

Lepturacanthus Fowler, 1905

TRICH Lept

Lepturacanthus (subgenus of **Trichiurus**) Fowler, 1905:770. Type species, **Trichiurus savala** Cuvier, 1829, by original designation (also monotypic).

Synonyms: None.

Diagnostic Features: Body elongate and remarkably compressed. Anteriormost fang of upper jaw very long, coming out through a small slit on ventral side of lower jaw; lower hind margin of gill cover concave. Anal-fin soft rays pungent spinules; pectoral fins fairly long, extending above lateral line; pelvic fins completely absent; caudal fin absent, posterior part of body tapering to a point.

Biology, Habitat and Distribution: Benthopelagic mostly on continental shelf, comes often close to surface at night. Feeds on a wide variety of small coastal fishes, squid and crustaceans. Known from Indo-West Pacific waters.

Interest to Fisheries: Caught with shore seines, bag nets and small bottom trawls in many Asian countries, mainly mixed with other coastal fish.

Species: Two species recognized so far.

Key to Species of *Lepturacanthus*:

- 1a. Snout rather short, its length about 3 times in head length; eye large, its diameter 5 to 7 times in head length; distance between eye and upper jaw (suborbital length) about half of eye diameter; dorsal-fin elements 123 to 133***L. pantului***
- 1b. Snout long, its length about 2 to 2.5 times in head length; eye small, its diameter 7 to 9 times in head length; distance between eye and upper jaw (suborbital length) slightly smaller than eye diameter; dorsal-fin elements 113 to 123 ***L. savala***

Lepturacanthus pantului (Gupta, 1966)

Fig. 186

TRICH Lept 1

Trichiurus pantului Gupta, 1966:170-171 (Parganas District, west Bengal, India).

Synonyms: None.

FAO Names: En - Coromandel hairtail; Fr - Poisson sabre bécune; Sp - Pez sable coromandélico.

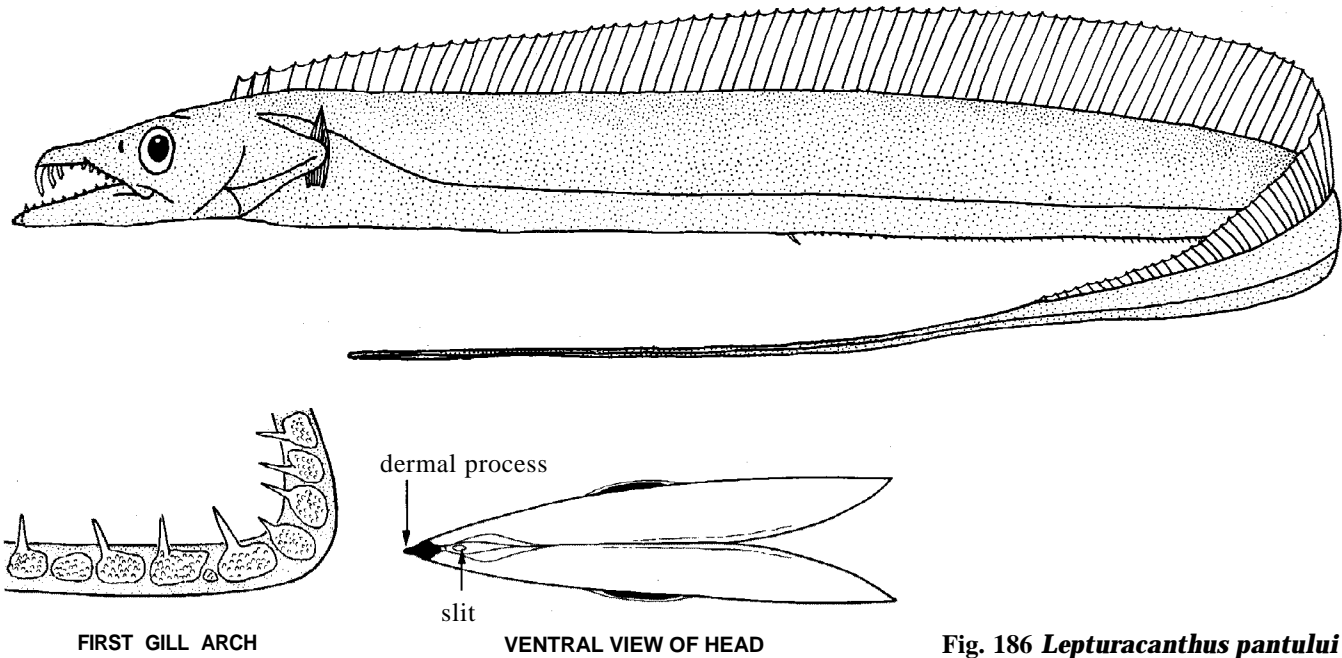


Fig. 186 *Lepturacanthus pantului*

Field Characters: Snout short, its length about 3 times in head length. Eye large, its diameter about 5 to 7 times in head length. Suborbital space about half as large as eye diameter.

Diagnostic Features: Body extremely elongate and strongly compressed, ribbon-like, gradually tapering to a point. Snout short, its length about 3 times in head length; mouth large with a dermal process at tip of each jaw; lower hind margin of gill cover concave; eye large, its diameter about 5 to 7 times in head length, suborbital space about half as large as eye; 3 (sometimes 4) fangs with barbs and 2 smaller forward directed canine teeth present in upper jaw; anteriormost fang very long, coming out through a small slit on ventral side of lower jaw. A single, long-based, dorsal fin with III spines and 120 to 131 soft rays; anal fin reduced to a long spine and 74 to 84 smaller spinules, breaking through the skin, the anteriormost fairly long, situated below 36th to 40th dorsal-fin soft ray; pectoral fins slightly shorter than snout, with I spine and 10 or 11 soft rays; pelvic and caudal fins absent. Lateral line nearer ventral contour than dorsal contour of body. **Colour:** In fresh specimens, body steely blue with metallic reflections, becoming silvery grey after death; tapering part black; margin of anus black; usually margin of dorsal fin, inside of opercle and anterior part of shoulder girdle, jet black.

