

Order RHINOBATIFORMES

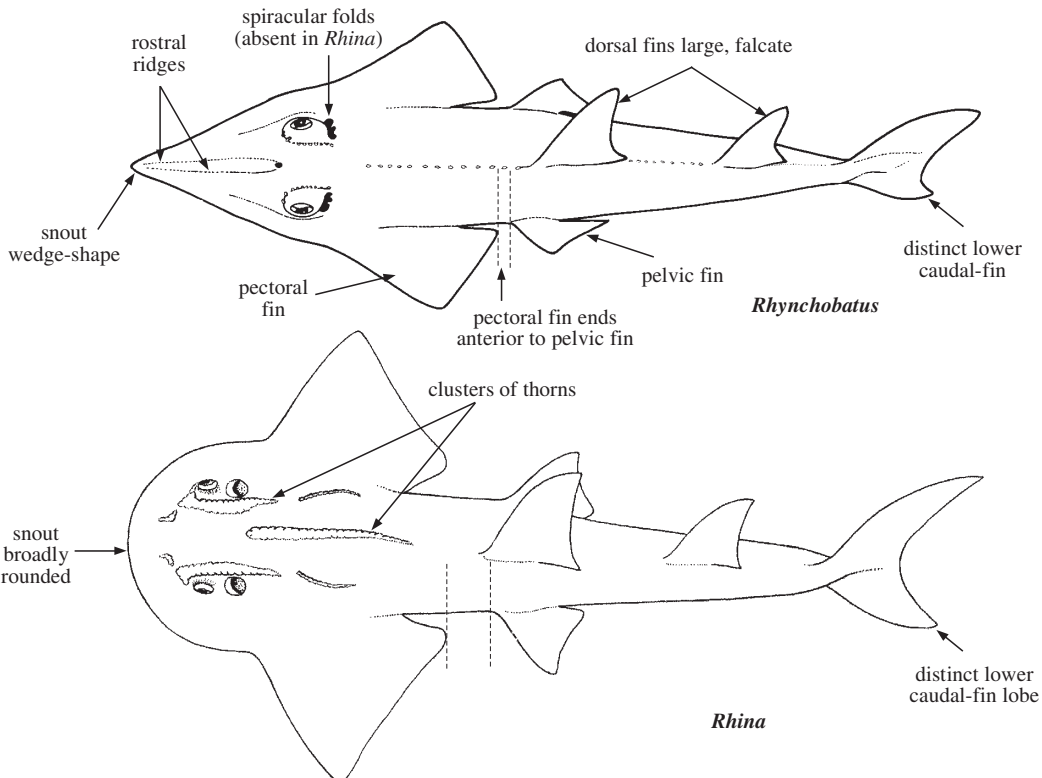
RHINIDAE

(= Rhynchobatidae)

Wedgefishes

by L.J.V. Compagno and P.R. Last

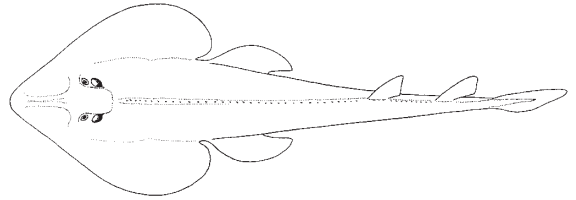
D **Diagnostic characters:** Large shark-like batoids (adults about 71 cm to over 3 m total length) with long stout tails and small pectoral discs. Body covered with tiny dermal denticles or placoid scales; enlarged denticles or thorns present on dorsal surface on snout, orbits, shoulders, and midline of trunk and tail, more or less enlarged. Trunk thick, slightly flattened and shark-like. Precaudal tail moderately depressed, with lateral ridges on sides, tail not abruptly narrower than trunk, no barbed sting (stinger or stinging spine) on dorsal surface of tail behind dorsal fins, no electric organs in tail. Head narrow to broad and moderately depressed; **snout short to moderately elongated, bluntly rounded or angular**; snout supported by a stout rostral cartilage; **snout not formed into a rostral saw and without lateral saw teeth**. Five small gill openings on underside of front half of pectoral-fin bases, not visible in lateral view; no gill sieves or rakers on internal gill slits. Eyes dorsolateral on head and just anterior to spiracles. Mouth more or less arched and with prominent knobs and depressions. **Nostrils somewhat anterior to mouth and separated from it by less than their own widths**, always separate from each other and mouth; anterior nasal flaps short, not connected with each other and not reaching mouth. Oral teeth small to moderately large, rounded-oval in shape and without cusps on their crowns, not laterally expanded and plate-like, similar in shape and in 32 to 76 rows in either jaw. **Pectoral fins small, originating in front of mouth but behind nostrils, attached to postrostral head and ending anterior to pelvic-fin origins**. No large electric organs at bases of pectoral fins. Pelvic fins angular, not divided into anterior and posterior lobes. **Two large subequal and widely separated dorsal fins present, these of similar falcate shark-like shape** with distinct apices, anterior, posterior and inner margins, and free rear tips. First dorsal fin originates over anterior half of total length, origin anterior to rear tips of pelvic fins and junction between trunk and tail. **Caudal fin large, shark-like, and asymmetrical**, with vertebral axis raised above body axis; **lower caudal-fin lobe present and large**. **Colour:** dorsal surface yellowish, brownish, grey-brown, or greenish, white below; dorsal surface with small to large white spots and sometimes dark blotches and dark ocelli on pectoral fins.



Habitat, biology, and fisheries: Wedgefishes (also known as “sharkfin guitarfishes”) are a small group of inshore tropical batoids of the eastern hemisphere, from tropical West Africa from Senegal to Zaire, and the Indo-West Pacific from the east coast of South Africa and the Red Sea to Japan, Indonesia, the Philippines, and Australia. They occur in shallow, inshore continental waters, often in muddy enclosed bays, in estuaries, off river mouths, and on coral reefs, but do not penetrate fresh water to any extent. They occur in depths from the intertidal down to at least 64 m and off large continental islands. They are slow but strong-swimming bottom-dwellers, resting on soft mud, sandy or rough bottoms, but also swimming just above it or well off it near the surface. All species are ovoviviparous as far as is known, with fetuses having large yolk sacks. They feed on benthic invertebrates. Wedgefishes are commonly caught as bycatches of small local inshore fisheries and can be captured in a variety of gear including gill and trammel nets, beach seines, longlines, handlines, and bottom trawls. They are inoffensive to people. Their meat is utilized fresh, dried-salted and frozen for human consumption, and their fins are valued in the oriental sharkfin trade. In some places, wedgefishes are sought by sports anglers because of their dogged resistance when hooked on rod and reel.

Similar families occurring in the area

Some authors place the 2 known genera into their own families, which has merit both morphologically and cladistically. *Rhina* would then be placed in the Rhinidae while *Rhynchobatus* would be placed in the Rhynchobatidae. Whatever arrangement is followed, the combination of a bluntly rounded or angular snout, large anterior, falcate shark-like fins, and caudal fin with a strong ventral lobe separates these rays from all other batoids in the area.

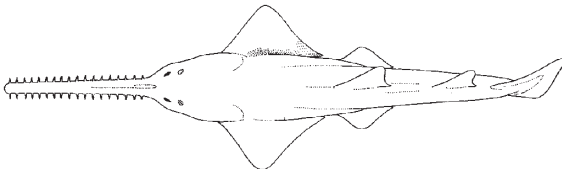


Rhinobatidae

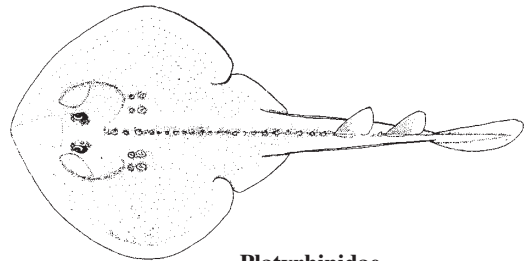
Rhinobatidae: body less thick and less shark-like; pectoral fins with origins in front of nostrils and with free rear tips posterior to pelvic-fin origins; dorsal fins smaller; first dorsal fin with origin behind rear tips of pelvic fins.

