

# BILLFISHES IN MARINE FISHERIES IN THE INDIAN OCEAN



## BILLFISH IDENTIFICATION IN INDIAN OCEAN PELAGIC FISHERIES



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



## **Key issues facing billfish species Identification in the Indian Ocean:**

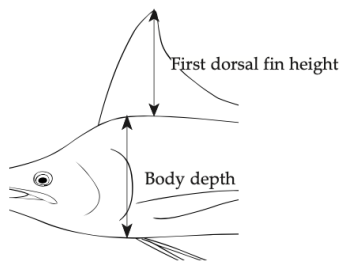
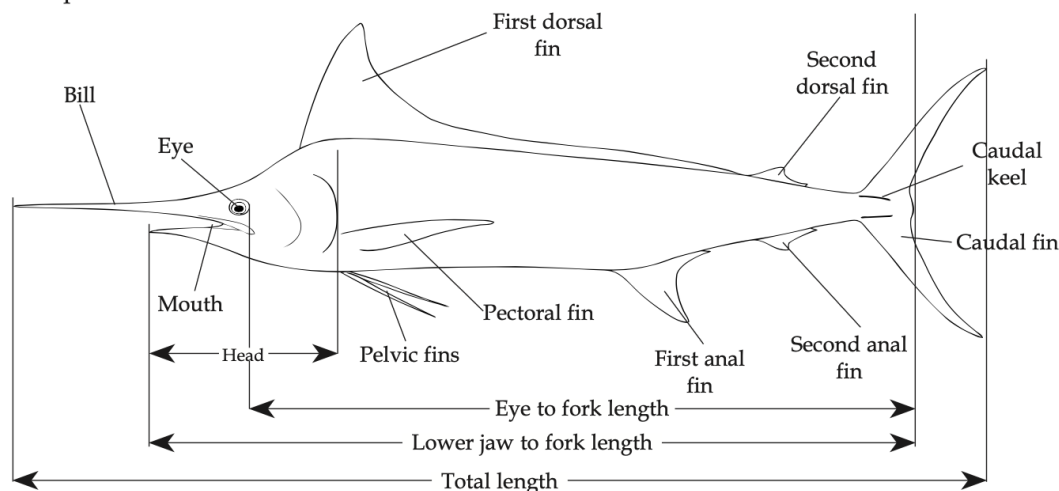
- 1. Confusion between the marlin species**
- 2. Use of common names that vary among areas and countries**
- 3. These issues lead to the aggregation of billfish into broader categories other than specific**

