

First record of the batfish, *Halieutopsis stellifera* (Lophiiformes: Ogcocephalidae) from the eastern Indian Ocean

M.P. RAJEESH KUMAR, JACOB VINU, CUBELIO SHERINE SONIA, K.J. JAYALAKSHMI
AND V.N. SANJEEVAN

Centre for Marine Living Resources and Ecology (CMLRE), Ministry of Earth Sciences, Government of India, Post Box No. 5415,
CSEZ P.O. Kochi-37

Halieutopsis stellifera was previously reported only from the northern Celebes to the Philippine archipelago and Okinawa Trough. The present study reports *Halieutopsis stellifera* from the eastern Indian Ocean based on three specimens from Andaman waters (depth range 480 to 580 m).

Keywords: batfish, *Halieutopsis stellifera*, Andaman Sea, Indian Ocean

Submitted 23 January 2013; accepted 17 June 2013

INTRODUCTION

As currently understood, the batfish genus *Halieutopsis* (Garman, 1899) contains ten species (Ho *et al.*, 2008a; Froese & Pauly, 2012) and is distributed from the Indian Ocean to the eastern Pacific Ocean in tropical and subtropical seas (Bradbury, 1988). The genus *Halieutopsis* was reviewed by Bradbury (1988) with the description of four new species. The generic characters are as follows: head moderately to greatly depressed, no teeth on palate, two or more lateral line scales with neuromasts on either side of anus, the illicial bone relatively simple and spine like; its base not perforated by foramina (Garman, 1899; Bradbury, 1988); gills two. The genus is shown to have the greatest bathymetric range (410–1372 m) of any ogcocephalid, from upper slope to abyssal depths (Bradbury, 1988). The holotype of *Halieutopsis stellifera* (Smith & Radcliffe, in Radcliffe, 1912) was reported from the Flores Sea off the coast of Celebes, at a depth of 1266 m. *Halieutopsis stellifera* is distributed from the northern Celebes to the Philippine archipelago and Okinawa Trough (Bradbury, 1988). To date no specimens have been reported from the eastern Indian Ocean.

MATERIALS AND METHODS

The three specimens of *Halieutopsis stellifera* reported herein (Referral Centre No. 292 89 22 A, B and C) were collected by the exploratory deep-sea fishery surveys of FORV 'Sagar Sampada', (Cruise no. 292) conducted by the Centre for Marine Living Resources and Ecology (CMLRE) during December 2011 from off the Andaman coast of India (latitude 07°31'N and longitude 93°39'E; Figure 2) at depths ranging from 480 to 580 m. The specimens were collected by a High Speed Demersal Trawl—Crustacean Version (HSDT-CV)

operated at a speed of 3 knots. Immediately after collection the specimens were preserved in a 5% buffered formaldehyde solution.

The specimens (Figure 1A, B) were identified as *Halieutopsis stellifera* following the original description and illustration given by Smith & Radcliffe, in Radcliffe (1912), and Bradbury (1980, 1988). Morphometric and meristic data (Tables 1 & 2) were taken from the preserved specimens following Bradbury (1980, 1988) and Ho *et al.* (2008b, 2009). Terminology used in describing angling apparatus follows Bradbury (1967). All measurements were made using digital callipers with a rated accuracy ± 0.001 mm. Morphometric values were expressed as percentage of standard length and defined as follows: skull length, distance between premaxillary symphysis and a groove between

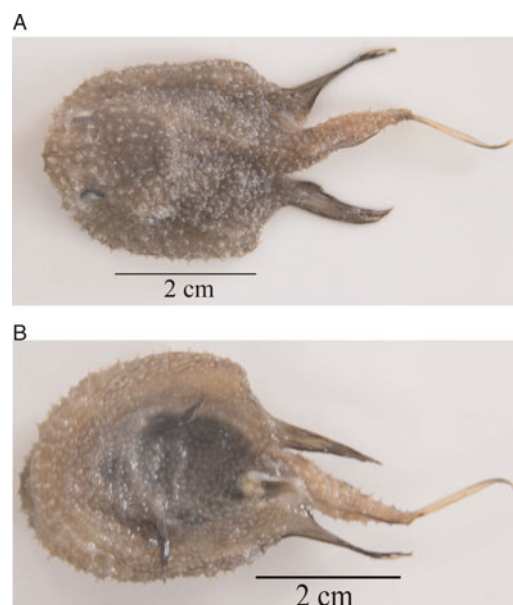


Fig. 1. (A) *Halieutopsis stellifera* dorsal view; (B) *H. stellifera* ventral view.

Corresponding author:
M.P. Rajeeesh Kumar
Email: rajeeeshmeleppura@gmail.com

Table 1. Morphometric values for *Halieutopsis stellifera*.

