



***Entomacrodus solus*, a new species of blenny (Perciformes, Blenniidae) from the Red Sea**

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Abstract

Entomacrodus solus, new species, is described on the basis of 35 specimens collected by J.E. Randall on a shallow rocky shore at the end of a mangrove channel at Ras Mohammed, Red Sea. The new species belongs to the Nigricans Species Group, which is distinguished from all other blennies in having about the medial third of the ventral margin of the upper lip entire and the lateral thirds crenulate. Within the group, now consisting of 11 species, the new species is distinguished by having only single pores at each preopercular pore position, typically three predorsal commissural pores, and small white spots on lips, head and body. *Entomacrodus solus* is the only species of the circumtropical genus *Entomacrodus* known from the Red Sea.

Key words: Lonely blenny, fish, Ras Mohammed, Egypt

Introduction

Springer (1967) revised the circumtropical genus *Entomacrodus* and recognized 22 valid species. Springer & Fricke (2000) described two new species, one from the Western Indian Ocean and another from the western Central Pacific; Randall (2005) tentatively placed *E. niuafoouensis* (Fowler, 1932a) in synonymy of *E. epalzeocheilos* (Bleeker, 1859), which we reject as these two species are distinct and easily identified by differences in nuchal cirri (Springer, 1967, 1972); Hastings & Springer (2009) subsequently elevated two subspecies, *E. stellifer lighti* (Herre, 1938) and *E. thalassinus longicirrus* Springer, 1967, to full species status. Most species of *Entomacrodus* are similar in appearance (Springer, 1967; Randall, 2005), but several species groups may be distinguished by the crenulation pattern on the ventral margin of the upper lip.

The most recent checklist of the fishes of the Red Sea (Goren & Dor 1994) reported one species of the genus *Entomacrodus*, *E. epalzeocheilos*, based on specimens collected in 1975 by J.E. Randall at Ras Mohammed (sometimes spelled Ras Muhammad or Ras Mohammad). Randall's collection included 35 specimens, which were subsequently divided between two museums with 18 specimens going to the Bernice P. Bishop Museum (BPBM) and the other 17 deposited at the National Museum of Natural History, Smithsonian Institution (USNM). V.G. Springer provisionally identified the USNM specimens as *E. epalzeocheilos*, a member of the Striatus Group of *Entomacrodus*, probably because several of the specimens have multifid nuchal cirri and the smaller specimens have faint indications of crenulae medially on the upper lip.

While preparing a revised checklist of the Red Sea fishes (Golani & Bogorodsky *in press*), the second author asked J. E. Randall to re-examine the Red Sea *Entomacrodus* specimens housed at the BPBM and compare them with *E. epalzeocheilos*. Randall reported (pers. comm.) that the specimens have no crenulae on the medial third of the upper lip and have crenulae on the lateral thirds, placing these specimens in the Nigricans Group of *Entomacrodus*. A subsequent re-examination of the BPBM and USNM specimens revealed that the Red Sea specimens belong to an undescribed species in the Nigricans Group of

Entomacrodus. Springer and Fricke (2000) recognized ten species in the Nigricans Group: *E. chiostictus* (Jordan & Gilbert, 1882), *E. vomerinus* (Valenciennes in Cuvier & Valenciennes, 1836), *E. textilis* (Valenciennes in Cuvier & Valenciennes, 1836), *E. cadenati* Springer, 1966, *E. nigricans* Gill, 1859, *E. caudofasciatus* (Regan, 1909), *E. sealei* Bryan & Herre, 1903, *E. corneliae* (Fowler, 1932b), *E. williamsi* Springer & Fricke, 2000, and *E. lemuria* Springer & Fricke, 2000. The purpose of this publication is to describe these Red Sea specimens of *Entomacrodus* as a new species, bringing the total number of recognized species in the genus to 27.

Methods

Our methods follow Springer (1967), with subsequent modifications by Springer and Fricke (2000). An illustration of the cephalic pore characters is given in Springer and Fricke (2000: Fig. 1). We use the following abbreviation: SL, standard length.



FIGURE 1. *Entomacrodus solus*, holotype, BPBM 19791, male, 42.5 mm SL, Sinai Peninsula, Ras Mohammed, 0–0.2 m (freshly collected specimen; photograph by J.E. Randall).

