

FAO SPECIES IDENTIFICATION SHEETS

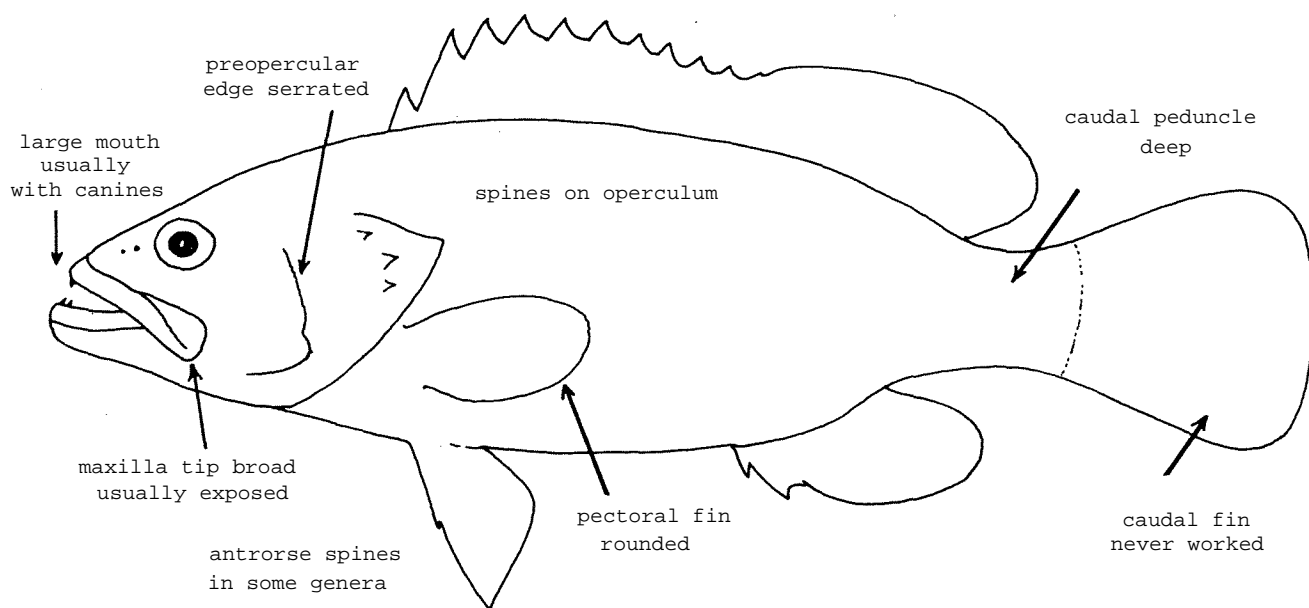
FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)

SERRANIDAE

Groupers and Seabasses

(Anthiidae included by many authors, but omitted here
since not of commercial importance)

Oblong, moderately elongate, perch-like fishes. Mouth large, its cleft horizontal or oblique; maxilla tip broad, usually completely exposed or only partially hidden beneath suborbital bones when mouth closed. Teeth in a villiform band in jaws, with a few anterior canines and sometimes canines at sides of lower jaw; vomer and palatines (roof of mouth) toothed or smooth. Operculum with 1 to 3, usually flat spines; hind edge of preoperculum serrated, lower edge sometimes with antrorse (forward pointing) spines. Gill membranes separate from isthmus; 4 gill arches; pseudobranch present; gill rakers strong, long or short. Vertebrae 10 to 14, sometimes more, but not exceeding 35. Swimbladder small. A single dorsal fin, soft and spinous portions sometimes partially separated by a notch; 7 to 12 spines. Pectoral fins normally rounded. Pelvic fins with 1 spine and 5 soft rays, close to base of pectoral fins; axillary scale present but inconspicuous. Anal fin with 3 spines, mostly strong, but sometimes weak. Caudal peduncle usually deep; caudal fin with 7 to 8 principal rays, its hind edge rounded, truncate, lunate or emarginate, but never forked. Scales small or moderate in size, mostly ctenoid (rough to touch), sometimes cycloid (smooth), firmly embedded in skin; head scaled.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Grammistidae: upper border of operculum attached to body by a flap of skin; nasal organ elongate (with horizontal lamellae in most genera, but arranged in a circle in *Diploprion* and *Aulacocephalus*; in a rosette in Serranidae); also, mucus of skin toxic, with bitter taste.

Pseudogrammidae: resemble Serranidae and Grammistidae, but do not reach more than 9 cm length.

Theraponidae, Kuhliidae, Plectorhynchidae, etc.: mouth moderate, upper jaw not reaching beyond eye centre; also, many species have dark horizontal stripes along body or oblique stripes on caudal fin.

Centropomidae: spinous and soft portions of dorsal fin clearly separated at base of fin, 7 to 8 spines in dorsal fin and a single strong spine on operculum.

Key to Genera

1 a. Spinous and soft portions of dorsal fin completely or partially separated by a deep notch (Fig. 1); no canine teeth in jaws

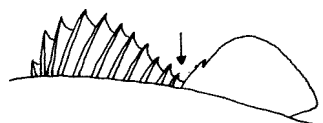
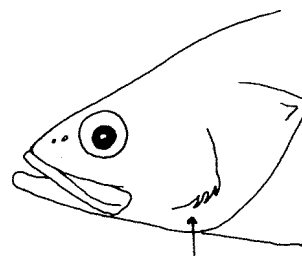


Fig. 1

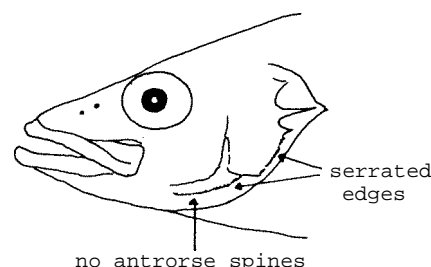
2 a. Preoperculum with strong antrorse spines at its angle (Fig. 2); edges of sub- and interoperculum smooth; distance between origins of pelvic and anal fins greater than length of head *Lateolabrax*



antrorse spines at angle of preoperculum

Fig. 2

2 b. Preoperculum with a strong spine at its lower angle but no antrorse spines on lower edge (Fig. 3); edges of sub- and interoperculum serrated; distance between origins of anal and pelvic fins shorter than length of head *Nippon*



no antrorse spines

Fig. 3

1 b. Spinous and soft portions of dorsal fin not separated by a deep notch (Fig. 4)

3 a. Canine teeth absent in jaws; head anteriorly very low, with a smoothly concave profile, becoming convex before the dorsal fin; hind nostril a vertical slit; dorsal fin with 10 spines *Cromileptes*

3 b. Canine teeth present in jaws; head normal, invariably with a convex profile; hind nostril normal, round; dorsal fin with 6 to 11 spines

4 a. Scales large, 40 to 55 along lateral line

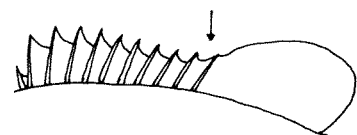
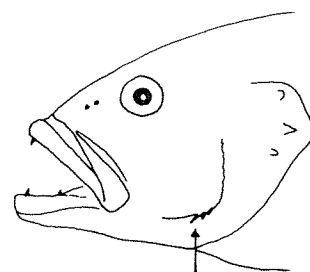


Fig. 4

5 a. Anal fin with 6 soft rays; 42 to 45 scales in lateral line; a few hinged teeth in upper jaw *Chelidoperca*

5 b. Anal fin with 9 soft rays; 50 to 55 scales in lateral line; no depressible teeth in upper jaw *Aethaloperca*

- 4 b. Scales small, over 80 along lateral line; 7 to 12 soft rays in anal fin
- 5 a. 6 to 8 dorsal fin spines; lower edge of preoperculum with several antrorse spines (Fig. 5) *Plectropomus*
- 5 b. 9 to 11 dorsal. fin spines; lower edge of preoperculum without antrorse spines
- 6 a. 2 to 3 curved canines on each side of lower jaw (Fig. 6)
- 7 a. Caudal fin deeply lunate, soft parts of dorsal and anal fins forming triangular lobes (Fig. 7) *Variola*
- 7 b. Caudal fin truncate, soft parts of dorsal and anal fins rounded posteriorly *Gracilia*
- 6 b. No distinct enlarged canines on each side of lower jaw; caudal fin rounded, truncate or emarginate (Fig. 8)
- 8 a. 9 dorsal fin spines *Cephalopholis*
- 8 b. 11 dorsal fin spines
- 9 a. Palatines toothless *Anyperodon*
- 9 b. Palatines toothed
- 10 a. 10 to 12 soft anal fin rays; preoperculum edge angulate (Fig. 9); body rhomboid, laterally compressed; caudal fin truncate; colour uniformly dark brown *Trisotropis*
- 10 b. 7 to 9 soft anal fin rays; preoperculum edge rounded or with slight angle only; body oblong and relatively less compressed laterally; caudal fin mostly rounded, sometimes truncate; colour not uniformly dark brown
- 11 a. Dorsal fin spines shorter than soft rays, increasing in length posteriorly (Fig. 10); body with black and yellow bands in young, becoming mottled dark and yellow in adult; pectoral fin dark or black-banded *Promicrops*
- 11 b. Dorsal fin spines more or less equal in length to soft rays, with median ones the longest (Fig. 11) colour not as above *Epinephelus*



