

## 2.3 FAMILY ISTIOPHORIDAE

ISTIO

**Synonymy** : Histiophoridae; Makairidae; Tetrapturidae.

**FAO Names**: En - Marlins, Sailfishes, Spearfishes; Fr - Makaires, Marlins, Voiliers; Sp - Agujas, Marlines, Peces vela.

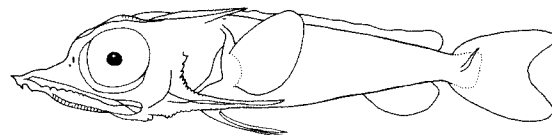
**Field Marks** : Bill long, round in cross-section; double keels on each side of caudal peduncle; scales ossified and elongate, each with one to several points posteriorly; pelvic fins rigid, string-like, depressible into a ventral groove; vertebrae 24, with plate-like spines.

**Diagnostic Features** : Premaxilla elongate, forming a long, pointed rostrum, round in cross-section; jaws with file-like teeth in adults; branchiostegal membranes entirely united to each other and free from isthmus; gillrakers absent. Caudal peduncle fairly depressed and slightly compressed, with 2 keels on each side and a shallow notch on dorsal and ventral profiles. Pelvic fins with one spine and 2 soft rays fused together, depressible into a groove. Body covered with elongate scales, each with one to several points. Vertebrae 24, with plate-like neural and haemal spines (triangular to square).

**Habitat, Distribution and Biology** : Istiophorids are primarily inhabitants of warm seas, usually swimming in the upper layers of water above the thermocline. They often migrate into temperate or cold waters to feed on forage organisms during the warmer season and back to warm waters for spawning or over-wintering during the colder season. Being among the largest and swiftest teleosts of the oceans, they perform considerably long migrations but only few records of transoceanic migrations are known for this group.

**Interest to Fisheries** : All istiophorid species have some commercial value throughout the world, but they are most highly priced in Japan which is the major consumer nation for this group of fishes. Most of the species are exploited commercially by longline fleets and all are regarded as excellent game fish by sports fishermen.

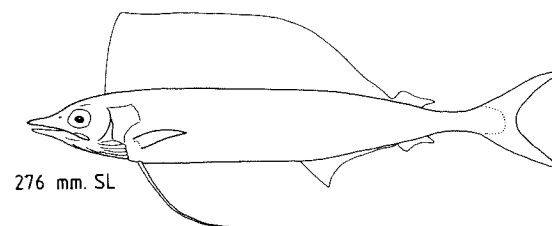
**Remarks** : The species of this family undergo drastic morphological changes during growth, as is shown in the illustrated example of Makaira mazara.



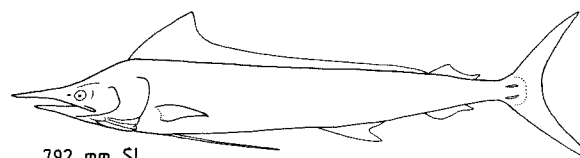
11,6 mm. TL



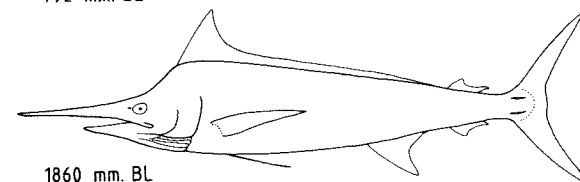
23,2 mm. TL



276 mm. SL



792 mm. SL



1860 mm. BL

Body changes of Makaira mazara with growth (schematic)

**Istiophorus** Lacepède, 1801

ISTIO Istio

**Genus** : Istiophorus Lacepède, 1801, Histoire naturelle des poissons, 3:374-5

**Type Species** : Istiophorus gladifer Lacepède, based on "Le voilier" of Broussonet, Mem.Acad.Sci., 1786: 450-5, pl. 10.

**Synonymy** : Nostidium Hermann, 1804; Histiophorus Cuvier, in Cuvier and Valenciennes, 1832; Skeponopodus Nardo, 1833; Zanclurus Swainson, 1839.

**Remarks** : There are many research workers who consider that this genus is monotypic, including only Istiophorus platypterus. Others recognize two species (or subspecies).

