

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/326112496>

First record of escolar, *Lepidocybium flavobrunneum* (Smith, 1843) from the Indian EEZ of Andaman Sea

Article in *Indian Journal of Geo-Marine Sciences* · July 2018

CITATIONS

0

READS

48

4 authors, including:



Musaliyarakam Nashad

Cochin University of Science and Technology

23 PUBLICATIONS 16 CITATIONS

[SEE PROFILE](#)



Swapnil Shirke

Fishery Survey of India

23 PUBLICATIONS 11 CITATIONS

[SEE PROFILE](#)



H. D. Pradeep

Fishery Survey of India

30 PUBLICATIONS 21 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Bivalve fishery of Kerala [View project](#)



New reports from Andaman and Nicobar Islands [View project](#)

First record of escolar, *Lepidocybium flavobrunneum* (Smith, 1843) from the Indian EEZ of Andaman Sea

¹Nashad M*, Swapnil S. Shirke¹, H.D Pradeep¹ & Monalisa S. Devi²

¹Fishery survey of India, Port Blair, Post Box No. 744101, Andaman and Nicobar Islands, India

² Fisheries Science Division, Central Islands Agricultural Research Institute, ICAR, Port Blair, 744105, Andaman and Nicobar Islands

*[E-mail: nashadfsi@gmail.com]

Received 17 October 2016 ; revised 13 December 2016

A single specimen of 485 mm total length, weighing 3.2 Kg was caught by a multiday longliner boat and landed at Junglighat fishing harbour, Port Blair on 24th July 2016. The specimen was collected from a depth of 530 to 660 m in the Andaman Sea.

[**Keywords:** Snake mackerel, Gempylidae, escolar, South Andaman, Junglighat]

Introduction

Members of the family Gempylidae are adapted to mesopelagic or benthopelagic life and most of them are large and swift predators^{1, 2}. There are 16 genera and 23 species known so far under the family Gempylidae. The snake mackerels are intermediate between tunas and trichiurids with both elongate and fusiform body shapes in suit of their ecological niche. Brownish or blackish colour of the body also acts as an adaptive feature for such an existence¹.

The gempylid fish, *Lepidocybium flavobrunneum* (Smith, 1843) commonly known as escolar is a large, mesopelagic fish that inhabits tropical and temperate seas throughout the world. Most of the reports are from the Atlantic and Pacific Ocean¹. The species is reported from North West Africa, Madeira Islands³; New South Wales⁴; Gulf of Mexico⁵; Bahamas⁶; Isles Comores in the Indian Ocean⁷; New Caledonia⁸; New Zealand⁹; North West Spain¹⁰⁻¹¹; West Portugal¹² and Ireland¹³. In Australia it is recorded from southern Queensland around the south of the continent and up the west coast to the north-west Shelf of Western Australia¹⁴. In contrast to its wider range of distribution throughout the tropics, reports from the Indian Ocean was limited by the occurrence of this species during 2004-06 in the landings of large meshed gill nets operated off the Tuticorin coast in the Gulf of Mannar and from the Nagapattinam coast North East coast of India¹⁵. The IUCN Red

List of Threatened Species lists the status of *L. flavobrunneum* as “Least Concern”¹⁶.

Materials and Methods

A single specimen of *Lepidocybium flavobrunneum* was collected from Junglighat fishing landing center, Port Blair, South Andaman. It was caught in the multiday long liner operated at a depth of 530-660m in the waters of Andaman sea of Indian Exclusive Economic Zone (EEZ). The specimen was identified following the description of Nakamura and Parin¹. Morphometric and meristic characters were recorded. Gut content was analyzed to look into their feeding habits. Specimen was preserved in the museum of the zonal base of Fishery Survey of India, Port Blair (referral no. MUS/FSI/PB/T/08/2016).

