distribution** Indo-West Pacific: East Africa to the Ryukyu Islands, Marshall Islands, Fiji, New Caledonia, northern Australia and Tonga.

Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
(COI)





## *Epinephelus quoyanus* (Valenciennes, 1830)

**Morphology** Size: to 40.0 cm TL. Rounded caudal fin; pelvic fins not reaching or just reaching anus; scales on body ctenoid and maxilla naked or with a few very small scales. Its body is whitish with numerous large dark brown to black spots on head, body and fins; chest with two dark brown bands joining below pectoral fin bases

**Ecology** Inhabits rocky and coral reefs - less than 50 m, where it feeds on a variety of fish and invertebrates.

**Distribution** Tropical waters of the Indo-Pacific region. Western Pacific: Japan to Australia.

Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
MK777621 (COI)





### *Epinephelus sexfasciatus* (Valenciennes, 1828)

**Morphology** Body length 20 cm; preopercle with two to four greatly enlarged serrae at its angle; upper edge of the operculum straight; nostril sub equal; maxilla reaches to or slightly past the vertical a rear edge of the eye; pectoral fins not fleshy; color of head and body pale grayish brown with 5 dark brown bars on the body and 1 on nape; scattered pale spots may be present on body and some faint small brown spots are often on the edges of the dark bars; the soft dorsal, caudal, and pelvic fins dusky gray, the pectoral fins grayish or orange-red; the jaws and ventral parts of the head sometimes pale reddish brown.

**Ecology** Marine; reef-associated; depth range 10 - 80 m; tropical; common on silty sand or mud bottoms; its preference for soft-bottom habitats may account for its restricted distribution and absence at oceanic islands; feeds on small fishes and crustaceans

**Distribution** Western Central Pacific: known only from tropical waters, from Thailand and the Philippines to northern Australia.

Class **Actinopterygii**

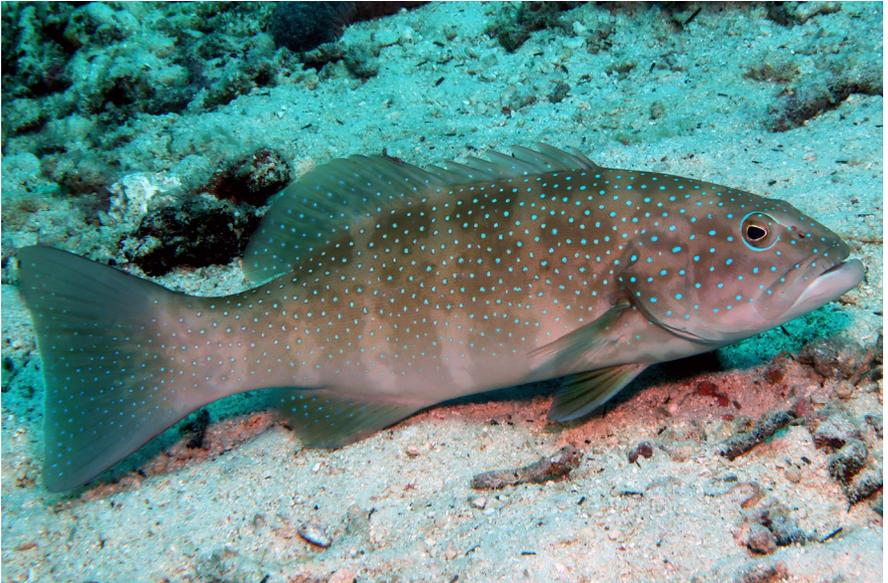
Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
JN313862.1 (COI)





## *Plectropomus leopardus* (Lacepède, 1802)

**Morphology** Size: to 120.0 cm SL. Robust and elongated body with a large head, a wide mouth, and a protruding lower jaw. Its body is covered in large, dark brown spots that resemble leopard spots.

**Ecology** Inhabit coral-rich areas of lagoon reefs and mid-shelf reefs. Solitary. Inactive at night, hiding under ledges. Juveniles have a demersal existence in shallow water in reef habitats, especially around coral rubble. Adults feed mainly on fish, juveniles feed on small fish and invertebrates such as crustaceans and squid.

**Distribution** Western Pacific: from Western Australia, eastward to the Caroline Islands and Fiji; from southern Japan to Australia (Queensland); Tonga

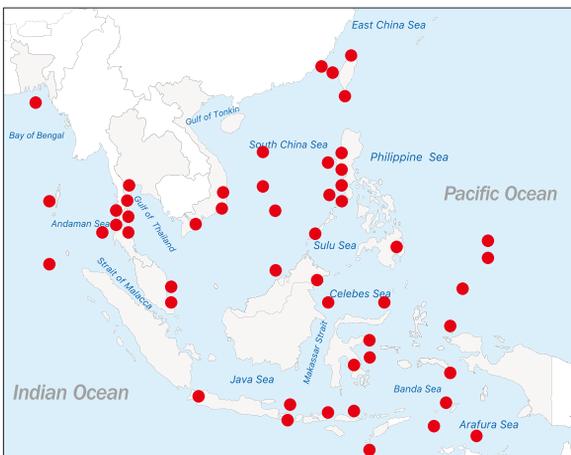
Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode  
MK777629 (COI)





### ***Plectropomus pessuliferus*** (Fowler, 1904)

**Morphology** Colour of body and fins brown to orange-red, with numerous small dark-edged blue spots; some spots on lateral surface of body vertically elongate in adults; spots few or absent on ventral part of body; spots on fins more bluish. Body elongate; Ventral margin of preopercle with 3 large spines. Opercle with 3 flat spines, upper and lower spines covered by skin. Anal-fin spines weak; first and second spines covered by skin. Caudal fin emarginate.

**Ecology** They are common on coastal and offshore reef habitats. Benthic or bottom-orientated, usually found on coral reefs or rocky substrata; most species occur on continental or insular shelves.

**Distribution** Indo-Pacific: Red Sea, Zanzibar, Maldives, St. Brandon's Shoals, Sri Lanka, Bangladesh, Chagos, Nazareth Bank, Sumatra, and Fiji.

Class **Actinopterygii**

Order **Perciformes**

Family **Epinephelidae**



Scan DNA Barcode

**MK340678 (COI)**,

**MK335875 (16S)**





## *Parapercis clathrata* Ogilby, 1910

**Morphology** Colour of body light brown dorsally with rows of small dark spots, whitish ventrally with a lower series of 9 or 10 elliptical brown or brown and red spots, with blackish centers; single black spot with white margin above gill opening in males; caudal fin with a white or yellow spot. Body cylindrical. Three pairs of canine teeth on the lower jaw anteriorly. Palatine teeth absent. Middle dorsal spines longest. Membrane from spinous dorsal connected to 1st soft ray opposite tip of last spine.

**Ecology** Inhabits both clear lagoon and seaward reefs, in areas of open sand and rubble as well as on rocky surfaces between coral heads.

**Distribution** Indo-West Pacific: Bangladesh, India and Sri Lanka to Tonga, Ryukyu Islands and the Great Barrier Reef to the Marshall Islands and Samoa.

Class **Actinopterygii**

Order **Perciformes**

Family **Pinguipedidae**



Scan DNA Barcode  
OQ387034 (COI)





### *Platycephalus indicus* (Linnaeus, 1758)

**Morphology** Back colour light brown, lower ventral flanks and belly whitish or silvery; without dark blotches. Both dorsal fins and caudal fin dusky; other fins pale. 1st and 2nd dorsal, pectoral and pelvic fins with dark spots; anal fin pale; caudal fin with 2 horizontal dark bands, single yellow blotch near middle of fin. Body elongate, snout pointed; upper profile of head slightly convex. Mouth large with bony ridges; a small pre-opercular and two pre-ocular spines present; teeth villiform. Two dorsal fins. Body very depressed, mouth large with bony ridges; a small pre-opercular and two pre-ocular spines present.

**Ecology** This species inhabits on the mud, sand, rocky shore and coral reef.

**Distribution** Indo-West Pacific: Red Sea and East Africa to the Philippines, north to southern Japan and Korea, south to northern Australia; northern Bay of Bengal.

Class **Actinopterygii**

Order **Perciformes**

Family **Platycephalidae**



Scan DNA Barcode  
MT374176 (COI),  
MT374177 (COI)





## ***Dendrochirus zebra*** (Cuvier, 1829)

**Morphology Size:** to 25 cm TL. Body reddish, vertical reddish brown stripes, dark brown band through eye, large black spot on lower gill cover, pale and dark bands on dorsal-fin spines; pectoral fins large, banded, fan-like; median fins with small dark spots; front dorsal fin consists of thirteen tall, quill-like venomous spines; second dorsal fin, anal fin, rounded caudal fin transversely banded in black and white.

**Ecology** Spawn in pairs. Coral, rubble, rock bottoms of reef flats, coastal to outer reef habitats, agoons, caves at 3 - 80 m depth; nocturnal courtship, spawning; males aggressive; highly venomous. Feeds on small crustaceans, fish but preyed by groupers.

**Distribution** Indo-West Pacific: Red Sea and East Africa to Samoa, to southern Japan and the Ogasawara Islands, Southeast Asia, Australia and Lord Howe Island.

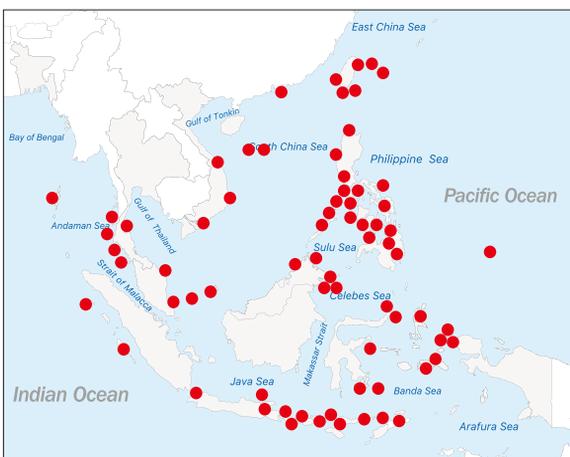
Class **Actinopterygii**

Order **Perciformes**

Family **Scorpaenidae**



Scan DNA Barcode  
FJ583352 (COI)





### *Inimicus didactylus* (Pallas, 1769)

**Morphology** Size: to 25 cm TL. Body colour red/ sandy yellow, light blotches to camouflage; scales only on lateral line, covered with venomous spines, wartlike glands; head flattened, depressed, concave with flaps of skin and raised ridges, tentacles; eyes, mouth and nostrils project upwards and outwards; pectoral fins large; two detached caudal rays at the most anterior of each pectoral fin allows “walking” on seabed.

**Ecology** Solitary. Sandy or silty substrates of lagoon, seaward reefs at 5 - 80 m depth; piscivorous ambush predator, feeds on small fishes and crustaceans; nocturnal; buries on sea floor/ coral head during daytime; coloured pectoral, caudal fins serve as warning.

**Distribution** Indo-West Pacific: From Ryukyu Islands, China, Southeast Asia, south to Vanuatu, Australia.

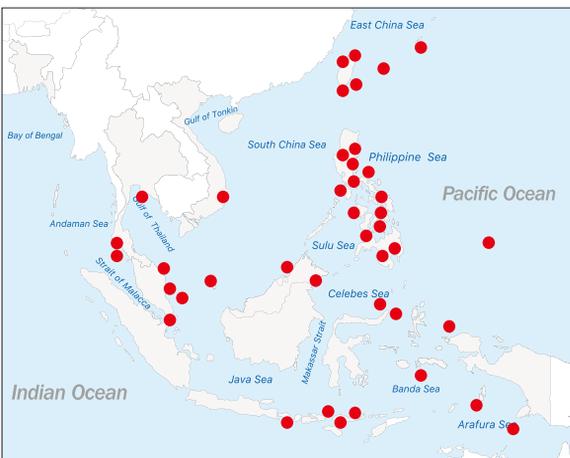
Class **Actinopterygii**

Order **Perciformes**

Family **Synanceiidae**



Scan DNA Barcode  
OQ385795 (COI)





## ***Balistoides viridescens*** (Bloch & Schneider, 1801)

**Morphology** Size: to 75 cm TL. Greyish body with light scale margins forming crosshatch pattern; dark 'moustache' behind mouth, separating light chin from yellow cheek; white tail base and yellow rear tail with a black rear margin. Often hostile (injury) towards divers when guarding their nests in coral rubble.

**Ecology** Adults occur singly or in pairs. Lagoons, seaward reefs and sheltered inner reef slope at 1- 50 m; feed on sea urchins, coral, crabs and other crustaceans, mollusks and tube worms; oviparous. Often hostile towards divers when guarding their nests in coral rubble.

**Distribution** Indo-Pacific: Red Sea to Delagoa Bay, Mozambique to the Line and Tuamoto islands, north to southern Japan, Southeast Asia, south to New Caledonia.

Class **Actinopterygii**

Order **Tetraodontiformes**

Family **Balistidae**



Scan DNA Barcode  
MK560530 (COI)





## *Diodon hystrix* Linnaeus, 1758

**Morphology** Size: to 80 cm TL Body elongated, spherical head with big round protruding eyes, large mouth which is rarely closed; body greyish, with small black spots, long sharp spines. When in danger, body inflates, spines are raised; produces tetrodotoxin eg. in liver, skin, gonads, viscera.

**Ecology** Solitary, except during mating periods. Lagoons, seaward reefs, caves, 2 - 50 m depth; Juveniles pelagic, adults benthic; mainly nocturnal with maximal at sunset and sunrise; feeds on sea urchins, gastropods, hermit crabs.

**Distribution** Circumtropical. Eastern Pacific: California, Chile, Galapagos Islands. Western Atlantic: Bermuda, Massachusetts (USA), Gulf of Mexico, Brazil. Eastern Atlantic: Western Indian Ocean: Red Sea to Madagascar, Reunion and Mauritius, Asia, Oceania.

Class **Actinopterygii**

Order **Tetraodontiformes**

Family **Diodontidae**



Scan DNA Barcode  
MN549741 (COI)





## *Monacanthus chinensis* (Osbeck, 1765)

**Morphology** Size: to 38.0 cm TL. Distinctive shape, with a triangular body and a small head. Its body is covered in small, sharp spines and has a dark, mottled pattern. The fan-bellied leatherjacket gets its name from the fan-like shape of its pelvic fins.

**Ecology** Inhabits estuaries and on coastal and offshore reefs; also on weed bottoms and on trawling grounds. Found on muddy or silty substrates. Is an omnivore which feeds mainly on seagrass, algae, gammarid amphipods and caridean shrimps as well as on bryozoans, hydroids, ascidians, copepods, caprellid amphipods and tanaidaceans

**Distribution** Indo-Pacific: Malaysia and Indonesia to Samoa, north to southern Japan, south to northwestern Australia and New South Wales.

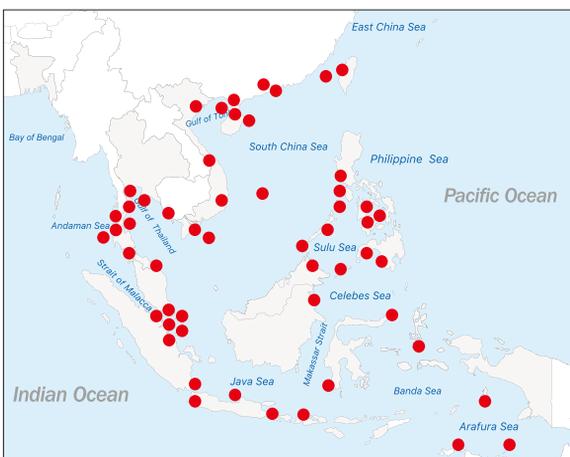
Class **Actinopterygii**

Order **Tetraodontiformes**

Family **Monacanthidae**



Scan DNA Barcode  
MK777823 (COI)





## ***Arothron mappa*** (Lesson, 1831)

**Morphology** Size: to 65 cm TL. Body spherical yet relatively elongated, covered with prickles (instead of scales); black area around anus; black reticulations below pectoral fins with wavy lines and spots; fine lines radiating from eyes; large black blotch around gill opening, black blotch on the lower side. Contains poisonous tetrodotoxin.

**Ecology** Usually solitary; demersal; lagoons and sheltered seaward reefs at 4-30 m depth. Feed on algae, sponges, and benthic invertebrates; oviparous.

**Distribution** Indo-Pacific: East Africa south to Natal, South Africa and east to Samoa, northward to the Ryukyus and western sea of Japan, southward to Indonesia, Malaysia, Vietnam, the Philippines, New Caledonia, Australia.

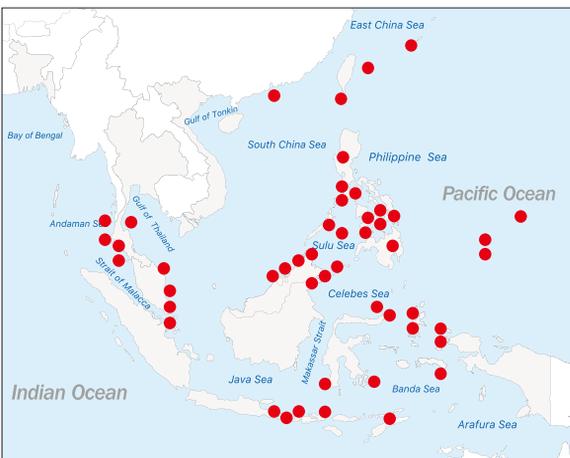
Class **Actinopterygii**

Order **Tetraodontiformes**

Family **Tetraodontidae**



Scan DNA Barcode  
JQ681765 (COI)





***Chelonodontops bengalensis*** Habib, Neogi, Oh, Lee & Kim, 2018

**Morphology** D 12; A 10; pectoral-fin rays 19; many two-rooted spinules on dorsal and ventral side of the body; two lateral lines with the upper joining the lower in the area above or behind the anal fin; nostril/nasal organ in the form of a depression, a slightly raised margin, expanded before and behind into a pair of elongate flaps, resembling an upraised cup with 2 fleshy lobes; both back and belly have spines. Colouration: dorsal half of head and body covered with fine brown reticulations and many white spots; ventral half of head and body silvery white covered by many white spots from chin to above anal-fin origin; dorsal rim of eye pale yellow.

Class **Actinopterygii**

Order **Tetraodontiformes**

Family **Tetraodontidae**



Scan DNA Barcode  
MH102413 (COI)

**Ecology** Inhabits Ganges Estuaries, southern coast of the Sundarbans mangrove region, Bay of Bengal, Bangladesh.

**Distribution** Eastern Indian Ocean: Bangladesh; West Bengal, India.





## *Caesio cuning* (Bloch, 1791)

**Morphology** Colour of caudal fin, upper caudal peduncle and posterior portion of back yellow; upper body if not yellow, grayish blue; lower sides and belly white or pinkish; axil and upper base of pectoral fins black; dorsal fin yellow posteriorly and grayish blue anteriorly. Body fairly deep and compressed. A single post-maxillary process; small conical teeth in jaws. Scale rows above lateral line; dorsal and anal fins scaly.

**Ecology** They are found in large schools on coral reefs. Schooling, often in groups with more than one species. Primarily plankton feeder

**Distribution** Indo-West Pacific: Sri Lanka to Vanuatu; southern Japan to northern Australia; northern Bay of Bengal.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Caesionidae**



Scan DNA Barcode

MK340588 (COI),

MK340589 (COI),

MK340590 (COI)





## ***Gerres erythrousus*** (Bloch, 1791)

**Morphology** Body length 10 cm; body silvery with indistinct fine dark stripes along scale rows above and 4-6 rows immediately below lateral line ; caudal fin short and deeply forked; pectoral fins reaches beyond level of anal fin; ventral and anal fins yellow with white tips.

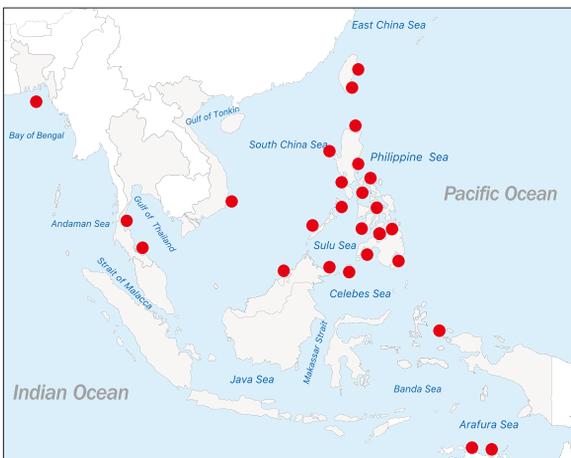
**Ecology** Marine species that enters estuaries and coastal lagoons; forms schools on sandy bottoms; small juveniles feed on zooplankton, larger fish feed on small polychaetes, bivalves, crustaceans and fishes; spawners migrate from mangroves and sand flats to the outer reef edge around the full moon.

**Distribution** Indo-West Pacific: Madagascar to Australia. Reported from Vanuatu.

Class **Actinopterygii**  
Order **Eupercaria incertae sedis**  
Family **Gerreidae**



Scan DNA Barcode  
MK777286.1 (COI)





***Plectorhinchus macropilus*** Satapoomin & Randall, 2000

**Morphology** Colour whitish to grayish ground colour on most parts of body; yellowish on soft portions of median fins, contrasting with many large (mostly larger or equal to orbit diameter), irregularly rounded black spots on body, nape, and soft portions of median fins, and smaller black spots on head. Body oblong, compressed. Dorsal profile of head strongly convex. Mouth small; lips fleshy, moderately thick; chin with 6 pores and no median pit. Dorsal fin slightly notched. Caudal fin truncate. Scales ctenoid; front of snout, lips and chin naked.

**Ecology** Inhabit coastal waters including reefs, bays, and estuaries. Grunts form schools and can be seen under ledges or over coral heads during daytime. Carnivorous, feed on small benthic invertebrates or fish.

**Distribution** Eastern Indian Ocean: Andaman Sea, off southwestern Thailand; northern Bay of Bengal.

Class **Actinopterygii**  
Order **Eupercaria incertae sedis**  
Family **Haemulidae**



Scan DNA Barcode  
MK560521 (COI),  
MK340677 (COI),  
MK561628 (16S),  
MK335874 (16S)





***Pomadasys andamanensis* McKay & Satapoomin, 1994**

**Morphology** Size: to 9.0 cm TL. Pale greyish damselfish; large black spot around the pectoral fin base, black tips on dorsal fin spines; can be distinguished from other damselfishes by a combination of characteristics that include body dimensions, counts of fin rays, scales and gill rakers; large black spot around the pectoral fin base; black tips on dorsal fin spines; distinguished from other damselfishes by combination of body dimensions, fin ray counts, scales and gill rakers.

**Ecology** Solitary, swimming well above substrates. Adults seen in lagoons, inshore, and offshore reefs at 5 - 60 m depth; non-migratory; feeds on algae, barnacle nauplii, copepods, fish eggs, and small gastropods; oviparous, distinct pairing during breeding; males guard and aerate the eggs.

**Distribution** Western Pacific: Indo-Malayan Archipelago, east to the Moluccas and Mentawai Islands, north to Taiwan, and the Ryukyu Islands.

Class [Actinopterygii](#)  
Order [Eupercaria incertae sedis](#)  
Family [Haemulidae](#)



Scan DNA Barcode  
MK340687 (COI)





## *Pomadasys guoraca* (Cuvier, 1829)

**Morphology** Body elongate and compressed, rounded; Mouth small, lips slightly thick. Maxilla extending below front edge of eye. Villiform teeth. Scales ctenoid. Body silvery, slightly darker on back. Yellow stripes present below lateral line. Dorsal fin silvery; pectoral, pelvic and anal fin yellowish; caudal fin black with white edge.

**Ecology** Inhabit coastal waters including reefs, bays, and estuaries. Grunts form schools and can be seen under ledges or over coral heads during daytime.

**Distribution** Indo-Pacific: eastern coast of Africa to the Philippines; Bangladesh in the northern Bay of Bengal.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Haemulidae**



Scan DNA Barcode

MK375172 (COI),  
MK340689 (COI),  
MK340690 (COI),  
MK340691 (COI),  
MK561616 (16S),  
MK561617 (16S),  
MK561618 (16S)





## ***Cheilinus chlorourus*** (Bloch, 1791)

**Morphology** Size: to 45.0 cm TL. Moderately deep; scales reaching well onto bases of dorsal and anal fins and rounded caudal fin in small fishes. Its body has variable colour from greenish brown to deep reddish brown and usually flecked with white; reddish brown fins; each scale on sides usually with a blue or brown spot; head with red spots and some joining to form lines radiating from eye.

**Ecology** Adults inhabit lagoon and coastal reefs, in areas with mixed sand, rubble, and coral. Occasionally in grassy areas. Feed mainly on benthic invertebrates such as mollusks and crustaceans. Oviparous, distinct pairing during breeding.

**Distribution** Indo-Pacific: East Africa to the Marquesan and Tuamoto islands, north to the Ryukyu Islands, south to New Caledonia and Rapa.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Labridae**



Scan DNA Barcode  
MK777398 (COI)





### ***Cheilinus fasciatus*** (Bloch 1791)

**Morphology** Size: to 40 cm SL. Greenish-blue head, red-orange band, black and white stripes along body; short orange lines radiating from eye; small dark red spots on lower half of body, dorsal and anal fins, rear of caudal fin; caudal fin white with black posterior margin, median black bar.

**Ecology** Solitary. Lagoon and seaward reefs at 4 - 60 m depth, on sand and rubble substrata near coral reefs; feed on benthic hard-shelled invertebrates, including mollusks, crustaceans, sea urchins; oviparous, distinct pairing during breeding.

**Distribution** Indo-Pacific: Red Sea, east Africa, islands of western Indian Ocean to Micronesia, Samoa and Tonga; north to Ryukyu Islands, Japan; south to Queensland, Australia through Southeast Asian waters.

Class	Actinopterygii
Order	Eupercaria incertae sedis
Family	Labridae



Scan DNA Barcode  
OQ387217 (COI)



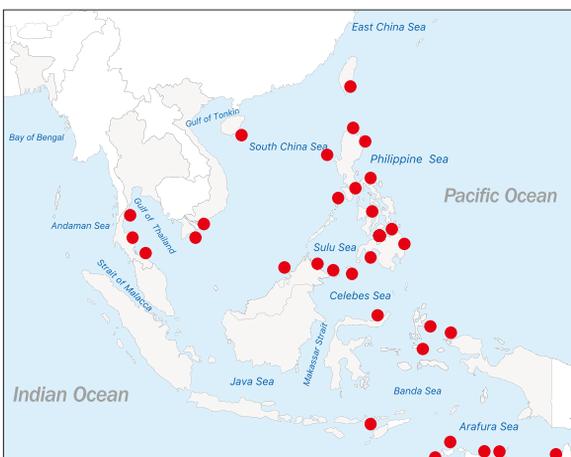


## *Cheilinus trilobatus* Lacepède, 1801

**Morphology** Body length 28 cm; 2 strong canines situated anteriorly in each jaw; pelvic fins long, well beyond anus in adults; centre of caudal fin rounded in adults; with the upper and lower rays forming elongate lobes giving the fin a trilobed appearance; cheek and opercle scaly; lower jaw without scales; colour of the body variably pigmented from green to brown with mottled purple and red markings; 4 vertical dark bars on body that are often indistinct on large individuals; head with numerous small red spots; red lines radiating from anterior and posterior of eye; scales on sides each with a vertical, slightly curved red line; dorsal, anal, and pectoral fins yellow or green with distal red streaks; caudal fin green with a red posterior margin; juveniles with 3-4 dark spots midlaterally on sides and more prominent dark bars; capable of rapid colour changes.

**Ecology** Marine; brackish; reef-associated; depth range 1 - 30 m; tropical; adults inhabit lagoon and seaward reefs at depths of 1 to over 30 m, and relatively common along shallow reef margins with good coral cover; usually solitary; feeds mainly on shelled benthic invertebrates such as mollusks and crustaceans, but occasionally take fishes; oviparous, distinct pairing during breeding; juveniles secretive on algae reefs and usually around stinging hydrozoans.

**Distribution** Indo-Pacific: East Africa to the Tuamoto and Austral islands, north to the Ryukyu Islands, south to New Caledonia.



Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Labridae**



Scan DNA Barcode  
MF123801.1 (COI)



### ***Coris gaimard* (Quoy & Gaimard, 1824)**

**Morphology** Body length 24 cm; body shape: flat-bottomed; colour: blackish violet body with yellow caudal fin and pinkish dorsal spines, pectoral fins and anal fins; broad caudal fin type; terminal mouth type.

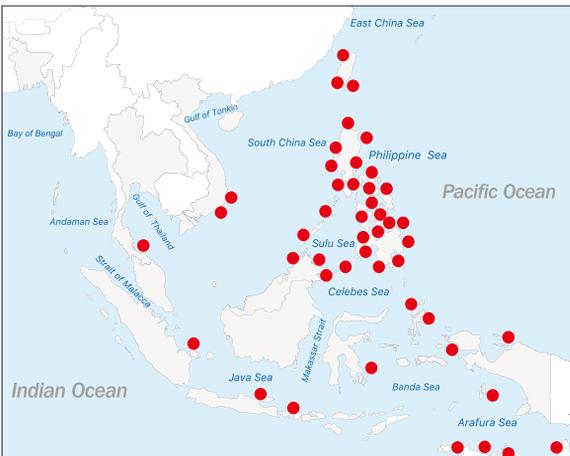
**Ecology** Marine; depth range 1 - 50 m; tropical; found in areas of mixed coral, sand and rubble of exposed outer reef flats, lagoon and seaward reefs; benthopelagic and territorial; feeds mainly on mollusks, crabs, and hermit crabs, and occasionally on tunicates and forams. Oviparous, with distinct pairing during breeding.

**Distribution** Pacific Ocean: Christmas and Cocos-Keeling Islands in the eastern Indian Ocean to the Society and Tuamotu islands, north to Japan and the Hawaiian Islands, south to Australia.

Class **Actinopterygii**  
Order **Eupercaria incertae sedis**  
Family **Labridae**



Scan DNA Barcode  
FJ583263.1 (COI)





## *Epibulus insidiator* (Pallas 1770)

**Morphology** Size: to 54 cm SL. Polychromatic (by age and sex); sub adults and females are brown; males dark brown, green edges on scales, yellowish vertical bar on side, pale grey head with narrow black streak behind eye; juveniles, dark brown, fine vertical white lines on head, body; black spot on dorsal, anal fins. Mouth protrusible, unfolds into suction tube to catch prey.

**Ecology** Solitary. Lagoon, seaward reefs, stony coral growth at 1 - 42 m depth; adults in deep slopes or drop-offs; benthopelagic; feed on small coral-dwelling crustaceans; fishes; visit cleaning stations for mouth inspection; males may patrol mating territory; likely protogynous hermaphrodite.

**Distribution** Indo-Pacific: From Red Sea through South Africa, Indian Ocean coasts, Pacific islands, Japan, Asia, Australia.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Labridae**



Scan DNA Barcode  
MN870616 (COI)





### ***Halichoeres marginatus*** Rüppell, 1835

**Morphology** Body length 20 cm; head with bluish horizontal streaks; body greenish brown; dorsal, ventral and caudal fins with yellow colouration on the edge. Juveniles are black with numerous longitudinal white streaks.

**Ecology** Marine; reef-associated; depth range 0 - 30 m; tropical; inhabit lagoon and seaward reefs, along the upper edges of coral-rich areas; benthopelagic; may be solitary or found in small group; feed on a wide variety of small invertebrates as well as fish eggs.

**Distribution** Indo-Pacific: Red Sea south to Inhaca Island, Mozambique and east to the Hawaiian (1 specimen) and Tuamotu islands, north to southern Japan, south to the southern Great Barrier Reef and Austral Islands.

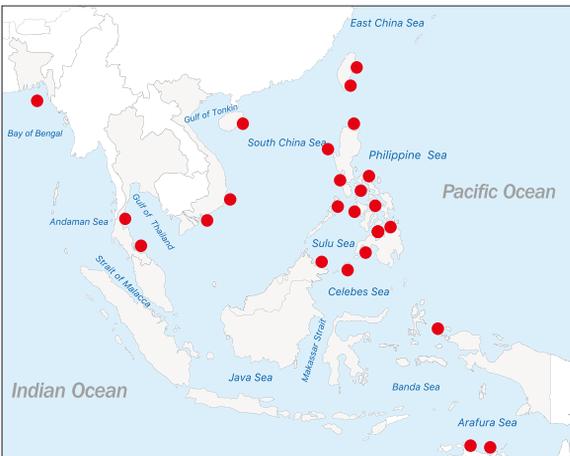
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Labridae**



Scan DNA Barcode  
FJ583511.1 (COI)





### ***Iniistius melanopus*** (Bleeker, 1857)

**Morphology** Body length 11 cm; identified by the thin but distinct blue line from the front of the eye to end of mouth and large individuals by the black elongate spot at the end of the anal fin.

