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First record of occurrence of Boulenger's anthias *Sacura boulengeri* (Heemstra, 1973), Family: Serranidae, in Indian waters

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Abstract

Previously known only from the Gulf of Oman off Muscat and Pakistan off Sindh, this record is the first from Indian waters for Boulenger's anthias, *Sacura boulengeri*. Morphometric and meristic characters of the specimens collected from the west coast of India complement those of the specimens from the Gulf of Oman (05 adult males; lectotype) and Pakistan (01 adult male) examined by Heemstra and Randall (1979) and Moazzam and Osmany (2004) respectively. Hitherto known only from male specimens, the present study records the morphometric and meristic characteristics of a female specimen. The identification key provided by Heemstra and Randall (1979) requires to be revised as the number of gill rakers present in the lower limb of the first gill is lesser than that stipulated as a diagnostic character in the earlier works.

Keywords: Boulenger's anthias, *Sacura boulengeri*, morphometric, meristic, Serranidae

Introduction

The subfamily Anthiinae of the family Serranidae consists of 24 genera. They are mostly colourful and small sized fishes, commonly known as fairy basslets, seaperches, goldies and splitfins. They are found in temperate as well as tropical and subtropical waters. Biologically protogynous, a few in a group mature to form dominant males. The principal component of their diet consists of crustaceans and fish eggs with the fishes being exclusively planktivorous. Their selectivity in feeding makes them difficult to keep in aquaria despite their attractive colouration. The genus *Sacura* comprises of four species: *Sacura margaritacea*, *S. speciosa*, *S. parva* and *S. boulengeri*. Except for *S. margaritacea*, which is fairly common in its distributional range, the others are less frequently collected, with *S. boulengeri*

being particularly rare (Heemstra and Randall, 1979; Randall, 1995; Manilo and Bogorodsky, 2003). All the species are demersal with *S. margaritacea* and *S. boulengeri* occurring in relatively shallower waters up to a depth of 90 m. *S. speciosa* and *S. parva* are deeper water species being found up to 150 m depth. *S. margaritacea* forms large schools around rocky areas. The other species have been found only in small aggregations. This is the first record of *S. boulengeri* occurring in Indian waters and a third record worldwide, after Oman and Pakistan. Only six male specimens have been examined in the past. The female specimen described in this paper is the only specimen obtained worldwide. The lectotype and paralectotypes of *S. boulengeri* are housed at the British Museum of Natural History (No. 1889.4.15.15 and 1889.4.15.15). The morphological and meristic characters of the currently

obtained specimens have been compared with those of the lectotypes published by Heemstra and Randall (1979). The specimens collected by the authors have been deposited in the Marine Biodiversity Referral Museum at CMFRI (Accession No: GB.31.139.44.2.), Cochin.

Materials and methods

The specimens described below were obtained during the course of routine sampling from two different locations along the west coast namely Mangalore (Karnataka) and Neendakara (Kerala). They were obtained from trawler by-catch in the postmonsoon season in 2005 and 2006. Morphometric and meristic counts have been made as per the method prescribed by Hubbs and Lagler (1949).

Results and Discussion

Sacura boulengeri (Heemstra, 1973)

Common Name: Boulenger's anthias

Synonymy:

Anthias formosus Boulenger, 1889:238 (Muscat, Oman): Boulenger, 1895:322,326. pl.14

Anthias boulengeri Heemstra, 1973:206, Fig.2.

Sacura boulengeri Heemstra & Randall, 1979:3-4, pl.1; Randall, 1995:124; Manilo & Bogorodsky, 2003: S 104.

Materials examined: Female from Neendakara-103.82 mm SL. Acc. No. GB.31.139.44.2. Male from Mangalore - 134.73 mm SL. Acc. No. FB. 1.2.

Diagnosis: Dorsal fin rays 14; gill rakers (12) + (27); head large; third anal fin prolonged; no scales on lower jaw colour patterns as shown in Fig. 1 and 2.

Description: The description is based on one adult male specimen and one female specimen examined in fresh condition. Dorsal spines 10, fin rays 14, pectoral soft rays 17, pelvic spine 1, soft rays 5, anal spines 3, soft rays 7. Margin of spinous portion not notched before soft ray portion in dorsal fin. Third dorsal spine prolonged, 3.4-3.6 times length of 4th dorsal spine in males and 3 times in female; 4th -10th spines subequal, 3rd-4th soft dorsal



Fig. 1. *Sacura boulengeri*, female from Neendakara



Fig. 2. *S. boulengeri*, male from Mangalore

rays prolonged, 48.4% in female and 50-52.5 % of SL in males; reaches well beyond caudal fin base (Table 1). Anal fin pointed anteriorly, 3rd ray characteristically prolonged. Caudal fin lobes also prolonged, upper lobe more than lower.

