

## FAO SPECIES IDENTIFICATION SHEETS

FISHING AREA 51  
(W. Indian Ocean)

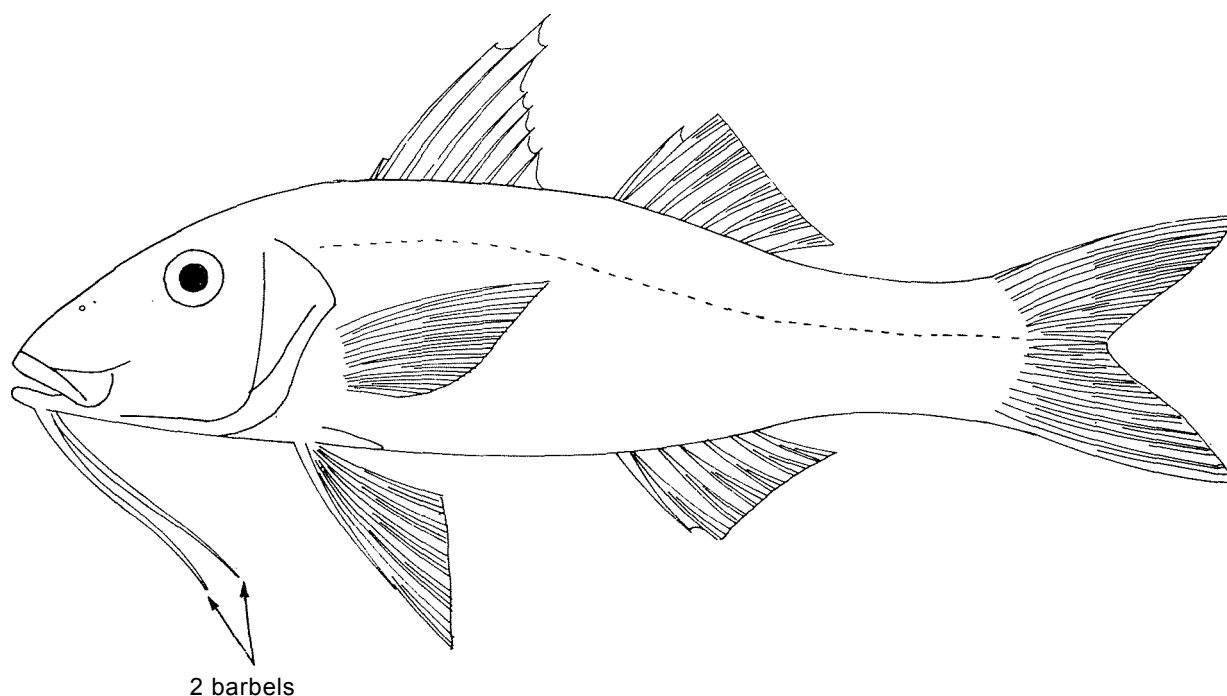
## MULLIDAE

## Goatfishes

Body elongate and somewhat compressed. Two long unbranched barbels on chin; mouth low on head, the lower jaw inferior, the gape slightly diagonal; dentition variable but teeth conical, either in villiform bands or in 1 or 2 rows, never as enlarged canines (except slightly enlarged in adult males of the Atlantic Pseudupeneus). Two well-separated dorsal fins, the first of 7 or 8 (usually 8) slender spines (first spine often very small), the second of 9 rays (first unbranched); anal fin with 1 spine and 6 rays; caudal fin deeply forked, with 13 branched rays. Scales finely cteroid; head and body completely scaled (except preorbital region of some Upeneus), the number of near-vertical scale rows from upper end of gill opening to base of caudal fin 27 to 39.

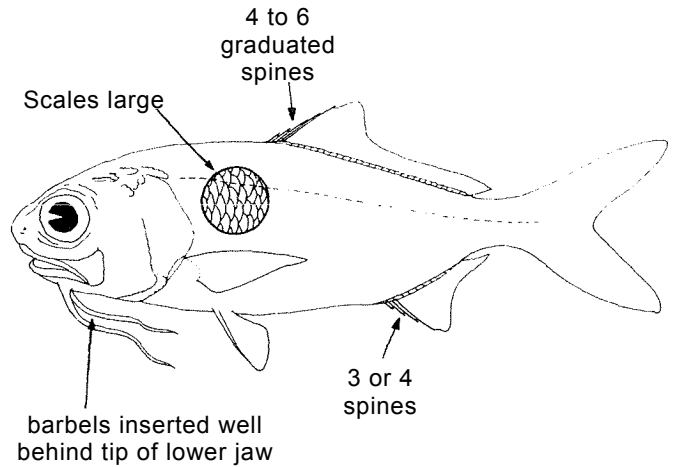
Colour: variable; ground colour generally pale, some species with distinctive dark, yellow, orange or brown bands or stripes and spots or blotches; many species colourful, with shades of red or yellow predominating. Vertical fins may have bands or stripes.

