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Identification: Target and Non-target Fish Species

IOTC ROS SFO TR9



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Indian Ocean Tropical and Neritic Tuna Species

IOTC ROS SFO TR9.3

Category: Identification: Target and Non-target Fish Species

[IOTC ROS SFO TR9]



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Course learning outcomes include:

- Capacity to differentiate between Indian Ocean tropical and neritic tuna species
 - ✓ Adult Indian Ocean tropical and neritic tuna species diagnostic anatomical features;
 - ✓ Juvenile yellowfin and bigeye tuna diagnostic anatomical features (external and internal).

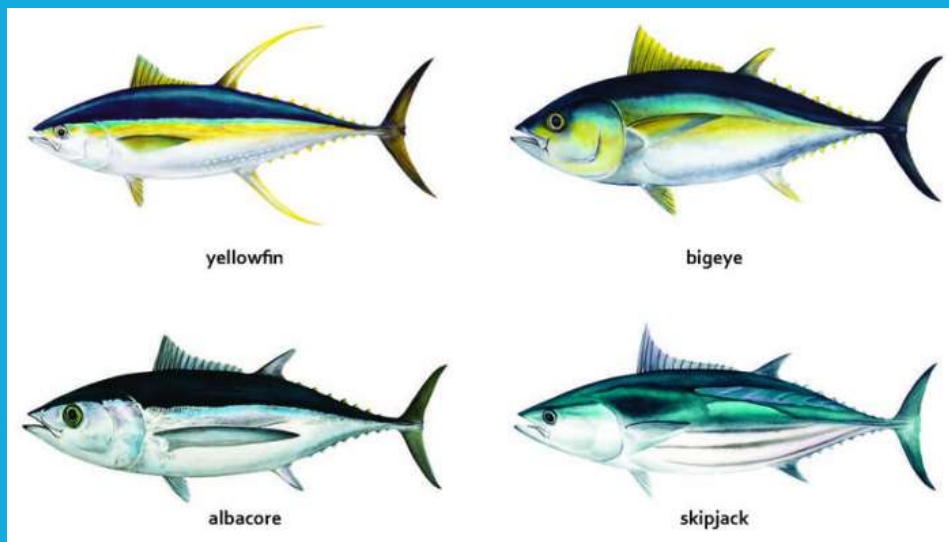


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Tropical Tuna Species



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Tropical tuna species are the tuna species that inhabit warm-temperate tropical and subtropical waters, with temperatures generally greater than 18°C, (although they can dive in colder waters). This group includes skipjack, yellowfin, and bigeye tuna. In this training course you are going to learn how to differentiate these species based on their diagnostic anatomical features.

Identifying fresh tuna is a relatively easy matter compared to distinguishing frozen or iced fish. Even at small sizes, each species has distinct coloration, body markings and body morphologies that allow rapid visual keys to positive identification.



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SKIPJACK - *Katsuwonus pelamis*

SKJ



- 1 Black horizontal stripes on the belly
- 2 Blue on the back
- 3 Silver on the sides



The **presence of stripes on the belly** and the **absence of markings on the back** are sufficient to **distinguish the skipjack tuna** from all similar species. The top of the fish is a dark purplish-blue, and the lower flanks and the belly are silvery and have four to six prominent, dark, longitudinal stripes. The first dorsal fin has 14 to 16 spines, and the pectoral and the ventral fins are short. The body is scale- less, except on the corselet and along the lateral line.

Skipjack tuna are cosmopolitan in tropical and subtropical seas, usually in deep coastal and oceanic waters. A pelagic, migratory, deep-water species, the skipjack tuna may form schools composed of 50,000 or more individuals, which makes it a prime target for commercial fishermen using purse seines.



