

Asymbolus Whitley, 1939

SCYL Asym

Genus : *Asymbolus* Whitley, 1939, Aust.Zool., 9(3):229.

Type Species : *Scyllium anale* Ogilby, 1885, by original designation.

Synonymy : Genus *Juncrus* Whitley, 1939 (see remarks below).

Diagnostic Features : Body not tadpole-shaped, slender and cylindrical, tapering slightly to caudal fin; body firm and thick skinned, with well-calcified dermal denticles; stomach not inflatable; tail moderately long, length from vent to lower caudal origin about 2/3 to nearly equal snout-vent length. Head slightly depressed, narrowly pointed-rounded in lateral view and not wedge-shaped; head short, less than 1/5 of total length in adults; snout short to slightly elongated, less than 5/6 of mouth width, thick, and slightly flattened, bluntly pointed in lateral view; snout not expanded laterally, rounded-parabolic and slightly bell-shaped in dorsoventral view; ampullal pores not greatly enlarged on snout; nostrils of moderate size, with incurrent and excurrent apertures only partly open to exterior; anterior nasal flaps formed as triangular lobes, without barbels, well separate from each other and falling somewhat anterior to mouth; internarial space 0.6 to 1 times the nostril width; no nasoral grooves; eyes dorsolateral on head, narrow subocular ridges present below eyes; mouth angular to arched, moderately long, with lower symphysis well behind upper so that upper teeth are exposed in ventral view; labial furrows present along both upper and lower jaws, these short and ending well behind level of upper symphysis of mouth; branchial region not greatly enlarged, distance from spiracles to fifth gill slits about half the head length; gill slits lateral on head. Two dorsal fins present, about equal-sized; origin of first dorsal over or slightly behind the pelvic insertions; origin of second dorsal varies from about over the anal midbase to over the rearmost third, of its base; anal fin moderately large but not greatly elongated, about as large as pelvic fins and larger than dorsals, its base length 1.4 to 1.8 times the second dorsal base; pectoral fins moderately large, their width about equal to or slightly greater than mouth width; inner margins of pelvic fins fused over claspers and forming an 'apron' in adult males; claspers moderately long to very long, fairly thick to slender, and distally blunt or pointed, extending about half of their lengths or more behind the pelvic fin tips; origin of anal far behind pelvic bases, and insertion separated from lower caudal origin by a broad space over half the anal base; caudal fin short and broad, less than a fifth of total length in adults. No crests of denticles on the caudal margins; supraorbital crests absent from cranium. Colour light to dark brown above, light below, with a simple colour pattern of scattered white or dark spots on the sides and dorsal surface, and sometimes dark spots on the underside of head.

Remarks : Whitley (1939) named two new genera for Australian catsharks, *Asymbolus* for *Scyllium anale* Ogilby, 1885, and *Juncrus* for *Scyllium vincenti* Zeitz, 1908. Fowler (1941) retained these species in the genus *Halaelurus*, but Whitley (1939, 1940) distinguished his genera by the basally fused pelvic inner margins in adult males, which form an 'apron' over the claspers. Apart from coloration, Whitley offered little to distinguish the two genera from each other. Springer (1979) revived *Asymbolus* and *Juncrus*, but distinguished them only by relative clasper length in males, very long and slender in *Juncrus vincenti* and shorter and thicker in *Asymbolus analis*; and by the form of the 'apron' over the claspers (Springer, 1979:96).

Recently, much new material of *Asymbolus-Juncrus* catsharks has been collected off Australia, and is being studied by Dr John Stevens and the writer. There are at least two undescribed species in this material, which confound Springer's generic criteria. There is an *analis*-like new species that has *vincenti*-like elongated claspers, and a *vincenti*-like new species with *analis*-like short claspers. Comparison of *analis*-like catsharks with *vincenti*-like species revealed little difference in the form of the pelvic 'apron' of adult males of various species, and suggests nothing of significance to separate these sharks in different genera. Hence the genus *Juncrus* is synonymized with *Asymbolus* (mentioned before *Juncrus* in Whitley, 1939:229).

