

First record of the twostripe goby, *Valencienna helsdingenii* (Gobiidae, Gobiiformes) from the southeast coast of India

K. Kannan¹, K. Sureshkumar¹, L. Ranjith¹, K. K. Joshi²,
M. S. Madan¹, Sajan John³

1 Tuticorin Research Centre of CMFRI, Tuticorin - 628 001, Tamilnadu, India **2** Central Marine Fisheries Research Institute, Kochi - 682 018, Kerala, India **3** Dakshin Foundation, 88/3, Sahakaranagar "A" Block, Bangalore, India

Corresponding author: K. Kannan (kanna.k84@gmail.com)

Academic editor: Nina Bogutskaya | Received 30 April 2013 | Accepted 18 June 2013 | Published 14 August 2013

Citation: Kannan K, Sureshkumar K, Ranjith L, Joshi KK, Madan MS, John S (2013) First record of the twostripe goby, *Valencienna helsdingenii* (Gobiidae, Gobiiformes) from the southeast coast of India. ZooKeys 323: 91–97. doi: 10.3897/zookeys.323.5440

Abstract

Two specimens of *Valencienna helsdingenii* (Bleeker, 1858) were collected off Punnakayal coast, from Gulf of Mannar, southeast coast of India in November 2012. The morphometric and meristic characters of the recorded specimens are described and discussed. This is the first record of the species from the Indian waters that is a range extension of its known range within the Indian Ocean.

Keywords

Gobiidae, Bay of Bengal, Tuticorin, geographical range, Gulf of Mannar

Introduction

The Gobiidae constitute one of the largest families of percomorph fishes. The family has a total of over 1,640 species belonging to six subfamilies (Pezold 1993, Hoese and Larson 1994, Nelson 2006). These subfamilies are distributed in reef environments of the Indian and Pacific oceans, which are home to the greatest diversity of gobiid fishes. Recent re-evaluation of gobioid systematic using molecular methods resulted in six

family clade-based classification for the family Gobiidae that includes all the genera of the former subfamilies (Thacker 2003, 2009, 2011, Ruber and Agorreta 2011). The gobiine genus *Valenciennea* has 15 recognised species, including *V. helsdingenii* that is one of larger sized species with the documented maximal total length of 25 cm (Kuitert 1993). Prior to the discovery of the material reported on in this paper, the known range of *V. helsdingenii* included the Marquesas Islands, Japan, the Philippines, Indonesia, New Britain, the Solomon Islands, the Great Barrier Reef and New South Wales, Australia, Saudi Arabia, Maldives, Seychelles, and southern Africa (Hoese and Larson 1994, Lieske and Myers 1994, Clark et al. 2000, Randall et al. 1990, Randall et al. 1997). In India, about 150 species of gobiids have been reported (Day 1876, Jones and Kumaran 1980, Murty 2002) but the finding of *V. helsdingenii* represents the first occurrence of the species from the southeast coast of India and an extension of its range within the Indian Ocean.

Material and methods

Two specimens of *V. helsdingenii* (Bleeker, 1858) (Fig. 1) were collected from the Punnakayal fish landing centre located about 15 km south of major port town of Tuticorin on 16 November 2012. The capture location was in the Gulf of Mannar (8°38'127"N, 78°12'612"E), 20 km southeast of Tuticorin (Fig. 2) at a depth of 30 to 50 m by a drift gill net operated from traditional fishing craft. The specimens were preserved in 5% formalin and brought to the laboratory for a detailed examination. Morphometric measurements were taken to the nearest millimeter using digital calipers according to Hubbs and Lagler (1958). The specimens are deposited in the National Marine Biodiversity Referral Museum at the Central Marine Fisheries Research Institute, Cochin.

Results

Valenciennea helsdingenii (Bleeker, 1858)

http://species-id.net/wiki/Valenciennea_helsdingenii

Material examined. Two specimens of *V. helsdingenii* (Bleeker, 1858) of SL 97 mm (GB.31.66.230.1) and 145 mm (GB.31.66.230.1.1) were deposited in the Designated National Repository, Central Marine Fisheries Research Institute, Cochin, India.

