

AN ACCOUNT OF ARMORED SEAROBINS (SCORPAENIFORMES-PERISTEDIIDAE) FROM INDIAN WATERS

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Centre for Marine Living Resources & Ecology
Ministry of Earth Sciences
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सत्यमेव जयते

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JULY 2021

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निदेशक
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समुद्री सजीव संसाधन एवं पारिस्थितिकी केन्द्र
GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
CENTRE FOR MARINE LIVING RESOURCES AND ECOLOGY



FOREWORD

THE DEEPSEA, the largest ecosystem on earth, supports one of the major reservoirs of biological and geological diversity on the planet, but remains one of the least studied because of its remoteness and the technological challenges for its investigation. The HMS Challenger Expedition (1872-1876) marked the beginning of the “heroic” age of deep-sea exploration, and our knowledge has progressed since in parallel with technological developments. The exploratory surveys of FORV Sagar Sampada since 1984 has brought out numerous information of the deep-sea resources existing beyond 200 m depth. The present catalogue titled “An Account of Armored Searobins (Scorpaeniformes-Peristediidae) from Indian Waters” provide a comprehensive taxonomic detail of deep-sea peristediids collected during the expeditions of FORV Sagar Sampada from Indian waters. The catalogue provides taxonomic identification keys for each species along with good quality photographs. The book will serve as a field guide for budding researchers and students interested in the identification of these lesser-known groups. I believe that the information on these least studied group significantly benefit to the knowledge of deep-sea biodiversity and wish to congratulate the team for the successful compilation of this catalogue.

GVM Gupta
Director

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PREFACE

Knowledge of family Peristediidae (Order-Scorpaeniformes) from Indian waters comprising Arabian Sea, Bay of Bengal and Andaman Sea is limited. The present study aims to unwind the taxonomic ambiguity and demarcates the distribution of peristediids within Indian waters. Indian peristediids are now represented by eight species within four genera; *Satyrichthys laticeps* (Schlegel 1852); *Scalicus serrulatus* (Alcock 1898); *Scalicus investigatoris* Alcock 1898; *Scalicus orientalis* Fowler 1938; *Heminodus philippinus* Smith 1917; *Peristedion amblygenys* Fowler 1938; *Peristedion liorhynchus* (Günther 1872) and *Satyrichthys milleri* Kawai 2013. A key to all genera and species of peristediids from Indian Exclusive economic Zone along with the identification characters, synonyms and distribution are provided.

INTRODUCTION

The family Peristediidae, armored searobins consist of about 34 species (Kawai, 2013) distributed in six genera, inhabit the bottoms of the tropical and temperate waters of the world oceans in depths ranging from 50 to 800 m (Kawai, 2008, 2013). The family is characterized by having four rows of bony plates, a rostral projection, pectoral fins with the two ventral most fin rays free, and barbels on the lower jaw (Miller, 1974; Kawai, 2008, 2013). Kawai (2008) done a pioneer work on family peristediidae on the basis of morphology and inferred pattern of phylogeny and well demarcated all the six monophyletic genera in the family; via *Gargariscus* Smith 1917; *Heminodus* Smith 1917; *Paraheminodus* Kamohara 1957; *Peristedion* Lacépède 1801; *Satyrichthys* Kaup 1873 and *Scalicus* Jordan 1923.

Diagnostic characters of the genus (Kawai, 2008) as follows *Gargariscus*: Upper jaw teeth present; lateral margin of head extremely indented; posterior parts of lower lateral row of bony plates separated from each other; and barbels on lower jaw not branched except for posteriormost lip and chin barbels. *Heminodus*: Upper jaw teeth present; lateral margin of head smooth; posterior parts of lower lateral rows of bony plates separated from each other; and one or two very short barbels present; the genus

is monotypic. *Paraheminodus*: Upper jaw teeth present; lateral margin of head smooth; posterior parts of lower lateral rows of bony plates separated from each other; barbels on lower jaw not branched except for posteriormost barbels. *Peristedion*: Upper jaw teeth absent; lateral margin of head smooth; and posterior pairs of bony plates in lower lateral rows contralaterally sutured along midline. The genus *Peristedion* is the largest in the family. *Satyrichthys*: Upper jaw teeth absent; lateral margin of head smooth; posterior parts of lower lateral rows of bony plates separated from each other; barbels on lower jaw not branched except for posteriormost lip and chin barbels (some species without chin barbels); number of dorsal fin soft rays fewer than 20; number of anal fin soft rays fewer than 19. *Scalicus*: Upper jaw teeth absent; lateral margin of head smooth; posterior pairs of lower lateral rows of bony plates separated from each other; barbels on lower jaw not branched except for posteriormost lip and chin barbels; and number of dorsal and anal fin soft rays greater than 19.

Among these six genera *Heminodus* and *Gargariscus* are recognized as monotypic, including only one species; *Heminodus philippinus* Smith 1917 and *Gargariscus prionocephalus* (Duméril 1869).