# 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.

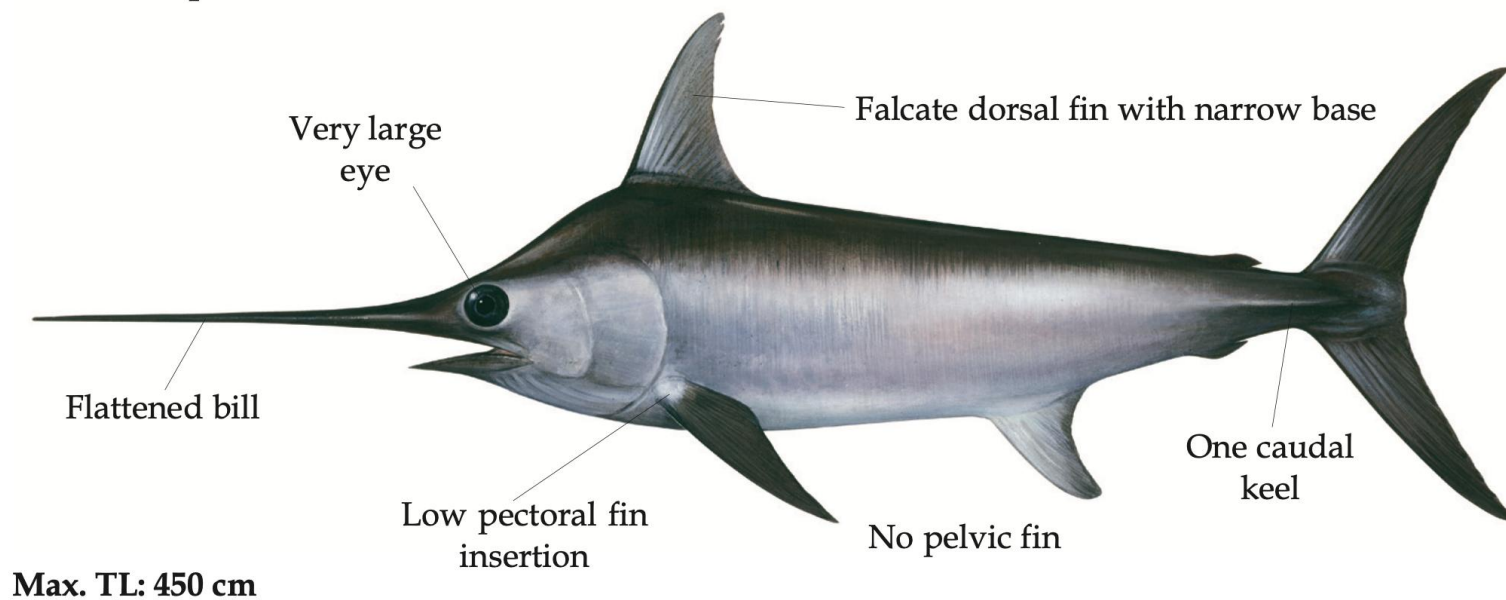
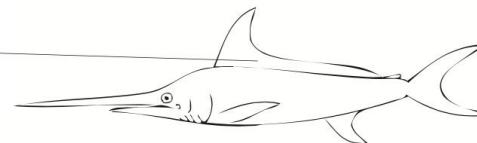
# Swordfish



*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









# 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

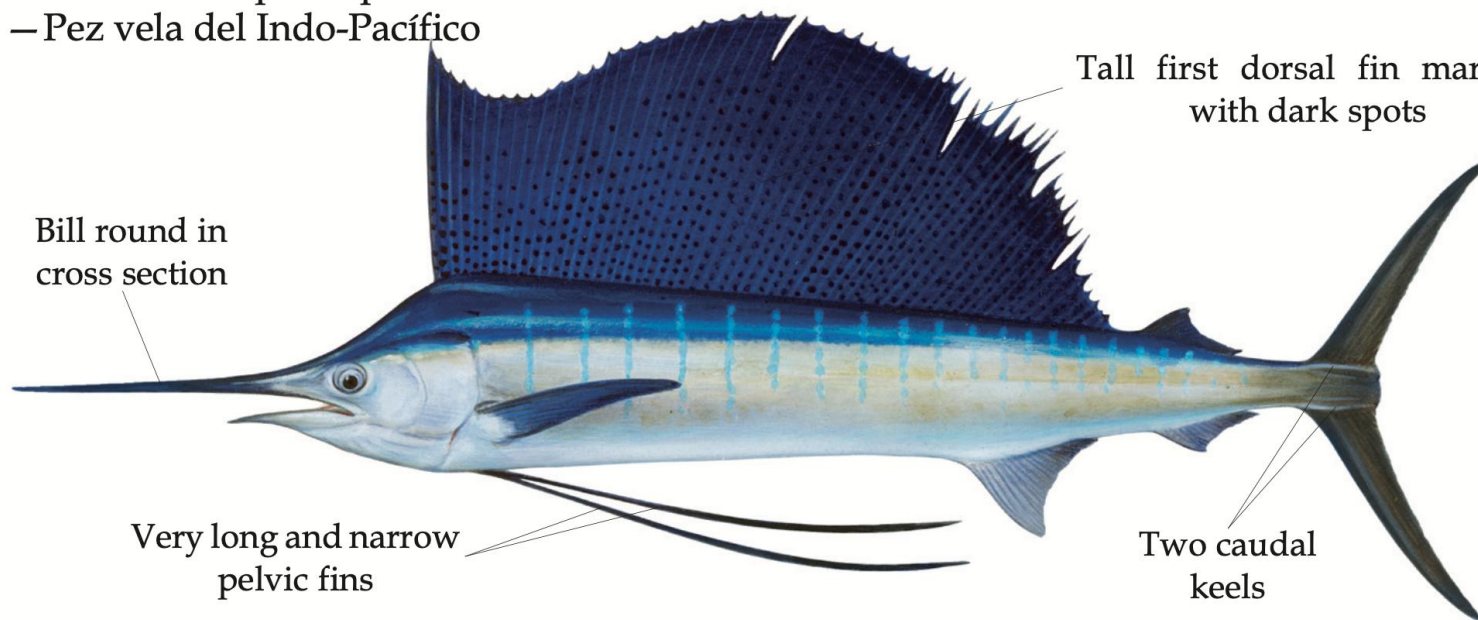
Tall first dorsal fin marked with dark spots

