

## Notes on two shallow water isopods (Crustacea: Peracarida: Isopoda: Idoteidae) from Kino Bay, Gulf of California, Mexico

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### ABSTRACT

Two species of isopods of the family Idoteidae were collected in the same sample, among sea grasses, in the northern Gulf of California, Mexico. The first species, *Synidotea harfordi* Benedict, 1897, was more abundant (46 specimens) than the second species, *Eusymmerus antennatus* Richardson, 1899 (eight specimens). *Synidotea harfordi* has previously been considered uncommon in the Gulf of California, and more like a component of warm-temperate to colder-water fauna. The male of *E. antennatus* has not been illustrated but SEM photographs are provided and show angular margins of the first three pereonites and a sharply bent lateral margin of the telson. Females also have angular first pereonites. All previous illustrations show rounded pereonites margins. Buccal appendages of *E. antennatus* are illustrated and compared with previous descriptions.

### KEY WORDS

Isopoda, western Mexico, sea grasses.

Isopods are common inhabitants of marine vegetation, including algae and sea grasses, which they use as shelter and food (Boström and Mattila, 1999; 2005). They play an important role in fragmentation of vegetation and its incorporation into the trophic webs (Robertson and Mann, 1980). Idoteidae are also important prey of larger predators such as fishes (Wallerstein and Brusca, 1982).

Idoteidae of the Gulf of California were reviewed by Brusca and Wallerstein (1977) who listed eight species in four genera. Two years later, the same authors reported a total of 11 species and proposed a key to the species known from the Gulf of California (Brusca and Wallerstein, 1979). Espinosa-Pérez and Hendrickx (2001) included 13 species of Idoteidae for the entire tropical eastern Pacific (western Mexico to northern Peru). Of these, all, except *Edotia sublittoralis* Menzies and Barnard, 1959, have been recorded in the Gulf of California at that time. More recently, Brusca *et al.*

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(2005) reported 13 species from the Gulf of California including a 13th species, *Idotea metallica* Bosc, 1802, which has not been reported in previous compilations.

During sampling in Kino Bay, in the northern Gulf of California, many crustaceans were collected among sea grasses. This material included two species of Idoteidae which are reported here.

## MATERIAL AND METHODS

Specimens were collected with a dredge ca. 40 cm wide and 15 cm high, at depths of ~0.5–1.2 m, on the protected side of Alcatraz Island, Kino Bay. The dredge was fitted with a 0.5 cm mesh size net. The material was

preserved in the field in a mild formaldehyde solution, later washed with sea water and conserved in 70% ethanol. In the laboratory, isopods were separated, identified, assigned a catalogue number, and kept in the holdings of the Regional Collection of Marine Invertebrates (ICML-EMU) in Mazatlán, Mexico. Measurements (total length) were obtained to the nearest 0.1 mm. Abbreviation: TL, total length.

