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A key to the dwarfgoby species (Teleostei: Gobiidae: *Eviota*) described between 1871 and 2016

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Abstract

The dwarfgobies in the genus *Eviota* are currently represented by 111 valid described species, occurring throughout the Indo-Pacific Ocean except for the eastern Pacific region, mainly in coral-reef habitats. A dichotomous diagnostic key to 107 of these species is presented, with information on characters, type material, references for the original descriptions, distributions, and photographs of each species. All of the species described from the first, in 1871, up to April 2016 are included; four more described after that date are listed, but not included in the key.

Key words: ichthyology, taxonomy, systematics, coral-reef fishes, gobies, Indo-Pacific Ocean.

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Introduction

The dwarfgobies of *Eviota* occur throughout the Indo-Pacific Ocean and are currently represented by 111 valid described species. The greatest diversity of species in this genus appears to be in the Coral Triangle, where there are at least 51 described species and many more awaiting description (Allen & Erdmann 2012). The genus was described by Jenkins (1903), based on *Eviota epiphanes* from Hawai'i. No etymology was given, but *Eviota* is a surname, or first name, particularly in the Philippines. Two species belonging to *Eviota* were described before Jenkins erected the genus in 1903. The first of these was described as *Eleotris prasina* Klunzinger, 1871 from the Red Sea, and the second as *Asterropteryx abax* Jordan & Snyder, 1901 from Japan. At the time Jenkins described the genus, he stated that it was the “smallest vertebrate that has up to this time been described”. The species are tiny (< 31 mm SL, usually < 18 mm SL), with some maturing at 8.9 mm SL (Lachner & Karnella 1980: 99). One species, *E. sigillata*, has the shortest lifespan known for any vertebrate, living for a maximum of eight weeks, the first three of which are in the planktonic larval phase (Depczynski & Bellwood 2005). Depczynski & Bellwood (2006) showed that this species exhibits rapid linear growth, produces several generations of offspring during its short lifetime, and experiences high daily mortality.

These small fishes are important because of their prominent role in coral-reef ecology. Boehlert & Mundy (1996) found that larval *Eviota* were the most abundant fish in the plankton around the Hawaiian Islands. Longenecker (2001, 2007) found *Eviota epiphanes* to be the most abundant cryptic fish species in the spur-and-groove habitat in Kaneohe Bay, Oahu, Hawai'i, feeding mainly on harpacticoid copepods, tanaids, and amphipods, as well as a large variety of other small invertebrates. Species of *Eviota* serve as food for larger fishes such as snappers (Wen *et al.* 2012) and even sea snakes (Voris 1972). Because of their abundance, rapid growth, and high turnover, *Eviota* species may be an important trophic link between the small invertebrates and larger piscivorous fishes in the coral-reef ecosystem (Depczynski & Bellwood 2003).

This key was started by the second author in 2004 in an effort to identify the many specimens in this genus he had collected. At that time, there were only 47 described species in the genus. As discussed by Greenfield & Jewett (2014b), earlier workers on *Eviota* did not have the advantage of color photographs of living or fresh specimens, and thus descriptions were based only on morphological characters and preserved coloration. The increased utilization of underwater photography, and especially photographing the freshly collected specimens, revealed that the diversity within the genus is much greater than previously thought. As a result, some previously described widespread species were split into two or more species with more restricted distributions (e.g. Greenfield & Randall 2010a, 2011). Since 2004, 64 additional valid species have been described and thus the key has been updated and modified many times. In addition, we are aware of a number of other undescribed species awaiting description. We thus realized that we had to choose a stopping point, so we have only included species described by April 2016 plus the ones that were already included in the key as manuscript names but are now described (some in 2016). Of the total 111 currently valid described species of *Eviota*, 107 are included in the key, with 4 more described between May and December 2016 listed separately at the end of the key.

Eviota is defined by the following combination of characters: the pelvic fins are separate and lack a frenum; the 5th pelvic-fin ray, if present, is unbranched; the membrane joining the 5th pelvic-fin rays is short and weakly developed; there are ctenoid scales on the body, but no scales on the head, nape, or pectoral-fin base; the breast either lacks scales or has a few embedded cycloid scales; the teeth in the upper jaw are in 2 or more rows, and there are 1–3 enlarged, curved, canine-like teeth in the innermost row of the lower jaw just behind the jaw symphysis.

Sueviota. Species of *Sueviota* look very similar to species of *Eviota* and the two easily can be confused (Allen *et al.* 2016). The most obvious difference is the 5th ray of the pelvic fins: in *Eviota*, that ray is either absent, or, if present, is a single ray without branches. In *Sueviota*, that ray is well developed and branched (Fig. 1). It is imperative to check the state of the pelvic fins to confirm the genus is *Eviota* before starting the key.

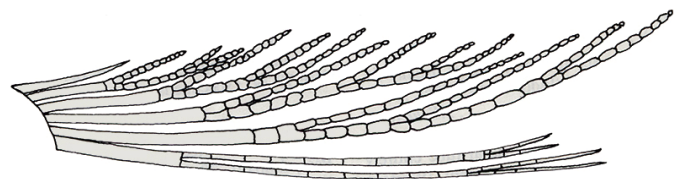


Figure 1. Ventral view of left pelvic fin of *Sueviota lachneri*, modified from Fig. 1 of Winterbottom & Hoese (1988).

Methods

Counts and measurements, descriptions of fin morphology, and the cephalic sensory-canal pore patterns follow Lachner & Karnella (1980) and Jewett & Lachner (1983). Dorsal/anal fin-ray formula counts only include segmented rays. Lengths are abbreviated as standard length (SL) and head length (HL). Pigment cells persisting in preserved fishes are considered melanophores. Postanal midline spots, along the posterior ventral midline of the body, begin at the anal-fin origin and extend to a vertical drawn 2–3 scale rows anterior to the ends of the hypurals where they articulate with the caudal-fin-ray bases; the additional smaller spot posterior to this, if present, is not counted. Dark caudal spots refer to subcutaneous dark spots on the caudal peduncle anterior to the ural complex (over the preural centrum). We follow Lachner & Karnella (1980:4) in describing the membranes joining the first four 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". The morphology of the male urogenital papilla is useful in identifying some of the species (Fig. 2).

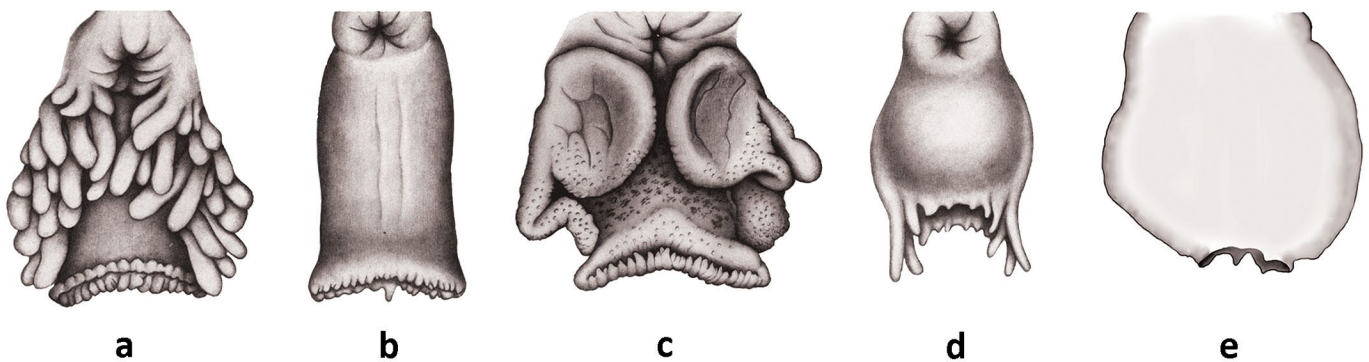


Figure 2. Examples of five types of urogenital papillae in mature *Eviota*. A: fimbriate condition in male; B: nonfimbriate condition in male; C: bulbous papilla of female; D: cup-shaped of male (A–D after Lachner & Karnella (1980) Figs. 2 & 3, drawn by J.R. Schroeder); E: flat rounded plate of male.

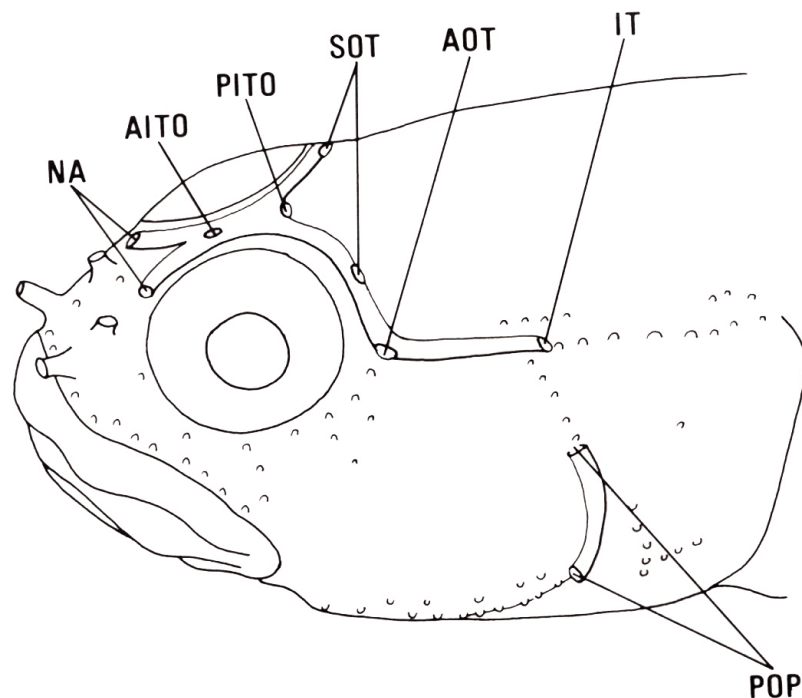


Figure 3. Cephalic sensory-canal pore system, complete pattern (1) (from Lachner & Karnella [1980] Fig. 4a, drawn by J.R. Schroeder); paired nares (NA); anterior interorbital (AITO); posterior interorbital (PITO); paired supraotics (SOT); paired anterior otics (AOT); paired intertemporals (IT); paired upper and lower preoperculars (POP).

Head pores. Although Rofen (1959) and Larson (1976) illustrated the cephalic sensory-canal pore patterns of individual species of *Eviota*, it was Lachner & Karnella (1978) who illustrated the different pore patterns found in the genus, and used these patterns to group different species as an aid to their identification (see Fig. 3). Even though grouping by cephalic sensory-canal pore patterns does not appear to reflect genealogical relationships (Tornabene *et al.* 2013a), they are useful in differentiating between species and usually do not vary within a species. However, we have noticed that in some small species with reduced head pores, the membranous roof to the sensory canals may be easily destroyed, and then it is impossible to tell with certainty whether or not a canal or pore was originally present. In addition, within a single lot of specimens that appear to be the same species based on coloration and morphology, some have obvious pores and others can appear to lack pores. Susan Jewett (pers. comm.) also has noted that some individuals of a species may lack pores. Because of this problem, certain species may appear more than once in the key. In addition, in some species, the pores are very small and may only be visible when stained with Cyanine Blue and when an air jet is used in the examination. The IT pore can be especially difficult to see because it is at the end of a fragile canal connecting to the AOT pore. If the canal has been torn away or pushed flat against the body, the pore will appear to be absent. If a specimen appears to lack only the IT pore, and does not match any species in that group, one should try keying it out assuming it has a complete pore system (in couplet 7) before assuming it is an undescribed species.

Key format. A bracketed list following the text of the couplet and before the species designation contains some or all of the following: the dorsal/anal-fin formula, whether the pectoral-fin rays are branched or not, the length of the 5th pelvic-fin ray relative to the 4th, and the morphology of the male urogenital papilla if other than non-fimbriate, non-cup-shaped, or non plate-like— for example [9/8, branched, 5th 20%, fimbriate]. The number in parentheses placed after the number of the first member of a couplet indicates the couplet number that leads to it. Illustrations in the key are, where relevant and available, presented in the following sequence: preserved specimen (first grayscale, then color), freshly collected specimen (referred to as ‘fresh’), live specimen, and finally any anatomical or color details (initials for the photographers and artists in the captions are explained in the Acknowledgments).

Key to the Species of *Eviota*

- 1a. All cephalic sensory-canal pores absent 2
- 1b. At least one cephalic sensory-canal pore present 7

- 2a.(1) Dark occipital spot present, dark basal spots in spinous dorsal fin; body red and head yellowish-orange in life [7/7–8/7, branched, 5th <20%] One-spot Dwarfgoby, *E. singula* Greenfield & Winterbottom, 2016

Holotype: ROM 84762, 9.1 mm SL, immature; type locality: Helen Reef, Palau.

Range: Positively known only from Palau, but may include *E. cf. singula* from Raja Ampat, Indonesia.



Figure 4. *E. singula*, a) preserved holotype, Helen Reef, Palau (RW); b) *E. cf. singula*, CAS 238218, preserved, Raja Ampat, Indonesia (DWG); c) same specimen as b, fresh (MVE).

- 2b. No dark occipital spot, dorsal coloration not as in 2a 3

- 3a.(2) Dark internal bar or spot present on caudal peduncle over preural centrum (may be faint)4
 3b. No dark internal bar or spot on caudal peduncle over preural centrum5
- 4a.(3) Spinous dorsal fin dark with a light stripe near distal border followed by a dark distal margin; no distinct dark lines below eye; crescent-shaped mark at caudal-fin base red or yellow in life; dorsal/anal fin-ray formula 8/8 or 9/8–9 [modal 9/8, branched, 5th absent]
Sunset Dwarfgoby, *E. occasa* Greenfield, Winterbottom & Suzuki, 2014

Holotype: ROM 74885, 10.2 mm SL, male; type locality: Aimeliik, west coast of Babeldaob, Palau.
 Range: Palau, including Merir Island and Helen Reef in the Southwest Islands of Palau, and Amami-oshima Island and Iriomote-jima Island, Ryukyu Islands, Japan.

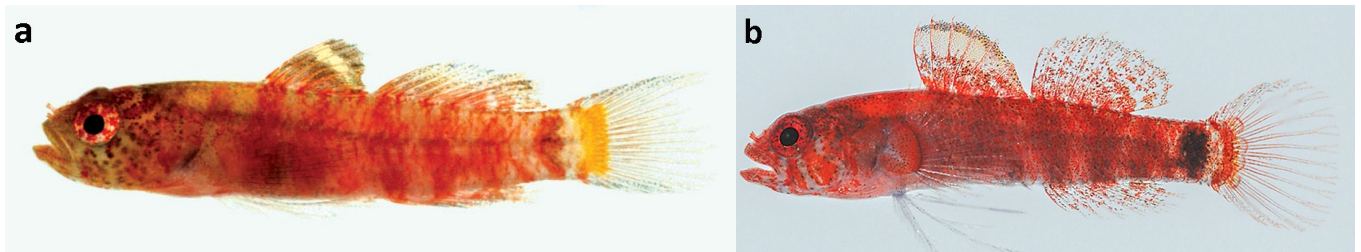


Figure 5. *E. occasa*, a) fresh paratype, ROM 74885, Palau (RW); b) fresh, OMNH-P 35256, Japan (TS).

- 4b. Spinous dorsal fin pale or with a dark distal margin; three distinct vertical lines under eye, posteriormost at posterior edge of eye; crescent-shaped mark at caudal-fin base black in life; dorsal/anal-fin formula 8/7 [8/7, branched, 5th absent or rudimentary]
Diminutive Dwarfgoby, *E. deminuta* Tornabene, Ahmadia & Williams, 2013

Holotype: USNM 407907, 8.7 mm SL, male; type locality: Hatihe'u, Nuku Hiva, Marquesas Islands.
 Range: Marquesas Islands, French Polynesia (widely distributed among the islands of the Archipelago).

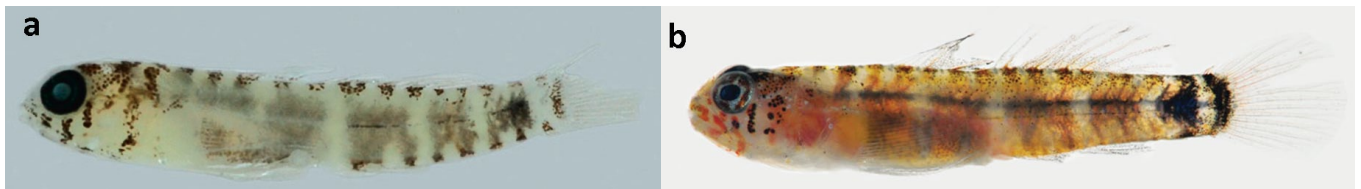


Figure 6. *E. deminuta*, a) preserved paratype, USNM 408835, Marquesas Islands (JTW); b) fresh paratype, USNM 409015, Marquesas Islands (JTW).

- 5a.(3) Fifth pelvic-fin ray 50–74% of 4th [9/8, branched, 5th 50–74%]
Laterite Dwarfgoby, *E. lateritea* Greenfield & Winterbottom, 2018
 [specimens with PITO, AITO, and SOT pores key out also at couplet 97]

Holotype: ROM 64446, 15.0 mm SL, female; type locality: Port de Goro, New Caledonia.
 Range: New Caledonia.

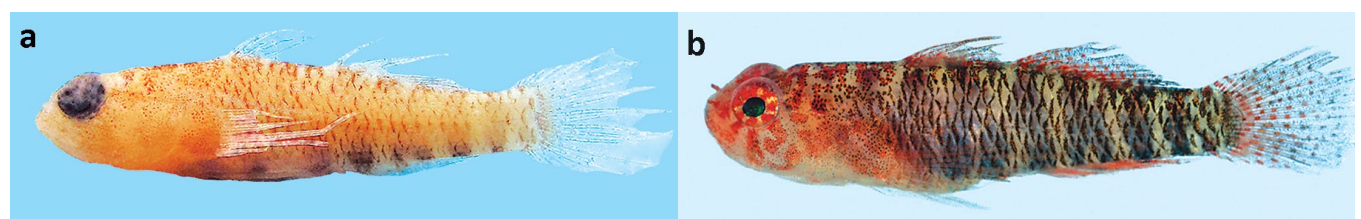


Figure 7. *E. lateritea*, a) preserved paratype, ROM 64462, New Caledonia (DWG); b) fresh holotype, New Caledonia (RW).

- 5b. Fifth pelvic-fin ray 20% or less of 4th6
- 6a.(5) Both male and female urogenital papillae fimbriate; pectoral-fin base usually with dark spots dorsally and ventrally, but not crossing center of base [8/8, branched, 5th <20%, fimbriate]
Thaman's Dwarfgoby, *E. thamani* Greenfield & Randall, 2016

Holotype: USNM 235816, 10.1 mm SL, male; type locality: Ono-i-Lau, Fiji.
 Range: Ono-i-Lau, Fiji.



Figure 8. *E. thamani*, preserved holotype, Ono-i-Lau, Fiji (DWG).

- 6b. Urogenital papillae of both males and females not fimbriate; pectoral-fin base often with melanophores crossing center of pectoral-fin base; body crossed by five wide orange bars in life; scales on lateral surface above midline can have dark pockets [8/8, branched, 5th 13–20%]
Jewett's Dwarfgoby, *E. jewettae* Greenfield & Winterbottom, 2012

Holotype: ROM 84731, 12.1 mm SL, female; type locality: Helen Reef, Hatohobei State, Palau.
 Range: West Pacific, recorded from Palau, Philippines, Papua New Guinea, and Raja Ampat, Indonesia.



Figure 9. *E. jewettae*, a) preserved, USNM 235382, Philippines (JRS); b) fresh paratype, ROM 93605, Palau (RW); c) live, Indonesia (MVE).

- 7a.(1) Cephalic sensory-canal pore system complete8
- 7b. Cephalic sensory-canal pore system incomplete49
- 8a.(7) Dorsal/anal fin-ray formula almost always 10/8 or 10/9; pelvic-fin membrane well developed9
- 8b. Dorsal/anal fin-ray formula usually 9/8, 8/8, 8/7, or 7/7 (*E. natalis* can be 10/9); pelvic-fin membrane reduced or well developed11

9a.(8) No large dark occipital spot [10/8, branched, 5th rudimentary]
Kermadec Dwarfgoby *E. kermadecensis* Hoese & Stewart, 2012

Holotype: NMNZ P.041191, 23.1 mm SL, male; type locality: Kermadec Islands.
 Range: Kermadec Islands, including Raoul Island, Macauley Island, and Stawell Shoal.

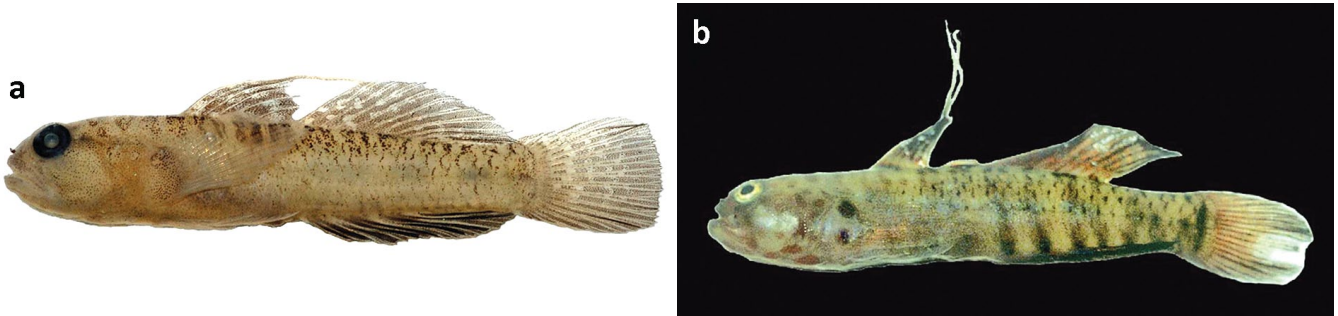


Figure 10. *E. kermadecensis*, a) preserved holotype, Kermadec Islands (anonymous); b) fresh, Kermadec Islands (ALS).

9b. Large dark rounded occipital spot present 10

10a.(9) Pectoral-fin base without two distinct dark spots; two short brown stripes on cheek [10/9, branched, 5th absent]
Masuda's Dwarfgoby, *E. masudai* Matsuura & Senou, 2006

Holotype: NSMT-P 72545, 24.7 mm SL, male; type locality: Boso Peninsula, Chiba Prefecture, Honshu, Japan.
 Range: Japan, along the Pacific coasts of Honshu, Shikoku, and Kyushu, from the Boso Peninsula southward to the Osumi Peninsula, Seto Inland Sea, Izu Islands, Ogasawara Islands, and Oki Islands in the Sea of Japan and Ryukyu Islands.

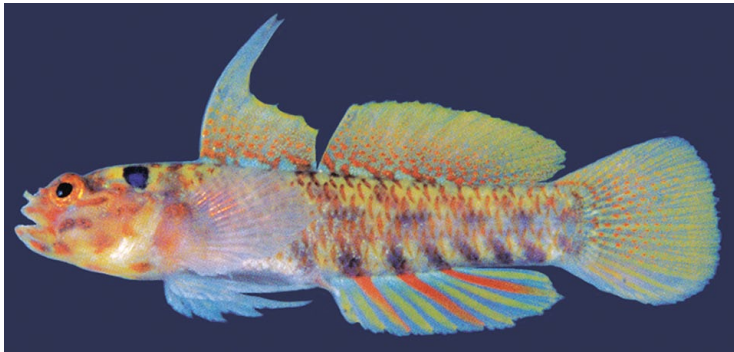


Figure 11. *E. masudai*, fresh holotype, Japan (MA).

10b. Pectoral-fin base with two distinct dark spots; no short brown stripes on cheek [10/8, branched, 5th 20%] ...
Sand-table Dwarfgoby, *E. abax* (Jordan & Snyder, 1901)

Holotype: SU 6445, 31.6 mm SL, male; type locality: Misaki, Sagami, Japan.
 Range: Japan.

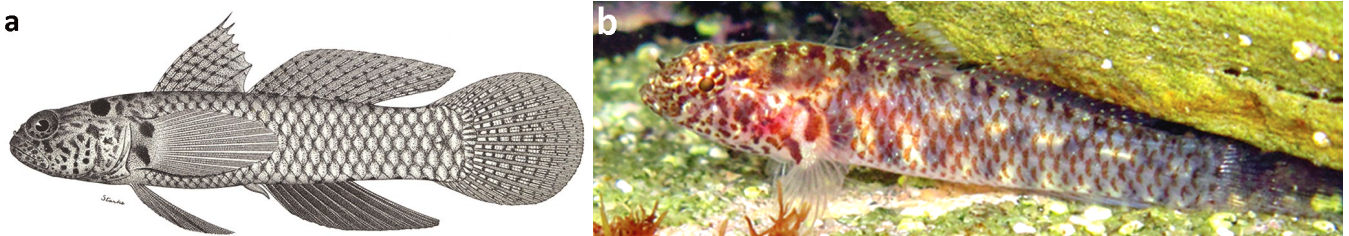


Figure 12. *E. abax*, a) preserved holotype, Japan (CLS); b) live, Japan (TM).

11a.(8) Dorsal/anal fin-ray formula usually 9/8	12
11b. Dorsal/anal fin-ray formula usually usually 8/8, 8/7, or 7/7	31
12a.(11) Prominent dark occipital spot present	13
12b. No prominent dark occipital spot	16
13a.(12) Dorsal midline of body with a series of small dark spots along dorsal-fin bases; dark bars crossing nape; caudal-peduncle depth 13.4–14.9% SL [9/8, branched, 5 th 20%]	Emerald Dwarfgoby, <i>E. smaragdus</i> Jordan & Seale, 1906

Holotype: USNM 51764, 17.5 mm SL, male; type locality: Apia, Samoa.

