Indian J. Fish., 68(1): 109-112, 2021
DOI: 10.21077/ijf.2021.68.1.96506-14

Note

New record of the dwarf dory *Zenion hololepis* (Goode and Bean, 1896) (Zeiformes: Zeniontidae) from Indian waters

THELLA RUFUS, K. V. ANEESH KUMAR, M. P. RAJEESHKUMAR, M. HASHIM, N. SARAVANANAE, M. SUDHAKAR AND R. FRICKE*

Centre for Marine Living Resources and Ecology, Ministry of Earth Sciences, Atal Bhavan, Ochanthuruth P. O. Puthuvype, Kochi - 682 508, Kerala, India
**Im Ramstal 76, 97922 Lauda-Konigshofen, Germany*
e-mail: rufusjoy1993@gmail.com

ABSTRACT

This paper reports a new record of *Zenion hololepis* (Goode and Bean, 1896) from Indian waters. The species was collected during an exploratory deep-sea fishery survey onboard FORV *Sagar Sampada* off the Andaman Islands at a depth of 314 m using a High-Speed Demersal Trawl-Crustacean Version (HSDT-CV) on 25 November 2017.

Keywords: Andaman Sea, Deep-sea, Dwarf dory, Exploratory survey

Marine fishes of the order Zeiformes are commonly distributed in bathypelagic and benthopelagic deep-sea habitats, preferring temperate and cold waters. They are characterised by a high and compressed body, with dorsal and anal fins often bordered by small thorns and shields and a truncate, split or rounded caudal fin bearing 11 soft rays, except in the family Grammicolepididae with 13 rays (Saezand Lamilla, 2017).

The family Zeniontidae constitutes three genera and seven species. The largest genus, *Zenion* Jordan and Evermann, 1896, comprises three valid species (Nelson *et al*., 2016; Fricke *et al*., 2019): *Z. hololepis* (Goode and Bean, 1896), circum global in distribution; *Z. japonicum* Kamohara, 1934, from the Pacific Ocean; *Z. leptolepis* (Gilchrist & von Bonde, 1924) from the Indo-West Pacific and *Z. japonicum* which was previously considered as a synonym of *Z. hololepis* (Heemstra, 1986; Pequeno and Matallanas, 2014), but is now recognised as a distinct species (Okamura *et al*., 1982; Fricke *et al*., 2015).

Zenion hololepis has a mostly circum global distribution and has been reported from the Atlantic, Pacific and the Indian Ocean at depths of 180-700 m (Yang *et al*., 1996). The present study reports the occurrence of *Z. hololepis* from the Indian EEZ for the first time.

A single specimen of *Zenion hololepis* (53 mm SL) was collected during exploratory deep-sea fishery surveys along the continental margins of Andaman Sea (12°31.557'N; 93°09.743'E) by FORV *Sagar Sampada* (Cruise No. 367) of Ministry of Earth Sciences-Centre for Marine Living Resources and Ecology (MoES-CMLRE), India on 25 November 2017 (Fig. 1). The deep-sea trawling operations were carried out using a High-speed Demersal Trawl-Crustacean Version (HSDT-CV) at a depth of 314 m. The trawl catches were sorted, counted and morphometric measurements were taken onboard using a digital vernier caliper. Later, the specimen was preserved in 10% formalin and taken to the shore laboratory for a detailed examination. The species was identified based on descriptions by Goode and Bean (1896) and Martins *et al*. (2012). The voucher specimen was deposited in the collections of Referral Centre of MoES-CMLRE, Kochi (Voucher ID, IO/SS/FIS/00616). Descriptive methods follow Goode and Bean (1896); the standard length is abbreviated SL, the head length HL; fin-ray formulae follow Fricke (1983). Proportions are expressed as percentage of SL. Abbreviations of museum collections follow Fricke and Eschmeyer (2019).

Results

Zenion hololepis (Goode & Bean, 1896*)*

(Junior synonyms: *Cyttula macropus* Weber, 1913; *Zenion longipinnis* Kotthaus,1970)

Material: IO/SS/FIS/00616, 1 specimen, 53 mm SL, Andaman Islands, 20 km east of Smith Island, 12°31.557'N; 93°09.743'E, FORV Sagar Sampada, Cruise No. 367, Station 5, 314 m depth, bottom trawl, 25 November 2017.

Diagnosis: Dorsal fin. VI, 27; Anal fin. I, 25; Pelvic fin. I, 6; Pectoral fin.15; Caudal fin. iii, 11, iii. Body compressed, elongate and elevated with large eyes equal to half the size of the head (Table 1). Length of head 2.35 in SL.

