Zootaxa 5507 (2): 224–244
https://www.mapress.com/zt/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.5507.2.2
http://zoobank.org/urn:lsid:zoobank.org:pub:45620A75-87EA-4906-821B-DAF95AA516EB

Description of new species of deep water *Sthenolepis* Willey, 1905 and *Neoleanira* Pettibone, 1970 (Annelida, Sigalionidae) from off Northern California, with the redescription of *Sthenolepis spargens* Fauchald, 1972

CHRISTOPHER CRUZ-GÓMEZ[1*] & JAMES A. BLAKE[2,3]
[1]*Departamento de Sistemática y Ecología Acuática, El Colegio de la Frontera Sur, Chetumal, Quintana Roo, Mexico*
christopher.cruz-gomez@hotmail.com; https://orcid.org/0000-0002-2618-9230
[2]*Aquatic Research & Consulting, 24 Hitty Tom Road, Duxbury, MA 02332, United States of America.*
[3]*Department of Invertebrate Zoology, Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, MA 02138 United States of America*
jablake9@gmail.com; https://orcid.org/0000-0001-8217-9769
[*]*Corresponding author*

Abstract

Two new species of scale worms belonging to Sigalionidae are described from deep water off Northern California. Specimens were collected as part of long-term monitoring surveys at the San Francisco Deep-Ocean Dredged Material Disposal Site, and baseline studies by the U. S. Navy off Northern California. Specimens were dredged from the continental slope at depths of 2,350 to 3,221 m. *Sthenolepis ruffi* **n. sp.** is characterized by having long palps and tentacular cirri, upper neurochaetae group with long blades, and the lowest neurochaetae group with non-canaliculate blades. Due to the morphological and distribution similarities, *Sthenolepis spargens* from Mazatlán, México is redescribed and compared with the newly described *S. ruffi* **n. sp.** Further, *Neoleanira solitaria* **n. sp.** stands out among the members of the genus by having a simple fusiform supracicular neurochaeta in posterior segments. Comparative tables of both genera are included. Both new species represent new additions to the knowledge of these genera, more than 50 years after the last description.

Key words: Eastern Pacific, deep-sea, morphology, scale worms

Introduction

Sigalionids occur worldwide in hard and soft substrates, from littoral depths to 4,000 m (Eibye-Jacobsen *et al.* 2022). Still, they are more abundant on soft substrata at shelf and bathyal depths (Jumars *et al.* 2015). Some genera of sigalionids are commonly found in deep water, especially those belonging to the subfamily Sigalioninae Kinberg, 1856. For many years various deep water species were referred as *Leanira* Kinberg, 1856; however, after a close examination and considering additional morphological details, differences were noted. Such differences led Pettibone (1970a, b) to use some species to propose new genera.

Among the latter, *Neoleanira* Pettibone, 1970b, was separated from *Leanira* Kinberg, 1856 by having auricles on the ceratophore of the median antenna, long dorsal cirri on segment 3, and the prechaetal lobe entire. Currently, *Neoleanira* is composed of four species distributed in temperate and subtropical regions, mostly in deep water sediments (Pettibone 1970b).

Sthenolepis Willey, 1905 has its origins in *Leanira* as well, and it was established to incorporate *Leanira japonica* McIntosh, 1885. Willey (1905) highlighted that specimens with a long median antenna and spinigerous neurochaetae are diagnostic for species of *Sthenolepis*. Currently, such features are also found in other closely related genera such as *Neoleanira*, or *Horstileanira* Pettibone, 1970b. However, *Sthenolepis* is also recognized by having inner tentacular lobes and three neuropodial lobes (Aungtonya 2002). *Sthenolepis* contains 13 valid species, and unlike *Neoleanira*, most of them are found in shallow waters but a few records are also known from deep waters (Read & Fauchald 2024).

 Accepted by J. Williams: 21 Aug. 2024; published: 12 Sept. 2024

The present study describes two new species of deep-water Sigalionidae from the continental slope off Northern California, collected as part of baseline surveys and the subsequent long-term monitoring program associated with a deep water dredged material disposal site (Blake *et al.* 2009). One new species of *Sthenolepis* is described, and due to the morphological closeness, and the bathymetric horizon shared with another species of *Sthenolepis*, the holotype of *S. spargens* Fauchald, 1972 from off Western Mexico is revised and redescribed. One new species of *Neoleanira* is also described and compared with all known species of the genus.

Material and methods

Material examined as part of this study

Benthic samples on which this study is based were collected with a box core as part of long-term monitoring surveys at the San Francisco Deep-Ocean Dredged Material Disposal Site (SF-DODS), located about 96 km west of the entrance to San Francisco Bay. After site designation baseline studies in 1990–1991 by the U.S. Navy (USN) and U.S. EPA, dredged material disposal began, and the first monitoring survey was conducted in January 1996 and continued annually through 2007. From 2008–2014 there were either no surveys or sediment collection was not successful. Annual surveys resumed successfully in 2015 and have continued to the present day. Identification and enumeration of the benthic fauna collected as part of the monitoring have been completed through the 2019 samples. Details of the results of the benthic monitoring (1996–2004) are provided by Blake *et al.* (2009). The present study also includes some specimens collected as part of the second USN baseline survey in July 1991.

Sample handling and preservation

Samples from the SF-DODS and USN surveys were collected with a 0.25-m^2 Sandia box core from which subcores measuring 10 x 10 x 50 cm were obtained and extruded for biology. The upper 10 cm of each of ten subcores was used for biology; other subcores were used for sediment chemistry, grain-size and total organic carbon analyses. Samples were sieved through a 300 μm sieve, fixed in 10% formalin in the field, and transferred to 70% ethanol (ETOH) within 48 h for preservation.

In the laboratory, samples were re-sieved with a 300-μm-sieve, then each sample was sorted, and organisms identified to major taxa and analyzed by specialists for taxonomic identification and enumeration. The present specimens are archived in the Natural History Museum of Los Angeles County (LACM-AHF Poly), Museum of Comparative Zoology, Department of Invertebrate Zoology, Harvard (MCZ IZ), and California Academy of Sciences, Department of Invertebrates Zoology, San Francisco (CASIZ).

For comparison, the holotype of *Sthenolepis spargens* Fauchald, 1972, archived in the LACM, was examined and redescribed. Further, the original descriptions of species of the genera *Sthenolepis* and *Neoleanira* were consulted to fulfill the comparative tables below. Morphological terminology follows Pettibone (1970a, b) for traditional terminology, for recent terminology Aungtonya (2005) and Cruz-Gómez (2022a) were followed, especially for parapodial and neurochaetal terms.

Recently, Cruz-Gómez (2022a) pointed out issues in the description of neurochaetae in classical contributions of the subfamily Pelogeniinae Chamberlin, 1919, but shared in other sigalionids as well. The main problems were inconsistency in descriptions and terminology, but also, most of the traditional descriptions partially overlooked neurochaetae, by only describing a few chaetae. Presumably, because most of the neurochaetae are similar to one another. However, sigalionids have a wide variety of neurochaetae, that could be seen as similar but slight differences are important to separate species. The proposed solution was to classify the chaetae in different units (A–D), based on the traditional terminology which considers the position of the chaetal insertion on the parapodia (*e.g.* Hartman 1942; Pettibone 1997), but also the morphological features of the chaetae (see Cruz-Gómez 2022a). Here, traditional and this novel approach was used in descriptions and figures.

The descriptions include the features of the handles' surface (*i.e.* subdistal denticles), unless otherwise indicated, the handles should be considered smooth and will be omitted in the description.

Neurochaetae of the genera *Sthenolepis* and *Neoleanira* are mostly spinigers, with long blades. However, the

sizes of the blades vary according to the chaetae observed. For a better understanding of the size of the blade, a ratio of length and width was implemented. In the descriptions, the size ratio between different body features the symbol '×' will replace the term 'times', denoting the number of times one structure is longer than the other. The width of the blade is considered the most expanded area of the blade, which is located at its basis where it joins with the handle. The total length of the blade is considered from the tip of the blade to its basis. Therefore, the ratio illustrates how long or short the blade is. This is useful for comparing the same type of neurochaetae in different species but in the same genus. For example, in genera with long blades, such as *Sthenolepis* and *Neoleanira*, the ratio is bigger compared with genera with typical short blades, such as *Pelogenia* or *Sthenelanella* Moore, 1910. Here for *Sthenolepis* and *Neoleanira*, the ratio considered for long blades is more than 25 times as long as wide, medium-sized is between 16 and 24 as long as wide, and short blade ratio is less than 15 times as long as wide.

Results

Systematic Account

Family Sigalionidae Kinberg, 1856

Subfamily Sigalioninae Kinberg, 1856

Genus *Sthenolepis* Willey, 1905

Type species. *Leanira japonica* McIntosh, 1885, by monotypy.

Diagnosis. (modified after Aungtonya 2002; Eibye-Jacobsen *et al.* 2022). Sigalioninae with prostomium rounded. Median antenna with long style; median antennal ceratophore with a pair of auricles; lateral antennae short, fused to the inner side of segment 1. With facial tubercle. Segment 1 with dorsal ctenidial pads and inner tentacular lobes. Segment 3 without dorsal cirri, but dorsal tubercles. Lateral lips of mouth aperture without labial lobes. Elytra colorless, smooth, or with tubercles and papillae. Neuropodia in median and posterior segments with three neuropodial lobes, one prechaetal and two postchaetal. Neurochaetae only compound spinigers, with canaliculate blades, non-canaliculate blades may be present in lower position, simple spinose capillaries may be present in upper position.

Remarks. Pettibone (1970b) proposed two sigalionid genera using specimens of *Leanira*, *Neoleanira*, mostly from deep water, and *Horstileanira*, mostly from shallow water. The name *Horstileanira* indicates morphological closeness with *Leanira*: however, *Sthenolepis* seems to be the genus that *Hortsileanira* resembles the most. The latter was noted by Aungtonya (2002), who suggested that both genera need further study to understand the morphology of each properly. Furthermore, some former members of *Sthenolepis*, with unclear generic and specific status such as *Leanira izuensis* Takahashi, 1938 and *L. vulturis* Horst, 1917, possess a morphology that could agree with *Sthenolepis*, but also other known genera (see Table 1). Solving these issues is beyond the scope of this research.

Sthenolepis spargens Fauchald, 1972

Figs. 1–2, Table 1

Sthenolepis spargens Fauchald, 1972: 36–38, Pl. I, figs. f–i.

Material examined. Holotype. North Pacific Ocean, Mexico, Mazatlán, 151 km from Mazatlán lighthouse, 22.733° N, 108.079° W, 2926 m, 13 Nov 1967, R/V *Velero IV*, Campbell grab (LACM-AHF-Poly 1053).

Description. Holotype incomplete with 73 segments, 17 mm long, 5 mm to segment 30, 1 mm wide. Body slender, tapered, fragile posteriorly due to poor condition; pale orange, slightly translucent (Fig. 1A). Mid-dorsal line smooth, no elytra remain, venter smooth. Elytrophores on segments 2, 4, 5, 7, then alternate segment to 25, then present in all segments. Elytrophores short, longer and thinner in posterior segments.