Pristidae: snouts with a rostral saw (sometimes lost through injury); jaws not undulated and teeth minute; no rows of thorns around eyes, on back, or on tail; dorsal surface plain, without spots or ocelli.

Platyrrhinidae: pectoral disc enlarged or heart-shaped, body flatter and not shark-like, dorsal fins small, not falcate, and far behind pelvic fins; pelvic-fin origins in front of pectoral rear tips; rows of enlarged thorns present on tail.



Pristidae



Platyrrhinidae

Key to the species of Rhinidae occurring in the area

- 1a. Snout and anterolateral edges of prepectoral head broadly rounded, with a deep indentation separating it from pectoral-fin origin on each side; orbits, middorsal line, and shoulders with prominent ridges bearing clusters of small, medium-sized, and large triangular thorns or spines, the large spines on the midback triangular and erect like saw teeth, the shoulder spines on 2 prominent ridges; spiracular folds absent; pectoral and pelvic fins high and angular; caudal fin almost lunate, with preventral margin nearly as long as dorsal margin *Rhina ancylostoma*
- 1b. Snout and anterolateral edge of prepectoral head broadly angular and wedge-shaped, with shallow indentation separating it from pectoral-fin origin on each side; back with a line of small thorns on midback, 2 short lines on shoulders, on orbits, and sometimes on snout, these not saw-like; outer and inner spiracular folds present; pectoral and pelvic fins low and angular; caudal fin distinctly asymmetrical, with preventral margin much shorter than dorsal margin (*Rhynchobatus*) → 2

- 2a. Two rows of enlarged thorns on rostral ridges; first dorsal-fin origin behind midbases of pelvic fins; no black pectoral-fin ocellus surrounded by white spots, but scattered large white spots in young; disc dark green or brown with prominent light margin; free propterygial radials 0 or 1, attached propterygial radials 16 to 17, total attached pectoral radials 47 to 48; total vertebral centra 113 to 116, precaudal centra 79 to 84, synarcual counts 25 to 26; rostral appendices of rostral cartilage elongated posteriorly like harpoon flukes. *Rhynchobatus* sp. 1
- 2b. No thorns present on rostral ridges; first dorsal-fin origin varies from about opposite pelvic-fin origins to just in front of midbases of pelvic fins; usually a prominent black ocellus surrounded by white spots (sometimes doubled), present on pectoral-fin bases; also rows of small white spots on trunk and tail of young (fading out in adults); disc grey or brown with inconspicuous light margin; free propterygial radials usually 4 to 8, attached propterygial radials 21 to 27, total attached pectoral radials 54 to 62; total free vertebral centra 127 to 182, precaudal centra 92 to 142, synarcual counts 29 to 34; rostral appendices of rostral cartilage laterally truncate → 3
- 3a. Snout distinctly bottle-shaped, constricted in front of tip; first dorsal-fin origin well behind pelvic-fin origins, by a distance about 1.5 to 2.5% of total length; propterygial radials (exclusive of free radials) 24 to 27 (mean 25.4); total free vertebral centra 160 to 182; anterior horn of antorbital cartilage short and ending posterior to front edges of nasal capsules *Rhynchobatus australiae*
- 3b. Snout narrowly or broadly wedge-shaped, not constricted in front of tip; first dorsal fin about opposite pelvic-fin origins, not exceeding 0.8% total length in front of them and 1.2% of total length behind them; propterygial radials (exclusive of free radials) 21 to 24 (mean 21.6); total free vertebral centra 127 to 158; anterior horn of antorbital cartilage elongated and extending in front of nasal capsules → 4
- 4a. Snout narrowly wedge-shaped, more pointed and slightly longer, preorbital space usually over 17% of total length (young less than 50 cm total length); total free vertebral centra 149 to 158, total vertebral segments 166 to 174 *Rhynchobatus* cf. *laevis*
- 4b. Snout broadly wedge-shaped, blunter, and shorter, preorbital space usually less than 17% of total length (young less than 50 cm total length); total free vertebral centra 127 to 139, total vertebral segments 145 to 157 *Rhynchobatus* sp. 2

List of species occurring in the area

The symbol ♠ is given when species accounts are included.

- ♠ *Rhina ancylostoma* Bloch and Schneider, 1801
- ♠ *Rhynchobatus australiae* Whitley, 1939^{1/}
- ♠ *Rhynchobatus* cf. *laevis* (Bloch and Schneider, 1801)^{1/}
- ♠ *Rhynchobatus* sp. 1^{1/}
- ♠ *Rhynchobatus* sp. 2^{1/}

References

Compagno, L.J.V., D.A. Ebert, and M.J. Smale. 1989. *Guide to the sharks and rays of Southern Africa*. South Africa, Struik Publishers, 160 p.

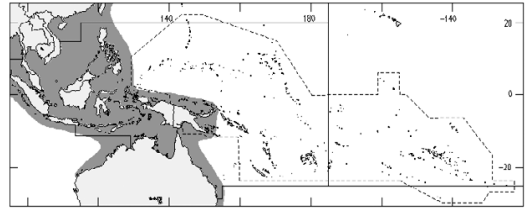
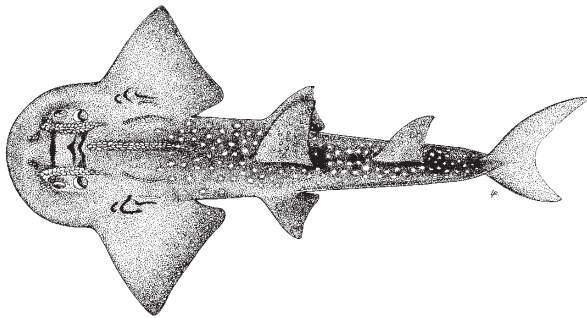
Michael, S.W. 1993. *Reef sharks and rays of the world: a guide to their identification, ecology and behaviour*. USA, Sea Challengers, 107 p.

^{1/} These species were previously included as synonyms of or identified as members of a single, wide-ranging species, *Rhynchobatus djiddensis* (Forsskål, 1775). This was attributed to virtually the entire tropical and warm-temperate Indo-West Pacific, from South Africa and the Red Sea eastwards to Japan and Australia. Apparently, *R. djiddensis* is a species complex of which 3 species occur in the area (*R. australiae*, possibly *R. laevis*, and *Rhynchobatus* sp. 2.) while *R. djiddensis* sensu stricto, as currently known, is apparently confined to the western Indian Ocean from South Africa to the Red Sea. The fourth species, *Rhynchobatus* sp. 1, is very distinctive and is not part of the *R. djiddensis* complex; it may be closer to the eastern Atlantic *R. luebberti* Ehrenbaum, 1914.

Rhina ancylostoma Bloch and Schneider, 1801

En - Shark ray.