Body oval, 39-41.8 % SL and moderately compressed. Head large, 2.4-2.5 in SL. Preorbital region, lower jaw and ascending processes of premaxillae naked, rest of head scaly. Eye diameter 3.6-3.8 in HL. Interorbital distance 4.5-4.8 in HL, width narrower than orbit. Upper jaw length 2.4-2.5 in HL, lesser than postorbital distance (1.8-1.9, in HL) (Table 1). Preopercle with three flat spines, edge of interopercles largely smooth. Anterior naris small and tubular, posterior naris tear drop shaped, 6-7 times of former.

Two rows of sharp fine canines on upper jaw, outer larger and fixed, inner minute and depressible. 2-3 stout canines on anterior

Table 1. Comparative morphometrics and meristics of *Sacura boulengeri*; SL: standard length; HL: head length

Characters	Muscat(1979)	Sindh(2004)	Neendakara(2005)	Mangalore(2006)
Sex	Male	Male	Female	Male
Number examined	03	01	01	01
Greatest body depth (% SL)	41- 43	41.7	39.1	41.8
Head length (% SL)	42- 43	39.2	38.1	44.0
Pectoral fin length (% SL)	29-32	29.2	29.7	29.2
Pelvic fin length (% SL)	25-29	28.3	30.2	29.2
Caudal peduncle length (% SL)	20-22	20.8	21	20.3
Caudal peduncle depth (% SL)	12 - 14	12.5	14.6	12.3
First dorsal spine length (% SL)	6.4-7.3	5.8	6.5	6
Second dorsal spine length (% SL)	9.7-11	7.5	9.2	9.9
Third dorsal spine length (% SL)	52-66	55	40.9	50.8
Fourth dorsal spine length (% SL)	13-15	14.2	13	13.6
Third dorsal soft ray length	50-52	47.5	48.4	52.5
Anal fin length (% SL)	33-36	32.5	31	31.8
First anal spine length (% SL)	7.6-8	7.5	7	7.3
Second anal spine length (% SL)	14-17	15	12.6	14.6
Second anal soft ray length (% SL)	26-29	25	27.9	27.8
Pelvic fin spine length (% SL)	15-18	15	14	15.2
Snout length (% HL)	20-21	21.3	21	20.4
Orbit length (% HL)	26-28	27.7	27.5	27.6
Inter orbital width (% HL)	20-22	23.4	22	22
Post orbital distance	53-56	53.5	53	57.2
Inter orbital width (% HL)	20-22	23.4	22	22
Post orbital distance	53-56	53.5	53	57.2
Upper jaw length	43-44	42.6	42	42.3
Maxilla depth	14-16	17.3	15.4	16.3
Gill rakers (Upper)	14-16	N.S.*	12	12
Gill rakers (Lower)	30-33	N.S.*	27	27

*Not specified

premaxilla. Median diastema with single large stout curved canine. Lower jaw with 2-3 stout canines on either sides of median diastema on outer edge of band of small sharp canines. Vomerine teeth in triangular patch, small stout and conical. Palatines with a curved band of small blunt canines.

The gill rakers in the upper limb of the first arch numbered 12 and in the lower limb 27 respectively in the male and female specimens examined. Comparative morphometrics of the

currently studied specimens with those of the earlier publications are presented in Table 1.

Colour: Colouration of male *S. boulengeri* matches with that of the description given by Heemstra and Randall (1979). The female specimen showed marked difference, being duller in colour.

In the fresh specimen of male the body is yellowish brown with four prominent irregular lavender pink stripes. The first stripe runs from the

nape backwards, the second from behind the upper orbital margin upwards to meet the first band, the third from the operculum to the upper base of the caudal peduncle and the fourth from the base of the pectoral fin to the lower base of the caudal peduncle. The head also has several lavender blotches with the orbit encircled with lavender except for the anterior portion. Lower jaw, thorax and abdomen are also lavender in colour. Base of dorsal fin and prolonged fin rays lavender. Pennant at tip of 3rd dorsal spine black. Distal parts of dorsal fin dusky yellow. Anal fin flesh pink to lavender. Caudal fin flesh pink with yellow distal margins. Pectoral fins orange to flesh pink. Pelvic fins bright yellow. Inner ring of iris yellow and outer ring violet to pink.

