

**S<sub>2</sub>**

## FAO SPECIES IDENTIFICATION SHEETS

FISHING AREAS 57,71

(E Ind. Ocean)

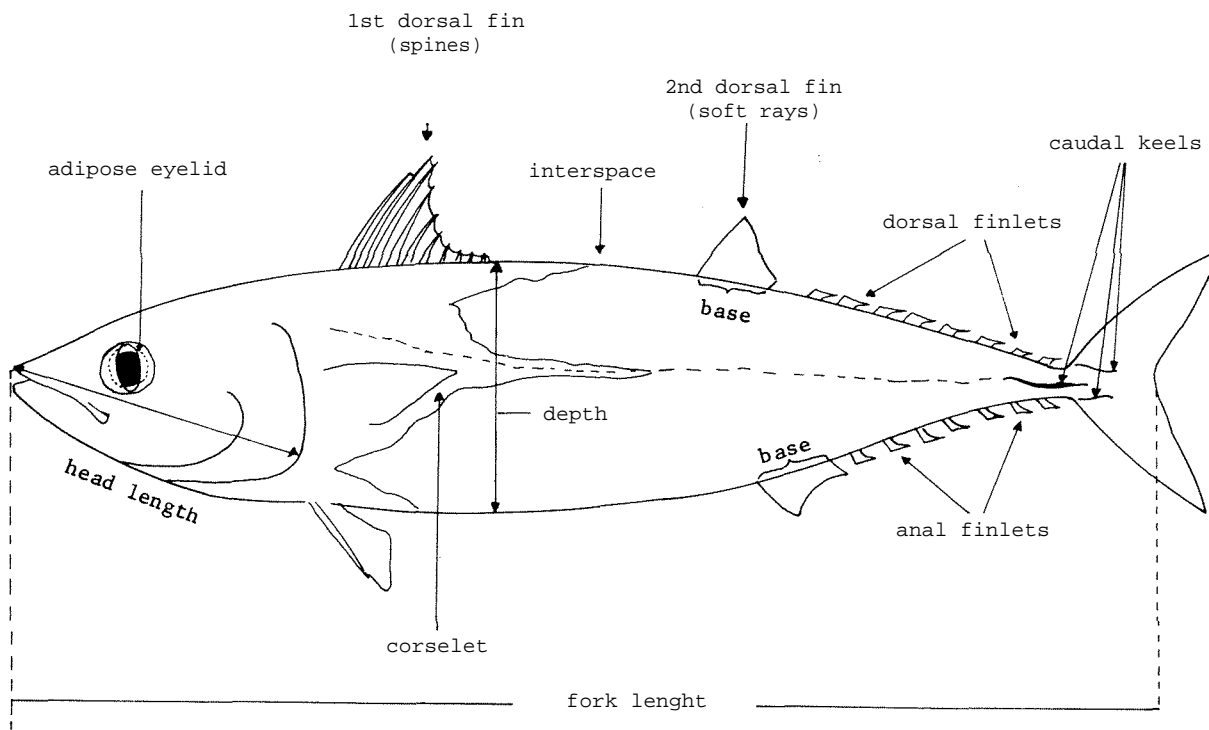
(W Cent. Pacific)

## SCOMBRIDAE

## Mackerels and tunas

Small to moderately large pelagic fishes which are frequently found in schools. Body elongate and fusiform, moderately compressed in some genera. Snout pointed; adipose eyelid sometimes present (*Rastrelliger*, *Scomber*); premaxillae beak-like, free from nasal bones which are separated by ethmoid bone. Mouth rather large; teeth in jaws strong, moderate or weak; no true canines; palate and tongue may be toothed. 2 dorsal fins; anterior fin usually short and separated from posterior fin. *Finlets present behind dorsal and anal fins*. Pectoral fins placed high; pelvic fins moderate or small; caudal fin deeply forked with supporting caudal rays completely covering hypural plate. At least 2 small keels on each side of caudal peduncle, a larger keel in between in many species. Lateral line simple or branched. Vertebrae 31 to 66. Body either uniformly covered with small to moderate scales (e.g. *Rastrelliger*, *Scomber*, *Scomberomorus*) or a corselet developed (area behind head and around pectoral fins covered with moderately large, thick scales) and rest of body naked (*Auxis*, *Euthynnus*), or covered with small scales (*Thunnus*).

Colour: various *Scomber* species are usually bluish or greenish above with pattern of wavy bands on upper sides and silvery below; *Rastrelliger* species are greenish above with row of spots on upper sides; *Scomberomorus* and *Acanthocybium* are grey above and silvery below with dark vertical bars or spots on sides. *Grammatorcynus* is green above, silvery below with dark spots along belly; *Sarda* has 5 to 11 dark oblique stripes on back; *Euthynnus* has a striped pattern on back and several dark spots between pectoral and pelvic fins; *Katsumonus* has 4 to 6 conspicuous longitudinal stripes on its belly; *Auxis* and *Thunnus* are deep blue/black above; most species of *Thunnus* have bright yellow finlets with black borders.



SIMILAR FAMILIES OCCURRING IN THE AREA:

Carangidae: frequently have scutes developed along the posterior part of the lateral line and usually lack the well developed finlets present in the Scombridae; they also have 2 detached spines in front of anal fin.

Gempylidae: those species which could be confused with the Scombridae are silvery without bars or spots and have no keels on the caudal peduncle.

Key to Genera

- A deep median groove along belly in which fins can be hidden; moderately large cycloid (smooth) scales covering body (about 50 along lateral line); pelvic fins black, enormous in young, normal in adults; in very large adults, 2 small keels on either side of caudal peduncle ..... *Gasterochisma*
- 1 b. No median groove along belly; scales on body minute, inconspicuous or absent
- 2 a. 2 small keels on either side of caudal peduncle (Fig.1)
- 3 a. Vertically zig-zag or wavy lines on back; anal fin spine fairly stiff and strong; teeth present on roof of mouth ..... *Scomber*
- 3 b. 2 horizontal rows of spots on each side of back; anal fin spine thin, rudimentary; no teeth on roof of mouth ..... *Rastrelliger*
- 2 b. 2 small keels and another between them on either side of caudal peduncle (Fig. 2)
- 4 a. Teeth in jaws strong, compressed; almost triangular or knife-like; corselet of scales obscure
- 5 a. 2 lateral lines, the lower joining the upper behind pectoral fin base and at base of caudal fin (Fig. 3); scaly process between pelvic fin bases single ..... *Grammatorcynus*
- 5 b. Single (upper) lateral line; scaly process between pelvic fin bases usually double
- 6 a. Snout as long as rest of head (Fig. 4b); no gill rakers; 21 to 27 spines in first dorsal fin ..... *Acanthocybium*
- 6 b. Snout much shorter than rest of head (Fig. 4a); at least 3 gill rakers present; 14 to 22 spines in first dorsal fin ..... *Scomberomorus*