**Ecology** Marine; reef-associated; depth range ? - 64 m, usually 6 - 15 m; tropical; occurs on upper part of sand and mud banks, usually on reef flat areas, just before sloping down in depths from 7 m down to about 15 m; dives into sand to sleep safely at night or to hide when alarmed, but the biggest males swim over large areas and move away quickly when approached by divers rather than diving into the bottom

**Distribution** Indo-West Pacific

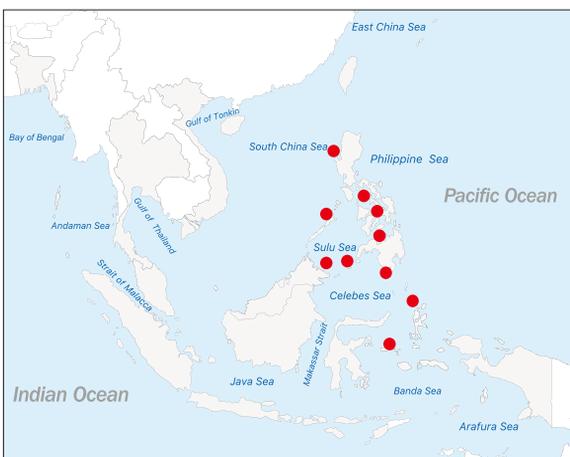
Class **Actinopterygii**

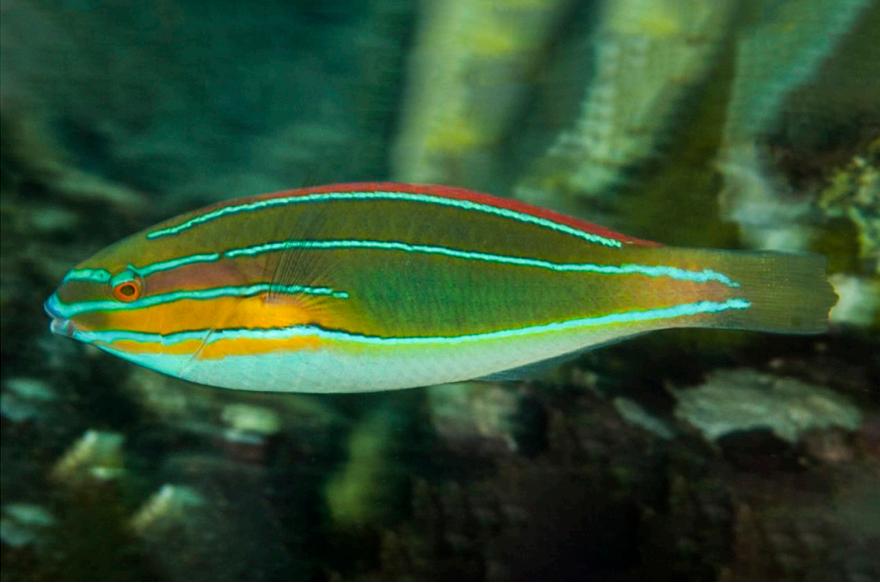
Order **Eupercaria incertae sedis**

Family **Labridae**



Scan DNA Barcode  
**OQ386749.1 (COI)**





## *Stethojulis trilineata* (Bloch & Schneider, 1801) NP

**Morphology** Females spotted, males with lines on head;

**Ecology** Marine; reef-associated; depth range 0 - 20 m; often found on exposed reefs with shallow clear water; usually swim in loose groups along upper parts of drop-offs or above reef crests; may also be found solitary or in pairs.

**Distribution** Indo-West Pacific: Red Sea, Maldives to Samoa and Palau, north to Tokara Island, Japan, south to Montague Island (Australia).

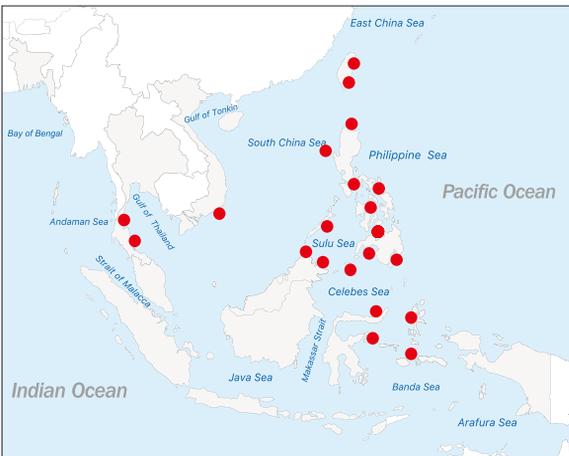
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Labridae**



Scan DNA Barcode  
JQ839608.1 (COI)





## *Thalassoma lunare* (Linnaeus, 1758) NP

**Morphology** Body length 12 cm; Lunate tail yellow; large males turn blue on the head that grades to green towards the tail; body dark green to blue with vertical red to purplish red lines; head green to blue with irregular pink to violet bands; adults with large yellow crescent posteriorly in caudal fin and blue pectoral fins with a large elongate pink area distally. Juveniles with a large dark spot in middle of dorsal fin and a large diffuse black spot at base of caudal fin.

**Ecology** Marine; reef-associated; depth range usually 1 - 20 m; tropical to subtropical; occurs solitary or in groups in the upper portions of lagoon and coastal reefs, and in protected seaward reefs; enters estuaries; usually found on upper portions of ledges and heads; feeds mainly on small benthic invertebrates and fish eggs; a protogynous hermaphrodite.

**Distribution** Indo-Pacific: Indo-Pacific: Red Sea and East Africa to the Line Islands, north to southern Japan, south to Lord Howe Island and northern New Zealand.

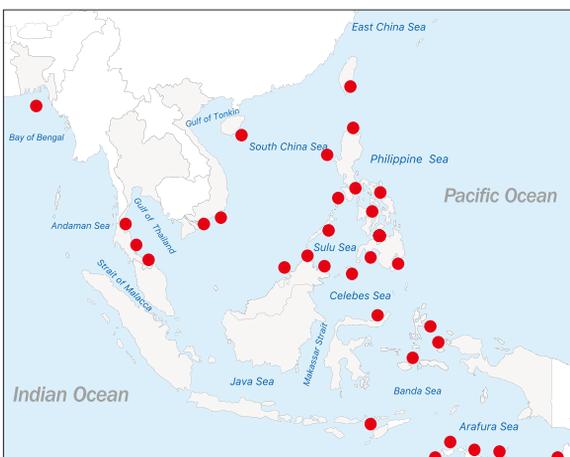
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Labridae**



Scan DNA Barcode  
OQ387725.1 (COI)





## *Lethrinus crocineus* Smith, 1959

**Morphology** Colour of body tan or yellowish, the base of scales sometimes black; head brown; fins pale or yellowish, the edge of the dorsal fin reddish or yellowish. Body fairly deep, dorsal profile near eye nearly straight; snout moderately short; snout angle relative to the upper jaw; interorbital space convex; posterior nostril an oblong longitudinal opening, closer to orbit than to anterior nostril or about halfway between orbit and anterior nostril; eye situated close or relatively removed from dorsal profile. Inner surface of pectoral fin densely covered with scales; posterior angle of operculum fully scaled or sometimes with a wide scaleless area.

**Ecology** Commonly found in coastal waters around coral and rocky reefs, seagrass beds and mangroves. They are predators, mainly active at night. Carnivorous, feeds on various organisms, e.g., fishes, mollusks, crustaceans, polychaetes, and sea urchins.

**Distribution** Western Indian Ocean: Natal, South Africa to the Seychelles and Sri Lanka, possibly more widespread.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Lethrinidae**



Scan DNA Barcode

MK340636 (COI),  
MK340637 (COI),  
MK340638 (COI),  
MK340639 (COI)





## *Lethrinus harak* (Forsskål, 1775)

**Morphology** Body length 20 cm; body moderately deep; snout short and blunt; lateral teeth in jaws of adults molars or rounded; pelvic-fin membranes between rays closest to body without dense melanophores; cheek without scales; colour of body olive or grey above, shading to silvery white below; a large elliptical black spot, often broadly edged in yellow, on side directly below lateral line and centered at a vertical near the posterior tip of pectoral fins; anal fins white to pinkish; caudal fin orange or reddish; vertical fins sometimes lightly mottled or striped.

**Ecology** Marine; brackish; reef-associated; non-migratory; depth range 0 - 20 m; solitary or in small schools over shallow sandy, coral rubble, mangroves, lagoons, channel and seagrass areas inshore and adjacent to coral reefs; feeds on polychaetes, crustaceans, mollusks, echinoderms and small fish; reported to spawn throughout the year during the first five days of the lunar month in large aggregations in Palau.

**Distribution** Indo-West Pacific: Red Sea and East Africa to Samoa, north to southern Japan, south to northeastern Australia.

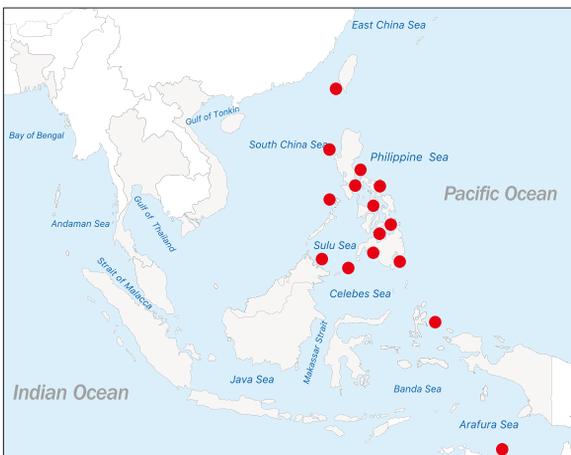
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Lethrinidae**



Scan DNA Barcode  
MN870203.1 (COI)





### ***Lethrinus lentjan*** (Lacepède, 1802)

**Morphology** Size: to 52.0 cm TL. Elongated body with a pointed snout and a large mouth filled with sharp teeth. Side and white on the underside. Pink or reddish-brown in color with a distinct spot behind the gill cover. Prominent black blotch at the base of the pectoral fin

**Ecology** Inhabits sandy bottoms in coastal areas, deep lagoons and near coral reefs. Juveniles and small adults commonly in loose aggregations over seagrass beds, mangrove swamps and shallow sandy areas while adults are generally solitary in deeper waters. Feeds primarily on crustaceans, mollusks and small fishes.

**Distribution** Indo-West Pacific: widespread, from the Red Sea, Arabian (Persian) Gulf, and East Africa to the Ryukyus and Tonga.

Class **Actinopterygii**  
Order **Eupercaria incertae sedis**  
Family **Lethrinidae**



Scan DNA Barcode  
MW498679 (COI)



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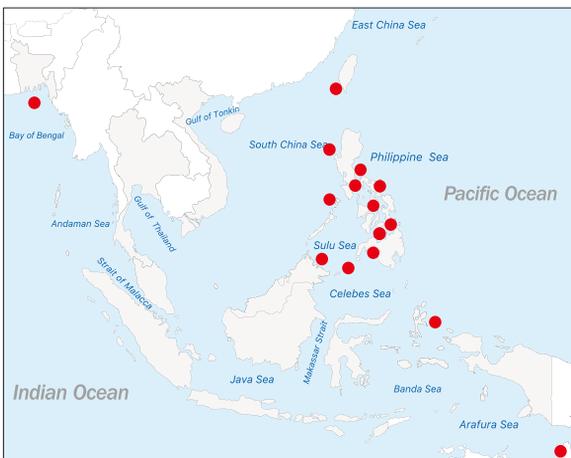


## *Lethrinus ornatus* Valenciennes, 1830

**Morphology** Body length 15 cm; body relatively deep; eye situated close to dorsal profile; lateral teeth in jaws rounded with points or molars; outer surface of maxilla usually smooth, sometimes with a longitudinal ridge; posterior angle of operculum fully scaly; colour of body dusky whitish, lighter below, with 5-6 orange stripes; posterior edge of opercle and preopercle bright red (the former more conspicuous); head brown or tan, sometimes a red spot on lower front edge of eye; pectoral fins orangish; pelvic and anal fins, and most of dorsal fin whitish; edge of dorsal and caudal fins reddish.

**Ecology** Marine; reef-associated; non-migratory; depth range 5 - 30 m; inhabits sandy and soft bottoms and seagrass beds in inshore bays, lagoons and areas adjacent to reefs; feeds on crustaceans, mollusks, echinoderms, polychaetes and small fishes.

**Distribution** Indo-West Pacific: Maldives (Ref. 30829) and Sri Lanka to the Ryukyu Islands, Papua New Guinea, and northeast Australia. Reported from Viet Nam but this is probably a misidentification.



1fish\_Eprime\_pip 17.pdf

Class **Actinopterygii**  
Order **Eupercaria incertae sedis**  
Family **Lethrinidae**



Scan DNA Barcode  
EF609390.1 (COI)



### ***Scolopsis affinis*** (Peters, 1877)

**Morphology** Size: to 24.0 cm TL. Moderately elongate, compressed body; greyish on back, silvery below; top of head and snout dusky grey; usually, a broad yellow to dusky stripe along the side of the body; yellow tail with blue margin; pelvic fins long, reaching to or beyond level of anus; indistinct bluish stripe between eyes; narrow white stripe from upper lip to eye

**Ecology** Singly/small aggregations. Sheltered lagoons on sandy or muddy bottoms close to reefs at 3 - 60 m depth. Unique Bobbit worm mobbing behaviour (protection) – positions vertically face-down above worm burrow, blows sharp jets of water in the potential predator's direction.

**Distribution** Western Pacific: Andaman Sea, Indo-Malay Archipelago, Ryukyu Islands, south to Australia, Solomon Islands.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Nemipteridae**



Scan DNA Barcode  
MK777757 (COI)





### ***Scolopsis bilineata*** (Bloch, 1793)

**Morphology** Size: to 25.0 cm TL. Body with a blacked-edged white stripe curving upwards from eye to middle of dorsal fin base separating upper dark area from whitish body; white blotch below posterior dorsal fin; 3 yellow stripes on upper head.

**Ecology** Adults on most reef habitats, in pairs; juveniles inshore, lagoons, rubble zones, usually singly; feed on small fishes and benthic invertebrates; protogynous hermaphrodite; Batesian mimicry of the poison-fanged blenny *Meiacanthus grammistes*; exhibits biofluorescence, possibly for intraspecific communication and camouflage.

**Distribution** Indo-West Pacific: Maldives and the Laccadive Islands to Fiji, north to southern Japan, Indo-Malay Archipelago, south to Tonga, Lord Howe Island.

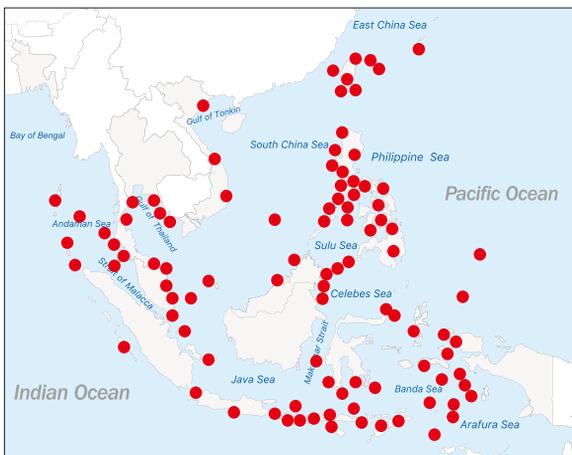
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Nemipteridae**



Scan DNA Barcode  
MK777758 (COI)





### *Scolopsis margaritifera* (Cuvier, 1830)

**Morphology** Size: to 28.0 cm TL. Body olive dorsally, whitish ventrally; two pearly white stripes on snout; lower lobe of caudal fin reddish, centre of scales with pearly or yellowish spots forming longitudinal and transverse lines; displays age and geographical colour variations, juveniles lack yellow stripe in the Indian Ocean population, adults show a contrasting dark back compared to Pacific form.

**Ecology** Shallow waters on sandy or muddy bottoms close to reefs at 2 - 25 m depth; feeds on small benthic invertebrates eg crustaceans, polychaete worms, mollusks and small fishes; juveniles may be Batesian mimics of poison-fang blennies, *Meiacanthus spp.*

**Distribution** Western Pacific: Andaman Sea, and the western central Pacific, from South China Sea to northern Australia and Vanuatu.

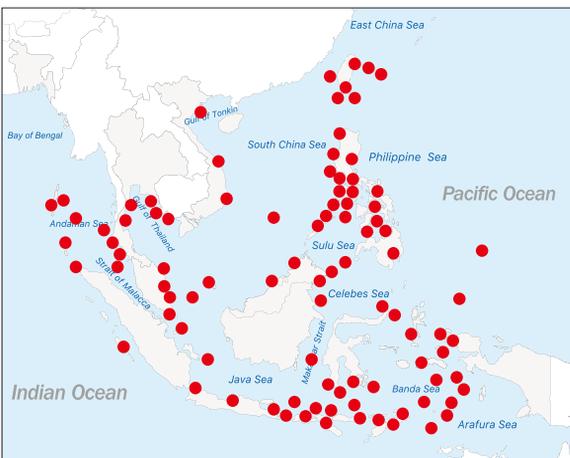
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Nemipteridae**



Scan DNA Barcode  
MN869959 (COI)





## *Scolopsis monogramma* (Cuvier, 1830)

**Morphology** Size: to 38.0 cm TL. Oval-shaped body with three blue stripes on snout; uppermost joining eyes above nostrils. A blue stripe on preopercle behind eye. A blue chevron-shaped stripe running upwards onto opercle from below eye and bending downward towards pectoral-fin base.

**Ecology** Benthic species that inhabits shallow coral reefs and seagrass beds. Occurs solitary or in small groups. It feeds on small invertebrates such as crustaceans and mollusks

**Distribution** Indo-West Pacific: eastern Indian Ocean (Andaman Sea and northwest Australia) to Papua New Guinea, north to the Ryukyu Islands, south to northeastern Australia.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Nemipteridae**



Scan DNA Barcode  
MK777760 (COI)





### *Scolopsis vosmeri* (Bloch, 1792)

**Morphology** Colour of head and body brownish, paler ventrally; distinct, broad white vertical bar on head. Body deep. Suborbital with a large backwardly-pointed spine; no antrorse spine just below eye; external edge of maxilla smooth; lower limb of preopercle scaled. Pelvic fin reaching to or beyond anus when appressed; caudal fin forked.

**Ecology** Found in coral reefs and coastal to offshore shelf waters with sandy or muddy bottoms. They are closely associated with the sandy or muddy bottoms of the sea bed and rarely swim. They are carnivorous and feed on small fish, crustaceans, cephalopods, and polychaetes.

**Distribution** Indo-West Pacific: from the Red Sea and East Africa to Pakistan, India, Sri Lanka, Bangladesh, Myanmar and Thailand (Andaman Sea), extending to western Indonesia and Borneo, the Philippines and New Guinea.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Nemipteridae**



Scan DNA Barcode

MK340705 (COI),

MK340706 (COI),

MK340707 (COI)





## *Priacanthus sagittarius* Starnes, 1988

**Morphology** Body length 20 cm and oval shaped; dorsal fin continuous; eyes very large; mouth large and oblique; preopercular spine short and broad. The head and body reddish silvery or, alternately, pale yellowish with gray mottling; the iris of the eye pink to bright red. The dorsal, anal, and caudal fins pink with reddish-brown spots in the membranes, or yellowish with dusky spots.

**Ecology** Marine; demersal; depth range ? - 350 m; tropical; in sheltered reefs in moderate depths, usually in caves or under coral plates; may also be found in rocky and open areas; solitary.

**Distribution** Indo-West Pacific: Red Sea and Reunion to Japan, northern Australia and Samoa.

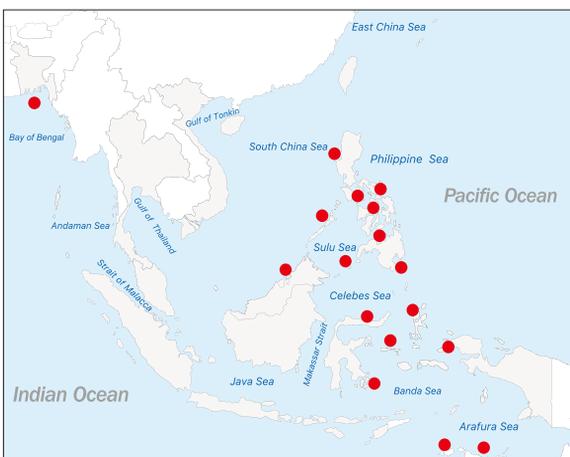
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Priacanthidae**



Scan DNA Barcode  
KF815027.1 (COI)





***Chlorurus rhakoura*** Randall & Anderson, 1997

**Morphology** Color dark gray-brown or deep blue, the scales of body with a dull blue-green cast and very dark purplish edges; margins of dorsal and anal fins bright blue; dental plates bluish white. Body moderately deep; adults with a large, bulbous, fleshy protuberance on the forehead. Caudal fin with strongly inserted rays, giving the posterior margin a ragged appearance.

**Ecology** Inhabits inshore rocky reefs and often in small schools.

**Distribution** Eastern Indian Ocean: Sri Lanka, East Andaman Sea (Thailand), Western Australia and Indonesia (eastern Halmahera), northern Bay of Bengal.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Scaridae**



Scan DNA Barcode  
MK560524 (COI),  
MK561629 (16S)





## ***Leptoscarus vaigiensis*** (Quoy & Gaimard, 1824)

**Morphology** Body length 21 cm; pectoral-fin rays relatively elongate; unique narrow dental plates composed of numerous small teeth; colour when fresh, greenish or olive brown, often strongly mottled; male with midlateral white stripe.

**Ecology** Marine; reef-associated; depth range 1 - 15 m; tropical; found in sheltered bays, harbors and lagoons. Inhabits sea-grass areas or areas with hard substrates heavy with algal cover; usually occur in small groups; unlike other parrotfishes, males and females look very similar and do not change sex; feeds on seagrasses and algae

**Distribution** Indo-Pacific: northern Red Sea and South Africa to Easter Island, north to southern Japan, south to Poor Knight's Island in New Zealand and Rottneest Island in Australia. Southeast Atlantic: False Bay, South Africa

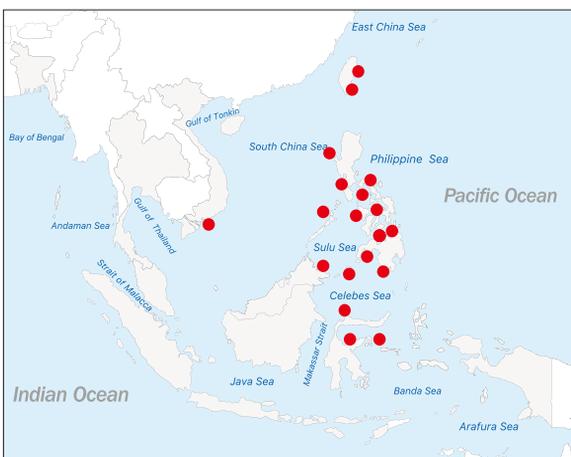
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Scaridae**



Scan DNA Barcode  
MT888973.1 (COI)





## *Scarus forsteni* (Bleeker, 1861)

**Morphology** Size: to 55.0 cm TL. Male, green with pink scale edges, green band around mouth with extension below eye, violet zone on upper head, pink/purple pincer-like marking on lunate tail; female, pale grey, yellowish brown on middle of side, small pale dot above diffuse blue-green patch on mid-side, dark band from eye to pectoral region; juveniles have white stripes and white spot on mid-side.

**Ecology** Solitary. Exposed outer lagoons, seaward reefs in rich coral habitats at 3 - 30 m depth; feeds on benthic algae; oviparous, distinct pairing during breeding.

**Distribution** Pacific Ocean: Christmas Island in the eastern Indian Ocean, Asia and to the Pitcairn Group.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Scaridae**



Scan DNA Barcode  
OQ214192 (COI)





## *Scarus ghobban* Forsskal, 1775

**Morphology** Colour dull orange yellow, the centers of scales bluish; 5 irregular blue bars present on body; fins yellowish. Terminal males green dorsally, the scales rimmed with salmon pink, shading to pale green ventrally with pale salmon pink bar on each scale; head green 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. Teeth fused to form dental plates; dental plates relatively smooth; lips covering more than half of dental plates. Usually 3 rows of scales on cheek. Caudal fin lunate.

**Ecology** Inhabit the vicinity of coral reefs, and usually most abundant in shallow waters. Adults of most species are very brightly coloured and conspicuous on the reef.

**Distribution** Indo-Pacific: Persian Gulf; Red Sea and Algoa Bay, South Africa to Rapa and Ducie islands, north to southern Japan; northern Bay of Bengal.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Scaridae**



Scan DNA Barcode  
MK340703 (COI)





## *Scarus oviceps* Valenciennes, 1840

**Morphology** Size: to 35.0 cm TL. Males, blue dark area (dark cap) over head and body; in females and juveniles “dark cap” is dusky with yellow barring on body.

**Ecology** Typically occurs singly but may also form groups. Lagoons, coastal and seaward reefs at 1 - 20 m depth; feeds on benthic algae.

**Distribution** Indo-Pacific: Mauritius, Line and Tuamoto Islands, north to Ryukyu Islands, through Southeast Asia, south to SharkBay, Great Barrier Reef.

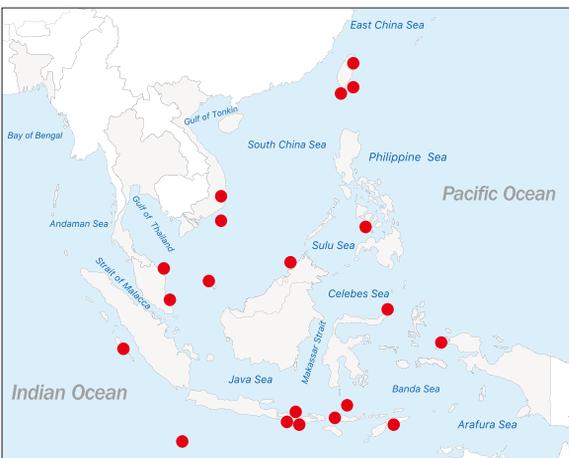
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Scaridae**



Scan DNA Barcode  
GU674343 (COI)





## ***Scarus quoyi*** Valenciennes, 1840

**Morphology** Body length 24 cm; caudal fin is truncate to slightly rounded; colour overall is green to purplish or bluish, sometimes a pink patch on pectoral region, often with lime-green saddle on upper caudal-fin base, a dark green 'moustache' and pale green patch on cheek.

**Ecology** Marine; reef-associated; depth range 2 - 18 m; tropical; Inhabits coral-rich areas of outer channels and seaward reefs; occurs singly or in small groups over intertidal flats to graze on algae during high water mark.

**Distribution** Indo-West Pacific: India to Vanuatu, north to the Ryukyu Islands, south to New Caledonia; Palau (Belau) in Micronesia.

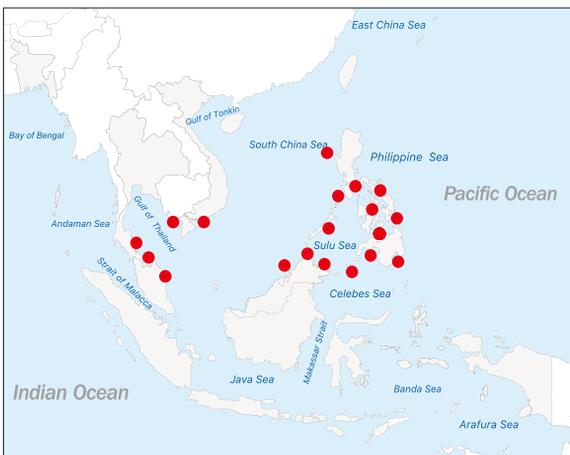
Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Scaridae**



Scan DNA Barcode  
**OQ179535.1 (COI)**





## *Scarus rivulatus* Valenciennes, 1840

**Morphology** Size: to 40.0 cm SL. Elongated body, bright green body marked with a series of narrow, white stripes that run along its sides. Has a beak-like mouth adapted for scraping algae and other organisms off of coral reefs.

**Ecology** Found in silty coastal and offshore areas to 20 m deep. Inhabits rocky and coral reefs from tidal pools to at least 10 m deep. Form schools with 30 to 40 individuals. Grazes on benthic algae and corals

**Distribution** Western Pacific: Thailand to New Caledonia, north to the Ryukyu Islands, south to Perth and New South Wales in Australia. Recently recorded from Tonga.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Scaridae**



Scan DNA Barcode  
MK777413 (COI)



1fish\_siti\_mal 37.pdf



## *Sillago sihama* (Forsskål, 1775)

**Morphology** Size: to 31.0 cm SL. Slender, elongated body with a flattened and narrow head. Silver-grey color and a distinct black spot behind the pectoral fin. The fins are transparent with yellowish tint, and the caudal fin has a black margin.

**Ecology** Common along beaches, sandbars, mangrove creeks and estuaries. Recorded from freshwater. Form schools. Adults bury themselves in the sand when disturbed. Feed mainly on polychaete worms, small prawns, shrimps and amphipods.

**Distribution** Indo-West Pacific: southern Red Sea and Knysna, South Africa to Japan and south to Australia; New Caledonia.

Class **Actinopterygii**

Order **Eupercaria incertae sedis**

Family **Sillaginidae**



Scan DNA Barcode  
MW498796 (COI)



1fish\_siti\_mal 45.pdf



### ***Butis koilomatodon*** (Bleeker, 1849)

**Morphology** Size: to 10.7 cm TL. Fusiform body shape. The fish has a small, pointed head with a protruding lower jaw, and its mouth is equipped with sharp teeth. Characterized by its brownish-grey or olive-green coloration with dark spots and blotches on the body. Long dorsal fin that runs along the length of their body and is supported by spines.

**Ecology** Inhabits slow-moving rivers, swamps, and ponds with muddy or sandy substrates. Feed mainly on small fish, insects, and crustaceans.

**Distribution** Indo-Pacific: Delagoa Bay, Mozambique and Madagascar to China and the Philippines. Introduced in Eastern Atlantic: Nigeria; Panama, Venezuela and Brazil.

Class **Actinopterygii**

Order **Gobiiformes**

Family **Butidae**



Scan DNA Barcode  
MK777296 (COI)





## *Amblyeleotris downingi* Randall, 1994

**Morphology** Four faint broad dark brown bars on body, as well as a weak similar-coloured short vertical line may be in the middle of each interspace; dorsal part of operculum tinged with dark brown; a dusky spot above dorsal end of gill opening; a faint dusky spot on first dorsal fin. Lower jaw slightly protruding beyond upper jaw; gill opening extending anteriorly beyond a vertical line through posterior margin of preopercle. Pelvic fins united medially; frenum present. Sensory canals and pores present on head; a series of short transverse rows of sensory papillae below eye; a pair of sensory papillae just behind chin.

**Ecology** Found in various habitats from torrential freshwater rivers to shelf waters, but most common in brackish waters, shallow coastal waters and coral reefs. They are carnivores or plankton feeders.

**Distribution** Western Indian Ocean: known only from the Persian Gulf from Kuwait to Musandam. Reported from Mentawai Islands, eastern Indian Ocean; northern Bay of Bengal, Bangladesh.

Class **Actinopterygii**

Order **Gobiiformes**

Family **Gobiidae**



Scan DNA Barcode  
MK340584 (COI)





### ***Amblyeleotris rubrimarginata* Mohlmann & Randall, 2002**

**Morphology** Size: to 11.0 cm TL. Body whitish with 5-6 prominent vertical brown or orange bars; row of red spots along dorsal fin margins and upper part of the caudal fin which distinguishes from other congeners; prominent black spot just above and behind eye.

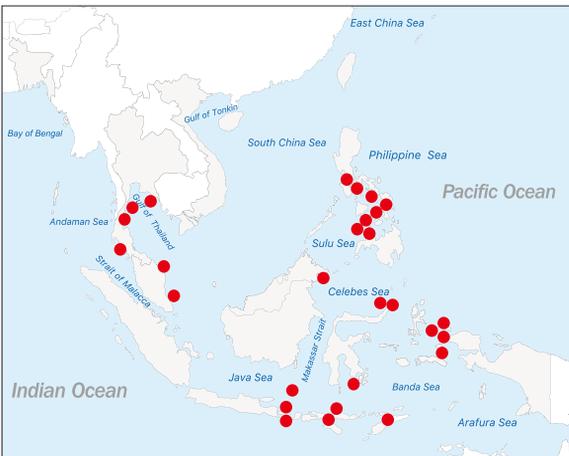
**Ecology** Reefs or in sea grass beds along the sandy bottom of coastal bays and estuaries at depth of 3 to 26 m; symbiotic relationship with alpheid shrimps, with one or a pair of gobies sharing a burrow with a pair of shrimps.

**Distribution** Western Pacific: from New Caledonia to Great Barrier Reef and around New Guinea, Indonesia, Malaysia and the Philippines.

Class **Actinopterygii**

Order **Gobiiformes**

Family **Gobiidae**





## *Amblygobius phalaena* (Valenciennes, 1837)

**Morphology** Size: to 15.0 cm TL. Greenish brown body color with five dark brown to blackish bars; white streak on head, body with white spots in 3-4 horizontal rows; pale edged dark stripe through eye and across cheek; first dorsal fin and upper caudal fin base with black spot.

**Ecology** Solitary or in pairs. Adults inhabit coastal coral reefs, lagoons near seagrass beds at 2 -20 m depth; feed on algae, invertebrates and other organic substances. Largely monogamous, spawning cycle is semilunar; eggs are deposited in burrows.

**Distribution** Western Pacific Ocean: Central area of the Indo-Pacific including the Philippines to the Society Islands, north to Ryukyu Islands, south through Indo-Malay Archipelago to southern Australia (including Lord Howe Island) and Rapa Island, and Micronesia.

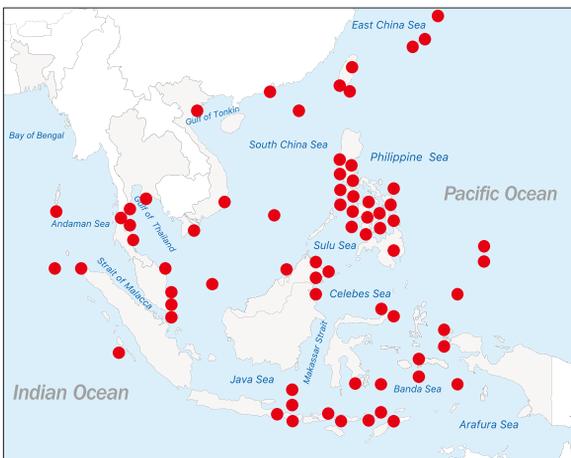
Class **Actinopterygii**

Order **Gobiiformes**

Family **Gobiidae**



Scan DNA Barcode  
OQ386013 (COI)





## *Cryptocentrus maudae* Fowler, 1937

**Morphology** Colour of head and body blackish brown; anterodorsal part of eye, interorbital space, snout and anterior tip of lower jaw pale or pale brown; several pale or pale brown saddles on head and body, in addition to numerous minute pale spots; anal fin with 5-6 diagonal black lines. Jaws subequal, not reaching to a vertical through posterior margin of eye; gill opening reaching anteriorly around a vertical through posterior margin of preopercle. Pelvic fins united medially; frenum present. Scales minute, cycloid; head, breast and pectoral fin base naked. Sensory canals and pores present on head; distinct transverse sensory-papillae rows on cheek; a pair of short longitudinal sensory papillae rows just behind chin.