Range: Taiwan, Philippines, Ogasawara Islands and Ryukyu Islands in Japan, Micronesia (Palau, Guam, Marshall Islands); east to Vanuatu, Fiji, Wallis and Futuna, Tonga, and Samoa; south to Australia (Scott Reef, Great Barrier Reef, Middleton Reef, and Elizabeth Reef) and Norfolk Island.



Figure 13. *E. smaragdus*, a) preserved holotype, Samoa; b) preserved paratype, CAS 238215, Samoa (DWG); c) live, Samoa (JK).

13b. Dorsal midline of body without dark spots along dorsal-fin bases or bars on nape; caudal-peduncle depth 10.3–12.9% SL	14
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14a.(13) Branches of 4 th pelvic-fin short, thick, and bound together by membranes; a single orange spot behind eye in life [9/8, branched, 5 th 0–10%]	Twin Dwarfgoby, <i>E. fallax</i> Greenfield & Allen, 2012
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Holotype: MZB 20888, 18.1 mm SL, male; type locality: Pulau Lemon, West Papua, Indonesia.

Range: Indonesia (Bali, West Papua, Banda, and Sangihe Island), Papua New Guinea (Kimbe, New Britain), Solomon Islands, Philippines, Micronesia (Chuuk, Yap, and Ngulu Atoll), and Japan (Ryukyu Islands).

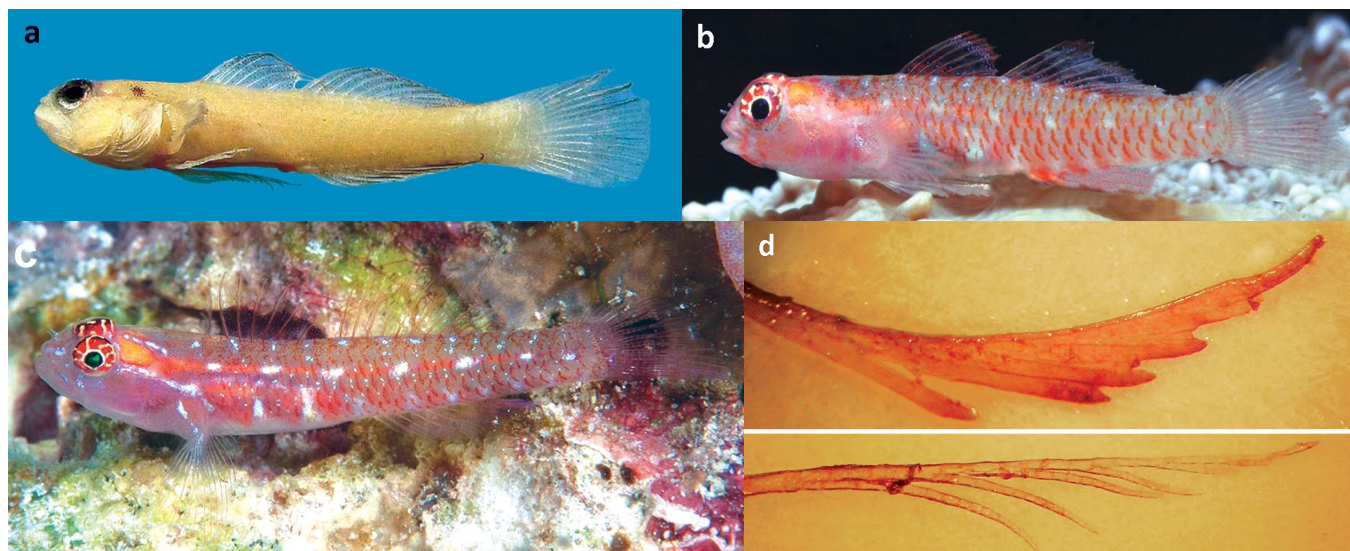


Figure 14. *E. fallax*, a) preserved holotype, West Papua (DWG); b) freshly collected, Bali (GRA); c) live, Philippines (RuW); d) pelvic fin (upper), vs. no membranes joining pelvic-fin rays in *E. melasma* (lower) (DWG).

14b. Branches of 4th pelvic-fin long, slender, and not bound together by membranes (see Fig. 14d lower); two orange spots behind eye in life or none 15

15a.(14)Eye smaller, mean 32% HL (28–34%); two distinct orange patches, often outlined in black, between eye and occipital spot in life; dark patches on abdomen [9/8, branched, 5th 10–20%]
Headspot Dwarfgoby, *E. melasma* Lachner & Karnella, 1980

Holotype: USNM 216286, 17.2 mm SL, male; type locality: Endeavour Reef, Australia.

Range: Described from Australia, but recorded from many other localities, which may represent different species: from Cocos-Keeling Islands throughout the East Indies; in the south from Bali eastwards to Samoa and New Caledonia and southward to Australia (Scott Reef and the southern Great Barrier Reef); in the north extending to the Yaeyama Islands of Japan and eastward to Micronesia (Palau, FSM [Truk and Enewetak], and the Marshall Islands). Records from Fiji are now identified as *Eviota karaspila* (see below).

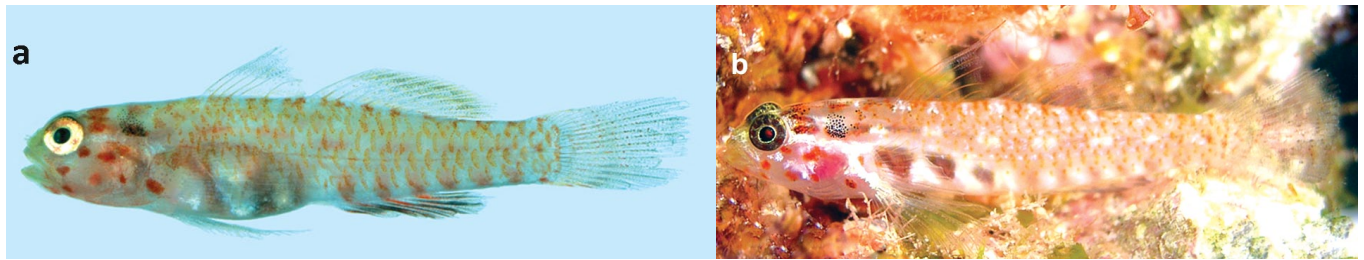


Figure 15. *E. melasma*, a) fresh, ROM 64298 New Caledonia (RW); b) live, Great Barrier Reef (AG). See also pelvic fin in Fig. 14d (lower).

15b. Eye larger, mean 37% HL (33–40%); no distinct orange patches behind eye and no dark patches on abdomen in life; body very pale and occipital spot very prominent [9/8, branched, 5th 10–20%]
Eastern Headspot Dwarfgoby, *E. karaspila* Greenfield & Randall, 2010a

Holotype: CAS 229856, 17.9 mm SL, male; type locality: Nananu-i-ra, Viti Levu, Fiji.

Range: Fiji; a possible photographic record from Tonga (J.T. Williams, pers. comm.; Randall *et al.* 2003).

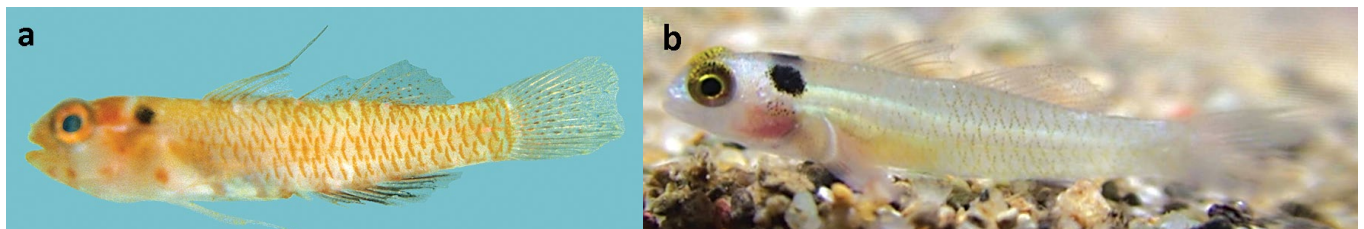


Figure 16. *E. karaspila*, a) fresh, ROM 45240, Fiji (RW); b) live, CAS 238216 Viti Levu, Fiji (JLE).

16a.(12)Pectoral-fin base with no obvious dark pigmentation (may be an oblique scattering of melanophores across central area as in *E. albolineata*); or (in *E. cf. nigripinna*) spinous dorsal fin entirely dense black 17

16b. Pectoral-fin base with obvious dark spots, a dark bar, or heavy peppering of small dark dots; spinous dorsal fin not entirely dense black 23

17a.(16)Dark spot present on mid caudal peduncle over preural centrum; head and nape with transverse bars 18

17b. No dark spot on mid caudal peduncle; head and nape without transverse bars 19

18a.(17)Spinous dorsal fin entirely dense black; a thin bar of pale melanophores on pectoral-fin base [9 (in all 14 specimens)/8, branched, 5th absent]
Eastern Blackfin Dwarfgoby, *E. cf. nigripinna* Lachner & Karnella, 1980
 [Cocos-Keeling & Christmas Island populations; other (western) populations with modal 8 dorsal-fin segmented rays key out also at couplet 46]

Range: Cocos-Keeling Atoll and Christmas Island, eastern Indian Ocean.

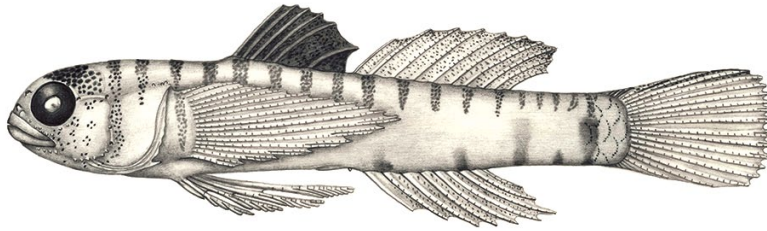


Figure 17. *E. cf. nigripinna*, preserved, Cocos-Keeling Atoll (JRS).

18b. Outer portion of spinous dorsal fin dark, proximal membranes between 5th and 6th spines and membrane joining 6th to body black (pale area present on anterior basal portion of fin between dark spots along dorsal midline) [9/8, branched, 5th absent]
Divine Dwarfgoby, *E. epiphanes* Jenkins, 1903

Holotype: USNM 50720, 14.1 mm SL, male; type locality: Honolulu, Oahu, Hawai'i.

Range: Hawaiian Island chain, Johnston, and Kiritimati Islands (Kiribati).

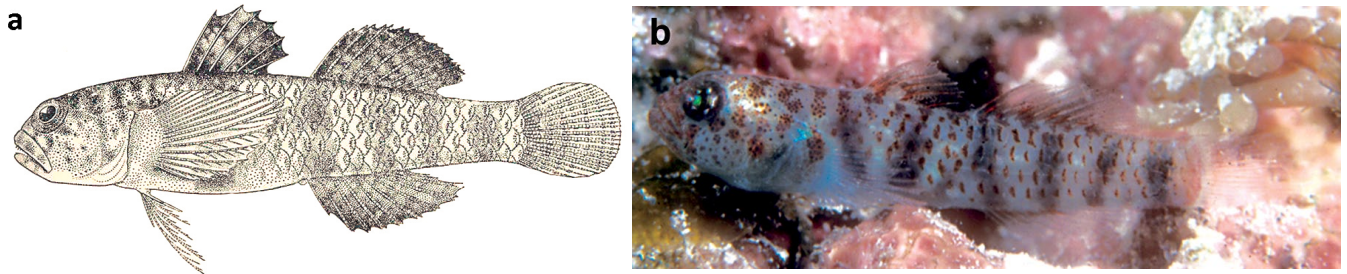


Figure 18. *E. epiphanes*, a) preserved holotype, Oahu, Hawaii (WSA); b) live, Oahu, Hawai'i (JER).

19a.(17)Anal fin only slightly dusky, not darker than other fins; body with series of white mid-lateral spots and orange scale-margins in life; pectoral-fin rays 17–19 [usually 9/8, branched, 5th 10%]
Christmas Dwarfgoby, *E. natalis* Allen in Allen, Steene & Orchard, 2007

Holotype: WAM P.32820-001, 20.9 mm SL, female; type locality: off NE coast of Christmas Island, Indian Ocean.

Range: Christmas Island, Indian Ocean.



Figure 19. *E. natalis*, live, Christmas Island, Indian Ocean (GRA).

19b. Anal fin darker than other fins; body without series of mid-lateral white spots and orange scale-margins ...20

20a.(19)Two unbroken stripes behind eye, upper across nape, lower across operculum; oblique wide stripe of melanophores across center of pectoral-fin base; no dark spots on ventral side of head on isthmus [9/8, branched, 5th 10%] White-line Dwarfgoby *E. albolineata* Jewett & Lachner, 1983

Holotype: USNM 227140, 22.2 mm SL, male; type locality: Tahiti, French Polynesia.

Range: Society Islands, Tuamotus, and Line Islands.

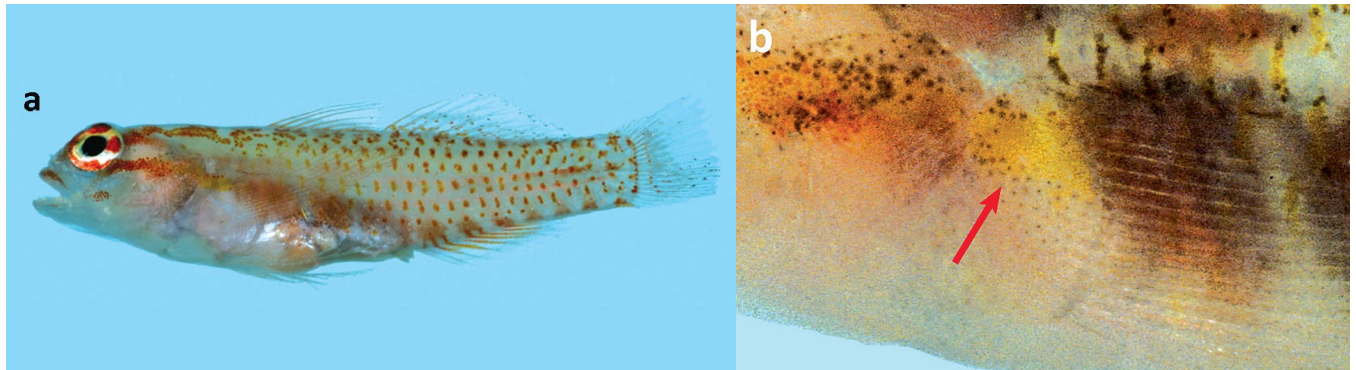


Figure 20. *E. albolineata*, a) fresh, ROM 60760, Society Islands (RW); b) ROM 60905 pectoral-fin base, arrow points to oblique wide stripe of melanophores, Moorea (RW).

20b. No unbroken stripes behind eye (can be colored patches); no dark marks on pectoral-fin base, at most a scattering of melanophores; dark spots present on ventral side of head on isthmus21

21a.(20)No dark spot on isthmus (may have scattered melanophores on gular area, or none); in life, two separate red/orange patches behind eye, body translucent with small red spots, and dorsal part of eye yellow with about 8 discrete black marks [9/8, branched, 5th 10–20%]
..... Redspeckled Dwarfgoby, *E. rubriparsa* Greenfield & Randall, 2010b

Holotype: WAM P.29017.003, 19.5 mm SL, male; type locality: Christmas Island, eastern Indian Ocean.
Range: Christmas Island (easter Indian Ocean), Indonesia (Flores, Alor, and West Papua), Papua New Guinea (D'Entrecasteaux Islands, New Britain), and Solomon Islands.



Figure 21. *E. rubriparsa*, a) live, Cenderawasih Bay, Indonesia (GRA); b) eye detail, Flores, Indonesia (JER).

- 21b. A distinct dark spot on isthmus, about in line with posterior part of maxilla, often a second spot under tip of jaw (as in Fig 22); in life, a single red/orange patch behind eye, body variously colored but not covered with small red spots, and dorsal part of eye not yellow with many discrete black marks dorsally22

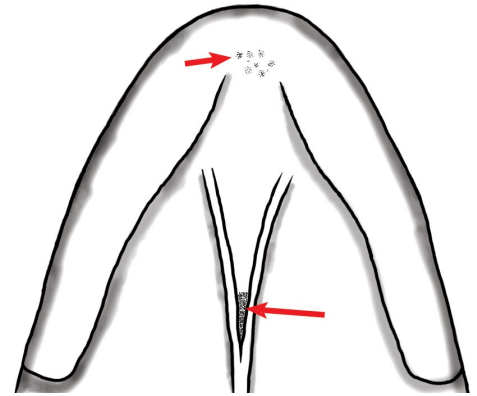


Figure 22. *E. teresae*, CAS 219808, ventral view of gular region, arrows indicate distinctive markings on chin and throat (DWG).

- 22a.(21)Dark spots prominent on body along base of dorsal fins and a dark stripe at base of spinous dorsal fin in preserved specimens; reddish blotches on abdomen wider than tall and dorsal part of eye with dark marks with light centers in life; 4th pelvic-fin ray with membranes between branches, rays thick with more than 2 segments between branches [9/8, branched, 5th 10%]
 Spotted Dwarfgoby, *E. guttata* Lachner & Karnella, 1978

Holotype: USNM 218013, 15.8 mm SL, female; type locality: Ethiopian naval base, Massawa, Red Sea. Range: Red Sea, Gulf of Aqaba, Gulf of Oman, Seychelles, and Maldives. Records from the Pacific Ocean are most likely *E. cf. teresae* (except Fiji with *E. teresae*).

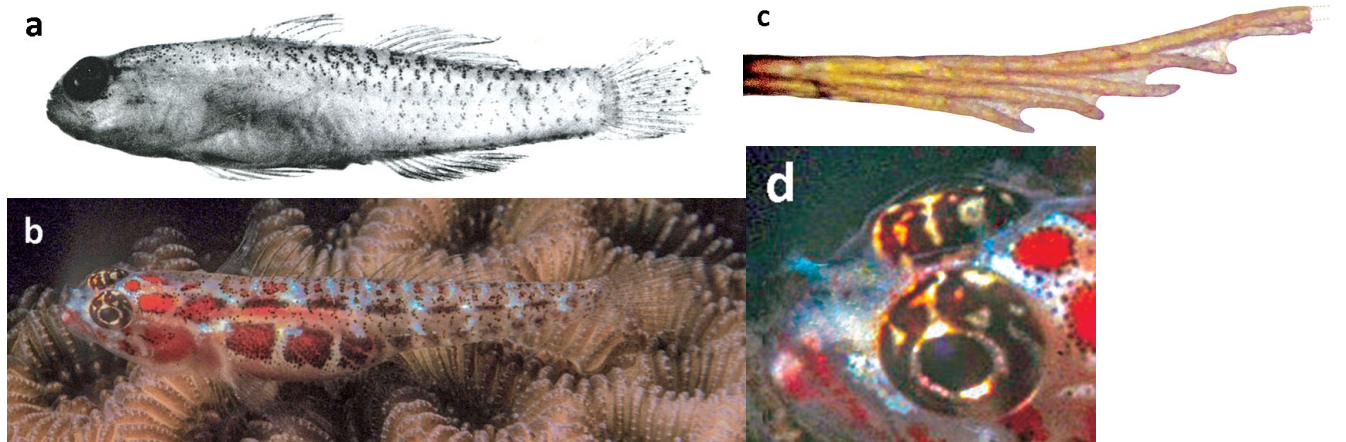


Figure 23. *E. guttata*, a) preserved holotype, Red Sea (SLJ); b) live, Sudan, Red Sea (JER); c) CAS 229088, left pelvic fin close-up (DWG); d) eye detail, Sudan, Red Sea (JER).

- 22b. No prominent dark spots on body along base of dorsal fins and no dark stripe at base of spinous dorsal fin in preserved specimens; in life, reddish blotches on abdomen taller than wide and dorsal part of eye reddish with small spots; 4th pelvic-fin ray slender and lacking membranes between branches, rays with 2 segments between branches [9/8, branched, 5th 8.8–16%] Terry's Dwarfgoby, *E. teresae* Greenfield & Randall, 2016

Holotype: CAS 229088, 19.6 mm SL, male; type locality: Rabi Island, Fiji.

Range: Fiji, similar individuals from other Pacific Ocean locations referred to as *E. cf. teresae*.



Figure 24. *E. teresae*, a) live, Fiji (RuW); b) eye detail, Fiji (RuW); c) CAS 229088, left pelvic fin close-up (DWG).

- 23a.(16) Body lacking numerous distinct dark bars 24

- 23b. Body crossed or partially crossed by numerous (more than 10) distinct dark bars 28

- 24a.(12) A broad dark bar crossing caudal peduncle; irregular serpentine light bars on cheek [9/8, branched, 5th absent] Rick's Dwarfgoby, *E. richardi* Greenfield & Randall, 2016

Holotype: CAS 238175, 13.5 mm SL, male; type locality: Charybdis Reef, Viti Levu, Fiji.

Range: Fiji.



Figure 25. *E. richardi*, a) fresh paratype, ROM 45203, Fiji (RW); b) preserved, CAS 238175 (DWG).

- 24b. No broad dark bar crossing caudal peduncle 25

- 25a.(24) Pectoral-fin base heavily peppered with small black dots, pigmentation on base confluent with pigment over breast and base of pelvic fins 26

- 25b. Pectoral-fin base with two dark vertically aligned spots; pectoral-fin base pigmentation not confluent across breast 27

26a.(25) Six dark ventral-midline spots posterior to anus; body pale; no obvious dark spot on caudal peduncle; lower portion of spinous dorsal fin pale; 5th pelvic-fin ray 20% of 4th [9/8, branched, 5th 20%] Chestspot Dwarfgoby, *E. inutilis* Whitley, 1943

Lectotype: AMS IB.330, 20.4 mm SL, male; type locality: Shark Bay, Western Australia.
Range: Western Australia.

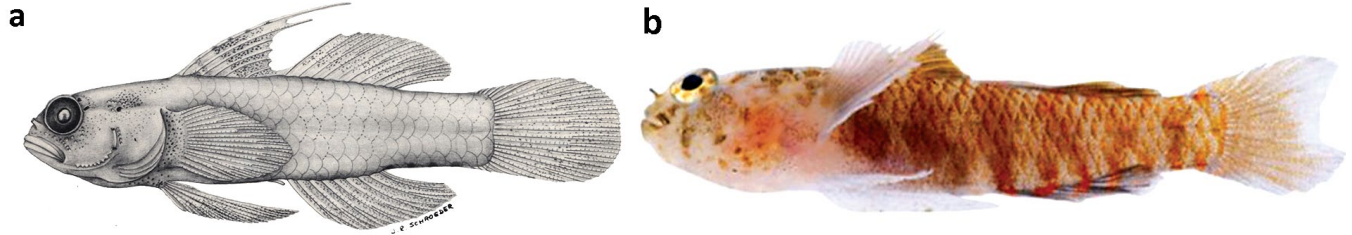


Figure 26. *E. inutilis*, a) preserved lectotype, W. Australia (JRS); b) fresh, W. Australia (WAM).

26b. Five dark ventral-midline spots posterior to anus; body dark; obvious dark spot on caudal peduncle; lower portion of spinous dorsal fin not pale; 5th pelvic-fin ray rudimentary [9/8, branched, 5th rudimentary] Dark Dwarfgoby, *E. aquila* Greenfield & Jewett, 2014b

Holotype: USNM 227381, 19.9 mm SL, male; type locality: Pingtung County, Taiwan.
Range: Taiwan.

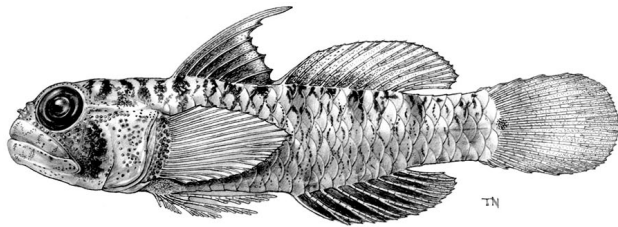
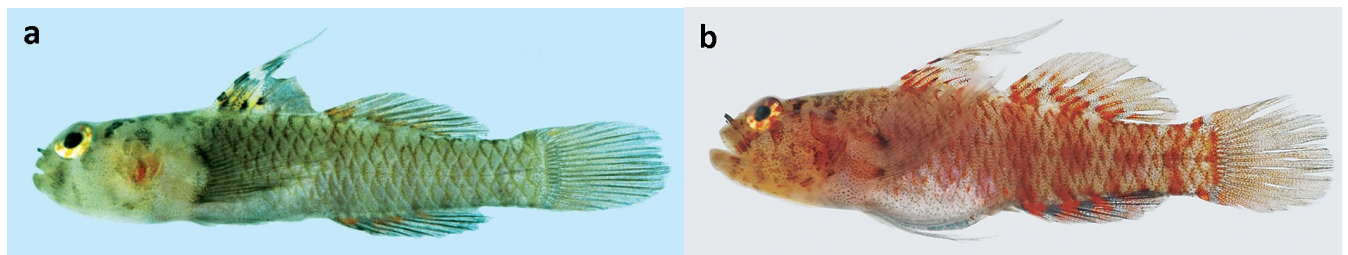


Figure 27. *E. aquila*, preserved holotype, Taiwan (TN).