MATERIALS AND METHODS

The specimens used in this study were collected by exploratory deep-sea fishery surveys of FORV 'Sagar Sampada' conducted by the Centre for Marine Living Resources and Ecology (CMLRE). Trawling surveys were covered along the continental slope of Indian EEZ at depths ranging from 200 to 1000 m. (Fig.1). The specimens were collected by a High Speed Demersal Trawl—Crustacean Version (HSDT-CV)/ EXPO, operated at a speed of 3 knots. Immediately after collection the specimens were preserved in a 5% buffered formaldehyde solution. Samples were

identified follows (Alcock, 1898; Fowler, 1938; Yatou, 1985; Kawai, 2008, 2013; Kawai & Nakaya, 2007). Counts and measurements follow (Kawai et al., 2004; Kawai, 2013). Terminology and counts for bony plates and barbels follow (Kawai, 2013). All the measurements were made by using digimatic calipers from the formaldehyde preserved specimens. Illustrations of lateral aspects of head and arrangement of barbels were presented in Fig 2 & 3. Photo plates of species recorded (Fig. 4—11) and distribution map (Fig. 12) were provided.



Fig. 1. Fishery Oceanographic Research Vessel Sagar Sampada. Photo by S. Dixit

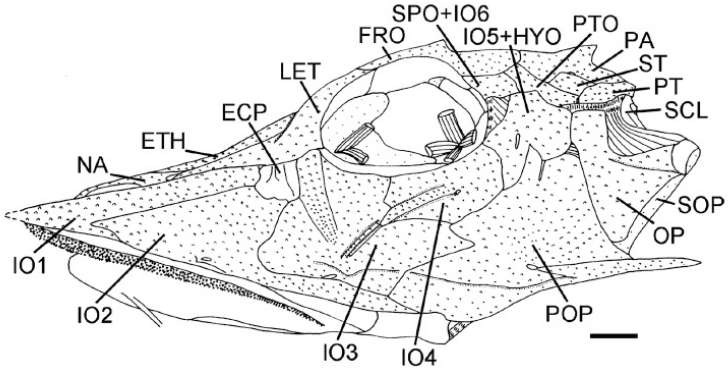


Fig. 2. Peristediidae—Lateral aspect of head; Abbreviations: ECP, ectopterygoid; ETH, ethmoid; FRO, frontal; HYO, hyomandibular; IO, infraorbital; LET, lateral ethmoid; NA, nasal; OP, opercle; PA, parietal; POP, preopercle; PT, posttemporal; PTO, pterotic; SCL, supra-cleithrum; SOP, subopercle; SPO, sphenotic; ST, supratemporal. Scale bar: 5mm. (Kawai, 2008)

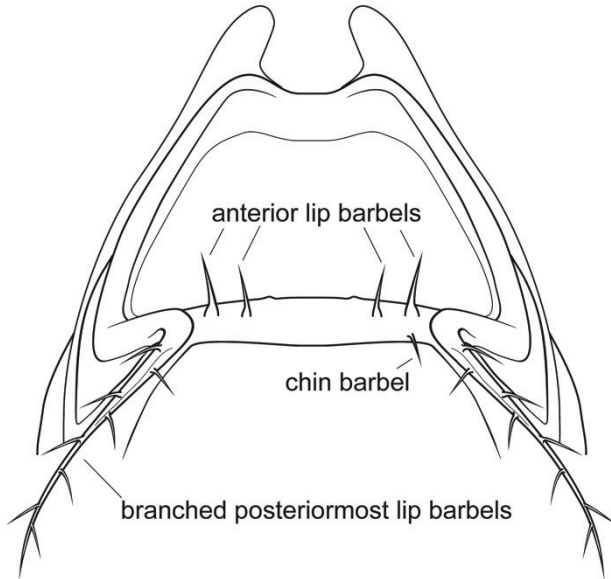


Fig. 3. Illustration of the ventral side of the lower jaw, showing barbel arrangement

SYSTEMATICS

Order—Scorpaeniformes Bloch 1789
Family—Peristediidae Jordan and Hubbs 1925
Genus—*Scalicus* Jordan 1923
***Scalicus serrulatus* (Alcock 1898)**

Synonyms—*Peristethus serrulatum* Alcock 1898; *Peristethuim serrulatum* (Alcock 1899)

Material examined—Two specimens; Referral Centre no. CMLRE 292 83 21 A and B, 146 mm, 140 mm SL, Andaman Sea (6° 6' N, 93° 6' E), depth- 325 m. December 2011

Diagnosis—*Dorsal soft fin rays more than 19; all the bony ridges of head are finely serrulate; rostral projections parallel to each other; 4 barbels on lip, 1 barbel on chin; anteriorly directed spines on posterior bony plates of upper lateral row.*

Description—Body fusiform covered with four rows of bony plates. Two rostral projection (length 3.7 in HL) parallel to each other. Nasal, mesethmoid and lateral ethmoid spines are present. Pre-orbital spine present on the anterior margin of the orbit; post-ocular, parietal spine are very short and stout. Posttemporal spine with ridge; large single backwardly directed preopercular spine; two opercular spine, uppermost smaller and lowermost larger with a ridge; nuchal spine short; upper jaw teeth absent; lateral margin of the head smooth; supra ocular spine very short and stout; deeply concave intra orbital space. All the bony

ridges of head are finely serrulated; 4 barbels on lip, 3 unbranched anteriorly directed and 1 filamentous barbel reaching up to the middle of the orbit; 1 chin barbel.

Bony plates on body arranged in four horizontal rows; posterior parts of lower lateral rows of bony plates separated from each other, each with one backwardly directed spine except dorsal and ventral rows of caudal peduncle; bony plates before anus which are large with a low ridge. Antrose spines present on upper lateral bony plates of caudal peduncle.

Color of fresh specimen—Head and body uniform red with small greenish markings. All the fins have deep red including the detached pectoral rays. Edges of the dorsal fin, distal part of the pectoral fins and caudal fin were black.

