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Eviota samota, a new dwarfgoby (Teleostei: Gobiidae) from Sumbawa, Indonesia

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Abstract

A new species of dwarfgoby, *Eviota samota*, is described from Teluk Saleh, Sumbawa, Indonesia. The new species is characterized by a cephalic sensory-canal pore pattern with only the SOT and PITO pores present. This pattern is shared with only two other species in the genus, *E. pseudaprica* and *E. amphipora*, which are distinguished from the new species by color patterns and having a dorsal/anal-fin formula of 9/8 (vs. 8/8). The new species has one or more of the ventralmost pectoral-fin rays branched and the fifth pelvic-fin ray is absent. The basic body color of *E. samota* is red-orange with a golden-yellow head, pectoral-fin base, and caudal-fin base. The new taxon represents the 134th valid species in the genus *Eviota*.

Key words: taxonomy, ichthyology, coral-reef fishes, gobies, Pacific Ocean, new species, Samota biosphere reserve, Conservation International, Konservasi Indonesia

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Introduction

The dwarfgobies of *Eviota* are a group of tiny Indo-Pacific fishes (usually <18 mm SL) currently represented by 134 valid species including the species described here, making it one of the most diverse genera of coral-reef fishes. In 2016, a key to all 107 of the species of *Eviota* described until then was published by Greenfield & Winterbottom (2016). Subsequently Greenfield (2017) reviewed the genus and raised the total number of species to 113. Greenfield (2021) listed, illustrated, and discussed the additional 16 species described since the 2016 key.

Since the early work of Lachner & Karnella (1980) and Jewett & Lachner (1983), species in the genus have been grouped according to the pattern of their cephalic sensory-canal pores, with most species either having a complete pore pattern or lacking only the IT (intertemporal) pore. In addition, there are a number of smaller groups lacking various combinations of pores, and 8 species lack all pores (Greenfield & Erdmann 2020a). Winterbottom & Greenfield (2020) described *Eviota pseudaprica*, a species with a unique cephalic sensory-canal pore pattern with only the SOT and PITO pores present. Later Greenfield & Erdmann (2020b) described *E. amphipora*, the second species with the same reduced pore pattern. The new species described herein, *Eviota samota*, from Teluk Saleh, Indonesia, is the third species to share this pore pattern.

The new species was discovered during an 8-day rapid biodiversity assessment (25 October–2 November 2024) of Teluk Saleh in the north of Sumbawa Island in Indonesia. The project was sponsored by Konservasi Indonesia and supported by the West Nusa Tenggara (NTB) Provincial Government. The results of the survey will be distilled into management recommendations for the nascent whale-shark marine-protected area (MPA) being developed as part of the SAMOTA (Saleh-Moyo-Tambora) Unesco Biosphere Reserve. The assessment of the ichthyofauna of the region recorded 569 species of reef fish, including 21 species of dwarfgoby (Erdmann & Muljadi 2024).

Materials and Methods

The holotype and paratype are deposited at the Museum Zoologicum Bogoriense, Cibinong Science Center, Cibinong, West Java Province, Indonesia (MZB).

Counts and measurements, descriptions of fin morphology and the cephalic sensory-canal pore patterns follow Lachner & Karnella (1980) and Jewett & Lachner (1983). Postanal ventral-midline spots, along the posterior ventral midline of the body, begin at the anal-fin origin and extend to a vertical line drawn two to three scale rows anterior to the ends of the hypurals; the additional smaller spot posterior to this, if present, is not counted. We follow Lachner & Karnella (1980:4) in describing the membranes joining the first 4 pelvic-fin rays, which "… are considered to be well developed when the membranes extend beyond the bases of the first branches; they are considered to be reduced when they are slightly developed, not extending to the bases of the first branches". Dorsal/anal fin-ray formula counts (e.g. 9/8) only include segmented rays. Measurements were made to the nearest 0.1 mm using an ocular micrometer, and are presented as percentage of standard length (SL). Lengths are given as standard length (SL), measured from the median anterior point of the upper lip to the base of the caudal fin (posterior end of the hypural plate); length to the origin of the first dorsal fin is measured from the median anterior point of the upper lip to the anterior base of the first dorsal-fin spine; origin of the second dorsal fin is measured from the median anterior point of the upper lip to the anterior base of its spine; origin of the anal fin is measured from the median anterior point of the upper lip to the anterior base of its spine; body depth is measured at the center of the first dorsal fin; head length is taken from the upper lip to the posterior end of the opercular membrane; orbit diameter is the greatest fleshy diameter; snout length is measured from the median anterior point of the upper lip to the nearest fleshy edge of the orbit; upper-jaw length is the distance from the anterior tip of the upper lip to the tissue covering the distal tip of the maxilla; caudal-peduncle depth is the least depth, and caudal-peduncle length is the horizontal distance between the verticals at the rear base of the anal fin and the caudal-fin base; pelvic-fin length is measured from the base of the pelvic-fin spine to the tip of the longest pelvic-fin soft ray.

