



## Monograph

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# Pelogeniinae Chamberlin, 1919 (Annelida, Sigalionidae) from the Grand Caribbean Region

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**Abstract.** The marine annelid family Sigalionidae is little known in the Grand Caribbean Region; there are few records of these worms in the area, and some of the recorded species have uncertain taxonomic status. In this contribution, the subfamily Pelogeniinae was addressed through a faunistic study, aiming to improve the knowledge of Sigalionidae in the region. In order to do this, material deposited in the three following institutions was examined: University of Miami Deep Sea Expeditions; Florida Museum of Natural History, University of Florida, Gainesville; and El Colegio de la Frontera Sur, Chetumal. Eleven species are recognized, including six newly described: *Dayipsammolyce paulayi* sp. nov., *Hartmanipsammolyce pettiboneae* sp. nov., *Neopsammolyce fragilis* sp. nov., *Pelogenia brevipalpata* sp. nov., *P. capitata* sp. nov. and *P. salazarvallejoi* sp. nov. Four other species are confirmed for this region: *N. floccifera* (Augener, 1906), *P. hartmanae* Pettibone, 1997, *P. kinbergi* (Hansen, 1882) and *Psammolyce flava* Kinberg, 1856; and one is indeterminate: *N. aff. floccifera*. A standardized terminology of neurochaetae is proposed, along with notes on the notochaetal morphology and elytral structures. For all genera covered in this study, identification keys are also provided.

**Keywords.** Caribbean Sea, morphology, new species, *Pelogenia*, scale worms.

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## Introduction

Among scale worms, sigalionids are distinguished by having long bodies; dorsal tubercles; elytra on segments 2, 4, 5, and 7, alternating to 25 or 27, and from there present on every segment; complex prostomium and first three anterior segments; parapodia with stylodes or papillae; ctenidial pads; and predominantly compound neurochaetae (Pettibone 1992; Aungtonya 2002; Gonzalez *et al.* 2018). Studies on this family have been scarce such that taxonomic problems remain. As an attempt to solve some issues of this family, the late Marian H. Pettibone made a series of contributions from 1969 to 1997 on pelogenins, pholoins, sigalionins, and sthenelanellins. More recently, Charatsee Aungtonya (2002–2018) published several studies on sigalionids from the Andaman Sea, with observations about the morphology and terminology of the family enabling the study of these worms.

In the Grand Caribbean region, sigalionids are apparently well-known, because several species were included in Pettibone's revisions; however, as indicated before, taxonomical problems are still present. For example, some local names were regarded as junior synonyms of foreign ones; *Sthenelais simplex* Ehlers, 1887 was described from the Gulf of Mexico but was regarded as a junior synonym of *Ehlersileanira incisa* (Grube, 1877) described from the Congo (Pettibone 1970b). Another problem is that of species with an apparently wide regional distribution, as *Taylorpholoe minuta* (Rullier & Amoureux, 1979) recorded from southern Brazil to South Carolina (Pettibone 1969). Finally, other species have been regarded as having an amphiamerican distribution, as *Pelogenia fimbriata* (Hartman, 1939) described from Western Mexico, but also recorded from the Caribbean coast of Panama (Pettibone 1997). Whichever the case, these records deserve a careful assessment.

In order to solve some problems of the family Sigalionidae Kinberg, 1856 in the Grand Caribbean region, a faunistic study is under way per subfamily (Cruz-Gómez 2020, unpublished data). The contribution here presented focuses on the subfamily Pelogeniinae Chamberlin, 1919. Members of this subfamily are recognized by having the dorsum and elytra covered by foreign particles attached by adhesive papillae (Pettibone 1997). They are found in tropical and subtropical waters worldwide, associated with several kinds of habitats including mud, coarse and fine sand, rocks, and coral reefs, from intertidal to a depth of 1700 m (Kinberg 1856; Augener 1906; Hartman 1942a, 1942b; Wolf 1984; Pettibone 1997). Historically, these worms have been recorded as belonging to *Psammolyce* Kinberg, 1856 or *Pelogenia* Schmarda, 1861, two common sigalionid genera distinguished by having dorsal cirri on the third segment in *Pelogenia*, and spinigers in *Psammolyce*. Nevertheless, Pettibone (1997) increased the relevant taxonomic features considered in the identification, which now include the appendages on the first anterior segments, the facial tubercle, and ctenidia on the prostomium or ceratophore. The various combinations of these features drove her to propose several genera: *Claparedepelogenia* Pettibone, 1997, *Dayipsammolyce* Pettibone, 1997, *Hartmanipsammolyce* Pettibone, 1997, *Heteropelogenia* Pettibone, 1997, *Neopsammolyce* Pettibone, 1997, and *Pottsipelogenia* Pettibone, 1997. So far, Pettibone's revision (1997) is the most comprehensive study on this subfamily.

Within the region, seven species of the subfamily Pelogeniinae have been reported: *Dayipsammolyce ctenidophora* (Day, 1973), *Hartmanipsammolyce pendula* (Hartman, 1942), *Neopsammolyce floccifera* (Augener, 1906), *N. occidentalis* (McIntosh, 1885), *Pelogenia hartmanae* Pettibone, 1997, *P. kinbergi* (Hansen, 1882), and *Psammolyce flava* Kinberg, 1856 (McIntosh 1885; Augener 1906; Treadwell 1934, 1939; Hartman 1942a, 1942b; San Martín *et al.* 1986; Pettibone 1997; Ibarzábal 2008). Other species recorded include questionable records: *Neopsammolyce spinosa* (Hartman, 1939) and *Pelogenia anoculata* (Hartman, 1939), both described from the Pacific coast of Costa Rica, *P. antipoda* (Schmarda, 1861) from New Zealand, *P. arenosa* (delle Chiaje, 1830) from the Gulf of Naples and *P. fimbriata* (Hartman, 1939) from Nayarit, Western Mexico (Treadwell 1901, 1939; Hartman 1944; Fauchald 1977; Suárez & Fraga 1978; Cubit & Williams 1983; Ibarzábal 1986, 1989, 1997, 2006; Liñero-Arana 1991; Báez & Ardilla 2003). These latter records are unlikely to be present in the region and must be revised.

This paper investigates the subfamily Pelogeniinae in the Gran Caribbean region. The main results include new records, new species, and notes about their morphology, along with a proposal to refine the chaetal terminology.

## Material and methods

### Material examined

Non-type material was examined, described, and illustrated. Specimens are deposited in the following collections: University of Miami Marine Laboratory, Voss Marine Invertebrate Collections (UMML); Florida Museum of Natural History, University of Florida, Gainesville (UF); Reference Collection of

Benthos (ECOSUR) of El Colegio de la Frontera Sur, Chetumal, Mexico, and Reference Collection of Laboratorio de Biodiversidad y Cambio Climático (BIOMARCCA), Campeche, Mexico. Specimens from the BIOMARCCA collection were deposited in the ECOSUR collection. Specimens were fixed in a 10% formalin-seawater solution and preserved in 70% ethanol. Illustrated and described specimens were temporally stained with methyl-green solution, the surplus removed, and photographed; Shirlastain-A was used to stain dorsal papillae, repeating the process previously described. Standardized measurements were obtained from all specimens: number of segments, total length from anterior end to posterior end, and total width from the widest middle segment including chaetae; since many specimens were damaged and incomplete, all specimens were also measured from the anterior end to segment 30.