Entomacrodus solus new species

Lonely blenny

Figure 1

Holotype: BPBM 19791, male, 42.5 mm SL, Sinai Peninsula, Ras Mohammed, rocky shore at north end of mangrove channel, 0–0.2 m depth, J.E. Randall, 24 October 1975.

Paratypes: USNM 216536, 18, 14–46 mm SL, collected with holotype. BPBM 41015, 16, 18–42 mm SL, collected with holotype.

Diagnosis. Ventral margin of upper lip smooth medially, crenulae present on lateral thirds; nape with simple or multifid cirri on each side; supraorbital tentacle branched; preopercular pore positions with simple pores; 3 (rarely 4) predorsal commissural pores; lips, head and body with small white spots; no contrasting dark humeral spot; oblique dark bar behind eye.

Description (characters of holotype indicated with * where variable). Dorsal-fin rays XIII, 14–15* (usually 15); anal-fin rays II, 15–17 (usually 16*), last ray split to base; pectoral-fin rays 14; pelvic-fin rays I, 4, spine not visible externally, innermost ray smaller than adjacent ray; segmented caudal-fin rays 13, middle 9 branched, dorsalmost and ventralmost 2 rays simple; dorsal fin deeply notched between spinous and soft portions; posteriormost dorsal-fin spine reduced, not visible externally; last dorsal ray attached by membrane to caudal peduncle; vertebrae 10+24=34* (three with 10+23=33); last rib borne on centrum 11; last epineural borne on centrum 14–17 (usually on 15*–16); over 100 freely movable slender teeth in each jaw; ventral

margin of upper lip smooth medially, crenulae present on lateral thirds, total crenulae 12–28 (13*); each supraorbital tentacle with 2–7 cirri, number of cirri tending to increase with body size, variable bilaterally, most with 2–4 (7* left–3* right); nuchal cirri 0–4 on each side, usually 1–1 (holotype with barely discernable rudiment on each side*), shape varying from tiny rudiment* to slender or palmate; anterior nostril with broad, palmate flap bearing fringe of 7 to 16 tiny cirri (12* left–10* right); pseudobranchial filaments 6–7* (usually 6); gill rakers 14–17* (usually 16); lateral line anteriorly continuous to about middle of body, curving posteroventrally and extending posteriorly to vertical from base of 10th to 12th dorsal-fin spine, then continuing along lateral midline of body as series of 7–11 (9*) very small, disconnected, bipored tubes ending at vertical from base of 13th dorsal-fin spine to 6th* segmented dorsal-fin ray; one pore in front of each anterior nostril; one pore occupying each preopercular pore position; predorsal commissural pores typically 3* (rarely 4).

Coloration (based on a photo (Figure 1) by J.E. Randall of the freshly dead holotype): Head greenish brown with small white spots on snout, upper lip, lower lip and lower half of cheek; chin and gill membranes with three narrow white chevrons separated by broader dusky brown chevrons, each dusky chevron with central string of small white spots; bluish white streak along posterior border of orbit, followed by brownish area then slender black diagonal streak bordered posteromedially with short, narrow white line on side of head behind eye. Body with greenish brown background covered with scattered, small white spots on dorsal half of body; about 11 irregular dark bars along side of body with each dark bar separated ventrally by intervening white blotches, humeral bars not differing in intensity from other bars. Pectoral-fin base with vertical white bar anteriorly, ventral and posterior to gill opening, followed by brownish bar, then by tiny white spots scattered over ventral third of translucent pectoral fin. Spinous portion of dorsal fin with fine melanophores basally, irregular whitish coloration on middle portion of each spine; segmented rayed dorsal fin with about five faint brown diagonal bands angling dorsally and posteriorly from base of fin to distal tips, bands separated by narrow translucent, whitish bands; distal tips of rays yellowish. Caudal and anal fins dusky to translucent with distal tips of rays yellowish, without obvious dark markings.

Distribution. The only known specimens are from a single collection from Ras Mohammed at the southern end of the Gulf of Aqaba. They were collected from a rocky shore at the north end of a mangrove channel from a depth of 0–0.2 m.

Etymology. The species name is from the Latin, *solus*, meaning alone, and refers to its being the only species of *Entomacrodus* occurring in the Red Sea. The name is treated as a noun in apposition. We propose the common name, Lonely blenny, in reference to its geographic isolation from other members of the genus.

