

FAO SPECIES IDENTIFICATION SHEETS

FISHING AREA 51
(W. Indian Ocean)

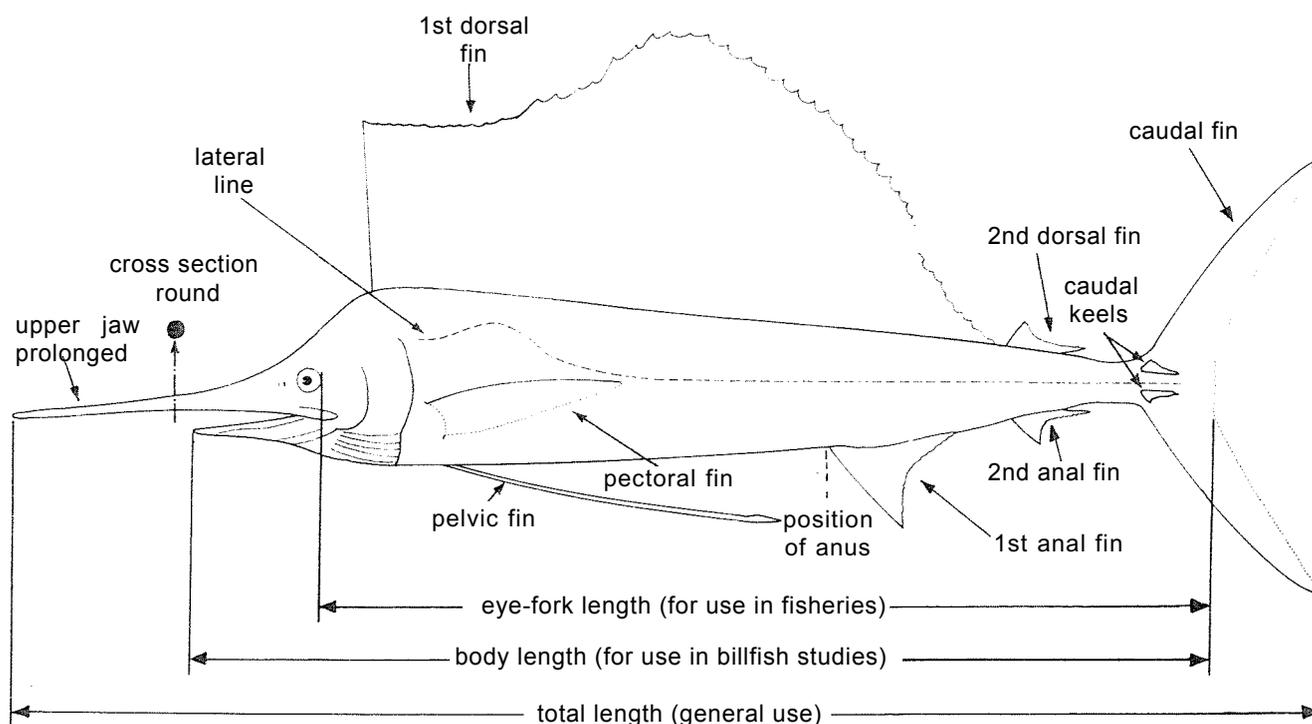
ISTIOPHORIDAE

Billfishes (spearfishes, marlins and sailfishes)

Body elongate and more or less compressed. Upper jaw prolonged into a long spear which is round in cross section. Mouth not protrusible, with fine, rasp-like teeth on both jaws; gill openings wide, gill membranes united but free from isthmus; no rakers on gill arches, gill filaments reticulated. Dorsal fins two, close together, the first much larger than the second; anal fins also two, the second much smaller than the first and similar in size and shape to second dorsal fin; the first dorsal and anal fins can both be folded back into grooves; pectoral fins falcate; pelvic fins consist of 1 or 2 rays united with a spine; caudal fin large, strong and forked, with a pair of keels on either side at base; a small shallow notch on both upper and lower profiles of caudal peduncle. Lateral line always well visible (except in large specimens of *Makaira nigricans* and *M. indica*). Body covered with more or less imbedded, narrow and pointed scales.

Colour: back and upper sides blue (sometimes dark), lower sides and belly silvery white. In some species there are horizontally aligned spots or longitudinal lines on body and/or black spots on the first dorsal fin membrane.