Some specific segments and elytra are particularly relevant in Pelogeniinae (Pettibone 1997): right parapodia of first three segments, and one from middle segments, as well as first three right elytra and a right posterior elytron were dissected. Dissected parapodia and elytra were cleaned using a soft brush; after, larger particles were removed, and then, the structures were immersed in a 1:1 vinegar-alcohol solution for a few seconds; in case of the elytra, the remaining particles were removed using a fine needle. Cleaned parapodia and elytra were placed in an anterior position in semi-permanent preparations in a 1:1 ethanol-glycerol solution. Using a Canon EOS REBEL T6 mounted on a light microscope, several photographs (30–50) were taken and stacked using HeliconFocus ver. 6.7.1 (HeliconSoft Limited 2007).

Furthermore, some parapodia and elytra were dissected, observed, and photographed by SEM. Specimens were dehydrated in a graded series of different concentrations of alcohol and HDMS (hexamethyldisilazane). Samples were left overnight, and then specimens were mounted on aluminum stubs and coated with gold for observations using a JEOL-JSM-601Plus-LA scanning electron microscopy at the Scanning Electron Microscopy Laboratory (LMEB), ECOSUR, Chetumal. Morphological terms follow Pettibone (1997) and Aungtonya (2002); also, a practical terminology of chaetal fascicle is proposed below. All generic diagnoses are after Pettibone (1997) and Aungtonya (2002). Both genera and species are presented in alphabetical order.

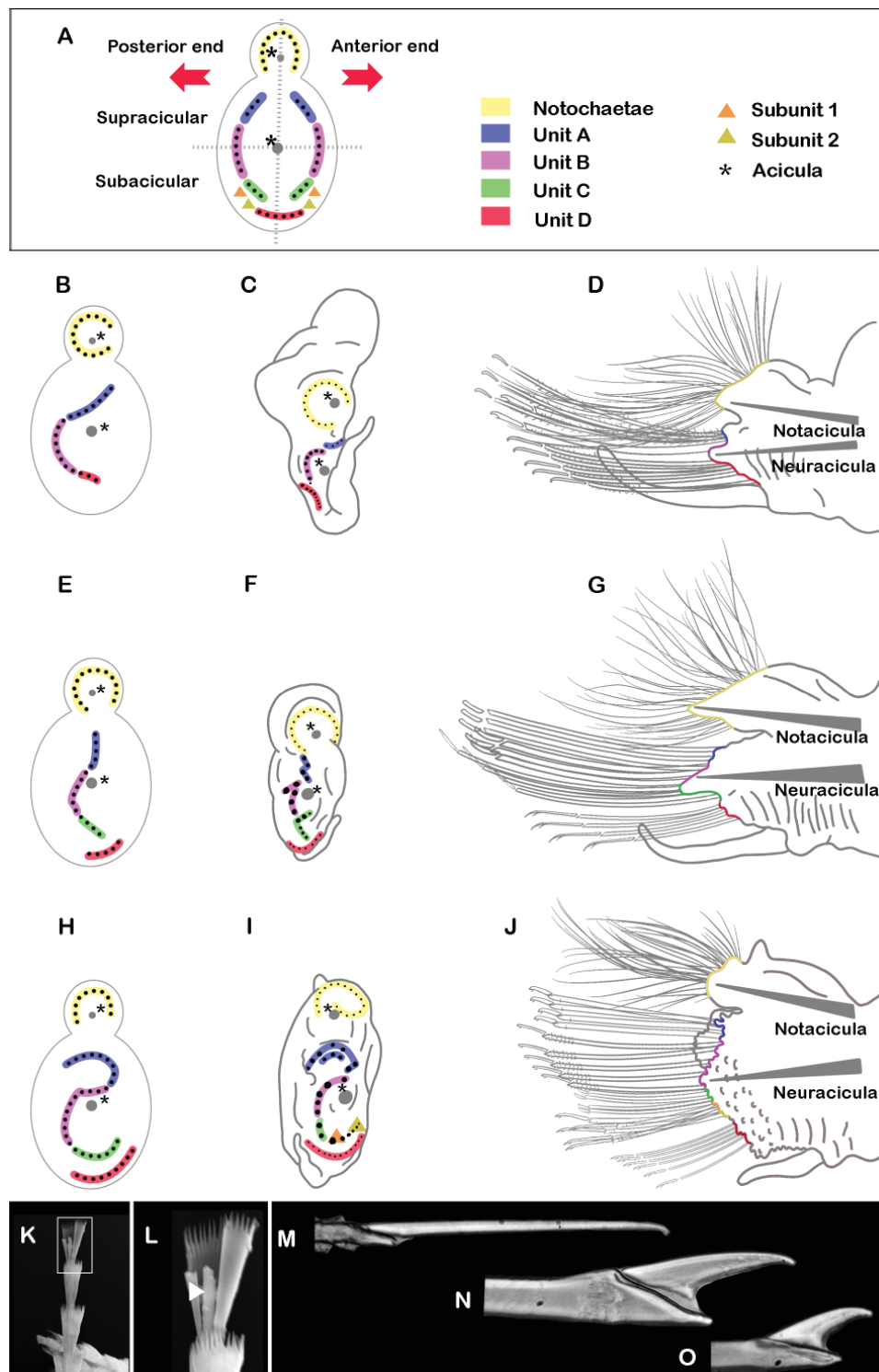
### **Terminology of chaetal fascicles**

Parapodia of Pelogeniinae are complex structures having extensions such as lobes, papillae, and chaetae with intricate distribution. During the study of this subfamily, descriptions of chaetae have been mainly focused on the type (e.g., Hartman 1942b; Day 1973; Pettibone 1997); however, the position, size, and secondary features have been overlooked.

Recently, Aungtonya (2003, 2005) made an important contribution to understanding the morphological characters of the family Sigalionidae, including a revised terminology; however, the relevance of the noto- and neurochaetal features was not discussed. In an attempt to classify the noto- and neurochaetae a practical terminology is proposed, along with recommendations to study this subfamily.

### **Notochaetal fascicles**

Unlike *Sigalion* Audouin & Milne Edwards in Cuvier, 1830 or *Sthenelanelle* Moore, 1910 most genera of scaled sigalionids have only one kind of verticillate simple chaetae; in Pelogeniinae all genera have a single type of notochaetae. Notochaetae have been described as capillaries covered by rows of spines, distally narrowed, although these chaetae are much more complex. The notochaetae of pelogenins are verticillate, with a regular series of membranes distally incised, almost completely surrounding the chaetal axis (Fig. 1K–L). Notochaetae are usually arranged surrounding notacicular lobes, no matter whether the parapodium examined is from the middle region, anterior or posterior end; however, the density of notochaetae might be relevant, because a dense number of chaetae is perceived in anterior view as two fascicles of notochaetae in an oblique angle, directed dorsally in posterior portion and directed ventrally in anterior portion (Fig. 1C, F, I).



