



SEAFDEC/UNEP/GEF Project on Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand

Rastrelliger brachysoma

Indo-Pacific Mackerel or Short Mackerel



Scientific classification

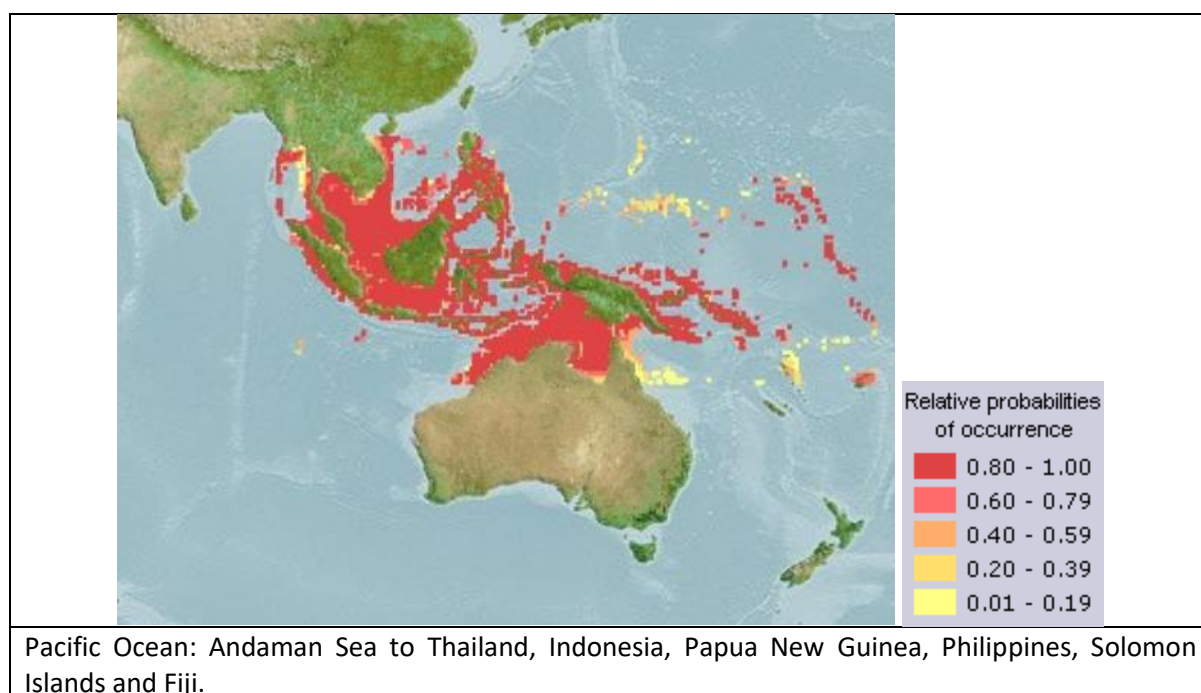
Kingdom: [Animalia](#)
 Phylum: [Chordata](#)
 Class: [Actinopterygii](#)
 Order: [Scombriformes](#)
 Suborder: [Scombroidei](#)
 Family: [Scombridae](#)
 Subfamily: [Scombrinae](#)
 Tribe: [Scombrini](#)
 Genus: [Rastrelliger](#)
 Species: ***R. brachysoma***

<u>Binomial name</u>
<i>Rastrelliger brachysoma</i> (Bleeker , 1851)
<u>Synonyms</u>
<ul style="list-style-type: none"> • <i>Rastrelliger neglectus</i> van Kampen, 1907 • <i>Scomber brachysoma</i> Bleeker, 1851 • <i>Scomber neglectus</i> van Kampen, 1907

A. Environment/Ecology:

Marine; brackish; pelagic-neritic; oceanodromous (Ref. [51243](#)); depth range 15 - 200 m (Ref. [28016](#)). Tropical; 20°C - 30°C (Ref. [54858](#)); 18°N - 18°S, 93°E - 180°E (Ref. [54858](#))

B. Distribution:



C. Length at first maturity / Size / Weight / Age:

Maturity: L_m [17.0](#) range ? - ? cm **Max length** : 34.5 cm FL male/unsexed; (Ref. [168](#)); common length : 20.0 cm FL male/unsexed; (Ref. [168](#)) **Length at First Maturity= total length of 16.83 for male and 17.18 cm for female** **Size= maximize size of 17.15cm for male and 17.70 cm for female** **Weight= 55.05g for male and 58.01 for female** **Age= ??(FiA,2020).** **Length at First Maturity=16.98 cm L_{inf} = 22.23, common length = 16-18 cm(Srichangam *et al.*,2014)**

