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New species of *Glyphohesione* and *Pseudexogone* (Annelida, Pilargidae) from the Gulf of Thailand

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Abstract

Two new species of Pilargidae, *Glyphohesione pattaniensis* **sp. nov.** and *Pseudexogone losinensis* **sp. nov.** are described from the southern Gulf of Thailand, Pattani Province. *Glyphohesione pattaniensis* **sp. nov.** is clearly distinguished from all other known species in the genus by having lateral antennae on the middle of the prostomium; lacking ventral cirri at chaetiger 2; first notopodial spines beginning at chaetiger 6; and having small epidermal papillae. *Pseudexogone losinensis* **sp. nov.** belongs to a group of species in the genus with eyespots present and differs from all other described species by the shape of the furcate chaetae with a strongly curved large tine and a tine with an open tip. An updated key to the species of *Glyphohesione* and *Pseudexogone* and a world map of both genera are also provided.

Key words: Losin Island, Pilargids, Polychaeta, Synelminae, Taxonomy

Introduction

Only four genera of Pilargidae have been previously recorded from Thailand: *Ancistrosyllis* McIntosh, 1878; *Cabira* Webster, 1879; *Hermundura* Müller, 1858; and *Sigambra* Müller, 1858 (Fauvel 1932; Licher & Westheide 1997; Plathong *et al.* 2021; Plathong *et al.* 2022; Salazar-Vallejo *et al.* 2001). The genera *Glyphohesione* Friedrich, 1950 and *Pseudexogone* Augener, 1922 have not been reported from Thailand before. This study is the first record and taxonomic study of these two genera from Thailand.

Glyphohesione Friedrich, 1950 and *Pseudexogone* Augener, 1922 are free living in shelf sediments (Glasby & Salazar-Vallejo 2022). During collection of benthic fauna at many sites in both the Andaman coast and the Gulf of Thailand from 2009 to 2023, only a single specimen of *Glyphohesione* and numerous specimens of *Pseudexogone* were collected from the Southern Gulf of Thailand, Pattani Province in July 2011, 23–24 August 2022 and 22–24 August 2023.

Currently only four species of *Glyphohesione* are known (Read & Fauchald 2023a): *G. campensis* Ribeiro, Barbosa, Freitas, Zanol, Glasby & Ruta, 2020 from Brazil; *G. klatti* Friedrich, 1950 from Scotland, *G. longocirrata* Licher, 1994 from South Florida (USA), and *G. nicoyensis* Dean, 1998 from Gulf of Nicoya, Costa Rica. *Glyphohesione pattaniensis* **sp. nov.**, described herein, is the fifth known member of the genus (Table 1). The genus *Pseudexogone* has only five known valid species: *P. backstromi* Augener, 1922 from off Chile, *P. dineti* Katzmann, Laubier & Ramos, 1974 from the NE Atlantic Ocean, *P. helmuti* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007 from Off Saint Paul Island, Southern Indian Ocean, *P. imajimai* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007 from off Tanegashima, Kyushu, Japan, NW Pacific Ocean, and *P. williamsae* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007 from Southern California, USA (Read & Fauchald 2023b). When including the new species described here, *P. losinensis* **sp. nov.**, the genus will have six species.

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TABLE 1. Comparison of *Glyphohesione* species (modified from Ribeiro *et al.* 2020).

Species/ Characters	***G. campensis* Ribeiro, Barbosa, Freitas, Zanol, Glasby & Ruta, 2020**	***G. klatti* Friedrich, 1950**	***G. longocirrata* Licher, 1994**	***G. nicoyensis* Dean, 1998**	***G. pattaniensis* sp. nov.**
Eyespots	Absent	Absent	Absent	Present	Absent
Lateral antennae located on prostomium	Anterior	Anterior	Anterior	Anterior	middle
Length (mm)	3	12	5.1	4	2.1
Width (mm)	0.3	0.5	0.5	0.6	0.5
No. of chaetiger	24	71	43	37	22
First notopodial spines from chaetiger	5	5–8	10–15	7–10	6
Type of neurochaetae	Finely serrated with entire and straight tips	Finely serrated with entire, curved tips	Finely serrated with minutely bifid tips	Finely serrated with entire and curved tips	Various types of curved tips limbate chaetae
Number of neurochaetae per fascicle	up to 8	up to 25	up to 14	up to 18	up to 35
Distribution	Campos Basin, Brazil	North Sea, Atlantic Ocean	Gulf of Mexico	Gulf of Nicoya, Costa Rica	Gulf of Thailand

According to Salazar-Vallejo *et al.* (2007), species of *Pseudexogone* can be separated into two main groups based on the presence or absence of eyespots. There are two species which lack eyespots: *P. dineti* Katzmann, Laubier & Ramos, 1974 and *P. helmuti* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007. The other four known species of *Pseudexogone* have eyespots: *P. backstromi* Augener, 1922; *P. imajimai* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007; *P. williamsae* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007; and *P. losinensis* **sp. nov.**, a new species herein (Table 2).

In this paper, we describe two new species of *Glyphohesione* and *Pseudexogone* from the Gulf of Thailand. Updated keys to identify species in both genera are also included and a map has been included for all the accepted species based on their type locations (Fig. 1). Further papers will deal with other genera belonging to the Pilargidae.

Material and methods

Specimens were collected from two areas in the Pattani Province area of the southern Gulf of Thailand by SCUBA diving. The first area is an artificial reef (6°57'N–7°00'N, 101°20'E–101°23'E) sampled in 2011 at depths ranging from 12 to 18 m. The second area is Losin Island, Pattani Province (7°20'N, 101°59'E); it was sampled in 23–24 August 2022 and 22–24 August 2023 (Fig. 2).

Samples were sieved with 2.0 mm, 1.0 mm and 0.5 mm mesh stacked screens in the field. Water and sediment from the samples were passed through a 300 μm filter bag. The material retained by both methods was fixed with 10% formalin in sea water. In the laboratory the samples were washed with freshwater and transferred to 70% ethanol. Polychaetes were sorted into taxonomic groups using a stereomicroscope and those belonging to the new species were examined under dissecting and compound microscopes. Light photographs and measurements of the specimens were produced using an Olympus SZX16 stereomicroscope and a Leica DM1000 compound microscope with an Olympus DP74 digital camera. Stacks of multifocal shots were merged into a single photograph using the Helicon Focus program. Specimens were temporarily stained with Shirlastain-A for observations. Line drawings

were made from high resolution light and SEM photographs using an ibis Paint X app and Adobe Photoshop program.

Chaetigers 21–22 of *Glyphohesione pattaniensis* **sp. nov.** and four specimens of *Pseudexogone losinensis* **sp. nov.** were examined using Scanning Electron Microscopy (SEM). They were dehydrated in 100% ethanol before being critical point dried and mounted onto SEM stubs and then coated with gold. SEM photographs were taken with a Field Emission Scanning Electron Microscope (Apreo, FEI).

Confirmation of the taxonomic status of the new species was based on the revision and compilation of the diagnostic characteristics from all recognized species of the genus *Glyphohesione* and *Pseudexogone* by Augener (1922); Dean (1998); Friedrich (1950); Glasby & Salazar-Vallejo (2022); Katzmann *et al.* (1974); Licher (1994); Ribeiro *et al.* (2020) and Salazar-Vallejo *et al.* (2007). For comparative purposes, tables with the main diagnostic characters of the new species and closely-related species were given (Table 1–2).

Type specimens are deposited in the Princess Maha Chakri Sirindhorn Natural History Museum, Prince of Songkla University (PSUZC), Thailand. Additional material is maintained in the personal collections of Jintana and Sakanan Plathong at MEM.