**Fig. 1.** Terminology of chaetal fascicles. **A.** Schematic parapodium of a hypothetical scaled sigalionid showing the arrangement of chaetae. **B–J.** Drawings from parapodia of *Pelogenia* sp. **B–D.** Segment II. **B.** Lateral view, scheme. **C.** Lateral view. **D.** Anterior view. **E–G.** Segment III. **E.** Lateral view, scheme. **F.** Lateral view. **G.** Anterior view. **H–L.** Segment form middle region. **H.** Lateral view, scheme. **I.** Lateral position. **J.** Anterior-posterior position. **K.** Notochaetae, SEM. **L.** Close-up of K, arrowhead indicates the chaetal axis. **M–O.** Neurochaetae from middle segment. **M.** Long blade. **N.** Medium-sized blade. **O.** Short blade.



### Neurochaetal fascicles

Neurochaetal distribution is more complex; Pettibone (1997: 3) described their distribution as: “curved J-shaped dorso-anterior bracts enclosing the upper group of neurochaetae; larger C-shaped postacicular bracts leaving gaps on the anterior sides and enclosing the middle group of neurochaetae; and curved J-shaped ventro-anterior bracts enclosing the lower group of neurochaetae”. Despite the worthy effort, this makes the chaetal distribution difficult to understand, renders descriptions more verbose, and complicates descriptions, photographs, and drawings, elements that also depend on the worm size and available optical equipment. The proposed chaetal classification emphasizes the importance of the chaetae as taxonomically relevant features, that will enable to compare among sigalionids species. The falcigers and spinigers are divided into four groups and two subunits; this classification was mainly based on the dorsal-ventral position perceived in parapodial slide-mounts, matching neurochaetal features (Fig. 1). To avoid excessive repetitions, for indicating the size of some features, an ‘×’ will replace the word ‘times’.

**Unit A (upper group).** J-shaped pattern, anterodorsal, above neuracicular level; neurochaetae often with thick handles (as wide as neuracicular width), and long blades (up to 6 × as long as wide).

**Unit B (median group).** C-shaped pattern, posterodorsal, surrounding neuracicula; neurochaetae always with thick handles, and medium-sized blades, shorter than those present in unit A.

**Unit C (lower group).** C-shaped pattern, posteroventral, below the neuracicular level; neurochaetae rarely with thick handles, and blades either long or medium-sized.

**Unit D (lowest group).** J-shaped pattern, posteroventral, the ventral-most neurochaetae; always with slender handles (half of neuracicular width), and always long blades, rarely short (up to 8 × as long as wide).

**Subunits 1 and 2.** Secondary neurochaetae might be present between regular units, these must be called subunits. Subunit 1 is located between unit C and subunit 2, usually with short blades and thick handles, resembling those present in unit B. Subunit 2 is positioned between subunit 1 and unit D, usually with long blades and slender handles, like those present in unit D.

Anterior segments might lack some groups of chaetae, usually only units A, B and D present; units C and D are apparently undifferentiated.

This proposed classification was inspired by a previous one by Hartman (1942a), who suggested a similar classification of neurochaetal types using a parapodium from *Sthenelais* sp. Her classification was based on the position that the chaetae occupied in the parapodium; however, unintentionally she omitted some fascicles of chaetae and their particular features.

Neurochaetae of sigalionids are diverse in terms of handles and blades. Handles are thick (darker, as wide as neuracicula), or slender (lighter, half as wide neuracicular width); smooth, or with rows of spines or denticles. Blades are short, medium-sized, or long (Fig. 1M–O). The length of the blades matches with a specific dorso-ventral position; usually, ventral-most chaetae have longer blades, including those on anterior segments.

On the other hand, there are some inconsistencies within neurochaetal terminology. Pettibone (1969, 1970b, 1997) used the blade length and tip, and rarely the terms falciger or spiniger; when she used these terms, she implicitly referred to neurochaetae as spinigers when the blade was long, tapered, and falciger when the blade was short to medium-sized with bifurcated tips. However, Pettibone (1970c: 384) mixed terminology in some instances, such as “spinigerous with blades long [...] with tips falcigerous”. Here,

a standard terminology to falciger and spiniger will be used, based on blade width, length and tip. Spiniger: blade, either short or long, base wide, tapered and tips unidentate, straight. Falciger: blade, either short or long, similar width along the blade and tips, mostly bidentate, falcate even if unidentate. In this study, some parapodia have neurochaetal blades with a lost secondary tooth; this is noticed as a lump in the site where the secondary tooth would be inserted, in such conditions, neurochaetae were regarded as falcigers.

### **Terminology for elytral papillae**

The elytra of pelogenins have several taxonomically relevant features: processes, lateral expansions, microtubercles and many types of papillae. This last feature is always described based on their appearance (Pettibone 1997), but sometimes this might be confusing, mostly in papillae with similar shapes. Indeed, some papillae seem similar to each other, though the differences rest on their tips, including their adherent or non-adherent condition. Practical forms of papillae used in the study are explained below.

**Pedunculate papillae with puffed tips, non-adherent** (Fig. 2C–D): arranged as marginal fringes; rarely on elytral surface.

**Short dendritic papillae, non-adherent** (Fig. 2E–F): arranged as marginal fringes; not seen on elytral surface.

**Long dendritic papillae, non-adherent** (Fig. 2G–H): arranged as marginal fringes; scattered along elytral surface.

**Flat papillae, adherent** (Fig. 2I–J): restricted to elytral surface, scattered. Previously referred as flat-topped papillae (Pettibone 1997).

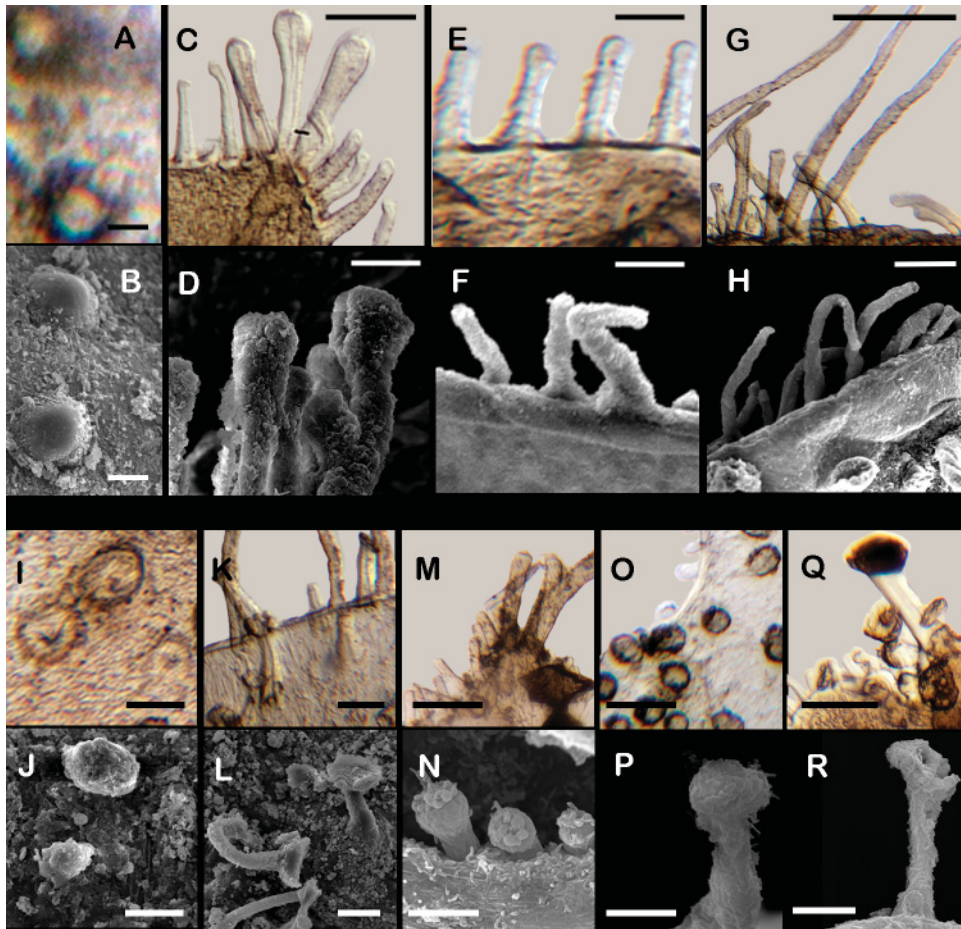
**Pedunculate papillae with flat tips, adherent** (Fig. 2K–L): present either on elytral surface or margins. Previously described as papillae with adhesive disc or cylindrical papillae with distal plate (Anton-Erxleben 1977; Pettibone 1997).

