



Field Identification of Nemipteridae: Threadfin Breems

Introduction

The fishes of family Nemipteridae are popularly known as threadfin breems. They are of high economic interest throughout their distribution in tropical Indo-Pacific (Russell, 1990). Globally the family is represented by 71 species across 5 genera. From Indian waters as many as 29 species are reported across 4 genera. (Froese and Pauly, 2021). The family is characterized by a single dorsal fin with X spines and 9 soft rays, anal fins with III spines and usually 7 soft rays, the last soft rays is usually branched (Fig. 1 & 2). Pectoral fins have 2 unbranched and 12-17 unbranched rays. Pelvic fins have single spine and 5 soft rays (Fig. 3) and placed in thoracic region. Body is covered with moderate sized scales with fine ctenii (Fig. 4). Some also have prominent and strong sub-orbital spine. Threadfin breems contributed 153066 tonnes to the total marine fish landings of India in 2019 which forms 4.3% of the total fish landings (NMFDC, 2021). The major species contributing to the commercial fishery belongs to the genus *Nemipterus* and they forms the major raw materials for the surimi based processing plants of India owing to high quality white meat with excellent textural properties.

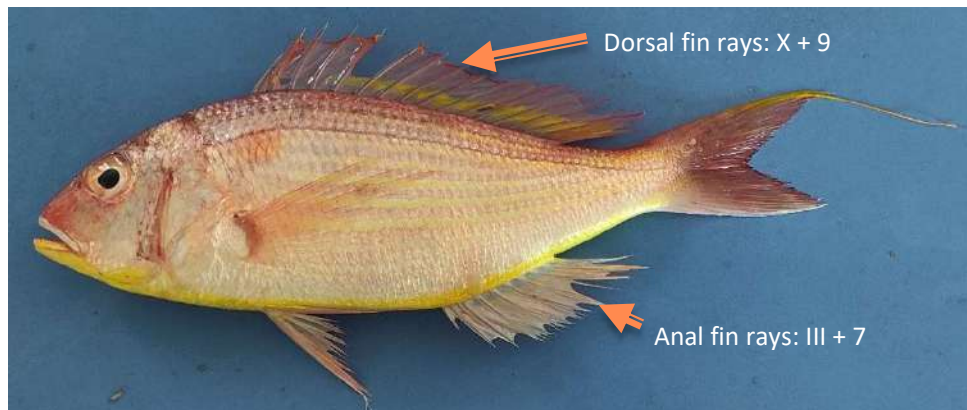


Fig 1: An illustration of a typical nemipterid fish

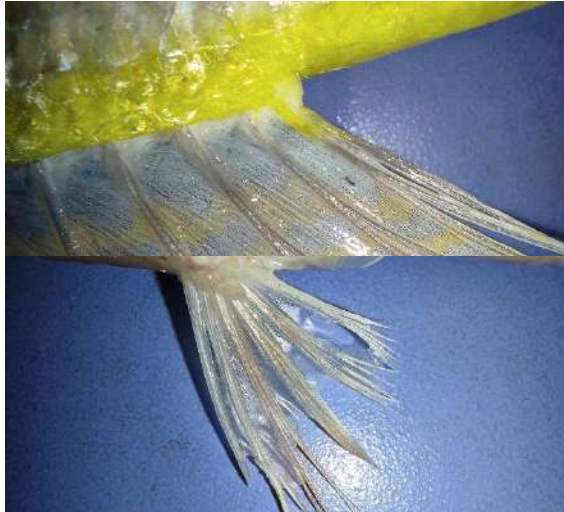


Fig 2. Last anal fin rays branched

Fig 3. Pelvic fin with I + 5 rays



Fig 4. Body covered by moderate sized scale with fine ctenii

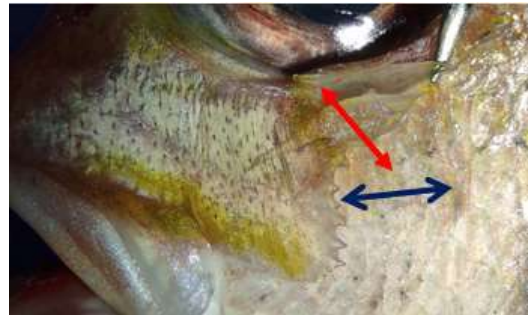


Fig 5. Presence of sub-orbital spine (red arrow) and serration (blue arrow) along the posterior margin

