

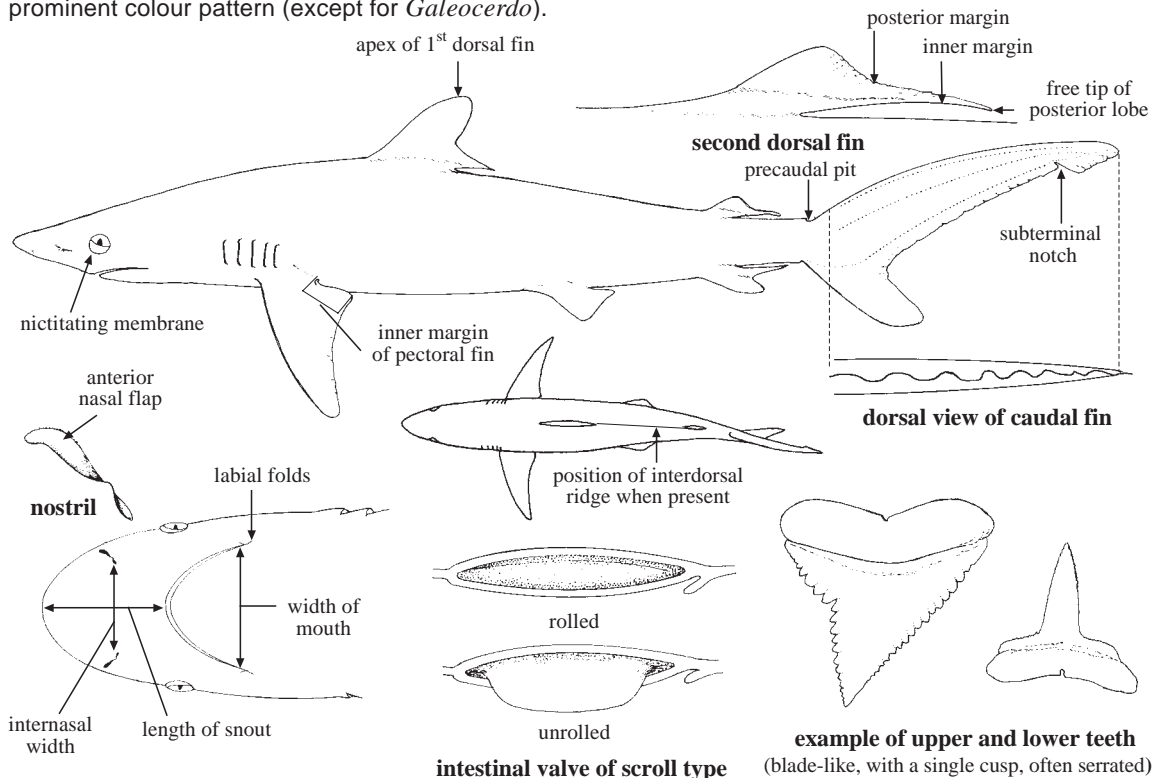
CARCHARHINIDAE

Requiem sharks

(also, ground sharks, blue sharks, sharpnose sharks)

by L.J.V. Compagno and V.H. Niem

Diagnostic characters: Small to large sharks. Trunk and precaudal tail cylindrical, not depressed and without lateral ridges: precaudal tail much shorter than trunk. Head not expanded laterally, conical to moderately depressed; 5 small- to medium-sized gill slits present, the last 1 to 3 over or behind pectoral-fin origins, their upper ends not expanded onto dorsal surface of head; no gill sieves and usually no gill rakers on internal gill slits (short dermal gill rakers present in *Prionace*); spiracles usually absent (but always present in *Galeocerdo*); nostrils well separated from mouth, without barbels, nasal grooves, or circumnarial grooves; **eyes on sides of head, with a well-developed nictitating lower eyelid**; snout short to moderately long, conical and slightly pointed to depressed and broadly rounded, never greatly flattened and blade-like and without lateral teeth and barbels; mouth usually large, arched and elongated, and extending well behind eyes; labial furrows usually present on both jaws but generally greatly reduced, confined to mouth corners, and barely visible when mouth is closed (but *Galeocerdo* and *Rhizoprionodon* species have well-developed labial furrows); upper labial furrows usually not reaching front of mouth (except in *Galeocerdo*); **teeth small to large, blade-like, with a single cusp and cusplets variably developed; anterior teeth in upper jaw smaller than lateral teeth and not separated from them by smaller intermediate teeth on each side.** Two dorsal fins, without spines, the first dorsal fin moderately large, high and angular or subangular, much shorter than the caudal fin, its base located over the interspace between pectoral and pelvic-fin bases and entirely anterior to origins of pelvic fins (free rear tip of dorsal fin may reach or extend posterior to pelvic-fin origins in *Scoliodon*, *Negaprion*, *Rhizoprionodon*, and *Triaenodon*); second dorsal fin varying from less than 1/5 the height of the first dorsal fin to about as high as the first (*Lamiopsis* and *Negaprion*); anal fin present, moderately large, with its origin varying from somewhat anterior to the second dorsal-fin origin to under the first half of second dorsal-fin base; **caudal fin strongly asymmetrical, much less than 1/2 of total length, with a rippled or undulated dorsal margin, a well-marked subterminal notch, and a short but well-defined lower lobe**; vertebral axis of caudal fin raised above body axis. Caudal peduncle not strongly depressed dorsoventrally or widely expanded laterally with weak **longitudinal keels** (*Prionace*, *Galeocerdo*) or none; **precaudal pits present and well developed. Intestinal valve of scroll type. Colour:** brown, grey, yellowish or bluish above, white to cream or yellowish below, some species with prominent dark or light markings on fins; body usually without a prominent colour pattern (except for *Galeocerdo*).

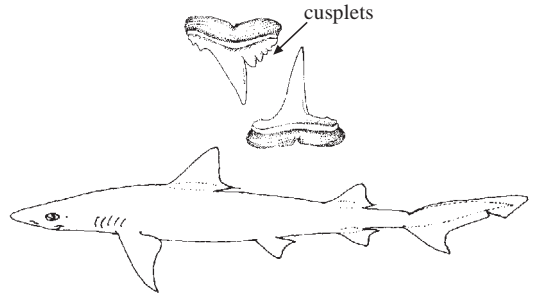


Habitat, biology, and fisheries: The Carcharhinidae are one of the largest families of sharks and are the dominant sharks in tropical waters, often both in variety and in abundance and biomass. Small to very large species often occur close inshore, but most large ones are more abundant well offshore, but still near or over the continental or insular shelves. A few species, including the blue, silky, and oceanic whitetip sharks, are truly oceanic. Requiem sharks are active, strong swimmers, occurring singly or in small to large schools. Some species are continually active, while others are capable of resting motionless for extended periods on the bottom. Many are more active at night or dawn and dusk than the daytime. Except for the ovoviviparous tiger shark (*Galeocerdo cuvier*), all species are viviparous, with a yolk sac placenta, and have litters of young from 1 or 2 to 135. All are voracious predators, feeding heavily on bony fishes, other sharks, rays, squid, octopuses, cuttlefishes, crabs, lobsters, and shrimp, but also sea birds, turtles, sea snakes, marine mammals, gastropods, bivalves, and carrion. The larger carcharhinids are dangerous to people, and they make up an important fraction of the shark species known to have attacked people. This is by far the most important shark family for fisheries in the tropics, and various species figure prominently in catches within the area. Most are utilized for human food, but also for the preparation of various subproducts, including oil and Vitamin A from the liver, fishmeal, and fins for the oriental soupfin markets.