Billfishes are primarily inhabitants of warm seas, usually the upper layers of water above the thermocline, but during the summer months they follow schools of smaller fishes into temperate areas. Being among the largest and swiftest fishes of the oceans, they perform considerable, sometimes transoceanic, migrations. All billfishes are of some commercial value throughout the world (high commercial value in Japanese markets) and provide excellent food. Most of the species are exploited commercially by longline fleets and all are regarded as excellent game fish by sportsfishermen. The total reported catch of billfishes from Fishing Area 51 in 1981 was about 2 100 t (commercial fisheries only), all taken by Korea and Pakistan.

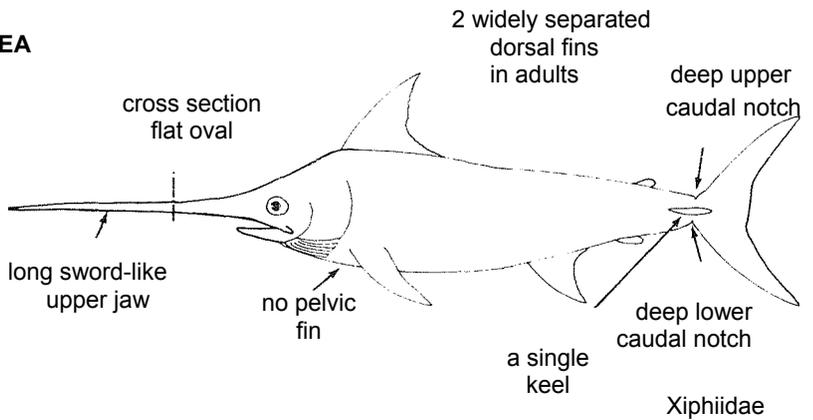


SIMILAR FAMILIES OCCURRING IN THE AREA

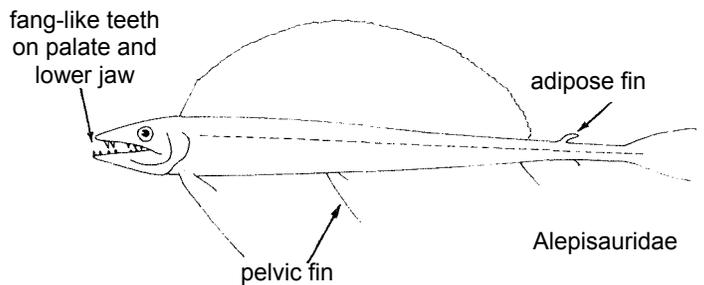
Xiphiidae: upper jaw prolonged like in the istiophorids, but shaped as a sword rather than a spear, its cross section flat-oval (round in Istiophoridae); pelvic fins absent; a single, strong keel on either side of caudal fin base (2 keels in Istiophoridae); a deep notch on both the upper and lower profiles of caudal peduncle (shallow notch in Istiophoridae); vertebrae 26 (24 in Istiophoridae). Adults are further characterized by the two well separated dorsal fins, the absence of teeth in the jaws and of scales on body, and by the fact that the lateral line is not visible externally.

Alepisauridae: somewhat similar to sailfishes (species of *Istiophorus*) in general appearance, but easily distinguished by their jelly-like body, the absence of prolonged jaws, of keels at base of caudal fin and of scales on body, the presence of fang-like teeth and an adipose fin (instead of a rayed second dorsal fin), and the insertion of the pelvic fins far behind the pectorals.

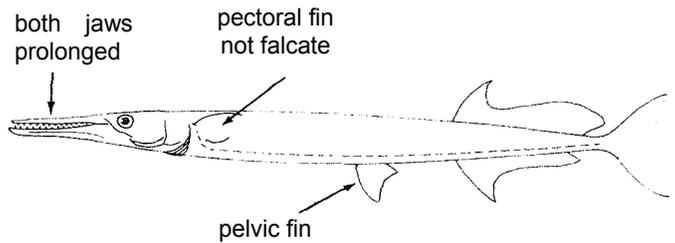
Belonidae: large representatives may be somewhat similar to small spearfishes or marlins (species of *Tetrapturus* or *Makaira*), with the first dorsal fin folded into a groove, but they have both jaws prolonged, the dorsal and anal fins both single and similar in size and shape, pectoral fins not falcate except in *Ablennes*, and pelvic fins inserted far behind the pectorals.