From the spotted species of *Halaelurus*, *Asymbolus* species additionally differ in their much narrower and less flattened heads, their nearly lateral eyes, lateral rather than dorsolateral) gill slits, and more narrowly parabolic, bluntly rounded snouts (broader, often angular and pointed snouts in spotted *Halaelurus*). Possibly these differences are only worthy of subgeneric ranking within *Halaelurus*, but *Asymbolus* is retained for the southern Australian spotted catsharks (which almost certainly form a natural, monophyletic group) until relationships of the *Halaelurus* species are Clarified.

Springer (1979) noted that Tasmanian and Australian mainland *A. analis* may be distinct, the Tasmanian form being considerably smaller (adult male 37 cm, *versus* mainland males immature at up to 51 cm and adult at 55 cm). In examining *Asymbolus* material the writer has seen such small, *analis*-like specimens, as well as the larger *analis* proper (including the holotype). However, whatever the status of these small *analis*-like sharks, there is definitely a new *analis*-like species that differs from *analis* in having numerous small black spots on its body and the underside of its head, in having enlarged teeth in males, and in being smaller. This will be described by Dr John Stevens and the writer.

Springer (1979) also noted that *vincenti* material examined by him was heterogeneous, and, while including it in a single species, noted that more material was necessary to determine if it represented more than one species. Apparently an additional new species of *vincenti*-like catshark exists, separable from typical *vincenti* in having a much lighter ground colour, larger and fewer light spots, shorter, thicker, pointed claspers, and in being considerably smaller.

Key to Species

- 1a. Colour light brown with obscure dusky saddles and scattered large dark rusty spots on back and fins. Claspers short, fairly thick, and terminally pointed **A. analis**
- 1b. Colour mottled chocolate brown above, white below, with numerous small white spots on back and fins. Claspers long, very slender, and terminally blunt **A. vincenti**

Asymbolus analis (Ogilby, 1885)

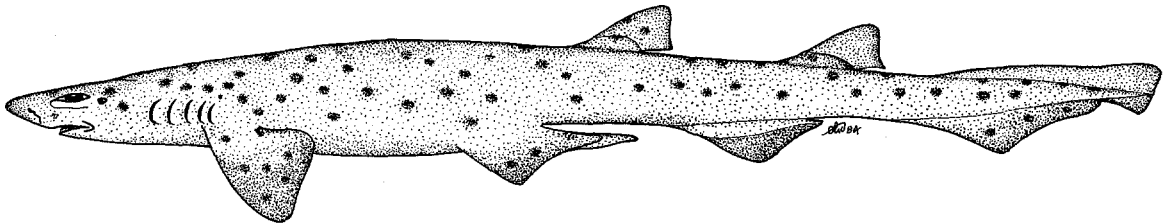
SCYL Asym 1

Scyllium anale Ogilby, 1885, Proc.Linn.Soc.New S.Wales, 10:445. Holotype: Australian Museum, Sydney, AMS B.8447, 569. mm adult male. Type Locality: Port Jackson Harbour, New South Wales, Australia.

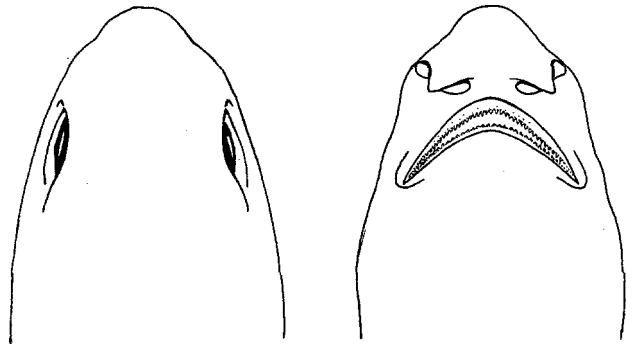
Synonymy : None.

Other Scientific Names Recently in Use : Halaelurus analis (Ogilby, 1885).

FAO Names : En - Australian spotted catshark; Fr - Chien tacheté; Sp - Pejegato de lunares.