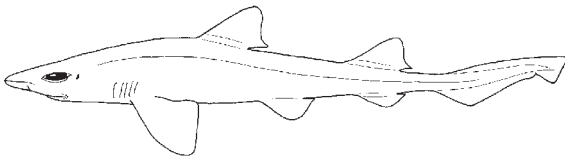
Similar families occurring in the area

Hemigaleidae: intestinal valve of spiral type; also, no carcharhinids in the area combine the characters of long snout, spiracles, upper teeth with strong distal cusplets, long labial furrows, and second dorsal fin large, about 2/3 as large as first dorsal fin, with a very short inner margin, and with its origin anterior to that of the slightly smaller anal fin.

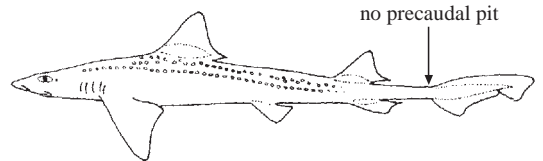
Proscylliidae and Triakidae: no precaudal pits, dorsal margin not undulated, intestinal valve of spiral type, eyes usually dorsolateral on head (except for *Hypogaleus* and *Galeorhinus*).



Hemigaleidae



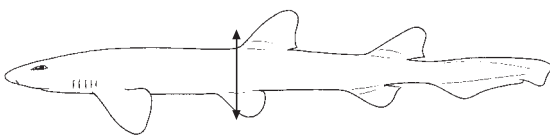
Proscylliidae



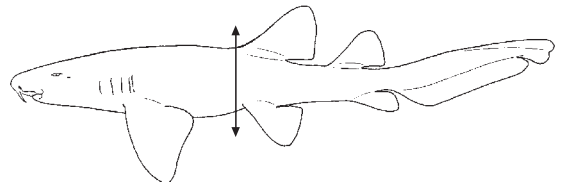
Triakidae

Scyliorhinidae: first dorsal-fin base over or posterior to pelvic-fin bases (anterior to pelvic-fin bases in Carcharhinidae).

Ginglymostomatidae: origin of first dorsal fin over, or only slightly anterior to pelvic-fin bases; nostrils connected with mouth by deep nasoral grooves, their anterior margins with a long, cylindrical barbel; eyes well behind mouth (over mouth in Carcharhinidae).



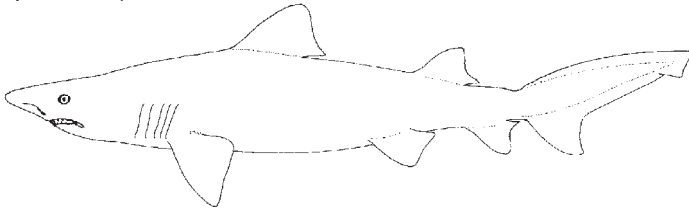
Scyliorhinidae



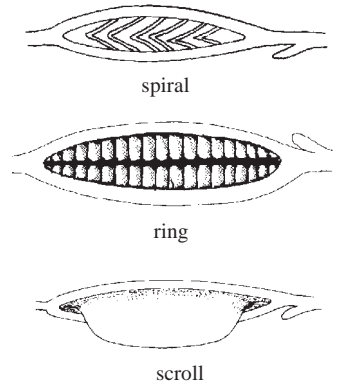
Ginglymostomatidae

Odontaspidae: fifth gill opening in front of pectoral-fin origin; eyes without nictitating folds; largest teeth in front part of jaws (on either side of symphysis), in upper jaw separated from large teeth at sides by a gap, usually with 1 or 2 rows of intermediate teeth (largest teeth as sides of jaws and no gap in teeth row of upper jaw in Carcharhinidae).

Other shark families: either caudal fin very long (Alopiidae), or head with "hammer-like" lateral projections (Sphyrnidae), or caudal fin lunate (Lamnidae), or size of adults much larger (Rhincodontidae), or a single dorsal fin and 6 or 7 gill slits (Hexanchidae), or anal fin absent (Squalidae and Squatinidae).



Odontaspidae



(only Carcharhinidae and Sphyrnidae)
types of intestinal valves

Key to the species of Carcharhinidae occurring in the area

- 1a. Upper labial furrows very long, extending to front of eyes; spiracles present and relatively large; prominent lateral keels on caudal peduncle (Fig. 1); vertical black or dusky bars on back, obscure or absent on adults *Galeocerdo cuvier*
- 1b. Upper labial furrows long to very short, not extending in front of eyes; spiracles usually absent; lateral keels usually absent (except for weak ones in *Prionace glauca*) (Fig. 2) → 2

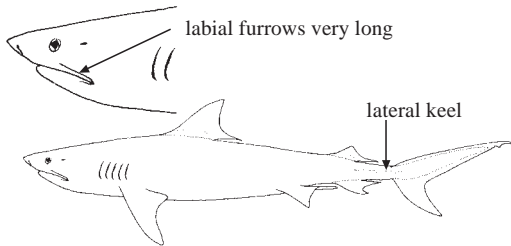


Fig. 1 *Galeocerdo cuvier*



Fig. 2 other species

- 2a. High proximal and distal cusplets present on most teeth in both jaws; expanded anterior nasal and mesonarial flaps forming a tube for the excurrent aperture (Fig. 3) . . . *Triaenodon obesus*
- 2b. Cusplets usually absent on lower teeth, low or absent on uppers (Fig. 4); nasal flaps not forming a tube → 3

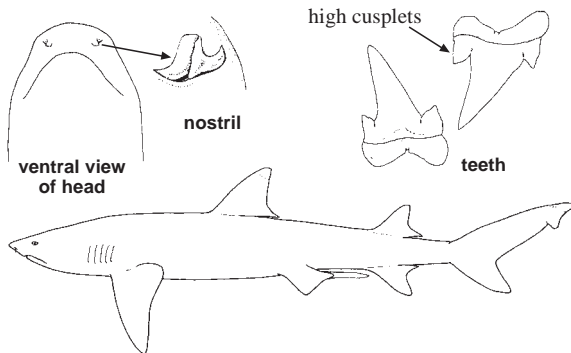


Fig. 3 *Triaenodon obesus*

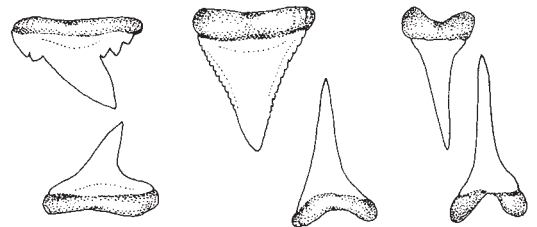


Fig. 4 teeth

- 3a. Second dorsal fin nearly or quite as large as first (Fig. 5). → 4
- 3b. Second dorsal fin considerably smaller than first (Fig. 6). → 5