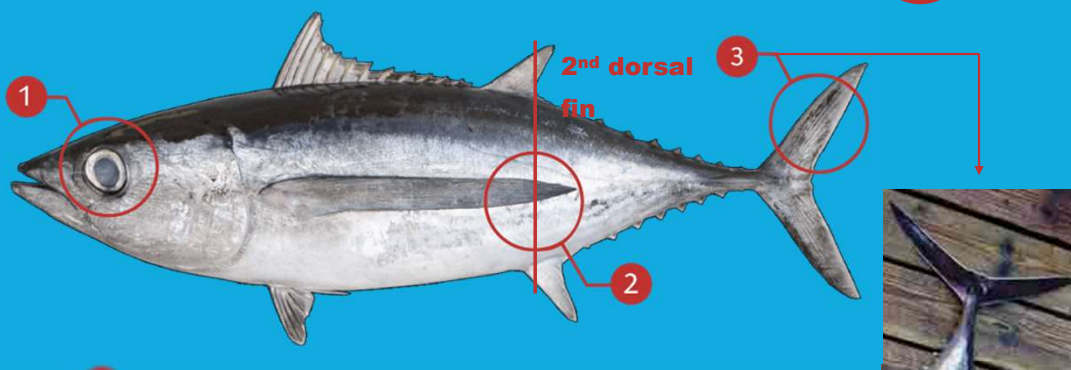
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ALBACORE - *Thunnus alalunga*

ALB



1 Large eye

2 Long pectoral fins that easily reach the base of the 2nd dorsal fin

3 Edge of the caudal fin white or colorless unique to this species

- No stripes or spots
- Metallic dark blue on the dorsal side and silvery white on the ventral side



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Albacore tuna, also called Longfinned tuna from its scientific name *Thunnus alalunga* (from Latin the tuna with long fins) it's a tropical tuna, that has an elongated fusiform and robust body, **long pectoral pointy fins** (up to 30% of fork length or longer in fishes longer than 50 cm), **reaching second dorsal finlets** (or beyond second dorsal fin). However, they are relatively short in individuals shorter than 30 cm. Often confused with juvenile *T. obesus* which also has long pectoral fins but with rounded tips. The **lack of stripes or spots distinguishes the albacore from other tuna**. The **caudal** fin relatively short, wide and strongly crescent-shaped, with a **narrow white posterior margin, which is unique to this species**.

The Albacore tuna is metallic dark blue on the dorsal side and silvery white on the ventral side; a faint lateral iridescent blue band runs along sides in live fish. First dorsal fin deep yellow, second dorsal and anal fins light yellow, anal finlets dark.

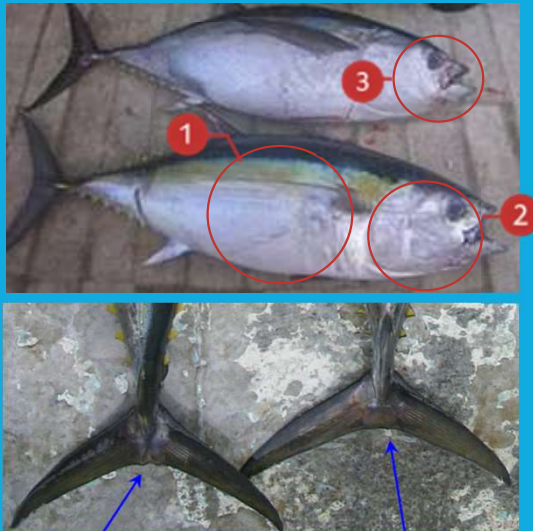


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BIGEYE TUNA - *Thunnus obesus* **BET**



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Yellowfin

Bigeye

- For adult fish >80 cm :

- 1 High stocky body
- 2 Head large and high
- 3 Big eyes
- 4 Finlets bright yellow with narrow black edges



Big eye tuna is a tropical tuna that has a **stocky body, a large and high head and large eyes** (its Latin name *Thunnus obesus* translates as the fat tuna). Usually, irregular widely spaced vertical lines on sides of the body. The first dorsal fin is deep yellow. The **finlets are bright yellow with narrow black edges**. The tail does not have a white trailing edge like that of the albacore neither a distinct notch like that of the yellowfin. The pectoral fins may reach to the second dorsal fin. The caudal peduncle keel is black.