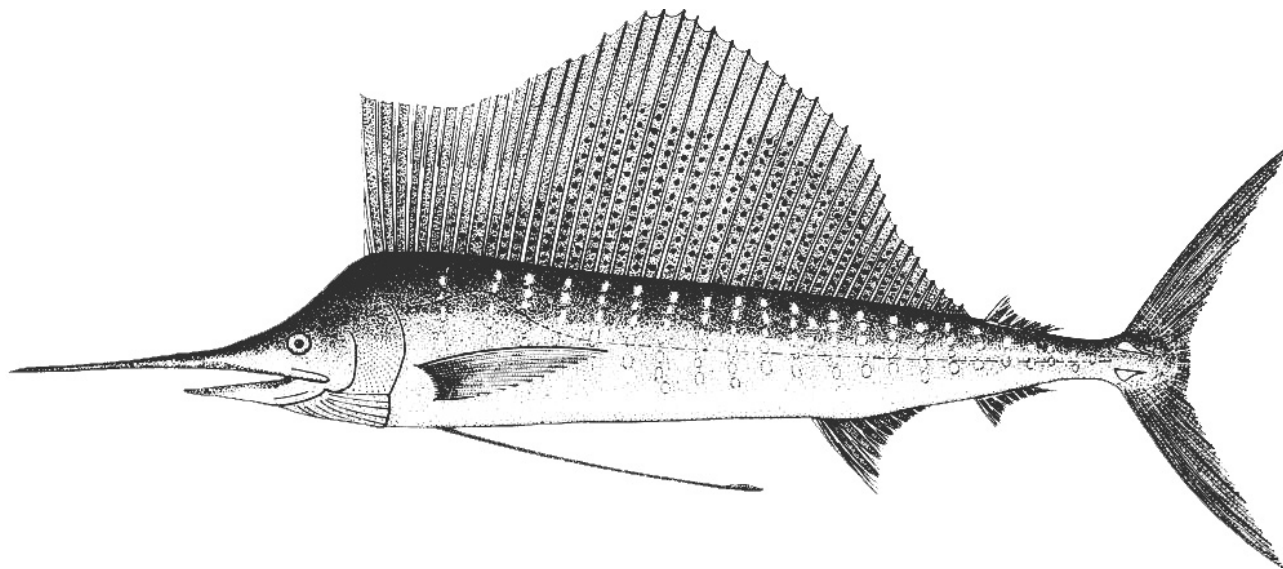
**Istiophorus albicans** (Latreille, 1804)

ISTIO Istio 1

Makaira albicans Latreille in Bose & Latreille, 1804, Nouveau Dictionnaire d'Histoire Naturelle, 1(24):104 (Brasil).

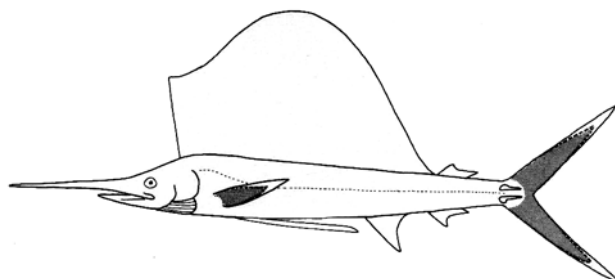
**Synonymy:** Histiophorus americanus Cuvier in Cuvier & Valenciennes, 1832; Histiophorus pulchellus Cuvier in Cuvier & Valenciennes, 1832; Makaira velifera Cuvier, 1832; Skeponopodus guebucu Nardo, 1833; Histiophorus granulifer Castelnau, 1861; Xiphias velifer Rochebrune, 1882; Istiophorus americanus-Jordan, 1885; Istiophorus wrighti Jordan & Evermann, 1926; Istiophorus maguirei Jordan & Evermann, 1926; Istiophorus volador Jordan & Evermann, 1926; Histiophorus albicans-Whitley, 1936; Istiophorus albicans-Whitley, 1937.

**Fao Name** : En - Atlantic sailfish; Fr - Voilier de l'Atlantique; Sp - Pez vela del Atlántico.

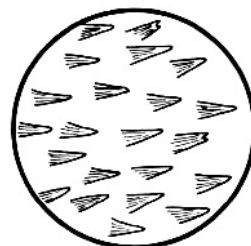


**Field Marks:** First dorsal fin sail-like and remarkably higher than greatest body depth; pelvic fins very long, nearly reaching to anus, with a well developed membrane; pectoral and caudal fins long compared with those of Istiophorus platypterus in young fish up to about 90 cm body length.

**Diagnostic Features :** Body fairly compressed. Bill long, slender and round in cross section; jaws and palatines with small, file-like teeth in adults; no gillrakers; right and left branchiostegal membranes united to each other, free from isthmus. Two dorsal fins, the first large, with 42 to 46 rays, the second small with 6 or 7 rays; first dorsal fin sail-like, remarkably higher than body depth at level of midbody, its base long and close to that of second dorsal fin; two anal fins, the first with 11 to 14, the second with 6 or 7 rays; position of second anal fin slightly more forward than that of second dorsal fin; pectoral fins with 17 to 20 rays, relatively longer than in I. platypterus in immature specimens (to about 90 cm body length); pelvic fins extremely long, almost reaching to anus, depressible into a groove, with one spine and several soft rays fused tightly together and with a well developed membrane. Caudal peduncle with double keels on each side and a shallow caudal notch on both, the dorsal and the ventral surfaces; anus situated near to first anal fin origin. Lateral line single and well visible. Scales vary in shape with growth (see I. platypterus); in adults they are somewhat sparse, imbedded in the skin, each with a single, rather blunt point or two posterior points. Vertebrae 24 (12 precaudal and 12 caudal). Colour: body dark blue dorsally, light blue splattered with brown laterally, and silvery white ventrally; about 20 rows of longitudinal stripes on sides, each stripe composed of many light blue round dots. Bases of first and second anal fins often tinged with silvery white; membrane of first dorsal fin dark blue or blackish blue, with scattered small round black dots; remaining fins blackish blue, sometimes tinged with dark brown.



