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A new species of sponge-dwelling *Elacatinus* (Pisces: Gobiidae) from the western Caribbean

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Abstract

A new species of sponge-dwelling goby, *Elacatinus lori*, is described from Belize and Roatan Island, Honduras. It is distinguished from congeners by a terminal mouth position, thin white lateral stripe from the eye to the caudal peduncle and a thin white bar on the snout. It is the only shallow water sponge-dwelling *Elacatinus* in the Gulf of Honduras, appears to be endemic to that region, and has a mutually exclusive distribution from its apparent closest relatives.

Key words: Fish, goby, *Elacatinus lori*, new species, Belize, Honduras

Introduction

The western North Atlantic coral reef fishes of the genus *Elacatinus* generally live associated with stony corals or sponges. Böhlke and Robins (l968) published the first review of the group, describing 9 new species, in addition to 3 previously known, for a total of 12 recognized species. While they reduced *Elacatinus* to a subgenus of *Gobiosoma*, Eschmeyer and Bailey (1990) assigned generic status to *Elacatinus* and I follow their designation. Sazima et al. (1996) described a thirteenth species, *Elacatinus figaro*, from Brazilian waters.

In addition to their specialist associations, each species has a limited geographic range across the western Atlantic reef tract. Within nominal species there is often consistent geographic variation in the color of the lateral body stripe or head markings without other apparent morphological differences (Colin, 1975). These populations are considered color forms of a single morphologically identifiable species with each color form having its own distinct geographic distribution within the total range of the species. It is usually impossible to distinguish between color forms once preserved (Colin, l975; Böhlke and Robins, l968).

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Colin (1975) described the biology and geographic distribution of *Elacatinus* species, and reported specimens of a shallow-water, sponge-dwelling species from Belize, tentatively identified as *Gobiosoma (Elacatinus) horsti*. However, the pattern of markings upon the snout differed from typical *E. horsti*. As previously indicated in Colin (1975: 98) "specimens are identical in every respect to *G. horsti* (W) except they have a bar of brilliant white on the snout, running from in front of the anterior edge of the eyes to near the upper lip. The geographic range and relationship of this form to the others is unknown and must await future collection. At present, it is best to consider these specimens as *G. horsti*."

Subsequent collections and observations indicate this does represent a new species geographically limited to the Gulf of Honduras. The purpose of this paper is to describe this species in preparation for a larger treatment of the zoogeography of the entire group.

Materials and methods

Specimens were typically collected by SCUBA diving with detailed color notes taken both underwater and on the surface after capture. Selected individuals were photographed on the surface. Underwater photographs of this fish were provided by Dr. J.E. Randall and Mr. Paul Humann.

Specimens were measured with dial calipers. Measurements were taken in the same manner as Böhlke and Robins (1968).

Results

Elacatinus lori - new species

Figures 1-2

Gobiosoma horsti (white color form, in part) Colin, 1975:102-103., Greenfield and Johnson, 1999: 265.

Gobiosoma illecebrosum, (non Böhlke and Robins, 1968), Humann 1994.

Material Examined- Holotype: UF 2030716, formerly UMML 30716, (a female, 45.6 mm SL), BELIZE, barrier reef, Tobacco Reef, 22-27 m depth, 26 Oct. 1972, P.L. Colin. Paratypes: UF 234708, BELIZE, same data as holotype, (6 ind. 12.0-36.8 mm SL, 3 largest female, others undetermined).

Description-

Morphometrics of holotype and three largest paratype specimens (29.8-36.8 mm SL) as percent of standard length: head length, 24.0-27.7; upper jaw length, 10.0-12.0; eye diameter, 6.2-7.6; snout length, 5.6-6.0; mouth width; 10.6-11.6; greatest depth, 21.0-23.4;

depth at dorsal origin, 18.6-23.4; depth at caudal peduncle, 12.5-13.9; pectoral fin length, 22.5-27.0; pelvic fin length, 17.6-19.2; caudal fin length, 22.3-24.0. Fin-ray counts: D. VII, 12-13; A . 11; P. 18-19.

The body is naked, elongate, somewhat laterally compressed. The mouth is terminal in position and U-shaped. A rostral frenum is absent. Tongue is rounded. The dorsal fin is without elongated anterior spines. Caudal fin is rounded. The ventral fin cup is complete.

The lower jaw has a small patch of recurved canine teeth on either side inside a row of smaller stubby canines near the anterior end. The upper jaw has a few much smaller canines in the area above the patch on the jaw, with tiny canines in a row along the edge of the jaw. As the 4 largest specimens were female, no assessment of sex-related dentition differences could be made. Such differences are known in other species of *Elacatinus* (Böhlke and Robins, 1968).