Cyanine Blue 5R (acid blue 113) stain and an airjet were used to make the cephalic sensory-canal pores, fin rays, and scales more obvious (Akihito et al. 1993, 2002, Saruwatari et al. 1997).

Figure 1. *Eviota samota*, fresh holotype, MZB 28241, 9.6 mm SL, female, anesthetized and underwater, Teluk Saleh, Sumbawa, Indonesia (M.V. Erdmann).

Eviota samota, n. sp.

Samota Dwarfgoby

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Figs. 1–3

Holotype. MZB 28241, 9.6 mm SL, female, Indonesia, Sumbawa, Teluk Saleh, Takat Lanco, -8.3648˚, 117.8239˚, 3–5 m, field number MVE-24-033, M.I. Herwata Putra & M.V. Erdmann, 26 October 2024.

Paratype. MZB 28242, 9.5 mm SL, female, Indonesia, Sumbawa, Teluk Saleh, East Moyo, -8.3058˚, 117.5806˚, 5 m, field number MVE-24-031, A. Muljadi & M.V. Erdmann, 25 October 2024.

Diagnosis. A species of *Eviota* distinguished from all congeners by a combination of a cephalic sensory-canal pore system with only SOT and paired PITO pores, a dorsal/anal fin-ray formula of 8/8, one or more of ventralmost pectoral-fin rays thickened at ends suggesting branching, fifth pelvic-fin ray absent, basic color is red-orange body with a golden-yellow head, pectoral-fin base, and caudal-fin base.

Description. Dorsal-fin elements VI+I,8, first dorsal fin triangular, spines not filamentous (in females), last ray branched to base; anal-fin elements I,8, last ray branched to base; pectoral-fin rays 16 (14), some ventralmost thickened at ends suggesting branching, fin pointed, reaching to below second dorsal fin; pelvic-fin elements I,4, fifth ray absent, fourth with 5 (4) branches; pelvic-fin membrane reduced, basal membrane reduced; 11 branched and 17 segmented caudal-fin rays; lateral-line scales damaged; urogenital papilla of female bulbous with finger-like projections; front of head rounded with an angle of about 60˚ from horizontal axis; mouth slanted obliquely upwards, forming an angle of about 60˚ to horizontal axis of body, lower jaw not projecting, maxilla extending posteriorly to front of pupil; anterior tubular nares moderate, extending to posterior edge of upper lip; gill opening extending forward to below posteroventral edge of preoperculum. Cephalic sensory-canal pore system with only paired supraotic (SOT) and paired posterior interorbital (PITO) pores in holotype (Fig. 3); paratype has SOT and PITO pores on only one side.

Measurements of holotype followed by paratype in parentheses: head length 31.2 (29.5); origin of first dorsal fin 39.1 (40.0); origin of second dorsal fin 60.4 (60.0); origin of anal fin 65.1 (63.1); caudal-peduncle length 21.9 (26.4); caudal-peduncle depth 13.0 (14.7); body depth 20.3 (24.2); eye diameter 9.4 (9.5); snout length 3.6 (5.3); upper-jaw length 9.4 (10.5); pectoral-fin length 26.0 (24.2); pelvic-fin length 40.6 (35.8).

Color in life. (Fig. 1) Background color of body red-orange and golden-yellow for head. Ventral body with 5 white spots just posterior to each red postanal spot; upper body mostly translucent with scales either all red or with a prominent margin of red; base of caudal fin golden-yellow as in head coloration; pectoral-fin base bright yellow, nape darker yellow due to peppering of melanophores. Side of head yellow except for three pale areas, one from 7 o'clock position under eye down across jaws, second at 5 o'clock position under eye down to below head, and third at three to 4 o'clock position on area behind eye; snout, jaws, and tubular nares red-orange. Iris of eye bright orange, narrow yellow line circling pupil, narrow white lines radiating out from yellow line onto iris. First dorsal fin red-orange with a yellow tinge on distal third and a few white spots on spines on basal third; second dorsal fin similar to first; caudal fin with golden-yellow base, rays red-orange and membranes clear; anal fin red-orange on basal two-thirds, distal third dusky; pectoral and pelvic fins clear.

Figure 2. *Eviota samota*, preserved holotype, MZB 28241, 9.6 mm SL, female, Teluk Saleh, Sumbawa, Indonesia (D.W. Greenfield).