27a.(25) Three dark spots along anal-fin base (extending from body bars); dark bar on caudal peduncle indistinct; spinous dorsal fin crossed by two dark stripes; anal fin with alternating red-orange and blue/gray spots along base and extending onto fin in life [equally 9/8 or 8/8, branched, 5th rudimentary] Korechika's Dwarfgoby, *E. korechika* Shibukawa & Suzuki, 2005 [specimens with 8 dorsal-fin segmented rays key out also at couplet 36]

Holotype: NSMT-P 70710, 24.4 mm SL, male; type locality: Uehara, Iriomote-jima Island, Ryukyu Islands, Japan.
Range: Ryukyu Islands, Brunei, Indonesia (N. Sulawesi & West Papua), Papua New Guinea, Philippines, Palau, Western Australia, and Sri Lanka.



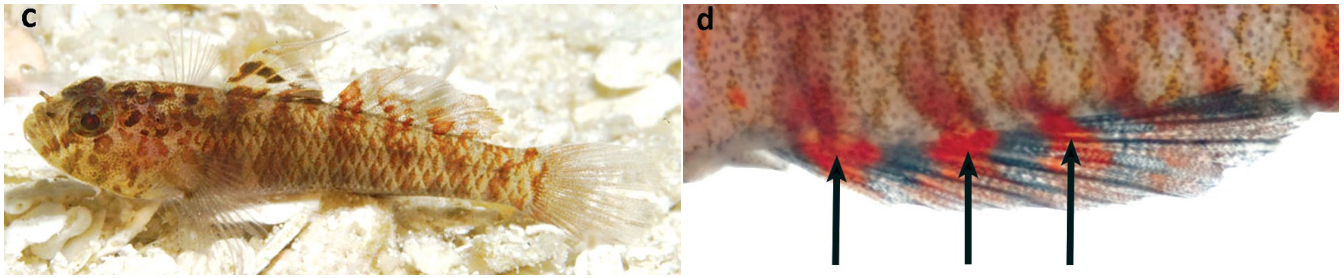


Figure 28. *E. korechika*, a) fresh, ROM 65053, Thailand (RW); b) fresh, ROM 85069, Indonesia (RW); c) live, Indonesia (GRA); d) detail of anal-fin base from b (RW).

- 27b. Two dark spots along anal-fin base (extending from body bars); prominent dark bar at caudal peduncle; spinous dorsal fin not crossed by two dark stripes; anal fin without alternating colored spots [9/8, branched, 5th absent]Toshiyuki's Dwarfgoby, *E. toshiyuki* Greenfield & Randall, 2010b

Holotype: OMNH-P 35366, 18.0 mm SL, female; type locality: Chichi-jima, Ogasawara Islands, Japan.
Range: Ogasawara Islands, Japan.

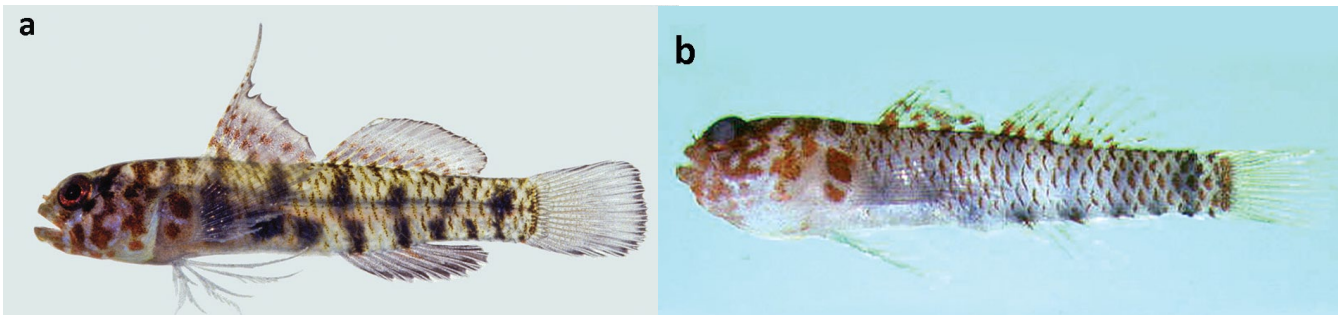


Figure 29. *E. toshiyuki*, a) fresh holotype, Japan (TS); b) fresh paratype, BPBM 35204, Japan (JER).

- 28a.(23)A single dark bar covering most of pectoral-fin base; body pale with numerous dark bars extending almost full depth of body [9/8, branched, 5th absent]Barred Dwarfgoby, *E. fasciola* Karnella & Lachner, 1981

Holotype: USNM 220560, 18.0 mm SL, male; type locality: One Tree Island, Queensland, Australia.
Range: Japan (Ryukyu Islands), throughout Micronesia to Kiribati, New Caledonia, Fiji, Tonga, Papua New Guinea (Trobriand Islands), and Australia (Great Barrier Reef).

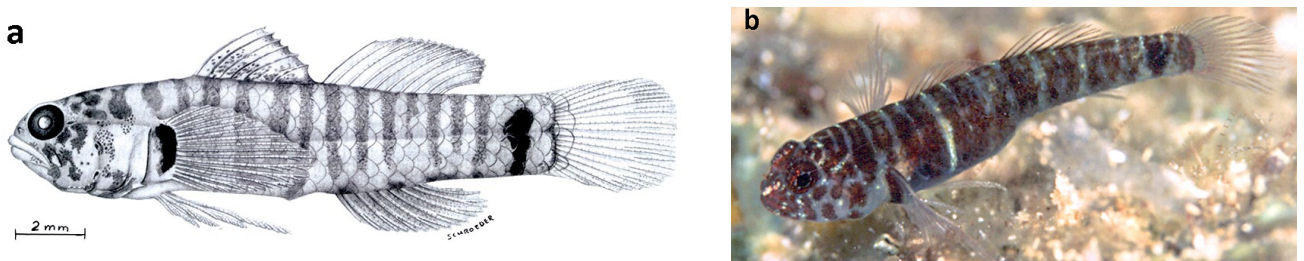


Figure 30. *E. fasciola*, a) preserved paratype, ANSP 143059, GBR, Australia (JRS); b) live, Japan (JN).

- 28b. Pectoral-fin base with two dark vertically aligned spots or a single dark rounded spot, neither covering most of base; body with numerous dark bars extending full or partial depth of body29

- 29a.(28)Pectoral-fin base with a single dark rounded spot on upper pectoral-fin base, at most a diffuse second spot or cluster of melanophores on lower pectoral-fin base [9/8, branched, 5th absent]
.....Reader's Dwarfgoby, *E. readeri* Gill & Jewett, 2004

Holotype: AMS I.27141-018, 17.9 mm SL; type locality: Middleton Reef, Tasman Sea.
Range: Middleton and Elizabeth Reefs on the Lord Howe Rise, Tasman Sea.

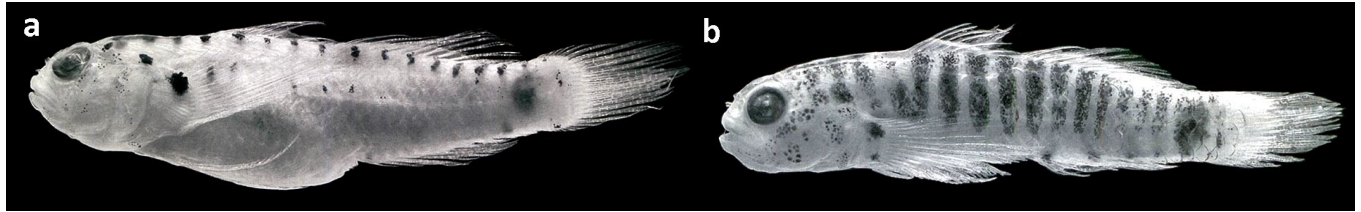


Figure 31. *E. readeri*, a) preserved holotype, Middleton Reef (HT); b) preserved paratype, AMS I.27148-031, Middleton Reef (HT).

29b. Pectoral-fin base with two dark vertically aligned spots30

30a.(29)Dark bar below first dorsal-fin spine disrupted; bars below second dorsal fin extending below lateral mid-line; pectoral-fin base with sharply defined spots [9/8, branched, 5th absent]
Brokenbar Dwarfgoby, *E. disrupta* Karnella & Lachner, 1981

Holotype: USNM 220912, 15.4 mm SL, male; type locality: Bora Bora, Society Islands, French Polynesia.
 Range: Fiji (only Rotuma), Samoa, and Tonga Islands to Mangaréva in French Polynesia.

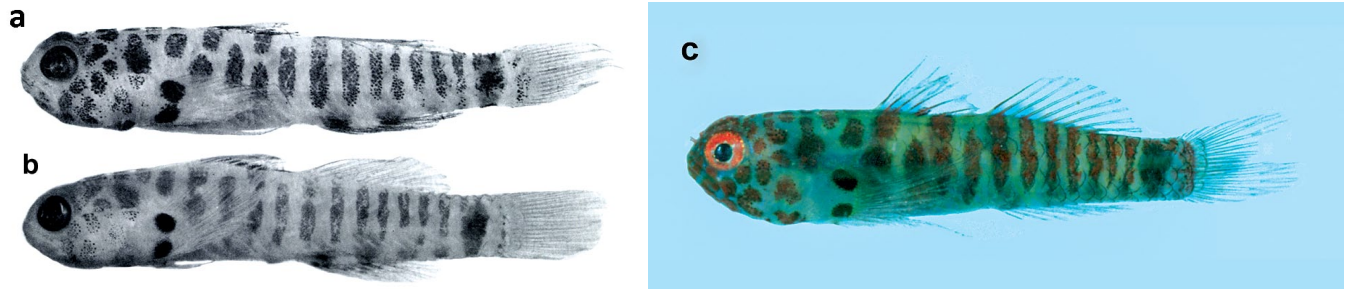


Figure 32. *E. disrupta*, a) preserved holotype, Bora Bora (SLJ); b) preserved paratype, USNM 220567, Bora Bora (SLJ); c) fresh, ROM 60750, Moorea (RW).

30b. Dark bar below first dorsal-fin spine not disrupted; bars below second dorsal fin not extending much below lateral midline; spots on pectoral-fin base not sharply defined [9/8, branched, 5th absent]
Unpolished Dwarfgoby, *E. irrasa* Karnella & Lachner, 1981

Holotype: USNM 220566, 16.0 SL, male; type locality: Cocoro Island, Cuyo Islands, Palawan, Philippines.
 Range: Cuyo Islands, Palawan, Philippines and the Southwest Islands of Palau.



Figure 33. *E. irrasa*, a) preserved holotype, Philippines (JRS); b) preserved, ROM 84763, Helen Reef, Palau (RW); c) fresh, ROM 84734, Southwest Islands of Palau (RW).

31a.(11)Dorsal/anal fin-ray formula almost always 7/7 [7/7, branched, 5th 10%]
Barhead Dwarfgoby, *E. notata* Greenfield & Jewett, 2012

Holotype: ANSP 145893, 13.4 mm SL, male; type locality: Mahe Island vicinity, Seychelles.
 Range: known from three island groups in the western and central Indian Ocean: Seychelles and Amirante Islands; Mauritius, Mascarene Islands, Cargados Carajos Shoals; and the Chagos Archipelago.

NOTE: Three specimens from New Caledonia (ROM 61476) key out here (with 7/7); however, their color pattern is more similar to *E. pardalota*, below (with 8/7). These specimens most likely represent an undescribed species.

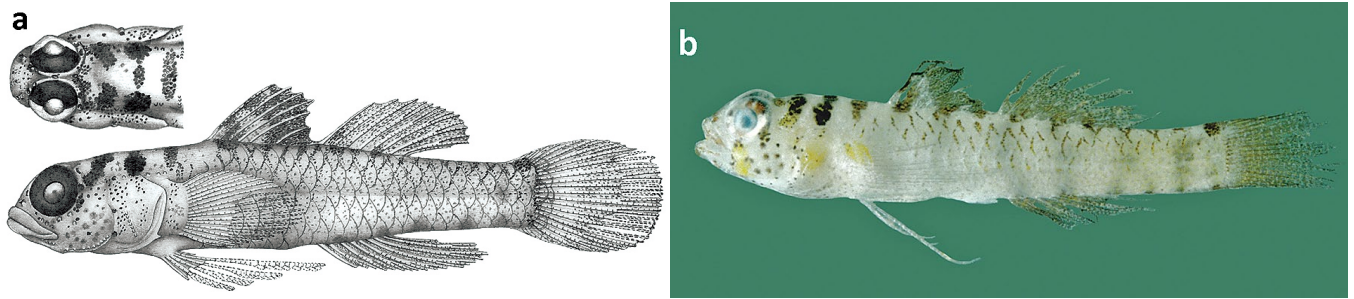


Figure 34. *E. notata*, a) preserved holotype, Seychelles (JRS); b) fresh, ROM 36417, Chagos Archipelago (RW).

31b. Dorsal/anal fin-ray formula almost always 8/7, 8/8, or 9/832

32a.(31)Dorsal/anal fin-ray formula almost always 8/733

32b. Dorsal/anal fin-ray formula usually 8/8, but can be 9/834

33a.(32)Pectoral-fin base with two dark vertically aligned spots; a series of more than 8 dark spots on body along bases of dorsal fins onto caudal peduncle [8/7, branched, 5th 10%]
Leopard Dwarfgoby, *E. pardalota* Lachner & Karnella, 1978

Holotype: USNM 218006, 17.4 mm SL, female; type locality: Ettur, north of Sharm el Sheikh, Gulf of Suez, Red Sea.

Range: Red Sea and Arabian Gulf (see 31a note regarding similar specimens from New Caledonia).

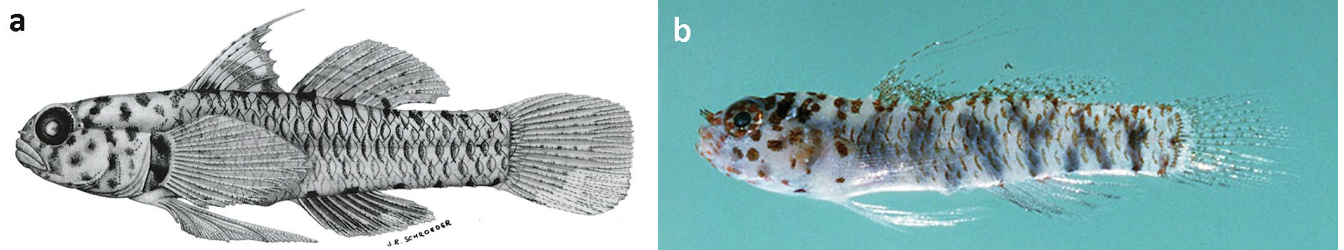


Figure 35. *E. pardalota*, a) preserved holotype (JRS); b) fresh, BPBM 30480, Saudi Arabia (JER).

33b. Pectoral-fin base without two dark vertically aligned spots; no series of more than 8 dark spots on body along bases of dorsal fins onto caudal peduncle [8/7, branched, 5th absent]
Redspotfin Dwarfgoby, *E. rubriguttata* Greenfield & Suzuki, 2011

Holotype: OMNH-P35645, 13.2 mm SL, female; type locality: Iriomote-jima Island, Ryukyu Islands, Japan.
 Range: Amami-oshima and Iriomote-jima Islands, Ryukyu Islands, Japan.

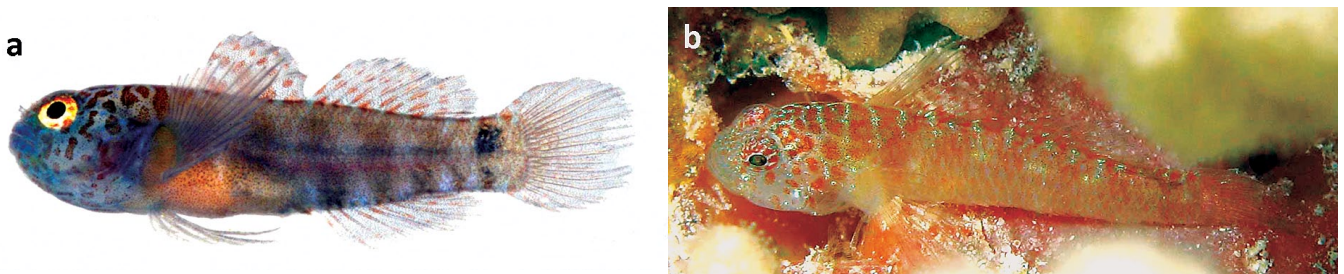


Figure 36. *E. rubriguttata*, a) fresh holotype, Japan (TS); b) live, Japan (HK).

- 34a.(32) 5th pelvic-fin ray 10–20% of 4th pelvic-fin ray 35
 34b. 5th pelvic-fin ray usually rudimentary or absent 36

35a.(34) Pectoral-fin base with two dark vertically aligned spots and head with prominent dark spots in males; body relatively slender, depth at origin of spinous dorsal fin 21.0–25.0% SL, mean 22.9% (in 8 males) [8/8, branched, 5th 10%] Twospot Dwarfgoby, *E. distigma* Jordan & Seale, 1906

Holotype: SU 8710, ca. 13.1 mm SL, male; type locality: Pago Pago, American Samoa.
 Range: Red Sea, Maldives, and from eastern Indonesia (Nusa Penida and West Papua), north to Japan (Ryukyu and Ogasawara Islands), east to Micronesia and Kiribati, south to Australia (western coast and southern Great Barrier Reef), New Caledonia, and across to the Tuamotus and Pitcairn Islands.

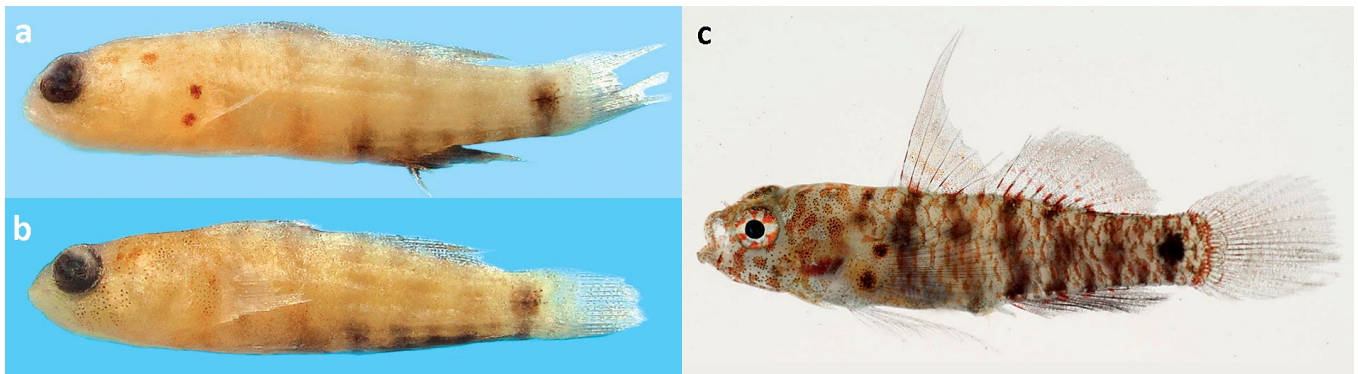


Figure 37. *E. distigma*, a) preserved male, CAS 243618, American Samoa (DWG); b) preserved female, CAS 243618, American Samoa (DWG); c) fresh, Tuamotus (JTW).

35b. Pectoral-fin base and head without prominent dark spots in both sexes; body relatively deep, depth at origin of spinous dorsal fin 24.8–28.5% SL, mean 26.9% (in 8)[8/8, branched, 5th 20%] Herre's Dwarfgoby, *E. herrei* Jordan & Seale, 1906

Holotype: USNM 51769, 12.9 mm SL, male; type locality: Apia, Samoa.
 Range: described from Samoa (other records from throughout the Indo-Pacific Ocean may represent a species complex), also eastern Indian Ocean, Indonesia, north to Japan (Ryukyu Islands), east to French Polynesia (Rapa), and south to Australia (Great Barrier Reef).

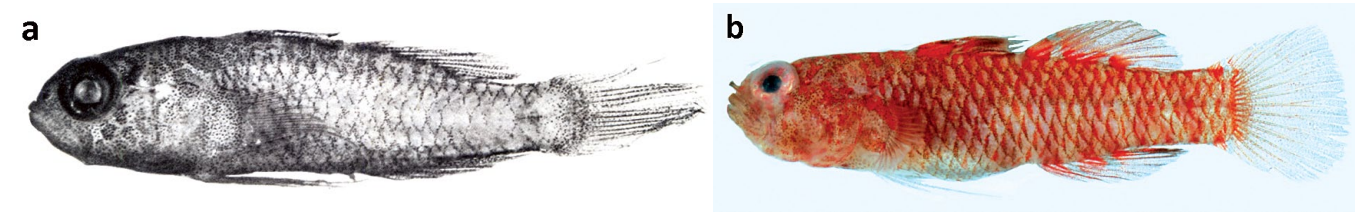


Figure 38. *E. herrei*, a) preserved, USNM 213924, Indonesia (SLJ); b) fresh, ROM 74948, Palau (RW).

- 36a.(34) Three dark spots on body along anal-fin base (Fig. 39, below left)37
 36b. Two dark spots on body along anal-fin base (Fig. 40, below right)38

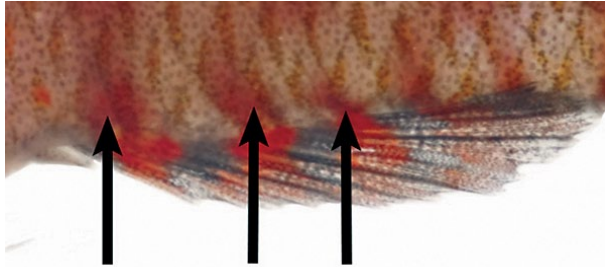


Figure 39. *E. korechika*, ROM 85069 (RW).

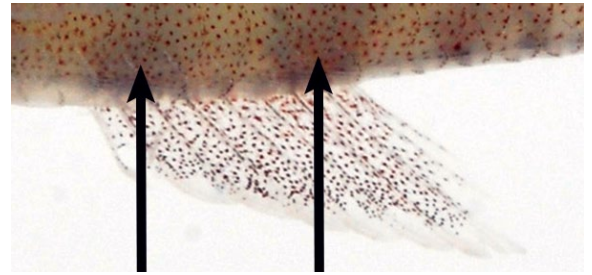


Figure 40. *E. specca*, NSMT-P 114945 (TS).

- 37a.(36) Pectoral-fin base with semicircular or crescent-shaped, full-height, solid dark marking; no dark stripes on spinous dorsal fin [8/8, unbranched or only 12 and 13 branched, 5th rudimentary]
 Singlespot Dwarfgoby, *E. monostigma* Fourmanoir, 1971

Holotype: MNHN 1979-241, 25.0 mm SL, male; type locality: Point Ma, New Caledonia.

Range: New Caledonia (including Chesterfield Islands), Tonga, and Australia (Great Barrier Reef).



Figure 41. *E. monostigma*, fresh, ROM 64306, New Caledonia (RW).

- 37b. Pectoral-fin base with diffuse bar or two vertically aligned dark spots; dorsal fin crossed by two dark stripes; anal fin with alternating red-orange and blue/gray spots along base and extending onto fin in life [equally 9/8 or 8/8, branched, 5th rudimentary]
 Korechika's Dwarfgoby, *E. korechika* Shibukawa & Suzuki, 2005
 [specimens with 9 dorsal-fin segmented rays key out also at couplet 27]

Holotype: NSMT-P 70710, 24.4 mm SL, male; type locality: Iriomote-jima Island, Ryukyu Islands, Japan.

Range: Ryukyu Islands, Brunei, Indonesia (N. Sulawesi & West Papua), Papua New Guinea, Philippines, Palau, Western Australia, and Sri Lanka.

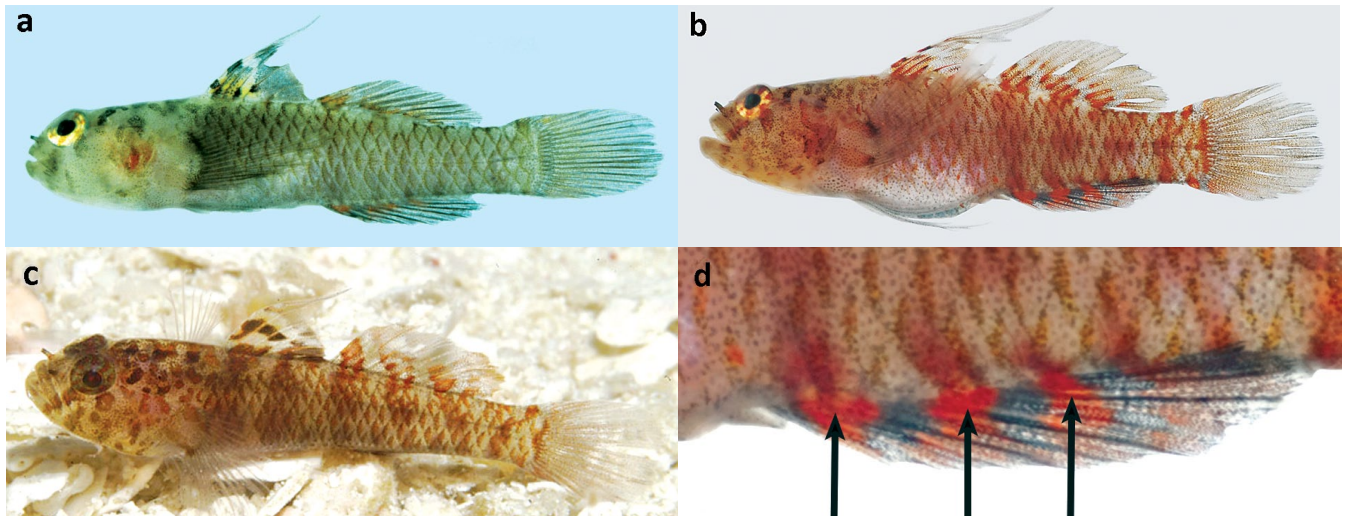


Figure 42. *E. korechika*, a) fresh, ROM 65053, Thailand (RW); b) fresh, ROM 85069, Indonesia (RW); c) live, Indonesia (GRA); d) detail of anal-fin base from b (RW).