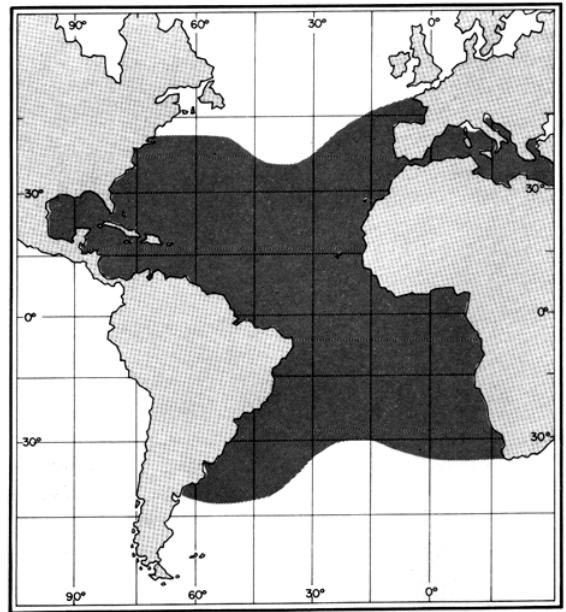
Immature of I. albicans ca. 90 cm. body length (screened areas show characters of I. platypterus)



scales

**Geographical Distribution :** I. albicans is widely distributed in the tropical and temperate waters of the Atlantic Ocean. The latitudinal range, based on data from longline catches, is approximately 40°N in the western North Atlantic, 50°N in the eastern North Atlantic, 40°S in the western South Atlantic, and 32°S in the eastern South Atlantic. However, the southern range limit of this species in the eastern South Atlantic near the Cape of Good Hope is uncertain because of possible joint occurrence of both sailfish species in that area, and the difficulty of separating these accurately in the field. The Atlantic sailfish is also known to migrate into the Mediterranean Sea, although the records from this area are few and mostly based on juvenile specimens. Furthermore, in at least one case (Ben-Tuvia, 1966) a specimen recorded from the Mediterranean as sailfish has been subsequently identified as Tetrapturus belone.

**Habitat and Biology :** This is an epipelagic and oceanic species, usually found in the upper layers of warm water above the thermocline (temperature range between 21° and 28°C), but also capable of descending to rather deep water. This is the least oceanic of the Atlantic billfishes, and it often migrates into near-shore waters. In the western Atlantic, it concentrates particularly in the Caribbean Sea, the Gulf of Mexico and around the West Indies and Florida. The distribution along the east coast of the USA appears to be influenced by meteorological conditions (wind) and by water temperatures; during summer, the fish move northward along with the extension of warm water, and with the beginning of cold weather and northerly winds they are driven back southward to congregate in schools off the Florida coast. In the eastern Atlantic, the shifts of the frontal zone of the Canary Current and the Equatorial Countercurrent are responsible for the aggregation of the populations off West Africa; in spring the population in that area moves northward along the coast, and apparently returns toward the south in autumn, following the 28°C isotherm; the period of increased abundance off Ivory Coast coincides with the period of maximum surface water temperature, around 28°C.



I. albicans occasionally forms schools or smaller groups of 3 to 30 individuals, but more often occurs in loose aggregation over a wide area. Observations on the diel activity of this species off Florida have shown scattering of the population in the early morning, but by 09.00 hours schools of up to 30 individuals begin to form and feed on concentrations of small forage fish.

Mather *et al.* (1974) reported on the results of 18 years of billfish tagging under the Woods Hole Oceanographic Institution's Cooperative Gamefish Tagging Program; 12 525 sailfish were tagged and 97 recoveries recorded; the longest distance between the points of release and recovery was about 3 070 km, from off Cape Hatteras, North Carolina (USA) to off Guianas; the longest time at liberty of tagged fish was about 4 years.

The Atlantic sailfish is heterosexual, but there are no external morphological characters or colour to distinguish males and females; large fish are usually females. Around Florida, this species often moves inshore into shallow waters where the females, swimming sluggishly with their dorsal fins extended and accompanied each by one or more males, may spawn near the surface in the warm season (Voss, 1956; Jolley, 1977). However, Gehringer (1956), stated that spawning occurs in offshore waters beyond the 100 fathom isobath and appears to extend from April to September from south of Cuba to Carolina. In the eastern Atlantic, spawning has been observed in West African shelf waters throughout the year with a peak intensity during the summer months in the Conakry-St. Luis region, and from February to April in the Conakry-Freetown region (Ovchinnikov, 1970). Off southeast Florida, the presence of three distinct groups of maturing ovocytes in ripe ovaries reveals that ovocyte development is asynchronous, this resulting in fractional or multiple spawning; a 33.4 kg female may shed up to 4.8 million eggs in three batches during one spawning season (Jolley, 1977).