Key to the genera of Nemipterids of India

1a. Sub-orbital without scales having prominent spine (Fig. 5), posterior margin with serration or series of spines *Scolopsis*

1b. Sub-orbital either naked or with scales having no or weak spine, posterior margin finely serrate..... **2**

2a. Sub-orbital spine absent, 3 transverse rows of scales (Fig. 6) present on pre-opercular region..... *Nemipterus*

2b. Sub-orbital spine either weak or absent, 4-6 transverse rows of scales (Fig. 7) present on pre-opercular region **3**

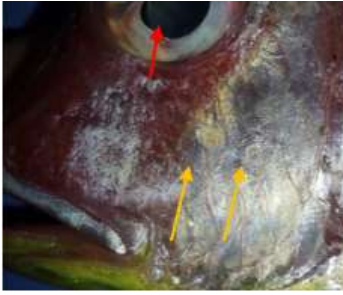


Fig 6.

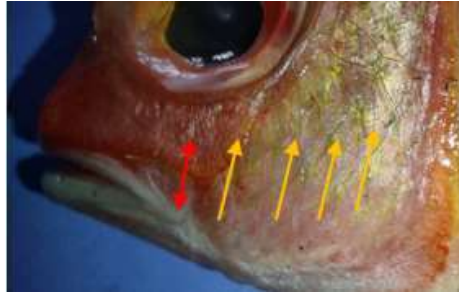


Fig 7.

- 3a.** 2nd anal spine short and weaker than the 3rd, a single pair large canine teeth on both side of the lower jaw (Fig.8) *Pentapodus*
3b. 2nd anal spine larger and stronger than the 3rd (Fig. 9), canine teeth in jaws absent *Parascolopsis*



Fig. 8. Enlarged teeth on lower jaw



Fig. 9. Large and robust 2nd anal spine

Key to the species of genus *Nemipterus* from Indian waters

- 1a.** 1st two dorsal spine close together and extended in to long filaments (Fig. 10) *N. nematophorus*
1b. 1st two dorsal spine separate and not extended in to long filaments (Fig. 10) 2



Fig. 10. Extension of 1st two dorsal spine



Fig. 10. Normal dorsal fin without extension (red arrow) & normal incision (orange arrow)

- 2a.** Deep incision in the membranes of dorsal spine *N. peronii*
2b. Membranes between dorsal spine normal (Fig10) 3
3a. Upper lobe of caudal fin extended in prominent filaments (Fig. 11) 4
3b. Upper lobe of caudal fin not-extended in prominent filaments (Fig. 12) 8
4a. Pelvic fins very long, reaching up to or beyond anal fin origin (Fig. 14) 5
4b. Pelvic fins short or moderate, not reaching up to anal fin origin (Fig. 13) 6



Fig. 11. Filamentous upper lobe of caudal fin



Fig. 12. Non-filamentous upper lobe of caudal fin



Fig. 13. Pelvic fin not going beyond anal fin origin

Fig. 14. Pelvic fin going beyond anal fin origin

- 5a. Pectoral fin long, reaching up to or beyond anal fin origin (Fig. 15)... *N. randalii*
- 5b. Pectoral fin short, not going beyond anal fin origin *N. marginatus*
- 6a. Pectoral fin short, reaching up to or beyond anal fin origin *N. japonicus*
- 6b. Pectoral fin short, not going beyond anal fin origin (Fig. 16) 7