antrorse spines at angle of preoperculum
Fig. 5

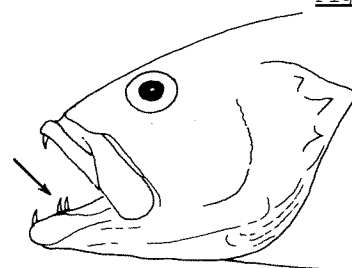


Fig. 6

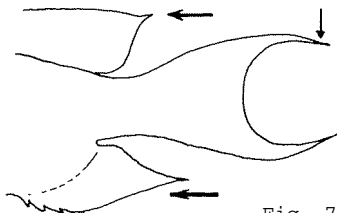
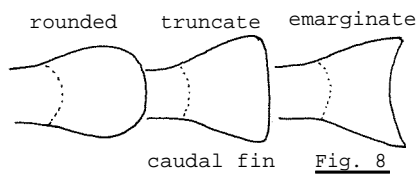


Fig. 7



rounded truncate emarginate
caudal fin Fig. 8

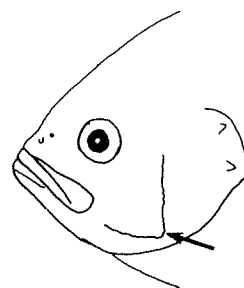
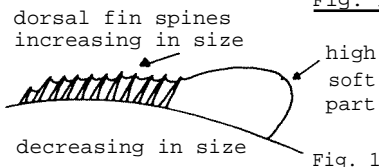


Fig. 9



dorsal fin spines increasing in size
high soft part
decreasing in size
Fig. 10

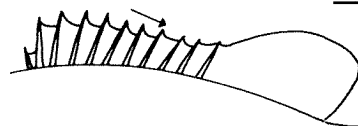


Fig. 11

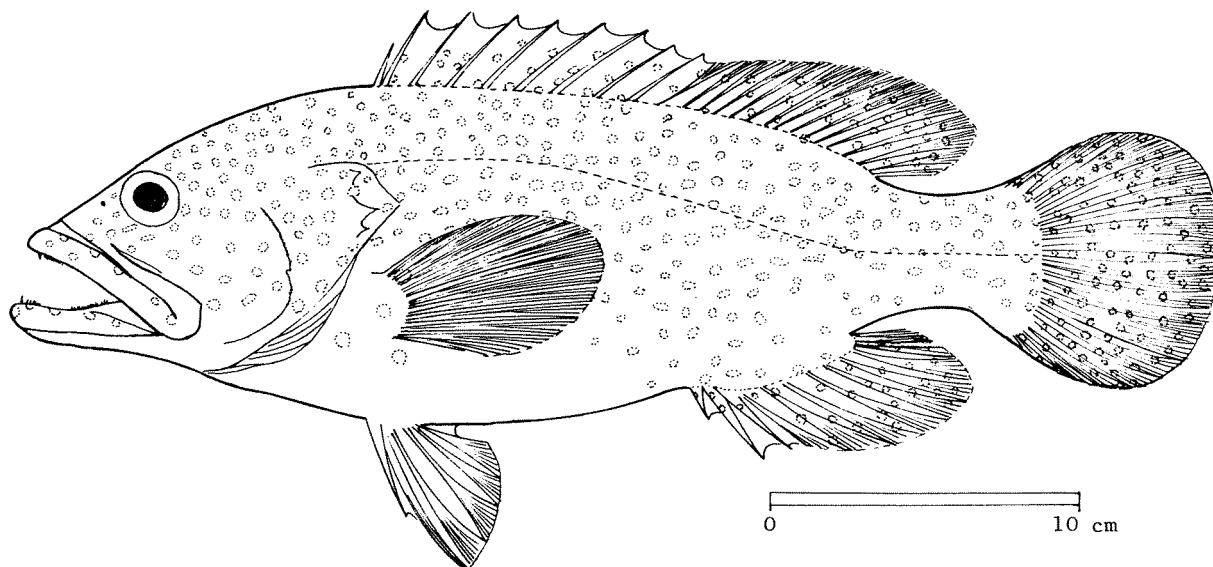
List of Species occurring in the Area*
(Code numbers are given for those species
for which Identification Sheets are included)

<i>Aethaloperca rogoa</i>		<i>Epinephelus hoedtii</i>	
		<i>Epinephelus kohleri</i>	
<i>Anyperodon leucogrammicus</i>		<i>Epinephelus latifasciatus</i>	
		<i>Epinephelus maculatus</i> (<i>medurensis</i> or <i>fario</i> of authors)	
<i>Cephalopholis argus</i>		<i>Epinephelus malabaricus</i>	
<i>Cephalopholis aurantius</i>		<i>Epinephelus megachir</i>	SERRAN Epin 10
<i>Cephalopholis boenack</i>		<i>Epinephelus merra</i>	
<i>Cephalopholis cyanostigma</i>		<i>Epinephelus moara</i>	
<i>Cephalopholis leopardus</i>		<i>Epinephelus morrhua</i>	
<i>Cephalopholis miniatus</i>	SERRAN Cephal 1	<i>Epinephelus retouti</i>	
<i>Cephalopholis nigripinnis</i>		<i>Epinephelus rhyncholepis</i>	
<i>Cephalopholis pachycentron</i>	SERRAN Cephal 2	<i>Epinephelus septemfasciatus</i>	
<i>Cephalopholis sexmaculatus</i> (<i>C. coatesi</i> of authors)		<i>Epinephelus sexfasciatus</i>	
<i>Cephalopholis sonnerati</i>	SERRAN Cephal 3	<i>Epinephelus summana</i>	SERRAN Epin 11
<i>Cephalopholis urodelus</i>		<i>Epinephelus tauvina</i>	SERRAN Epin 12
		<i>Epinephelus truncatus</i> (perhaps not in area)	
<i>Chelidoperca hirundacea</i>		<i>Epinephelus undulosus</i>	
		<i>Gracilia albomarginatus</i>	
<i>Cromileptes altivelis</i>	SERRAN Cromil 1	<i>Lateolabrax japonicus</i> (perhaps not in area)	
<i>Epinephelus akaora</i>		<i>Nippon spinosus</i>	
<i>Epinephelus amblycephalus</i>		<i>Plectropomus leopardus</i>	SERRAN Plect 1
<i>Epinephelus areolatus</i>	SERRAN Epin 4	<i>Plectropomus maculatus</i>	
<i>Epinephelus awoara</i>	SERRAN Epin 5	<i>Plectropomus melanoleucus</i>	
<i>Epinephelus bleekeri</i>	SERRAN Epin 6	<i>Plectropomus oligacanthus</i>	
<i>Epinephelus brunneus</i>	SERRAN Epin 7	<i>Plectropomus truncatus</i>	SERRAN Plect 2
<i>Epinephelus chlorostigma</i>		<i>Promicrops lanceolatus</i>	SERRAN Promic 1
<i>Epinephelus coeruleopunctatus</i>		<i>Trisotropis dermopterus</i> (perhaps not in area)	
<i>Epinephelus corallicola</i>		<i>Variola louti</i>	SERRAN Variol 1
<i>Epinephelus diacanthus</i>			
<i>Epinephelus epistictus</i>			
<i>Epinephelus fasciatomaculatus</i>			
<i>Epinephelus fasciatus</i>	SERRAN Epin 8		
<i>Epinephelus fuscoguttatus</i>	SERRAN Epin 9		
<i>Epinephelus gilberti</i>			
<i>Epinephelus hexagonatus</i>			

* List tentative and by no means conclusive since many genera urgently need revision

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Cephalopholis miniatus* (Forsskål, 1775)SYNONYMS STILL IN USE: *Enneacentrus miniatus* Munro, 1955
Cephalopholis miniatus Munro, 1967

VERNACULAR NAMES:

FAO: En - Vermilion seabass
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small serranid fish with a stout body. No canine teeth at sides of jaws. Dorsal fin with 9 spines and 14 to 15 soft rays. Anal fin with 3 spines and 9 soft rays. Caudal fin rounded. Scales extending more or less onto basal portions of fins.

Colour: orange, red or red/brown, brighter on belly; head, body and unpaired fins covered with small blue spots, ringed with dark brown; pectoral and pelvic fins sometimes with a few spots also; inside of gill opening more or less tinged with red; unpaired fins and pelvic fins with narrow dark brown margins.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Cephalopholis aurantius: blue or golden spots restricted to head and front of body.