Color in preservative. (Fig. 2) Background color of head and body light yellow with body, both dorsal fins, and anal fin heavily peppered with small melanophores; dorsal and ventral margins of caudal fin peppered with melanophores; pectoral and pelvic fins clear. Body with 5 postanal spots and a dark bar on ventral part of body at fifth spot, over preural centrum. Side of head with larger scattered melanophores, nape and pectoral-fin base heavily peppered with melanophores, top of head dark, with heavy clusters of larger melanophores. Jaws, snout and tubular nares heavily peppered with melanophores.

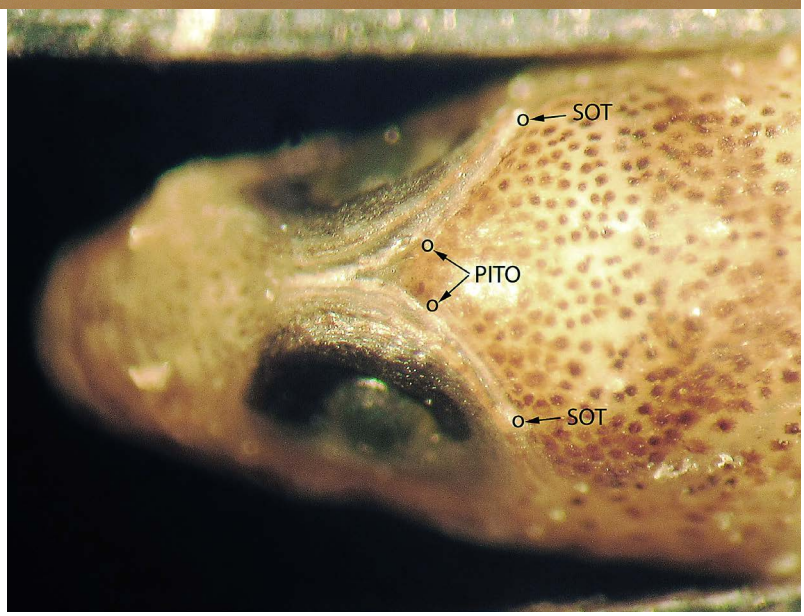

Figure 3. *Eviota samota*, preserved holotype, MZB 28241, top of head showing position of SOT and PITO pores (D.W. Greenfield).

Etymology. The specific epithet is a noun in apposition, named for the 728,484-hectare SAMOTA Biosphere Reserve at Teluk Saleh, Sumbawa, Indonesia.

Distribution and habitat. The new species is currently known only from two sites in the Teluk Saleh region of Sumbawa Island in the Lesser Sundas of Indonesia, nevertheless it is likely more widespread in Indonesia. Both specimens were collected in shallow (3–5m depth) reef areas, from the interstices of delicate lagoonal live-coral colonies. The reefs of this enclosed bay are largely protected from wave action, although they are subject to significant terrigenous sedimentation from land conversion in the surrounding coastal areas.

Comparisons. Only two other described *Eviota* species, *E. pseudaprica* (Fig. 4A) and *E. amphipora* (Fig. 4B), share the cephalic sensory-canal pore pattern with only the SOT and PITO pores as is found in the new species. Both of those species have 9 segmented dorsal-fin rays vs. 8 in *E. samota*. *Eviota pseudaprica* further differs from *E. samota* by having a long fifth pelvic-fin ray vs. the fifth ray absent, as well as the body yellow vs. colors as in Fig. 1. *Eviota amphipora* differs by having a rudimentary fifth pelvic-fin ray and in color, with a translucent-bluish-gray background color and the body crossed by 6 dark body bars vs. red-orange with a yellow head, pectoral-fin base, and caudal-fin base and no dark bars. It should be noted that only the female color pattern is available to compare for the new species.

Eviota samota keys to couplet 49 in the 2016 key by Greenfield & Winterbottom, being a third alternative with the unusual cephalic sensory-canal pore pattern with only the SOT and PITO pores. It shares that branch with the recently described *E. amphipora* and *E. pseudaprica* (neither in the 2016 key) as discussed in Greenfield (2021), and differs from them as outlined above. Although cephalic sensory-canal pore patterns are useful in identifying species, especially in dichotomous keys, phylogenetic analyses of *Eviota* (Tornabene et al. 2013) find that species with shared pore patterns can fall into different clades (corresponding to pectoral-fin branching), thus the phylogenetic relationship between these three species and other congeners remains unresolved.

Figure 4. (A) *Eviota pseudaprica*, ROM 87550, 13.2 mm SL, female, Keruo Island, Raja Ampat, Indonesia; (B) *Eviota amphipora*, Raja Ampat, Indonesia (both M.V. Erdmann).

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