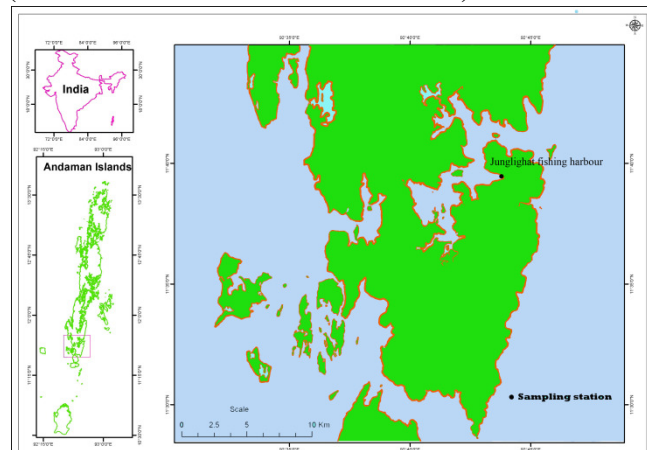


Fig. 1. — Location map of the sampling station

Results

SYSTEMATICS

Order: Perciformes (Bleeker, 1859)

Family: Gempylidae (Gill, 1862)

Genus: *Lepidocybium* (Gill, 1862)

Species: *flavobrunneum* (Smith, 1843)

Synonyms: *Cybium flavobrunneum* Smith, 1843; *Xenogramma carinatum* Waite, 1904; *Nesogrammus thompsoni* Flower, 1923; *Diplogonurus maderensis* Noronha, 1926; *Lepidosarda retigramma* Kishinouye, 1926.

Specimen Examined: Female, 485mm TL, 3.2 Kg whole body weight.

Diagnosis

Body fusiform and slightly compressed, body depth is 17.7% of the total length of the specimen. Head pointed and compressed at nape. Head length is 3.84 times the standard length. Snout region is broad with inter orbital width of 39 mm. Eye diameter is 26 mm which is 20.6 % of the head length and 5.4% of the total length. They have well separated oval, small nostrils on either side of the head. Operculum and pre operculum rounded, without spines. The lower jaw slightly protruded than the upper jaw and tip of both jaws without dermal processes. Length of the upper jaw is 11 times of the total length. Presence of stronger fang like teeth, two pairs anteriorly in the upper jaw is a distinctive feature; vomer and palatines each with a single row of teeth.

The size of the first dorsal fin is smaller than the second dorsal fin, consisting of 9 short spines originated from a narrow groove. Second and third spine of this specimen was in a broken condition. The second dorsal fin has 18 soft rays followed by 6 finlets; anal fin also has two spines and 14 soft rays; pectoral fins with 16 soft rays; pelvic fins well developed, with 1 spine and 5 soft rays. Dorsal fins are placed at a distance of 4.7 times of the total length of the specimen. Caudal fin deeply forked but small,

with a prominent lateral keel on caudal peduncle flanked by 2 smaller supplementary keels, one on each side of the lateral keel.

Small cycloid scales present over the head and body, snout and upper part of the head is devoid of scales. Single serpentine lateral line present. It originates from the dorsal region in line with the opercular partition, then descending vertically around the pectoral fin towards the ventral margin. After a straight portion in parallel to belly it rises abruptly, and then descends again to the anal and at last joins with the keel of the caudal peduncle.

Color

Body uniformly dark brown

Discussion

Morphometric measurements and meristic counts (Table 1) fall within the range of the species given^{1,9,13} and the specimen were identified as *Lepidocybium flavobrunneum* based on the keys given¹. The *L. flavobrunneum* is an oceanodromous species that occur between 200 and 1100 m depths¹⁷ but mostly confined to depths of 100 to 500 m of the continental shelf margin and the upper part of the slope¹⁸. It often migrates upward at night^{1,2}. Even though the targeted fishery is not there, the escolar appears as bycatch in the tuna longline caught usually at depths from 100 to 300 m. In New Zealand waters *L. flavobrunneum* is taken with other large pelagic fishes such as the sharks, marlins, and large tunas, and another gempylid, *Ruvettus pretiosus*⁹.

The maximum recorded standard length (SL) for *L. flavobrunneum* was 200 cm¹ and the maximum weight is 45.0 kg¹⁹. Present specimen is a female with a total length of 48.5 cm and 3.2 kg in weight. Head length is 3.6 to 3.7 times the standard length¹, the present specimen head length is 3.84 times the standard length. Members of the family Gempylidae have lateral-line patterns similar to either trichiurids or scombrids depending on their habitat orientation. The characteristic pattern of lateral line in escolar is in tune with its mesopelagic habitat¹.