- 38a.(36)Pectoral-fin base with distinct dark markings; no dark internal spot or bar on caudal peduncle over preural centrum38
- 38b. Pectoral-fin base without distinct dark markings (can be dispersed individual melanophores); a dark internal spot or bar on caudal peduncle over preural centrum43
- 39a.(38)Pectoral-fin base with two dark spots, one on upper portion and one on lower portion39
- 39b. Pectoral-fin base with one contiguous dark patch40
- 40a.(39)Pectoral-fin base with lower marking a spot, not a stripe; four dark subcutaneous body bars between anal-fin origin and caudal-fin base, not bifurcated ventrally; dark spots on ventral branchiostegal membranes not as four corners of a quadrangle, two on each side of isthmus [8/8, branched, 5th rudimentary, male urogenital papilla cup-shaped (as in Fig 2D)]
Minute Dwarfgoby, *E. minuta* Greenfield & Jewett, 2014a

Holotype: USNM 230090, 12.9 mm SL, female; type locality: Maloh, Negros Oriental, Philippines.
 Range: Philippines (similar specimens from other areas are part of an undescribed species complex).



Figure 43. *E. minuta*, preserved holotype, Philippines (SLJ).

- 40b. Pectoral-fin base with lower marking a stripe, not a spot; four dark subcutaneous body bars between anal-fin origin and caudal-fin base, bifurcated ventrally; dark spots on ventral branchiostegal membranes as four corners of a quadrangle, two on each side of isthmus [8/8, branched, 5th rudimentary or absent, male urogenital papilla flat, plate-like (as in Fig 2E)]Mimic Dwarfgoby, *E. mimica* Greenfield & Randall, 2016

Holotype: CAS 238095, 11.3 mm SL, male; type locality: Rabi Island, Fiji.
 Range: Fiji.

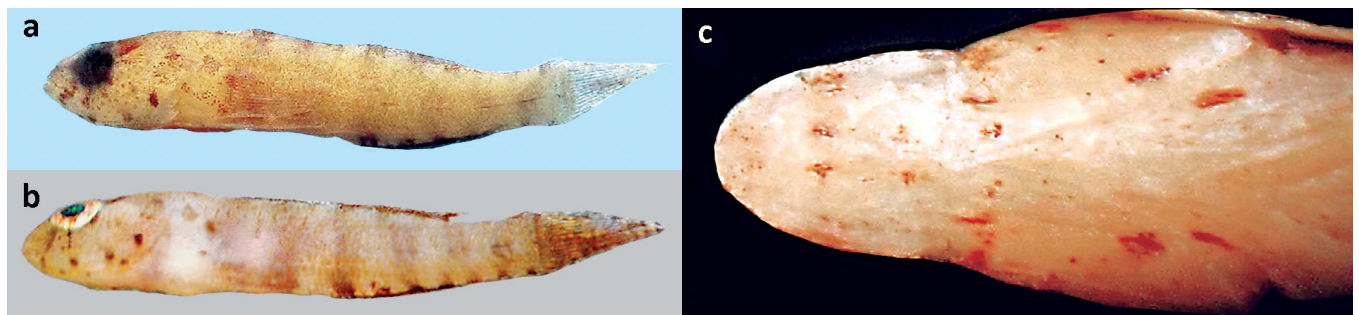


Figure 44. *E. mimica*, a) preserved holotype, Fiji (DWG); b) fresh holotype (note reflective streak in original removed) (DWG); c) CAS 238196, ventral view of head (DWG).

- 41a.(39)Pectoral-fin base with dark marking an oblique stripe on upper portion angling back posteroventrally; three narrow dark lines radiating from lower eye41
- 41b. Pectoral-fin base with dark marking a large patch centered on lower portion; single oblique dark line under eye, across jaws42
- 42a.(41)Body with a heavy peppering of single dark melanophores; underside of head with many dark spots [8/8, branched, 5th 0–4%]Speckled Dwarfgoby, *E. specca* Greenfield, Suzuki & Shibukawa, 2014

Holotype: NSMT-P 114945, 12.1 mm SL, immature; type locality: Hatoma-jima Island, Ryukyu Islands, Japan.
Range: Ryukyu Islands, Japan.

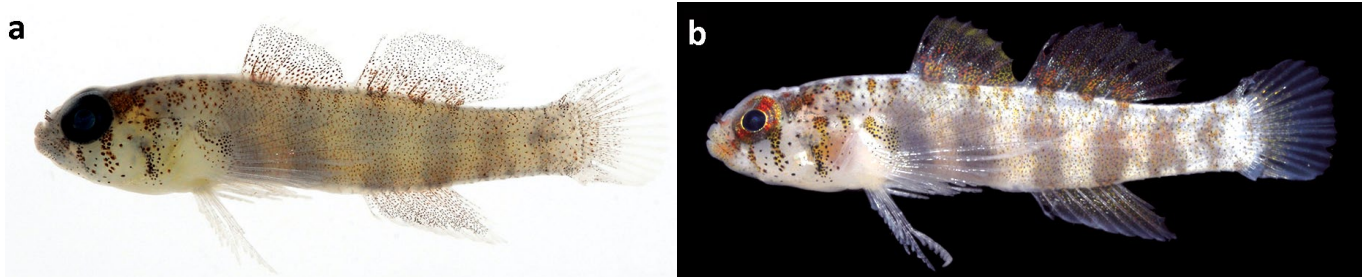


Figure 45. *E. specca*, a) preserved holotype, Japan (TS); b: fresh holotype, Japan (KS).

- 42b. Body without a heavy peppering of single dark melanophores; underside of head with only a scattering of melanophores at front of lower jaw [8/8, branched, 5th absent]
.....Fiji Speckled Dwarfgoby, *E. cf. specca* Greenfield & Randall, 2016

Range: Fiji.



Figure 46. *E. cf. specca*, preserved, CAS 238197, Fiji (DWG).

- 43a.(41)Three subcutaneous body bars between anal-fin origin and caudal-fin base; 16–18 pectoral-fin rays, branching of rays not beginning until 10th to 12th ray [8/8, branched, 5th absent]
.....Randall’s Dwarfgoby, *E. randalli* Greenfield, 2009

Holotype: CAS 228572, 16.8 mm SL, female; type locality: Cobia Island, Fiji.
Range: Fiji, Samoa, and Society Islands.



Figure 47. *E. randalli*, fresh, ROM 60894, Moorea (RW).

- 43b. Four subcutaneous body bars between anal-fin origin and caudal-fin base; 14–17 pectoral-fin rays, branching of rays may start with 3rd ray [8/8, branched, 5th absent]
False Singlespot Dwarfgoby, *E. pseudostigma* Lachner & Karnella, 1980

Holotype: USNM 219289, 20.6 mm SL, male; type locality: Mahé vicinity, Seychelles.
 Range: Comores, Seychelles, and Amirante Islands.

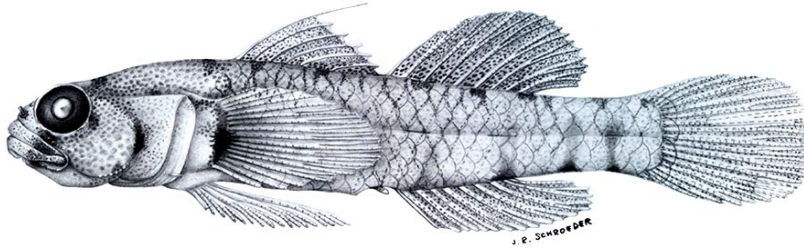


Figure 48. *E. pseudostigma*, preserved holotype, Seychelles (JRS).

- 44a.(38)Pectoral-fin base with scattered single melanophores45
 44b. Pectoral-fin base with few or no melanophores46

- 45a.(44)A full-depth dark internal bar on caudal peduncle over preural centrum; male urogenital papilla not black, but may have a few scattered melanophores [8/8, branched, 5th absent]
Winterbottom's Dwarfgoby, *E. winterbottomi* Greenfield & Randall, 2010b

Holotype: ROM 73100, 14.7 mm SL, male; type locality: Hon Rua Island, Nha Trang Bay, Vietnam.
 Range: Indonesia (Bali to West Papua), Vietnam, and Palau.

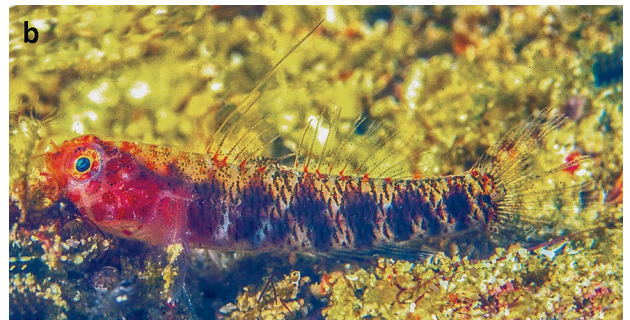


Figure 49. *E. winterbottomi*, a) fresh, ROM 73100, Vietnam (RW); b) live, BPBM 38789, Indonesia (JER).

- 45b. Dark internal mark on caudal peduncle over preural centrum reduced, not a full-depth bar; male urogenital papilla all black [(7–)8/(7–)8, branched, 5th absent]
Upwelling Dwarfgoby, *E. algida* Greenfield & Erdmann, 2014b

Holotype: CAS 237611, 16.4 mm SL, male; type locality: Gamat Bay, Nusa Penida, Bali, Indonesia.
 Range: Bali, Indonesia; also photographed at Beangabang Bay, Pantar, East Nusa Tenggara, Indonesia.



Figure 50. *E. algida*, a) preserved holotype, Bali (JDF); b) live, Bali (MVE); c) black male urogenital papilla (DWG).

46a.(44) Spinous dorsal fin entirely densely black; dark internal mark on caudal peduncle over preural centrum centered on lateral midline [8 (in 19) or 9 (in 3)/8, branched, 5th absent]
Blackfin Dwarfgoby, *E. nigripinna* Lachner & Karnella, 1980
 [western Indian Ocean populations; other (eastern) populations, with 9 dorsal-fin segmented rays, key out also at couplet 18]

Holotype: USNM 213929, 12.5 mm SL, male; type locality: North Island, Agaléga Islands, Mauritius.
 Range: Agaléga Islands, Mauritius, Réunion, Comores Islands, Chagos Archipelago.

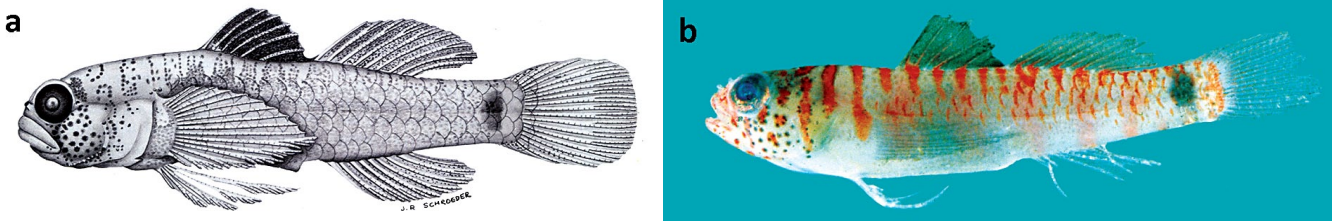


Figure 51. *E. nigripinna*, a) preserved paratype, USNM 213925, Agaléga Islands, Mauritius (JRS); b) fresh, Chagos Archipelago (RW).

46b. Spinous dorsal fin not entirely densely black; dark internal mark on caudal peduncle over preural centrum centered above lateral midline47

47a.(46) Spinous dorsal fin with prominent dark and pale lines; no distinct dark occipital spot; dark markings (short irregular bars) on nape in front of dorsal fin [8/8, branched, 5th rudimentary]
Nebulous Dwarfgoby, *E. nebulosa* Smith, 1958

Holotype: RUSI 259, 14.5 mm SL, female; type locality: Pinda, Mozambique.
 Range: East African coast (Mozambique); Seychelles, Aldabra, and Chagos Archipelago; throughout the East Indian region to Fiji; south to Australia (Great Barrier Reef); north to Japan, Micronesia (Palau, Federated States of Micronesia, Guam, Northern Mariana Islands, Marshall Islands, Kiribati); and French Polynesia (Society Islands).



Figure 52. *E. nebulosa*, a) preserved, USNM 213913, Java Sea (JRS); b) fresh, ROM 64486, New Caledonia (RW); c) fresh, Fiji (JER).

47b. Spinous dorsal fin with prominent dark and pale lines (may be dark at base and distal margin); distinct dark occipital spot usually present; no dark markings (short bars) on nape in front of dorsal fin48

48a.(47) Opercular membrane with distinct bar of melanophores; occipital spot may not be prominent; scale pockets lightly pigmented [8/8, branched, 5th absent]
Blackbar Dwarfgoby, *E. nigramembrana* Greenfield & Suzuki, 2013

Holotype: OMNH-P 35642, 13.9 mm SL, female; type locality: Iriomote-jima Island, Ryukyu Islands, Japan.
 Range: Ryukyu Islands, Japan; and Philippines.

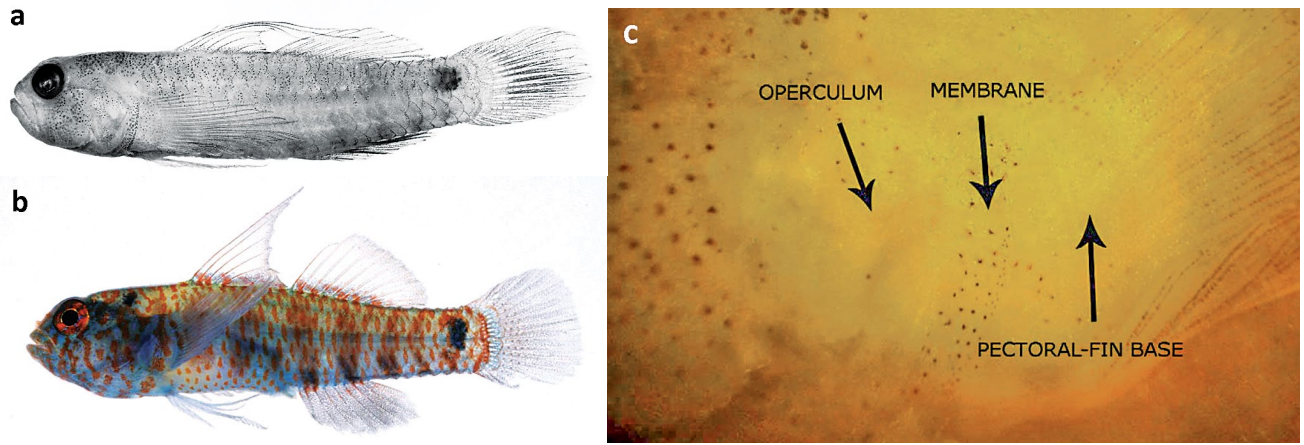


Figure 53. *E. nigramembrana*, a) preserved, USNM 223063, Philippines (KSa); b) holotype, fresh, Japan (TS); c) OMNH-P 35644, opercular membrane detail (DWG).

48b. Opercular membrane without distinct bar of melanophores; occipital spot prominent; scale pockets heavily pigmented [8/8, branched, 5th absent or rarely rudimentary]
Twinspot Dwarfgoby, *E. epistigmata* Greenfield & Jewett, 2014b

Holotype: USNM 223074, 13.0 mm SL, male; type locality: Haruku Island, Moluccas, Indonesia.
 Range: Moluccas (Indonesia) and eastern Papua New Guinea.

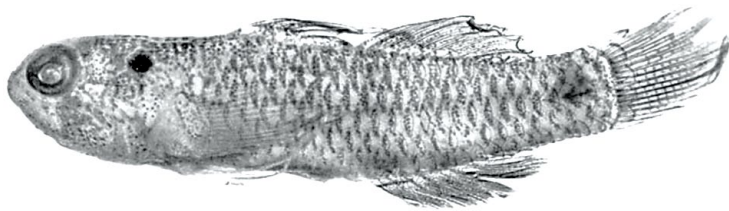


Figure 54. *E. epistigmata*, preserved holotype, Moluccas, Indonesia (SLJ).

- 49a.(7) Cephalic sensory-canal pore system lacking only the IT pore (pattern 2)50
- 49b. Cephalic sensory-canal pore system lacking the IT pore and one or more of the NA, POP, SOT, AOT, or PITO pores89

- 50a.(49)Pectoral-fin rays always simple; pelvic-fin membrane almost always well developed; segments between branches of the 4th pelvic-fin ray more numerous, usually 2 to 4; branches on the 4th pelvic-fin ray fewer, usually 5 to 7; male urogenital papilla smooth and elongate51
- 50b. Some pectoral-fin rays branched; pelvic-fin membrane reduced; segments between branches of the 4th pelvic-fin ray fewer, usually 1 or 2; branches on the 4th pelvic-fin ray more numerous, usually 7 to 12; male urogenital papilla fimbriate, nonfimbriate, or cup-shaped63

- 51a.(50)Dorsal/anal fin-ray formula usually 9/8 or 9/7 (note: if 8/8, then caudal-fin base with a central dark spot, i.e. *E. zebrina* and *E. cometa* specimens with 8/8)52
- 51b. Dorsal/anal fin-ray formula almost always 7/7, 8/7 or 8/8 (if 8/8, then caudal-fin base without a central dark spot)55

- 52a.(51)Base of caudal fin with a central dark spot (not the caudal peduncle over preural centrum)53
- 52b. Base of caudal fin without a central dark spot54

53a.(52)Caudal fin with 3 or 4 prominent dark wavy vertical lines; body scales with conspicuous dark margins [8–9/(7–)8, unbranched, 5th 10%]Zebra Dwarfgoby, *E. zebrina* Lachner & Karnella, 1980

Holotype: USNM 218026, 15.9 mm SL, male; type locality: Curieuse Island, Seychelles.

Range: Red Sea and Gulf of Aqaba, across the Indian Ocean to Indonesia; north to Taiwan, Japan, Marshall Islands, and Kiribati; east to New Caledonia, Fiji, Wallis and Futuna, Samoa, and Tonga; south to Western Australia, Great Barrier Reef, and Lord Howe Island.

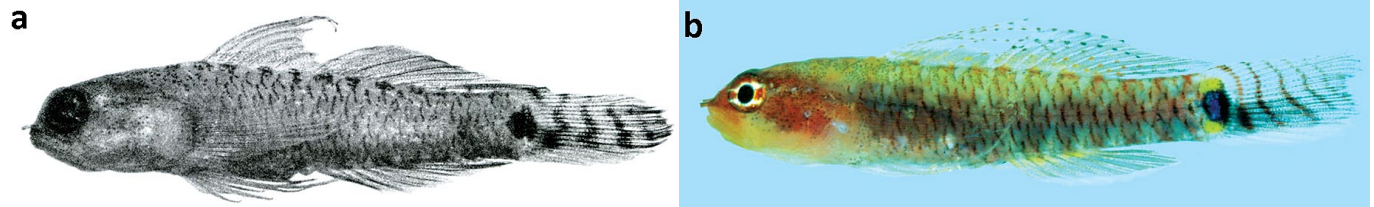


Figure 55. *E. zebrina*, a) preserved, WAM P.25608-036, Seychelles (SLJ); b) fresh, ROM 64305, New Caledonia (RW).

53b. Caudal fin without dark vertical lines; body scales without conspicuous dark margins [8–9/7–8, unbranched, 5th 10%]Comet Dwarfgoby, *E. cometa* Jewett & Lachner, 1983

Holotype: USNM 235817, 15.7 mm SL; type locality: Totoya Islands, Fiji.

Range: Philippines, Japan (Ryukyu Islands), Micronesia (Palau, Pohnpei, Marshall Islands), Kiribati (Phoenix and Line Islands, Caroline Island), southwards to Indonesia (Bali), Papua New Guinea, Solomon Islands, Vanuatu, Fiji, New Caledonia, and Australia (Great Barrier Reef).



Figure 56. *E. cometa*, a) preserved, CAS 52852, Palmyra Island (JRS); b) fresh, ROM 80694, Palau (RW); c) live, Fiji (RuW).

54a.(52)Pectoral-fin base with a dark blotch on uppermost border [9/usually 7, unbranched, 5th 40%]Spottedfin Dwarfgoby, *E. spilota* Lachner & Karnella, 1980

Holotype: USNM 219853, 23.0 mm SL, male; type locality: Ninigo Island, Papua New Guinea.

Range: East Andaman Sea (Thailand), Malaysia, Vietnam, Philippines and Palau, Indonesia (Java and Kalimantan to West Papua), and Papua New Guinea.

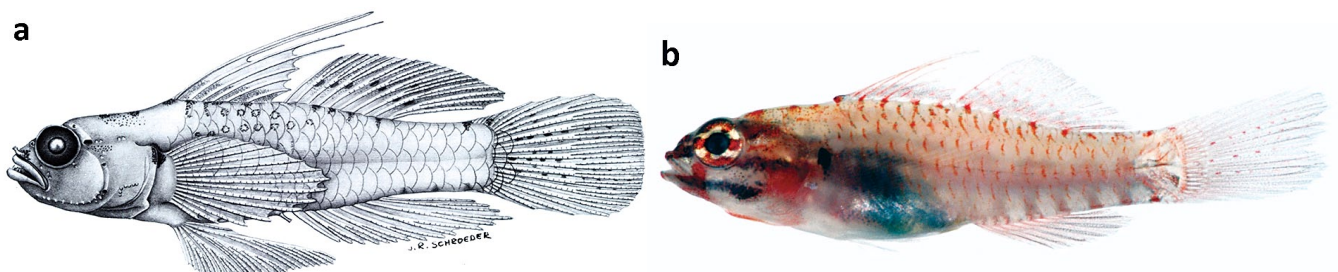


Figure 57. *E. spilota*, a) preserved, USNM 213887, Vietnam (JRS); b) fresh, ROM 80694, Vietnam (RW).

- 54b. Pectoral-fin base without a dark blotch [9/usually 8, unbranched, 5th 8.5–20%]
Adorned Dwarfgoby, *E. sigillata* Jewett & Lachner, 1983

Holotype: USNM 223836, 18.3 mm SL, male; type locality: Raphael Island, Cargados Carajos Shoals, Mauritius.

Range: Seychelles to Indonesia, north to Japan (Ogasawara Islands); east to Micronesia (Palau and FSM [Pohnpei, Yap and Kapingamarangi]) and Melanesia to Wallis and Futuna; south to Australia (Western Australia and Great Barrier Reef). In Fiji and Tonga, the species is considered *E. cf. sigillata* (not separated in this key).

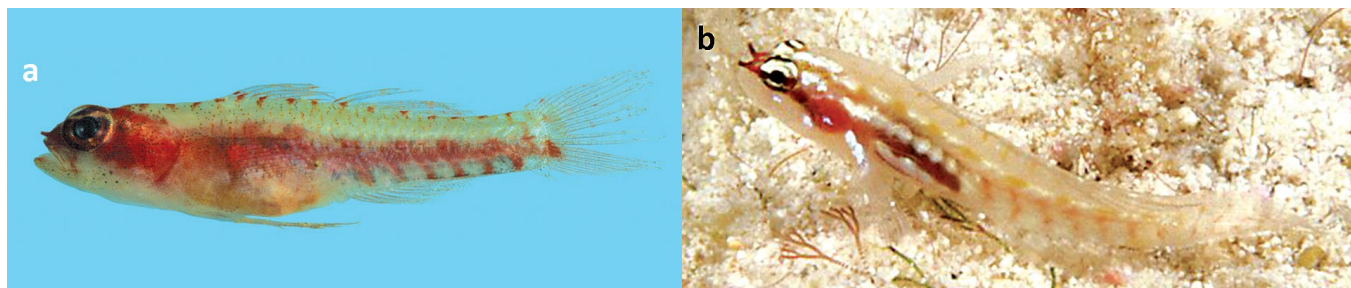


Figure 58. *E. sigillata*, a) fresh, ROM 63914, New Caledonia (RW); b) live, Seychelles (JER).

- 55a.(51)5th pelvic-fin ray shorter, 10% or less of length of 4th pelvic-fin ray56
 55b. 5th pelvic-fin ray longer, usually 30% or more of length of 4th pelvic-fin ray61

- 56a.(55)Base of caudal fin with a central dark spot (mark is posterior to typical caudal-peduncle spot over preural centrum) [8/7, unbranched, 5th 10%]Springer’s Dwarfgoby, *E. springeri* Greenfield & Jewett, 2012

Holotype: USNM 222651, 14.2 mm SL, male; type locality: Cargados Carajos Shoals, Mauritius.
 Range: four widely distributed localities in the Indian Ocean: the Amirantes (Seychelles), Cargados Carajos Shoals (Mauritius), Chagos Archipelago, and possibly Sri Lanka.

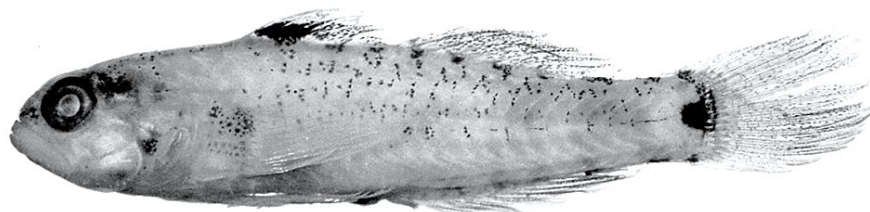


Figure 59. *E. springeri*, preserved holotype, Cargados Carajos Shoals, Mauritius (SLJ).