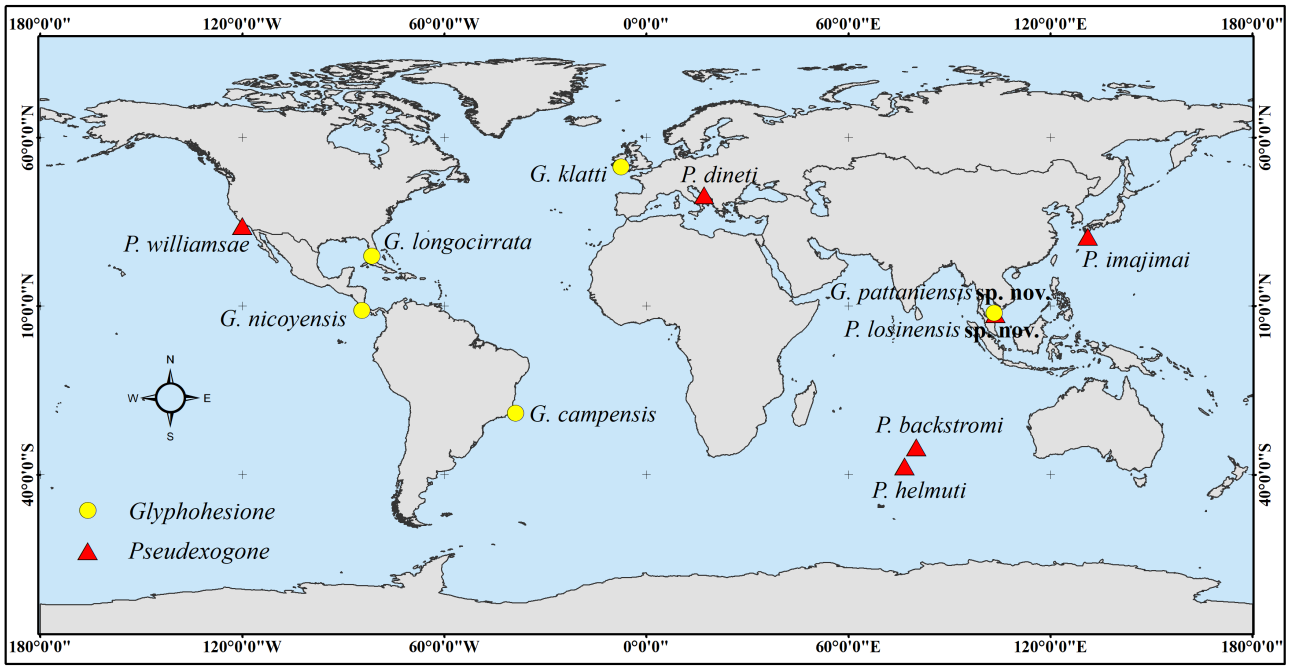


FIGURE 1. Geographic distribution of type localities the accepted species of *Glyphohesione* Friedrich, 1950 (circles) and *Pseudexogone* Augener, 1922 (triangles).

Results

Systematics

Family Pilargidae de Saint-Joseph, 1899

Subfamily Pilarginae de Saint-Joseph, 1899

Genus *Glyphohesione* Friedrich, 1950

Diagnosis (after Glasby & Salazar-Vallejo 2022)**.** Pilargids with body cylindrical, integument smooth. Median and lateral antennae present. Palps not fused, biarticulated, palpostyles cirriform, ventrally directed. Paired ventrolateral papillae absent. Pharynx lacking terminal papillae; proximally smooth. Two pairs of tentacular cirri, cirriform. Dorsal and ventral cirri tapered. Notochaetal spines, emergent below dorsal cirri, starting from chaetigers 4–10, and present on all subsequent segments. Neurochaetae short or long limbate (laterally spinulose) capillaries.

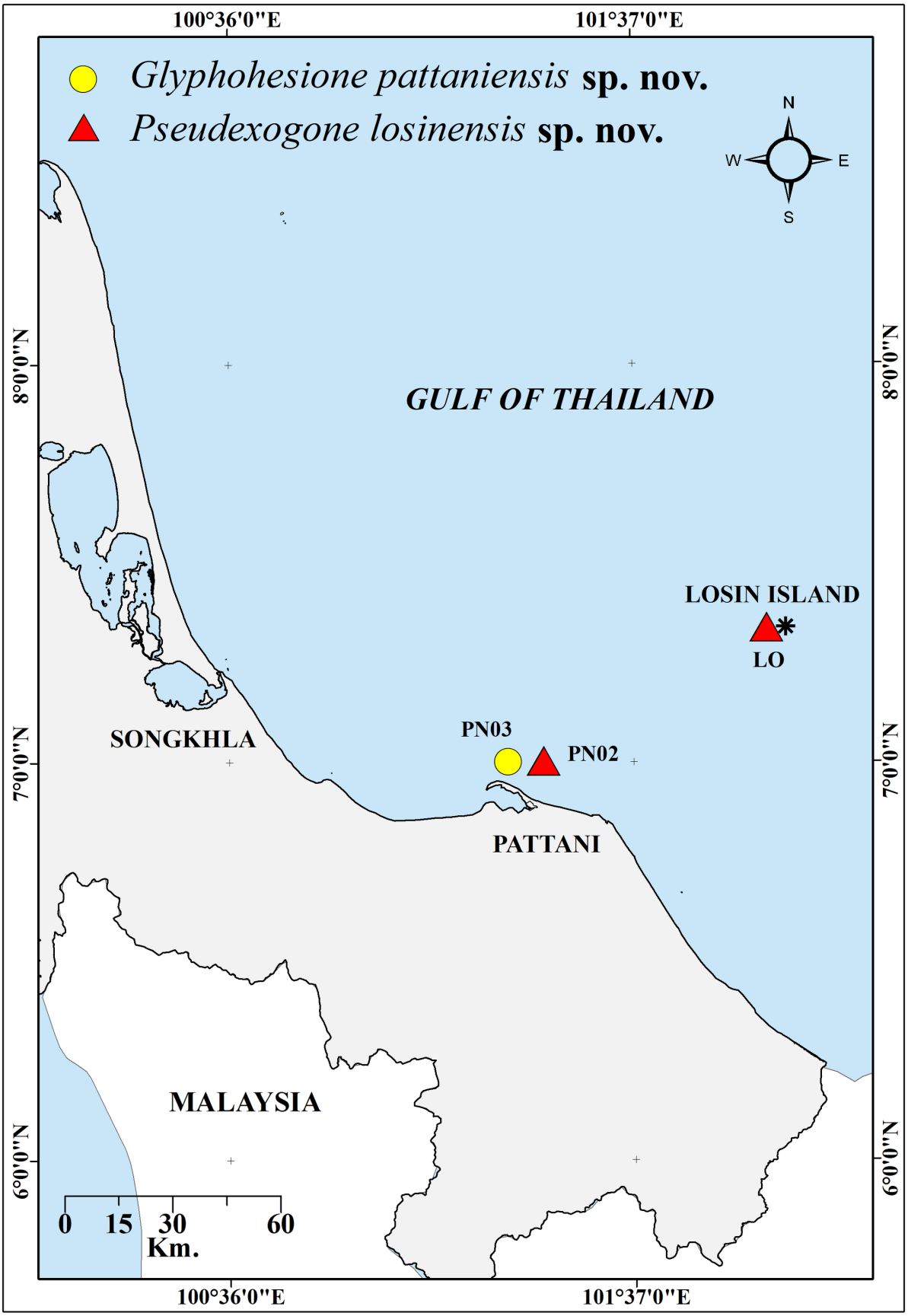


FIGURE 2. Sites in the Gulf of Thailand where specimens of *Glyphohesione pattaniensis* **sp. nov.** (circle) and *Pseudexogone losinensis* **sp. nov.** (triangles) were collected.

***Glyphohesione pattaniensis* sp. nov.**
Figs 3–7

Material examined. Thailand, Southern Gulf of Thailand, Pattani Province. A single incomplete specimen, holotype (PSUZC-POL-0455), chaetigers 21–22 on SEM stub, Sta. PN03 (7°00'N, 101°20'E), coll. Marine Ecosearch Management Co., Ltd., SCUBA diving, 12 Jul. 2011, sandy mixed with shells fragments, 15 m.

Diagnosis. *Glyphohesione* without eyespots. Ventral cirri absent in chaetiger 2. Notopodial spines start on chaetiger 6. Body with small papillae on peristomium and parapodia.