Cephalopholis argus: also has blue spots on body (outlined in dark brown), but soft part of dorsal fin and anal and caudal fins with yellow margins (dark brown in *C. miniatus*); also, 15 to 17 soft dorsal fin rays (14 to 15 in *C. miniatus*).

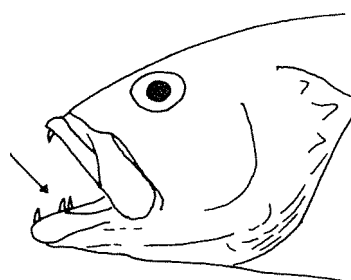
Cephalopholis sonnerati and *C. nigripinnis*: spots only present on head and front of body (white in *C. sonnerati*; yellow or blue in *C. nigripinnis*).

Other *Cephalopholis* species: body with darker vertical bars (or horizontal blue bars in *C. boenack*), or dark saddle-like blotches on back (*C. sexmaculatus*) or on caudal peduncle (*C. leopardus*); also, spots either restricted to head or of different colour (brown, red, black, etc., not blue).

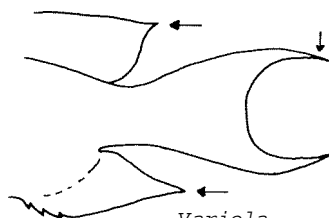
Variola species: caudal fin lunate (emarginate in juveniles) and canine teeth at sides of jaws.

Epinephelus, *Cromileptes* and *Promicrops* species: 10 to 11 dorsal fin spines (9 in *Cephalopholis*).

Plectropomus species: only 6 to 8 dorsal fin spines.



Variola



Variola (adults)

SIZE:

Maximum: 50 cm; common: 30 to 40 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

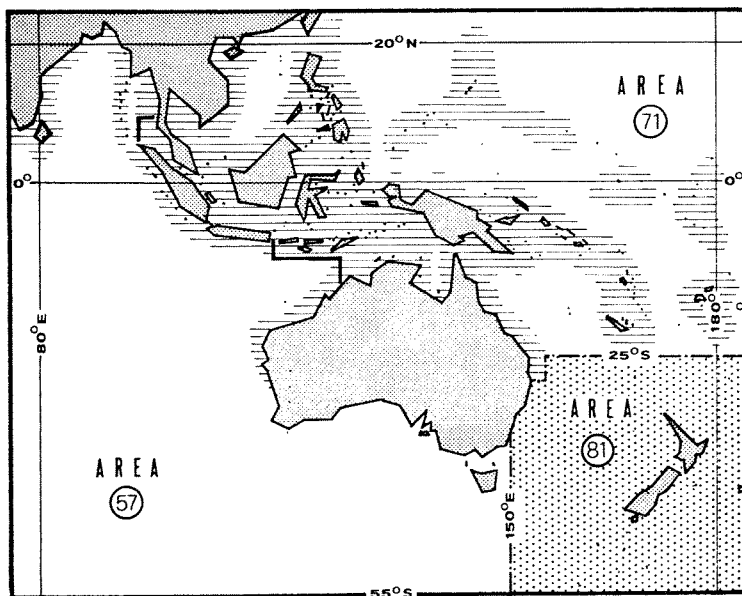
Throughout warm coastal waters of area.

Inhabits coral reefs and rocky areas.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught mainly with handlines and traps.

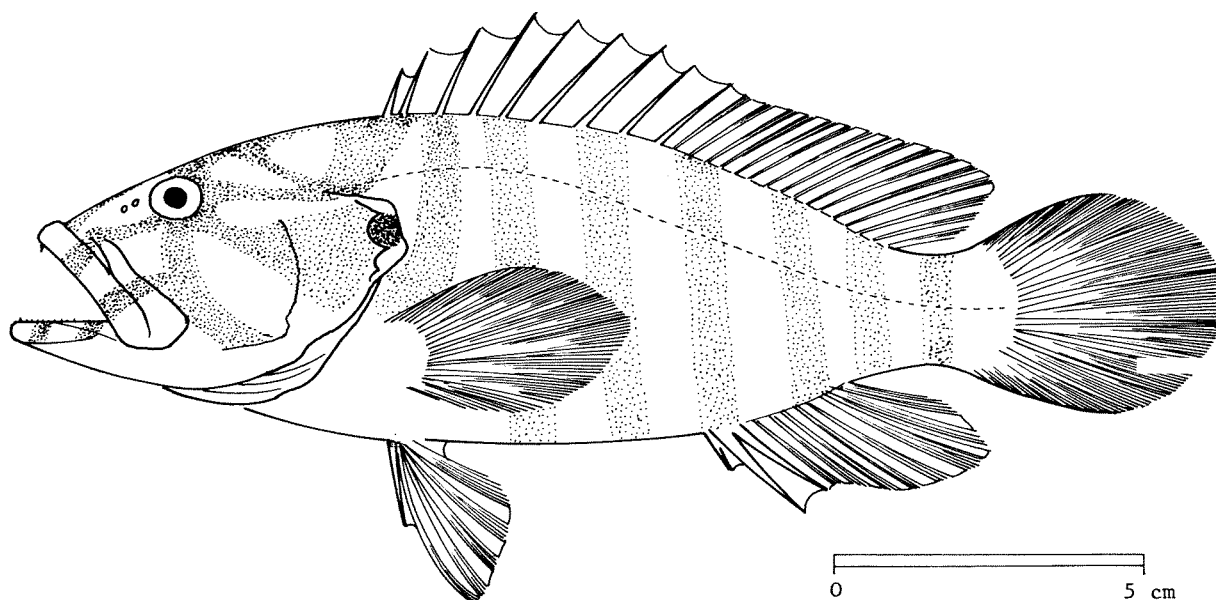
Marketed mostly fresh.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Cephalopholis pachycentron* (Valenciennes, 1828)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Brown-banded seabass
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small serranid fish with a stout body. No canine teeth at sides of jaws. *Dorsal fin* with 9 spines and 15 to 17 soft rays. *Anal fin* with 3 spines and 8 soft rays. *Caudal fin* rounded. Scales extending more or less onto basal portions of fins.

Colour: varies from dark chocolate brown to a very pale red/brown; 8 more or less distinct darker vertical bars on body, almost disappearing when the basic colour is pale red/brown. Head often with small black-edged blue spots that may extend onto front part of body; 4 to 5 dark brown streaks radiating from eye to upper jaw and hind part of head. A black/brown blotch between upper and lower opercular spine. Soft parts of dorsal and anal fins with narrow white margins.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Cephalopholis aurantius: head, body and fins orange/red (pale to dark red/brown in *C. pachycentron*), without bars.

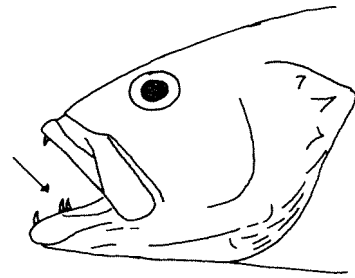
Other *Cephalopholis* species with bars: spots all over body, not just on head and front of body; also, bars horizontal and blue in *C. boenack*, or reduced to saddle-like blotches in *C. sexmaculatus* and *C. leopardus*.

Other *Cephalopholis* species: dominant colour pattern is spots, not bars; also, usually 9 soft anal fin rays (8 in *C. pachycentron*).

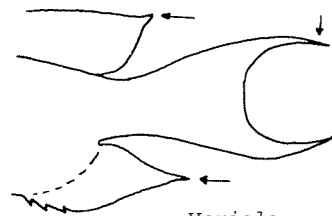
Variola species: caudal fin lunate (emarginate in juveniles) and canine teeth at sides of jaws.

Epinephelus, *Cromileptes* and *Promicrops* species: 10 to 11 dorsal fin spines (9 in *Cephalopholis*).

Plectropomus species: only 6 to 8 dorsal fin spines.



Variola



Variola (adults)

SIZE:

Maximum: 30 cm; common: 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

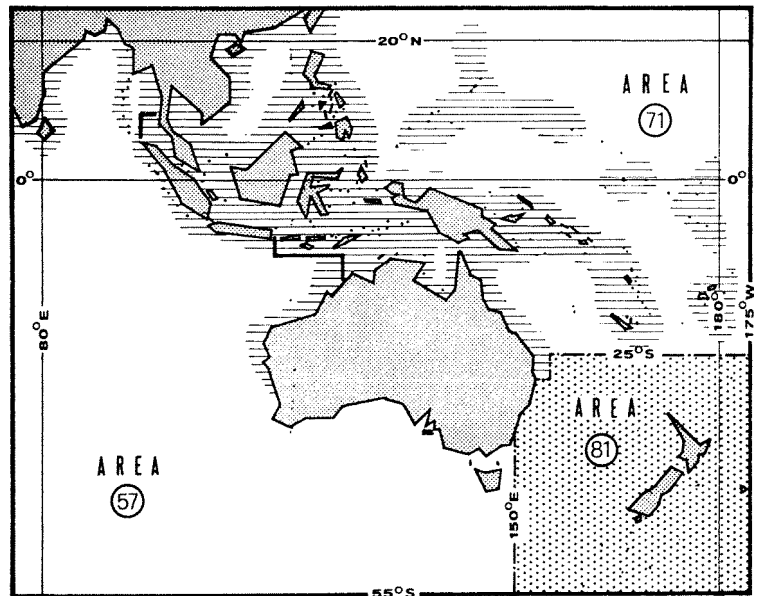
Throughout warm coastal waters of area.