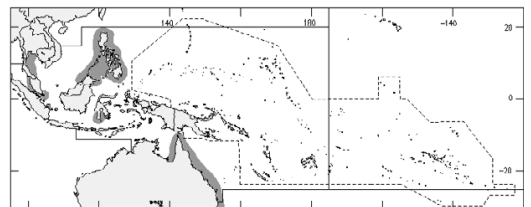
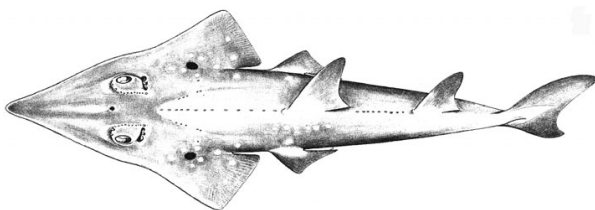
Maximum total length at least 270 cm; males adolescent between 157 and 178 cm and reaching at least 206 to 220 cm. A common and strikingly formed wide-ranging batoid of the tropical Indo-West Pacific. A bottom dweller found in coastal areas and on coral reefs, close inshore. Feeds on bottom crustaceans (including crabs) and molluscs. Caught on line gear and in nets, including prawn trawls, and is marketed fresh for human consumption in the area. Can be a problem in trawls because it is very rough and spiky, difficult to handle, and can damage the catch. Occurs in the Indo-West Pacific, from South Africa (Natal coast), Mozambique, East Africa, Seychelles, the Red Sea, Arabia, Oman, the Persian Gulf, India, Sri Lanka, Malaysia, Indonesia (Borneo), Philippines, New Guinea, Thailand, Viet Nam, China, Taiwan Province of China, Korea, Japan, and Australia (from Exmouth Gulf, Western Australia, north to Northern Territory, Queensland, and Forster, New South Wales).



Rhynchobatus australiae Whitley, 1939

En - Whitespotted wedgefish.

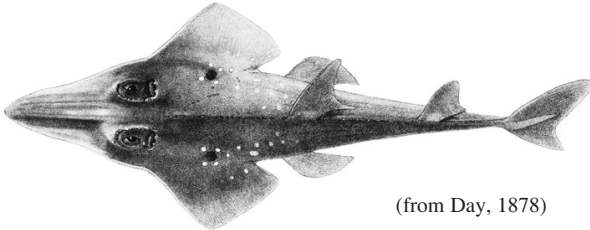
Maximum total length at least 187 cm (female) and probably between 200 and 300 cm (specimens seen in Thailand); males adult at 131 cm. A locally common batoid of the tropical Indo-West Pacific, which occurs in inshore waters on the continental shelves. Feeds on bottom crustaceans and molluscs. Caught on line gear and in nets, and marketed fresh for human consumption; fins prized for the oriental "sharkfin" trade. Occurs off Indonesia (Macassar and "East Indies", no further data), Singapore, Thailand (Gulf of Thailand), Philippines, and Australia (Queensland); a similar and perhaps identical species occurs in the western Indian Ocean off Mozambique and in the Gulf of Aden and is broadly sympatric with the true *Rhynchobatus djiddensis* of the western Indian Ocean and the Red Sea. Probably has a wider range than reported here, but many nominal records of "*R. djiddensis*" from the western Pacific and southeastern Indian Ocean cannot be identified to species.



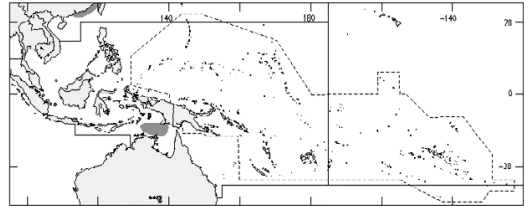
***Rhynchobatus cf. laevis* (Bloch and Schneider, 1801)**

En - Smoothnose wedgefish.

Maximum total length at least 147 cm and probably over 200 cm. A locally common batoid of the tropical and tropical and warm-temperate continental shelves of the western Pacific, and possibly extending to the northwestern Indian Ocean if identical with *Rhynchobatus laevis*. A bottom dweller found off river mouths and in shallow bays. Feeds on bottom invertebrates. Caught in nets and utilized for human consumption; probably used for the oriental "sharkfin" trade. Occurs off Japan, China, and northern Australia. A similar and possibly identical species tentatively identified as *R. laevis* occurs off Zanzibar, Oman, in the Arabian Sea, and off Pakistan, India, Oman, Sri Lanka, and Bangladesh.



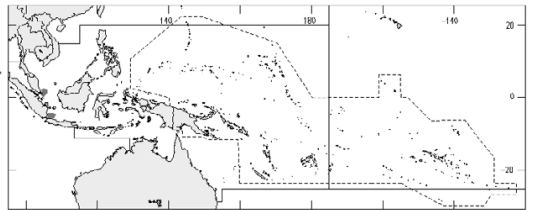
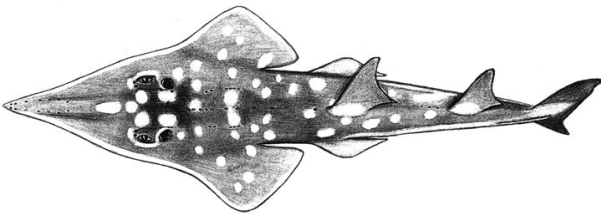
(from Day, 1878)



***Rhynchobatus* sp. 1**

En - Roughnose wedgefish.

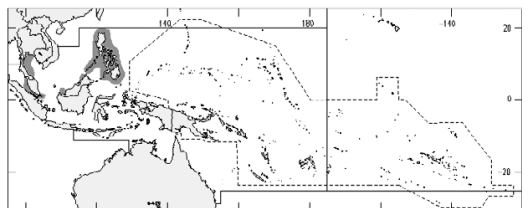
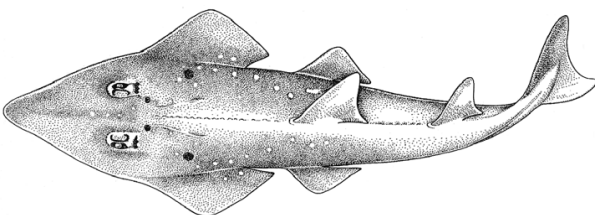
Maximum total length at least 82 cm; a dwarf species, with term fetuses between 21 and 24 cm, an adolescent male 65 cm, an adolescent female about 69 cm, and adult males between 71 and 82 cm total length. An uncommon but distinctive inshore batoid endemic to the area. Biology poorly known. Utilized for human consumption and the oriental fin trade in Singapore, flesh excellent. Occurs off Indonesia (Java) and Singapore.



***Rhynchobatus* sp. 2**

En - Broadnose wedgefish.

Maximum total length at least 213 cm (female) and probably up to between 250 and 300 cm (specimens seen in Thailand); males mature at 125 cm. A locally common wedgefish of the tropical western Pacific. Found in shallow inshore waters of the continental shelves. Feeds on bottom invertebrates. Caught on line gear and in nets, and is marketed fresh for human consumption; fins prized for the oriental "sharkfin" trade. Confirmed as occurring off Indonesia (Java), Singapore, Philippines, and Thailand (Gulf of Thailand). Most readily confused with *Rhynchobatus cf. laevis* but so far known to be sympatric only with *R. australiae* and *Rhynchobatus* sp. 1; *R. yentinesis* Wang, 1933, described from China, may be applicable to this species or may be a synonym of *R. laevis*.