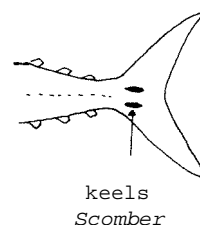


Fig. 1

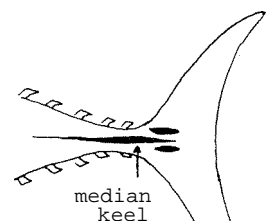


Fig. 2

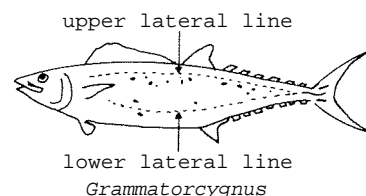


Fig. 3

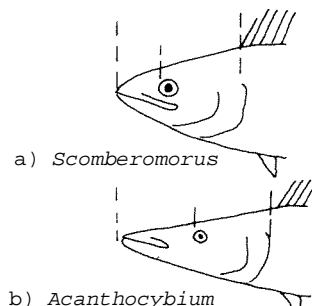


Fig. 4

- 4 b. Teeth in jaws slender, conical, hardly compressed;  
corselet of scales well developed (Fig. 5)
- 7 a. Upper surface of tongue without cartilaginous  
longitudinal ridges
- 8 a. Jaw teeth tiny, 40 to 55 on each side;  
gill rakers fine, numerous, 70 to 80 on  
first arch ..... *Allothunnus*
- 8 b. Jaw teeth larger, only 10 to 30 on each  
side; gill rakers fewer, 8 to 21 on  
first arch
- 9 a. 5 to 10 narrow, dark longitudinal stripes  
on upper part of body; no teeth on  
tongue ..... *Sarda*
- 9 b. Upper part of body without stripes; two  
patches of teeth on tongue
- 10 a. Body plain, no spots or stripes; first  
dorsal fin lower than second, with 13  
to 15 spines; swimbladder well  
developed ..... *Gymnosarda*
- 10 b. Body with dark spots above lateral line  
and dark longitudinal lines below;  
first dorsal fin higher than second;  
swimbladder absent ..... *Cybiosarda*
- 7 b. Upper surface of tongue with two longitudinal  
ridges
- 11 a. First and second dorsal fins widely  
separated, the space between them  
equal to base of first dorsal ..... *Auxis*
- 11 b. First and second dorsal fins barely  
separated, at most by about eye  
diameter
- 12 a. 3 to 5 prominent dark longitudinal  
stripes on belly; gill rakers 53  
to 63 on first arch; 15 to 16  
spines in first dorsal fin ..... *Katsuwonus*
- 12 b. No dark longitudinal stripes on  
belly; gill rakers 19 to 43 on  
first arch; 11 to 14 spines in  
first dorsal fin
- 13 a. Body naked behind corselet of  
enlarged and thickened scales;  
black spots often between  
pectoral and pelvic fin bases;  
26 to 27 pectoral fin rays ... *Euthynnus*
- 13 b. Body covered with very small  
scales behind corselet; no  
black spots on body; 30 to  
36 pectoral fin rays ..... *Thunnus*

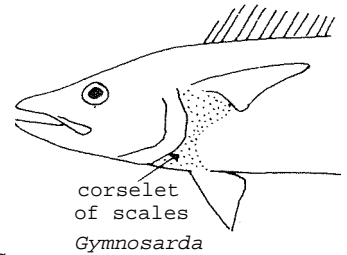


Fig. 5

FAO Sheets

SCOMBRIDAE

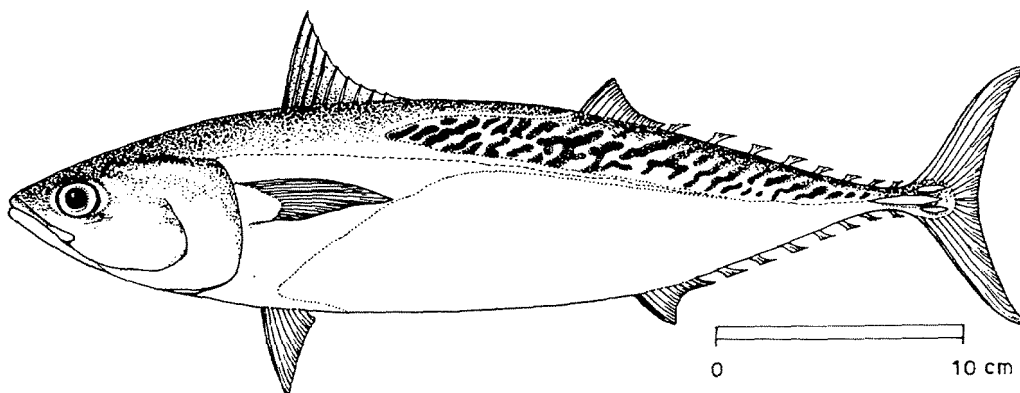
Fishing Areas 57,71

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

<i>Gasterochisma melampus</i>		<i>Cybiosarda elegans</i>	
<i>Scomber australasicus</i>	SCOMBR Scom 3	<i>Sarda australis</i>	
<i>Scomber japonicus</i>		<i>Sarda orientalis</i>	SCOMBR Sarda 2
<i>Rastrelliger brachysoma</i>	SCOMBR Rast 1	<i>Gymnosarda unicolor</i>	
<i>Rastrelliger faughni</i>	SCOMBR Rast 2	<i>Allothunnus fallai</i>	
<i>Rastrelliger kanagurta</i>	SCOMBR Rast 3		
<i>Scomberomorus commerson</i>	SCOMBR Scombm 1	<i>Auxis rochei</i>	SCOMBR Aux 2
<i>Scomberomorus guttatus</i>	SCOMBR Scombm 3	<i>Auxis thazard</i>	SCOMBR Aux 1
<i>Scomberomorus lineolatus</i>	SCOMBR Scombm 2	<i>Euthynnus affinis</i>	SCOMBR Euth 2
<i>Scomberomorus multiradiatus</i>		<i>Katsuwonus pelarnis</i>	SCOMBR Kats 1
<i>Scomberomorus niphonius</i>			
<i>Scomberomorus queenslandicus</i>		<i>Thunnus alalunga</i>	SCOMBR Thun 1
<i>Scomberomorus semifasciatus</i>		<i>Thunnus albacares</i>	SCOMBR Thun 3
<i>Grammatorcynus bicarinatus</i>		<i>Thunnus maccoyii</i>	SCOMBR Thun 4
<i>Acanthocybium solandri</i>		<i>Thunnus obesus</i>	SCOMBR Thun 5
		<i>Thunnus tonggol</i>	SCOMBR Thun 6

## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71  
(E Ind. Ocean)  
(W Cent. Pacific)*Auxis thazard* (Lacepède, 1803)SYNONYMS STILL IN USE: *Auxis tapeinosoma* Bleeker, 1854  
*Auxis hira* Kishinouye, 1923

## VERNACULAR NAMES:

FAO: En - Frigate mackerel  
Fr -  
Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

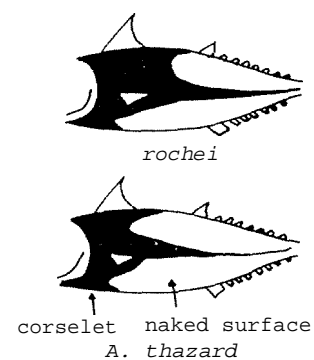
Body robust, elongate and rounded. 2 dorsal fins, the first with 10 to 12 spines, separated from the second by a large interspace (at least equal in length to the first dorsal fin base), the second fin followed by 8 finlets; pectoral fins short, but reaching past vertical line from anterior margin of scaleless area above the corselet; a large single-pointed flap (interpelvic process) between the pelvic fins; anal fin followed by 7 finlets. Body naked except for corselet, which is well developed and narrow in its posterior part (no more than 5 scales wide under second dorsal fin origin). A strong central keel on each side of caudal fin base between 2 smaller keels.

Colour: back bluish, turning to deep purple or almost black on the head; a pattern of 15 or more narrow, oblique to nearly horizontal, dark wavy lines in the scaleless area above lateral line; belly white; pectoral and pelvic fins purple, their inner side black.



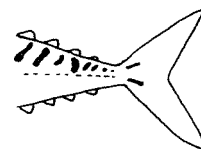
## DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*A. rochei*: posterior part of corselet wider (6 to 20 scales wide under the second dorsal fin origin; not more than 5 scales in *A. thazard*); pectoral fins not reaching the scaleless area above corselet, and dark stripes on back nearly vertical.



*Scomber* and *Rastrelliger* species: scales present all over body, no central keel on each side of caudal fin base between the 2 small keels, and marbled colour pattern of back extending forward up to head.

All other scombrid species occurring in area: both dorsal fins close together.



*Scomber* sp.

#### SIZE:

Maximum: 50 cm; common: 25 to 40 cm (larger than *A. rochei*).

#### GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

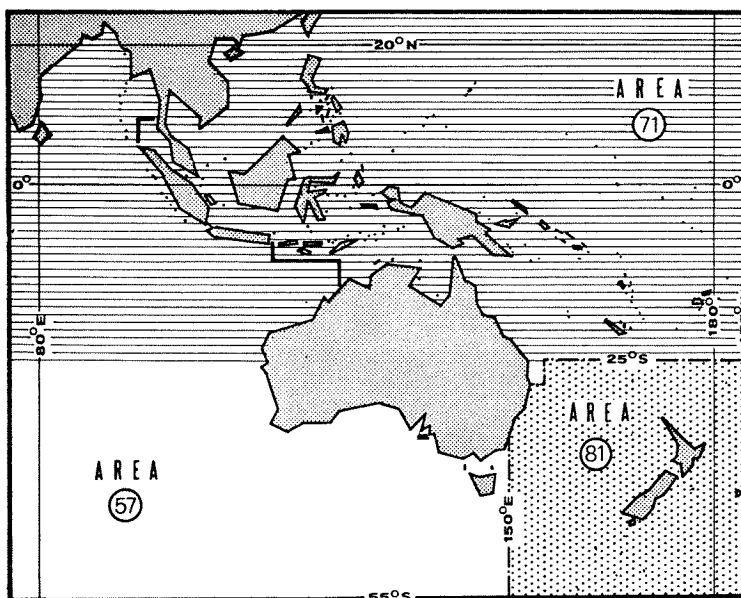
Throughout most of area, southward to tropical coasts of Australia; also, westward to East and South Africa, northward to Japan and eastward to Hawaii.

A seasonal visitor to coastal waters in India. More common in India than *A. rochei*. Occurs in large inshore schools during the summer months off New South Wales, Tasmania, and Western Australia.

FAO Species Synopsis Nos. 4 and 8 (also No. 27 - Atlantic).

#### PRESENT FISHING GROUNDS:

Mainly coastal waters.



#### CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

Caught with beach seines, drift nets, purse seines, and by trolling.

Marketed dried-salted; also frozen and canned.

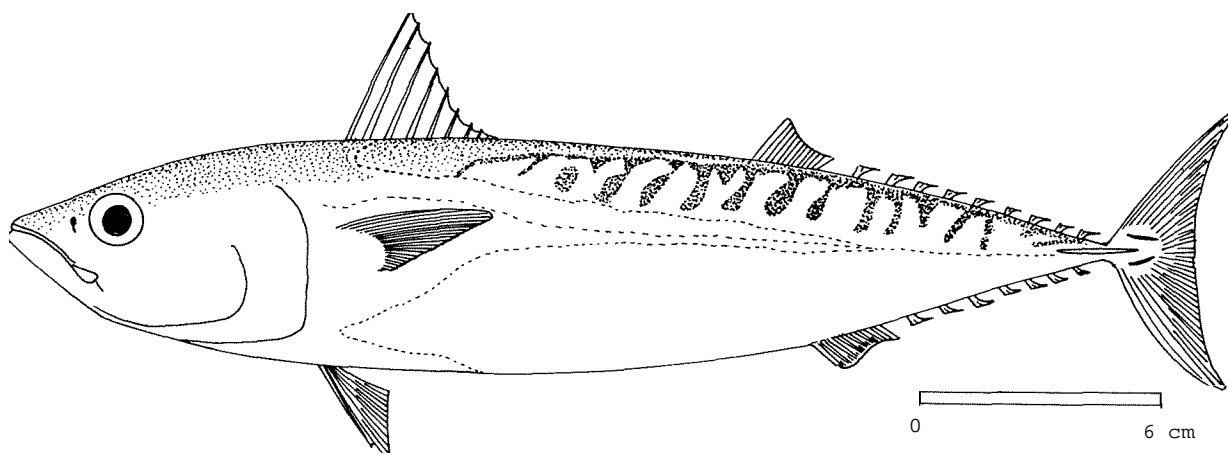
## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71

(E Ind. Ocean)

(W Cent. Pacific)

*Auxis rochei* (Risso, 1810)SYNONYMS STILL IN USE: *Auxis thynnoides* Bleeker, 1855*Auxis maru* Kishinouye, 1923

## VERNACULAR NAMES:

FAO: En - Bullet mackerel

Fr -

Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

Body robust, elongate and rounded. 2 dorsal fins, separated by a large interspace (at least equal in length to the first dorsal fin base), the 2nd fin followed by 8 finlets; pectoral fins short, not reaching vertical line beneath anterior margin of scaleless area above the corselet; a large single-pointed flap (interpelvic process) between the pelvic fins; anal fin followed by 7 finlets. Body naked except for corselet, which is well developed in its posterior part (more than 6 scales wide under the second dorsal fin origin). A strong central keel on each side of caudal fin base between 2 smaller keels.

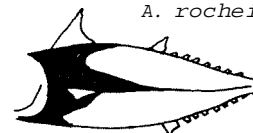
Colour: back bluish, turning to deep purple or almost black on the head; a pattern of 15 or more fair-by broad, nearby vertical dark bars in the scaleless area; belly white; pectoral and pelvic fins purple, their inner side black.

## DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*A. thazard*: posterior part of corselet narrower (not more than 5 scales wide under the 2nd dorsal fin origin; 6 to 20 scales wide in *A. rochei*); pectoral fins reaching scaleless area above the corselet, and dark stripes on back oblique.



interpelvic process

*A. rochei*corselet *A. thazard*

naked area

*A. rochei*



*Scomber* and *Rastrelliger* species: scales present all over body, no central keel on each side of caudal fin base between the 2 small keels, and marbled colour pattern of back extending forward up to head.



All other scombrid species occurring in area: both dorsal fins close together.

#### SIZE:

Maximum: 40 cm; common: 20 to 35 cm.

#### GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout area except for southern coasts of Australia (bounded by 40° N and 34° S); also, westward to East and South Africa, northward to Japan and eastward to the Pacific coasts of the Americas.

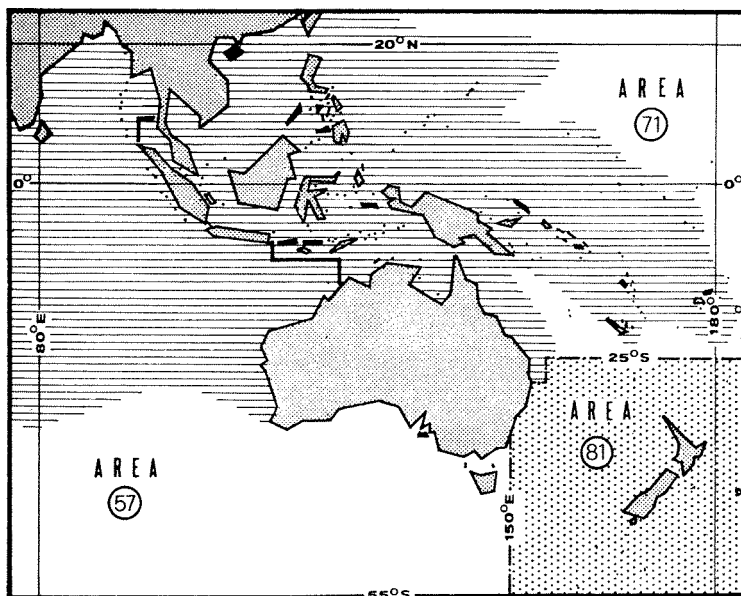
Adults have been taken largely in inshore waters and near islands.

Feeds on small fishes, especially clupeoids; also on crustaceans, especially megalops larvae and larval stomatopods, and on squids.

FAO Species Synopsis No. 28.

#### PRESENT FISHING GROUNDS:

No specific fishery exists. It is caught with other species in the Philippines and along the west coast of India.



#### CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

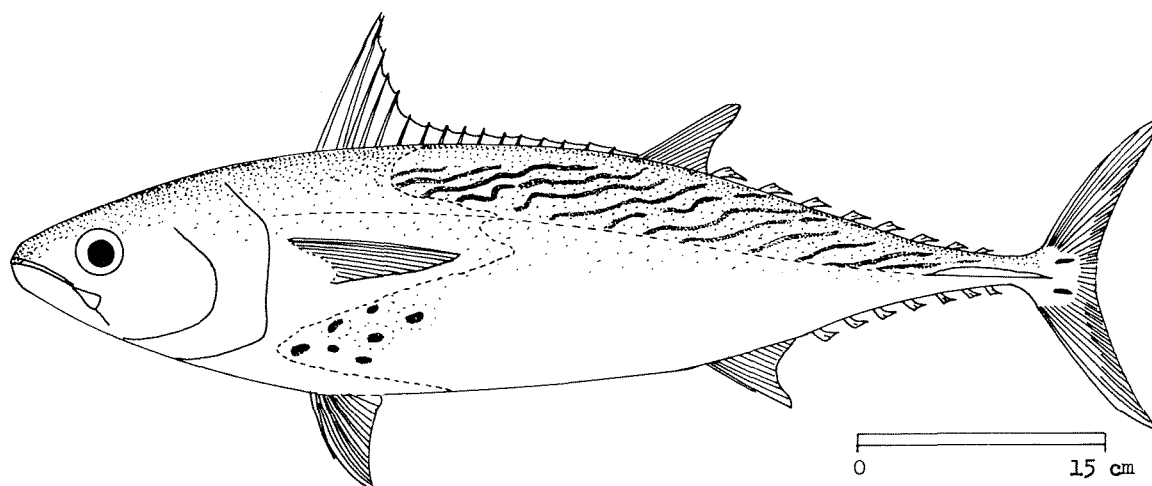
Separate statistics are not reported for this species.

Caught with purse seines, lift nets, traps, pole and line, and by trolling (the gear used is not selective for the species).

Small catches are marketed fresh in India and Australia. Large catches in India are dried-salted for export to Ceylon. Also, frozen and canned for the export market. In Japan it has a reputation as a poor food fish, whether fresh or salted.

## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71  
(E Ind. Ocean)  
(W Cent. Pacific)*Euthynnus affinis* (Cantor, 1850)SYNONYMS STILL IN USE: *Euthynnus yaito* Kishinouye, 1923

## VERNACULAR NAMES:

FAO: En - Eastern little tuna  
Fr -  
Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

Medium sized fish with robust, elongate and fusiform body. Gill rakers 29 to 34 on first arch. 2 dorsal fins, separated by only a narrow interspace (not wider than eye), anterior spines of first much higher than those mid-way, giving the fin a strongly concave outline; second dorsal fin much lower than first and followed by 8 to 10 finlets; pectoral fins short, never reaching the interspace between the dorsal fins; two flaps (interpelvic process) between pelvic fins; anal fin followed by 6 to 8 finlets. Body naked except for corselet and lateral line. very slender caudal peduncle with a prominent lateral keel between 2 smaller keels at base of caudal fin.

Colour: back dark blue with a complicated striped pattern which does not extend forward beyond middle of first dorsal fin; lower sides and belly silvery white; several characteristic dark spots between pelvic and pectoral fins (which, however, may not always be very conspicuous).

interpelvic  
process

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*Thunnus* species: no pattern of stripes on back; also, scales present on all parts of body.

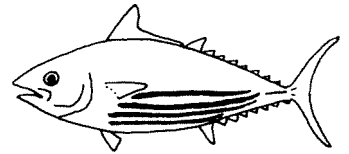
*Katsuwonus pelamis*: no striped colour pattern on back, but very characteristic dark longitudinal bands along lower sides; also, more gill rakers on first arch (53 to 63; 29 to 34 in *E. affinis*).

*Sarda* species: mouth wider and upper jaw reaching at least to hind margin of eye.

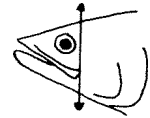
*Axius*, *Scomber* and *Rastrelliger* species: large interspace between dorsal fins (at least equal to length of first dorsal fin base).

SIZE:

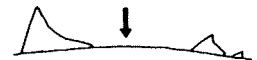
Maximum: about 100 cm;  
common: 50 to 60 cm.



*K. pelamis*



*Sarda* sp.



*Scomber* sp.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Throughout northern part of area and southward to northern coasts of Australia; also, westward to East Africa and eastward to Hawaii (one specimen from California).

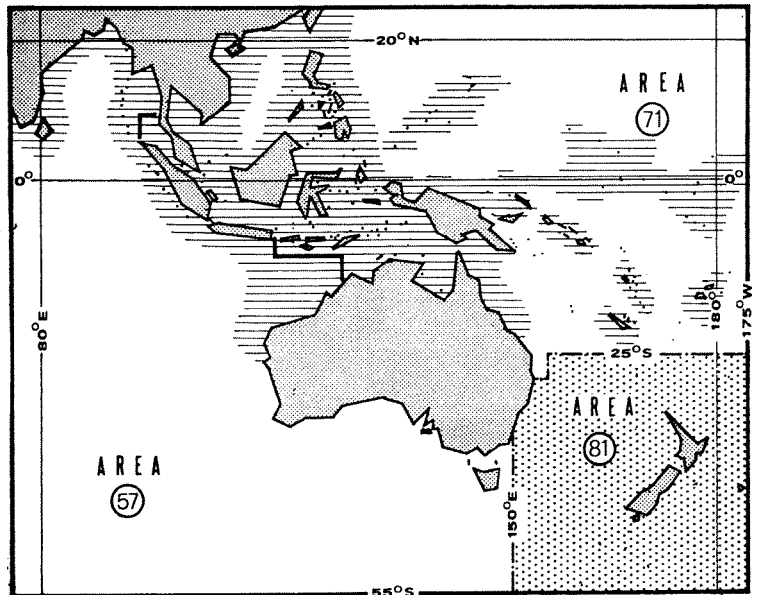
Found in coastal waters and along reefs; enters estuaries.

Feeds on stomatopods, decapods, pteropods, cephalopods, and fishes.

FAO Species Synopsis No: 5 and No. 7 (as *E. yaito*).

PRESENT FISHING GROUNDS:

Coastal waters, mainly in Andaman Sea, South China Sea, north of New Guinea, and Marshall Islands.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

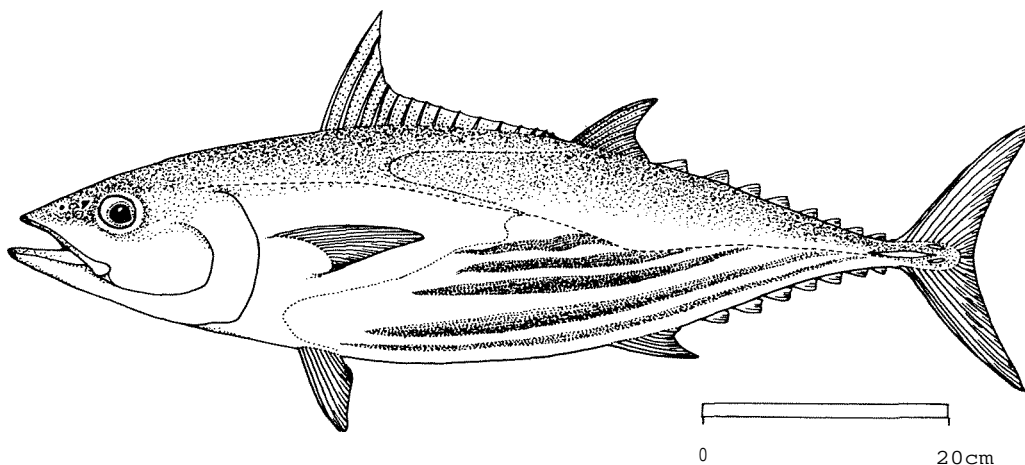
Separate statistics are reported for this species only by Malaysia (1972: 400 tons).

Caught mainly by surface trolling; also with gill nets.

Marketed canned and frozen; also dried-salted and smoked.

## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71  
(E Ind. Ocean)  
(W Cent. Pacific)*Katsuwonus pelamis* (Linnaeus, 1758)SYNONYMS STILL IN USE: *Euthynnus pelamis* (Linnaeus, 1758)

## VERNACULAR NAMES:

FAO: En - Skipjack tuna  
Fr -  
Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

Body fusiform, elongate and rounded; gill rakers numerous, 53 to 63 on first gill arch. 2 dorsal fins, separated by a small interspace (not larger than eye), the first with 14 to 16 spines, the second followed by 7 to 9 finlets; pectoral fin short; 2 flaps (interpelvic process) between pelvic fins; anal fin followed by 7 to 8 finlets. Body scaleless except for corselet and lateral line. A strong keel on each side of base of caudal fin between 2 smaller keels.

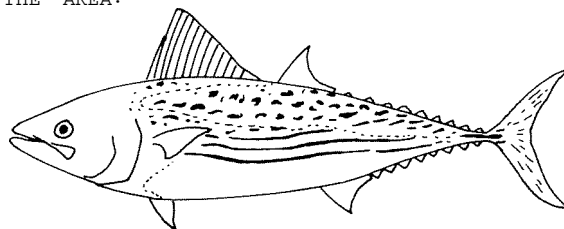
Colour: back dark purplish blue, lower sides and belly silvery, with 4 to 6 very conspicuous longitudinal dark bands which in live specimens may appear as discontinuous lines of dark blotches.

interpelvic  
process

DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*Cybiosarda elegans*: the only other scombrid with longitudinal stripes on lower sides, but it has spots above the lateral line; also, only 12 to 15 gill rakers on first arch (53 to 63 in *K. pelamis*), and body flattened and compressed.

All other scombrid species in area: lack dark longitudinal bands on lower flanks.



*C. elegans*

SIZE:

Maximum: 100 cm; common: 40 to 80 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Cosmopolitan in tropical and sub-tropical seas.

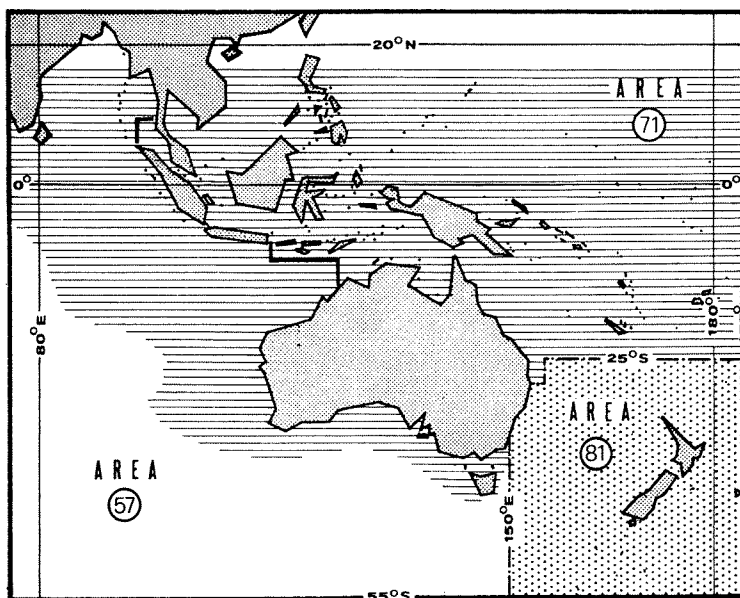
Occurs in large schools in deep coastal and oceanic waters, generally above the thermocline.

Feeds on fishes, cephalopods, and crustaceans.

FAO Species Synopsis Nos. 21 and 22.

PRESENT FISHING GROUNDS:

Deep coastal and oceanic waters.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL ARMS OF UTILIZATION:

The total reported catch in 1972 was:

area 57 (Eastern Indian Ocean): 100 tons (Australia only)  
area 71 (Western Central Pacific): 96 800 tons (Japan: 75 500 tons;  
Philippines: 21 300 tons)

Caught mainly by pole and line; also with purse seines.

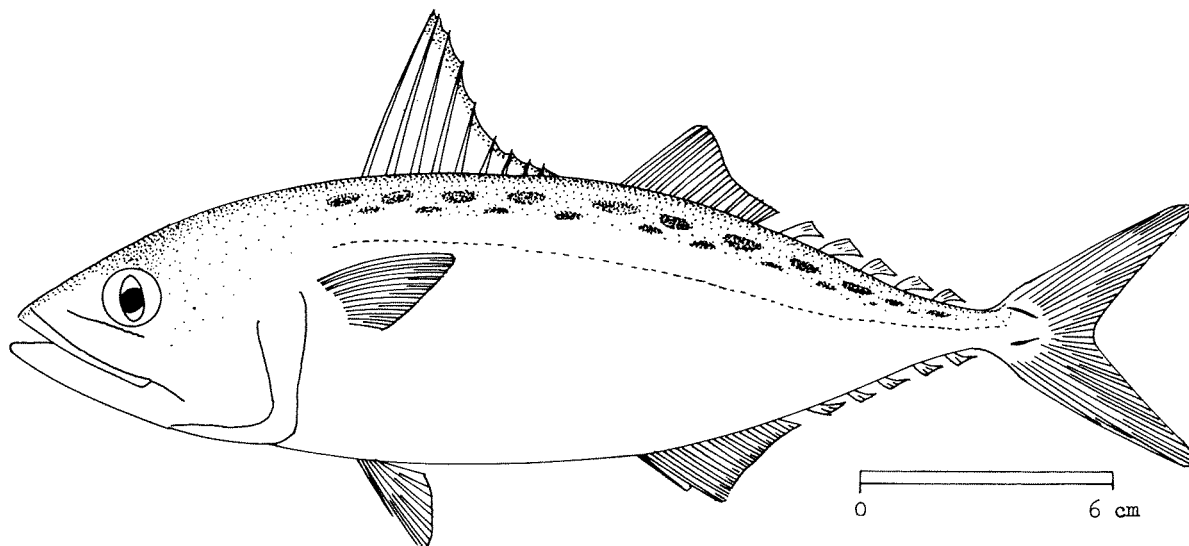
Marketed canned, frozen and smoked; also fresh and dried-salted.

## FAD SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71  
(E Ind. Ocean)  
(W Cent. Pacific)*Rastrelliger brachysoma* (Bleeker, 1851)

SYNONYMS STILL IN USE: None



## VERNACULAR NAMES:

FAO: En - Short-bodied mackerel  
Fr -  
Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

Body very deep, its depth at margin of gill cover 3.7 to 4.0 times in standard length; head equal to or less than body depth. Maxilla covered by lacrimal bone but extending nearly to end of lacrimal. Well developed adipose eyelids. Intestine very long, 3.0 to 3.4 times standard length. Gill rakers very long, visible when mouth is opened, 30 to 48 on lower limb of first gill arch; numerous bristles on longest gill raker, about 150 on one side in specimens of 120 mm, 210 in specimens of 150 mm, and 240 at 180 mm standard length. Second dorsal and anal fins each followed by 5 finlets.

Colour: back blue/green, sides and belly silvery, with a row of dark spots along back; spinous dorsal fin yellowish with a black edge, pectoral and pelvic fins dusky, other fins yellowish.

## DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*Rastrelliger kanagurta*: less deep-bodied, the depth at margin of gill cover 4.0 to 4.8 times in standard length (3.7 to 4.0 in *R. brachysoma*); intestine shorter, 1.3 to 1.7 times standard length; bristles on longest gill raker fewer, about 105 on one side in specimens of 120 mm, 140 in specimens of 150 mm, and 160 in specimens of 180 mm standard length.

*Rastrelliger faughni*: body slimmer, its depth at margin of gill cover about 5.0 times in standard length (3.7 to 4.0 in *R. brachysoma*); intestine about equal to standard length; gill rakers shorter than snout, not extending far into mouth when the latter opened, and less numerous (20 to 25 on lower limb of first gill arch; 30 to 48 in *R. brachysoma*); only 30 to 55 bristles on one side of the longest gill raker.

