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Eviota tigrina, a New Goby from Tonga (Teleostei: Gobiidae)

David W. Greenfield[1,3] and John E. Randall[2]

1 *California Academy of Sciences, 55 Music Concourse Drive, San Francisco, California 94118-4599; Email: greenfie@hawaii.edu.* 2 *Bishop Museum, 1525 Bernice Street, Honolulu, Hawaii 96817-2704*

A new species of goby in the genus *Eviota* was collected at Vava`u, Tonga. The species differs from other described species by its distinctive coloration of numerous vertical black lines (from black pigment in scale-pocket tissue) forming spindle-shaped patterns, a curved black band at the caudal-fin base, dark reddish bands on the head, and a number of morphological characters. *Eviota storthynx* Rofen is also reported from Tonga for the first time.

While on a one-month, fish-collecting trip to Tonga in 1983, the second author collected numerous gobies. One productive collecting site was at the wreck of the *Glen McWilliams*, a ship that sank in 1927. Among the gobies taken there were specimens in the genus *Eviota*, one of which is new to science, another a new record of *E. storthynx* Rofen for the kingdom, and a third unidentified species that was photographed. It is the purpose of this paper to describe the new species.

Materials and Methods

Counts and measurements, descriptions of fin morphology and the laterosensory pore/neuromast patterns follow Lachner and Karnella (1980), and the format of description follows Gill and Jewett (2004) except that some measurements are given. Measurements were made to the nearest 0.1 mm using dial calipers, and are presented as percentage of Standard Length (SL). Institutional abbreviations are as listed in Leviton et al. (1985).

Species Description

***Eviota tigrina* Greenfield and Randall, sp. nov.**
Figures 1–2.

Material Examined.— Holotype: Bishop Museum-BPBM 38095, 21.7 mm SL, male, Tonga, Vava`u Group, Neiafu, inner harbor at wreck of the "Glen McWilliams," 16 m, rotenone, 13 March 1983, J.E. Randall.

Diagnosis.— The following combination of characters distinguishes *E. tigrina* from congeners: dorsal-anal fin ray formula 10/9; 27 lateral scales; six pectoral-fin rays branched; cephalic sensory-pore system pattern 2; fifth segmented pelvic-fin ray present and 25% length of fourth ray; genital papilla non-fimbriate; dorsal fin not filamentous; branches on fourth pelvic-fin ray 13; body with numerous vertical black lines (from black pigment in scale-pocket tissue) forming spindle-shaped patterns, a curved black bar at the caudal-fin base, and dark reddish bars on the head.

[3] Research Associate, Department of Ichthyology, California Academy of Sciences and Emeritus Professor, University of Hawaii. Mailing address: 944 Egan Ave., Pacific Grove, CA 93950.

Description.— Dorsal-fin rays VI + I,10; anal-fin rays I, 9; pectoral-fin rays 17; pectoral-fin rays 11th through 16th branched; pelvic-fin rays I,5, fifth ray 25% of length of fourth ray; 13 branches on fourth segmented pelvic-fin ray; one or two segments between consecutive branches of fourth segmented pelvic-fin ray; pelvic-fin membrane reduced; branched caudal-fin rays 13; segmented caudal-fin rays 16; lateral scale rows 27; transverse scale rows 6; breast scaleless.

The dorsal-fin spines of the male are not elongate. Pelvic fins reaching to anal-fin origin. Cephalic sensory-pore system pattern 2; superficial neuromast (cutaneous papillae) system pattern B. Male genital papilla non-fimbriate with three points on the end.

As percentage of standard length: head length 26.7; origin of first dorsal fin 31.1; origin of second dorsal fin 54.8; origin of anal fin 57.6; caudal-peduncle length 22.6; caudal-peduncle depth 15.4; eye diameter 7.1; snout length 3.4; pectoral-fin length 34.8; pelvic-fin length 29.0.

Color in preservative: Background color of body and head tan with an orange tint. Body with numerous bold vertical black lines (from black pigment in scale-pocket tissue) forming spindle-shaped patterns on back and sides. A dark brown to blackish curved band at the caudal-fin base, followed by a white area before dark brown spots begin on the caudal-fin rays. Head with a light brown postocular spot and a few scattered melanophores on cheek. Pectoral-fin base with scattered melanophores. Pectoral fin with fine melanophores along edges of fin rays, membrane clear. Dorsal and anal fins with a peppering of melanophores on the rays and membranes with the distal half black on dorsal fins. Anal fin uniformly dark. Pelvic fins peppered with melanophores. Iris black, pupil straw.

Color of fresh specimen: Background color on back and head a pale yellowish gray, sides and abdomen translucent with eight dark internal bands showing through. Ventral surface very pale gray, almost white. Back and sides with numerous bold vertical black lines (from black pigment in scale-pocket tissue) forming spindle-shaped patterns. Caudal-fin base with a curved black band followed by a white area before black spots begin on caudal-fin rays. Pectoral-fin base with scattered melanophores with a narrow oblique dusky line with light areas on each side on midlateral portion, areas above and below the line yellow-orange. Opercular membrane directly in front of pectoral-fin base white with a bluish tinge. Side of head with three dusky red bands extending from top to lower side of head. First band in two parts, the first directly under the eye, the remainder below it extending down to bottom of cheek. The second extending from the postocular spot down the cheek to the preopercular edge. The third band from the top of the head down across the opercle. Pupil of eye black, iris gold and red. Lower third of first dorsal fin clear with yellow-orange on the spines and scattered melanophores on the membranes. Distal two-thirds mottled black. Second dorsal fin similar to first. Anal fin dusky, black on distal portion. Pelvic fins clear with scattered melanophores.