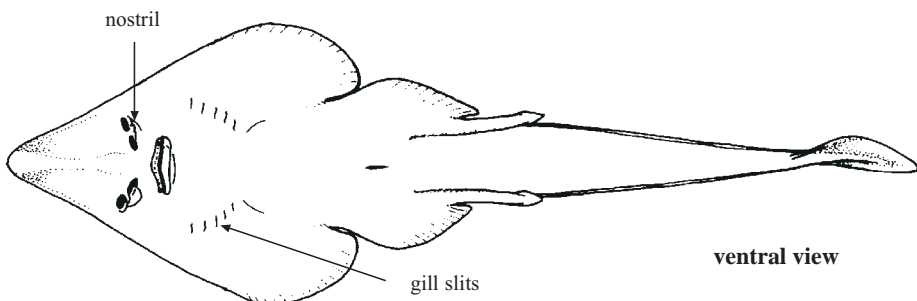
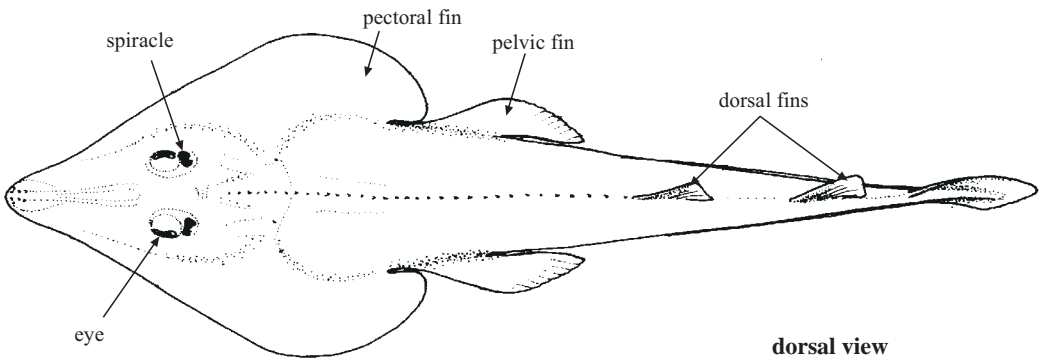


RHINOBATIDAE

Guitarfishes

by L.J.V. Compagno and P.R. Last

Diagnostic characters: Small to large (adults mostly between 50 and 150 cm total length, a few species up to 300 cm), **more or less shark-like batoids with small to moderate-sized pectoral discs and long, stout tails.** Body covered with tiny dermal denticles or placoid scales; enlarged denticles or thorns present on dorsal surface on the snout, orbits, shoulders, and midline of the trunk and tail but these not greatly enlarged. Trunk depressed and flattened. Precaudal tail moderately depressed, with lateral ridges on sides, **tail not abruptly narrower than trunk**, no barbed sting (stinger or stinging spine) on dorsal surface of tail behind dorsal fins, no electric organs in tail. Head narrow to broad and moderately depressed; **snout** short to moderately elongated, **acutely to obtusely angular**; supported by a stout rostral cartilage; **not formed into a rostral saw and without lateral saw teeth.** Five small gill openings on underside of front half of pectoral-fin bases, not visible in lateral view; no gill sieves or rakers on internal gill slits. Eyes dorsolateral on head and just anterior to spiracles. Mouth transverse and straight to moderately arched, without prominent knobs and depressions. **Nostrils somewhat anterior to mouth and separated from it by less than their own widths**, either separate from each other and mouth (*Rhinobatos*, *Aptychotrema*) or connected by broad nasoral grooves with mouth (*Trygonorrhina*); anterior nasal flaps either short, not connected with each other and not reaching mouth, or fused into a broad nasal curtain that overlaps mouth. Oral teeth small, rounded-oval in shape and without cusps on their crowns, not laterally expanded and plate-like, similar in shape and in over 60 rows in either jaw. **Pectoral fins moderately large, originating in front of mouth but behind snout tip**, attached to most of head except part of rostrum, and ending posterior to pelvic-fin origins. No large electric organs at bases of pectoral fins. Pelvic fins low, angular or rounded, not divided into anterior and posterior lobes. **Two moderately large equal-sized and widely separated dorsal fins present, these of similar angular or rounded-angular (not falcate) shape** with distinct apices, anterior, posterior and inner margins, and free rear tips. First dorsal fin originates behind anterior half of total length, **base behind rear tips of pelvic fins** and behind junction between trunk and tail but well anterior to midlength of tail. **Caudal fin large, shark-like, asymmetrical**, with vertebral axis raised above body axis; **lower caudal-fin lobe absent.** **Colour:** dorsal surface yellowish, brownish, grey-brown, greenish, or even black above, usually white below; dorsal surface either unspotted or with small to large dark spots and blotches, white spots, and transverse or diagonal bars and lines, spots often in a bilaterally symmetrical pattern, but no prominent eye-shaped spots or ocelli on pectoral fins; sometimes a dark blotch on underside of snout.



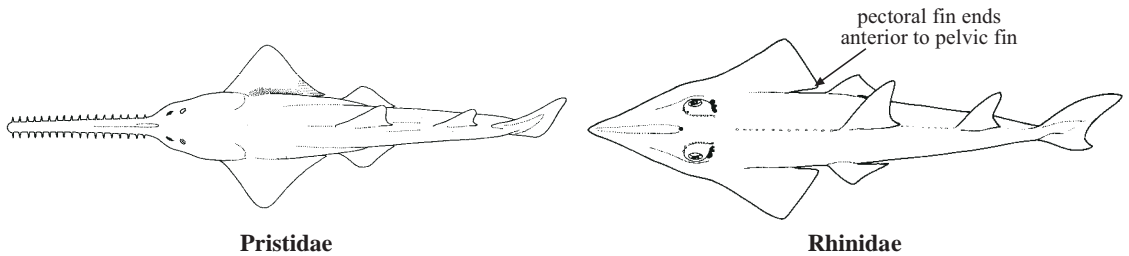
Habitat, biology, and fisheries: Guitarfishes are a large group of inshore batoids of circumglobal distribution that are mostly found in warm-temperate to tropical inshore continental waters. They often occur off sandy beaches, in muddy enclosed bays, in estuaries, and off river mouths. A few species occur in deeper water offshore on the continental shelves and at least 1 species occurs on the uppermost continental slopes down to 366 m. Guitarfishes generally do not penetrate fresh water to any extent (with the possible exception of the giant shovelnose ray) and are absent far up rivers and lakes. They are slow but strong-swimming bottom-dwellers, resting on soft mud or sandy bottoms but also swimming just above it. All species are ovoviviparous as far as is known, with fetuses having large yolk sacks that are their primary intrauterine source of nutrient. Guitarfishes feed largely on invertebrates which are ingested on the bottom; their jaws are protrusible and enable them to pick up and manipulate bottom organisms. They are taken as bycatches of small local inshore fisheries and in offshore trawl fisheries and can be caught on a variety of gear such as gill and trammel nets, beach seines, longlines, handlines, and bottom trawls. Guitarfishes are inoffensive to people. Their meat is utilized fresh, dried-salted, and frozen for human consumption, and is commonly eaten as steaks or cutlets with the skin on.

Similar families occurring in the area

Guitarfishes may be only confused with other shark-like species of the following batoid families:

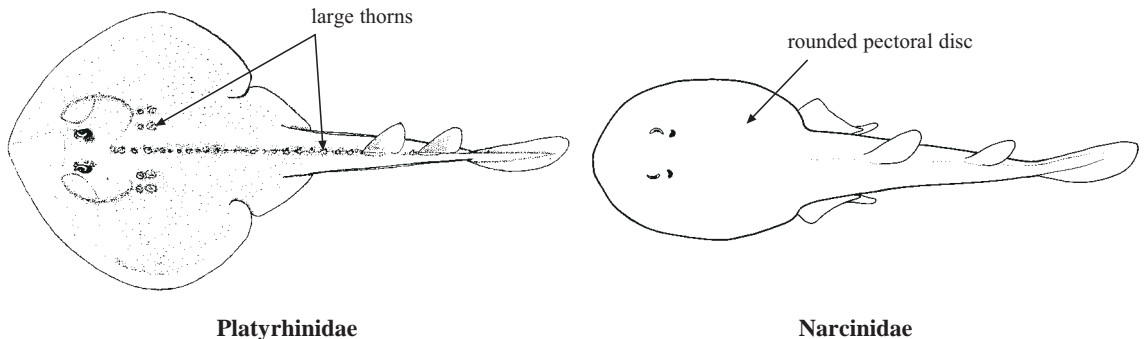
Pristidae: snout with a rostral saw; body thicker and more shark-like; pectoral fins with origins behind nostrils and with free rear tips anterior to pelvic-fin origins; dorsal fins larger; first dorsal fin with origin over pelvic fins.