Inhabits shallow coral reefs and rocky areas.

Feeds on smaller bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

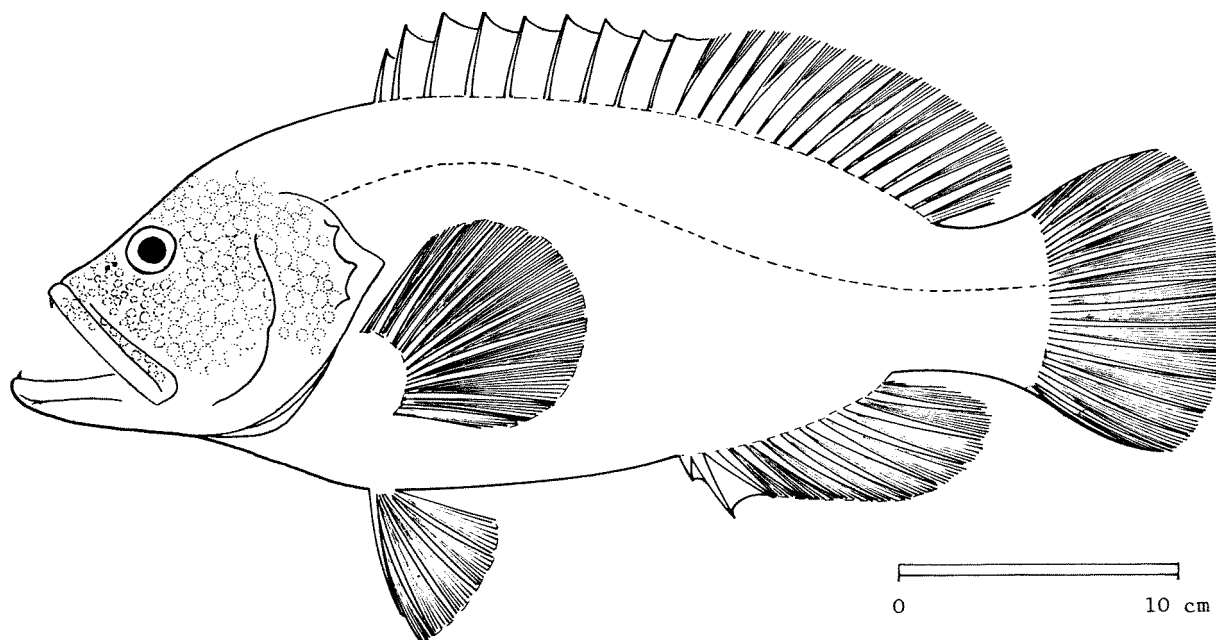
Separate statistics are not reported for this species.

Caught mainly with handlines, traps, gill nets and purse seines.

Marketed mostly fresh.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Cephalopholis sonnerati* (Valenciennes, 1828)SYNONYMS STILL IN USE: *Enneacentrus sonnerati* Munro, 1955
Cephalopholis sonnerati Munro, 1967

VERNACULAR NAMES:

FAO: En - Tomato seabass
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small-sized serranid fish with a stout body. No canine teeth at sides of jaws. *Dorsal fin with 9 spines and 14 to 15 soft rays. Anal fin with 3 spines and 9 soft rays. Caudal fin rounded. Fine scales extending onto basal portion of fins.*

Colour: body and fins brilliant red; head with numerous white spots.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Cephalopholis nigripinnis: spots on head and front of body yellow or blue, body dark red/brown and pectoral and caudal fins broadly edged with white.

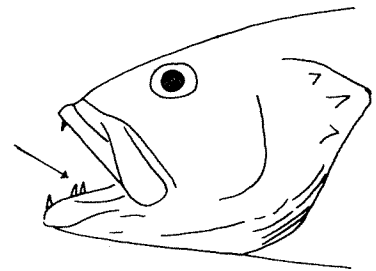
Cephalopholis aurantius: head, body and fins orange/red and spots on head and front of body blue or golden (white in *C. sonnerati*).

Other *Cephalopholis* species: either spots present over entire body (blue spots in *C. miniatus* and *C. argus*) or darker bars on body (or saddle-like blotches in *C. semmaculatus* and *C. leopardus*).

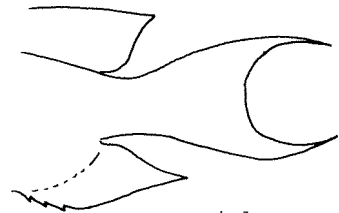
Variola species: caudal fin lunate (emarginate in juveniles) and canine teeth at sides of jaws.

Epinephelus, *Cromileptes* and *Promicrops* species: 10 to 11 dorsal fin spines (9 in *Cephalophotis*).

Plectropomus species: only 6 to 8 dorsal fin spines.



Variola



Variola
(adults)

SIZE:

Maximum: 60 cm; common: 30 to 50 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

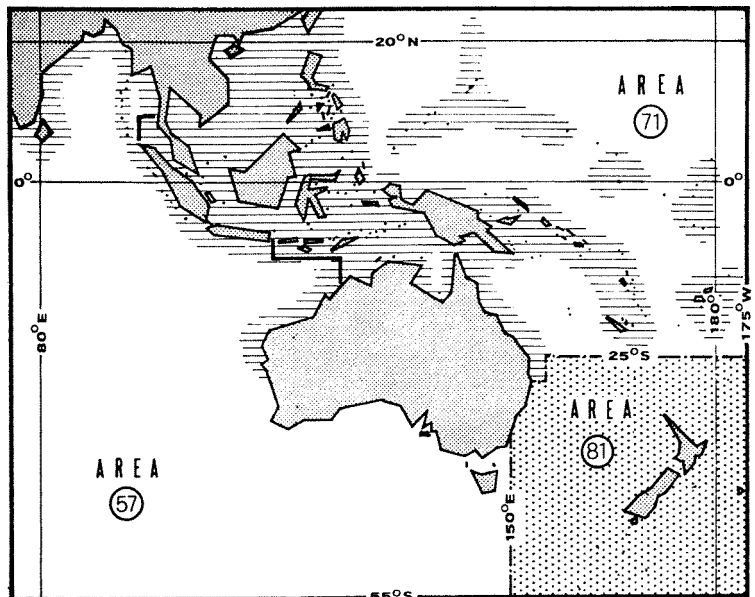
Throughout warm coastal waters of area.

Inhabits shallow coral reefs and rocky areas.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

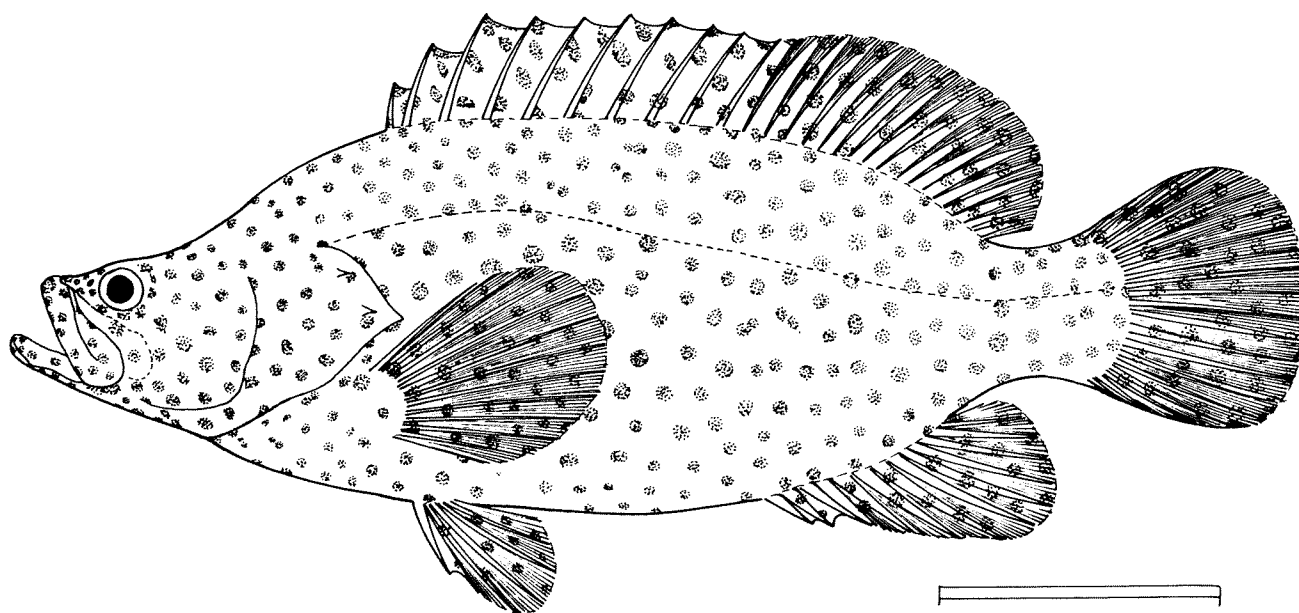
Separate statistics are not reported for this species.

