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

iotc ctoi

# Identification: Target and Non-target Fish Species

*IOTC ROS SFO TR9*



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# Billfish Identification

## *IOTC ROS SFO TR9.4*

Category: Species identification

*IOTC ROS SFO TR9*

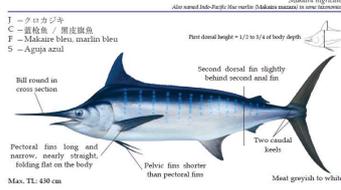


### **Course learning outcomes include:**

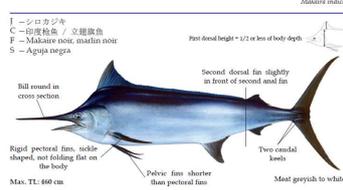
- Capacity to Differentiate between Indian Ocean billfish species using anatomical features
  - ✓ Indian Ocean billfish species diagnostic anatomical features.

# Billfish

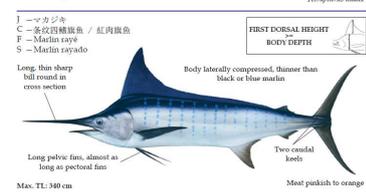
## Blue marlin



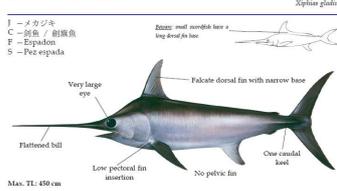
## Black marlin



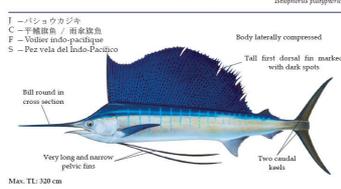
## Striped marlin



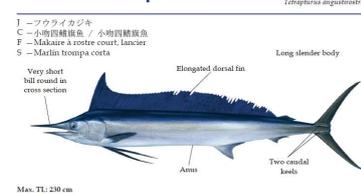
## Swordfish



## Indo-Pacific sailfish



## Shortbill spearfish



Observers are to learn to identify different billfish species, since they will be requested to collect scientific data 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.

There are two families of Billfish, the:

- Xiphiidae family and the Istiophoridae family. The Xiphiidae are represented by **the Swordfish (*Xiphias gladius*)**, can be differentiated from the other billfish species since it's the only species of billfish that **has a flattened bill and a large single caudal keel on each side of the caudal trunk**.
- Istiophoridae family include all species of **Marlins, spearfishes and sailfishes**. These species share common characteristics they **all have two caudal keels on each side of the caudal keel and a rounded bill**.

<p><b>SWO</b></p> <p><b>SWORDFISH</b></p> <p><i>Xiphias gladius</i></p>	<ul style="list-style-type: none"> <li>• Flattened bill 'a), large eyes (b)</li> <li>• Prominent falcate dorsal fin with a narrow base ©.</li> </ul>	<ul style="list-style-type: none"> <li>• 1st and 2nd dorsal fin very spaced (d)</li> </ul>
	<ul style="list-style-type: none"> <li>• Pectoral fins placed low on body</li> <li>• No pelvic fins</li> </ul>	<ul style="list-style-type: none"> <li>• One large, single caudal keel (large) on each side (e)</li> </ul>

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### Swordfish – *Xiphias gladius* <broadbill swordfish> (SWO)

Species mainly targeted by the pelagic longline fisheries. Can also be caught by the gillnet fisheries. But never caught by the tuna purse-seine and the tuna pole and line surface fisheries.