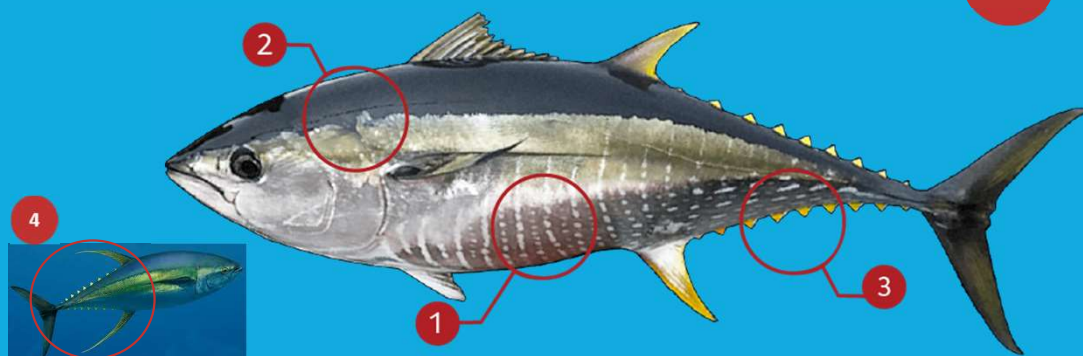
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YELLOWFIN TUNA *Thunnus albacares*

YFT



1 Continuous and discontinuous vertical stripes on the belly and on the sides

2 Back is blue-black, fading to silver on the lower flanks and belly, a golden yellow or iridescent blue strip runs from the eye to the tail

3 Fins and finlets golden yellow or silver-edged with yellow

4 Adults (> 80cm FL): 2nd dorsal and anal fin very elongated



Most large yellowfins have overextended second dorsal and anal fins that may reach more than halfway back to the tail base in some large specimens. In smaller specimens under about 27 kg this may not be an accurate distinguishing factor. The pectoral fins in adults reach to the origin of the second dorsal fin, but never beyond the second dorsal fin to the finlets as in the albacore. This is probably the most colourful of all the tunas. The back is blue-black, fading to silver on the lower flanks and belly. A golden yellow or iridescent blue strip runs from the eye to the tail, though this is not always prominent. All the fins and finlets are golden yellow though in some very large specimens the elongated dorsal and anal fins may be silver edged with yellow. The finlets have black edges. The belly and the flanks frequently shows as continuous and discontinuous vertical rows or whitish spots.



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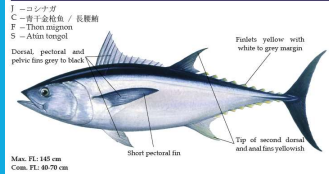


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Neritic Tuna Species

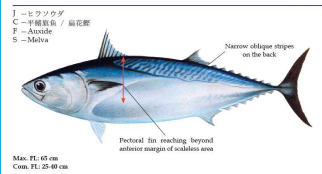
Longtail tuna

LOT



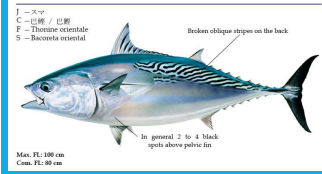
Frigate tuna

FTI



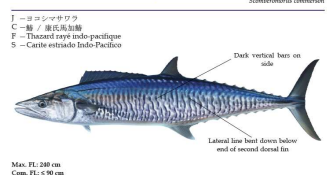
Kawakawa

ETI



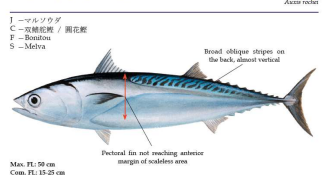
Narrow-barred Spanish mackerel

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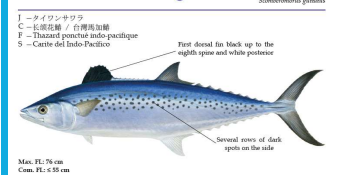
Bullet tuna

BLT



Indo-Pacific king mackerel

SKT



Neritic tunas (also called coastal tuna) are very important species group for commercial coastal fishing and / or the small-scale fisheries of most nations.

