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Article

First record of Rama Rao's scorpionfish, *Scorpaenopsis ramaraoi* Randall and Eschmeyer, 2001 (Scorapenidae) from Visakhapatnam, Andhra Pradesh Coast, India

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Abstract

The first record of *Scorpaenopsis ramaraoi* Randall and Eschmeyer, 2001 from east coast of India is reported based on eight specimens ranging from 52-152 mm SL. Specimens were collected from the shallow waters of Lawsons Bay rocky shore and Tenneti Park Beach, Visakhapatnam, south east coast of India. This species is distinguished from its closest relatives by tympanic spines separate, suborbital ridge with four stout spines, longitudinal scale series 45-49. This paper presents the first report and also provided detailed morphological data of *S. ramaraoi* based on recently collected specimens.

Keywords: First record, *Scorpaenopsis ramaraoi*, Visakhapatnam, India.
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Introduction

The suborder Scorpaenoidei Risso 1827 is a diverse group consisting of approximately 500 species (Eschmeyer 2010). Species of this suborder are widely distributed in every ocean including tropical (Adrim et al. 2004; Randall and Lim 2000; Winterbottom et al. 1989), subtropical (Motomura and Iwatsuki 1997; Motomura et al. 2004) and temperate waters (Motomura et al. 2005; Motomura et al. 2006). They are mostly known from the Indo-Pacific region (Poss 1999), inhabiting intertidal shores (Carpenter and Niem 1999) and coastal areas to deep offshore waters.

In the suborder Scorpaenoidei, fishes of the family Scorpaenidae are moderately compressed robust fishes, with large spiny heads. They consist of about 418 species belonging to at least 56 genera. In Indo-West Pacific region, about 375 species are recorded from this family (Fischer and Bianchi 1984; Froese and Pauly 2016). The genus *Scorpaenopsis* Heckel, 1840 belongs to the subfamily Scorpaeninae that comprises 20 genera and 185 species (Nelson 2006). The Indo-Pacific scorpionfish of the genus *Scorpaenopsis* has 28 species, and several undescribed species (Randall and Eschmeyer 2001). In the revision of Indo-Pacific members of the genus *Scorpaenopsis,* Randall and Eschmeyer (2001) described 24 species and till date, 28 species of this genus are known (Froese and Pauly 2015). This study is aimed to report first record of *Scorpaenopsis ramaraoi* from Visakhapatnam, Andhra Pradesh Coast, India, and also provides a detailed morphological data of this species based on the collected specimens.

Material and Methods

Eight specimens of the genus *Scorpaenopsis* were collected from Visakhapatnam coastal waters, East Coast of India (17º44'N, 83º23'E) during 2011-2016. Specimens were examined and identified as *S. ramaraoi* Randall and Eschmeyer, 2001 hitherto not reported so far. The colour of the specimens in the samples was noted in fresh condition. Morphometric and meristic data of the fresh specimens were taken. Data on other characters, including preorbital bone, pyloric caeca and vertebrae are also taken. Specimens of the *S. ramaraoi* were identified based on Randall and Eschmeyer (2001) and Froese and Pauly (2015). Methodology for morphometric measurements follows Hubbs and Lagler (1958). Terminology of head spines follows Eschmeyer (1969b), Randall and Eschmeyer (2001) and Motomura (2002). The specimens were preserved in 5% formaldehyde and deposited in

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Figure 1. *Scorpaenopsis ramaraoi* Randall and Eschmeyer, 2001, 152 mm SL.

the museum of the department of marine living resources, Andhra University, Visakhapatnam, India.

Results

Systematics: The present paper follows the classifications provided by Nelson (2006).