Although I. albicans probably competes for food with many other large pelagic fishes, such as other billfishes, tunas, sharks and dolphinfishes, it is most likely less affected by food competition than the other species. In the Atlantic it overlaps in geographical range and hence, competes for food during certain seasons of the year, particularly with Tetrapturus albidus and Makaira nigricans.

The food of larval Atlantic sailfish consists primarily of copepods, but the diet of the larvae changes rapidly to include predominantly fishes after an increase in size of only a few millimetres. Around Florida, adult I. albicans have been shown to feed mainly on pelagic fishes such as Euthynnus alletteratus, Hemiramphus spp., Trichiurus lepturus, Strongylura notatus, Caranx ruber, Lagodon rhomboides and squids, e.g., Argonauta argo, Ommastrephes bartrami, etc. They also often feed on bottom-dwelling organisms including sea robins (Triglidae), cephalopods and gastropods. This shows that I. albicans does not feed only in surface waters but also near the sea bottom down to considerable depths.

**Size** : This species reaches a maximum size beyond 3.15 m in total length and 58 kg in weight. The all-tackle angling record is a 58.10 kg fish taken off Luanda (Angola) on 27 March 1974. Other large records include individuals of 58 kg in 1975 and 52.75 kg in 1972 (both off Louanda) and 58 kg in 1979 from Cancun, Quintana Roo, Mexico (IGFA, 1981). The all-line-class world records recognized by IGFA are from West Africa (Angola and Senegal) and Mexico (Cancun, Quintana Roo). The largest fish recorded by sportsfishermen measured 3.15 m in total length and 55.8 kg weight (Walker Bay, Bahamas, 25 April 1950).

The majority of sportsfishing catches in southern Florida range from about 102 to 140 cm body length (or 173 to 229 cm total length) with considerable differences in weight (from 6.0 to 49.4 kg). The second largest size group ranges from 61 to 94 cm body length, averaging less than 6 kg in weight. The small fish begin to appear in the catches in late summer, becoming prominent in November, December and January. The body length of individuals caught by commercial tuna longliners in the Atlantic ranges from about 125 to 210 cm (mostly between 150 and 195 cm).

**Interest to Fisheries** : Catches of I. albicans in the period from 1978 to 1982 have been reported from five FAO major marine fishing areas (21, 31, 34, 41 and 47), mostly by Ghana, Japan, Brazil and the USSR. The total world catch was 267 metric tons in 1978, 2 823 t in 1979, 1 320 t in 1980, 1 091 t in 1981 and 920 t in 1982. More than 88% of the total catch from 1979 to 1982 was taken in Fishing Area 34 (eastern central Atlantic), predominantly by Ghana (FAO, 1984).

The principal commercial fishing gear for I. albicans is the tuna longline used primarily for tunas and marlins, and hence the Atlantic sailfish is a byproduct of the fisheries for these species. Trolling is the primary method used by sportsfishermen, mainly by towing baited hooks and lures through the surface water to stimulate swimming fish.

The flesh is good in summer, but usually not as good as that of marlins. It is marketed mostly frozen and often fresh in local markets.

**Local Names**: BRAZIL: Agulhão, Agulhão bandeira, Agulhão de vela, Agulhão vela, Bicudo, Guebuçú; CANADA: Sailfish; CUBA: Abanico, Aguja de abanico, Aguja voladora, Bicuda, Prieta, Voladeira; FRANCE: Voilier, Voilier de l'Atlantique; GHANA: Adzietekwesi, Fetiso, Onyankle; GOLD COAST: Fetiso; JAPAN: Nishibashoo, Nishibashookajiki (names for Atlantic sailfish landed in Japan); MEXICO: Pez vela, Volador; MOROCCO: Espadon; NETHERLANDS: Zegal-fisch; PORTUGAL: Bicuda, Espardarte veleiro, Peixe de vela, Veleiro, Veleiro do Atlantico; SENEGAL: Espadon, Oumbajhe; SPAIN: Pez vela, Pez vela del Atlantico; SOUTH AFRICA: Sailfish, Seilvis; UNITED KINGDOM: Sailfish; USA: Atlantic sailfish, Sail, Sailfish; USSR: Parusnik, Parusnik-ryba; VENEZUELA: Aguja vela; WEST INDIES: Balahoo, Billfish, Mère, Ocean gar, Sailfish, Squadron.

**Literature** : Voss (1953); de Sylva (1957); Cadenat (1961); Tinsley (1964); Wise & Davis (1973); Jolley (1974, 1977); Beardsley, Merrett & Richards (1975).

**Remarks** : Adults of I. albicans and I. platypterus are extremely similar and very difficult to distinguish. In the immature stage (to about 90 cm body length), this species has longer pectoral and caudal fins than I. platypterus; this seems to be due to the more rapid growth of I. albicans which attains a much smaller maximum size than I. platypterus. Further study is required, to clarify the speciation problem of the two sailfish species. For the time being, the author prefers to retain the use of Istiophorus albicans (Latreille, 1804) for the Atlantic sailfish and Istiophorus platypterus (Shaw & Nodder, 1792) for the Indo-Pacific sailfish, but other research workers recognize a single species under the name Istiophorus platypterus.