Most goatfishes (sometimes called surmullets) live in shallow water. They are usually found on open sand or mud bottoms, at least for feeding (though the species of Parupeneus and Mulloides are often seen on coral reefs). Their barbels, which have chemosensory receptors, are actively moved over or into the sediment to locate food organisms. These fishes often root with their snouts into the sediment for their food. They are carnivorous, feeding on a wide variety of small animals, particularly small crustaceans and worms. A few species prey on small fishes. The flesh of goatfishes is of good quality - that of some species highly esteemed in certain areas. Catch statistics are usually not collected by individual species. The goatfish catch reported from Fishing Area 51 exceeded 6 500 t in 1980, of which more than 5 500 t corresponded to species of Upeneus.



**SIMILAR FAMILIES OCCURRING IN THE AREA:**

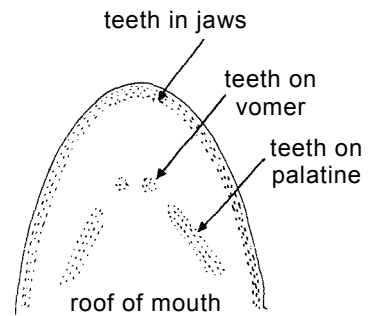
Polymixiidae: the only other family besides Mullidae with a pair of long barbels on chin. A single, unnotched dorsal fin with 4 to 6 spines; anal fin with 3 or 4 spines; barbels inserted well behind tip of lower jaw. Deep water (about 200 to 400 m).



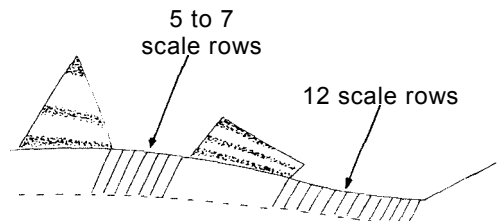
Polymixiidae

**KEY TO GENERA OCCURRING IN THE AREA:**

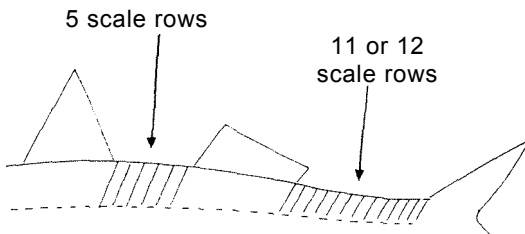
- 1a. Teeth on vomer and palatines (Fig.1); stripes on both dorsal fins (Fig.2); most species with oblique dark bands on lobes of caudal fin..... Upeneus
- 1b. No teeth on palatines or vomer; stripes some-present on second dorsal; no black bands on caudal fin lobes
- 2a. Teeth in jaws small, in a villiform band anteriorly (Fig.3); 5 rows of scales between dorsal fins; 11 or 12 rows of scales along upper part of caudal peduncle (Fig.4); lateral line scales 33 to 38 ..... Mulloides



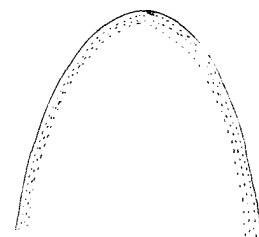
Upeneus Fig.1



Upeneus Fig.2

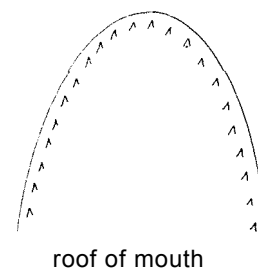


Mulloides Fig.4



roof of mouth  
Mulloides Fig.3

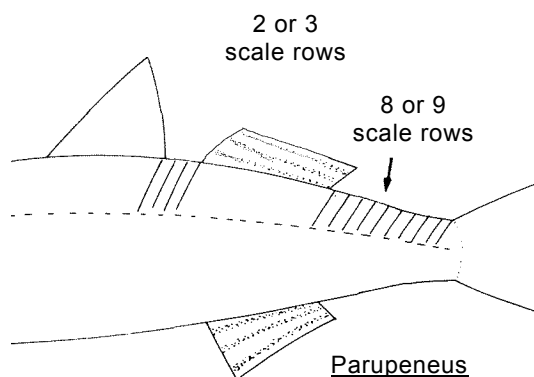
2b. Teeth in jaws moderately large, blunt, in a single row (Fig.5); 2 or 3 rows of scales between dorsal fins; 8 or 9 rows of scales along upper part of caudal peduncle (Fig.6); lateral line scales 26 to 31 ..... Parupeneus