**Pedunculate papillae with truncated tips, adherent** (Fig. 2M–N): present either on elytral surface or margin. Papillae with distal triad of dendritic structures; similar structures have been recorded in *Sthenelais boa* (Johnston, 1839) as “thick cilia” by Anton-Erxleben (1977: pl. 6 fig. 2). These papillae are also referred to as clavate papillae (Pettibone 1997).

**Pedunculate globular papillae, adherent** (Fig. 2O–P): present mainly on elytral surface, rarely on the margin, resemble papillae on worm’s venter. Previously referred to as globular papillae (Pettibone 1997).

**Pedunculate capitate papillae, adherent** (Fig. 2Q–R): present either on elytral surface or margin, distally expanded. Previously called capitate or clavate papillae (Pettibone 1997).

With regard to the microtubercles, these have been recorded on the elytral surface in some genera of the subfamily Sigalioninae (Pettibone 1971; Anton-Erxleben 1977; Aungtonya 2003). In Pelogeniinae, microtubercles were considered limited to the dorsal side of anterior segments. In this study, microtubercles were also found on the elytral surface of some pelogenins (Fig. 2A–B). They are differentiated from papillae by being sclerotized lumps without adherent structure or surface (sensu Anton-Erxleben 1977); however, further histological studies are necessary to clarify these features.



**Fig. 2.** Elytral microstructures. **A–B, E–F, M–N.** *Dayipsammolyce paulayi* sp. nov. **C–D, I–J.** *Pelogenia kinbergi* (Hansen, 1882). **G–H.** *Neopsammolyce floccifera* (Augener, 1906). **K–L.** *Neopsammolyce* aff. *floccifera*. **O–P.** *Hartmanipsammolyce pettiboneae* sp. nov. **Q–R.** *Pelogenia capitata* sp. nov. **A–H.** Non-adherent microstructures. **A–B.** Microtubercles. **C–D.** Pedunculate papillae with puffed tips. **E–F.** Short dendritic papillae. **G–H.** Long dendritic papillae. **I–R.** Adherent papillae. **I–J.** Flat papillae. **K–L.** Pedunculate papillae with flat tip. **M–N.** Pedunculate papillae with truncated tips. **O–P.** Pedunculate globular papillae. **Q–R.** Pedunculate capitate papillae. Scale bars: A–B, N, Q–R = 10 µm; C–F, I–M, O = 20 µm; G–H = 100 µm; P = 5 µm.

## Results

Phylum Annelida Lamarck, 1809  
Order Phyllodocida Dales, 1962  
Family Sigalionidae Kinberg, 1856

Subfamily **Pelogeniinae** Chamberlin, 1919

## Remarks

Claparède (1868: 415) proposed the tribe-group Polylepides to refer to worms with elytra on all segments. *Lepidopleurus* Claparède, 1868 was the genus originally proposed for these worms, but it is a junior homonym of *Lepidopleurus* Risso, 1826 (Mollusca, Polyplacophora), as a consequence Grube (1878) proposed *Polylepis*. Earlier, Grube (1876: 72) examined topotype Naples specimens and recognized

*Lepidopleurus*, noting an alternation of elytra and “branchiae” (he also referred to them as cirri) in the specimens. Two years later, Grube (1878: 16) proposed an alternative name for worms with elytra on all segments, *Polylepis* Grube, 1878; however, he doubted the steady elytral pattern of the genus. Chamberlin (1919) proposed Polylepidae based on *Polylepis* Grube, 1878 and included *Pelogenia* Schmarda, 1861, diagnosing this family by having elytra on all segments. However, he noticed the conflict within the two genera and the diagnosis of the family group and concluded that, if *Polylepis* was a valid genus, it would belong to Sigalionidae, and that the name of his proposed group Polylepidae would have to be changed to Pelogeniidae (Chamberlin 1919: 92). Hartman (1959: 117) clarified that there are no species in *Polylepis*, and that it should be regarded as a junior synonym of *Psammolyce* Kinberg, 1856 along with *Pelogenia* and *Lepidopleurus*. Finally, Pettibone (1997) revised *Psammolyce* and reinstated *Pelogenia*; she also proposed six new genera, depart from both known genera, and placed them in the subfamily Pelogeniinae.

### Key to genera of Pelogeniinae Chamberlin, 1919

(modified from Pettibone 1997; Aungtonya 2002)

1. Segment III with dorsal cirri ..... 2
  - Segment III without dorsal cirri ..... 5
2. Neuropodia of segment II with long filiform appendages ..... *Claparedepelogenia* Pettibone, 1997
  - Neuropodia of segment II without any appendages ..... 3
3. Ceratophore of median antenna with bulbous ctenidia; neuropodia of segment III with digitiform prechaetal extensions on acicular lobes; elytral and parapodial papillae articulated ..... *Heteropelogenia* Pettibone, 1997
  - Ceratophore of median antenna may present ctenidia; neuropodia of segment III without prechaetal extensions; elytral and parapodial papillae non-articulated ..... 4
4. Median antennal ceratophore with lateral ctenidia; upper lip with facial tubercle large, pedunculated, bulbous ..... *Pottsipelogenia* Pettibone, 1997
  - Median antennal ceratophore without lateral ctenidia; upper lip without facial tubercle ..... *Pelogenia* Schmarda, 1861
5. Neuropodia of segment II with long appendages; falcigers with blades tapered, bifid ..... *Psammolyce* Kinberg, 1856
  - Neuropodia of segment II without long appendages; falcigers with or without bifid blades ..... 6
6. Segment III parapodia with balloon-like lobes on neuropodial distal margins ..... *Hartmanipsammolyce* Pettibone, 1997
  - Segment III parapodia without balloon-like lobes on neuropodial distal margin ..... 7
7. Median antennal ceratophore with lateral ctenidia; upper lip with facial tubercle stalked ..... *Dayipsammolyce* Pettibone, 1997
  - Median antennal ceratophore without lateral ctenidia; upper lip with facial tubercle unstalked ..... *Neopsammolyce* Pettibone, 1997

Genus *Dayipsammolyce* Pettibone, 1997

*Dayipsammolyce* Pettibone, 1997: 27.