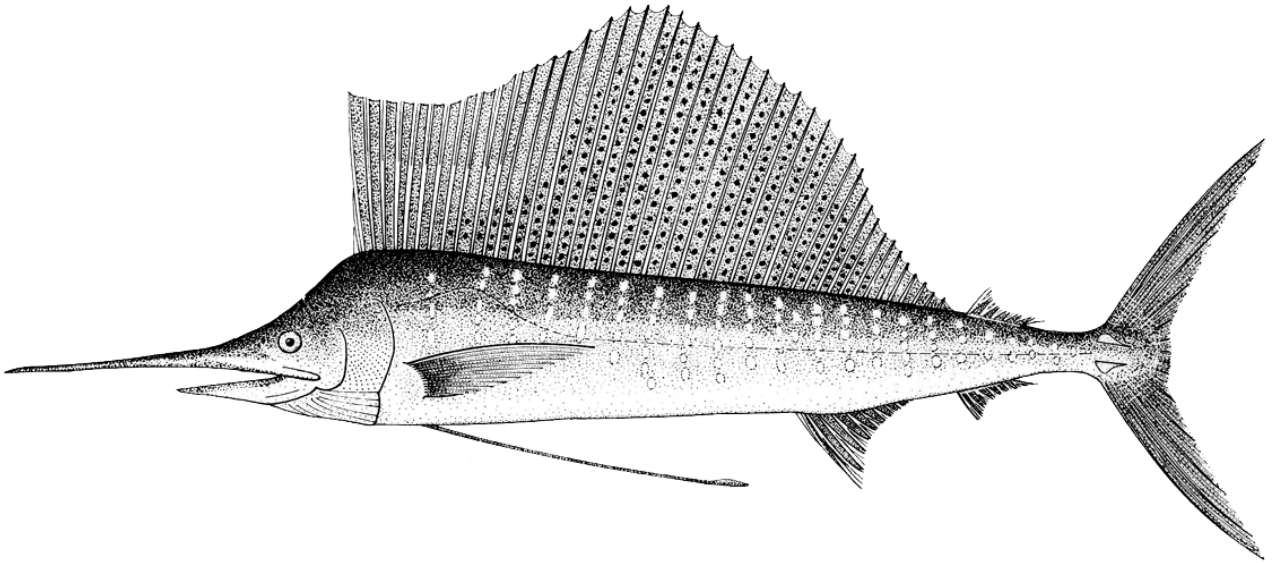
**Istiophorus platypterus** (Shaw & Nodder, 1792)

ISTIO Istio 2

Xiphias platypterus Shaw & Nodder, 1792, Nat.Misc., (28):no pagination, pl. 88 (Indian Ocean).

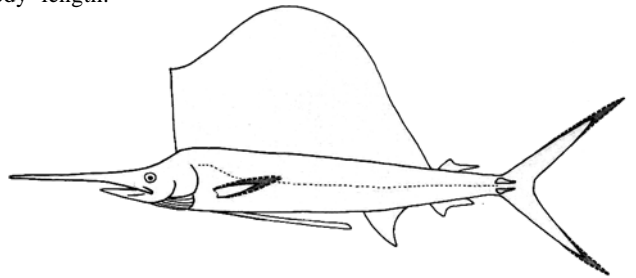
**Synonymy** : Scomber gladius Bloch, 1793; Istiophorus gladius Lacepède, 1801; Xiphias velifer Schneider, in Bloch & Schneider, 1801; Histiophorus indicus Cuvier, in Cuvier & Valenciennes, 1832; Histiophorus immaculatus Rüppel 1835; Histiophorus orientalis Schlegel in Temminck & Schlegel, 1842-50; Histiophorus gladius-Günther, 1860; Istiophorus dubius Bleeker, 1873; Istiophorus triactis Hemprich & Ehrenberg, 1899; Istiophorus japonicus Jordan & Thompson; Istiophorus gladius-McCulloch, 1921; Istiophorus orientalis-Jordan & Snyder, 1901; Istiophorus eriquius Jordan & Ball in Jordan & Evermann, 1926; Istiophorus Greyi Jordan & Evermann, 1926; Istiophorus greyi-Jordan, Evermann & Clark, 1930; Istiophorus brookei Fowler, 1933; Istiophorus ludibundus Whitley, 1933; Istiophorus immaculatus-La Monte & Marcy, 1941; Istiophorus amarui Curtis, 1944; Istiophorus gladius greyi-Nichols & Murphy, 1944; Istiophorus greyii-de Buen, 1958; Istiophorus platypterus-Whitehead, 1964.