D. Short description

[Dorsal spines](#) (total): 8 - 11; [Dorsal soft rays](#) (total): 12; [Anal spines](#): 0; [Anal soft rays](#): 12; [Vertebrae](#): 31. This species is distinguished by the following characters: body very deep, its depth at posterior margin of opercle 3.7-4.3 times in fork length; head equal to or less than body depth; maxilla covered by lacrimal bone but extending nearly to end of lacrimal; gill rakers very long, visible when mouth is opened, 30-48 on lower limb of first gill arch; numerous bristles on longest gill raker, about 150 on one side in specimens of 12.7 cm, 210 in specimens of 16 cm, and 240 at 19 cm fork length; intestine very long, 3.2-3.6 times fork length; snout pointed; swim bladder present; vertebrae 13 + 18 = 31; interpelvic process small and single; anal spine rudimentary. Colour of spinous dorsal fin yellowish with a black edge, pectoral and pelvic fins dusky, other fins yellowish (Ref. [168](#), [9684](#)).

E. Biology

An epipelagic, neritic species that tolerates slightly reduced salinities in estuarine habitats and in areas where surface temperature range between 20° and 30°C. It forms schools of equally sized individuals. Batch spawning is believed to extend from March through September. Feeds chiefly on microzooplankton with a high phytoplankton component. Marketed fresh, frozen, canned, dried salted and smoked (Ref. [168](#), [9684](#)).

F. Life cycle and mating behavior

G. Fisheries

Catches of this species are usually either recorded as *Rastrelliger* spp. or are combined with *R. kanagurta*. It is the most important commercial species of mackerel in the Philippines, caught the year round with native purse seines (italakop) and fish corrals (ibaklad) in Manila Bay (Manacop, 1958) and by dynamiting. In India, ("indian mackerel fishing"), it is fished with a variety of gear such as gillnets, seines, and cast nets and drift nets operated from boats with out-riggers and from dugout canoes. The catch in the Philippines fluctuated between 25 183 metric tons in 1978 and 18 962 metric tons in 1981 (FAO, 1983). The total catch reported for this species to FAO for 1999 was 25 713 t. The countries with the largest catches were Philippines (25 713 t).

H. IUCN Red List Status

GEOGRAPHIC RANGE

- **Taxonomy**

Kingdom:	Animalia
Phylum:	Chordata
Class:	Actinopterygii
Order:	Perciformes
Family:	Scombridae

Genus: *Rastrelliger*

- **Geographic Range**

NUMBER OF LOCATIONS

UPPER DEPTH LIMIT : 0 metres

LOWER DEPTH LIMIT : 200 metres

RANGE DESCRIPTION

This species is found in the Pacific Ocean from the Andaman Sea to Thailand, Indonesia, Papua New Guinea, Philippines, Solomon Islands and Fiji.

- **Population**

CURRENT POPULATION TREND : *Unknow*POPULATION SEVERELY FRAGMENTED : *No*

- **Habitat and Ecology**

System : Marine

Habitat type : Marine Neritic

Movement patterns : Full Migrant

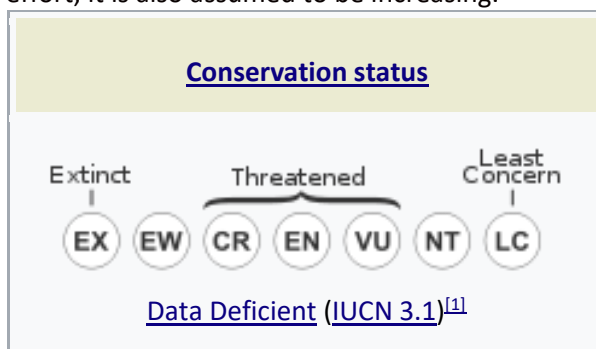
- **Biological resource use :**

Logging & wood harvesting

- **Threats**

This species is highly commercial, and is caught with a number of different gears including purse-seines, fish corrals, gill-nets, cast and drift nets, and by dynamiting. It is marketed fresh, frozen, canned, dried salted and smoked (Collette 2001). In the Philippines, this is a highly commercial species caught by seines, and where landings range from 10,000 to 50,000 tonnes per year.

Worldwide reported landings of *Rastrelliger* spp. are increasing, and although there is no information on effort, it is also assumed to be increasing.



- **Use and Trade**

This is a highly commercial fish species.