**Type species**

*Psammolyce ctenidophora* Day, 1973 by original designation.

**Diagnosis**

Pelogeniinae with prostomium oval, longer than wide. Upper lip with facial tubercle stalked, bulbous. Median antennal ceratophore bulbous, base with ctenidia. Segment II without middorsal lobe; neuropodia without appendages; neurochaetal blades bifid. Segment III without dorsal cirri; neuropodia without appendages; neurochaetal blades bifid. First pair of elytra elongated.

**Key to species of *Dayipsammolyce* Pettibone, 1997**

1. Second elytra subrectangular, with five posterior processes; handles of neurochaetae from segment II with transverse rows of spines, blades straight, bifid .....  
..... *D. ctenidophora* (Day, 1973), North Carolina, Northwestern Atlantic
- Second elytra pear-shaped, with one median and one posterior process; handles of neurochaetae from segment II whorled, blades short, straight, falcate, bifid .....  
..... *D. paulayi* sp. nov., Saint Martin, Caribbean Sea

**Remarks**

Wolf (1984) recorded *Psammolyce ctenidophora* (= *Dayipsammolyce ctenidophora*) from eastern Florida, in the Gulf of Mexico; later, Pettibone (1997) stated that his description did not agree with this species, without further comment. The specimens recorded by Wolf (1984) were described and illustrated with features that resemble those of *Neopsammolyce* and *Dayipsammolyce*. For instance, the prostomium, neurochaetae and second elytra agree with those of *D. paulayi* sp. nov. However, his illustration of neurochaetae from anterior segments and the statement that some specimens lack ctenidia on the base of the median antennal ceratophore differ from *Dayipsammolyce* but fit with *Neopsammolyce*. This record should be revised.

*Dayipsammolyce paulayi* sp. nov.

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Figs 2A–B, E–F, M–N, 3–4

**Diagnosis**

A species of *Dayipsammolyce* with second elytra pear-shaped with one median and one posterior process; neurochaetae from segment II with whorled handles and falcate blades.

**Etymology**

This species is named after Dr Gustav Paulay, echinoderm specialist and curator of marine invertebrates at the University of Florida Natural History Museum, Gainesville, in recognition of his support by kindly sharing many of the specimens used in this study. The epithet is a noun in the genitive case (ICZN 1999, Art. 31.1.2).

**Material examined**

**Holotype**

SAINT MARTIN • complete spec.; Chicot, windward side of Tintamarre Island; 18°06'7" N, 62°58'58" W; depth 13–19 m; 23 Apr. 2012; Mandy Bemis and Frank Roncuzzi leg.; reef in sand; UF 2777.



### **Paratype**

SAINT MARTIN • 1 complete spec., 74 segments, 1.7 cm long, 0.8 cm to segment 30, 0.3 cm wide; same locality as for holotype; depth 15–18 m; 12 Apr. 2012; Frank Roncuzzi leg.; reef in sand; UF 2618.

### **Description (holotype)**

**BODY.** Pale yellow, long, broad (Fig. 3A); 104 segments, 2.8 cm long, 0.5 cm to segment 30, 0.1 cm wide. Middorsal line covered with foreign particles attached to adhesive papillae (Fig. 3B). Venter covered with short globular and long papillae (Fig. 3C).

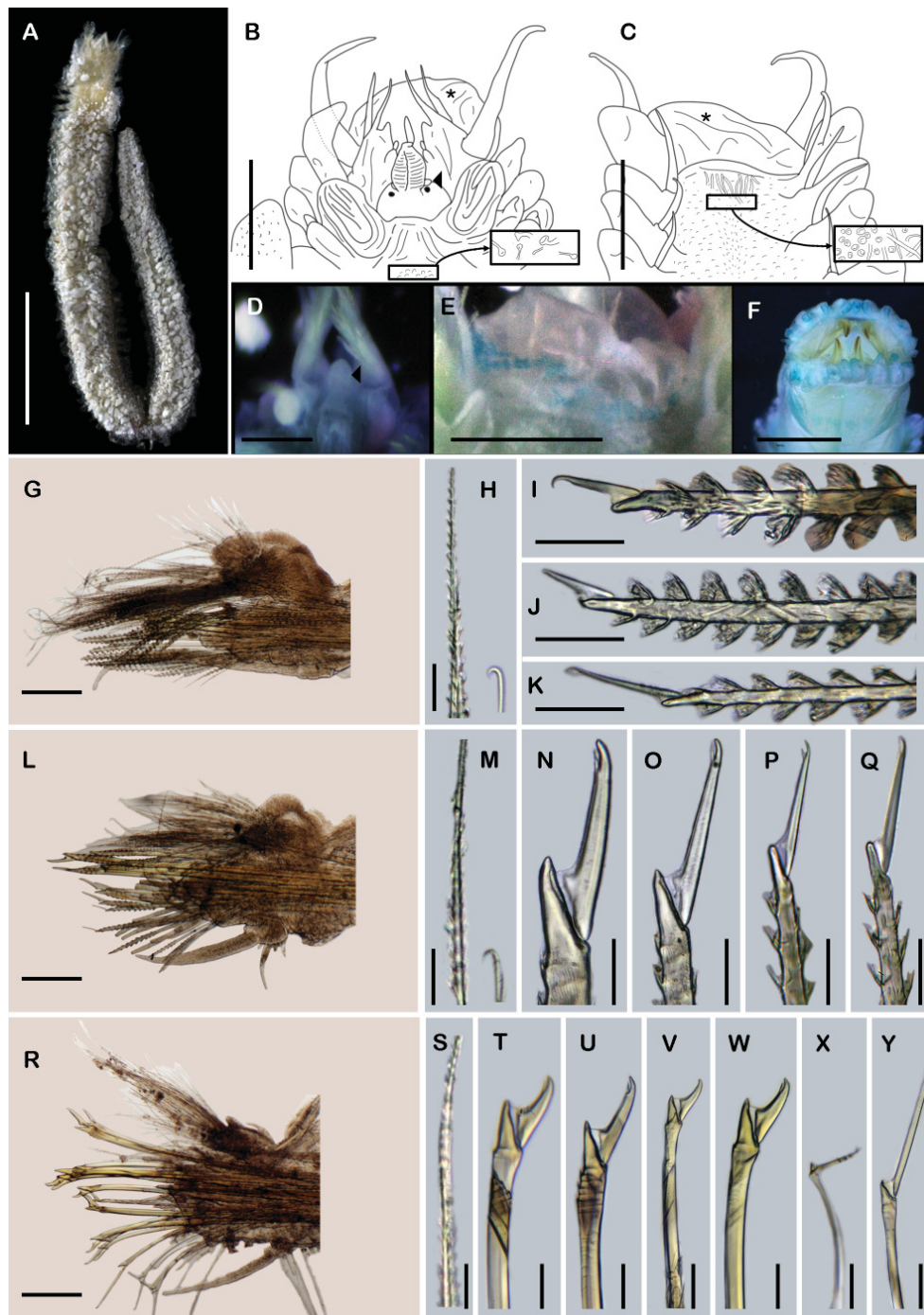
**PROSTOMIUM.** Oval, wider than long. Two pairs of eyes, anterior eyes larger, inserted anteriorly. Lateral antennae small, slender; ceratophores longer than style, dorsally fused with tentacular segment. Median antenna with bulbous ceratophore with a dorsal ridge; basally with small ctenidia, ceratophore slightly larger than prostomium; style short, almost twice as long as ceratophore (Fig. 3B). Middorsal lobe of segment II absent. Facial tubercle large, bulbous, stalk reduced (Fig. 3D). First segment directed anteriorly, fused with tentacular segment; biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral tentacular cirrus as long as dorsal one; palps laterally displaced, short, reaching segment four, with inner palpal sheaths (Fig. 3C). Pharynx partially everted, margin papillate (Fig. 3E). Paratype with pharynx completely everted (Fig. 3F).