**Ecology** Inhabits tide pools and mud flats of brackish to fresh waters. Also found on rubble patches on coastal reef. They are carnivores or plankton feeders.

**Distribution** Indo-West Pacific: Sri Lanka to northeastern Australia, north to Palau, Philippines and Brunei, northern Bay of Bengal.

Class **Actinopterygii**

Order **Gobiiformes**

Family **Gobiidae**



Scan DNA Barcode  
**MK293942 (COI)**,  
**MK293944 (16S)**



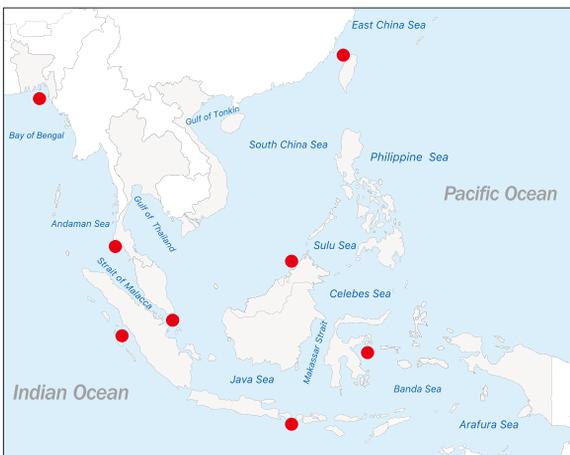


## *Lepidamia kalosoma* (Bleeker, 1852)

**Morphology** Characterized by pale grey to silvery color; 13-14 narrow brown stripes on side of body; fins are dusky brown to reddish. Body shape ovate to elongate. Mouth rather oblique, reaching to below hinder half of eye, lower jaw slightly included. First dorsal spine very small, second one is more than half of third, which is longest and strongest and equal to snout. Second dorsal fin larger than first dorsal fin. Color of live specimen white with a dark lateral band from head to base of caudal, where it ends in a large caudal spot. A second band from snout, along sides at some distance below profile of back. Upper part of first dorsal fin blackish. All the fin slightly reddish in color in live. In preserved condition, body color reddish with slightly dark band over the body and caudal spot may be absent or disappear.

**Ecology** Inhabit coral and rocky reefs and adjacent habitats including sand-rubble patches and seagrass beds. Usually in small to large aggregations that shelter among or near live coral during the day; feeds on small shrimps and crabs.

**Distribution** Indo-West Pacific: India, Sri Lanka, Bangladesh; Western Indonesia and Borneo (Indonesia, Malaysia, Brunei) north to Taiwan.



Class **Actinopterygii**

Order **Kurtiformes**

Family **Apogonidae**



Scan DNA Barcode  
MK340634 (COI),  
MK560520 (COI),  
MT379891 (COI)



## *Ostorhinchus cookii* (MacLeay, 1881)

**Morphology** Colour of head and body pale with six longitudinal dark brown stripes with various widths; 3rd stripe short and extends from dorsal margin of eye to, or slightly beyond, a vertical through origin of second dorsal fin; a dusky rounded spot at caudal-fin base; fins sub-translucent or a little tinged with red. Body oblong, moderately deep and compressed; lateral line well developed, extending posteriorly to caudal-fin base. Snout moderately pointed. Posterior margin of preopercle serrate. No enlarged canine teeth on jaws. Base of anal fin sub-equal to base of second dorsal fin in length; caudal fin emarginate.

**Ecology** Inhabit coral and rocky reefs and adjacent habitats including sand-rubble patches and seagrass beds. Usually in small to large aggregations that shelter among or near live coral during the day; feeds on small shrimps and crabs.

**Distribution** Red Sea; Indo-West Pacific: KwaZulu-Natal (South Africa), East Africa, Persian Gulf, Madagascar, northern Bay of Bengal, east to Philippines, north to southern Sea of Japan, south to Queensland (Australia).

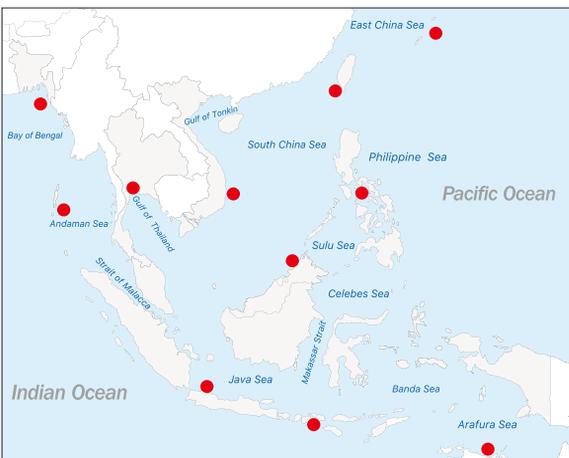
Class **Actinopterygii**

Order **Kurtiformes**

Family **Apogonidae**



Scan DNA Barcode  
**MK340670 (COI)**,  
**MK335872 (16S)**





## *Taeniamia fucata* (Cantor, 1849)

**Morphology** Size: to 10.0 cm TL. Elongated and slender body with a deep notch separating its dorsal fin. Distinctive bright orange stripe running along the base of its dorsal fin, extending along the entire length of its body. Has small mouth and large eyes, and its coloration is typically silver with a yellowish-green tint.

**Ecology** Inhabits continental and insular shelves; on coral and rocky reefs in sheltered bays and lagoon, patch reefs, with muddy, sandy and silty bottoms or coral rubble, and mangroves; typically forming dense aggregations at the entrance of caves and among branching corals. Feeds on small crustaceans and invertebrates.

**Distribution** Indo-Pacific: Persian Gulf; Red Sea and east coast of Africa, eastward to the Marshall Islands, Samoa and Tonga; north to Ryukyu Islands; south to northern Australia.

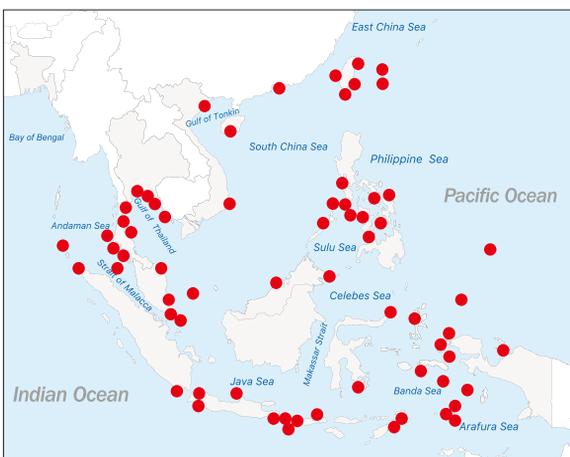
Class **Actinopterygii**

Order **Kurtiformes**

Family **Apogonidae**



Scan DNA Barcode  
MK777396 (COI)





### *Diademichthys lineatus* (Sauvage, 1883)

**Morphology** Size: to 5 cm TL. Slender, flexible, reddish or brown elongated body with three yellowish longitudinal lines. Distinct long spatulate snout (sexual dimorphism, females have longer and finer snout); caudal fin has central yellow spot, snout may have some yellow coloration. May release a grammistin-like toxic mucus on its skin.

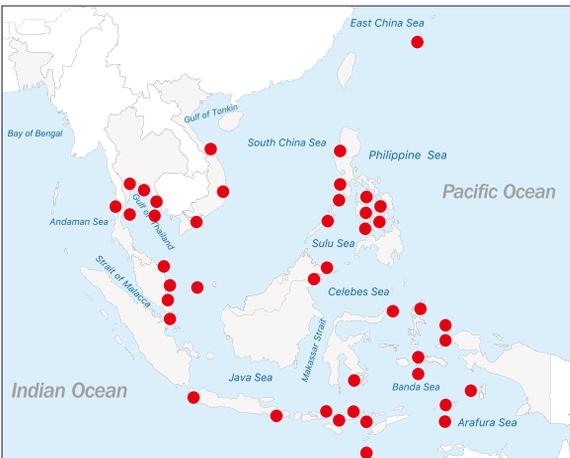
**Ecology** Close association with long-spined sea urchins genus *Diadema* or branching corals of sheltered reefs at 3 - 20 m depth; juveniles eat pedicellariae and sphaeria of the host and commensal copepods; adult fish eat burrowing bivalves in corals, tube feet of host and eggs of shrimp.

**Distribution** Western Indian Ocean: Oman and Mauritius. Western Pacific: Indo-Malay Archipelago to Fiji and Tonga, southern Japan, south Papua New Guinea and Australia.

Class **Actinopterygii**  
Order **Gobiesociformes**  
Family **Gobiesocidae**



Scan DNA Barcode  
OQ386247 (COI)





## *Opistognathus rosenbergii* Bleeker, 1856

**Morphology** Six irregular brown colour bands on sides of body forming a wavy mid-lateral stripe; dorsal fin with five black blotches separated by white bands posteriorly; caudal fin brownish shading to black ventrally, crescentic white band in middle of fin. Body compressed; mouth large, upper jaw short. Scales absent on head, nape, pectoral-fin base, breast, and anteriorly above lateral line.

**Ecology** Occurs in shallow waters on sandy substrates. Inhabiting burrows and usually found with only their heads protruding from the burrow. Lives in small colonies in most species, but solitude in some species. All species are mouth brooders.

**Distribution** Eastern Indian Ocean, Western Pacific: southeast coast of India and Myanmar east to Indonesia, north to Vietnam; northern Bay of Bengal, Bangladesh.

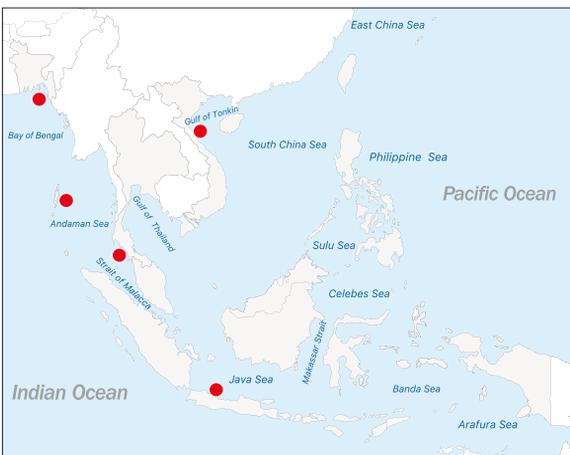
Class **Actinopterygii**

Order **Ovalentaria incertae sedis**

Family **Opistognathidae**



Scan DNA Barcode  
MW940139 (COI)





### ***Abudefduf bengalensis*** (Bloch, 1787)

**Morphology** Size: to 17.0 cm TL. Deep and compressed body; smooth posterior margin of preopercle; teeth on jaws uniserial and incisor-like; forked caudal fin with rounded tail lobes and no conspicuous projecting spine-like rays at upper and lower edges of caudal-fin base. Its ground colour is pale or light gray and gradually darkened dorsally and dorsal end of pectoral-fin base with a distinct black spot.

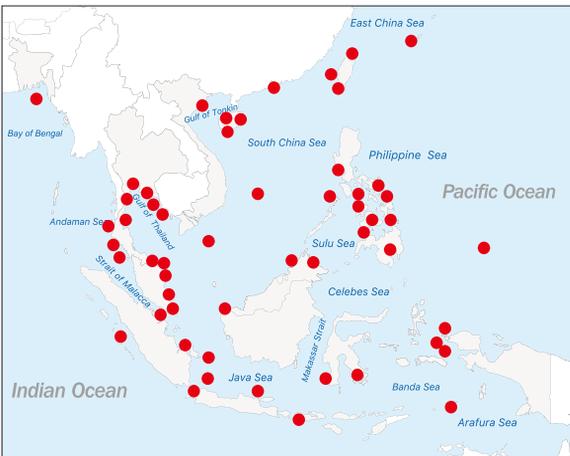
**Ecology** Benthic fish that inhabits coral reefs and lagoons, where it can be found in large aggregations near the bottom, often among branching coral. These fish are diurnal and feed mainly on plankton and small invertebrates.

**Distribution** Indo-Pacific region, including the Andaman and Nicobar Islands, India, Sri Lanka, Myanmar, Thailand, Malaysia, Indonesia, and the Philippines.

Class **Actinopterygii**  
Order **Ovalentaria incertae sedis**  
Family **Pomacentridae**



Scan DNA Barcode  
MK777548 (COI)





***Abudedefduf septemfasciatus*** (Cuvier, 1830)

**Morphology** Whitish body with six dark bands, each wider than the spaces between. There is a seventh band on the head that has spots below. A small black spot is present on the upper pectoral fin base; anal and caudal fins dusky; pectoral fins yellowish with basal triangular black spot. Margin of opercle smooth; caudal fin forked; lobes rounded; soft dorsal.

**Ecology** Found in coral reefs and rocky shores, and often enter brackish estuaries or freshwater streams. Several species prefer holes in the reef structure. They live close to the substrate for protection and to obtain food. Their food preferences range zooplankton to macro algae.

**Distribution** Indo-West Pacific: Red Sea and East Africa to Indonesia, New Guinea and Philippines, north to Taiwan and Japan, south to northern Australia; including the Persian Gulf.

Class **Actinopterygii**  
Order **Ovalentaria incertae sedis**  
Family **Pomacentridae**



Scan DNA Barcode  
MK340573 (COI),  
MK340574 (COI),  
MK340575 (COI)





### ***Abudefduf sordidus*** (Forsskal, 1775)

**Morphology** Body yellowish-white, lighter below with 5-6 dark grey bars on sides; a black spot at tip of caudal fin base; all fins dusky. 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.

**Ecology** Found in coastal waters such as coral reefs and rocky shores, and often enter brackish estuaries or freshwater streams. They occupy many different niches on the reef habitat such as some species prefer branching corals, some tabulate coral species. Several species prefer holes in the reef structure.

**Distribution** Indo-Pacific: Red Sea and East Africa to the Hawaiian and Pitcairn islands, north to Japan, south to Australia; northern Bay of Bengal.

Class **Actinopterygii**  
Order **Ovalentaria incertae sedis**  
Family **Pomacentridae**



Scan DNA Barcode  
MK340576 (COI)





### ***Amblyglyphidodon leucogaster* (Bleeker, 1847)**

**Morphology** Size: to 14.4 cm. Body silvery grey, paler scale centers, yellow belly; anterior half of anal fin, anterior margin of soft dorsal fin, upper and lower margins of caudal fin are blackish; upper pectoral fin base has a distinct wedge-shaped black mark.

**Ecology** Solitary or in small groups. Adults inhabit lagoons, reef passages, outer reef slopes at 2 - 45 m depth. non-migratory; oviparous, distinct pairing during breeding; males guard and aerate the eggs.

**Distribution** Indo-West Pacific: from the Eastern Indian Ocean, north to Ryukyu Island, through Indo-Malay Archipelago, south to Western Australia up to the Caroline and Marshall Islands.

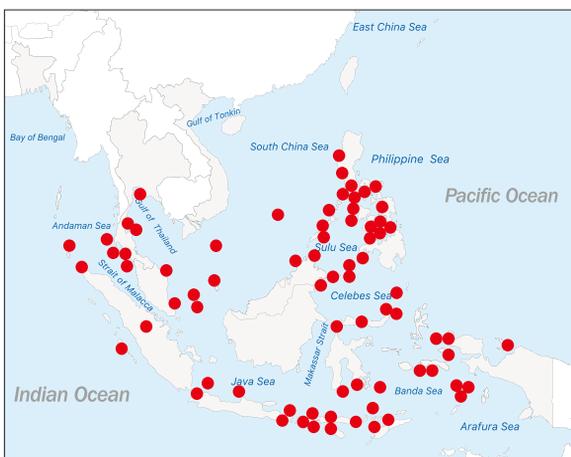
Class **Actinopterygii**

Order **Ovalentaria incertae sedis**

Family **Pomacentridae**



Scan DNA Barcode  
OQ387108 (COI)





## *Amphiprion clarkii* (Bennett, 1830)

**Morphology** Body length 9 cm; head and body color is orange with large white vertical bands present on the head, trunk and the peduncle. Half of the body is colored black. Dorsal fin is black. Pectoral, pelvic and anal fins are orange. Caudal fin is white with orange edges.

**Ecology** coral reef inhabitant; Adults inhabit lagoons and outer reef slopes. Omnivorous. Oviparous, with elliptical eggs. Monogamous. Oviparous, distinct pairing during breeding. Eggs are demersal and adhere to the substrate. Males guard and aerate the eggs. Associated with other species of anemone:

**Distribution** Indo-West Pacific: Persian Gulf to Western Australia, throughout the Indo-Australian Archipelago and in the Western Pacific at the islands of Melanesia and Micronesia, north to Taiwan, southern Japan and the Ryukyu Islands.

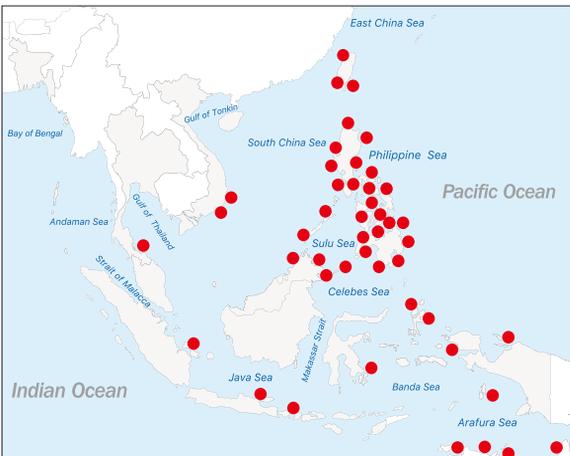
Class **Actinopterygii**

Order **Ovalentaria incertae sedis**

Family **Pomacentridae**



Scan DNA Barcode  
MH049265.1 (COI)





## *Amphiprion frenatus* Brevoort, 1856

**Morphology** Size: to 14 cm TL. Body red to black with one black-edged white bar just behind the eyes; may be a second black-edged white bar in the middle of the body; juveniles are usually red and may have 2-3 narrow white bars.

**Ecology** In a group, observe strict dominance hierarchy, the largest and most aggressive fish, a female. In lagoon reefs and embayment; monogamous, protandrous sequential hermaphrodite; oviparous, distinct pairing during breeding; males guard and aerate the eggs; symbiotic mutualisms with sea anemones. Only a single pair in a group reproduce through external fertilization.

**Distribution** Western Pacific: Gulf of Thailand to southwestern Palau, north to southern Japan, Taiwan, south to Indo-Malay Archipelago.

Class **Actinopterygii**

Order **Ovalentaria incertae sedis**

Family **Pomacentridae**



Scan DNA Barcode  
OQ385767 (COI)





## ***Amphiprion ocellaris*** Cuvier, 1830

**Morphology** Size: to 11 cm TL. Orange to reddish brown with three white bands on head and body; white bands are outlined in black; rounded caudal fin; 11 dorsal spines and 17 pectoral rays.

**Ecology** Dominance hierarchy. Coral reefs and sheltered lagoons 1 -15 m depth; Lives symbiotically among venomous tentacles of large sea anemones; *Heteractis magnifica*, *Stichodactyla gigantean*, and *Stichodactyla mertensii*; protandrous hermaphrodite, and monogamous; oviparous, distinct pairing during breeding; male prepares nest, guards and aerates the eggs.

**Distribution** Indo-West Pacific: eastern Indian Ocean including Andaman and Nicobar Islands, Thailand, Malaysia Singapore, Indonesia, the Philippines, north west Australia; north to Taiwan and the Ryukyu Islands.

Class **Actinopterygii**

Order **Ovalentaria incertae sedis**

Family **Pomacentridae**



Scan DNA Barcode  
OQ386809 (COI)





## *Dascyllus melanurus* Bleeker, 1854

**Morphology** Size: to 8 cm TL. Three alternating black bars on a white body; black area outer two thirds of the tail; black pelvic fins, pectoral fins transparent.

**Ecology** In pair or in a shoal. Isolated coral heads in sheltered inshore habitats at 1 - 68 m depth; non-migratory; territorial and aggressive. protogynous hermaphrodite; feed on fish eggs, crustacean larvae, algae, ostracods, amphipods, copepods, tunicates; oviparous, distinct pairing during breeding; males guard and aerate the eggs.

**Distribution** Western Pacific: Ryukyu Islands, Indo-Australian Archipelago and western Caroline Islands, Southeast Asian waters, New Guinea, Great Barrier Reef, Tonga.

Class **Actinopterygii**

Order **Ovalentaria incertae sedis**

Family **Pomacentridae**



Scan DNA Barcode  
FJ583326 (COI)





### *Dascyllus trimaculatus* (Rüppell, 1829)

**Morphology** Size: to 14 cm TL. Scales outlined in black and white blotch on forehead and upper sides; All fins dark grey/black except transparent pectoral and outer portion of soft dorsal rays. Color variation; spot on forehead disappear or very reduced side spot as they age.

**Ecology** In pairs or small groups; coral and rocky reefs at 1 - 55 m depth; juveniles commensal with large sea anemones, sea urchins, small coral heads; non-migratory; feed on algae, copepods, and planktonic crustaceans; oviparous, distinct pairing during breeding.

**Distribution** Indo-Pacific: Red Sea and East Africa to the Line and Pitcairn islands, north to southern Japan, south through Southeast Asia to Australia

Class **Actinopterygii**  
Order **Ovalentaria incertae sedis**  
Family **Pomacentridae**



Scan DNA Barcode  
OQ387641 (COI)





## *Hemiglyphidodon plagiometopon* (Bleeker, 1852)

**Morphology** Size: to 18.0 cm TL. Body brown; adults, pale russet head darkening towards tail; pinkish markings on operculum; juveniles dark blue to brownish anteriorly, yellow towards rear and belly, large iridescent blue spot on the dorsal fin, blue bands and spots anteriorly on the body; distinctive yellow ring around eyes.

**Ecology** Solitary and territorial. Sheltered lagoons, coastal reefs around branching corals, turbid waters (algae on coral bases) at 1 - 20 m depth; non-migratory; high number of gill rakers allow efficient feeding on fine detritus, algae and small invertebrates; oviparous, distinct pairing during breeding; males guard and aerate the eggs.

**Distribution** Western Pacific: Asian waters- China, Thailand, Malaysia, the Philippines, Indonesia, New Guinea, Timor Sea, Australia, New Britain, Solomon Islands.

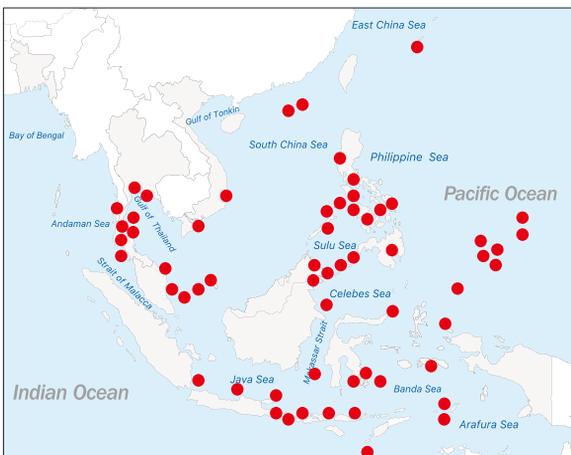
Class **Actinopterygii**

Order **Ovalentaria incertae sedis**

Family **Pomacentridae**



Scan DNA Barcode  
MZ421436 (COI)





## *Plectroglyphidodon apicalis* (De Vis, 1885)

**Morphology** Body color is generally dark brown with yellow or reddish suffusion on antero-dorsal part of head and body. The scales have blackish streaks near margin, giving an overall appearance of narrow transverse bands; a few small blue spots is scattered on head, breast and posteriorly on the sides. The spinous dorsal fin is reddish brown with orange submarginal band while outer edge of soft rays orange. A black spot is on the distal part of membrane between 2nd and 3rd dorsal spine. The tip of the upper caudal lobe is orange; the anterior edge of pelvic and anal fins is blue.

**Ecology** Adults are found around dead coral outcrops, also in rubble areas in lagoons and on the outer edge of reefs.

**Distribution** Western Pacific: from the east coast of Australia - Great Barrier Reef, Queensland, and New South Wales; Taiwan, Bangladesh.

Class **Actinopterygii**  
Order **Ovalentaria incertae sedis**  
Family **Pomacentridae**



Scan DNA Barcode  
MK340724 (COI),  
MK335888 (16S)





## ***Pomacentrus alexanderae*** Evermann & Seale, 1907

**Morphology** Size: to 9.0 cm TL. Pale greyish damselfish; large black spot around the pectoral fin base, black tips on dorsal fin spines; can be distinguished from other damselfishes by a combination of characteristics that include body dimensions, counts of fin rays, scales and gill rakers; large black spot around the pectoral fin base; black tips on dorsal fin spines; distinguished from other damselfishes by combination of body dimensions, fin ray counts, scales and gill rakers.

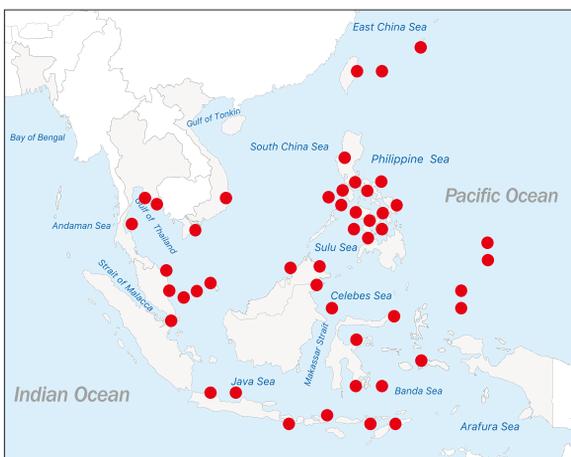
**Ecology** Solitary, swimming well above substrates. Adults seen in lagoons, inshore, and offshore reefs at 5 - 60 m depth; non-migratory; feeds on algae, barnacle nauplii, copepods, fish eggs, and small gastropods; oviparous, distinct pairing during breeding; males guard and aerate the eggs.

**Distribution** Western Pacific: Indo-Malayan Archipelago, east to the Moluccas and Mentawai Islands, north to Taiwan, and the Ryukyu Islands.

Class [Actinopterygii](#)  
Order [Ovalentaria incertae sedis](#)  
Family [Pomacentridae](#)



Scan DNA Barcode  
OQ387428 (COI)





***Pomacentrus bangladeshius*** Habib, Islam, Nahar & Neogi, 2020

**Morphology** Lateral line single and interrupted. Body olive to dark brown in freshly caught fish; premaxilla dark brown; iris of adult mostly yellow with a narrow bronze eye ring around pupil; pectoral-fin base without a black spot; margin of suborbital and preopercle with distinct serrations; with a prominent notch present between preorbital and suborbital; snout scaly to about level of nostrils or beyond, while no scales on preorbital and suborbital; axillary scale present above base of pelvic fin; a single scale row on preopercle behind the eye and 3 rows of scales present on preopercle below the eye.

**Ecology** Found in the Saint Martin's Island of Bangladesh where coral community extends from near shore to about 200 m off-shore. There are large areas of sand ridges, rocky reefs with some mangrove formations, Pandanus vegetation, and scattered boulders/dead corals are the major characteristics of this locality.

**Distribution** North-east Bay of Bengal, Bangladesh.

Class **Actinopterygii**  
Order **Ovalentaria incertae sedis**  
Family **Pomacentridae**



Scan DNA Barcode  
MK340681 (COI),  
MK340682 (COI),  
MK340683 (COI),  
MK482569 (16S)



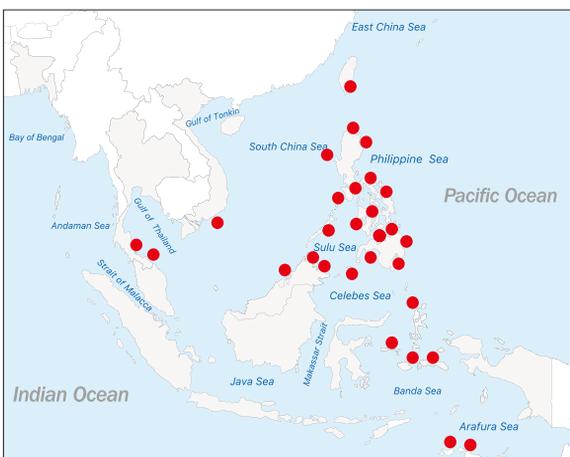


## *Parupeneus barberinus* (Lacepède, 1801)

**Morphology** Body length 16 cm, colour whitish with a dark brown to black stripe (red on fish in deeper water) from upper lip through eye to below posterior part of second dorsal fin or anteriorly on upper caudal peduncle; body above stripe yellow or yellowish gray; body below whitish, scale edges narrowly gray to brownish red; a black or red spot larger than eye at the midbase of caudal fin; some large adults with centers of scales below dark stripe pale blue, the edges yellow or with yellow spots, especially posteriorly; peritoneum dark brown.

**Ecology** Marine; reef-associated; depth range 1 - 100 m; adults, solitary or in small groups inhabit large sand patches as well as sand and rubble areas of reef flats, and lagoon and seaward reefs to a depth of about 100 m; diurnal foraging on sand-dwelling invertebrates like polychaete worms, crabs (portunid, anomuran, xanthid, and raninid), small bivalve molluscs, brachiopods, shrimps, small gastropods, isopods, amphipods, foraminifera, and a small unidentified eel .

**Distribution** Indo-Pacific: Gulf of Aden and Oman, south on the east coast of Africa to Mossel Bay, South Africa, east to the islands of Micronesia, Line Islands, Marquesas Islands, and Tuamotu Archipelago; and from southern Japan to Australia and New Caledonia.



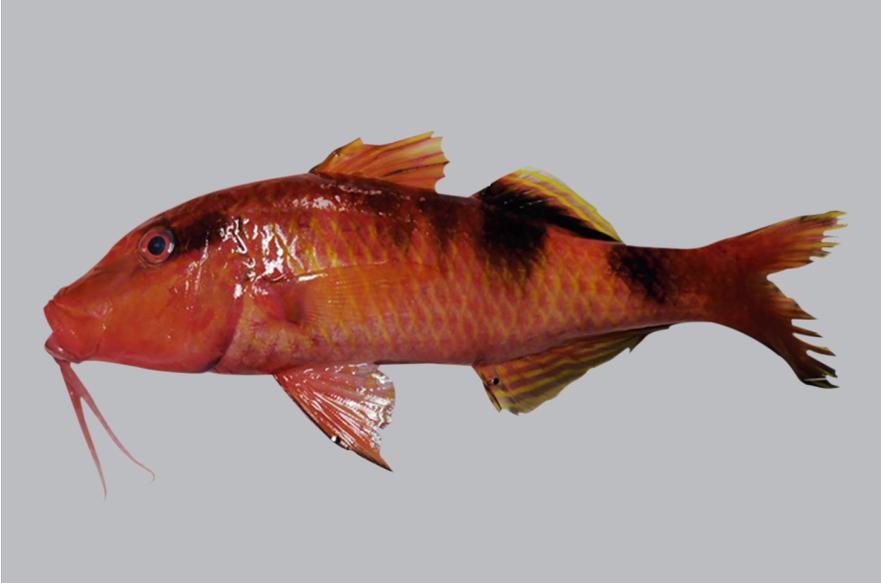
Class **Actinopterygii**

Order **Mulliformes**

Family **Mullidae**



Scan DNA Barcode  
**OQ386367.1 (COI)**



## *Parupeneus cyclostomus* (Lacepède, 1801)

**Morphology** Body length 14 cm, colour of large adults yellowish gray, edges of the scales bright blue except ventrally, edges more broadly blue posteriorly; a large, hemispherical, saddle-like, yellow spot covering most of upper half of caudal peduncle; region around eye yellow with radiating short narrow blue bands; caudal fin with longitudinal blue bands; second dorsal and anal fins with narrow oblique blue bands; a second smaller color phase entirely yellow, with dorsal peduncular spot sometimes apparent by being brighter yellow than rest of body.

**Ecology** Marine; reef-associated; non-migratory; depth range 2 - 125 m; tropical; found on coral, rocky, or rubble bottoms of reef flats, lagoons, and seaward reefs; benthopelagic; juveniles form schools, adults usually solitary; feeds primarily on small fishes, crustaceans, peanut worms, shrimps, crabs, octopi, and small gastropods during the day.

**Distribution** Indo-Pacific: Red Sea and east coast of Africa south to Durban, South Africa, east to the Hawaiian Islands, islands of French Polynesia and the Pitcairn Islands, north to the Ryukyu Islands and Ogasawara Islands, Japan south to Australia.



Class **Actinopterygii**

Order **Mulliformes**

Family **Mullidae**



Scan DNA Barcode  
KF930238.1 (COI)



## *Parupeneus heptacanthus* (Lacepède, 1802)

**Morphology** Body length 18 cm; body brownish yellow to light red (deeper-dwelling fish more red), the edges of the scales darker, shading to silvery white ventrally; adults with a small reddish brown spot on upper side of body just below seventh and eighth lateral-line scales; an indistinct narrow yellow stripe often visible above the lateral line (more evident in juveniles and subadults); dorsal body scales often with a pale blue or pearly spot; faint iridescent blue lines extending dorsoposteriorly and ventroanteriorly from eye, and often a parallel one on the cheek below eye; second dorsal and anal fins with faint pale blue or pink narrow bands alternating with pale yellow.

**Ecology** Marine; brackish; reef-associated; depth range 12 - 350 m; occurs singly or in small groups, over muddy, sandy, rubble, or seagrass bottoms of lagoon and seaward reefs, usually below 20 m.