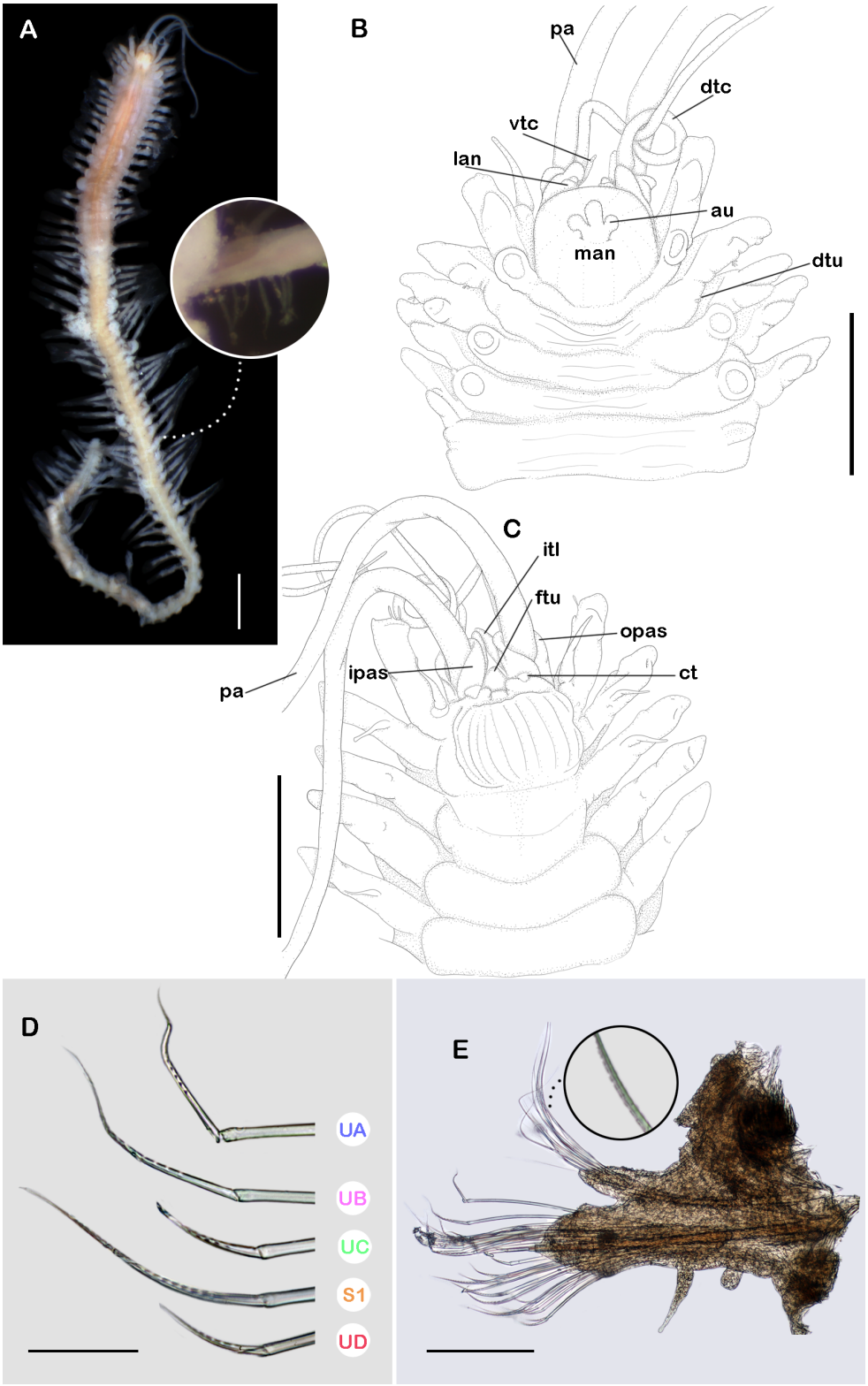

FIGURE 1. ***Sthenolepis spargens*** **Fauchald, 1972**. Holotype (LACM-AHF-Poly 1053). A. Incomplete specimen, inset: close-up of stylodes emerging from the posterior surface on posterior segments. B. Drawing of anterior end, dorsal view. C. Drawing of anterior end, ventral view. D. Neurochaetae from segment 3. E. Parapodium from segment 3, anterior view, inset: close-up of a notochaeta. Abbreviations: au= auricle, ct= ctenidia, dtu= dorsal tubercle, dtc= dorsal tentacular cirrus, ftu= facial tubercle, ipas= inner palpal sheath, itl= inner tentacular lobe, lan= lateral antenna, man= median antenna, opas= outer palpal sheath, pa= palp, S1= lower middle group, UA= upper group, UB= upper middle group, UC=middle group, UD= lowest group, vtc= ventral tentacular cirrus. Scales bars: A, B, C: 1 mm, D: 50 µm, E: 200 µm.

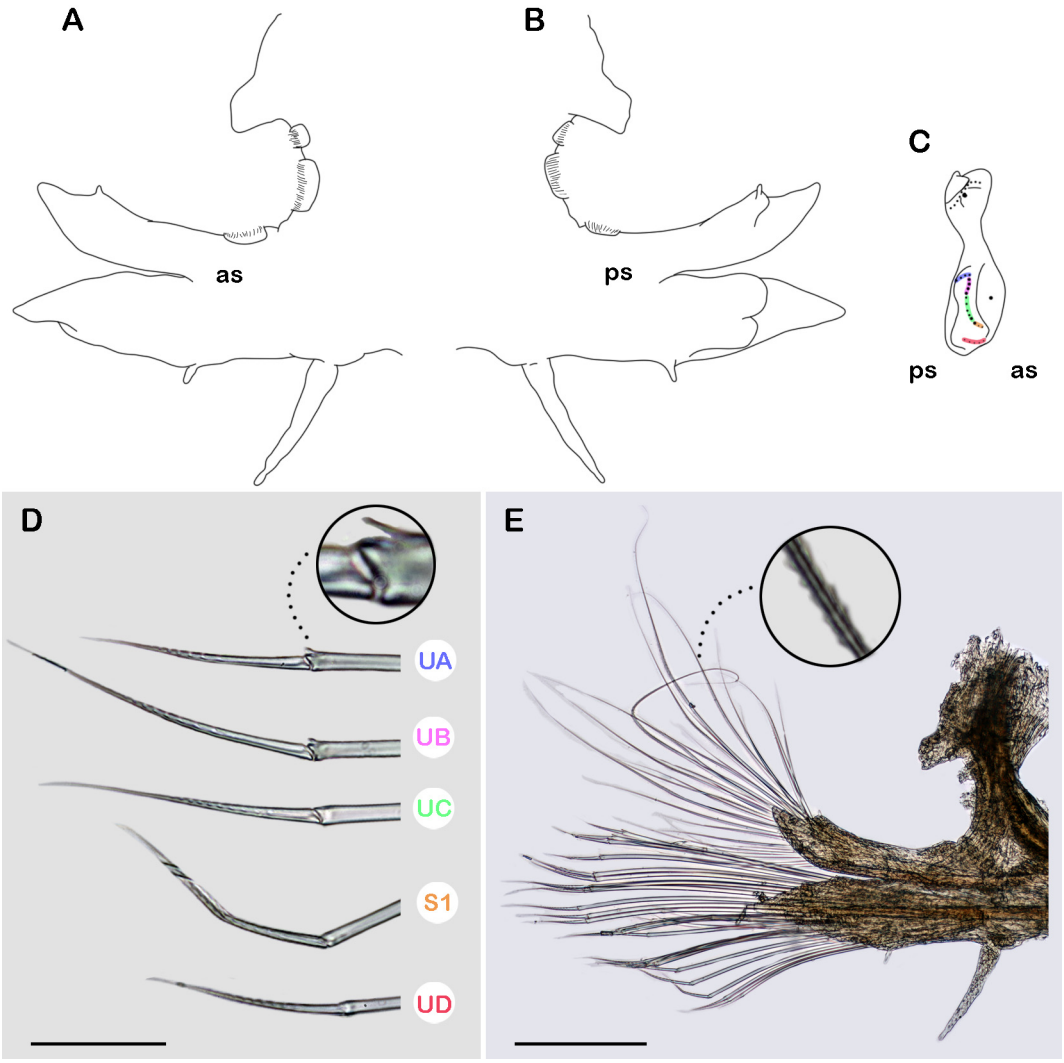

FIGURE 2. ***Sthenolepis spargens*** **Fauchald 1972.** Holotype (LACM-AHF-Poly 1053). A. Drawing of parapodium from segment 20, anterior view. B. Drawing of same, posterior view. C. Diagrammatic of same, lateral view, color lines indicate the insertion of neurochaetal groups, color scheme following that shown in D. D. Neurochaetae from segment 20, inset: close-up of the distal margin of upper group handle. E. Parapodium from segment 20, anterior view, inset: close-up of a notochaeta. Abbreviations: as= anterior side; ps= posterior side. S1= lower middle group, UA= upper group, UB= upper middle group, UC= middle group, UD= lowest group. Scale bars: A–C: no scale, D: 50 µm, E: 200 µm.

Prostomium pale orange, darker on cerebral lobes; oval, wider than long. Eyes lacking. Lateral antennae short, inconspicuous, inserted on inner dorsal side of tentacular segment. Median antenna with ceratophore slightly shorter than prostomial length; style lost; inserted centrally on prostomium. Auricles semispherical, half as long as ceratophore; inserted basally and laterally on ceratophore. Tentacular segment uniramous, chaetae verticillate. Dorsal tentacular cirri 12× longer than tentacular neuropodia, ventral tentacular cirri short, 2× longer than tentacular neuropodia (Fig. 1B). Inner tentacular lobes ¼ larger than inner palpal sheaths (Fig. 1C). Palps reaching segment 20. Inner and outer palpal sheaths subequal. Buccal cirri, slightly larger than remaining ventral cirri. Buccal ctenidial pads, enlarged, inserted anterolaterally on buccal aperture (Fig. 1C). Ctenidial pads from segment 1; segment 1 with only one dorsal ctenidial pad, succeeding segments with 3–6 ctenidial pads: 2 large and bulbous pads placed on dorsolateral surface of segment; 1–2 smaller, half as large as dorsolateral ones, placed on dorsal side of notopodia; 0–1, small pads, placed on anterior inner side of parapodia; and 1 truncated pad, inserted ventrally. Branchiae from segment 2, small, becoming slightly larger from segment 7, filiform, cilia not seen. Nephridial papillae not observed.

Elytra unknown.

Segment 3 (Fig. 1E): Notopodia conical, ½ as long as neuropodia. Notacicula slender, protruding from the body wall. Notochaetae with up to 10 simple verticillate chaetae (Fig. 1E, inset), smallest 4× longer than notopodia, longest 7× as long. Neuropodia lanceolate. Prechaetal lobe entire, without stylodes. Postchaetal lobes well differentiated, without stylodes. Neuracicula thick, inserted in prechaetal lobe, protruding from the body wall. Neurochaetae only spinigers (Fig. 1D). Upper group (unit A) with 4 chaetae, handles thick with a subdistal row of small denticles, blades medium-sized, 18–20× as long as wide. Upper middle group (unit B) with 5 chaetae, blades medium-sized to long, 24–26× as long as wide. Middle group (unit C) with 4 chaetae, blades short, 12–13× as long as wide. Lower middle group (subunit 1) with 6 chaetae, blades medium-sized to long, 23–24× as long as wide. Lowest group (unit D) with 5 chaetae, blades short, 13× as long as wide. Ventral cirri 1/3 as long as neuropodia (Fig. 1E).