The three largest specimens were ripe females (36.8-29.8 mm SL)

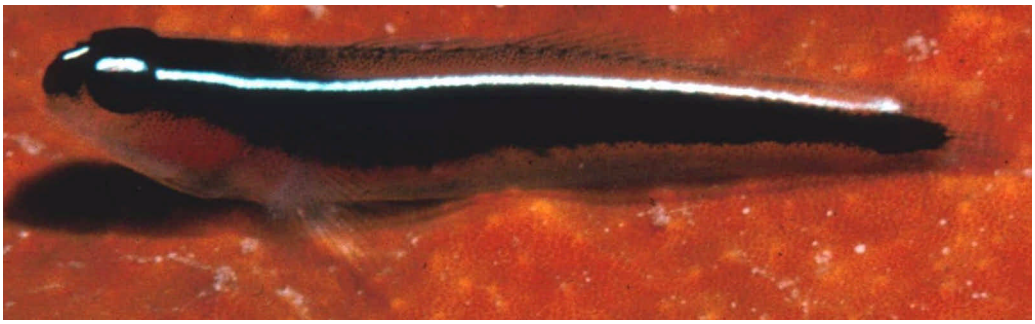


FIGURE 1. Live individual of *Elacatinus lori* on sponge, Belize. Photograph by Dr. J.E. Randall.

Color Pattern in Life: The most prominent feature is the thin white lateral stripe just above the mid-line of the body running anteriorly from the upper part of the eye posteriorly to the origin of the caudal fin. On the upper surface of the eye the stripe is slightly wider than on the body. When looking straight ahead, the eye line is aligned with the body stripe (Fig. 1). A thin white stripe (called a "bar" by Colin, 1975) is found on the mid-line of the snout, running from near the forward margin of the eyes to near the upper lip (Fig. 1). Its width is similar to the stripe on the body. The body has a broad dark lateral stripe running along the mid-line. Its upper limit is at the white lateral stripe along its entire length. Its lower margin starts at the lower edge of the eye, drops slightly lower on the belly, then becomes narrower posteriorly. It ends in a rounded extension on the anterior part of the caudal fin, extending further posteriorly than the white stripe. Other than the extension of the dark lateral stripe onto the caudal fin, all fins are clear and colorless. The area above the white lateral stripe is dark to the origin of the first dorsal fin, then is pale posteriorly. The bases of the dorsal fins have some melanophores. The dorsal

portion of the head is dark between the eyes and onto the snout. The lips are dark anteriorly becoming pale posteriorly where they merge with the pale coloration of the ventral surface of the head. The ventral surface of the mouth, throat, abdomen and tail are pale. Eye black with the exception of the white stripe on its upper surface.

Color Pattern in Preserved Specimens: In the preserved specimens used in this description, the white lateral stripe and snout stripe are still plainly visible as a dark line 30 years after preservation in all specimens. The posterior extension of the dark lateral stripe is visible as a dark splotch at the base of the caudal fin. Otherwise the dark stripe has faded to just a faint area. This was also found to be the case in non-type specimens held in the FMNH since the 1970's, collected by D.W. Greenfield.

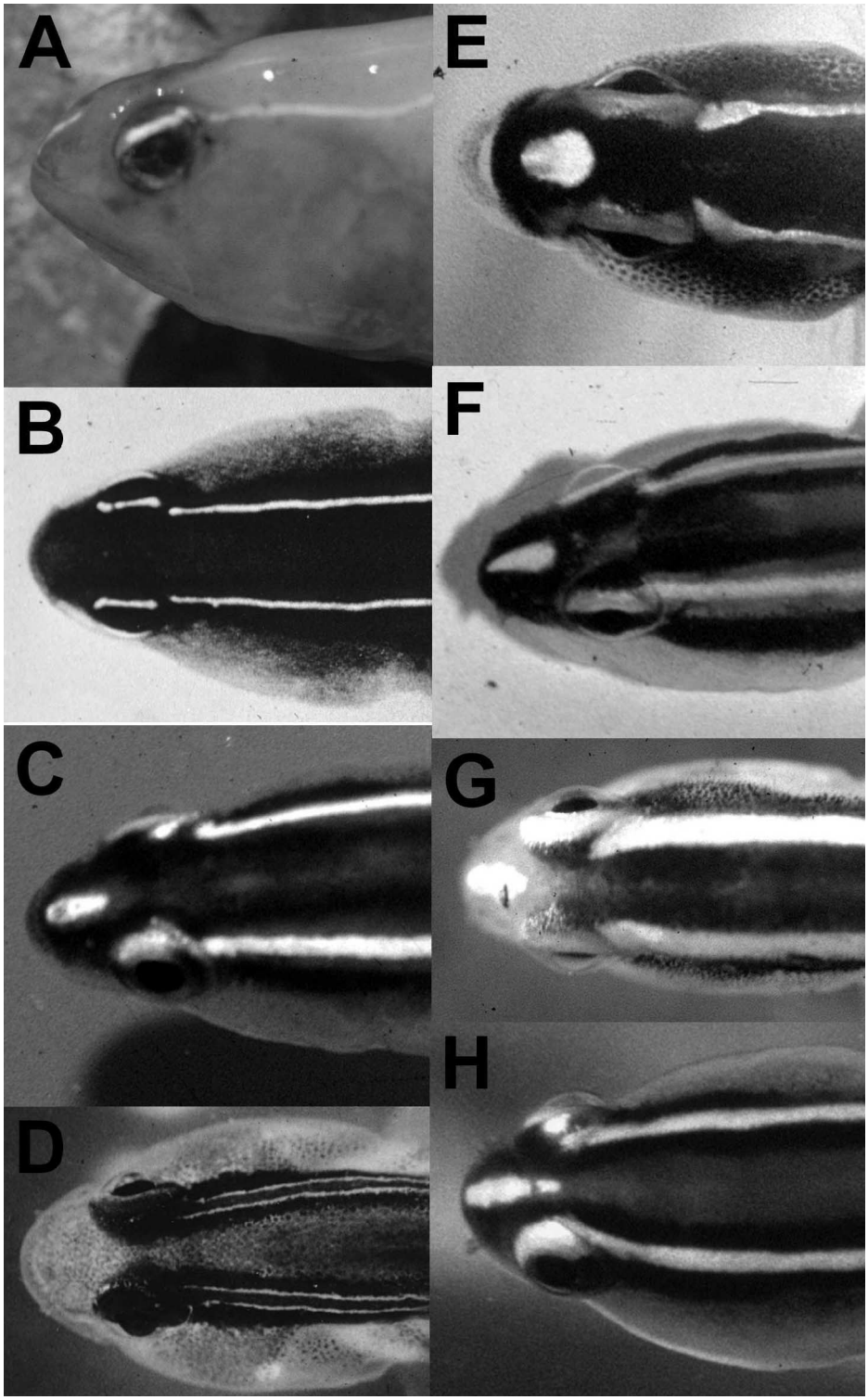
Geographic Range: *E. lori* is known only from the Gulf of Honduras where it occurs along the Belize barrier reef and offshore atolls, plus the Bay Islands of Honduras. Its range appears to be mutually exclusive to that of *E. horsti* (W), known from Haiti, Jamaica and Serranilla Bank, and *E. horsti* (Y), known from the Cayman Islands and northern Bahamas (Colin, 1975). *E. lori* is the only shallow-water (generally above 20-30 m) sponge-dwelling *Elacatinus* found in the Gulf of Honduras; *E. louisae* occurs deeper in that region. It is not known what shallow-water sponge-dwelling *Elacatinus*, if any, occurs further north in the Yucatan Channel.