Rhinidae: body thicker and more shark-like; pectoral fins with origins behind nostrils and with free rear tips anterior to pelvic-fin origins; dorsal fins larger and strongly falcate; pelvic fins higher and more angular; caudal fin with a strong ventral caudal lobe.



Platyrrhinidae: pectoral disc larger and broadly rounded anteriorly; tail slenderer and narrower-based; large thorns on disc and tail on midline and on shoulders.

Narcinidae: some species of *Narcine* have elongated tails and resemble guitarfishes, except that they completely lack denticles, have small mouths with deep grooves around them that can be protruded as a short tube, have rounded soft pectoral discs, and have large electric organs in their discs.



Key to the species of Rhinobatidae occurring in the area

Note: the Indo-West Pacific species are in need of revision and some of the key characters given below need further testing. Also, many of the species have more restricted distributions than was first thought and much of the range data presented requires validation.

1a. Anterior nasal flaps of nostrils expanded posteriorly and fused medially to form a broad nasal curtain that reaches mouth (Fig. 1a); disc with light diagonal bands highlighted with dark margins and with dark transverse bands; a distinctive dark triangular or diamond-shaped marking behind the eyes *Trygonorrhina* sp. A

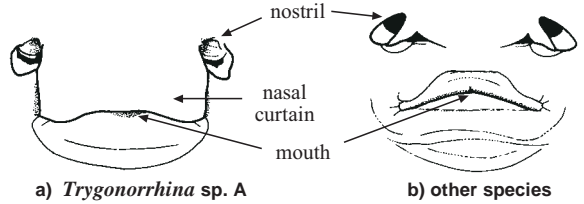


Fig. 1 region of nostrils and mouth
(after Last and Stevens, 1994)

1b. Anterior nasal flaps of nostrils not expanded posteriorly and fused medially to form a broad nasal curtain, well separated from each other and from mouth (Fig. 1b); colour pattern spotted or plain, without diagonal and transverse bands and without an angular marking behind the eyes → 2

2a. Nostrils almost transverse, width equal or narrower than internarial space (Fig. 2a); spiracles without narrow folds on their posterior margins (Fig. 3a); species in the area with an acutely angular snout and generally with a colour pattern of symmetrical, small white and/or moderate to large dark spots on dorsal disc and tail, sometimes plain (*Aptychotrema*) → 3

2b. Nostrils diagonal, width much greater than internarial space (Fig. 2b); spiracles with a pair of narrow folds on their posterior margins (Fig. 3b); species in the area with a broadly to obtusely angular snout and plain or spotted with small dark and light spots . . . (*Rhinobatos*) → 4

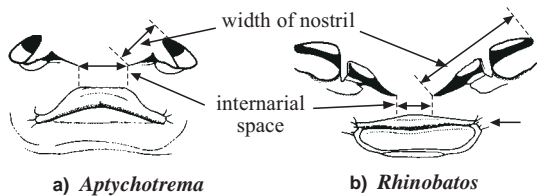


Fig. 2 region of nostrils and mouth
(after Last and Stevens, 1994)



Fig. 3 left eye and spiracle
(after Last and Stevens, 1994)

3a. Upper surface covered with small white spots, some of which are highlighted with dusky margins and form a symmetrical pattern, in addition to moderately large dark spots; snout tip very slender *Aptychotrema* sp. A

3b. Upper surface without white spots, plain or with a symmetrical pattern of large dark spots or blotches; snout tip less slender *Aptychotrema rostrata*

4a. Snout tip expanded into a club-like knob *Rhinobatos thouin*

4b. Snout tip not expanded into a club-like knob → 5

5a. Snout short, broad-tipped, and obtusely angular, preoral length less than 2 times mouth width → 6

5b. Snout longer, narrow-tipped, and more acutely angular, preoral length 2.6 to 3.3 times mouth width → 7

6a. Nostrils almost twice mouth width; only outer skin fold of spiracle developed . . . *Rhinobatos obtusus*

6b. Nostrils about equal to mouth width; spiracle with 2 well-developed skin folds . . . *Rhinobatos* sp. A
(presence in the area uncertain)

- 7a.** Nostrils greatly expanded, width 0.8 to 1.0 times mouth width, 2.2 to 2.4 times internarial space *Rhinobatos typus*
- 7b.** Nostrils moderately large, width 0.5 to 0.7 times mouth width, 1.0 to 1.5 times internarial space → 8
- 8a.** Snout long and anteriorly slender, eye length 9 to 14 in preorbital length; nostril width about 0.5 of mouth width, 1.0 to 1.2 times internarial space; spiracle with outer fold weakly developed and inner fold rudimentary or absent on posterior margins
 *Rhinobatos granulatus*
- 8b.** Snout moderately long and broadly angular, eye length 4 to 6 in preorbital length; nostril width 0.6 to 0.7 in mouth width, 1.3 to 1.5 times internarial width; spiracle with both outer and inner folds present → 9
- 9a.** Snout with sides nearly straight in front of nostrils; medial edge of anterior nasal flap not extending inwards onto internarial space, far lateral to inner ends of excurrent apertures; spiracles with both outer and inner folds on posterior margins, these well developed; enlarged denticles on orbits, back, and shoulders prominent and sharp-tipped . . . *Rhinobatos halavi*
- 9b.** Snout with sides concave in front of nostrils; medial edge of anterior nasal flap extending inwards onto internarial space to about opposite inner ends of excurrent apertures; spiracle with both outer and inner folds present but weakly developed on posterior margins; enlarged denticles on orbits, back, and shoulders very small, blunt, and smooth → 10
- 10a.** Rostral ridges more or less separated throughout their lengths, approximated only at snout tip; horizontal distance from incurrent aperture of nostril to lateral margin of snout a little less than nostril width; nostril apertures narrow and wedge-shaped; underside of snout without a black longitudinal bar *Rhinobatos formosensis*
- 10b.** Rostral ridges more or less approximated in anterior 2/3 of their lengths. Horizontal distance from incurrent aperture of nostril to lateral margin of snout greater than nostril width; nostril apertures broad and rounded; underside of snout with black longitudinal bar *Rhinobatos schlegelii*

List of species occurring in the area

The symbol ♠ is given when species accounts are included.

- ♠ *Aptychotrema rostrata* (Shaw and Nodder, 1794)
- ♠ *Aptychotrema* sp. A. [Last and Stevens, 1994]
- ♠ *Rhinobatos formosensis* Norman, 1926
- ♠ *Rhinobatos granulatus* Cuvier, 1829
- ♠ *Rhinobatos halavi* (Forsskål, 1775)
- ♠ *Rhinobatos obtusus* Müller and Henle, 1841
- ♠ *Rhinobatos schlegelii* Müller and Henle, 1841
- ♠ *Rhinobatos thouin* (Anonymous in Lacepede, 1798)
- ♠ *Rhinobatos typus* Bennett, 1830
- ? *Rhinobatos* sp. A [Last and Stevens, 1994]^{1/}
- ♠ *Trygonorrhina* sp. A [Last and Stevens, 1994]

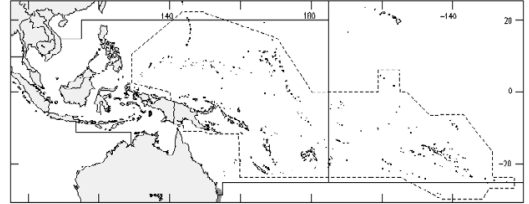
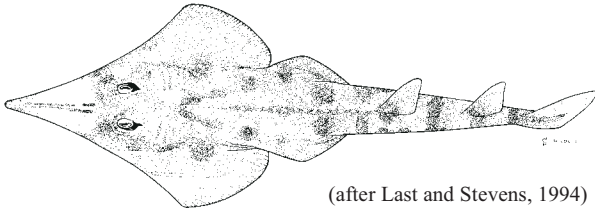
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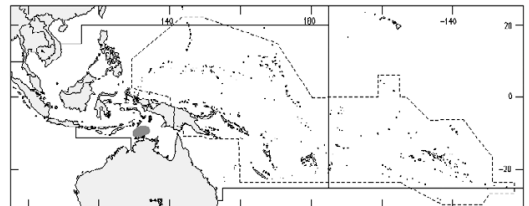
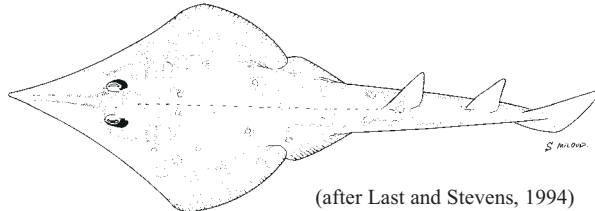
^{1/} Known from the tropical northwestern shelf of Western Australia in a limited area between Dampier and Broome. Biology little known, common where it occurs.