SIZE:

Maximum: 34.5 cm  
common: 15 to 20 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

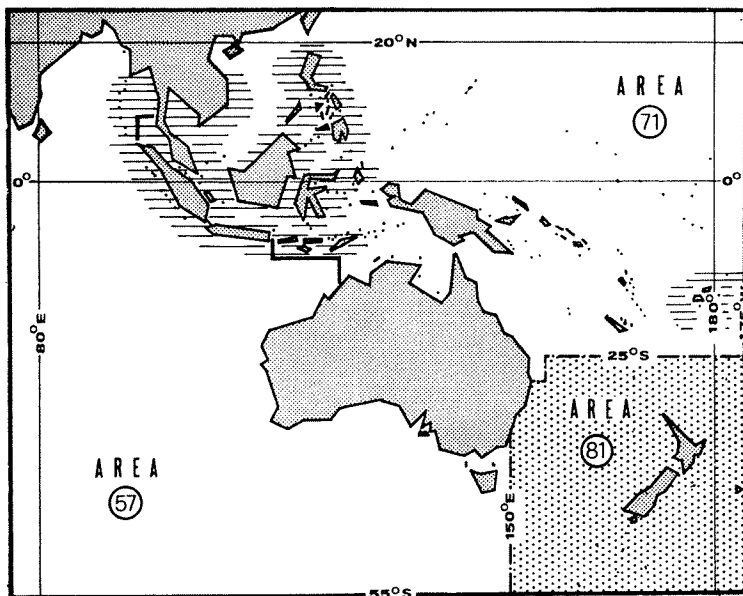
Known from the Andaman Sea, Indonesia, Thailand, Philippines, and eastward to Fiji Islands.

Lives in large schools in coastal waters, usually at depths between 10 and 50 m.

Feeds on minute plankton organisms.

PRESENT FISHING GROUNDS:

Coastal waters, throughout its range.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

This species is usually included, together with *R. kanagurta* in a single statistical category. The total reported catch for this category in 1972 was:

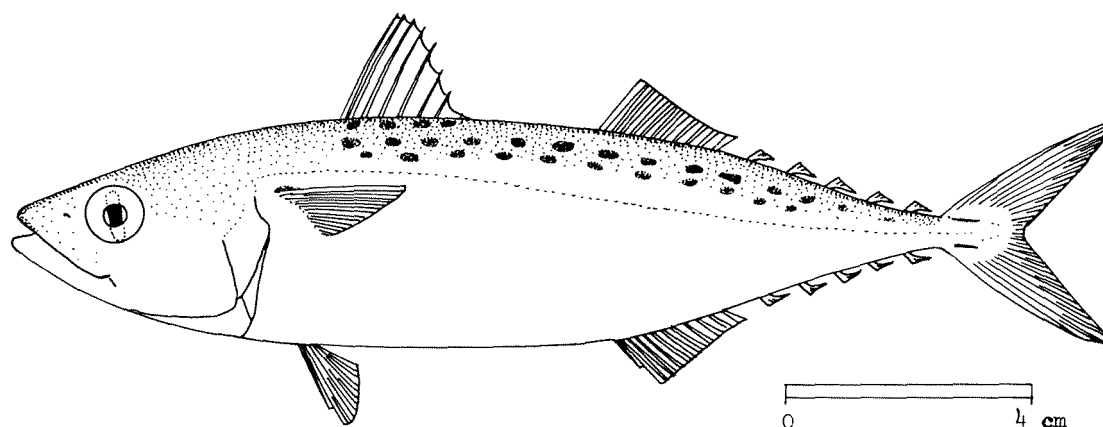
area 57 (Eastern Indian Ocean): 15 100 tons (India only)  
area 71 (Western Central Pacific): 180 900 tons (Malaysia: 17 600 tons;  
Philippines: 44 100 tons;  
Thailand: 119 200 tons)

Caught mainly with purse seines, encircling gill nets, lift nets, bamboo stake traps, and midwater trawls.

Marketed fresh; also dried-salted, smoked, canned, or fermented.

## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71  
(E Ind. Ocean)  
(W Cent. Pacific)*Rastrelliger faughni* Matsui, 1967SYNONYMS STILL IN USE: *Scomber australasicus*: misidentification

## VERNACULAR NAMES:

FAO: En - Faughn's mackerel  
Fr -  
Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

Body slim, its depth at margin of gill cover about 5.0 times in standard length; head longer than body depth. Maxilla covered by lacrimal bone but extending only 3/4 the length of the lacrimal. Adipose eyelids present. Intestine short, about equal to standard length. Gill rakers shorter than snout; when mouth is opened wide gill rakers do not extend far into mouth; 20 to 25 rakers on lower limb of first gill arch; few bristles on longest gill raker, 30 to 55 on one side. Dorsal and anal fins each followed by 5 finlets; anal fin spine rudimentary and covered with skin.

Colour: back dark, belly yellowish silver; two rows of black dots on back below dorsal fin base from origin of first dorsal fin to caudal peduncle; 2 to 6 large spots at base of first dorsal fin, visible from above; two faint stripes at level of lateral line in some specimens; a black blotch behind pectoral fin base; outer margin of dorsal and pectoral fins dark.

## DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*R. kanagurta*: more deep-bodied, the depth at margin of gill cover 4.0 to 4.8 times in standard length (5.0 times in *R. faughni*); intestine longer, 1.3 to 1.7 times standard length (equal in *R. faughni*); gill rakers longer, clearly visible when mouth is opened, and more numerous (30 to 46 on lower limb of first gill arch; 20 to 25 in *R. faughni*).



*R. brachysoma*: much more deep-bodied, its depth at margin of gill cover 3.7 to 4.0 times in standard length (5.0 times in *R. faughni*); intestine much longer (3.0 to 3.4 times standard length; gill rakers longer, clearly visible when mouth is opened, and more numerous (30 to 46 on lower limb of first gill arch; 20 to 25 in *R. faughni*).

SIZE:

Maximum: 20 cm;  
common: 9 to 19 cm.

GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

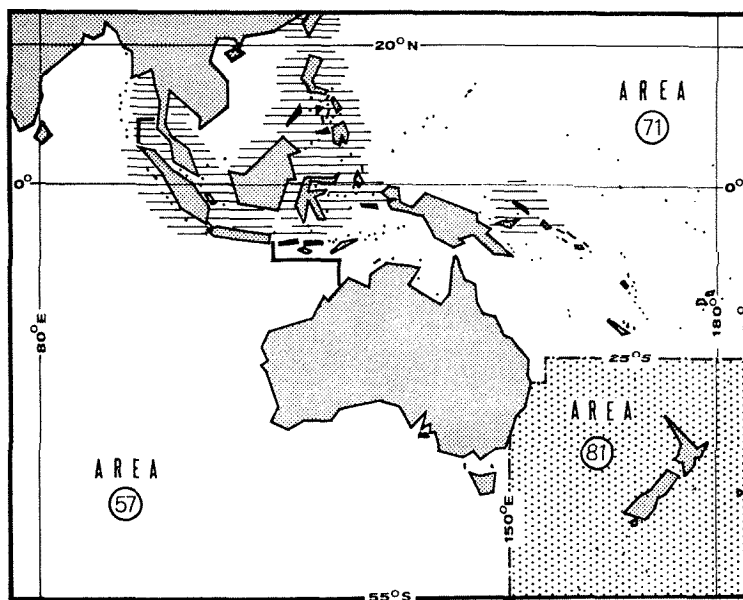
This recently described (1967) species is now known from Malaysia, Indonesia, New Britain, the Philippines, and Taiwan.

A pelagic and migratory fish found in large schools in coastal waters.

Feeds on small plankton organisms. Little is known about the biology of this species.

PRESENT FISHING GROUNDS:

Mainly coastal waters.



CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

In the Philippines, occasionally taken with *Auxis* and *Decapterus* species in fish corals and with purse seines.

