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Note

Report of velvet dogfish, *Zameus squamulosus* (Günther, 1877) (Somniosidae: Squaliformes) from Indian waters

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ABSTRACT

The velvet dogfish shark, *Zameus squamulosus* (Günther, 1877) is recorded from Indian waters, from the south-eastern Arabian Sea, off Kochi, Kerala for the first time. Two specimens of total length (TL) 280 mm and 322 mm were caught by a deep-sea trawler at depths 280-350 m. The specimens are described and figured.

Keywords: Arabian Sea, Northern Indian Ocean,Velvet dogfish, *Zameus squamulosus*

Chondrichthyan fauna of Indian waters are poorly studied in all aspects. Raje *et al.* (2007) listed 47 species of sharks in commercial landings along the Indian coast mainly from catches made within 100 m depths. However elasmobranchs are also known from deeper waters and undoubtedly many species which are not yet recorded occur in the unexploited/underexploited deep waters of the Indian EEZ. In recent years several deepwater chondrichthyans species previously unknown to Indian fauna were reported (Akhilesh *et al.,* 2010; Babu *et al.,* 2011) which indicates that the diversity is unexplored and more detailed studies are needed on this group. The present study reports the velvet dogfish shark, *Zameus squamulosus* from Indian waters.

Regular surveys were made at landing sites along the south-west coast of India to study the species and size composition of the chondrichthyan landings. At the Cochin Fisheries Harbor, Kerala in south-west India, three specimens of *Zameus squamulosus* were collected from the bycatch of the deep-sea shrimp trawl landings during December 2008, caught at 350-450 m depths off the south-western coast of India (two retained). Species identification was carried out based on Yano and Tanaka (1984) and Compagno *et al.* (2005). Scale image was taken with Leica Stereo Zoom Microscope (4x magnification). Morphometric measurements were taken to the nearest millimeter (mm) using a Mityutyo digital Vernier Calipers following Compagno (1984).

Zameus squamulosus (Günther, 1877)

Velvet dogfish
Family: Somniosidae
Order: Squaliformes
Figs 1-3; Table 1

Centrophorus squamulosus Günther 1877. Preliminary notes on new fishes collected in Japan during the expedition of H. M. S. 'Challenger.' The Transactions of the Linnean Society of London. Second Series. Zoology v. 20 (no. 119): 433-446.

Synonyms: *Centrophorus squamulosus* Günther, 1877; *Centroscymnus squamulosus* (Günther, 1877); *Scymnodon squamulosus* (Günther, 1877); *Centroscymnus obscurus* Vaillant, 1888; *Scymnodon obscurus* (Vaillant, 1888); *Scymnodon niger* Chu and Meng, in Chu, Meng, Hu and Li, 1982.

Holotype: (unique): BMNH 1880.5.1.1, from Off Inoshima, Japan

Diagnosis: A small dark colored shark with very minute dorsal fin spines, very small dorsal fins and no anal fin. Head rather low and flat; snout rather narrow. Mouth almost transverse and narrow. First dorsal posterior to pectorals. Caudal fin with a strong subterminal notch and a short lower lobe. Scale surface with transverse ridges.

Morphometry: Proportional measurements in percentage of total length (TL) are given (Table 1). A small shark, body slender, trunk sub-cylindrical, tapering posteriorly; precaudal length 3.08-3.12 times TL, 77.86-79.19% SL, no precaudal pits or keels. Head short, depressed, head length 25.24-25.41% TL; small snout, snout length 3.58-3.66 in HL; eyes small placed dorsolaterally, eye length 4.62-4.67 in HL; very small spiracles, spiracle length 1.54-1.65% TL; elevated and dorsolaterally placed gills, very small gill slits, mouth narrow and transverse, mouth width 9.00-9.17% TL; preoral length 9.46-9.64% TL; pre-branchial length 20.50-21.45% TL, pre-spiracular length 1.86-1.91 in HL, prenarial length (outer) 3.34-3.47% TL. Pre-first dorsal length 63.21-63.98% TL, pre-pectoral