Aptychotrema rostrata (Shaw and Nodder, 1794)**En** - East Australian shovelnose ray.

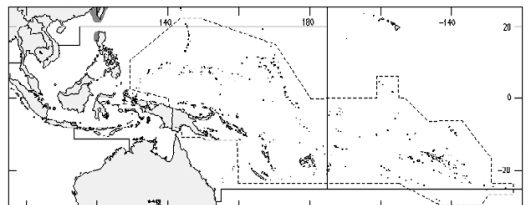
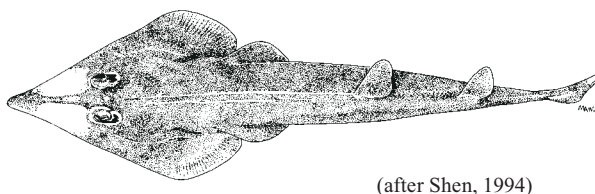
Maximum total length at least 120 cm; adult males to 72 cm. A locally common guitarfish endemic to the tropical and warm-temperate continental shelf of eastern Australia and which barely enters the area. A soft-bottom dweller found off beaches, the lower parts of estuaries and offshore down to a depth of 50 m or more. Feeds on benthic crustaceans, molluscs, and fishes. Caught on line gear and in nets, and is marketed fresh for human consumption. Occurs off the east coast of Australia from Queensland (Moreton Bay) to New South Wales (Jervis Bay), but not further south in cold-temperate waters.

***Aptychotrema* sp. A** [Last and Stevens, 1994]**En** - Spotted shovelnose ray.

Maximum total length at least 51 cm. A small offshore guitarfish known only from the Timor Sea, off Melville Island in a depth of about 120 m. Known from a few specimens, therefore biology little known. Probably caught by offshore trawlers, but unlikely to be of commercial importance. The small white spots on the upper surface, some of which are highlighted with dusky margins and form a symmetrical pattern, distinguished it from all other members of the genus.

***Rhinobatos formosensis*** Norman, 1926**En** - Taiwan guitarfish.

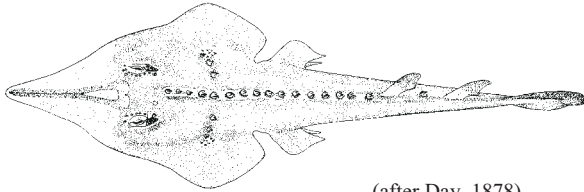
Maximum total length at least 63 cm; adult or adolescent at 56 cm. A moderate-sized inshore and offshore guitarfish of the warm-temperate to tropical western Pacific at depths from the intertidal to well offshore down to 119 m. Biology little known. Utilized where it occurs, but details lacking. Occurs in the western Pacific off Taiwan Province of China, also in the Philippines (off mouth of Manila Bay, Luzon).



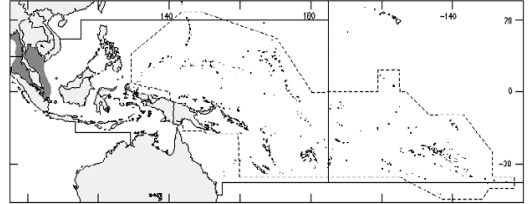
Rhinobatos granulatus Cuvier, 1829

En - Sharpnose guitarfish.

Maximum total length at least 180 to 215 cm. A large inshore and offshore guitarfish of the warm-temperate to tropical Indo-West Pacific at depths from the intertidal to the offshore continental shelves down to 119 m. Biology little known. Utilized where it occurs, but details lacking. Occurs in the Indo-West Pacific in the Persian Gulf and off India, Sri Lanka, Andaman Islands, Pakistan, Myanmar, Thailand, Viet Nam; possibly China, Indonesia (Sumatra, Borneo), Philippines, New Guinea, Bougainville Is.; nominal from the Red Sea and Australia but records need confirmation.



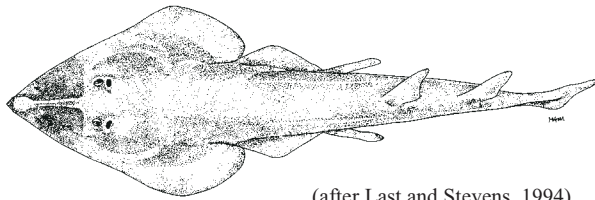
(after Day, 1878)



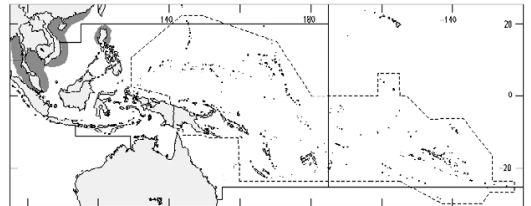
Rhinobatos halavi (Forsskål, 1775)

En - Halavi guitarfish.

Maximum total length possibly to 150 cm; males adult at 83 cm. A moderate-sized inshore guitarfish of the tropical western Pacific. Biology little known. Utilized where it occurs, but details lacking. Occurs in the Indo-West Pacific from the Red Sea to the Gulf of Oman; nominal from Persian Gulf, India, Myanmar, Philippines, Viet Nam, and China; Persian Gulf and records east of Oman need to be confirmed.



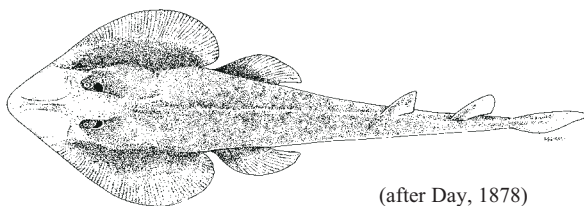
(after Last and Stevens, 1994)



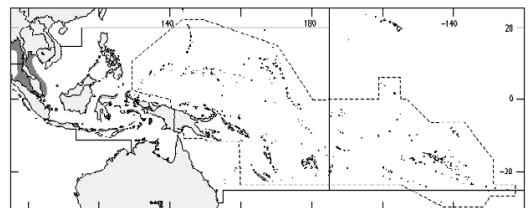
Rhinobatos obtusus Müller and Henle, 1841

En - Bluntnose guitarfish.

Maximum total length at least 93 cm. A moderate-sized inshore and offshore guitarfish of the tropical Indo-West Pacific. Biology little known. Probably utilized where it occurs, but details lacking. Occurs in the Indo-West Pacific from off Pakistan, India, the "Malay Archipelago" and the "East Indies", with more specific records from the area not confirmed; a nominal South African record from kwaZulu-Natal is probably based on some other species.