Distribution—Indo-West Pacific, southern Japan and the Andaman Sea. Depth range of 200-330 m

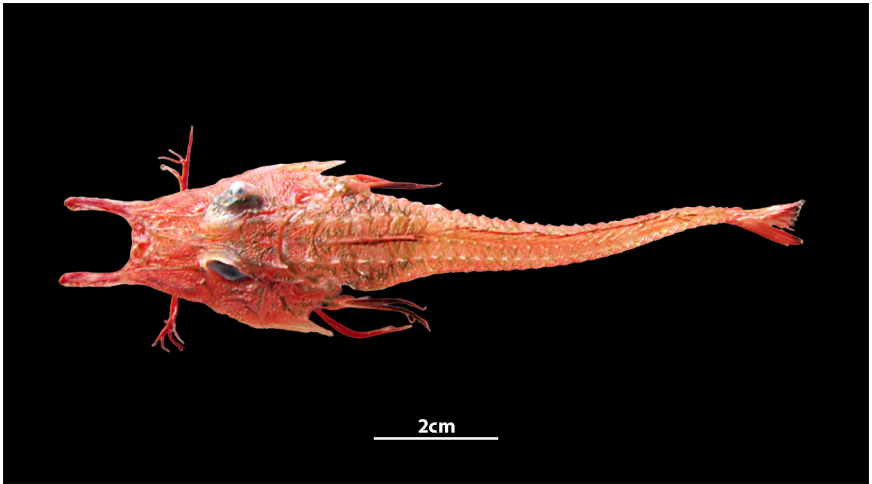


Fig. 4. *Scalicus serrulatus* (146 mm SL)

Order—Scorpaeniformes Bloch 1789
 Family—Peristediidae Jordan and Hubbs 1925

Genus—*Scalicus* Jordan 1923

***Scalicus investigatoris* (Alcock 1898)**

Synonyms—*Peristethus investigatoris* Alcock 1898; *Peristethium investigatoris* Alcock 1899; *Peristedion investigatoris* (Alcock 1898)

Material examined—Single specimen, IO/SS/FIS/0005, 165 mm SL, Andaman Sea (6°.6' N, 93°.68' E), 200–300 m, September 2010; 27801, 85 mm SL, Arabian Sea, 9.9° N, 75.5° E, Depth-238 m, HSDT CV, 2010

Diagnosis—*Equilateral triangular rostral projection; long filamentous barbels, reaching up to the origin of anal fin; 6 barbels on lip and 3 barbels on chin; Antrose spines absent on posterior bony plates of upper lateral row.*

Description—Body fusiform covered with four rows of bony plates. Equilat-

eral triangular rostral projections (17.2 in HL). No rostral, nasal spines; single mesethmoid present; small and stout supraocular spine on dorso-posterior region of the orbit. Parietal spine large; posttemporal spine present with ridge. Preopercle with two backwardly directed spines, outer spine longer and stronger than inner; two opercular spines, uppermost smaller and lowermost larger with a horizontal ridge. Mouth large and inferior. Upper jaw teeth absent; lateral margin of the head smooth; 6 barbels on lip, 5 anterior unbranched and 1 posterior filamentous barbel which reaching up to the origin of anal fin (111.3 in HL); 3 barbels on chin, third one having tuft like with three filaments.

Bony plates on body arranged in four horizontal rows, each plate with one backwardly directed spine except dorsal and ventral rows of caudal peduncle; bony plates before anus which are large with a low ridge. Antrose spines absent on upper lateral bony plates of caudal peduncle.

Color of fresh specimens—Head and body uniform red; pectorals, first dorsal and distal half of longest barbel blackish; dorsal fin rays with black edge, pelvic black.

Color in preservative— Body surface pale brown, ventral surface whitish,

first spinous dorsal and distal half of longest barbel blackish; dorsal fin rays with a black edge, pelvic black.

Distribution—Arabian Sea, Andaman Sea, off Durban, South Africa, Western Central Pacific in depth of 200- 658 m

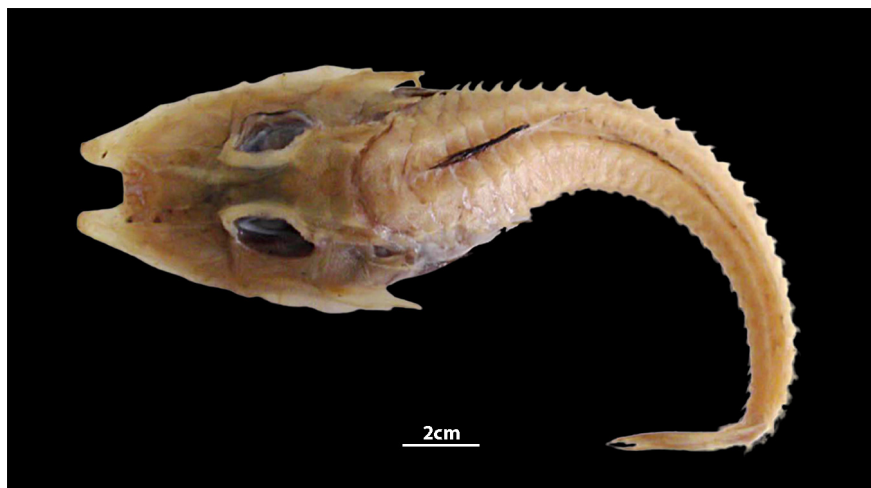


Fig. 5. *Scalicus investigatoris* (165 mm SL)

Order—Scorpaeniformes Bloch 1789

Family—Peristediidae Jordan and Hubbs 1925

Genus— *Scalicus* Jordan 1923

***Scalicus orientalis* (Fowler 1938)**

Synonyms—*Nemaperistedion orientale* Fowler 1938

Material examined—Single specimen, Referral Centre no. CMLRE 2929024, 137 mm SL, Andaman Sea (7° 6' N, 93° 3' E), 388-402 m, December 2011.