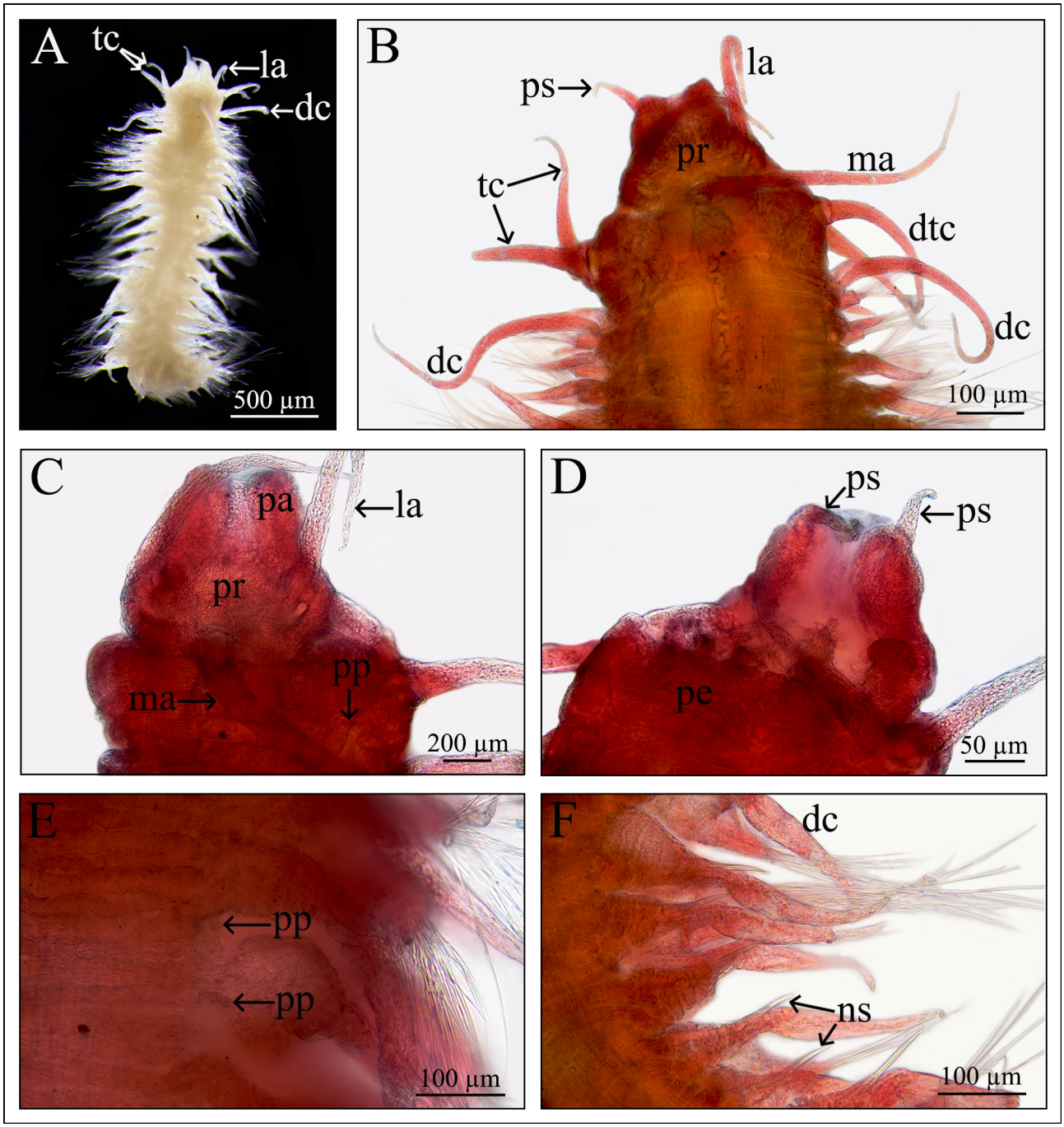


FIGURE 3 *Glyphohesione pattaniensis* **sp. nov.**, light photographs (Holotype, PSUZC-POL-0455). A. Anterior region, dorsal view; B–F, stained with Shirlastain-A. B. Anterior end, dorsal view; C. Prostomium, dorsal view; D. Prostomium, ventral view; E. Papillae on parapodia, dorsal view; F. Notopodia showing notopodial spines located near base of dorsal cirri, dorsal view. Abbreviations: dc, dorsal cirrus; dtc, dorsal tentacular cirrus; la, lateral antenna; ma, median antenna; ns, notopodial spine; pa, palp; pe, peristomium; pp, axillary ciliated papillae; pr, prostomium; ps, palpostyle; tc, tentacular cirri.

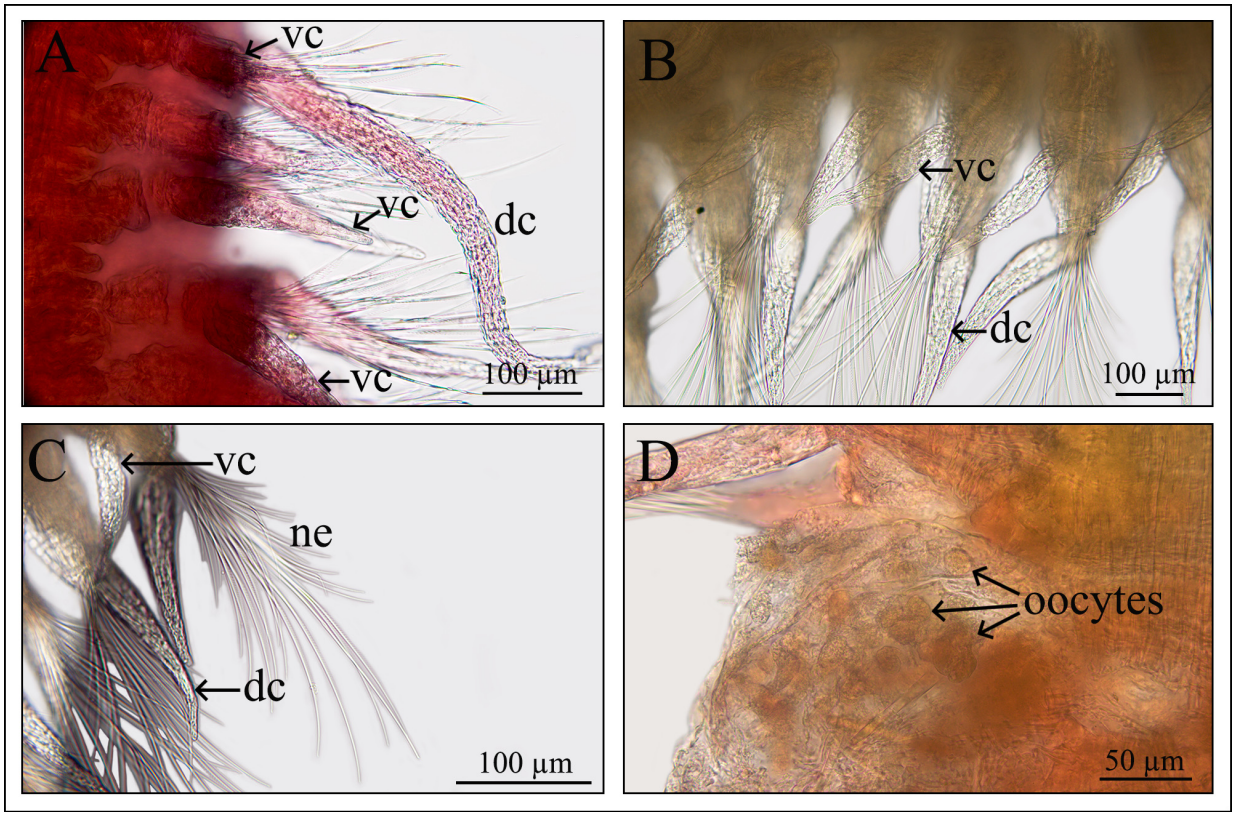


FIGURE 4. *Glyphohesione pattaniensis* **sp. nov.**, light photographs (Holotype, PSUZC-POL-0455). A, D, stained with Shirlastain-A. A. First four chaetigers, right side, ventral view; B. Anterior ventral cirri of anterior chaetigers, ventral view; C. Neurochaetae, ventral view; D. Oocytes in parapodia, dorsal view. Abbreviations: dc, dorsal cirrus; ne, neurochaetae; vc, ventral cirrus.

Description. Holotype incomplete, 2.1 mm long 0.5 mm width (at widest point of chaetiger 7, including parapodia), 22 chaetigers (Fig. 3A). Body depressed, annulated, with a row of small papillae on peristomium and parapodial bases, mid-ventral groove present; semi-transparent in alcohol, no pigmentation (Fig. 3A–D).

Prostomium bilobed anteriorly, longer than wide (341 µm in length palpostyle and 253 µm wide at the peristomium); three slender cirriform antennae with short ceratophores; median antenna located on the posterior margin of prostomium, about 1.6x longer than lateral antennae. Lateral antennae located at mid-lateral of prostomium; eyespots absent. Palps biarticulate, palpophores large, palpostyles long, slender (0.08 mm), about 0.3x shorter than lateral antennae (Fig. 3A–C). Proboscis retracted (Fig. 3D).

Peristomium indistinctly separated from prostomium. Two pairs of slender tentacular cirri, slightly shorter than lateral antennae (0.26: 0.28 mm); dorsal tentacular cirri longer than ventral cirri (Fig. 3B–C). A transverse row of very small papillae (about 5 µm in diameter) located dorsally about mid-peristomium (Fig. 3C).

Each chaetiger with rows of 3–5 small epidermal papillae in the posterior dorsolateral margin, and longer than prostomium papillae (up to 7.8 µm in diameter and 12.8 µm long), each row located near parapodial bases (Figs 3E, 5D–E) and with 4 axillary ciliated papillae on the parapodia near the aciculum (Fig. 5D).