- **Conservation Action**

There are no species-specific conservation measures. Although landings are increasing, without information on effort, it is not known if current fishing activities are affecting population abundance. Better reporting is needed to determine species specific landings if

possible. Additionally, given the high combined landings for this species and unknown level of effort and the absence of an international management body, further monitoring of this species is needed on the national level.

I. More Information:

1) Stocks

This species is widespread in southeastern Asia. There is no information on population or general abundance. This species is targeted in commercial and artisanal fisheries throughout its range, but landings are primarily reported in combination with mixed *Rastrelliger* spp. Reported worldwide landings for *Rastrelliger* species have steadily increased since 1950 to over 800,000 tonnes in 2006, but no effort information is available. Given that effort is assumed to be increasing, it is not known how this species population is affected by current and historical fishing pressure. This species is listed as Data Deficient. Given the absence of an international management body, further monitoring of this species is needed on the national level, in addition to species-specific data on landings, effort and population status.

Catches of the three species of *Rastrelliger* are not usually recorded separately. *Rastrelliger brachysoma* is the most important commercial species of mackerel in the Philippines (Collette and Nauen 1983). Reported worldwide landings show gradual increase for all three *Rastrelliger* species, with combined reported landings increasing from 200,000 tonnes in 1950 to over 800,000 tonnes in 2006 (FAO 2009).

2) Ecology

Ecology of *Rastrelliger brachysoma*

This species is pelagic and oceanodromous and is found in estuarine habitats with slightly reduced salinities and in areas where surface temperature range between 20–30°C. It forms schools of equally sized individuals, and feeds chiefly on microzooplankton with a high phytoplankton component.

Main Ref.	Collette, B.B. and C.E. Nauen, 1983	
Distribution	Marine - Oceanic <ul style="list-style-type: none"> • epipelagic 	Brackishwater <ul style="list-style-type: none"> • estuaries/lagoons/brackish seas
	Highlighted items on the list are where <i>Rastrelliger brachysoma</i> may be found.	
Remarks	This species tolerates slightly reduced salinities in estuarine habitats. Feeds chiefly on microzooplankton with a high phytoplankton component.	

3) Diet

Feeding

The short mackerel feeds chiefly on microzooplankton with a high phytoplankton component.

Feeding type	plants/detritus+animals (troph. 2.2-2.79)					
Feeding type ref	Collette, B.B. and C.E. Nauen, 1983					
Feeding habit	selective plankton feeding					
Feeding habit ref	Collette, B.B. and C.E. Nauen, 1983					
Trophic level(s)		Original sample		Unfished population		Remark
	Estimation method	Troph	s.e.	Troph	s.e.	
	From individual food items	2.72	0.31			Trophic level estimated from a number of food items using a randomized resampling routine.

4) Reproduction

Reproduction of *Rastrelliger brachysoma*

Main Ref.	Collette, B.B. and C.E. Nauen, 1983
Mode	dioecism
Fertilization	external
Mating type	
Spawning frequency	
Spawning aggregation	Ref.
Batch spawner	Yes. Ref. Collette, B.B. and C.E. Nauen, 1983
Reproductive guild	nonguarders open water/substratum egg scatterers
Parental Care	none
Description of life cycle and mating behavior	
Search for more references on reproduction	Scirus

5) Maturity

Maturity studies for *Rastrelliger brachysoma* n = 1. ([Lm vs Linf graph](#))

Lm (cm)	Length (cm)	Age range (y)	tm (y)	Sex of fish	Country	Locality
17.0	-	-		unsexed	Thailand	Gulf of Thailand

6) Spawning

Spawning for *Rastrelliger brachysoma*

n = 1

J	F	M	A	M	J	J	A	S	O	N	D	Country	Locality
		111	111	111	111	111	111	111					<u>Central Indo-West Pacific</u>

7) Spawning aggregation

Batch spawning is believed to extend from March through September.

8) Fecundity

(NA)

9) Eggs

(NA)

10) Egg development

(NA)

11) Age/Size

List of Population Characteristics records for *Rastrelliger brachysoma*

n = 7

Sex	Wmax	Lmax (cm)	Tmax (y)	Country	Locality
unsexed			2	Thailand	Gulf of Thailand
unsexed		13.2		Philippines	Estancia, Iloilo
unsexed		22		Malaysia	Kedah
unsexed		22		Indonesia	Sumatra

unsexed		24		Thailand	Gulf of Thailand, 10° N 100° E
unsexed		34			to be filled
unsexed		35		Philippines	Not specified