**ELYTRA.** First three right elytra missing. Second left elytron pear-shaped, with one median and one posterior process (Fig. 4F), covered with a few foreign particles and foraminifera, and several kinds of papillae: dendritic short papillae, pedunculate papillae with truncated tips, pedunculate papillae with flat tips, and flat papillae (Figs 2E–F, M–N, 4H, K); central region with a patch of long dendritic papillae; marginal papillae long dendritic, bifurcate (Fig. 4I). Third left elytron slightly longer than second, with same distribution and kinds of papillae as second elytron. Posterior right elytron round (Fig. 4G), with two posterior and one medial process, with same kinds of papillae, but less abundant, and with microtubercles (Fig. 2A–B).

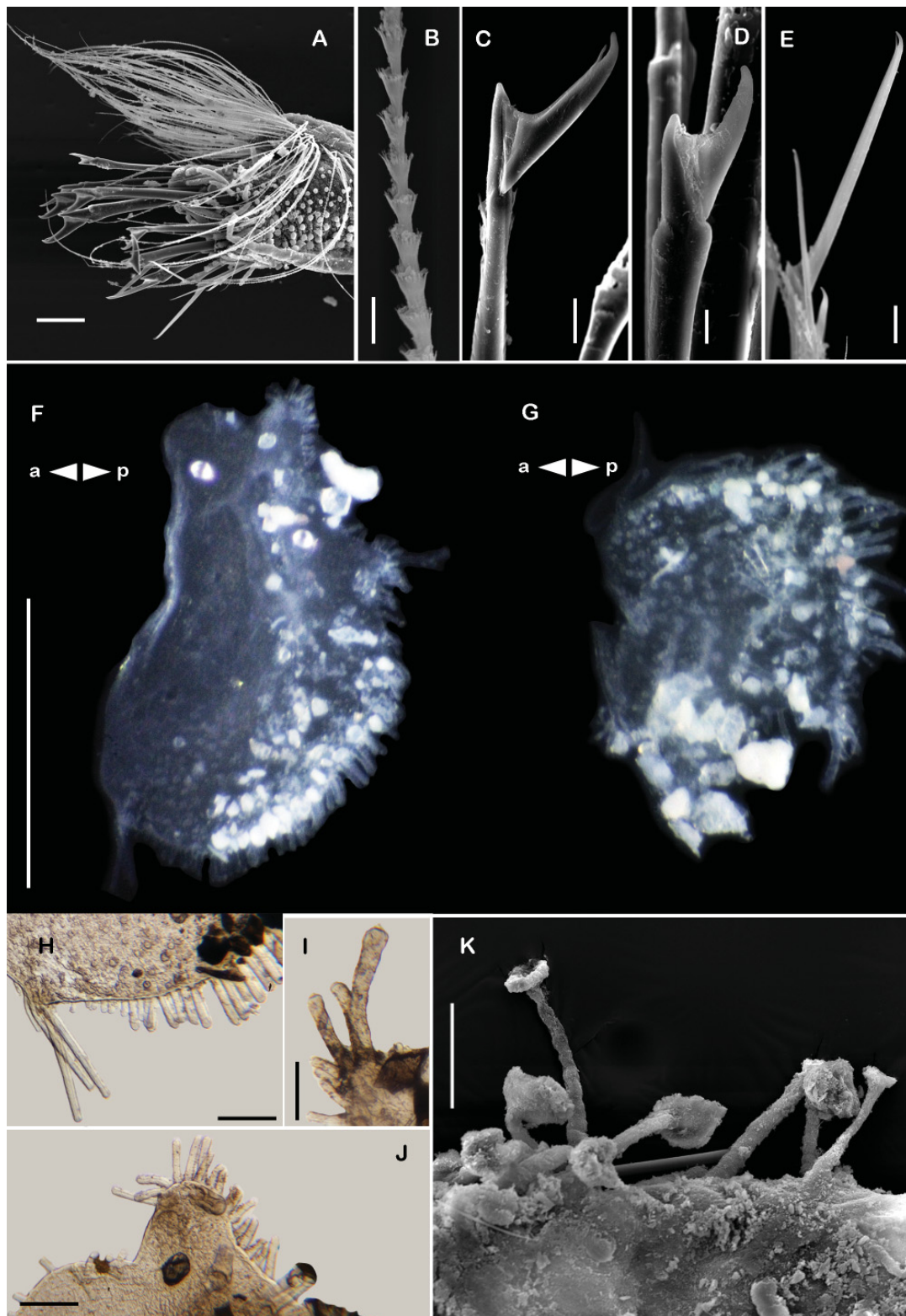
**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 3G). Notopodia leaf-shaped, smooth (non-papillate), slightly shorter than neuropodia, notopodial flange fleshy. With up to 100 simple verticillate notochaetae, tips hooked, shortest ones slightly longer than notopodia, longest ones  $3\times$  as long (Fig. 3H). Neuropodia conical, smooth (non-papillate), slightly larger than notopodia. Neurochaetae only falcigers, blades falcate, bifid, subdistal tooth broken in most blades: unit A, eight falcigers with handles thick, whorled with fimbriae, blades short,  $4\text{--}5\times$  as long as wide (Fig. 3I); unit B, two falcigers with handles thick, whorled with fimbriae, blades short,  $3\times$  as long as wide (Fig. 3J); unit C and D undifferentiated, six falcigers with handles slender, whorled with fimbriae, blades long,  $6\text{--}7\times$  as long as wide (Fig. 3K).

**RIGHT PARAPODIUM FROM SEGMENT III** (Fig. 3L). Notopodia oval, smooth (non-papillate), short, half as long as neuropodia, notopodial flange fleshy. With up to 100 simple verticillate notochaetae, tips hooked, shortest ones half as long as notopodia, longest ones twice as long (Fig. 3M). Neuropodia conical, smooth (non-papillate), larger than notopodia. Neurochaetae only bifid falcigers: unit A, four falcigers with handles thick, with 5–7 transverse rows of fimbriae, blades medium-sized,  $4\times$  as long as wide (Fig. 3N); unit B, three falcigers with handles thick with 7–8 transverse rows of fimbriae, blades medium-sized,  $6\text{--}7\times$  as long as wide (Fig. 3O); unit C, eight falcigers with handles thick with 8–10 transverse rows of fimbriae, blades medium-sized,  $5\text{--}6\times$  as long as wide (Fig. 3P); unit D, two falcigers with handles thick with 11–12 transverse rows of fimbriae, blades medium-sized,  $5\text{--}6\times$  as long as wide (Fig. 3Q).