Notopodia with elongated dorsal cirrus; first pair of dorsal cirri longer than those on subsequent chaetigers, about 5.5x longer than dorsal cirri of chaetiger 2 (436:78.5 µm) and 1.7x longer than dorsal tentacular cirri (Fig. 3A–B). Ventral cirri shorter than dorsal cirri, ventral cirri of chaetiger 1 shorter than those of other chaetigers, absent on chaetiger 2 (Fig. 4A). Dorsum and ventrum of dorsal cirri with rows of pores (Fig. 5B–C).

Parapodia biramous. Notopodial lobe reduced; notopodia of chaetigers 1–5 with elongate dorsal cirrus and one notoacicula; from chaetiger 6, notopodia with elongate dorsal cirrus, one notoacicula, and one slightly bent notospine (Figs 3A–B, F, 5A–B, D, 6A, 7B).

Neuropodial lobes well developed, conical, truncate (Fig. 5A–B); all neurochaetae pectinate with slightly curved tips (Figs 5B, 6C–F, 7C–F). Inferior chaetae shorter than superior ones (Figs 5A, C, 6B, D, 7D). Neurochaetae numerous, up to 36 chaetae per fascicle (Figs 4B–C, 5A).

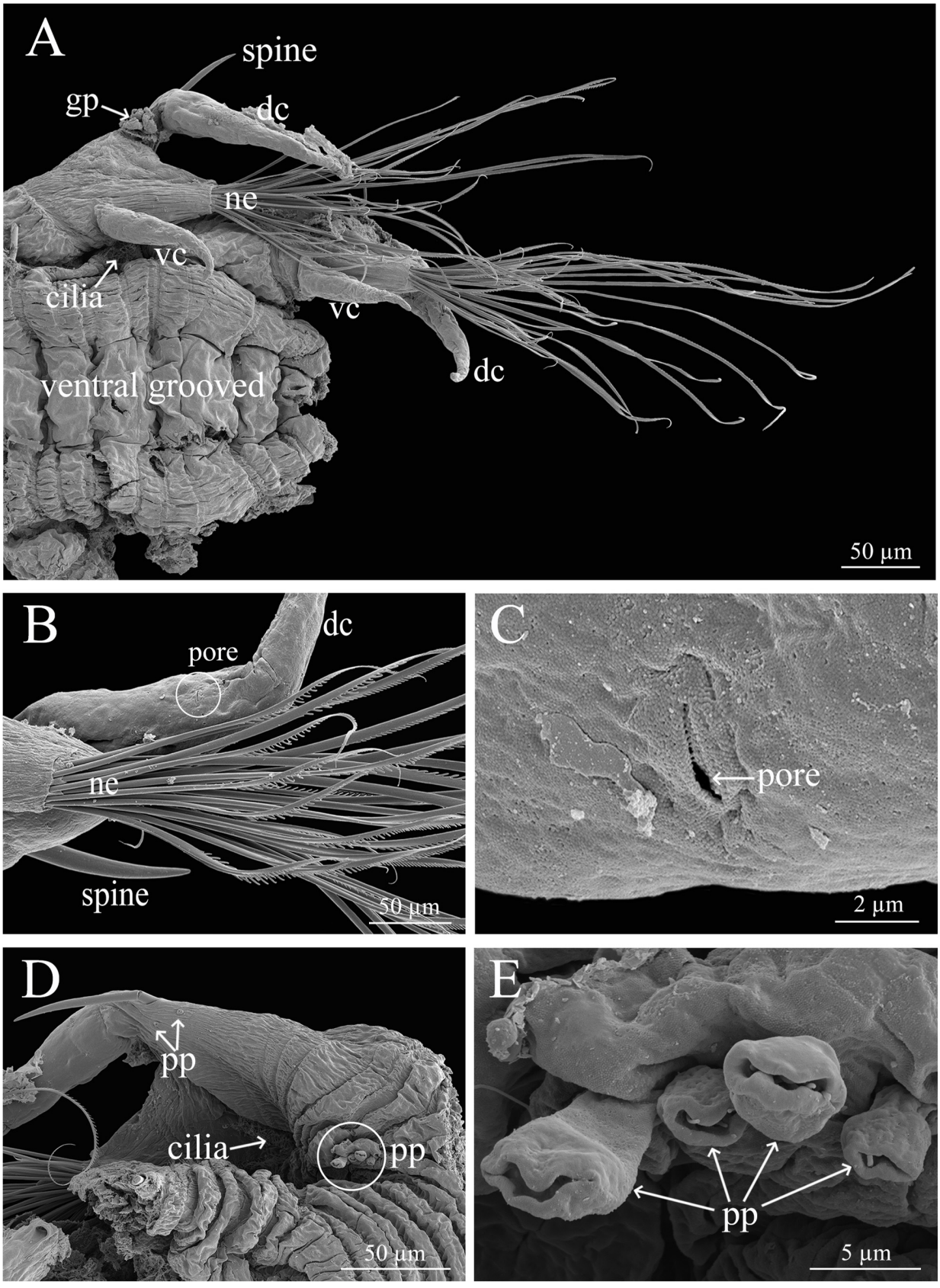


FIGURE 5. *Glyphohesione pattaniensis* **sp. nov.** (PSUZC-POL-0455, holotype) A. Chaetigers 21–22, left side, ventral view; B. Close up parapodia (chaetiger 21, right side), ventral view; C. Close-up of pore on dorsal cirrus, lateral view D. Close up notopodia, chaetiger 21, left side, in circle shows papillae, lateral view; E. Close up axillary ciliated dorsal papillae, frontal view. Abbreviations: dc, dorsal cirrus; gp, gonopores; ne, neurochaetae; pp, axillary ciliated papillae; vc, ventral cirrus.

Oocytes visible in parapodia, very small measure about 11–18 μm in diameter (Fig. 4D).

Pygidium unknown.

Etymology. This species is named after Pattani Province, the type locality.

Habitat. Found at 15 m depth of water in sand mixed with shells fragments.

Distribution. *Glyphohesione pattaniensis* **sp. nov.** is only known from the Southern Gulf of Thailand.

Remarks. *Glyphohesione pattaniensis* **sp. nov.** belongs to the group of *Glyphohesione* with eyespots absent. This group includes *G. campensis*, *G. klatti* and *G. longocirrata*. *Glyphohesione pattaniensis* **sp. nov.** differs from these species by having the lateral antennae located on the mid-lateral of the prostomium. In *G. campensis*, *G. klatti* and *G. longocirrata* the lateral antennae are found on the anterior of the prostomium (Friedrich 1950; Licher 1994; Ribeiro *et al.* 2020). Although it most resembles *G. klatti* by having the first notopodial spines beginning on chaetiger 6, those of *G. klatti* actually vary from chaetigers 5–8 while those of the new species are only found on chaetiger 6 (Friedrich 1950). *Glyphohesione pattaniensis* **sp. nov.** also differs from *G. campensis* and *G. longocirrata* as its notopodial spines start from chaetiger 6 while those of *G. campenisis* and *G. longocirrata* present on 5 and 10–15 respectively (Licher 1994; Ribeiro *et al.* 2020). Additionally, the new species lacks ventral cirri at chaetiger 2 and small epidermal papillae are present on the prostomium and the parapodia. These characters have not been reported in other species in the genus previously.

Glyphohesione pattaniensis **sp. nov.** also differs from *G. campensis* and *G. longocirrata* by having curved tipped neurochaetae instead of the straight tips of *G. campensis* (Ribeiro *et al.* 2020) and bifid tips seen in *G. longocirrata* (Licher 1994).

Glyphohesione pattaniensis **sp. nov.** also differs from all known species of the genus in having a greater number (up to 35) of neurochaetae per fascicle. *Glyphohesione campensis*, *G. klatti*, *G. longocirrata* and *G. nicoyensis* bear fewer neurochaetae with 8, 25, 14 and 18 chaetae per fascicle respectively (Dean 1998; Friedrich 1950; Licher 1994; Ribeiro *et al.* 2020).