**Distribution** Indo-West Pacific: Red Sea and east coast of Africa to the Caroline Islands and Fiji.

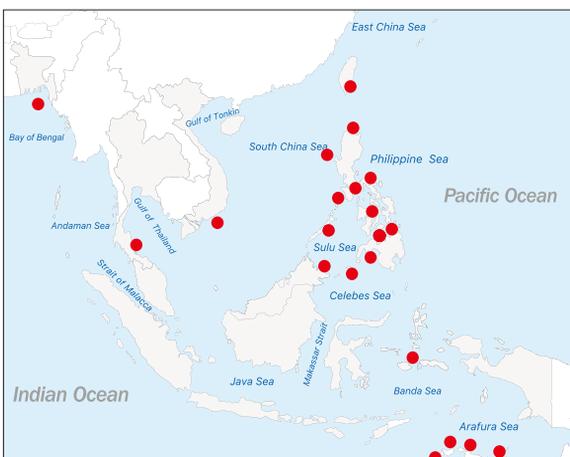
Class **Actinopterygii**

Order **Mulliformes**

Family **Mullidae**



Scan DNA Barcode  
KJ202184.1 (COI)





### ***Parupeneus indicus*** (Shaw, 1803)

**Morphology** Colour of body brownish-white above and silvery white below; a horizontally elongated yellow spot on middle of back centered on lateral line; a black spot posteriorly on caudal peduncle; upper part of head with light blue lines; fins hyaline. Barbels extending slightly behind hind margin of preoperculum.

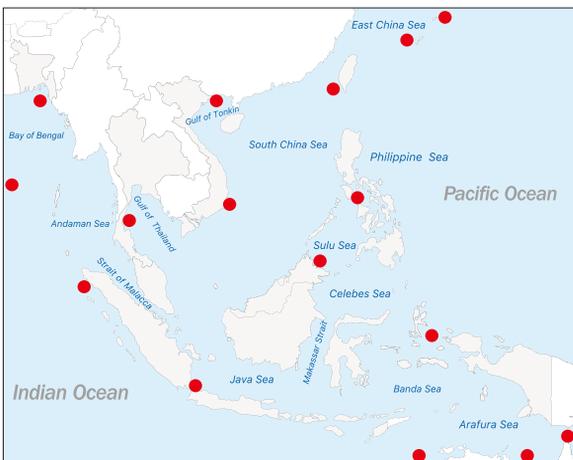
**Ecology** Inhabit shallow seas, on open sand or mud bottoms. The barbels, chemosensory receptors, are actively moved over or into the sediment to find food organisms and in holes on the reef. They are carnivorous, feeding on a wide variety of small animals, especially crustaceans and worms.

**Distribution** Indo-Pacific: Yemen coast of the Gulf of Aden and southern Oman, along the east coast of Africa to Port Alfred, east to the Caroline and Somoan islands; north Bay of Bengal, southern Japan to southern Queensland.

Class **Actinopterygii**  
Order **Mulliformes**  
Family **Mullidae**



Scan DNA Barcode  
MW034081.1 (COI)





### ***Upeneus subvittatus*** (Temminck & Schlegel, 1843)

**Morphology** Body length 20 cm; colour plain, with silvery sides, a barred caudal fin and rounded snout, somewhat reminiscent of the silver oceanic or pelagic pufferfishes *Lagocephalus* that occur in the same area and represents a possible case of mimicry;

**Ecology** Marine; demersal; depth range 3 - 45 m; Inhabits sandy and muddy areas in coastal waters. Seen in small groups in about 15 m depth.

**Distribution** Western Pacific: Philippines, Indonesia, Malaysia, Vietnam

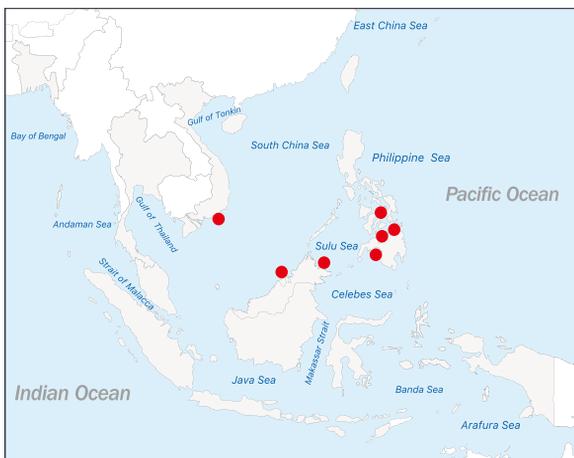
Class **Actinopterygii**

Order **Mulliformes**

Family **Mullidae**



Scan DNA Barcode  
KY372340.1 (COI)





## *Upeneus sulphureus* Cuvier, 1829

**Morphology** Body length 11 cm; no bars on caudal-fin lobes, yellowish lower lobe base, grey on upper lobe (some of the caudal-fin lobe pigmentation retained when preserved, including inner margin of fin lobes); 2 yellow body stripes, 1 mid-lateral body from operculum to caudal-fin base (both faintly retained in preserved fish); white barbels; body dorsally pale brown and ventrally white (pale brown with some reddish or darker brown area at mid-body in preserved fish);

**Ecology** Found in sandy-muddy bottom coastal waters, entering estuaries; forms schools.

**Distribution** Indo-West Pacific: East Africa to southeast Asia, north to China, south to northern Australia and Fiji.

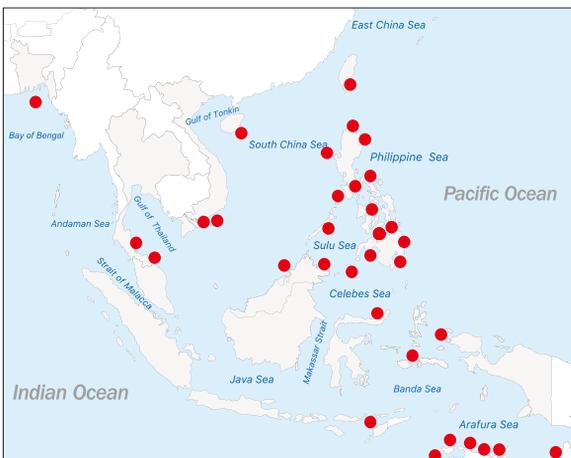
Class **Actinopterygii**

Order **Mulliformes**

Family **Mullidae**



Scan DNA Barcode  
EF609635.1 (COI)





## *Upeneus tragula* Richardson, 1846

**Morphology** Body length 17 cm; all fins with red, brown or black stripes, bars or blotches; 7–19 oblique bars on caudal fin, 3–9 bars on upper lobe, 4–10 on lower lobe; first dorsal fin with a large blotch around tip; one red, brown or black mid-lateral body stripe from tip of snout through eye to caudal base; body and head ground colour white or beige, slightly darker above lateral line, with irregular red, brown or black spots and/or blotches; yellow barbels but may be pale brown or orange in fresh fish.

**Ecology** Known to enter lower reaches of rivers. Usually found on sandy bottoms in nearshore areas; usually solitary. Forms small to moderately large aggregations at all sizes.

**Distribution** Eastern Indian Ocean to Western Pacific: from Andaman Islands to E Australia and to Japan and New Caledonia.

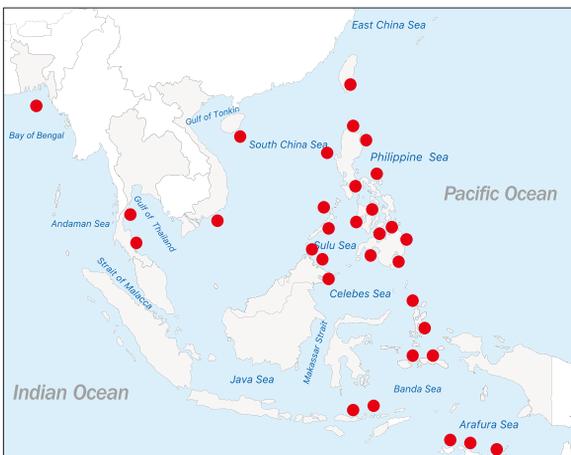
Class **Actinopterygii**

Order **Mulliformes**

Family **Mullidae**



Scan DNA Barcode  
KX887498.1 (COI)





### ***Hippocampus kuda*** Bleeker, 1852

**Morphology** Body dark brown with scattered dark spots and cross bands on tail. Body rings 11+36 without spines. Snout long, cornet low, divided distally; tubercles on body rings; dorsal fin located above last two body rings and first two tail rings.

**Ecology** Found in all tropical and warm-temperate marine waters, and some even found in freshwater environments. Some of seahorses are reef associated.

**Distribution** Indo-Pacific: Pakistan, Bangladesh and India to southern Japan, Hawaii, and the Society Islands.

Class **Actinopterygii**  
Order **Syngnathiformes**  
Family **Syngnathidae**



Scan DNA Barcode  
**MG816695 (COI)**





# Cnidaria







## *Arachnanthus* sp.

**Morphology** Arachnactidae with sterile proto mesenteries; meta mesenteries in duplets (M and B), long ('M') meta mesenteries with gonads and a double mesenteric filament, short (B) beta mesenteries sterile, with single, convoluted mesenteric filament; very long stomodeum; lacking a directive labial tentacle; cnidome with p-mastigophores and b-mastigophores.

**Ecology** Live in parchment-like tubes which are buried in muddy or sandy sediment.

**Distribution** Widespread in coral reef area of Indo-Pacific.

Class **Anthozoa**

Order **Penicillaria**

Family **Arachnactidae**





## *Anthopleura* sp.

**Morphology** Actiniidae with a well-developed pedal disc. A column with adhesive verrucae arranged in longitudinal rows. Simple, endocoelic marginal spherules containing basitrichs and holotrichs (= acrorhagi) encircle the column; spherules may sit inside fosse or atop marginal projections. Fosse deep. Tentacles are simple, conical, hexamerous or irregularly arranged, with ectodermal longitudinal muscles. At least two well-developed siphonoglyphs. Marginal sphincter muscle diffuse to circumscrip; retractor muscles diffuse or restricted. In adults, numerous or all mesenteries perfect and fertile.

**Ecology** Abundant on rocks, in tidepools or crevices, and on pier pilings.

**Distribution** Widespread in the coral reef area of Indo-Pacific.

Class **Anthozoa**

Order **Actiniaria**

Family **Actiniidae**





***Dipsastraea lizardensis*** (Veron, Pichon & Wijsman-Best, 1977)

**Morphology** The species have massive colonies. Circular and regularly spaced corallites. Thick corallite walls. Widely spaced and thin septa; paliform lobes absent. Costae is well developed. Pinkish brown with cream in color.

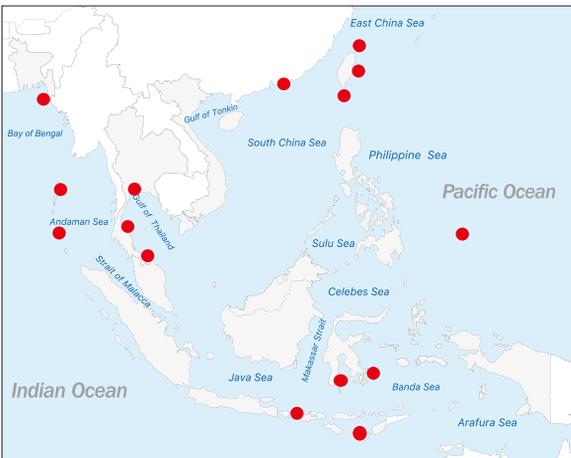
Class **Anthozoa**

Order **Scleractinia**

Family **Merulinidae**

**Ecology** Occur in upper reef slopes.

**Distribution** Distributed in the Indo-West Pacific.





### ***Favites acuticollis* (Ortmann, 1889)**

**Morphology** The species have submassive to encrusting colony. Deep corallites have thin angular walls. Few widely spaced septa present, paliform lobes are absent. Dark brown in colors, often with white upper margins to walls.

Class **Anthozoa**

Order **Scleractinia**

Family **Merulinidae**

**Ecology** Occur in shallow reef environments; in lagoons and on the back and foreslope of the reef.

**Distribution** Western, Northwest and Western Central Pacific regions





### ***Favites halicora*** (Ehrenberg, 1834)

**Morphology** They have massive colonies, either rounded or hill-oaky. Corallites have very thick walls and tend to become sub-plocoid. Paliform lobes may be developed. Usually uniform pale yellowish- or greenish-brown.

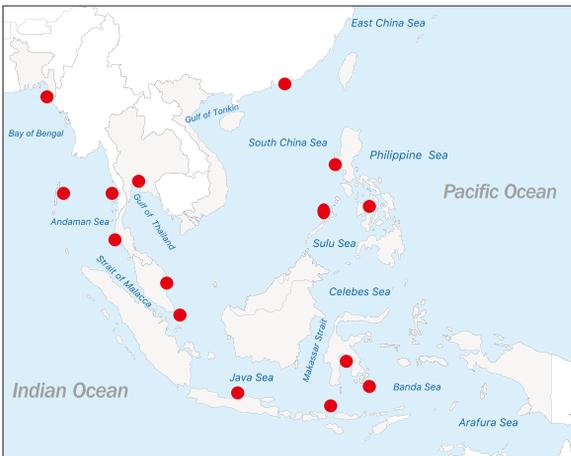
**Ecology** Inhabits in shallow reef environments.

**Distribution** Tropical and Indo-West Pacific.

Class **Anthozoa**

Order **Scleractinia**

Family **Merulinidae**





### ***Favites pentagona* (Esper, 1790)**

**Morphology** The species have submassive to the encrusting colony, sometimes forming irregular columns, thin-walled and angular corallites. Septa are few in number. Well-developed paliform lobes commonly form a conspicuous crown. Brightly brown in color with green oral discs.

**Ecology** Occur in shallow reef environments and among rocks.

**Distribution** Indo-West Pacific.

Class **Anthozoa**

Order **Scleractinia**

Family **Merulinidae**





***Psammocora exesa* Dana, 1846**

**Morphology** The species have columnar colonies with a flat top. Corallites are in shallow valleys. Granulated septo-costae. Tentacles are often extended during the day. Uniform dark brown in color.

Class **Anthozoa**

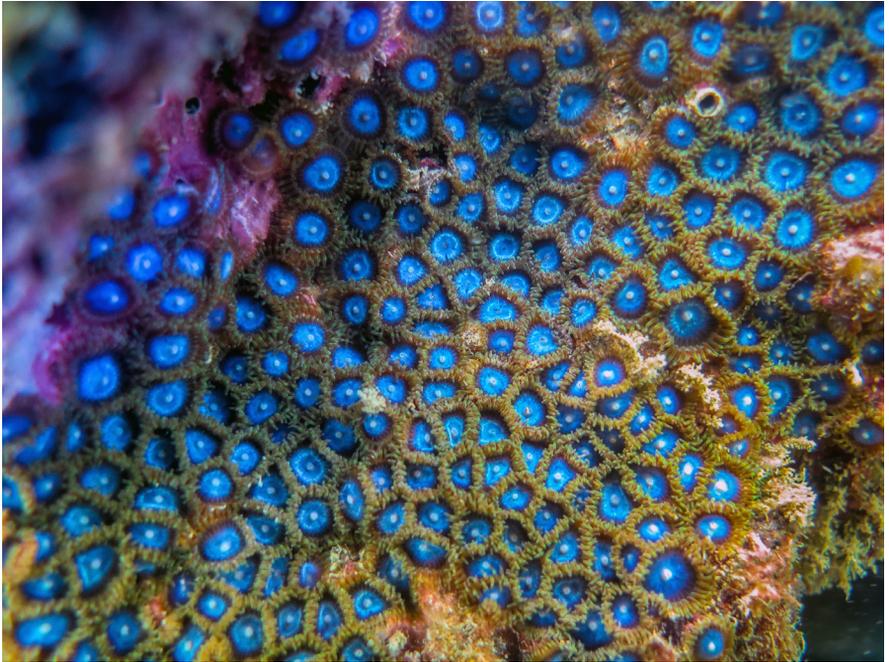
Order **Scleractinia**

Family **Psammocoridae**

**Ecology** They inhabit in shallow reef environments, and colonies may reach in several meters in diameter in lagoons.

**Distribution** They are widely distributed throughout the Pacific, from the Indonesian archipelago to French Polynesia





## Zoanthus sp.

**Morphology** Zoanthus spp. have a distinct sphincter muscle around their oral opening. The others generally lack this characteristic. Zoanthus are also the more colorful zoanthids, sometimes growing in bright colors of orange, blue, green, turquoise, red, etc. They are likely to have contrasting colors between the tentacles and the oral disk. Polyps are grown in a mat of the coenenchyme, and they are embedded in the tissue (growing close to the mat).

**Ecology** Zoanthids are observed at mid and lower intertidal zones beyond 20 m from highest high tide level.

**Distribution** Indo-Pacific region.

Class **Anthozoa**

Order **Zoantharia**

Family **Zoanthidae**





## *Melithaea* sp.

**Morphology** Members of the genus *Melithaea* are arborescent colonial corals forming fan, bush or tree shapes. The axis or main skeletal “trunk” is jointed, there being nodes, flexible horny joints, separated by internodes composed of hard, calcareous material. The branches divide off at the nodes which are often swollen. The minute calcareous spicules in the flexible membrane called the mesoglea that covers the skeleton are called sclerites. They have predominantly double discs and small disc-spindles, but also include plain spindles, capstans and small clubs. They do not have Zooxanthellae. Colonies vary in color but tend to be shades of yellow, orange, red and brown.

**Ecology** They grow on shallow reef habitat. These corals are one of several genera of sea fan that can be hosts to a species of pygmy seahorse,

**Distribution** They are distributed the tropical Indo-Pacific region.

Class **Anthozoa**

Order **Malacalcyonacea**

Family **Melithaeidae**





## ***Menella* sp.**

**Morphology** Colonies forming sparsely branched fans or bushes with long, cylindrical upright branches. Polyps arranged all around the branches. They don't have zooxanthella in tissue. Colour of colonies red, yellow, purple.

**Ecology** Occurs in reef slopes in current rich areas, in a depth range of 5-100 meters. They feed on plankton which is filtered out of the water column.

**Distribution** They are distributed in the tropical Indo-Pacific

Class **Anthozoa**

Order **Malacalcyonacea**

Family **Plexauridae**



# Mollusca







## *Vasticardium flavum* (Linnaeus, 1758)

**Morphology** Shell rounded-ovate, inequivalve. Outer surface of valves with low radial undulations and arched imbricate spines. Interstices of main ribs are broad, radially ridged with small fine spines. Internal margins with crenulations corresponding with the outer radial sculpture. Outer shell colour is cream with a blackish brown blotches on umbonal area. Interior whitish, pale brown on ears and hinge.

**Ecology** Filter feeder. Usually buried in the sand of seagrass beds.

**Distribution** Indo-Pacific, Mediterranean sea

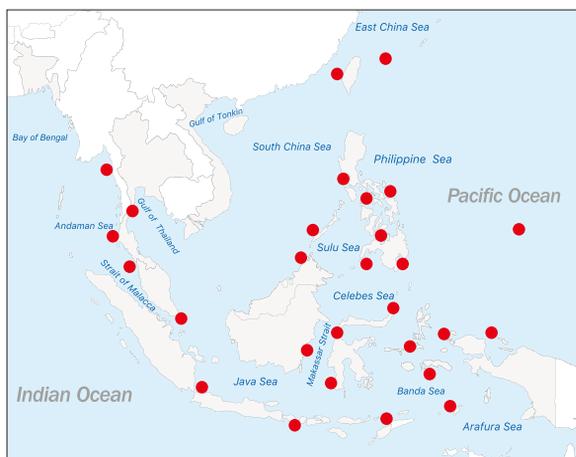
Class **Bivalvia**

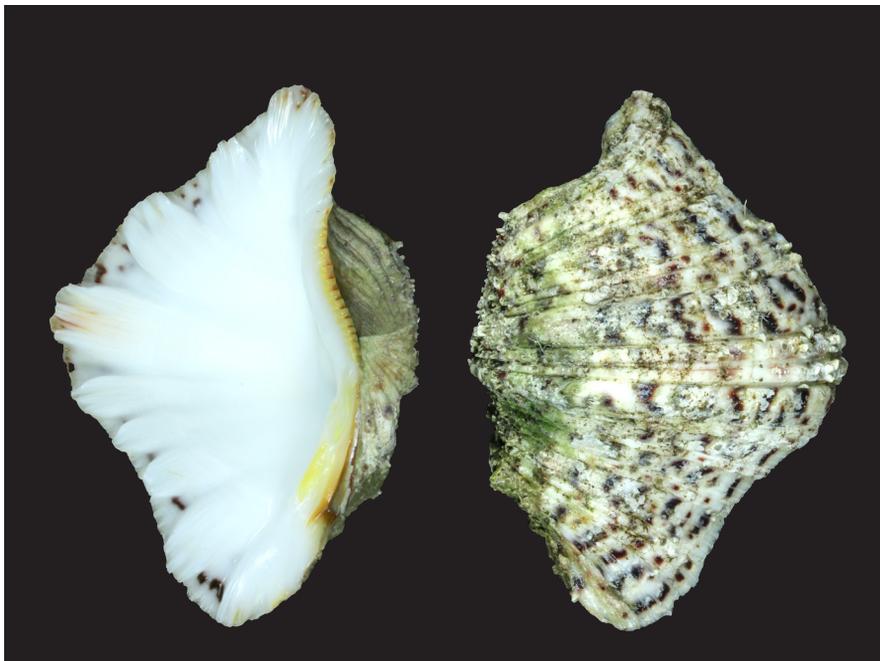
Order **Cardiida**

Family **Cardiidae**



Scan DNA Barcode  
JN860021.1 (COI)





## *Hippopus hippopus* (Linnaeus, 1758)

**Morphology** Shell is thick and heavy; its shape is globose and triangularly ovate in outline. Umbones are firmly coiled. Dorsal free margin of shell is irregularly arched and roughly triangular. Posteroventral slope concave, bordered by a marked radial angulation. Surface moderately is rough, with conspicuously ribbed radial folds. Valve with rib-like folds and many low radial riblets. Radial riblets are unequal in size and strength. Colour of the outer shell is yellowish orange with reddish blotches arranged in irregular concentric bands.

**Ecology** Filter feeder. It is found in shallow waters in reef flats and seagrass beds.

**Distribution** Indo-Pacific

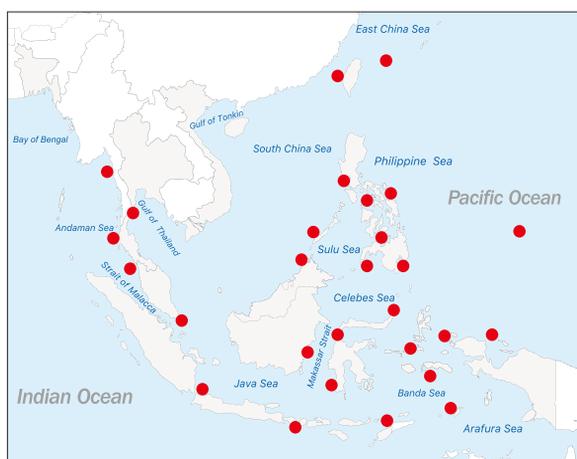
Class **Bivalvia**

Order **Cardiida**

Family **Cardiidae**



Scan DNA Barcode  
MT755622.1 (COI)





### ***Marcia opima*** (Gmelin, 1791)

**Morphology** Small, thick, solid and flattened shell with prosogyrate umbo. Prominent and deeply depressed lunule. Shell sinuopalliate. Fine concentric striations are present on the shell surface. Yellowish brown or straw-coloured shell, spotted and rayed with undulating concentric purplish grey markings with 3-4 radial bands radiating from the umbo. Hinge plate with three teeth. Anterior lateral teeth are absent in the left valve but corresponding depression is present on the right valve.

**Ecology** Occur in sandy and muddy bottoms, prefer brackish waters.

**Distribution** Indo-Pacific: from northwest Indian Ocean and the Aden Gulf to Indonesia.

Class **Bivalvia**

Order **Venerida**

Family **Veneridae**



Scan DNA Barcode  
MN696997 (COI)





## *Meretrix lyrata* (G.B.Sowerby II, 1851)

**Morphology** Shell thick, moderately inflated with a variable, inequilateral shape, subtrigonal in outline. Pallial sinus well developed, relatively shallow, rounded anteriorly pointing forwards well beyond the posterior adductor scar. Outside of shell smoothish or with concentric sculpture only. Escutcheon, if developed, not deeply sunken; interior margins smooth. Umbones poorly inflated, pointing on top of dorsal margin. Outer surface with incised concentric grooves.

**Ecology** Commonly inhabits tidal flats, estuaries and sandy beaches.

**Distribution** Distributed in the Indo-West Pacific: from western Indonesia to the Philippines; north to the East China Sea and Taiwan Province of China, and south to southern Indonesia.

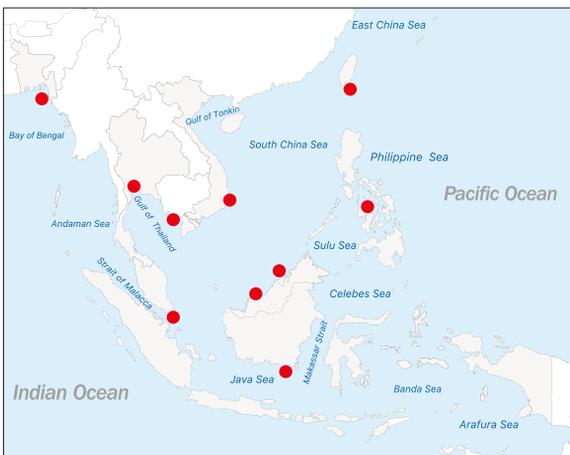
Class **Bivalvia**

Order **Venerida**

Family **Veneridae**



Scan DNA Barcode  
MN696995 (COI)





### *Tegillarca granosa* (Linnaeus, 1758)

**Morphology** Shell equivalve, thick and solid, ovate, strongly inflated, slightly longer than high and feebly inequilateral. About 18 radial ribs (15 to 20) with wide interstices at each valve; ribs stout and distinctly rugose, bearing regular, often rectangular nodules. Periostracum rather thin and smooth. Internal margins with strong crenulations corresponding with the external radial ribs. No byssal gape. Outside of shell white under the yellowish brown periostracum. Inner side white, often tinged yellow towards the umbonal cavity.

**Ecology** Inhabit muddy bottoms, mainly in protected bays and estuaries, or in mangroves; often occurring in dense populations. Intertidal and shallow subtidal waters.

**Distribution** Widespread in the Indo-West Pacific.

Class **Bivalvia**  
Order **Arcida**  
Family **Arcidae**



Scan DNA Barcode  
HQ896817 (COI)





## *Saccostrea cucullata* (Born, 1778)

**Morphology** Shell stout, very variable, usually medium sized to small and very inequivalve. Left (lower) valve generally deep with large attachment area and strong radial ribs towards the periphery. Right (upper) valve flattish, fitting down into the plicate margins of the wider opposite valve. Interior of valves with a crescent-shaped series of small disjunct pallial imprints between the posterior adductor scar and the anterodorsal margin. Chomata present all around the internal shell margins, forming 1 row of distant ridgelets in right valve, and corresponding pits in left valve.

**Ecology** Inhabit intertidal and shallow subtidal levels. Attached to various hard substrates, in marine, estuarine and mangrove areas.

**Distribution** Indo-Pacific and Eastern Atlantic. Introduced in the Mediterranean.

Class **Bivalvia**

Order **Ostreida**

Family **Ostreidae**



Scan DNA Barcode  
MN972475 (COI)





## *Spondylus squamosus* Schreibers, 1793

**Morphology** Shell is roughly ovate in outline with a size height from 8 to 10 cm, inequivalve; the outer surface of valves forms a series of appressed, rather broad white ribs bearing generally a few short, flattened and spines. Main spinose ribs is 8 to 12 ribs on the right valve and 5 to 8 on the left valve; the hinge teeth of the right valve more or less bifid on top; colour outside of shell is white to cream, with a few purples to blackish brown on umbonal area and fine; radial bands of similar colours on the interstices of the main ribs. Internal margin marked with brown and purple.

**Ecology** Filter feeder. They can be found in tidal zones which attach themselves to the basal substrate with their right valve.

**Distribution** Indo-Pacific

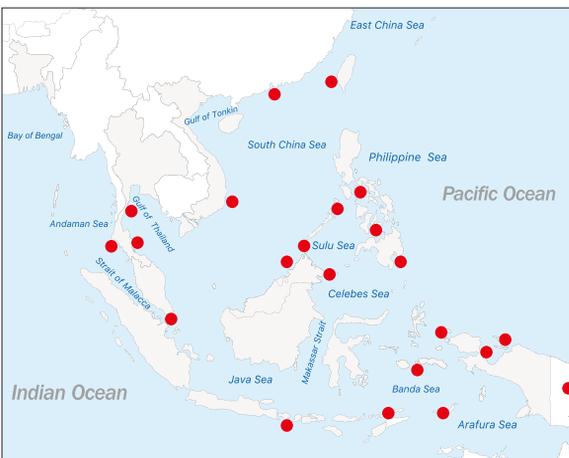
Class **Bivalvia**

Order **Pectinida**

Family **Spondylidae**



Scan DNA Barcode  
AB033684.1 (COI)





## ***Pinna muricata*** Linnaeus, 1758

**Morphology** Maximum shell length 31 cm, commonly to 15 cm; Outer surface of valves with a median radial keel, internal nacreous layer divided into two lobes by a median radial groove; Posterior margin of shell squarely truncate; posterior adductor scar often extending onto ventral lobe of nacreous area,

**Ecology** Living in soft bottoms (silty mud, sand, sandy gravel), seagrass beds or in sandy patches of coral reefs. Feeding guild is a filter feeder.

**Distribution** Indo-Pacific, South Africa

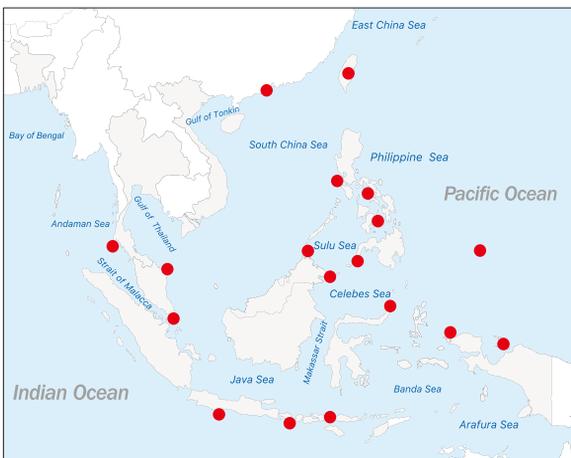
Class **Bivalvia**

Order **Ostreida**

Family **Pinnidae**



Scan DNA Barcode  
KJ366405.1 (COI)





## *Pinctada margaritifera* (Linnaeus, 1758)

**Morphology** Shell is rather thick and large, subcircular in outline, with a short posterior ear that is not drawn out into a wing-like process. Anterior margin markedly protruding beyond the tip of anterior ear. Hinge utterly devoid of teeth. Colour outside of the shell is dark greyish brown or green to nearly black in ground colour, with radial stripes of white or yellowish markings. Internal nacreous area is silvery, with a darker smoky hue and a hint of red and green iridescence on border. Non-nacreous area is very dark.

**Ecology** Littoral and sublittoral on various bottoms

**Distribution** Indo-Pacific, Africa

Class **Bivalvia**

Order **Ostreida**

Family **Pteriidae**



Scan DNA Barcode  
HM467838.1  
(COI)





## *Cypraea tigris* Linnaeus, 1758

**Morphology** Shell is large and heavy with a maximum shell length of 15 cm, commonly to 9 cm. Shell ovate to pear-shaped outline. Dorsal side inflated, with an unbranched, mantle groove. Teeth of the outer lip are solid and short. Shell colour ranges from almost white to nearly black with a dense overlay of closely packed and irregularly sized, rounded spots of dark brown to black on dorsal and lateral sides. Ventral side of the shell is white throughout.

**Ecology** Abundant on reef areas, on sand among rocks or corals, in tidal pools or on branched corals, often nearby seaweeds. Intertidal and sublittoral zones to a depth of about 30 m.

**Distribution** Indo-Pacific, South Africa

Class **Gastropoda**

Order **Littorinimorpha**

Family **Cypraeidae**



Scan DNA Barcode  
MW278160.1  
(COI)





### *Luria isabella* (Linnaeus, 1758)

**Morphology** Shell length is 5cm. Shell shape is cylindrical with fawn or light beige colour. Thin discontinuous longitudinal patterns span the dorsum surface; the extremities have orange-red terminal dots. The base is mostly white, with few small teeth in the long, narrow opening.

**Ecology** Under slabs and small corals in reefs, frequently occurring in groups. Intertidal and shallow subtidal waters. Feeding type is omnivore (grazer and predator).

**Distribution** Indo-Pacific

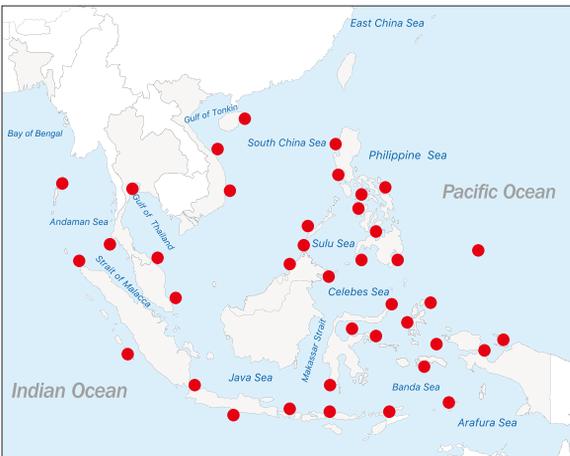
Class **Gastropoda**

Order **Littorinimorpha**

Family **Cypraeidae**



Scan DNA Barcode  
MW277757.1 (COI)





## *Monetaria annulus* (Linnaeus, 1758)

**Morphology** Shell is thick with a length of around 4cm. Shell is primarily off-white or pale yellowish, with a black cast on the dorsum and two orange stripes on the top sides. These stripes are almost touching at the ends.

