

First Record of Small Eyeariomma, *Ariomma brevimanum* (Klunzinger, 1884) (Perciformes: Ariommatidae) from Andaman Islands

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Abstract

Three specimens of *Ariomma brevimanum* (Klunzinger, 1884) were collected from the deep-sea longline vessel of Andaman Islands. The fishermen caught the fish from continental shelf areas of Hut bay of little Andaman Islands (Lat. 10°58'09" N Long. 92°22'48" E) using long-line of hook number 7 in the depth of 70-90m. The species recorded earlier from Indo-Pacific: Red Sea, off Indonesia to Japan and Hawaii and recently from the south eastern Arabian Sea. The present observation suggests new geographical distribution and addition of one more genus and species to the biodiversity of the Andaman Islands. The fish is characterized by an elongated body, covered with large deciduous scales. There were two distinct dorsal fin first bears 11 brittle and slender spines and second with 15 soft rays; Anal spines: 2; Anal soft rays: 15. Eye well developed covered with the thick adipose eyelid. Morphometric and morphological data confirmed that the specimens examined from the Andaman Islands are *A. brevimanum*.

Keywords: New record, deep sea fish, *Ariomma brevimanum*, Andaman Islands

The family Ariommatidae comprises of 7 species belonging to a single genus *Ariomma* Jordan & Snyder, 1904 (Freese and Pauly, 2020). The genus *Ariommas* characterized by the presence of two strong fleshy lateral keels on the caudal peduncle, small terminal mouth without teeth in palatine and vomer entire body covered with cycloid deciduous scales. Two distinct dorsal fins; first spiny and second soft lateral line passing through the upper half of the body and the fish possess six branchiostegal rays (Last, 2001).

These fishes are distributed over the tropical and subtropical waters of Atlantic, Pacific, and Indian Oceans in the depth 700 m. (Last, 2001). Based on the body shape the species divided into two types (either elongated with circular cross-section or deep-bodied laterally compressed with fusiform cross-section) (Ajjad and Mahasneh, 1986). The species *Ariomma brevimanum* large and elongated fish categorised under the first group.

Nearly 1434 fish species under 576 genera belonging to 165 families and 33 orders recorded from the Andaman and Nicobar Islands so far (Rajan et al., 2013). Not a

single species of family Ariommatidae (drift fishes) were recorded from these islands. The species originally found in: tropical and subtropical eastern North and South America, Africa, Asia, Kermadec Islands, and Hawaii Islands. In Andaman Islands the species are recorded for the first time showing an extended geographical distribution. A brief description of the species recorded is described herein.

Material and methods

Three specimens were collected from the deep sea long line fishermen of Jungligh at marine Fishing landing centre (Lat. 11°39'35.10" N Long. 72°43'18.77" E) of Andaman and Nicobar Islands. The fishermen caught the fish from continental shelf areas of Hut bay of little Andaman Islands (Lat. 10° 58'09" N Long. 92°22'48" E) using long-line of hook number 7 in the depth of 70-90 m. The specimens are preserved in 5 % formalin solution. The morphometric measurement was taken in nearest 0.01 mm using the Mitutoyo CD-6" ASX digital calliper. The terminologies used in the present study follows Roul et al. (2019). The morphometric measurements were

transformed in to ratios for size independent comparison. The collected specimens were deposited in Museum of ICAR- Central Island Agricultural Research Institute, Port Blair (CIARI/MF-31)

Results

Systematics (as given in Fig. 1, Table. 1)

Order: Perciformes Bleeker, 1863

Family: Ariommatidae Haedrich, 1967

Genus: *Ariomma* Jordan and Snyder, 1904

Species: *Ariomma brevimanum* (Klunzinger, 1884)

Body elongated and round (fusiform) with a blunt and small snout. The body covered with large deciduous cycloid scales and a pair of strong fleshy lateral keels on caudal peduncle. Greatest body depth is nearer to first dorsal fin origin and it is 29.60-31.02 % and reduces posteriorly. Head large 26.89-28.01% of SL. The rows of pre dorsal scale extending behind the orbital region and soft scales covered in pre opercula and opercula. Eyes moderately large covered with thick adipose tissue. The eye diameter is

23.02-24.34% of head length. Mouth small and terminal, maxilla small and not reaching to eyes. Branchiostegal rays long and 6 in number. Small teeth present on jaws and absent in palatine and vomer.