Field Marks: Simple colour pattern of large, widespread rusty brown spots and obscure dark saddles on a light brown background, head rather narrow and not greatly flattened, snout narrowly parabolic, short, and rounded but not pointed or upturned, nostrils well separated from each other and from mouth, without nasoral grooves, eyes close to horizontal head rim, gill slits lateral, labial furrows short but present on both jaws, claspers of males with apron formed from fused pelvic inner margins, dorsal fins equally large, with origin of first over or behind pelvic insertions, anal fin somewhat larger than second dorsal fin and with its base partly in front of second dorsal base, no supracaudal crests of denticles, cranium without supraorbital crests.



dorsal view of head

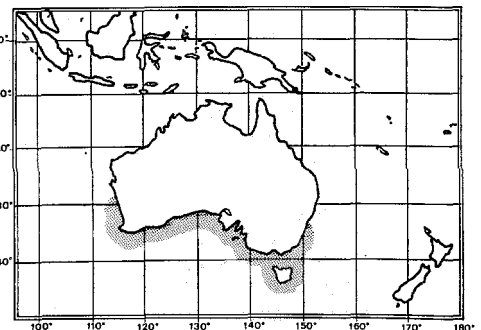
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Diagnostic Features: Snout more rounded. Claspers rather stout, moderately long, and pointed. Colour pattern of back and sides of scattered large rusty spots and saddles on light brown background, light below.

Geographical Distribution : Western South Pacific: Australia (southern New South Wales, Victoria, Tasmania, South and southern Western Australia).

Habitat and Biology : A widespread, common but little-known bottom-dwelling catshark, on the temperate Australian continental shelf from close inshore to offshore, depth range 26 (or less) to 175 m; described as preferring firm bottom. Oviparous.

Size: Maximum about 61 cm, adult males 55 cm, adult females 57 cm; taxonomic status of small (adult males 37 cm) analis-like sharks uncertain, but possibly specifically or subspecifically distinct.



Interest to Fisheries : None at present, commonly taken by bottom trawlers.

Literature : Whitley (1940); Fowler (1941); Stead (1963); McKay (1966); Springer (1979).

Remarks : The holotype was examined by the writer in 1982 and is illustrated above.

Asymbolus vincenti (Zeitz, 1908)

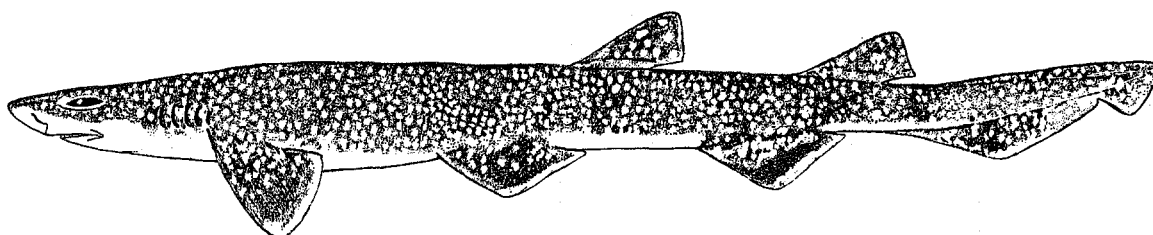
SCYL Asym 2

Scyllium vincenti Zeitz, 1908, *Trans. Roy.Soc.S.Australia*, 32:287. Syntypes: South Australian Museum. Type Locality: Investigator Strait and Kangaroo Island, South Australia.

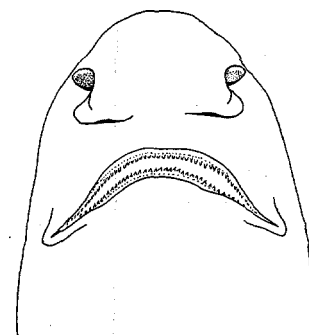
Synonymy : None.

Other Scientific Names Recently in Use : *Halaelurus vincenti* (Zeitz, 1908), *Juncrus vincenti* (Zeitz, 1908).