Neritic Tunas Species include: Longtail tuna (*Thunnus tonggol*), Frigate tuna (*Auxis thazard*), Bullet tuna (*Auxis rochei*), Kawakawa (*Enthynnus affinis*), Narrow-Barred Spanish mackerel (*Scomberomorus commerson*), Indo-Pacific King mackerel (*Scomberomorus guttatus*).

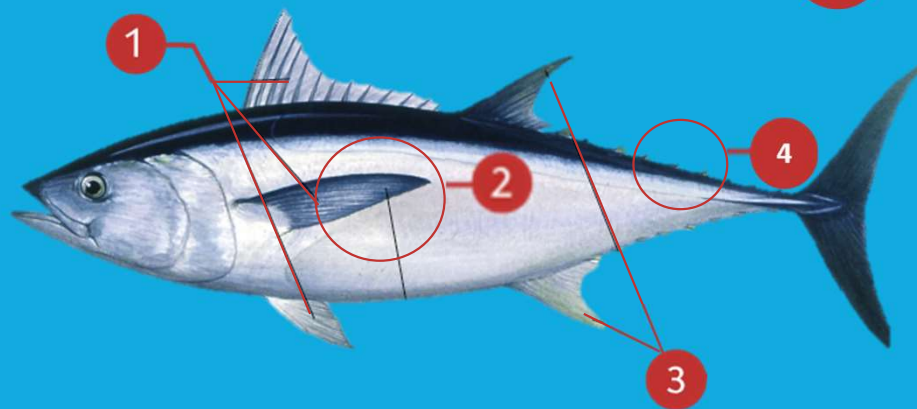


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LONGTAIL TUNA *Thunnus tonggol* **LOT**



1 Dorsal, pectoral and pelvic
fins grey to black

2 Short pectoral fin

3 Tip of second dorsal and
anal fins yellowish

4 Finlets yellow with white
to grey margin



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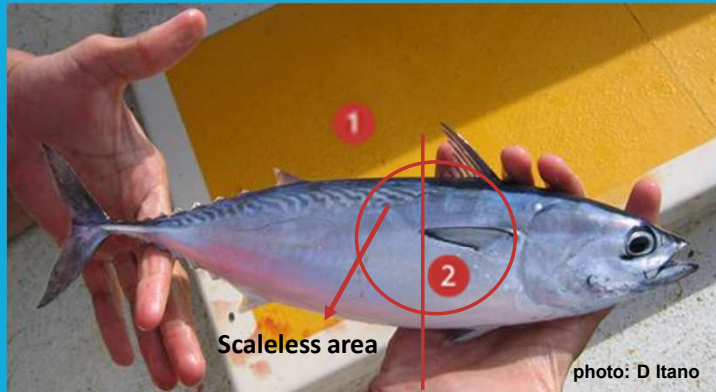


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FRIGATE TUNA *Auxis thazard* FRI



- 1 1st dorsal fin and 2nd dorsal fin spaced apart
- 2 Short pectoral fins, reaching past vertical line from anterior margin of scaleless area



- Head dark blackish purple fading to a blue coloured back. White ventral surface. Purple pectoral and pelvic fins with black inner sides.
- At least fifteen wavy lines found in area above lateral line where no scales are present.
- Corselet extends narrowly along lateral line with fewer than six scales deep below insertion of second dorsal fin
- Dorsal fins broadly separated (unlike kawakawa).
- Pelvic fins separated from one another by a large single flap (interpelvic process)
- Small, conical teeth found in a single series