Segment 20 (middle segment) (Fig. 2A–C): Notopodia conical, as long as neuropodia. Notacicula thick. Notochaetae with up to 20 simple verticillate chaetae (Fig. 2E, inset), smallest as long as notopodia, longest 2× longer than notopodia. Neuropodia conical. Prechaetal lobe entire with a few small dendritic stylodes on it. Postchaetal lobes well differentiated, without stylodes. Neuracicula thick, inserted in prechaetal lobe, protruding from body wall. Neurochaetae only spinigers (Fig. 2D). Upper group (unit A) with 4 chaetae, handles thick with an enlarged subdistal tooth (Fig. 2D, inset); blades short, 14–15× as long as wide. Upper middle group (unit B) with 7 chaetae, handle thick with an enlarged subdistal tooth, blades medium-sized, 23× as long as wide. Middle group (unit C) with 6 chaetae, blades medium-sized, 19–20× as long as wide. Lower middle group (subunit 1) with 3 chaetae, blades medium-sized, 20–21× as long as wide. Lowest group (unit D) with 4 chaetae, blades medium-sized, 16–17× as long as wide. Ventral cirri half as long as neuropodia (Fig. 2E).

Posterior region lost. Pygidium unknown.

Remarks. Fauchald (1972) described *Sthenolepis spargens* based on specimens from the southern Gulf of California collected at 3,108 m depth. In the original description, Fauchald (1972) stated that *S. spargens* possesses long lateral antennae, as well as a small dorsal cirrus on segment 3. However, examination of the holotype revealed that what Fauchald interpreted as lateral antennae are the dorsal tentacular cirri. The lateral antennae in *Sthenolepis* are small and located on the dorsal side of the tentacular segment but displaced to the inner side of the notopodium, very close to the anterior prostomial border covered by the auricles on the median antennal ceratophore. Therefore, they were likely overlooked by Fauchald. It was also noticed that the holotype lacks a dorsal cirrus on segment 3 and instead, has an enlarged tubercle.

Fauchald (1972) discussed in the remarks section of *Sthenolepis racemosa* Fauchald, 1972 that *S. spargens* differs from all the eye-less *Sthenolepis* species in having four fimbriae (=stylodes) in the notopodium. The comparison between *S. spargens* and the eye-less *Sthenolepis* species was pertinent at the time. However, all those species are now contained either in *Neoleanira* or *Leanira* (*e.g. Neoleanira racemosa*), and both genera are known for having members eyes-less (Pettibone 1970b). The observation on the stylodes was confirmed, but their number was noticed to vary according to the segment observed, increasing in posterior segments. Currently, *S. spargens* differs from all *Sthenolepis* species, by lacking eyes and having long palps and dorsal tentacular cirri (Table 1).

Distribution. Northeastern Temperate Pacific, Western Mexico, Gulf of California, 1,750–3,400 m.

***Sthenolepis ruffi* new species**

Figs. 3–5, Table 1

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Sthenolepis sp.—Suárez-Morales *et al.* 2024: 55, figs. 1A, C (as host of a mesoparasitic copepod).

Material examined. Holotype. Eastern Pacific Ocean, Continental slope off northern California. W of Farallon Island, SF-DODS Benthic Monitoring Program, Sta. 52, 23 Jun 2015, 37.71686°N, 123.46695°W; 2350 m (LACM-AHF-Poly 14396).

Paratypes and additional material. Eastern Pacific Ocean, Continental slope off northern California. W of Farallon Islands, SF-DODS Benthic Monitoring Program, Sta. 11, 23 Sep 2017, 37.6499°N, 123.5166°W, 3109 m, 1 **paratype** (LACM-AHF Poly 14397). Sta. 16, 28 Aug 2016, 37.6335°N, 123.4499°W, 2753 m, 2 **paratypes** (CASIZ 236805). Sta. 16, 20 Oct 2018, 37.633°N, 123.450°W, 2500 m, 2 **paratypes** (CASIZ 236806). Sta. 17, 07 Nov 2007, 37.635°N, 123.468°W, 2753 m, 1 **paratype** (LACM-AHF Poly 14398). Sta. 17, 20 Jun 2015, 37.634°N,

123.467°W, 2675 m, 4 **paratypes** (LACM-AHF Poly 14399). Sta. 19, 07 Nov 2007, 37.634°N, 123.500°W, 3030 m, 1 **paratype** (LACM-AHF Poly 14400). Sta. 19, 28 Aug 2016, 37.633°N, 123.500°W, 3064 m, 1 **paratype** (CASIZ 236807). Sta. 27, Nov 7, 2007, 37.686°N, 123.535°W, 2832 m, 1 **paratype** (LACM-AHF Poly 14401). Sta. 27, 27 Jun 2015, 37.667°N, 123.534°W, 2750 m, 4 **paratypes** (MCZ IZ 169539). Sta. 27, 28 Sep 2017, 37.683°N, 123.533°W, 2819 m, 4 **paratypes** (LACM-AHF Poly 14402). Sta. 92, 21 Jun 2015, 37.750°, 123.583°W, 2800 m, 2 **paratypes** (MCZ IZ 169540). Sta. 116, 07 Jul 2007, 37.750°N, 123.484°W, 2908 m, 1 **paratype** on SEM Stub (LACM-AHF Poly 14403). Sta. 137, 08 Aug 2016, 37.550°N, 123.483°W, 3253 m, 1 **paratype** on SEM stub (LACM-AHF Poly 14404). Sta. 19, 07 Oct 1998, 37.633°N, 123.5°W, 3030 m, 1 **paratype** (LACM-AHF 14418). Sta. 27, 2016, 37.666N, 123.53W, 2805 m, 5 **non-types** (LACM-AHF Poly 14416). Sta. 6, 27 Sep 2006, 37.650°N, 123.1166°W, 2732 m, 6 **non-types** (LACM-AHF Poly 14405). Sta. 6, 22 Sep 2006, 37.400°N, 123.127°W, 2697 m, (6, LACM-AHF Poly 14419). Sta. 16, 11 Jul 2007, 37.616°N, 123.433°W, 2699 m, 2 **non-types** (LACM-AHF Poly 14446). Sta. 19, 11 Jul 2007, 37.633°N, 123.5°W, 3100 m, 1 **non-type** (LACM-AHF Poly 14407). Sta. 23, 13 Jul 2007, 37.6166°N, 123.4833°W, 2995 m, 2 **non-types** (LACM-AHF Poly 14408). Sta. 23, 26 Sep 2002, 37.3695°N, 123.2901°W, 2954 m, (1, LACM-AHF Poly 14417). Sta. 64, 13 Jul 2007, 37.60°N, 123.55°W, 3115 m, 3 **non-types** (LACM-AHF Poly 14409). Sta. 23, 21 Jul 2015, 37.616°N, 123.483°W, 3000 m, 1 **non-type** (LACM-AHF Poly 14410). Sta. 92, 27 Aug 2016, 37.733°N, 123.583°W, 2820 m, 1 **non-type** (LACM-AHF Poly 14411). Sta. 57, 27 Aug 2016, 37.70°N, 123.533°W, 2815 m, 1 **non-type** (LACM-AHF Poly 14412). Sta. 64, 29 Aug 2016, 37.60°N, 123.533°W, 3221 m, 3 **non-types** (LACM-AHF Poly 14413). Sta. 116, 28 Jun 2015, 37.583°N, 123.483°W, 2850 m, 2 **non-types** (LACM-AHF Poly 14414).**—Eastern Pacific, Continental slope off northern California. Baseline Survey at U. S. Navy Ocean Disposal Site, July 1991, R/V *Wecoma*, coll. J.A. Blake.** Sta. B-1, 18 Jul 1991, 37.657°N, 123.500°W, 2955 m, 4 **non-types** (MCZ IZ 169541). Sta. B-2, 19 Jul 1991, 37.668°N, 123.466°W, 2701 m, 1 **non-type** (MCZ IZ 169542). Sta. B-4, 20 Jul 1991, 37.641°N, 123.501°W, 3055 m, 2 **non-types** (MCZ IZ 169543). Sta. B-5, 20 Jul 1991, 37.649°N, 123.480°W, 2925 m, 2 **non-types** (MCZ IZ 169544). Sta. B-6, 21 Jul 1991, 37.646°N, 123.4201°, 2720 m, 1 **non-type** (MCZ IZ 169545). Sta. B-12, 22 Jul 1991, 37.571°N, 123.472°W, 2700 m, 1 **non-type** (MCZ IZ 169546). Sta. B-13, 22 Jul 1991, 37.545°N, 123.413°W, 2400 m, 2 **non-types** (MCZ IZ 169547). Sta. B-14, 22 Jul 1991, 37.549°N, 123.4701°W, 3000 m, 1 **non-type** (MCZ IZ 169548). Sta. B-15, 23 Jul 1991, 37.5395°N, 123.435°W, 2750 m, 3 **non-types** (MCZ IZ 169549). Sta. B-19, 23 Jul 1991, 37.523°N, 123.413°W, 2425 m, 1 **non-type** (MCZ IZ 169550).

Description. Holotype complete with 81 segments, 35.5 mm long, 9 mm to segment 30, 4.5 mm wide. Body slender, tapered at both ends; pale orange (Fig. 3A). Mid-dorsal line smooth, some elytra remain, venter smooth. Elytrophores on segments 2, 4, 5, 7, then alternate segments to 25, then present in all segments. Elytrophores bulbous, longer and thinner in posterior segments.

Prostomium pale orange, whitish on cerebral lobes; oval, wider than long. Eyes lacking. Lateral antennae short, inconspicuous, inserted on inner dorsal side of tentacular segment. Median antenna with ceratophore, slightly shorter than prostomial length; style 7× as long as ceratophore length; inserted on anterior margin of the prostomium. Auricles reniform, half as long as ceratophore; inserted basally and laterally on ceratophore. Tentacular segment uniramous, chaetae verticillate. Dorsal tentacular cirri 5× longer than tentacular neuropodia, ventral tentacular cirri very short, 2× as long as tentacular neuropodia (Figs. 3B, 5A). Inner tentacular lobes half as long as inner palpal sheaths. Palps reaching segment 12. Inner palpal sheaths twice as large as outer palpal sheaths (Figs. 3C, 5C). Buccal cirri slightly longer than the remaining ventral cirri. Buccal ctenidial pads, slightly enlarged, inserted anterolaterally on buccal aperture (Figs. 3C, 5B–C). Ctenidial pads from segment 1; segment 1 with 1 dorsal ctenidial pad, succeeding segments with 4–5 ctenidial pads: 2 large and bulbous pads placed on dorsolateral surface of the segment; 1 smaller pad, half as large as dorsolateral ones, placed on dorsal side of notopodia; 0–1 small pad, placed on anterior inner side of parapodia; and 1 truncated pad, inserted ventrally. Branchiae from segment 2, small becoming larger from segment 7, filiform with cilia (Fig. 3E). Nephridial papillae not observed.

First right elytron small, oval (Fig. 3A, upper inset). Median elytron larger, oblong (Fig. 3A, lower inset). Posterior elytra larger, distally expanded (Fig. 3A, upper inset). All elytra with smooth surfaces and margins; due to their fragility and delicate texture, elytral surface may appear corrugated under microscope.

