

HEXANCHIDAE

Heptanchias perlo (Bonnaterre, 1788)

(Plate I, 1)

Frequent synonyms / misidentifications: *Heptanchias cinereus* (Gmelin, 1789) / None.

FAO names: **En** – Sharpnose seven-gill shark; **Fr** – Requin perlon; **Sp** – Cañabota bocadulce.

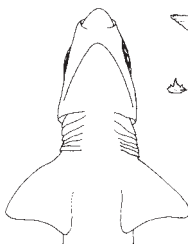
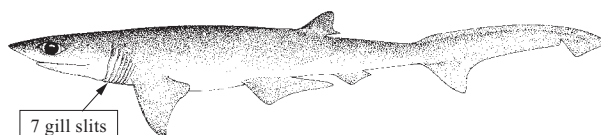
Size: From 100 to 140 cm TL.

Habitat and biology: Usually benthic at depths from 50 to 400 m, occasionally to 1 000 m, often near shelf edge, in warm waters. Ovoviparous, litters of about 9 to 20.

Distribution: Whole Mediterranean, absent in the north Adriatic and Black Sea and north African coasts. Atlantic northern limit in the Bay of Biscay. Probably worldwide in tropical and subtropical waters but nowhere common.

Importance to fisheries: Seldom caught as bycatch by bottom trawls and longlines in epibathyal and bathyal grounds.

Conservation and exploitation status: FAO, B1; IUCN, Near Threatened; Mediterranean, threatened.



underside of head



upper and lower teeth

Hexanchus griseus (Bonnaterre, 1788)

(Plate I, 2)

HEXANCHIDAE

Frequent synonyms / misidentifications: *Notidanus griseus* Cuvier, 1817 / None.

FAO names: **En** – Bluntnose six-gill shark; **Fr** – Requin gris; **Sp** – Cañabota gris.

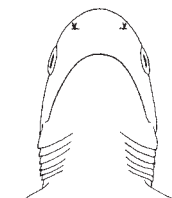
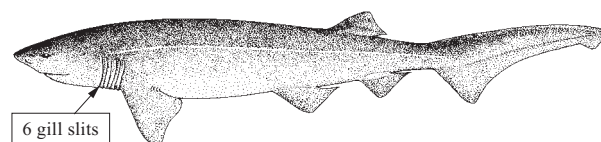
Size: To 500 cm TL.

Habitat and biology: Usually deep and cool waters, close to the bottom (100–1 000 m), possibly rising to surface at night. Ovoviparous, litters of about 20 to 50, possibly up to 100 embryos.

Distribution: Common in the Mediterranean, absent in the north Adriatic and Black Sea. Reaching southern Norway and Iceland (rare) in the Atlantic. Probably worldwide in temperate or subtropical seas.

Importance to fisheries: Rarely caught as bycatch by bottom trawls and longlines in epibathyal and bathyal grounds. Occasional a target species.

Conservation and exploitation status: FAO, B3; IUCN, Near Threatened; Mediterranean, vulnerable species.



underside of head



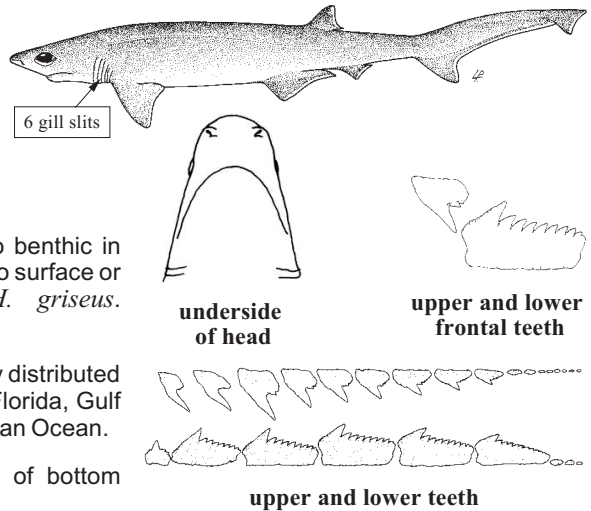
upper and lower frontal teeth



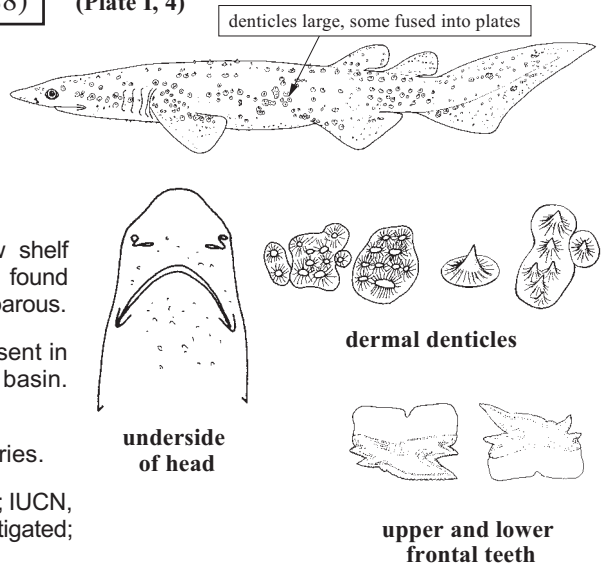
upper and lower teeth

***Hexanchus nakamurai* Teng, 1962**

(Plate I, 3)

HEXANCHIDAE**Frequent synonyms / misidentifications:***Hexanchus vitulus* Springer and Waller, 1969 / None.**FAO names:** **En** – Bigeyed six-gill shark; **Fr** – Requin vache; **Sp** - Cañabota ojigrande.**Size:** To 180 cm TL.**Habitat and biology:** Probably mesopelagic to benthic in deep waters (90–350 m), possibly with intrusion to surface or shallow waters. In warmer seas than *H. griseus*. Ovoviparous, litters of up to 26 embryos.**Distribution:** Rare in the Mediterranean. Spottily distributed in warmer waters of North Atlantic. Elsewhere, Florida, Gulf of Mexico, Caribbean area and southwestern Indian Ocean.**Importance to fisheries:** Occasional bycatch of bottom trawls and longlines.**Conservation and exploitation status:** FAO, A; IUCN, Data Deficient (Near Threatened eastern Pacific); Mediterranean, occasional, vulnerable species.**Remarks:** *Hexanchus vitulus* Springer and Waller, 1969 is considered synonym by Whitehead *et al.*, 1984, dubious in the sheets of FAO (Fischer *et al.*, 1987) and valid species in Compagno (1984). Tortonese (1986) considers the possibility to change the name from *vitulus* to *nakamurai* as suggested by Teng (1962). Recently Compagno (pers. comm.) confirmed the species but changed its name to *H. nakamurai*.**ECHINORHINIDAE*****Echinorhinus brucus* (Bonnaterre, 1788)**

(Plate I, 4)

Frequent synonyms / misidentifications:*Squalus spinosus* Gmelin, 1789 / None.**FAO names:** **En** – Bramble shark; **Fr** – Squalé bouclé; **Sp** – Tiburón de clavos.**Size:** To 310 cm TL.**Habitat and biology:** Occasionally on shallow shelf areas, mostly deep waters (200–900 m), also found inshore in cold-temperate areas. Probably ovoviparous.**Distribution:** Present in the Mediterranean, absent in the Black Sea, very rare in the Levantine basin. Present in all oceans.**Importance to fisheries:** Bycatch in trawl fisheries.**Conservation and exploitation status:** FAO, B4; IUCN, Data Deficient, to be urgently investigated; Mediterranean, occasional, rare species.

SQUALIDAE

Squalus acanthias Linnaeus, 1758

Frequent synonyms / misidentifications: None / None.

FAO names: **En** – Spotted spiny dogfish; **Fr** – Aiguillat commun; **Sp** – Mielga.

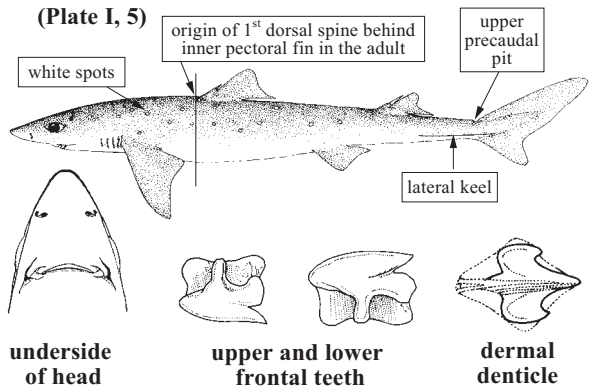
Size: From 60 to 105 cm TL.

Habitat and biology: Benthic on soft bottoms (10–700 m), rather sluggish but migratory, often forming large schools. Ovoviparous, one litter every two years with 1 to 20 embryos, gestation from 18 to 22 months.

Distribution: Mediterranean and Black Sea, southern Greenland, Iceland and the Murmansk coasts south to Madeira, Morocco and Canary Islands, western Atlantic and North Pacific.

Importance to fisheries: Caught by trawls, longlines and gillnets. In western Mediterranean areas the stock has collapsed.

Conservation and exploitation status: FAO, B4; IUCN, Near Threatened, to be urgently investigated, vulnerable in the North Atlantic and Mediterranean.



Squalus blainvillei (Risso, 1826)

(Plate I, 6)

SQUALIDAE

Frequent synonyms / misidentifications: *Squalus fernandinus* (non Molina, 1782) / None.

FAO names: **En** – Longnose spurdog; **Fr** – Aiguillat-coq; **Sp** – Galludo.

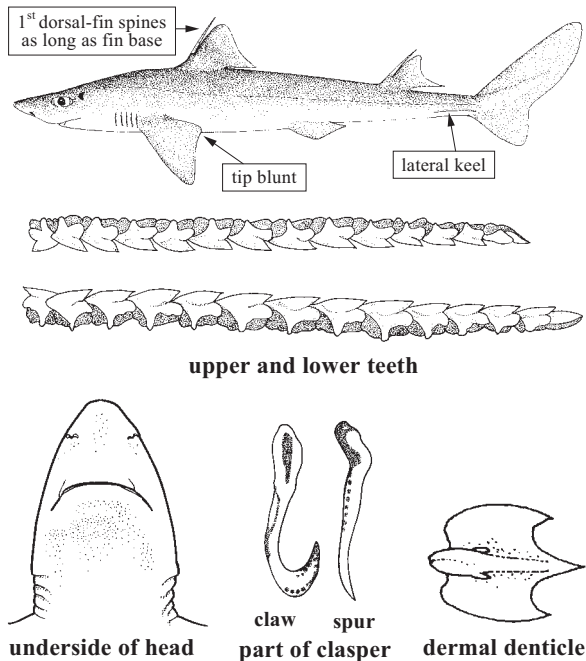
Size: From 50 to 80 cm; occasionally to 110 cm TL.

Habitat and biology: Benthic at intermediate depth (15–720 m). Demersal on the continental shelf, living in tropical and temperated waters. Ovoviparous, one litter every two years with 4 to 9 embryos.

Distribution: Mediterranean and Black Sea. Present in south Atlantic, Pacific and Indian oceans.

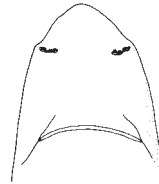
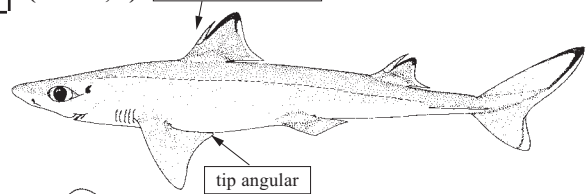
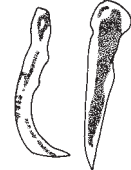
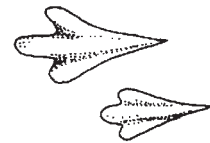
Importance to fisheries: Incidentally caught by bottom trawls and longlines.

Conservation and exploitation status: FAO, B1; Mediterranean, vulnerable species.