**Ecology** Abundant in reefs and rock platforms exposed to wave action. Intertidal and shallow subtidal waters.

**Distribution** Indo-Pacific

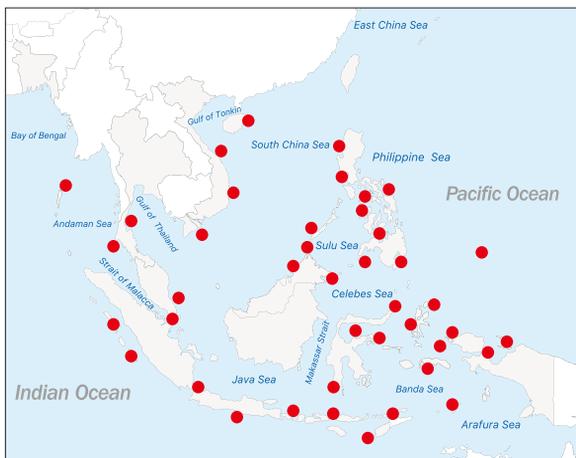
Class **Gastropoda**

Order **Littorinimorpha**

Family **Cypraeidae**



Scan DNA Barcode  
MN389075.1  
(COI)





## *Atlanta inclinata* J.E., Gray, 1850

**Morphology** Transparent, lenticular shaped shells. Shells with an inclined, triangular shaped spire are symmetrical in form and weight. Patterns of punctae (small projection) on the shell surface and the overall size of the shell is 6-7 mm. Developed eyes, a foot that has adapted into swimming fins and a shell periphery fringed with a keel.

**Ecology** Holoplanktonic, live in the upper 250m of the ocean

**Distribution** Celebes Sea, Atlantic, Pacific, and Indian Oceans

Class **Gastropoda**

Order **Littorinimorpha**

Family **Atlantidae**



Scan DNA Barcode  
FJ876841.1 (COI)





***Canarium urceus* (Linnaeus, 1758)**

**Morphology** Shell elongate-ovate with a tall spire. Spire whorls with incised suture, rounded to angulate shoulder. Sculpture of body whorl reduced, with fine spiral grooves near the anterior end. Outer lip thickened and expanded at margin. Anterior notch is not deep but well-marked. Siphonal canal is short and widely arched. Exterior shell colour is brown with various bands. Aperture white; margins of the aperture are sometimes rimmed with black.

**Ecology** Feeding types are detritus feeders and grazers on algae. It is commonly found in the seagrass areas and mainly occurs in colonies.

**Distribution** Indo-Pacific

Class **Gastropoda**

Order **Littorinimorpha**

Family **Strombidae**



Scan DNA Barcode  
 MN389050.1  
 (COI)





## *Conomurex luhuanus* (Linnaeus, 1758)

**Morphology** Shell shape is conical and body whorl tapering towards the narrow anterior end. Spire whorls convex and smooth with rounded axial ribs. Body whorl strongly shouldered, periostracum thick. Outer lip of the aperture is almost rectangular. Anterior notch deep, inner lip smooth, siphonal canal short and truncate. Outer colour shell is white, with variable light tan to brown blotches and zigzag lines. Aperture colour is orange.

**Ecology** Commonly found in seagrass and reef flat areas. The feeding guild is a grazer or herbivore that mainly eats benthic algae.

**Distribution** Indo-Pacific and Caribbean sea

Class **Gastropoda**

Order **Littorinimorpha**

Family **Strombidae**



Scan DNA Barcode  
KY853669.1 (COI)





## ***Lambis lambis*** (Linnaeus, 1758)

**Morphology** Shell is thick and heavy, with a pointed spire and large marginal spikes on the outer lip. Spire whorls concave on their apical half, with fine spiral threads and a row of small knobs on the angulate shoulder. Dorsal side of body whorl rough, with low spiral cords. Ventral side of shell is extensively glazed. Columella and outer lip of the aperture are smooth. Outer lip with a deep stromboid notch and six slender, hollow digitations. Siphonal canal forms a wide and developed digitation anteriorly. Outer shell colour is cream.

**Ecology** Live in intertidal areas and is found on subtidal sea-grass and reef flats. Grazes on animal matter in the mud also feed on small invertebrates.

**Distribution** Indo-Pacific, South Africa

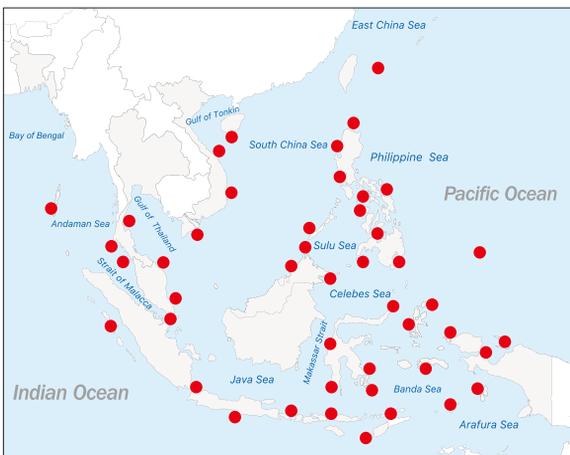
Class **Gastropoda**

Order **Littorinimorpha**

Family **Strombidae**



Scan DNA Barcode  
MN690208.1  
(COI)





## *Reticutriton pfeifferianus* (Reeve, 1844)

**Morphology** Body symmetry is dextrally coiled, body length up to 58 mm, body volume is  $13.9 \text{ cm}^3$ , has a much paler color pattern of either uniform pale yellowish brown, or white to cream with spiral bands of pale red-brown, the body is very narrow, with a tall spire and a long, straight siphonal canal, the shape is quite variable, and markedly short and wide.

**Ecology** Epifauna, live on sand and mud; shallow water; in stadium larva as planktonic larvae (meroplanktonic species).

**Distribution** Celebes Sea, Indo-West Pacific, East to South Africa, Mexico, southern Florida to northern Brazil, Ceram Sea, Timor Sea, Red Sea eastward to the Western Pacific archipelagoes, and Japan

Class **Gastropoda**

Order **Littorinimorpha**

Family **Cymatiidae**



Scan DNA Barcode  
MH581362.1  
(COI)





## *Stellaria solaris* (Linnaeus, 1764)

**Morphology** Shell flat coiled with 14 long spines on the last outer whorl. Underside with fine spiraling lines. Objects are rarely attached to the shell, except on early whorls. The whorls and base of the shell are convex, and the shell is often a light yellowish-brown color all over.

**Ecology** Inhabit benthic waters. They are mobile creatures that filter detritus and foraminifera from the sediment they live on.

**Distribution** Widespread in the Indo-West Pacific

Class **Gastropoda**

Order **Littorinimorpha**

Family **Xenophoridae**



Scan DNA Barcode  
MN703099 (COI)





### ***Babylonia spirata*** (Linnaeus, 1758)

**Morphology** Shell broad, ovately conical and moderately short; spire pointed and prominent; sutural canal conspicuous, wide and deep with angulate keel-like shoulder; body whorl somewhat flattened between the shoulder and above the periphery; aperture about half of shell height; umbilicus varying from wide open to completely closed. Ground colour white; blotches of varying shapes and sizes that are generally arranged in spiral bands, ranging from pinkish-orange to dark brown.

**Ecology** Inhabit in the mud, fine sand, shell substrates and sea-grass beds.

**Distribution** Distributed in the Indo-West Pacific.

Class **Gastropoda**

Order **Neogastropoda**

Family **Babyloniidae**



Scan DNA Barcode  
MN703097 (COI)





## *Nassarius coronatus* (Bruguère, 1789)

**Morphology** Shell squat and thick with a stepped spire and inflated body whorl. Early spire whorl with intersecting axial and spiral cords, giving a coarse pattern. Later whorls are smooth. Outer lip is thickened white with small spines on its anterior outer edge. Inner lip with tooth-like nodule posteriorly. Columellar callus thick. Operculum with serrated margin. Colour of outer shell is cream or brown with lighter spiral bands. Aperture is purplish brown inside, frequently with two pale spiral lines.

**Ecology** Omnivores and facultative scavengers. Living in the intertidal area in the sand and seagrass beds.

**Distribution** Indo-Pacific, South Africa

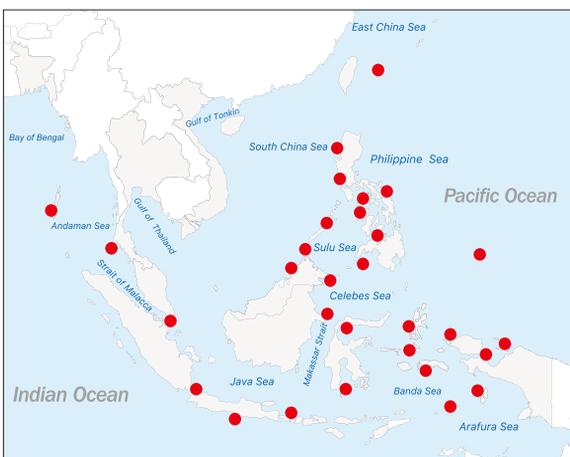
Class **Gastropoda**

Order **Neogastropoda**

Family **Nassariidae**



Scan DNA Barcode  
KY451287.1 (COI)





### ***Nassarius stolatus*** (Gmelin, 1791)

**Morphology** The ovate, conical shell is pointed at the summit. The pyramidal spire is formed of six or seven distinct, smooth, convex whorls. These are covered with very prominent, convex, longitudinal folds, intersected only at the base, and upon the two or three upper whorls, by a few pretty deep transverse striae. Upon these whorls the striae become finer and more approximate. The color is of a violaceous white. A dark red zone borders the suture, and a broader and browner band surrounds also the middle of the body whorl.

**Ecology** Feeding type is scavenger.

**Distribution** Western Central Pacific: Indonesia, Bay of Bengal.

Class **Gastropoda**

Order **Neogastropoda**

Family **Nassariidae**



Scan DNA Barcode  
MN703102 (COI)





## *Conus leopardus* (Röding, 1798)

**Morphology** Shell cone-shaped, sculpture of body whorl with beaded spiral cords; outer colour differently patterned. Body whorl smooth, and the apical part of the spire is slightly protruding. Outer colour is patterned with various axial or spiral rows of black or dark brown spots. Shoulder sharply angulate, shell very large, up to 22 cm in length; anterior end of shell truncated.

**Ecology** Reef associated (depth range 0–20m), predatory snail and venomous.

**Distribution** Indo-Pacific

Class **Gastropoda**

Order **Neogastropoda**

Family **Conidae**



Scan DNA Barcode  
MW278517.1 (COI)





### **Conus litteratus** Linnaeus, 1758

**Morphology** Shell cone-shaped, sculpture of body whorl with shallow spiral grooves anteriorly. The apical part of the spire is flat; the outer color is patterned with various axial or spiral rows of spots, Spots of body whorl dark brown or black. Spire flattish, with the apex not protruding; shoulder sharply angulate. Shell large, up to 15 cm in length; body whorl usually with three spiral bands of yellow and with many dark spots, regular and squarish; anterior end of shell rounded, tinged dark violet

**Ecology** Commonly found in sand among coral in shallow water and seagrass beds.

**Distribution** Indo-Pacific

Class **Gastropoda**

Order **Neogastropoda**

Family **Conidae**



Scan DNA Barcode  
KJ550336.1 (COI)





## *Conus marmoreus* Linnaeus, 1758

**Morphology** Conical shell, with a moderately low, conical to flat spire and a well-developed body whorl tapering towards the narrow anterior end. Shell colour with a pattern of triangular white patches. Spire low and coronate; body whorl sides approximately straight; background colour black.

**Ecology** Commonly found in intertidal areas in reef flats and seagrass. Poisonous and act as predator / carnivore.

**Distribution** Indo-Pacific, Madagascar

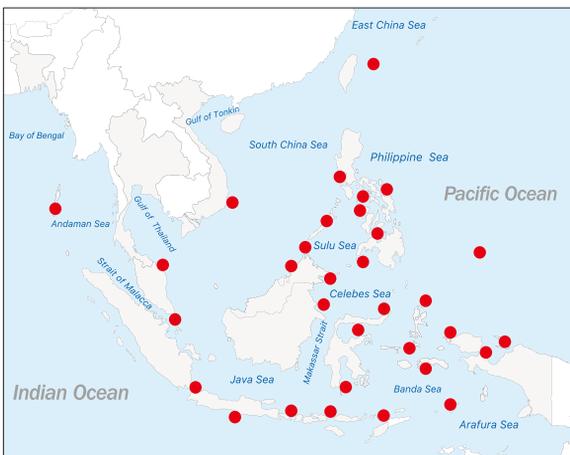
Class **Gastropoda**

Order **Neogastropoda**

Family **Conidae**



Scan DNA Barcode  
KJ549950.1 (COI)





### **Conus miles** Linnaeus, 1758

**Morphology** Shell is solid and thick with a raised spire and nodular shoulders of whorls. Shoulder angulate or sub-angulate. Spire of moderate height, outline straight to slightly concave. Last whorl with widely spaced spiral ribs on basal third and a few spiral threads. Sculpture obsolete. Ground colour white.

**Ecology** Found in seagrass and reef flat areas. Feeding guild is predator or carnivore.

**Distribution** Indo-Pacific

Class **Gastropoda**

Order **Neogastropoda**

Family **Conidae**



Scan DNA Barcode  
KJ549952.1 (COI)





## *Conus quercinus* [Lightfoot], 1786

**Morphology** Shell medium sized, heavy, with a low conical spire and pointed apex. Spire whorls flat, spirally striate. Shoulder broad and rounded to somewhat angulate. Body whorl with a low gloss, smoothish but for a number of fine spiral grooves in the anterior half. Anterior end of columella slightly calloused. Outer shell colour is light brown, and aperture is pure white inside.

**Ecology** Found in reef flats and seagrass beds.

**Distribution** Indo-Pacific

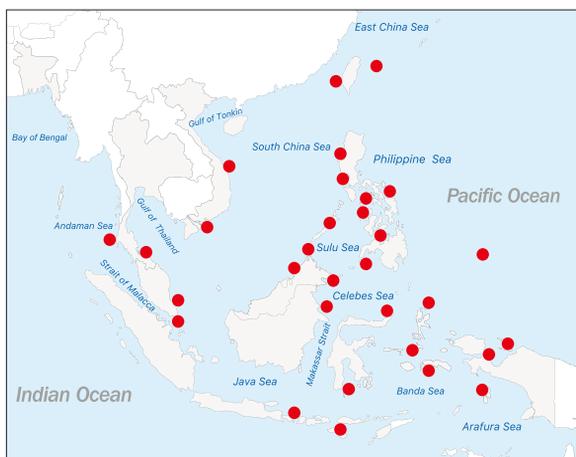
Class **Gastropoda**

Order **Neogastropoda**

Family **Conidae**



Scan DNA Barcode  
MH400188.1  
(COI)





## *Conus virgo* Linnaeus, 1758

**Morphology** Moderately large to large, solid to heavy. Last whorl conical; outline slightly convex at adapical fourth, straight below. Shoulder angulate. Spire low, outline slightly concave to slightly convex. Teleoconch sutural ramps almost flat to slightly concave. Last whorl with weak to obsolete spiral ribs near base; widely spaced fine ribs and wrinkled threads may extend to centre or beyond. Colour white to yellow or orange, occasionally with darker orange collabral lines marking growth cessations. Base dark blue-violet. Aperture white, blue-violet at the base. Periostracum greenish brown to brown, thick, opaque, horny or with fine axial ridges

Class **Gastropoda**

Order **Neogastropoda**

Family **Conidae**



Scan DNA Barcode  
KJ550523.1 (COI)

**Ecology** Reef flats and seagrass beds

**Distribution** South Africa, Indo-Pacific





## *Drupina grossularia* (Röding, 1798)

**Morphology** Shell is yellow-mouthed and develops marginal lobate digitate processes. Teeth are singularly arranged on the outer lip.

**Ecology** Feeding guild is predator or carnivore. They are commonly found in reef flat intertidal areas or lagoons.

**Distribution** Indo-Pacific

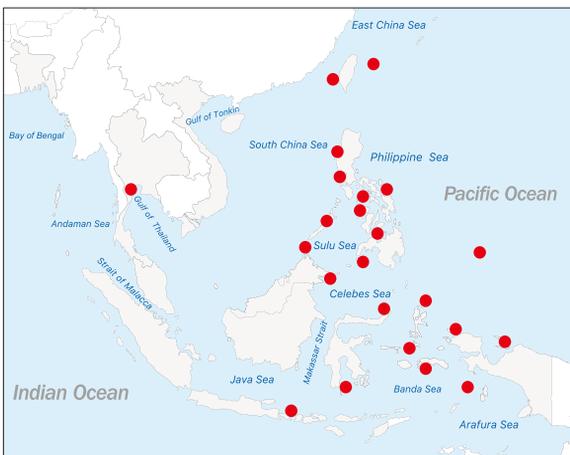
Class **Gastropoda**

Order **Neogastropoda**

Family **Muricidae**



Scan DNA Barcode  
HE584488.1 (COI)





### ***Nassa sarta*** (Bruguère, 1789)

**Morphology** Shell length 6 cm. Shell is ovate with large siphonal opening. Aperture is elongated, about half of the shell. The dorsal side shows striae and ribs. Colour of the shell is beige to brown, with a white inner lip. Spire whorls with a wide, shallow, subsutural groove; posterior end of aperture constricted by prominent inner and outer lip denticles; outer lip smooth inside. Outer surface finely beaded

**Ecology** Intertidal and shallow subtidal zones. On rocky areas or under corals, slabs, and stones. Feeding type is a predator.

**Distribution** Indo-Pacific: Madagascar, Red Sea, Republic of Mauritius, Tanzania, Indonesia, The Philippines, Andaman sea

Class **Gastropoda**

Order **Neogastropoda**

Family **Muricidae**



Scan DNA Barcode  
HE584349.1 (COI)





## *Rapana rapiformis* (Born, 1778)

**Morphology** A distinctive shell, up to 7 cm, with low spire, large body whorl and wide aperture. Spire whorls with deep sutures and moderate-sized tubercles (2-3 rows of tubercles on body whorl, most prominent on shoulder). Colour mottled orange, brown and cream; aperture white. Habitat: deep water on sand.

**Ecology** Inhabit in sandy bottoms, burrows almost completely, with only the siphon sticking out.

**Distribution** Found in the Indo-West Pacific, from Madagascar and Sri Lanka to Melanesia; north to Japan and the Bay of Bengal.

Class **Gastropoda**

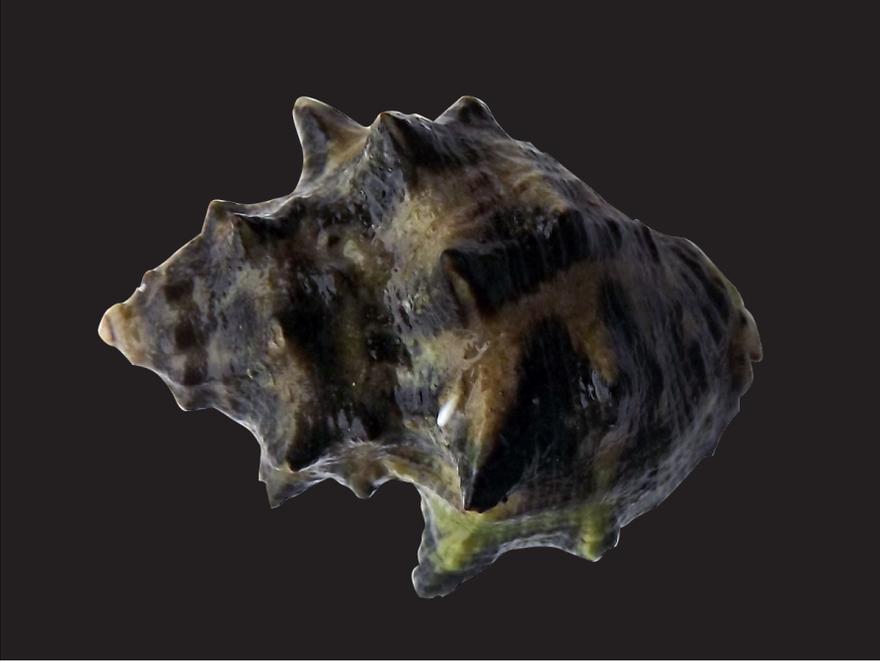
Order **Neogastropoda**

Family **Muricidae**



Scan DNA Barcode  
MN703094 (COI)





### *Reishia bitubercularis* (Lamarck, 1822)

**Morphology** Shell thick, bituberculate. Spirally ridged with axial stripes, spines on shoulder, short siphonal canal.

**Ecology** They inhabit in rocky intertidal areas.

**Distribution** Distributed in the Indo-West Pacific.

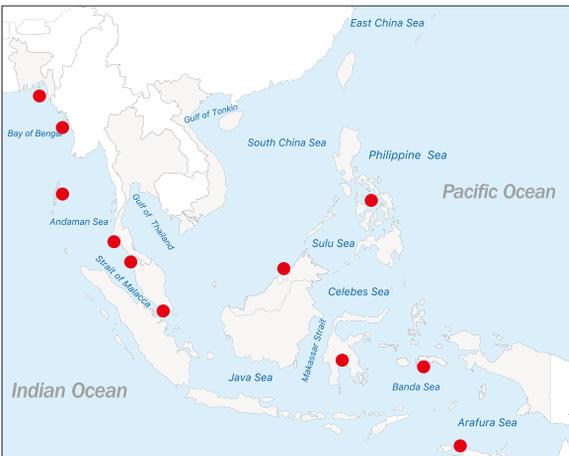
Class **Gastropoda**

Order **Neogastropoda**

Family **Muricidae**



Scan DNA Barcode  
MT568496





## *Vasum turbinellus* (Linnaeus, 1758)

**Morphology** Shell is thick and robust with a low spire. Shell size is relatively small in up to 16 cm in length, biconical in shape, and the siphonal canal short and broad. Shell has blunt spines on the shoulders of whorls. Spire relatively low; Columella has 6 folds with white colour and brown blotches. Aperture colour is yellowish-white. Outer lip speckled with black.

**Ecology** On rocky bottoms; common on reef flats. Intertidal and shallow subtidal waters. Feeding type is carnivores.

**Distribution** Indo-Pacific

Class **Gastropoda**

Order **Neogastropoda**

Family **Turbinellidae**



Scan DNA Barcode  
HQ834084.1  
(COI)





## *Melo melo* (Lightfoot], 1786)

**Morphology** Shell large to very large, globose-ovate in shape. Spire completely enveloped by posterior end of the very large, inflated body whorl. Apex smooth. Outer surface of shell smooth, only with axial lines of growth. Shoulder of body whorl rounded, devoid of spines. Aperture wide, as long as the shell, with a thin, regularly arched outer lip. Columella with 3 or 4 long and prominent oblique folds. Anterior siphonal canal a wide and shallow notch. No operculum.

**Ecology** Scavenger or carnivore, feeding on a variety of invertebrates, including other mollusks.

**Distribution** Restricted to the Southeast Asian region, from Myanmar, Thailand, and Malaysia to the South China Sea and the Philippines.

Class **Gastropoda**

Order **Neogastropoda**

Family **Volutidae**



Scan DNA Barcode  
MN703101 (COI)





### *Planaxis sulcatus* (Born, 1778)

**Morphology** Shell solid, wide, moderately elongated,; whorls inflated, each sculptured with 5 to 6 incised spiral lines or grooves, suture deeply impressed; profile of base moderately concave; aperture ovate, about half the shell height or slightly less; outer lip smooth, slightly scalloped and denticulate within, interior of aperture prominently sculptured with deep grooves, columella concavewith slight callus and prominent parietal tooth at posterior. Shell dark brown to brownish black with variable amount of white blotches, particularly on the spiral cords; periostracum thin, brown.

**Ecology** Inhabits rocky intertidal areas. Found in subtidal, on rubble. Feeds on microalgae

**Distribution** Widespred in the Indo-West Pacific.

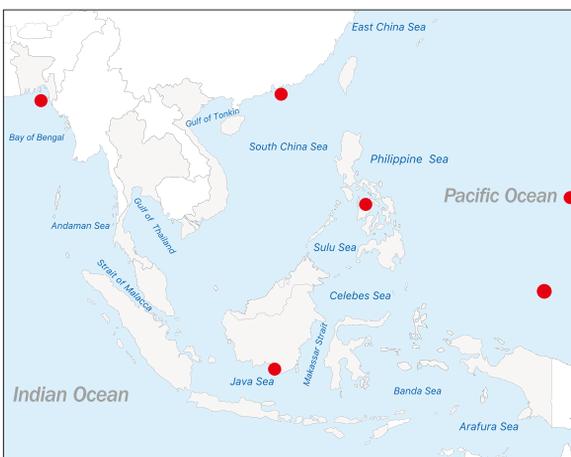
Class **Gastropoda**

Order **Sorbeoconcha**

Family **Planaxidae**



Scan DNA Barcode  
OQ720955 (CO)





## *Nembrotha purpureolineata* O'Donoghue, 1924

**Morphology** The background colour is creamy white, but much of this is obscured by a large brown, characteristically shaped patch which covers most of the dorsum. There is a brown band running around the head and anterior end of the mantle, and there are usually longitudinal brown bands down each side of the body. In some animals, the brown patch is broken into a few broad irregular longitudinal patches, and in few instances a number of brown lines. The rhinophore sheaths range from white to pink or purple and often have a dark brown band at the upper edge. The rhinophore clubs are red or orange-red and the stalk is usually pink or purple. The gills are orange or reddish-orange, and the gill stalks are white often with some pink or purple colouration. The foot is often edged with purple or at least faint traces of purple.

**Ecology** Rocky sandy with weeds and algae

**Distribution** Tropical Indo-West Pacific, Australia

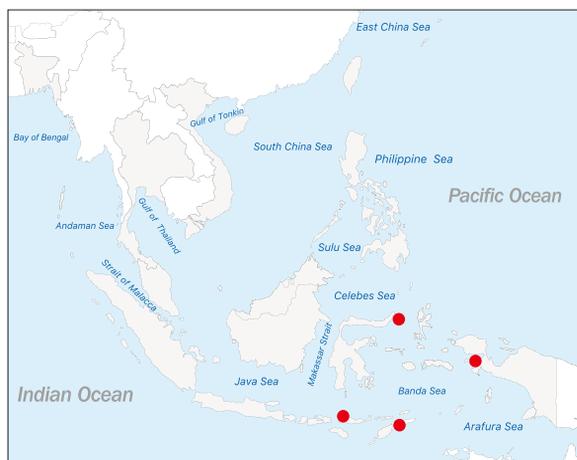
Class **Gastropoda**

Order **Nudibranchia**

Family **Polyceridae**



Scan DNA Barcode  
EF142883.1 (COI)





### ***Chromodoris boucheti*** Rudman, 1982

**Morphology** Having a bluish-white body with longitudinal black lines, and pale gills and rhinophores. Rhinophore clubs uniformly yellow. Gills - lower half white, upper half yellow, a black stripe runs from the base, up both the inside and outside edge of each gill, for a varying distance.

**Ecology** Coral reef to depths of 35 meters.

**Distribution** Western Indian Ocean, Comoro Island, South Africa

Class **Gastropoda**

Order **Nudibranchia**

Family **Chromodorididae**



Scan DNA Barcode  
JQ727831.1 (COI)





### ***Doriprismatica atromarginata* (Cuvier, 1804)**

**Morphology** Lemon-yellow elongated body with an undulating margin that is elegantly edged in black colour. Black edging presents in the feathery gills and feathery rhinophores. It typically has a black-lined edge running down the outside of a much-folded mantle and black rhinophore clubs. Feathery gills and feathery rhinophores are black in colour. There are black rings where the rhinophores emerge from the body.

**Ecology** Feeds on sponges. The species is capable of obtaining metabolites from its food source, and uses them to protect itself against predators.

**Distribution** Tropical Indo-Pacific, extending into New South Wales in Eastern Australia and along the West Australian coast.

Class **Gastropoda**  
Order **Nudibranchia**  
Family **Chaetodontidae**



Scan DNA Barcode  
MT293622 (COI)





***Jorunna funebris* (Kelaart, 1858)**

**Morphology** Body oval and elongated with white round or oval patches containing black papillae; these are spinulose, giving a spiky appearance to the animal. The rhinophores have a translucent stalk and black or brown clavus. The six, black or brown, quite sparsely branched gills form a complete circle around the anus.

**Ecology** Inhabit reef flat zone and feeds on the blue sponge.

**Distribution** Distributed in tropical Indo-West Pacific. regions

Class **Gastropoda**

Order **Nudibranchia**

Family **Discodorididae**



Scan DNA Barcode  
MN690307 (COI)





***Nerita albicilla*** Linnaeus, 1758

**Morphology** Shell thick, globose, with a flat spire, width conspicuously greater than length. Outer surface dull, with broad and low, rounded spiral cords. Outer lip somewhat flattened, with small denticles at inner margin. Columellar shield wide and flat, with numerous, distinct pustules over most of its surface and with a few small teeth at centre of its inner margin. Operculum finely granulate. Outer coloration very variable. Aperture and columellar shield whitish, often tinged yellow interiorly.

**Ecology** Inhabit rocky shores, forming dense colonies in upper mid-tidal pools, on damp and submerged rocks and in crevice.

**Distribution** Widespread in the Indo-West Pacific, from East and South Africa to eastern Polynesia; north to South Japan and Hawaii, and south to northern New South Wales.

Class **Gastropoda**

Order **Cycloneritida**

Family **Neritidae**



Scan DNA Barcode  
OQ712071 (16S)





## ***Nerita undata*** Linnaeus, 1758

**Morphology** Shell is thick and robust, with a maximum shell length of around 4 cm. The shell has radial ridges on the surface, and the columella has three teeth. Shell colour is pale with varying darker pattern, bluish-black, pale interior.

**Ecology** In littoral areas, on rocky shores often in crevices and other protected areas. Feeding guild is detritus feeders, grazers or herbivores.

**Distribution** Indo-Pacific, South Africa

Class **Gastropoda**

Order **Cycloneritida**

Family **Neritidae**



Scan DNA Barcode  
EU732327.1 (COI)





***Nerita undulata* Gmelin, 1791**

**Morphology** Shell is thick, heavy, and hemispherical; the spire sticks out more prominently than other nerites. Thin, regular well-developed spiralling ribs. Shell colour is purplish brown also pale, often with a pattern of three darker spirals. The flat underside may be smooth or wrinkled, white to yellowish, or with orange tinge. Square notched 'teeth' (3-4) are on the straight edge at the shell opening, and the uppermost one is squarish. Tiny or no 'tooth' on one side of the shell opening. Operculum thick, evenly covered in little bumps, grayish with beige patches. Body creamy white with dark tentacles.

**Ecology** Marine intertidal: mangroves and adjacent muddy cobble; upper littoral, under rocks

**Distribution** Indo-Pacific, South Africa

Class **Gastropoda**

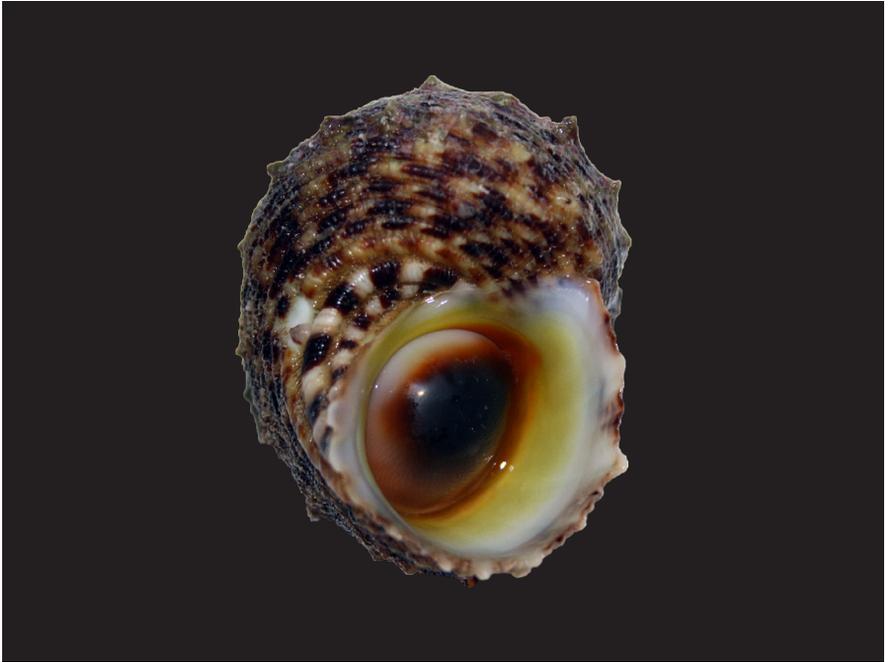
Order **Cycloneritida**

Family **Neritidae**



Scan DNA Barcode  
**EU732351.1 (COI)**





## *Turbo chrysostomus* Linnaeus, 1758

**Morphology** Shell moderately large, solid, and heavy, turbanate in shape with length greater than width. Spire pointed, whorls convex with angular shoulders. Outer sculpture rounded, unequal spiral cords and many fine scaly axial threads. Aperture rounded-ovate and bright orange. Umbilicus closed, operculum circular and smooth. outer shell brownish or cream-coloured

**Ecology** Feeding guilds are deposit feeders, grazers or herbivores. Found in intertidal to 30 m, reef flats and on rocks.