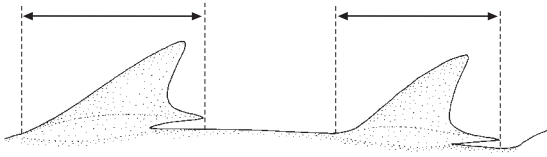


Fig. 5 dorsal fins



Fig. 6 dorsal fins

- 4a. Snout short, preoral length much less than mouth width; upper and lower teeth with narrow, unserrated cusps (Fig. 7) *Negaprion acutidens*
- 4b. Snout longer, preoral length about equal to mouth width; upper teeth with broad, triangular, serrated cusps, lowers with narrow, smooth cusps (Fig. 8). *Lamiopsis temmincki*

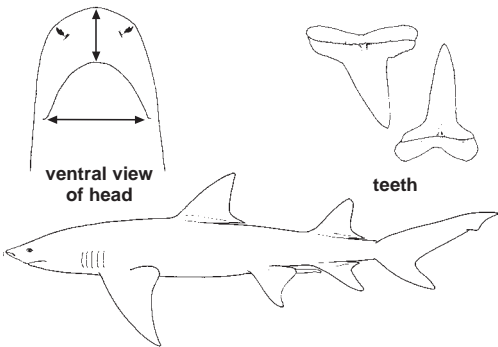


Fig. 7 *Negaprion acutidens*

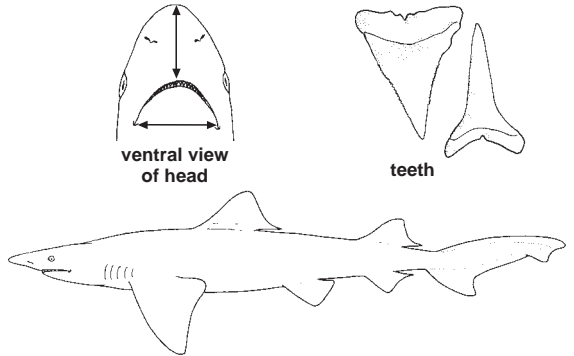


Fig. 8 *Lamiopsis temmincki*

- 5a. Head greatly depressed and trowel-shaped; pectoral fins broadly triangular, their length from origins to free rear tips about equal to their anterior margins; free rear tip of first dorsal fin about over midbases of pelvic fins; postventral margin of caudal fin usually only shallowly concave (Fig. 9) *Scoliodon laticaudus*
- 5b. Head varying from conical to slightly depressed; pectoral fins narrower, length 4/5 or less of anterior margin (usually less); free rear tip of first dorsal fin over or (usually) anterior to pelvic-fin origins; postventral margin of caudal fin deeply incised (Fig. 10). → 6

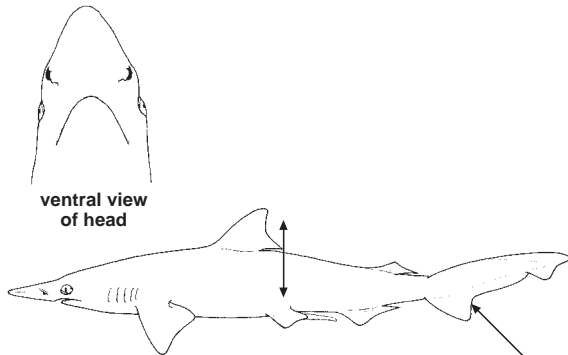


Fig. 9 *Scoliodon laticaudus*

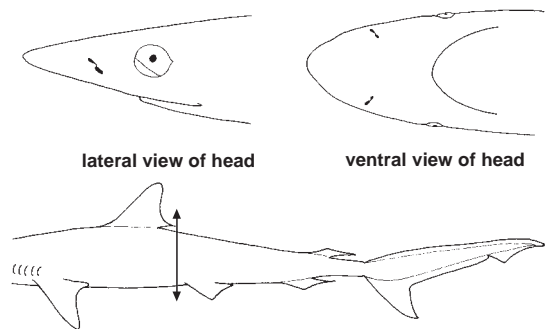


Fig. 10

- 6a. Second dorsal-fin origin well behind anal-fin origin, usually over or slightly anterior to anal-fin insertion (Fig. 11a); preanal ridges very long and prominent, subequal to or greater in length than anal-fin base (Fig. 11b); posterior margin of anal fin straight or shallowly concave (Fig. 11b) → 7
- 6b. Second dorsal-fin origin usually near anal-fin origin, in some species posterior to it (Fig. 12a); but usually well anterior to anal-fin insertion (Fig. 12b) and midbase of anal fin; preanal ridges variably developed, short, up to 1/2 the anal-fin base length or less (Fig. 12c); posterior margin of anal fin deeply concave or deeply notched (Fig. 12c) → 10

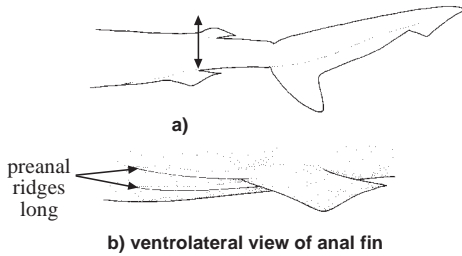


Fig. 11

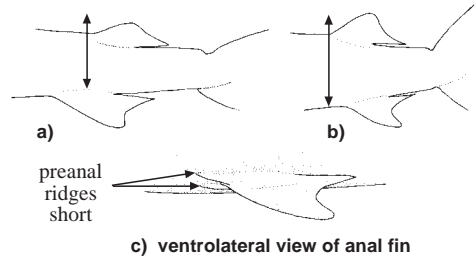


Fig. 12

- 7a. Posterior notches present on eyes; first dorsal-fin base 2 to 3 times in distance between pectoral and pelvic-fin bases (Fig. 13). *Loxodon macrorhinus*
- 7b. No eye notches; first dorsal-fin base usually less than 2 times in distance between pectoral to pelvic-fin bases (up to 2 times in adult *R. acutus*) (Fig. 14). (*Rhizoprionodon*) → 8

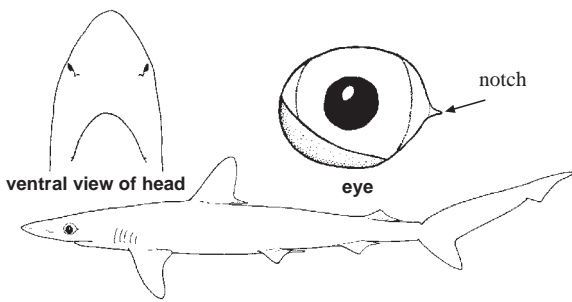


Fig. 13 *Loxodon macrorhinus*

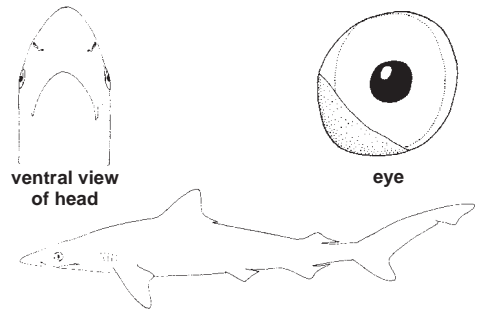


Fig. 14 *Rhizoprionodon*

- 8a. Upper labial furrows long and rather prominent, 1.4 to 2% of total length; uppers usually longer than lower furrows (Fig. 15a); tooth rows more numerous in average, counts usually 25/24 (Fig. 15b) *Rhizoprionodon acutus*
- 8b. Upper labial furrows reduced and often inconspicuous, generally less than 1% of total length and rarely up to 1.3%; uppers usually shorter than lower furrows (Fig. 16); tooth rows averaging fewer, counts 23-25/21-24 but mostly below 25/24. → 9