Diagnosis—Two little long, broad, isosceles-triangular rostral projection;

six lip barbels, long filamentous barbel (with blackish flaps) reaches beyond the anus (105.45 in HL). Three barbels on chin; antrose spines on upper lateral bony plates of caudal peduncle.

Description—Body strongly depressed, covered with four rows of hard bony plates, two little long, broad, isosceles-triangular rostral projection (6.2 in HL). Head length 38.08 (37-40 % of SL); snout length 50.8 (50) % of HL, orbit diameter 23.00 (22.2-23.3), inter orbital width 17.6 (16.9-17.5). Nasal, mesethmoid, lateral ethmoid spines are present. Small and stout supraocu-

lar spine present on the dorso-posterior region of orbit; parietal spine large and sharp; posttemporal spine short with ridge; single long backwardly directed preopercular spine reaches well on pectoral fin; two opercular spines; uppermost smaller, lowermost with a ridge. Interorbital space deeply concave. Mouth inferior; no teeth on upper jaw; six lip barbels; five unbranched and one long filamentous barbels, (with blackish flaps) reaches beyond the anus (105.45 in HL). Three barbels on chin.

Bony plates on body arranged in

four horizontal rows; each plate with one backwardly directed spine, except dorsal and ventral rows of caudal peduncle and bony plates before anus which are large with a low ridge; antrorse spines on upper lateral bony plates of caudal peduncle.

Color of fresh specimen—Head and body uniform red color. Ventral surface pale red, spinous dorsal, distal half of longest barbel blackish.

Distribution—Andaman Sea, Philippines, Tosa Bay, East China Sea and Indonesia. Depth 350-500 m.

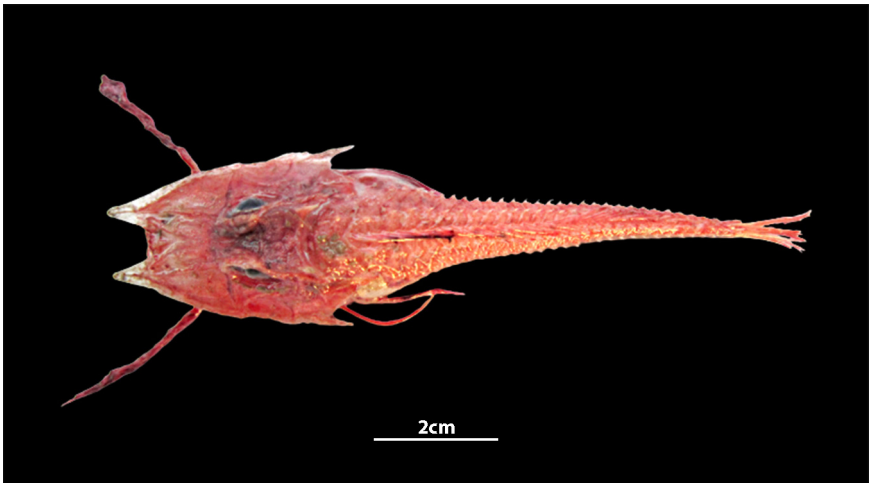


Fig. 6. *Scalicus orientalis* (137 mm SL)

Order—Scorpaeniformes Bloch 1789

Family—Peristediidae Jordan and Hubbs 1925

Genus—*Peristedion* Lacépède 1801

***Peristedion amblygenys* Fowler 1938**

Material examined—Single specimen, CMLRE 2801609, 128 mm SL, Andaman Sea (12° 83'N, 93° 21' E) 312- 441 m, September 2010.

Diagnosis—A species of *Peristedion* with a pair of attenuated, long, flat, triangular rostral; anterior edge of 4th sensory pore of rostral projection located anterior to anterior edge of premaxilla

Description—Body fusiform, covered with four rows of bony plates. Head depressed, snout narrow rather than

broad, snout length 2.25 in HL, 42 (41.8); orbital diameter 1.6 in snout length, 18.6 (18.3); interorbital space deeply concave. A pair of attenuated, long, flat, rostral extensions, as long as snout. (38.1 in HL). Rostral, nasal, mesethmoid and lateral ethmoid spines were absent. Frontal first and second spines rudimentary. Stout, supra ocular spine present on the dorso- posterior region of orbit; parietal spine also stout; posttemporal spine very short with ridge; nuchal spine short and stout; preopercular spine absent; single small opercular spine; longitudinal ridge running from base of the rostral projection to the anterior limit of the orbit. Head depressed, lateral margin of head smooth, snout narrow rather than broad, interorbital space deeply concave, mouth large and inferior, no teeth on upper jaw, lower jaw, vomer and palatine. A total of six tuft of barbels on lip; each having 3-4 filaments, posteriormost one longest (33.3 in HL) and branched. Two

tufted barbels on chin.

Bony plates on body arranged in four horizontal rows; each plate with one backwardly directed spine, except dorsal and ventral rows of caudal peduncle and bony plates before anus. Anterior most bony plate largest, second one possess weak spine. Antrose spines present on upper lateral bony plates of caudal peduncle. Posterior pairs of bony plates in lower lateral rows contralaterally sutured along the mid-line.