**RIGHT PARAPODIUM FROM SEGMENT 32 (MIDDLE SEGMENT)** (Figs 3R, 4A). Notopodia conical, smooth (non-papillate), short, half as long as neuropodia, notopodial flange absent, with lobe instead. With up to



**Fig. 3.** *Dayipsammolyce paulayi* sp. nov. **A–D, G–Y.** Holotype (UF 2777). **E–F.** Paratype (UF2618). **A.** Complete worm, dorsal view. **B.** Anterior end, dorsal view, arrowhead indicates ctenidia (insert: dorsal papillae); asterisk indicates partially everted pharynx. **C.** Anterior end, ventral view (insert: ventral papillae); asterisk indicates partially everted pharynx. **D.** Close-up of C, arrowhead indicates facial tubercle. **E.** Marginal pharyngeal papillae. **F.** Detail of pharynx. **G.** Right parapodium from segment II. **H.** Notochaeta from same. **I.** Unit A. **J.** Unit B. **K.** Units C and D. **L.** Right parapodium from segment III. **M.** Notochaeta from same. **N.** Unit A. **O.** Unit B. **P.** Unit C. **Q.** Unit D. **R.** Right parapodium from segment 32. **S.** Notochaeta from same. **T.** Unit A. **U.** Unit B. **V.** Unit C. **W.** Subunit 1. **X.** Subunit 2. **Y.** Unit D. Scale bars: A = 5 mm; B–C = 1 mm; D–F = 500 µm; G, L, R = 200 µm; H–K, M–Q, S–Y = 40 µm.



**Fig. 4.** *Dayipsammolyce paulayi* sp. nov., holotype (UF 2777). A–E, K. SEM micrographs. A. Right parapodium from segment 26. B. Notochaeta from same. C. Unit B. D. Unit C. E. Unit D. F. Second left elytron. G. Right posterior elytron. H. Detail of distal margin of F. I. Posterior process from G. J. Posterior process from F. K. Marginal papillae. Abbreviations: a = anterior; p = posterior. Scale bars: A, H–J = 100 µm; B = 5 µm; C, E = 20 µm; D = 10 µm; F–G = 500 µm; K = 50 µm.



60 simple verticillate notochaetae, tips hooked, shortest ones as long as notopodia, longest ones  $4\times$  as long (Figs 3S, 4B). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only falcigers: unit A, two falcigers with handles thick with 2 transverse rows of spines, blades short,  $2\times$  as long as wide (Fig. 3T); unit B, two falcigers with handles thick with 3 transverse rows of spines, blades medium-sized,  $4\text{--}5\times$  as long as wide (Figs 3U, 4C); unit C, eight falcigers with handles slender, smooth, with subdistal transverse row of denticles, blades short,  $2\times$  as long as wide (Figs 3V, 4D); subunit 1, three falcigers with handles thick, smooth, with subdistal transverse rows of denticles, blades short,  $2\times$  as long as wide (Fig. 3W); subunit 2, two falcigers with handles slender, smooth, blades medium-sized,  $5\text{--}6\times$  as long as wide (Fig. 3X); unit D, two falcigers with handles slender, smooth, blades long,  $8\text{--}10\times$  as long as wide (Figs 3Y, 4E).

PYGIDIUM. Rounded, with two anal cirri.

### Remarks

Before this study, *Dayipsammolyce* was considered monotypic with *D. ctenidophora*, described from North Carolina, as its only species. *Dayipsammolyce paulayi* sp. nov. differs from *D. ctenidophora* in several features. *Dayipsammolyce paulayi* sp. nov. has the second right elytron pear-shaped, with only one median and one posterior process, whereas in *D. ctenidophora* it is subrectangular, with five posterior processes (Pettibone 1997: 29, fig. 20b). Another relevant difference between both species is found in the neurochaetae from segment II. The neurochaetae of *D. paulayi* sp. nov. are falcigers with thick and whorled handles and short falcate blades, whereas in *D. ctenidophora* the neurochaetae are falcigers with slender handles covered by transverse rows of spines, and short straight blades (Pettibone 1997: 28, fig. 18d).

### Distribution

Caribbean Sea. Saint Martin, French Antilles.

Genus *Hartmanipsammolyce* Pettibone, 1997

*Hartmanipsammolyce* Pettibone, 1997: 23.

### Type species

*Psammolyce pendula* Hartman, 1942 by original designation.

### Diagnosis

Pelogeniinae with prostomium oval, wider than long. Upper lip without facial tubercle. Median antennal ceratophore bulbous, base with ctenidia. Segment II with middorsal subtriangular lobe; neuropodia without appendages; neurochaetal blades bifid. Segment III without dorsal cirri; neuropodia with large, expanded balloon-like lobes on distal margin; neuropodial blades falcate, bifid or entire. First pair of elytra short or elongated.

### Remarks

Pettibone (1997) proposed *Hartmanipsammolyce* with *H. pendula* as type species, and *Psammolyce globula* Hartman, 1965 as its junior synonym. Hartman (1942b: 91) described *P. pendula* from sediments at a depth of 352 m off Cuba using an anterior fragment with 85 segments and highlighting the "... large, pendulous organ on the third parapodium...". Later, she (Hartman 1965: 53) described *P. globula* from off Bermuda based on an anterior fragment with 54 segments, from sediments at a water depth of 1700 m, and emphasized that the main difference between these two species was the presence of the "... globular process..." on the second parapodium, instead of being present on the third, as in *P. pendula*. Pettibone (1997: 23) revised the type material of both species and did not find any morphological

differences to keep them as two separated species. However, there are some slight differences between these two species, and the key below includes them as distinct, pending a comparative study to clarify their differences.

**Key to species of *Hartmanipsammolyce* Pettibone, 1997**

1. Segment III neuropodia with sessile lobes, not pedunculate, ventral cirri surpassing lobe ..... 2  
– Segment III neuropodia with pedunculated lobes, stalk as long as distal expanded portion, ventral cirri not reaching tip of lobe ..... *H. globula* (Hartman, 1965), off Bermuda, Northwestern Atlantic
2. Median segments with neurochaetal blades of units A–D with short distal and subdistal teeth; posterior elytra without medial processes, longer papillae entire.....  
..... *H. pendula* (Hartman, 1942), Cuba, Caribbean Sea  
– Median segments with neurochaetal blades of units A–D with long distal and subdistal teeth; posterior elytra with 6–7 medial processes, longer papillae articulated.....  
..... *H. pettiboneae* sp. nov., Mexico, Caribbean Sea

**Remarks**

The junior synonym of *H. pendula*, *Psammolyce globula* Hartman, 1965, is clearly congeneric but both the original descriptions and illustrations point out differences to be considered. For example, *H. pendula* has a drop-like neuropodial lobe on segment III that is inserted at the neuroacicular level without a stalk (Hartman 1942b: 106, pl. 9 fig. 20; Pettibone 1997: 24, fig. 15e), whereas in *P. globula* this neuropodial lobe is balloon-like, inserted at the supracular level with a long stalk (Hartman 1965: 265, pl. 3 fig. a). The type material of both species should be revised in order to clarify the morphology of both species.

*Hartmanipsammolyce pettiboneae* sp. nov.