## RESULTS AND DISCUSSION

### Idoteidae Samouelle, 1819 *Synidotea harfordi* Benedict, 1897 (Fig. 1)

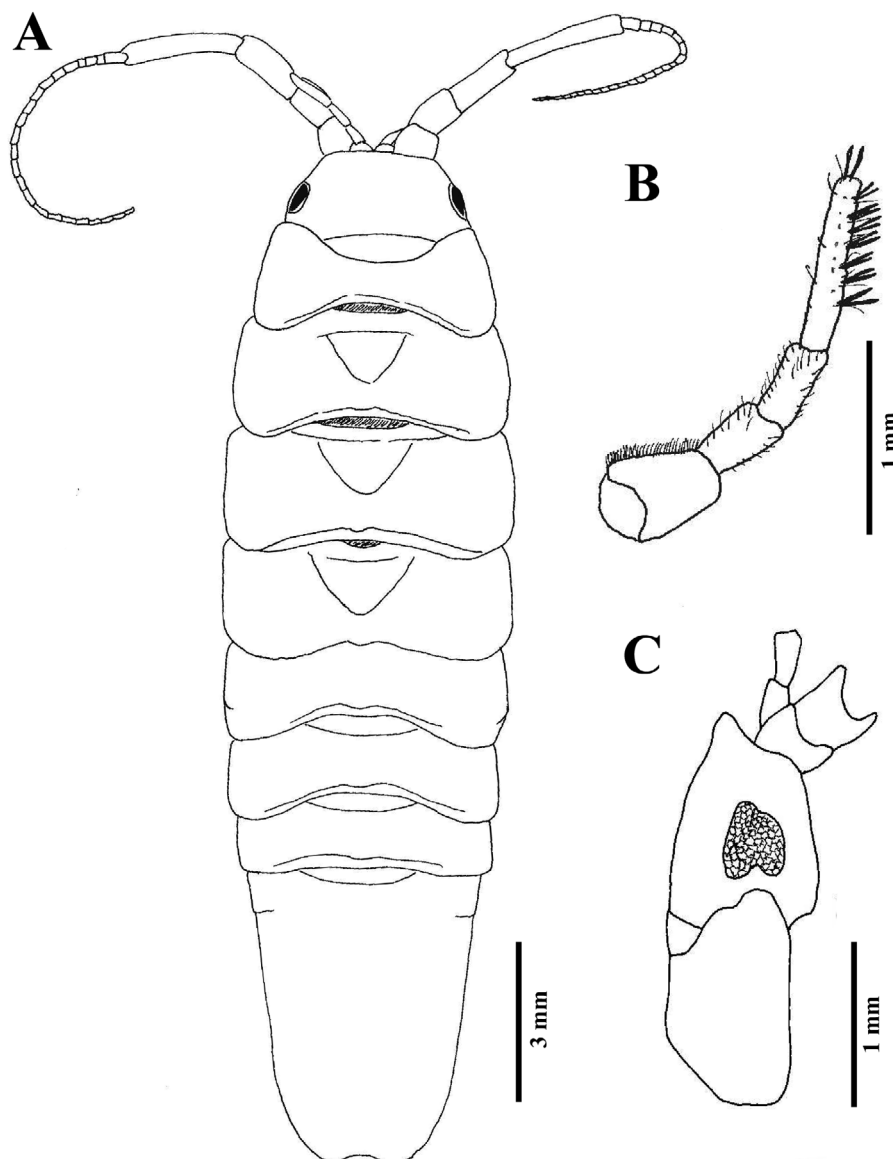


Figure 1. *Synidotea harfordi* Benedict, 1897, male, TL 18.9 mm. A. Dorsal view. B. Detail of antenna 1, dorsal. C. Detail of cephalon, lateral..

*Idotaea marmorata* Harford, 1877: 117.

*Synidotea harfordi* Benedict, 1897: 402, fig. 13. — Richardson, 1899a: 849. — Richardson, 1899b: 269. — Richardson, 1905: 387–388, figs. 427–428. — Johnson and Snook, 1927: 290. — Schultz, 1969: 67. — Menzies and Miller, 1972: 16–18, fig. 6. — Brusca and Wallerstein, 1979: 260–261, fig. 3, 269 (key). — Austin, 1985: 581. — Espinosa-Pérez, 1999: 156. — Espinosa-Pérez and Hendrickx, 2001: 50 (list). — Espinosa-Pérez and Hendrickx, 2006: 242. — Brusca *et al.*, 2001: 31 (list), fig. 91. — Brusca *et al.*, 2005: 137 (list).

*Synidotea hartfordi*. — Wallerstein, 1980: 338. — Vargas *et al.*, 1985: 234.

*Material examined.* Alcatraz Island, Kino Bay (28°48'56"N 111°57'51"W), Sonora, Mexico, 25 males (TL 7.8–20.6 mm) and 21 ovigerous females (TL 11.1–13.3 mm), 8 March 2007, 0.5–1.2 m depth, among sea grasses (ICML-EMU-12093).

*Distribution.* Magdalena Bay (type locality). Oregon and Morro Bay, California, USA. Cedros Island, Baja California, Mexico. Gulf of California, Mexico: Chivato Point, near Santa Rosalia, Baja California Sur; Estero del Soldado, Guaymas, and Bacoichampo, Sonora; Chamela, Jalisco; Acapulco, Guerrero. Gulf of Nicoya, Costa Rica (a single record). Introduced in Japan (Richardson, 1905; Menzies and Miller, 1972; Brusca and Wallerstein, 1979; Vargas *et al.*, 1985; Espinosa-Pérez, 1999; Brusca *et al.*, 2001, 2005).

*Remarks.* The illustration by Richardson (1905; dorsal view and maxilliped) was of poor quality. Menzies and Miller (1972) provided a detailed series of illustrations of *S. harfordi*, including a dorsal view, and figures of pereopods 1 and 7, buccal appendages (mandible, maxilla 1 and 2, maxilliped), appendix masculina, and pleopods 1 and 2. Other illustrations were provided by Brusca and Wallerstein (1979, dorsal view and maxilla 2), and Brusca *et al.* (2001; dorsal view), but were not very detailed.