Color in preservative—In preservative both dorsal and ventral surface of the body uniform creamy white, a black color is retained on the margin of dorsal fin rays; pectoral whitish, with black terminally and transverse light brown band.

Distribution—Andaman Sea (first record) and Philippines in depth of 194-801 m

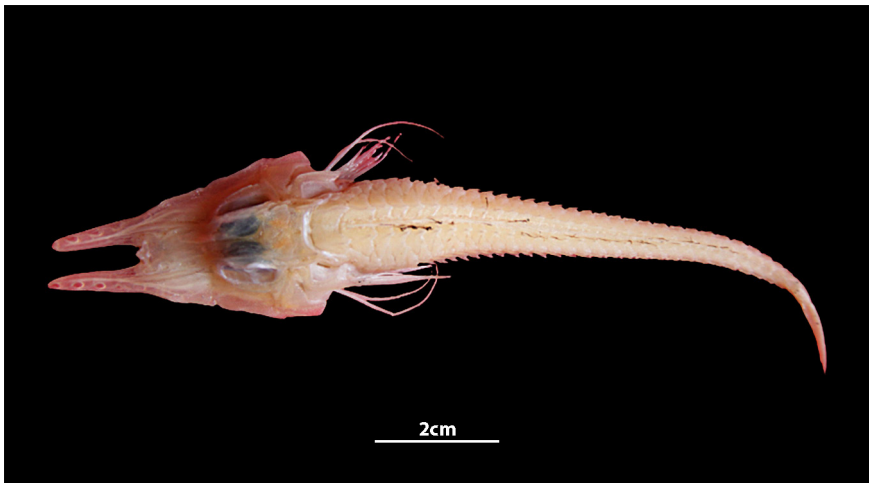


Fig. 7. . *Peristedion amblygenys* (128 mm SL)

Order—Scorpaeniformes Bloch 1789
Family—Peristediidae Jordan and Hubbs 1925
Genus—*Peristedion* Lacépède 1801
Peristedion liorhynchus (Günther 1872)

Synonym—*Peristedion picturatum*
McCulloch 1926 (Kawai & Yabe, 2006)

Material examined— IO/SS/FIS/00613 A& B, 170 mm, 174 mm SL respectively; Cruise 366, station 03, 8.35° N, 76.23° E, 934 m., Arabian Sea, Central Indian Ocean, FORV SS, HSDT-CV, 10:20 hrs, October 2017

Diagnosis—A species of *Peristedion* with long projection, spatulate in outline with 4 sensory pores on each of its ventral surface and ends up with curved margin on medial side at base; anterior edge of 4th sensory pore of rostral projection located posterior to anterior edge of premaxilla

Description—Body fusiform, covered with four rows of bony plates such as dorsal, upper lateral, lower lateral and ventral rows; head large and depressed, lateral margin of head smooth; snout broad; perifacial rim straight, starting at anterior margin of lower jaw, gradually increasing in width posteriorly and terminating at posterior edge of preopercle; mouth large and inferior, both jaws, vomer and palatine toothless.

No spines on nasal, lateral ethmoid, and mesethmoid; first and second frontal spines are stout and small; parietal spine present; post temporal

ridge weak with small spine; single prominent ridge on 4th infraorbital without any spine below the orbit; opercle with a prominent ridge and spine at the tip. All the bony plates with a single backwardly placed spines which gradually decreasing its size posteriorly. Forwardly directed spines present on the posterior part of upper lateral row, 23rd plate onwards up to caudal peduncle. Posterior pairs of bony plates in lower lateral rows contralaterally sutured with plates of the other side along the mid-line. Two large contralateral pairs of bony plates with low ridge before anus; bony plates are tightly sutured along ventral midline. Dorsal fin originating at anterior end of 2nd bony plates in dorsal row, ending at caudal peduncle. Anal fin originating between 2nd and 3rd ventral bony plates; detached pectoral-fin rays thick, upper ray longer than lower and former barely reaches up to the anal fin origin, lower and pelvic fin rays almost reaching up to anus; weakly emarginated caudal fin. VIII- 20 dorsal fin rays; 20-21 anal soft fin rays. Three groups of lip barbels (one half), 1st with cluster of 3 barbels; 2nd with 2-3 barbels and 3rd, long filamentous barbel with 19-23 small branches. Six groups of barbels on chin, each group consists of 3 to 4 branches.

Color of the specimen—In fresh, not documented. In preservative, head and body light brown with distinct dark reticulate pattern. Rostral region having series of longitudinal lines with dark brown color. Both dorsal fin spine and soft rays margins are black, markings is prominent especially in spinous

region of dorsal fin. Caudal fin with light brown, dorsal and ventral margins retain black. Three faded black blotches on the joined pectoral fin. Detached

pectoral fin rays and pelvic fins having light brown without any marking. Anal fin rays with black margin.



Fig. 8. *Peristedion liorhynchus* (170 mm SL)

Order—Scorpaeniformes Bloch 1789
Family—Peristediidae Jordan and
Hubbs 1925

Genus—*Heminodus* Smith 1917
***Heminodus philippinus* Smith 1917**

Synonyms—*Heminodus japonicus*
Kamohara 1952

Material examined—Single specimen,
Referral Centre no. CMLRE 292 83 22,
117 mm SL, Andaman Sea (6° 6' N, 93°
6' E) 300-325 m. December 2012.