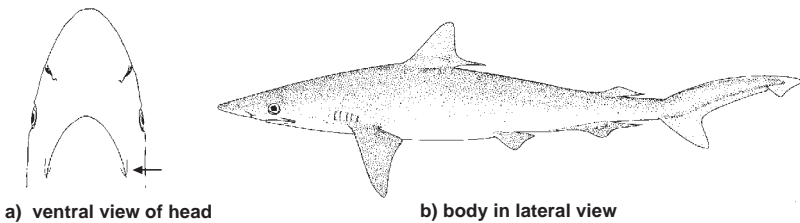


Fig. 15 *Rhizoprionodon acutus*

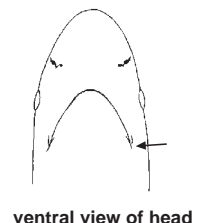


Fig. 16

- 9a. Total number of enlarged hyomandibular lateral-line pores just behind mouth corners on both sides of head fewer, 7 to 16 and rarely above 14; precaudal vertebral centra 84 to 91 (Fig. 17). *Rhizoprionodon oligolinx*
- 9b. Total number of enlarged hyomandibular pores greater, 15 to 22; precaudal vertebral centra 73 to 80 (Fig. 18). *Rhizoprionodon taylori*

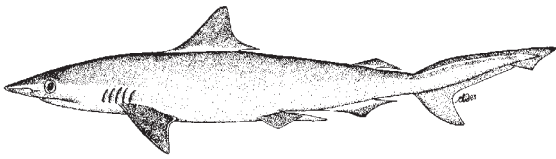


Fig. 17 *Rhizoprionodon oligolinx*

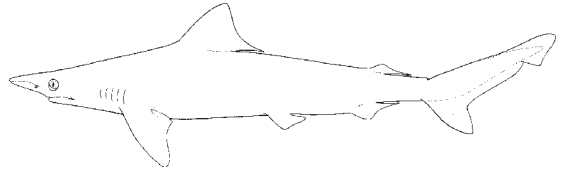


Fig. 18 *Rhizoprionodon taylori*

- 10a. Papillose gill rakers present on gill arches (Fig. 19a); weak lateral keels present on caudal peduncle; first dorsal-fin base much closer to pelvic- than to pectoral-fin bases (Fig. 20); colour brilliant dark blue above in life. *Prionace glauca*
- 10b. No papillose gill rakers on gill arches (Fig. 19b); no lateral keels on caudal peduncle; first dorsal-fin base equidistant between pectoral- and pelvic-fin bases or (usually) closer to pectoral fins (Figs 21 and 22); colour light to dark grey, grey-brown, brown, or grey-black above → 11

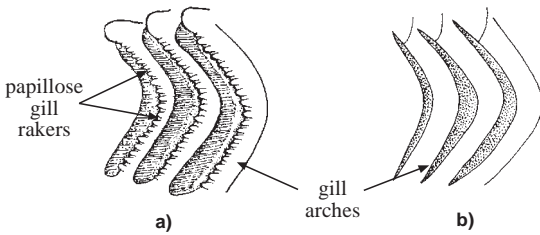


Fig. 19

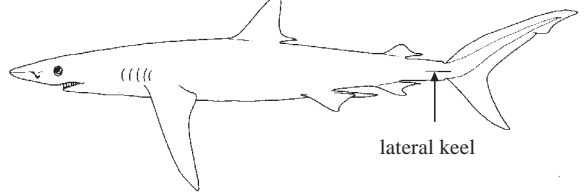


Fig. 20 *Prionace glauca*

- 11a. Second dorsal fin 1/2/ to 3/5 height of first dorsal fin; precaudal pits longitudinal and not crescentic (Fig. 21). (*Glyphis*) → 12
- 11b. Second dorsal fin 2/5 height of first dorsal fin or less; precaudal pits transverse and crescentic (Fig. 22). (*Carcharhinus*) → 14

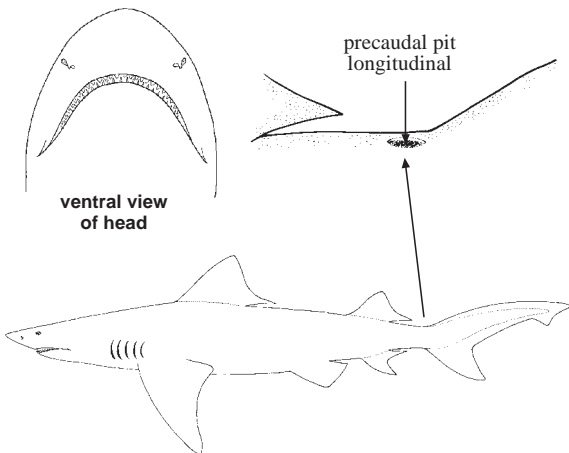


Fig. 21 *Glyphis*

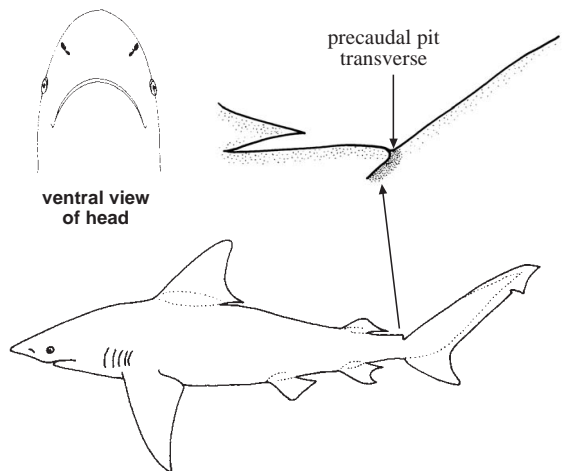


Fig. 22 *Carcharhinus*

12a. Head very flat and narrowly wedge-shaped in lateral view; total vertebral counts 147 to 148, diplospondylous caudal centra 65 to 68 (New Guinea and northern Australia) (Fig. 23) . . . *Glyphis* sp. C

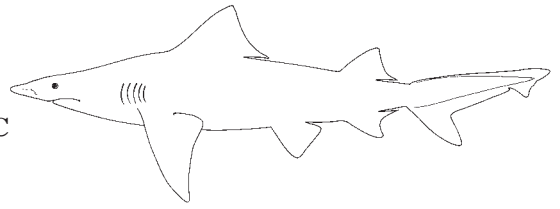


Fig. 23 *Glyphis* sp. C

12b. Head higher and broader in lateral view; total vertebral counts 196 to 217, diplospondylous caudal centra 85 to 93 → 13

13a. Lower anterior teeth enlarged, with cusps smooth basally but with a serrated, spear-like (hastate) expanded tip; total tooth row counts 55; free rear tip of first dorsal fin about opposite pelvic-fin origins; total vertebral counts 217, monospondylous precaudal count 70, diplospondylous precaudal count 54; all fins with black or dusky edges and dusky webs in young (Queensland, Australia) (Fig. 24) *Glyphis* sp. A

13b. Lower anterior teeth with cusps entirely serrate and without a spear-like expanded tip; total tooth row counts 60 to 63; free rear tip of first dorsal fin somewhat anterior to pelvic-fin origins; total vertebral counts 196 to 205, monospondylous precaudal count 63 to 67, diplospondylous precaudal count 43 to 51; fins plain and light, except for dark patch on pectoral-fin bases and dusky tip on ventral caudal-fin lobe (Borneo) (Fig. 25) *Glyphis* sp. B