Etymology.— The specific epithet is a noun in apposition, derived from the Latin *tigrinus* in reference to the many narrow, black lines on scale pockets forming spindle-shaped patterns like those in tigers.

Comparisons.— *Eviota tigrina* fits the description of the Group II species-group of Lachner and Karnella (1980), except that the fifth pelvic-fin ray is not short (10%) or absent, but rather is 25% of the length of the fourth ray. It does have the remainder of the characters of that group: cephalic sensory-pore system pattern 2 (NA, AITO, PITO, SOT, AOT and POP pores present); some pectoral-fin rays branched; and pelvic-fin membranes joining first four segmented rays reduced. *Eviota tigrina* differs from all other species of *Eviota* by its distinctive color pattern. It differs from species in Group II as listed in Gill and Jewett (2004) as follows: from all species by its relatively long fifth pelvic-fin ray; *E. indica* and *E. latifasciata* both have a strong mode of I,8 dorsal-fin rays, whereas *E. tigrina* has I,10; *E. tigrina* has an anal-fin formula of I,9, whereas all

others except *E. variola* have a mode of I,8; *E. indica* has a mode of 15 pectoral-fin rays, *E. japonica*, *E. punctulata*, and *E. zonura* a mode of 16, whereas *E. tigrina* has 17; the genital papillae is fimbriate in *E. prasina*, *E. variola*, and *E. zonura*, is cup-shaped in *E. saipanensis*, but is non-fimbriate in *E. tigrina*; *E. tigrina* lacks spots on the pectoral-fin base, whereas they are present in *E. hoesei*, *E. japonica*, and *E. queenslandica*, and it also lacks prominent dark spots on the occipital region that are present in *E. bimaculata*, *E. japonica*, *E. prasina*, *E. punctulata*, *E. queenslandica*, and *E. variola*; *E. tigrina* differs from all Group II species except *E. indica*, *E. latifasciata*, and *E. punctulata* by not having filamentous or elongate dorsal-fin rays. In the key in Lachner and Karnella (1980), *E. tigrina* keys to the couplet of *E. bimaculata* and *E. afelei*, and in a modified key updated with species described since 1980 prepared by R. Winterbottom (pers. comm.), it ends at the couplet of *E. punctulata* and *E. afelei*.. The head and trunk lack prominent color marks in *E. afelei,* whereas there are boldly marked dark scale pockets in *E. punctulata* similar to those in *E. tigrina*.

FIGURE 1. *Eviota tigrina* holotype. BPBM 38095, 21.7 mm SL. Photograph by J.E. Randall.

Eviota tigrina appears to be most similar to *E. punctulata*, but differs in coloration and other characters. The boldly marked black scale pockets are darker, more numerous and thus closer together in *E. tigrina* than in *E. punctulata,* and are obvious in preserved specimens (Fig. 2). There also is a distinct black curved band at the base of the caudal fin that is lacking in *E. punctulata*. The oblique dusky mark at the center of the pectoral-fin base is more distinct in *E. punctulata*, and *E. tigrina* lacks the several doughnut-shaped clusters of melanophores on the cheek that are present in *E. punctulata*. When alive or fresh, *E. punctulata* has two distinct reddish rectangles outlined with silver-white lines on the abdomen that are lacking in *E. tigrina* (Fig. 3). Based on the description of *E. punctulata*

FIGURE 2. *Eviota tigrina* holotype (BPBM 38095) above, *Eviota punctulata* (CAS 225903-18.6 mm SL-Fiji) below.

FIGURE 3. *Eviota punctulata*, underwater photograph taken at Majuro by J.E. Randall.

(Jewett and Lachner 1983) the greatest number of anal-fin rays it has is 8, whereas *E. tigrina* has 9. The mode for dorsal-fin rays is 9 (one of 26 with 10) for *E. punctulata*, whereas it is 10 in *E. tigrina*. *Eviota tigrina* has 27 lateral scales whereas the counts for *E. punctulata* are 23(7) 24(8) 25 (5) 26 (1). The length of the fifth pelvic ray is 25% of the fourth ray in *E. tigrina*, whereas the longest value given for *E. punctulata* is 20%.

Additional Material Examined.— *Eviota punctulata*, CAS 225903 (11), Fiji, Budd Reef, Yvau Island, 16º29.920´S, 179º42.600´W, 8.2 — 10.2 m, rotenone, 21 May 2003, field no. G03-50, D.W. and T.A. Greenfield.

Eviota storhynx.— Fourteen specimens of *Eviota storthynx* Rofen were taken along with *E. tigrina* (BPBM 38096). Based on Randall et al. (2003), this is the first record of this species from Tonga. The species was previously known from the Philippines, Palau, Caroline Islands, Japan, Java, and Western Australia.

Remarks.— Underwater photographs of unidentified *Eviota* species have become common in the literature (Hayashi and Shiratori 2003; Senou et al. 2004). These photographic records are beneficial both in alerting others of the existence of these species and also providing additional color and distributional information when the species are captured and later described. We are including such a photograph of an *Eviota* species seen in Vava`u Tonga (Fig. 4). The second author photographed the fish at the same time he photographed and collected the holotype of *E. tigrina*. Unfortunately bottom time expired after photographing the goby and it was not possible to collect the fish at that time or return to the locality later.

Figure 4. *Eviota* sp., photograph taken at the wreck of the "Glen McWillliams" in Tonga.

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