FAO Names: En - Gulf catshark; Fr - Chien tasmanien; Sp - Pejagato de Tasmania.



Field Marks : Simple colour pattern of small, densely scattered white spots on chocolate-brown, mottled back, sides and fins, light and unspotted below, head rather narrow and not greatly flattened, snout narrowly parabolic, short to moderately long, and rounded but not pointed or upturned, nostrils well separated from each other and from mouth, without nasoral grooves, eyes close to horizontal head rim, gill slits lateral, labial furrows short but present on both jaws, claspers of males with apron formed from fused pelvic inner margins, dorsal fins equally large, with origin of first over or behind pelvic insertions, anal fin somewhat larger than second dorsal fin and with its base partly in front of second dorsal base, no supracaudal crests of denticles, cranium without supraorbital crests.



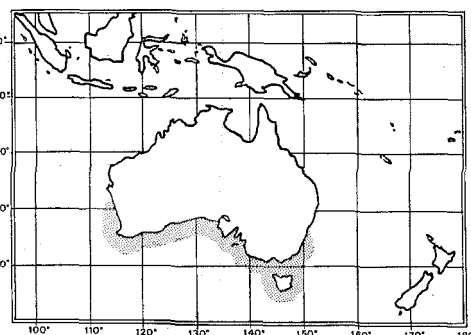
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Diagnostic Features: Snout often more parabolic. Claspers very slender, elongated, and blunt-tipped. Colour pattern of back and sides of densely scattered small white spots on chocolate-brown mottled background, light below.

Geographical Distribution : Western South Pacific: Australia (Victoria, Tasmania, South and southern Western Australia).

Habitat and Biology : A widespread, little-known bottom-dwelling catshark, on the temperate Australian continental shelf and slope edge, at or near bottom at depths of 27 to 220 m. Oviparous; lays a single egg-case to each oviduct at a time. Size of egg-cases 5 cm long by 2 cm wide, with long filaments.

Size : Maximum about 61 cm, adult males 51 cm, adult females 45 to 53 cm.



Interest to Fisheries : None at present, taken by bottom trawlers.

Literature : Whitley (1940); Fowler (1941); Stead (1963); McKay (1966); Springer (1979).

Atelomycterus Garman, 1913

SCYL Atel

Genus: Atelomycterus Garman, 1913, Mem.Mus.Comp.Zool.Harv.Coll., 36:100.

Type Species : Scyllium marmoratum Bennett, 1830, by monotypy.

Synonymy : "Pseudogenus" (= subgenus), Deltascyllium Leigh-Sharpe, 1926 (Genus Scyllium Cuvier, 1817); Genus Atelomycterius Fowler, 1928 (error).

Field Marks: Variegated slender scyliorhinids with narrow head, enlarged anterior nasal flaps and nasoral grooves, long mouth and very long labial furrows, equal-sized dorsal fins, and small anal fin, smaller than the dorsal fins.