12) Growth

Growth parameters for <i>Rastrelliger brachysoma</i>													
Maximum Length 34.5cm FL n = 38													
Note that studies where Loo is very different (+/- 1/3) from Lmax are doubtful.													
<u>Lm vs Linf graph</u>		[n = 2]											
<u>Reproductive graph</u>		[n = 1]											
<u>M vs K graph</u>		[n = 2]											
<u>M vs Linf graph</u>		[n = 2]											
<u>Longevity vs 3/K graph</u>		[n = 1]											
$\phi = 3.00$ L inf = 25.0 cm FL K = 1.6 Median record no. 201263Ref. 1263													
Loo (cm)	Length Type	K (1/y)	to (years)	Sex	M (1/y)	Temp° C	Lm	Ø'	Country	Locality	Questionable	Captive	
18.2	TL	1.560				28.0		2.71	Thailand	Gulf of Thailand	No	No	
19.6	TL	4.140				28.0		3.20	Thailand	10°N 100°E Gulf of Thailand	No	No	
20.0	TL	3.528				28.0		3.15	Thailand	10°N 100°E Gulf of Thailand	No	No	
20.9	TL	3.384	0.00		7.22	28.0		3.17	Thailand	Gulf of Thailand	No	No	
20.9	TL	4.200				28.0		3.26	Thailand	Inner Gulf of Thailand	No	No	
21.2	FL	0.960				23.0		2.63	Philippines	Samar Sea	No	No	
22.0	TL	0.700				28.0	17.0	2.53	Thailand	Gulf of Thailand	No	No	
22.0	SL	1.420				21.5		2.84	Thailand	Southwest coast	No	No	
22.4	TL	2.000				21.5		3.00	Thailand	Strait of Malacca	No	No	

22.9	TL	2.280			4.56	28.0		3.08	Indonesia	Tanjung Satai (Western Borneo)	No	No
22.9	TL	1.800				27.0		2.97	Indonesia	Java Sea (Central Java)	No	No
23.0	TL	3.600				28.0		3.28	Thailand	Gulf of Thailand	No	No
23.2	FL	1.200				23.0		2.81	Philippines	Guimaras Strait	No	No
23.5	TL	1.500				29.0		2.92	Malaysia	Kedah	No	No
24.0	TL	1.020				22.4		2.77	Malaysia	Selangor	No	No
24.0	TL	1.040				29.0		2.78	Malaysia	Kedah	No	No
24.2	TL	0.520				22.4		2.48	Malaysia	Selangor	No	No
24.5	FL	1.280				28.5		2.89	Philippines	Ragay Gulf	No	No
24.5	TL	1.400				21.5		2.92	Thailand	Strait of Malacca	No	No
25.0	FL	1.600				28.5		3.00	Philippines	Samar Sea	No	No
25.0	FL	1.300				28.5		2.91	Philippines	Samar Sea	No	No
25.0	TL	0.820				22.4		2.71	Malaysia	Perak	No	No
25.1	TL	1.250				21.5		2.90	Thailand	Strait of Malacca	No	No
25.4	TL	1.330				21.5		2.93	Thailand	Strait of Malacca	No	No
25.5	FL	1.450				28.5		2.97	Philippines	Samar Sea	No	No
25.8	TL	1.630				28.0		3.04	Indonesia	Java Sea (Pekalongan)	No	No
26.0	TL	0.600				22.4		2.61	Malaysia	Perak	No	No
26.3	TL	1.300				21.5		2.95	Thailand	Strait of Malacca	No	No

26.5	TL	1.050				12.0		2.87	Indonesia	Asahan, Sumatra	No	No
27.0	FL	1.600				27.0		3.07	Myanmar	Mergui Archipelago	No	No
28.0		1.000					11.9	2.89	Philippines	Davao Gulf	No	No
28.5	FL	1.400				28.0		3.06	Philippines	Guimaras Strait	No	No
29.8	TL	1.300				28.5		3.06	Philippines	Samar Sea	No	No
32.5	TL	1.200				27.7		3.10	Philippines	Visayan Sea	No	No
34.0	TL	1.100				28.2		3.10	Philippines	Manila Bay	No	No
34.0	TL	0.980				28.2		3.05	Philippines	Manila Bay	No	No
34.0	TL	0.981				27.7		3.05	Philippines	Visayan Sea, 1983 & 1985	No	No
34.0	TL	0.982				28.4		3.06	Philippines	Leyte Gulf	No	No

13) Length-weight

Length-Weight Parameters for *Rastrelliger brachysoma*

Score	a	b	Sex	Length (cm)	Length type	r ²	Country	Locality
<input type="text" value="1.00"/>	0.02580	2.879	unsexed			1.000	Indonesia	Tanjung Satai, Western Borneo
<input type="text" value="0.50"/>	0.01300	3.210	unsexed				Thailand	Indian coast, 1967-77
<input type="text" value="0.50"/>	0.00614	3.213	unsexed				Thailand	Inner Gulf of Thailand
<input type="text" value="0.50"/>	0.01000	3.230	unsexed				Philippines	Guimaras Strait, 1988-89