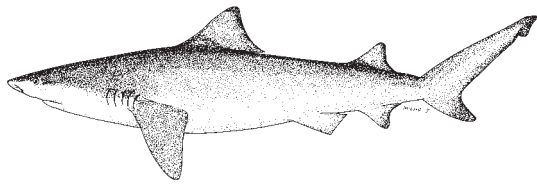


Fig. 24 *Glyphis* sp. A

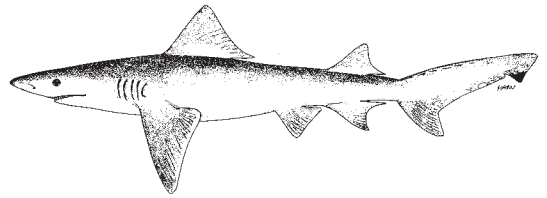


Fig. 25 *Glyphis* sp. B

14a. Pectoral and first dorsal fins very broad distally and broadly rounded apically, only slightly tapering toward their apices; most fin tips mottled white in adults, also black-tipped and with black dorsal saddle-marks on the caudal peduncle in juveniles (Fig. 26) *Carcharhinus longimanus*

14b. Pectoral and first dorsal fins tapering distally and usually pointed or narrowly rounded; fins not mottled white, often black tipped but without black saddles on the caudal peduncle → 15

15a. First dorsal, pectoral, pelvic, and caudal fins with extremely conspicuous white tips and posterior edges (Fig. 27) *Carcharhinus albimarginatus*

15b. Fins not conspicuously tipped and edged with white → 16

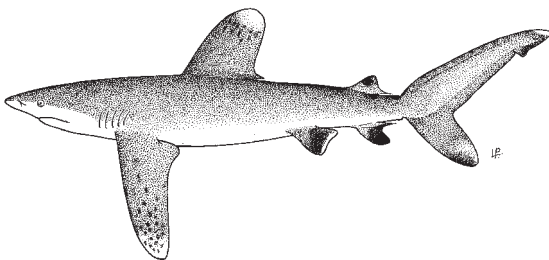


Fig. 26 *Carcharhinus longimanus*

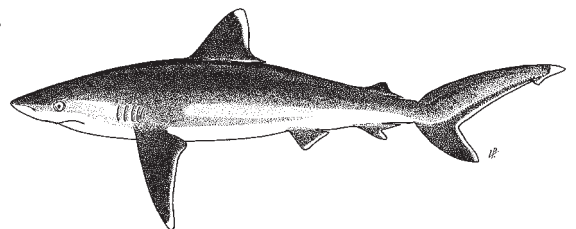


Fig. 27 *Carcharhinus albimarginatus*

16a. Second dorsal fin with a conspicuous black tip but other fins plain (Figs 28 and 29) → 17

16b. Second dorsal fin plain, white or black-tipped but never the only fin with markings → 18

- 17a. First dorsal fin triangular, erect, and with a posteroventrally sloping posterior margin; usually 13/13-14 rows of anteroposterior teeth, and 28/27 to 29 total rows of teeth; distal cusplets serrated on upper anterolateral teeth; pectoral-fin length 1.4 to 1.8 in anterior margin length; mouth width 6.4 to 8.3% of total length; precaudal centra 54 to 74 (Fig. 28). *Carcharhinus dussumieri*
- 17b. First dorsal fin falcate, with almost vertical posterior margin (apart from free rear tip); usually 12/12 rows of anteroposterior teeth, and 26/25 total rows of teeth; distal cusplets smooth on upper anterolateral teeth; pectoral length 1.7 to 2 in anterior margin length; mouth width 4.2 to 6.6% of total length; precaudal centra 74 to 85 (Fig. 29) . . . *Carcharhinus sealei*

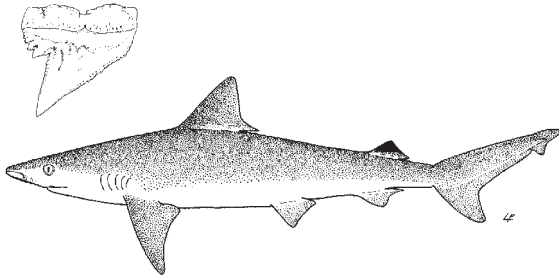


Fig. 28 *Carcharhinus dussumieri*

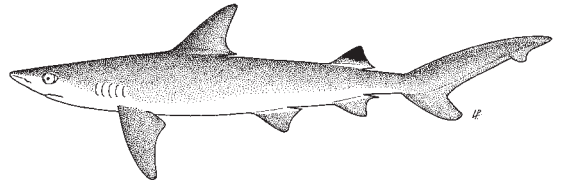


Fig. 29 *Carcharhinus sealei*

- 18a. Caudal fin prominently edged with black along entire posterior edge; first dorsal fin plain or white-tipped, never black-tipped (Fig. 30) *Carcharhinus amblyrhynchos*
- 18b. Caudal fin either plain or prominently edged with black, but if black, first dorsal fin also prominently black-tipped → 19
- 19a. Upper anterolateral teeth with bent, hooked, narrow cusps (Fig. 31). *Carcharhinus brachyurus*
- 19b. Upper anterolateral teeth variably shaped, and broad or narrow, but with cusps nearly straight → 20

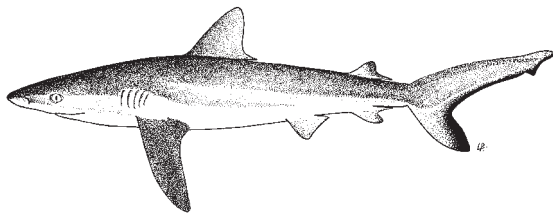


Fig. 30 *Carcharhinus amblyrhynchos*

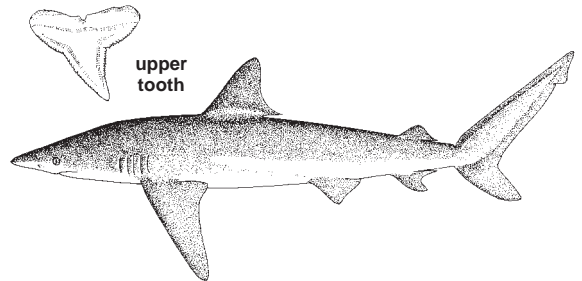


Fig. 31 *Carcharhinus brachyurus*

- 20a. Dermal interdorsal ridge present (Fig. 32). → 21
- 20b. Dermal interdorsal ridge absent. → 27
- 21a. Second dorsal fin, pectoral fin, and ventral caudal-fin lobe strikingly black-tipped → 22
- 21b. Fins plain or dusky-tipped but not strongly black-tipped → 23

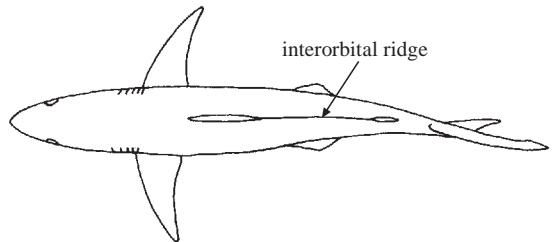


Fig. 32

- 22a. Second dorsal fin low, with very elongated inner margin over twice fin height; upper anterolateral teeth with strongly serrated cusps; usually only 12 rows of upper antero-posterior teeth (Fig. 33) *Carcharhinus sorrah*
- 22b. Second dorsal fin higher, with shorter inner margin 1.4 to 1.6 times fin height; upper anterolateral teeth with smooth or weakly serrated cusps; 14 or 15 rows of upper anteroposterior teeth (Fig. 34) *Carcharhinus hemiodon*