Diagnostic Features : Body not tadpole-shaped, moderately slender to slim and elongated, and cylindrical, tapering slightly to caudal fin; body firm and thick-skinned, with well-calcified dermal denticles; stomach not inflatable; tail moderately long, length from vent to lower caudal origin about 4/5 of snout-vent length. Head slightly depressed, narrowly rounded and not wedge-shaped in lateral view; head short, less than 1/5 of total length in adults; snout short, less than 3/4 of mouth width, thick, and slightly flattened, bluntly pointed in lateral view; snout not expanded laterally, rounded-parabolic or slightly angular in dorsoventral view, not bell-shaped; ampullal pores not greatly enlarged on snout; nostrils enlarged, but with incurrent and excurrent apertures only slightly open to exterior; anterior nasal flaps formed as enlarged, very broad, triangular lobes with angular or rounded posterior borders, without barbels, nearly meeting each other at midline of snout and extending posteriorly to overlap mouth; internarial space less than 0.5 times the nostril width; broad nasoral grooves present between excurrent openings and mouth, covered by anterior nasal flaps; eyes dorsolateral on head, narrow subocular ridges present below eyes; mouth angular or semiangular, moderately long, with lower symphysis close behind upper so that upper teeth are only slightly exposed in ventral view; labial furrows present along both upper and lower jaws, these very long and extending in front of level of upper symphysis of mouth; branchial region not greatly enlarged, distance from spiracles to fifth gill slits slightly more than half head length; gill slits lateral on head. Two dorsal fins present, about equal-sized or with the second slightly larger than the first; origin of first dorsal varying from over midbases of pelvics to about over their insertions; origin of second dorsal over the first quarter of the anal base; pectoral fins moderately large, their width slightly less to somewhat greater than mouth width; inner margins of pelvic fins not fused over claspers in adult males; claspers moderately to extremely long, fairly thick to very slender, and distally pointed or rounded, extending over half of their lengths behind the pelvic fin tips; anal fin small and not greatly elongated, smaller than pelvic and dorsal fins, its base length 0.8 to 1 times second dorsal base; origin of anal far behind pelvic bases, and insertion separated from lower caudal origin by a broad space two-thirds to about as long as the anal base; caudal fin short and broad, less than a fifth of total length in adults. No crests of denticles on the caudal margins. Supraorbital crests present on cranium. Colour light, with a varied colour pattern of dark and white spots, and dusky saddles on the sides and dorsal surface, with dark spots enlarged and partially coalescing in some species.

Remarks : McKay (1966), described what he termed Atelomycterus marmoratus from Western Australia, but examination of his material by the writer revealed that this record is based on two species, a hatchling A. macleayi and two specimens of a new species of Atelomycterus that differs from A. macleayi and A. marmoratus in its stouter body, different colour pattern, dorsal fin shape, smaller anal fin, and longer snout. It additionally differs from A. marmoratus in its short, stout claspers with a different arrangement of clasper glans structures. Additional specimens of this species have been collected off of northwestern Australia, and it will be described by Or John Stevens and the writer.

Key to Species

- 1a. Colour pattern of grey saddles separated by light areas and outlined by numerous small black spots (hatchlings have a simpler pattern of dusky saddles, remarkably similar to the coolie loach, Acanthophtalmus semicinctus) **A. macleayi**
- 1b. Saddle markings obsolete, light grey and white spots outlined by large black spots, bars and lines **A. marmoratus**

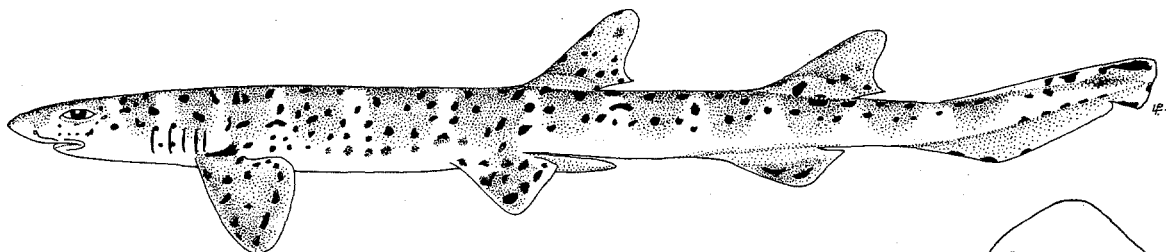
Atelomycterus macleayi Whitley, 1939

SCYL Atel 2

Atelomycterus macleayi Whitley; 1939, Aust.Zool., 9(3):230, fig. 3. Holotype: Australian Museum, Sydney, AMS 1.5269, 488 mm adult male. Type Locality: Port Darwin, Northern Australia, Timor Sea, Indian Ocean.

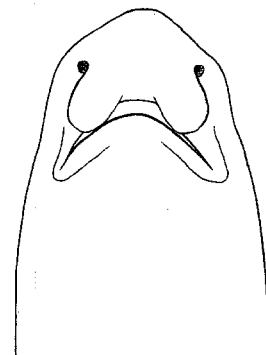
Synonymy : None.