Fig. 15. Pectoral fin going beyond anal fin origin

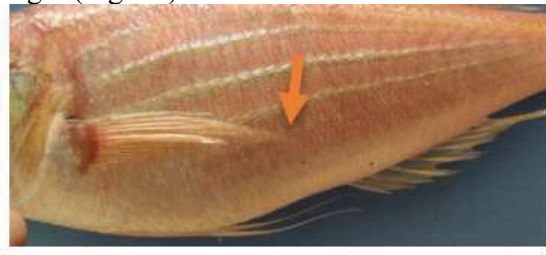


Fig. 16. Pectoral fin not reaching anal fin origin

- 7a. Body elongate, 21.7% to 26.3% of standard length *N. zysron*
- 7b. Body moderately deep, 25% to 34.5% of standard length *N. nemurus*
- 8a. Dorsal fin with stripes (Fig. 17)..... *N. hexadon*
- 8b. Dorsal fin without any stripes (Fig.18)..... 9

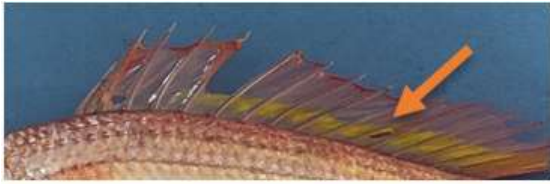


Fig. 17. Dorsal fins with stripes



Fig. 18. Dorsal fin without any stripes

- 9a. Anal fin with 2-5 undulating yellow stripes (Fig. 19)..... *N. bipunctatus*
 9b. Anal fin without any stripes on it *N. furcosus*



Fig. 19. Anal fins with stripes on it

Key to the species of genus *Parascolopsis* from Indian waters

- 1a. Gill rakers on 1st gill arch more than 15 (Fig. 20)*P. akatamae**
 1b. Gill rakers on 1st gill arch less than 15 (Fig. 21)2



Fig. 20. 1st arch of gill with > 15 gill rakers



Fig. 21. 1st arch of gill with < 15 gill rakers

- 2a. Sub-orbital with scales *P. townsendi*
 2b. Sub-orbital and maxilla without scales (Fig. 22).....3



Fig 22. Sub-orbital and maxilla without scales

- 3a. Scales on head reaching forward to or up to anterior margin of the eye(Fig.23)... 4
- 3b. Scales on head not reaching forward to or up to anterior margin of the eye (Fig. 24)
 *P. inermis*



Fig 23. Head scales reaching up to anterior of eye.



Fig 24. Head scales not reaching up to anterior of eye.

- 4a. Posterior margin of sub-orbital smooth or with few tiny spinules; black blotch on base of middle of dorsal fins (Fig. 25)..... *P. aspinosa*
- 4b. Posterior margin of sub-orbital denticulate; reddish blotch on middle of dorsal fins (Fig. 26) 5

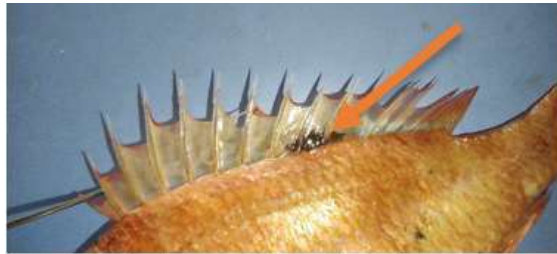


Fig. 25. Black or dark blotch on dorsal fin



Fig. 26. Red or orange blotch on dorsal fin

- 5a. Body depth < Head length, pectoral fin extended up to vent (Fig. 26)..... *P. boesmani*
- 5b. Body depth = Head length, pectoral not reaching up to vent *P. baranesi*