Key to species of *Glyphohesione* Friedrich, 1950

1. Prostomium lacking eyespots 2
– Prostomium with eyespots . . . . . ***G. nicoyensis*** Dean, 1988 (Gulf of Nicoya, Costa Rica)

2. Lateral antennae located on the anterior of prostomium 3
– Lateral antennae located on the middle-lateral of prostomium; lacking ventral cirri at chaetiger 2; first notopodial spines begin on chaetiger 6 . . . . . ***G. pattaniensis*** sp. nov. (Gulf of Thailand)

3. First notopodial spines from chaetigers 5–8. 4
– First notopodial spines from chaetigers 10–15, neurochaetae with bifid tips . . . ***G. longocirrata*** Licher, 1994 (Gulf of Mexico)

4. Neurochaetae tips entire and straight, first notopodial spines from chaetiger 5 . . . . . .***G. campensis*** Ribeiro, Barbosa, Freitas, Zanol, Glasby & Ruta, 2020 (Campos Basin, Brazil)
– Neurochaetae with entire and curved tips, first notopodial spines from chaetigers 5–8 . . . . . ***G. klatti*** Friedrich, 1950 (North Sea, Atlantic Ocean)

Subfamily Synelminae Salazar-Vallejo, 1987

Genus *Pseudexogone* Augener, 1922

Diagnosis (after Glasby & Salazar-Vallejo 2022)**.** Pilargids with body cylindrical, integument smooth. Lateral and median antennae present. Palps variably fused, palpostyles ventrolateral. Paired ventrolateral palpal papillae present. Pharynx smooth. Two pairs of tentacular cirri. Dorsal and ventral cirri cirriform. Notochaetae are falcate bidentate spines. Neurochaetae include pectinate and denticulate capillaries and furcate chaetae.

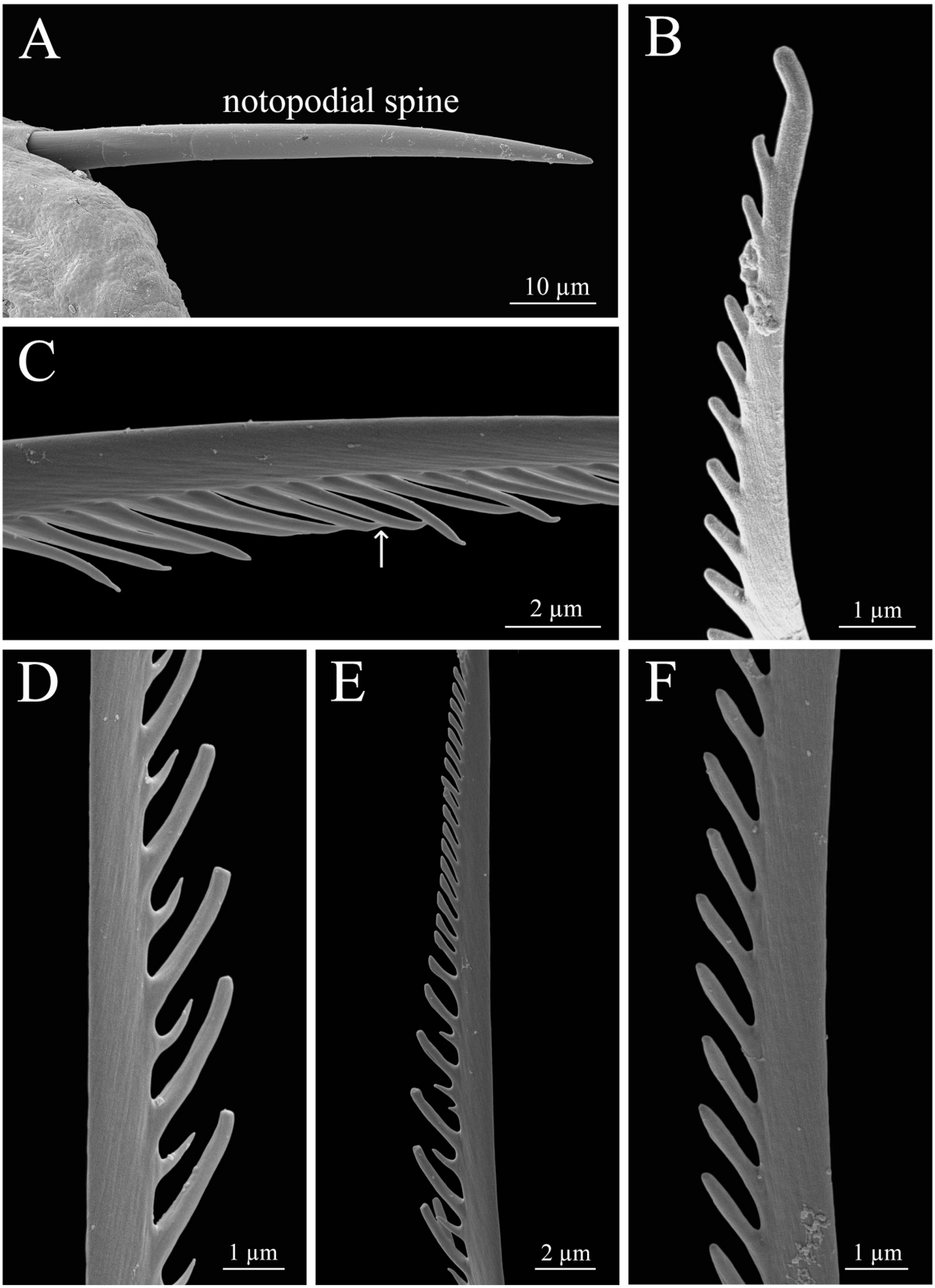


FIGURE 6. *Glyphohesione pattaniensis* **sp. nov.** (PSUZC-POL-0455, holotype) A. Close-up notopodial spine of chaetiger 21; B. Close up tip of limbate chaeta, lateral; C. Close-up teeth of pectinate chaeta, arrow points to fine teeth, lateral view; D–E. Close-up teeth of inferior limbate chaeta in neuropodia (chaetiger 21), lateral view; D. Anterior area; E. Poster area; F. Close up teeth of long limbate chaeta, lateral view.