Measurements	Present study specimens			Mean		Range (Bradbury, 1988)
	292 89 22A	292 89 22B	292 89 22C			
Total length (mm)	68	73	72			
Standard length (SL) (mm)	51	55	56			
In % of SL						
Skull length	32.4	34.2	31.6	32.7	327	247–358
Head depth	25.3	19.5	18.2	21.0	210	
Orbital diameter	9.9	12.2	11.3	11.1	111	105–154
Interorbital width	17.8	17.0	16.9	17.2	172	140–192
Mouth width	30.1	28.7	24.4	27.7	277	228–280
Jaw length	14.5	27.7	15.9	19.4	194	156–208
Illicial cavity width	13.1	13.2	12.1	12.8	128	
Pre-dorsal length	71.1	68.5	65.6	68.4	684	661–767
Post-anus length	70.2	67.3	69.3	68.9	689	594–696
Pre-anal length	76.3	74.2	73.4	74.6	746	717–774
Disc margin length	43.5	45.6	47.1	45.4	454	415–479
Pectoral fin length	32.5	28.2	27.2	29.3	293	280–347
Pelvic fin length	19.7	15.5	19.0	18.1	181	–
Anal fin length	21.7	22.3	19.2	21.1	211	–
Dorsal fin length	22.9	22.7	23.0	22.9	229	–
Caudal fin length	30.8	32.4	31.5	31.6	316	–

–, not mentioned.

posteromedial end of the skull and the 1st vertebra; head depth, distance between the 2nd neuromast of dorsolateral branch of sub-opercular lateral line and joint connecting the opercle and pterotic; orbital diameter, greatest diameter of bony orbit; inter-orbital width, narrowest distance between lateral margins of frontal bones; mouth width measured as greatest overall width; illicial cavity width, greatest width of illicial cavity opening; pre-dorsal length, distance from centre of premaxillary symphysis to base of 1st dorsal fin ray; post-anus length, distance from the symphyseal spine of lower jaw to the genital papilla immediately posterior to anus; pre-anal length, distance from symphyseal spine of lower jaw to origin of 1st anal fin ray; disc margin length measured on ventral side, distance from posterior swelling of mandible to posterior base of sub-opercular buckler; pectoral fin length, distance from base to distalmost tip of longest fin ray; anal fin length, distance from origin of anal fin to distalmost tip of longest fin ray; dorsal fin length, distance from origin of dorsal fin to distalmost tip of longest fin ray; and caudal fin length, distance from base of caudal fin to distalmost tip.

RESULTS

Diagnosis

A species of *Halieutopsis* with wide inter-orbital distance, tubercles present on ventral surface of disc, three lateral-line scales on pre-opercular series (Bradbury, 1988).

Description

Head not as broad as long, elliptical, disc depressed; moderately arched. Mouth moderate, jaws comparatively long, narrow and delicate; narrow bands of villiform teeth on jaws; palate and tongue without any teeth. Inter-orbital space broad and flat; rostrum scarcely projecting beyond the jaws; illicium ending in two large globular lobes and a narrow bifurcated lobe; illicial cavity having a well-marked dorsal median notch. Skin translucent especially on belly portion. Dorsal surface covered with stellate tubercles; usually having six facets, each consists of one weak spine; those on lateral margin of the disc comparatively strong and

Table 2. Meristic values for *Halieutopsis stellifera*.

Meristic value	Present study specimens			(Smith & Radcliffe, 1912)	(Bradbury, 1988)
	292 89 22A	292 89 22B	292 89 22C		
Dorsal fin rays	6	6	6	6	5–6
Pectoral fin rays	15	15	15	15	14–16
Pelvic fin rays	5	5	5	5	–
Anal fin rays	4	4	4	4	–
Caudal fin rays	9	9	9	9	–
Lateral-line scales counts					
Supraorbital series	6	8	6	–	6–8
Body series	9	10	9	–	9–10
Preopercular series	3	3	3	–	3–4
Subopercular series	5	5	6	–	5–6
Tail series	10	10	11	–	11–14

–, not mentioned.

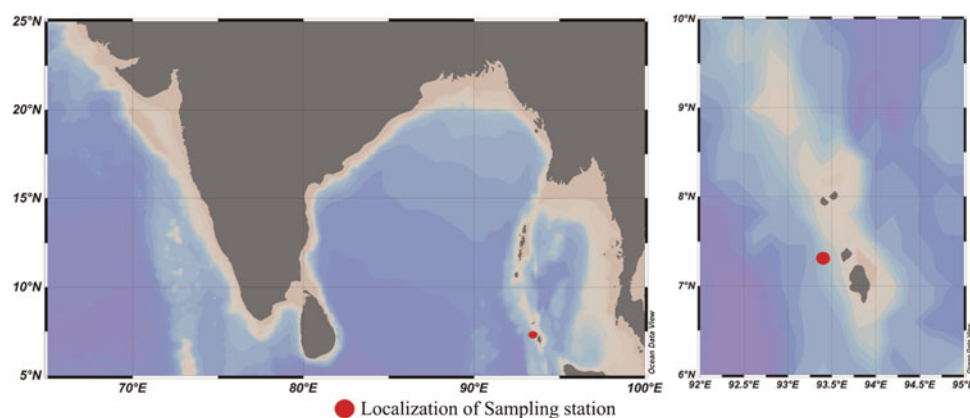


Fig. 2. Localization of sampling station.

bifid. Ventral surface of the disc and tail covered with tubercles; but the spine on ventral surface of the disc is minute. Sub-opercular spines slightly developed.