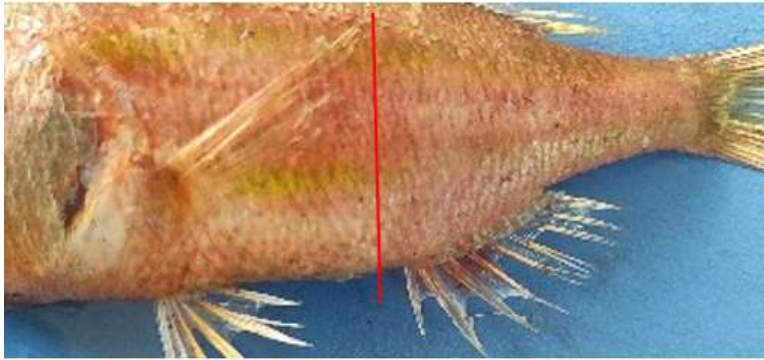


Fig. 27. Pectoral fins long reaching up to vent

***Note:** Miyamoto et al. (2020) described a new species *Parascalopsis akatamae* with close resemblance to *P. eriomma* and inferred that previous records of *P. eriomma* from Indian waters are in fact *P. akatamae*

Key to the species of Genus *Scolopsis* from Indian waters

- 1a. Antrorse spine or bony ridge present below eye (Fig. 28) 2
- 1b. Antrorse spine or bony ridge below eye absent 5



Fig. 28.



Fig. 29

- 2a. Maxilla denticulate on its external edge *S. ciliata*
- 2b. Maxilla smooth along its external edge (Fig. 28) 3
- 3a. Scales on the top of the head not extending up to posterior nostril *S. xenochrous*
- 3b. Scales on the top of the head not extending up to posterior nostril 4
- 4a. Pectoral fin reaching up to anus & anterior part of anal fin dark *S. bilineatus*
- 4b. Pectoral fin not reaching up to anus & anterior part of anal fin not dark (Fig. 30) *S. vosmeri*



Fig. 30.

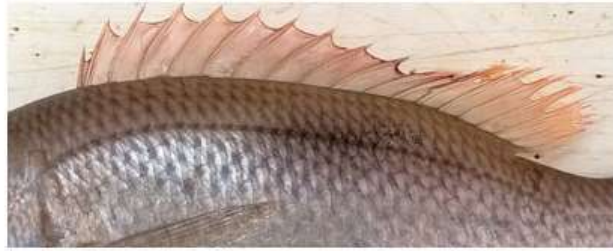


Fig. 31. Oval dark spot on the upper half of the body

- 5a. Head scales reaching forward up to mid of orbit *S. ghanam*
- 5b. Head scales reaching forward up to anterior margin of eye 6
- 6a. Large, dark and oval shaped spot on upper half of body intersected by lateral line below dorsal fin (Fig. 31) *S. bimaculatus*
- 6b. No dark oval spots on the upper half of the body 7

- 7a. Line joining snout and upper base of pectoral fin above lower margin of eye (Fig. 32) *S. frenatus*
- 7b. Line joining snout and upper base of pectoral fin below lower margin of eye (Fig. 32) 8

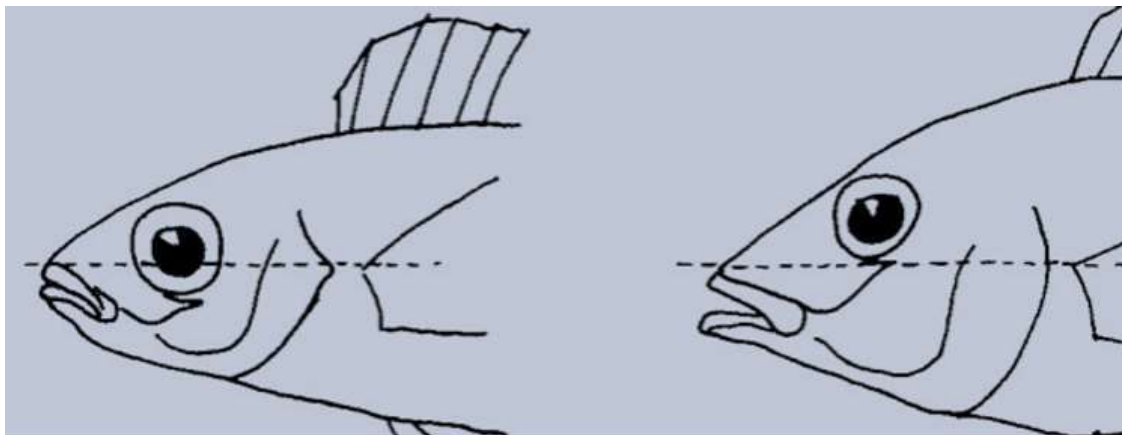


Fig. 32. Position of eye in relation of snout-pectoral axis

- 8a. Head scales reaching to the level of posterior nostrils *S. taeniatus*
- 8b. Head scales not reaching to the level of posterior nostrils *S. auratus*