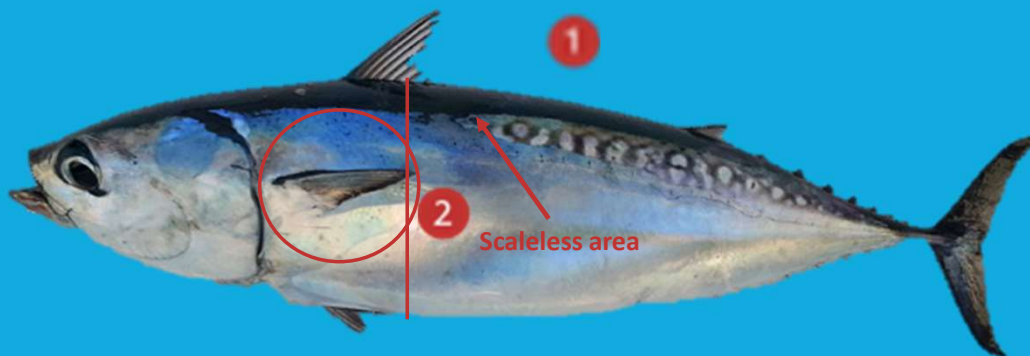
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BULLET TUNA *Auxis rochei*

BLT



1 1st dorsal fin and 2nd dorsal fin spaced apart

2 Pectoral fins short, not reaching vertical line from anterior margin of scaleless area above corselet



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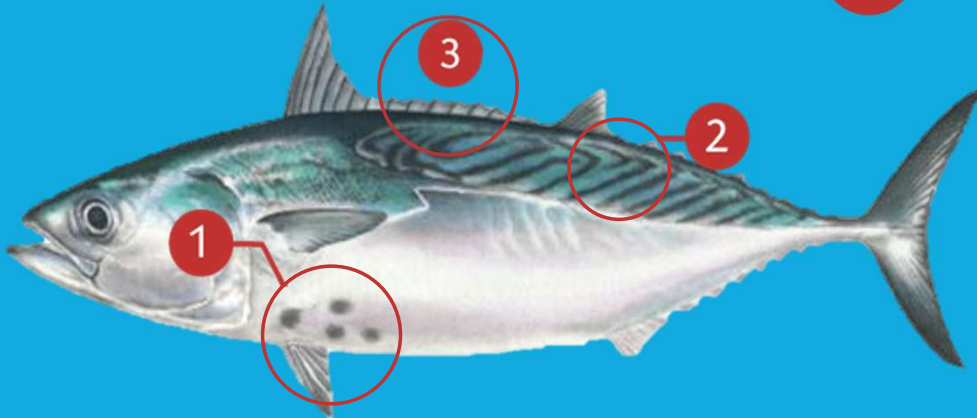


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KAWAKAWA *Euthynnus affinis*

KAW



- 1 Extended 1st dorsal fin to 2nd dorsal fin
- 2 Broken oblique stripes
- 3 Black spots on the belly close to pelvic fin



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Identifying characters

- Space between first and second dorsal fin very short - Extended 1st dorsal fin to 2nd dorsal fin
- Coloration: predominantly silver-gray, some dark spots can be found below pectoral fin
- Dorsal coloration: darker gray, rear half of back has a large patch of irregular wavy lines
- Dorsal and anal finlets present
- First dorsal fin spines very high in the front and much lower moving towards the tail



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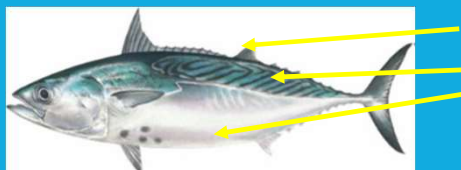


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SMALL NERITIC TUNA (compared):

KAWAKAWA
Euthynnus affinis
CODE: KAW



- Extended 1st dorsal fin to 2nd dorsal fin
- Broken oblique stripes
- Black spots on the belly close to pelvic fin

FRIGATE TUNA
Auxis thazard
CODE: FRI

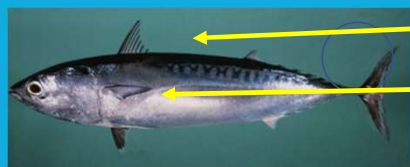


- 1st dorsal fin and 2nd dorsal fin spaced apart
- Short pectoral fins, reaching past vertical line from anterior margin of scaleless area

BULLET TUNA
Auxis rochei
CODE: BLT



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- 1st dorsal fin and 2nd dorsal fin spaced apart
- Short pectoral fins, reaching behind vertical line from anterior margin of scaleless area