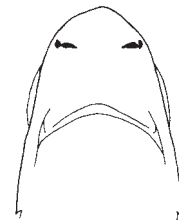
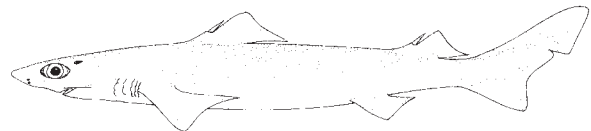
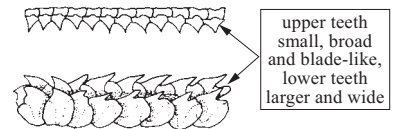
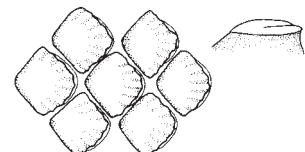


***Squalus cf. megalops* (Macleay, 1881)**

(Plate I, 7)

1st dorsal-fin spine
shorter than fin base**SQUALIDAE****Frequent synonyms / misidentifications:**
None / None.**FAO names:** **En** – Shortnose spurdog;
Fr – Aiguillat nez court; **Sp** – Galludo ñato.**Size:** To 70 cm TL.**Habitat and biology:** Common dogfish of temperate and tropical seas, forming dense and large schools, found on the continental shelf and upper slope at depths between 50 and 750 m. Ovoviviparous, males maturing at about 42 cm, females at 55 cm TL; gestation period of about two years. Usually 3 young per litter.**underside
of head****upper and
lower teeth****claw spur
part of clasper****Distribution:** Rare in the Mediterranean, absent in the Black Sea. Eastern Atlantic, Western Indian Ocean and Western Pacific.**Importance to fisheries:** Incidentally caught by bottom trawls.**Conservation and exploitation status:** FAO, B1; IUCN, Least Concern (Australia only); Mediterranean, rare species.**dermal denticles****Remarks:** Described for the Mediterranean Sea by Muñoz-Chapuli *et al.*, 1984, has been considered very difficult to identify and for this reason indicated as *S. cf. megalops*.**CENTROPHORIDAE*****Centrophorus granulosus* (Bloch and Schneider, 1801)**

(Plate I, 8)

Frequent synonyms / misidentifications:
None / None.**FAO names:** **En** – Gulper shark; **Fr** – Squale-chagrin commun; **Sp** – Quelvacho.**Size:** To 120 cm TL.**Habitat and biology:** Benthic over the upper slope (150–1 400 m) mostly at depths between 200 and 500 m. Ovoviviparous with 1 or 2 embryos.**Distribution:** Mediterranean, absent in the Black Sea, northwestern Atlantic, eastern Atlantic, Western Indian Ocean.**Importance to fisheries:** Bycatch in bottom trawl, longline and game fisheries.**Conservation and Exploitation Status:** FAO, B1; IUCN, Vulnerable (A1abd+2d); Mediterranean, vulnerable species.**underside
of head****upper and lower teeth****dermal denticles**

***Centrophorus uyato* (Rafinesque, 1810)**

(Plate I, 9)

CENTROPHORIDAE

Frequent synonyms / misidentifications: None / *Centrophorus granulosus* (Bloch and Schneider, 1801).

FAO names: **En** – Little gulper shark; **Fr** – Petit squalo-chagrin; **Sp** – Quelva.

Size: To 100 cm usually from 40 to 90 cm TL.

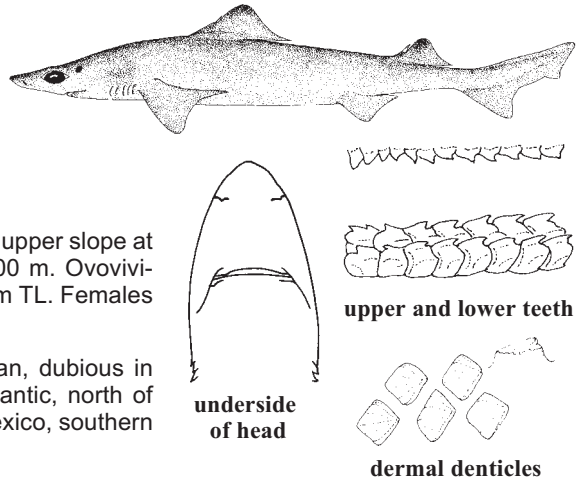
Habitat and biology: Benthic on outer shelf and upper slope at depths from 50 to 1 400 m, usually 500 to 1 000 m. Ovoviviparous usually with only one young, born at 40 cm TL. Females mature at 75 to 89 cm, males at 81 to 94 cm TL.

Distribution: Rare in the western Mediterranean, dubious in the east and absent in the Black Sea. East Atlantic, north of Gibraltar. Elsewhere, south of Angola; Gulf of Mexico, southern Mozambique and Taiwan Province of China.

Importance to fisheries: Occasionally caught as bycatch by deep bottom trawls and longlines.

Conservation and exploitation status: FAO, B1; IUCN, Data Deficient; Mediterranean, rare species.

Remarks: Probably the holotype has to be related to a still undetermined species of *Squalus* (Compagno, pers. comm.). Nevertheless it seems there is another valid species of *Centrophorus* in the Mediterranean Sea other than *C. granulosus*. This genus needs revision worldwide (Lloris and Rucabado, 1998).

**ETMOPTERIDAE*****Etmopterus spinax* (Linnaeus, 1758)**

(Plate II, 10)

Frequent synonyms / misidentifications: None / None.

FAO names: **En** – Velvet belly; **Fr** – Sagre commun; **Sp** – Negrito.

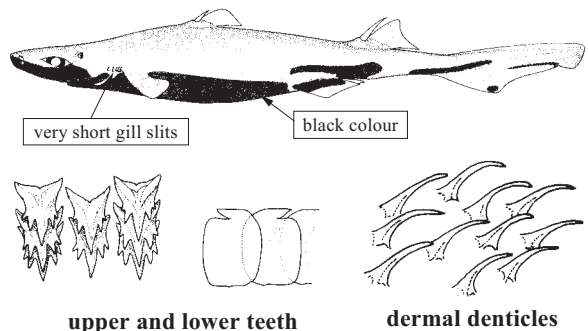
Size: To 60 cm TL.

Habitat and biology: Benthic on shelf and slopes (100–1 000 m) mostly below 300 m. Feeds on fishes, cephalopods and other invertebrates. Ovoviviparous, with 6 to 20 embryos, young born at 9 to 11 cm.

Distribution: Western Mediterranean, absent in the north Adriatic, and Black Sea. Rarely occurring in the North Sea. Northward to Iceland and Norway, south to Senegal and southern Africa.

Importance to fisheries: Bycatch in bottom trawl and longline fisheries (discarded).

Conservation and exploitation status: FAO, B1; Mediterranean, stable biomass.



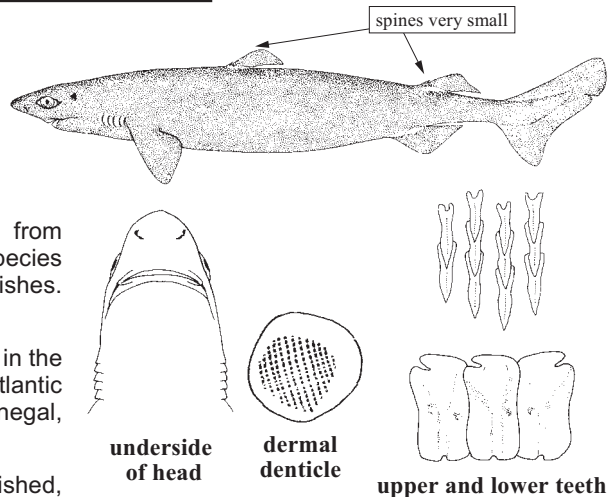
SOMNIOSIDAE

***Centroscymnus coelolepis* Bocage and Capello, 1864** (Plate II, 11)**Frequent synonyms / misidentifications:**

None / None.

FAO names: En – Portuguese dogfish;

Fr – Pailona commun; Sp – Pailona.

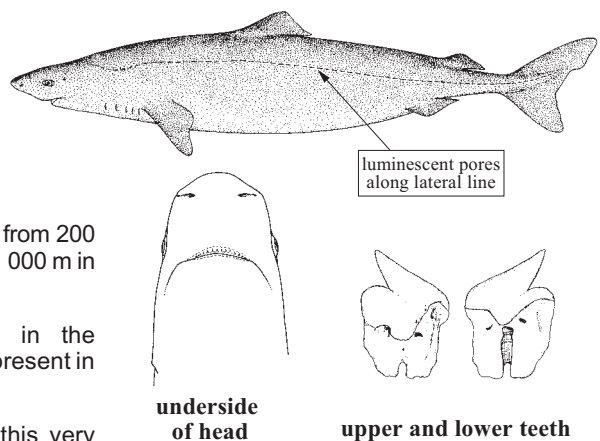
Size: To 120 cm TL.**Habitat and biology:** Deepwater benthic from depths of 400 to 2 700 m; this sluggish species prefers cold waters of 12–13°C. Feeds on fishes. Ovoviviparous with 13 to 16 embryos.**Distribution:** Western Mediterranean, absent in the east except in the Cretan Sea. Neighbouring Atlantic from Morocco to Iceland, south to Senegal, northwestern Atlantic.**Importance to fisheries:** Not commercially fished, accidentally caught as bycatch in bottom trawls.**Conservation and exploitation status:** FAO, B1; IUCN, Near threatened; Mediterranean, vulnerable species.**Remarks:** The occurrence of this species in the eastern Mediterranean was recorded using video cameras: between 1 500 and 2 500 m in the Cretan Sea and between 2 300 and 3 850 m in the Rhodos Basin (Priede and Bagley, 2000).***Somniosus (Rhinoscymnus) rostratus* (Risso, 1810)** (Plate II, 12)

SOMNIOSIDAE

Frequent synonyms / misidentifications:*Somniosus bauchotae* Quérou, 1976 / None.**FAO names:** En – Little sleeper shark;

Fr – Laimargue de la Méditerranée;

Sp – Tollo boreal.

Size: To 100 cm TL.**Habitat and biology:** Benthic on slope in depths from 200 to 1 000 m; prefers bathyal grounds deeper than 1 000 m in the western Mediterranean basin. Ovoviviparous.**Distribution:** Western Mediterranean, rare in the Levantine Basin, absent in the Black Sea. Also present in Madeira.**Importance to fisheries:** No information on this very rare shark.**Conservation and exploitation status:** FAO, B1; IUCN, to be urgently investigated; Mediterranean, occasional/rare species.

OXYNOTIDAE

Oxynotus centrina (Linnaeus, 1758)

(Plate II, 13)

Frequent synonyms / misidentifications:
None / None.

FAO names: **En** – Angular rough shark;
Fr – Centrine commune; **Sp** – Cerdo marino.

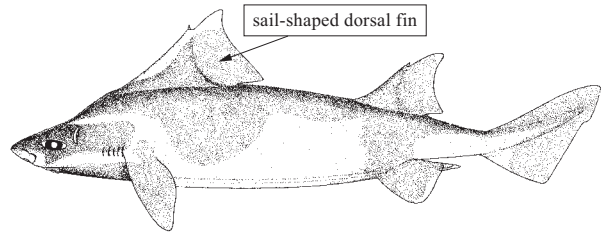
Size: To 150 cm, usually from 50 to 70 cm TL.

Habitat and biology: Benthic on continental shelf and upper slope from depths of 60 to 660 m. Ovoviviparous with probably 7 or 8 young. Maturing at about 50 to 70 cm.

Distribution: Whole Mediterranean, absent in the Black Sea. Neighbouring Atlantic. Southward to South Africa, rarely to northern waters.

Importance to fisheries: Bycatch in deep-sea trawling.

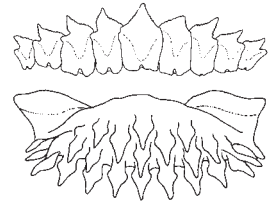
Conservation and exploitation status: FAO, B1; IUCN, to be urgently investigated; Mediterranean, threatened species.



sail-shaped dorsal fin



underside of head



upper and lower teeth

DALATHIIDAE

Dalatias licha (Bonnaterre, 1788)

(Plate II, 14)

Frequent synonyms / misidentifications:
Scymnorhinus licha (Bonnaterre, 1788) / None.

FAO names: **En** – Kitefin shark; **Fr** – Squale liche; **Sp** – Carrocho.

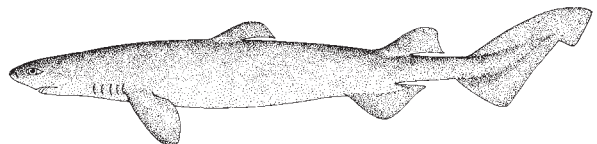
Size: From 150 to 180 cm TL.