There were two distinct dorsal fins, first spiny with 11 soft spines, the distance between two consecutive spines increases from anterior to posterior. The 2nd dorsal fin bears 15 soft and branched fin rays and posterior rays looks like finlets. Anal fin originates as same as or slightly beyond the level of second dorsal fin origin with two spiny and 15 soft rays. Pectoral fin contains 21 to 22 soft rays and moderately long, nearly reaches or not reaches to the lateral line. Caudal fin highly forked with equal sized lobes. Lateral line scales well developed and passing through the upper part of the mid-lateral region, 50- 54 lateral line scales present.



Fig. 1. *Ariomma brevimanum* (Klunzinger, 1884)

Table 1. Meristic and morphometric parameters of *A. brevimanum*. Body proportions are expressed as a percentage of standard length and head length

Characters	Range	Mean	CV
TL	70-73	71.66	2.33
SL	56.4-58.8	57.73	1.49
FL	61.3-63.9	62.73	1.74
HL/SL	26.89-28.01	27.29	0.40
PFDL/SL	34.14-35.64	34.66	0.71
PSDL/SL	64.14-66.84	65.05	2.40
PPL/SL	29.96-31.20	30.39	0.50
PPeL/SL	33.86-35.28	34.37	0.63
PAL/SL	64.53-67.37	65.52	2.58
IDD/SL	5.14-5.32	5.21	0.01
FDH/SL	12.93-13.47	13.12	0.10

SDH/SL	6.55-6.73	6.62	0.01
AFH/SL	6.02-6.20	6.09	0.01
CFL/SL	25.86-26.95	26.23	0.39
CPL/SL	10.28-10.63	10.42	0.04
CPD/SL	6.37-6.56	6.44	0.01
DFDO/SL	29.60-31.02	30.1	0.65
DSDO/SL	28.72-30.14	29.22	0.64
LA/SL	63.79-66.48	64.7	2.39
FDBL/SL	22.87-23.93	23.25	0.36
SDBL/SL	31.02-32.26	31.44	0.51
ABL/SL	26.24-27.48	26.7	0.46
PCTL/SL	14.31-14.89	14.52	0.10
PELL/SL	9.39-9.92	9.6	0.08
SnL/HL	6.38-6.57	6.45	0.01
POL/HL	32.05-32.89	32.39	0.20
PSTL/HL	53.20-55.26	53.92	1.36
ED/HL	23.02-24.34	23.48	0.56
IOD/HL	31.57-32.89	32.17	0.44
UJL/HL	20.39-21.05	20.65	0.12
LJL/HL	22.36-23.68	22.83	0.55

(TL- Total length; SL- Standard length; FL- Fork length; HL- Head length; PFDL-Pre first dorsal fin length; PSDL- Pre second dorsal fin length; PPL- Pre pectoral fin length; PPeL- Pre pelvic fin length; PAL- Pre anal fin length; IDD- Inter dorsal fin distance; FDH- First dorsal fin height; SDH- First dorsal fin height; AFH- Anal fin height; CFL: Caudal fin length; CPL- Caudal peduncle length; CPD- Caudal peduncle depth; DFDO; body depth at first dorsal fin origin; DSDO - Body depth at second dorsal fin origin; LA: Length up to anus; FDBL-First dorsal fin base length ; SDBL- Second dorsal fin base length; ABL- Anal fin base length; PCTL- Pectoral fin length; PELL; Pelvic fin length;; SnL- Snout length; POL- Pre orbital length; PSTL- Post orbital length; ED- Eye diameter; IOD- Interorbital distance; UJL- length of upper jaw; LJL- Length of lower jaw)

Colour: Dark brownish colour dorsally, silver on ventral side. Dorsal fin black in colour, caudal anal white with black border. Pelvic fin black with white colour on the base.