#### Identifying characters:

- Flattened bill
- No pelvic fins
- One large, single caudal keel (large) on each side
- Pectoral fins placed low on body
- Prominent falcate dorsal fin with a narrow base
- Large eyes



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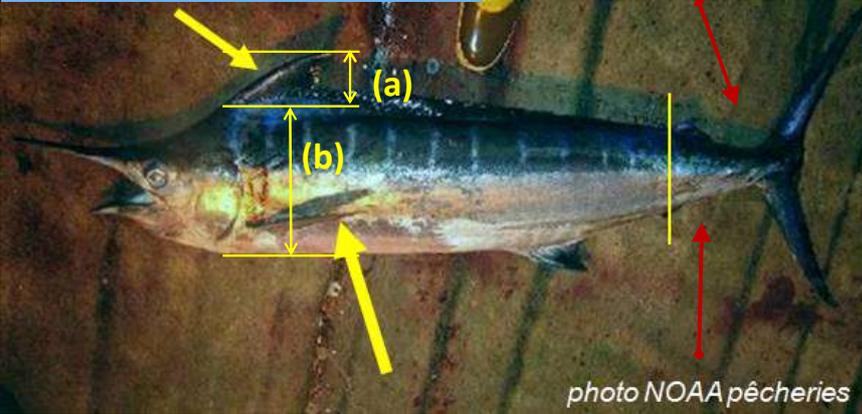


photo: D. Itano



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<p><b>BUM</b></p> <p><b>BLUE MARLIN - <i>Makaira nigricans</i></b></p>	<ul style="list-style-type: none"> <li>• 1<sup>st</sup> dorsal fin height (a) is <math>\frac{1}{2}</math> to <math>\frac{3}{4}</math> greatest body depth (b)</li> </ul>	<ul style="list-style-type: none"> <li>• 2<sup>nd</sup> dorsal fin slightly posterior to 2<sup>nd</sup> anal fin</li> </ul>
	 <p style="text-align: right; font-style: italic;">photo NOAA pêcheries</p>	
	<ul style="list-style-type: none"> <li>• Pectoral non rigid (can be folded flat against the body).</li> <li>• Pectoral fins nearly straight</li> </ul>	<ul style="list-style-type: none"> <li>• Color blue-black on back and upper sides</li> <li>• White / silver ventrally</li> </ul>



### BLUE MARLIN - *Makaira nigricans* (BUM)

Species accidentally caught in the pelagic longline, the pelagic drift gillnet and the tuna purse-seine fisheries. But not caught by the tuna pole and line surface fisheries.

Listed as one of the IOTC species of special interest (SSI). Observers are to identify and collect catch and biometric data on this species.

#### Identifying characters

- **First dorsal fin height is  $\frac{1}{2}$  to  $\frac{3}{4}$  greatest body depth**
- **Pectoral fins rotate and fold flat to body**
- Pectoral fins nearly straight, not sickle shaped
- Second dorsal fin slightly posterior to second anal fin
- Body coloration: blue-black on dorsal surface and white to silver below with approximately 15 vertical stripes
- Body thick in cross section with grayish-white meat
- The belly will feel smooth if rubbed toward the head
- **Stocky trunk compared to striped marlin – take care not to confuse these species**



**BLUE MARLIN - *Makaira nigricans* (BUM)**

Note:

Dorsal fin height relative to body depth

Blade shaped, slightly recurved pectoral fins that can be easily folded flat to body

MLS

**STRIPED MARLIN** *Tetrapturus audax*

photos NOAA pêcheries

- Body thin and flattened, not rounded as for blue or black marlin
- Meat can be pinkish or orange

- Dorsal fin long and thin, not as rigid as blue/black marlin
- Dorsal fin height (a) equal to or greater than body depth (b)
- Long, thin, sharp bill

### **STRIPED MARLIN *Tetrapturus audax* (MLS)**

Species accidentally caught in the pelagic longline, the pelagic drift gillnet and the tuna purse-seine fisheries. But not caught by the tuna pole and line surface fisheries.

Listed as one of the IOTC species of special interest (SSI). Observers are to identify and collect catch and biometric data on this species.