Xiphiidae



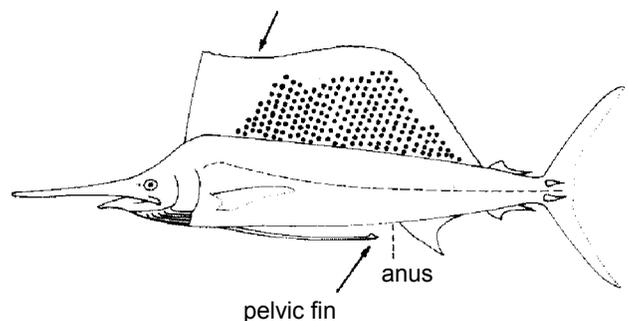
Alepisauridae



Belonidae

KEY TO ADULTS OF GENERA OCCURRING IN THE AREA:

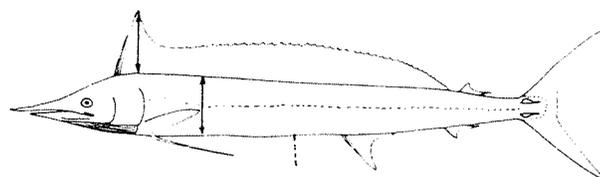
- 1a. First dorsal fin sail-like, considerably higher than body depth at level of midbody; pelvic fin very long (almost reaching to anus), with a well developed membrane (Fig.1) Istiophorus
- 1b. First dorsal fin not sail-like, only slightly higher to lower than body depth at level of midbody; pelvic fins not as long (far from reaching to anus), with a moderately developed membrane (Fig.2)



Istiophorus albicans

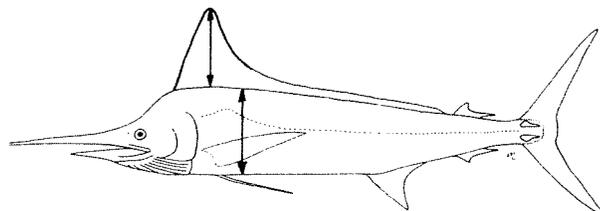
Fig.1

2a. Anterior part of first dorsal fin slightly higher than, or nearly equal to, body depth; profile of head between preorbital region and origin of first dorsal fin nearly flat (Fig.2) to slightly elevated (Fig.3); body strongly compressedTetrapturus

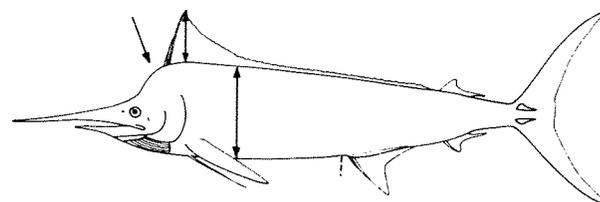


Tetrapturus angustirostris Fig.2

2b. Anterior part of dorsal fin lower than body depth; profile of head between preorbital region and origin of first dorsal fin steeply elevated (Fig.4); body not strongly compressedMakaira



Tetrapturus audax Fig.3



Makaira indica Fig.4

LIST OF SPECIES OCCURRING IN THE AREA:

Code numbers are given for those countries for which Identification Sheets are included

Istiophorus platypterus (Shaw & Nodder, 1792)

ISTIO Istio 2

Makaira indica (Cuvier, 1832)

ISTIO Mak 2

Makaira mazara (Jordan & Snyder, 1901)

ISTIO Mak 3

Tetrapturus angustirostris Tanaka, 1915

ISTIO Tetra 3

Tetrapturus audax (Philippi, 1887)