Caught mainly with handlines and traps.

Marketed mostly fresh.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Cromileptes altivelis* (Valenciennes, 1828)SYNONYMS STILL IN USE: *Serranus altivelis* (Valenciennes, 1828)

VERNACULAR NAMES

FAO: En - Humpback seabass
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A moderate-sized, compressed serranid fish; anterior part of head low and flattened, its dorsal profile deeply concave behind eyes. Canine teeth completely absent. Preoperculum finely serrated along its upper edge, but without any enlarged spinules at angle. 2 flat spines on operculum. Dorsal fin with 10 spines and 18 to 19 soft rays; soft dorsal fin rays long, about half the length of head, slightly longer than the longest fin spine. Anal fin with 3 spines and 9 to 11 soft rays. Caudal fin rounded.

Colour: body light brown with numerous dark brown spots; head and all fins similarly spotted; with age the relative size of spots decreases, and the number of spots increases.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Other serranid genera: upper head profile convex; also, dorsal fin spines 11 (*Epinephelus*, *Promicrops*), 9 (*Variola*, *Cephalopholis*) or 6 to 8 (*Plectropomus*) (10 in *Cromileptes*).

SIZE:

Maximum: 70 cm; common: 45 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

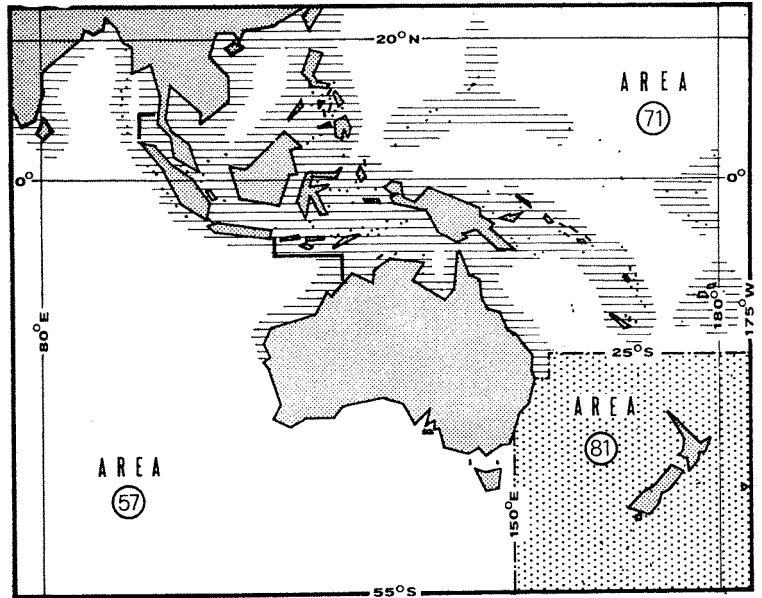
Throughout warm coastal waters of area.

Inhabits shallow waters of coral and rocky reefs.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

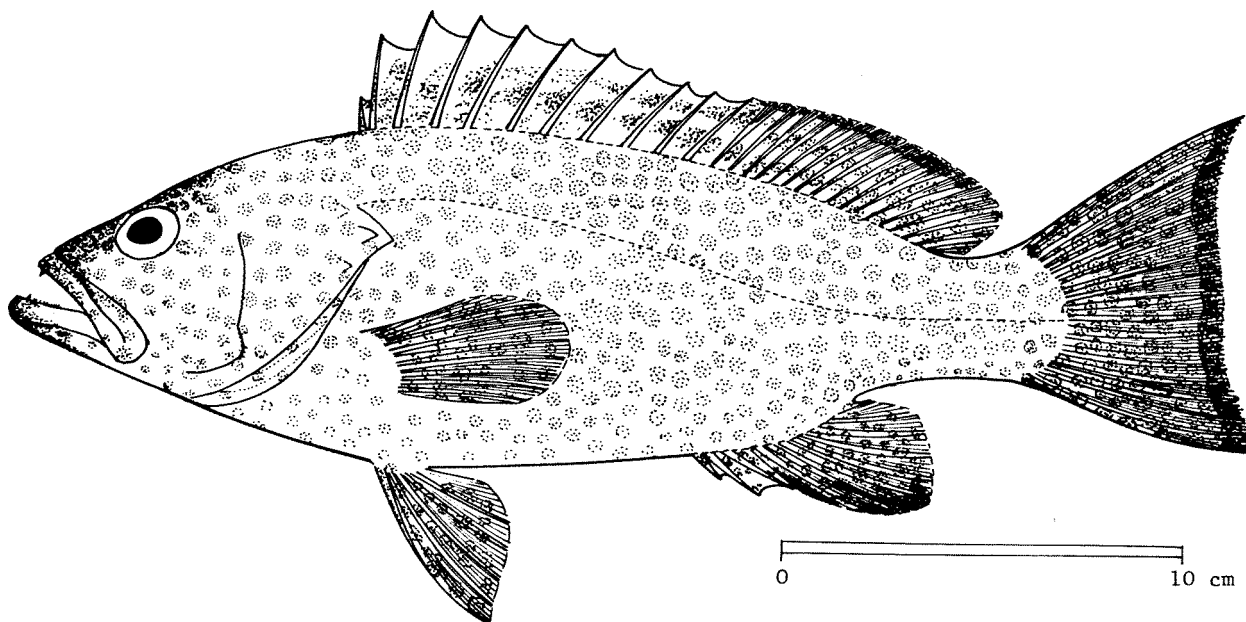
Separate statistics are not reported for this species.

Caught mainly with handlines, traps and gill nets.

Marketed fresh only.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Epinephelus areolatus* (Forsskål, 1775)SYNONYMS STILL IN USE: *Serranus aereolatus* Fowler & Bean, 1930

VERNACULAR NAMES:

FAO: En - Areolated grouper
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small serranid fish with a slender and laterally compressed body. Preoperculum with a convex and finely serrated upper edge and 2 to 4 enlarged spinules at angle. Operculum with convex upper border and 3 flat spines, the middle spine equidistant from upper and lower ones. Teeth in narrow bands, in 2 series on sides of jaws, teeth of inner series longer and depressible; canines at front of jaws. Dorsal fin with 11 spines and 15 to 16 soft rays. Caudal fin truncate to emarginate.

Colour: ground colour of head, body and fins pale brown, covered by dark green/brown spots; spots on fins usually darker; caudal and soft part of dorsal and anal fins edged dusky black but with a fine white outer margin.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Epinephelus fuscoguttatus and *E. coralicola*: no spinules at angle of preoperculum, caudal fin rounded (truncate or emarginate in *E. areolatus*) and 3 to 4 black blotches along back at base of dorsal fin.

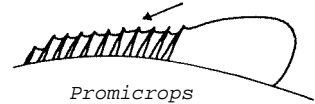
Epinephelus bleekeri and *E. maculatus*: spots on body respectively orange/red or red with black centres; also, caudal fin rounded.

Epinephelus summana and *E. coeruleopunctatus*: spots on body respectively pale yellow (or white) or blue; also, caudal fin rounded.

Epinephelus tauvina: spots on body red/brown, dark vertical or oblique stripes on body and caudal fin rounded.

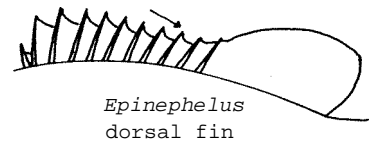
Other *Epinephelus* species: stripes present on body, or spots much larger, sometimes forming reticulated honeycomb pattern.

Promicrops species: dorsal fin spines increase in length posteriorly, the longest spine shorter than soft rays.



Cephalopholis, *Cromileptes* and *Variola* species: 9 to 10 dorsal fin spines (11 in *Epinephelus*).

Plectropomus species: 6 to 8 dorsal fin spines.