**Distribution** Indo-Pacific

Class **Gastropoda**

Order **Trochida**

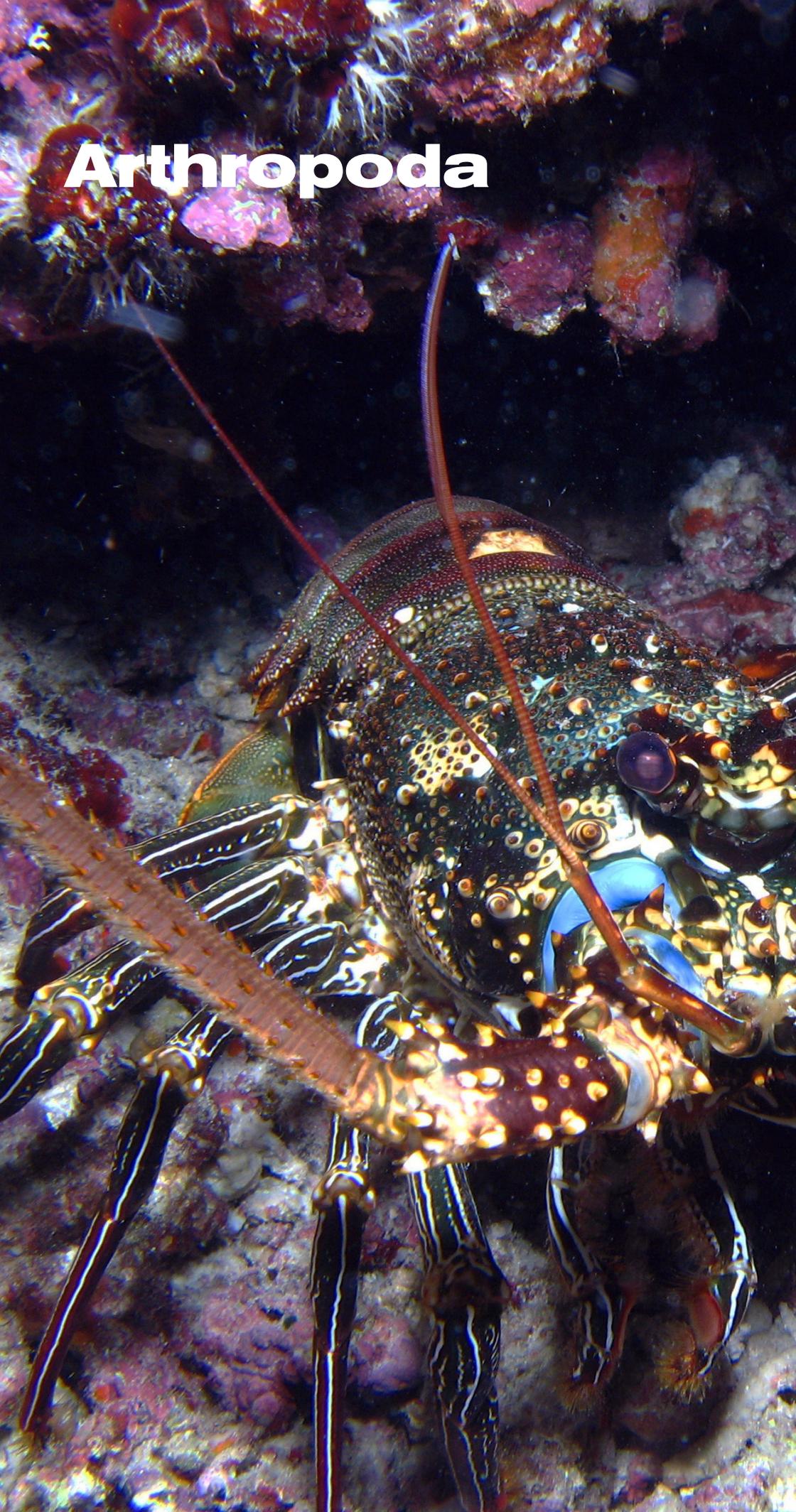
Family **Turbinidae**

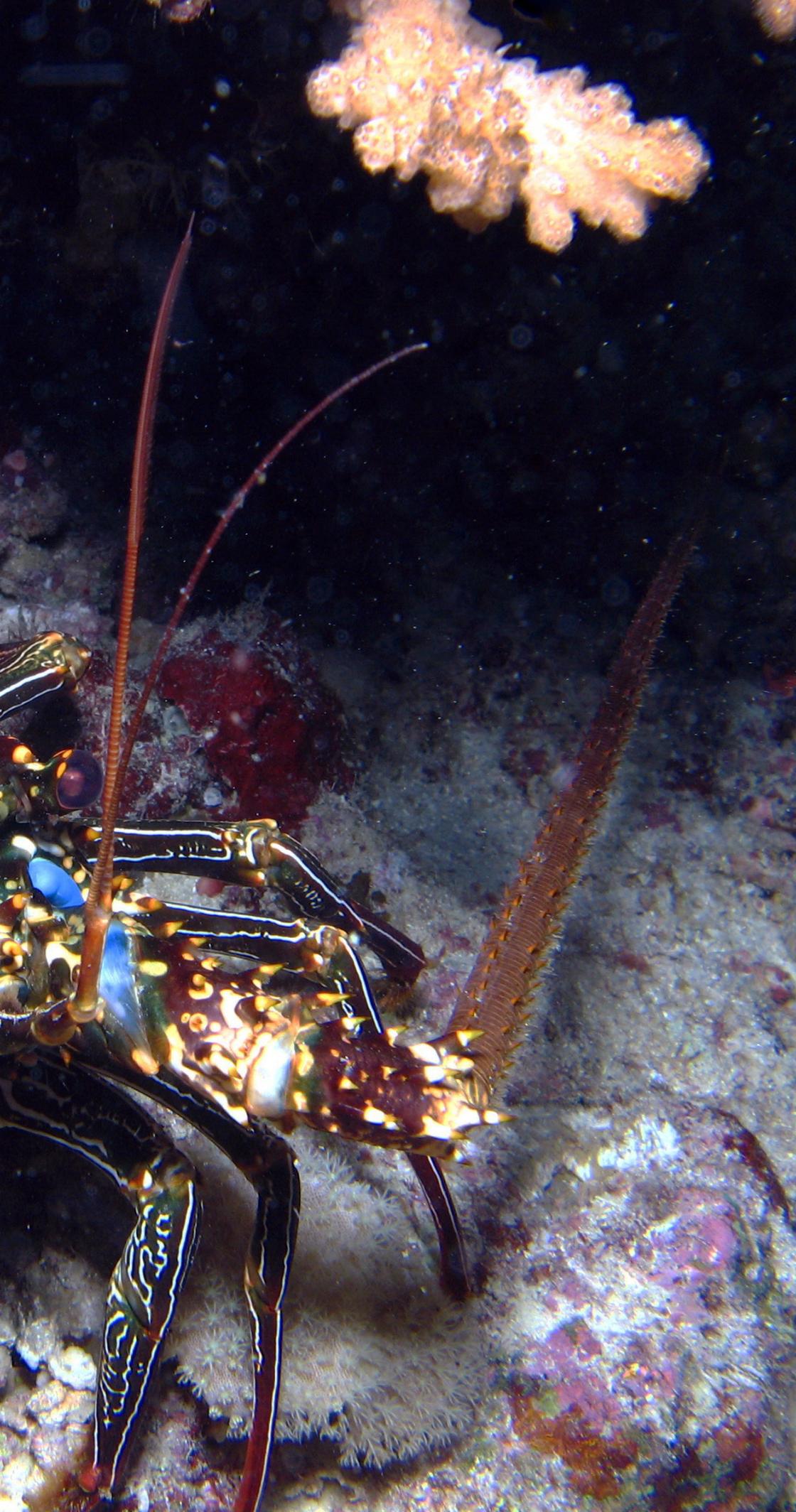


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AM403903.1 (COI)



# Arthropoda







## *Penaeus merguensis* De Man, 1888

**Morphology** In nature, they usually measure a total length (TL) of 25 cm. Plain white skin, slightly dark (shrimp living in the sea are cleaner and have a clear reddish-white color, on the tail of the fan there are clean green stripes). This shrimp, has a rostrum with 7 to 8 spines on the top, while on the bottom 4 to 6. Rostrum with spines formula 7–8/4–6, generally 7/5. Meanwhile, the rostrum of young shrimp is relatively slender, strong and long. At maturity the rostrum is straight and short with a large triangular base.

**Ecology** Solitary or in pairs. Prefers living in a mud substrate at a depth of 10–45 m in coastal and/or sea areas. The shrimp *P. merguensis* is benthic, living on the surface of the seabed. Bay-shaped waters with large river flows are excellent shrimp areas.

**Distribution** Andaman Island, Brunei Darussalam, Cambodia, Hong Kong, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam and Indonesia: Java, Sumatera, Bali, Sulawesi, Kalimantan, Ambon and Papua. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Bangladesh, India, Iran Pakistan, Sri Lanka and in Africa country such as Kenya.



Class **Malacostraca**

Order **Decapoda**

Family **Penaeidae**



Scan DNA Barcode  
ON259533 (COI)



## ***Penaeus monodon*** Fabricius, 1798

**Morphology** Size: Maximal length 33- 35 cm total length (TL) in male and 35-38 Cm in female. Color in life is as follows: Carapace and abdomen are transversely banded (patterned) with large vertical stripes, bluish green, black or for individuals that live in the sea red and white. The antennae are greyish brown. Pereopods and pleopods are brown and fringing setae red. Upon entering shallow brackish waters or when kept in ponds, the color changes to dark brown and often to blackish. This shrimp has a rostrum with 7 spines on the top, while on the bottom 3. Ventral teeth is sigmoidal in shape. The hepatic crest on the front side of the carapace is a horizontal prominent line. This shrimp has a thick and hard skin, but not stiff. Legs are generally red. The telson is unarmed. Guinea.

**Ecology** Solitary or in pairs. Tropical to temperate, brackish waters, inhabit in mangrove inlets and mangrove vegetate area and enters shallow brackish water. Caught inshore fishing. The preferred habitat for *P. monodon* is a mud substrate (soft seabed) at a depth of 10–45 m in coastal areas and/or the sea. *P. monodon* shrimp is benthic, living on the surface of the seabed. Bay-shaped waters with large river flows are excellent shrimp areas.

**Distribution** China, Cambodia, Hong Kong, Malaysia, Singapore, Philippines, Thailand, Taiwan and Indonesia: Java, Sumatera, Sulawesi, Kalimantan and East Nusa Tenggara. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Bangladesh, Cyprus, India, Iran, Japan, North Korea, South Korea, Sri Lanka, Pakistan, and in Africa countries such as Cote d'Ivoire, Gambia, Kenya, Madagascar, Mauritius, Mozambique, Reunion, Senegal, Somalia and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Penaeidae**



Scan DNA Barcode  
**DQ176048 (COI)**



## *Panulirus homarus* (Linnaeus, 1758)

**Morphology** The maximum total length is 31 cm. The color of the carapace is green (dark green) or brown with bright spots scattered over the entire surface of the abdominal segments. Legs have white patches. Lobsters have a large body, covered with a calcareous skin framework, and there are hard and sharp thorns, especially on the top of the head and antennae. The top of the head has 4 large spines, the height of the frontal horn is twice the height of the eyes, has no spines in between, there is no rostrum. The antennae on lobsters grow well, especially the second antenna which is longer than the body length. Antennae plate with two large spines located in front. Behind the thorns there is each row of thorns consisting of two to six small thorns and the rear thorns are large, but still smaller than the large thorns which are located in the front. The pair of walking legs do not have chela or pincers, except for the pair of five legs in female lobsters.

**Ecology** Life solitary or in pairs. Lobsters live in the sea, in shallow waters (coastal waters), from the sublittoral to a depth of 15 m, and sometimes in slightly cloudy waters. In coral reef areas these lobsters are often found on the seaward edge of the reef plains. Lobsters are also found in sandy and muddy substrates, sometimes even under rocks near river mouths.

**Distribution** China, Malaysia, Myanmar, Philippine, Taiwan, Thailand, Vietnam and Indonesia: Java, Sumatera, Bali, East Nusa Tenggara, Sulawesi, Kalimantan, Ambon and Arafura Sea. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Bangladesh, India, Iran, Japan, Oman, Pakistan, and in Africa countries such as Kenya, Madagascar, Mozambique, Somalia, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Paninuridae**



Scan DNA Barcode  
KU523842 (COI)



## *Panulirus longipes* (A. Milne-Edwards, 1868)

**Morphology** The maximum body length is 30 cm with an average body length of 20–25 cm. These lobsters come in various color of purple, green, red and gray and form beautiful patterns. Abdomen with white spots. The foot of the road is mottled with white spots with a pale color extending on each leg. Lobsters have a large body, protected by a hard skin containing lime, have hard and sharp thorns arranged irregularly, especially on the top of the head and antennae or antennae. The height of the thorns or front horn (frontal horn) is 2.5 times the height of the eye, behind the thorns there are one to six small spines, in addition to the 3 large spines arranged longitudinally. The antennulae have flagella which are longer than the antennular stalks, the plates have a pair of large spines and several small spines scattered irregularly. The undersurface of the antennal segments each has 1 large spine flanked by several smaller spines. The antennae grow well, especially the second antenna which exceeds the body length. Walking legs have no pincers, except for the fifth pair in the female.

**Ecology** Life solitary or in pairs. Lobsters are found in shallow marine waters (coastal waters, but can also be found at depths of up to 13–90 meters), on coral reefs or rocky waters, generally in clear waters with moderate currents, sometimes found in slightly turbid waters. Is an animal that is active at night (nocturnal) and not in groups.

**Distribution** Malaysia, Philippines, Taiwan, Thailand and Indonesia: Java, Sumatera, Sulawesi. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as India, Japan and in Africa countries such as Comoros, Kenya, Madagascar, Mozambique, Reunion, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Palinuridae**



Scan DNA Barcode  
MT803344 (COI)



## *Panulirus ornatus* (Fabricius, 1798)

**Morphology** Lobsters generally have a smaller size, which is between 30-35 Cm in total length. Its body is green with a bluish-green carapace, frontal horn with yellowish white and brown stripes. This lobster has a carapace that is rounded and spiny, has no rostrum, its body is covered with a hard layer of chitin. The front of the head has spines of varying sizes; front horn/thorn height (frontal horn) about 2 times the height of the eye, without any thorns in between. The antenna has flagella which are longer than the stem, the base of the antenna plate has 2 pairs of completely separate spines, sometimes followed by smaller spines. All the walking legs of the male lobster do not have claws, while the female lobster's five walking legs have pincers. The abdomen is smooth without any cross-sectional indentations or hairiness.

**Ecology** Life solitary or in pairs. Lobsters live in calm shallow waters (coastal waters) in areas of coral reefs and cliffs at depths of 1–10 meters, but generally these lobsters are scattered to a depth of 50 m on sandy, rocky or muddy substrates. Sometimes lobsters can also be found at a depth of 200 m, in slightly muddy waters at the mouth of the river.

**Distribution** China, Philippines, Taiwan, Thailand and Indonesia: Java, Sumatera, Bali, East Nusa Tenggara, Sulawesi and Kalimantan. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as India, Iran, Israel, Japan, Maldives, Oman, Pakistan, Sri Lanka, Saudi Arabia, Yemen and in Africa countries such as Djibouti, Egypt, Kenya, Madagascar, Mauritius, Mozambique, Reunion, Seychelles, Somalia, South Africa and Tanzania.



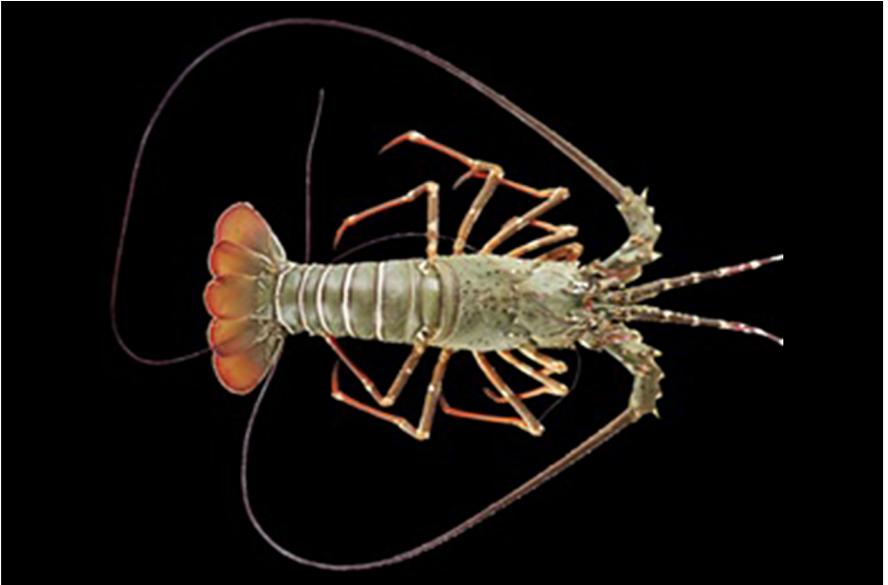
Class **Malacostraca**

Order **Decapoda**

Family **Paninuridae**



Scan DNA Barcode  
KU523812 (COI)



## *Panulirus polyphagus* (Herbst, 1793)

**Morphology** Maximum body length reaches 40 cm with an average body length between 20 –25 cm. The body is light green, the spines on the carapace with a brownish yellow tip; stem antennae striped yellowish white and pale green, flagella striped yellowish white and dark brown. The back of the upper surface of the abdominal segment is marked by a white line transverse from the left edge to the right edge with a brown border. White spotted feet.

**Ecology** Life solitary or not in group. Lobster habitat in shallow, somewhat turbid sea waters (coastal waters), close to rivers, at depths of 3–90 meters, but generally found at depths of less than 40 m, or subtidal, it is found on muddy substrates and sometimes on rocky bottoms near river mouths in turbid water, lives mainly at river-influenced shelf in shallow, turbid water with moderate run-off.

**Distribution** Cambodia, Myanmar, Philippines, Thailand, Vietnam and Indonesia: Java, Sumatera, Sulawesi, Kalimantan, Ambon, Papua and Arafura Sea. These species also found in other Asian countries, Indo-Pacific such as in Bangladesh, India. Pakistan, Sri Lanka.



Class **Malacostraca**

Order **Decapoda**

Family **Palinuridae**



Scan DNA Barcode  
MK130712 (COI)



## *Panulirus versicolor* (Latreille, 1804)

**Morphology** The maximum body length can reach 40 cm and the average body length is less than 30 cm. The basic color of this shrimp is blue or bright green. Carapace with a mosaic pattern in blue, white and green. The antennae are pink while the flagella are blue. The abdomen varies, but the basic color is bright green or blue with a transverse white stripe flanked by a black or dark blue stripe and the tail is blue-green. The tail is made up of five yellowish appendages yellowish at its base, with an apical blue area and a white margin. Legs are blue with white stripes. Young lobsters have a bluish or purplish base color. The top of the lobster head has 4 large spines. High spines / frontal horn (frontal horn) 3 times the height of the eye, without spines in between. Antennal plates with 2 pairs of spines are located separately and without additional small spines. Four pairs of walking legs without claws, fifth leg with claws. The abdomen is smooth, the upper surface of the abdominal segments has no transverse grooves and is devoid of hair, except for the dorsal edge and side bends.

**Ecology** Life solitary or not in group. Lobsters live in shallow waters in rocky habitat (coral reef areas), or are found on the seaward edge of reef flats, generally at depths of less than 16 m, especially at depths of 4–12 meters, in clean waters or in slightly turbid waters with strong currents. Lobsters are animals that are active at night (nocturnal) and don't live in groups, during the day hiding in underwater holes or caves and only their antennae are visible.

**Distribution** Andaman Island, China, Hong Kong, Malaysia, Myanmar, Philippines, Taiwan, Thailand and Indonesia: Java, Sumatera, Bali, East Nusa Tenggara, Sulawesi, Kalimantan, Maluku and Banda Sea. In addition, this species is also found in other Asian countries, Indo-Pacific such as Bahrain, India, Iran, Japan, Kuwait, Oman, Pakistan, Qatar, Sri Lanka, Saudi Arabia and in Africa countries such as Egypt, Kenya, Madagascar, Mauritius, Mozambique, Reunion, Seychelles, Somalia, Sudan, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Painuridae**



Scan DNA Barcode  
KF548583 (COI)

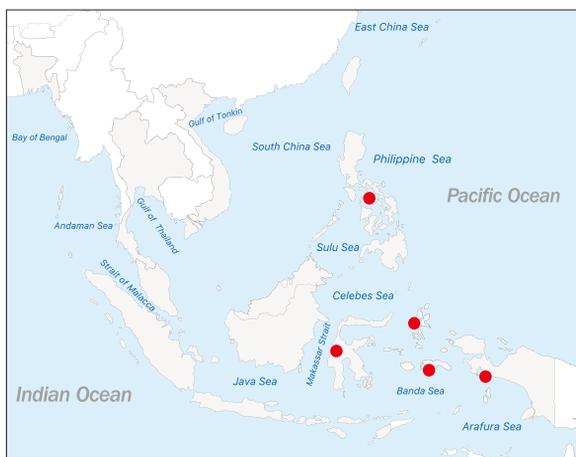


## ***Birgus latro*** (Linnaeus, 1767)

**Morphology** Size: Up to 40 cm in total length (TL) and up to 5 kg in weight. The body is dark black or bluish brown. It has a narrow carapace at the front, with a pointed rostrum, the lower carapace is widened and rounded. The abdomen shortens and hardens, folded/bent under the carapace. Left claw slightly larger than right claw. The male coconut crab has a conical protrusion on the fifth coxae which serves to channel sperm (vas deferens), while the female crab has three unpaired swimming legs on its abdomen.

**Ecology** Living in groups in the coconut vegetation areas, caves or rock holes. These crabs also live in coastal areas that merge with the mainland islands and are also in contact with human settlements and plantations.

**Distribution** Philippines and Indonesia: Sulawesi, Halmahera, Ambon and Papua. In addition, this species is also found in other Asian countries and Indo-Pacific region such as Chagos Island, Christmas Island, Cocos Island, Glorieuses Island, Juan de Nova Island, Mauritius, Seychelles.



Class **Malacostraca**

Order **Decapoda**

Family **Coenobitidae**



Scan DNA Barcode  
LC479169 (COI)



## *Ashtoret lunaris* (Forskål, 1775)

**Morphology** Size: maximal size 6.9 cm in Total Length (TL). Color beige to yellow with little maroon dots evenly sprinkled on the body surface, sometimes highlighting the six bumps. Body rather circular, with a pair of long spikes on the sides. Surface of carapace minutely granular and provided with six mid-dorsal tubercles, mid-postero-lateral tubercle of carapace present. Pincers short, sturdy, held against the body to form a somewhat box-like shape. All walking legs end in paddle-shaped tips and used to skim along the sea bottom and also like spades to rapidly burrow into the sand. Some may have large dark blotches on the paddles, with smaller dark spots on the legs.

**Ecology** Solitary or in pairs in shallow water, occurs from intertidal zone to a depth of 50 m. Found on muddy sand or broken shells bottoms and coastal.

**Distribution** Brunei Darussalam, Cambodia, China, Malaysia, Philippine, Singapore, Taiwan, Thailand, Timor Leste, Vietnam and Indonesia: Java. In addition, this species is also found in other Asian countries and Indo-Pacific regions such as, Israel, Japan, Pakistan, and Africa countries such as Madagascar, Mauritius, Mozambique and Seychelles.



Class **Malacostraca**

Order **Decapoda**

Family **Matutidae**



Scan DNA Barcode  
MN689982 (COI)



### ***Matuta victor*** (Fabricius, 1781)

**Morphology** Size: Up to 4 cm or more in total length (TL). Color: yellowish ground color with numerous fine black spots and several larger ones on carapace; legs and chelae bright yellow. Carapace rounded, with 2 long, well-developed lateral spines. The dorsal surface of the carapace is smooth. Anterolateral margins gently serrated. The anterolateral edge is pointy-toothed and on the posterolateral edge is blunt-toothed. The four pairs of legs have a flat, paddle-shaped propodus and dactylus. The propodus of the first three pairs of legs has a slightly pointed tip, while the propodus of the fourth leg is round. The surface of the leg segments is smooth without nodules.

**Ecology** Solitary or in pairs. Living in shallow waters, estuaries. Caught by local communities in nets, by hand or beach seines. On sandy areas.

**Distribution** Andaman Island, Brunei Darussalam, Cambodia, China, Hong Kong, Malaysia, Philippines, Singapore, Taiwan, Thailand, Vietnam and Indonesia: Java, Sumatera, Madura, Kalimantan and Ambon. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as India, Iran, Japan, Kuwait, Maldives, Oman, Pakistan, Saudi Arabia, Sri Lanka, and in Africa countries such as Madagascar, Mauritius, Mozambique and Somalia.



Class **Malacostraca**

Order **Decapoda**

Family **Matutidae**



Scan DNA Barcode  
MG753566 (COI)



### ***Calappa hepatica*** (Linnaeus, 1758)

**Morphology** Size up to 5 Cm in total length (TL). The body has varies in color, pale olive to olive grey or olive yellow. The carapace is oval and convex dorsally. The dorsal surface has nodules of various sizes and exposed parts of the chelae (pincers) are a mottled greyish-brown color. Lateral widened shield shaped with wide, pointed teeth. A pair of pincers that are almost the same size. The outer surface of the merus, carpus, propodus and dactylus is nodule, while the inner surface is smooth. The palms of the pincers are flat and wide.

**Ecology** Live in solitary or in pairs, found on sandy shelly substrates, this is a common littoral and sublittoral species from coral reefs and sea grass beds, in shallow water.

**Distribution** Andaman Island, Brunei Darussalam, China, Myanmar, Philippines, Singapore, Taiwan, Thailand, Timor Leste, Vietnam and Indonesia: Java, West Nusa Tenggara and Kalimantan. In addition, this species is also found in other Asian countries, Pacific regions such as Cocos Island, India, Japan, Jordan, Maldives, Turkey, United Arab Emirate and Africa countries such as Glorieuses Island, Kenya, Madagascar, Mauritius, Mayotte, Mozambique, Reunion, Somalia, and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Calappidae**



Scan DNA Barcode  
AY580003 (COI)



## *Calappa philargius* (Linnaeus, 1758)

**Morphology** The body of this species is dorsal surface smooth, convex; anterior part with minute flat tubercles. Rostrum slightly projecting, with 2 triangular teeth separated by deep sulcus. Posterior carapace margin with 7 well-developed granulated teeth, surface and base of teeth usually weakly granulate, tips of teeth usually slightly turned upwards; median tooth usually shorter than lateral teeth, sometimes subequal in length, never longer in adult specimens. Dorsal surface of carapace uniformly light grey to pale pink; external subdorsal surface of manus and carpus each with large purple to maroon spot. Inner surface of cheliped with red blotches arranged longitudinally. Dorsal surface of carapace uniformly colored, without markings; purple to maroon horseshoe-shaped marking surrounding orbit.

**Ecology** Benthic, continental shelf, muddy sand, sand bottom, sublittoral. It usually inhabits near-shore shallow waters (10~100 m) on sandy and muddy bottoms, and mainly feeds on mollusks and hermit crabs.

**Distribution** Cambodia, China, Hong Kong, Malaysia, Philippines, Singapore, Thailand, Taiwan, Timor Leste, Vietnam and Indonesia: Java, Sumatera, Sulawesi and Kalimantan. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Japan.



Class **Malacostraca**

Order **Decapoda**

Family **Calappidae**



Scan DNA Barcode  
AY580004 (COI)



## *Arcania undecimspinosa* De Haan, 1841

**Morphology** Size: maximal size 1.51 Cm in Total Length (TL). Dorsally the carapace is brownish with many small yellow dots, ventrally it is yellowish white. The legs also are yellowish white. Carapace globose, longitudinally ovate in male, nearly rounded in adult female, regions nearly indistinct, covered with spinules of uneven size. Frontal lobes triangular, closely set anteriorly with flat-topped granules. Margins of carapace bearing eleven spines: one spine each on subhepatic, anterolateral, midlateral, posterolateral and posterior margins, single spine on intestinal region. Anterolateral spine shortest; midlateral, posterolateral, and intestinal spines squat, upcurved, granulate; posterior spines dorso-ventrally flattened, granulate. Thoracic sternites prominently granulate. Cheliped merus in male four fifths as long as carapace, thickly set with conical granules, proximal meral tubercle indistinct. Carpus and propodus minutely granulate, propodus dorso-ventrally flattened, thicker basally, fingers slender, longer than palm. Pereiopodal meri, carpi and propodi minutely granulate; dactylar margins setose.

**Ecology** Solitary or in pairs in subtidal, on sandy-muddy substrates.

**Distribution** Andaman Island, Philippines, Singapore, Thailand, and Indonesia: Java, Sulawesi and Kalimantan. In addition, this species is also found in other Asian countries and Indo-Pacific regions such as Hong Kong, India, Japan and South Korea.



Class **Malacostraca**

Order **Decapoda**

Family **Leucosiidae**



Scan DNA Barcode  
ON991508 (COI)



## *Tiarinia cornigera* (Latreille, 1825)

**Morphology** Size: Up to 20 cm or more in total length (TL). This species has the ability to camouflage against its habitat. Some strategic camouflage can be done, such as decoration, color change, and masking behavior, so that it matches the background habitat. Carapace has no spines on the dorsal and lateral parts. Rostral on the carapace is reduced or very short. The carapace was pyriform-shaped, the regions are well defined by deepish grooves; the entire dorsal surface is closely covered with granules and tubercles of various sizes.

**Ecology** Solitary or in pairs. The habitat was, benthic; in this case, they were found at rock, algae and seagrass beds.

**Distribution** Andaman Islands, Philippines, Singapore, Taiwan and Indonesia: Java, Kalimantan, Sulawesi, Ambon, Banda Sea, East Nusa Tenggara and Papua.

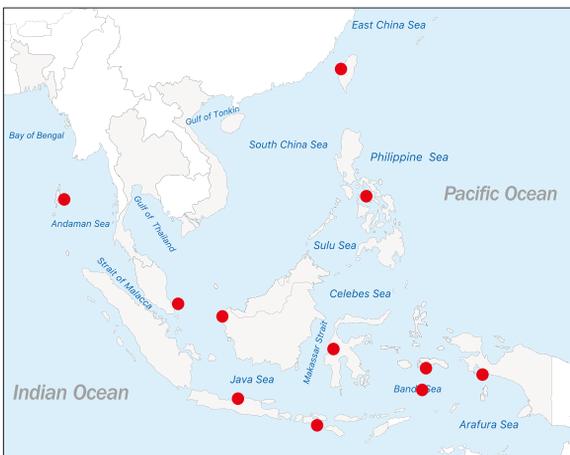
Class **Malacostraca**

Order **Decapoda**

Family **Epialtidae**



Scan DNA Barcode  
MF360955 (COI)





### *Daldorfia horrida* (Linnaeus, 1758)

**Morphology** Carapace generally tuberculated, branchial regions pitted. Epibranchial region inflates. The teeth on the upper margin of the ambulatory meri are not r-shaped, and the tips of all teeth are slightly bent outwards. Cheliped manus heterogeneous. Protogastric region is not more inflated than the epibranchial region. The mesobranchial margin usually with only one tooth, and the mesobranchial margin is usually without teeth; the tips of teeth, if present, not extended laterally. The male sternal pit is divided into three lobes, with a small anterior and 2 large lateral lobes. Base of teeth on upper margin of ambulatory meri narrow

**Ecology** Prefers sandy substrates. large chela is used to crush snails and molluscan shells of hermit crabs.

**Distribution** Indo-Pacific. Tropical and subtropical.

Class **Malacostraca**

Order **Decapoda**

Family **Parthenopidae**



Scan DNA Barcode  
MT803335 (COI)





## *Charybdis (Charybdis) lucifer* Fabricius, 1798

**Morphology** Carapace's dorsal surface is smooth with no clearly defined parts, transversely oval, and the frontal portion is frequently bilobed with a hint of a medial fissure. Without teeth but with a crest, the anterior borders are convex, and the epibranchial angle lacks a lobe. Antennal flagellum can be propped into the orbit by a tiny gap. Strong and nearly equal-sized chelipeds, with a crest on the dorsal border of the propodus. The dorsal margins of the merus, carpus, and propodus, as well as the ventral margin of the propodus, all have crests in walking legs. Somites 3–5 of the male abdomen are immobile. Reddish hues can differ. Small juveniles have a white carapace margin.

**Ecology** Inhabit intertidal rocky coral shore to 30 m.

**Distribution** East Coast of Africa, Yemen to South China, Japan including Thailand, Singapore, Philippines and Australia (NW, W).

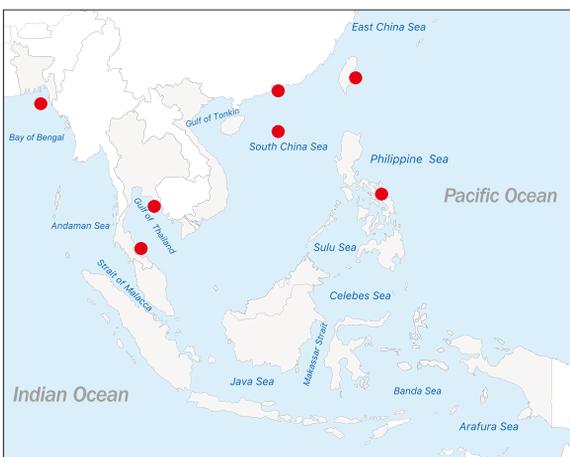
Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
MT278107 (COI)





## *Charybdis (Charybdis) natator* (Herbst, 1794)

**Morphology** Carapaces are densely covered with very short pubescence. The colors overall are orange-red, with ridges on carapace while the legs are dark reddish brown. Frontal-orbital border width is distinctly narrower than the carapace width. Carapaces have distinct ridges or granular patches behind the level of the last pair of anterolateral teeth. The front-orbital margin has 8 teeth, 6 teeth on the anterolateral margin with the first anterolateral tooth being truncated. Regarding the cheliped, anterior border of the merus with 3 spines and posterior border with 1 spine; the carpus with a strong spine on the inner angle and three spinules on the outer angle.