A few studies have explored the biology and ecological status of escolar, and little is known about its population structure²⁰. It feeds mainly on squid, crustaceans and fishes like bramids, coryphaenids, scombrids, trachipterids and often migrates upwards at night¹. The gut of the present specimen consists of digested squid and juvenile bramids.

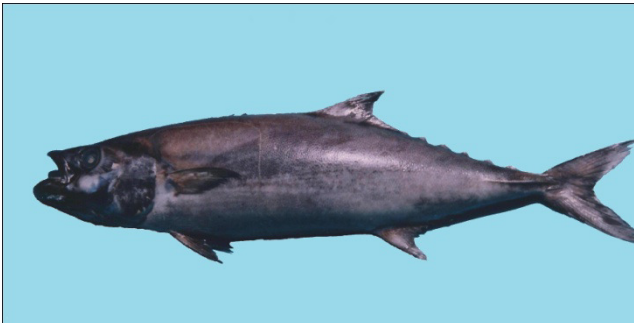


Fig. 2 — *Lepidocybium flavobrunneum* (Smith, 1843)

Table 1 — Morphometric and Meristic details of the *Lepidocybium flavobrunneum* (in mm and %TL) in comparison with previous records

Measurements	Present specimen		Irish waters, (Quigley and Flannery, 2005)		New Zealand waters (Paulin and Habib, 2010)	
	Length in mm	% TL	Length in mm	% TL	Length in mm	% TL
Total length	485	100.0	1450	100.0	900	100.0
Fork length	445	91.8	1355	93.4	-	0.0
Standard length	408	84.1	1240	85.5	-	0.0
Head length	126	26.0	-	-	241	26.8
Eye diameter	26	5.4	-	-	40	4.4
Snout length	45	9.3	-	-	95	10.6
Inter orbital width	39	8.0	-	-	74.5	8.3
Distance from Snout to origin of first dorsal fin	128	26.4	-	-	270	30.0
Distance from Snout to origin of second dorsal fin	225	46.4	-	-	-	0.0
Distance between first dorsal fin to second dorsal fin	103	21.2	-	-	-	0.0
Body depth	96	19.8	-	-	209	23.2
Distance from Snout to Anal	291	60.0	-	-	620	68.9
First dorsal fin height	11	2.3	-	-	-	-
Second dorsal fin height	31	6.4	-	-	-	-
Second dorsal fin base	75	15.5	-	-	-	-
Pelvic fin length	43	8.9	-	-	-	-
Pelvic fin base	6	1.2	-	-	-	-
Pectoral fin length	62	12.8	-	-	-	-
Pectoral fin base	15	3.1	-	-	-	-
Anal fin height	20	4.1	-	-	-	-
Anal fin base	50	10.3	-	-	-	-
Length of upper jaw	44	9.1	-	-	103	11.4
Length of lower jaw	23	4.7	-	-	-	0.0
Height of the caudal peduncle	19	3.9	-	-	24	2.7
Pre orbital length	49	10.1	-	-	-	0.0
Weight	3.2 Kg	-	34 Kg	-	-	-
Meristic Counts						
Dorsal fin spines, rays and finlets	9+18+6		8+18+6		9+17+5	
Anal fin spines, rays and finlets	2+14+4		2+14+4		2+13+4	
Pelvic fin rays	1+5		--		1+5	
Pectoral rays	16		16		16	
Ventral fin spines and rays	1+5				1+5	

The *L. flavobrunneum* is widely distributed in tropical and temperate seas of the world, but probably absent from the northern Indian Ocean¹. The present report confirms the range extension of this species in the Southeast of the Bay of Bengal i.e., Andaman Sea.

Acknowledgement

The authors are thankful to the Director General, Fishery Survey of India, Mumbai for his encouragement during the study period.

References

- 1 Nakamura I & Parin N V, *Snake mackerels and cutlass fishes of the world (families Gempylidae and Trichiuridae)*. An

annotated and illustrated catalogue of the snake mackerels, snoeks, escolars, gemfishes, sackfishes, domine, oilfish, cutlass fishes, Scabbard fishes, hairtails, and frost fishes known to date. (FAO Species Catalogue) 1993, pp. 136.