Range: Deep sea fish species found in the bottom areas of continental shelf and continental slope, inhabited in more than 700m depth (Last, 2001). The species recorded earlier from Indo-Pacific region where it has been reported from the Red Sea, Mayotte, Indonesia, Philippines, Guam, Japan, Fiji, Hawaii, Tuvalu and Ryukyu Islands,

Taiwan (Ajiad and Mahasneh, 1986; Ho *et al.*, 2013; Bos and Gumanao 2013; Froese and Pauly 2020) and south eastern Arabian sea (Roul *et al.*, 2019).

Discussion

The present study intends to record the species *A. brevimanum*, the first time from the Andaman Islands. The species recorded earlier from Indo-Pacific region where it has been reported from the Red Sea, Mayotte, Indonesia, Philippines, Guam, Japan, Fiji, Hawaii, Tuvalu and

Ryukyu Islands, Taiwan (Ajiad and Mahasneh 1986; Ho et al. 2013; Bos and Gumanao 2013; Froese and Pauly 2020) and south eastern Arabian sea (Roul et al., 2019).

The original description of the species is from the Red Sea based on a single specimen of 800.0 mm long, having XI dorsal spine and 15 soft rays, II anal spine and 15 soft rays, and 24 pectoral soft rays and described as *Cubiceps brevimanus* by Klunzinger (1884). After the original description by Klunzinger (1884), the species were re-described by Ajiad and Mahasneh (1986) from the Gulf of Aqaba (Red Sea) and after that several new records from various parts in the Indo Pacific region (Ho et al. 2013; Bos and Gumanao 2013; Froese and Pauly 2020). Recently Roul et al., (2019) confirm occurrence of the species through molecular markers from south eastern Arabian sea near Lakshadweep islands and landed to Cochin fishing harbour. The existence of *A. Brevimanum* revealed additional biodiversity of fish in Andaman Islands and also shows new geographical distribution in this region.

According to Last (2001) the genus *Ariomma* can be distinguished by the presence of 2 low lateral keels on each side near caudal-fin base; large eyes and located centrally; small and terminal mouth, not protractile, maxilla barely reaching order of eye; teeth absent from palatines and vomer; two distinct dorsal fins, almost connected; lateral line on upper half of body, often indistinct, following dorsal profile but not extending onto caudal peduncle; large, cycloid, thin, very deciduous scales; and 6 branchiostegal rays. There were 7 species in the genus with some are deep bodied and others are elongated. *A. brevimanum* a deep bodied species appearance is closely related to *A. luridum*.

The major difference between the two species prominent in the distribution of pre dorsal scales and the shape of preopercle; In *A. luridum* the predorsal scale patches extends from dorsal area to beyond the orbital area; whereas in *A. brevimanum* it reach up to the post orbital area. The preopercle of *A. luridum* is round in shape whereas in *A. brevimanum* is triangular. But in both the species have elongated and round body with same range of fin rays. Dorsal and anal fin rays of *A. brevimanum* in present collection is 11 (X+I) brittle spines in first dorsal

and 15 soft rays which is within the range of 11 (X+I) to 12 (XI+I) in first dorsal and 13 to 15 in 2nd dorsal by Ajiad and Mahasneh, 1986; Bos and Gumanao, 2013 and Roul et al., 2019. According to this comprehensive examination and comparison of diagnostic morphological characters, it is confirmed the distribution of *A. brevimanum* in Andaman and Nicobar waters.

Although the species is known to Indo Pacific and Indian ocean from Red Sea, off Indonesia to Japan and Hawaii and recently from the south eastern Arabian sea (Ajiad and Mahasneh 1986; Ho et al. 2013; Bos and Gumanao 2013; Froese and Pauly 2018; Roul et al., 2019), the present study adding the distributional gap of the species *A. brevimanum*. In Andaman and Nicobar Islands the species landed in shark longline fishery as by catch. The present record on the species will help the ecosystem managers and species conservation authority to use the database for their conservation plan formulation.

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Conflict of Interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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