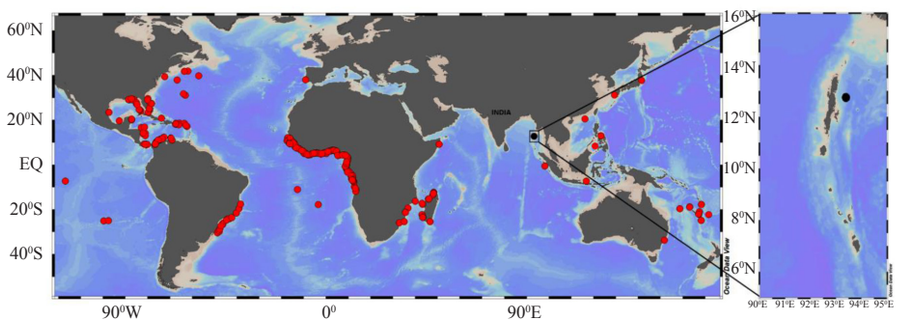


Fig. 1. Distribution of *Z. hololepis* (Black bullet: New record from the Andaman Sea; Red bullets: Previous records) based on the data retrieved from OBIS (http://iobis.org/mapper/), Heemstra (2002); Martins *et al.* (2012) and Heemstra (2016)

Depth of the body 2.54 in SL. Interorbital width 4.25 in HL. Several small ridges present on supraorbital. Mouth protractible and almost vertical when closed. Teeth minute and invisible. Pelvic fin with one strong spine, serrated on anterior margin, followed by six soft rays. Dorsal and ventral margin of body on the same vertical level, both with well-developed bony plates. First dorsal spine 0.17 of second dorsal spine. Ten rows of scales between lateral line and base of dorsal spines.

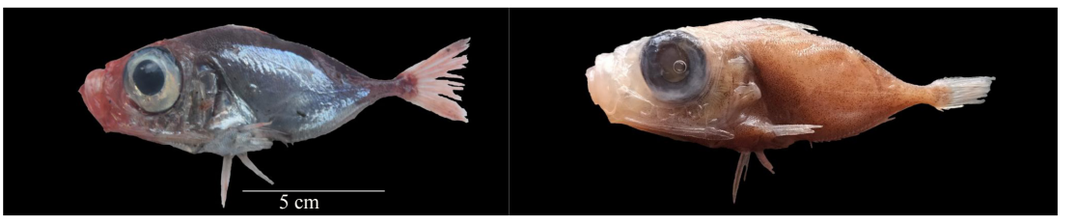
Colour: Sides of body silvery, dorsally grey, belly white, anterior parts of head and caudal peduncle rosy, eye silvery, dorsally grey; pelvic fin white, caudal fin rosy, other fins translucent (Fig. 2a). After preservation in formalin, head and body light brown, fins colourless (Fig. 2b).

Distribution: Western Indian Ocean: East Africa (Somalia south to Mozambique), Madagascar; eastern Indian Ocean: Andaman Islands (new record), western Indonesia (Sumatra, Bali); western Pacific: South China Sea and Philippines east to Hawaiian Islands, north to southern Japan, south to New South Wales (Australia) and New Caledonia; south-eastern Pacific: Nazca and Sala y Gomez ridges; western Atlantic: Canada south to Brazil, including Gulf of Mexico and Caribbean Sea; eastern Atlantic: Portugal south to Angola, including Ascension and Saint Helena islands.

The main character that distinguishes *Z. hololepis* from *Z. leptolepis* is the anal fin, with 23-28 rays in the former and 28-32 in the latter (Martins *et al*., 2012) (Table 1). The maxillary which is obtuse to the extremity,

Table 1. Morohometric and meristic features of the Andaman Sea specimen of *Z. hololepis* in comparison with the report of Martins *et al*. (2012)

Parameter	*Z. hololepis* IO/SS/FIS/00616 (n=1)	*Z. hololepis* Martins *et al*. (2012) (n=5)
Total length	67.9 mm	79.0-134.0 mm
Standard length	53.0 mm	NA
Head length	43.8	35.7-41.8
Pre-orbital length	33.1% in HL	27.7-39.1% in HL
Post-orbital length	23.6% in HL	19.4-23.6% in HL
Eye diameter	49.3% in HL	38.6-48.3% in HL
Interorbital length	26.5% in HL	25.9-30.1% in HL
Body depth/height	41.8% in SL	37.6-43.2
Pre-dorsal length	41.5% in SL	40.3-45.2
Dorsal base length	54.4% in SL	53.2-56.1
Pre-anal length	59.8% in SL	58.6-70.2
Anal base length	35.8% in SL	33.3-35.9
Caudal length	23.7% in SL	23.4-28.9
Number of dorsal spines and rays	VI, 27	VI-VII, 25-28
Number of anal spines and rays	I, 25	NA
Number of ventral spines and rays	I, 6	I,6
Number of pectoral rays	15	15-17
Number of caudal rays	17	NA



(a) (b)

Fig. 2. Lateral view of *Z. hololepis* collected from Andaman Sea. (a) Fresh specimen; (b) Formalin preserved specimen

absence of pre-anal spine and sub-truncate caudal fin differentiate *Z. japonicum* from *Z. hololepis* (Kamohara, 1934). Head length of *Z. hololepis* is comparatively higher than *Z. japonicum*. This forms the first report of *Z. hololepis* from Indian waters. There was a vast gap in the distribution range of *Z. hololepis* in Indian Ocean; otherwise, the species is distributed mostly circum globally, except for the eastern Pacific. The collection depth of the present specimen is well within the known depth range of 170-800 m reported for the species (Parin, 1991; Heemstra, 2016)

Acknowledgements

We express our sincere gratitude to the Secretary, Ministry of Earth Sciences (MoES), Government of India and the Director, MoES-CMLRE, Kochi, for all the support and cooperation provided for the study. We are also grateful to the Captain, Chief Scientist, Fishing Master and all participants of FORV Sagar Sampada Cruise No. 367 for all their whole hearted support throughout the cruise period. This is CMLRE contribution no. 135.

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Date of Receipt : 29.12.2019
Date of Acceptance : 12.11.2020