SIZE:

Maximum: 40 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

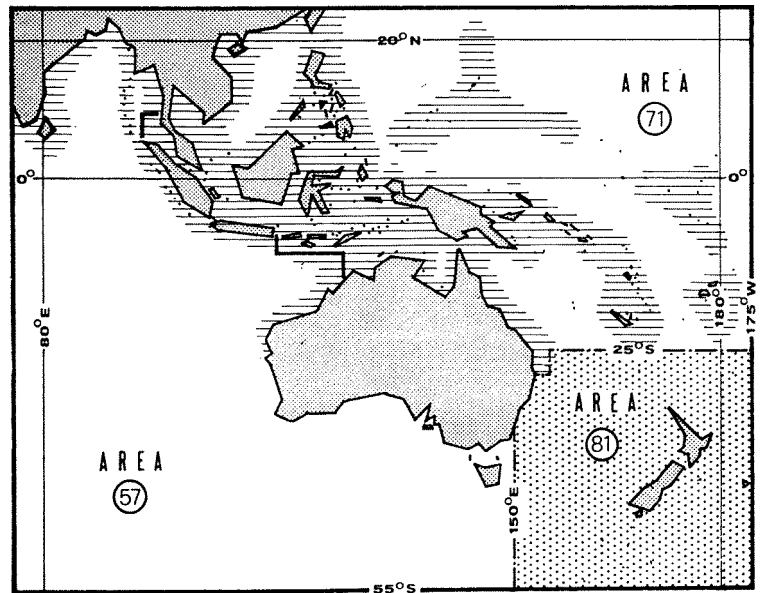
Throughout warm coastal waters of area.

Inhabits coastal waters down to 80 m.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unspecified *Epinephelus* species in 1972 was: 7 900 tons (Philippines: 7 800 tons; Singapore: 100 tons).

Caught mainly with bottom longlines, handlines and bottom trawls.

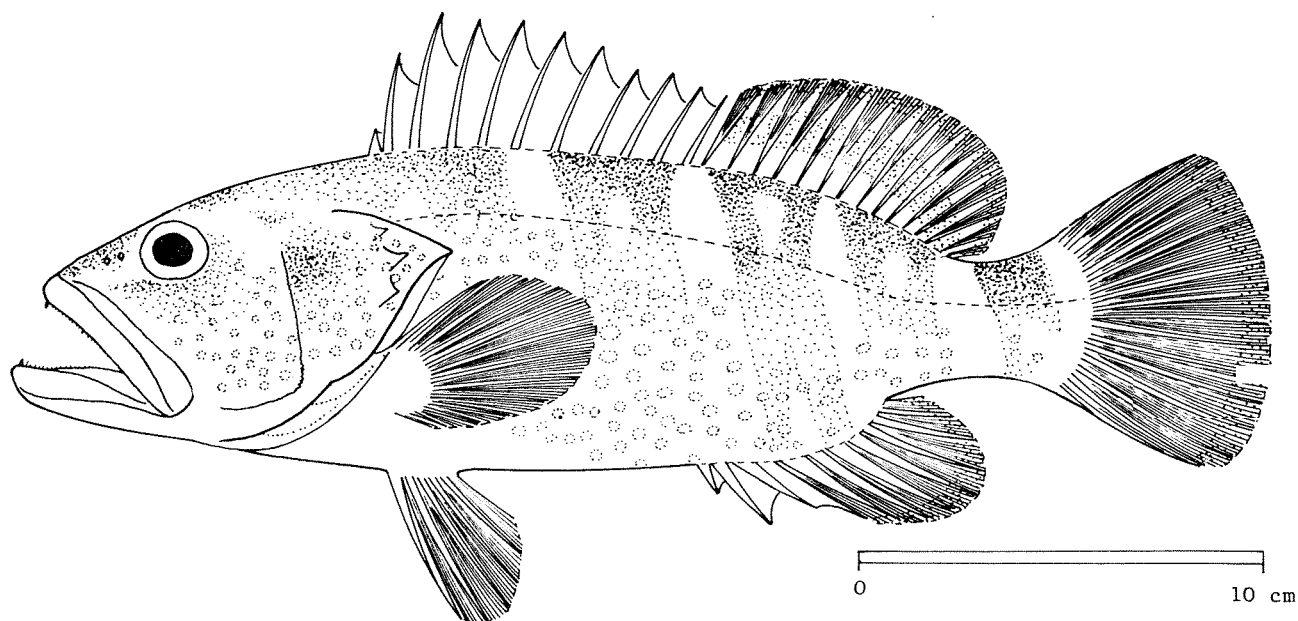
Marketed mostly fresh.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Epinephelus awoara* (Temminck & Schlegel, 1842)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Yellow grouper
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A fairly small serranid fish with an oblong and laterally compressed body. Preoperculum with a slightly convex upper edge and 4 to 5 spinules at angle. Operculum with convex upper border and 3 flat spines, the middle one closer to the lower one. Teeth in narrow bands, in 2 series on sides of jaws, teeth of inner series longer and depressible; canines at front of jaws. Dorsal fin with 11 spines and 15 to 16 soft rays. Caudal fin rounded.

Colour: ground colour pale brown above, yellow on underside of head and body; body with yellow spots and 5 dark brown oblique bands leaning forward and distinctly forked along most of their length; fins with yellow margins; juveniles with dark bands, but often without yellow spots.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

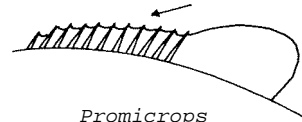
Epinephelus sexfasciatus, *E. akaora*, *E. fasciatomaculatus* and *E. tauvina*: oblique brown bands lean backward; spots on body and fins brown (*E. sexfasciatus*), red/brown (*E. tauvina*) or orange/red (*E. akaora*, *E. fasciatomaculatus*) (yellow in *E. awoara*).

Epinephelus brunneus, *E. septemfasciatus* and *E. moara*: oblique brown bands lean backward (in *E. brunneus*, 2 curved brown bands on head) and no spots on or between bands.

Epinephelus fasciatus: body red, with dark red bands; also, margin of spinous dorsal fin black.

Other *Epinephelus* species: colour pattern wholly spotted or reticulated.

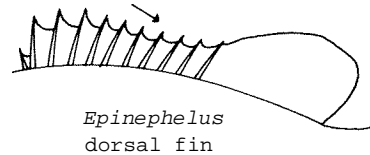
Promicrops species: dorsal fin spines increasing in length posteriorly, the longest spine shorter than soft rays.



Promicrops

Cephalopholis, *Cromileptes* and *Variota* species: 9 to 10 dorsal fin spines (11 in *Epinephelus*).

Plectropomus species: 6 to 8 dorsal fin spines.



Epinephelus
dorsal fin

SIZE:

Maximum: 50 cm; common: 30 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

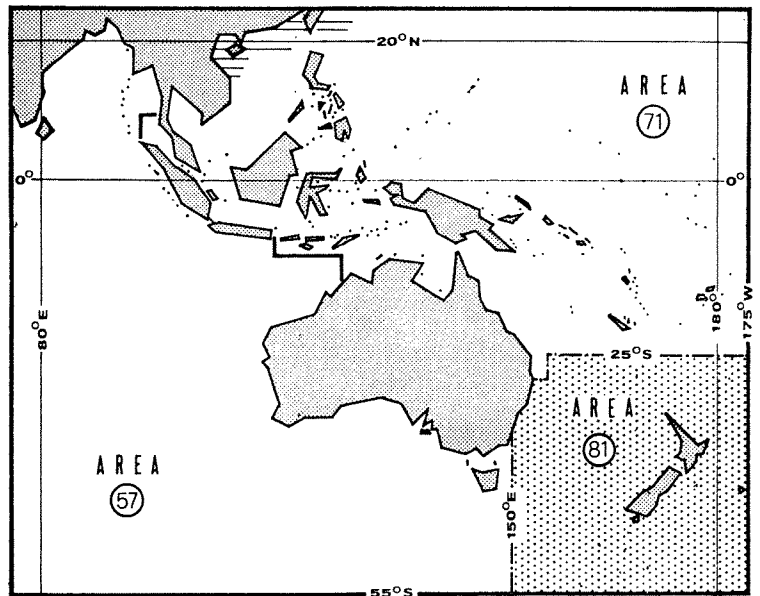
Coasts of China and Vietnam; also, northwards to Japan.

Shallow coastal waters down to 80 m.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unspecified *Epinephelus* species in 1972 was: 7 900 tons (Philippines: 7 800 tons; Singapore: 100 tons).

Caught mainly with bottom longlines and trawls.