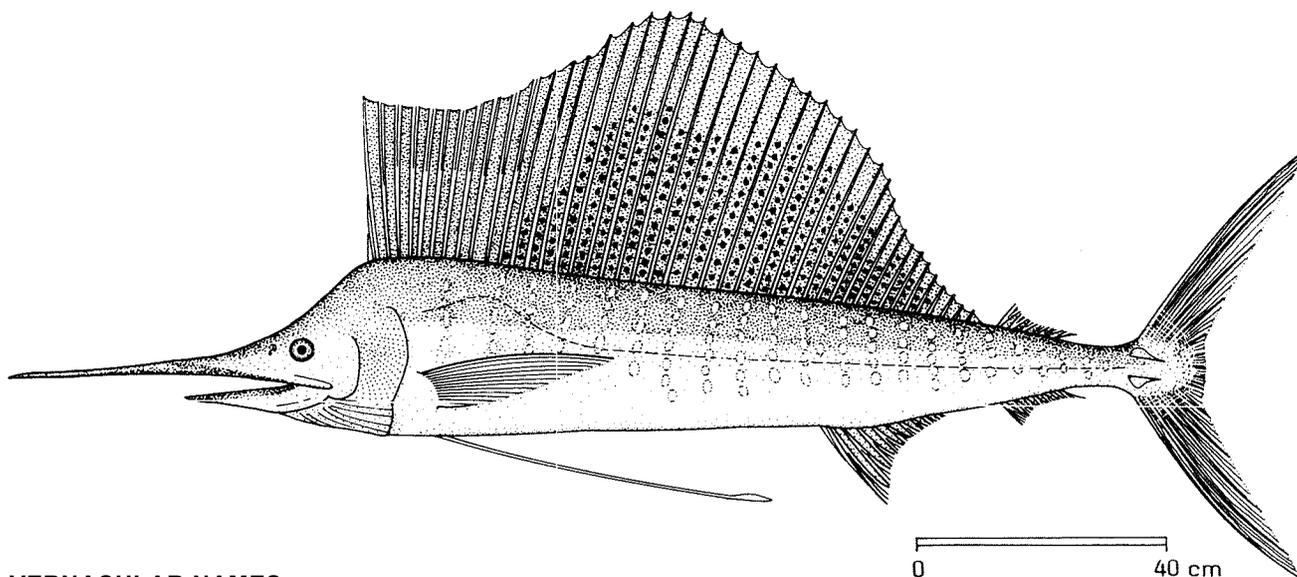
ISTIO Tetra 5

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ISTIOPHORIDAE

FISHING AREA 51
(W. Indian Ocean)*Istiophorus platypterus** (Shaw & Nodder, 1792)

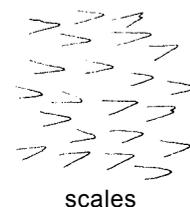
OTHER SCIENTIFIC NAMES STILL IN USE:

Istiophorus gladius (Bloch, 1793)*Histiophorus gladius* (Bloch, 1793)*Histiophorus orientalis* Temminck & Schlegel, 1844*Istiophorus orientalis* Temminck & Schlegel, 1844)

VERNACULAR NAMES:

FAO: En - Sailfish
Fr - Violier
Sp - Pez vela

NATIONAL:



DISTINCTIVE CHARACTERS:

Body elongate, much compressed. Upper jaw prolonged into a rather slender spear. Two dorsal fins, first dorsal fin large and sail-like with 42 to 48 rays, second dorsal fin small, with 6 or 7 rays; 2 separated anal fins, with 12 to 15 (1st) and 6 or 7 (2nd) rays, respectively; pectoral fins falcate, with 17 to 20 rays; pelvic fins very long, almost reaching to anus, with one spine and 2 soft rays. Lateral line visible, curved above pectoral fin, then almost straight to tail. Anus close to origin of first anal fin. Body covered by rather sparsely embedded scales, each with 1 or 2 dull points. Vertebrae 24 (12 + 12). Pelvic and caudal fins of much shorter than those of Atlantic sailfish.

Colour: body dark blue dorsally, silvery white ventrally; first dorsal fin membrane blue-black with many small black spots; other fins brown-black; more or less 20 horizontal bars, each consisting of several pale blue spots on body.

*This name has been used recently by those who recognize a single, cosmopolitan species of sailfish. The present author prefers to retain the traditional usage of *I. platypterus* for the Indo-Pacific sailfish and *I. albicans* for the Atlantic sailfish, because he considers that the data presently available do not permit to establish with certainty whether the two forms are conspecific, subspecies or distinct species

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Tetrapturus angustirostris: first dorsal fin not sail-like, anterior fin rays of first dorsal fin slightly higher, remaining part of fin of same height throughout its length; snout short; pectoral fins short; pelvic fins a little longer than pectoral fins; anus well in front of origin of first anal fin.

T. audax: first dorsal fin not sail-like, anterior fin rays of first dorsal fin higher than body depth; pelvic fins shorter than pectoral fins in larger specimens, slightly longer than pectoral fins in smaller specimens.

Makaira mazara: first dorsal fin not sail-like, height of anterior part of dorsal fin lower than body depth; pelvic fins shorter than pectoral fins; body less compressed; lateral line system with simple loops; nape elevated.

M. indica: first dorsal fin not sail-like, height of its anterior part lower than body depth; pectoral fins rigid, not folded back against side of body; pelvic fins shorter than pectoral fins; body less compressed; nape elevated.

SIZE:

Maximum: about 3.2 m (total length); common to 2.7 m (total length).

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout tropical and subtropical (sometimes temperate) waters of the Indo-Pacific. In the area, densely distributed in waters close to coasts and islands, around Sri Lanka, off west coast of India and in the Mozambique Channel.