**Ecology** Found in shallow tropical waters, often on soft sediments.

**Distribution** Indo-West Pacific: from the Red Sea to China and Australia.

Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
MT278106 (COI)





## *Charybdis feriata* (Linnaeus, 1758)

**Morphology** Body somewhat fan-shaped. Carapace ovate with 5 distinct teeth on each anterolateral margin. Distinctive pattern of longitudinal stripes of maroon and white, usually with a distinct white cross on the median part of the gastric region; legs and pincers with numerous scattered white spots.

**Ecology** Inhabits in sandy-muddy substrates, subtropical and tropical climates. Usually occurs in a sublittoral environment, on rocky intertidal and stony coasts, reef flats at depths. Also found in the estuarine area and offshore

**Distribution** Indo-West Pacific: reaching Japan and Australia. Subtropical and tropical climates.

Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
MT278105 (COI)





## *Portunus pelagicus* (Linnaeus, 1758)

**Morphology** Carapace rough to granulose, with distinct zones; front has 4 sharply triangular teeth; each anterolateral edge has 9 teeth, with the last tooth being 2–4 times larger than the teeth before it. Chelae are longer in males, and the larger chela has a conical teeth at the base of the fingers. Males have blue patterns, while females are a dull green color.

**Ecology** Reef-associated; brackish; depth range 0 - 65 m. Tropical.

**Distribution** Indo-West Pacific: from China, Japan and Korea to Philippines and westwards to the straits of Malacca, also present in the Northern Territory, Australia. Tropical to subtropical.

Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
MT278113 (COI)





## *Portunus sanguinolentus* (Herbst, 1783)

**Morphology** Maximum body length reaches 20 cm in total length. The color of the carapace is very prominent with three circular patterns which are dark brown, black, olive or dark green near the posterior side, sometimes found also with 3 prominent maroons to red spots on posterior 1/3 of carapace. Easily distinguished from other species by its very distinct color markings. The carapace is hexagonal in shape, and the dorsal surface is smooth or finely granulate. The frontal has 6 spines, the outermost tooth are the largest tooth, 2 to 3 times larger than preceding teeth. The anterolateral margin has 9 teeth, the first 8 tooth are short, while the last tooth is longer and sharper than the other eight tooth. Chelae elongated in male; larger chela with conical teeth at base of fingers; pollex ridged.

**Ecology** Life solitary or in pairs. Generally, live in shallow waters, in estuaries or mangrove areas, intertidal zone (especially juveniles) to depths of 30 m. Subtidal, Inhabits sandy to sandy-muddy substrates. Also, in brackish water. Subtropical and tropical climates.

**Distribution** Brunei Darussalam, Cambodia, China, Hong Kong, Malaysia, Philippines, Singapore, Taiwan, Thailand, Timor Leste, Vietnam and Indonesia: Java, Sumatera, Banda Sea, Sulawesi, Maluku and East Nusa Tenggara. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Bahrain, India, Iran, Japan, South Korea, Kuwait, Pakistan, Qatar, Saudi Arabia, United Arab Emirate and in Africa countries such as Kenya, Madagascar, Mauritius, Mayotte, Mozambique, Reunion, Seychelles, Somalia, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
MF588556 (COI)



## *Scylla olivacea* (Herbst, 1796)

**Morphology** Color varies from red through brown to brownish black depending on habitat. Carapace is transversely ovate to transversely hexagonal with dorsal surface smooth and relatively flat to gently convex, usually ridged or granulate. Gastric groove is shallow and H-shaped, front broad, margin usually multidentate. Frontal lobe spines of the carapace are low, rounded with shallow interspaces. The anterolateral spines of carapace are broad with outer side convex. Carpus of cheliped is without two obvious spines on distal half of outer margin. Palm of cheliped is usually with a pair of blunt prominences on dorsal margin behind insertion of the dactyl, orange to yellow in color. Chelipeds, legs, and abdomen all are without obvious polygonal or marble like patterning.

**Ecology** Inhabit the intertidal to subtidal, estuarine, found on mangroves.

**Distribution** Indo-West Pacific.

Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
MT278115 (COI)





## *Scylla paramamosain* Estampador, 1950

**Morphology** Carapace usually green to light green, palm green to greenish blue or brown with lower surface and base of fingers usually pale yellow to yellowish orange. The claws are orange and green. Maximum body length reaches between 15 and 18 Cm. The "H" shape of the groove on the carapace is relatively not that deep, the shape of the spines on the front edge of the carapace is moderate, the hairs/setae are only found in the hepatic region. The spines on the forehead are tall, sharp and triangular in shape, and the outer carpus on the claw feet are spineless and the spines on the propodus are rather sharp, of medium size.

**Ecology** Solitary or in pairs. So far *S. serrata* and *S. tranquebarica* crabs have the same habitat, *S. paramamosain* crabs can be found in mangrove forests in intertidal to subtidal in the tropical and sub-tropical areas. Its dark brown body is almost blackish due to its lives in holes dug in mangrove brackish swamps.

**Distribution** Brunei Darussalam, Cambodia, China, Hong Kong, Malaysia, Philippines, Singapore, Taiwan, Thailand, Timor Leste, Vietnam and Indonesia: Java, Sumatera, Kalimantan and West Nusa Tenggara. In addition, this species is also found in other Asian country such as South Korea.



Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
AY373351 (COI)



## *Scylla serrata* (Forskål, 1775)

**Morphology** *Scylla serrata* has a carapace color of red-brown like rust or green to almost black. Maximum body length reaches 20 –28 Cm. The “H” shape of the groove on the carapace is not deep. The shape of the tip of the spine on the forehead is blunt, hair or setae are found on the hepatic carapace only, on the pincers there are no spines on the elbow joints (finger joints) which turn vestigial. The spines on the forehead are high and have a rounded tip, and the outer front carpus of the pincers bear a pair of spines. The claw legs and all other legs are polygonal in color, dark green or black, marbled depending on the habitat.

**Ecology** Solitary or in pairs. Crab can be found in almost all coastal waters, especially those overgrown with mangroves, shallow waters near mangrove forests, estuaries and muddy beaches; tidal areas associated with estuarine (coastal) areas, mangrove (brackish) swamps, estuaries of mangrove areas and even in fresh water as well as in protected parts of the coastal coastline. This species lives in holes dug in muddy or sandy mud bottoms, mainly during moulting until its carapace hardens.

**Distribution** China, Hong Kong, Malaysia, Philippines, Singapore, Taiwan, Thailand, Vietnam and Indonesia: Java, Sumatera, Sulawesi, East Nusa Tenggara and Ambon. In addition, this species is also found in other Asian countries, Indo-Pacific such as Bangladesh, India, Iran, Japan, Maldives, Pakistan, Sri Lanka, United Arab Emirate and in Africa countries such as Kenya, Madagascar, Mauritius, Mayotte, Mozambique, Reunion, Seychelles, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
KX249606 (COI)



## *Scylla tranquebarica* (Fabricius, 1798)

**Morphology** *Scylla tranquebarica* has an olive-green carapace. Maximum body length reaches between 12 and 17 Cm Shape "H" groove on the inner carapace. There are no hairs or setae on the carapace. The spines on the forehead are of medium size and have a blunt tip, and the carpus on the front of the pincers has a pair of spines. The claw feet are dark purple or black, depending on the habitat.

**Ecolog** Solitary or in pairs. *S. tranquebarica* crabs are also found in mangrove areas, shallow waters. This species lives in holes dug in mud or sandy mud bottoms, mainly during molting until its carapace hardens.

**Distribution** Brunei Darussalam, Cambodia, China, Malaysia, Philippines, Singapore, Taiwan, Thailand, and Vietnam and Indonesia: Java, Sumatera, Sulawesi and Ambon.

Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
AY373353 (COI)





### ***Thalamita crenata* Rüppell, 1830**

**Morphology** Maximum body length reaches 5-7 Cm. Body somewhat rectangular, the sides of the body with 5 light blue-light brown tipped spines of about equal size. Crabs have a smooth carapace, a pronounced gastric line, a pronounced epibranchial line and are interrupted at the cervical indentation. The forehead has six teeth, the median teeth are relatively larger than the other teeth. The anterolateral part has 5 teeth, the further back the smaller. The eyes are wide apart, between the eyes are 6 small rounded lobes. Cheliped are not the same size, the right side is stronger than the left. Walking legs greenish or bluish with orange joints and orange or red tips. Last pair of legs are paddle-shaped. Body and pincers sand colored, plain light olive or pinkish. The body edge may have a fine powder blue-brown banded pattern. The pincers are powder blue with dark red tips.

**Ecology** Solitary or in pairs. This swimming crab with powder blue pincers is sometimes seen near seagrasses and reefs on some of our shores, they are also found in mangroves and soft-silty bottoms near rocky areas without reefs.

**Distribution** Andaman Islands, Brunei Darussalam, Cambodia, China, Hong Kong, Malaysia, Philippines, Singapore, Taiwan, Thailand, Vietnam and Indonesia: Java, Sumatera, Sulawesi, Maluku and Arafura Sea. In addition, this species is also found in other Asian country, Indo-Pacific such as Cocos Island, India, Iran, Japan, Pakistan, Saudi Arabia, United Arab Emirate and in Africa countries such as Juan de Nova, Kenya, Madagascar, Mauritius, Seychelles, Somalia and South Africa.



Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
KY587388 (COI)



## *Thalamita prymna* (Herbst, 1803)

**Morphology** Maximum body length reaches between 5-17 Cm. Crabs with colorful swimming crab with bright blue spines or is usually yellowish, orange with brown blotches. The carapace is smooth and shiny with hair in slightly indented areas. The body sides with 5 bright blue-black tipped spines, the fourth spine is much tinier than the others so it may appear to have only 4 spines. The lines on the forehead and epibrachial area are clearly visible. The forehead is flat, equipped with 6 teeth, the submedian teeth are larger than the median teeth. The lateral teeth are the slimmest. Cheliped is not as big, sturdy. Anterior margin of merus with sharp spines and 1 sharp spine at each anterior angle and ventral edge. The merus on the legs runs smooth without hairs on the posterior surface. The eyes are wide apart. Between the eyes are 6 rounded equal-sized lobes. Last pair of legs are paddle-shaped. The pincers also have bright blue-black tipped spines.

**Ecology** Solitary or in pairs. This swimming crab is commonly seen on many of our shores, especially those with coral rubble and reefs. Scattered in coastal waters and coral reefs with a substrate of sand, coral.

**Distribution** Brunei Darussalam, Malaysia, Myanmar, Philippines, Taiwan, Thailand, Singapore, Vietnam, Papua New Guinea and Indonesia: Java, Sumatera, Bali, Sulawesi, North Maluku, Ambon and Papua. In addition, this species is also found in other Asian country, Indo-Pacific such as Gulf of Oman, India and Pakistan.



Class **Malacostraca**

Order **Decapoda**

Family **Portunidae**



Scan DNA Barcode  
MZ559458 (COI)



## *Carpilius maculatus* (Linnaeus, 1758)

**Morphology** Size: Up to 11 cm in total length (TL). The body is cream to pink ground color. Carapace oval and convex, lateral edges devoid of spines. The dorsal surface of the carapace with nine round red stripes. There are blunt teeth on each side of the anterolateral and posterolateral edges. A pair of asymmetrical pincers. Large pincers with a smooth outer surface, large shape with a stout tooth in the middle. Small slender pincers, no cutting teeth. Merus is cylindrical, dactylus long and slender and claw-shaped at the end.

**Ecology** Live in solitary or in pairs, in shallow water, under rocks and rocky beach.

**Distribution** Brunei Darussalam, Cambodia, China, Malaysia, Philippines, Singapore, Taiwan, Thailand, Timor Leste, Vietnam and Indonesia: Java, Sumatera, West Nusa Tenggara and Kalimantan. In addition, this species is also found in other Asian countries and Indo-Pacific regions such as Cocos Island, India, Japan and Africa countries such as Glorieuses Island, Kenya, Madagascar, Mauritius, Mozambique and South Africa.

Class **Malacostraca**

Order **Decapoda**

Family **Carpiliidae**



Scan DNA Barcode  
HM638026 (COI)





## *Eriphia sebana* (Shaw & Nodder, 1803)

**Morpholog** Size: Up to 8 cm or more in total length (TL). Overall coloration is dark brown or purplish dark brown. The carapace is hexagonal in shape, the surface of the carapace is divided into two lobes, with nodules on the edges. The anterolateral part is equipped with 5-6 spines. The four legs (merus to propodus) are covered with setae. A pair of asymmetrical pincers, smooth and without nodules. The pollex edge of the large claw has teeth, the propodus and dactylus are slightly bulging. Small claw fingers are slender and pointed.

**Ecology** Solitary or in groups. In habits rocky shore or reefs. Found on subtropical, tropical climates and Intertidal. Also occurs on algal and found within crevices in rocks or coral reefs.

**Distribution** Andaman Island, Cambodia, China, Hong Kong, Philippines, Singapore, Taiwan, Thailand, Vietnam and Indonesia: Java, Sulawesi, Ambon. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Christmas Island, Cocos Island, India, Japan, Maldives, Oman and in Africa countries Glorieuses Island, Juan de Nova Island, Kenya, Madagascar, Mauritius, Mayotte, Mozambique, Reunion, Seychelles, Somalia, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Eriphiidae**



Scan DNA Barcode  
MW887551 (COI)



## ***Actaeodes tomentosus*** (H.Milne Edwards, 1834)

**Morphology** Size: to 7.6 Cm in total length (TL). Coloration in life variable. Dorsal surface of the carapace dark grey or brown, but tubercles of the central areolas prevalently whitish, forming two bands anteriorly, eyes red. Dactyls brown or black, teeth whitish. The black or dark brown pigmentation on the fixed finger reaches approximately the middle of the lower margin of the palm. The body is oval, Carapace longitudinally oval, divided into numerous areolas separated by narrow furrows. Carapace entirely covered by a fine, close cropped, velvet felt only leaving exposed the apices of the granules. Less dense velvet also covers a great part of the sternum and, in general, the ventral face of the crab. Antero-lateral margins of the carapace convex, granular and divided into four rounded not prominent teeth included in the general convexity. Postero-lateral margins strongly concave, forming a deep cavity to accommodate the last three pairs of ambulatory legs. Chelipeds and ambulatory legs granular.

**Ecology** Solitary or in pairs in shallow water. Intertidal or associated with coral reefs.

**Distribution** Andaman Island, China, Philippine, Taiwan, and Indonesia: Java, Sumatera and Sulawesi. In addition, this species is also found in Africa region such South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Xanthidae**



Scan DNA Barcode  
HM423539 (COI)



### *Atergatis floridus* (Linnaeus, 1767)

**Morphology** Body oval, shape with a smooth surface and edge. Greenish and greenish-blue-brown hues are always laced with a fine network of white or yellow lines to create a lovely flower pattern. Carapace with regions poorly defined and lacking lateral teeth. Chelipeds are similar in size, short eye stalks. Both of the large pincers are around the same size, smooth (no bumps), and have spoon-shaped, black tips. Pincers on males could be bigger. Walking legs are not hairy, but rather thick, square, and have purple borders.

Class **Malacostraca**

Order **Decapoda**

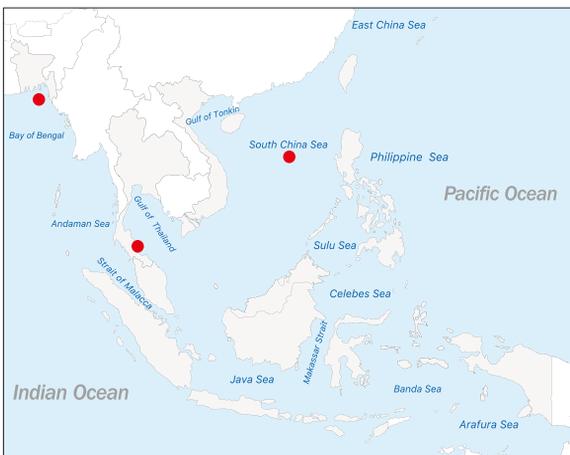
Family **Xanthidae**



Scan DNA Barcode  
MT803333 (COI)

**Ecology** Marine; occurs in the low intertidal and shallow subtidal zones on coral or rock reefs.

**Distribution** Tropical Indo-Pacific: Arabian Sea, Indian Ocean, South China Sea, Tropical SouthWestern Pacific, Western Indo-Pacific.





### *Atergatis integerrimus* (Lamarck, 1818)

**Morphology** Carapaces are sub-oval and transverse. Its length is shorter than the breadth, which is about 1.6 times longer than the length. Moreover, the carapace is slightly convex and has mini punctures all over the surface. These punctures are also present on chelipeds, walking legs, abdomen, and sternum. The front is narrow and undetectably convex, divided by a small slit into two lobes. The posterior lower margin of the carapace is smaller than the width of the front orbital. The carapace has a reddish brown, orange to bright red, usually with scattered white spots. Hairy blunt teeth are present upon the inner angle of the carapace's carpus.

**Ecology** Inhabit in the intertidal rocky coral shore.

**Distribution** Found in Oman Gulf, the Persian Gulf, Zanzibar, the South of India, Taiwan, Pakistan, Philippines and Japan

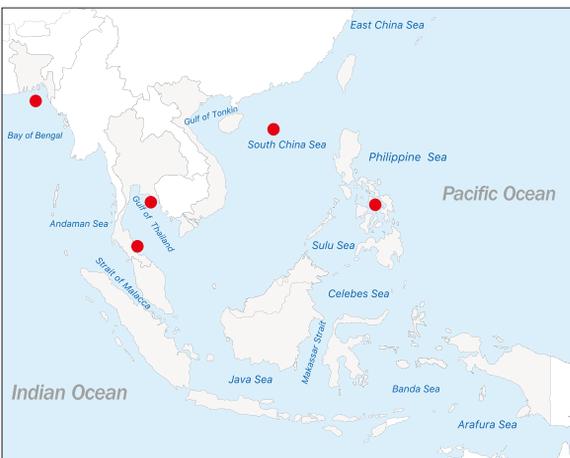
Class **Malacostraca**

Order **Decapoda**

Family **Xanthidae**



Scan DNA Barcode  
MN689992 (COI)





## ***Grapsus albolineatus*** Latreille in Milbert, 1812

**Morphology** Size: reach up to 7 Cm in total length (TL). Color in life: This species is, in general, greenish black, reddish black, reddish dark green and have greenish white longitudinal line, four pairs of feet and a pair of claws with purple tip or dark tips. The carapace is sub circular, almost flat and has mosaic colorations. The dorsal surface of the carapace is moderately flat, usually with transversal ridges and a body that is mottled and marbled with brown. Lateral edges without spines. It has a very small pair of pincers when compared to the other four pairs of legs.

**Ecology** Living solitary or in pairs. This crab is often found in intertidal areas, mangrove mudflats, rocky shores and open mudflats but also living together on substrates and is occupied by many kinds of organisms, such as mollusks, shrimps, crabs and worms or in rocky shore submerged in seawater at the highest tide, and exposed to sunlight at low tide. It usually forages at low tide levels, and it moves very quickly. Crab feeding periods tend to be limited to periods of low tide, and at high tide levels, *G. albolineatus* would stay put in one position and not move, because in general this crab stay above the water level at all times, even in intertidal areas.

**Distribution** Andaman Island, Brunei Darussalam, Cambodia, China, Hong Kong, Myanmar, Philippines, Singapore, Taiwan, Thailand, Timor Leste, Vietnam and Indonesia: Java, Sulawesi and Kalimantan. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Bahrain, India, Iran, Japan, Kuwait, Maldives, Oman, Pakistan, Qatar, Rykyus Island, Sri Lanka, Saudi Arabia, United Arab Emirate, Yemen and in Africa countries such as Madagascar, Mauritius, Mozambique and Somalia.



Class **Malacostraca**

Order **Decapoda**

Family **Grapsidae**



Scan DNA Barcode  
MN689986 (COI)



***Mictyris thailandensis*** Davie, Wisespongpan & Shih, 2013

**Morphology** Body sub-globular, slightly longer than broad. The carapace is relatively smooth medially, but some sparse low granules anteriorly; sparse clusters of microscopic granules laterally on the cardiac region; branchial regions evenly, densely, and microscopically granular. Anterolateral spines prominent, directed anteriorly upward (not divergent), apically subacute. Carapace regions well-defined; branchial regions moderately swollen, clearly separated from posterolateral margins above ambulatory legs by broad sulcus. Rostrum deflexed, distally triangular, upper surface broadly sulcate; about as long as broad.

**Ecology** Occurs in the sandy-muds of sheltered estuarine and coastal intertidal flats.

**Distribution** Known from the Andaman coast, Thailand, between Ranong Province and Pakbara Beach, Satun Province and Bangladesh.

Class **Malacostraca**

Order **Decapoda**

Family **Mictyridae**



Scan DNA Barcode  
MT803332 (COI)





### ***Austruca annulipes*** (H. Milne Edwards, 1837)

**Morphology** Species having a broad front, a carapace that is just slightly longer than three fifths of its extreme width. Antero-lateral borders of carapace convergent. Major male chela with palm bearing a supra marginal groove adjacent to lower border, which very often is beset with short bristles. G 1 with palp relatively short, sometimes reaching to base of horny endpiece; this last one flat, with flanges not inclined, longer than broad, mainly due to the largely protruding dorsal lobe; suture displaced ventrally; terminal opening marked by a more or less distinct notch.

**Ecology** They are small crabs and seen feeding in the evening on low tide.

**Distribution** Found along the coastline from South Africa to Somalia, Madagascar, India, China, Indonesia, Malaysia and the Philippines.

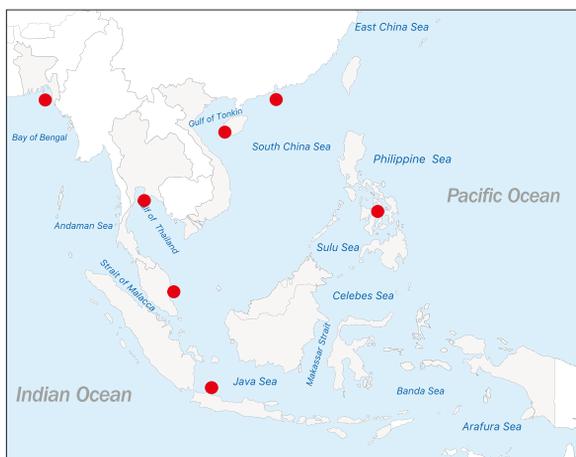
Class **Malacostraca**

Order **Decapoda**

Family **Ocypodidae**



Scan DNA Barcode  
MT803331 (COI)





## *Gelasimus vocans* (Linnaeus, 1758)

**Morphology** The carapace males reach 5 cm. Carapace rectangular, dorsal surface smooth. Adult males have pincers that are not the same size, one claw that is significantly larger than the other, while adult females have two equal-sized smaller claws. The color of the carapace generally is a black. Dactylus on the large claw (major chella) is yellow. The movable finger of this crab is white in the upper or yellow with the lower finger mostly orange. The movable finger at the top is white, while the bottom hollow is yellow. On the surface of the manus there are nodules (granules) that are rather large in size which can be seen very clearly and can be felt when touched.

**Ecology** In groups. Usually found in muddy substrates in mangrove areas.

**Distribution** China, Hong Kong, Malaysia, Myanmar, Philippines, Singapore, Thailand, Viet Nam and Indonesia: Java, Sumatera, Kalimantan and Ambon. In addition, this species is also found in other Asian countries, Indo-Pacific such as India, Japan and in Africa countries such as Djibouti, Eritrea, Kenya, Madagascar, Mauritius, Mayotte, Mozambique, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Ocypodidae**



Scan DNA Barcode  
AB535426 (COI)



***Tubuca coarctata*** (H. Milne Edwards, 1852)

**Morphology** The carapace males reach 3 cm. The common name of these crabs is either the compressed fiddler crab or the orange-clawed fiddler crab. The color of the carapace is variable however typical coloring for adult males is mostly black on the back with white or yellow or blue markings. Carapace rectangular, dorsal surface smooth, outer corner of orbit sharp. Slender eye stalks. Adult males have pincers that are not the same size, while adult females have a pair of smaller pincers. The clawed limb of adult males is in general orange or light brown with the color continuing onto the top and bottom fingers of the claw and fading to white at the ends. The carapace of adult females is also typically black with either small yellow markings or blue markings or sometimes orange. Juvenile males have a blue carapace with black markings and juvenile females either orange or blue with black markings similar to males.

**Ecology** In groups. They are found on tidal mud flats adjacent mangroves and muddy tidal creek and river banks.

**Distribution** China, Malaysia, Singapore, Taiwan, Philippines and Indonesia: Java, Sumatera and Bali. In addition, this species is also found in other Asian country such as Japan and Ryukyus Island.



Class **Malacostraca**  
 Order **Decapoda**  
 Family **Ocyropidae**



Scan DNA Barcode  
 LC053371 (COI)



## *Tubuca dussumieri* (H. Milne Edwards, 1852)

**Morphology** The carapace males reach 3.5 cm. Usually found in muddy substrates in mangrove areas. Carapace rectangular, dorsal surface smooth, outer corner of orbit sharp. Slender eye stalks. Adult males have pincers that are not the same size, one claw that is significantly larger than the other, while adult females have two equal-sized smaller claws. The color of the carapace is a blue-black carapace. The male claw is red or orange on the lower half and white to yellow on the upper half, with granules on the wrist and a gutter along the lower claw. The movable finger of this crab is white in the upper or yellow white with the lower finger mostly orange and the wrist (manus) blue-grey and that there is two rather than one grooves in the upper claw.

**Ecology** In groups. Usually found in muddy substrates in mangrove areas.

**Distribution** China, Malaysia, Myanmar, Philippines, Singapore, Taiwan, Thailand, Viet Nam and Indonesia: Java, Sumatera, and Sulawesi. In addition, this species is also found in other Asian country such as India, Japan, Sri Lanka, and Ryukyus Island.

Class **Malacostraca**

Order **Decapoda**

Family **Ocypodidae**



Scan DNA Barcode  
LC150437 (COI)





***Tubuca forcipata* (Adams & White, 1849)**

**Morphology** The carapace males reach 2 cm. Carapace rectangular, dorsal surface smooth, outer corner of orbit sharp. Skinny eye stalks. Adult males have pincers that are not the same size, one claw that is significantly larger than the other, while adult females have two equal-sized smaller claws. The color of the carapace generally is a black. Dactylus on the large claw (major chella) is red pinkish or brown yellow and the pollex is white.

**Ecology** In groups. Usually found in muddy substrates in mangrove areas.

**Distribution** Hong Kong, Malaysia, Singapore, Thailand and Indonesia: Java, Sumatera, Sulawesi, Kalimantan and Ambon. These species also found in Bangladesh and India.

Class **Malacostraca**

Order **Decapoda**

Family **Ocypodidae**



Scan DNA Barcode  
LC053372 (COI)





## *Ocypode ceratophthalmus* (Pallas, 1772)

**Morphology** Size: Up to 4- 8 cm total length (TL). The crabs have a box-shaped body, usually bluish grey with brown markings on the back, often in the shape of an "H". But a variety of other patterns also seen. The outer edges of the eye-sheaths are sharp and broadly triangular and distinctly pointing sideways in larger individuals. Large eyes on short stalks which can fold away into grooves on the body when the crab burrows into the sand. Crabs can run fast and quickly burrow into wet sand. Adult crabs have a characteristic tall skinny point or 'horn' on top of each eye (called the stylophthalmous), usually darker in color. Pincers long, downward pointing often with white or pale claws. This species of crab is well adapted to life out of water and is one of the few sea creatures that roams the beach at low tide, especially at night.

**Ecology** Solitary or in pairs. Commonly seen on many of shores, inhabits on the edge of sandy beaches which is still affected by the tides. Appears to be a predator in beaches where it is abundant. The habitat of this species is also found in estuaries with a sand substrate and high salinity. It is active only at night, and it moves so swiftly over the sand.

**Distribution** Hong Kong, Malaysia, Singapore, Philippines and Indonesia: Java, Sumatera, Sulawesi and Kalimantan. In addition, this species is also found in other Asian countries, Indo-Pacific regions such as Cocos Island, Japan and Africa countries such as Comoros, Kenya, Madagascar, Mauritius, Mozambique, Reunion, Seychelles, Somalia, South Africa and Tanzania.



Class **Malacostraca**

Order **Decapoda**

Family **Ocypodidae**



Scan DNA Barcode  
MH722457 (COI)

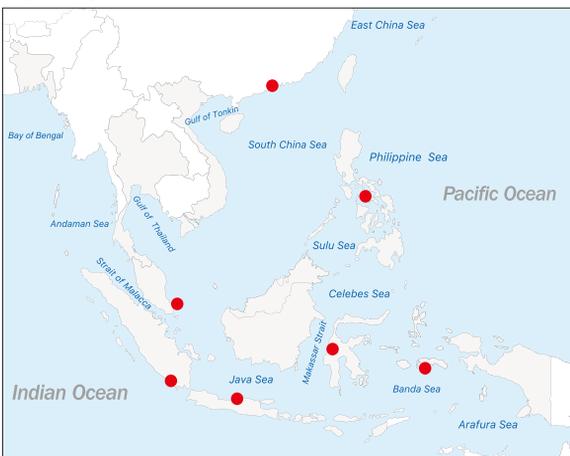


## ***Ocypode cordimana*** Latreille, 1818

**Morphology** Size: Up to 3- 5 cm total length (TL). Solitary. Color in life is yellow, cream and sandy. The crabs have a box-shaped body, large eyes on very short stalks, without 'horns' on top of the eye and the uneven size of their claws. The most species are pale greyish blue without dark markings on the back of the body. Pincers long, downward pointing. It lacks ridges on the inside of the 'palm'. Legs long with pointed tips. They can move a little slower when compared to *O. ceratophthalmus*.

**Ecology** Solitary or in pairs. Commonly found on beaches with sandy substrates. These semi terrestrial crabs dig burrows in sand and mud found in that zone between the high and low tide on beaches on the oceans or estuaries

**Distribution** Hong Kong, Philippines, Singapore and Indonesia: Java Sumatera, Sulawesi and Ambon. This species also found in Africa countries such as Kenya, Madagascar, Mauritius, Mozambique, Seychelles and Somalia.



Class **Malacostraca**

Order **Decapoda**

Family **Ocypodidae**

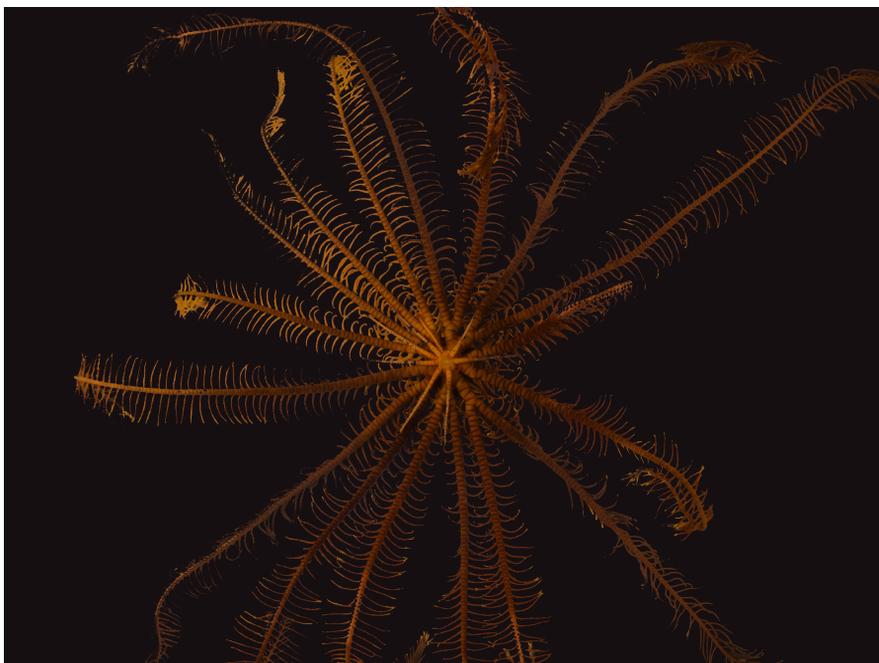


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AB751383 (COI)

# Echinodermata







## *Capillaster multiradiatus* (Linnaeus, 1758)

**Morphology** Arm up to 30 in number; cirri stout, up to 50 in number, consist of 22–26 segments; arm axillaries consist of 2 segments; first free arm syzygy on third segment; second proximal pinnules longest among first three pinnules; general body coloration varies, from one colour (purplish- or dark brownish-black) to variously banded.

**Ecology** Coral reefs; cryptic or semicryptic at day and perching on substrates at night; suspension feeder; may associated with shrimps.

**Distribution** Indo-Pacific; Japan, South China Sea, Philippines, Indonesia, Malaysia, Singapore, Oceania, Bay of Bengal, East Africa, Madagascar, Red Sea.

Class **Crinoidea**

Order **Comatulida**

Family **Comatulidae**



Scan DNA Barcode  
KR010326 (COI)





## ***Comanthus parvicirrus* (Müller, 1841)**

**Morphology** Arm up to 60 in number; cirri small, up to 20 in number, consist of 12–16 segments; first arm axillary consists of 2 segments, following axillaries of 2 or 4 segments; first free arm syzygy on third segments; proximal pinnules with comb-like structure; general body coloration dark moss green, pinnule tip yellow.

**Ecology** Coral reefs; semicryptic with arms extended in a multidirectional posture, beneath ledges and crevices; suspension feeder; frequently associated with shrimps.

**Distribution** Indo-Pacific; Japan, South Korea, Philippines, Indonesia, Malaysia, Oceania, Bay of Bengal, East Africa, Madagascar.