Habitat and biology: Benthic to mesopelagic from 90 to 1 000 m. Mainly on slopes at depths of 300 to 600 m. Ovoviviparous, 3 to 16 juveniles born at 30 cm. Maturing at 77 to 121 cm for males and 117 to 159 cm for females.

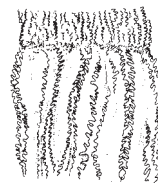
Distribution: Mediterranean, absent in the north Adriatic and Black Sea. In general in the Atlantic and Pacific temperate zones.

Importance to fisheries: Bycatch in bottom trawl fishery.

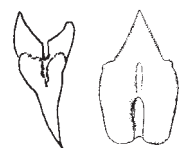
Conservation and exploitation status: FAO, B3; IUCN, Data Deficient; Near Threatened for the North Eastern Atlantic populations. To be urgently investigated; Mediterranean, vulnerable species.



underside of head



fringes lips



upper and lower teeth



dermal denticles

SQUATINIDAE

Squatina aculeata Dumeril, in Cuvier, 1817

Frequent synonyms / misidentifications:
None / None.

FAO names: **En** – Sawback angelshark;
Fr – Ange de mer épineux; **Sp** – Angelote espinudo.

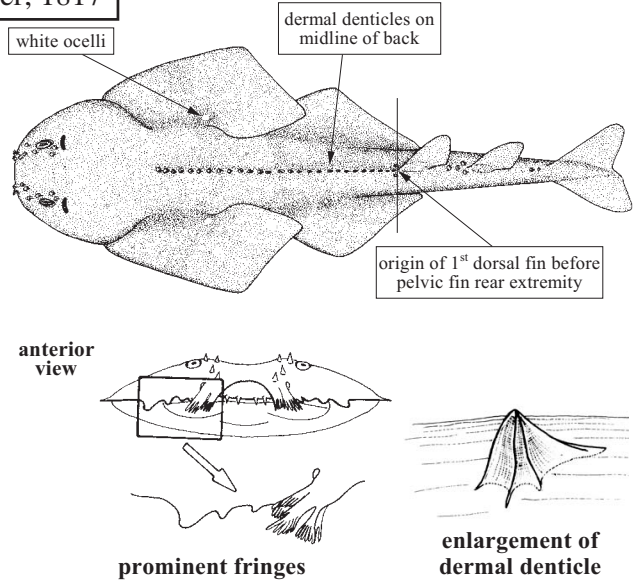
Size: From 150 to 180 cm TL..

Habitat and biology: Prefers temperate and tropical waters and muddy bottoms at depths from 50 to 500 m. Ovoviviparous, maturing at 124 cm.

Distribution: Mediterranean, rare in the eastern, absent in the Black Sea. Atlantic, Morocco to Angola.

Importance to fisheries: Caught with bottom trawls and probably by other artisanal fishing gears.

Conservation and exploitation status: FAO, B1; IUCN, to be urgently investigated; Mediterranean, threatened species.



Squatina oculata Bonaparte, 1840

Frequent synonyms / misidentifications:
None / None.

FAO names: **En** – Smoothback angelshark;
Fr – Ange de mer de Bonaparte; **Sp** – Pez angel.

Size: To 150 cm TL.

Habitat and biology: Bottom dweller on sand and mud from depths of 20 to 560 m, more common between 50 and 100 m. Ovoviviparous, males maturing at 140 cm.

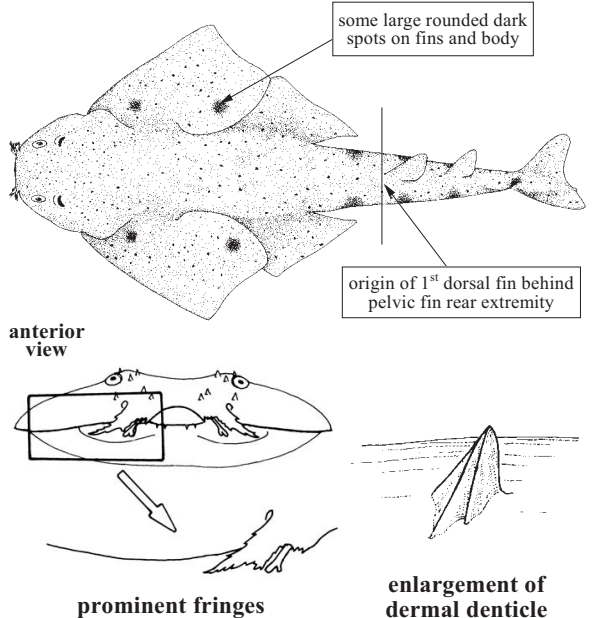
Distribution: Whole Mediterranean, absent in the Black Sea. Atlantic, Morocco to Angola.

Importance to fisheries: Caught by bottom trawls and probably other artisanal fishing gears.

Conservation and exploitation status: FAO, B1; IUCN, Endangered (A1abd+A2d); Mediterranean, threatened species.

(Plate II, 15 & 16)

SQUATINIDAE



Squatina squatina* (Linnaeus, 1758)*SQUATINIDAE**

Frequent synonyms / misidentifications:
Squatina vulgaris Risso, 1810; *S. angelus* Blainville, 1816 / None.

FAO names: **En** – Angelshark; **Fr** – Ange de mer commun; **Sp** – Angelote.

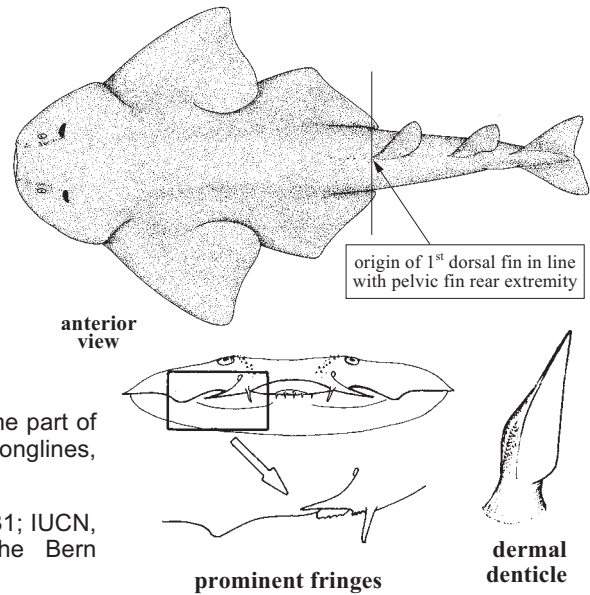
Size: To 250 cm TL.

Habitat and biology: A bottom dweller on sand or mud at moderate depth (5–100 m).

Distribution: Whole Mediterranean including Black Sea, Atlantic from southern North Sea to Mauritania.

Importance to fisheries: Target species in some part of the Mediterranean, usually caught by gillnet, and longlines, probably also caught by bottom trawls.

Conservation and exploitation status: FAO, B1; IUCN, Vulnerable (A1abcd+A2d) Appendix 3 of the Bern Convention; Mediterranean, vulnerable species.

**ODONTASPIDIDAE*****Carcharias taurus* Rafinesque, 1810**

(Plate III, 17 & 18)

Frequent synonyms / misidentifications:
Eugomphodus taurus (Rafinesque, 1810);
Odontaspis taurus (Rafinesque, 1810) / None.

FAO names: **En** – Sandtiger shark; **Fr** – Requin taureau; **Sp** – Toro bacota.

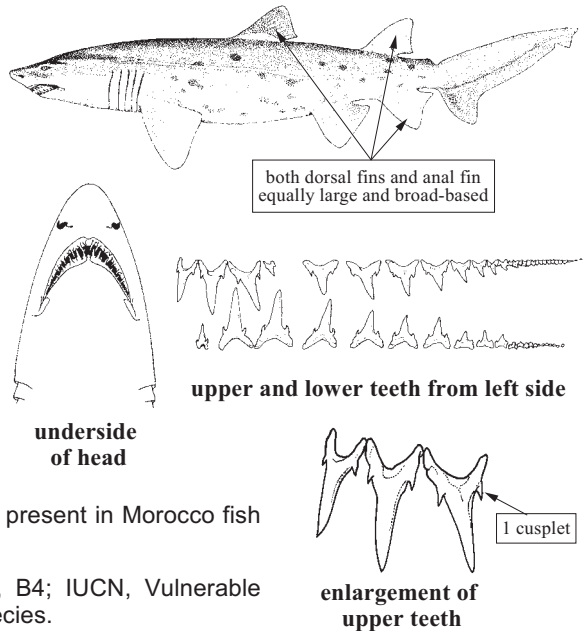
Size: To about 320 cm TL.

Habitat and biology: Mostly on or close to bottom; coastal species, entering bays. From the surface to 200 m, mainly less than 70 m; migratory. Ovoviviparous usually with two young; size at birth 95 to 105 cm; males mature at 220 to 257 cm, females at 220 to 300 cm.

Distribution: Whole Mediterranean, absent in the Black Sea. Widely distributed throughout the oceans.

Importance to fisheries: Bycatch, occasionally present in Morocco fish markets.

Conservation and exploitation status: FAO, B4; IUCN, Vulnerable (A1ab+A2d); Mediterranean, occasional/rare species.



***Odontaspis ferox* (Risso, 1810)**

(Plate III, 19)

ODONTASPIDIDAE

Frequent synonyms / misidentifications: *Odontaspis herbsti* Whitly, 1950; *Carcharias ferox* Risso, 1826 / None.

FAO names: **En** – Smalltooth sand tiger; **Fr** – Requin féroce; **Sp** – Solrayo.

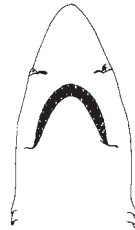
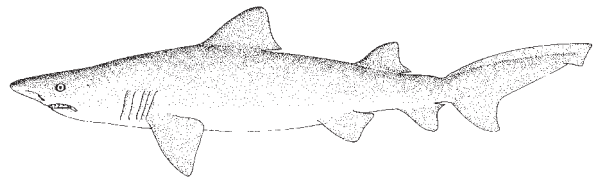
Size: To about 410 cm TL.

Habitat and biology: Epipelagic or benthic on continental and insular shelves and slopes from depths of 15 to 420 m. Probably ovoviparous; males mature at 275 cm, females at 350 cm; size at birth about 105 cm.

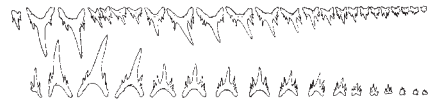
Distribution: Whole Mediterranean, absent in the Black Sea. Atlantic, Pacific and Indian Oceans temperate zones.

Importance to fisheries: Occasionally caught as bycatch with gillnets, lines and trawls.

Conservation and exploitation status: FAO, A; IUCN, Data Deficient (Vulnerable for Australia); Mediterranean, occasional/rare species.



underside of head



upper and lower teeth



2-3 cusplets

enlargement of tooth

ALOPHIIDAE***Alopias superciliosus* (Lowe, 1839)**

(Plate III, 20)

Frequent synonyms / misidentifications: *Alopias profundus* Nakamura, 1935 / None.

FAO names: **En** – Bigeye thresher; **Fr** – Renard à gros yeux; **Sp** – Zorro ojón.

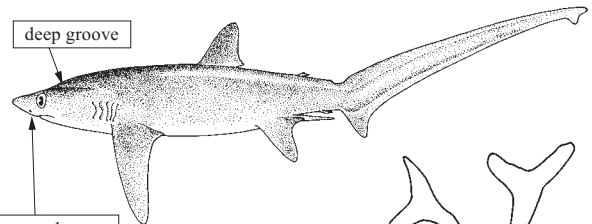
Size: From about 400 to 460 cm TL.

Habitat and biology: Epipelagic, oceanic and coastal in warm-temperate and tropical waters, in depth to 1 000 m. Ovoviparous with litter of 2 to 4 embryos; size at birth probably about 65 to 106 cm.

Distribution: Western Mediterranean. Neighbouring Atlantic, temperate and tropical areas of all oceans.

Importance to fisheries: Bycatch of tuna longlines fisheries.

Conservation and exploitation status: FAO, B3; IUCN, Data Deficient; Mediterranean, occasional/rare species.