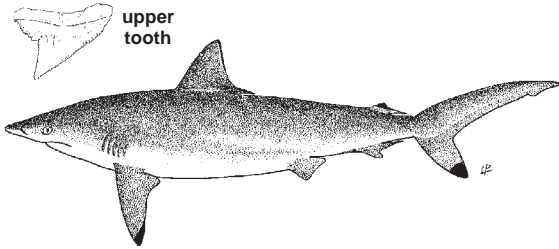


Fig. 33 *Carcharhinus sorrah*

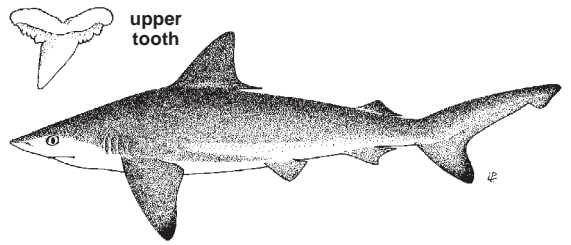


Fig. 34 *Carcharhinus hemiodon*

- 23a. First dorsal-fin origin well behind free rear tips of pectoral fins; very coarse serrations or small cusplets on feet of upper anterolateral teeth; inner margin of second dorsal fin very long, usually over twice (but exceptionally down to 1.6) times the fin height (Fig. 35) . . . *Carcharhinus falciformis*

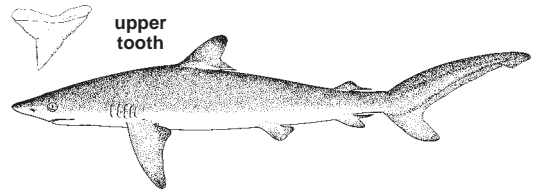


Fig. 35 *Carcharhinus falciformis*

- 23b. First dorsal-fin origin over or anterior to free rear tips of pectoral fins; serrations on feet of upper anterolateral teeth small and not very coarse; inner margin of second dorsal fin shorter and generally less than twice the fin height (but up to 2.1 times the fin height in *Carcharhinus obscurus*) → 24

- 24a. First dorsal-fin origin in front or over pectoral-fin insertions or at least nearer to them than to free rear tips of pectoral fins (Figs 36 and 37) → 25

- 24b. First dorsal-fin origin opposite or somewhat in front of free rear tips of pectoral fin but closer to them than pectoral-fin insertions (Figs 38 and 39) → 26

- 25a. Anterior nasal flaps usually low and inconspicuous; distance from nostrils to mouth more than 2.4 times in mouth width; upper anterolateral teeth moderately high, usually in 14 rows; first dorsal fin very high, its height about 1/2 of predorsal length (Fig. 36); interdorsal ridge low *Carcharhinus plumbeus*

- 25b. Anterior nasal flaps usually high and triangular; distance from nostrils to mouth less than 2.4 times in mouth width; upper anterolateral teeth very high, usually in 15 rows; first dorsal fin lower, its height much less than 1/2 of predorsal length (Fig. 37); interdorsal ridge high *Carcharhinus altimus*

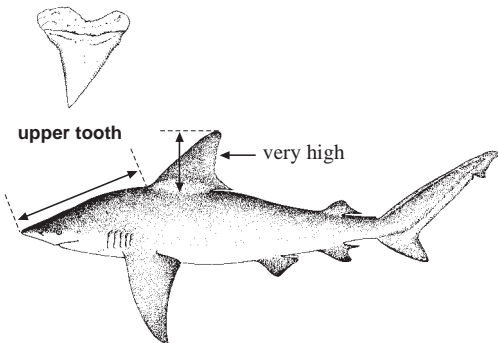


Fig. 36 *Carcharhinus plumbeus*

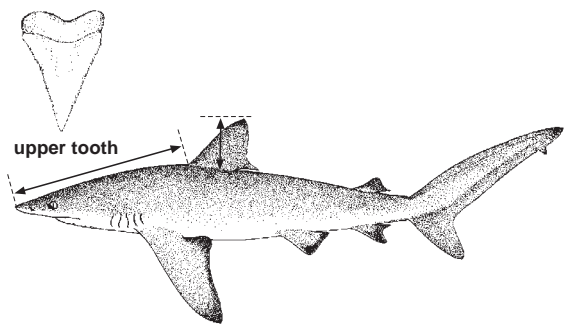


Fig. 37 *Carcharhinus altimus*

26a. Upper anterolateral teeth relatively high and narrow; pectoral fins nearly straight; first dorsal fin higher and with a nearly straight anterior margin; height of second dorsal fin 2.1 to 3.3% of total length and 1.3 to 1.7 times in inner margin length; precaudal centra 103 to 109 (Fig. 38) *Carcharhinus galapagensis*

26b. Upper anterolateral teeth relatively low and broad; pectoral fins more falcate; first dorsal fin lower and with a rounded anterior margin; height of second dorsal fin 1.5 to 2.3% of total length and 1.6 to 2.1 times in inner margin length; precaudal centra 89 to 95 (Fig. 39). *Carcharhinus obscurus*

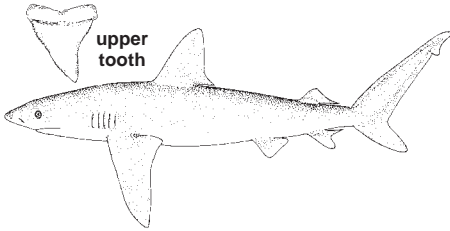


Fig. 38 *Carcharhinus galapagensis*

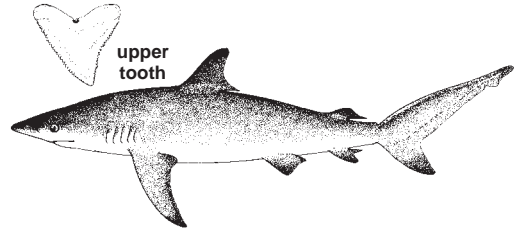


Fig. 39 *Carcharhinus obscurus*

27a. Entire posterior margin of caudal fin with a narrow but obvious black edge; pectoral, second dorsal, and caudal fins with obvious black tips → 28

27b. Posterior margin of caudal not black or only partly dusky or black; fins black-tipped or not → 29

28a. First dorsal fin with a broad black blotch at its apex, highlighted below with white (Fig. 40) *Carcharhinus melanopterus*

28b. First dorsal fin with a narrow black edge on its anterior margin but without a black blotch at its apex (Fig. 41) *Carcharhinus cautus*

