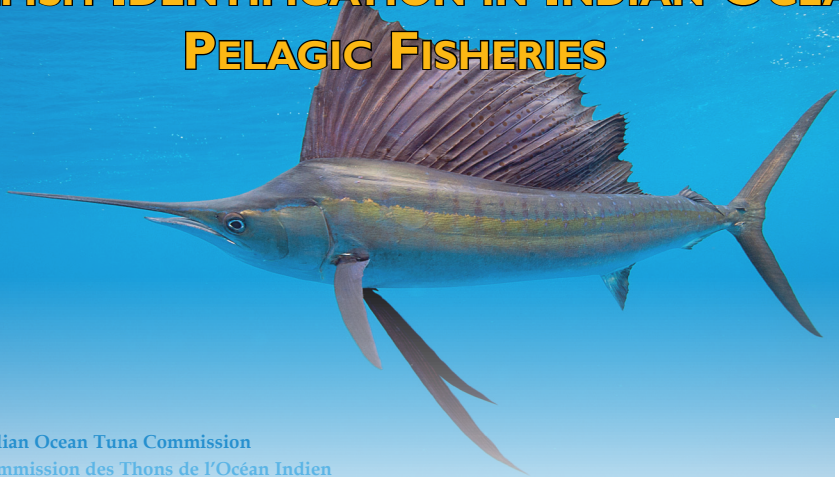




Food and Agriculture
Organization of the
United Nations

BILLFISH IDENTIFICATION IN INDIAN OCEAN PELAGIC FISHERIES



Indian Ocean Tuna Commission
Commission des Thons de l'Océan Indien



These identification cards are produced by the Indian Ocean Tuna Commission (IOTC) to help improve catch data and statistics on billfish targeted or that interact with tuna fisheries in the Indian Ocean. With a better understanding of billfish stocks and with better statistics, regional fisheries managers can ensure that these species are fished in a sustainable manner in the Indian Ocean. The most likely users of the cards are fisheries observers, samplers, fishing masters and crew on board fishing vessels targeting billfish, tuna and tuna-like species in the Indian Ocean. Fisheries training institutions and fishing communities are other potential users.

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We gratefully acknowledge Dr. Evgeny Romanov (CAP RUN/ARDA) for the development of the billfish identification cards.

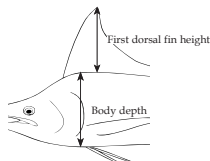
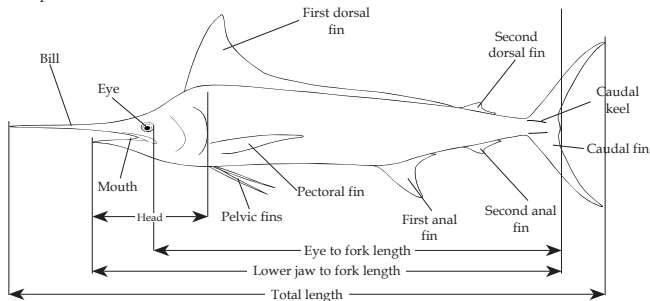
Illustrations © R.Swainston/anima.net.au.

Common English name



Scientific name

- J – Japanese name
- C – simplified Chinese / traditional Chinese names
- F – French name
- S – Spanish name



Measurements used for billfish:

- lower jaw to fork length (LJFL)
- eye to fork length (EFL)

Beware: total length is never used to sample billfish and is given here only for illustrative purpose.

How to use this card?

Each card contains

- the scientific name of the species as well as its common names in English, French, Spanish, Japanese, traditional and simplified Chinese,
- its FAO code
- an illustration of the species with some distinctive features
- its maximum total length (Max. TL)

Terminology

- Caudal keel: fleshy ridge; usually relates to a skin fold on the precaudal peduncle. Xiphiidae have a large median caudal keel and Istiophoridae have a pair of caudal keels on the middle of the caudal peduncle.