Geographical Distribution: Known from Hooghly estuaries to Gulf of Mannar in the east coast of India (Fig. 187).

Habitat and Biology: Benthopelagic (or pelagic), estuaries and coastal waters from surface to the depths of about 80 m. Feeds on a wide variety of small fishes and crustaceans (chiefly on prawns, young clupeoids, *Harpodon nehereus* and *Trichiurus* spp. in Hooghly estuaries, India).

Size: Maximum 92 cm total length, common 20 to 60 cm.

Interest to Fisheries: In the east coast of India, caught mainly with bag nets in estuaries, with shore seines and boat seines in inshore waters, and with trawls in off-shore waters. Marketed fresh as well as dried salted.

Local Names:

Literature: Gupta (1966, 1967, 1968); Nakamura (1984a).

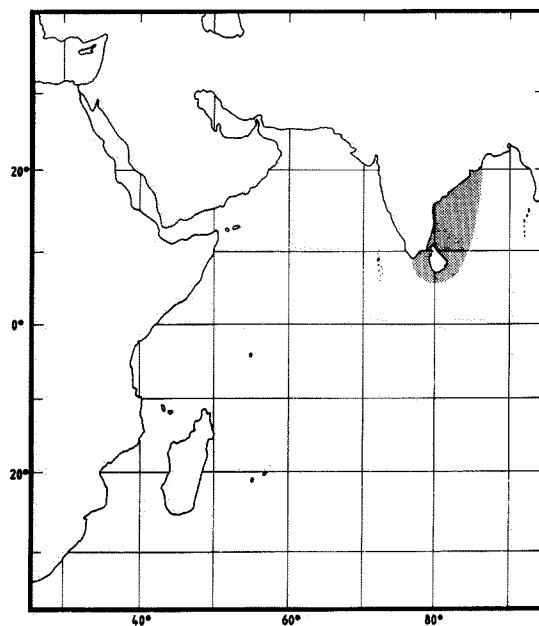


Fig. 187

Lepturacanthus savala (Cuvier, 1829)

Fig. 188

TRICH Lept 2

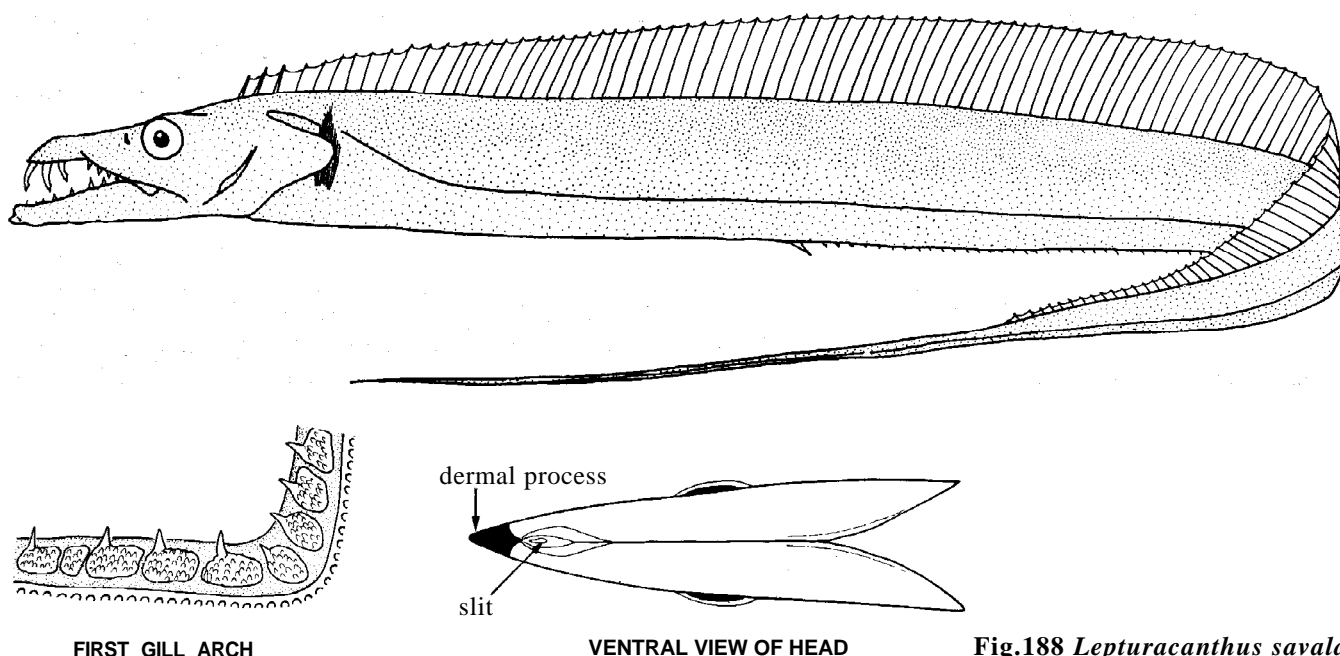
Trichiurus savala Cuvier, 1829:219 ("Mer des Indes"= Bombay and Malabar district, India).

Synonyms: *Trichiurus armatus* Gray, 1831. *Trichiurus roelandti* Bleeker, 1860.

FAO Names: En - Savalani hairtail; Fr - Poisson sabre cimenterre; Sp - Pez sable savalai.

Field Characters: Snout long, its length 2 to 2.5 times in head length. Eye small, its diameter about 7 to 9 times in head length and slightly longer than suborbital space.