The material examined herein (Fig. 1) fits well the description of Menzies and Miller (1972). Pairs of setae illustrated on the last antenna 1 article (Fig. 1B) by these authors are aesthetascs. With a total of 46 specimens collected in a single seagrass sample during this study, *S. harfordi* does not appear to be

as uncommon as previously reported for the Gulf of California (Brusca & Wallerstein, 1979), at least in its northern part. Males and females were found in roughly the same number, and all females were ovigerous. Menzies and Miller (1972) emphasize that the thermal distribution of *S. harfordi* ranges from warm-temperate to colder waters at 34°30'N. Therefore, the presence of this species in Kino Bay, where shallow-water summer temperatures can be in the range of 25–30°C, is noteworthy.

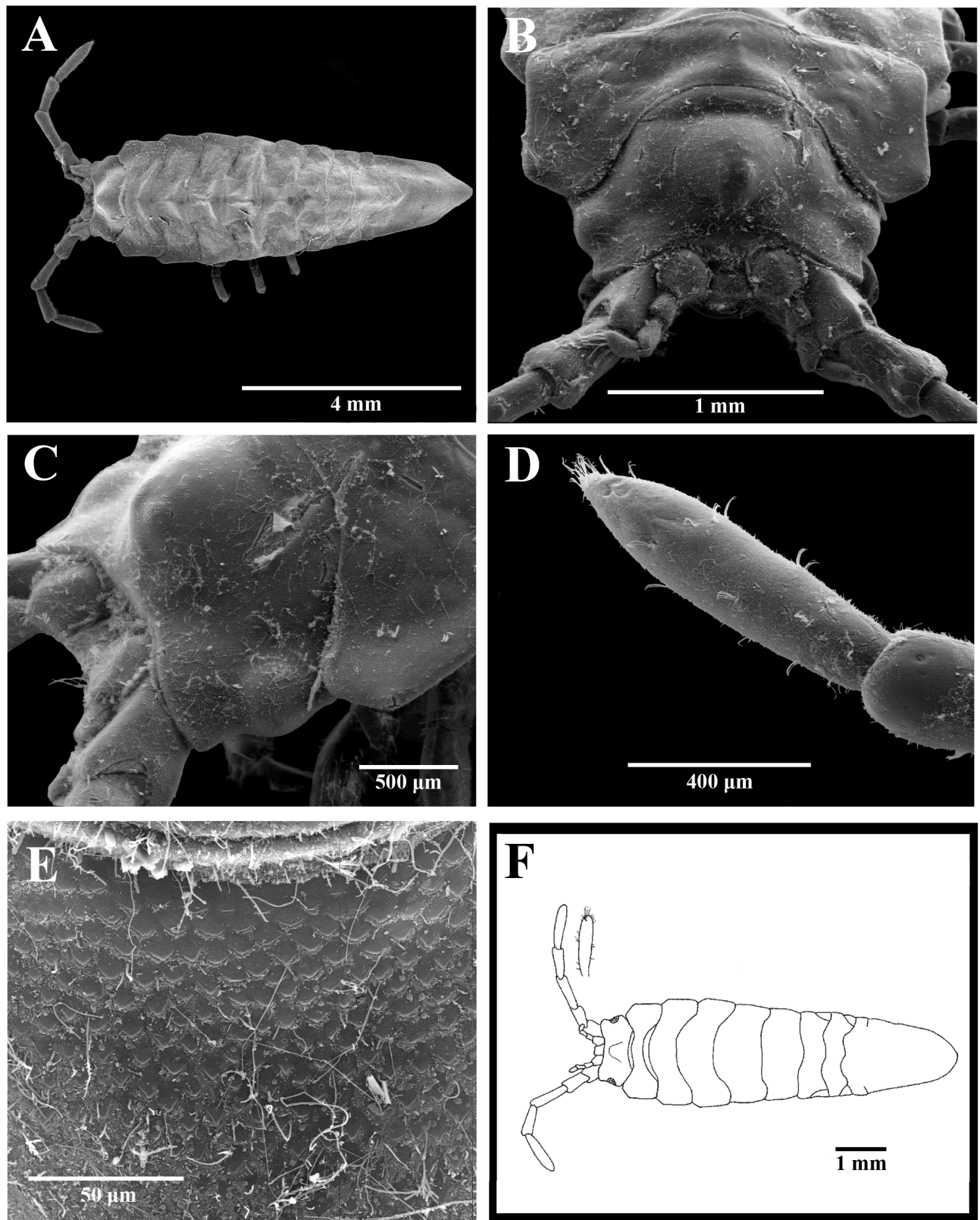
***Eusymmerus antennatus* Richardson, 1899**  
(Figs. 2, 3)