roof of mouth

Parupeneus

Fig.5



2 or 3  
scale rows

8 or 9  
scale rows

Parupeneus

Fig.6

**LIST OF SPECIES OCCURRING IN THE AREA:**

Code numbers are given for those species for which Identification Sheets are included

<u>Mulloides flavolineatus</u> (Lacepède, 1801)	MULL Mullo 1
<u>Mulloides pflügeri</u> (Steindachner, 1900)	
<u>Mulloides vanicolensis</u> (Valenciennes, 1831)	MULL Mullo 2
<u>Parupeneus barberinus</u> (Lacepède, 1801)	MULL Paru 2
<u>Parupeneus bifasciatus</u> (Lacepède, 1801)	MULL Paru 1
<u>Parupeneus cinnabarinus</u> (Cuvier, 1829)	MULL Paru 5
<u>Parupeneus cyclostomus</u> (Lacepède, 1801)	MULL Paru 7
<u>Parupeneus forsskali</u> (Fourmanoir & Guézé, 1976)	MULL Paru 8
<u>Parupeneus indicus</u> (Shaw, 1803)	MULL Paru 4
<u>Parupeneus macronema</u> (Lacepède, 1801)	MULL Paru 3
<u>Parupeneus pleurostigma</u> (Bennett, 1831)	MULL Paru 9
<u>Parupeneus rubescens</u> (Lacepède, 1801)	MULL Paru 6
* <u>Parupeneus</u> sp.	
<u>Upeneus asymmetricus</u> Lachner, 1954	
<u>Upeneus bensasi</u> (Temminck & Schlegel, 1842)	MULL Upen 4
<u>Upeneus luzonius</u> Jordan & Seale, 1907	
<u>Upeneus moluccensis</u> (Bleeker, 1855)	MULL Upen 1
<u>Upeneus sulphureus</u> Cuvier, 1829	MULL Upen 2
<u>Upeneus sundaicus</u> (Bleeker, 1855)	MULL Upen 5
<u>Upeneus taeniopterus</u> Cuvier, 1829	MULL Upen 8
<u>Upeneus tragula</u> Richardson, 1845	MULL Upen 6
<u>Upeneus vittatus</u> (Forsskål, 1775)	MULL Upen 3

Prepared by M. Kumaran, Central Marine Fisheries Research Institute, Cochin, India and J.E. Randall, Bernice Bishop Museum, Honolulu, Hawaii, USA

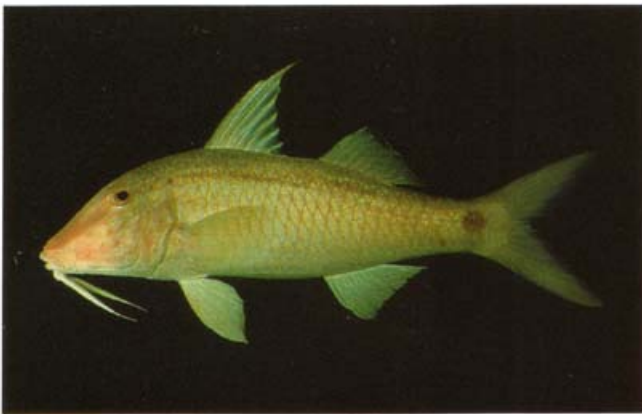
\* An undescribed species from the "Gulf" and India to be named by J.E. Randall and P. Guézé



*Mulloides flavolineatus* 158 mm S.L.  
Mauritius



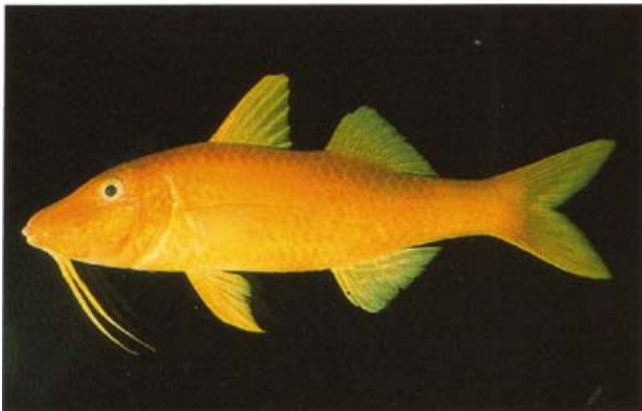
*Mulloides vanicolensis* 150 mm S.L.  
Tanzania



*Parupeneus barberinus* 243 mm S.L.  
Fanning Is.