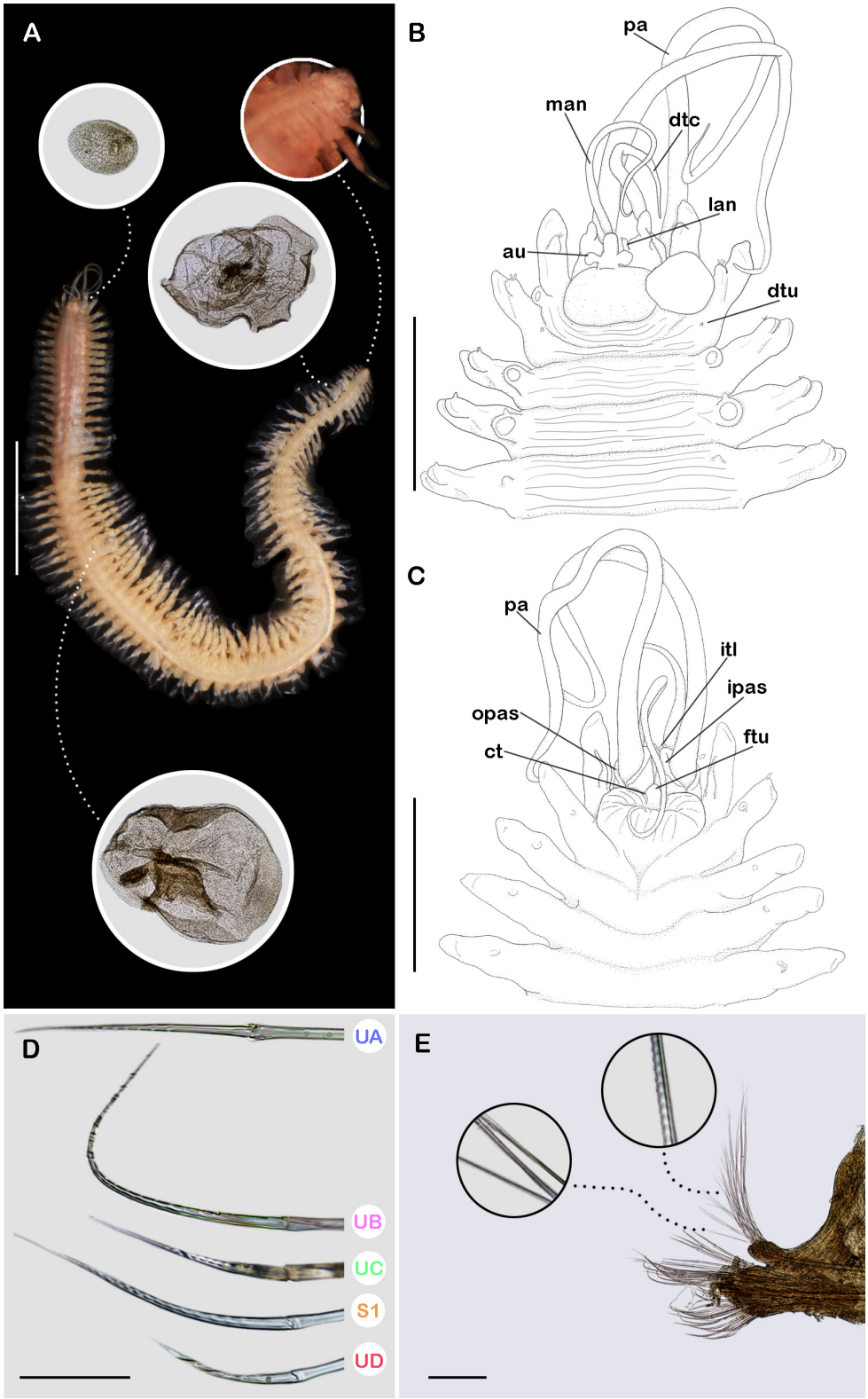

FIGURE 3. ***Sthenolepis ruffi*** **n. sp.** Holotype (LACM-AHF-Poly 14396). A. Complete specimen, inset: 1st right elytron, medium right elytron, posterior right elytron, and pygidium, ventral view. B. Drawing of anterior end, dorsal view. C. Drawing of anterior end, ventral view. D. Neurochaetae from segment 3. E. Parapodium from segment 3, anterior view, inset: close-up of notochaetae from lower and upper position. Abbreviations: au= auricle, ct= ctenidia, dtu= dorsal tubercle, dtc= dorsal tentacular cirrus, ftu= facial tubercle, ipas= inner palpal sheath, itl= inner tentacular lobe, lan= lateral antenna, man= median antenna, opas= outer palpal sheath, pa= palp, S1= lower middle group, UA= upper group, UB= upper middle group, UC= middle group, UD= lowest group. Scale bars: A: 5 mm, B, C: 1 mm, D: 50 µm, E: 200 µm.

Segment 3 (Fig. 3E). Notopodia ovate, slightly shorter than neuropodia. Notacicula thick, not protruding from body wall. Notochaetae with up to 20 simple verticillate chaetae, smallest 3× as long as notopodia (Fig. 3E, lower inset), longest 5× as long (Fig. 3E, upper inset). Neuropodia conical. Prechaetal lobe entire, with a few dendritic stylodes. Postchaetal lobes differentiated, divided by a deep notch, without stylodes. Neuracicula thick, inserted in the prechaetal lobe, protruding from body wall. Neurochaetae only spinigers (Fig. 3D). Upper group (unit A) with 6 chaetae, handles slender with a subdistal row of small denticles, blades medium-sized, 24× as long as wide. Upper middle group (unit B) with 10 chaetae, blades long, 35× as long as wide. Middle group (unit C), 8 chaetae, blades short, 15× as long as wide. Lower middle group (subunit 1) with 8 chaetae, blades long, 29× as long as wide. Lowest group (unit D) with 5 chaetae, blades medium-sized, 18× as long as wide. Ventral cirri 1/3 as long as neuropodia.

Segment 20 (middle segment) (Fig. 4A–D): Notopodia conical, with a few small subdistal dendritic stylodes, barely shorter than notopodia. Notacicula thick. Notochaetae with up to 15 simple verticillate chaetae (Figs. 4D, inset, 5F), smallest barely shorter than notopodia, longest 2× longer than notopodia. Neuropodia conical. Prechaetal lobe entire, with a few small dendritic stylodes along lateral external margin. Postchaetal lobes well differentiated, without stylodes. Neuracicula thick, inserted in prechaetal lobe, protruding from body wall. Neurochaetae only spinigers (Figs. 4E, 5H). Upper group (unit A) with 3 chaetae, handles slender with a medial small subdistal tooth, and two smaller ones laterally, blades medium-sized to long, 16–30× as long as wide. Upper middle group (unit B) with 10 chaetae, handles thick with a medial small subdistal tooth, and two smaller ones laterally, blades long, 39–47× as long as wide. Middle group (unit C) with 8 chaetae, blades long, 26× as long as wide. Lower middle group (subunit 1) with 5 chaetae, blades short, 14× as long as wide. Lower group (subunit 2) with 2 chaetae, blades medium-sized, 24× as long as wide. Lowest group (unit D) with 7 chaetae, blades short, 15× as long as wide. Ventral cirri 1/3 as long as parapodia (Fig. 4D).

Pygidium half as large as regular posterior segments. Pygidial cirri not observed, large ctenidial pads inserted dorsally. Anus terminal (Figs. 3A, inset, 5D).

Remarks. In the Northeastern Pacific, there are two *Sthenolepis* species: *S. fimbriarum* (Hartman, 1939) and *S. spargens*, both described from the Gulf of California. Although these species and the newly described *Sthenolepis* species are morphologically similar, they can be easily distinguished based on the size of the median antennae and auricles, as well as on the type of neurochaetae and elytra (Table 1).

Sthenolepis ruffi **n. sp.** differs from *S. fimbriarum* in lacking eyes, having smaller auricles and a long median antenna, smooth elytra without fimbriae on its margins, and canaliculate blades. In contrast, *S. fimbriarum* has two pairs of eyes, large auricles, as long as the median antennal ceratophore, a short median antenna, slightly longer than the prostomium, elytra with a few fimbriae on one of its margins, and non-canaliculate blades (Hartman 1939: 70, Pl. 18, 217–225). Hartman (1939) originally described her species in the genus *Leanira*, but noted that it resembles *Sthenelais* Kinberg, 1856; however, she kept her species in *Leanira* because it only has spinigers. Later she transferred the species to *Sthenolepis* with no comment on the decision (Hartman 1965). The other genus that has spinigers is *Eusthenelais* McIntosh, 1876 (*sensu* Barnich & Van Haaren 2021), but even in this latter genus, falcigers are present. Further, *Eusthenelais* presents dorsal tentacular crests and nuchal organs, features lacking in *S. frimbriarum*. We recommend the revision of *Sthenolepis*, and its comparison with other morphologically close genera such as *Eusthenelais* and *Horstileanira*. This issue is beyond the scope of the present paper.

Sthenolepis spargens seems closer morphologically to *S. ruffi* **n. sp.**, both lack eyes and have small auricles and canaliculate blades. However, the two species differ in the size of the palps and tentacular cirri and the composition of neurochaetae (Table 1). *Sthenolepis ruffi* **n. sp.** has long palps reaching segment 12 and short tentacular cirri, five times as long as tentacular parapodia. Meanwhile, *S. spargens* has longer palps reaching segment 20 and long tentacular cirri, 12 times as long as the tentacular parapodia. Further, *S. ruffi* **n. sp.** has upper neurochaetal handles with a small median subdistal tooth, and two barely noticeable smaller ones on the sides. In comparison, *S. spargens* has handles with an enlarged medial subdistal tooth but no additional teeth on the sides. Another difference between these species is the nature of the neurochaetal blades. *Sthenolepis ruffi* **n. sp.**, bears noticeably longer blades, for instance, blades from the upper middle group (unit B) can reach up to 47 times longer than wide, and blades from the lowest group (unit D) may be non-canaliculate. While *S. spargens* has blades from the upper middle group (unit B) shorter, ½ as long as the ones in *S. ruffi* **n. sp.**, being about 23 times longer than wide, and all blades are canaliculate, including the lowest group (unit D).

An additional difference observed between the three similar species, *S. spargens* and *S. ruffi* **n. sp.** were found in deep water (2,350–3,400 m), while *S. fimbriarum* occurs in shallow water (18.2 m).