14) Length-length

Length-Length Parameters for *Rastrelliger brachysoma*

n=4

Unknown length	a	b	Known length	r	Length range (cm)	Sex of fish
SL	0.000	0.901	FL		-	unsexed
SL	0.000	0.961	FL		-	unsexed
TL	0.000	1.104	FL		-	unsexed
TL	0.000	1.149	SL		-	unsexed

15) Length-frequencies

List of frequency studies for *Rastrelliger brachysoma*

Locality	Year from - to	Sex	Gear	Frequency type
Guimaras Strait, Philippines	1984 - 1986	unsexed/mixed	various gears	absolute number measured
Java Sea (Central Java), Indonesia	1979 - 1979	unsexed/mixed	trawls	absolute number measured
Leyte Gulf, Philippines	1983 - 1987	unsexed/mixed	various gears	absolute number measured
Manila Bay, Philippines	1978 - 1979	unsexed/mixed	trawls	absolute number measured
Samar Sea, Philippines	1979 - 1979	unsexed/mixed	trawls	absolute number measured
Southwest coast (Phuket, Phang-ga, Krabi, Trang & Satun), Thailand	1984 - 1986	unsexed/mixed	seines	raised to the catch
Tanjung Satai (southwest coast), Indonesia	1971 - 1972	unsexed/mixed	seines	% of sample
Visayan Sea, Philippines	1983 - 1988	unsexed/mixed	various gears	absolute number measured

16) Morphometrics

Morphometric Data for *Rastrelliger brachysoma*

n = 1

Picture Name	Length		Lifestage	Aspect ratio
Rabra_u0.jpg	28.8	SL	unsexed	3.10

17) Morphology

Morphometric Data for *Rastrelliger brachysoma*

Main Ref.	Collette, B.B., 2001
Appearance refers to	
Bones in OsteoBase	

Sex attributes

Specialized organs	no special organs
Different appearance	males alike females
Different colors	males alike females
Remarks	

Descriptive characteristics of juvenile and adult

Striking features	striking shape of body
Body shape lateral	fusiform / normal
Cross section	oval
Dorsal head profile	more or less straight
Type of eyes	more or less normal
Type of mouth/snout	more or less normal
Position of mouth	terminal
Type of scales	
Diagnosis	This species is distinguished by the following characters: body very deep, its depth at posterior margin of opercle 3.7-4.3 times in fork length; head equal to or less than body depth; maxilla covered by lacrimal bone but extending nearly to end of lacrimal; gill rakers very long, visible when mouth is opened, 30-48 on lower limb of first gill arch; numerous bristles on longest gill raker, about 150 on one side in specimens of 12.7 cm, 210 in specimens of 16 cm, and 240 at 19 cm fork length; intestine very long, 3.2-3.6 times fork length; snout pointed; swim bladder present; vertebrae 13 + 18 = 31; interpelvic process small and single; anal spine rudimentary. Colour of spinous dorsal fin yellowish with a black edge, pectoral and pelvic fins dusky, other fins yellowish (Ref. 168, 9684).
Ease of Identification	

Meristic characteristics of *Rastrelliger brachysoma*

Lateral Lines	1 Interrupted: No
Scales on lateral line	

Pored lateral line scales	
Scales in lateral series	
Scale rows above lateral line	
Scale rows below lateral line	
Scales around caudal peduncle	
Barbels	0
Gill clefts (sharks/rays only)	absent
Gill rakers	
on lower limb	30 - 48
on upper limb	
total	
Vertebrae	
preanal	13 - 13
total	31 - 31

Fins**Dorsal fin(s)**

Attributes	no striking attributes
Fins number	2
Finlets No.	Dorsal 5
	Ventral 5
Spines total	8 - 11
Soft-rays total	12 - 12
Adipose fin	absent

Caudal fin

Attributes	forked; more or less normal
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Anal fin(s)

Fins number	1
Spines total	0 - 0
Soft-rays total	12 - 12

Paired fins

Pectoral	Attributes more or less normal
	Spines 0
	Soft-rays 19 - 20
Pelvics	Attributes more or less normal
	Position thoracic before origin of D1

	Spines
	Soft-rays

18) Larvae

(NA)

19) Recruitment

(NA)

20) Abundance

(NA)

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