Description. The body is elongate and compressed, the tongue adnate, the head is slightly compressed. The pelvic fins are completely separated, no membrane is present between the first and the second dorsal fins. The first dorsal fin is shallow and its margin rounded, the fourth spine is slightly longer than the other spines, and the caudal fin is deeply emarginate. The specimens have a pair of elongated caudal fin filaments that makes the caudal fin a peculiar shape as typical for the species. Specimens above 70 mm SL show the presence of the elongated caudal fin filaments (Hoese and Larson



Figure 1. *Valenciennesa helsdingenii*, 145 mm SL from the Gulf of Mannar, southeast coast of India.

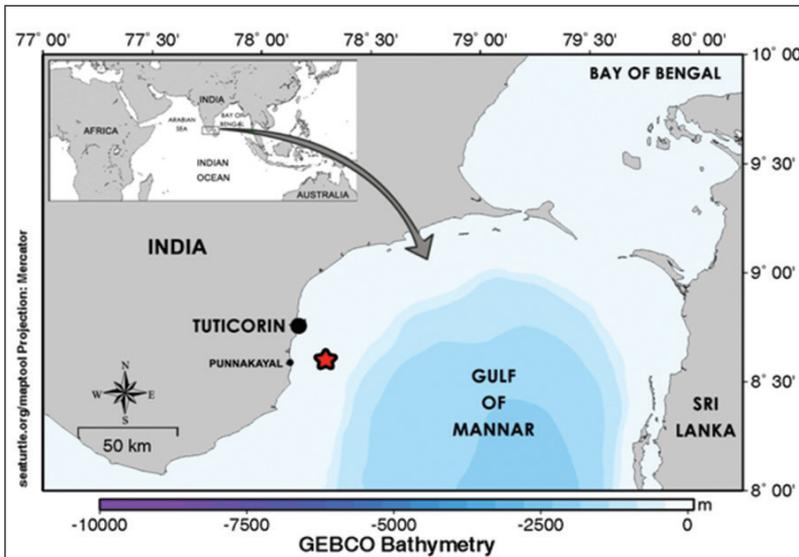


Figure 2. Capture location of *Valenciennesa helsdingenii* (red star) in the Gulf of Mannar, southeast coast of India.

1994). Body is covered with ctenoid scales while anteriorly under the middle of the first dorsal fin and on the belly the scales are cycloid; sides of the nape and the pectoral base are scaled; the prepelvic area are naked; the longitudinal-scale count is 142; the transverse-scale count is 40.

Colour. Overall colouration is similar to that described by Hoese and Larson (1994). The top of the head and the dorsal surface of the body are brownish gray; the rest of the head and the body is white to pale gray.

The body has two dark red stripes, the dorsal stripe extending from the front of the snout through the eye and just above the pectoral base and along the upper body to the tip of the upper caudal filament; the ventral stripe runs parallel to the first stripe, beginning at the side of the upper lip, extending across the upper part of the preoperculum and middle of the operculum, over middle of the pectoral base, continuing on the body behind the pectoral base, and reaching the tip of the lower caudal filament. The colour of

Table 1. Morphometric and meristic characters of *Valenciennesa helsdingenii* from the Gulf of Mannar, southeast coast of India.

Morphometric measurements	GB.31.66.230.1		GB.31.66.230.1.1	
	mm	% SL	mm	% SL
Standard length (SL)	97	–	145	–
Head length (HL)	23	23.7	37	25.5
Eye diameter	4	4.1	5	3.4
Postorbital length	12	12.4	19	13.1
Upper jaw length	10	10.3	16	11.0
Lower jaw length	9	9.3	15	10.3
Preorbital length	9	9.3	14	9.7
Predorsal length	32	33.0	48	33.1
Prepectoral length	27	27.8	45	31.0
Prepelvic length	27	27.8	42	29.0
Preanal length	56	57.7	86	59.3
Body depth (max.)	17	17.5	26	17.9
Caudal peduncle length	16	16.5	25	17.2
Caudal peduncle width	11	11.3	15	10.3
Distance between anal fin and anus	2	2.1	4	2.8
Distance between pelvic fin and anal fin	29	29.9	45	31.0
Fin-ray counts				
First dorsal	VI		VI	
Second dorsal	I11		I12	
Pectoral	22		22	
Pelvic	6		6	
Anal	I11		I12	
Segmented caudal	17		17	
Branched caudal	13		13	

the stripes is dark red to reddish brown, darkest anteriorly, and the stripes on the caudal filaments are outlined in white. The eye is yellowish white dorsally and ventrally with a reddish brown stripe through the middle, and the lower lip is white. The first dorsal fin possesses a large oval black spot extending between the third and the fifth dorsal spines.