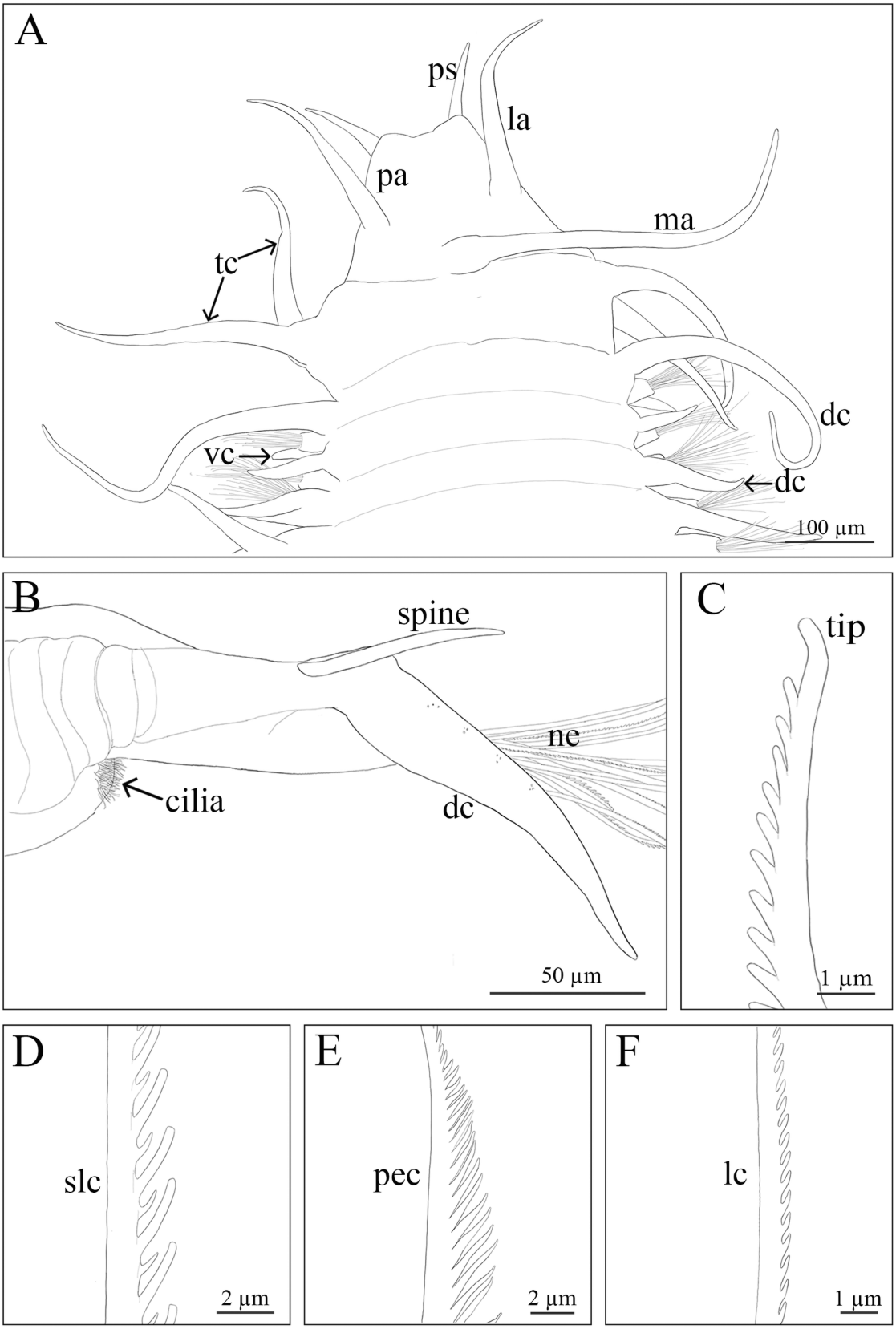


FIGURE 7. *Glyphohesione pattaniensis* **sp. nov.** illustrate A. Anterior end, dorsal view; B. Notopodia, dorsal-lateral view; C. Close up tip of Tip of limbate chaeta, lateral view; D–F. Close up teeth of neurochaetae, lateral view; D. Short limbate chaeta; E. Pectinate chaeta, F. Long limbate chaeta. Abbreviations: dc, dorsal cirrus; la, lateral antenna; lc, long limbate chaeta; ma, median antenna; ne, neurochaetae; pa, palp; pec, pectinate chaeta; ps, palpostyles; slc, short limbate chaeta; tc, tentacular cirri; vc, ventral cirrus.

***Pseudexogone losinensis* sp. nov.**
Figs 8–11

Material examined. Thailand, Gulf of Thailand. 54 specimens, Losin Island (7°09'N, 101°59'E), coll. Marine Ecosearch Management Co., Ltd., SCUBA diving, sand mixed with dead coral rubbles. Holotype: PSUZC-POL-0456, Sta. LO2-4, 23 Aug. 2022, 32 m. Paratypes: 53 specimens; Sta. LO1 (same as holotype), 23 Aug. 2022; 25.5 m: PSUZC-POL-0457 (1 spec.), Sta. LO1-1; PSUZC-POL-0458 (3 specs.), Sta. LO1-3; PSUZC-POL-0459–0461 (12 specs., 3 specs. on SEM stub), Sta. LO2 (same as holotype), 23 Aug. 2022, 27–32 m; PSUZC-POL-0462–0464 (14 specs., 2 specs. on SEM stub), Sta. LO3 (same as holotype), 23 Aug. 2022, 29 m; PSUZC-POL-0465 (3 specs.), Sta. LO4 (same as holotype), 24 Aug. 2022, 29 m; PSUZC-POL-0466 (2 specs.), Sta. LO5 (same as holotype), 22 Aug. 2023, 31 m; PSUZC-POL-0467 (2 specs.), Sta. LO6, 23 Aug. 2023, 28.5 m; PSUZC-POL-0468 (4 specs.), Sta. LO7 (same as holotype), 23 Aug. 2023, PSUZC-POL-0469 (4 specs.), Sta. LO8 (same as holotype), 23 Aug. 2023, 35.6 m; PSUZC-POL-0470 (8 specs., 3 specs. on SEM stub), Sta. LO9 (same as holotype), 24 Aug. 2023, 31 m.

Additional material. **Southern Gulf of Thailand, Pattani Province.** 86 specimens: 12 Jul. 2011, One specimen, Sta. PN02 (7°00'N, 101°23'E), 18 m, sand mixed with shells. Losin Island (same as holotype); 23 Aug. 2022, Sta. LO2 (11 specs.), Sta. LO3 (18 specs.); 24 Aug. 2022, Sta. LO4 (3 specs.); 22 Aug. 2023, Sta. LO5 (2 specs.); 23 Aug. 2023, Sta. LO6 (6 specs.); Sta. LO7 (4 specs.); Sta. LO8 (4 specs.); 24 Aug. 2023, Sta. LO9 (38 specs.).

Diagnosis. *Pseudexogone* with eyespots; bidentate notospines from chaetiger 6; furcate chaetae from chaetiger 2; median and posterior chaetigers lacking furcate chaetae; blade of larger tine very curved, expanded, tip of smaller tine with a distal excavation. Short limbate and denticulate capillary chaetae with double rows of teeth; tip of short limbate chaeta unidentate, acute.

Description. Holotype largest complete specimen, 9.9 mm long 0.2 mm wide, 63 chaetigers. Paratypes, complete specimens 5.5–9.8 mm long, 0.14–0.20 mm wide about 41–60 chaetigers. Body annulate, transparent, slightly wider anteriorly, tapering posteriorly (Fig. 8A).

Prostomium bilobed, longer than wide. Eyespots, small, dark brown, semicircular, close to lateral antennae. Three cirriform antennae; median antenna longer than laterals, located on posterior margin of the prostomium; lateral antennae located anterior to eyespots (Figs 8A–B, 9A–E, 11A–B).

Palps bilobed, anteriorly rounded; pair of digitiform ventro-lateral palpal papillae present, shorter than antennae, located half way along the palp length (Figs 9A–E, 11A–B). Brain lobes extended posteriorly to chaetiger 4.

Peristomium biannulate, first ring laterally reduced; tentacular cirri ventro-laterally placed, dorsal tentacular cirrus slightly longer than ventral ones (Figs 9A–E, 11A–B).

Parapodia uniramous in chaetigers 1–5, thereafter biramous. Notopodial bidentate sigmoid spines present from chaetiger 6 to the posterior end. Each notopodia with a single notospine (Figs 9A, 10AB, F, 12A, E); in anterior chaetigers notospine shorter than posterior ones (Fig 10A, F). Dorsal cirri larger and longer than ventral cirri (Fig. 10A).

Neuropodia of chaetiger 1 with 5 chaetae, two short limbate chaetae and three elongate denticulate capillaries. Each neuropodia with 5–6 chaetae per bundle; one furcate (in anterior chaetigers), 1–2 short limbate chaetae and 2–3 elongate denticulate capillaries (Fig. 10A, C). Furcate neurochaetae from chaetiger 2, lacking in median and posterior chaetigers; furcate chaeta with unequal tines, large tine strongly curved and expanded, smaller tine with excavated tip (Figs 10E, 11C–D). Posterior chaetigers with 3 chaetae per bundle; one pectinate and two denticulate capillaries (Fig. 10F). All neurochaetae pectinate, with double longitudinal rows of teeth (Figs 10C–E, 11C).

Oocytes present in holotype and paratypes, oocytes visible in lateral side of parapodia from anterior to posterior chaetigers, measure about 6–9 μm in diameter (Fig. 8C).

Pygidium with two cirriform ventrolateral anal cirri, longer than posterior dorsal cirri. Anus dorso-terminal, ciliated. Posterior end with one achaetous segment (Figs 8D, 11F).

Etymology. This species is named after Losin Island, a smallest Island in the Gulf of Thailand, the locality where the specimens were collected.

Habitat. Found in sandy and dead coral rubble at Losin Island.

Distribution. Only known from the type locality, Losin Island at 25.5–32 m depth, the Gulf of Thailand.

Remarks. *Pseudexogone losinensis* **sp. nov.** belongs to a group of *Pseudexogone* species with eyespots (Table 2). This group includes *P. backstromi* Augener, 1922, *P. imajimai* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007 and

P. williamsae Salazar-Vallejo, Bailey-Brock & Dreyer, 2007. *Pseudexogone losinensis* **sp. nov.** differs *P. backstromi* by having the first notospines from chaetiger 6 and the large tine of the furcate chaeta being strongly curved; *P. backstromi* has the first notospines from chaetiger 7 and the large tine of the furcate chaeta straight. Moreover, the median antenna in the new species is longer than the lateral antennae whereas in *P. backstromi* the median antenna and lateral antennae are of similar length (Salazar-Vallejo *et al.* 2007).