Oceanic, epipelagic and highly migratory, usually above the thermocline.

Feeds on a wide variety of fishes, crustaceans and cephalopods.

PRESENT FISHING GROUNDS:

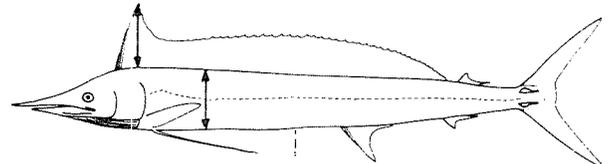
Commercial longline fishing grounds near shore, throughout the Indo-Pacific.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION:

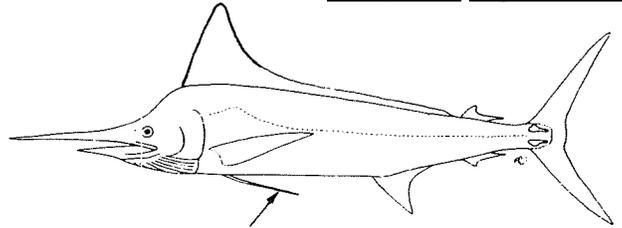
The reported catches for this species in Fishing Area 51 totalled 158 t in 1981.

Caught mainly with longlines and setnets, sometimes by trolling and harpooning from boats.

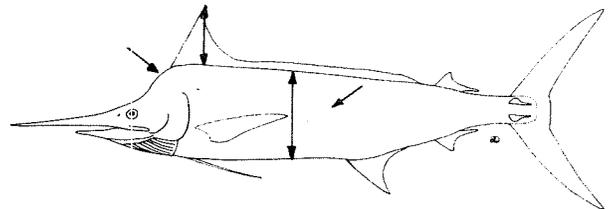
Marketed mostly fresh, frozen, prepared as fish cakes and sashimi (sliced raw fish) in Japan.



