

## *Eviota randalli*, a New Gobiid Fish from Oceania

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**The Oceania populations of *Eviota pseudostigma* are recognized as a distinct species, *E. randalli*, from those in the Indian Ocean. *Eviota randalli* differs from *E. pseudostigma* in having more pectoral-fin rays but fewer of them branched and three rather than four subcutaneous body bars. Specimens from Palau remain as *incertae sedis*.**

When Lachner and Karnella (1980) described *Eviota pseudostigma*, they noted differences between their specimens from the Indian Ocean and those from Oceania (the Society Islands [Tahiti] and the Samoa Islands [Tutuila]), restricting their type material to specimens from the Indian Ocean. They suggested that the widely separated populations may represent distinct species, but because they only had four specimens from Oceania they did not describe them as a separate species. Intensive collecting at Fiji resulted in ten specimens that were initially identified as *E. pseudostigma*, and R. Winterbottom provided three more specimens from Moorea. The differences observed by Lachner and Karnella were confirmed and the specimens from Oceania are here described as *E. randalli*.

### MATERIALS AND METHODS

Counts and measurements, descriptions of fin morphology and the laterosensory pore/neuromast patterns follow Lachner and Karnella (1980). Measurements were made to the nearest 0.1 mm using dial calipers and an ocular micrometer, and are presented as percentage of Standard Length (SL). Cyanine Blue 5R (acid blue 113) stain was used to make features more obvious (Akihito et al. 1993; Saruwatari et al. 1997; Nakabo 2002). Values for the holotype are given first, followed by the range in parentheses for all types, and by the mean where appropriate. Pectoral-fin ray counts in Table 1 combine those from Lachner and Karnella (1980) with those taken in this study. Institutional abbreviations are as listed in Leviton et al. (1985).

### SPECIES DESCRIPTION

*Eviota randalli* Greenfield, sp. nov.

Figures 1–2.

**MATERIAL EXAMINED.**—HOLOTYPE: CAS 228572, 16.8 mm SL, female, Fiji, Cobia Island, outside barrier reef, spur and groove, 16°27.333'S, 179°40.250'W, 12–17 m, rotenone, field number G03-55, D.W. Greenfield, T.A. Greenfield, R. Langston, J. Pilipoff, 22 May 2003. PARATYPES: CAS 228573, 18.3 mm SL, male, Fiji, N. Lau Group, Duff Reef, barrier reef, N.W. side, coral rock on top of reef, 16°50.390'S,

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179°56.743'W, 0–1.8 m, rotenone, field number G03-36, D.W. Greenfield, K. Longenecker and R. Langston, 11 January 2003; CAS 228574, 17.6 mm SL, male, Fiji, N. Lau Group, Kanacea Island, N. side at Copra Plantation, barrier reef, crack in reef, 17°14.890'S, 179°08.475'W, 3.4–8.5 m, rotenone, field number G03-13, D.W. Greenfield, K. Longenecker, R. Langston, and B. K. Mataitini, 5 January 2003; CAS 219785, 16.8 mm SL male, 17.5 mm SL female, Fiji, Viti Levu, barrier reef off Suva, main channel, spur and groove, 18°08'90"S, 178°23'91"E, 4.7–8.0 m, rotenone, field number G99-19, D.W. Greenfield, K. Longenecker and K. Cole, 31 May 1999. BPBM 41001, 17.1 mm SL, female, Fiji, N. Lau Group, Mago Island, N.W. side, cave in wall of fringing reef, 17°25.460'S, 179°10.085'W, 9.2 m, rotenone, field number G03-03, D.W. Greenfield, K. Longenecker, R. Langston, and B. K. Mataitini, 2 January 2003; USNM 396995, 16.6 mm SL, female, taken with BPBM 41001; ROM 84966, 15.1 mm SL, male, Fiji, Vanua Levu, N. shore, outside Great Sea Reef, W of Kia Island, reef front, 16°13.730'S, 179°01.733'E, 4.3–10.8 m, rotenone, field number G02-125, D.W. Greenfield, K. Longenecker, R. Langston, and B. K. Mataitini, 31 March 2002; CAS 228575, 14.4 mm SL, male, 13.1 mm SL female, taken with ROM 84966; ROM 60894, male, 16.8 mm SL, Moorea, E. of pass out of Cook Bay on reef slope, 17°28.29'S, 149°49.17'W, 3.1–12.2 m, rotenone, field number RW89-29, R. Winterbottom, R. Holleman, and R. Mooi, 12 December 1989; ROM 60895, females, 13.9 and 14.9 mm SL, Moorea, N.E. tip of pass out of Cook Bay, 17°28.42'S, 149°49.22'W, 13.9–14.5 m, rotenone, field number RW89-37, R. Winterbottom and R. Mooi, 15 December 1989. OTHER MATERIAL EXAMINED: *Eviota randalli*- BPBM 9419 (2), 14.8–16.1 mm SL, males, Tahiti, Popote Bay, Papara, 9.2–12 m, chemfish, J.E. Randall, 13 March 1969; *Eviota pseudostigma*- CAS 43545 (2 paratypes, 15.0–19.2 mm SL), Amirantes Islands, J. Böhlke, R. Rosenblatt, et al., 2 March 1964; ROM 58949 (4, 11.1–15.1 mm SL), Comoros, Moheli, 12°23.52'S, 43°30.000'E, 2.0–5.0 m, rotenone, field number RW88-39, R. Winterbottom et al., 25 November 1988.