Diagnostic Features: Body extremely elongate and strongly compressed, ribbon-like, tapering to a point (caudal tapering part very long). Snout long about 2 to 2.5 times in head length; eye small, its diameter about 7 to 9 times in head length and slightly longer than suborbital space; mouth very large with a dermal process at tip of each jaw; 2 or 3 (mostly 3) fangs with barbs and 2 small forward directed canine teeth present in upper jaw, anteriormost fangs (usually without barbs) present at tip of lower jaw. Lower hind margin of gill cover concave. A single, long-based, dorsal fin with III or IV spines and 110 to 120 soft rays; anal fin reduced to small spinules (about 75) breaking through skin, the anteriormost fairly long, its origin situated below 36th to 39th soft dorsal-fin ray; pectoral fins slightly shorter than snout, with I spine and 10 soft rays; pelvic and caudal fins absent. Lateral line nearer ventral than dorsal contour of body. **Colour:** In fresh specimens, body steely blue, with metallic reflections, tapering part white; margin of anus pale; usually margin of caudal-fin membrane white; tip of both jaws black; inside of opercle and anterior part of shoulder girdle, pale black.

Fig.188 *Lepturacanthus savala*

Geographical Distribution: Indo-West Pacific: from India and Sri Lanka to Malaysia, Singapore, Indonesia, Philippines, Thailand, China, New Guinea, and northern Australia (Fig. 189).

Habitat and Biology: Benthopelagic, in coastal waters down to about 100 m depth, often comes near surface at night. Feeds on a wide variety of small fishes and crustaceans (chiefly on prawns and species of *Setipinna*, *Anchoviella*, *Harpodon*, *Trichiurus* etc. in Hooghly estuaries, India).

Size: Maximum 100 cm, common 30 to 70 cm total length.

Interest to Fisheries: Caught mainly with shore seines, bag nets and coastal bottom trawls in Asian countries. Marketed fresh as well as dried salted.

Local Names: AUSTRALIA: Spiny hairtail; MALAYSIA: Selayur, Timah; SRI LANKA: Smallheaded ribbonfish, Savalai.

Literature: Tucker (1956); James (1961, 1967); Gupta (1967, 1968); Nakamura (1984a).

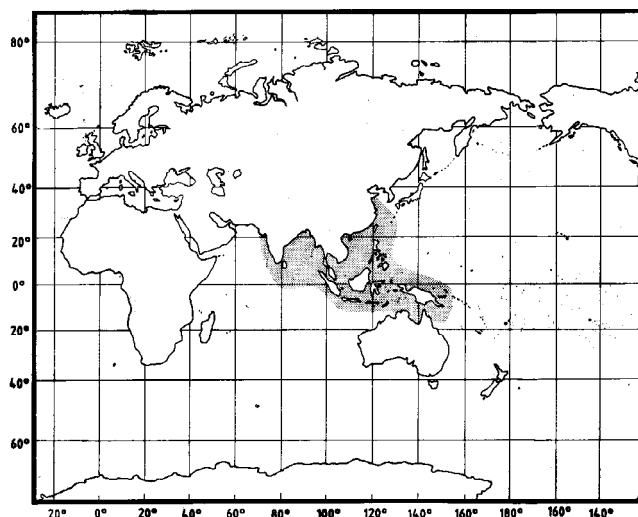


Fig. 189

Tentoriceps Whitley, 1948

TRICH Tent

Tentoriceps Whitley, 1948:94. Type species, *Trichiurus cristatus* Klunzinger, 1884, by original designation (also monotypic).

Synonyms: *Pseudoxymetopon* Chu and Wu, 1962.

Diagnostic Features: See species.

Species: Only one species recognized so far.

Tentoriceps cristatus (Klunzinger, 1884)

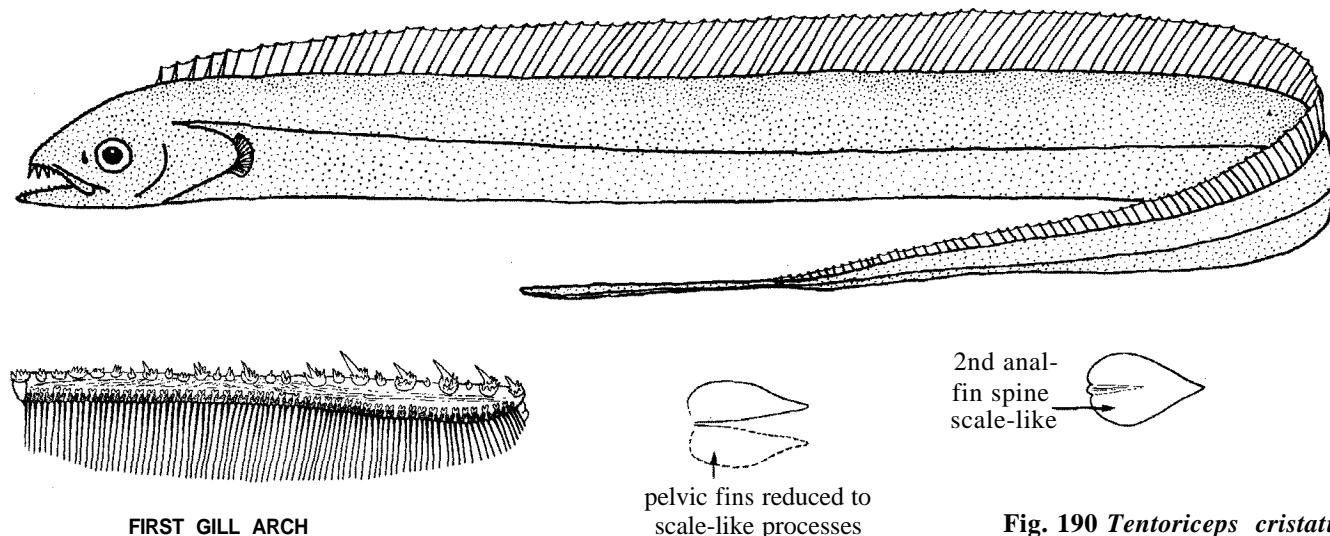
Fig. 190

TRICH Tent 1

Trichiurus cristatus Klunzinger, 1884:120, pl. 13, fig. 5a (Kosseir, Red Sea coast of Egypt).