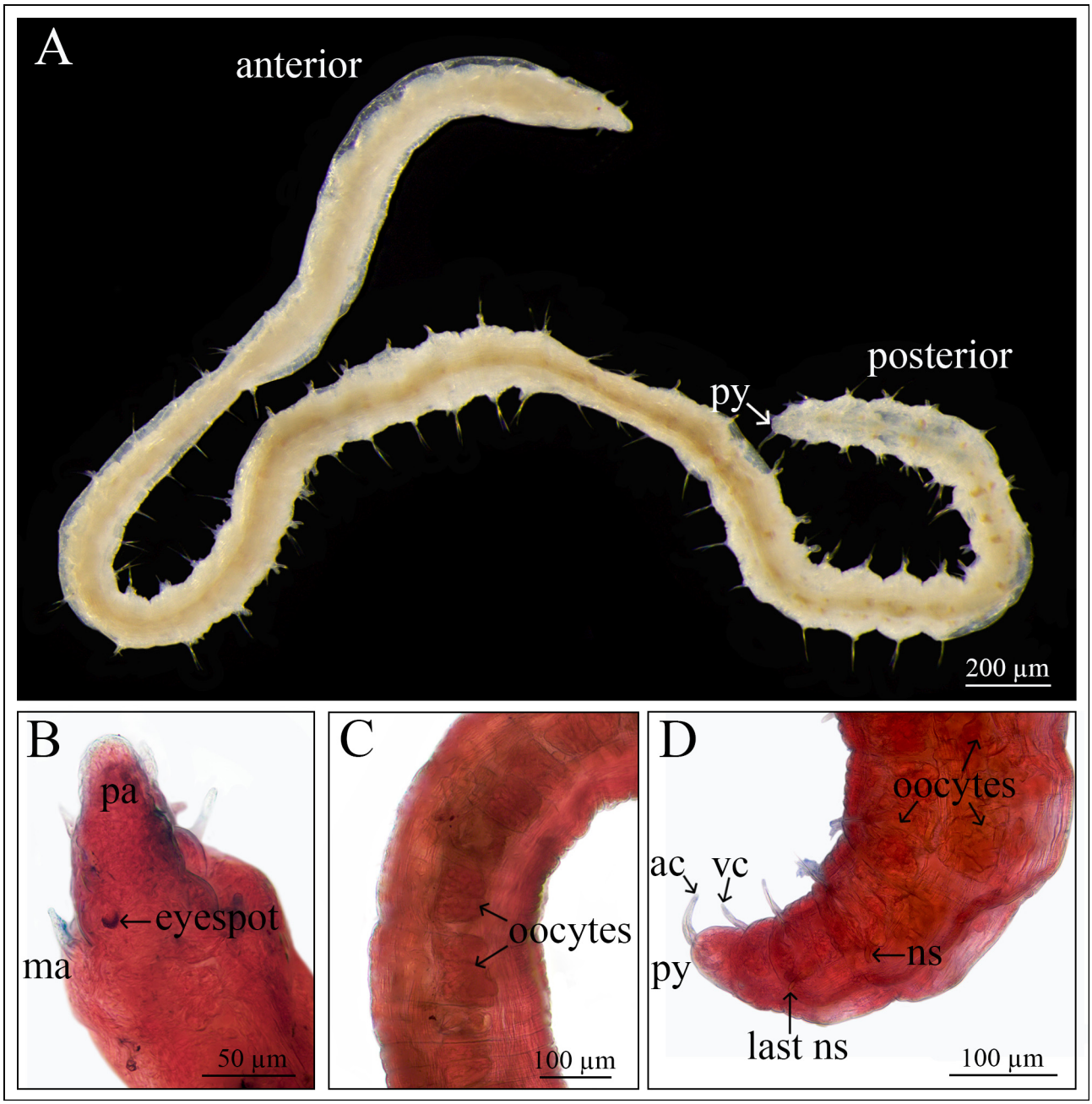
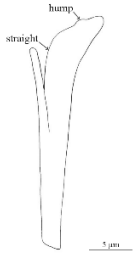
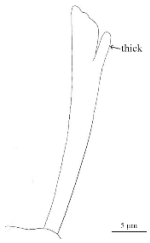
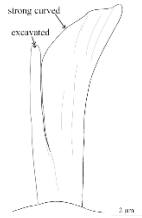


FIGURE 8. *Pseudexogone losinensis* **sp. nov.** light photographs (A, PSUZC-POL-0467, paratype; B–D, stained with Shirlastain-A, PSUZC-POL-0456, holotype). A. Whole specimen, lateral view; B. Prostomium, show semicircular eyespots, lateral view; B. Oocytes in parapodium, lateral view; D. Posterior end, lateral view. Abbreviations: ac, anal cirrus; ma, median antenna; ns, notospine; pa, palp; py, pygidium; vc, ventral cirrus.

TABLE 2. Comparison of *Pseudexogone* species with eyespots present (modified from Salazar-Vallejo *et al.* 2007).

Characters/ Species	***P. backstromi* Augener, 1922**	***P. imajimai* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007**	***P. williamsae* Salazar-Vallejo, Bailey-Brock & Dreyer, 2007**	***P. losinensis* sp. nov.**
Prostomium	Longer than wide	Wider than long	Longer than wide	Longer than wide
Bidentate spines from chaetiger	7	6	6	6
Shape of furcates chaeta	dorsal keel of furcates is straight with a subdistal hump, smaller tine cylindrical	Blade with a flaring rounded, slightly longer than the tapering, dorsal keel curved with a subdistal notch; smaller tine	Smaller tine thick	Blade strong curved and expanded, smaller tine cylindrical and tip with pore open
				
Anterior neurochaetae	5 chaetae; two denticulate capillaries, two pectinates, and one furcate chaeta	5 chaetae; two denticulate capillaries, two pectinates, and one furcate chaeta	4–6 chaetae; two elongated denticulate capillaries, two pectinates, and two furcates chaetae. Furcates apparently restricted to chaetigers 3–8	5–6 chaetae; 2–3 elongated denticulate capillaries, 2 pectinate, and one furcate chaeta. Chaetiger 1 without furcate chaeta.
Posterior end	One achaetous segment	Two achaetous segments	One achaetous segment	One achaetous segment
Locality	Juan Fernández Archipelago, off Chile; Pacific Ocean	Off Tanegashima, Kyushu, Japan, NW Pacific Ocean	Southern California, East Pacific Ocean	Losin Island, Gulf of Thailand, Western Pacific Ocean

Pseudexogone losinensis **sp. nov.** differs from *P. imajimai* in that the prostomium is longer than wide while in *P. imajimai* the prostomium is wider than long. Moreover, the large tine of the furcate chaetae of the new species is strongly curved and expanded without a subdistal notch and the tip of the small tine has a distal depression. In *P. imajimai* the large tine of the furcate setae has a subdistal notch and the tip of the small tine lacks a pore (Salazar-Vallejo *et al.* 2007). Additional, *P. losinensis* **sp. nov.** has one prepygidial achaetous segment while *P. imajimai* has two prepygidial achaetous segments (Salazar-Vallejo *et al.* 2007).

Pseudexogone losinensis **sp. nov.** differs from *P. williamsae* in that the longer tine of the furcate chaetae of *P. williamsae* is uncurved with a subdistal hump. Moreover, *P. losinensis* **sp. nov.** has only a single furcate chaeta per bundle in anterior chaetigers, whereas *P. williamsae* has up to 2 (Salazar-Vallejo *et al.* 2007).