The female specimen had olive brown body with pale white abdomen suffused with light orange. Horizontal bands on body were pinkish orange. Lower jaw and margin of upper jaw reddish orange. Base of dorsal fin and tips of spines pinkish orange, distal margin greenish yellow. Dorsal soft rays yellowish orange. Anal and pelvic fins dusky yellow with orangish markings on the distal borders. Pelvic fin reddish orange with tint of yellow. Caudal fin pinkish orange with distal margin of dusky yellow. Iris rimmed with reddish orange.

Distribution: With a proposed range of distribution in the Western Indian Ocean (Fishbase, 2007), the species has been previously recorded only from off Muscat, Oman (Heemstra and Randall, 1979; Randall, 1995) and off Sindh, Pakistan (Moazzam and Osmany, 2004). The current record confirms that its distributional range extends to the west coast of India.

This species was first described by Boulenger (1889, 1895) as *Anthias formosa* based on collections from Muscat. Since this name was preoccupied by *formosa* described by Bloch (1792) from specimen from Antilles, Heemstra (1973) renamed it as *Anthias boulengeri*. Jordan and Richardson (1910) established the genus *Sacura* to accommodate the anthiine *Anthias margaritacea*. The genus *Sacura* is distinguished from genus *Anthias* in having a deeper body, longer

head, variations in the shape of dorsal and anal fins and in having fewer caudal fin rays. In their publication revising the genus, Heemstra and Randall (1979) assigned *A. formosus* Boulenger, 1889 to the genus *Sacura* and established the current nomenclature *i.e. Sacura boulengeri*.

The diagnostic generic characters of the genus *Sacura* as outlined by them are a moderately compressed (body depth/body width ratio= 37-47% SL) oval body (depth 40-50% SL), dorsal fin X, 14-18, 3rd dorsal fin strongly prolonged especially in males, 2nd-4th soft dorsal rays also prolonged in adults and anterior dorsal and anal fin rays longer than posterior ones. Anal fin III, 7-7, 3rd soft ray prolonged, posterior margin of anal fin rounded, angular or pointed. Pectoral fin rays 16-18 with first two unbranched followed by branched rays. Caudal fin forked: 7+6 branched rays. Head scaly, preorbitals naked. Opercle with three flat spines, first spine least acute. Supramaxilla lacking. Vomerine teeth in triangular patch. Tongue with or without teeth. Gill rakers 23-33 on lower limb of first arch. Vertebrae 10 + 16. Predorsal bone 2. As the available specimens confirm to all the above characters, their genus is identified as *Sacura*.

The diagnostic characters for the species *S. boulengeri* as per the original description of the fish by Boulenger (1889), Heemstra (1973) and the key provided by Heemstra and Randall (1979) after examining lectotypes, differentiate the dorsal fin to be X, 14; lower limb gill rakers 30-33 and body depth not greater than head length. However, the gill rakers on the lower limb of the first gill arch were only 27 in both the specimens examined in the current study. This does not confirm with the observations from the specimens examined by Heemstra and Randall (1979), who specified the range as 30-33 numbers. Also the range of all the other morphometric characters falls within that recorded earlier for *S. boulengeri* except that the body depth is greater than the head length in the female specimen and also in the male specimen recorded from Sindh (Table 1). The coloration in fresh condition confirms with that described by Heemstra and Randall (1979). The current

specimens are thus identified as *Sacura boulengeri* (Heemstra, 1973), Heemstra 2007.

S. boulengeri mainly differs from the other *Sacura* species in its colour pattern, longer head, fewer lateral line scales and relatively shorter pectoral fins. Further, the difference noted in the present specimens is a reduction in the stipulated count for the lower limb of the first gill raker as mentioned, and the second characteristic of the head length being lesser than body depth hold true for both the female specimen obtained at Neendakara, Kerala as well as the male specimen described from Sindh, Pakistan (Moazzam and Osmany, 2004). Hence, a revision of the key provided to the identification of the species of the genus *Sacura* is thus recommended. There is no information available on the biology of this species owing to the rarity of occurrence.

As all the specimens obtained were in fresh condition without being frozen, it is inferred that they were caught from nearshore waters (within 50 m depth). Since they were also collected from landing centres at two different localities, it appears that *S. boulengeri* has wider distributions along the southwest coast of India.

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