**FAO Name** : En - Indo-Pacific sailfish; Fr - Voilier de l'Indo-Pacifique; Sp - Pez vela del Indo-Pacífico.

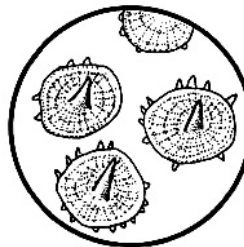


**Field Marks :** First dorsal fin sail-like and remarkably higher than greatest body depth; pelvic fins very long, nearly reaching to anus, with a well developed membrane. Pectoral and caudal fins short compared with those of Istiophorus albicans in young up to about 90 cm body length.

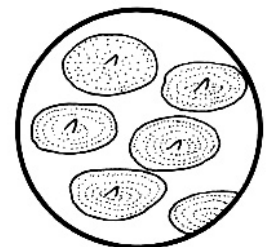
**Diagnostic Features :** Body fairly compressed. Bill long, slender and round in cross section; jaws and palatines with small, file-like teeth; no gillrakers; right and left branchiostegal membranes united to each other, free from isthmus. Two dorsal fins, the first large with 42 to 49 rays, the second small with 6 or 7 rays; first dorsal fin sail-like, with the middle rays longest, remarkably higher than body depth at level of midbody, its base long and close to that of second dorsal fin; two anal fins, the first with 12 to 17, the second with 6 or 7 rays; position of second anal fin slightly more forward than that of second dorsal fin; pectoral fins with 18 to 20 rays, relatively shorter than in I. albicans in immature specimens (to about 90 cm body length pelvic fins extremely long, almost reaching to anus, depressible into a groove, with one spine and several soft rays fused tightly together and with a well developed membrane. Caudal peduncle with double keels on each side and a shallow notch on both, the dorsal and the ventral surfaces; anus situated near to first anal fin origin. Lateral line single and well visible. Scales varying in shape with growth; in adults they are somewhat sparse, imbedded in the skin, each with a single, rather blunt point, or with two posterior points. Vertebrae 24 (12 precaudal and 12 caudal). Colour: body dark blue dorsally, light blue splattered with brown laterally, and silvery white ventrally; about 20 rows of longitudinal stripes on sides, each stripe composed of many light blue round dots. Bases of first and second anal fins often tinged with silvery white; membrane of first dorsal fin dark blue or blackish blue, with scattered small, round black dots; remaining fins blackish brown or dark blue.



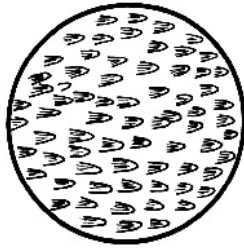
Immature of I. platypterus ca. 90 cm. body length ( screened areas show characters of I. albicans )



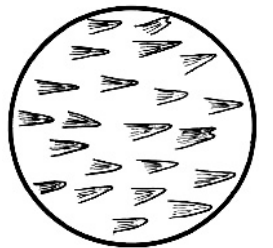
ca. 15 cm body length



ca. 21 cm body length



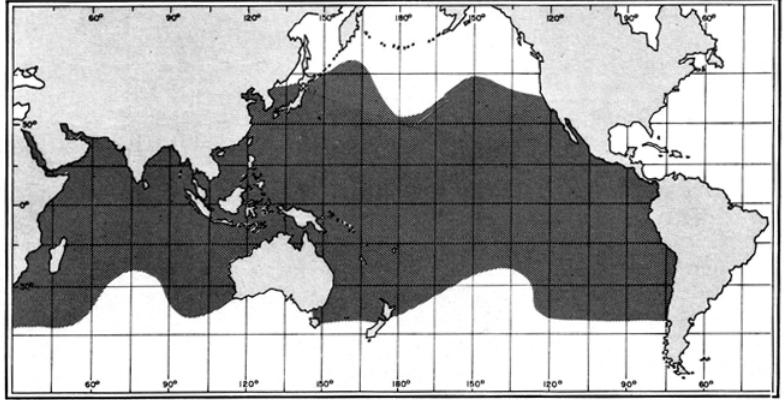
ca. 90 cm body length



ca. 200 cm body length

Schematic drawings of scales (not same size)

**Geographical Distribution :** *I. platypterus* is widely distributed in the tropical and temperate waters of the Pacific and Indian oceans. Its latitudinal range, based on data from longline catches, is approximately 45° to 50° N in the western North Pacific, 35° N in the eastern North Pacific, 40° to 35° S in the western South Pacific, 35° S in the eastern South Pacific, 45° S in the western Indian Ocean, and 35° S in the eastern Indian Ocean. This species shows a strong tendency to come close to the shore, even though a few individuals have been caught in the central parts of the oceans. Large numbers of Indo-Pacific sailfish are found in waters off Papua New Guinea, around the Solomon Islands, in the warm Kuroshio Current and its branch, the Tsushima Current, in the Sea of Japan, in the East China Sea, around the Philippines, in the Banda Sea, in the central South Pacific from Tahiti to the Marquesas, and off the Pacific coast of Mexico. They are also fairly abundant off the northern coast of Australia and around the Hawaiian Islands, India and Sri Lanka, but have been seldom seen off the Pacific coast of South America from Peru to Chile. This species has also entered the Mediterranean Sea from the Red Sea through the Suez Canal.