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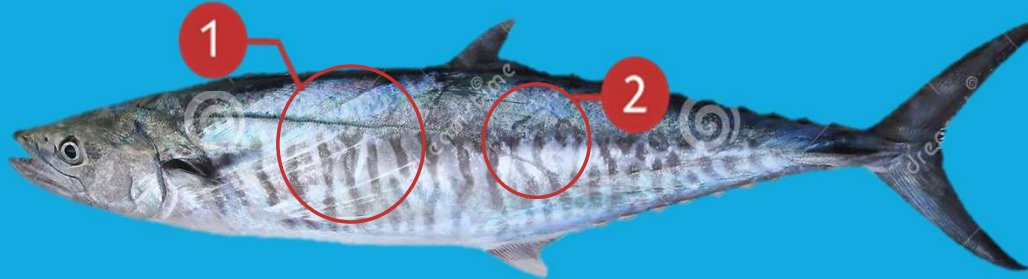


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NARROW-BARRED SPANISH MACKEREL

Scomberomorus commerson

COM



1 Dark vertical bars on the side

2 Lateral line bents down below the end of the second dorsal fin



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They can be distinguished from other Spanish mackerels by the dark vertical bars on the side and the lateral line bent down below the end of second dorsal fin.

A coastal, pelagic, schooling species, usually found in tropical and subtropical waters.

Congregations often occur around wrecks, buoys, coral reefs, and other such areas where food is abundant. Schools vary in size and the largest individuals are usually loners.



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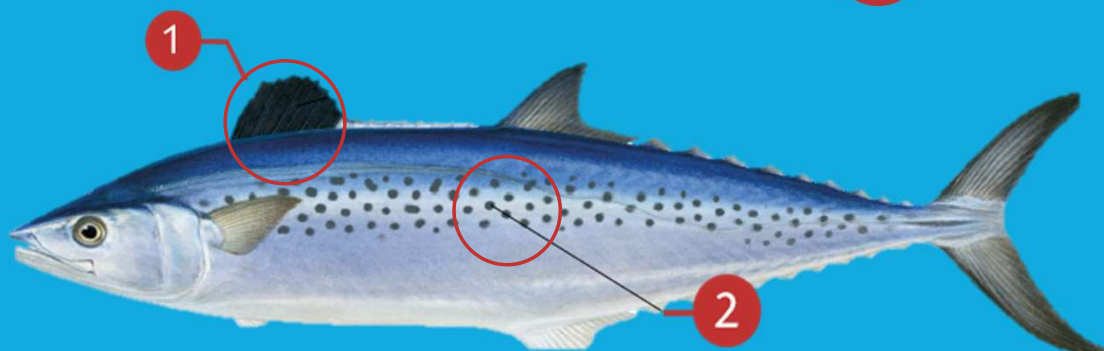


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INDO-PACIFIC KING MACKEREL

Scomberomorus guttatus

GUT



1 First dorsal fin black up to the eighth spine and white posterior

2 Several rows of dark spots on the side



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Yellowfin tuna vs. Bigeye tuna



Juvenile yellowfin and bigeye tuna in fresh condition can be reliably identified using a combination of the following features.

Internal characteristics:

- liver appearance and morphology
- swim bladder morphology

External characteristics

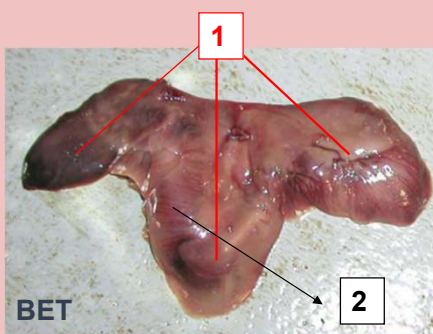
- body markings
- body morphology
- head and eye morphology
- pectoral fin characteristics
- caudal fin characteristics
- finlet coloration