*Eusymmerus antennatus* Richardson, 1899a: 852–853, figs. 26–27. — Richardson, 1899b: 273; Richardson, 1905: 399–400, figs. 445–446. — Schultz, 1969: 83, fig. 108. — Brusca and Wallerstein, 1977: 7, figs. 4, 5; — Brusca and Wallerstein, 1979: 269 (key). — Brusca, 1980: 237, fig. 12.27. — Vargas *et al.*, 1985: 338. — Calderon-Aguilera and Campoy-Favela, 1993: 418. — Espinosa-Pérez and Hendrickx, 2001: 50 (list). — Espinosa-Pérez and Hendrickx, 2006: 241. — Brusca *et al.*, 2005: 136.

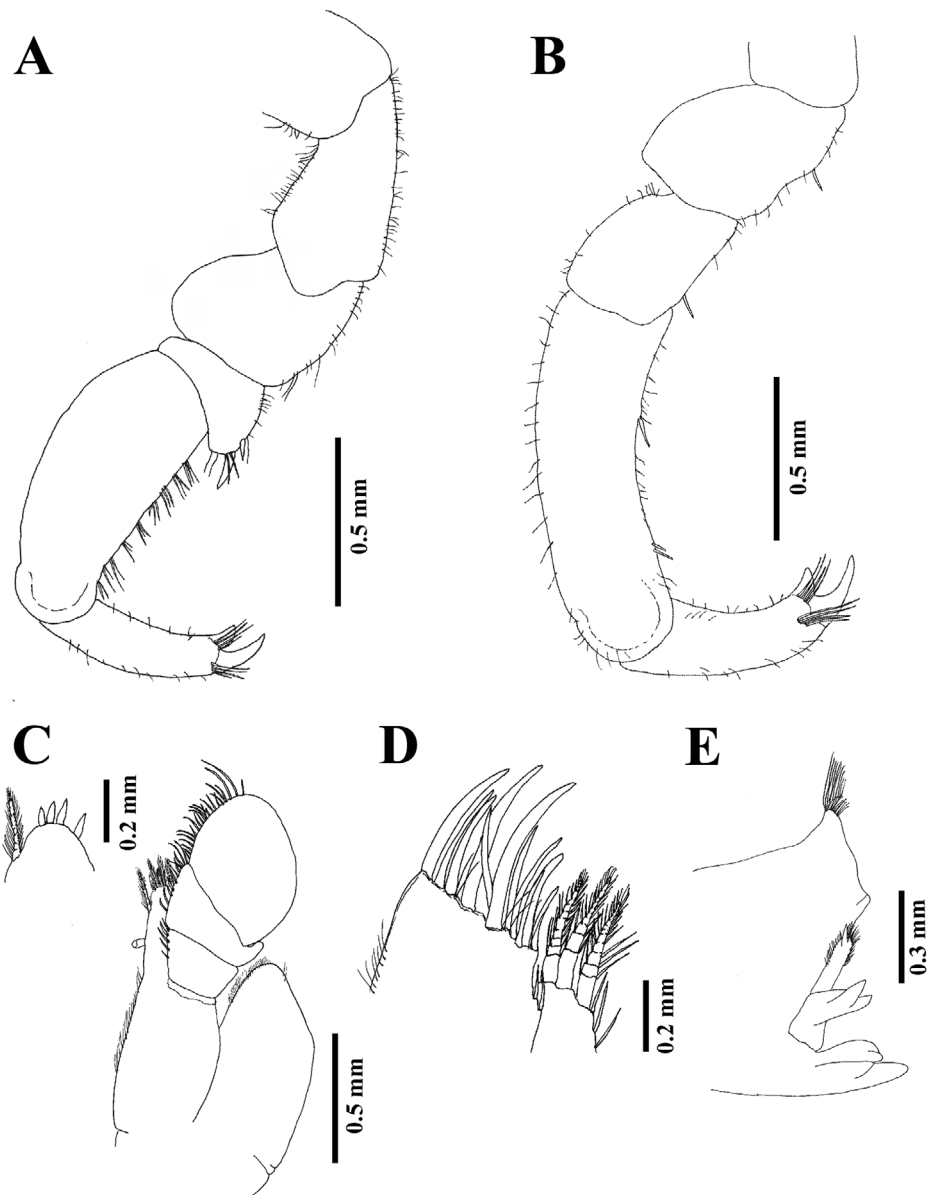
*Material examined.* Alcatraz Island, Kino Bay (28°48'56"N 111°57'51"W), Sonora, Mexico, 5 males (TL 7.8–13.8 mm) and 3 ovigerous females (TL 8.6–9.3 mm), 8 March 2007, 0.5–1.2 m depth, among sea grasses (ICML-EMU-12092).