Bill round in cross section

Very long and narrow pelvic fins

Two caudal keels

Max. TL: 320 cm







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# 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 – Makaïre à rostre court, lancier

S – Marlin trompa corta

Long slender body

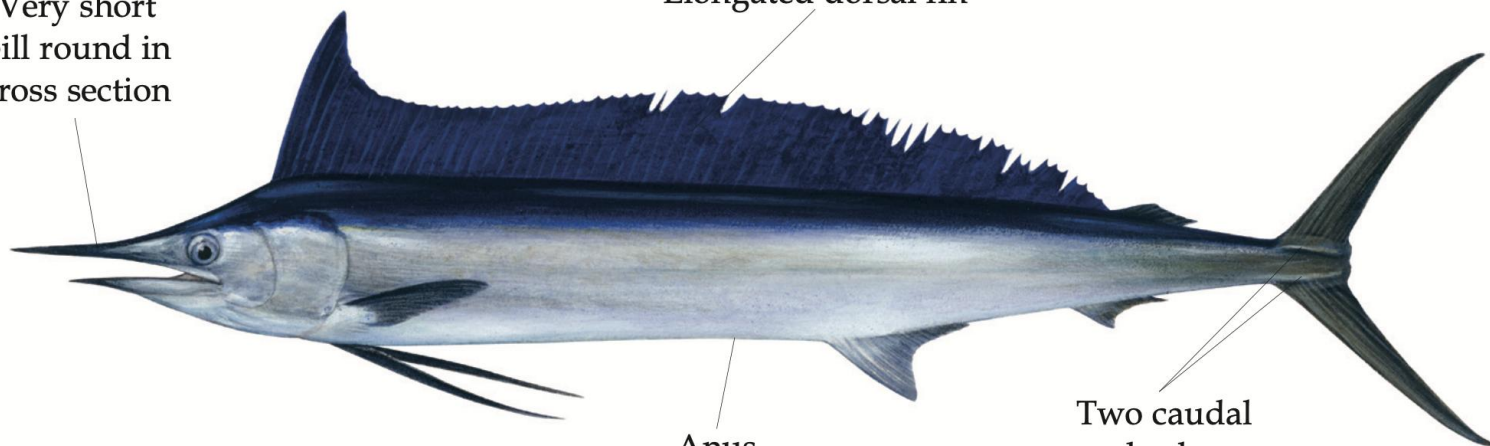
Very short  
bill round in  
cross section

Elongated dorsal fin

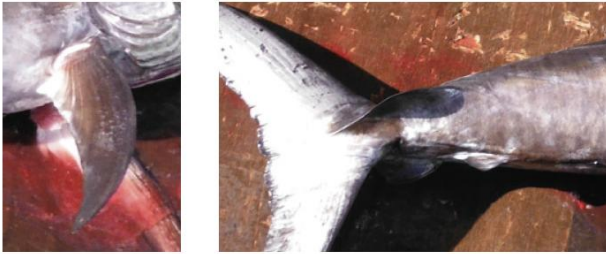
Anus

Two caudal  
keels

Max. TL: 230 cm



No pelvic & single keel / Pas de pelvienne & simple carène



Pelvic & double keel /  
Pelvienne & double



Anterior part of dorsal higher  
continuously relatively high / Partie  
antérieure de la dorsale plus haute  
en permanence relativement élevée  
Body compressed / Corps compressé