Diagnosis—A species of *Heminodus*
with 1-2 barbels on lip and no barbels
on chin; short triangular rostral projec-
tion; teeth on upper jaw; antorse spine
on upper lateral bony plates of caudal

peduncle.

Description—Body fusiform covered
with four rows of bony plates, short
triangular rostral projections on each
side (11.7 in HL), nearly parallel to each
other. Bony plates are arranged in four
horizontal rows, each plate with a single
backwardly directed spine; upper
lateral bony plates of caudal peduncle
devoid of antorse spine; first four
plates on upperlateral rows are small.
Lower lateral row of bony plate ending
at caudal peduncle. Four bony plates
on the ventral side before anus, among
them anterior most is largest. Head
large and depressed; snout broad with
short triangular parallel rostral projec-
tions on each side; inter orbital con-

cave; rostral, nasal, mesethmoid and lateral ethmoid spines are absent. Supraocular spine small and stout placed on the dorso-posterior region of orbit; parietal spine large and pointed. Short posttemporal spines with ridge. Pre opercular spine also with a ridge; opercular spine having small inner and large outer projections. Mouth large and inferior, villiform teeth on upper jaw; lower jaw, vomer and palatine toothless. Two short barbels on lip (6.73, 11.70 mm in HL) and no barbels on chin.

Dorsal fin originating between first and second bony plates in dorsal row, ending on anterior part of caudal peduncle. Anal fin originating just after anus and terminating on the anterior part of caudal peduncle. Two de-

tached pectoral fin rays, upper one slightly larger than lower. Pelvic fin reaching posteriorly to point between origin of dorsal fin and anus. Caudal fin truncate.

Color in preservative—Whole body pale brown. Head and dorsal body part having dusky brown irregular spots. All fins are whitish in color; anterior part of first three dorsal spine have dusky brown color. Two dusky bands on pectoral and caudal fin.

Distribution—Previous records of *Heminodus philippinus* came only from southern Japan, the Philippines, Indonesia at depth range of 300-410 m. The present record from Off Andaman coast of India represents the first report.

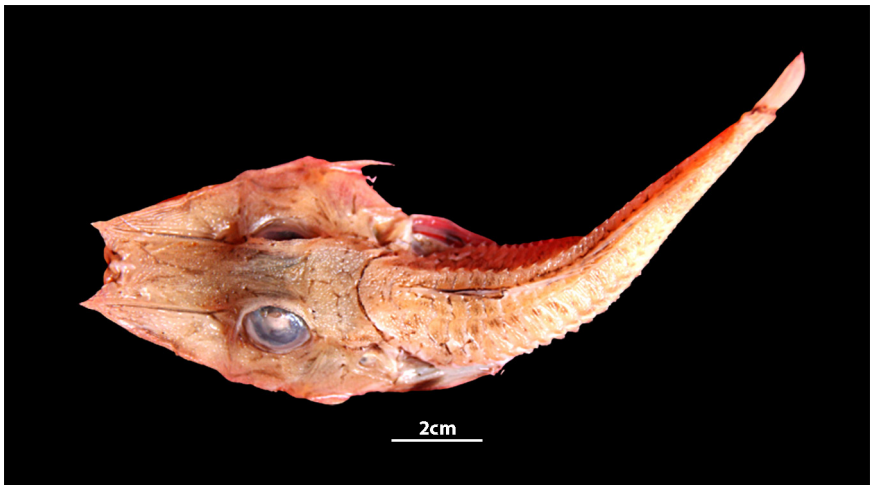


Fig. 9. *Heminodus philippinus* (117 mm SL)

Order—Scorpaeniformes Bloch 1789
Family—Peristediidae Jordan and
Hubbs 1925
Genus—*Satyrichthys* Kaup 1873
***Satyrichthys milleri* Kawai 2013**

Synonyms—*Heminodus japonicus*
Kamohara 1952

Material examined—Single specimen,
Referral Centre no. CMLRE 2801625,
160 mm SL, Andaman Sea (12° 83'N,
93° 21' E) 312- 441 m, September 2010

Diagnosis—A species of *Satyrichthys*
with equilateral-triangular rostral
projections; 4 (rarely 5) lip and 4 chin
barbels and lacking anteriorly directed
spines on posterior bony plates of up-
per lateral row.

Description—Body fusiform, covered
with bony plates. Head large, depressed
and extremely expanded around lateral
edges, length 2.3 (2.0–2.4) in SL. Snout
length 2.0 (1.8–2.2) in HL. Flat
equilateral-triangular rostral projections,
length 4.3 in HL; inter-orbital concave,
width 3.6 (3.8–4.7). Rostral, nasal and
fourth suborbital spines are absent. Single
rudimentary mesethmoid spine; large stout
supra-ocular spine on dorso-posterior
region of orbit; large and stout parietal
spine; stout posttemporal spine with ridge.
Mouth large, inferior. Lower jaw reaching
up to ventral anterior border of orbit,
length 2.7 (2.4–2.8) in HL. Longitudinal
ridge running from preopercle to rostral
projection. Preopercle

with two backwardly directed spines,
outer spine longer and stronger than
inner. Two opercular spines; uppermost
smaller, lowermost larger with a ridge,
vomer and palatine toothless. Four
barbels on lip; anterior three unbranched,
posteriormost longest and branched,
1.2 (0.9–1.5) in HL. Four unbranched
barbels on chin. Bony plates on body
arranged in four horizontal rows; each
plate with one backwardly directed spine,
except dorsal and ventral rows of caudal
peduncle and bony plates before anus.
Antrose spines absent on upper lateral
bony plates of caudal peduncle.