Marketed fresh, dried-salted, smoked, canned or fermented.

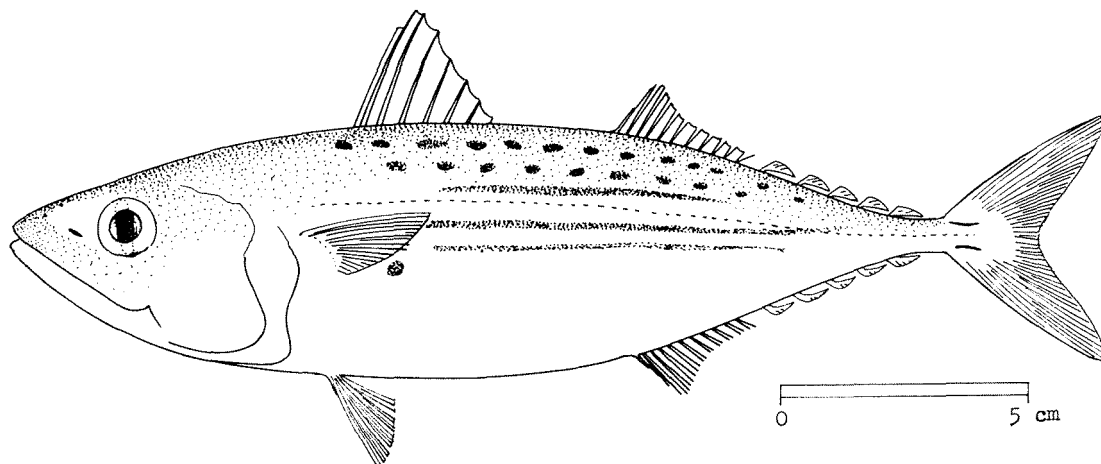
## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

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

*Rastrelliger kanagurta* (Cuvier, 1816)

SYNONYMS STILL IN USE: *Rastrelliger chrysozonus* (Rüppell, 1835)



## VERNACULAR NAMES:

FAO: En - Indian mackerel  
Fr -  
Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

Body moderately deep, its depth at margin of gill cover 4.0 to 4.8 times in standard length; head longer than body depth. Maxilla covered by lacrimal bone, but extending nearly to end of lacrimal. Well developed adipose eyelids. Intestine 1.3 to 1.7 times standard length. Gill rakers very long, visible when mouth is opened, 30 to 46 on lower limb of first arch; moderate number of bristles on longest gill raker, 105 on one side in specimens of 120 mm, 140 in specimens of 150 mm, and 160 in specimens of 180 mm standard length. Second dorsal and anal fins each followed by 5 finlets.

Colour: back blue/green, flanks silver with golden tint; two rows of small dark spots on sides of dorsal fin bases, narrow dark longitudinal bands on upper part of body (golden in fresh specimens) and a black spot on body near lower margin of pectoral fin; dorsal fins yellowish with black tips, caudal and pectoral fins yellowish; other fins dusky.

## DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*Rastrelliger brachysoma*: more deep-bodied, the depth at margin of gill cover 3.7 to 4.0 times in standard length (4.0 to 4.8 in *R. kanagurta*); intestine very long, 3.0 to 3.4 times standard length (1.3 to 1.7 in *R. kanagurta*); bristles on longest gill rakers more numerous, about 150 on one side in specimens of 120 mm, 210 in specimens of 150 mm, and 240 in specimens of 180 mm standard length.

*Rastrelliger faughni*: body slimmer, its depth at margin of gill cover about 5.0 times in standard length (4.0 to 4.8 in *R. kanagurta*); intestine about equal to standard length; gill rakers short, not extending far into mouth when the latter is opened, and less numerous (20 to 25 on lower limb of first gill arch; 30 to 46 in *R. kanagurta*); only 30 to 55 bristles on one side of longest gill raker (over 100 in *R. kanagurta*).

#### SIZE:

Maximum: 35 cm; common: 20 to 25 cm.

#### GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

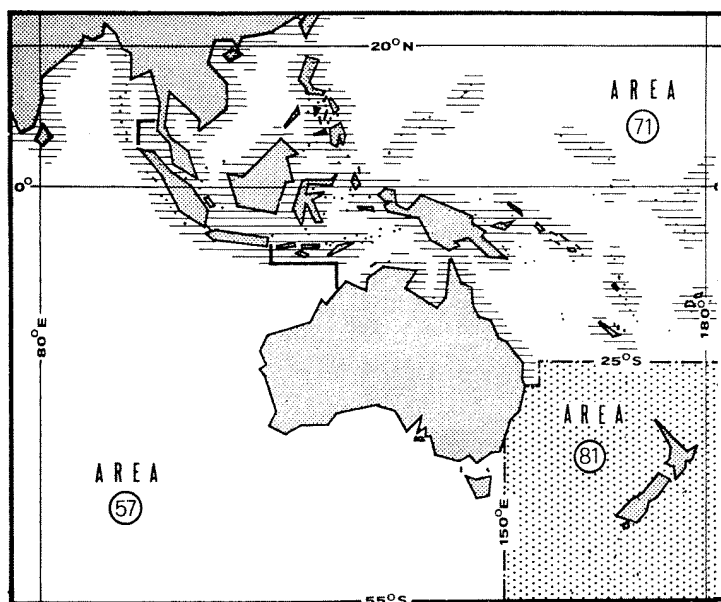
Throughout area except southern coasts of Australia; also, westward to Red Sea and northward to Japan. Has entered eastern Mediterranean.

A common pelagic fish, often found in large surface schools.

Feeds on plankton organisms, mainly crustaceans.

#### PRESENT FISHING GROUNDS:

Mainly in coastal waters, throughout its range.



#### CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

This species is usually included together with *R. brachysoma* in a single statistical category. The total reported catch for this category in 1972 was:

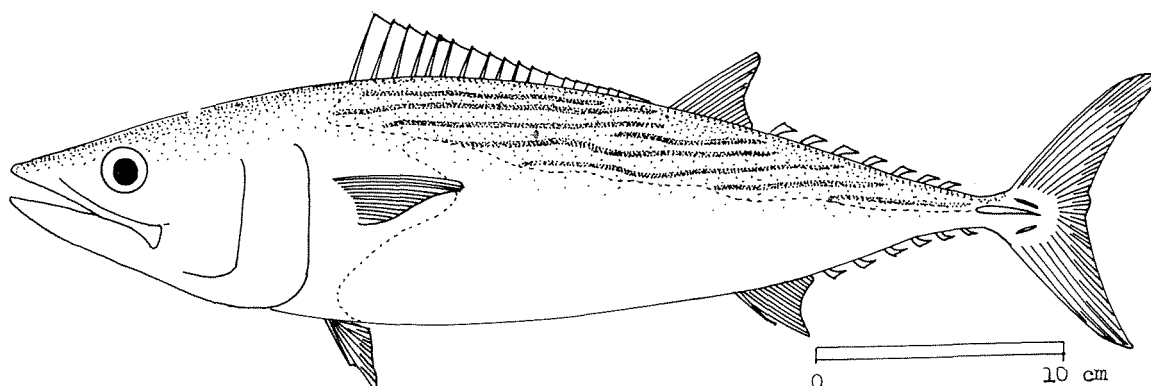
area 57 (Eastern Indian Ocean):	15 100 tons (India only)
area 71 (Western Central Pacific):	180 900 tons (Malaysia: 17 600 tons;
	Philippines: 44 100 tons;
	Thailand: 119 200 tons)

Caught mainly with purse seines, encircling gill nets, lift nets, and bamboo stake traps.

Marketed fresh, frozen, canned, dried-salted, and smoked; also made into fish sauce.

## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71  
(E Ind. Ocean)  
(W Cent. Pacific)*Sarda orientalis* (Temminck & Schlegel, 1844)SYNONYMS STILL IN USE: *Sarda orientalis serventyi* Whitley, 1945

## VERNACULAR NAMES:

FAO: En - Oriental bonito

Fr -

Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

A small species, the body relatively slender. Mouth rather wide, upper jaw reaching to hind margin of eye or beyond; 12 to 20 teeth on each side in upper jaw, 10 to 17 in lower jaw; teeth on palatines but none on tongue or vomer. Gill rakers 8 to 13 on first arch. 2 dorsal fins, almost joined, the first very long with 17 to 19 spines, its border straight or only slightly concave, the second followed by 7 to 9 finlets; pectoral fins short, with 23 to 25 soft rays (usually 24); pelvic fins with 2 flaps (interpelvic process) between them; anal fin followed by 6 to 7 finlets. Entire body with scales, minute except on well defined corselet. A prominent keel on each side of caudal peduncle between two smaller keels.

interpelvic  
process*Sarda* spp.

Colour: back and upper sides steel blue, with 5 to 11 dark oblique stripes running forward and downward; lower sides and belly silvery.

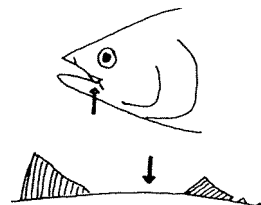
## DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*Sarda australis*: confined to the southeastern corner of Australia; also, more gill rakers (19 to 21; 8 to 13 in *S. orientalis*) and usually 26 pectoral fin rays (usually 24 in *S. orientalis*).

All other scombrid species in area: a shorter upper jaw which never reaches to hind margin of eye, and a shorter, clearly concave 1st dorsal fin; also, many are considerably larger and all have a different colour pattern; *Scomber*, *Rastrelliger* and *Auxis* species have widely separated dorsal fins (interspace at least equal to length of first dorsal fin base).



Sarda



Scomber

#### SIZE:

Maximum: 80 cm; common: 30 to 50 cm.

#### GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Apparently only recorded from southern coasts of India, the Philippines and the southwest corner of Australia; also, westward to East Africa, northward to Japan and eastward to Hawaii and the Pacific coasts of the Americas.

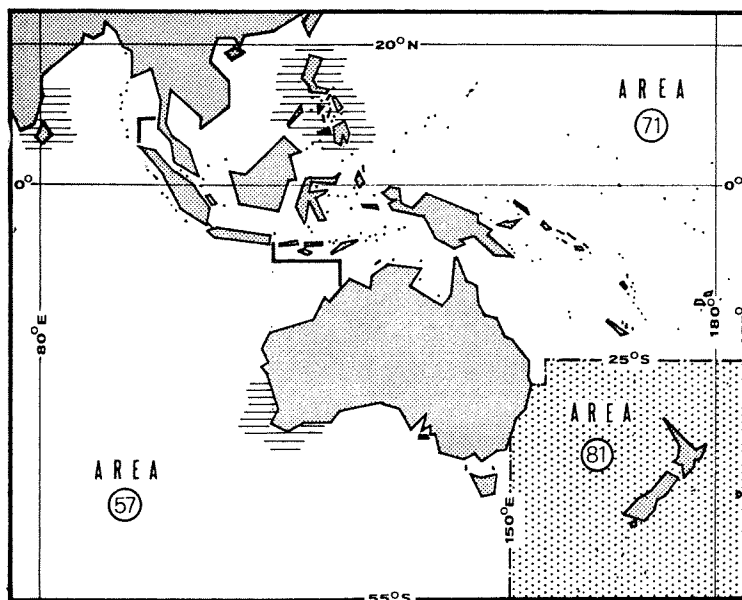
Inhabits coastal waters.

Feeds on crustaceans, squids, and small fishes.

FAO Species Synopsis Nos. 3 and 30.

#### PRESENT FISHING GROUNDS:

Coastal waters.



#### CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

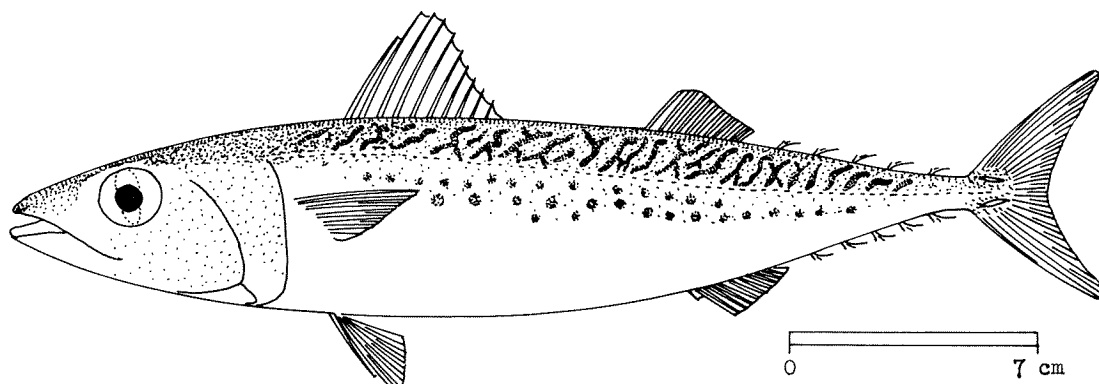
Separate statistics are not reported for this species.

Caught mainly by pole and line and with purse seines.

Marketed mainly fresh; also dried-salted.

## FAO SPECIES IDENTIFICATION SHEETS

FAMILY: SCOMBRIDAE

FISHING AREAS 57,71  
(E Ind. Ocean)  
(W Cent. Pacific)*Scomber australasicus* Cuvier, 1831SYNONYMS STILL IN USE: *Scomber japonicus*: Munro, 1967

## VERNACULAR NAMES:

FAO: En - Slimy mackerel  
Fr -  
Sp -

## NATIONAL:

## DISTINCTIVE CHARACTERS:

Body elongate and rounded, snout pointed, caudal peduncle slim. Vomer and palatine bones in roof of mouth with fine teeth; 24 to 28 gill rakers on lower limb of first gill arch. 2 dorsal fins and a series of finlets behind second dorsal and anal fins; the 2 dorsal fins widely separated (interspace approximately equal to length of first dorsal fin base); 10 to 13 dorsal spines in first dorsal fin; anal spine independent from anal fin. Scales behind head and around pectoral fins larger and more conspicuous than those covering other parts of body. 2 small keels on each side of caudal fin base, but no central keel between them.

Colour: markings on back oblique lines which zigzag and undulate; belly marked with thin, wavy, broken lines which appear in places as speckling; no rows of spots along the back next to dorsal fin bases.

## DISTINGUISHING CHARACTERS OF SIMILAR SPECIES OCCURRING IN THE AREA:

*Rastrelliger* species: no teeth on vomer and palatines; only a rudimentary anal spine, and 2 horizontal rows of spots on each side of back. Also, *R. brachysoma* and *R. kanagurta* have more gill rakers (30 to 48; 24 to 28 in *S. australasicus*) that are so long they are clearly visible when the mouth is opened; *R. faughni* tends to have fewer gill rakers (21 to 25).

*Auxis rochei* and *A. thazard*: a strong central keel between the 2 feeble keels at base of caudal fin; also, a corselet of scales, while the rest of the body is scaleless.

All other scombrid species occurring in the area: the 2 dorsal fins close together (interspace much smaller than the length of the first dorsal fin base), a strong keel on caudal peduncle; also, size of species larger.

#### SIZE:

Maximum: 40 cm; common: 20 to 30 cm.

#### GEOGRAPHICAL DISTRIBUTION AND BEHAVIOUR:

Eastern part of area only, including Taiwan, the Philippines, New Guinea to southern Australia; also, northward to Japan, southward to New Zealand, and eastward to Hawaii.

A pelagic fish, occurring in surface waters.

Little is known of its biology.

#### PRESENT FISHING GROUNDS:

Mainly coastal waters; commercially important in southern Australia and southern part of Western Australia.

#### CATCHES, MAIN FISHING GEAR AND PRINCIPAL FORMS OF UTILIZATION:

Separate statistics are not reported for this species.

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

Marketed mainly fresh and dried-salted.