Only anterior part of dorsal high / Seule la partie antérieure de la dorsale est haute  
Body not compressed / Corps non compressé

**Swordfish / Espadon**



SWO

**Indo-pacific sailfish / Voilier indo-pacifique**

First dorsal sail-like / Première dorsale en forme de voile



First dorsal not sail-like /  
Première dorsale non en forme de voile

SFA

**Shortbill spearfish / Makaïre à rostre court**



SSP



# Striped marlin



*Kajikia audax*

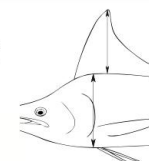
J - マカジキ

C - 条纹四鳍旗鱼 / 紅肉旗魚

F - Marlin rayé

S - Marlín rayado

FIRST DORSAL HEIGHT  
 $\geq$   
BODY DEPTH



Long, thin sharp  
bill round in  
cross section

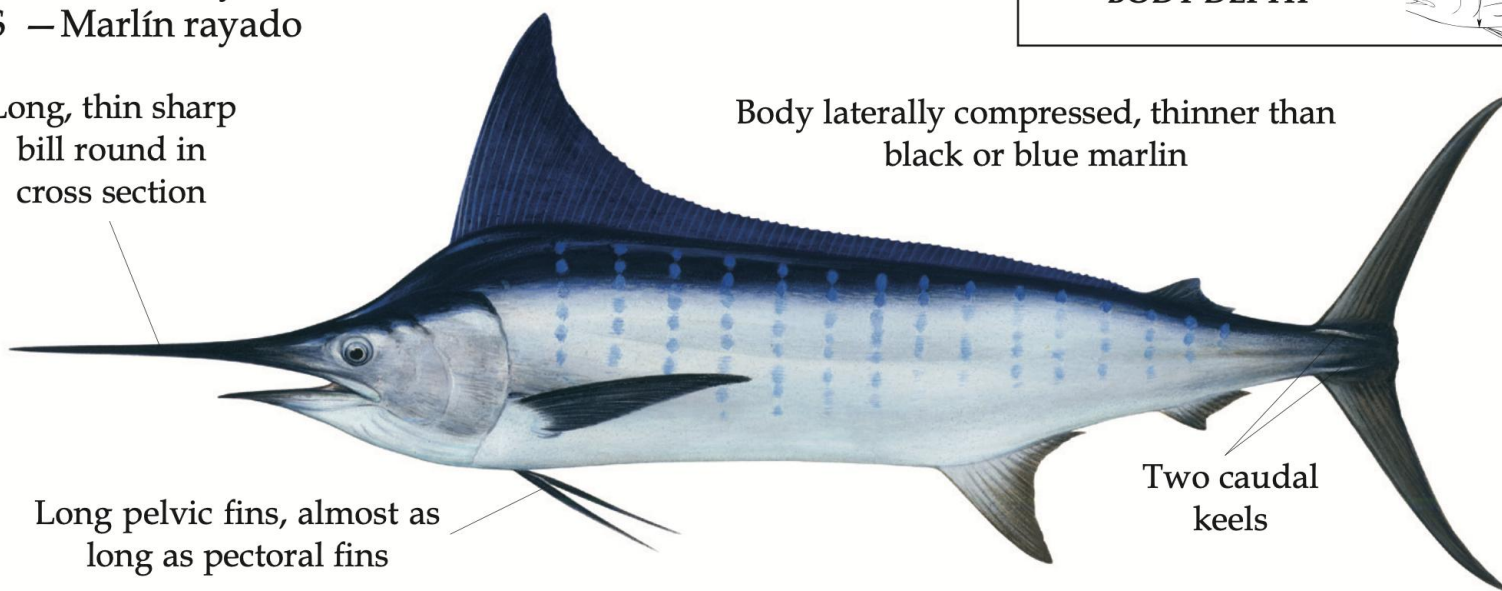
Body laterally compressed, thinner than  
black or blue marlin