- 56b. Base of caudal fin without a central dark spot (posterior to typical caudal-peduncle spot over preural centrum)57

- 57a.(56)A prominent broad black stripe along full-length of vertebral column in life and fresh; conspicuous black pigment along scale pockets on ventral half of sides (at least when preserved)58

- 57b. No prominent broad black stripe along full-length of vertebral column in life and fresh; no conspicuous black pigment along scale pockets on ventral half of sides59

58a.(57)A curved gold stripe on head and forebody in life; nape and upper body without scattered small dark spots when preserved [8/7, unbranched, 5th <6%]
Blackspine Dwarfgoby, *E. nigrispina* Greenfield & Suzuki, 2010

Holotype: OMNH-P35615, 15.0 mm SL, male; type locality: Ishigaki-jima Island, Ryukyu Islands, Japan.
 Range: Ryukyu Islands, Japan and West Papua, Indonesia.



Figure 60. *E. nigrispina*, a) preserved holotype (DWG); b) fresh holotype (TS); c) live, Japan (HK).

58b. No curved gold stripe on head and forebody in life; nape and upper body with scattered small dark spots when preserved [8/7, unbranched, 5th rudimentary to 20%]
Redhead Dwarfgoby, *E. rubriceps* Greenfield & Jewett, 2011

Holotype: CAS 233447, 13.5 mm SL, male; type locality: West Waigeo Island, Waisilip, Raja Ampat Islands, Indonesia.

Range: Indonesia (Raja Ampat Islands, Halmahera, Banda Islands, Molucca Islands, West Papua), Papua New Guinea (Bismark Archipelago), and Philippines (Palawan).



Figure 61. *E. rubriceps*, a) preserved paratype, USNM 209978, Saparua (TN); b) preserved holotype (DWG); c) live, Halmahera (GRA).

59a.(57)Caudal fin crossed by thin dark vertical lines; a dark postocular spot present [8/7, unbranched, 5th 10%] ..
Storhynx Dwarfgoby, *E. storhynx* Rofen, 1959

Holotype: SU 52108, 16.9 mm SL, male; type locality: Bungau, Sulu Province, Philippines.

Range: Japan (Ryukyu and Ogasawara Islands), Micronesia (Palau and Yap), Hong Kong, northern Vietnam, Philippines, Indonesia (Java and Kalimantan to West Papua), Western Australia.

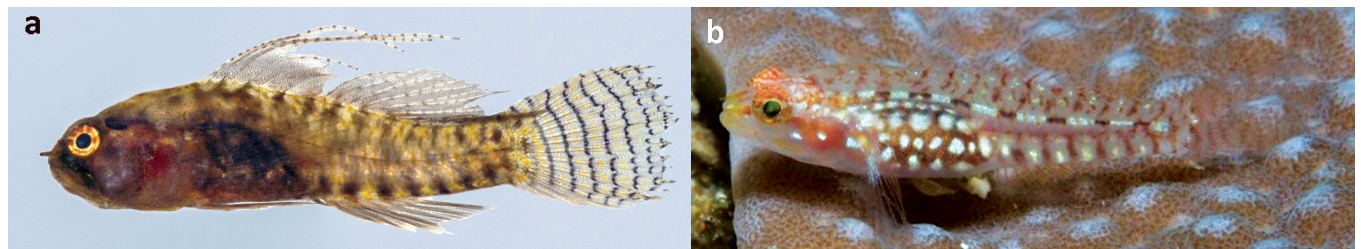


Figure 62. *E. storhynx*, a) fresh, ROM 70888, Vietnam (RW); b) live, Indonesia (MVE).

59b. Caudal fin not crossed by thin dark vertical lines; no dark postocular spot60

60a.(59)Caudal-fin base with a thin dark bar; a narrow, red-orange line under eye; caudal fin without rows of dark spots, distal margin dark; no J-shaped orange mark on head [8/7, unbranched, 5th 13%]
Tearful Dwarfgoby, *E. flebilis* Greenfield, Suzuki & Shibukawa, 2014

Holotype: NSMT-P 114944, 10.1 mm SL, male; type locality: Iriomote-jima Island, Ryukyu Islands, Japan.
 Range: Ryukyu Islands, Japan.



Figure 63. *E. flebilis*, a) preserved holotype (TS); b) fresh holotype (KS); c) live, Japan (KY).

60b. Caudal-fin base without a thin dark bar; no narrow, red-orange line under eye; caudal fin with rows of dark spots, distal margin not dark; a J-shaped orange mark on head present [8/7, unbranched, 5th 10%]
Hookcheek Dwarfgoby, *E. ancora* Greenfield & Suzuki, 2010

Holotype: OMNH-P21096, 14.0 mm SL, male; type locality: Irimote-jima Island, Ryukyu Islands, Japan.
 Range: Ryukyu Islands, Japan; Raja Ampat Islands and northern Sulawesi, Indonesia; and underwater photographs from the Philippines.

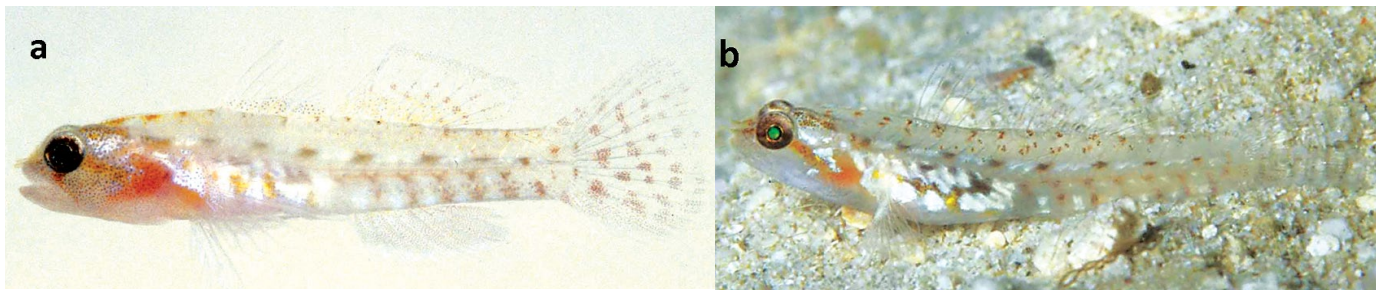


Figure 64. *E. ancora*, a) fresh holotype (TS); b) live, Japan (HK).

61a.(55)Abdomen with black peritoneum that is clearly visible through body wall, crossed by a prominent curved white stripe in life; no red spots on fins in life or fresh; no dark spot on upper portion of pectoral-fin base; pectoral-fin rays modally 14 [8/7, unbranched, 5th 30%]
Blackbelly Dwarfgoby, *E. atriventris* Greenfield & Suzuki, 2012

Holotype: ROM 76339, 17.1 mm SL, male; type locality: west of Koror, Palau.
 Range: Japan (southern Ryukyu Islands), Thailand, Brunei, Malaysia, Philippines, Palau, Indonesia (NW Kalimantan and Bali eastwards), Papua New Guinea, Solomon Islands, south to Australia (Great Barrier Reef) and east to New Caledonia.

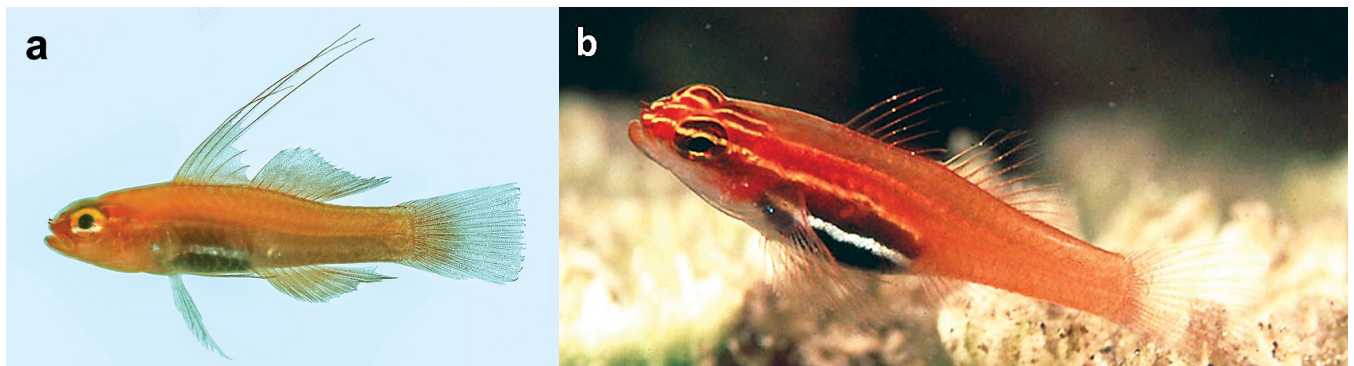


Figure 65. *E. atriventris*, a) fresh, ROM 76339, Palau (RW); b) live, Flores, Indonesia (JER).

61b. Abdomen without black peritoneum visible through body wall and without white stripe; red spots on fins and red stripe below eye in life; dark spot on upper pectoral-fin base present or absent; pectoral-fin rays modally 1662

62a.(61)Dark markings on top of head (if present) at most a dark area on each side of PITO pore (not directly behind); two dark lines on upper snout; a dark spot on upper pectoral-fin base when dead; a dark spot on caudal-fin base below lateral midline often present [8/7, unbranched, 5th 40%]
Hairfin Dwarfgoby, *E. parasites* Jordan & Seale, 1906

Holotype: USNM 51768, 20.4 mm SL, male; type locality: Pago Pago, American Samoa.

Range: Japan (Ryukyu Islands), Micronesia (Yap, Guam, and Kiribati [Abaiang Atoll]), Vietnam, Philippines, Indonesia (Moluccas), south to Australia (Great Barrier Reef), east through Melanesia to Samoa and French Polynesia (Gambier).



Figure 66. *E. parasites*, a) fresh, ROM 64166, New Caledonia (RW); b) live, Brunei (MVE); c) pigmentation on top of head (DWG).

62b. Dark lines on top of head (if present) in three lines, one behind PITO pore and one on each side near SOT pores; three dark lines on upper snout; at most a faint dusky spot on upper pectoral-fin base; no dark spot on caudal-fin base below lateral midline [8/7, unbranched, 5th 30–70%]
Transparent Dwarfgoby, *E. pellucida* Larson, 1976

Holotype: BPBM 18586, 18.5 mm SL, male; type locality: Guam, Mariana Islands.

Range: Japan (Ryukyu Islands), Micronesia (Pohnpei, Guam, Marshall Islands, and Kiribati [Abaiang Atoll]); all other location records represent *E. atriventris*.



Figure 67. *E. pellucida*, a) fresh, OMNH 35616, Ryukyu Islands, Japan (TS); b) live, Japan (HK); c) pigmentation on top of head (DWG).

63a.(50)Pectoral-fin base with one or two distinct dark markings (spots or bars)64

63b. Pectoral-fin base without distinct dark markings (may have red spots in life or diffuse darker areas on upper and lower portions)70

64a.(63)Second dorsal-fin elements usually I,865

64b. Second dorsal-fin elements usually I,9 or I,1068

65a.(64)No distinct dark lines radiating down below eye; pectoral-fin base with dark bar or one or two distinct dark spots [8/8, branched, 5th 10%] Variable Dwarfgoby, *E. bipunctata* Greenfield & Jewett, 2016a

Holotype: USNM 225176, 14.0 mm SL, male; type locality: Putic Island, Palawan Province, Philippines. Range: Aldabra and Seychelles in the Indian Ocean; east to Ponape, Caroline Islands; north to Taiwan; south to Philippines, Indonesia, and Papua New Guinea (absent from the Great Barrier Reef but present at Northwest Cape, Western Australia).



Figure 68. *E. bipunctata*, a) preserved, ANSP 146503, Seychelles (JRS); b) fresh, ANSP 146497, Timor Leste (MVE); c) preserved, detail of pectoral-fin base spot patterns, Seychelles (DWG).

65b. One or more distinct dark lines radiating down below eye (except *E. hoesei*, with 9/8, see 68a); pectoral-fin base usually with two distinct dark spots66

66a.(65)Six postanal ventral-midline dark spots; spinous dorsal fin of male filamentous with 3 small discrete dark spots on lower portion of 1st spine (white spots in life, weaker spots may extend to tip of spine); a small dark spot near base of membrane between 5th and 6th spines of first dorsal fin; no dark bars across nape [8/8, branched, 5th 10–20%]Inconsistent Dwarfgoby, *E. asymbasia* Greenfield & Jewett, 2016a

Holotype: USNM 229476, 15.0 mm SL, male; type locality: Cuyo Island, Palawan Province, Philippines. Range: Islands within the Sulu Sea, south to the Java Sea.

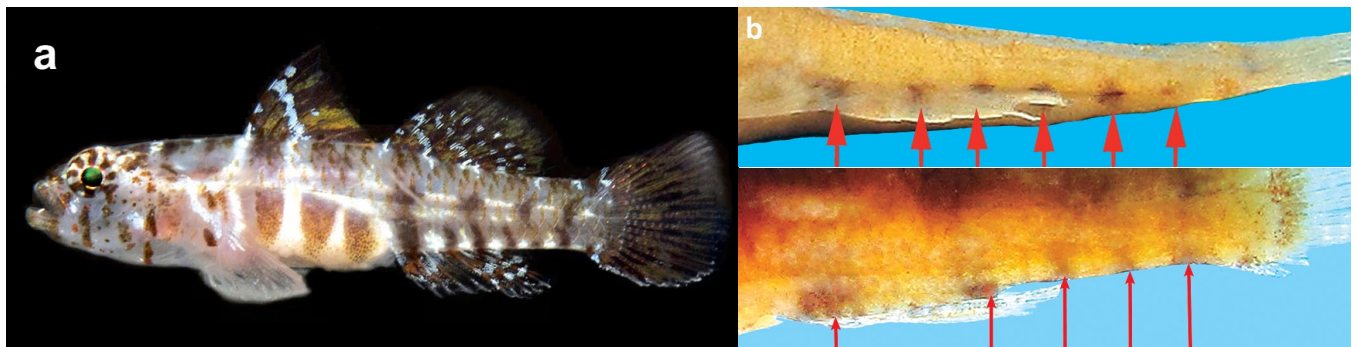


Figure 69. *E. asymbasia*, a) fresh, CAS 238223, Damar (MVE); b) six ventral midline spots of *E. asymbasia*, USNM 229476 (upper) vs. five in *E. piperata*, USNM 229481 (lower) (DWG).

66b. Five postanal ventral-midline dark spots; spinous dorsal fin of male filamentous or not; spots on first dorsal-fin spine present or absent; dark bars across nape present or absent67

67a.(66) Three postanal dark subcutaneous body bars; spinous dorsal fin of male not filamentous; no spots on first dorsal-fin spine; head and body not densely speckled with small melanophores [8/8, branched, 5th 10–20%] Weeping Dwarfgoby, *E. lacrimosa* Tornabene, Ahmadi & Williams, 2013b

Holotype: USNM 399892, 10.2 mm SL, male; type locality: Mohotane Island, Marquesas Islands, French Polynesia.

Range: Marquesas Islands, French Polynesia.

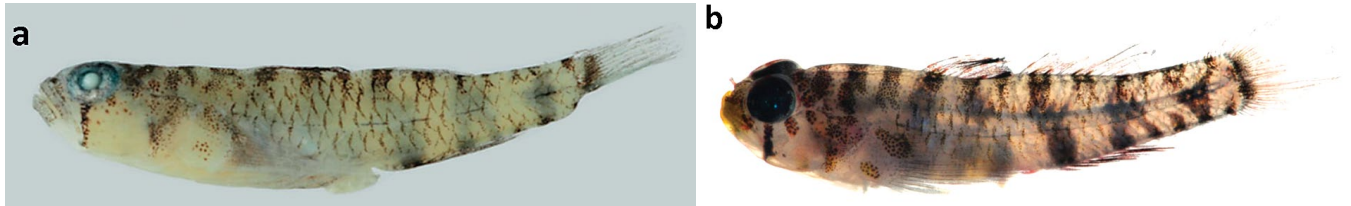


Figure 70. *E. lacrimosa*, a) preserved paratype, USNM 409081, Marquesas Islands (JTW); b) fresh paratype, USNM 409082, Marquesas Islands (JTW).

67b. Four postanal subcutaneous dark body bars; spinous dorsal fin of male filamentous; series of dark spots along first dorsal-fin spine; head and body densely speckled with small melanophores [8/8, branched, 5th 10%] Peppered Dwarfgoby, *E. piperata* Greenfield & Winterbottom, 2014

Holotype: ROM 84490, 20.1 mm SL, male; type locality: Fana Island, Sonsorol State, Palau.

Range: Palau south to Raja Ampat and the Moluccas in Indonesia and Papua New Guinea; Taiwan south to the South China Sea to the Philippines Islands (Apo Reef, Mindoro Province, outside of the Sulu Sea).

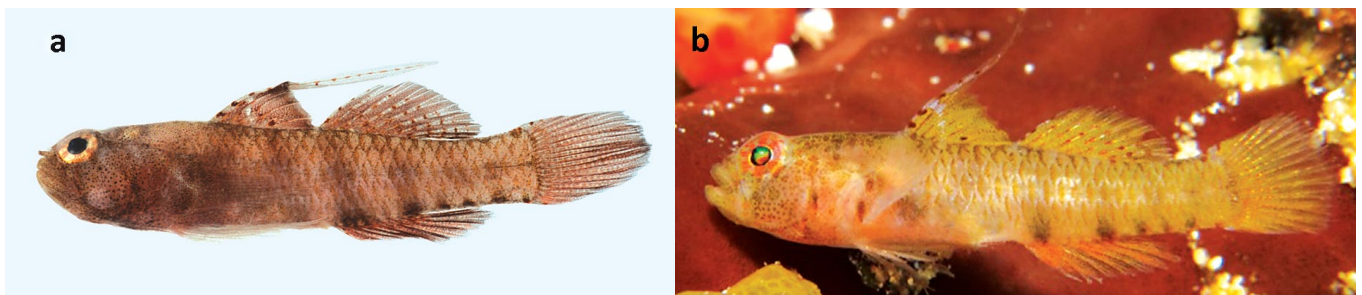


Figure 71. *E. piperata*, a) fresh holotype, Palau (RW); b) fresh, Indonesia (MVE).

68a.(64) No prominent postocular dark spots; large dark caudal-peduncle spot over preural centrum (more than half caudal-peduncle depth); six postanal subcutaneous dark body bars; no dark spots along dorsal midline [9/8, branched, 5th 10%] Hoesé's Dwarfgoby, *E. hoesei* Gill & Jewett, 2004

Holotype: AMS I.17367-004, 19.7 mm SL; type locality: Lord Howe Island, Australia.

Range: New Caledonia, Norfolk Island, and Lord Howe Island (Middleton and Elizabeth Reefs).

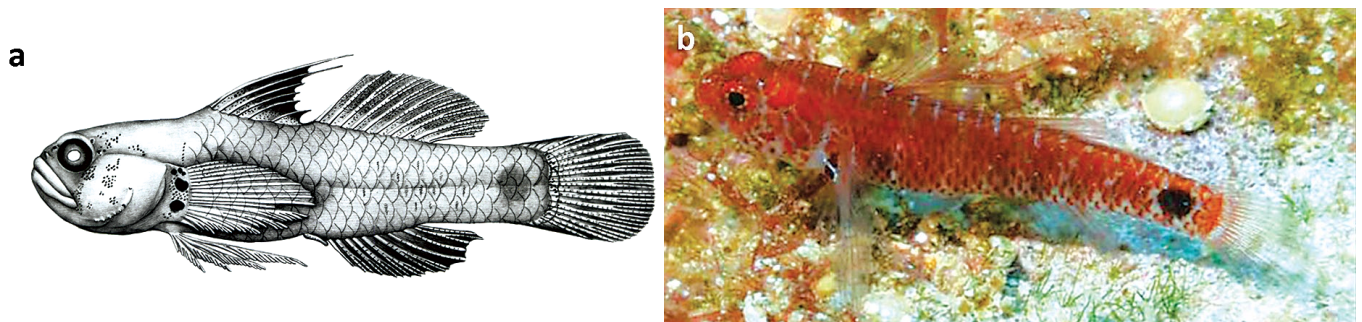


Figure 72. *E. hoesei*, a) preserved holotype, Lord Howe Island (JRS); b) live, Lord Howe Island (RSS).

68b. Postocular dark spots present; small dark caudal-peduncle spot over preural centrum (less than half caudal-peduncle depth); five or six postanal subcutaneous dark body bars; series of dark spots along dorsal midline69

69a.(68)Postocular dark spots mainly rounded; five postanal subcutaneous dark body bars; body heavily pigmented in preservative [usually 9/8, branched, 5th 10%]Queensland Dwarfgoby, *E. queenslandica* Whitley, 1932

Holotype: AMS IA. 4068, 19.8 mm SL, male; type locality: Batt Reef off Port Douglas, northern Queensland, Australia.

Range: Japan, Taiwan, Palau, southwestern Thailand, Philippines, Indonesia, south to Australia (southern Great Barrier Reef, Lord Howe Island, Norfolk Island, and Middleton Reef), New Caledonia, Vanuatu, and Tonga.

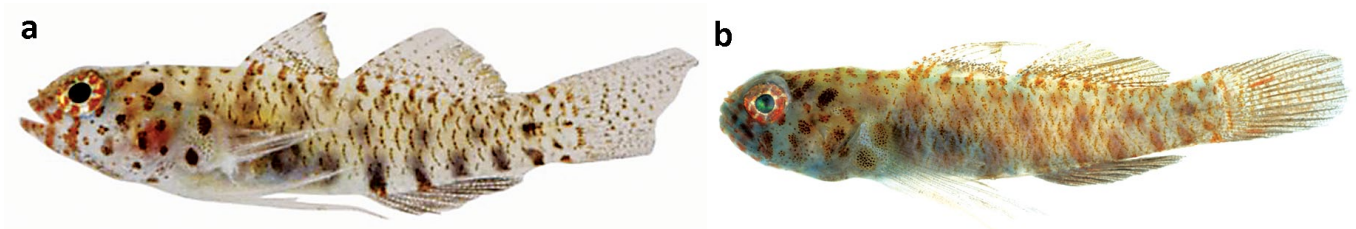


Figure 73. *E. queenslandica*, a) fresh, Queensland, Australia (JBH); b) fresh, ROM 84751, Palau (RW).

69b. Postocular dark spots relatively elongate; six postanal subcutaneous dark body bars; body lightly pigmented in preservative [9/8, branched, 5th 10–20%]Japanese Dwarfgoby, *E. japonica* Jewett & Lachner, 1983

Holotype: USNM 221758, 17.5 mm SL, female; type locality: Kohamajima Island, Ryukyu Islands, Japan.

Range: southern Japan, Ryukyu Islands, and Taiwan.

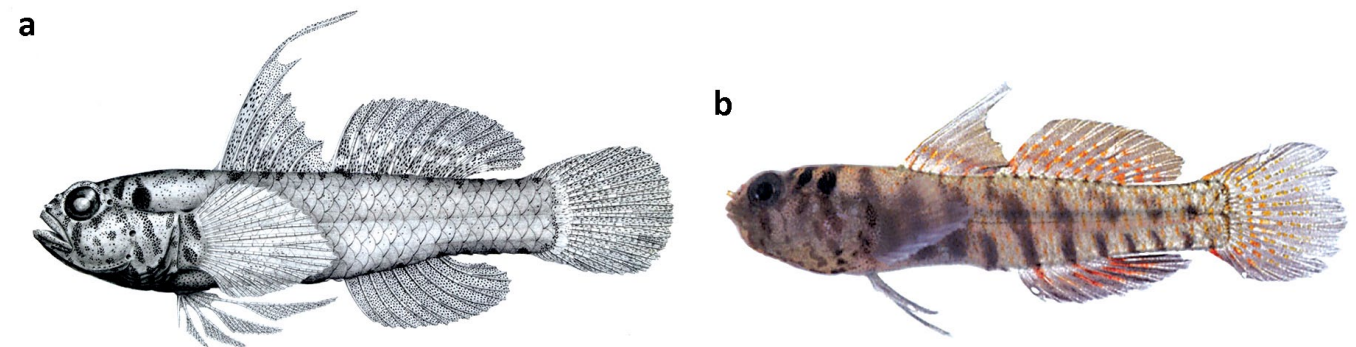


Figure 74. *E. japonica*, a) preserved paratype, USNM 221745, Japan (PM); b) fresh, Japan (TS).

70a.(63)Second dorsal-fin elements usually I,871

70b. Second dorsal-fin elements usually I,9 or I,1075

71a.(70)No dark caudal-peduncle spot over preural centrum; urogenital papilla fimbriate (rugose) in both males and females [8/8, branched, 5th 10%, fimbriate]Red Dwarfgoby, *E. rubra* Greenfield & Randall, 1999

Holotype: BPBM 38385, 11.6 mm SL, male; type locality: Kaneohe Bay, Oahu, Hawai'i.

Range: Previously known only from Kaneohe Bay in Oahu, but it has now been recorded from the big island of Hawai'i, and it likely occurs throughout the Hawaiian Islands.