FAO Names : En - Australian marbled catshark; Fr - Chien marbré; Sp - Pejegato jaspeado.



Field Marks: Very slender, narrow-headed catshark with variegated colour pattern, grey saddles spaced by light ground colour and outlined with small black spots, anterior nasal flaps greatly expanded and extending to mouth, nasoral grooves present, first dorsal with origin about opposite pelvic insertions, second dorsal fin much larger than anal fin and subequal to first dorsal.

Diagnostic Features: Claspers of adult males stout and moderately long, reaching about halfway to anal origin. Colour pattern highly variegated, grey dorsal saddles well-marked and separated by light ground colour, black spots small, numerous, and outlining saddle areas as well as being scattered on flanks, no small or large white spots scattered on sides and back.



underside of head

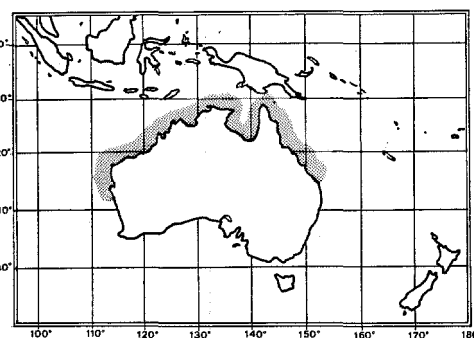
Geographical Distribution : Western South Pacific: Australia (Northern and Western Australia, Queensland).

Habitat and Biology : A little-known inshore, shallow-water catshark, found on sandy and rocky bottom at depths of 0.5 to 3.5 m and presumably deeper. Oviparous.

Size: Maximum about 60 cm; adult males at 48 to 49 cm; adult females 51 cm. Size at hatching probably about 10 cm.

Interest to Fisheries : None at present.

Literature : Whitley (1939, 1940); McKay (1966); Springer (1979).



Remarks : Springer (1979) was uncertain if this species was valid or a synonym of A. marmoratus, but examination of its holotype and other material convinced me that the species is readily separable from nominal A. marmoratus by its colour pattern, shorter, stouter claspers, and differences in the external structures of its clasper glans. Whitley (1939, 1940) suggested that the species differed in egg-case morphology from A. marmoratus. Records of A. marmoratus from Western Australia (McKay, 1966) include a hatchling of this species as well as two specimens of an undescribed Australian Atelomycterus.

Atelomycterus marmoratus (Bennett, 1830)

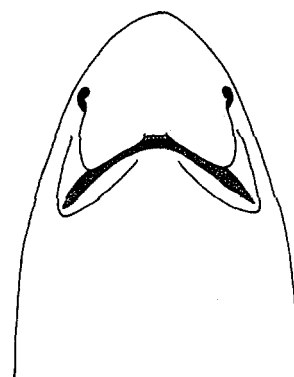
SCYL Atel 1

Scyllium marmoratum Bennett, 1830, Mem.Life Pub.Serv.Sir Stamford Raffles, London, 693. Holotype: Possibly lost according to Springer (1979). Type Locality: Sumatra.

Synonymy : Scyllium maculatum Gray, 1832; Scyllium pardus Temminck, in Müller & Henle, 1838 (name only).

FAO Names : En - Coral catshark; Fr - Chien corail; Sp - Pintarroja coralera.

Field Marks : Very slender, narrow-headed catshark with variegated colour pattern, grey saddle markings obsolete, black spots enlarged and merging together to form dash and bar marks that bridge saddle areas, large white spots scattered on sides and back, anterior nasal flaps greatly expanded and extending to mouth, nasoral grooves present, first dorsal with origin about opposite or slightly in front of pelvic insertions, second dorsal fin much larger than anal fin and subequal to first dorsal.