Comparisons. *Entomacrodus solus* is a member of the Nigricans Species Group. All 11 species of the Nigricans Group are characterized by having the ventral margin of the upper lip smooth medially and the lateral thirds crenulate (Springer, 1967; Springer and Fricke, 2000). All species of the Nigricans Group have highly variable color patterns generally consisting of short, double, dark bars and small white spots and dashes on the body. *Entomacrodus solus* is easily distinguished from all other species in the Nigricans Group by having small white spots and no dark bars on the upper lip.

Springer & Fricke (2000) divided the Nigricans Group into 3 subgroups based on the number of preopercular pore positions with single or multiple pores. *Entomacrodus solus* belongs in Subgroup 1, which includes those species with a single pore at each preopercular pore position, or with no more than two positions with two or more pores. Subgroup 1 includes the four species in the Atlantic-Caribbean region, *E. vomerinus*, *E. textilis*, *E. cadenati*, and *E. nigricans*; the Red Sea *E. solus*; and the Indo-Pacific *E. caudofasciatus*. Subgroup 2 includes only the Eastern Pacific *E. chiostictus*. The other four Indo-Pacific species, *E. corneliae*, *E. lemuria*, *E. sealei* and *E. williamsi* are placed in Subgroup 3, in which specimens typically have multiple pores at 3–5 (rarely 1 or 2) pore positions (Springer & Fricke, 2000). The most distinctive character of the new species is the presence of small white spots on the upper lip, head and pectoral-fin base (Figure 1). Other members of the Nigricans Group have alternating narrow dark bars and broad pale bars on the upper lip (Figure 2). In addition to the white spots, *E. solus* is readily distinguished from members of Subgroup 1 by a combination of having only 3 predorsal commissural pores, lacking a contrasting dark humeral spot and dark markings on caudal fin faint (black markings on the caudal fin are not

pronounced on preserved specimens, but the only photo of a fresh specimen was taken on a black background that obscures any black markings that may have been present on the translucent fins). Color photographs (Figure 2) of *E. nigricans* and *E. caudofasciatus* illustrate the typical characteristics of the Nigricans Group showing dark brown bars on the upper lip, absence of white spots on the upper lip and most of the head, and pronounced blackish or dark brown bars on the caudal fin (see also Allen *et al.*, 2007).

Although *Entomacrodus solus* is known only from a single locality in the Red Sea, it is likely that it occurs in similar habitats at other localities in the Red Sea. Blennies can be difficult to collect without the use of rotenone and many species can easily be overlooked. Because species of *Entomacrodus* live in very shallow water on rocky shores and often in estuaries, they are not usually seen by snorkelers and SCUBA divers, who predominately visit the more colorful coral reefs in the Red Sea. Rotenone collecting along rocky shores in other parts of the Red Sea is needed to determine the extent of the geographic distribution of *E. solus*.



FIGURE 2. Selected specimens of the Nigricans Group exhibiting the typical brown bars on the lips and dark bars on the caudal fin. Top) *Entomacrodus nigricans*, Navassa Island, Caribbean (USNM 359131, 30 mm SL; photograph by J.T. Williams). Middle) *Entomacrodus caudofasciatus*, Busuanga Island, Philippines (36.2 mm SL; photograph by J.T. Williams). Bottom) *Entomacrodus caudofasciatus*, Christmas Island, Indian Ocean (collected in 1978 at the type locality for the species; photograph by G.R. Allen).

Acknowledgments

We thank V.G. Springer for providing background information on the new species and for his encouragement and support during the study. We thank J.E. Randall (BPBM) for providing the photograph used for Figure 1, information about the collecting site and for the initial examination of BPBM specimens. L. O'Hara and A. Suzumoto (BPBM) kindly arranged to send specimens on loan. At the USNM, J.F. Finan, K.A. Murphy, L.F. Palmer, D.E. Pitassy, S.J. Raredon, D.G. Smith, S. Smith, and E. Wilbur provided curatorial support during this project. G.R. Allen graciously provided a color photograph of *E. caudofasciatus* from its type locality, Christmas Island. We thank P.A. Hastings, W.F. Smith-Vaniz and V.G. Springer for providing constructive comments on an earlier version of the manuscript.

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