Synonyms: *Pseudoxymetopon sinensis* Chu and Wu, 1962.

FAO Names: En - Crested hairtail; Fr - Poisson sabre manchot; Sp - Pez sable cuchilla.

Fig. 190 *Tentoriceps cristatus*

Field Characters: Pectoral fins short, not reaching lateral line. Pelvic fins reduced to scale-like process.

Diagnostic Features: Body extremely elongate and strongly compressed, ribbon-like, tapering to a point. Dorsal profile of head evenly convex; mouth large with a dermal process at tip of each jaw; lower hind margin of gill cover convex; eye very large situated laterally, its diameter 5 or 6 times in head length; 2 or 3 fangs in upper and 2 fangs in lower jaw, a single series of sharp compressed lateral teeth in both jaws. A single, long-based, dorsal fin with V spines and 126 to 144 soft rays; anal fin represented by I minute first spine and I scale-like second spine, situated below 47th to 50th soft dorsal-fin ray, reduced to minute spinules buried in skin thereafter; pectoral fins short, not reaching lateral line; pelvic fins present but reduced to scale-like processes; caudal fin absent, posterior part of body tapering to a point. Lateral line running almost straight mid-lateral, or slightly nearer ventral than dorsal contour. **Colour:** In fresh specimens, body silvery white becoming silvery grey with dark cloud-like patches after death; each jaw, dorsal and anal-fin bases sooty.

Geographical Distribution: Indo-West Pacific: Red Sea, Mozambique channel, Saya- de Malha Bank, Chagos Islands, Andaman Sea, Northwest and North Australia, South China Sea, East China Sea, Tasman Sea, Philippines and southern Japan (Fig. 191).

Habitat and Biology: Benthopelagic or pelagic, lives in coastal waters from 30 to 110 m depth, not found in low salinity waters. Feeds mainly on small fish, squid and crustaceans.

Size: Maximum 90 cm total length, common 30 to 70 cm.

Interest to Fisheries: Caught mainly with bottom trawls and sometimes with bag nets, mixed with other trichiurids in southeast Asian countries. Marketed fresh and dried salted in the Philippines.

Local Names: JAPAN: Kanmuri-dachi; PHILIPPINES: Crested hairtail.

Literature: Tucker (1956); Senta (1975, 1977); Parin and Mikhailin (1982b); Nakamura (1984a,b); Gloerfelt-Tarp and Kailola (1984); Sainsbury et al. (1985).

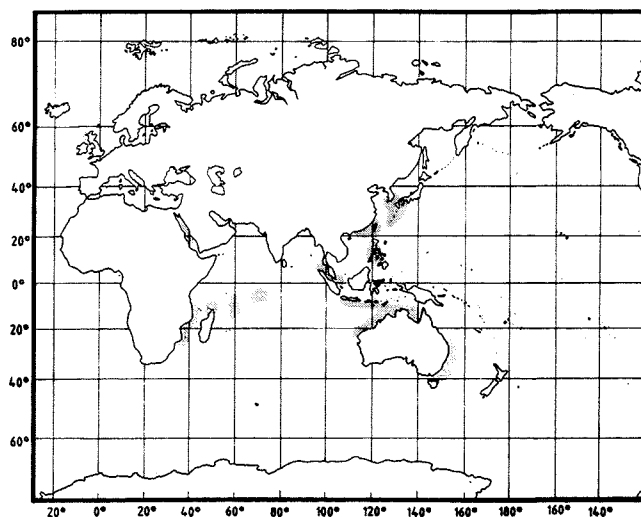


Fig. 191

Trichiurus Linnaeus, 1758

TRICH Trich

Trichiurus Linnaeus, 1758:246. Type species, *Trichiurus Lepturus* Linnaeus, 1758, by monotypy

Synonyms: *Enchelyopus* Bleeker, 1862. *Lepturus* Gill, 1863.

Diagnostic Features: Body elongate and remarkably compressed. Lower hind margin of gill cover concave. Anal-fin soft rays mostly buried in skin; pectoral fins fairly long, extending above lateral line; pelvic fins absent; caudal fin absent, posterior part of body tapering to a point.

Biology,Habitat and Biology: Benthopelagic, on continental shelf and slope. Feeds on fish, squid and crustaceans. Generic distribution being tropical and temperate waters worldwide for *T. Lepturus* and off Indian Ocean for the other two species.

Interest to Fisheries: *T. Lepturus* is a commercially important species worldwide, and the other two species are occasionally caught in local fisheries in India.

Species: Three species recognized so far (Nakamura, 1984a). *T. Lepturus* seems to be composed of various local populations which have been evaluated by some author as species or subspecies. We follow Tucker (1956) who recognized only one single species for *T. Lepturus*.

Illustrated Key to Species of *Trichiurus*:

- 1a. Pectoral-fin spine serrated: first anal-fin spine situated below about 36th soft dorsal-fin soft ray (Fig. 192) *T. gangeticus*
- 1b. Pectoral-fin spinenot serrate; first anal-fin spine situated below 39th to 41st soft dorsal-fin soft ray → 2

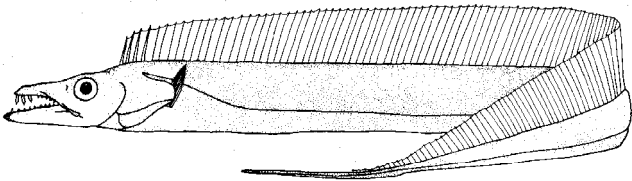
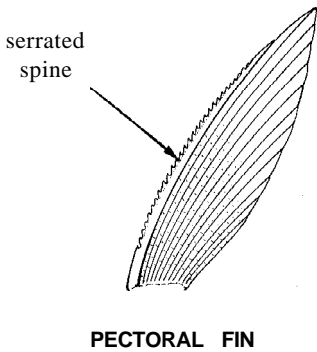