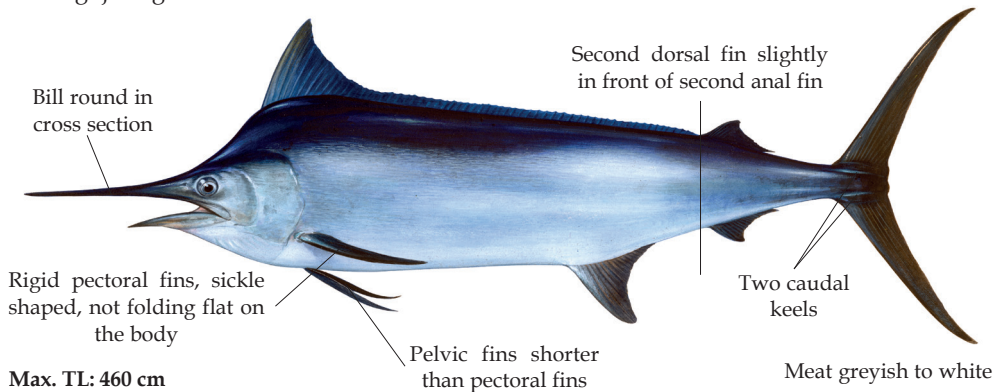
Black marlin



Makaira indica

- J - シロカジキ
- C - 印度枪鱼 / 立翅旗魚
- F - Makaire noir, marlin noir
- S - Aguja negra

First dorsal height = 1/2 or less of body depth



Blue marlin

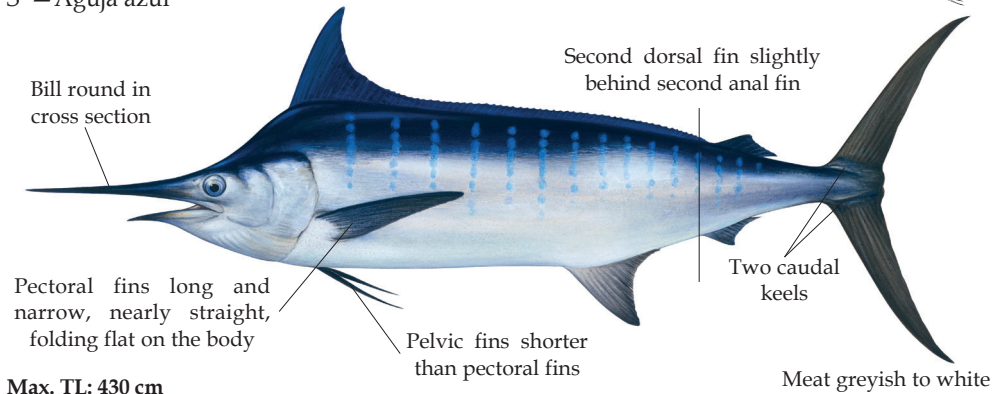
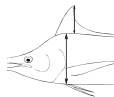
BUM