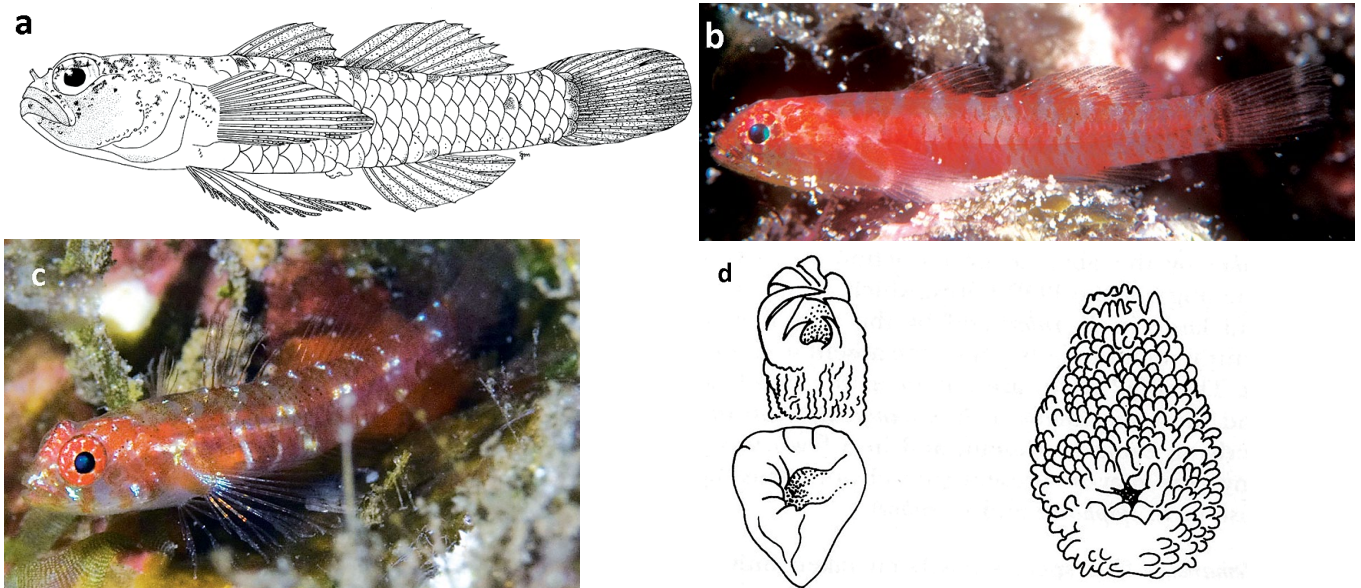


Figure 75. *E. rubra*, a) preserved holotype, Hawai'i (SGM); b) live, Hawai'i (JER); c) live, Hawai'i (JPH); d) urogenital papillae, female, BPBM 35422 (left) and male, BPBM 35424 (right) (SGM).

71b. Dark caudal-peduncle spot over preural centrum present; urogenital papilla non-fimbriate72

72a.(71)Cheek with distinct small spots, six postanal subcutaneous dark body bars73

72b. Cheek without small spots, four postanal subcutaneous dark body bars (third can be bifurcated ventrally to form five bars)74

73a.(72)Dark caudal-peduncle spot over preural centrum vertically elongate [8/8, branched, 5th 10%]
Indian Dwarfgoby, *E. indica* Lachner & Karnella, 1983

Holotype: USNM 219663, 15.4 mm SL, male; type locality: Raphael Island, Cargados Carajos Shoals, Mauritius.

Range: Mauritius, Réunion, Cargados Carajos Shoals, and Seychelles.

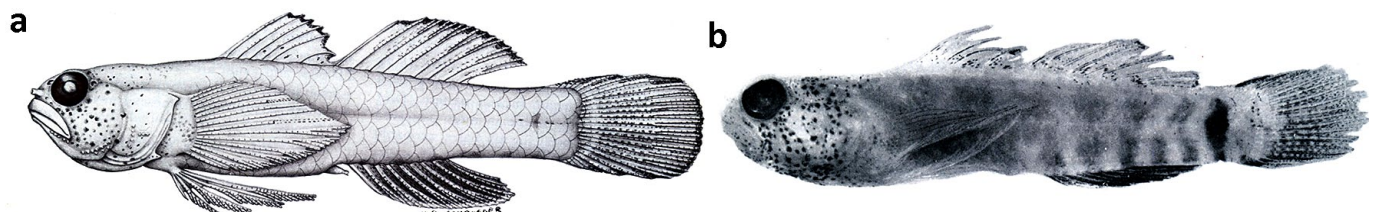


Figure 76. *E. indica*, a) preserved holotype, Cargados Carajos Shoals (JRS); b) preserved paratype, USNM 219665, Seychelles (KBS).

- 73b. Dark caudal-peduncle spot over preural centrum rounded [8–9/8, branched, 5th <10%]
Shibukawa's Dwarfgoby, *E. shibukawai* Suzuki & Greenfield, 2014
 [specimens with 9 dorsal-fin segmented rays also key out to couplet 85]

Holotype: NSMT-P 114946, 9.9 mm SL, female; type locality: Iriomote-jima Island, Ryukyu Islands, Japan.

Range: Ryukyu Islands, Japan.

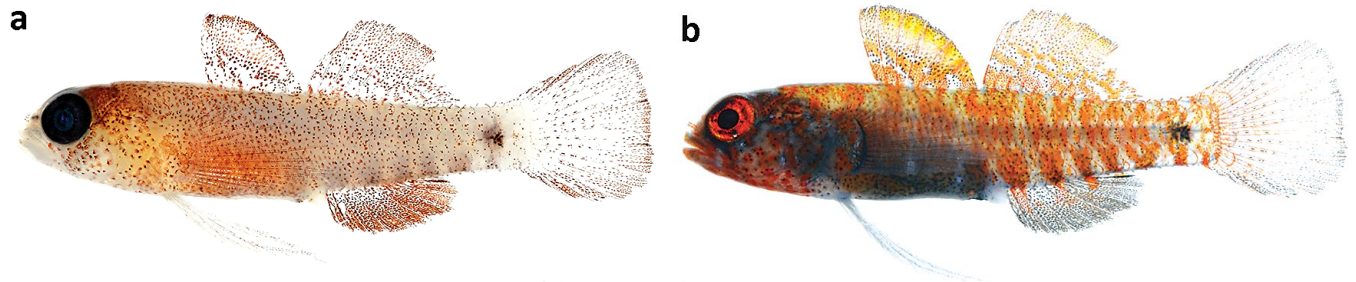


Figure 77. *E. shibukawai*, a) preserved holotype, Japan (TS); b) fresh holotype, Japan (TS).

- 74a.(72)Dark caudal-peduncle spot over preural centrum centered on lateral midline [8/8, branched, 5th rudimentary]
Brownbanded Dwarfgoby, *E. latifasciata* Jewett & Lachner, 1983

Holotype: AMS I.18051-001, 12.4 mm SL, female; type locality: Abaiang Atoll, Gilbert Islands.

Range: Christmas Island in the eastern Indian Ocean, Indonesia (Sulawesi, Lesser Sundas, Banda, West Papua), north to Japan (Okinawa and Ryukyu Islands) and Micronesia (Palau, FSM [Pohnpei], and Kiribati), east to New Caledonia, Solomon Islands, Fiji, Tonga and French Polynesia (Austral Islands).



Figure 78. *E. latifasciata*, a) preserved paratype, USNM 260079, Abaiang Atoll (JRS); b) fresh, ROM 84733, Palau (RW); c) fresh, ROM 81035, Palau (RW).

- 74b. Dark caudal-peduncle spot over preural centrum centered above lateral midline [8/8, branched, 5th rudimentary]
Dorsal-spot Dwarfgoby, *E. dorsimaculata* Tornabene, Ahmadi & Williams 2013b

Holotype: USNM 407437, 13.6 mm SL, female; type locality: Motu One, Fatu Hiva, Marquesas Islands.

Range: Marquesas Islands, French Polynesia.



Figure 79. *E. dorsimaculata*, a) preserved paratype, USNM 404797, Marquesas Islands (LT); b) fresh paratype, USNM 497975, Marquesas Islands (JTW).

75a.(70)Dark wedge-shaped mark at base of caudal fin, flanked by two dark spots over procurrent rays (mark is posterior to typical caudal-peduncle spot over preural centrum) [9/8, branched, 5th 10%]
Wedge Dwarfgoby, *E. melanosphen*a Greenfield & Jewett, 2016b

Holotype: AMS I.19483-092, 13.3 mm SL, male; type locality: Lizard Island, Great Barrier Reef, Australia.
 Range: Great Barrier Reef, Australia.

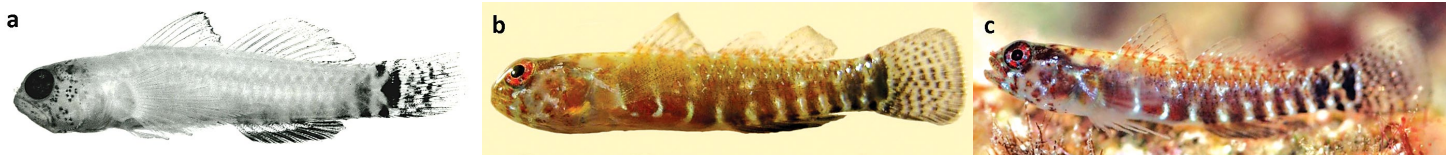


Figure 80. *E. melanosphen*a, a) preserved holotype, GBR (KBS); b) fresh, GBR (AG-C); c) live, GBR (AG-C).

75b. No large dark marking posterior to typical caudal-peduncle spot over preural centrum76

76a.(75)Two distinct postocular dark spots present on each side (more than diffuse clusters of melanophores)77

76b. No distinct postocular dark spots79

77a.(76)Six postanal ventral-midline dark spots from subcutaneous body bars; male urogenital papilla non-fimbriate; first spine of spinous dorsal fin with a series of small, dark spots; spinous dorsal, second dorsal, and caudal fins with a series of from 3 to 8 small dark spots on rays of fins [9/8, branched, 5th 10%]
Twin-occipital Dwarfgoby, *E. bimaculata* Lachner & Karnella, 1980

Holotype: WAM P. 10110, 19.5 mm SL, male; type locality: Rottnest Island, Western Australia.
 Range: South and Western Australia.



Figure 81. *E. bimaculata*, a) preserved holotype, Western Australia (JRS); b) fresh (RHK); c) fresh (RHK).

77b. Four or five postanal ventral-midline dark spots from subcutaneous body bars; male urogenital papilla fimbriate; spines and rays not marked as in 77a78

78a.(77)Five postanal ventral-midline dark spots from subcutaneous body bars; filamentous spine of dorsal fin with alternating dark and light spots extending from base nearly to tip, spinous dorsal fin with 3 light spots at base and with irregular dusky pigmentation on middle and outer portion; anal-fin elements usually 1,9 [10/9, branched, 5th rudimentary]Finspot Dwarfgoby, *E. variola* Lachner & Karnella, 1980

Holotype: USNM 219238, 20.3 mm SL, male; type locality: One Tree Island, Great Barrier Reef, Australia.
 Range: Southern Great Barrier Reef, Australia.

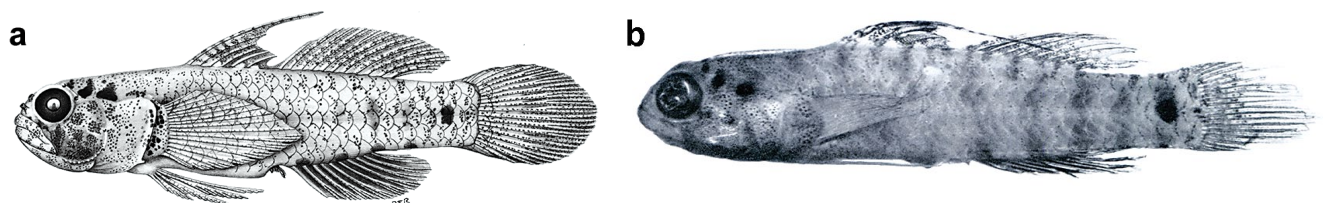


Figure 82. *E. variola*, a) preserved paratype, CAS 13783, Great Barrier Reef (JRS); b) preserved paratype, CAS 13783, Great Barrier Reef (SLJ).

- 78b. Four or five postanal ventral-midline dark spots from subcutaneous body bars (4 in Red Sea type population, 5 in some other populations); spinous dorsal fin with a pale anterior basal area, remaining outer portion dark (or middle and outer portions with dark stripes); anal-fin elements almost always I,8 [9/8, branched, 5th absent to rudimentary]Greenbubble Dwarfgoby, *E. prasina* (Klunzinger, 1871) [note that distinct postocular dark spots are present only in some southwest Indian Ocean populations; other populations key out also at couplet 88]

Holotype: NFIS 1693, 11.6 mm SL, female; type locality: Al-Qusair, Egypt, Red Sea.

Range: East Africa, islands of the western Indian Ocean, Red Sea, throughout East Indian region, including Indonesia, Philippines, Palau; north to southern Japan, south to Lord Howe and Norfolk Island (but not known from the Great Barrier Reef).

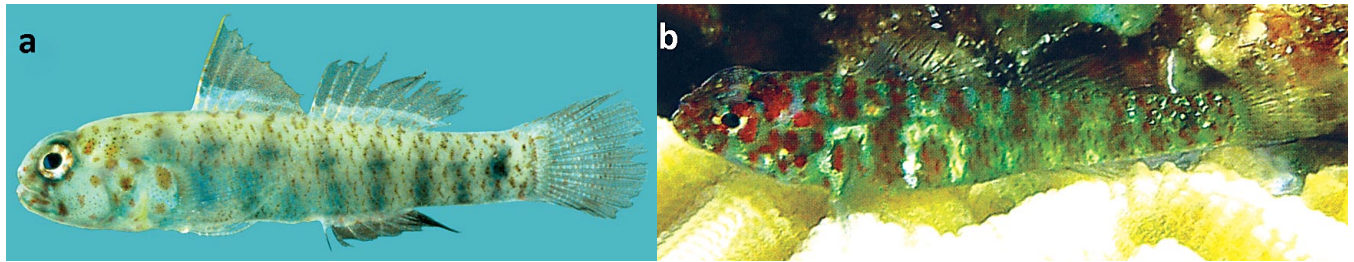


Figure 83. *E. prasina*, a) fresh, ROM 37060, Chagos Archipelago (RW); b) live, Jordan, Red Sea (JH).

- 79a.(76) No dark caudal-peduncle spot over preural centrum80
 79b. Distinct dark caudal-peduncle spot over preural centrum84
- 80a.(79)Dorsal/anal fin-ray formula 10/9; edges of scale pockets darkly pigmented; a dark crescent-shaped bar at base of caudal fin (mark is posterior to location of typical caudal-peduncle spot over preural centrum found on other species)[10/9, branched, 5th 20%]Tiger Dwarfgoby, *E. tigrina* Greenfield & Randall, 2008

Holotype: BPBM 38095, 21.7 mm male. Type locality: Neiafu, Vava'u Island Group, Tonga.

Range: Tonga.

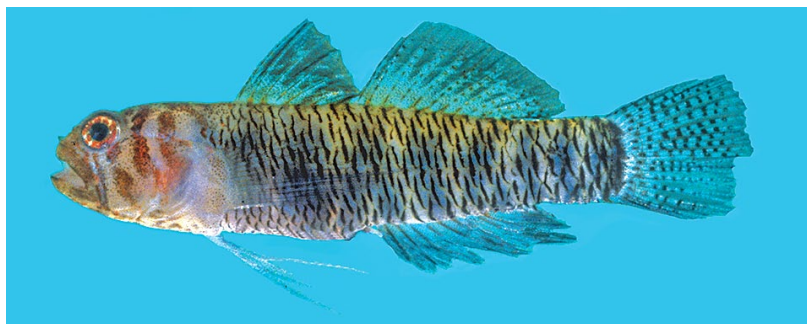


Figure 84. *E. tigrina*, fresh holotype, Tonga (JER).

- 80b. Dorsal/anal fin-ray formula 9/8; edges of scale pockets darkly pigmented or not; no dark crescent-shaped bar at base of caudal fin81

81a.(80)Caudal-fin membranes not dark, at most with a few scattered melanophores, caudal-fin rays with scattered well-spaced prominent dark spots; edges of scale pockets darkly pigmented; subcutaneous dark bars on body posterior to anal-fin origin weak or absent in preserved specimens [9/8, branched, 5th 10–20%]
Dotted Dwarfgoby, *E. punctulata* Jewett & Lachner, 1983

Holotype: USNM 224550, 20.7 mm SL, male; type locality: Great Astrolabe Reef, Fiji.

Range: Described from Fiji where there are confirmed records from numerous localities. Other records from throughout the western Pacific Ocean may represent a species complex.

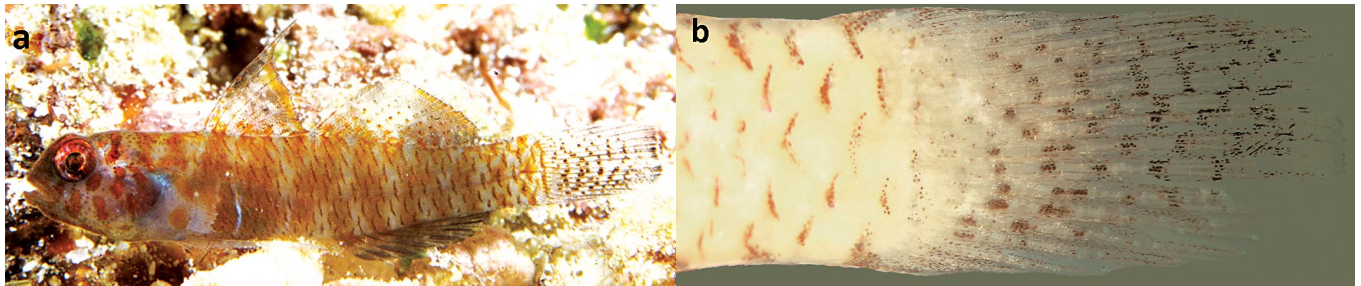


Figure 85. *E. punctulata*, a) live, Fiji (JER); b) preserved, caudal fin, CAS 238211, Fiji (DWG).

81b. Caudal-fin membranes dark, or pale with a few small dark spots on rays (no well-spaced prominent dark spots, Fig. 86); edges of scale pockets not darkly pigmented; subcutaneous dark bars on body variable82

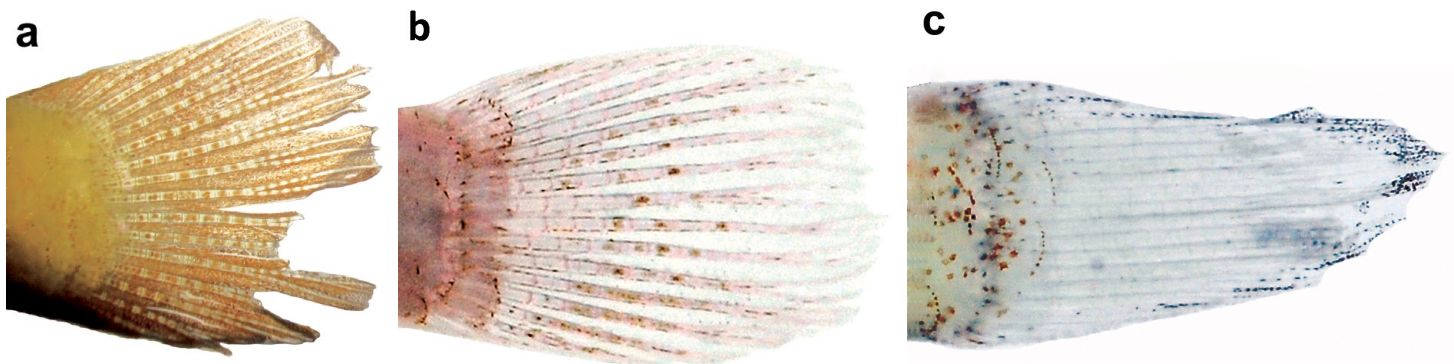


Figure 86. Preserved caudal fins of a) *E. afelei*, USNM 259379; b) *E. rubrimaculata*, KPM-N I.30770; and c) *E. flavipinnata*, NSMT-P110502 (all DWG).

82a.(81)Three dark spots on body along anal-fin base; spinous dorsal fin dark (females may have pale central portion) [9/8, branched, 5th 10–30%]Afele's Dwarfgoby, *E. afelei* Jordan & Seale, 1906 [specimens with a spot over the preural centrum key out also at couplet 85]

Holotype: SU 8715, 11.9 mm SL, male; type locality: Pago Pago, American Samoa.

Range: Ryukyu Islands, Japan; south to the Timor Sea and Great Barrier Reef, east to Oceania and Tuamotus.

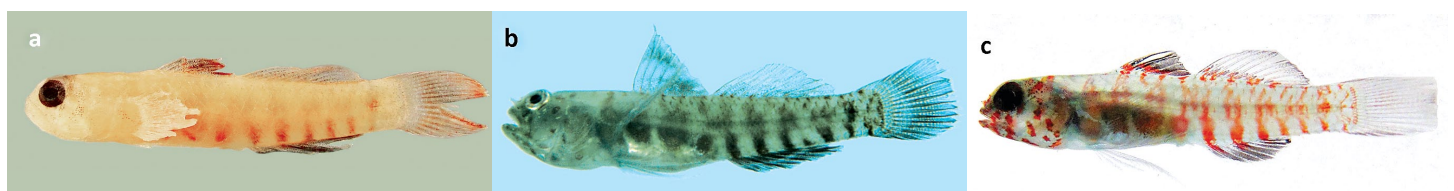


Figure 87. *E. afelei*, a) preserved, CAS 238034, American Samoa (DWG); b) fresh, ROM 60746, Moorea (RW); c) fresh, Moorea (GA).

82b. Two dark spots on body along anal-fin base; spinous dorsal fin not dark; 5th pelvic fin ray either absent or 12% of 4th ray83

83a.(81)Spinous dorsal fin translucent, not colored; second dorsal fin translucent with red spots; anal fin dusky; body markings bright red in life [9/8, branched, 5th absent]
Redspot Dwarfgoby, *E. rubrimaculata* Suzuki, Greenfield & Motomura, 2015

Holotype: KPM-NI 30770, 12.0 mm SL, female; type locality: Yoron Island, Ryukyu Islands, Japan.
 Range: Ryukyu Islands, Japan.

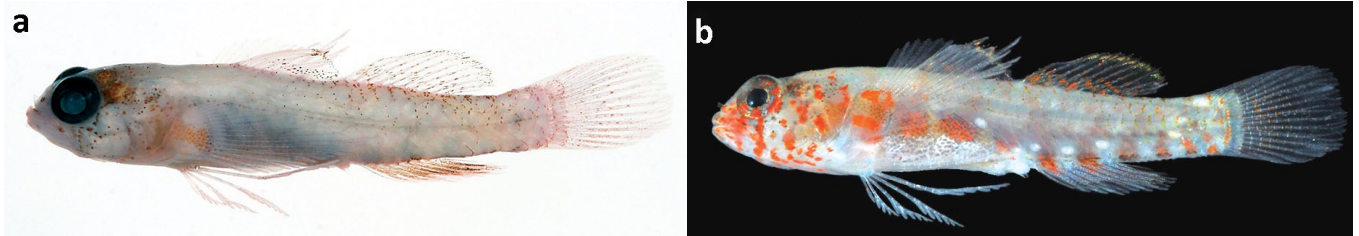


Figure 88. *E. rubrimaculata*, a) preserved holotype, Japan, image reversed (TS); b) fresh holotype, Japan (HS).

83b. Spinous dorsal fin and second dorsal fin golden yellow in life; anal fin reddish; body markings not bright red in life [9/8, branched, 5th 12%]Yellowfin Dwarfgoby, *E. flavipinnata* Suzuki, Greenfield & Motomura, 2015

Holotype: NSMT-P 110502, 16.6 mm SL, female; type locality: Yoron Island, Ryukyu Islands, Japan.
 Range: Ryukyu Islands, Japan.

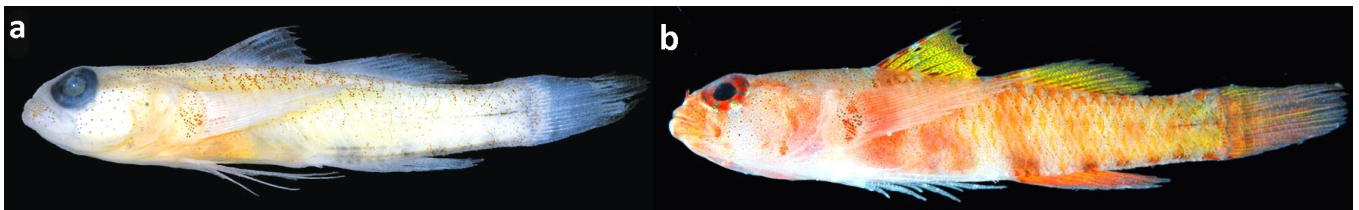


Figure 89. *E. flavipinnata*, a) preserved holotype, Japan (TS); b) fresh holotype, Japan (KFT).

84a.(79)Six postanal ventral-midline dark spots from subcutaneous body bars; male urogenital papilla neither fimbriate nor cup-shaped85

84b. Four or five postanal ventral-midline dark spots from subcutaneous body bars; male urogenital papilla either fimbriate or cup-shaped86

85a.(84)Head and body heavily peppered with small discrete melanophores; spinous dorsal fin with dark edging [8–9/8, branched, 5th <10%]Shibukawa's Dwarfgoby, *E. shibukawai* Suzuki & Greenfield, 2014 [specimens with 8 dorsal-fin segmented rays key out also to couplet 73]

Holotype: NSMT-P 114946, 9.9 mm SL, female; type locality: Iriomote-jima Island, Ryukyu Islands, Japan.
 Range: Ryukyu Islands, Japan.