Fig. 192 *Trichiurus gangeticus*

- 2a. Fangs on jaws with barbs; dorsal-fin elements more than 130 (Fig. 193) *T. Lepturus*
- 2b. Fangs on jaws without barbs; dorsal-fin elements less than 120 (Fig. 194) *T. auriga*

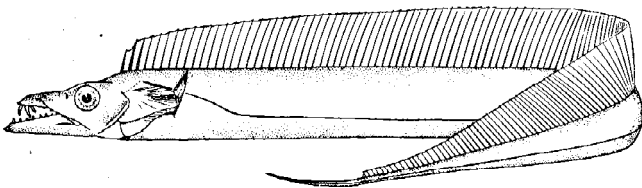


Fig. 193 *Trichiurus lepturus*

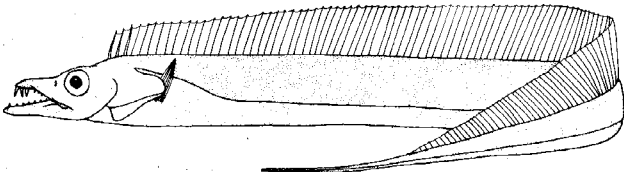
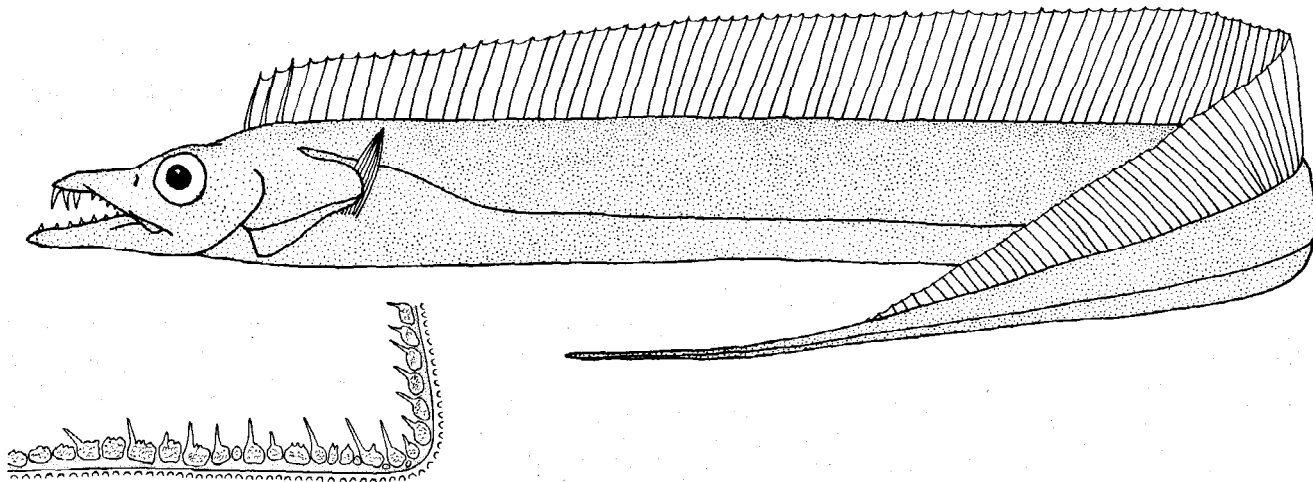


Fig. 194 *Trichiums auriga*

Trichiurus auriga Klunzinger, 1884

Fig. 195

TRICH Trich 2*Trichiurus auriga* Klunzinger, 1884:120, pl. 12, fig. 1 (Kossier, Red Sea coast of Egypt).**Synonyms:** None.**FAO Names:** En - Pearly hairtail; Fr - Poisson sabre brochet; Sp - Pez sable perla.

FIRST GILL ARCH

Fig. 195 *Trichiurus auriga*

Field Characters: Anterior margin of pectoral-fin spine not serrated. Anal-fin origin situated below 40th or 41st dorsal-fin soft ray. Fangs on both jaws without barbs.

Diagnostic Features: Body extremely elongate and strongly compressed, ribbon-like, tapering to a point; distance from snout to anus about 2/5 of standard length. Mouth very large, with a small dermal process at tip of each jaw; lower hind margin of gill cover concave; eye very large, its diameter 5.5 to 7 times in head length; 2 or 3 pairs and one pair of fangs without barbs in upper and lower jaws, respectively; a single series of sharp, compressed lateral teeth in both jaws; minute teeth on palatines. Dorsal-fin base long and fin rather low, without a notch between the spinous and soft parts, with III spines and 106 to 113 soft rays; anal fin reduced to about 80 spinules slightly breaking skin (its origin situated below 40th or 41st dorsal-fin soft ray); pectoral fins about as long as snout, with I spine and 9 soft rays; pelvic and caudal fins absent. Lateral line originating at upper margin of gill cover, running obliquely to behind tip of pectoral fins, then straight to ventral contour of body. **Colour:** Fresh specimens are pearl white and slightly dusky dorsally; margins of dorsal and anal fins dusky in formalin.

Geographical Distribution: Indian Ocean: Red Sea, off west coast of India and Timor Sea (Fig. 196).

Habitat and Biology: Benthopelagic, in deep waters ranging from 250 to 350 m depth off Kerala and Tamil Nadu, India. Feeds on deep water shrimps and small fishes like myctophids.

Size: Maximum 35 cm total length, common 15 to 30 cm.

Interest to Fisheries: No special fishery for this species. Caught with deep water trawls mixed together with other commercially important fish as by-catch.

Local Names:

Literature: Silas and Rajagopalan (1974); Nakamura (1984a).