Etymology: Named for Lori Jane Bell Colin in recognition of her numerous contributions to the biology of coral reef fishes.

Remarks- *Elacatinus lori* is most similar to the white color form of *E. horsti* (Fig. 2b). Since the pattern and coloration of *E. lori* is consistent across its known range and is the only shallow-water sponge-dwelling *Elacatinus* in the Gulf of Honduras, it was decided it did indeed represent a valid species. The narrow snout stripe in *E. lori* easily separates this species from *E. horsti* (W) and remains visible in well-preserved material.

The only other *Elacatinus* that might be confused with *E. lori* are two others with a snout marking and terminal/subterminal mouth position; *E. xanthiprora* and *E. randalli* (Fig. 2). However, both species have a wider lateral stripe and wide snout marking with rounded ends which would distinguish them from *E. lori*. Additionally *E. randalli* has the mouth subterminal, rather than terminal, in position and is a cleaning coral-dwelling species. Additional species of *Elacatinus* with snout-markings are shown in Figure 2.

FIGURE 2. Comparison of head markings of species of *Elacatinus*. A. *Elacatinus lori*, dorsolateral view of fresh dead specimen showing thinness of snout stripe and lateral stripe. B. Dorsal view of the head of *E. horsti* (W) which lacks a snout stripe. C. Dorsal view of the head of *E. xanthiprora*. D. Dorsal view of the head of *E. chancei*. E. Dorsal view of the head of *E. atronasum*. F. Dorsal view of the head of *E. illecebrosum* (B). G. Dorsal view of the head of E. *randalli*. H. Dorsal view of the head of *E. xanthiprora*.



E. lori was extremely common on the barrier reef and offshore atolls of Belize and at Roatan Island, Honduras. Greenfield and Johnson (1999:265), based on ichthyocide stations, reported the depth range of *E. lori* as being generally 9-24 m (although one or a few individuals were recorded at 0-1.2 m). They reported a similar depth range for *E. louisae* (12-24 m), however the depth involved (12-24 m) are those where both species may occur. However, *E. lori* was not found below about 30 m and *E. lousiae* was extremely common at those depths and below. Regarding the collection from 0-1.2 m, *E. lori* might occur in very shallow water, if the proper species of sponges were present. Such sponges, though, are generally found at minimum depths of 6-9 m in areas protected from the wave action near the surface.

E. lori shares what appears to be a common range with a southern population of the cleaning goby, *E. oceanops*, which is limited to the Gulf of Honduras. Although Greenfield and Johnson (1999) identified *E. oceanops* from Belize as *E. evelynae*, indicating it was common in that area, I examined these specimens at the Field Museum of Natural History and determined all were *E. oceanops*. The zoogeography of *Elacatinus* in the tropical Western Atlantic is complex and is receiving further attention.

Acknowledgments

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