The Indo-Pacific sailfish is an epipelagic and oceanic species, usually found above the thermocline. It shows a strong tendency to approach continental coasts, islands and reefs.

**Habitat and Biology :** The Indo-Pacific sailfish is an epipelagic and oceanic species, usually found above the thermocline. It shows a strong tendency to approach continental coasts, islands and reefs.

In the western Pacific, the distribution of postlarvae and adults appears to be closely related to the Kuroshio Current, and the densest concentrations seem to coincide with the spawning season. Individuals over 160 cm eye-fork length (= 84 to 88.7 % of body length) migrate southward out of the East China Sea, presumably for spawning. In the eastern Pacific, the seasonal north-south displacements of this species off the coast of Mexico appear to coincide with the seasonal movements of the 28°C water isotherm. In the Indian Ocean, off East Africa, the abundance and distribution of *I. platypterus* is positively correlated with the months of the northeast monsoons when the East African coastal current reaches its maximum temperature (28° to 30° C) and minimum salinity (35.2 to 35.3‰). This also the time of highest biological productivity in the surface waters caused by a mixing of waters resulting from the junction of the southward-flowing Somalia Current and the northward-flowing East African Coastal Current. In the Sea of Japan, considerable numbers of individuals of this species migrate in schools northward with the warm Tsushima Current (a branch of the Kuroshio) during summer (peak in later summer), and southward against the current during autumn (peak in early autumn), and are caught in these periods by the coastal setnets. These schools consist of young (55 to 110 cm body length) and adults (145 to 235 cm body length) with no fish of intermediate sizes caught by the setnets. Sometimes the young and the adults are mixed in the catches, but more often they are landed separately. Therefore, *I. platypterus* most likely schools by size. Usually, the young form more dense schools than the adults. In the East China Sea, the Indo-Pacific sailfish migrates northward in summer and returns southward in autumn where it overwinters in the southernmost area; fish under 160 cm eye-fork length move into the area between May and July while those over 160 cm migrate southward out of the area, probably for spawning.

Spawning of this species occurs with males and females swimming in pairs or with two or three males chasing a single female (probably mating behaviour). *I. platypterus* seems to spawn throughout the year in tropical and subtropical waters of the Pacific with peak spawning occurring in the respective local summer seasons. The ripe ovarian eggs are about 0.85 mm in diameter and have a single oil globule surrounded by a pale yellow indefinite nimbus; there are no structures on the vitelline membrane and the egg as a whole is transparent or translucent. Eggs shed from a captured female in the Indian Ocean averaged 1.304 mm in diameter.

The feeding behaviour of *I. platypterus* has been observed by fishermen as follows: when one or several sailfish found a school of prey fishes (sardines, anchovies, mackerels, or jack mackerels), they began to pursue it at half speed with their fins half-folded back into the grooves. They then drove at the prey at full speed with their fins completely folded back and once they had caught up with it, they suddenly made sharp turns with their fins expanded to confront a part of the school and then hit the prey with the bill. Subsequently they ate the killed and stunned fish, usually head first. Surprisingly, several individuals showed a kind of team-behaviour in capturing the prey.

*I. platypterus* and *Makaira indica* are the billfish species dominantly migrating into inshore waters and they undoubtedly compete with each other for food and habitat, although *M. indica* probably feeds on larger forage organisms, and swims a little deeper and farther offshore than the sailfish. The habitat of this species is strikingly different from that of the closely related *Tetrapturus angustirostris* which does not usually occur within 500 km off the coast, while *M. indica* is mostly distributed within this range.

The major forage items of the Indo-Pacific sailfish are fishes and squids, but the adults are fairly opportunistic feeders and take almost any food they come across. During several longline cruises of Japanese research vessels in the eastern North Pacific Ocean, adult *I. platypterus* have been shown to feed mainly on cephalopods and fishes (Bramidae, Stromateidae, Carangidae, *Ostracion* spp., Gempylidae, *Auxis* spp., *Trachipterus* spp., *Belonidae*, *Balistidae*, *Coryphaena* spp., *Lagocephalus* spp., etc.).

Large pelagic sharks, the killer whale and other related species attack billfishes and tunas hooked by longlines, but predation on free-swimming tunas and billfishes is thought to be very rare.

**Size :** This species reaches a maximum size beyond 340 cm in total length and 100 kg in weight. In the sports fishery (all tackle angling record) corresponds to a fish of 327.7 cm total length and 100.24 kg (221 lb) weight, taken at Santa Cruz Island, Galapagos, Ecuador on 12 February 1947. Another very large fish (340.4 cm total length and 89.81 kg (198 lb) weight) was taken at La Paz, Baja California, Mexico on 23 August 1957. Other records over 85 kg are the following: 90.26 kg (199 lb) at Pinas Bay, Panama on 17 January 1968; 89.81 kg (198 lb) at Mazatlan, Mexico on 10 November 1954; 87.54 kg (193 lb) at Acapulco, Mexico on 8 January 1978; 87.28 kg (192.7 lb) at Acapulco, Mexico on 4 October 1961; 87.09 kg (192 lb) at La Paz, Baja California, Mexico on 6 September 1950; and 85.72 kg (189 lb) at Yanuca, Fiji on 7 December 1967 (IGFA, 1981). All-line-class world records up to 1981 for both men and women recognized by IGFA are from the eastern Pacific, except the one for the women's 130-lb line class of 189 lb already mentioned from Yanuca, Fiji.