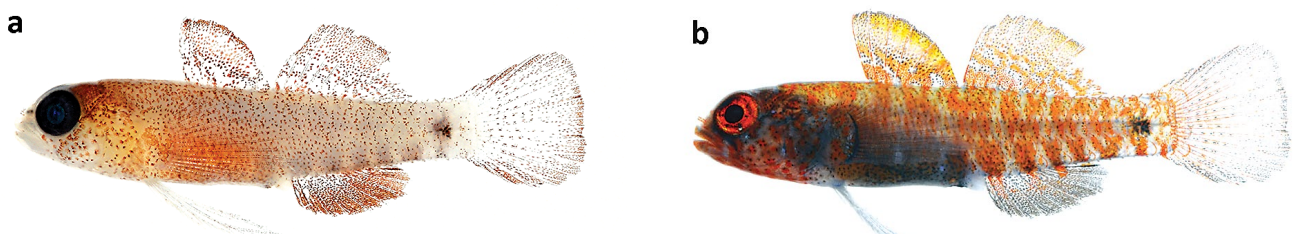


Figure 90. *E. shibukawai*, a) preserved holotype, Japan (TS); b) fresh holotype, Japan (TS).

85b. Body not heavily peppered with small discrete melanophores; spinous dorsal fin dark, not distinctly edged with darker rim [9/8, branched, 5th 10–30%]Afele's Dwarfgoby, *E. afelei* Jordan & Seale, 1906 [specimens without a distinct spot over the preural centrum key out also at couplet 82]

Holotype: SU 8715, 11.9 mm SL, male; type locality: Pago Pago, American Samoa.

Range: Ryukyu Islands, Japan; south to the Timor Sea and Great Barrier Reef, east to Oceania and Tuamotus.



Figure 91. *E. afelei*, a) preserved, CAS 238034, American Samoa (DWG); b) fresh, ROM 60746, Moorea (RW); c) fresh, Moorea (GA).

86a.(84)Four postanal ventral-midline dark spots from subcutaneous body bars; male urogenital papilla cup-shaped [9/8, branched, 5th absent, cup-shaped]Saipan Dwarfgoby, *E. saipanensis* Fowler, 1945

Holotype: ANSP 71594, 14.6 mm SL, female; type locality: Saipan, Federated States of Micronesia.

Range: Western Central Pacific from south Taiwan, Vietnam, Palau, Federated States of Micronesia (Fais Atoll [Yap State] and Saipan), Guam.



Figure 92. *E. saipanensis*, a) preserved, USNM 219628 (upper), UG 5899 (lower), Guam (SLJ); b) fresh, Taiwan (FTD); c) live, Taiwan (BC).

86b. Five postanal ventral-midline dark spots from subcutaneous body bars; male urogenital papilla fimbriate or cup-shaped87

87a.(86)Dark caudal-peduncle spot over preural centrum usually larger than eye, subcutaneous portion rectangular and centered above lateral midline, surface portion circular to chevron-shaped; male urogenital papilla fimbriate [9/8, branched, 5th absent to rudimentary, fimbriate]

.....Zoned Dwarfgoby, *E. zonura* Jordan & Seale, 1906

Holotype: USNM 51766, 16.1 mm SL, male; type locality: Pago Pago, American Samoa.

Range: Japan, Taiwan, south through Philippines, Indonesia (Waigeo, Java, Celebes Sea), Micronesia (Marshall Islands, Kapingamarangi Atoll in the FSM), to Australia (Dampier Archipelago in Western Australia, Ashmore Reef [Timor Sea], Great Barrier Reef, and Lord Howe Island); east to New Caledonia, Fiji, Tonga, and Samoan Islands to French Polynesia (Society Islands) and Pitcairn Island.

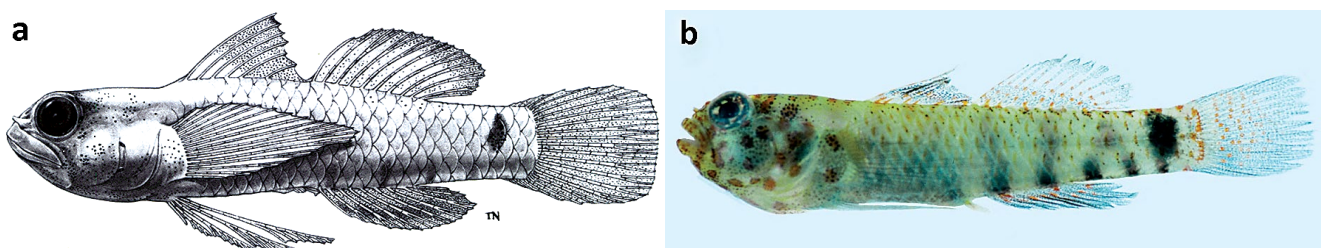


Figure 93. *E. zonura*, a) preserved, CAS 43710, Kapingamarangi Atoll (TN); b) fresh, ROM 76399, Palau (RW).

87b. Dark caudal-peduncle spot over preural centrum smaller than eye, centered at lateral midline; male urogenital papilla fimbriate or cup-shaped88

88a.(87)Pectoral-fin base with two dark vertically aligned spots (reddish in life), spinous dorsal fin of male filamentous; male urogenital papilla fimbriate [9/8, branched, 5th absent to rudimentary, fimbriate]
Greenbubble Dwarfgoby, *E. prasina* (Klunzinger, 1871)
 [some southwest Indian Ocean populations have dark postocular spots and key out also at couplet 78]

Holotype: NFIS 1693, 11.6 mm SL, female; type locality: Al-Qusair, Egypt, Red Sea.

Range: East Africa, islands of the western Indian Ocean, Red Sea, throughout East Indian region, including Indonesia, Philippines, Palau; north to southern Japan, south to Lord Howe and Norfolk Island (but not known from the Great Barrier Reef).

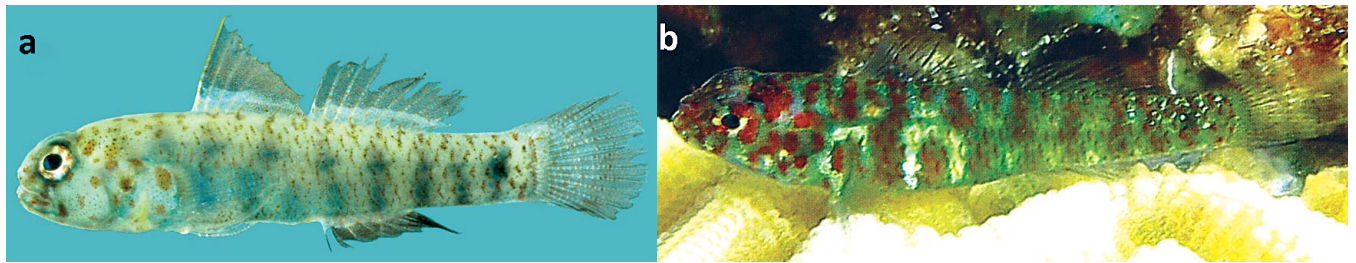


Figure 94. *E. prasina*, a) fresh, ROM 37060, Chagos Archipelago (RW); b) live, Jordan, Red Sea (JH).

88b. Pectoral-fin base without dark spots; spinous dorsal fin of male not filamentous; male urogenital papilla cup-shaped [9/8, branched, 5th absent to rudimentary, cup-shaped]
Hinano's Dwarfgoby, *E. hinanoae* Tornabene, Ahmadi & Williams, 2013

Holotype: USNM 407541, 10.3 mm SL, male; type locality: Cook's Bay, Moorea, French Polynesia.

Range: French Polynesia (Moorea, Austral, and Gambier Islands), Niue, Tonga, and Fiji (Ono-i-Lau).

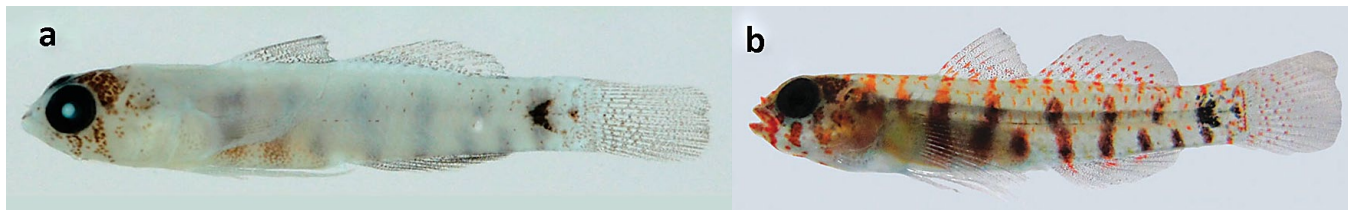


Figure 95. *E. hinanoae*, a) preserved holotype, Moorea (JTW); b) fresh holotype, Moorea (JTW).

89a.(49)Cephalic sensory-canal pore system lacking NA & IT pores, location of AITO pore far forward and opening anteriorly (Fig. 96)90



Figure 96. Anterior interorbital pore (AITO) located far forward and opening anteriorly (red arrow), on *E. tetha*, ROM 94929, West Papua, Indonesia (RW).

89b. Cephalic sensory-canal pore system not as in 89a, AITO pore not far forward or opening anteriorly91

90a.(89)Irregular or W-shaped black mark on upper anterior body above and just posterior to base of pectoral fin; no distinct black spot at caudal-fin base; seven postanal ventral-midline dark spots from subcutaneous body bars [8/7, unbranched, 5th 30%]Shouldermark Dwarfgoby, *E. infulata* (Smith, 1956)

Holotype: RUSI 223, 15.5 mm SL, male; type locality: Mahé, Seychelles.

Range: Seychelles and Mauritius (Cargados Carajos Shoals) and Western Australia; Japan (Ryukyu Islands), Palau, across Micronesia through islands of Oceania to French Polynesia (Rapa) and Pitcairn Islands [apparently absent from Indonesia, Philippines, and New Guinea].



Figure 97. *E. infulata*, a) preserved, RUSI 2215, Mauritius (KBS); b) fresh, Mururoa Atoll (JTW); c) live, Moorea (JER).

90b. No black mark on upper anterior body; a distinct black spot at caudal-fin base; postanal ventral-midline dark spots not apparent [8/7, unbranched, 5th absent]
Tetha's Dwarfgoby, *E. tetha* Greenfield & Erdmann, 2014a

Holotype: CAS 237105, 11.6 mm SL, male; type locality: Cenderawasih Bay, West Papua, Indonesia.

Range: Kwatisore South Bay within Cenderawasih Bay, West Papua, Indonesia.

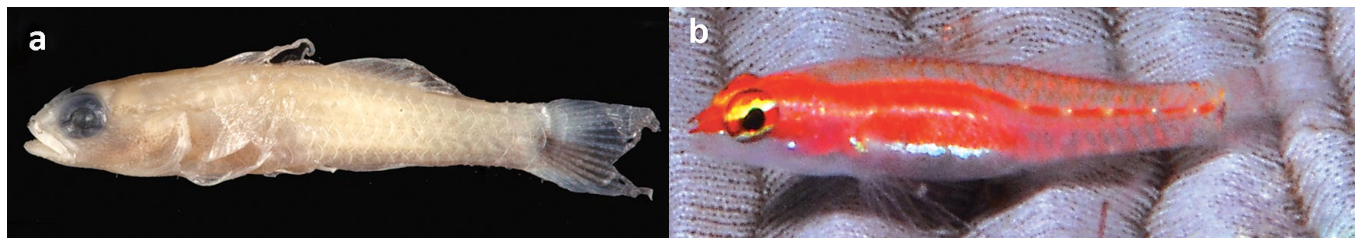


Figure 98. *E. tetha*, a) preserved holotype, Indonesia (JDF); b) live, Indonesia (MVE).

91a.(89)Cephalic sensory-canal pore system lacking only IT and POP pores92

91b. Cephalic sensory-canal pore system lacking a combination of pores other than only IT and POP97

92a.(91)Fifth pelvic-fin ray relatively long, mean 70% length of 4th ray [9/8, branched, 5th 53–90%]
Redspeckled Dwarfgoby, *E. sparsa* Jewett & Lachner, 1983

Holotype: USNM 227483, 16.9 mm SL, male; type locality: Utulei village, Tutuila Island, American Samoa.

Range: Indonesia, Philippines, Palau; east to Fiji, Solomon Islands, New Caledonia, Tonga, and the Samoan Islands; and south to Australia (Great Barrier Reef and New South Wales).



Figure 99. *E. sparsa*, a) preserved paratype, USNM 210070, Indonesia (PM); b) fresh, ROM 80026, Palau (RW); c) fresh, ROM 74916, Palau (RW).

92b. Fifth pelvic-fin ray relatively short, about 0–20% length of 4th ray93

93a.(92)Spinous dorsal fin with prominent black horizontal blotch near anterior base, extending back more than half of fin, bordered above with pale yellow [9/8, branched, 5th 10–18%]
.....Ocellated Dwarfgoby, *E. ocellifer* Shibukawa & Suzuki, 2005

Holotype: NSMT-P 70712, 18.4 mm SL, male; type locality: Iriomote-jima Island, Ryukyu Islands, Japan.
Range: Mouth of the Urauchi-gawa River, Iriomote-jima Island; in interstices between rocks and oyster shells at depths of 1–1.5 m in an estuary.



Figure 100. *E. ocellifer*, fresh holotype, Japan (TS).

93b. Spinous dorsal fin with no dark marking, or, at most, a small black blotch with orange center restricted to anterior quarter of fin94

94a.(93)Anterior narial tube black and very elongate (greater than pupil diameter), reaching well anterior to upper lip; head and body lightly pigmented, orange-yellow bars on head and body in life; PITO & AITO pores often fused [9/8, unbranched, 5th 6–15%]
.....Pinocchio Dwarfgoby, *E. pinocchio* Greenfield & Winterbottom, 2012

Holotype: ROM 84731, 12.1 mm SL, female; type locality: Helen Reef, Hatohobei State, Palau.
Range: Palau and Indonesia (Rouw Island, Cenderawasih Bay, Raja Ampat, and Kei Islands).

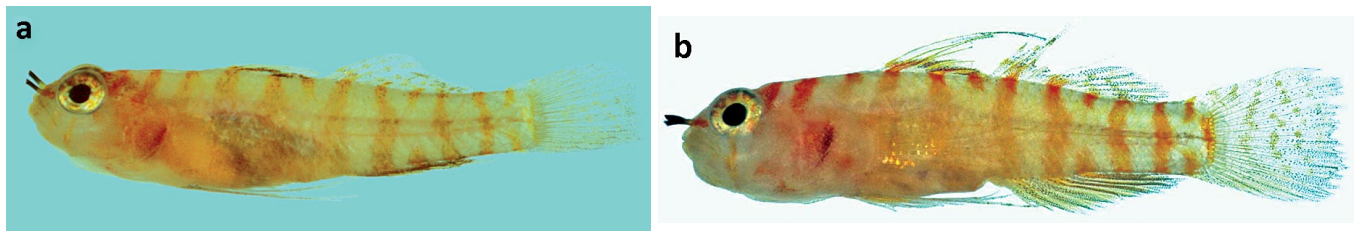


Figure 101. *E. pinocchio*, a) fresh paratype, ROM 79437, Palau (RW); b) fresh paratype, ROM 80701, Palau (RW).

94b. Anterior narial tube relatively short, at most reaching to upper lip; dorsal/anal fin-ray formula usually 8/8; PITO & AITO pores often fused95

95a.(94)Urogenital papilla fimbriate (rugose) in both sexes [8/8, branched, 5th 10%, fimbriate]
Susan’s Dwarfgoby, *E. susanae* Greenfield & Randall, 1999

Holotype: BPBM 38379, 15.6 mm SL, male; type locality: Kaneohe Bay, Oahu, Hawaiian Islands.
 Range: Oahu, Hawaiian Islands.

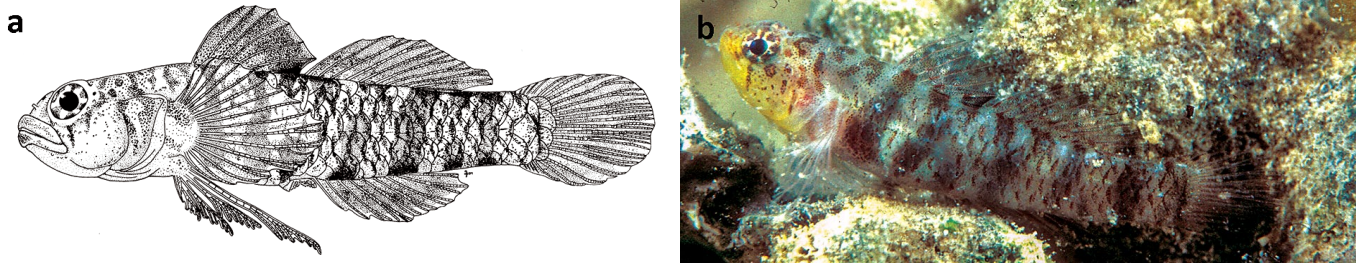


Figure 102. *E. susanae*, a) preserved holotype, Hawai‘i (SGM); b) live, Hawai‘i (JER).

95b. Urogenital papilla non-fimbriate (smooth) in both sexes96

96a.(95)Pectoral-fin rays branched; spinous dorsal fin not entirely dark, clear area mid-fin; male urogenital papilla tapered and peppered with small black spots [9/8, unbranched, 5th 11–21%]
Spotted Dick Dwarfgoby, *E. maculibotella* Greenfield & Winterbottom, 2016

Holotype: ROM 73333, 13.7 mm SL, female; type locality: Bai Lan, Hon Lon, Nha Trang Bay, Vietnam.
 Range: Nha Trang Bay, Vietnam.

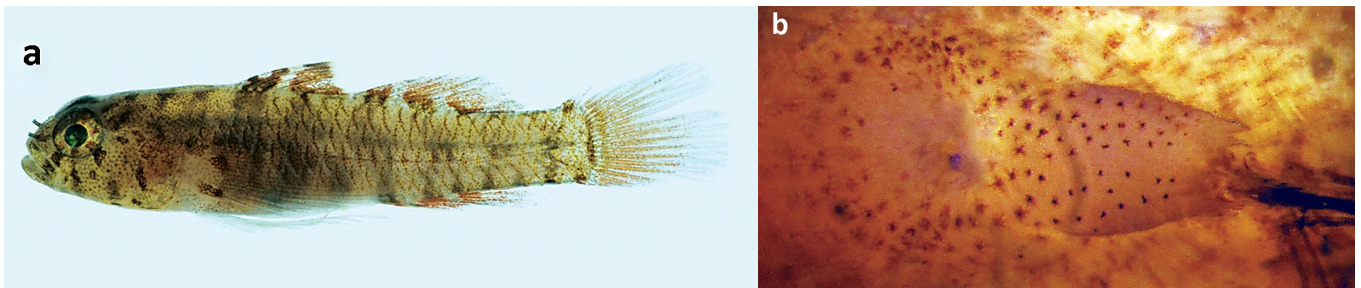


Figure 103. *E. maculibotella*, a) fresh holotype, Vietnam (RW); b) male urogenital papilla (DWG).

96b. Pectoral-fin rays usually unbranched; spinous dorsal fin entirely dark; male urogenital papilla rounded and without black spots [8/8, unbranched, 5th absent]Teared Dwarfgoby, *E. lacrimae* Sunobe, 1988

Holotype: NSMT-P 41874, 12.5 mm SL, male; type locality: Cape Sata, Kagoshima Prefecture, Japan.
 Range: Japan (Kagoshima Prefecture, Okinawa, Ogasawara Islands), Solomon Islands, Vanuatu and Tonga.

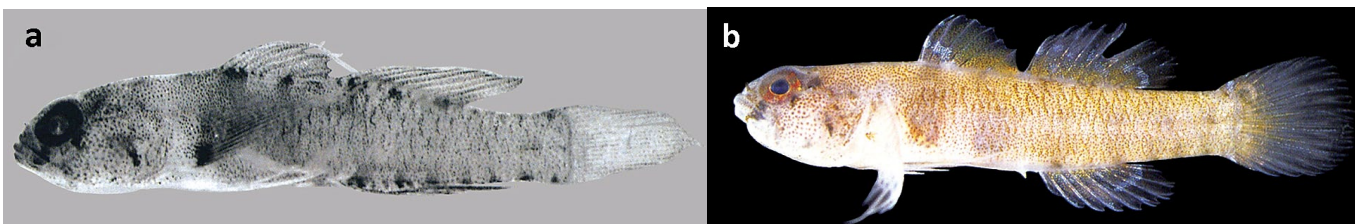


Figure 104. *E. lacrimae*, a) preserved holotype, Japan (ToS); b) fresh paratype, NSMT-P 41876, Japan (ToS).

97a.(91)Cephalic sensory-canal pore system consisting only of PITO, AITO, and SOT pores [9/8, branched, 5th 50–74%]Laterite Dwarfgoby, *E. lateritea* Greenfield & Winterbottom, 2016 [specimens with all pores absent key out also at couplet 5]

Holotype: ROM 64446, 15.0 mm SL, female; type locality: Port De Goro, New Caledonia.
Range: New Caledonia.

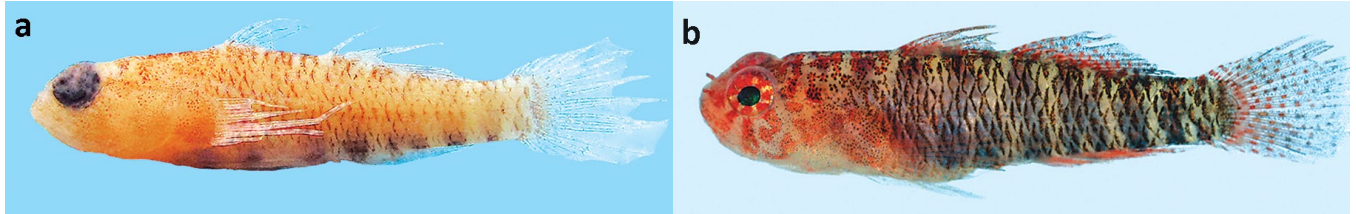


Figure 105. *E. lateritea*, a) preserved paratype, ROM 64462, New Caledonia (DWG); b) fresh holotype, New Caledonia (RW).

97b. Cephalic sensory-canal pore system not consisting only of PITO, AITO, and SOT pores98

98a.(97)Cephalic sensory-canal pore system lacking NA, PITO, and IT pores99

98b. Cephalic sensory-canal pore system lacking a combination other than NA, PITO, and IT pores101

99a.(98)Caudal-fin base with a small dark spot at ventral edge of body extending onto procurrent caudal-fin rays [usually 10/9 at Seychelles and 9/8 at Chagos, unbranched, 5th 80%]
.....Miki's Dwarfgoby, *E. mikiae* Allen, 2001

Holotype: NCIP 6188, 19.1 mm SL; type locality: Iboih Beach, Weh Island, Aceh Province, northern Sumatra, Indonesia.
Range: Seychelles (Amirante Islands), Chagos Archipelago, Maldives, Thailand (Andaman Sea), and Indonesia (Sumatra).

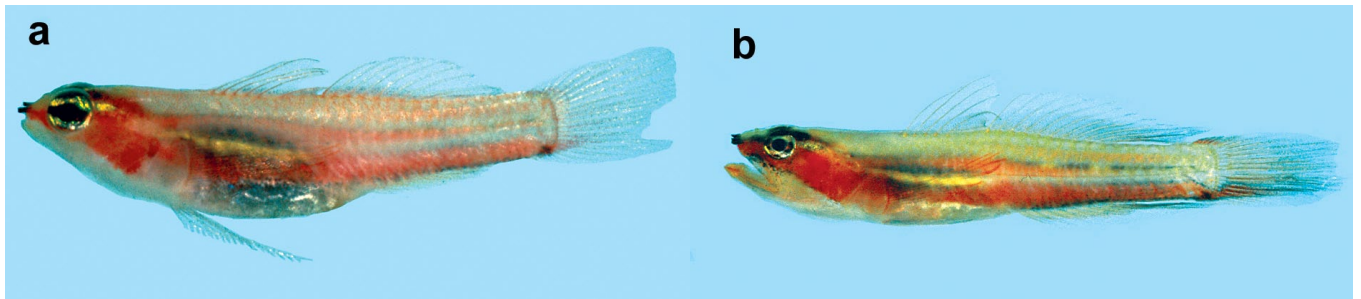


Figure 106. *E. mikiae*, a) fresh, ROM 68057, Thailand (RW); b) fresh, ROM 69056, Thailand (RW).

99b. Caudal-fin base with a large dark spot at lateral midline, lower portion of spot extending as a dark streak across caudal fin100

100a.(99)A prominent black mid-lateral stripe extending from snout to caudal peduncle [9/8, unbranched, 5th 50–80%]Sebree’s Dwarfgoby, *E. sebreei* Jordan & Seale, 1906

Holotype: USNM 51765, 13.5 mm SL, male; type locality: Apia, Samoa Islands.

Range: Seychelles eastward through the Coral Triangle and Oceania to Tonga and Samoa.

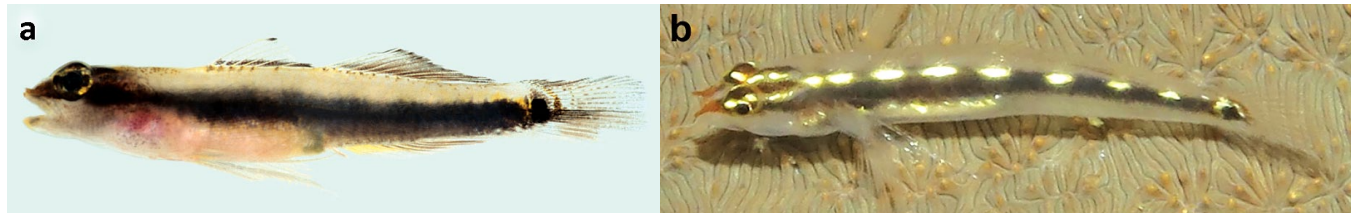


Figure 107. *E. sebreei*, a) fresh, ROM 84780, Palau (RW); b) live, Fiji (JE).