*Distribution.* Abreojos Point (type locality) and Eugenio Point, west coast of Baja California Sur; Puerto Peñasco, Algodones Bay and San Francisco Bay, Sonora; Mazatlán, Sinaloa; Sayulita and Raza Point, Nayarit; Chamela Bay, Jalisco; Santa Lucia Bay, Acapulco, Guerrero; and Salina Cruz, Oaxaca, Mexico. Gulf of Nicoya, Costa Rica (Richardson, 1905; Brusca and Wallerstein, 1977; Espinosa-Pérez, 1999; Brusca *et al.*, 2005).

*Remarks.* The original description by Richardson (1899a) includes a dorsal view of a specimen and a figure of the maxilliped (republished, Richardson, 1899b). The same dorsal figure and a more detailed maxilliped illustration were used by Richardson (1905). In both cases, she did not mention the sex of



**Figure 2.** *Eusymmerus antennatus* Richardson, 1899. A–C, male, TL 7.5 mm; D, female, TL 8.6 mm. A. Dorsal view. B. Same, dorsal view of cephalon and first pleonite. C. Same, cephalon, lateral view. D. Antenna 2 distal article. E. Detail of tergite of pereonite 3, showing minute scales. F. Dorsal view.



**Figure 3.** *Eusymmerus antennatus* Richardson, 1899, male TL 13.8 mm. A. Pereiopod 1. B. Pereiopod 5. C. Maxilliped and tip of endite with terminal setae omitted. D. Tip of maxilla 1 exopod and endopod. E. Left mandible.

the single specimen available. Brusca and Walerstein (1977) redescribed *E. antennatus* in details (female: dorsal view; antenna and antennula; pereopods 1 and 5; maxilliped, maxilla 1 and 2, mandible; pleopods 1–5; uropods) since Richardson (1899a, 1899b, 1905) had not illustrated properly the appendages of this species. The dorsal figure of the female specimen in Brusca and Walerstein (1977), later reproduced by Brusca (1980), is quite different from the illustration of Richardson (1899a, 1905) in that it is narrower, eyes are located dorso-laterally (instead of dorsally), it features a medial dorsal tubercle (not illustrated or

reported in the original description), and the antero-lateral margin of pereonite 1 extends anteriorly to the eye level (not overreaching the cephalon level in the original description). All illustrations of a female in dorsal view available to date clearly show antero-laterally rounded pereonite 1 and smoothly rounded lateral margin of all other pereonites, and a triangle-shape pleotelson with lateral margins regularly convex. The material from Kino Bay included both males and females. In both sexes the antero-lateral margin of pereonites 1–3 is clearly angular and the margin straight (Fig. 2A, F). In males, the pleotelson lateral margin has a sharp angle at

about 2/3 of its length (Fig. 2A), which is different from what is observed in females: lateral margins “tapering posteriorly to a rounded apex” (Brusca and Wallerstein, 1977). Females collected in Kino Bay (Fig. 2F) are also much narrower than previously illustrated. Pereiopods 1 and 3 of the Kino Bay specimens are similar (Fig. 3A, B) to those illustrated by Brusca and Wallerstein (1977), with bifid dactyls and with robust and weaker spines on the inner margin of the carpus of pereiopod 1. Distal article of antenna 1 (Fig. 2D) bears short, isolated setae and a tuft of terminal setae, as illustrated by Brusca & Wallerstein (1977). Tergites of pereonites are covered with minute scales (Fig. 2E), not reported previously for this species.

The buccal appendages (Fig. 3) fit well the redescription of *E. antennatus* by Brusca and Wallerstein (1977), although some small differences were observed. Maxilliped (Fig. 3C) features a 4-segment setose palp and the endite is similar to that described by Brusca and Wallerstein (1977), with one short coupling hook, but terminal setae have pseudo-articulations. Maxilla 1 exopod has a similar number of large apical spines but these appear proportionally longer in the Kino material (Fig. 3D), and the endopod ends in 3 (instead of 2) “setose spines” which are actually plumose setae with pseudo-articulations (Fig. 3D). The left mandible is similar to the description provided by Brusca and Wallerstein (1977), including the additional 3-pointed “setose spine” between the incisor and the lacina mobilis (Fig. 3E).

The discovery of sympatric, reproducing populations of *S. harfordi* and *E. antennatus* in a coastal ecosystem in the northern Gulf of California brings additional information on the general distribution and abundance of these two species in the eastern Pacific.

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