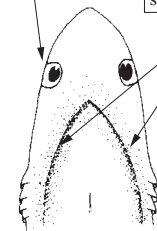
deep groove

eyes large, reaching the dorsal surface of head

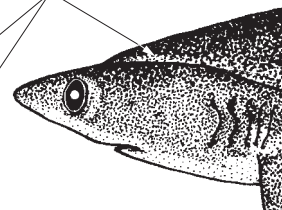
strong grooves



upper and lower teeth



underside of head



lateral view of head

***Alopias vulpinus* (Bonnaterre, 1788)**

(Plate III, 21)

ALOPIIDAE**Frequent synonyms / misidentifications:**

Squalus vulpinus Bonnaterre, 1788;
S. vulpes Gmelin, 1789 / None.

FAO names: En – Thresher shark;
 Fr – Renard de mer; Sp – Zorro.

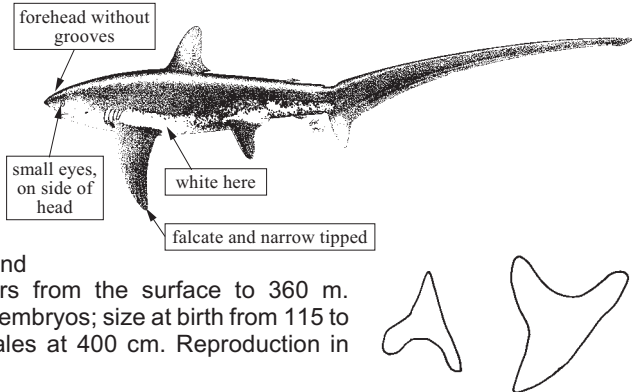
Size: From about 420 to 560 cm, possibly
 610 cm TL for females.

Habitat and biology: Epipelagic, oceanic and
 coastal in cold-temperate to tropical waters from the surface to 360 m.
 Migratory. Ovoviviparous with litters of 2 to 7 embryos; size at birth from 115 to
 150 cm TL. Males mature at 350 cm, females at 400 cm. Reproduction in
 summer.

Distribution: Whole Mediterranean, absent in the Black Sea. Atlantic, Pacific
 and Indian Oceans temperate zones.

Importance to fisheries: Bycatch of tuna fisheries caught by game fishery.

Conservation and Exploitation Status: FAO, B4; IUCN, Data Deficient; Near threatened for Californian
 population; Mediterranean, vulnerable species.

**upper and lower teeth****CETORHINIDAE*****Cetorhinus maximus* (Gunnerus, 1765)**

(Plate III, 22 & 23)

Frequent synonyms / misidentifications:

Squalus maximus Gunnerus, 1765 / None.

FAO names: En – Basking shark; Fr – Pélerin;
 Sp – Peregrino.

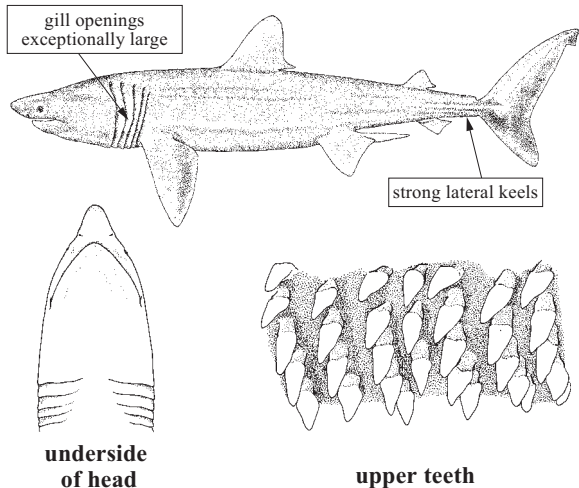
Size: Males up to 900 cm, females to about
 980 cm TL.

Habitat and biology: Epipelagic, oceanic,
 towards the coast mainly in spring and summer.
 Migratory, probably linked to feeding and
 reproduction. Feeds on minute crustaceans.
 Viviparous; apparently about 160 cm at birth;
 gestation period assumed long (3.5 years).

Distribution: Whole Mediterranean, rare in the
 eastern basin absent in the Black Sea. Elsewhere
 in boreal, temperate and warm temperate seas.

Importance to fisheries: Bycatch of artisanal fisheries or occasionally in pelagic trawls.

Conservation and exploitation status: FAO, B3; IUCN, Vulnerable (A1ad+A2d); Endangered (A1ad)
 for NE Atlantic and N Pacific; Mediterranean, Vulnerable species. Appendix 2 of Berne Convention;
 Appendix 2 of Barcelona Convention. Also listed in CITES Appendix II.

**underside
of head****upper teeth**

LAMNIDAE

***Carcharodon carcharias* (Linnaeus, 1758)**

(Plate IV, 24)

Frequent synonyms / misidentifications: None / None.

FAO names: **En** – Great white shark; **Fr** – Grand requin blanc; **Sp** – Jaqueton blanco.

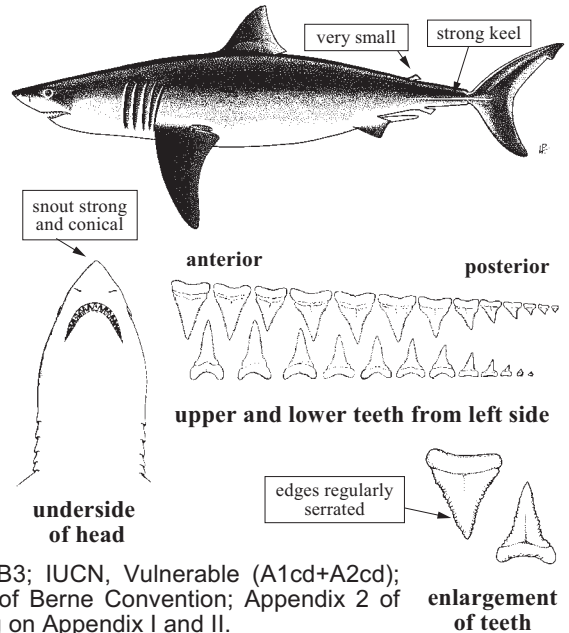
Size: To 650 cm, generally from 300 to 600 cm TL.

Habitat and biology: Epipelagic, coastal and offshore, from surfaces to 1 300 m. Viviparous, mature at about 400 cm with 9 or 10 embryos from 60 to 140 cm at birth.

Distribution: Whole Mediterranean, absent in the Black Sea. Almost anywhere else in temperate oceans, rarely found in tropical waters.

Importance to fisheries: Bycatch in tuna traps. Bottom set trammel nets positioned may catch large sized individuals. Nowadays limited to mainly “recreational” fisheries for the jaws, teeth and fins.

Conservation and exploitation status: FAO, B3; IUCN, Vulnerable (A1cd+A2cd); Mediterranean, Vulnerable species. Appendix 2 of Berne Convention; Appendix 2 of Barcelona Convention. Proposed for CITES listing on Appendix I and II.

***Isurus oxyrinchus* Rafinesque, 1810**

(Plate IV, 25)

LAMNIDAE

Frequent synonyms / misidentifications: None / None.

FAO names: **En** – Shortfin mako; **Fr** – Requin-taupe bleu; **Sp** – Marrajo dentuso.

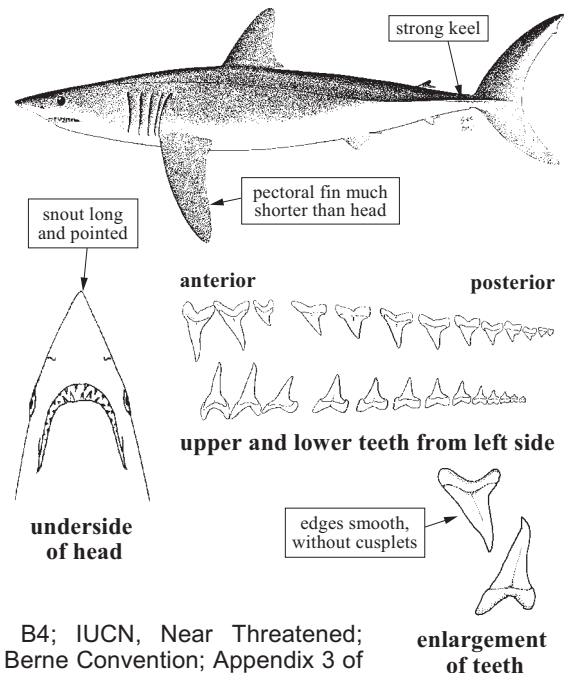
Size: To 400 cm, generally from 300 to 370 cm TL.

Habitat and biology: Pelagic, coastal and oceanic, occurring at or near the surface or deeper, down to 400 m. Ovoviviparous with 1 to 6 (rarely 10) young; size at birth from 60 to 70 cm. Males mature at 180 to 284 cm, females at 280 to 394 cm.

Distribution: Whole Mediterranean, absent in the Black Sea; cosmopolitan in temperate and tropical waters of Atlantic, Pacific and Indian Ocean.

Importance to fisheries: Caught mainly in tuna longline fisheries and occasionally by the swordfish fishery using longlines and driftnets.

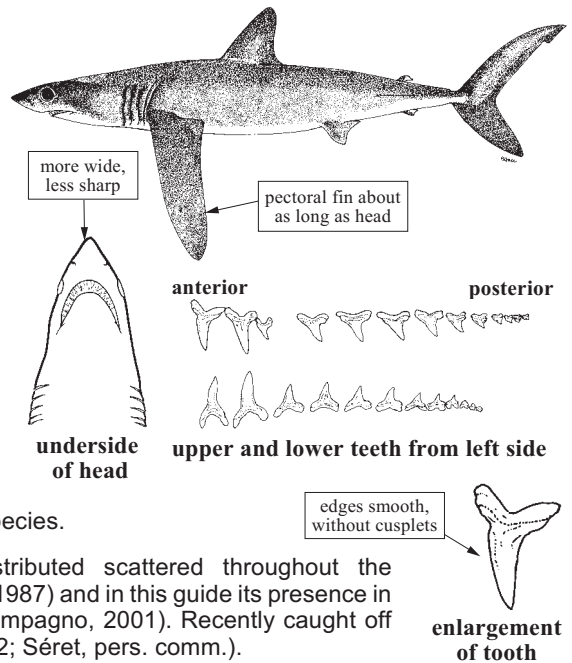
Conservation and exploitation status: FAO, B4; IUCN, Near Threatened; Mediterranean, Vulnerable species. Appendix 3 of Berne Convention; Appendix 3 of Barcelona Convention. Proposed for CITES listing on Appendix I and II.



***Isurus paucus* Guitart Manday, 1966**

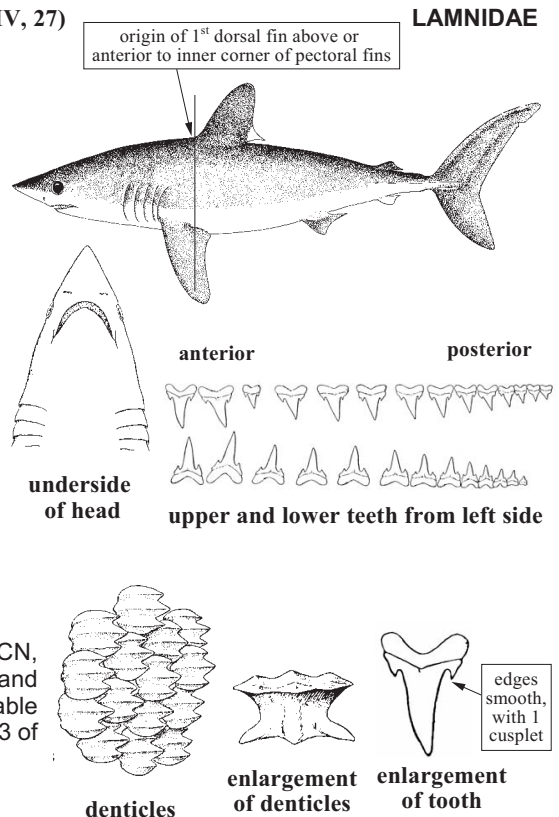
(Plate IV, 26)

LAMNIDAE

Frequent synonyms / misidentifications:*Isurus alatus* Garrick, 1967 / None.**FAO names:** En – Longfin mako; Fr – Petit requin-taube; Sp – Marrajo carite.**Size:** To about 290 cm TL.**Habitat and biology:** Pelagic. Ovoviviparous, number of young usually 2 with size at birth 92 cm. Males mature at 245 cm, females at 245 to 280 cm.**Distribution:** Rare in the Mediterranean. Elsewhere in warm waters of Atlantic, Pacific and Indian oceans.**Importance to fisheries:** Bycatch tuna and swordfish fisheries.**Conservation and exploitation status:** FAO, B3; IUCN, Data Deficient; Mediterranean, Rare species.**Remarks:** It is a circumtropical species, distributed scattered throughout the Mediterranean Sea. It is not included in Bauchot, (1987) and in this guide its presence in the Mediterranean is considered as probable (Compagno, 2001). Recently caught off Algeria (Hemida, 2000; Hemida and Capapé, 2002; Séret, pers. comm.).***Lamna nasus* (Bonnaterre, 1788)**

(Plate IV, 27)

LAMNIDAE

Frequent synonyms / misidentifications: None / None.**FAO names:** En – Porbeagle; Fr – Requin-taube commun; Sp – Marrajo sardinero.**Size:** To over 300 cm, generally from 100 to 260 cm TL.**Habitat and biology:** Epipelagic, coastal and oceanic, occurring in deep midwaters at depths of 200 to 700 m (usually 370 m) occasionally also on or close to the surface. Ovoviviparous with few young (1–5); size at birth from 50 to 75 cm. Females mature at 150 to 220 cm, males 220 to 260 cm.**Distribution:** Whole Mediterranean, absent in the Black Sea. Temperate waters of Northern and Southern Hemisphere.**Importance to fisheries:** Heavily fished as bycatch of pelagic fisheries, drifting lines and longlines targeting tuna and swordfish especially in the past in northeastern Atlantic and the Mediterranean.**Conservation and exploitation status:** FAO, B4; IUCN, Near Threatened; vulnerable (A1bd) for NE Atlantic and Low Risk/cd for NW Atlantic; Mediterranean, Vulnerable species. Appendix 3 of Berne Convention; Appendix 3 of Barcelona Convention.