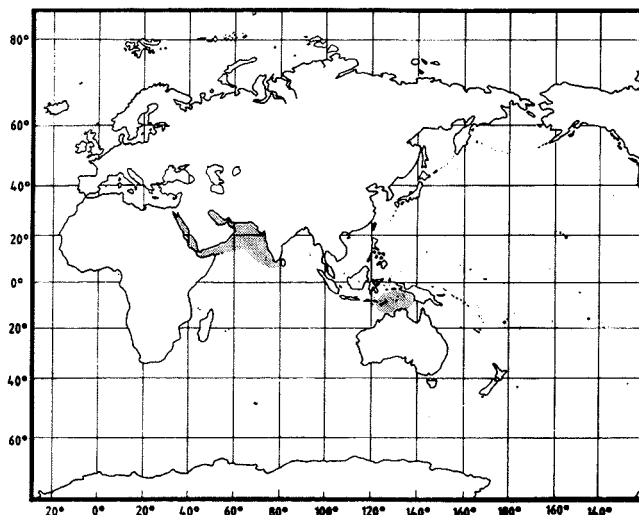


Fig. 196

Remarks: This species has long been synonymized with *Trichiurus Lepturus*. Silas and Rajagopalan (1974) recognized this species as distinct.

Trichiurus gangeticus Gupta, 1966

Fig. 197

TRICH Trich 3

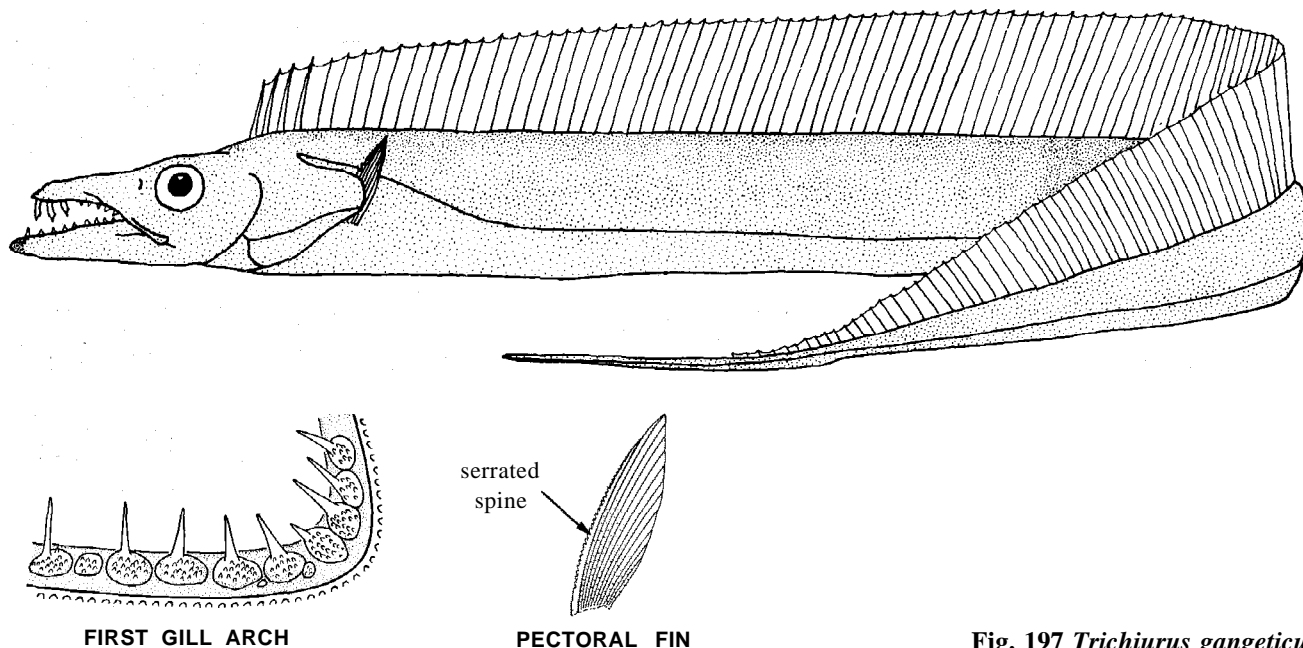
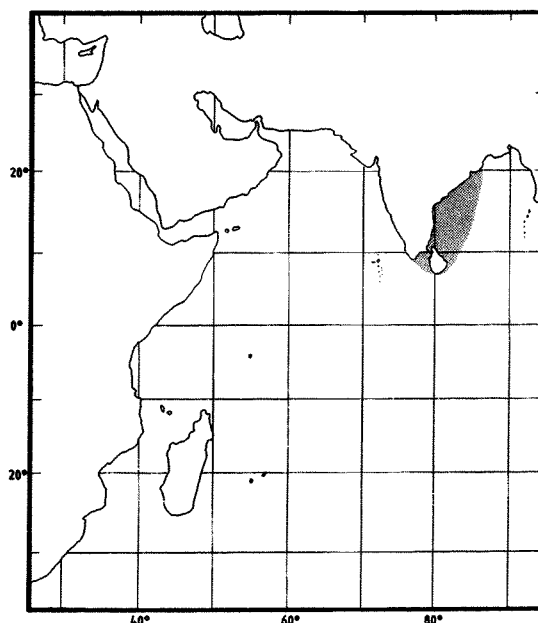
Trichiurus gangeticus Gupta, 1966:169-170 (Parganas District, West Bengal, India).**Synonyms:** *Lepturacanthus serratus* Dutt and Thankam, 1966.**FAO Names:** **En** - Ganges hairtail; **Fr** - Poisson sabre du Gange; **Sp** - Pez sable del Ganges.Fig. 197 *Trichiurus gangeticus***Fields Characters:** Anterior margin of pectoral-fin spine serrated. Anal-fin origin situated below about 36th dorsal-fin soft ray. Fangs on both jaws with barbs.**Diagnostic Features:** Body extremely elongate and strongly compressed, ribbon-like, tapering to a point. Mouth very large, with a dermal process at tip of each jaw; lower hind margin of gill cover concave; eye very large, situated dorsally, its diameter 6 or 7 times in head length; 2 or 3 pairs and one pair of fangs with barbs near tip of upper and lower jaws, respectively; a single series of sharp, compressed lateral teeth in both jaws. A single long-based dorsal fin, with IV spines and 116 to 129 soft rays; anal fin reduced to about 85 minute spinules, slightly breaking through skin, its origin situated below about 36th dorsal-fin soft ray; pectoral fins about as long as snout with I serrated spine and 10 or 11 soft rays; pelvic and caudal fins absent. Lateral line nearer ventral Contour than dorsal contour of body, rising toward dorsal profile only anteriorly.**Colour:** Fresh specimens bright silvery white with semi-transparent dorsal- and anal-fin membranes; body becomes darker in formalin.**Geographical Distribution:** Distributed in east coast of India from Hooghly estuaries to Gulf of Mannar (Fig. 198).**Habitat and Biology:** Benthopelagic to pelagic, in coastal waters and estuaries, comes often near surface at night. Feeds on a wide variety of small fish and crustaceans.**Size:** Maximum 50 cm as far as known total length, common 20 to 40 cm.**Interest to Fisheries:** Caught mainly with shore seines, bag nets and coastal bottom trawls, mixed with other trichiurids in catches on the east coast of India. Marketed fresh as well as dried salted, mixed with other trichiurids.**Local Names:****Literature:** Gupta (1967); Nakamura (1984a).

