



## Field identification of yellowfin and bigeye tuna

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Tunas are commercially important food fishes exploited from all the world oceans. Of the 9 species contributing to the Indian tuna fisheries, yellowfin and bigeye tuna grow to big sizes, and with superior meat quality have high export demand. Identification of these tuna species are comparatively easier in fresh condition than the iced or frozen condition due to discolouration, fin and skin damage during handling and storage process. In such cases certain internal characteristics such as length of air bladder, liver shape and striation are used. Misidentification of yellowfin and bigeye tunas occurs in several cases. The present study is based on field observations at Cochin Fisheries Harbour and uses an easy field identification key for yellowfin and bigeye tuna based on external characteristics developed by Itano (2005) and IOTC (2013). Bigeye tuna are landed stray numbers along with yellowfin tunas, at Cochin Fisheries Harbour. Due to lack of proper identification in the field, bigeye tunas are sometimes misidentified and included along with yellowfin tuna catch, leading to erroneous estimates of species-wise catch volumes in the tuna fishery. A large sized bigeye



Fig. 1. Bigeye tuna landed at Cochin Fisheries Harbour tuna measuring 149 cm fork length (FL) and weighing 66 kg caught by Hook and line was observed at Cochin Fisheries Harbour on 16<sup>th</sup> April 2013 (Fig.1). All the morphometric measurements were taken and compared with yellowfin tuna of same fork length. The main characters (in % of FL) that distinguished it from yellowfin tuna was the Head length (28.2% versus 23.2%), Eye diameter (3.9% versus 3%), Pectoral fin length (25 % versus 23%), 2<sup>nd</sup> Dorsal fin height (15% versus 27%) and Anal fin height (15% versus 31%). The tissue sample which was DNA barcoded was confirmed as bigeye tuna and submitted in GenBank with accession number KF541748.1. Properly distinguished yellowfin and bigeye tuna catch will improve the catch statistics reporting.

1. Body morphology	
Yellowfin tuna	Bigeye tuna
<ul style="list-style-type: none"> <li>• Body elongate with comparatively long tail</li> <li>• Body outline flat towards posterior region</li> </ul> 	<ul style="list-style-type: none"> <li>• Body deep, rounded with short tail</li> <li>• Body outline rounded, forms a smooth dorsal and ventral arc between snout and caudal peduncle</li> </ul> 

**2. Head and eye morphology**

- Shorter head length and smaller eye diameter compared to bigeye tuna of same fork length



- Greater head length and eye diameter



**3. Pectoral fin length**

- Short and reaching before or up to the second dorsal fin origin (in adults)



- Long and reaching beyond second dorsal fin origin in adults



**4. Second dorsal and anal fin length**

- Second dorsal and anal fin greatly elongated in adults



- Second dorsal and anal fin short



### 5. Caudal fin fork shape

- Central portion of caudal fin fork region forms V" or "M" notch

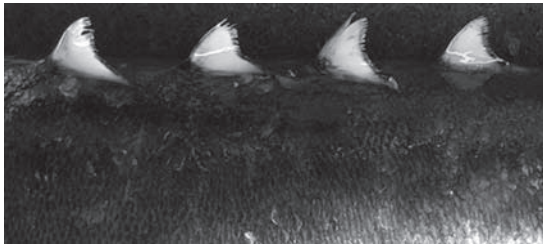


- Central portion of caudal fin fork region forms a flat or slightly crescent shaped area



### 6. Finlet colouration

- Bright yellow with thin black margins



- Yellowish colour with distinct and thick black margins