SCYLIORHINIDAE

***Galeus atlanticus* (Vaillant, 1888)**

(Plate IV, 28)

SCYLIORHINIDAE

Frequent synonyms / misidentifications: *Pristiurus atlanticus* Vaillant, 1888 / *Galeus melastomus* (Rafinesque, 1810).

FAO names: **En** – Atlantic catshark; **Fr** – Chien atlantique; **Sp** – Pintarroja atlántica.

Size: From about 34 to 44 cm TL.

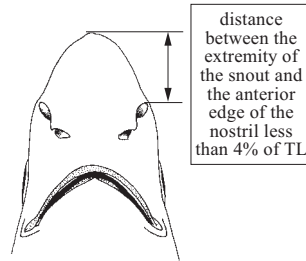
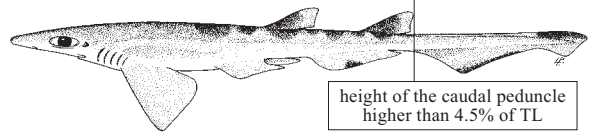
Habitat and biology: Bathydemersal from 400 m to 600 m. Males matures at 38 cm, females at 40 cm.

Distribution: Mediterranean, only in the Alboran Sea. Eastern-central Atlantic, northwest coast of Morocco.

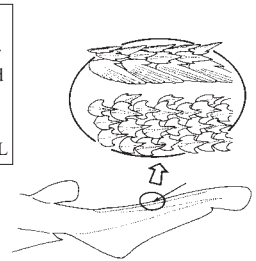
Importance to fisheries: Caught as bycatch by bottom trawls and artisanal fisheries.

Conservation and exploitation status: Mediterranean, rare species.

Remarks: *Galeus atlanticus* has been well described by Muñoz-Chapuli and Perez-Ortega (1985) for a very restricted area (Alboran Sea). Previously considered as synonymous of *G. melastomus* it is a valid species but needs more study.



underside of head



caudal upper edge with small denticles



dermal denticle



lower teeth

***Galeus melastomus* Rafinesque, 1810**

(Plate IV, 29)

SCYLIORHINIDAE

Frequent synonyms / misidentifications: *Scyllium melanostomus* Bonaparte, 1834 / *Galeus atlanticus* (Vaillant, 1888).

FAO names: **En** – Blackmouth catshark; **Fr** – Chien espagnol; **Sp** – Pintarroja bocanegra.

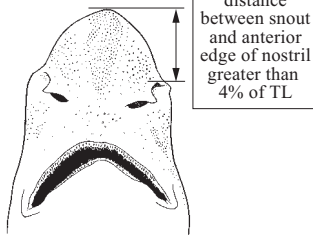
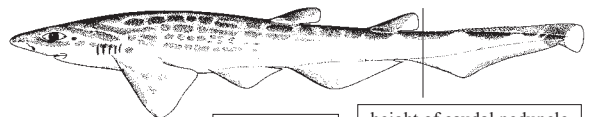
Size: Up to 52 cm, usually from 20 to 40 cm TL.

Habitat and biology: Benthic, from upper continental slope at depths of 200 to 1 200 m, mainly at 300 to 400 m. Feeds on bottom-living invertebrates and fishes, also scavenger. Oviparous, spawning all year round with a peak in spring and summer. Males mature at 34 to 42 cm, females 38 to 45 cm.

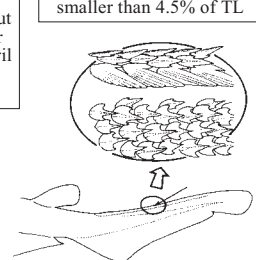
Distribution: Whole Mediterranean, absent in the north Adriatic and Black Sea. Atlantic from the Faeroes to Senegal.

Importance to fisheries: Bycatch of deepsea trawl fisheries.

Conservation and exploitation status: FAO, B1; Mediterranean, very common, its population seems not to be depleted at the moment (stable biomass).



underside of head



caudal upper edge with greater denticles



dermal denticle



lower teeth

***Scyliorhinus canicula* (Linnaeus, 1758)**

(Plate IV, 30)

SCYLIORHINIDAE

Frequent synonyms / misidentifications: *Scyllium canicula* Cuvier, 1817 / *Scyliorhinus stellaris* (Linnaeus, 1758).

FAO names: En – Smallspotted catshark; Fr – Petite roussette; Sp – Pintarroja.

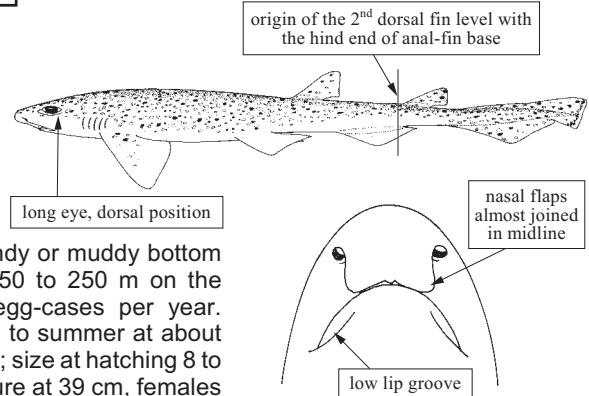
Size: To about 90 cm, generally 20 to 50 cm TL.

Habitat and biology: Benthic over gravelly, sandy or muddy bottom from shallow water up to 550 m, mainly from 50 to 250 m on the continental shelf. Oviparous with 90 to 115 egg-cases per year. Egg-laying (two egg-cases at time) from autumn to summer at about 200 m of depth (depth considered a nursery area); size at hatching 8 to 10 cm TL, 9 to 11 months incubation. Males mature at 39 cm, females at 34 to 45 cm.

Distribution: Whole Mediterranean including the Black Sea. Neighboring Atlantic from Shetlands and Norway to Senegal.

Importance to fisheries: Bottom trawl fishery bycatch, represent an important part of shark landings in Europe.

Conservation and exploitation status: FAO, B1 (though exploited in the Mediterranean); Mediterranean, this species is very common and its population does not seem depleted at the moment.



underside of head

***Scyliorhinus stellaris* (Linnaeus, 1758)**

(Plate IV, 31)

SCYLIORHINIDAE

Frequent synonyms / misidentifications: *Scyllium acanthonotus* Filippi and Verany, 1853 / *Scyliorhinus canicula* (Linnaeus, 1758).

FAO names: En – Nursehound; Fr – Grande roussette; Sp – Alitán.

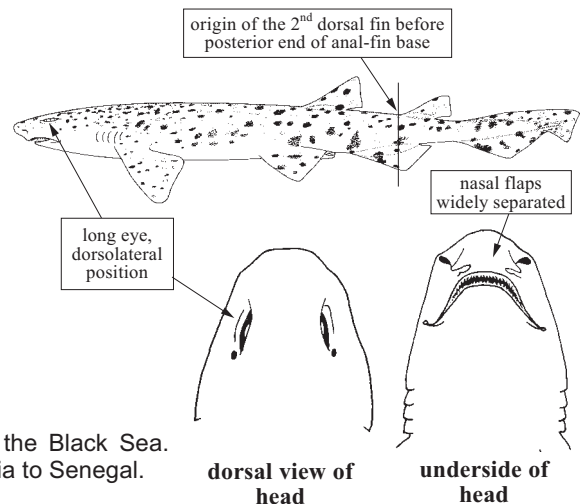
Size: To 162 cm, usually 110 cm TL.

Habitat and biology: Benthic over rough, rocky or coralline grounds from 20 m to about 100 m. Oviparous egg-laying (two egg-cases at time) all year round, mainly from spring to summer. Size at hatching 16 cm TL about 9 months incubation. Males mature at 77 cm, females at 79 cm.

Distribution: Whole Mediterranean, absent in the Black Sea. Atlantic from Shetlands and southern Scandinavia to Senegal.

Importance to fisheries: Bycatch in bottom trawl and artisanal fisheries.

Conservation and exploitation status: FAO, B1; Mediterranean, occasional rare and vulnerable species.



dorsal view of head

underside of head

TRIAKIDAE

Galeorhinus galeus (Linnaeus, 1758)

Frequent synonyms / misidentifications: *Squalus galeus* Linnaeus, 1758 / None.

FAO names: **En** – Tope shark; **Fr** – Requin Hâ; **Sp** – Cazón.

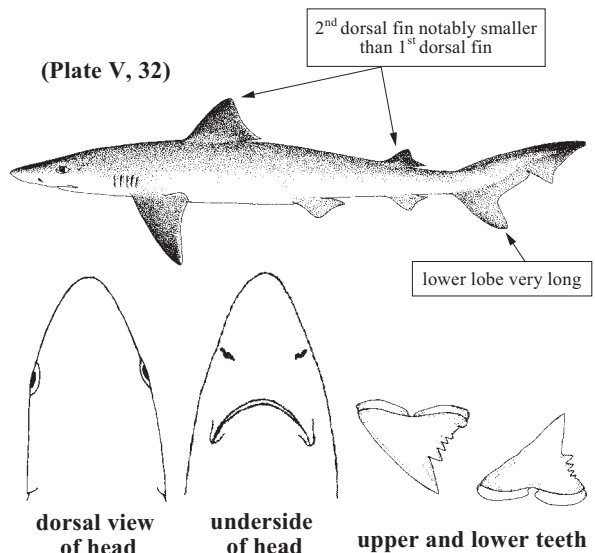
Size: To over 200 cm, common from 80 to 120 cm TL.

Habitat and biology: Coastal to epipelagic, demersal within continental temperate waters from depths of 20 to 470 m. Ovoviviparous, number of young up to 52, common 25 to 35; size at birth 25 to 40 cm TL; gestation period about 10 months. Males mature at 120 to 170 cm, females at 130 to 185 cm TL.

Distribution: Whole Mediterranean but rare, absent in the Black Sea. All oceans temperate waters.

Importance to fisheries: Traditionally caught by gillnets in the northern Adriatic Sea and as bycatch of trammel nets in the same area.

Conservation and exploitation status: FAO, B4; IUCN, Vulnerable (A1bd; A2d); Conservation dependent (Australasia); Mediterranean, vulnerable.



Mustelus asterias Cloquet, 1821

Frequent synonyms / misidentifications: None / None.

FAO names: **En** – Starry smoothhound; **Fr** – Émissole tachetée; **Sp** – Musola estrellada.

Size: To 140 cm, common from 50 to 100 cm TL.

Habitat and biology: Coastal, benthic on the continental shelf to 300 m, usually at 100 m. Ovoviviparous, gestation period about 12 months, 7 to 15 young of about 30 cm TL at birth. Males mature at 75 to 85 cm, females at 85 to 96 cm.