#### **Identifying characters**

- First dorsal fin height is equal to or greater than body depth, thin membrane easily torn
- Long, thin, sharp bill
- Long, thin, pelvic fins; longest of all the marlins
- 15 to 25 vertical markings on side consisting of blue bars or spots
- Body laterally compressed, much thinner than blue or black marlin
- Meat can be pinkish to orange in colour
- The belly will feel like finely rough if rubbed towards the head
- Skinny trunk compared to blue marlin – take care not to confuse these species



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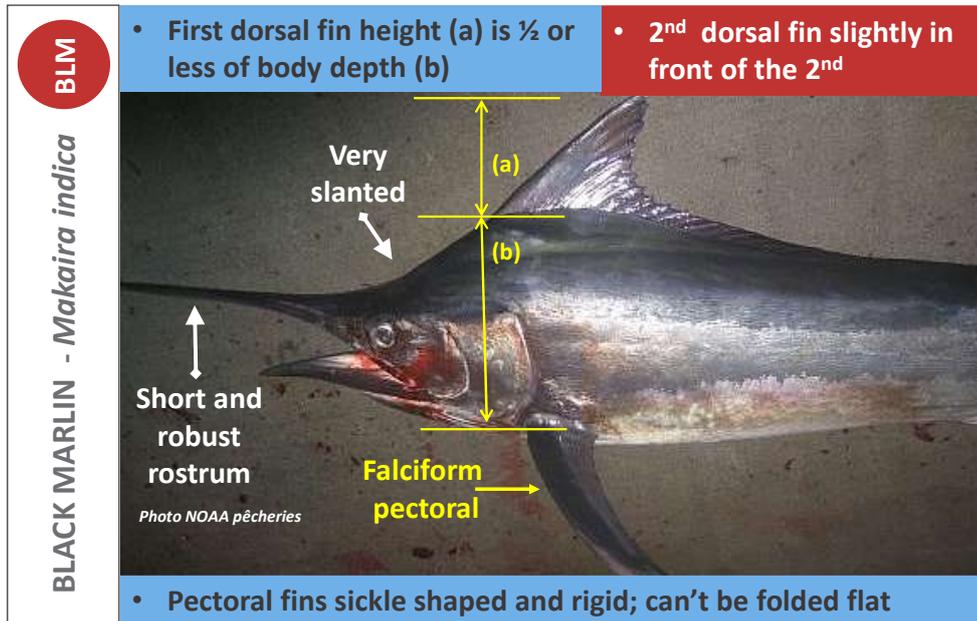


### **STRIPED MARLIN *Tetrapturus audax* (MLS)**

Note:

Shape and height of dorsal fin (equal or greater than body depth)

Long, thin bill



### BLACK MARLIN *Makaira indica* (BLM)

Species accidentally caught in the pelagic longline, the pelagic drift gillnet and the tuna purse-seine fisheries. But not caught by the tuna pole and line surface fisheries.

Listed as one of the IOTC species of special interest (SSI). Observers are to identify and collect catch and biometric data on this species.

#### Identifying characters

- **First dorsal fin height is  $\frac{1}{2}$  or less of the greatest body depth**
- **Pectoral fins sickle shaped and rigid; can not be folded flat to body**
- Second dorsal fin slightly anterior to the second anal fin
- Highly angled nape (area between bill and first dorsal fin)
- Short, stout bill, round in cross section
- Body coloration is black to dark blue on dorsal surface, silvery-white to white below
- Vertical stripes not distinct in life and fade after death
- Short pelvic fins; shortest of all the marlins



### **BLACK MARLIN *Makaira indica* (BLM)**

Note:

- Low dorsal fin with rounded tip
- Sickle shaped, rigid pectoral fins
- Second dorsal fin slightly anterior to second anal fin

<p><b>SSP</b></p> <p><b>SHORTBILL SPEARFISH</b> - <i>Tetrapterus angustirostris</i></p>	<ul style="list-style-type: none"> <li>• Very short, stout bill (little overlap past lower jaw)</li> <li>• Body very long, slender and laterally compressed</li> <li>• Elongated, dark blue 1<sup>st</sup> dorsal fin, other fins are darker blue.</li> </ul>
	 <ul style="list-style-type: none"> <li>• Dark blue dorsal region cleanly separated from silvery white sides and belly</li> <li>• Not clearly marked with vertical bars or stripes</li> <li>• Low sloping nape (between bill and first dorsal fin)</li> </ul>

### SHORTBILL SPEARFISH - *Tetrapterus angustirostris* (SSP)

Species accidentally caught in the pelagic longline, the pelagic drift gillnet and the tuna purse-seine fisheries. But not caught by the tuna pole and line surface fisheries.