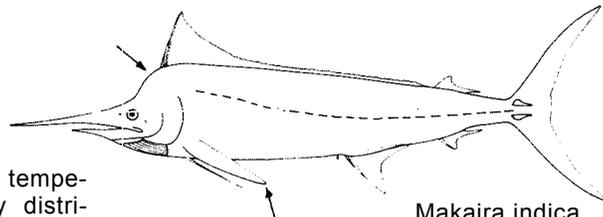
Tetrapturus angustirostris



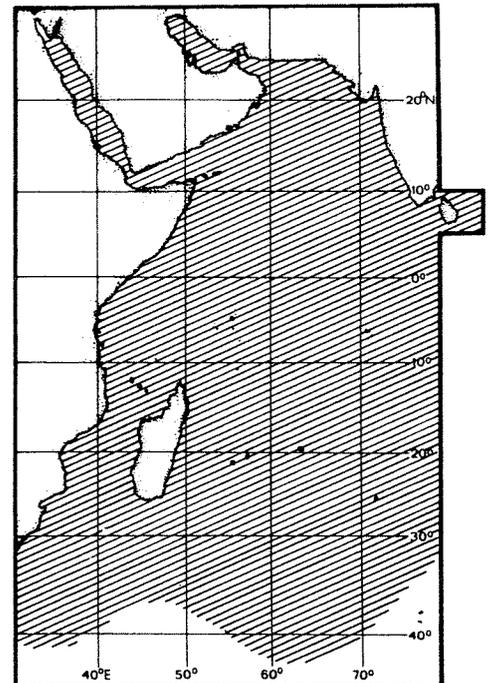
Tetrapturus audax



Makaira mazara



Makaira indica



FAO SPECIES IDENTIFICATION SHEETS

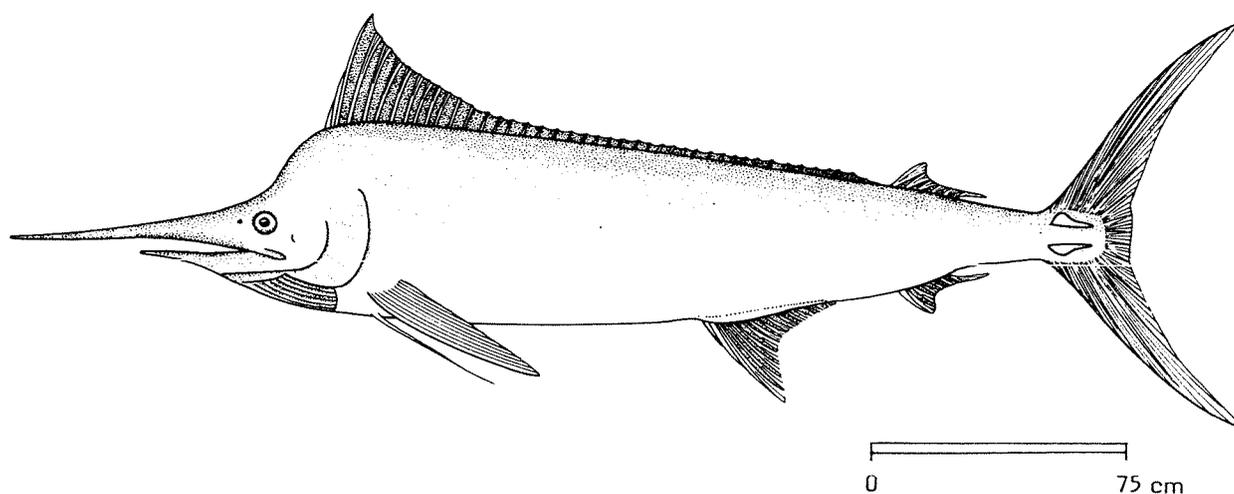
FAMILY: ISTIOPHORIDAE

FISHING AREA 51
(W. Indian Ocean)

<i>Makaira indica</i> (Cuvier, 1832)

OTHER SCIENTIFIC NAMES STILL IN USE :

Makaira marlina Jordan & Hill, 1926
Istiompax marlina (Jordan & Hill, 1926)
Istiompax indicus (Cuvier, 1832)



VERNACULAR NAMES:

FAO : En - Black marlin
 Fr - Makaire noir
 Sp - Aguja negra

NATIONAL:



scales

DISTINCTIVE CHARACTERS:

Body elongate, not strongly compressed. Upper jaw prolonged into a stout spear; nape (head profile between preorbital region and origin of first dorsal fin) very steep. Two dorsal fins, the first long (38 to 42 rays) and low posteriorly; the second small, with 6 or 7 rays; height of anterior part of first dorsal fin smaller than body depth; two separated anal fins with 13 or 14 (1st) and 6 or 7 (2nd) rays respectively; pectoral fins falcate with 19 or 20 rays, rigid, not foldable back against sides of body; pelvic fins shorter than pectorals, consisting of 1 spine and 2 soft rays. Lateral line single, curved above pectoral fin, then almost straight to tail, obscure in larger specimens. Anus close to origin of first anal fin. Body covered by densely embedded scales, each with 1 or 2 long acute spines. Vertebrae 24 (11 + 13).

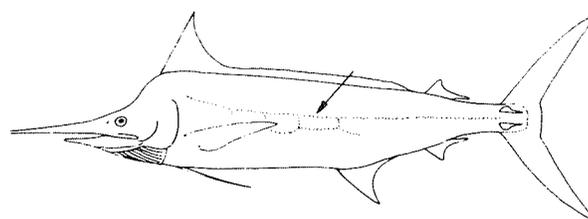
Colour: body dark blue dorsally, silvery white ventrally; first dorsal fin membrane blue-black, usually unspotted; other fins brown-black; no markings or dots on sides of body; after death, the body turns a greyish white, therefore the name "Shirokajiki" (white marlin) used in Japan; live specimens with darker body generally named "black marlin".

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

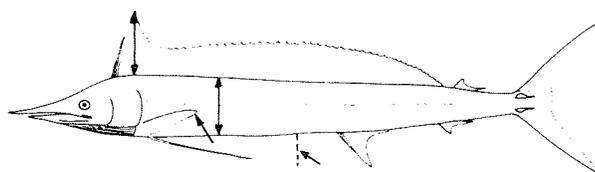
Makaira mazara: lateral line system with simple loops; pectoral fins folded back against side of body.

Tetrapturus species: anterior part of first dorsal fin slightly higher than, or nearly equal to, body depth; pectoral fins folded back against side of body; body compressed. Furthermore, anus apart from first anal fin origin and snout short in T. angustirostris.

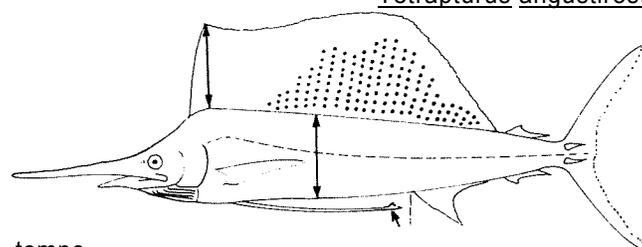
Istiophorus platypterus: first dorsal fin large, sail-like, with many small black spots; pelvic fins very long, almost reaching to anus; pectoral fins folded back against side of body, body compressed.