Remarks. *Valenciennesa helsdingenii* is easily distinguished from other species of the genus in having two dark red stripes from the snout to the tip of the caudal fin, stripes on the caudal-fin filaments outlined in white and the presence of filamentous caudal rays in adults. The species was first described as *Eleotriodes helsdingenii* by Bleeker (1858), based on specimens collected from Pulau-Pulau Gorong, Indonesia.

Discussion

Hoese and Larson (1994) revised Indo-Pacific gobiid fishes and described seven new species from this area. Among these species, *V. helsdingenii* shows wide distribution from

Southern Red sea, east Africa to Indonesia and Japan to the Great Barrier Reef (Clark et al. 2000, Lieske and Myers 1994, Randall et al. 1990). *Valenciennea sexguttata* (Valenciennes, 1837) was distributed along the Red sea, Persian Gulf, East Africa and Australia (Hoese and Larson 1994). The species like *Valenciennea longipinnis* (Lay & Bennett, 1839) and *Valenciennea muralis* (Valenciennes, 1837) were widely distributed in the eastern Indian Ocean. *Valenciennea parva* (Hoese & Larson, 1994), *Valenciennea strigata* (Broussonet, 1782) and *Valenciennea puellaris* (Tomiyama, 1956) were distributed in the Indo-Pacific from Red Sea to the Great Barrier Reef. The species *Valenciennea wardii* (Playfair, 1867) is rare and distributed in widely scattered localities in the Indian Ocean (Hoese and Larson 1994). Other species of this genus show narrow ranges. Distribution of *Valenciennea alleni* (Hoese & Larson, 1994) is restricted to the Australian coast whereas *Valenciennea bella* (Hoese & Larson, 1994) occurs along the coast of Japan and Philippines (Hoese and Larson 1994). *Valenciennea immaculata* (Ni, 1981) is distributed along the coast of Taiwan, Hongkong, the Philippines and Australia (Randall et al. 2004) and *V. limicola* (Hoese & Larson, 1994) occurs along the coast of Thailand and Fiji (Allen and Adrim 2003).

The nearest known record of *V. helsdingenii* is from the Maldives. The present report adds to our knowledge of species diversity of Gobiidae from the Bay of Bengal, and it assumes that the Bay of Bengal contains as many species as the entire western Indian Ocean. The long stretch of coral islands along the Gulf of Mannar and Andaman Nicobar Islands increases the chance of species abundance and richness in the Bay of Bengal. During recent years, great numbers of new fish species have been described and recorded from the east coast of India (Kannan et al. 2012, Joshi et al. 2012, Zacharia and Kannan 2012).

Acknowledgements

The authors are grateful to Dr G. Syda Rao, Director, Central Marine Fisheries Research Institute (CMFRI) Cochin, to colleagues from Tuticorin Research Centre of CMFRI, and fisherfolk of Punnakayal fishing village. Online GIS program MAP-TOOL, provided by SEATURTLE.ORG is also acknowledged.

References

- Allen GR, Adrim M (2003) Coral reef fishes of Indonesia. *Zoological Studies* 42(1): 1–72.
- Bleeker P (1858) Bijdrage tot kennis der vischfauna van der Goram-Archipel. *Natuurkundig Tijdschrift voor Nederlandsch Indie* 15: 197–218.
- Broussonet P (1782) *Ichthyologia, sistens piscium descriptiones et icones*. Elmsly, London, 41 pp. doi: 10.5962/bhl.title.5786
- Clark E, Stoll MJ, Alburn TK, Petzold R (2000) Mound-building and feeding behavior of twostripe goby, *Valencienna helsdingenii*, in the south Red sea. *Environmental Biology of Fishes* 57: 131–141. doi: 10.1023/A:1007648611429