- 2 Nakamura I & Parin N V, Gempylidae. Snake mackerels, in: *The living marine resources of the Western Central Pacific*, edited by K E Carpenter and V Niem (FAO species identification guide for fishery purposes) 6:2001, pp. 3698–3708.
- 3 Noronha, A.C., Description of a new genus and species of deep water Gempyloid fish, *Diplogonurus maderensis*, *Annls. Carnegie Mus.*, 16(1926) 381.
- 4 Munro, I.S.R., The rare gempylid fish, *Lepidocybium flavobrunneum* (Smith), *Pro. Roy. Soc. Queensl.*, 60(1949) 31–41.
- 5 Schultz, L.P. & Springer, V.G., *Lepidocybium flavobrunneum*, a rare gempylid fish new to the fauna of the Gulf of Mexico, *Copeia*, (1) 1956: 65.

- 6 Bartlett, M.R. & Backus, R.H., A catch of the rare gempylid *Lepidocybium flavobrunneum* (Smith) in the Bahamas, *Copeia* 4(1962) 845–847.
- 7 Merrett, N.R., *Lepidocybium flavobrunneum* (Smith, 1849) (Gempylidae) from the Western Indian Ocean, *J. Nat. Hist.*, 2(1968) 201–4.
- 8 Fourmanoir, P., Notes Ichthyologiques (II). Cahiers O.R.S.T.O.M. *Serie Oceanographie* VIII 3 (1970) 35–46.
- 9 Paulin, C.D. & Habib, G., First record of *Lepidocybium flavobrunneum* (Pisces: Gempylidae) from New Zealand, *New Zeal. J. Mar. Fresh.*, 14(1980) 405–407.
- 10 Quero, J.C., Buit, D.M.H., Delmas, G., Fonteneau, J. & Vayne, J.J., Observations ichthyologiques effectuees en 1988. *Annales de la Societe des Sciences Naturelles de la Charente-Maritime*, 7 (7) (1989): 849–852.
- 11 Quero, J.C., Buit, D.M.H., Fonteneau, J., Labastei, J., Laborde, J.L., Morandeau, G. & Vayne, J.J., Observations ichthyologiques effectuees en 1991. *Annales de la Societe des Sciences Naturelles de la Charente-Maritime*, 8 (1) (1992): 51–56.
- 12 Quero, J.C., Buit, D.M.H., Caill, N., Casamajor, M.N., Cazeils, N., Dewez, A., Morandeau, G. & Vayne, J.J., Observations ichthyologiques effectuees en 1991. *Annales de la Societe des Sciences Naturelles de la Charente-Maritime*, 8(8) (1999): 925–934.
- 13 Quigley, D.T.G. & Flannery, K., First record of escolar *Lepidocybium flavobrunneum* (Smith, 1849) (Pisces: Gempylidae) from Irish waters, together with a review of NE Atlantic records, *Ir. Nat. J.*, 28: 3 (2005).
- 14 Yearsley, G.K., Last, P.R. & Ward, R.D., Australian Seafood Handbook: Domestic Species. CSIRO Marine Research, *Nature Australia*, 26(8) (1999):74.
- 15 Mohan, S., Rajan, S. & Vasu, Rare occurrence of deep sea snake mackerel off Nagapattinam coast in the Bay of Bengal, *Mar. Fish. Infor. Serv. T & E Ser.*, 207(2011).
- 16 Smith, V.W.F., Willilams, J., Amargors, P.F., Curtis, F. & Grijalba, B.L., *Lepidocybium flavobrunneum*, *The IUCN Red List of Threatened Species* (2015).
- 17 Riede, K., Global register of migratory species – from global to regional scales. Final report of the R&D project 80805081. Federal agency for natural conservation, Bonn, Alemania, 329(2004).
- 18 Parin, N.V. & Becker, V.E., Materials for a revision of the trichiurid fishes of the genus *Benthodesmus*, with the description of four new species and one new subspecies, *Proc. Biol. Soc. Washington*, 83 (1970) 351–364.
- 19 Nakamura I, Gempylidae, Istiophoridae, Trichiuridae, Xiphiidae, in: *FAO Species Identification Sheets for Fishery Purposes. Western Indian Ocean, fishing area 51*, edited by W. Fischer and G. Bianchi (FAO) 1984, Vol 1-6.
- 20 Kirsten, B.S., McDowell, J.R. & Graves, J.E., Population genetic structure of Escolar *Lepidocybium flavobrunneum*, *Mar. Biol.*, 155(2008) 11–22.