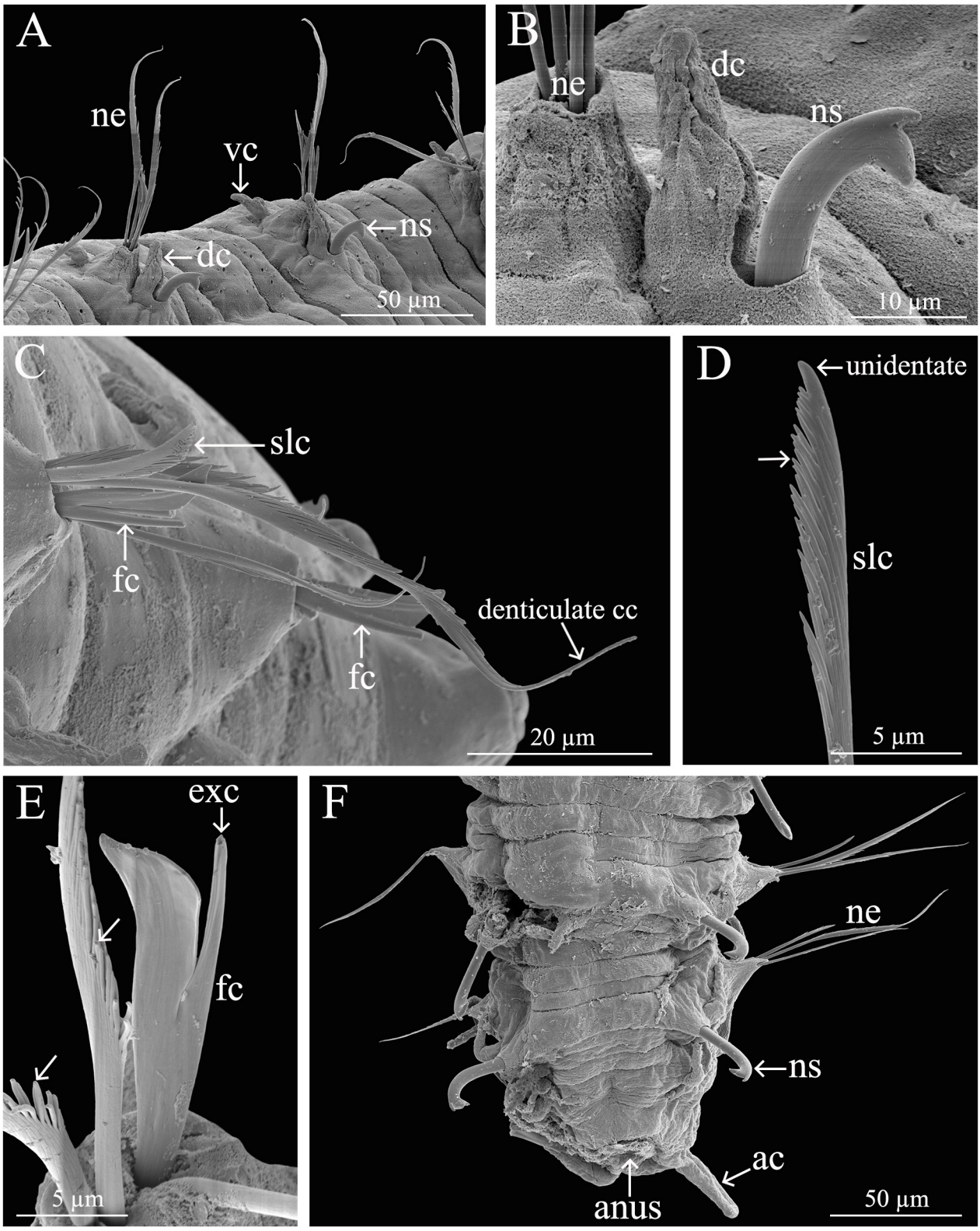


FIGURE 10. *Pseudexogone losinensis* **sp. nov.** (A–B, PSUZC-POL-0461; C–F, PSUZC-POL-0470) A. Anterior parapodia (chaetiger 8–9), lateral view; B. Close-up anterior notopodia of chaetiger 9, lateral view; C. Anterior neuropodia (chaetigers 4–5, start from left side), lateral view; D. Close-up short limbate chaeta with unidentate tip (mid-chaetiger), lateral view; E. Close-up furcate chaeta of chaetiger 4, lateral view; F. Posterior region, dorsal view. Abbreviations: ac, anal cirrus; dc, dorsal cirrus; denticulate cc, denticulate capillary chaeta; exc, excavated tip; fc, furcate chaeta; ne, neurochaetae; ns, notospine; slc, short limbate chaeta; vc, ventral cirrus.

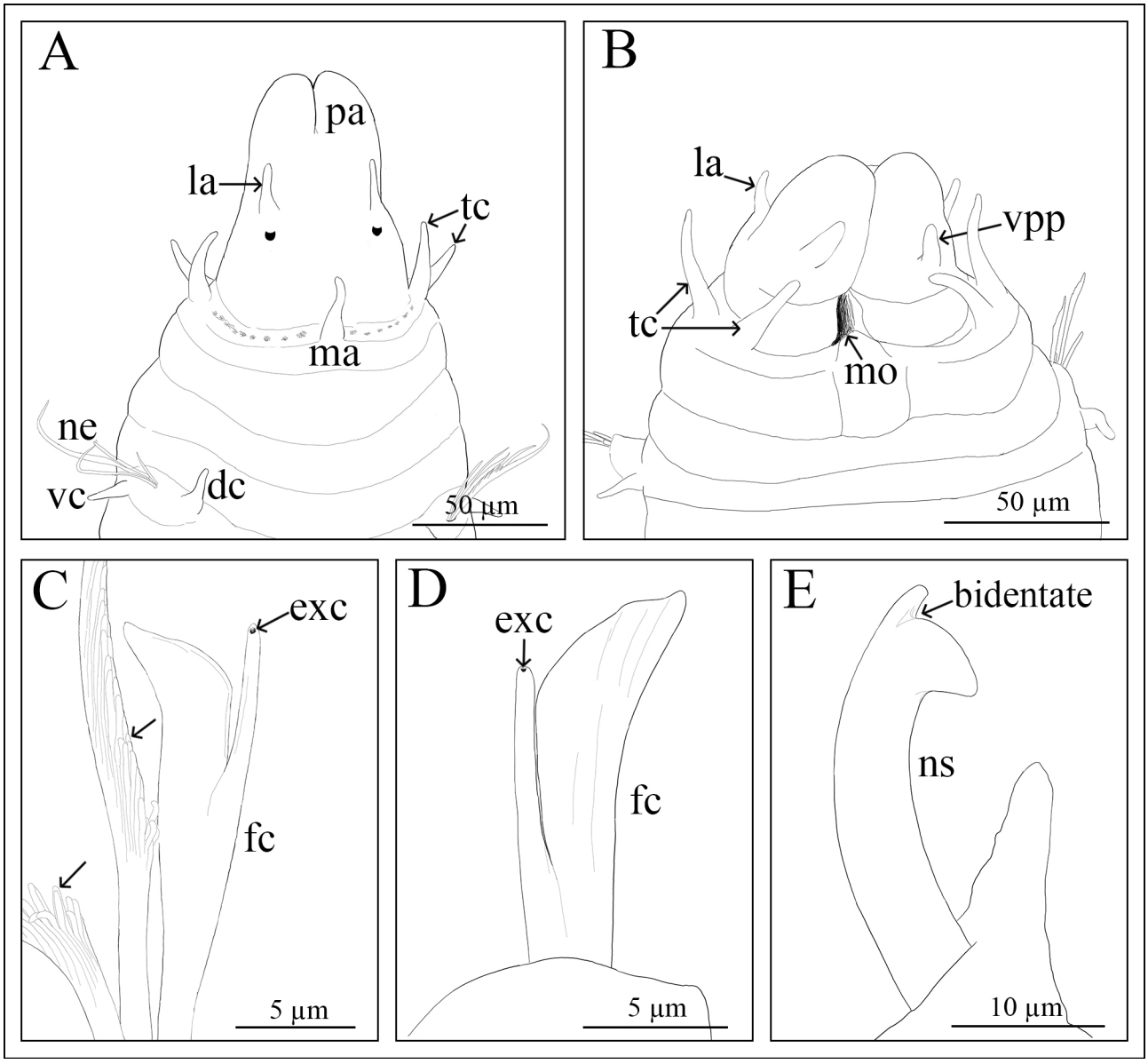
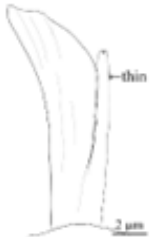


FIGURE 11. *Pseudexogone losinensis* **sp. nov.** illustrate A. Anterior region, dorsal view; B. Same, ventral view; C–D. Close-up furcate chaeta, lateral view; C. Chaetiger 4; D. Chaetiger 7; E. Close-up bidentate notopodial spine, lateral view. Abbreviations: dc, dorsal cirrus; exc, excavated tip; la, lateral antenna; fc, furcate chaeta; ma, median antenna; mo, mount; ne, neurochaetae; ns, notospine; pa, palp; tc, tentacular cirri; vc, ventral cirrus; vpp, ventro-lateral palpal papillae.

Key to species of *Pseudexogone* Augener, 1922

(modified from Salazar-Vallejo *et al.* 2007; the drawings at each couplet are the furcate chaetae)

1. Prostomium with eyespots 2
– Prostomium without eyespots. 5



2. 3

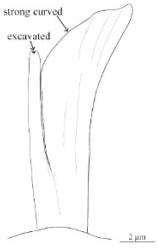
– . . . . . ***P. williamsae*** Salazar-Vallejo, Bailey-Brock & Dreyer, 2007
(Southern California, USA)

3. Bidentate spines from chaetiger 6 4

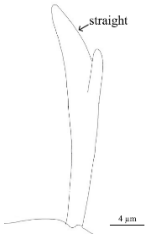
– Bidentate spines from chaetiger 7; 

. . . . . ***P. backstromi*** Augener, 1922
(off Chile; Pacific Ocean)

4. . . . . ***P. imajimai*** Salazar-Vallejo, Bailey-Brock & Dreyer, 2007
(off Tanegashima, Japan)



– . . . . . ***P. losinensis*** **sp. nov.**
(Gulf of Thailand)



5. . . . . ***P. helmuti*** Salazar-Vallejo, Bailey-Brock & Dreyer, 200
(off Saint Paul Island, Southern Indian Ocean)

– . . . . . ***P. dineti*** Katzmann, Laubier & Ramos, 1974
(geounit Adriatic Sea)

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