- Day F (1876) The fishes of India; being a natural history of the fishes known to inhabit the seas and fresh waters of India, Burma and Ceylon. Bernard Quaritch, London, 281–320.
- Hoese DF, Larson HK (1994) Revision of the Indo-Pacific gobiid fish genus *Valenciennea*, with descriptions of seven new species. *Indo-Pacific Fishes* 23: 1–71.
- Hubbs CL, Lagler KF (1958) Guide to the fishes of the great lakes and tributary waters. Cranbrook Institute Science Bulletin 18: 1–100.
- Jones S, Kumaran M (1980) Fishes of the Laccadive Archipelago. Mathrubhumi Press, Cochin, 662–676.
- Joshi KK, Zacharia PU, Kanthan KP (2012) Description of a new sand lance species, *Bleekeria murtii* (Perciformes: Ammodytidae) from India. *Indian Journal of Fisheries* 59(2): 101–107.
- Kannan K, Arumugam G, Sathakkathullah MS, Prabhu K (2012) First record of *Parapercis clathrata* (Perciformes: Pinguipedidae) from Indian waters. *Marine Biodiversity Records* 5(54): 1–3.
- Kuiter RH (1993) Coastal fishes of south-eastern Australia. University of Hawaii Press. Honolulu, Hawaii, 437 pp.
- Lay GT, Bennett ET (1839) Fishes. In: John R, Vigers NA, Lay GT, Bennett ET, Owen R, Gray JE, Buckland W, Sowerby GB (Eds) *The Zoology of Captain Beechey's Voyage*. Henry G. Bohn, London, 41–75.
- Lieske E, Myers R (1994) Collins Pocket Guide. Coral reef fishes. Indo-Pacific & Caribbean including the Red Sea. Hoper Collins Publishers, 400 pp.
- Murty VS (2002) Marine ornamental fish resources of Lakshadweep. *CMFRI, Special Publication* 72: 1–134.
- Nelson JS (2006) *Fishes of the World*, 4th Edition. Wiley-Interscience, New York, 461 pp.
- Ni Y (1981) On a new species of the genus *Eleotriodes bleeker* from China. *Oceanologia Et Limnologia Sinica* 12(4): 362–364.
- Pezold F (1993) Evidence for a monophyletic Gobinae. *Copeia* 1993: 634–643. doi: 10.2307/1447224
- Playfair RL (1867) On the fishes of Cachar. *Proceedings of Zoological Society, London* (Part 1): 14–17.
- Randall JE, Allen GR, Steene RC (1990) *Fishes of the Great Barrier Reef and Coral Sea*. University of Hawaii Press, Honolulu, Hawaii, 506 pp.
- Randall JE, Smith DG, Williams JT, Kulbicki M, Tham GM, Labrosse P, Kronen M, Clua E (2004) Checklist of the shore and epipelagic fishes of Tonga. *Atoll Research Bulletin* 502: 1–35. doi: 10.5479/si.00775630.502.1
- Randall JE, Allen GR, Steene RC (1997) *Fishes of the Great Barrier Reef and Coral Sea*. Crawford House, Press, 557 pp.
- Ruber L, Agorreta A (2011) Molecular Phylogeny of gobioid fishes. In: Patzner RA, Van Tassell JL, Kovacic M, Kapoor BG (Eds) *The Biology of Gobies*. Science Publisher Inc., Enfield, 23–50.
- Thacker CE (2003) Molecular phylogeny of the gobioid fishes (Teleostei: Perciformes: Gobioidae). *Molecular Phylogeny and Evolution* 26: 354–368. doi: 10.1016/S1055-7903(02)00361-5

- Thacker CE (2009) Phylogeny of Goboidei and placement within Acanthomorpha, with a new classification and investigation of diversification and character evolution. *Copeia* 2009: 93–104. doi: 10.1643/CI-08-004
- Thacker CE (2011) Systematics of Gobiidae. In: Patzner RA, Van Tassell JL, Kovacic M, Kapoor BG (Eds) *The Biology of Gobies*. Science Publisher Inc., Enfield, 129–136.
- Tomiyama I (1956) *Eleotriodes puellaris*. In: Tomiyama I, Abe T (Eds) *Figures and descriptions of the fishes of Japan*. Kazama Shobo, Tokyo, 55: 1136–1140.
- Zacharia PU, Kannan K (2012) First record of Polka-dot ribbonfish *Desmodema polystictum* (Pisces: Trachipteridae) from Indian waters. *Marine Biodiversity Records* 5(8): 1–4.