length 3.83-3.89 in TL, pre-pelvic length 1.73-1.76 in TL, dorsal caudal space 8.74-8.89% TL, interdorsal space 15.22-17.28% TL, first dorsal fin length 9.84-10.41% TL, first dorsal anterior margin 7.91-8.06% TL, first dorsal base 5.56-6.01% TL, first dorsal inner margin 4.07-4.35% TL, second dorsal length 10.87-11.50, second dorsal inner margin 4.28-4.97% TL. First dorsal-fin origin about posterior to pectoral fin tip. Dorsal caudal margin 20.20-21.74% TL, preventral caudal margin 10.57-11.91% TL. Second dorsal fin low and keel shaped. Second dorsal fin spine much larger than first. Upper teeth lanceolate. Dermal denticles leaf like with three longitudinal ridges. Uniform dark in colour.

Fig. 1. *Zameus squamulosus,* 322 mm TL

Fig. 2. *Zameus squamulosus* teeth image

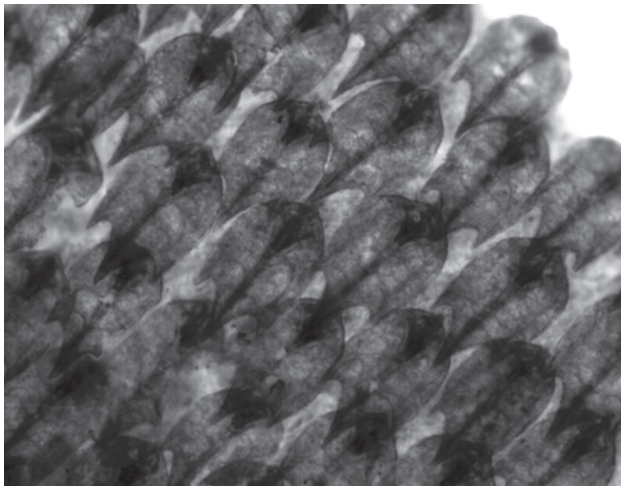

Fig. 3. Dermal denticlesof *Zameus squamulosus*

Distribution and habitat: Zameus squamulosus is a cosmopolitan deepwater shark, except in the Eastern Pacific region. Found in the continental or insular slopes, on or near bottom depths of 550 to 1,450 m (Compagno *et al.,* 2005). Indian Ocean reports are only from South Africa (Compagno, 1984) and Indonesia (White *et al.,* 2006). The presently known disjunct distribution range from many oceanic regions suggests that it is more widely distributed. Reaches a maximum size of 69 cm total length, little is known of its biology.

Remarks: The genus *Zameus* proposed by Jordan and Fowler 1903 contains to valid species*viz*., *Z. ichiharai* and *Z. squamulosus* (Compagno *et al.,* 2005), and both are hither to not reported from Indian waters. The present report from south-eastern Arabian Sea extends the distribution range of *Z. squamulosus* to northern Indian Ocean and fills the gap in the known distribution range. The present specimens agree with the earlier descriptions (Yano and Tanaka, 1984; Compagno *et al.,* 2005 and White *et al.,* 2006), but shows slight variations in few characters. Similar report with varying characters were reported earlier by Wetherbee and Crow (1996). Yano and Tanaka (1983) reported that body proportions of *Centroscymnus* changes with growth, which could be similar with *Zameus,* a nearest genus. *Zameussquamulosus* can be easily differentiated from *Z. ichiharai,* in morphometric and external characters; former having dermal denticles with distinct transverse ridges and symmetrical lower teeths. The diversity of deepsea fauna of Indian EEZ still remains largely unexplored and the development of multiday distant water fishing and resultant landings of certain rare deepsea species which were not reported earlier from Indian waters emphasises the need to conduct more exploratory surveys and taxonomic studies to increase the knowledge of deep-sea fauna from Indian waters. The report of *Z. squamulosus* in Indian waters contributes very much to the chondrichthyan diversity of the Indian EEZ and provides insight in to the extended distribution of many deepwater fauna into Indian waters.

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