Long pelvic fins, almost as  
long as pectoral fins

Two caudal  
keels

Max. TL: 340 cm

Meat pinkish to orange



# STRIPED MARLIN (MLS)

Kajikia audax



**BILL:** Long, thin, sharp. **BODY:** Back dark blue; belly silvery; membrane of first dorsal blue black without dark spots; flanks with about 20 bluish stripes. Laterally compressed, not rounded, much thinner than blue or black marlins. **DORSAL:** First dorsal height equal to or greater than body depth, thin membrane easily torn. **PEDUNCLE & KEEL:** Two caudal keels. **CAUDAL:** Forked, symmetrical and rigid. **ANAL:** Base with a tinge of silvery white. **PELVIC:** Long thin, longest of all marlins. **PECTORAL:** Falcate & flexible.



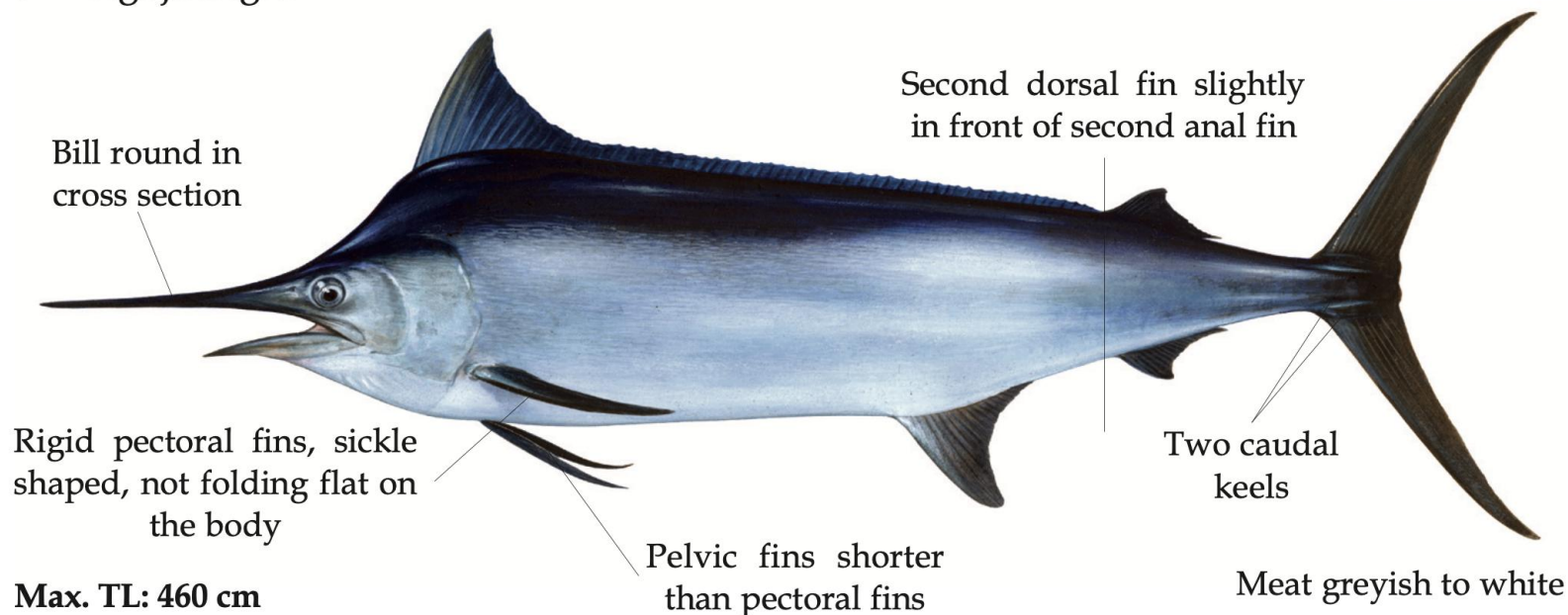
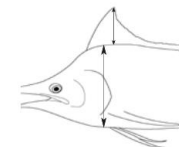
# Black marlin