COMMON THREADFIN BREAMS AVAILABLE IN INDIA

Scientific name: *Nemipterus japonicus* (Bloch, 1791)

Common Name: Japanese threadfin bream

Distribution: Indo Pacific

Key diagnostic features (Fig 33)

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Pelvic fins short or moderately long, not reaching the origin of anal.
- Pectoral fins long, reaching to or beyond the origin of anal fin.
- Upper lobe of caudal fin yellow in cooler filamentous
- 11-12 yellow stripes on the body from head till caudal region.
- Margin of dorsal fin yellow, edged with red and a yellow stripe near base of dorsal fin.



Scientific Name: *Nemipterus randalli* Russell, 1986 [Fig. 34]

Common Name: Randall's threadfin bream

Distribution: Western Indian Ocean

Key diagnostic features

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Upper lobe of caudal fin filamentous and pinkish or reddish in colour
- Dorsal fin not noticeably elevated & 1st dorsal spine short.
- Pectoral and pelvic fins very long, reaching to or beyond the origin of anal fin.
- Body whitish-pink with 3 or 4 light yellow stripes on sides below lateral line



Scientific Name: *Nemipterus bipunctatus* (Valenciennes, 1830) [Fig. 35]

Common Name: Delagoa threadfin bream

Distribution: Indian Ocean

Key diagnostic features

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Upper lobe of caudal fin not produced in to filaments rather rounded in profile.
- Dorsal fin rosy, with reddish or yellowish margin, but lacks stripes
Anal fin with 2 to 5 yellowish stripes.
- Body with 5 to 7 greenish-yellow bands on body
- Scales below lateral line in ascending rows anteriorly



Scientific Name: *Parascolopsis akatamae* Miyamoto, McMahan & Kaneko, 2020 [Fig. 36]

Common Name: Rosy dwarf monocle bream

Distribution: Indo-West Pacific

Key diagnostic features

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Gillrakers on first arch: 16-19.
- Length of forked part of caudal fin 5.8–6.5 times in SL.
- Eye diameter 1.3–1.8 times in length of longest dorsal-fin spine.
- Pale yellow stripe present from lower edge of the eye to posterior edge of the preopercle.
- Strong bio-fluorescence emission observed on isthmus and branchiostegal region



Scientific Name: *Parascolopsis aspinosa* (Rao & Rao, 1981) [Fig. 37]

Common Name: Smooth dwarf monocle bream

Distribution: Indian Ocean

Key diagnostic features

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Cheek scales: 4 or 5 transverse rows.
- Lower limb of preopercle without scales.
- Posterior margin of suborbital smooth.
- Black Spot at base of dorsal fin between 8th spine and 1st soft ray.
- Dorsal fin with orange emargins; pectoral fin yellowish ; anal fin rosy



Photo credit @ Rekha Nair

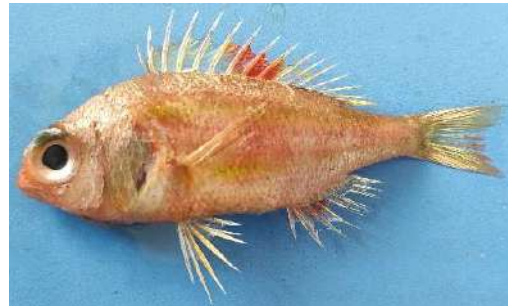
Scientific Name: *Parascolopsis boesemani* (Rao & Rao, 1981) [Fig. 38]