Listed as one of the IOTC species of special interest (SSI). Observers are to identify and collect catch and biometric data on this species.

#### Identifying characters

- Very short, stout bill (little overlap past lower jaw)
- Body very long, slender and laterally compressed
- Elongate, dark blue first dorsal fin, other fins are darker blue
- Dark blue dorsal region cleanly separated from silvery white sides and belly
- Not clearly marked with vertical bars or stripes
- Low sloping nape (between bill and first dorsal fin)



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photo: D Itano

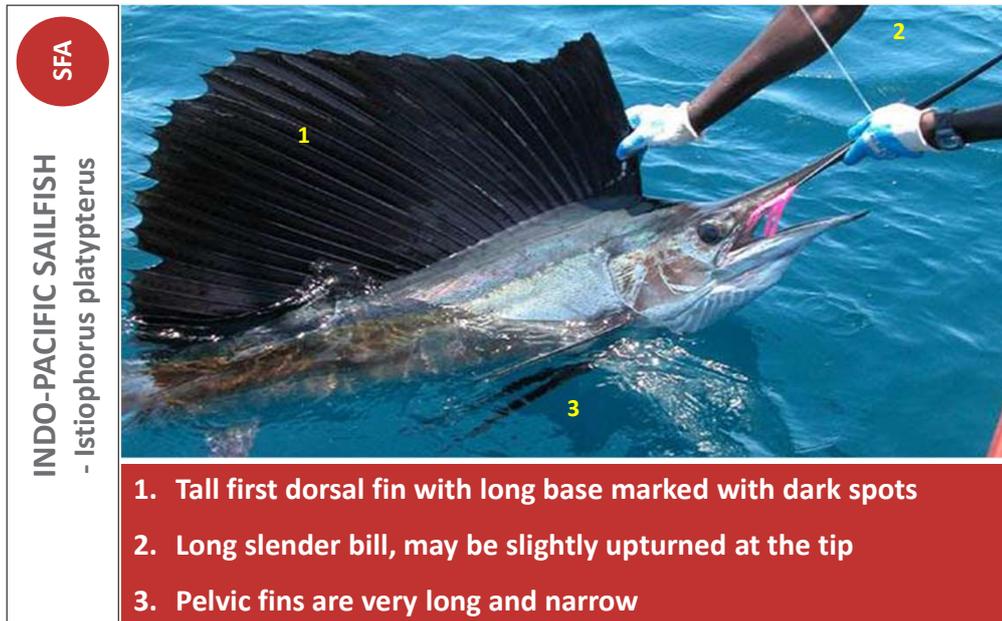


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### SHORTBILL SPEARFISH - *Tetraodon angustirostris* (SSP)

Note:

- Short, stout shape of bill
- Blue dorsal coloration, and silver-white belly



### **Indo-Pacific sailfish – *Istiophorus platypterus* SFA**

Species accidentally caught in the pelagic longline, the pelagic drift gillnet and the tuna purse-seine fisheries. But not caught by the tuna pole and line surface fisheries.

Listed as one of the IOTC species of special interest (SSI). Observers are to identify and collect catch and biometric data on this species.

#### **Identifying characters**

- Tall first dorsal fin with long base marked with dark spots
- Body is long and laterally compressed
- Long slender bill, may be slightly upturned at the tip
- Vertical blue bars along the length of the body (approximately 20)
- Dark blue back, light blue and whitish on sides, silvery-white below
- Pelvic fins are very long and narrow



### Indo-Pacific sailfish – *Istiophorus platypterus* SFA

#### Note

- Vertical blue bars along the length of the body (approximately 20)
- Dark blue back, light blue and whitish on sides, silvery-white below



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## ANY QUESTIONS?



*send us a message via Talents LMS*



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