*Istiompax indica*

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

First dorsal height =  $\frac{1}{2}$  or less of body depth



# BLACK MARLIN (BLM)

*Istiompax indica*

BLM



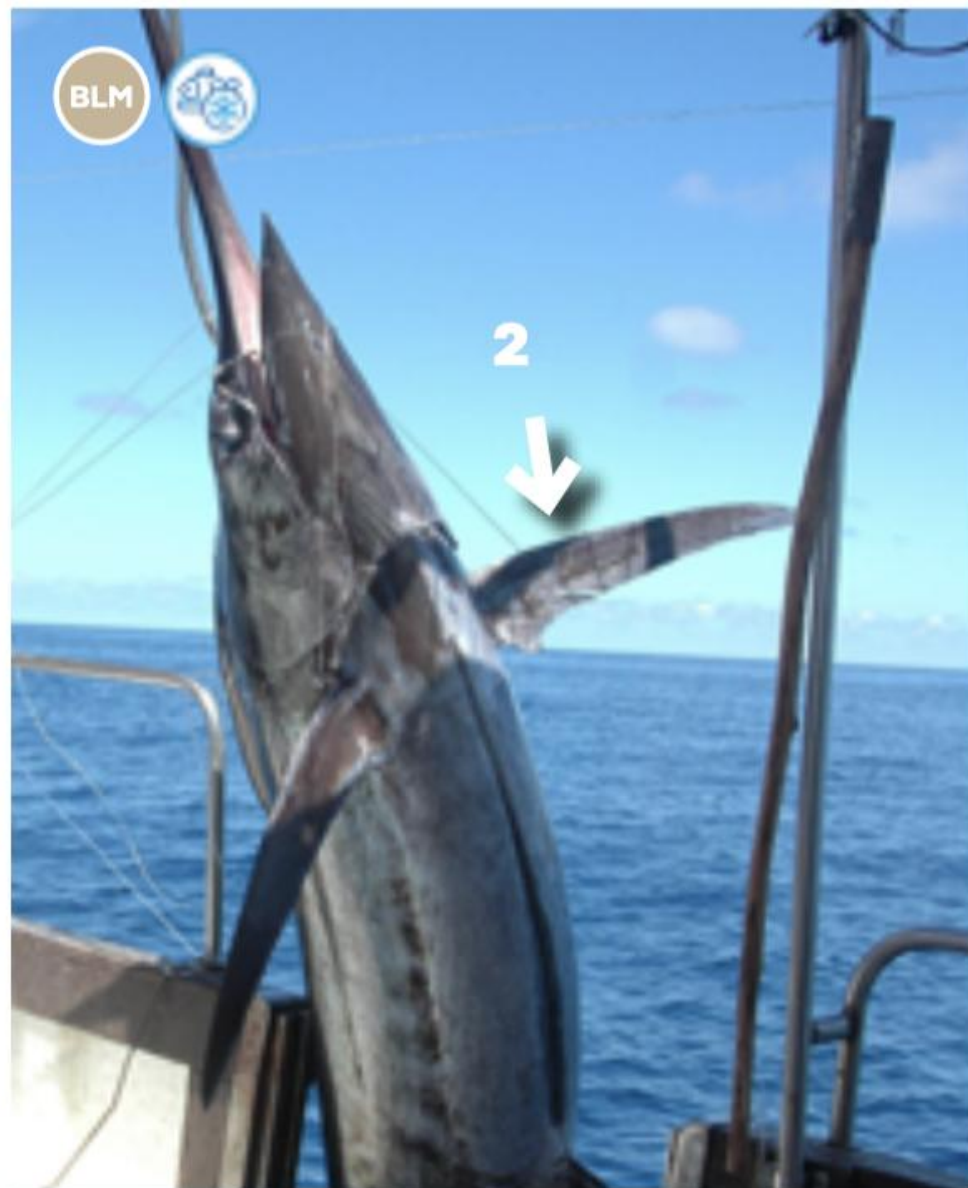
MAX FL 250 cm



**BILL:** Short, stout bill, round in cross section. **BODY:** Body elongate & not very compressed. Black to dark blue on the back, silver white to white on belly. Highly angled nape (area between bill & first dorsal). Flanks without spots. Sometimes with light blue vertical stripes. **DORSAL:** Membrane