Division Teleostei
Subdivision Euteleostei
Superorder Acanthopterygii
Order Scorpaeniformes Risso 1827
Family Scorpenidae
Genus *Scorpaenopsis* Heckel, 1840

Scorpaenopsis ramaraoi Randall and Eschmeyer, 2001
(Fig. 1)

Description: D XII 9-10; A III 5; C 14-15; V I 5; P 1+4-5+12=17-18; Ll 42-50; Ltr 8/1/19; Poredscales: 24; GR 4-5+1+9-11=14-17; Pyloric caeca 5; Vertebrae 24. Morphometric data are presented in Tables 1.

Body ablong, slightly compressed; dorsal profile more convex than ventral; dorsal profile of head with gentle slope, with transverse quadrangular depression across occiput; deep concavity on snout before eyes; interorbital space, narrow, deep becomes wider with age; coronal ridges low; mouth large, oblique; lower jaw slightly projecting, with symphysial knob; maxilla long its extending to posterior to a vertical at rear edge of orbit, jaws with a band of slender, conical, incurved, inwardly depressible teeth in about 6-7 rows at front of upper jaw and 6 in lower, narrowing to 1-2 rows at posterior end; teeth vomer with small, close set, conical teeth in about 4 rows forming an inverted V-shaped patch of teeth; palatine teeth absent. Tongue thick and broadly rounded, apically free; Gill opening wide, gill membrane free from isthmus; gill rakers short and stout with small spinules; preopercle slightly rounded, opercular flap pointed, reaching origin of pectoral fin base.

Spines on head well-developed and moderate in size, lacrimal bone nearly vertical; suborbital well-developed, ridge with four spines, the first on lacrimal short, only slightly retorse, but angling upward, the last three in a straight line and lightly upward; suborbital pit present; preopercle with five spines, the ventral two only as slight

Table 1. Morphometric data of the species of *Scorpaenopsis ramaraoi* represented in the catches of Visakhapatnam (n=8).

	Min-Max	Mean±S.D
Standard Length in mm	52-152	
As percentage of standard length		
Total length	122.53-131.48	127.31±2.35
Body depth	28.12-32.73	32.73±2.31
Head length	43.92-51.51	46.95±2.10
Pre dorsal distance	34.52-43.00	39.60±2.43
Pre pectoral distance	33.80-42.80	40.10±2.74
Pre pelvic distance	38.02-48.07	42.01±2.94
Pre anal distance	72.90-81.40	77.00±2.72
Dorsal base	56.92-65.90	60.80±2.87
Pectoral base	15.29-27.27	12.22±12.34
Anal base	12.90-17.50	14.90±1.53
Dorsal spine height	13.08-17.52	14.96±1.47
Soft dorsal height	14.95-22.72	16.12±2.25
Pectoral length	15.81-23.07	18.45±2.46
Pelvic spine length	10.56-15.29	12.29±2.44
Soft pelvic fin length	21.15-35.41	28.29±2.50
Anal spine height	17.51-27.77	24.26±2.14
Soft anal height	18.55-24.77	22.4±2.65
As percentage of head length		
Head depth	52.83-67.64	61.60±2.72
Head width	58.13-67.64	61.73±2.95
Eye diameter	25.62-34.04	30.22±2.59
Pre orbital distance	20.58-27.90	23.80±2.25
Post orbital distance	45.45-53.33	50.52±2.53
Inter orbital distance	11.76-24.24	19.86±2.64
Upper jaw length	45.40-53.30	50.52±2.37
Lower jaw length	45.65-53.33	50.48±2.38
Maxilla width	14.00-20.00	16.80±1.72
Snout length	26.40-34.00	30.20±2.67
Caudal peduncle depth	10.28-26.92	22.43±2.49

protuberances, the uppermost with a strong anterior supplemental spine; anterior spine of lacrimal horizontal, its tip just reaching dorsal edge of upper lip; a sharp ridge above anterior lacrimal spine; angling upward with a free pointed tip; third one present on lacrimal directed toward anterior nostril; posterior spine of lacrimal broad, angling ventro-posteriorly, projecting over upper lip, associated with a long fimbriate flap, and linked posteriorly to head with fringed skin; interorbital ridges ending posteriorly on a short ridge its extending medially from base of postocular spines; post ocular spines delicate; tympanic spine in pit and not associated with any ridges; no extra spine anterior to each tympanic spine; parietal and nuchal spines small; joined at the base, and in line with tympanic spines; sphenotic, pterotic, upper and lower posttemporal and supracleithral spines in a row.