Makaira nigricans

Also named Indo-Pacific blue marlin (*Makaira mazara*) in some taxonomies

- J - クロカジキ
- C - 藍槍魚 / 黒皮旗魚
- F - Makaïre bleu, marlin bleu
- S - Aguja azul

First dorsal height = $1/2$ to $3/4$ of body depth



Bill round in cross section

Pectoral fins long and narrow, nearly straight, folding flat on the body

Max. TL: 430 cm

Pelvic fins shorter than pectoral fins

Second dorsal fin slightly behind second anal fin

Two caudal keels

Meat greyish to white

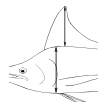
Striped marlin



Tetrapturus audax

- J - マカジキ
- C - 条纹四鳍旗鱼 / 紅肉旗魚
- F - Marlin rayé
- S - Marlin rayado

FIRST DORSAL HEIGHT
=>
BODY DEPTH



Long, thin sharp
bill round in
cross section

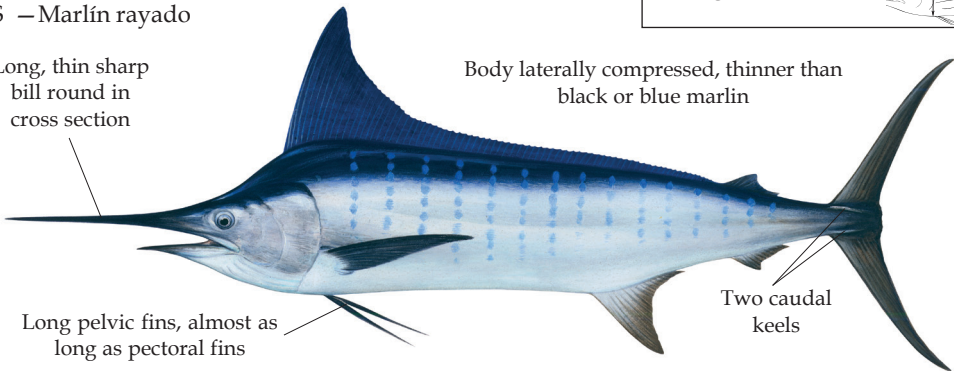
Body laterally compressed, thinner than
black or blue marlin

Long pelvic fins, almost as
long as pectoral fins

Two caudal
keels

Max. TL: 340 cm

Meat pinkish to orange



Shortbill spearfish



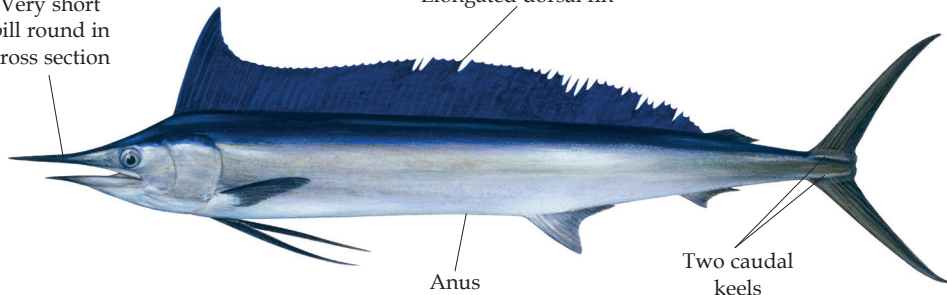
Tetrapturus angustirostris

- J - フウライカジキ
- C - 小吻四鰭旗魚 / 小吻四鰭旗魚
- F - Makaire à rostre court, lancier
- S - Marlin trompa corta

Long slender body

Very short
bill round in
cross section

Elongated dorsal fin



Two caudal
keels

Anus

Max. TL: 230 cm

Indo-Pacific sailfish



Istiophorus platypterus

J - バシヨウカジキ

C - 平鰭旗魚 / 雨傘旗魚

F - Voilier indo-pacifique

S - Pez vela del Indo-Pacífico

Body laterally compressed

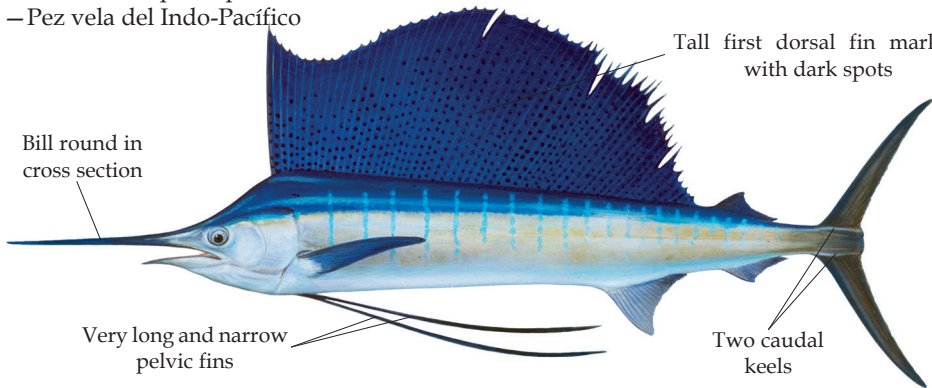
Tall first dorsal fin marked with dark spots