YFT vs BET - Liver Appearance and Morphology

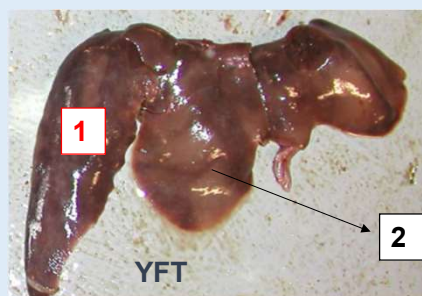
Bigeye tuna

1. Three rounded lobes of about equal size
2. **Ventral surface striated**



Yellowfin tuna

1. Right lobe longer & thinner than rounded medial & left lobes
2. Lobes smooth no striations.





YFT vs BET - Swim Bladder Appearance

Yellowfin tuna

1. only in anterior half of body cavity
2. inconspicuous, usually deflated or slightly inflated



Bigeye tuna

1. occupies almost entire body cavity
2. large, conspicuous, often inflated

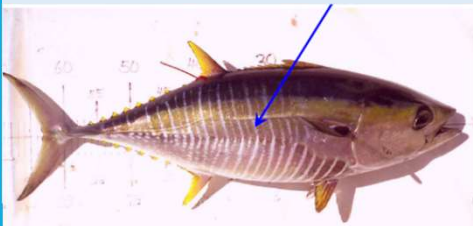




YFT vs BET - Body markings

Yellowfin tuna

- Conspicuous chevron pattern of closely spaced silvery lines
- Solid lines alternate with rows of dots
- Line pattern extends from tail, forward to beneath pectoral fin and to above mid-lateral line



Bigeye tuna

- Irregular vertical, widely spaced white lines or marks
- Some rows of dots but few and irregular
- Line pattern irregular, broken, confined mostly to below mid-lateral line





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YFT vs BET - Body markings anterior under pectoral

YELLOWFIN TUNA

- conspicuous alternating bands forward to below pectoral fin
- clear demarcation between marked and unmarked region



BIGEYE TUNA

- markings more common on posterior half of body, few spots
- demarcation between marked and unmarked region not as clear



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YFT vs BET - Body morphology



Yellowfin tuna

- body elongate, long tail
- body outline flat between 2nd dorsal and caudal fin and between anal and caudal fin

Bigeye tuna

- body deep, rounded
- body outline rounded, forming a smooth dorsal and ventral arc between snout and caudal peduncle



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YFT vs BET -Head and eye morphology

YFT

- shorter head length and depth vs fork length than BET
- smaller eye diameter compared to BET of same fork length



BET

- greater head length and depth vs fork Length than yellowfin
- greater eye diameter compared to yellowfin of same Fork Length



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YFT vs BET - Pectoral fin

BET

- pectoral fin long, extending beyond the second dorsal fin base
- pectoral tapers to thin point, flexible, often curves ventrally at side



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YFT

- pectoral fin short, extending to base of second dorsal fin
- pectoral fin thicker, stiff, blade-like



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YFT vs BET - Pectoral fin



Bigeye 96 cm



Yellowfin 104 cm



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YFT vs BET - Colour



YFT

- Bright yellow mid-lateral band
- Dark black back may be separated from the gold by a thin blue band
- Fins yellow to yellowish, anal fin sometimes tinged with silver
- Flanks and belly silvery white



BET

- Golden to brassy mid-lateral band
- Dark black back edged with bright metallic blue line
- Fins dusky yellowish with anal fin tinged with silver
- Caudal fin often dusky black
- Flanks and belly pearly white



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YFT vs BET – Caudal Fin



Yellowfin

- Central portion of trailing edge forms distinct notch
- Two distinctly raised ridges present that form the “V” notch

Bigeye

- Central portion of trailing edge forms a flat or slightly crescent shaped area
- Central area of caudal fin flat with 2 inconspicuous low mounds present.



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YFT vs BET – Caudal Fin – centre of trailing edge

YFT

Forms "V or M" shaped notch

BET

Forms flat or slightly rounded cup





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THANK YOU FOR YOUR PARTICIPATION

ANY QUESTIONS?



send us a message via Talents LMS



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