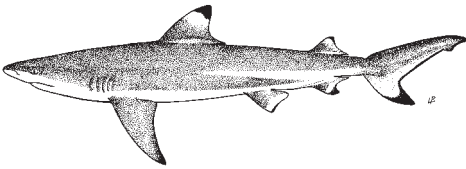


Fig. 40 *Carcharhinus melanopterus*

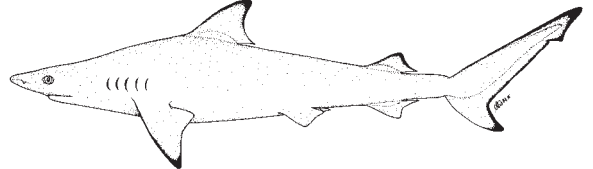


Fig. 41 *Carcharhinus cautus*

29a. Snout very short and broadly rounded, internarial space usually less than preoral length; upper anterolateral teeth with very broad, triangular cusps and straight to concave distal margins; lower anterolaterals with strongly arched roots (Fig. 42) → 30

29b. Snout longer and parabolic or wedge-shaped to pointed, internarial space equal to, or greater than preoral length; upper anterolateral teeth with narrow cusps and strongly notched distal margins; lower anterolaterals with nearly transverse roots (Fig. 43) → 31

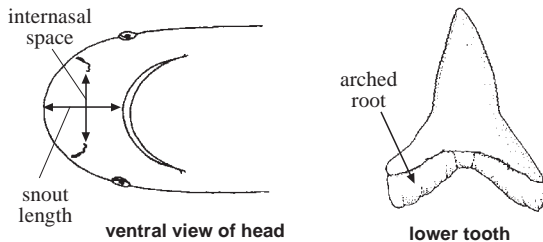


Fig. 42

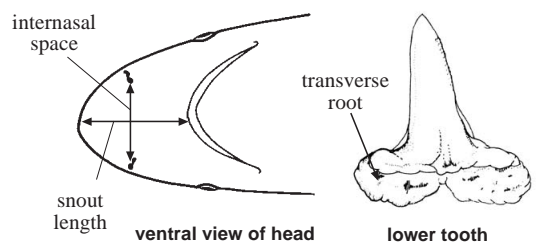
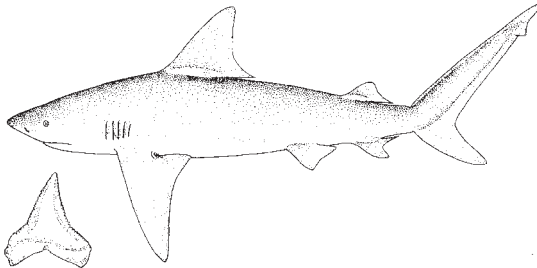


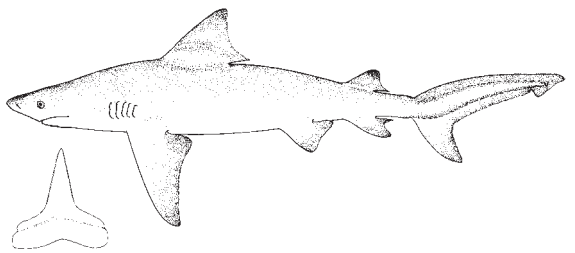
Fig. 43

30a. Usually 11 lower anteroposterior teeth, with extremely broad cusps; first dorsal-fin height more than 3.1 times the second dorsal-fin height; second dorsal-fin margin usually nearly straight; angle of notch in anal fin posterior margin more acute, usually less than a right angle; precaudal centra 89 to 95 (Fig. 44) *Carcharhinus amboinensis*

30b. Usually 12 lower anteroposterior teeth, with moderately broad cusps; first dorsal-fin height more than 3.1 times the second dorsal-fin height or less; second dorsal-fin margin usually concave; angle of notch in anal fin posterior margin more obtuse, usually a right angle or more; precaudal centra 101 to 123 (Fig. 45) *Carcharhinus leucas*



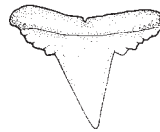
lower tooth **Fig. 44** *Carcharhinus amboinensis*



lower tooth **Fig. 45** *Carcharhinus leucas*

31a. Origin of second dorsal fin well behind anal-fin origin, about opposite its midbase → 32
31b. Origin of second dorsal fin about over anal-fin origin → 34

32a. Upper anterolateral teeth with large mesial and distal cusplets and no serrations; inner margin of first dorsal fin extremely long, about 2/3 of fin base; rostrum expanded as a hypercalcified, hardened mass, easily detected by pinching or cutting into the snout (Fig. 46) *Carcharhinus macloti*



upper tooth

32b. Upper anterolateral teeth with distal cusplets and serrations; inner margin of first dorsal fin shorter, 1/2 fin base or less; rostrum not hypercalcified → 33

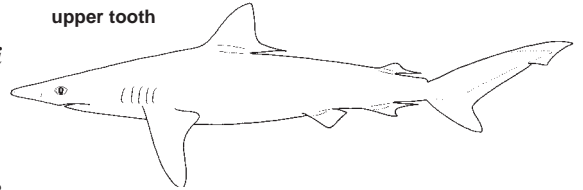


Fig. 46 *Carcharhinus macloti*

33a. Hyomandibular pores conspicuously enlarged alongside mouth corners; anteroposterior teeth 11-12/11-12; second dorsal fin lower, height 2.2 to 2.5 times in inner margin (Fig. 47) *Carcharhinus borneensis*

33b. Hyomandibular pores not enlarged alongside mouth corners; anteroposterior teeth 13-15/13-14; second dorsal fin higher, height 1.5 to 1.9 times in inner margin (Fig. 48) *Carcharhinus* sp. (= "*Carcharhinus porosus*")

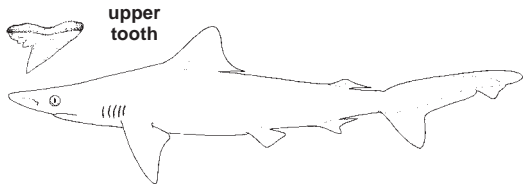


Fig. 47 *Carcharhinus borneensis*

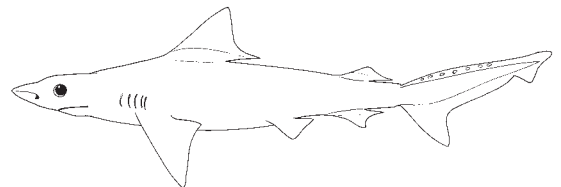


Fig. 48 *Carcharhinus* sp.

34a. Upper anterolateral teeth with semioblique cusps and strong cusplets; gill slits shorter, longest 3% of total length; pectoral fins rather broad and triangular, their lengths 1.5 in anterior margin length; fins not black-tipped (Fig. 49). *Carcharhinus fitzroyensis*

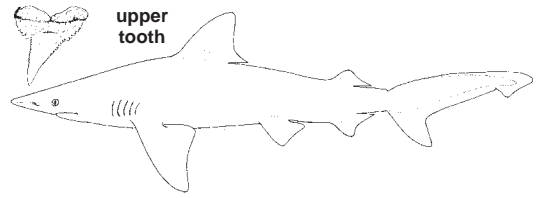


Fig. 49 *Carcharhinus fitzroyensis*

34b. Upper anterolateral teeth with erect or nearly erect cusps and no cusplets (Fig. 50); gill slits longer, longest usually at least 4% of total length; pectoral fins narrower and falcate, their lengths 1.8 or more in anterior margin length; fins often black-tipped → 35

35a. Upper labial furrows noticeably elongated and prominent; usually at least 16 rows of upper anteroposterior teeth; first dorsal fin lower, its height over 2.2 times in the interdorsal space; first dorsal-fin origin over or just behind rear tips of pectoral fins (Fig. 51). *Carcharhinus brevipinna*