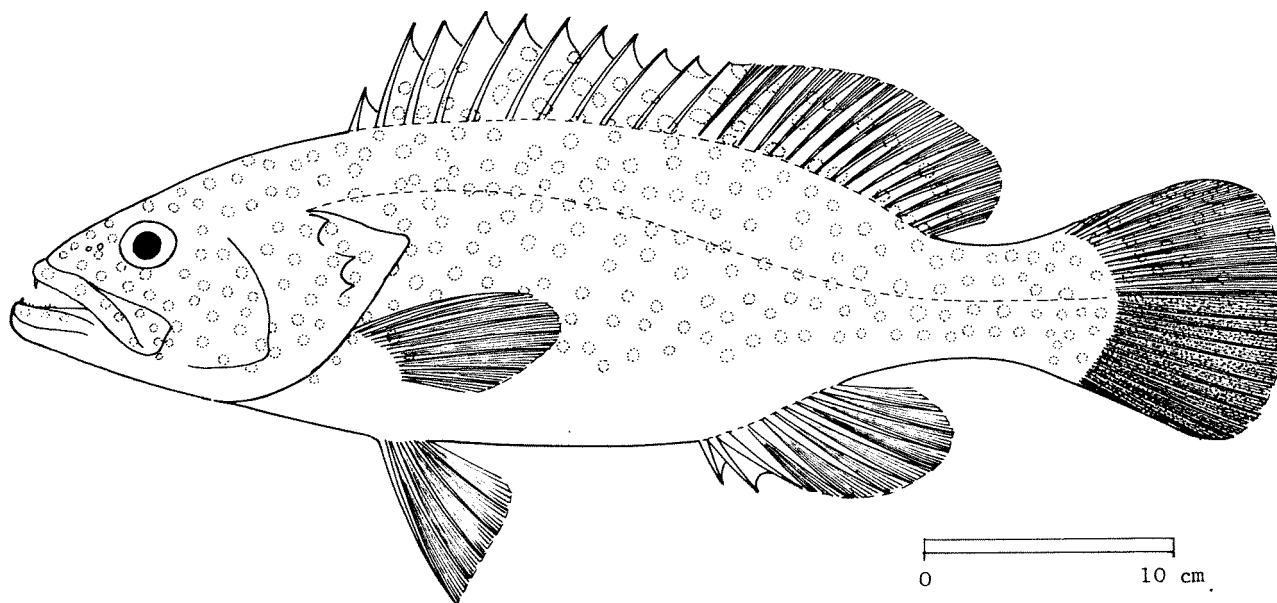
Marketed mostly fresh.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Epinephelus bleekeri* (Vaillant & Bocourt, 1877)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Bleeker's grouper
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A medium-sized serranid fish with an elongate and laterally compressed body. Preoperculum with a convex, finely serrated upper edge and a shallow notch above its angle, but no enlarged spinules on latter. Operculum with a straight upper border and 3 flat spines, the middle spine about equidistant from lower and upper ones. Teeth in narrow bands, in 2 series on sides of jaws, teeth of outer series longer, those of inner series shorter and depressible; canines at front of jaws. Dorsal fin with 11 spines and 16 to 17 soft rays. Caudal fin slightly rounded.

Colour: ground colour light brown above, lighter brown below; upper parts of head and body, pelvic and anal fins, and upper half of caudal fin covered with orange to orange/red spots; lower half of caudal fin and outer edge of anal fin purple/brown.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Epinephelus maculatus: spots on body red with a black centre.

Epinephelus tauvina: spots on body red/brown and darker vertical or oblique stripes.

Epinephelus fuscoguttatus and *E. corallicola*: 3 to 4 black blotches along back at base of dorsal fin; also, upper border of gill cover strongly convex (straight in *E. bleekeri*).

Epinephelus areolatus: spots on body dark green/brown; also, caudal fin truncate or emarginate (rounded in *E. bleekeri*).

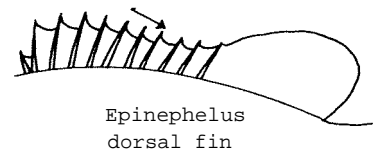
Epinephelus surmnana and *E. coeruleopunctatus*: spots on body respectively pale yellow (or white) or blue.

Other *Epinephelus* species: stripes present on body, or spots much larger, sometimes forming a reticulated honeycomb pattern.

Promicrops species: dorsal fin spines increasing in length posteriorly, the longest spine shorter than soft rays.

Cephalopholis, *Cromileptes* and *Variola* species: 9 to 10 dorsal fin spines (11 in *Epinephelus*).

Plectropomus species: 6 to 8 dorsal fin spines.



SIZE:

Maximum: 75 cm; common: 50 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

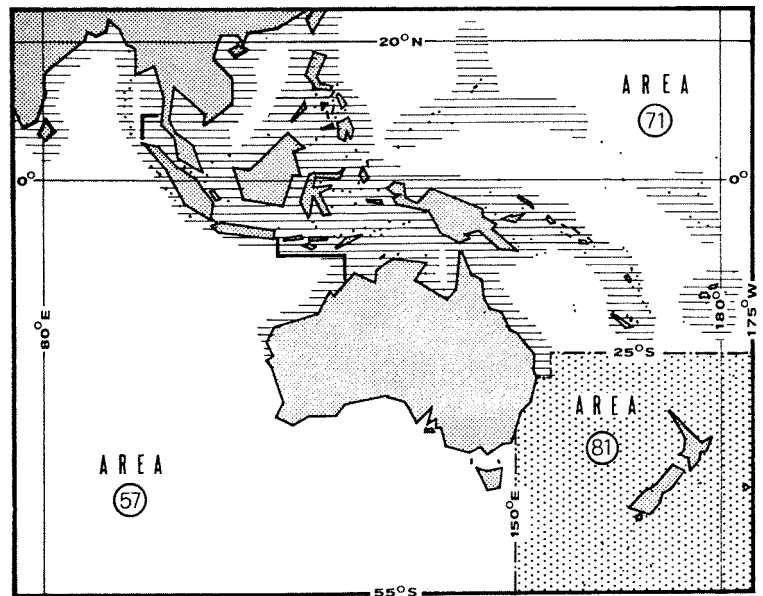
Throughout warm coastal waters of area.

Inhabits shallow waters of coral and rocky areas.

Feeds on bottom-living crustaceans and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of unspecified *Epinephelus* species in 1972 was: 7 900 tons (Philippines: 7 800 tons; Singapore: 100 tons).

Caught mainly with bottom longlines, handlines and bottom trawls.

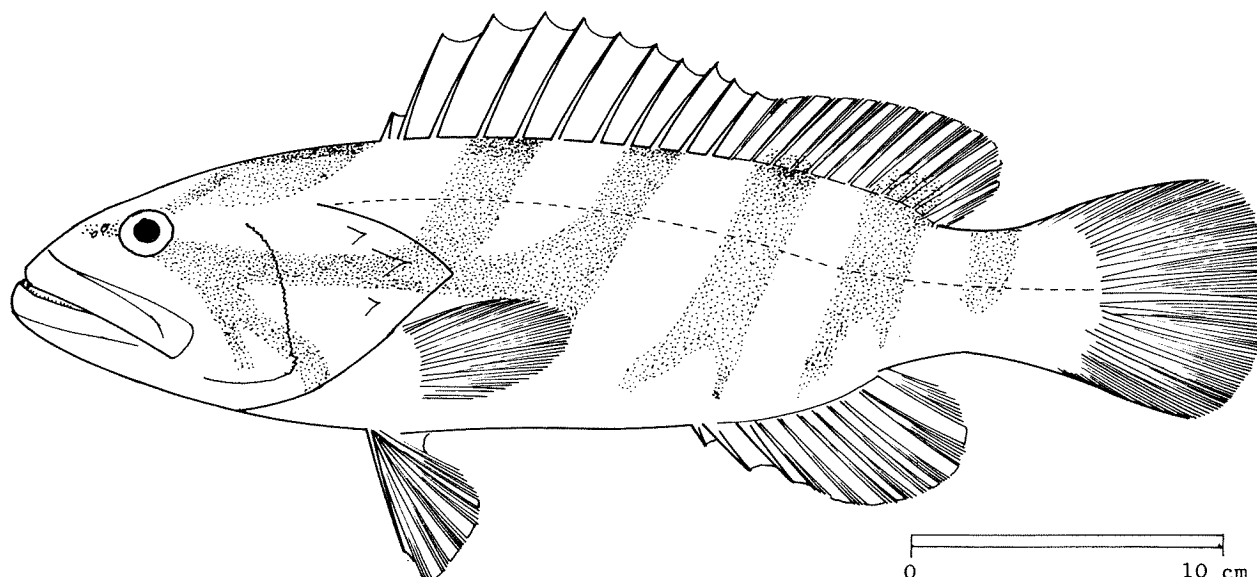
Marketed mostly fresh; also dried-salted.

FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Epinephelus brunneus* (Bloch, 1793)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Mud grouper
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A large serranid fish with an oblong and laterally compressed body. Preoperculum with a conspicuously inclined serrated upper edge and 3 to 4 small spinules at angle. Operculum with upper border convex and 3 flat spines, the middle one closer to the lower one. Teeth in narrow bands, in 2 series on sides of jaws, those of inner series longer and depressible; canines at front of jaws. Dorsal fin with 11 spines and 13 to 14 soft rays. Caudal fin rounded.

Colour: head, body and fins varying from olive/brown to brown; 5 to 6 partially paired oblique dark bands leaning backward, and 4 dark curved bands radiating from eye to snout and hind part of head in the young and subadults; dark bands sometimes forming blotches and disappearing in fish larger than 60 cm.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

Epinephelus septemfasciatus: bands not continued onto head and no spinules at angle of preoperculum.