Fig. 198

Trichiurus lepturus Linnaeus, 1758

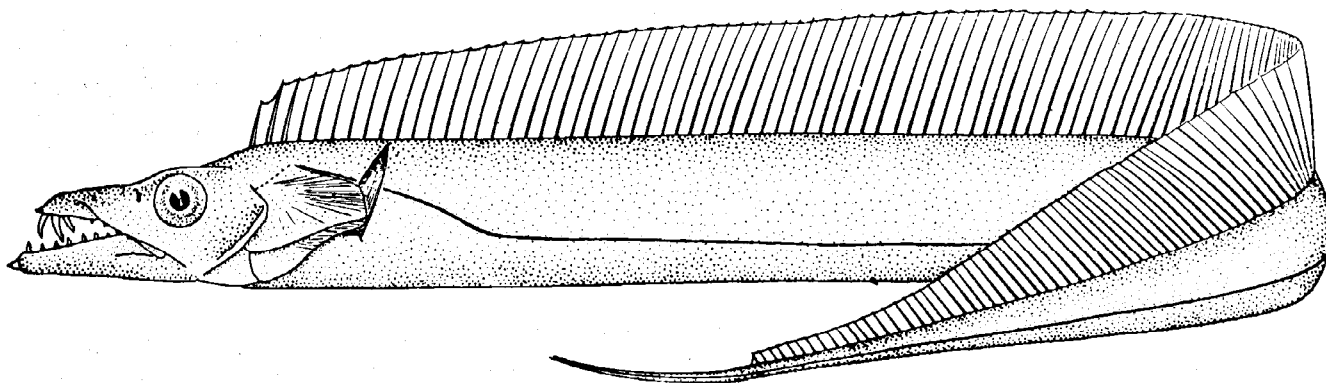
Fig. 199

TRICH Trich 1

Trichiurus Lepturus Linnaeus, 1758:246 (South Carolina, North America).

Synonyms: *Clupea haumela* Forsskål, 1775. *Trichiurus lepturus japonicus* Temminck and Schlegel, 1844. *Trichiurus coxii* Ramsay and Ogilby, 1887. *Trichiurus nitens* Garman, 1899.

FAO Names: En - Largehead hairtail; Fr - Poisson sabre commun, Sp - Pez sable.

Fig. 199 *Trichiurus lepturus*

Field Characters: Anterior margin of pectoral-fin spine not serrated. Anal-fin origin situated below 39th to 41st dorsal-fin soft ray. Fangs in both jaws with barbs.

Diagnostic Features: Body extremely elongate and strongly compressed, ribbon-like, tapering to a point (tip often broken); position of anus nearer snout than posterior tip of body (preanal length about 2/5 of standard length). Mouth large, with a dermal process at tip of each jaw; lower hind margin of gill cover, concave; eye large, its diameter 5 to 7 times in head length; 2 or 3 pairs of enlarged fangs with barbs nearer tip of upper jaw and another pair near tip of lower jaw; a single series of sharp, compressed lateral teeth (often also fang-like in larger specimens) in both jaws; minute teeth on palatines. Dorsal fin rather high and long, without a notch between the spinous and soft parts, with III spines and 130 to 135 soft rays; anal fin reduced to about 100 to 105 minute spinules, usually embedded in the skin or slightly breaking through, its origin situated below 39th to 41st dorsal-fin soft ray; pectoral fins medium-sized, about as long as snout, with I spine and 11 to 13 soft rays; pelvic and caudal fins absent. Lateral line beginning at upper margin of gill cover, running oblique to behind tip of pectoral fins, then straight close to ventral contour. Scales absent on body. Excess ossification of supraoccipital, interhaemal and interneural bones often seen in specimens from Indian waters. **Colour:** Fresh specimens steel blue with silvery reflection, pectoral fins semi-transparent, other fins sometimes tinged with pale yellow; the colour becomes uniform silvery grey sometime after death.

Geographical Distribution: Throughout tropical and temperate waters of the world (Fig. 200).