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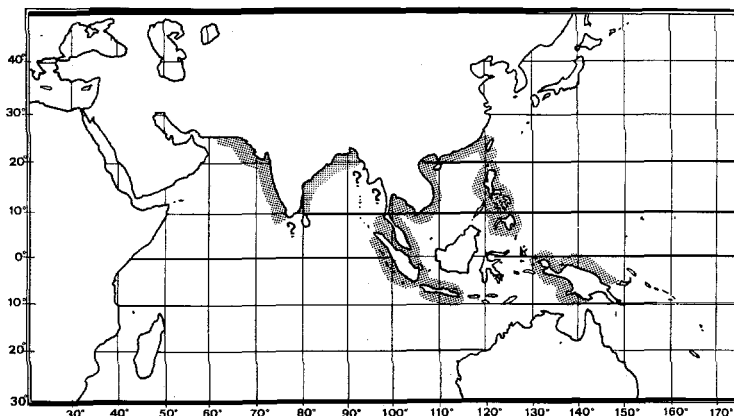
Diagnostic Features : Claspers of adult males extremely attenuated and narrow, reaching at least 2/3 of distance from pelvic insertions to anal origin. Colour pattern highly variegated, dorsal saddles obsolete, black spots enlarged and often merging together to form dash and bar marks that bridge saddle areas, light ground colour forming large white spots scattered on sides and back.

Geographical Distribution : Indo-West Pacific: Pakistan and India to Malaya; Singapore, Indonesia, New Guinea, Thailand, Viet Nam, The Philippines, southern China, including Taiwan Island.

Habitat and Biology : A common but little-known, harmless inshore species, found on coral reefs, and thought to inhabit crevices and holes on reefs. Oviparous, with single egg-cases laid per oviduct.

Size: Maximum 70 cm; adult males 47 to 62 cm; adult females 49 to 57 cm.

Interest to Fisheries : Unimportant, captured close inshore. Relatively common and forming a minor catch of inshore artisanal fisheries. Probably caught with line gear and gillnets, with flesh utilized fresh and dried-salted for food or processed for fishmeal and oil.



Literature : Garman (1913); White (1937); Fowler (1941); Springer (1979).

Remarks : Springer (1979) warned that all records of this wide-ranging, attractive little shark might not pertain to a single species. The Philippines and Singapore specimens of the species examined by the writer are probably conspecific, but Western Australian specimens of this species (recorded by McKay, 1966) include A. macleayi and an undescribed species. Unfortunately, the writer did not find any specimens of Atelomycterus either in the field or in collections when he visited India in 1982.

Aulohalaelurus Fowler, 1934

SCYL Aul

Genus : Subgenus Aulohalaelurus Fowler, 1934 (Genus Halaelurus Gill, 1862), Proc.Acad.Nat.Sci.Philad., 85:237.

Type Species: Catulus labiosus Waite, 1905, by original designation.

Synonymy : None.

Diagnostic Features: Body not tadpole-shaped, moderately slender and cylindrical, tapering slightly to caudal fin; body firm and thick-skinned, with well-calcified dermal denticles; stomach not inflatable; tail moderately short, length from vent to lower caudal origin about 3/5 of snout-vent length. Head slightly depressed, narrowly rounded and not wedge-shaped in lateral view; head short, less than 1/5 of total length in adults; snout short, less than 3/4 of mouth width, thick, and slightly flattened, bluntly pointed in lateral view; snout not expanded laterally, rounded-parabolic and slightly bell-shaped in dorsoventral view; ampullal pores not greatly enlarged on snout; nostrils enlarged, but with incurrent and excurrent apertures only slightly open to exterior; anterior nasal flaps formed as broad triangular lobes with truncated posterior borders, without barbels, well separated from each other and ending slightly anterior to mouth; internarial space about 1.4 times the nostril width; nasoral-grooves absent; eyes dorsolateral on head, narrow subocular ridges present below eyes; mouth angular or semiangular, moderately long, with lower symphysis somewhat behind upper so that upper teeth are well-exposed in ventral view; labial furrows present along both upper and lower jaws, these very long and extending in front of level of upper symphysis of mouth; bronchial region not greatly enlarged, distance from