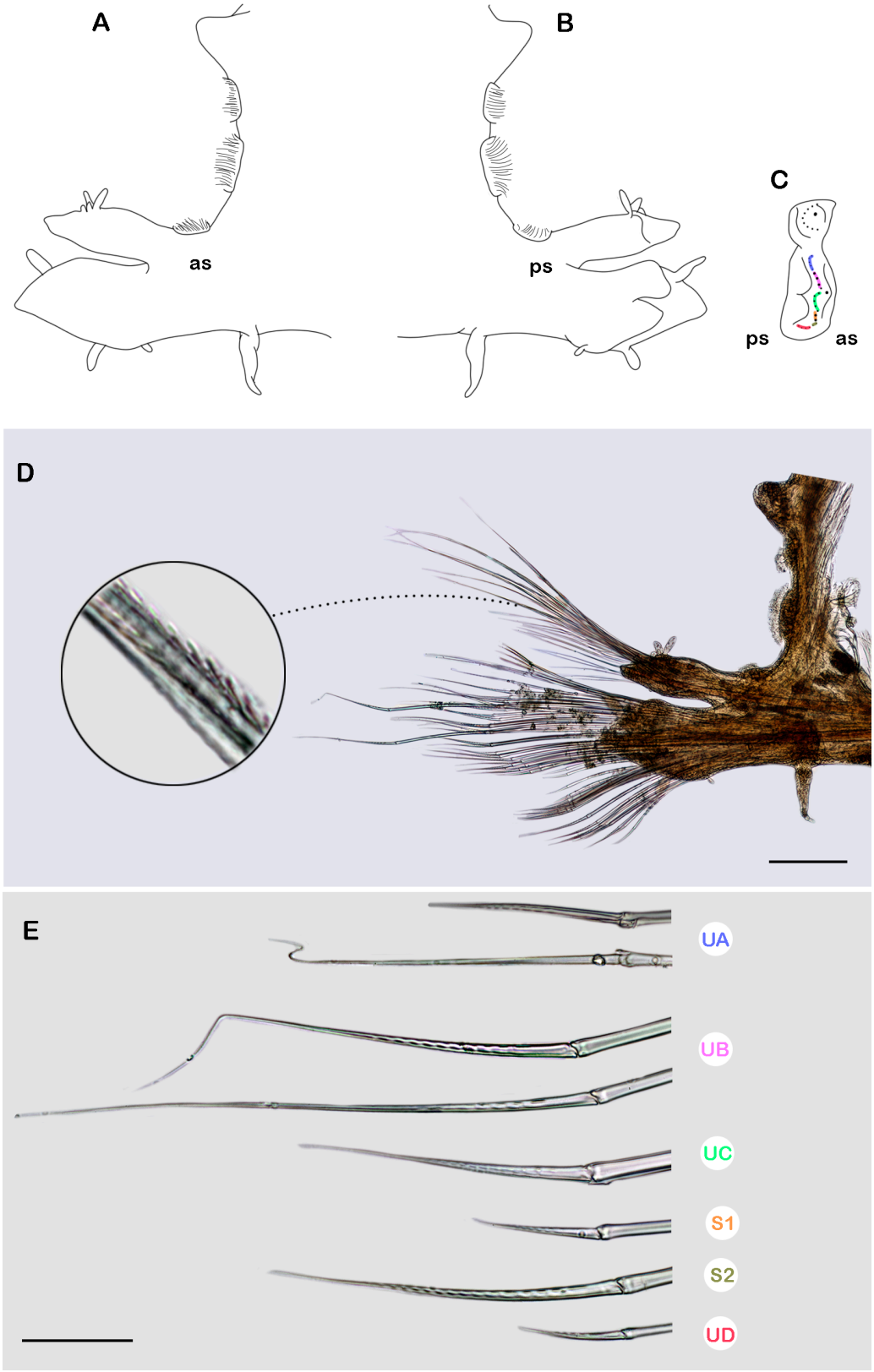

FIGURE 4. ***Sthenolepis ruffi*** **n. sp.** Holotype (LACM-AHF-Poly 14396). A. Drawing of parapodium from segment 20, anterior view. B. Drawing of same, posterior view. C. Diagrammatic of same, lateral view, color lines indicate the insertion of neurochaetal groups, color scheme following that shown in E. D. Parapodium from segment 20, anterior view, inset: close-up of notochaetae. E. Neurochaetae from segment 20. S1= lower middle group, S2= lower group, UA= upper group, UB= upper middle group, UC= middle group, UD= lowest group. Scale bars: A–C: no scale, D: 200 µm, E: 50 µm.

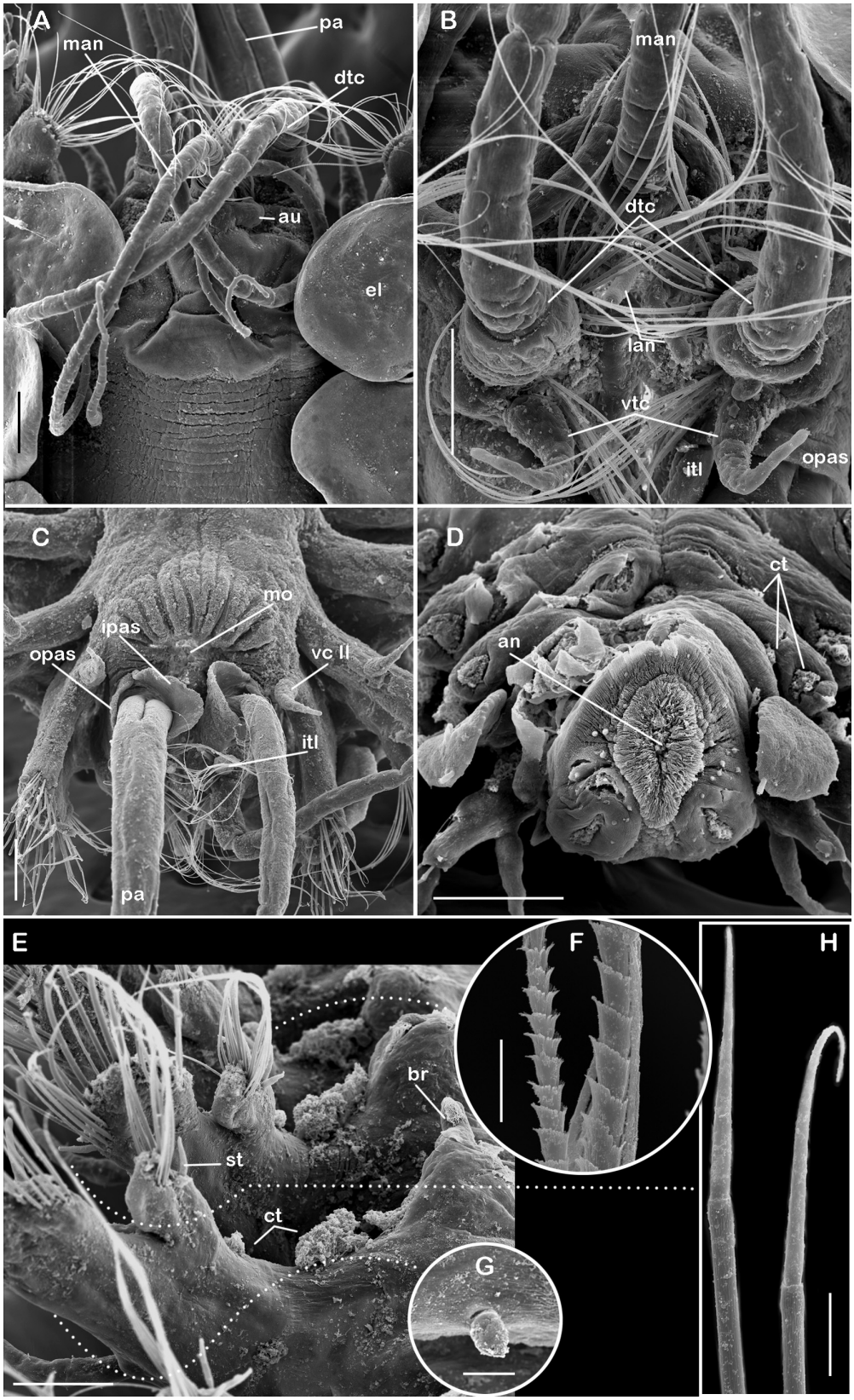

FIGURE 5. ***Sthenolepis ruffi*** **n. sp.** SEM images of paratypes (LACM-AHF-Poly 14403 and 14404). A. Anterior end, dorsal view. B. Anterior end, frontal view. C. Anterior end, ventral view. D. Posterior end, pygidium. E. Parapodia from median segments. F. Notochaetae from same. G. Ventral ctenidium. H. Neurochaetae, upper group. Abbreviations: an= anus, au= auricle, br= branchia, ct= ctenidia, dtu= dorsal tubercle, dtc= dorsal tentacular cirrus, ipas= inner palpal sheath, itl= inner tentacular lobe, lan= lateral antenna, man= median antenna, mo= mouth, opas= outer palpal sheath, pa= palp, st= stylode, vc= ventral cirrus, vtc= ventral tentacular cirrus. Scale bars: A–E: 100 µm, F: 10 µm, G: 50 µm, H: 20 µm.

Biology. Specimens of *Sthenolepis ruffi* **n. sp**. were collected from throughout the SF-DODS disposal area including the boundary of the actual disposal site and from numerous reference locations well outside the site (see Blake *et al*. 2009: fig. 2). In addition, the species was collected in samples from the US Navy baseline survey prior to any dredged material disposal. As such the species is likely widespread along the continental slope off California.

Sedimentary parameters determined by subsamples from the box cores and sediment profile images (SPI) from surveys from 1996–2003 indicate that *S. ruffi* **n. sp**. occurs in sediments with fine grains (silt + clay) of 90–98% and total organic carbon (TOC) of 2.97–3.09% at distant reference stations (64 and 92) not influenced by dredged material (DM) disposal and where it was not detected in the SPI images. In contrast, Stations 17 and 19 on the boundary of the disposal site had sediments with 45–77% silt + clay, TOC values of 1.3–2.6%, and DM depths of 2.35–7.0 cm (Sta. 17, 7 surveys) and 2.1–5.7 (Sta. 19, 5 surveys) (Blake *et al*. 2009).

In addition, *S. ruffi* **n. sp.** was recently recorded as a host of a mesoparasitic copepod. The copepod was found attached to the anterior region of the body; apparently the prevalence is low since only one of more than 60 specimens was parasitized (Suárez-Morales *et al.* 2024).

Etymology. This species is named after the late Robert Eugene Ruff in recognition of his many efforts in the exploration of deep-sea and collections of marine invertebrates, especially polychaetes. Also, he made the first round of identification of these specimens. The species name is a noun in the genitive case (ICZN 1999, Art. 31.1.2).

Distribution. Northeast Temperate Pacific, lower continental slope off northern California, 2,350–3,253 m.

Genus *Neoleanira* Pettibone, 1970b

Type species. *Sigalion tetragonum* Örsted, 1845

Diagnosis. (modified after Aungtonya 2002; Eibye-Jacobsen *et al.* 2022). Sigalioninae with oval prostomium. Median antenna with long style; median antennal ceratophore with a pair of auricles; lateral antennae rather long, fused with dorsal side of segment 1. Without facial tubercle. Segment 1 with dorsal ctenidial pads and inner tentacular lobes. Segment 3 with a long dorsal cirrus. Lateral lips of mouth aperture without labial lobes. Elytra colorless, smooth, or with tubercles and papillae. Neuropodia in median and posterior segment with three neuropodial lobes, one prechaetal and two postchaetal. Neurochaetae compound, with canaliculate blades; spines and simple chaetae might be present in upper position.

Neoleanira solitaria new species

Figs. 6–9, Table 2

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Holotype. Eastern Pacific Ocean, Continental slope off northern California. W of Farallon Island, SF-DODS Benthic Monitoring Program, Sta. 02, 28 Jun 2015, 37.68334°N, 123.50025°W, 2560 m **(**LACM-AHF-Poly 14415). Left middle segment (34th segment) and elytron coated in gold and palladium on SEM stub.

Description. Holotype incomplete with 34 anterior segments, 12.7 mm long, 11.2 mm to segment 30, 3.7 mm wide (Fig. 6A). Body slender, cylindrical; pale orange. Mid-dorsal line smooth, some elytra remain, venter smooth. Elytrophores on segments 2, 4, 5, 7, then alternate to segment 25, then present in all segments. Elytrophores bulbous, slightly larger in posterior segments.

Prostomium pale orange, slightly whitish on cerebral lobes; oval, wider than long. Eyes lacking. Lateral antennae 2× as long as prostomium length, inserted on anterior dorsal margin of the tentacular segment. Median antenna with ceratophore, 1/3 as long as prostomium, style 8× as long as ceratophore length; inserted centrally on prostomium. Auricles oblong, half as long as ceratophore; inserted basally and laterally on ceratophore. Tentacular segment uniramous, chaetae verticillate. Dorsal tentacular cirri 3× longer than neuropodia, ventral tentacular cirri short, as long as neuropodia (Fig. 6E). Inner tentacular lobes 2× larger than inner palpal sheaths. Palps reaching segment 20, with palpal sheaths. Inner and outer palpal sheaths subequal (Fig. 6F). Buccal cirri, long, 2× longer than remaining ventral cirri. Buccal ctenidial pads, enlarged, inserted on the antero-upper margin of the buccal aperture. Ctenidial pads from segment 1; segment 1 with only 1 dorsal ctenidial pad, succeeding segments with 3 ctenidial pads: 2 pads on the parapodial dorsal surface, and 1 smaller, boot-shaped pad, inserted ventrally (Figs. 8A–B, E, 9A, arrow).