Class **Crinoidea**

Order **Comatulida**

Family **Comatulidae**



Scan DNA Barcode  
KR010265 (COI)





## *Dichrometra palmata* (Müller, 1841)

**Morphology** Arm up to 30 in number; cirri stout, up to 50 in number, consist of 22–26 segments; arm axillaries consist of 2 segments; first free arm syzygy on third segment; second proximal pinnules longest among first three pinnules; general body coloration varies, from one colour (purplish- or dark brownish-black) to variously banded.

**Ecology** Coral reefs; cryptic or semicryptic at day and perching on substrates at night; suspension feeder; may associated with shrimps.

**Distribution** Indo-Pacific; Japan, South China Sea, Philippines, Indonesia, Malaysia, Singapore, Oceania, Bay of Bengal, East Africa, Madagascar, Red Sea.

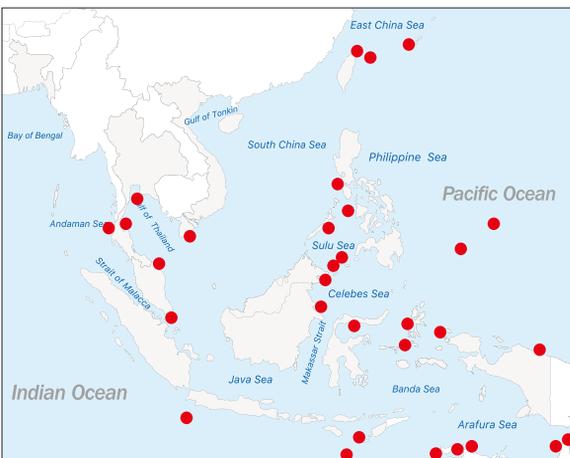
Class **Crinoidea**

Order **Comatulida**

Family **Mariametridae**



Scan DNA Barcode  
AB42608986 (COI)





## *Echinaster luzonicus* (Gray, 1840)

**Morphology** Arms 5–7, elongate, slender, cylindrical; abactinal surface smooth, covered by thick skin; supero- and inferomarginal plates inconspicuous; spines conical, sharply pointed, borne sparsely on abactinal and marginal area, embedded in skin; tube feet biserial, cylindrical with a terminal disc; general body coloration varies, red, dark red, black, orange, dark greenish brown.

**Ecology** Coral reefs; cryptic or exposed, beneath or on dead corals, rocks, ledges; fissiparous; associated with Ctenophora, copepods, polychaetes, shrimps.

**Distribution** Entire Indo-West Pacific

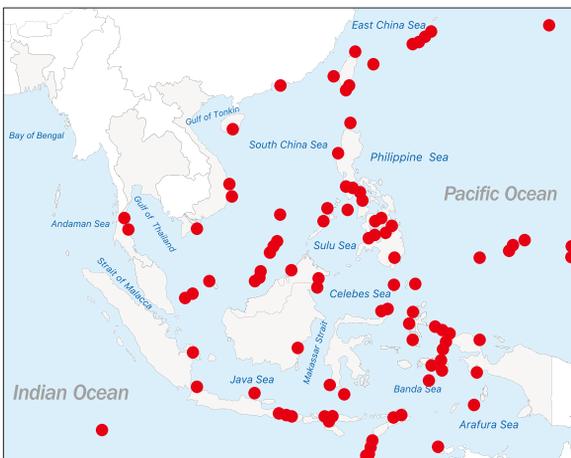
Class **Astroidea**

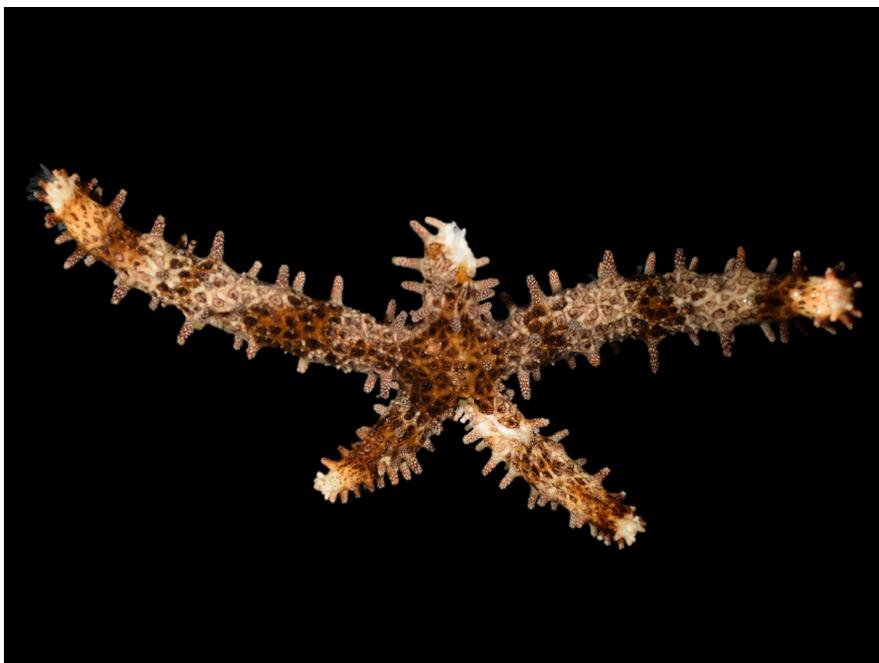
Order **Spinulosida**

Family **Echinasteridae**



Scan DNA Barcode  
JQ918248 (COI)





## *Mithrodia clavigera* (Lamarck, 1816)

**Morphology** Arms generally 5, elongate, slender, cylindrical; abactinal surface reticulated, densely covered by numerous granules; supero- and inferomarginal plates inconspicuous; spines conical, bluntly pointed or truncated, covered by granules, borne sparsely on abactinal and marginal plates; tube feet biserial, cylindrical with a terminal disc; general body coloration beige with orange to brown blotches.

**Ecology** Coral reefs; cryptic; probably carnivores, feeding sponges; associated with shrimps.

**Distribution** Entire Indo-West Pacific and Central Atlantic Ocean

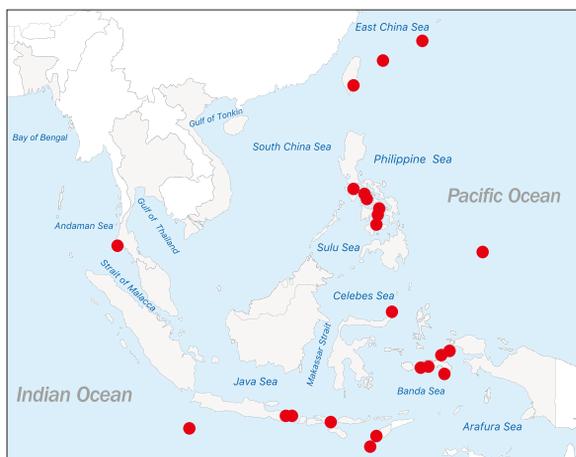
Class **Astroidea**

Order **Spinulosida**

Family **Mithrodiidae**



Scan DNA Barcode  
JQ918225 (COI)





## *Luidia maculata* Müller & Troschel, 1842

**Morphology** Arms 7–9, elongate, slender, flat; abactinal surface rough, covered by numerous paxillae; supero- and inferomarginal plates conspicuous, but superomarginal plates too small to distinguish from abactinal plates; spines forming paxillae, conical, sharply pointed, borne densely on abactinal and marginal plates, and elongated spines serially borne on marginal plates; tube feet biserial, tapering to a conical tip; general body coloration beige with orange to brown blotches.

**Ecology** Sandy bottoms; cryptic, buried in sands; carnivores and scavengers, feeding molluscs, echinoderms; associated with polychaetes.

**Distribution** Entire Indo-West Pacific

Class **Astroidea**

Order **Paxillosida**

Family **Luidiidae**



Scan DNA Barcode  
MT444501 (COI)





## *Aquilonastra coronata* (von Martens, 1866)

**Morphology** Arms generally 5, short, broad, flat; abactinal surface rough, covered by numerous pseudopaxillae; supero- and inferomarginal plates inconspicuous; spines forming pseudopaxillae, tiny digitiform or pointed, borne densely on abactinal and marginal plates; tube feet biserial, cylindrical with a terminal disc; general body coloration olive-green with dark red blotches.

**Ecology** Rocky shore; cryptic, beneath boulders.

**Distribution** West Pacific; northern Australia to southern Japan

Class **Asteroidea**

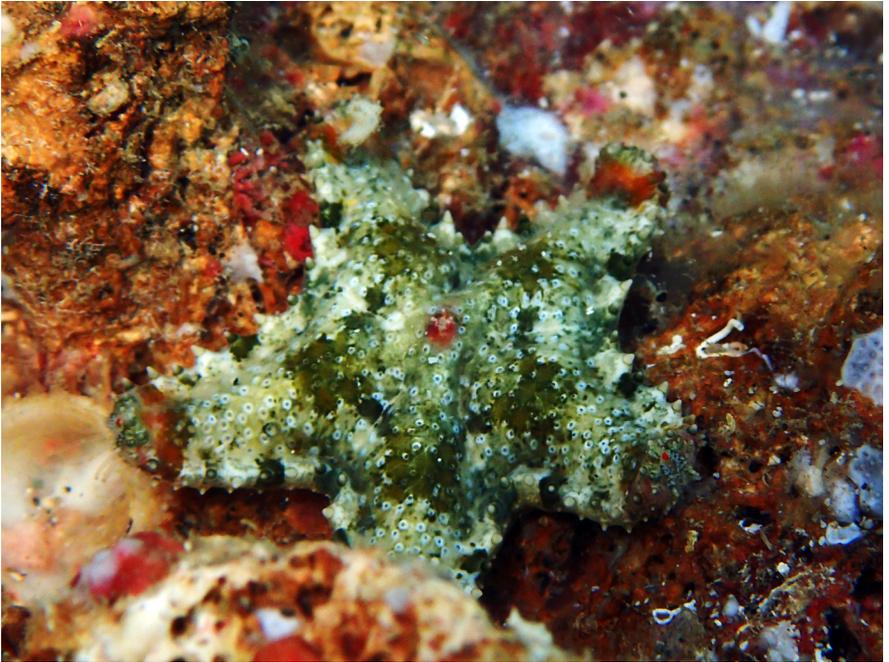
Order **Valvatida**

Family **Asterinidae**



Scan DNA Barcode  
AY370747 (COI)





## *Asteropsis carinifera* (Lamarck, 1816)

**Morphology** Arms generally 5, short, broad, flat; abactinal surface smooth, covered by thick skin; supero- and inferomarginal plates inconspicuous; spines conical, bluntly pointed, serially borne on marginal and sometimes on carinal plates; tube feet biserial, cylindrical with a terminal disc; general body coloration pale green with brown and/or dark green blotches.

**Ecology** Coral reefs; cryptic, beneath dead corals and rocks; omnivores and scavengers feeding macroalgae, coralline algae, dead fish, molluscs; associated with crabs and shrimps.

**Distribution** Entire Indo-West Pacific and East Pacific

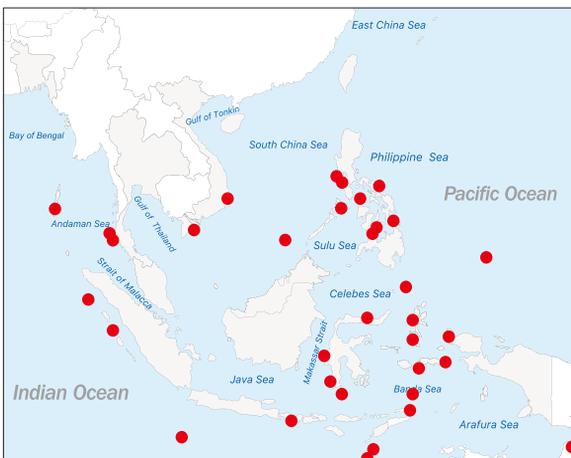
Class **Asteroidea**

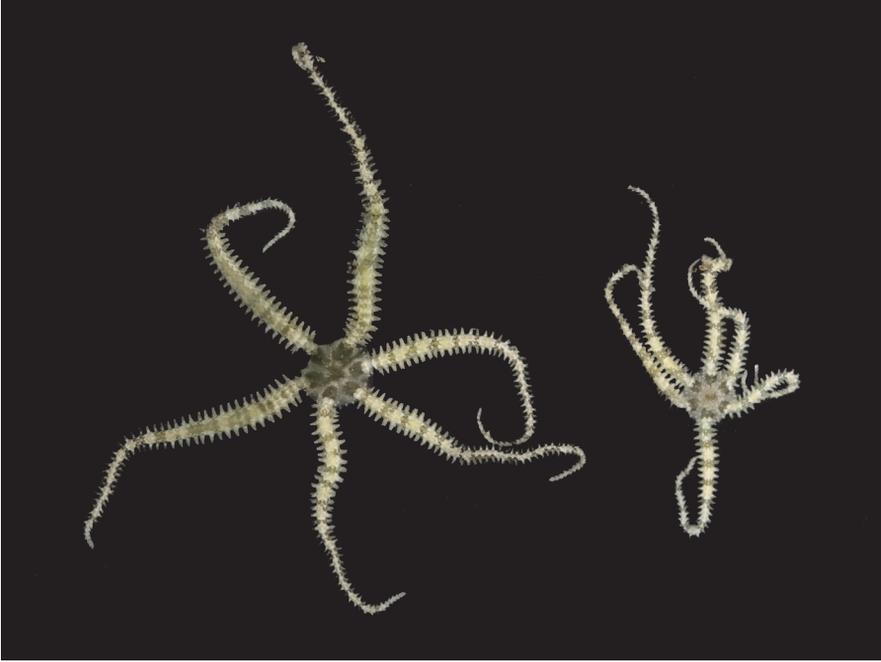
Order **Valvatida**

Family **Asteropseidae**



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JQ918220 (COI)





### *Ophiactis savignyi* (Müller & Troschel, 1842)

**Morphology** Usually 6 arms (3 large arms and 3 short arms). Oral shields rounded; Adoral shields large and meet in the proximal edge of oral shields. Dorsal arm plates large and wider than length, center of their distal edge convex. 5 to 7 arm spines on each lateral arm plate. 1 large tentacle scale. Deep and light green markings on disc, bands on arms when alive. Dorsal arm plates elliptical with rounded lateral margins.

**Ecology** Always found in sponges. Asexual reproduction by splitting into 2 individuals, resulting in individuals with 6 arms of uneven length.

**Distribution** Mexico, Australia, United States of America, Brazil, Panama, Colombia, Papua New Guinea, Indonesia, French Polynesia, Lebanon

Class **Ophiuroidea**

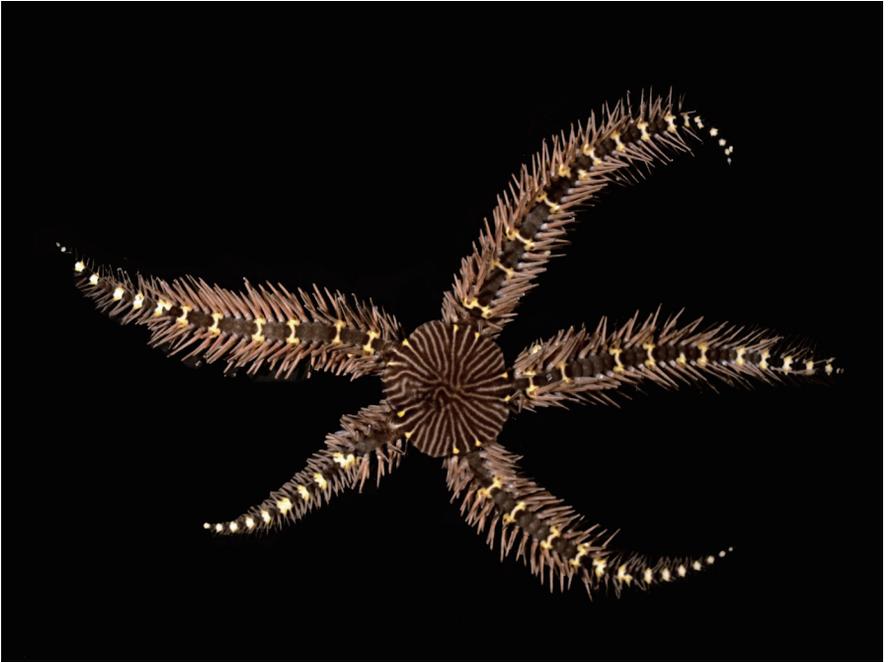
Order **Amphilepidida**

Family **Ophiactidae**



Scan DNA Barcode  
GU480578 (COI)





## ***Breviturma pica*** (Müller & Troschel, 1842)

**Morphology** Minute granules on disc. Golden radial lines on its black disc, and yellowish markings on edge of dorsal arm plates and whole lateral arm plates. Only 3 to 4 oral spines and the outer one is a little larger than the rest. Dorsal-most arm spines are strong but still as slender as the others. 2 large tentacle scales on one tentacle pore.

**Ecology** Found in coral.

**Distribution** United States of America, French Polynesia, Japan, Marshall Islands, Kiribati, Australia, Réunion, Philippine

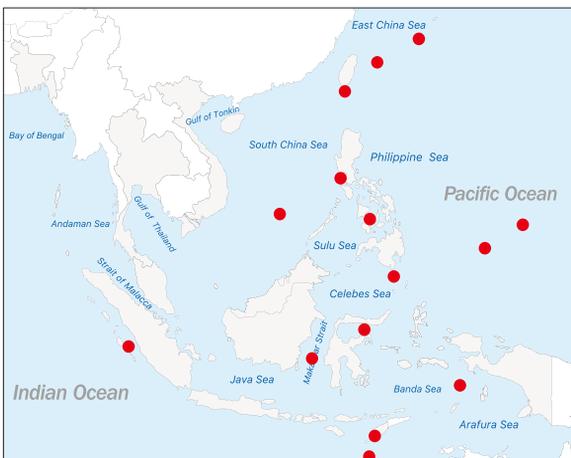
Class **Ophiuroidea**

Order **Amphilepidida**

Family **Ophiocomidae**



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MW278601 (CO)





## *Ophiocoma erinaceus* Müller & Troschel, 1842

**Morphology** Black or deep brown. Disc covered by skin with granules. Both have oral scales and cluster of tooth papillae. 3 to 4 arm spines in each lateral arm plate. Dorsal-most arm spine stout. 2 (sometimes 1) tentacle scales are same in shape, covering a red tentacle when alive.

**Ecology** Found in intertidal zone of coral reef or rocks. Can move to new shelter fast after exposed from stone or coral.

**Distribution** United States of America, Australia, French Polynesia, Papua New Guinea, Kiribati, Japan, France, Philippines

Class **Ophiuroidea**

Order **Amphilepidida**

Family **Ophiocomidae**



Scan DNA Barcode  
OP898179 (COI)





## *Ophionereis porrecta* Lyman, 1860

**Morphology** Disk covered by small round imbricating scales. Papillae along edges of genital slits stout and prominent. Bearing small supplementary dorsal arm plates in both side of dorsal arm plates whose distal edge shorter than proximal edge. 3 short and smooth spines on each lateral arm plates; the dorsal-most arm spines near prismatic. Single large oval tentacle scale.

**Ecology** Always found in coral reef.

**Distribution** Australia, United States of America, South Africa, Madagascar, French Polynesia, France, New Caledonia, Papua New Guinea, Réunion

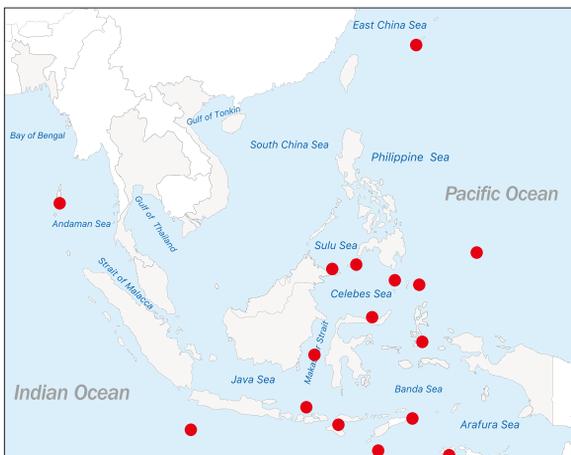
Class **Ophiuroidea**

Order **Amphilepidida**

Family **Ophionereididae**



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OP898200 (COI)





## *Gymnolophus obscura* (Ljungman, 1867)

**Morphology** 5 short slender curve arms. Cluster of tooth papillae and lack of oral scale. Covered by thick black skin. Radial shields are large, elongate and bearing vertical crest. Oral shield wide, distal edge convex. Dorsal arm plates are twice as width as height. The ventral arm plates are quadrangular and their contours appear less clearly under membrane. The lateral arm plates bear three to four arm spines, short, obtuse and a little flattened.

**Ecology** Obligate symbiont of Crinoids, always occupy the mouth of hosts.

**Distribution** Sri Lanka, Maldives, Indonesia, Singapore, Philippines, Australia, India, New Caledonia

Class **Ophiuroidea**

Order **Amphilepidida**

Family **Ophiotrichidae**



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HM400538 (COI)





## *Macrophiothrix nereidina* (Lamarck, 1816)

**Morphology** Length of the arm is 12 times the diameter of the disc. Disc covered by large smooth scales. Oral shield broad and not convex in distal edge. Dorsal arm plate broad, twice as width as length. 9 transparent thorny arm spines on lateral arm plates of segments near the disc. Specimens preserved in ethanol color purplish-blueish, with purple margined scales on disc. White stripes embraced by deep lines on dorsal arm plate.

**Ecology** Found in intertidal zone. Always be commensal with crinoids and Gorgonia.

**Distribution** Australia, Papua New Guinea, Indonesia, Singapore, Japan, Philippines, French Polynesia, India, Solomon Islands

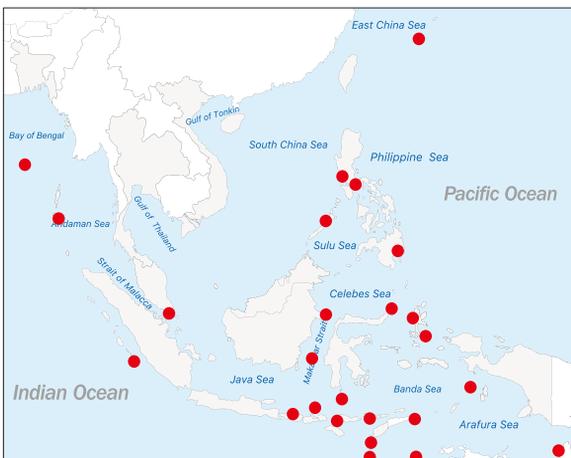
Class **Ophiuroidea**

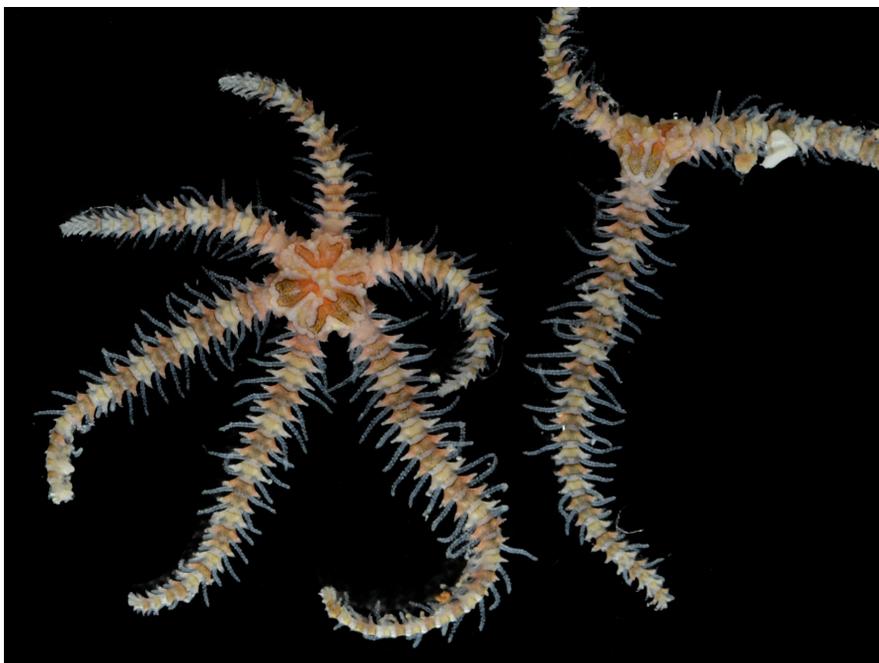
Order **Amphilepidida**

Family **Ophiotrichidae**



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AY365167 (16S)





## *Ophiothela mirabilis* (Verrill, 1867)

**Morphology** Small, disc diameter 2 mm. Usually 6 arms. Disk lobulated and totally covered by rounded and scattered granules. The disc mostly be occupied by big radial shields. Ventral-most arm spines are hook shaped. Color purplish, rosaceous or greenish.

**Ecology** Always attach Gorgonia or other echinoderms by wrapping its arms on.

**Distribution** Mexico, Australia, Brazil, Japan, Indonesia, New Caledonia, Philippines, Oman, Singapore, Panama

Class **Ophiuroidea**

Order **Amphilepidida**

Family **Ophiotrichidae**



Scan DNA Barcode  
MN961481 (COI)





***Ophiarachnella gorgonia* (Müller & Troschel, 1842)**

**Morphology** Upper and under disk covered by dense granules while radial shields naked. With large supplementary oral shields near the distal edge of oral shields, equaling the oral shields in width. Two small adoral separated in both sides of oral shield. Jaws are covered by granules. 10 to 11 arm spines which are no longer than a segment on each lateral arm plate. Specimens preserved in ethanol greenish.

**Ecology** Found in intertidal zone of coral reef or rocks.

**Distribution** Australia, Korea, Japan, Philippines, Madagascar, New Caledonia, Indonesia, Papua New Guinea, France

Class **Ophiuroidea**

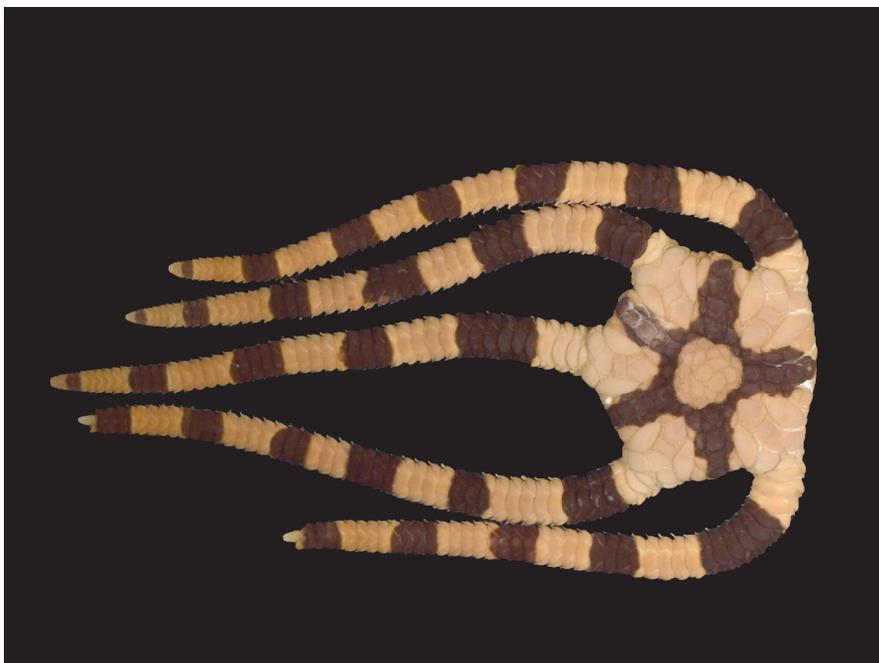
Order **Amphilepidida**

Family **Ophiodermatidae**



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**OP898160 (COI)**





## *Ophiolepis superba* H.L. Clark, 1915

**Morphology** Disc covered by flat and thin disc scales, smaller ones surrounding larger ones regularly; completely naked radial shields almost twice as long as wide; supplementary dorsal plates fragmented in two or three pieces; a deep-purple star-like pattern on the center and interradial of dorsal disc; arms banded with deep-purple bands.

**Ecology** Coral reef

**Distribution** Australia, Japan, Indonesia, Philippines, Papua New Guinea, Kenya, Réunion, Saudi Arabia, Tanzania

Class **Ophiuroidea**

Order **Amphilepidida**

Family **Ophiolepididae**



Scan DNA Barcode  
MF989367 (COI)





## *Stichopus chloronotus* Brandt, 1835

**Morphology** Dark blue in colour underwater and appeared almost black out of the water (Figure 2). Two rows of large and long papillae at dorso-lateral edge running from the collar of the tentacles toward the anus; similar papillae at ventro-lateral edge but one single row; tip to the base of the papillae were yellow and ochre colour. Tube feet in ambulacra areas with narrow interambulacra; central ambulacra wider with more rows of tube feet compared to the other coupling ambulacra area. Ventral oral opening with 20 peltate tentacles; terminal anus.

**Ecology** on sand, rocks and sometimes coral.

**Distribution** Widely distributed in the shallow tropical waters of Indo Western Pacific Ocean,

Class **Holothuroidea**

Order **Aspidochirota**

Family **Stichopodidae**



Scan DNA Barcode  
OR636975 (16S)





### ***Stichopus pseudohorrens*** Cherbonnier, 1967

**Morphology** Body cross section slight quadrangular with prominent long and triangular papillae. Colours can be various from yellow to patches of red and brown.

**Ecology** Coral reefs

**Distribution** Western Pacific Ocean

Class **Holothuroidea**

Order **Aspidochirotida**

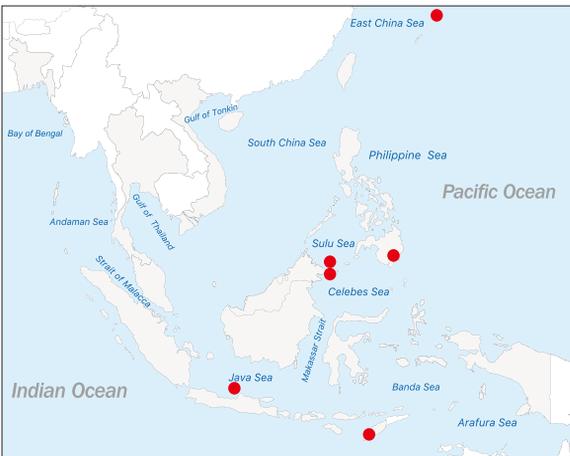
Family **Stichopodidae**



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**OR644362 (16S)**



Scan DNA Barcode  
**OR636965 (COI)**





## *Stichopus vastus* Sluiter, 1887

**Morphology** Descriptions. Body cross section slight quadrangular without distinct edges; body surface smooth and tough; resembles a collage of irregular rectangular bulges; black deep depressions line separating each bulges; brown and yellow colour with numerous darker brown strips transverse and encircles the base of the papillae. Limited number of papillae; two rows of large papillae with low protrusion in the dorsal body; two rows of discontinuous rows of large papillae between the bivium and trivium. Tube feet in ambulacra areas only; reddish brown background colour at the ventral side with lighter yellowish brown on the interambulacra area. Ventral mouth with 20 peltate tentacles surrounded by a collar of minute papillae at the oral opening

**Ecology** Coral reef area, semicryptic at day

**Distribution** Indian Ocean, Andaman Islands, South China Sea, Flores Sea, Great Barrier Reef Australia, Micronesia, Palau, Papua New Guinea

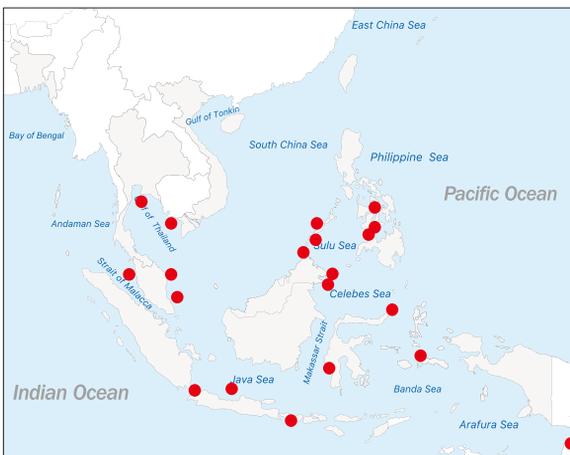
Class **Holothuroidea**

Order **Aspidochirota**

Family **Stichopodidae**



Scan DNA Barcode  
OR636978 (COI)





22 Thelenota anax.JPG

## *Thelenota anax* Clark, 1921

**Morphology** Body trapezoid, large, and flattened sole with crowded tube feet. Body colour creamy white, profusely speckled with minute greenish yellow spots and red spots.

**Ecology** Found on sandy bottom

**Distribution** Tropical Indo-Western Pacific ocean up to Ryukyu islands in Japan.

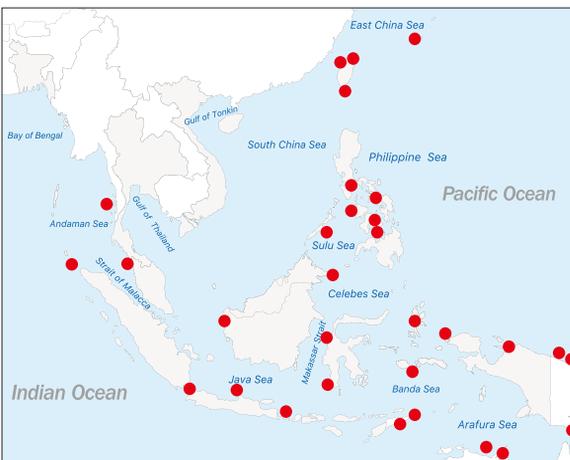
Class **Holothuroidea**

Order **Aspidochirotida**

Family **Stichopodidae**



Scan DNA Barcode  
OR636965 (16S)



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