Filaments on head; two pairs on snout; two on preorbital, posterior one large, multiciliate; supraorbital short, between supra and postorbital spines; upper margin of pupil filamentous; maxilla with one long and two to five short filaments; four to five broad filaments on preopercular margin, small filaments on lower opercular edge; on lower jaw three long and two to four short filaments, on each side. On the body 2/3 of anterior lateral line and some scales on the body with short filaments.

Scales ctenoid on most part of the body; small cycloid scales embedded on chest, belly and bases of pectorals, pelvics and anal; ctenoid scales on upper half of opercle behind eye; minute embedded scales below eye. Origin of dorsal fin above supracleithral spine, dorsal fin continuous, with notch after penultimate spines; origin of dorsal above second half of opercle, origin of dorsal and pelvic same line where as origin of pectoral slightly anterior.

First dorsal spine shortest, half long as second, which is shorter than second and fourth, fourth spine longest; fifth to eleventh spines gradually smaller, slightly shorter than post orbital part of head, spines decreasing in length to the eleventh, soft rays divided, soft dorsal rounded, soft rays longer than longest dorsal spine height. Pectorals with rounded edge, reaching to slightly beyond vent, upper 2 to 6 rays divided, 8th to last ray fleshy, with pointed tips. Pelvics shorter than pectorals, origin behind that of pectorals; first anal spine is very short, the second longest and strongest, robust, longer than dorsal spine, anal rays also longer than dorsal rays, rays divided. Caudal slightly rounded.

Colour: Variable, body and head usually brownish to gray, with bluish green, green or pale red mottling; lower flanks and ventral side pale, chest pale red with white and gray mottling; maxilla and lower jaw with gray to dark brown streaks. Dorsal fin dusky, spinous part with irregular gray to brown patches; dark blotch near edge of spinous dorsal fin sometimes present; when present, usually between eighth to tenth dorsal spines; soft dorsal mottled dark green. Pectorals brown, with vertical gray bars. Pelvics red with white streaks, distally brown; area of body covered by pelvics is red, with dusky mottling. Anal fin greenish brown, with gray streaks distally and two white bars, first one small across base, second one large, in the middle of fin. Caudal mottled red and brown with irregular gray bars. Filaments on body gray to dark brown some pale; second preorbital filament with white streaks. Filaments bluish or green, those above eyes reddish; iris scarlet.

Distribution: Taiwan, Gulf of Thailand, Sri Lanka and India.

Discussion

The genus *scorpaenopsis* has 12 dorsal spines connected by membrane and usually 9-10 rays. The interorbitalis broad, a deep pit presents between suborbital stay and front of eye, and the most of the head spines are multified. It is closely distinguished from *S. longispina* by having a small sized pupil, and interorbital space slightly broad. Randall and Eschmeyer (2001) stated that this species is easily distinguished from the other humpback species of the *S. diabolus* complex and the small species of the *S. cotticeps* complex. The ridge of the first spine of the lacrimal sharp-edged angling slightly upward with a pointed tip. Longitudinal series 45-49 present in *S. ramaraoi*. Morphological characters of the collected specimens are in agreement with those of reported by Randall and Eschmeyer (2001). This species is mainly represented in hand line, rarely in shore seines catches and trawl catches. Earlier Indian records of this species was from Dhiga Coast (Ray et al. 2015). *Scorpaenopsis ramaraoi* is known by specimens from continental shelf and near shore waters. This is the first record of this species from Visakhapatnam, Andhra Pradesh with local Telugu name of "Moragoddu".

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