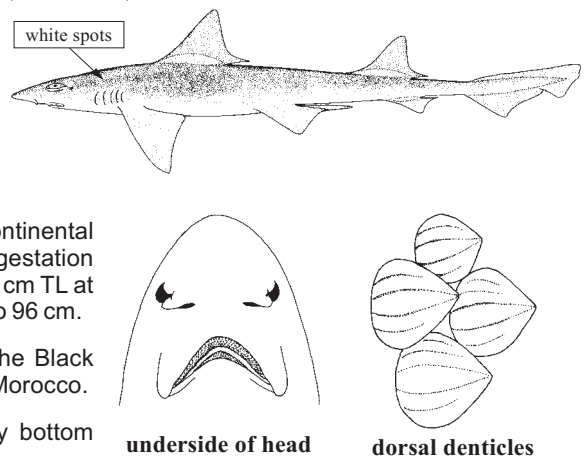
Distribution: Whole Mediterranean, absent in the Black Sea. Atlantic: Shetland, North Sea, Madeira and Morocco.

Importance to fisheries: Frequently caught by bottom trawl fisheries in the Alboran Sea shelf.

Conservation and exploitation status: FAO, B1; IUCN, Least Concern; however in the Mediterranean, vulnerable species, probably disappeared in some areas.

(Plate V, 33)

TRIAKIDAE



***Mustelus mustelus* (Linnaeus, 1758)**

Frequent synonyms / misidentifications: *Mustelus canis* (Mitchell, 1815); *Squalus canis* Mitchell, 1815 / None.

FAO names: **En** – Smoothhound; **Fr** – Émissole lisse; **Sp** – Musola.

Size: To 160 cm, common between 60 and 120 cm TL.

Habitat and biology: Coastal demersal species on the continental shelf and upper slope to 450 m, more frequently from 5 to 50 m. Viviparous, 4 to 15 young, born at cm 35 cm TL. Males mature at 70 to 96 cm, females at 80 cm.

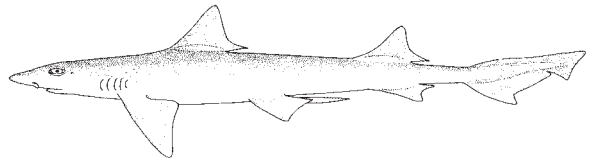
Distribution: Whole Mediterranean, absent in the Black Sea. Eastern Atlantic from British Isles to South Africa.

Importance to fisheries: Traditionally caught by gillnets in the northern Adriatic Sea and as bycatch in bottom trawl fisheries.

Conservation and exploitation status: FAO, B1; Mediterranean, vulnerable species.

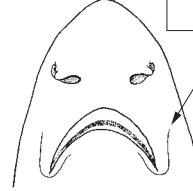
(Plate IV, 34)

TRIAKIDAE

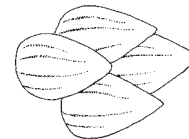


snout fairly pointed

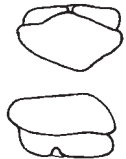
upper lateral lip furrows equal to or slightly larger than lower



underside of head



dorsal denticle



upper and lower teeth

***Mustelus punctulatus* Risso, 1826**

Frequent synonyms / misidentifications: *Mustelus mediterraneo* Quignard and Capapé, 1972 / None.

FAO names: **En** – Blackspotted smoothhound; **Fr** – Émissole pointillée; **Sp** – Musola pimienta.

Size: To 190 cm, common from 70 to 120 cm TL.

Habitat and biology: Coastal benthic on the continental shelf to 200 m. Viviparous, size at birth 38 to 43 cm. Males mature at 50 to 90 cm, females at 60 to 70 cm.

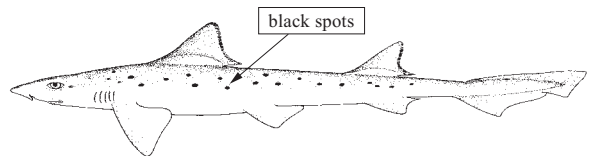
Distribution: Whole Mediterranean, absent in the Black Sea. Eastern Atlantic from British Isles to South Africa.

Importance to fisheries: Bottom trawl fisheries bycatch.

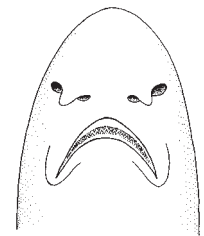
Conservation and exploitation status: FAO, B1; Mediterranean, vulnerable species.

(Plate IV, 35)

TRIAKIDAE



black spots



underside of head

CARCHARHINIDAE

***Carcharhinus altimus* (Springer, 1950)**

(Plate IV, 36)

Frequent synonyms / misidentifications:

Carcharhinus radamae Fourmanoir, 1961 / *Carcharhinus obscurus* (Lesueur, 1818); *C. plumbeus* (Nardo, 1827).

FAO names: En – Bignose shark; Fr – Requin babosse; Sp – Tiburón baboso.

Size: To 300 cm TL.

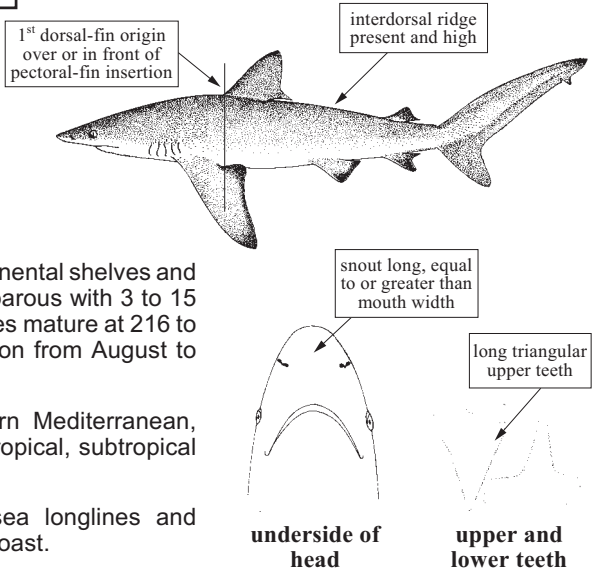
Habitat and biology: Benthic, found off the continental shelves and upper slope, at depths from 100 to 450 m. Viviparous with 3 to 15 young per litter; size at birth 70 to 90 cm TL. Males mature at 216 to 267 cm, females at 226 to 282 cm. Reproduction from August to September.

Distribution: Rare in the western and eastern Mediterranean, absent in the Black Sea. Widely distributed in tropical, subtropical and warm temperate waters in all oceans.

Importance to fisheries: Bycatch of deep-sea longlines and pelagic longline fishery in the eastern Algerian coast.

Conservation and exploitation status: FAO, B1; IUCN, Least Concern (Australia only); Mediterranean, occasional/rare species.

Remarks: This is a presumably circumtropical species and spottily distributed in the Mediterranean Sea. Not included in Clofnam area but described in Golani *et al.* (2002) and considered in this guide as a valid species. Immigrant species through the Straits of Gibraltar.

***Carcharhinus brachyurus* (Günther, 1870)**

(Plate V, 37)

CARCHARHINIDAE

Frequent synonyms / misidentifications:

Carcharhinus acronotus (Poey, 1860) / *Carcharhinus acarenatus* Morenos and Hoyos, 1983.

FAO names: En – Copper shark; Fr – Requin cuivre; Sp – Tiburón cobrizo.

Size: To about 300 cm TL.

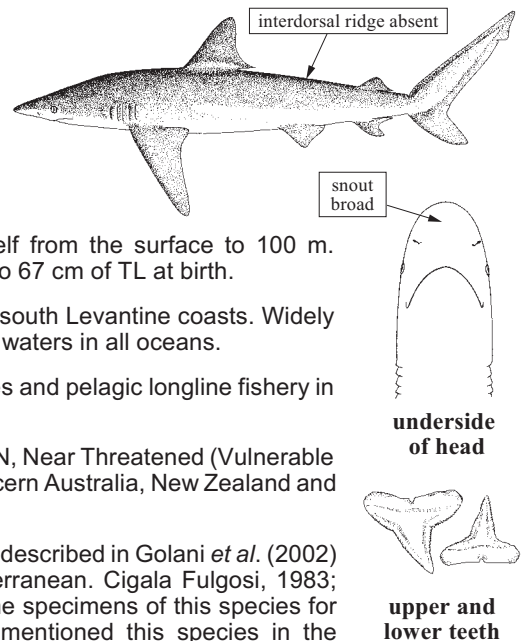
Habitat and biology: Pelagic on the continental shelf from the surface to 100 m. Specimens mature at 200 cm, 13 to 20 young with 59 to 67 cm of TL at birth.

Distribution: Western Mediterranean, probable in the south Levantine coasts. Widely distributed in tropical, subtropical and warm temperate waters in all oceans.

Importance to fisheries: Bycatch of deep-sea longlines and pelagic longline fishery in the eastern Algerian coast.

Conservation and exploitation status: FAO, B3; IUCN, Near Threatened (Vulnerable eastern Asia, Data Deficient eastern Pacific, Least Concern Australia, New Zealand and South Africa); Mediterranean, occasional/rare species.

Remarks: This is presumably a circumtropical species, described in Golani *et al.* (2002) and considered in this guide as present in the Mediterranean. Cigala Fulgosi, 1983; Vacchi *et al.*, 1996 and Orsi Relini, 1998 describe some specimens of this species for the Mediterranean Sea. Moreno and Hoyos (1983) mentioned this species in the Alboran Sea as *C. acarenatus*, successively considered synonym of *C. brachyurus*.



Carcharhinus brevipinna* (Müller and Henle, 1839)*(Plate V, 38) CARCHARHINIDAE****Frequent synonyms / misidentifications:**

Carcharhinus jonsoni Smith, 1951;
C. maculipinnis (Poey, 1865) / *Carcharhinus*
limbatus (Valenciennes, 1839); *C. melanopterus*
 (Quoy and Gaimard, 1824).

FAO names: **En** – Spinner shark; **Fr** – Requin tisserand; **Sp** – Tiburón aleta negra.

Size: To 278 cm, common to 220 cm TL.

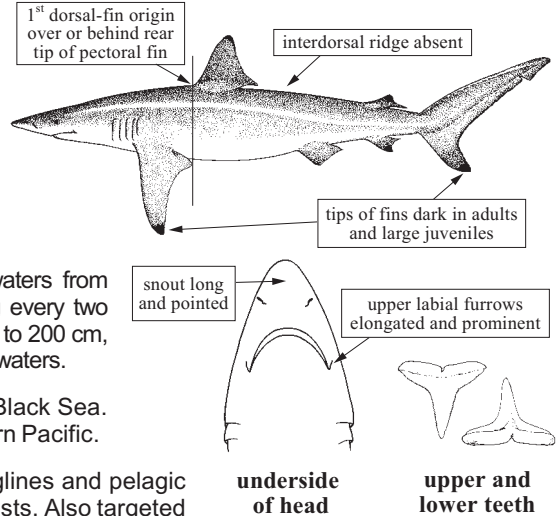
Habitat and biology: Pelagic in coastal and open waters from surface to 100 m. Viviparous, 1 litter of 6 to 20 young every two years; size at birth 60 to 75 cm TL. Males mature at 160 to 200 cm, females at 130 to 200 cm. Parturition occurs in coastal waters.

Distribution: Whole Mediterranean, absent in the Black Sea. All temperate and tropical waters except in the eastern Pacific.

Importance to fisheries: Bycatch of deep sea longlines and pelagic longline fishery in eastern Algerian and Tunisian coasts. Also targeted by game fishery.

Conservation and exploitation status: FAO, B1; IUCN, Near Threatened (Vulnerable (A1bd+A2d) in Northwest Atlantic); Mediterranean, occasional/rare species.

Remarks: Before the 1980s Ben-Tuvia (1978) erroneously recorded Spinner shark as a Red Sea migrant but it is an indigenous species in the Mediterranean. Por (1978) rejects some cases of Lessepsian migrant species. Also Golani (1996) in the list of Lessepsian fish migrants and their distribution in the eastern Mediterranean does not report *C. brevipinna*.

***Carcharhinus falciformis* (Bibron, in Müller and Henle, 1839)****CARCHARHINIDAE**
(Plate V, 39)

Frequent synonyms / misidentifications: None / *Carcharhinus obscurus* (Lesueur, 1818).

FAO names: **En** – Silky shark; **Fr** – Requin soyeux; **Sp** – Tiburón jaquetón.