of first dorsal blue black. Low dorsal rounded tip. First dorsal height is  $\frac{1}{2}$  or less of body depth; second dorsal slightly front of second anal. **PEDUNCLE & KEEL:** Two caudal keels. **CAUDAL:** Forked, symmetrical (homocercus) & rigid. **ANAL:** Brown with tinges of dark blue in some specimens. **PELVIC:** Short, shortest of all marlins. **PECTORAL:** sickle shaped & rigid; cannot be folded flat to body.

IOTC (2022)





# Blue marlin

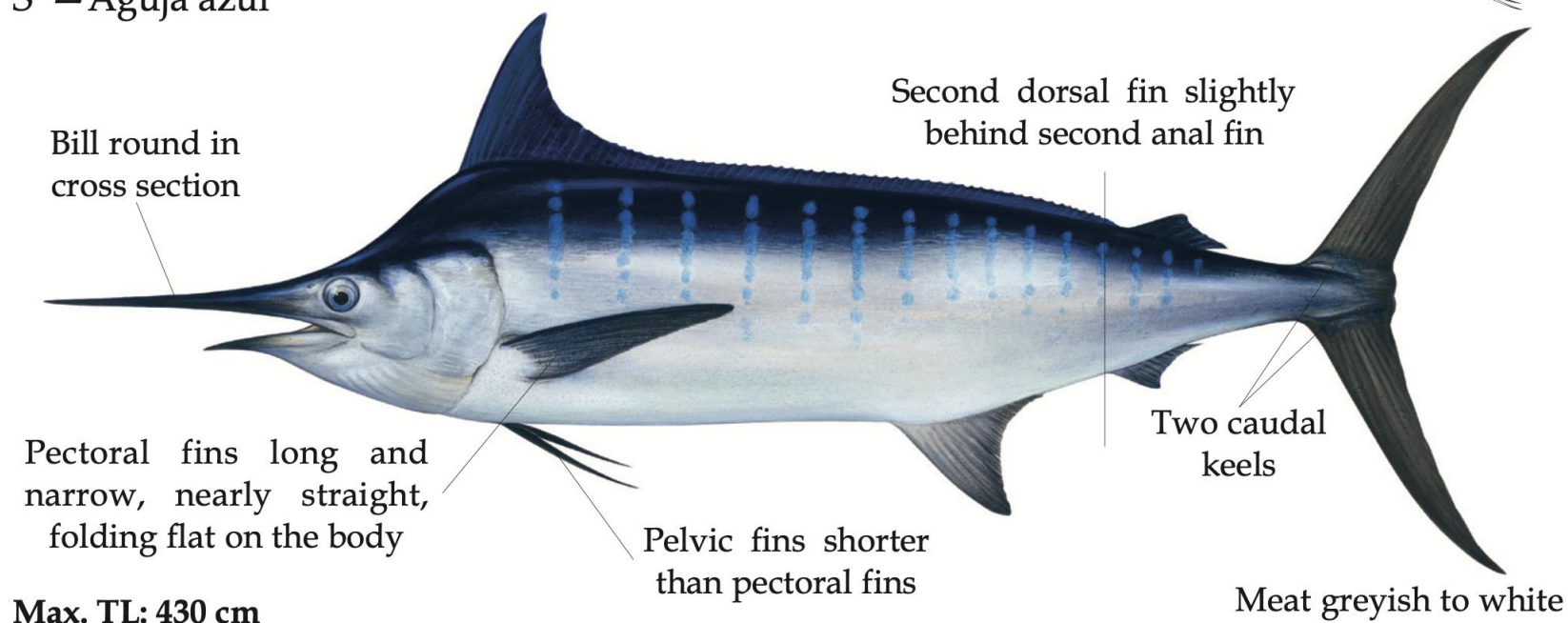
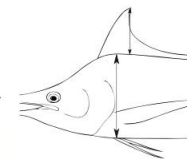