Fins moderately sized, weak; fin membranes and rays delicate. Origin of dorsal fin just above anal opening. Dorsal fin with six rays; pelvic fin with five; pectoral with fifteen; pectoral fin reaching origin of caudal fin. Anal fin with four rays; its insertion under or slightly behind posterior base of dorsal; caudal fin with nine soft rays. Body proportions and counts were compared with original description (Smith & Radcliffe, in Radcliffe, 1912) and previous studies (Bradbury, 1988).

Colour in life

Dorsal surface of the body uniform yellowish brown; all fins are dark brown.

Colour in formaldehyde

In preservative dorsal surface of the body uniform dark brown in one specimen and moderately dark brown in other two specimens. All the fins are dark brown.

DISCUSSION

All measurements of Andaman Sea specimens listed herein fall well within the range described by Bradbury (1988). Body shapes of the present specimens were affected by the preservation (especially the disc shape), probably due to weakly calcified skeleton. Some measurements were omitted. The fresh specimen shows relatively wide, round disc with smooth skin and rounded contours (Okamura *et al.*, 1984; Bradbury, 1988).

ACKNOWLEDGEMENTS

We are grateful to Hsuan-Ching Ho, Institute of Marine Biology, National Taiwan Ocean University, Taiwan and John H. Caruso, Tulane University, Department of Ecology and Evolutionary Biology, New Orleans, USA for providing the details and references to carry out our study. We also express our gratitude to the participants of Cruise No. 292.

REFERENCES

- Bradbury M.G. (1967) The genera of batfishes (Family Ogcocephalidae). *Copeia* 1967, 399–422.
- Bradbury M.G. (1980) A revision of the fish genus *Ogcocephalus* with descriptions of new species from the western Atlantic Ocean (Ogcocephalidae; Lophiiformes). *Proceedings of the California Academy of Sciences (Series 4)* 42, 229–285.
- Bradbury M.G. (1988) Rare fishes of the deep-sea genus *Halieutopsis*: a review with descriptions of four new species (Lophiiformes: Ogcocephalidae). *Fieldiana Zoology (New Series)* 44, 1–22.
- Froese R. and Pauly D. (eds) (2012) *FishBase*. World Wide Web electronic publication. Version (10/2012). Available at: www.fishbase.org (accessed 20 January 2013).
- Garman S. (1899) The fishes. In Reports on an exploration off the west coasts of Mexico, Central and South America, and off the Galapagos Islands by the U. S. Fish Commission steamer 'Albatross,' during 1891. No. XXVI. *Memoires of the Museum of Comparative Zoology (Harvard)* 24, 1–431.
- Ho H.-C. and Kwang-Tsao S. (2008a) The batfishes (Lophiiformes: Ogcocephalidae) of Taiwan, with description of eight new records. *Journal of the Fisheries Society of Taiwan* 35, 289–313.
- Ho H.-C., Hiromitsu E. and Kazunobu S. (2008b) A new species of *Halicmetus* (Lophiiformes: Ogcocephalidae) from the Western Pacific, with comments on congeners. *Zoological Studies* 47, 767–773.
- Ho H.-C., Prokofiev A.M. and Kwang-Tsao S. (2009) A new species of the batfish genus *Malthopsis* (Lophiiformes: Ogcocephalidae) from the northern Indian Ocean. *Zoological Studies* 48, 394–401.
- Okamura O., Machida Y., Yamakawa T., Yatou T., Nakaya K. and Kitajima T. (1984) *Fishes of the Okinawa Trough and the adjacent waters. I. The Intensive research of unexploited fishery resources on continental slopes*. Tokyo: Japan Resource Conservation Association, Tosho Printing, 414 pp.
- and
- Radcliffe L. (1912) New pediculate fishes from the Philippine Islands and contiguous waters. *Proceedings of the United States National Museum* 42, 199–214. [Scientific results of the Philippine cruise of the Fisheries steamer 'Albatross', 1907–1910.–No. 16.]

Correspondence should be addressed to:

M.P. Rajeesh Kumar
Centre for Marine Living Resources and Ecology (CMLRE)
Ministry of Earth Sciences, Government of India
Post Box No: 5415, CSEZ P.O. Kochi-37
email: rajeeshmeleppura@gmail.com