Dorsal fin originating between first
and second bony plates in dorsal row,
ending on anterior portion of caudal
peduncle. Anal fin originating posterior
to anus. Pectoral fin reaching to base
of first anal fin ray; lower two rays
completely free and greatly thickened,
upper ray longer than lower. Pelvic fin
reaching up to the anus. Caudal fin
weakly emarginate.

Color of fresh specimen—Head and
body dark brown. Dorsal and pectoral
fins, except for free rays, and posterior
half of longest barbel blackish. Anal,
pelvic and caudal fins blackish, free
pectoral fin rays dark brown.

Distribution—Andaman Sea, East
China Sea, Taiwan, Philippines, Indonesia,
Vanuatu and Fiji, in depth of 259–860
m.

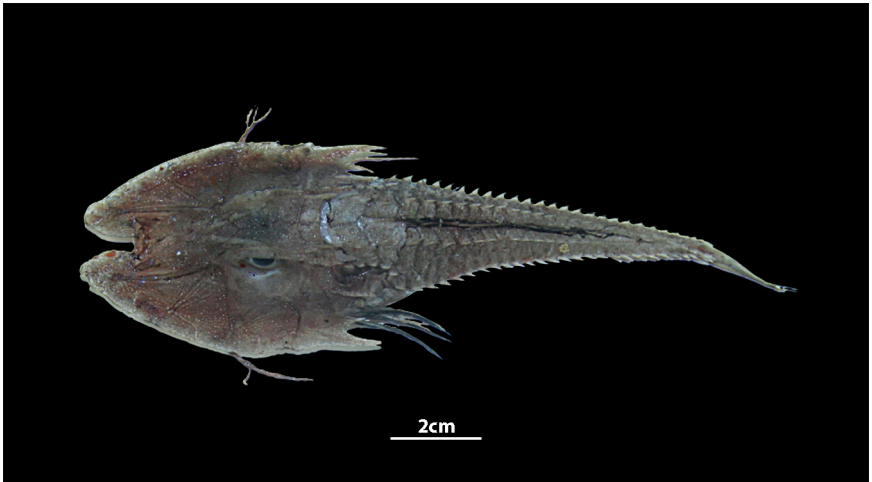


Fig. 10. *Satyrichthys milleri* (160 mm SL)

Order—Scorpaeniformes Bloch 1789

Family—Peristediidae Jordan and Hubbs 1925

Genus—*Satyrichthys* Kaup 1873

***SSatyrichthys laticeps* (Schlegel 1852)**

Synonyms—*Peristethus halyi* Day 1888; *Peristethus adeni* Lloyd 1907; *Satyrichthys adeni* (Lloyd 1907)

Material examined— Three specimens; Referral Centre no. CMLRE 292 83 21 C, 151.8 mm SL, Andaman Sea (6° 6' N, 93° 6' E), 300-325 m, December 2012. CMLRE 3181808, 189 mm SL, Arabian Sea (11° 28' N, 74° 19' E), 230-260 m, August-2013; CMLRE 2910703, 240 mm SL, Bay of Bengal, (20°.16' N, 87°.28' E), 200 m, October 2011.

Diagnosis— A species of *Satyrichthys* with four (rarely three or five) lip and 2–5 chin barbels; antrose spines present on upper lateral bony plates of caudal peduncle; parietal bones unequal in size on midline; no dusky

spots on dorsal fin.

Description—Body fusiform, covered with four rows of bony plates. Lateral margin of head smooth; posterior parts of lower lateral rows of bony plates separated from each other. Two long inwardly directed rostral projections (length 3.9 in Head Length (HL)). Nasal, mesethmoid spines present; no frontal spine; stout and small supraocular spine on dorso-posterior region of orbit. Parietal spine large/well developed. Post-temporal spine with ridge. Upper jaw teethless; pre opercle with large pointed single spine. Opercle with three spine, arranged serially. Labial tentacle reaches beyond the limit of orbit. Mouth large inferior. Specimen from Arabian Sea do not have the nasal spine; opercle with two spines, arranged serially; post-temporal spine without ridge. Three barbels on lip; two unbranched and posteriormost one longest and branched. Two unbranched barbels on chin. Bony plates

on body arranged in four horizontal rows; each plate with one backwardly directed spine, except dorsal and ventral rows of caudal peduncle and bony plates before anus, which are three in number with a low ridge. Antrose spines (forwardly directed spines) on upper lateral bony plates of caudal peduncle. Parietal bones unequal in size on midline.

Color of fresh specimen—Head and body have uniform red color; ventral surface pale red. All the fins are reddish including the barbels.

Distribution—Andaman Sea, Arabian Sea, Bay of Bengal, Japan, Taiwan, East China Sea, Sulu Sea, South China Sea, Indonesia, Sri Lanka, Saya de Malha Bank, off Indian coast of southern Africa, in depth of 58–300 m.