35b. Upper labial furrows shorter and less noticeable; usually 15 or fewer rows of upper anteroposterior teeth; first dorsal fin higher, its height 2.2 times or less in interdorsal space; first dorsal-fin origin over or just behind insertions of pectoral fins → 36

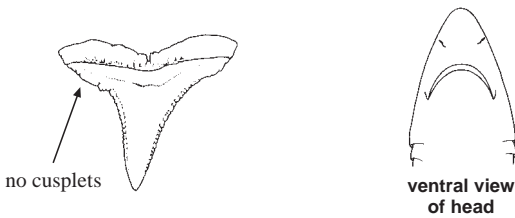


Fig. 50 upper tooth

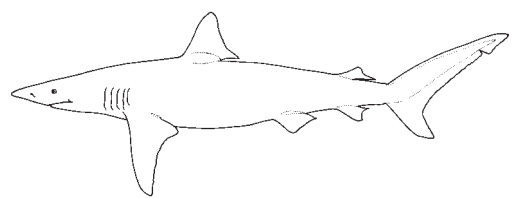


Fig. 51 *Carcharhinus brevipinna*

36a. Snout rather short and wedge-shaped, internarial space 1 to 1.2 times in preoral snout; second dorsal height 1 to 1.2 times in inner margin length; precaudal centra usually less than 82 (Fig. 52) *Carcharhinus amblyrhynchoides*

36b. Snout longer and pointed, internarial space 1.3 to 1.7 times in preoral snout (Fig. 53); second dorsal height 1.1 to 1.6 times in inner margin length; precaudal centra usually more than 83 → 37

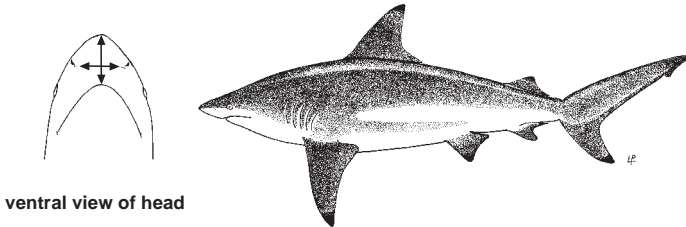


Fig. 52 *Carcharhinus amblyrhynchoides*

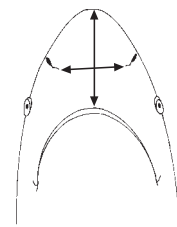


Fig. 53 ventral view of head

37a. Precaudal centra 94 to 102 (Fig. 54) *Carcharhinus limbatus*

37b. Precaudal centra 84 to 91 (Fig. 55). *Carcharhinus tilstoni*

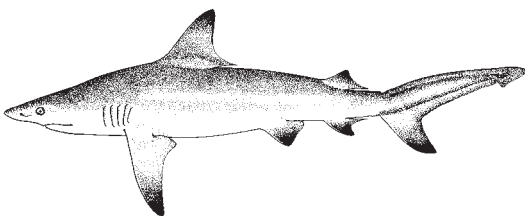


Fig. 54 *Carcharhinus limbatus*

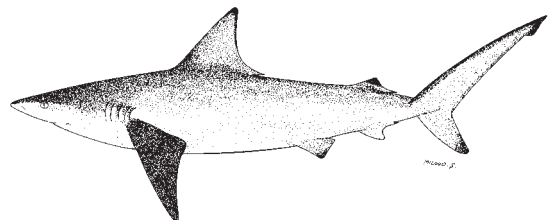



Fig. 55 *Carcharhinus tilstoni*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Carcharhinus albimarginatus* (Rüppell, 1837)
-  *Carcharhinus altimus* (Springer, 1950)
-  *Carcharhinus amblyrhynchoides* (Whitley, 1934)
-  *Carcharhinus amblyrhynchos* (Bleeker, 1856)
-  *Carcharhinus amboinensis* (Müller and Henle, 1839)
-  *Carcharhinus borneensis* (Bleeker, 1859)
-  *Carcharhinus brachyurus* (Günther, 1870)
-  *Carcharhinus brevipinna* (Müller and Henle, 1839)
-  *Carcharhinus cautus* (Whitley, 1945)
-  *Carcharhinus dussumieri* (Valenciennes in Müller and Henle, 1839)
-  *Carcharhinus falciformis* (Bibron in Müller and Henle, 1839).
-  *Carcharhinus fitzroyensis* (Whitley, 1943)
-  *Carcharhinus galapagensis* (Snodgrass and Heller, 1905)
-  *Carcharhinus hemiodon* (Valenciennes in Müller and Henle, 1839)
-  *Carcharhinus leucas* (Valenciennes in Müller and Henle, 1839)
-  *Carcharhinus limbatus* (Valenciennes in Müller and Henle, 1839)
-  *Carcharhinus longimanus* (Poey, 1861)
-  *Carcharhinus macroti* (Müller and Henle, 1839)
-  *Carcharhinus melanopterus* (Quoy and Gaimard, 1824)
-  *Carcharhinus obscurus* (LeSueur, 1818)
-  *Carcharhinus plumbeus* (Nardo, 1827)
-  *Carcharhinus sealei* (Pietschmann, 1916)
-  *Carcharhinus sorrah* (Valenciennes in Müller and Henle, 1839)
-  *Carcharhinus tilstoni* (Whitley, 1950)
-  *Carcharhinus* sp. [Compagno, 1988] (= "*Carcharhinus porosus*" of Garrick, 1982 for western Pacific specimens)
-  *Galeocerdo cuvier* (Peron and LeSueur in LeSueur, 1822)
-  *Glyphis* sp. A [Last and Stevens, 1994] (Queensland)
-  *Glyphis* sp. B [Compagno] (Borneo)
-  *Glyphis* sp. C [Compagno] (New Guinea, Australia)
-  *Lamiopsis temmincki* (Müller and Henle, 1839)
-  *Loxodon macrorhinus* Müller and Henle, 1839
-  *Negaprion acutidens* (Rüppell, 1837)
-  *Prionace glauca* (Linnaeus, 1758)
-  *Rhizoprionodon acutus* (Rüppell, 1837)
-  *Rhizoprionodon oligolinx* Springer, 1964
-  *Rhizoprionodon taylori* (Ogilby, 1915)
-  *Scoliodon laticaudus* Müller and Henle, 1838
-  *Triaenodon obesus* (Rüppell, 1837)

References

- Compagno, L.J.V. 1988. *Sharks of the order Carcharhiniformes*. Princeton, New Jersey, Princeton University Press, 572 p.
- Garrick, J.A.F. 1982. Sharks of the genus *Carcharhinus*. *NOAA Tech. Rep. NMFS Circ.*, (445)8:194 p.
- Garrick, J.A.F. 1985. Additions to a revision of the shark genus *Carcharhinus*: synonymy of *Aprionodon* and *Hypoprion*, and description of a new species of *Carcharhinus*. *NOAA Tech. Rep., NMFS Circ.*, (34):26 p.
- Last, P.R. and J.D. Stevens. 1993. *Sharks and rays of Australia*. Australia, CSIRO, 513 p.
- Springer, V.G. 1964. A revision of the carcharhinid shark genera *Scoliodon*, *Loxodon*, and *Rhizoprionodon*. *Proc. U.S. Natl. Mus.*, 115:559-632.