*Makaira nigricans*

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

- J - クロカジキ
- C - 蓝枪鱼 / 黑皮旗鱼
- F - Makaire bleu, marlin bleu
- S - Aguja azul

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



Max. TL: 430 cm



# BLUE MARLIN (BUM)

Makaira nigricans



BUM



MAX TL 430 cm



**BILL:** Round in cross section. **BODY:** Blue-black on dorsal surface and white silver below with approximately 15 vertical stripes. Body thick in cross section with greyish-white meat. Lateral line has a network of interconnecting canals. **DORSAL:** Second dorsal slightly behind to second anal. First dorsal height is  $\frac{1}{2}$  to  $\frac{3}{4}$  of greatest body depth. **PEDUNCLE & KEEL:** Two caudal keels. **CAUDAL:** Forked, symmetrical (*homocercus*) & rigid. **ANAL:** Brown, bases with a tinge of silvery white. **PELVIC:** Shorter than pectoral. **PECTORAL:** Pectoral rotate and fold flat to body and are almost straight, not sickle shaped.

## Striped marlin / Marlin rayé



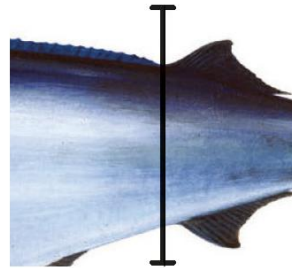
MLS

Pectoral folding / Pectorale repliable  
Leaf shaped / Forme de feuille

## Black marlin / Makaïre noir



Pectoral folded - Half sickle shaped /  
Pectorale repliable sur corps - Demi-  
faucille



Second dorsal anterior to second anal /  
Seconde dorsale antérieure à la seconde anale



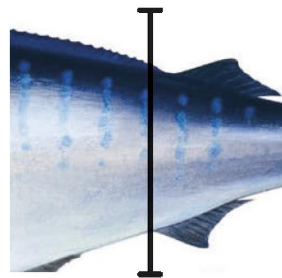
Lateral line single / Ligne latérale  
simple

BLM

## Blue marlin / Makaïre bleu



Pectoral folded - Half sickle shaped /  
Pectorale repliable sur corps - Demi-  
faucille



Second dorsal anterior to second anal /  
Seconde dorsale antérieure à la seconde anale



Lateral line single / Ligne latérale  
simple

BUM



# Difference between Swordfish and marlins

Feature	Swordfish ( <i>Xiphias gladius</i> )	Marlins ( <i>Makaira</i> , <i>Kajikia</i> , <i>Tetrapturus</i> , <i>Istiophorus</i> )
Bill (rostrum)	Long, very flat, broad and sword-like (flattened in cross-section)	Long, round and pointed (cylindrical in cross-section)
Dorsal fins	Only one dorsal fin (low, long, without spines)	Two dorsal fins (first tall/pointed, second much smaller)
Pelvic fins	Absent (no pelvic fins at all)	Present (very long and thin filaments in marlins)
Scales & skin	Adults almost scaleless, smooth skin	Covered with small embedded scales
Caudal peduncle	No lateral keels, only a single median keel on each side	Two strong lateral keels on each side
Eyes	Very large, adapted for deep diving	Proportionally smaller
Body profile	Robust, laterally compressed, “naked” look	More streamlined, with visible finlets
Size	Up to 4.5 m, >500 kg	Varies by species (blue marlin up to 4 m, striped ~3 m, sailfish smaller)

## Field memo

Flat, broad sword-shaped bill + no pelvic fins + single dorsal fin → Swordfish

Round pointed bill + pelvic fins + two dorsal fins + caudal keels → Marlin



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THANKS

QUESTIONS?



# REFERENCES

IOTC (2013). BILLFISH IDENTIFICATION IN INDIAN OCEAN PELAGIC FISHERIES

IOTC (2022). PORT STATE MEASURES – SPECIES IDENTIFICATION GUIDE FOR FISHERIES INSPECTORS, VICTORIA. FAO.  
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