**DIAGNOSIS.**—The following combination of characters distinguishes *E. randalli* from congeners: dorsal-anal fin-ray formula 8/8; pectoral-fin rays branched, only starting with ray 10 (usually 11 or 12); cephalic sensory-pore system pattern I (complete); fifth segmented pelvic-fin ray absent; three to four branches on fourth pelvic-fin ray, three to seven segments between branches (usually three or four); genital papilla non-fimbriate; dorsal fin slightly filamentous; three internal dark bars between anal-fin origin and caudal fin; a prominent dark spot on lower half of pectoral-fin base and a white area anterior to pectoral-fin base.

**DESCRIPTION.**—Dorsal-fin rays VI+I, 8; anal-fin rays I, 8; pectoral-fin rays 16 (16–18; 16.8), rays 11–13 branched (10–13); pelvic-fin rays I, 4, fifth ray absent; branches on fourth pelvic-fin ray three (3–4), four (3–7) segments between branches; branched caudal-fin rays 11 (10–11); segmented caudal-fin rays 17 (17–19); lateral scale rows 24; transverse scale rows 7; breast scaleless; first dorsal fin of holotype not filamentous, slightly so in some specimens; pelvic fins reaching to genital papilla; cephalic sensory-pore system pattern I (complete); male genital papilla non-fimbriate.

*Measurements:* (based on holotype and eight paratypes): Standard length 16.8 (14.4–18.3); head length 29.8 (29.8–31.9; 30.8); origin of first dorsal fin 35.7 (32.5–38.9; 36.1); origin of second dorsal fin 55.6 (54.1–59.7; 56.8); origin of anal fin 58.9 (57.9–60.2; 58.9); caudal-peduncle length 24.4 (21.9–26.6; 24.4); caudal-peduncle depth 10.7 (9.1–11.6; 10.8); body depth 19.0 (18.0–21.4; 19.4); eye diameter 11.6 (11.1–12.1; 11.6); snout length 5.1 (4.1–6.5; 5.4); pectoral-fin length 34.8 (27.2–35.1; 34.8); pelvic-fin length 26.8 (26.8–37.4; 31.1).

*Color in preservative:* Background color of body, head, and fins straw colored. Sides and top of head with a peppering of small black dots extending onto the nape. A narrow broken line along top of head from behind eyes onto nape. A brown band extends anteriorly from anteroventral portion of eye across both jaws onto and across gular area. A second brown bar extends from posteroventral portion of eye across cheek half way to preopercle. Scattered small black dots on side of head concentrated on ventral half of preopercular margin forming a short bar. Space between this bar and pectoral-fin base immaculate until very dark brown band on lower half of pectoral-fin base. A scattering of dark dots above bar on upper part of pectoral-fin base. Sides of body with a pep-

pering of small dots and four complete internal dark bars, the anteriormost bar, anterior to anus and under pectoral fin; second bar just posterior to anal-fin origin; third bar just posterior to end of anal fin; fourth bar on caudal peduncle; ventral portions of bars two, three and four obvious dark brown to black spots. An incomplete dark bar present at dorsal-fin origin. Dorsal surface of body with dark brown spots along dorsal-fin bases corresponding to lateral internal bars on body. Scale pockets outlined by light brown pigment. Caudal-fin base with a light brown bar, remainder of fin with some fine peppering. Pectoral fin immaculate. Anal and dorsal fins with scattered light brown pigment on rays and membranes.

*Color of fresh specimen:* Pigment pattern in fresh specimen same as in preserved specimens except that internal lateral bars are black and more obvious. Background color of body white. Orange color on head: concentrated on snout, around anteroventral and posteroventral subocular dark brown bars and onto iris adjacent to bars; another orange blotch on top of iris, pupil black; preopercular area around black area on preopercular margin orange and more faintly onto cheek; posterodorsal area behind eye with an orange blotch; some scattered light orange pigment on nape. Band on ventral half of pectoral-fin base intense black, upper half of base above black band orange. Area anterior to pectoral-fin base white with no dark pigment spots. Dorsal ends of internal lateral bars under dorsal fins with orange. A slight orangish tinge on sides of body.

**ETYMOLOGY.**—The specific epithet is a patronym, a noun in the Latin genitive case, in honor of John E. Randall, who has greatly furthered *Eviota* systematics by photographing and collecting many species, including a number new to science.