100b. A prominent reddish mid-lateral stripe extending from snout to caudal peduncle in life [9/8, unbranched, 5th 50–80%]Punyit Dwarfgoby, *E. punyit* Tornabene, Valdez, Erdmann & Pezold, 2016

Holotype: CAS 238167, 18.1 mm SL, female; type locality Porter Patch, Brunei Darussalam, Borneo.

Range: Red Sea, Gulf of Oman and western Indian Ocean east to Ryukyu Islands and Raja Ampat, central Oceania and Australia (Great Barrier Reef).



Figure 108. *E. punyit*, a) preserved holotype, Brunei (LT); b) live, West Papua (MVE); c) live, Banda (MVE).

101a.(98)Cephalic sensory-canal pore system lacking IT and SOT pores; three postanal ventral-midline dark spots from subcutaneous body bars; iris with oblique orange stripe across eye in life [8/8, branched, 5th absent] ..
.....Geminate Dwarfgoby, *E. geminata* Greenfield, Bogorodsky & Mal, 2014

Holotype: SMF 34956, 12.3 mm SL, male; type locality: Duba, Saudi Arabia, Red Sea.

Range: Red Sea.

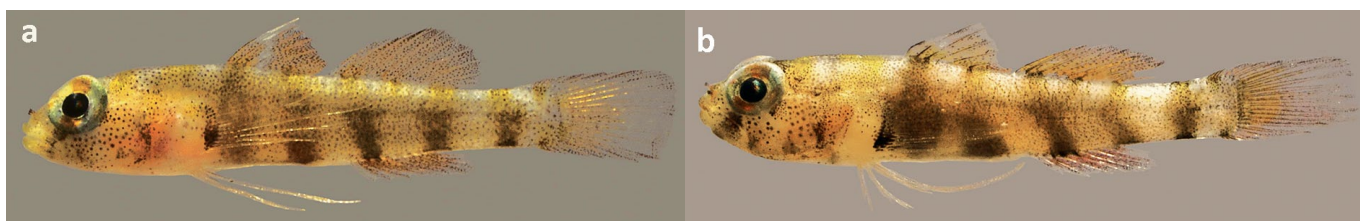


Figure 109. *E. geminata*, a) fresh holotype, Red Sea (SVB); b) fresh paratype, KAUMM 17, Red Sea (SVB).

101b. Cephalic sensory-canal pore system with SOT pore; variable (but not three) postanal ventral-midline dark spots from subcutaneous body bars; iris without oblique orange stripe in life102

102a.(101)Cephalic sensory-canal pore system lacking only AOT, IT, POP, and N pores [8/8, unbranched, 5th absent]Threadfin Dwarfgooby, *E. filamentosa* Suzuki & Greenfield, 2014

Holotype: KAUM-I. 50855, 10.9 mm SL, male; type locality: Chabana Fishing Port, Yoron-jima Island, Ryukyu Islands, Japan.

Range: Yoron-jima and Iriomote-jima Islands, Ryukyu Islands, Japan.



Figure 110. *E. filamentosa*, a) preserved paratype, OMNH-P 34246, Japan (TS); b) fresh paratype, OMNH-P 34246, Japan (TS); c) fresh holotype (breeding colors), Japan (KFT).

102b. Cephalic sensory-canal pore system lacking only PITO and IT pores103

103a.(102)Cephalic sensory-canal pore system with single AITO pore of normal size; distinct dark caudal-peduncle spot over preural centrum [8/8, branched, 5th absent]Santana’s Dwarfgooby, *E. santanai* Greenfield & Erdmann, 2013

Holotype: CAS 234966, 11.8 mm SL, male; type locality: Tutuala, Timor-Leste.

Range: Northern coast of Timor-Leste.

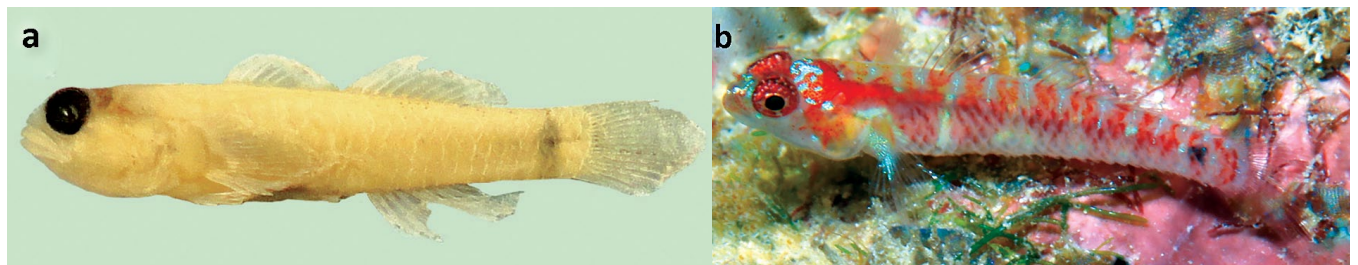


Figure 111. *E. santanai*, a) preserved holotype, Timor-Leste (DWG); b) live holotype, Timor-Leste (MVE).

103b. Cephalic sensory-canal pore system with AITO pore enlarged or paired; no distinct dark caudal-peduncle spot over preural centrum (but can have a more posterior placed prominent dark spot at base of caudal fin)104

104a.(103)Dark spot at caudal-fin base round or oval, centered at mid-lateral line, and not connected to a dark lateral body stripe105

104b. No dark spot at caudal-fin base, or, if present, centered below mid-lateral line and/or connected to a dark lateral body stripe, or, alternatively two markings, upper and lower106

105a.(104)Dark spot at caudal-fin base quadrangular with dorsal and ventral margins indented; snout length <9% SL; male urogenital papilla non-fimbriate [8/7, unbranched, 5th 50–70%]
Lachdebere's Dwarfgoby, *E. lachdeberei* Gilta, 1933

Syntypes: ISNB 41, 15.6 mm SL, male, and 14.4 mm SL, female; type locality: Banda Neira and Goenoeng Api, Indonesia.

Range: Japan (Yaeyama Islands in the Ryukyu Islands), Palau, Federated States of Micronesia, Guam and Northern Mariana Islands, Vietnam, Indonesia (Sulawesi, Moluccas to West Papua), south to Rowley Shoals in the Timor Sea, Papua New Guinea, and Solomon Islands.

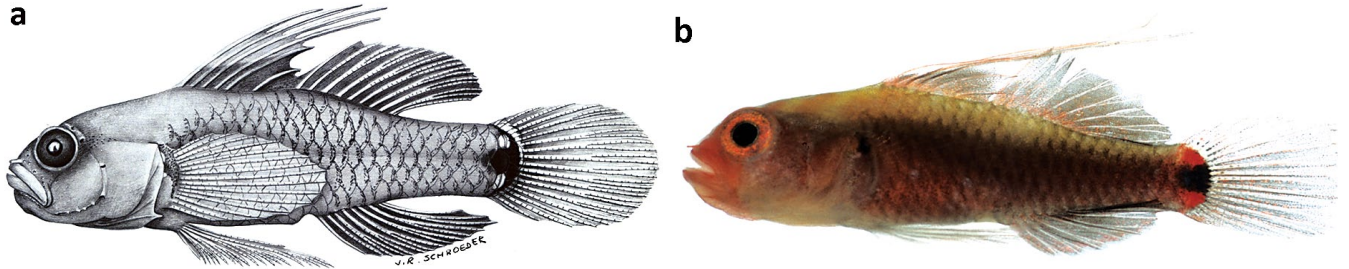


Figure 112. *E. lachdeberei*, a) preserved, CAS 43735, Palau (JRS); b) fresh, ROM 81117, Palau (RW).

105b. Dark spot at caudal-fin base oval divided by a midline white line; snout length >10% SL; male urogenital papilla finely fimbriate [8/7, unbranched, 5th 30–40%, finely fimbriate]
Dividedspot Dwarfgoby, *E. partimacula* Randall, 2008

Holotype: CBPBM 39648, 13.0 mm SL, male; type locality: Uliga Island, Majuro Atoll, Marshalls Islands.
 Range: Palau and Marshall Islands.



Figure 113. *E. partimacula*, fresh, ROM 80665, Palau (RW).

106a.(104)No dark marking at caudal-fin base 107

106b. Dark marking(s) at caudal-fin base, may be connected to a dark lateral body stripe 108

107a.(106)Two or three branches on 4th pelvic-fin ray; body translucent with red markings in life; no dark-brown patches on side of abdomen [8/8–9/8, unbranched, 5th absent to 20%]
Shimadai's Dwarfgoby, *E. shimadai* Greenfield & Randall, 2010b

Holotype: NSMT-P 94898, 14.5 mm SL, male; type locality: Iriomote Island, Ryukyu Islands, Japan.
 Range: Japan (Ogasawara Islands and the Ryukyu Islands), Palau, and Indonesia (Bali and Raja Ampat).

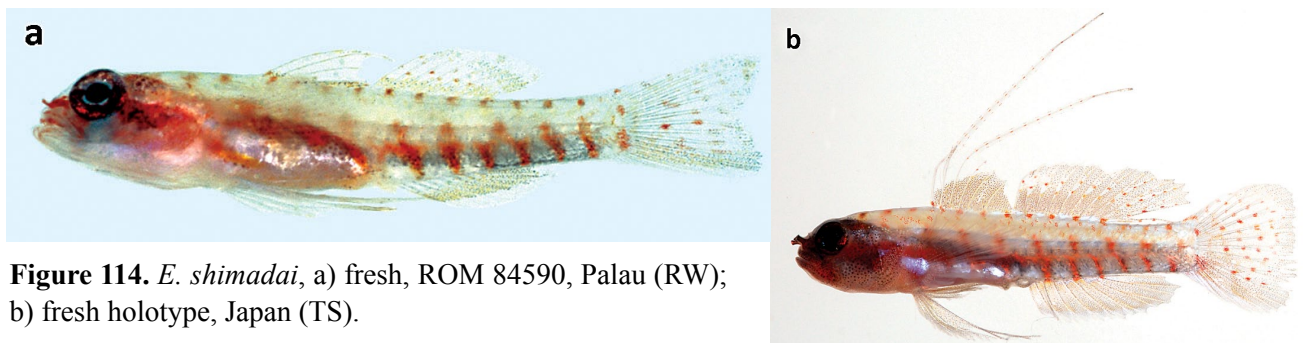


Figure 114. *E. shimadai*, a) fresh, ROM 84590, Palau (RW); b) fresh holotype, Japan (TS).

- 107b. Nine branches on 4th pelvic-fin ray; body not translucent with red markings in life; prominent dark-brown patches on side of abdomen [8/8, unbranched, 5th 20%]
Pepperminteye Dwarfgoby, *E. oculopiperita* Greenfield, Bogorodsky & Mal, 2014

Holotype: SMF 34955, 11.9 mm SL, female; type locality: Al Wajh Bank, Saudi Arabia, Red Sea.
 Range: Red Sea.

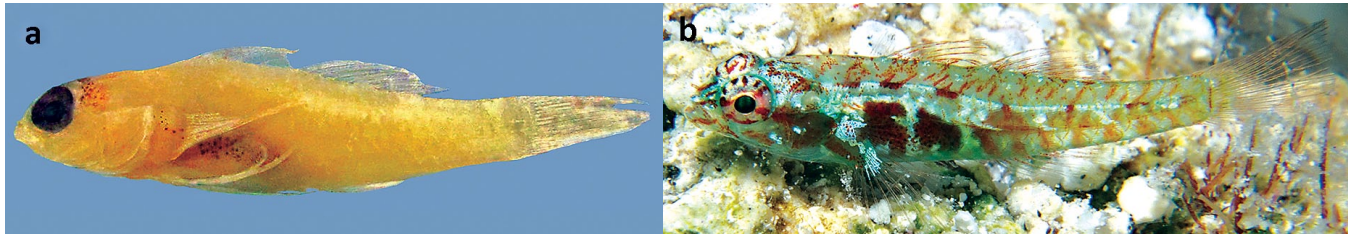


Figure 115. *E. oculopiperita*, a) preserved holotype, Red Sea (DWG); b) live holotype, Red Sea (SVB).

- 108a.(106)Dark markings at caudal-fin base split into upper and lower portions, upper portion may be lighter ...109
 108b. Dark marking at caudal-fin base single, may be connected to a dark lateral body stripe110

- 109a.(108)Dark markings at caudal-fin base two vertically aligned short narrow bars; mid-lateral stripe on body bright yellow in life [10/9, unbranched, 5th 80%]Raja Dwarfgoby, *E. raja* Allen, 2001

Holotype: NCIP 6191, 23.2 mm SL; type locality: Pef Island, Raja Ampat Islands, Irian Jaya Province, Indonesia.

Range: Raja Ampat Islands, Irian Jaya Province, Indonesia.



Figure 116. *E. raja*, live, Indonesia (GRA).

- 109b. Dark markings at caudal-fin base two horizontally elongated spots at upper and lower margins (upper spot may be lighter); mid-lateral stripe on body white in life [9/9, unbranched, 5th 70%]
Twostripe Dwarfgoby, *E. bifasciata* Lachner & Karnella, 1980

Holotype: USNM 219276, 22.5 mm SL, male; type locality: Bararin Island, Palawan Province, Philippines.
 Range: Japan (Yaeyama Islands), Palau, Philippines, and Indonesia; east to Papua New Guinea, Vanuatu and New Caledonia; south to Australia (Great Barrier Reef).



Figure 117. *E. bifasciata*, a) preserved paratype, USNM 209638, Indonesia (TN); b) fresh, ROM 76380, Palau (RW); c) fresh, ROM 76356, Palau (RW).

110a.(108)Dark spot at caudal-fin base rounded and on lower third of fin base; bright yellow midlateral stripe from upper half of eye to caudal-fin base, bordered above and below by relatively narrow reddish stripes; bright yellow stripe along dorsal midline of snout [8–9/8, unbranched, 5th absent] Pam's Dwarfgoby, *E. pamae* Allen, Brooks & Erdmann, 2013

Holotype: MZB 21371, 17.7 mm SL, male; type locality: Kei Besar, Kei Islands, Maluku Province, Indonesia.

Range: Kei Islands, Indonesia.



Figure 118. *E. pamae*, live, Indonesia (GRA).

110b. Dark spot at caudal-fin base fills lower half of fin base, not round, but terminus of single broad lateral dark or reddish stripe; no yellow midlateral stripe; stripe along dorsal midline of snout, if present, white 111

111a.(110)Upper iris with a broad pale patch (faint purple to golden in life), not a narrow white line; pectoral-fin base with narrow bar of melanophores along outer margin of fin base, may extend anteriorly on ventral portion (Fig. 119) 112

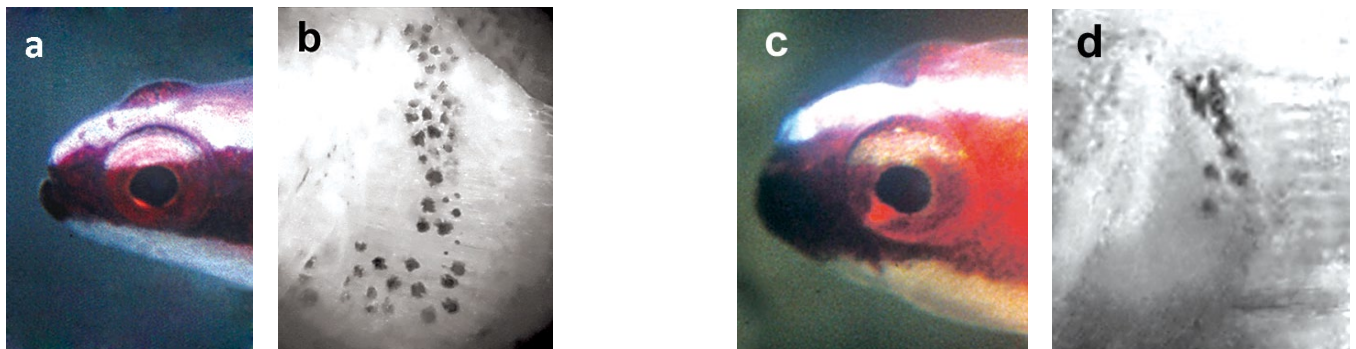


Figure 119. Eye and pectoral-fin base details: a & b) *E. dorsopurpurea*; c & d) *E. brahmi* (DWG).

111b. Upper iris with a narrow white line running above pupil; pectoral-fin base melanophores either limited to upper portion only or broadly scattered (Fig. 120) 113



Figure 120. Eye and pectoral-fin base details: a & b) *E. nigrivertris*; c & d) *E. dorsogilva* (DWG).

112a.(111)Dark marking at caudal-fin base asymmetric, with dorsal margin sharply angled downward; dark area only at posterior part of body, continues forward as broad red-orange stripe in life [9–10/8–9, unbranched, 5th >50%]Brahm’s Dwarfgoby, *E. brahmi* Greenfield & Tornabene, 2014

Holotype: WAM P.33813.002, 13.6 mm SL, male; type locality: New Hanover, Papua New Guinea.
 Range: Papua New Guinea at Hermit Islands, New Hanover, Milne Bay, Madang, D’Entrecasteaux Islands, and Kimbe Bay, New Britain.

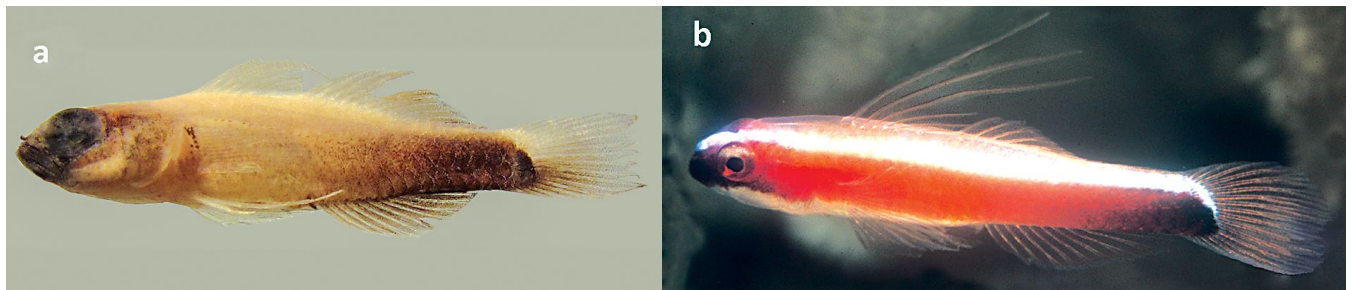


Figure 121. *E. brahmi*, a) preserved holotype, PNG (DWG); b) live, PNG (JER).

112b. Dark marking at caudal-fin base symmetric, ending in a semicircle and terminus of a broad dark stripe along full length of body, stripe black with purple area above in life [9/9, unbranched, 5th >50%]Purple Dwarfgoby, *E. dorsopurpurea* Greenfield & Randall, 2011

Holotype: BPBM 36217, 21.9 mm SL, female; type locality: Milne Bay, Papua New Guinea.
 Range: Papua New Guinea at Milne Bay, Ferguson Island, Normandy Island, and D’Entrecasteaux Islands.

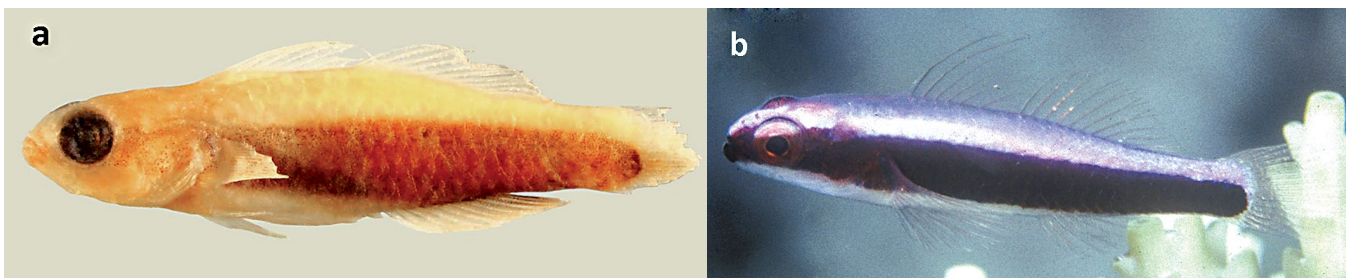


Figure 122. *E. dorsopurpurea*, a) preserved holotype, PNG (DWG); b) live, PNG (JER).

113a.(111)Broad dark stripe extending full length of head and body, cream area above in life; narrow white line across upper iris bends around pupil; pectoral-fin base melanophores broadly scattered, more concentrated dorsally [9/8, unbranched, 5th >50%]Creamback Dwarfgoby, *E. dorsogilva* Greenfield & Randall, 2011

Holotype: CAS 232705, 12.4 mm SL, male; type locality: north shore, Viti Levu, Fiji.
 Range: Presently known only from Fiji where it has been observed throughout the island group; the species is likely more widely distributed, but may represent a species complex within the *E. nigriventris* complex.

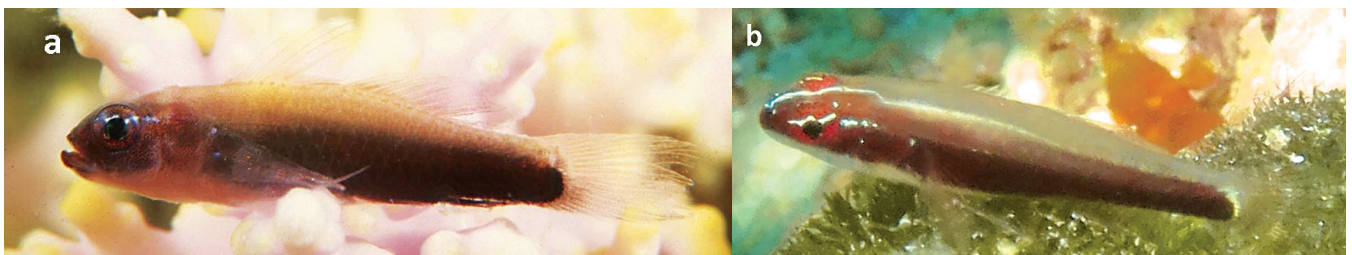


Figure 123. *E. dorsogilva*, a) fresh, Fiji (JER); b) live, Fiji (JE).

- 113b. Broad lateral stripe red in life, ending in a black spot occupying lower half of caudal-fin base; narrow white line across upper iris straight (no bend) above pupil; pectoral-fin base usually with melanophores only at top edge, but sometimes broadly scattered [9/8, unbranched, 5th >50%]
Redbelly Dwarfgoby, *E. nigriventris* Giltay, 1933

Syntypes: IRSNB 42A, 12.5 mm SL, male, IRSNB 42B, 11.8 mm SL, female; type locality: Banda Neira and Goenoeng Api, Indonesia.

Range: Indonesia (Banda Sea, Goenoeng Api, Proco, Halmahera, Yeben, and Raja Ampat). Specimens from other locations likely represent a species complex. Underwater photographs of individuals with similar white eye markings are known from Australia, Philippines, Palau, and Japan (Yaeyama Islands), but identification awaits confirmation from specimens.

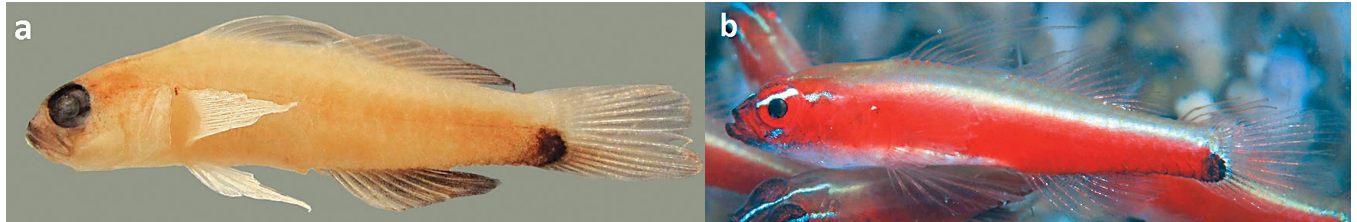


Figure 124. *E. nigriventris*, a) preserved, CAS 236615, Banda (DWG); b) fresh, Banda (MVE).

Four species described after April 2016 and not included in the key:

Eyre's Dwarfgoby *Eviota eyrae* Greenfield & Randall, 2016

Holotype: CAS 238067, 10.8 mm SL, female; type location: Vatu-i-ra Island, Fiji.

Range: Vatu-i-ra Island, Fiji.

Erdmann's Dwarfgoby *Eviota erdmanni* Tornabene & Greenfield, 2016

Holotype: CAS 238221, 11.8 mm SL, male; type location: Ende, South Flores, Indonesia.

Range: Savu Sea, South Flores, Indonesia

Sodwana Dwarfgoby, *Eviota sodwanaensis* Greenfield & Winterbottom, 2016

Holotype: ROM 72842, 13.6 mm SL, male; type locality: Sodwana Bay, Kwazulu-Natal Province, South Africa.

Range: Sodwana Bay south to Aliwal Shoal, Kwazulu-Natal Province, South Africa.

Crescent Dwarfgoby, *Eviota bilunula* Greenfield & Suzuki, 2016

Holotype: CAS 238065, 10.9 mm SL, male; type location: Viti Levu, Fiji.

Range: Fiji.

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