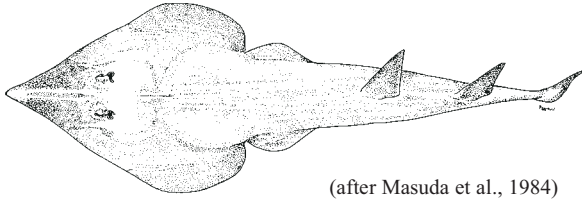


(after Day, 1878)

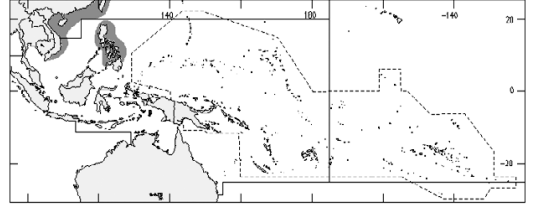


Rhinobatos schlegelii Norman, 1926**En** - Brown guitarfish.

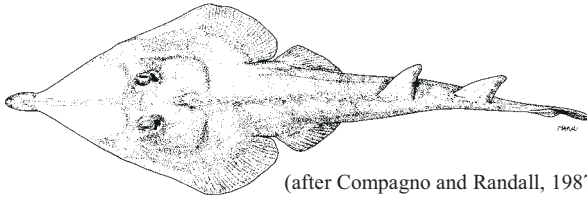
Maximum total length at least 75 cm; adult or adolescent at 55 cm. A moderate-sized inshore guitarfish of the temperate to tropical western Pacific and possibly the eastern Indian Ocean. Biology little known. Probably utilized where it occurs, but details lacking. Occurs in the western Pacific off China, Korea, and Japan, also Viet Nam and Philippines; westward records from India and Oman may not be this species.



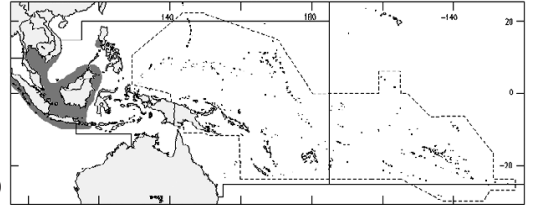
(after Masuda et al., 1984)

***Rhinobatos thouin*** (Anonymous, in Lacepede, 1798)**En** - Clubnose guitarfish.

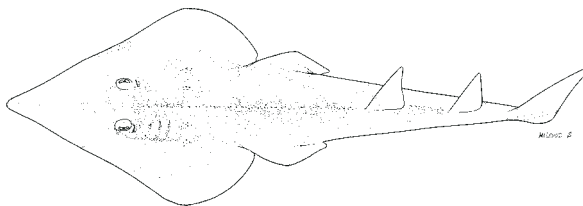
Maximum total length between 250 to 300 cm. A large inshore guitarfish of the tropical Indo-West Pacific. Biology little known, but reasonably common in some parts of its range. Caught in inshore and offshore fisheries in trawls and probably gill nets and line gear, utilized for human consumption fresh and probably dried-salted. Occurs in the Indo-West Pacific from the Red Sea, Malaysia, Singapore, Thailand, Viet Nam, Indonesia (Java, Sumatra, Borneo, etc.), New Guinea, and Japan. Australian records and old records from the Mediterranean Sea and Surinam need confirmation.



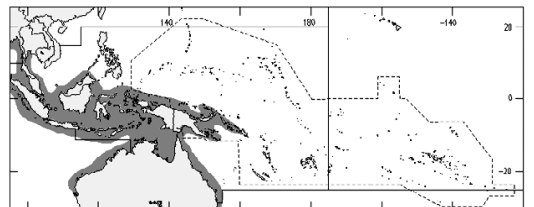
(after Compagno and Randall, 1987)

***Rhinobatos typus*** Bennett, 1830**En** - Giant shovelnose ray.

Maximum total length at least 270 cm. A large, locally common inshore and offshore guitarfish of the warm-temperate to tropical Indo-West Pacific at depths from the intertidal to the offshore continental and insular shelves down to 100 m. Possibly the major commercial guitarfish of the area. Young occur inshore on sand flats, around atolls, and in mangrove swamps while adults range offshore. May occur and breed in fresh or brackish water. Feeds mainly on shellfish. Occurs off Malaysia, Singapore, Indonesia (Macassar, Java, Sumatra, Celebes, Borneo, Waigiu), Viet Nam, New Guinea, Philippines, Solomon Islands, and the entire north coast of Australia (from Shark Bay, Western Australia, to Forster, New South Wales); records from the south coast of India, Sri Lanka, Bangladesh, and Myanmar need confirmation.

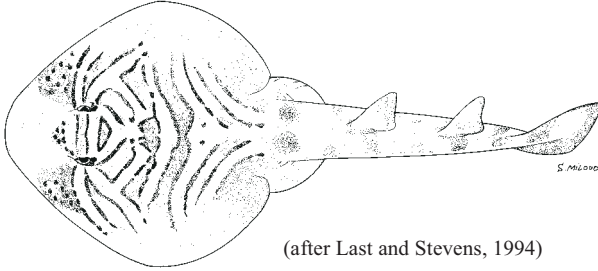


(after Last and Stevens, 1994)

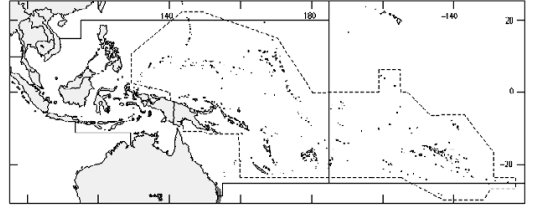


***Trygonorrhina* sp. A** [Last and Stevens, 1994]**En** - Eastern fiddler ray.

Maximum total length 92 cm, possibly 120 cm. A moderate-sized, common inshore and offshore guitarfish limited to the temperate and tropical east coast of Australia that occurs from the intertidal to 100 m. Feeds on bottom invertebrates, scavenges in fish traps. Probably caught by offshore trawlers, but utilization not reported. Occurs off the east coast of Australia from southern Queensland and barely into the area south to New South Wales (Twofold Bay).



(after Last and Stevens, 1994)