Makaira mazara



Tetrapturus angustirostris



Istiophorus platypterus

SIZE:

Maximum: about 4.6 m (total length); common to 3.8 m (total length).

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout tropical and subtropical (sometimes temperate) waters of the Indo-Pacific. Most densely distributed in waters close to coasts and islands.

Oceanic, highly migratory and epipelagic, usually above the thermocline.

Feeds on a wide variety of fishes, crustaceans and cephalopods.

PRESENT FISHING GROUPS:

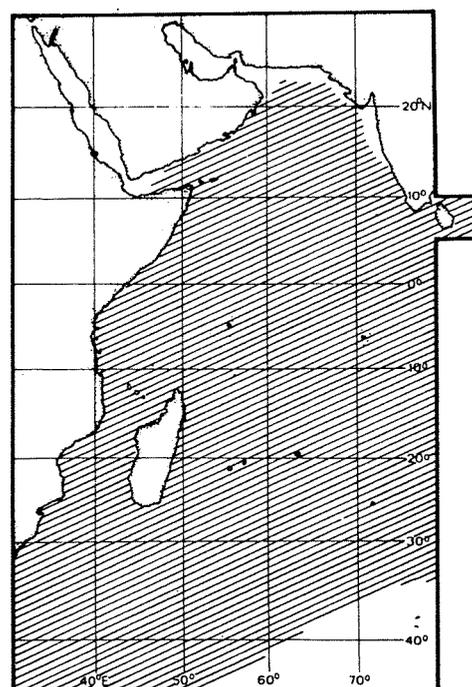
Commercial longline fishing grounds off Arabian Peninsula and southern Madagascar.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION:

The estimated total catch of this species in Fishing Area 51 was 215 t in 1981.

Caught mainly by commercial longlines, trolling of sport fishermen, harpooning from boats and sometimes by setnets.

Marketed mostly iced or frozen, prepared as sashimi (sliced raw fish) in Japan. Flesh excellent eating.

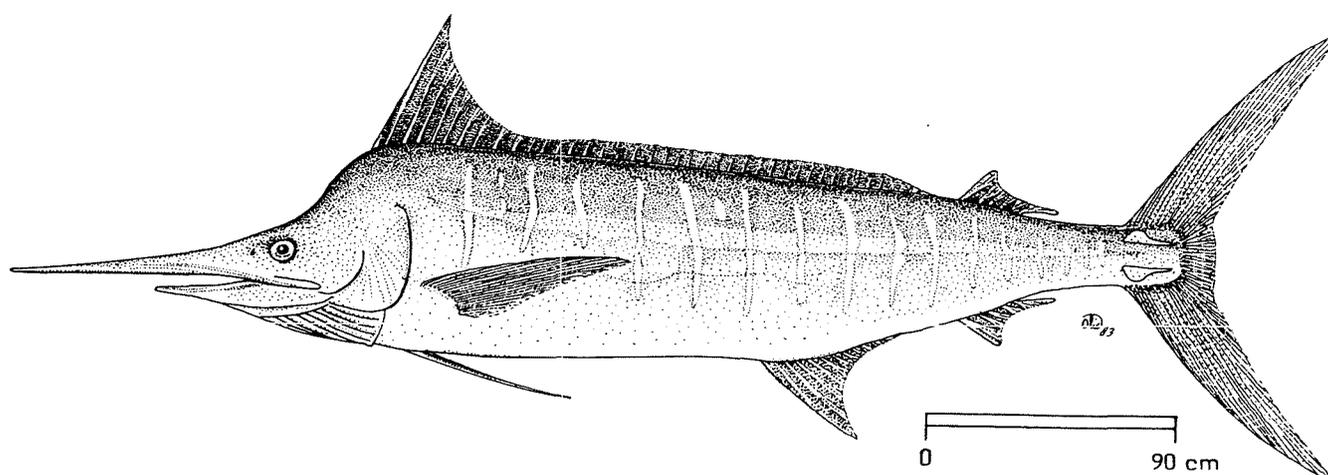


FAO SPECIES IDENTIFICATION SHEETS

FAMILY: ISTIOPHORIDAE

FISHING AREA 51
(W. Indian Ocean)Makaira mazara (Jordan & Snyder, 1901)