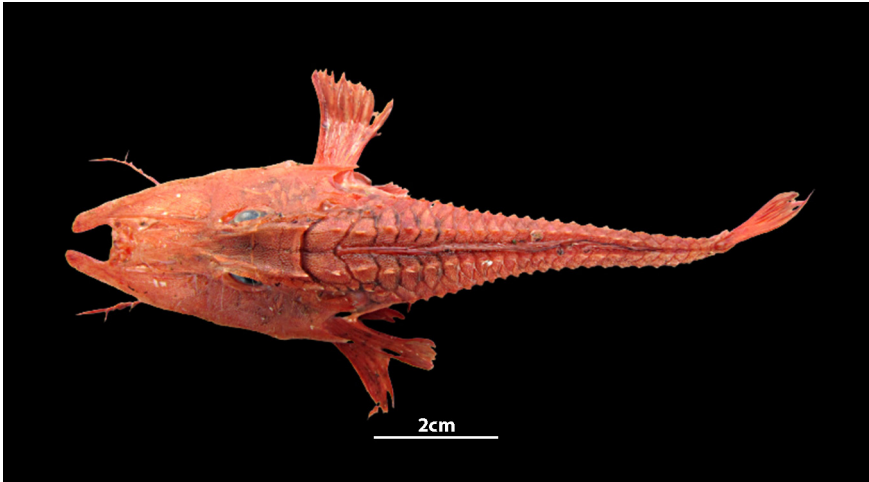


Fig. 11. *Satyrichthys laticeps* (240 mm SL)

KEY TO INDIAN PERISTEDIIDS

- 1A. Upper jaw teeth present.....2
- 1B. Upper jaw teeth absent3
- 2A. One or two short barbel on lip, longest barbel very short; no chin barbel, irregular dusky spots on head and dorsal part of the body...*Heminodus philippinus*
- 3A. Lateral margin of the head smooth; Posterior pairs of bony plates in lower lateral rows contralaterally sutured.....*Peristedion* 4
- 3B. Lateral margin of the head smooth; posterior parts of lower lateral rows of bony plates separated by ventral rows of plates.....5
- 4A. Attenuated flat, long triangular rostral projection; anterior edge of 4th sensory pore of rostral projection located anterior to anterior edge of premaxilla...
.....*P. amblygenys*
- 4B. Rostral projection spatulate, anterior edge of 4th sensory pore of rostral projection located posterior to anterior edge of premaxilla.....*P. liorhynchus*
- 5A. Dorsal fin soft rays fewer than 20.....*Satyrichthys* 6
- 5B. Dorsal fin soft rays more than 19..... *Scalicus* 7
- 6A. Antrose spines present; parietal bone unequal; four (rarely three or five) lip and 2–5 chin barbels.....*Satyrichthys laticeps*
- 6B. Antrose spine absent; equilateral triangular projections; four (rarely three or five) lip and 2–5 chin barbels.....*Satyrichthys milleri*
- 7A. Antrose spine present on upper lateral row of posterior bony plates.....8
- 7B. Antrose spine absent on upper lateral row of posterior bony plates9
- 8A. Isocelus triangular rostral projection; filamentous barbell having blackish flap reaching beyond anus; 6 lip and 3 chin barbels.....*Scalicus orientalis*
- 8B. Rostral projection parallel to each other; 3 lip and 1 chin barbel; all the bony edges and head are finely serrulated; green spots on dorsal body and head.....
.....*Scalicus serrulates*

9A. Pair of small equilateral triangular projection; 6 lip and 3 chin barbels.....*Scalicus investigatoris*

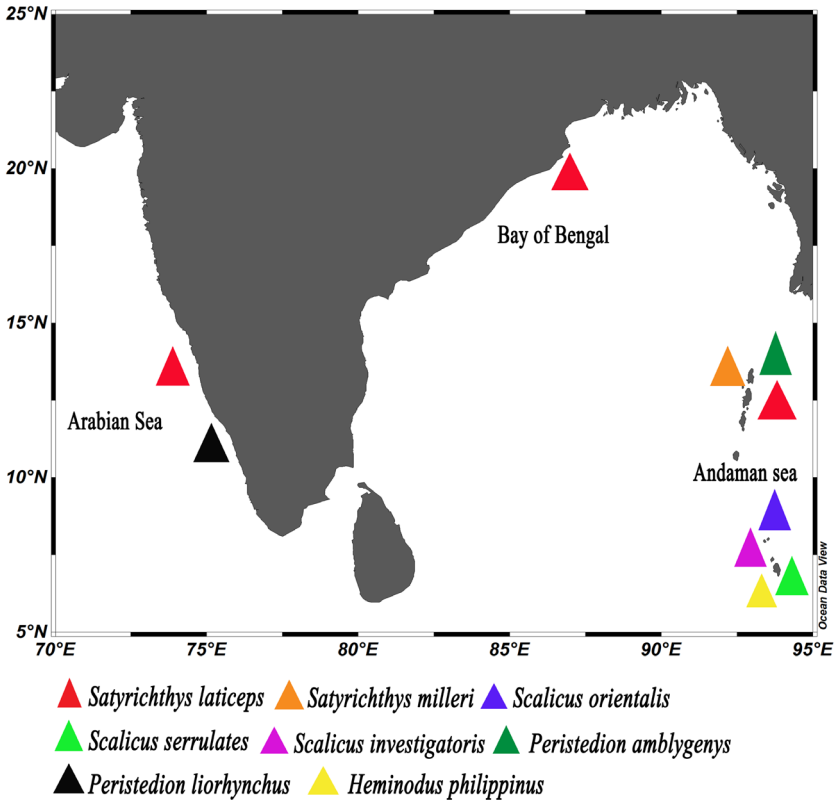


Fig. 12. Map showing the geographical distribution of *Peristediid* spp. along the Indian EEZ

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