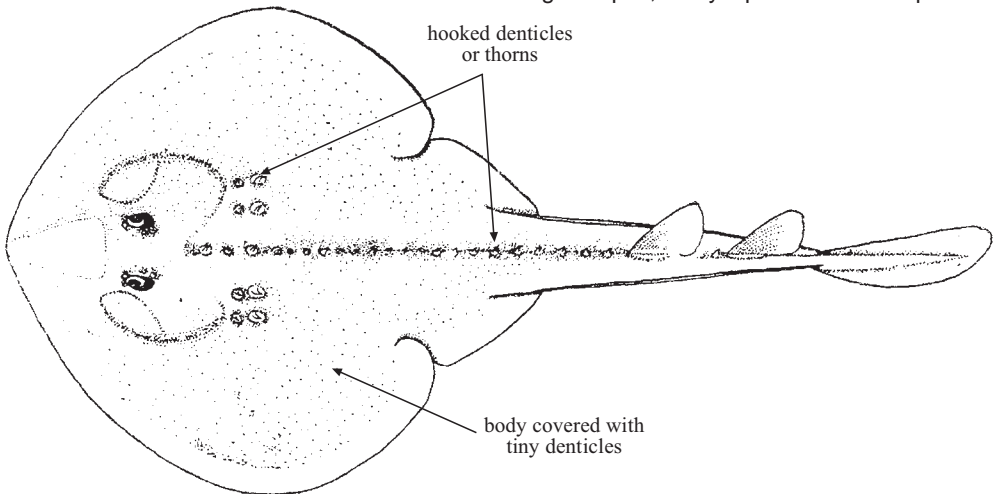


PLATYRHINIDAE

Thornback rays

by L.J.V. Compagno and P.R. Last

Diagnostic characters: Small to moderate-sized batoids (adults between 30 and 91 cm total length) with large broad flat rounded or heart-shaped pectoral discs and long shark-like tails longer than the pectoral disc. Body covered with tiny dermal denticles or placoid scales; enlarged, sharp hooked denticles or thorns present on dorsal surface on the snout, orbits, shoulders, and in rows on midline of the trunk and tail. Trunk depressed and flattened, not shark-like. Precaudal tail moderately depressed, with lateral ridges on sides, tail abruptly narrower than trunk, no barbed sting (stinger or stinging spine) on dorsal surface of tail behind dorsal fins, no electric organs in tail. Head broad and moderately depressed; snout short and bluntly angular or rounded; supported by a broad rostral cartilage with anterior projections; not formed into a rostral saw and without lateral saw teeth. Five small gill openings on underside of front half of pectoral-fin bases, not visible in lateral view; no gill sieves or rakers on internal gill slits. Eyes dorsolateral on head and just anterior to spiracles. Mouth transverse and straight, without prominent knobs and depressions. Nostrils just anterior to mouth and separated from it by less than 1/2 their own widths, separate from mouth or connected by broad nasoral grooves with mouth; anterior nasal flaps short, not connected with each other and not reaching mouth, not fused into a broad nasal curtain that overlaps mouth. Oral teeth small, rounded-oval in shape and without cusps on their crowns, not laterally expanded and plate-like, similar in shape and over 60 rows in either jaw. Pectoral fins large, originating in front of mouth and reaching snout tip and with free rear tips ending posterior to pelvic-fin origins; pectoral disc not subdivided by a notch at eyes. No large electric organs at bases of pectoral fins. Pelvic fins low, rounded, not divided into anterior and posterior lobes. Two moderately large equal-sized, widely separated dorsal fins present, these of similar rounded-angular (not falcate) shape with distinct apices, anterior, posterior and inner margins, and free rear tips. First dorsal fin originates behind anterior half of total length, base behind rear tips of pelvic fins and behind junction between trunk and tail but well anterior to midlength of tail. Caudal fin large, asymmetrical to nearly symmetrical and rounded, with vertebral axis virtually parallel to body axis; lower caudal-fin lobe absent. **Colour:** dorsal surface yellowish, brownish, grey-brown, or greenish above, usually white below; dorsal surface either unmarked or with transverse dark or light stripes, no eyespots or ocelli on pectoral fins.

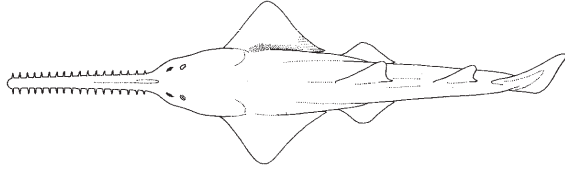


Habitat, biology, and fisheries: Thornback rays are a small group of inshore batoids found in cool-temperate to warm-temperate and tropical continental waters off the western Pacific (Japan to Viet Nam and possibly Indonesia), and in the eastern North Pacific (northern California, USA, to Baja California, Mexico). The somewhat similar genus *Zanobatus* occurs off West Africa and possibly India; it was previously placed in this family, but is now included in its own family, Zanobatidae. They occur off sandy beaches, in muddy enclosed bays and estuaries, near kelp beds, and offshore on soft sand and mud bottom at depths to 46 m, but none penetrate into fresh water. They are little-known bottom-dwellers that feed on small invertebrates including crustaceans, marine worms, and molluscs. All species are ovoviparous as far as is known, with fetuses having large yolk sacks that are their primary intrauterine source of nutrient. Utilization and fishing gear unknown for the area, probably taken with gill nets, beach seines and bottom trawls and utilized fresh and dried-salted. Thornback rays are inoffensive to people although their thorns are large and sharp and should be treated with respect.

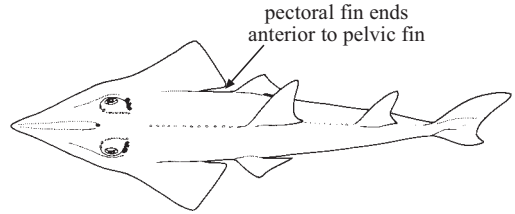
Similar families occurring in the area

Pristidae: snout with a rostral saw; body thicker and more shark-like; nostrils far anterior to mouth; pectoral fins angular with origins behind nostrils and with free rear tips anterior to pelvic-fin origins; dorsal fins larger; first dorsal fin with origin over pelvic fins.

Rhinidae: body thicker and more shark-like; pectoral fins angular, with origins behind nostrils and with free rear tips anterior to pelvic-fin origins; dorsal fins larger and strongly falcate; pelvic fins higher and more angular; caudal fin with a strong ventral caudal lobe.



Pristidae

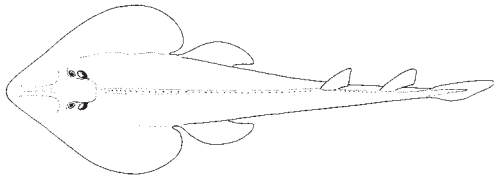


Rhinidae

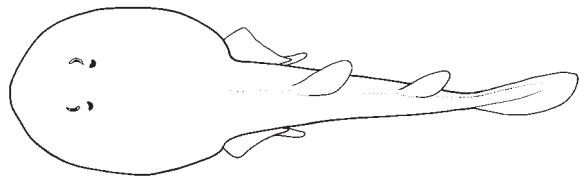
Rhinobatidae: pectoral disc smaller, more angular anteriorly, with pectoral-fin origins not reaching snout tip; tail stouter and broader-based; thorns on disc and tail small and usually blunt.

Narcinidae: some species of *Narcine* have elongated tails and resemble thornback rays, but completely lack denticles or thorns, have small mouths with deep grooves around them that can be protruded as a short tube, and have soft pectoral discs with large electric organs.

No other batoids in the area combine round or heart-shaped pectoral discs, long, stout shark-like tails with 2 large dorsal fins well anterior on the tail, and strong thorns on the disc and tail.



Rhinobatidae



Narcinidae

References

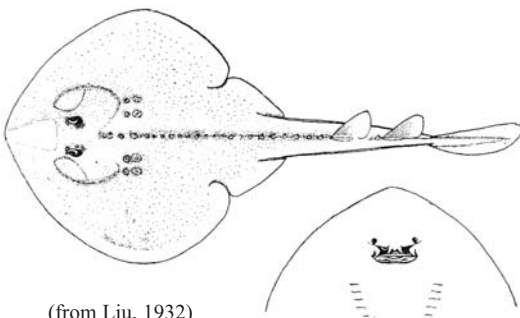
- Masuda, H., K. Amaoka, C. Araga, T. Uyeno, and T. Yoshino (eds). 1984. *The fishes of the Japanese Archipelago*. Tokyo, Tokai University Press, 437 p.
- Michael, S.W. 1933. *Reef sharks and rays of the world: a guide to their identification, ecology and behaviour*. USA, Sea Challengers, 107 p.

A single species occurring in the area.

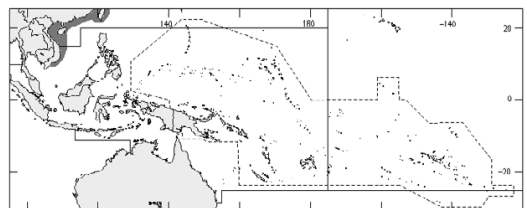
Platyrhina sinensis (Bloch and Schneider, 1801)

En - Fanray.

Maximum total length about 68 cm. A little-known but locally common inshore ray. Biology little known, possibly not utilized in the area. Occurs in the western Pacific off Japan, China, Taiwan Province of China, Korea, Viet Nam (Cochin-China), and possibly Indonesia.



(from Liu, 1932)



**anterior part of body
(ventral view)**