*Parupeneus bifasciatus* 198 mm  
S.L. Oaku, Hawaii



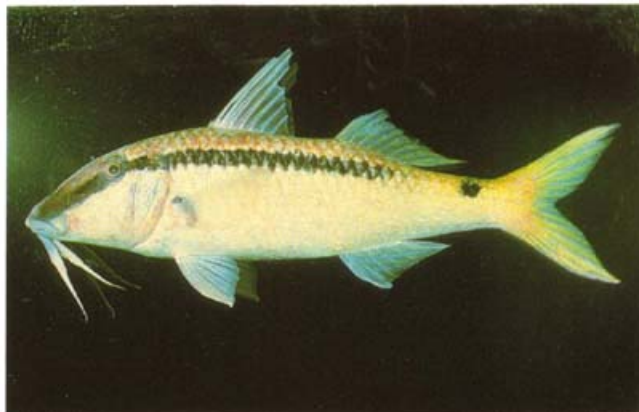
*Parupeneus cyclostomus* 159 mm S.L.  
Marshall Is.



*Parupeneus cyclostomus* 222 mm S.L.  
Kona, India



*Parupeneus cinnabarinus* 234 mm S. L.  
Lord Howe Is.



*Parupeneus forsskali* 217 mm S.L. Red  
Sea



*Parupeneus indicus* 164 mm S.L.  
Tuticorin, India



*Parupeneus macronema* 151 mm S.L. Red  
Sea



*Parupeneus pleurostigma* 160 mm S.L.  
Marshall Is.



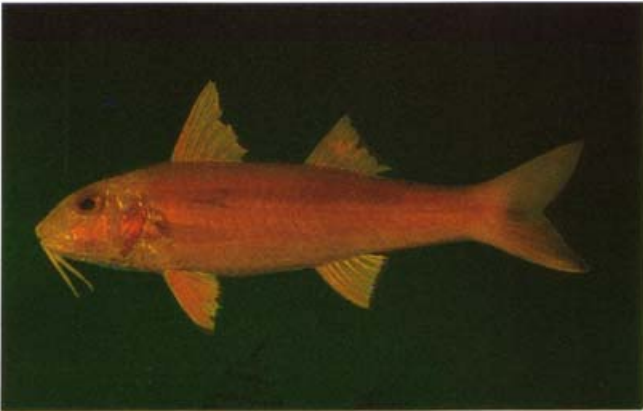
*Upeneus bensasi* 115 mm S.L.  
Madras, India



*Upeneus moluccensis* 136 mm S.L.  
Ambon, Indonesia



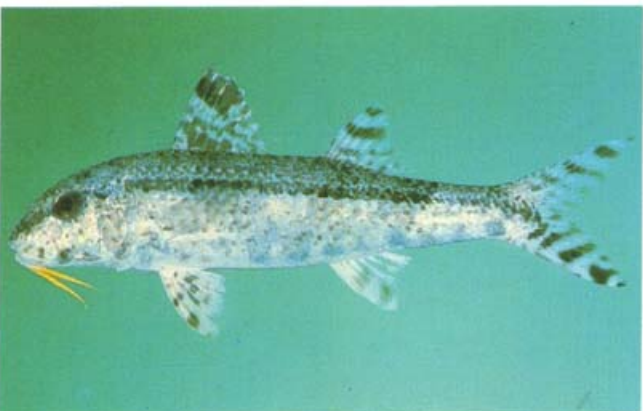
*Upeneus sulphureus* 160 mm S.L.  
Madras, India



*Upeneus sundaicus* 122 mm S.L.  
Ambon, Indonesia



*Upeneus taeniopterus* 120 mm S.L.  
Madras, India



*Upeneus tragula* 116 mm S.L.  
Bahrain



*Upeneus vittatus* 155 mm S.L.  
Mauritius