Branchiae from segment 2, small, becoming larger from segment 7, filiform, cilia not observed. Nephridial papillae not observed.

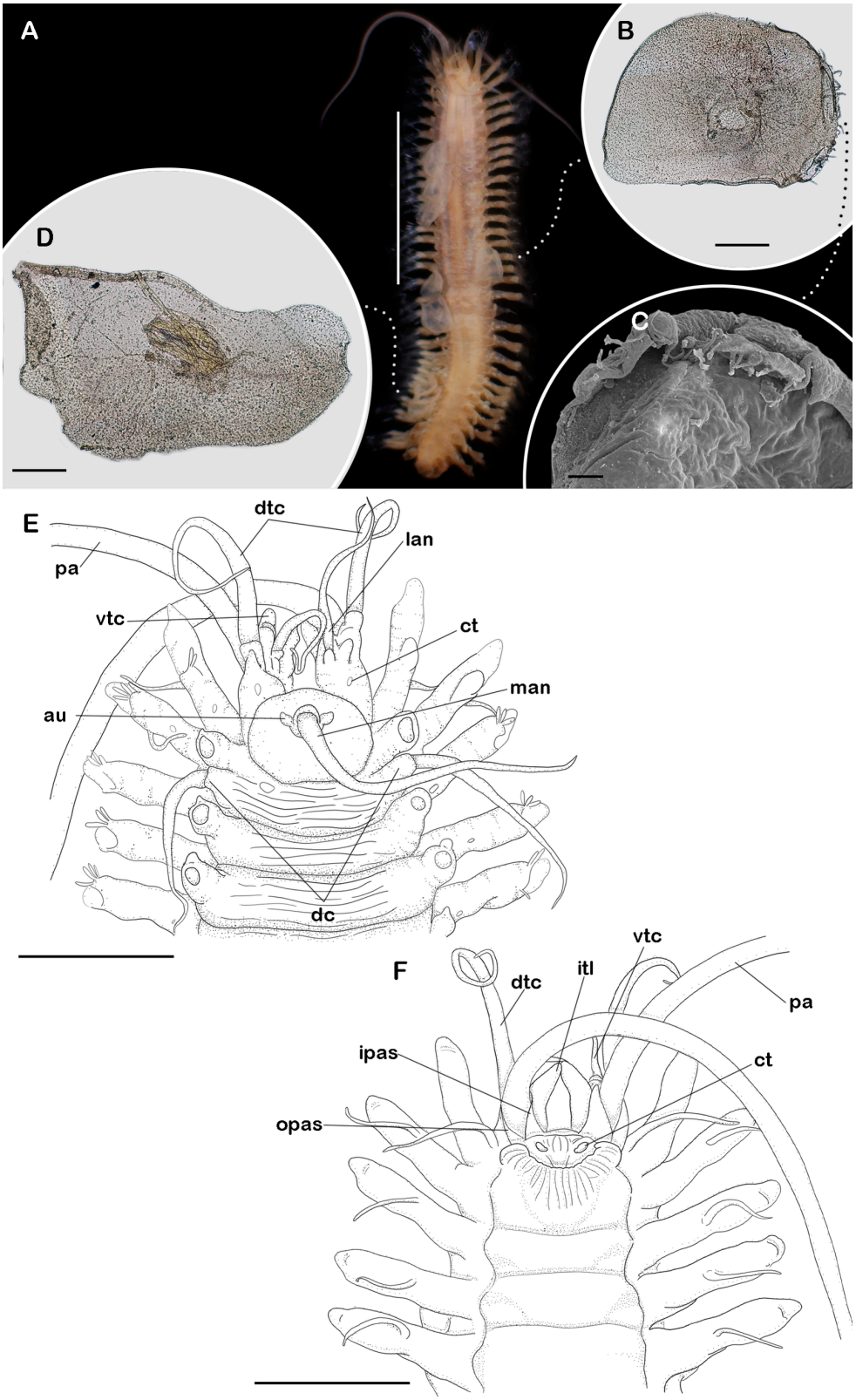

FIGURE 6. ***Neoleanira solitaria*** **n. sp.** Holotype (LACM-AHF-Poly 14415). A. Incomplete specimen. B. Median right elytron. C. SEM image from same, marginal fimbriae. D. Posterior left elytron. E. Drawing of anterior end, dorsal view. F. Drawing of anterior end, ventral view. Abbreviations: au= auricle, ct= ctenidia, dc= dorsal cirrus, dtc= dorsal tentacular cirrus, ipas= inner palpal sheath, itl= inner tentacular lobe, lan= lateral antenna, man= median antenna, opas= outer palpal sheath, pa= palp, vtc= ventral tentacular cirrus. Scale bars: A: 5 mm, B, D: 200 µm, C: 50 µm, E, F: 1 mm.

Elytra from anterior region lost. Median elytra large, oblong (Fig. 6B–C). Posterior elytra larger, oblong (Fig. 6D). All elytra with smooth surface, and small fimbriae along lateral margins (Fig. 8C).

Segment 3 (Fig. 7A). Dorsal cirri longer than parapodia (Fig. 7A, arrow). Notopodia ovate, small, half as long as neuropodia; acicular lobe with a few stylodes, inserted distally. Notacicula thick, protruding into a stylode. Notochaetae with up to 20 simple verticillate chaetae, smallest slightly smaller than notopodia, longest 4× as long as notopodia (Fig. 7A, inset). Neuropodia conical. Prechaetal lobe entire, with a few long dendritic stylodes, one bifurcated inserted distally in acicular lobe. Postchaetal lobes differentiated, without stylodes. Neuracicula thick, inserted in prechaetal lobe. Neurochaetae, differentiated in spines and composed chaetae (Fig. 7B). One small smooth spine inserted in upper position. Upper group (unit A) with 6 chaetae, handles thick with 6–7 subdistal rows of spines, blades long, 29–30× as long as wide. Upper middle group (unit B) with 10 chaetae, blades long, 39–40× as long as wide. Middle group (unit C) with 14 chaetae, blades medium-sized, 22–24× as long as wide. Lower middle group (subunit 1) with 1 chaeta, blade long, 42× as long as wide. Lowest group (unit D) with 12 chaetae, blades medium-sized, 20× as long as wide. Ventral cirri as long as neuropodia (Fig. 7A).

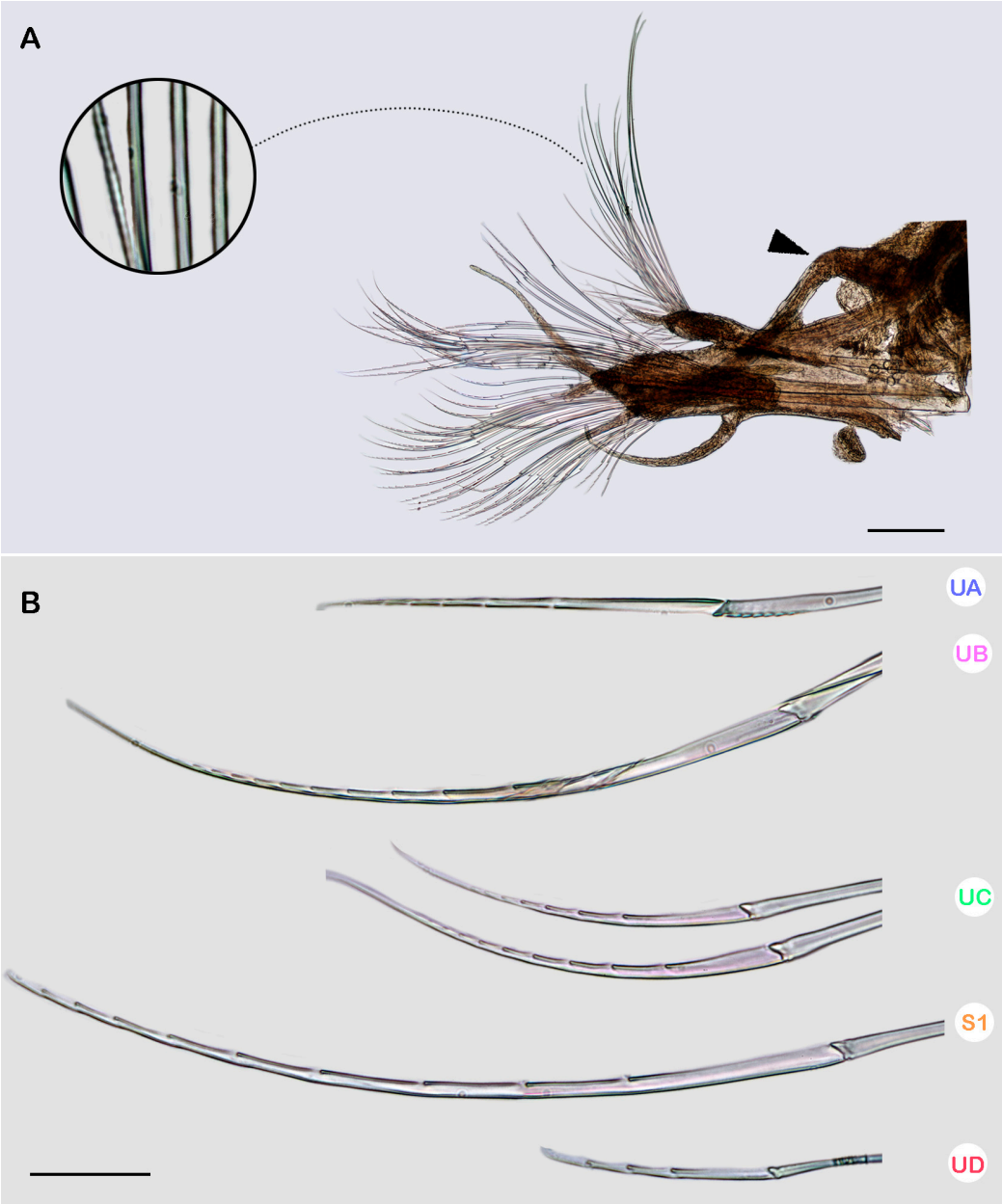

FIGURE 7. ***Neoleanira solitaria*** **n. sp.** Holotype (LACM-AHF-Poly 14415). A. Parapodium from segment 3, anterior view, inset: close-up of notochaetae, arrowhead indicates dorsal cirrus. B. Neurochaetae from segment 3. Abbreviations: S1= lower middle group, UA= upper group, UB= upper middle group, UC= middle group, UD= lowest group. Scale bars: A: 200 µm, B: 50 µm.