spiracles to fifth gill slits about half of head length; gill slits lateral on head. Two dorsal fins present, about equal-sized or with the second slightly larger than the first; origin of first dorsal about over pelvic insertions; origin of second dorsal over the first quarter of the anal base; pectoral fins moderately large, their width slightly greater than mouth width; inner margins of pelvic fins not fused over claspers in adult males; claspers moderately long, fairly thick, and distally pointed or rounded, extending about half of their lengths behind the pelvic fin tips; anal fin small and not greatly elongated, smaller than pelvic and dorsal fins, its base length about equal to second dorsal base; origin of anal far behind pelvic bases, and its insertion separated from lower caudal origin by a space about half as long as the anal base; caudal fin short and broad, less than a fifth of total length in adults. No crests or denticles on the caudal margins. Supraorbital crests present on cranium. Colour dark grey with a variegated colour pattern of dark and white spots, and dark saddles on the sides and dorsal surface.

Remarks : Springer (1979) raised the rank of Aulohalaelurus to genus for the Australian A. labiosus. While definitely not congeneric with Halaelurus, Aulohalaelurus is very close to the genera Atelomycterus and Schroederichthys and needs to be critically compared with these taxa to determine its validity.

Aulohalaelurus labiosus (Waite, 1905)

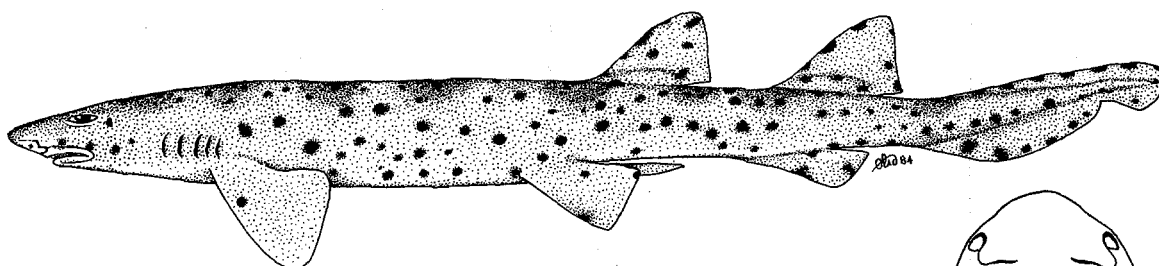
SCYL Aul 1

Catulus labiosus Waite, 1905, Rec.Aust.Mus., 6(2):57, fig. 23. Holotype: Western Australian Museum, WAM PO 13253-001, 620 mm adult male. Type Locality: Fremantle, Australia.

Synonymy : ? Squalus maculatus Bloch & Schneider, 1801 (doubtful synonym according to Fowler, 1941, but possibly based on Squalus maculatus Bonnaterre, 1788 = Orectolobus maculatus).

Other Scientific Names Recently in Use : Halaelurus labiosus (Waite, 1905).

FAO Names : En - Blackspotted catshark; Fr - Chien a taches noires; Sp - Pejegato estrellado.



Field Marks: A moderately slender, cylindrical-bodied, relatively narrow-headed catshark with a variegated colour pattern of small to large black spots and obscure dusky saddles on light brown background of sides, back and fins, very long upper labial furrows that reach in front of upper symphysis, a short, bluntly rounded snout, moderately large anterior nasal flaps that do not meet each other at the midline of the snout, no nasoral grooves, equal-sized dorsal fins, origin of first dorsal over or slightly in front of pectoral insertions, and anal fin much smaller than second dorsal and about opposite its base.

Diagnostic Features: See genus.

Geographical Distribution : Confined to Western Australia, Eastern Indian Ocean. Whitley (1940) and McKay (1966) noted that records of this species from Northern Australia and Queensland are erroneous.

Habitat and Biology : A common inshore catshark of the Western Australian continental shelf, but little-known. Depth to at least 4 m.

Size : Maximum 67 cm; adult males 54 to 62 cm, adult females 67 cm.

Interest to Fisheries : None at present.

Literature : Whitley (1940); Fowler (1941); Stead (1963); McKay (1966); Springer (1979).

Remarks : Specimens of this small attractively coloured shark were examined by the writer in the Western Australian Museum.