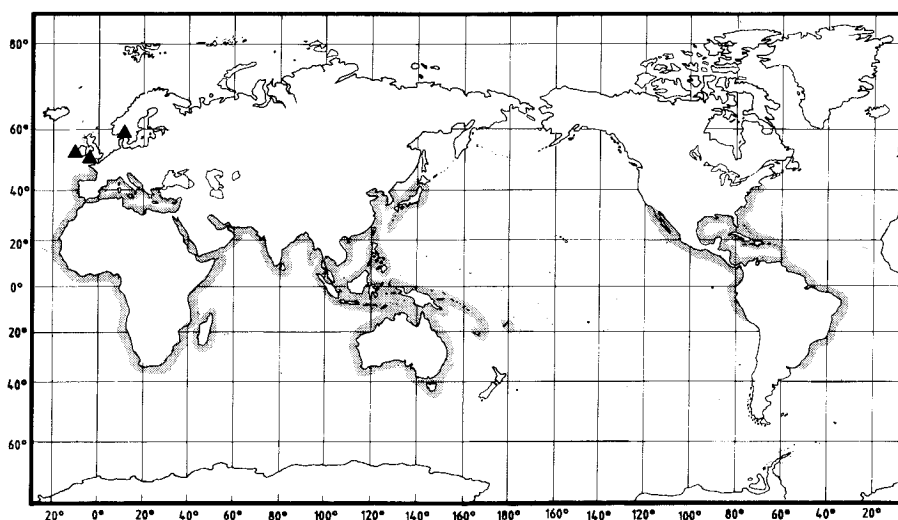


Fig. 200

Habitat and Biology: Benthopelagic, continental shelf to 350 m depth (from 55 to 385 m in the eastern Pacific), occasionally in shallow waters and at surface at night. Young and immature fish feed mostly on euphausiids, small pelagic planktonic crustaceans, such as *Paracalanus*, *Acartia*, *Oncaea* etc., and small fishes (anchovies, bregmacerotids etc.). Adults become more piscivorous and feed on anchovies, sardines, myctophiids, bregmacerotids, carangoids, sphyraenids, atherinids, sciaenids, *Scomber*, *Trichiurus* etc. and occasionally on squid and crustaceans. Adults and juveniles have opposing complementary vertical diurnal feeding migration. Juveniles and small adults form schools about 100 m above the bottom during daytime and form loose feeding aggregations at night-time near the surface where they prey on planktonic organisms. Large adults feed on pelagic prey near the surface during daytime and migrate to the bottom at night.

In the Sea of Japan, this species matures at 2 years old at a size of about 30 cm preanal length in females and 28 cm in males. Some individuals of both sexes also mature at age 1 (Shiokawa, 1988). Egg production at 45 cm preanal length is estimated at about 130 000 over the entire spawning season around the central part of the Sea of Japan. Eggs are pelagic, have a diameter of 1.59 to 1.88 mm, and hatch after 3 to 6 days at a size of 5.5 to 6.5 mm total length. The spawning season is from April to August with a peak in June in the East China Sea, from July to October with a peak of September in Suruga Bay, from April to October with a peak in June in the Kii Channel, from May to November off the Kii Peninsula, and from June to October with a peak in July and August in the central part of the Sea of Japan (Shiokawa, 1988).

Shiokawa (1988) estimated the age at preanal length of this species in the Sea of Japan based on otolith readings. Females: 1 year at 24 cm, 2 years at 30 cm, 3 years at 34 cm, 4 years at 37 cm, 5 years at 40 cm, 6 years at 41 cm. Males: 1 year at 23 cm, 2 year at 28 cm, 3 year at 31 cm, 4 year at 33 cm, 5 year at 34 cm, 6 year at 35 cm. For the Californian population Fitch and Gotshall (1972) estimated the age of a 83 cm total length male as 4 years and the age of a 112 cm total length female as 7 years. Migration of this species is considered to be carried out between the wintering grounds in the East China Sea and the spawning grounds in the Yellow Sea (Misu, 1961). In the Sea of Japan, the wintering grounds is situated in the coastal waters, mostly on the continental shelf (Shiokawa, 1988).

Size: Maximum 120 cm total length, common from 50 to 100 cm.

Interest to Fisheries: Caught mainly with bag nets in estuaries, with trolling, shore seines, boat seines, set nets and bottom or midwater longlines in inshore waters, and with bottom trawls in offshore waters throughout the world. The most important commercially caught trichiurid or gempylid with an annual catch of 752 711 t in 1990. About 85% of the catches reported are taken from FAO Fishing Area 61, and around 60% of the total yield is taken by China. For more information about fisheries statistics see section 1.2. Excellent taste for fish fry and various kinds of grills and for sashimi (sliced raw meat prepared with soysauce and horse radish) when fresh.

Local Names: AUSTRALIA: Australian hair-tail; CANADA: Cutlassfish; FRANCE: Sabre; JAPAN: Hakuio, Hakuuo, Hakunagi, Hakuyo, Hiragatana, Katana, Saabera, Sawaberu, Shiraga, Tabinohimo, Tachiuo, Tachi, Tachio, Tachuo, Tachiio, Tachinoiyu, Tachinuiyu, Tachinja, Tachinouo, Tachinoyo; MALAYSIA: Selayar, Timah; RUSSIA: Sablja ryba; SPAIN: Espada, Sable, Savola; SRI LANKA: Largeheaded ribbon-fish; KOREA: Mae-dom-gwa; UK: Cutlassfish, Hairtail; USA: Cutlassfish.

Literature: Tucker (1956); James (1961); Gupta (1967); Franca (1969); Fitch and Gotshall (1972); Nakamura (1981, 1984a,b); Mikhailin (1982); Gloerfelt-Tarp and Kaiola (1984); Sainsbury et al. (1985); Parin (1986, 1990c); Shiokawa (1988); Ochiai and Tanaka (1988).

Remarks: *Trichiurus japonicus* was originally described by Temminck and Schlegel (1844) from Japan as *Trichiurus lepturus japonicus*, and synonymized with *Trichiurus lepturus* Linnaeus by Tucker (1956). Two forms referable to the genus *Trichiurus* are recently recognized in Okinawa, Japan, and Dr. Tetsuo Yoshino of the University of the Ryukyus and I. Nakamura are currently studying these forms with respect to the validity of *Trichiurus japonicus*. Another nominal species synonymized with *T. lepturus* is *Trichiurus nitens* Garman, 1899 from the eastern Pacific Ocean (California to Peru) (Tucker, 1956). This form differs from all other populations of *T. lepturus* in having fewer numbers of dorsal-fin soft rays (116 to 128 versus 136 to 142) and vertebrae (141 to 158 versus 162 to 170), and is considered as a valid species by Hubbs and Hubbs (1941) and many subsequent authors, including most recently by Mikhailin (1982).