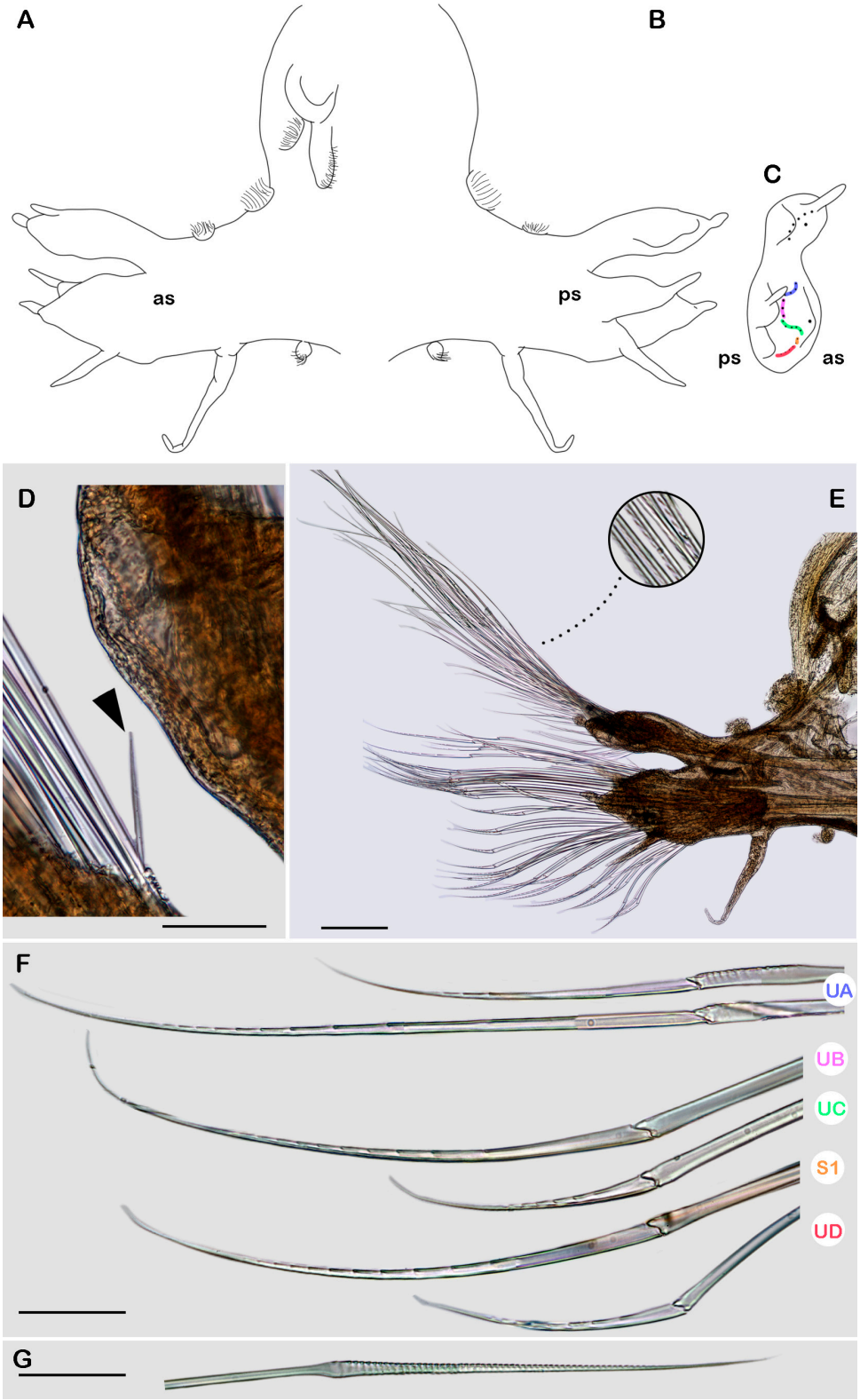

FIGURE 8. ***Neoleanira solitaria*** **n. sp.** Holotype (LACM-AHF-Poly 14415). A. Drawing of parapodium from segment 21, anterior view. B. Drawing of same, posterior view. C. Diagrammatic of same, lateral view, color lines indicate the insertion of neurochaetal groups, color scheme following that shown in F. D. Interramal section of segment 21, anterior view, arrowhead indicates the spine inserted in neuropodium. E. Parapodium from segment 21, anterior view, inset: close-up of notochaetae. F. Neurochaetae from segment 21. G. Simple fusiform spinous neurochaetae from segment 33. Abbreviations: S1= lower middle group, UA= upper group, UB= upper middle group, UC= middle group, UD= lowest group. Scale bars: A–C: no scale, D, F, G= 50 µm, E: 200 µm.

Segment 21 (middle segment) (Figs. 8B–C, E). Notopodia distally pointed, slightly oblanceolate, large, longer than neuropodia; acicular lobe with a few stylodes, inserted distally. Notacicula thick, not protruding from body wall. Notochaetae with up to 40 simple verticillate notochaetae (Fig. 8E, inset), smallest, half as long as notopodia, longest 5× as long. Neuropodia subconical. Prechaetal lobe entire, with small filiform stylodes. Postchaetal lobes differentiated, divided by a deep notch, with a long upper and lower stylodes. Neuracicula thick, inserted in prechaetal lobe. Neurochaetae spinigers (Fig. 8F), and 1 small smooth spine in upper position (Fig. 8D, arrow). Upper group (unit A) with 5 chaetae, handles thick with 5–12 subdistal rows of spines; blades long, 30–62× as long as wide. Upper middle group (unit B) with 13 chaetae, handles thick with 1–2 subdistal rows of denticles; blades long, 36× as long as wide. Middle group (unit C) with 13 chaetae, blades short, 15× as long as wide. Lower middle group (subunit 1) with 1 chaeta, blade long, 32× as long as wide. Lowest group (unit D) with 10 chaetae, blades short to medium-sized, 20× as long as wide. Ventral cirri as long as neuropodia (Fig. 8E).

Segment 33 (posterior segment) (Fig. 9A). Similar features as in middle segments. Notochaetae simple verticillate chaetae (Fig. 9D). Neurochaetae spinigers (Fig. 9E) and simple chaeta. One simple, fusiform, spinous neurochaeta, inserted in upper position (Fig. 8G, 9B–C).

Posterior region lost. Pygidium unknown.

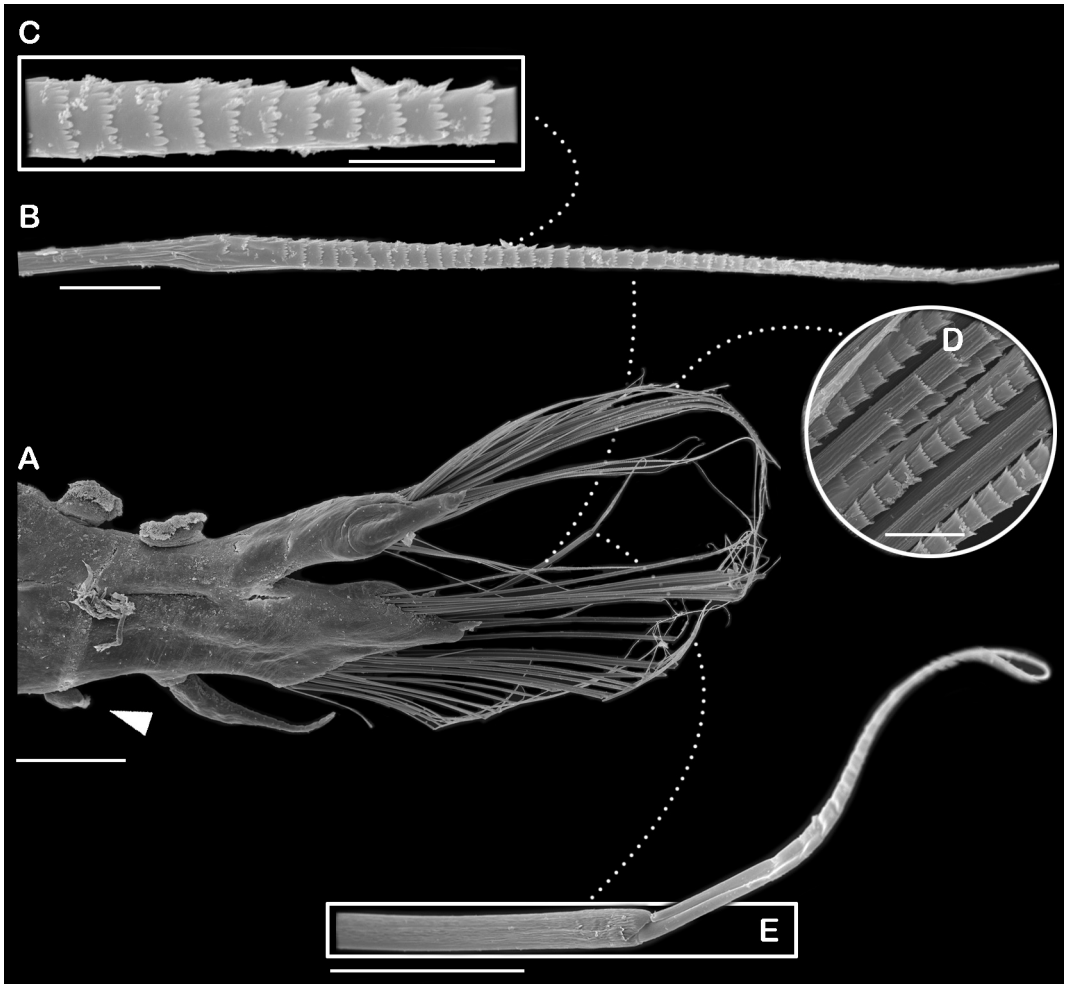

FIGURE 9. ***Neoleanira solitaria*** **n. sp.** Holotype (LACM-AHF-Poly 14415). A. SEM image from segment 34, anterior view, arrowhead indicates ventral ctenidium. B. Upper fusiform spinous neurochaetae. C. Close-up to the surface of same. D. Notochaetae. E. Upper group neurochaeta. Scale bars: A: 200 µm, B, E: 50 µm, C: 20 µm, D: 10 µm.

Remarks. In the Eastern Pacific, only two species of *Neoleanira* are known, *N. racemosa* Fauchald, 1972 from the Guaymas Basin, and *N. areolata* McIntosh, 1885 described from the south of Yedo, Japan, but recorded in Washington, California, and the Gulf of California (Hartman 1960 as *Leanira calcis* Hartman, 1960; Pettibone 1970b; Fauchald 1972 as *L. calcis*). These two species are similar to *N. solitaria* **n. sp.**, in having small auricles, a

long median antenna, and bulbous boot-shaped ventral ctenidia. However, they differ in the length of the appendages from the first anterior segments, the shape of the branchiae, and the type of neurochaetae.

Neoleanira solitaria **n. sp.** differs from *N. areolata* in having the dorsal cirri from segment 3 longer, ¼ longer than the ones on *N. areolata* (McIntosh 1885; pl. 21, fig. 3; Imajima 2003: 57, fig. 32a). The main feature that distinguishes *N. areolata* from *N. solitaria* **n. sp.**, and from the rest of the species of *Neoleanira* is the presence of spur-like processes in the basis of the branchiae from the median and posterior region (Hartman 1960: 185, Pl. 4; Pettibone 1970b: 373, fig. 5b–c, fig. 6a–b; Imajima 2003: 59, fig. 34a–b). While all the known species of *Neoleanira* possess entire branchiae, including *N. solitaria* **n. sp.**, records of *N. areolata* in the Eastern North Pacific should be reevaluated. Ideally this would include examination of the type material of its regional junior synonym, *L. calcis* Hartman, 1942, since it is unlikely that a species described from Japan occurs along the Eastern Pacific coast.

On the other hand, *N. solitaria* **n. sp.** differs from *N. racemosa* in having longer median and lateral antennae, as well as longer dorsal cirri from segment 3. *Neoleanira solitaria* **n. sp.** has longer anterior appendages, the median and lateral antennae are ¼ longer than the ones on *N. racemosa*, and regarding the dorsal cirri from segment 3, *N. solitaria* **n. sp.** it is twice as long as the ones in *N. racemosa* (Fauchald 1972: 425, pl. 2, fig. b; Pettibone 1989: 165, fig. 5A).