Bill round in cross section

Very long and narrow pelvic fins

Two caudal keels

Max. TL: 320 cm



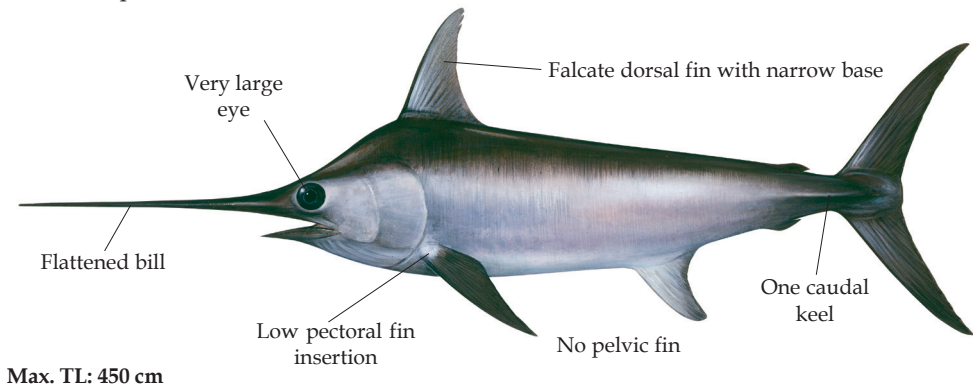
Swordfish



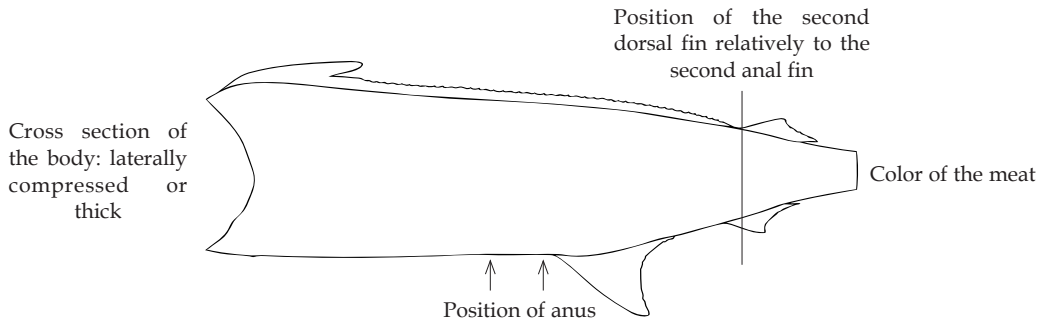
Xiphias gladius

- J - メカジキ
- C - 剑鱼 / 劍旗魚
- F - Espadon
- S - Pez espada

Beware: small swordfish have a long dorsal fin base



Identification of dressed billfish



Often billfish are unloaded dressed and frozen:

- head, tail, pelvic and pectoral fins are cut off
- first dorsal fin is folded

Concentrate on the following identification features:

- length of the first dorsal relative to the body depth (if possible)
- position of the second dorsal fin relative to the second anal fin to differentiate blue or striped marlins from black marlin
- cross section of the body (compressed or thick) and meat color to differentiate blue from striped marlins
- position of anus to differentiate shortbill spearfish from other marlins and Indo-Pacific sailfish

IOTC requirements regarding billfish

Identify, record and correctly report every billfish caught by your vessel

The following are among the actions that fishers/observers are expected to take in relation to billfish in accordance with IOTC Conservation and Management Measures (CMM) (It is recommended that you check annually for modifications by IOTC):

- Fishers onboard longline and troll line vessels shall report through their logbooks, catches of swordfish (*Xiphias gladius*), blue marlin (*Makaira nigricans*), black marlin (*Makaira indica*), striped marlin (*Tetrapturus audax*), Indo-Pacific sailfish (*Istiophorus platypterus*) and shortbill spearfish (*Tetrapturus angustirostris*) as per applicable CMM.
- Fishers onboard purse seine and pole-and-line vessels shall report through their logbooks, catches of billfish, where possible by species or species group as per applicable CMM.
- Fishers onboard gillnet vessels shall report through their logbooks, catches of swordfish (*Xiphias gladius*), Indo-Pacific sailfish (*Istiophorus platypterus*) and other billfish, where possible by species or species group as per applicable CMM.
- Fishers onboard handline vessels shall report through their logbooks, catches of black marlin (*Makaira indica*), Indo-Pacific sailfish (*Istiophorus platypterus*) and other billfish, where possible by species or species group as per applicable CMM.

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