Epinephelus moara: soft part of dorsal fin higher than spinous part and usually with 15 soft rays (13 to 14 in *E. brunneus*).

Epinephelus fasciatus: dark red bands on red body.

Other *Epinephelus* species: dark bands interspersed with spots, or only spots (or blotches) present, sometimes forming a reticulated pattern.

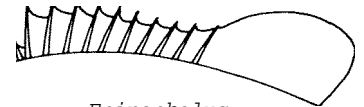
Promicrops species dorsal fin spines increasing in length posteriorly, the longest spine shorter than soft fin rays.

Cephalopholis, *Cromileptes* and *Variola* species: 9 to 10 dorsal fin spines (11 in *Epinephelus*).

Plectropomus species: 6 to 8 dorsal fin spines.



Promicrops



Epinephelus dorsal fin

SIZE:

Maximum: 150 cm;
common: 40 to 90 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

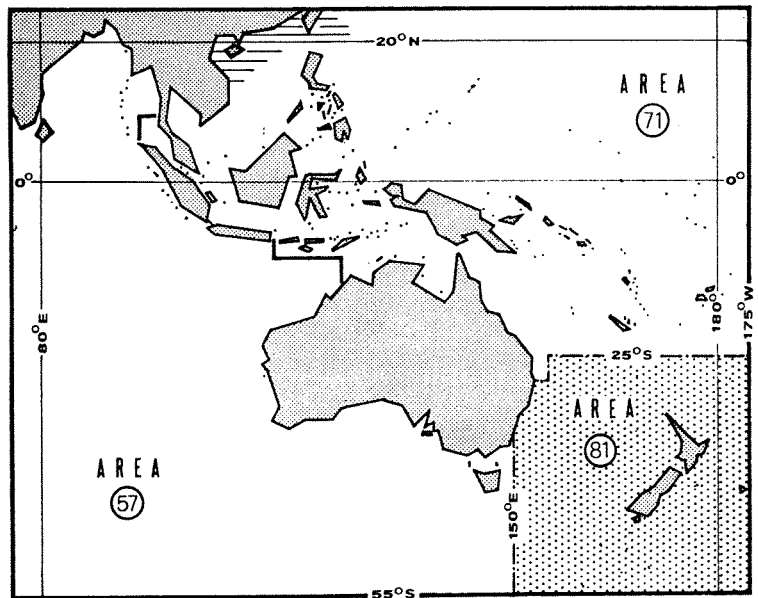
Coasts of China and Vietnam.

Inhabits coastal areas, down to 100 m.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of *Epinephelus* species in 1972 was 7 900 tons (Philippines: 7 800 tons; Singapore: 100 tons).

Caught mainly with bottom longlines and trawls.

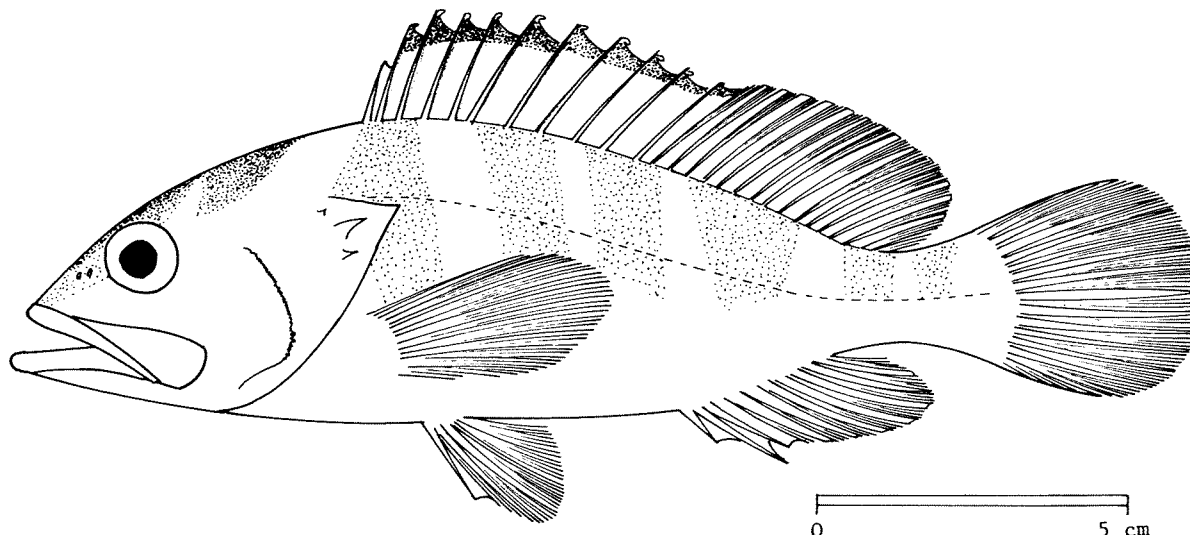
Marketed mostly fresh.

FAO SPECIES IDENTIFICATION SHEET

FAMILY: SERRANIDAE

FISHING AREAS 57,71
(E Ind. Ocean)
(W Cent. Pacific)*Epinephelus fasciatus* (Forsskål, 1775)

SYNONYMS STILL IN USE: None



VERNACULAR NAMES:

FAO: En - Red-banded grouper
Fr -
Sp -

NATIONAL:

DISTINCTIVE CHARACTERS:

A small serranid fish with an oblong and somewhat robust body. Preoperculum with a convex, finely serrated upper edge, its angle slightly produced and bearing enlarged spinules. Operculum with upper border straight and 3 flat spines, the middle spine equidistant from upper and lower ones. Teeth in narrow bands, in 2 to 3 series on sides of jaws, those of inner series longer and depressible; canines at front of jaws. Dorsal fin with 11 spines and 16 soft rays. Caudal fin rounded.

Colour: ground colour orange/red on head, body and fins; a red band from tip of snout along dorsal part of head through eye to front of dorsal fin; 6 red bands on body; margin of spinous dorsal fin black; upper part of iris black.

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

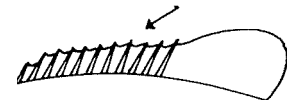
Other *Epinephelus* with stripes: either body and stripes not red or spots present between stripes; also, lack the distinctive black margin to spinous part of dorsal fin.

Other *Epinephelus* species: colour pattern wholly spotted, sometimes reticulated.

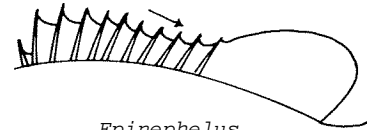
Promicrops species: dorsal fin spines increasing in length posteriorly, the longest spine shorter than soft rays.

Cephalopholis, *Cromileptes* and *Variola* species: 9 to 10 dorsal fin spines (11 in *Epinephelus*).

Pleotropomus species: 6 to 8 dorsal fin spines.



Promicrops



Epinephelus
dorsal fin

SIZE:

Maximum: 30 cm; common: 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

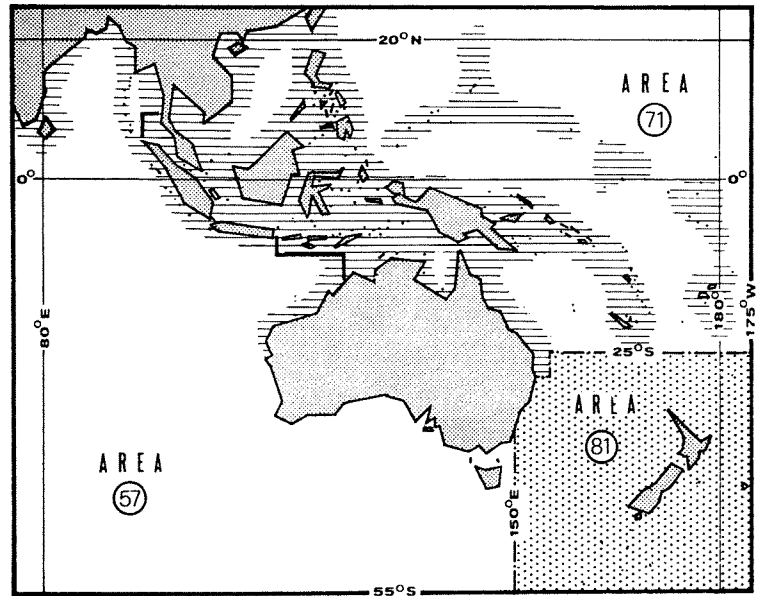
Throughout warm coastal waters of area.

Inhabits shallow waters of coral and rocky areas.

Feeds on bottom-living invertebrates and fishes.

PRESENT FISHING GROUNDS:

Throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species. The total reported catch of *Epinephelus* species in 1972 was 7 900 tons (Philippines: 7 800 tons; Singapore: 100 tons).

Caught mainly with handlines and traps.

Marketed mostly fresh.