Size: To 330 cm TL.

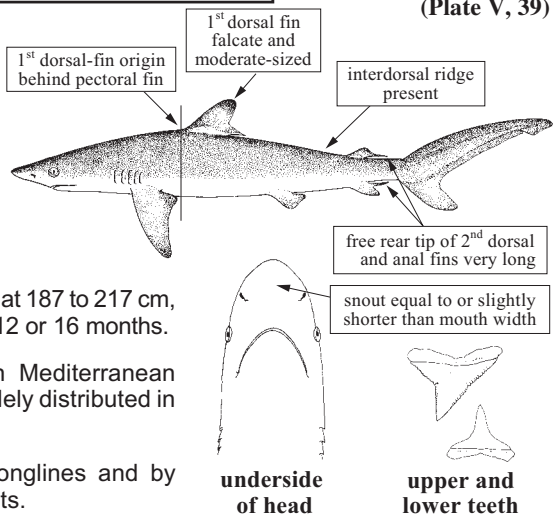
Habitat and biology: Coastal and oceanic, common near shelves and slopes from the surface to 500 m. Viviparous with 2 to 14 young apparently born in pelagic waters; size at birth 70 to 87 cm. Males mature at 187 to 217 cm, females at 213 to 230 cm; gestation period, possibly 12 or 16 months.

Distribution: Occurs occasionally in the western Mediterranean along the coasts of Spain, Italy and North Africa. Widely distributed in tropical and subtropical coastal in all oceans.

Importance to fisheries: Bycatch of deep sea longlines and by pelagic longline fishery in the eastern Algerian coasts.

Conservation and exploitation status: FAO, B3; IUCN, Least Concern (Data Deficient in the Northern Indian Ocean, Tropical Pacific and Western North Atlantic); Mediterranean, occasional/rare species.

Remarks: Atlantic immigrant species.



Carcharhinus limbatus (Valenciennes, in Müller and Henle, 1839)**CARCHARHINIDAE**
(Plate VI, 40)

Frequent synonyms / misidentifications: None / *Carcharhinus brevipinna* (Müller and Henle, 1839), *C. melanopterus* (Quoy and Gaimard, 1824).

FAO names: **En** – Blacktip shark; **Fr** – Requin bordé; **Sp** – Tiburón macuira.

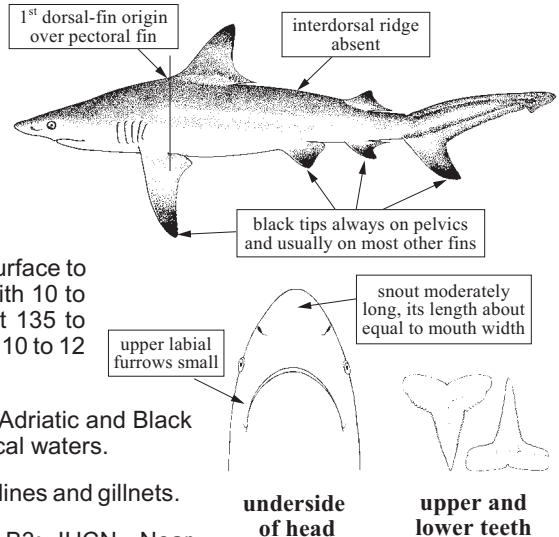
Size: To 255 cm, common to 150 cm TL.

Habitat and biology: Pelagic, coastal and offshore but not a truly oceanic species. From the surface to 100 m depth. Viviparous, 1 litter every two years with 10 to 14 pups born at 38 to 72 cm TL. Males mature at 135 to 180 cm, females at 120 to 190 cm. Gestation period 10 to 12 months; nursery area usually in coastal lagoons.

Distribution: Whole Mediterranean, absent in the Adriatic and Black Sea. Cosmopolitan species in temperate and tropical waters.

Importance to fisheries: Caught with surface longlines and gillnets.

Conservation and exploitation status: FAO, B3; IUCN, Near Threatened (Vulnerable A1bd+2d in NW Atlantic); Mediterranean, occasional/rare species.

***Carcharhinus melanopterus*** (Quoy and Gaimard, 1824)**(Plate VI, 41) CARCHARHINIDAE**

Frequent synonyms / misidentifications: *Squalus* (*Carcharhinus*) *commersoni* Blainville, 1816 / *Carcharhinus brevipinna* (Müller and Henle, 1839); *C. limbatus* (Valenciennes, 1839).

FAO names: **En** – Blacktip reef shark; **Fr** – Requin pointes noires; **Sp** – Tiburón de puntas negras.

Size: To about 200 cm, common to 160 cm TL.

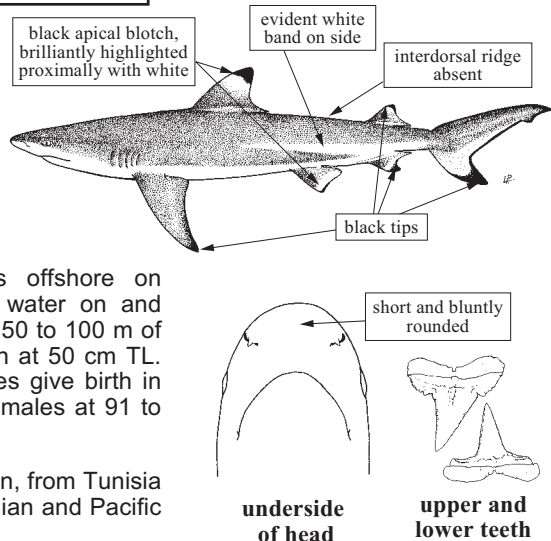
Habitat and biology: Inshore and sometimes offshore on continental and insular shelves; prefers shallow water on and around coral reefs, territorial and aggressive; from 50 to 100 m of depth. Viviparous, litter of about 4 to 14 pups born at 50 cm TL. Gestation period may be 12 to 16 months; females give birth in coastal waters, they are mature at 96 to 112 cm, males at 91 to 100 cm.

Distribution: Probably in the eastern Mediterranean, from Tunisia to Israel. In temperate and tropical areas of the Indian and Pacific Ocean also in the Red Sea.

Importance to fisheries: Caught with longlines and gillnets in coastal fisheries.

Conservation and exploitation status: FAO, B1; IUCN, Near Threatened; Mediterranean, doubtful species.

Remarks: Even if Compagno (1984) states the presence of *C. melanopterus* in the eastern Mediterranean, the presence of this species in the basin can be considered anecdotal. In fact, although this species was reported by Tortonese (1951b) in the Mediterranean, based on observations from the coast of Egypt, no specimen has been preserved (Golani *et al.*, 2002).



***Carcharhinus obscurus* (Lesueur, 1818)**

Frequent synonyms / misidentifications: *Squalus obscurus* Lesueur, 1818 / *Carcharhinus altimus* (Springer, 1950), *C. falciformis*, (Bibron, 1839) and *C. plumbeus*, (Nardo, 1827).

FAO names: **En** – Dusky shark; **Fr** – Requin sombre; **Sp** – Tiburón arenero.

Size: To 400 cm TL.

Habitat and biology: Epipelagic in coastal and open oceanic waters, demersal in coastal waters down to 400 m. Viviparous with 6 to 14 embryos, born at 69 to 100 cm TL. Gestation period may be 16 months, with two separated breeding populations of females; mature at 257 to 300 cm TL, males at 280 cm.

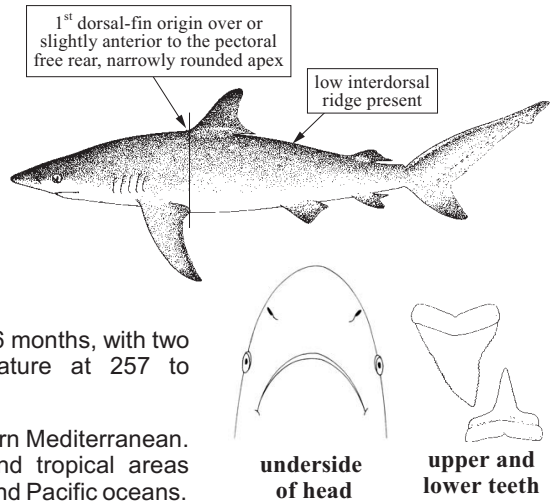
Distribution: Rarely found in the western and eastern Mediterranean. Cosmopolitan species distributed in temperate and tropical areas along the continental shelves of the Atlantic, Indian and Pacific oceans.

Importance to fisheries: Bycatch of deep-sea longlines. Important catches are obtained by pelagic longline fishery in eastern Algerian coasts.

Conservation and exploitation status: FAO, B4; IUCN, Near Threatened (Vulnerable A1bd+2d in Northern western Atlantic and Gulf of Mexico); Mediterranean, threatened species.

(Plate VI, 42)

CARCHARHINIDAE

***Carcharhinus plumbeus* (Nardo, 1827)**

Frequent synonyms / misidentifications: *Carcharhinus milberti* (Valenciennes, in Müller and Henle, 1839) / *Carcharhinus altimus* (Springer, 1950), *C. obscurus* (Lesueur, 1818).

FAO names: **En** – Sandbar shark; **Fr** – Requin gris; **Sp** – Tiburón trozo.

Size: To 300 cm, common to 240 cm TL.

Habitat and biology: Coastal-pelagic, on continental and insular shelves and in deep water adjacent to them up to 280 m. Viviparous, one litter every 2 to 3 years, with 6 to 18 young born at 50 to 75 cm TL. Gestation period 11 to 12 months and parturition occurs in coastal waters. Females mature at 144 to 182 cm, males at 130 to 178 cm TL.

Distribution: Whole Mediterranean, absent in the Black Sea. Neighboring Atlantic and most temperate and tropical waters except in the eastern Pacific.

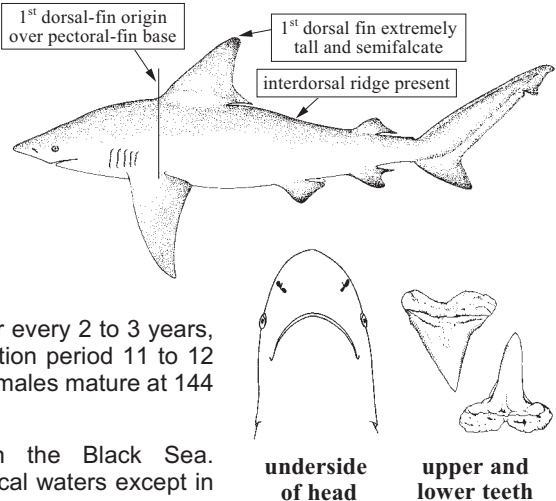
Importance to fisheries: Sometimes juveniles of this species are caught as bycatch of trammel nets in the Adriatic Sea. In other parts of Mediterranean bycatch of pelagic longline fisheries. Important catches are made by pelagic longline in the eastern Algerian coast.

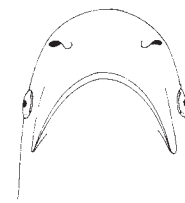
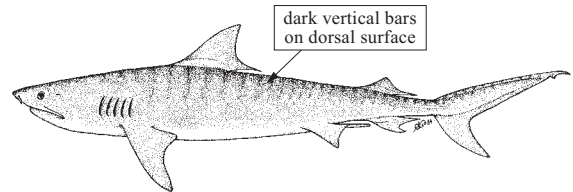
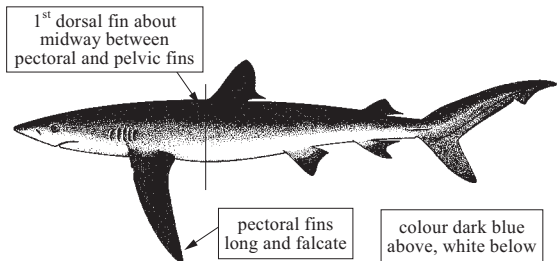
Conservation and exploitation status: FAO, B4; IUCN, Near Threatened (Vulnerable A1bd+2d in North Western Atlantic); Mediterranean, threatened species.

Remarks: This species is one of the most widely distributed representatives of this genus in the Mediterranean, and it has important nursery grounds in the Aegean Sea along the Turkish coast (Cló and De Sabata pers.com.).