Common Name: Redfin drawf monocle bream

Distribution: Indian Ocean

Key diagnostic features

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Cheek scales: 4 or 5 transverse rows; sub orbital margin finely serrate.
- Predorsal scales reaching up to posterior nostrils.
- Lower limb of preopercle without scales
- 4 light reddish saddles on the body
- Red blotch on dorsal fin between 7th and 10th spines.
- Pectoral and pelvic fins long, reaching to beyond level of anus
- Body depth less than head length



Scientific Name: *Scolopsis vosmeri* (Bloch, 1792) [Fig. 39]

Common Name: Whitecheek monocle bream

Distribution: Indo-West Pacific

Key diagnostic features

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Body compressed with very convex dorsal profile.
- Small antrorse spine below eye (and prominent sub-orbital spine)
- Scales on top of head extending forward to between snout and anterior nostril
- Anal fin with 3 strong spines (2nd spine very broad and longer than the 3rd spine).
- Pectoral fin short with 2 unbranched and 16 or 17 branched rays.
- A bright (whitish) vertical band from top of head onto gill covers.



Scientific Name: *Scolopsis bimaculata* Ruppel, 1828 [Fig. 40]

Common Name: Thumbprint monocle bream

Distribution: Indian Ocean

Key diagnostic features

- Dorsal fin rays: X +9; Anal fin rays: III + 7
- Pectoral fin with 2 unbranched and 16 branched rays.
- No antrorse spine below eye.
- Predorsal scales reaching up to posterior nostrils.
- Lower limb of preopercle with 1 or 2 rows of small scales.
- A dark oval patch on upper side originating below 7th or 8th dorsal fin spine.
- A blue stripe present along the line joining eyes



**Note: The line diagrams are adopted from Fisher and Bianchi (1984) and Russel (1990 & 2001) and for character demonstration.*

References

- Barman, R.P. and Mishra, S.S., (2009). The fishes of the family Nemipteridae of India. A pictorial guide to the fishes of the family Nemipteridae of India. Zoological Survey of India, Kolkata, 41p.
- Fisher, W. and Bianchi, G., (1984). FAO Identification Sheets for Fishery Purpose, Western Indian Ocean, Fishing Area 51, Vol III.
- Froese, R. and Pauly, D. (Eds), (2021). FishBase. Family Nemipteridae. <https://www.fishbase.se/summary/FamilySummary.php?ID=324> (accessed on 12 Dec 2021)
- Miyamoto, K., McMahan, C.D. and Kaneko, A., (2020). *Parascolopsis akatamae*, a new species of dwarf monocle bream (Perciformes: Nemipteridae) from the Indo-West Pacific, with redescription of closely related species *P. eriomma*. Zootaxa, 4881(1): 91-103.

- Nair, Rekha J, Kuriakose, Somy (2014) *Field Guide on Reef Associated Fishes of India*. CMFRI Special Publication (117). Central Marine Fisheries Research Institute, Kochi.
- Nair, Rekha J, Dinesh Kumar, S and Kuriakose, Somy (2016) First report of dwarf monocle bream *Parascolopsis capitinis* (Teleostei: Nemipteridae) from South-west coast of India. *Marine Biodiversity Records*, 9 (74). pp. 1-4.
- Nair, Rekha J and Praveen, P and Dinesh Kumar, S and Kuriakose, Somy (2012) First record of the Dwarf monocle bream, *Parascolopsis baranesi* from Indian waters. *Indian Journal of Geo-Marine Sciences*, 41 (5). pp. 395-397
- NMFDC, 2021. Fish Catch Estimates. <https://www.cmfri.org.in/2019> (Accessed on 10 Dec 2021)
- Russell, B.C., (1990). Nemipterid fishes of the world. *FAO Fisheries Synopsis*, 125 (12), 149p.
- Russell, B.C., (2001). Nemipteidae. In: Carpenter, K.E.; Niem, V.H. (eds). *FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 5. Bony fishes part 3 (Menidae to Pomacentridae)*. Rome, FAO. 2001. pp. 2791-3380.