In sportsfishing at Malindi, Kenya, the majority of individuals caught ranged from 203 to 254 cm fork length (224 to 279 cm total length) and from 18.1 to 47.2 kg in weight. Length frequency data for sailfishes caught by longlines in the East China Sea, give size range from 105 to 240 cm body length (60% between 165 and 190 cm body length); the size distribution is essentially unimodal, except in June when a group of 125 to 150 cm fish suddenly appeared in the catch. Koto, Furukawa & Kodama (1959) believed that these small fish enter the East China Sea from other areas during this month. The average size of the individuals caught by longlines is unimodal, about 140 to 240 cm body length, while it is bimodal in those caught by driftnets and setnets, about 50 to 110 cm and 140 to 240 cm body length, respectively.

**Interest to Fisheries :** In the period from 1978 and 1982 catches of *I. platypterus* have been reported from seven FAO Fishing Areas (51, 57, 61, 71, 77, 81 and 87), predominantly by Japan and the Republic of Korea. The total world catch was 10 516 t in 1978, 7 916 t in 1979, 7 767 t in 1980, 6 438 t in 1981 and 7 214 t in 1982. Only 4% (285 t) of the 1982 total world catch were taken in the Indian Ocean, and 96% (6 929 t) in the Pacific Ocean particularly in Fishing Areas 61 and 77 (northwest Pacific and eastern central Pacific) of which 6 218 t were taken by Japan, China (Taiwan Province) and the Republic of Korea. In Fishing Area 77 (eastern central Pacific), the Korean and Japanese landings have decreased remarkably in recent years: 5 425 t (1978), 4 351 t (1979), 1 525 t (1980), 539 t (1981) and 2 483 t (1982) (FAO, 1984). It should be noted that the catch statistics given for this species by Japanese longliners include *Tetrapturus angustirostris*, but that the share of the latter species in these catches is quite negligible.

Indo-Pacific sailfish are often taken as bycatch by the commercial surface tuna longliners. They are also caught by commercial fishermen with surface driftnets, and by trolling, harpooning and setnetting. In sportsfishing this species is caught by surface trolling.

The flesh is dark red, and not as good as that of marlins. In summer it is good for sashimi (sliced flesh with soy-sauce and horse radish) or sushi (vinegared boiled rice with sliced flesh and horse radish, dipped in soy-sauce during the meal).

**Local Names :** AUSTRALIA: Bayonet fish, Pacific sailfish, Sailfish; CHINA: Ho-soan-ki-hi, Tong-fang-chiyii, Yu-san-chi-yu, Yu-san-yu; COMOROS: Mbassi kouri; INDIA: Fung-hibaru, Mylmeen, Ola-meen, Peacock fish, Sailfish, Tadmasa, Yemungolah; INDONESIA: Djangilus, Geulang pajang, Hohoo malays, Ikan jegan, Ikan laya, Ikan layar, Lijarang, Landjareng, Lkajar plajaren, Panombuk, Stuji stuji; JAPAN: Akitaroo, Atsutaro, Banba, Baren, Barin, Bashoo, Bashookajiki, Byoobu, Byoobusashi, Haio, Haioshibi, Haou, Hauo, Kanga, Kannushi, Koomori, Minokajiki, Nourage, Oba, Suginairage, Suginairagi, Sugiyama, Tobihira; KENYA: Mbassi, Nsulinsuli; MADAGASCAR: Ndwaro; MALAYSIA: Mersuji, Layeran; MEXICO: Pez vela, Volador; NEW CALEDONIA: Empereur éventail, Voilier; PHILIPPINES: Dogso, Dugso, Dumosok, Kandelan, Kandayan, Liplipan, Malasugi, Sailfin, Sailfish; REPUBLIC OF KOREA: Dot-sae-chi; SRI LANKA: Mylmeen, Thalapatha; TAHITI: Haurepe; TANZANIA: Mbassi, Nsuli nsuli; USA: Pacific sailfish, Sailfish; USSR: Parusnik, Parusnik-ryba; VIET NAM: Cá co.

**Literature :** Nakamura, H. (1937, 1938, 1940, 1942, 1949, 1951); Koto, Furukawa & Kodama (1959); Koto & Kodama (1962); Ueyanagi (1963, 1963a, 1964); Tinsley (1964); Williams (1964, 1970); Kume & Joseph (1969, 1969a); Nakamura, I. (1974, 1983); Beardsley, Merrett & Richards (1975).

**Remarks:** See remarks for *Istiophorus albicans*.