**COMPARISONS.**—*Eviota randalli* has a complete cephalic sensory-canal pore configuration, belonging to Group I of Lachner and Karnella (1980). This group contained 22 described species (Shibukawa and Suzuki 2005, Matsuura and Senou 2006; and Allen et al. 2007), with the addition of *E. randalli* bringing the total to 23. *Eviota randalli* has a dorsal-anal formula of 8/8, whereas the following species in Group I have different formulas: 9/8 — *E. albolineata* Jewett and Lachner 1983, *E. disrupta* Karnella and Lachner 1981, *E. epiphanyes* Jenkins 1903, *E. fasciola* Karnella and Lachner 1981, *E. guttata* Lachner and Karnella 1978, *E. inutilis* Whitley 1943, *E. irrasa* Karnella and Lachner 1981, *E. korechika* Shibukawa and Suzuki 2005, *E. melasma* Lachner and Karnella 1980, *E. natalis* Allen 2007, *E. readerae* Gill and Jewett 2004, *E. smaragdus* Jordan and Seale 1906; 8/7 — *E. pardalota* Lachner and Karnella 1978. 10/8–10/9 — *E. abax* (Jordan and Snyder 1901), *E. masudae* Matsuura and Senou 2006. The following described species in Group I share the dorsal-anal formula of 8/8 with *E. randalli*: *Eviota distigma* Jordan and Seale 1906, *E. herrei* Jordan and Seale 1906, *E. nebulosa* Smith 1958, *E. nigripinna* Lachner and Karnella 1980, *E. monostigma* Fourmanoir 1971, and *E. pseudostigma* Lachner and Karnella 1980. *Eviota randalli* has a dark mark on the pectoral-fin base whereas the base is light in *E. nebulosa*, *E. nigripinna*, and *E. herrei*. The fifth pelvic-fin ray is 10–20% the length of the fourth pelvic ray in *E. distigma* whereas it is rudimentary or absent in *E. randalli*, and it has prominent dark spots on the top of the head that are lacking in *E. randalli*. *Eviota monostigma* has the entire pectoral-fin base covered with a dark spot, whereas in *E. randalli* only the lower half of the base is intensely dark, and it has up to seven dark spots on the ventral midline from the anal-fin origin to the end of the caudal



FIGURE 1. Holotype of *Eviota randalli*, CAS 228572, 16.8 mm SL, female, Fiji, Cobia Island.



FIGURE 2. Paratype of *Eviota randalli*, ROM 60894, 16.8 mm SL, male, Moorea. Photo by R. Winterbottom.

peduncle whereas there are only three in *E. randalli*. *Eviota randalli* is most similar to *E. pseudostigma* (Fig. 3), the species it was previously called. The most obvious difference between the two is the coloration on the ventral surface, with *E. randalli* having three distinct dark spots between the anal-fin origin and the caudal-fin base that connect to internal bars, whereas *E. pseudostigma* has four (Fig. 3). There also are differences in the pectoral-fin rays between the two: *Eviota randalli* has 16–18 rays, whereas *E. pseudostigma* has 14–17 (Table 1); the greater difference is in the branching of the rays with the branching not beginning in *E. randalli* until the 10<sup>th</sup> to 12<sup>th</sup> ray, whereas branching can start with the third ray in *E. pseudostigma*. These differences that were first observed by Lachner and Karnella (1980) are supported by the additional Pacific Ocean material.

Three small specimens of *Eviota* from Palau, ROM 84483 (10.1 mm SL), ROM 84766 (12.4 mm SL), ROM 84784 (11.3 mm SL), differ from other material examined. These specimens have four distinct dark spots on the ventral surface between the anal-fin origin and the caudal-fin base, similar to *E. pseudostigma*, but the branching of the pectoral-fin rays does not begin until at least the 10<sup>th</sup> ray as in *E. randalli*. In addition, the specimens have a bold, narrow bar extending down from the center of the eye to behind the maxilla that is absent in either species, and the pigmentation on the lower half of the pectoral-fin base is not as intense (Fig. 4). Until more, larger specimens are available these specimens will remain as *incertae sedis*.

TABLE 1. Pectoral-fin ray counts for specimens of *Eviota randalli* and *E. pseudostigma*.

Pectoral-fin rays	14	15	16	17	18
<i>Eviota randalli</i>	—	—	8	8	4
<i>Eviota pseudostigma</i>	1	4	6	6	—

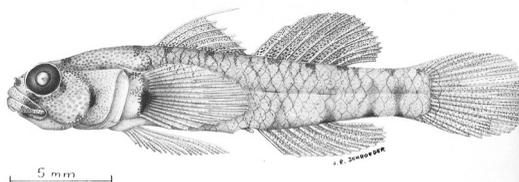


FIGURE 3. Holotype of *Eviota pseudostigma*, USNM 219289. Drawing from Lachner and Karnella (1980).



FIGURE 4. *Eviota* sp., ROM 84784, 11.3 mm SL, Palau.

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