Regarding the chaetae, *N. solitaria* **n. sp.** possesses neurochaetae of two types, simple and compound. The simple chaetae are either small spines, slightly thicker than the notochaetae, or thick fusiform chaetae. Neurochaetae are spinigers with thick handles, either smooth or with several subdistal rows of denticles, and canaliculated blades. In contrast, *N. racemosa* has only compound spinigers as neurochaetae, with slender handles with a terminal row of denticles, and non-canaliculated blades (Fauchald 1972: 425, pl. 2, fig. a; Pettibone 1989: 166, fig. 6c).

Another species that *N. solitaria* **n. sp.** resembles is *N. tetragona* (Örsted, 1845) from Norway with a wide distribution in the North Atlantic. These two species have small auricles, long palps, branchiae without large processes, neurochaetae with thick handles, and elytra with lateral fimbria. However, *N. solitaria* **n. sp.** differs from *N. tetragona* in having slightly longer appendages such as median and lateral antennae, and the dorsal cirri from segment 3; whereas *N. tetragona* has shorter antennae and dorsal cirri (Table 2). Also, some other differences are found in the neuropodia and neurochaetae. *Neoleanira solitaria* **n. sp.** has a deep notch between the upper and lower postchaetal lobes, and neurochaetae of two types, simple and compound chaetae, the latter being spinigers with rather long blades; whereas the notch between the upper and lower postchaetal lobes in *N. tetragona* is shallow, with only compound spinigers with short blades. The shape of ventral ctenidia also differs between these species, *N. solitaria* **n. sp.** possesses bulbous boot-shaped ventral ctenidia, while *N. tetragona* has clavate ventral ctenidia (Pettibone 1970b: 368, fig. 1a, b; 370, fig. 3c; 371, fig. 4b).

Finally, *Neoleanira solitaria* **n. sp.** differs from all *Neoleanira* species in having a simple fusiform spinous neurochaeta in the upper position in the neuropodia. This is the first record of this kind of chaeta in the genus.

Biology. The holotype of *Neoleanira solitaria* **n. sp**. from Station 2 of the 2015 survey is the only specimen of this species to have been identified after the collection and analysis of approximately 235 benthic samples collected from SF-DODS since monitoring began in 1996. Station 2 is located northeast of the disposal site boundary (see Blake *et al*. 2009: fig. 2). During the site selection process for SF-DODS by the US EPA and a companion site planned by the U.S. Navy, oceanographic dispersion models were developed that predicted dredged material would drift to the north-northwest of the disposal site (Courtney *et al*. 1994). Station 2 is directly in the path of such a drift pattern and during years of heavy dredged material disposal, the sand content of the sediments increased. The 2015 sediment data for Station 2, was sand 8.6% and silt + clay 41.4% (averaged over three replicates); TOC was 1.9%. Dredged material depth at the site averaged 7.64 cm (EPA, unpublished data). Therefore, the site where *N. solitaria* **n. sp**. occurred outside of SF-DODS had increased sand content over ambient sediments, low TOC, and deep deposits of dredged material. The more typical habitat of *N. solitaria* **n. sp**. has yet to be discovered.

Etymology. The specific epithet *solitaria* (*-us*, *-um*) is a Latin singular feminine adjective in the nominative case, which means ‘solitary’ or ‘lone’ (ICZN 1999, Art. 31.2). The sole specimen of *Neoleanira solitaria* **n. sp.** was found after many samplings in the area where other species of sigalionids were found. The name also refers to the presence of a solitary fusiform chaeta in the neuropodia of posterior segment, a characteristic that makes this species unique.

Distribution. Northeastern Temperate Pacific, lower continental slope off northern California, 2,560 m.

TABLE 1. Comparative table of the valid species of *Sthenolepis* Willey, 1905 (Read & Fauchald 2024), including the geographical and bathymetrical distribution. The number of times in sizes relationships between wide and length is given by '×'.

	S. fimbriarum (Hartman, 1939)	*S. grubei* (Treadwell, 1901)	*S. japonica* (McIntosh, 1885)	*S. javanica* (Horst, 1917)	*S. kuekenthali* Augener, 1922	*S. melanocephala* (Horst, 1917)	*S. oculata* (Hartman, 1942)	*S. spargens* Fauchald, 1972	*Leanira izuensis* Takahashi, 1938	*Leanira vulturis* Horst, 1917	*S. ruffi* **n. sp.**
Type locality	Escondido Bay, off Carmen Island, Baja California, Mexico	Puerto Rico	Kobe, Japan	N coast of Java	Kingston, Jamaica	Molo Strait, Indonesia	Off Cayo Fragoso, Cuba	Mazatlán, Mexico	Izu Peninsula, Japan	Makassar, Indonesia	W of Farallon Islands, California, USA
Depth (m)	Shore–18.2	1	91.4	330	–	69–91	438	1,750–3,400	30–130	30.6–56	2,350–3,253
Median antenna style size compared to prostomium	Slightly longer	Shorter	2× as long	4× as long	–	Slightly longer	–	–	Slightly longer, biarticulate	Half as long, biarticulate	4× as long
Auricle size compared to median ceratophore	Similar length	Slightly larger	½ as long	Similar length	–	Similar length	½ as long	½ as long	Similar length	½ as long	½ as long
Eyes	Present	Present	Present	Absent	Present	Present	Present	Absent	Absent	Present	Absent
Palps size (reach segment)	–	Segment 9	Approx. Segment 16	Segment 10	–	Segment 12	Segment 13	Segment 20	Segment 14	Approx. Segment 18	Segment 12
Tentacular cirri size compared to parapodia	Similar	–	Slightly longer	2× as long	–	3× as long	–	12× as long	Slightly longer	6× as long	5× as long
Neurochaetae canaliculate	Absent	Absent	Present	Present	Present	Present	Present	Present	Present	Present	Present, may be absent in lowest neurochaetae
Neurochaetal handles (distal section)	Slightly spinose	Smooth	Smooth	Subdistal tooth	–	Smooth	Smooth	Enlarged subdistal tooth	Smooth	Smooth	Small subdistal tooth
First branchiae	Segment 7	–	–	Segment 5	–	Segment 5	–	Segment 2	Segment 13	Segment 13	Segment 2
Elytral surface/ Margin	Smooth/ Fimbriae	Smooth/ Fimbriae	Smooth/ Fimbriae	Granular/ Fimbriae	Smooth/ Anterior ones with fimbriae, posterior ones smooth	Granular/Smooth	Smooth/ Smooth	–	Smooth/ Smooth	Smooth/ Smooth	Smooth/ Smooth
Reference	Hartman 1939	Treadwell 1901	McIntosh, 1885; Uschakov & Wu 1959; Imajima 1997	Horst 1917	Augener 1922	Horst 1917	Hartman 1942	Fauchald 1972; this study	Takahashi 1938	Horst 1917	This study

Sthenolepis gracilior Augener, 1927 was deliberately kept out of this table due to the lack of morphological details in the original description, which may agree or disagree with *Sthenolepis* but to other morphologically close genera such as *Horstileanira* or *Labiosthenolepis*. Currently, *Leanira izuensis* and *L. vulturis* are junior synonyms of *Ehlersileanira incisa* (Grube, 1877); however, here they are considered in the table due to the past combination under the genus-group name *Sthenolepis* and the current unclear specific status (Hartman 1965; Cruz-Gomez 2022b).

TABLE 2. Comparative table of the valid species of *Neoleanira* Pettibone, 1970b (Read & Fauchald 2024), including the geographical and bathymetrical distribution. The number of times in sizes relationships between wide and length is given by '×'.

	N. areolata (McIntosh, 1885)	*N. magellanica* (McIntosh, 1885)	*N. racemosa* (Fauchald, 1972)	*N. tetragona* (Örsted, 1845)	*N. solitaria* **n. sp.**
Type locality	South of Yedo, Japan San Nicolas Basin, California (synonym *Leanira calcis*)	Off little Wellington Island, Chile	Guaymas Basin, Gulf of California, Mexico	Christianiafjord, Norway	W of Farallon Islands, California, USA
Depth (m)	280–1,370	485–675	1,774–2,900	40–2,200	2,560
Median antenna style size compared to its ceratophore	5–7× as long	8× as long	–	6× as long	8× as long
Lateral antennae style size compared to prostomium	2× as long	3× as long	Shorter	1.5× as long	2× as long
Auricle size compared to median ceratophore	¼× as long	½× as long	½× as long	1/3× as long	1/3× as long
Palps size (reach segment)	Segment 19	Segment 30	–	Segment 20	Segment 20
Tentacular cirri size compared to parapodia	4× as long	5× as long	Similar length	Slightly longer	3× as long
Size of dorsal cirrus from segment 3 compared to the parapodia	Slightly longer	As long as parapodium	Slightly longer	Similar	Slightly longer
Simple chaetae in posterior neuropodia	Absent	Absent	Absent	Absent	Present
Neurochaetae canaliculate	Present	Present	Absent	Present	Present
Neurochaetal handles (distal section)	Subdistal spines	Smooth	Distal spines	Smooth	Subdistal and distal spines
First branchiae	Segment 6	Segment 7	Segment 2	Segment 6	Segment 2
First ctenidial pads	Segment 6	Segment 7	–	Segment 6	Segment 1
Branchiae with a spurlike process	Present	Absent	Absent	Absent	Absent
Ventral ctenidia	Boot-shaped	Clavate	–	Clavate	Boot-shaped
Elytral surface/Margin	Smooth/Fimbriae	Granular/Smooth	–	Smooth/Fimbriae	Smooth/Fimbriae
Reference	McIntosh 1885; Hartman 1960; Pettibone 1970b; Imajima 2003	McIntosh 1885; Pettibone 1970b	Fauchald 1972; Pettibone 1989	Örsted 1845; Pettibone 1970b	This study

Acknowledgments

CCG thanks Leslie Harris for her kind support during the visit to Los Angeles, and for preparing a space for work at the Natural History Museum of Los Angeles County (LACMNH). Also, CCG acknowledges Dr. Kirk Fitzhugh (LACMNH) for his help with the SEM images. The careful reading and comments provided by Sergio I. Salazar-Vallejo (ECOSUR) and Karla J. Humara-Gil (CUC-UDG) helped to improve an early version of this manuscript. Jenna Moore (ZMH) is thanked for providing a space for work to CCG in the final revision of this contribution. This research is part of the PhD Thesis of CCG at ECOSUR. Funding was provided to CCG by the LACMNH Student Collections Study Award, and by a scholarship from CONAHCYT (916456). JAB acknowledges Mr. Allan Y. Ota, U.S. EPA, San Francisco District for the financial support required to sort, identify, enumerate and report on the benthic fauna collected as part of the SF-DODS surveys. Most of the fieldwork was funded by Mr. Michael Donnelly, U.S. Army Corps of Engineers, San Francisco, who also chartered the research vessels used for the surveys. Most of the taxonomic work was conducted at JAB's former ENSR and AECOM laboratory in Woods Hole, Massachusetts, and managed first by Ms. Isabelle P. Williams and later by Ms. Stacy A. (Doner) Tewari. The late Mr. R. Eugene Ruff, a systematist on the team, identified and enumerated most of the scale worms, including those used in this study. Ms. Christina Piotrowski, California Academy of Sciences, Department of Invertebrate Zoology, San Francisco, CA, Ms. Leslie Harris, LACMNH, Los Angeles, CA, and Mr. Adam J. Baldinger, Museum of Comparative Zoology, Department of Invertebrate Zoology, Harvard University, Cambridge, MA and cataloged specimens used in this study. The critical reading and suggestions provided by two anonymous reviewers helped us to improve the manuscript. Thanks are also extended to Jason D. Williams for his attention and help during the editorial process.

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