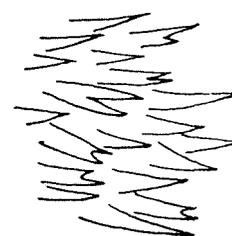
OTHER SCIENTIFIC NAMES STILL IN USE:

Eumakaira nigra Hirasaka & Nakamura, 1947Makaira nigricans: misidentification or misuse (this scientific name should properly be used for the Atlantic blue marlin)

VERNACULAR NAMES:

FAO : En - Blue marlin
Fr - Makaïre bleu
Sp - Agujazul

NATIONAL:



scales

DISTINCTIVE CHARACTERS:

Body elongate, not strongly compressed. Upper jaw prolonged into a stout spear. Two dorsal fins, first dorsal fin long (40 to 44 rays) and low posteriorly, second dorsal fin small, with 6 rays; height of anterior part of first dorsal fin smaller than body depth; two separated anal fins, with 12 to 15 (1st) and 6 or 7 (2nd) rays, respectively; pectoral fins falcate with 21 to 23 rays folded back against side of body; pelvic fins shorter than pectoral fins, with one spine and 2 soft rays. Lateral line system with simple loops, obscure in larger specimens. Anus close to origin of first anal fin. Body covered with densely imbedded scales, each with 1 or 2 long acute spines. Vertebrae 24 (11 + 13).

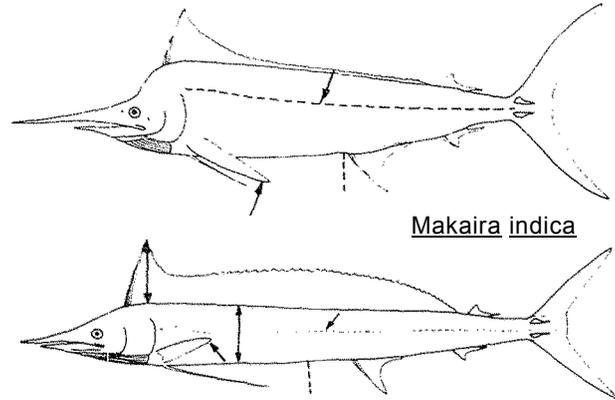
Colour: body blue dorsally, silvery white ventrally; first dorsal fin membrane blue black, unspotted; other fins brown black; about 15 vertical bars, each consisting of pale blue spots and lines on body.

DISTINGUISHNG CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Makaira indica. pectoral fins rigid, not folded back against side of body; lateral line single.

Tetrapturus species: anterior part of first dorsal fin slightly higher than or nearly equal to body depth; body strongly compressed. Furthermore, anus apart from origin of first anal fin and snout short in T. angustirostris.

Istiophorus platypterus: first dorsal fin large, sail-like, with many small black spots; pelvic fins very long, almost reaching to anus; lateral line single; body compressed.

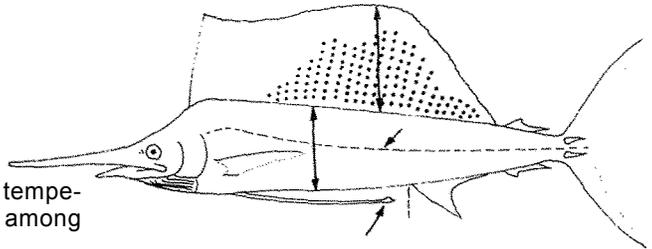


Makaira indica

Tetrapturus angustirostris

SIZE:

Maximum: about 4.3 m (total length); common to 3.5 m (total length).



Istiophorus platypterus

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout tropical and subtropical (sometimes temperate) waters of the Indo-Pacific. The most tropical among billfishes, chiefly distributed in equatorial areas.

Oceanic, highly migratory and epipelagic, usually above the thermocline.

Feeds on a wide variety of fishes, crustaceans and cephalopods.

PRESENT FISHING GROUNDS:

Commercial longline fishing grounds, chiefly in equatorial waters.

CATCHES, FISHING GEAR AND FORMS OF UTILIZATION:

The reported catches of blue marlin in Fishing Area 51 totalled about 1 200 t in 1981 (mostly taken by Tanzania, Korea and Japan).

Caught mainly by commercial longliners and by trolling (sport fishermen).

Marketed mostly frozen, prepared as sashimi (sliced raw fish) and fish sausages in Japan. Flesh excellent eating.