(Plate VI, 43)

CARCHARHINIDAE



Galeocerdo cuvier* (Péron and Lesueur, in Lesueur, 1822)*(Plate VI, 44) CARCHARHINIDAE****Frequent synonyms / misidentifications:***Galeocerdo arcticus* (Faber, 1829) / None.**FAO names:** **En** – Tiger shark; **Fr** – Requin tigre commun; **Sp** – Tiburón tigre.**Size:** Common to about 400 cm TL.**Habitat and biology:** Coastal to pelagic waters, usually close to the bottom but also occurring near the surface; often in shallow waters, including estuaries and rivers. Omnivorous. Ovoviviparous, large litter between 10 and 80 young usually near 40, born at 60 to 80 cm TL. Gestation period about 16 months.**Distribution:** Presence in the Mediterranean to be confirmed. Rare along the Atlantic coasts of Europe. Elsewhere, cosmopolitan in temperate and tropical areas.**Importance to fisheries:** Occasionally caught by longline and bottom gillnets fisheries.**Conservation and exploitation status:** FAO, B1; IUCN, Near Threatened.**Remarks:** The presence of this species in the Mediterranean Sea is doubtful (Fischer *et al.*, 1987; Compagno, 1984; Notarbartolo di Sciara and Bianchi, 1998). In fact, only two records for waters off Malaga (Spain) (Pinto de la Rosa, 1994) and off Messina (Italy) (Celona, 2000) are reported. In both papers only the jaws are described while any other parts of the body of the specimens are not mentioned at all. At the moment this species cannot be considered confirmed for the Mediterranean Sea even though Barrull and Mate (2002) described a Spanish specimen killed by the local Guard Coast.**underside of head****upper and lower teeth*****Prionace glauca* (Linnaeus, 1758)****(Plate VI, 45)****CARCHARHINIDAE****Frequent synonyms / misidentifications:****FAO names:** **En** – Blue shark; **Fr** – Peau bleue; **Sp** – Tiburón azul.**Size:** To at least about 400 cm TL.**Habitat and biology:** Open oceanic waters outside continental shelf but occurring also in coastal waters, often swimming near the surface down to 150 m. Viviparous, litters up to 135 young. Pups born at 35 to 45 cm TL. Gestation period from 9 to 12 months. Females mature at 173 to 221 cm, males at 182 to 281 cm TL.**Distribution:** Whole Mediterranean, absent in the Black Sea. Cosmopolitan in tropical to cold-temperate waters.**Importance to fisheries:** Along the Calabria and Apulia (Italian southern regions) a special artisanal fishery targeting *P. glauca* takes place using drifting surface longlines known as "stese" in spring. Bycatch of tuna and swordfish longline and small drifnet fishery, especially in Italy, Malta, Morocco, Tunisia and Crete. Target species of game fishing, in the past on of the main elasmobranch species caught in tuna traps.**Conservation and exploitation status:** FAO, B3; IUCN, Near Threatened; Mediterranean, vulnerable species. Appendix 3 of the Berne Convention; Appendix 3 of the Barcelona Convention (ASPIM protocol, Asp. 3).

very long snout

**underside of head****upper and lower teeth**

***Rhizoprionodon acutus* (Rüppell, 1837)**

Frequent synonyms / misidentifications: *Carcharias acutus* Rüppell, 1835; *Scoliodon terra-novae* Fowler, 1936; *S. acutus* Fowler, 1936; *Rhizoprionodon (Rhizoprionodon) acutus* Springer, 1964 / *Carcharias fissidens* Bennett, 1830.

FAO names: **En** – Milk shark; **Fr** – Requin museau pointu; **Sp** – Tiburón lechoso.

Size: Less than 110 cm, exceptionally 178 cm TL.

Habitat and biology: Inshore and offshore shark, from surfline to depths of about 200 m. Viviparous, litters of 2 to 8 young born at 25 to 39 cm TL. Gestation period 1 year; females mature at 70 to 81 cm, males at 68 to 72 cm TL.

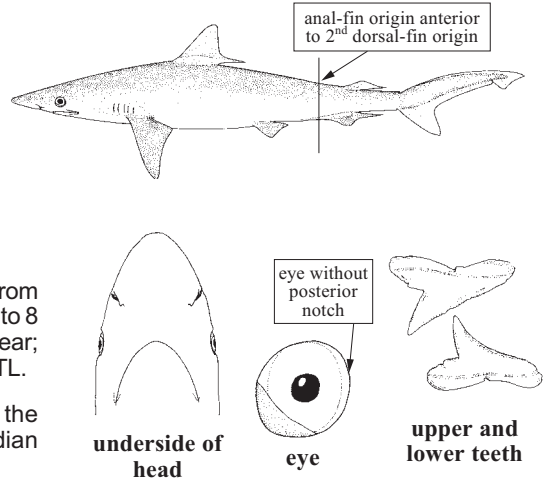
Distribution: Only one specimen described in the central Mediterranean. Tropical Atlantic and Indian Ocean, Red Sea and Japan.

Importance to fisheries: Only one specimen caught in the Mediterranean (Ionian Sea). Caught by longlines, gillnets and trawls outside off the Mediterranean.

Conservation and exploitation status: FAO, 1; IUCN, Data Deficient; Mediterranean, very rare species.

Remarks: This species, previously not considered by Compagno (1984), is now included in this guide as valid species. Only one specimen was found in the Ionian Sea and described by Pastore and Tortonese (1985). Atlantic immigrant species from the Straits of Gibraltar.

(Plate VI, 46)

CARCHARHINIDAE**SPHYRNIDAE*****Sphyrna (Mesozygaena) tudes* (Valenciennes, 1822)**

Frequent synonyms / misidentifications: *Sphyrna bigelowi* Bigelow and Schroeder, 1948 / *Sphyrna couardi* Cadenat, 1950 and *S. mokarran* (Rüppell, 1837).

FAO names: **En** – Smalleye hammerhead; **Fr** – Requin-marteau à petits yeux; **Sp** – Cornuda ojichica.

Size: To 150 cm TL.

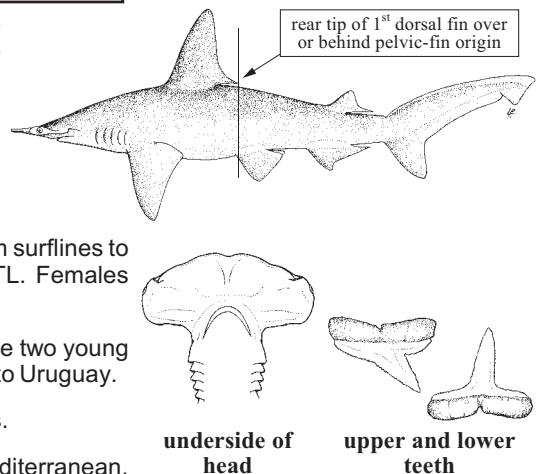
Habitat and biology: Coastal on continental shelf from surfline to 12 m. Viviparous with 6 to 9 young born at 30 cm TL. Females mature at 120 to 148 cm, males at 110 to 134 cm TL.

Distribution: Mediterranean (only known by one of the two young syntypes from Nice); western Atlantic from Venezuela to Uruguay.

Importance to fisheries: Bycatch in coastal fisheries.

Conservation and exploitation status: FAO, B3; Mediterranean, occasional/rare species.

Remarks: Compagno (1984) did not consider this species in the Mediterranean but recently McEachran and Séret (1987) confirmed its occasional presence. The first finding of *S. tudes* in the Mediterranean is described by Tortonese (1951b) at present stored in the Museum of Natural History of Calci (University of Pisa) with code No. 2347.



***Sphyrna (Sphyrna) lewini* (Griffith and Smith, in Cuvier, Griffith and Smith, 1834)**

(Plate VI, 47) **SPHYRNIDAE**

Frequent synonyms / misidentifications: *Sphyrna diplana* Springer, 1941 / *Sphyrna mokarran* (Rüppell, 1837).

FAO names: En – Scalloped hammerhead; Fr – Requin-marteau halicorne; Sp – Cornuda común.

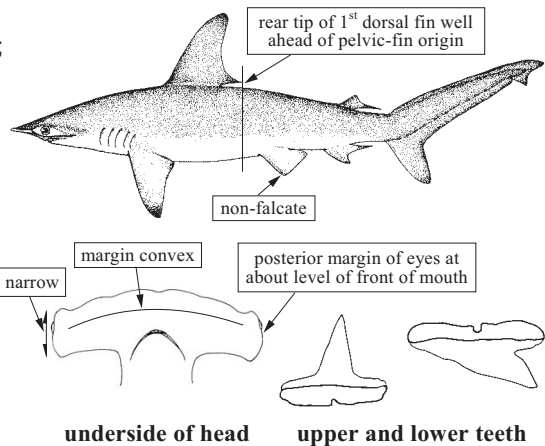
Size: To about 420 cm, usually 360 cm TL.

Habitat and biology: From inshore to offshore, coastal, epipelagic and semi-oceanic in tropic and warm areas over continental and insular shelves from the surface (10–25 m) to about 250 m. Juveniles common in estuaries and shallow bays. Viviparous, with 15 to 31 young per litter.

Distribution: Western Mediterranean. Elsewhere in temperate and tropical waters of all oceans.

Importance to fisheries: Bycatch of pelagic longline and purse-seine fisheries, also caught with gillnets by artisanal fisheries.

Conservation and exploitation status: FAO, B3; IUCN, Near Threatened (Least Concern in Australia); Mediterranean, occasional/rare species.



***Sphyrna (Sphyrna) mokarran* (Rüppell, 1837)**

(Plate VII, 48)

SPHYRNIDAE

Frequent synonyms / misidentifications: *Zigaena mokarran* Rüppell, 1837 / *Sphyrna lewini* (Griffith and Smith, 1834) and *S. tudes* (Valenciennes, 1822).

FAO names: En – Great hammerhead; Fr – Grand requin-marteau; Sp – Cornuda gigante.

Size: To more than 600 cm TL.

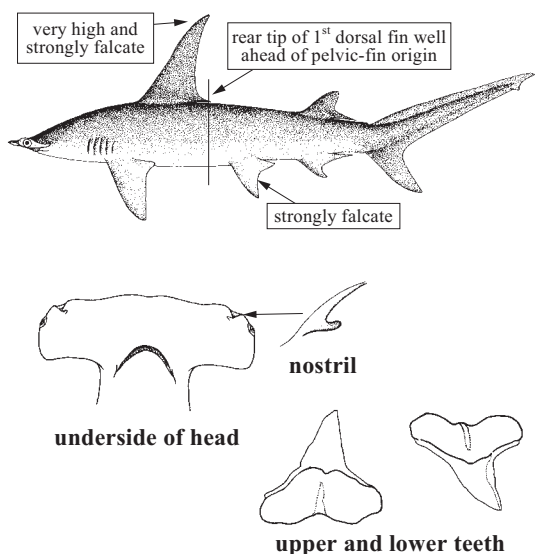
Habitat and biology: Coastal, pelagic and semi-oceanic over continental and island shelves from coast to 80 m. Viviparous, 13 to 42 young per litter, born at 50 to 70 cm TL. Females mature at 250 to 300 cm, males at 234 to 269 cm TL. Gestation period at least 7 months.

Distribution: South and northwestern Mediterranean (only one specimen). Circumtropical.

Importance to fisheries: Bycatch of pelagic longline and purse-seine fisheries, also caught by artisanal fisheries gillnets.

Conservation and exploitation status: FAO, B3; IUCN, Data Deficient (Least Concern for Australasia); Mediterranean, very rare species.

Remarks: Atlantic immigrant species, only one valid specimen recorded in the northwestern Mediterranean, well described by Boero and Carli (1977).



***Sphyrna (Sphyrna) zygaena* (Linnaeus, 1758)**

(Plate VII, 49 & 50)

SPHYRNIDAE

Frequent synonyms / misidentifications: None / None.

FAO names: **En** – Smooth hammerhead;
Fr – Requin-marteau commun; **Sp** – Cornuda cruz.

Size: To 400 cm.

Habitat and biology: Coastal-pelagic, mainly on continental shelf from coast to 20 m. Viviparous, up to 37 embryos, born at 50 to 60 cm TL. Female mature at 300 cm, males at 210 to 240 cm TL.

Distribution: Whole Mediterranean, only one record in Black Sea to be confirmed. Temperate and tropical areas of all oceans.

Importance to fisheries: Common bycatch of pelagic fisheries.

Conservation and exploitation status: FAO, B1; IUCN, Near Threatened (least Concern for Australasia); Mediterranean, vulnerable species.