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Figs 2O–P, 5–6

**Diagnosis**

A species of *Hartmanipsammolyce* with an oblong neuropodial lobe on segment III; neurochaetae from median segments with blades with long distal and subdistal teeth; posterior elytra with a medial process and 6–7 medial projections; marginal elytral papillae long and articulated.

**Etymology**

The species is named after the late Dr Marian H. Pettibone in recognition of her sustained efforts in studying polychaetes during many years, especially regarding the members of Sigalionidae. Her studies are the backbone for this and further contributions. The epithet is a noun in the genitive case (ICZN 1999, Art. 31.1.2).

**Material examined**

**Holotype**

MEXICO • incomplete spec.; Quintana Roo, off Cancun; 21°05' N, 86°23' W; R/V Pillsbury, Stn 580; depth 351 m; 22 May 1967; UMM 22.1087.

**Description (holotype)**

BODY. Orange, long, broad (Fig. 5A); 136 segments, 9 cm long, 1.1 cm to segment 30, 1.1 cm wide. Middorsal line covered with white foreign particles attached to adhesive papillae (Fig. 5D). Venter only covered with short globular papillae (Fig. 5E).



**PROSTOMIUM.** Oval, wider than long. Two pairs of eyes, anterior eyes larger. Lateral antennae small, slender; ceratophores as long as styles, dorsally fused with tentacular segment. Median antennal ceratophore bulbous, as long as prostomium, with a lateral ridge; basally with ctenidia; style long, as long as ceratophore. Middorsal lobe of segment II subtriangular (Fig. 5B). First segment directed anteriorly, fused with tentacular segment; biramous, chaetae simple verticillate. Dorsal tentacular cirrus slightly longer than neuropodia including chaetae, ventral tentacular cirrus slightly shorter than dorsal one; palps laterally displaced, short, reaching segment five, with inner sheaths. Pharynx partially everted (Fig. 5C).

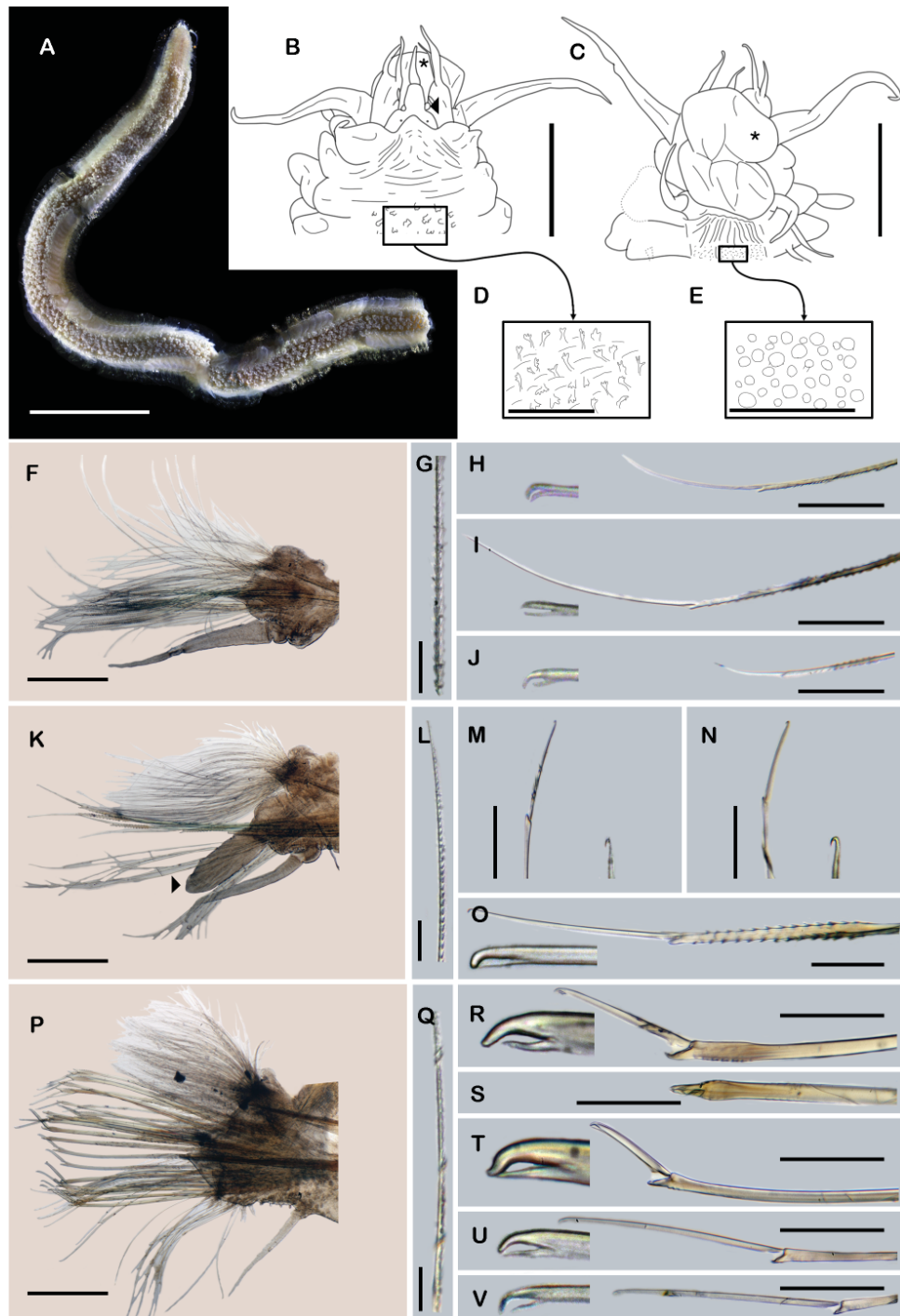
**ELYTRA.** First right elytron oval, with a mid-distal notch, covered with few fragments of shells attached to several kinds of papillae (Fig. 6E); elytral surface with pedunculate papillae with flat tips, pedunculate papillae with truncated tips, and pedunculate globular papillae, more abundant in the mid-posterior section; elytral margins with short dendritic papillae and segmented, long dendritic papillae (Figs 2O–P, 6I, L). Second right elytron oblong, covered with few fragments of shells and same kinds of papillae (Fig. 6F) but sparser, lateral margin with one mid-distal projection (Fig. 6H). Third right elytron similar to second one. Posterior elytra subrectangular with papillae only along posterolateral elytral surface (Fig. 6G, M), with a large medial process, lateral margin with 6–7 mid-distal projections with segmented, long dendritic papillae (Fig. 6J–K).

**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 5F). Notopodia truncated, papillate, short, half as long as neuropodia. With up to 50 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones  $4\times$  as long (Fig. 5G). Neuropodia heart-shaped, smooth (non-papillate), larger than notopodia. Neurochaetae only bifid falcigers: unit A, eight falcigers directed upwards with handles slender, with 30–36 transverse rows of spines, blades long,  $16\times$  as long as wide (Fig. 5H); unit B, 15 falcigers with handles thick, with 27–34 transverse rows of spines, blades long,  $35\times$  as long as wide (Fig. 5I); unit D, seven falcigers with handles slender with 15–18 transverse rows of spines, blades medium-sized,  $10\times$  as long as wide (Fig. 5J).

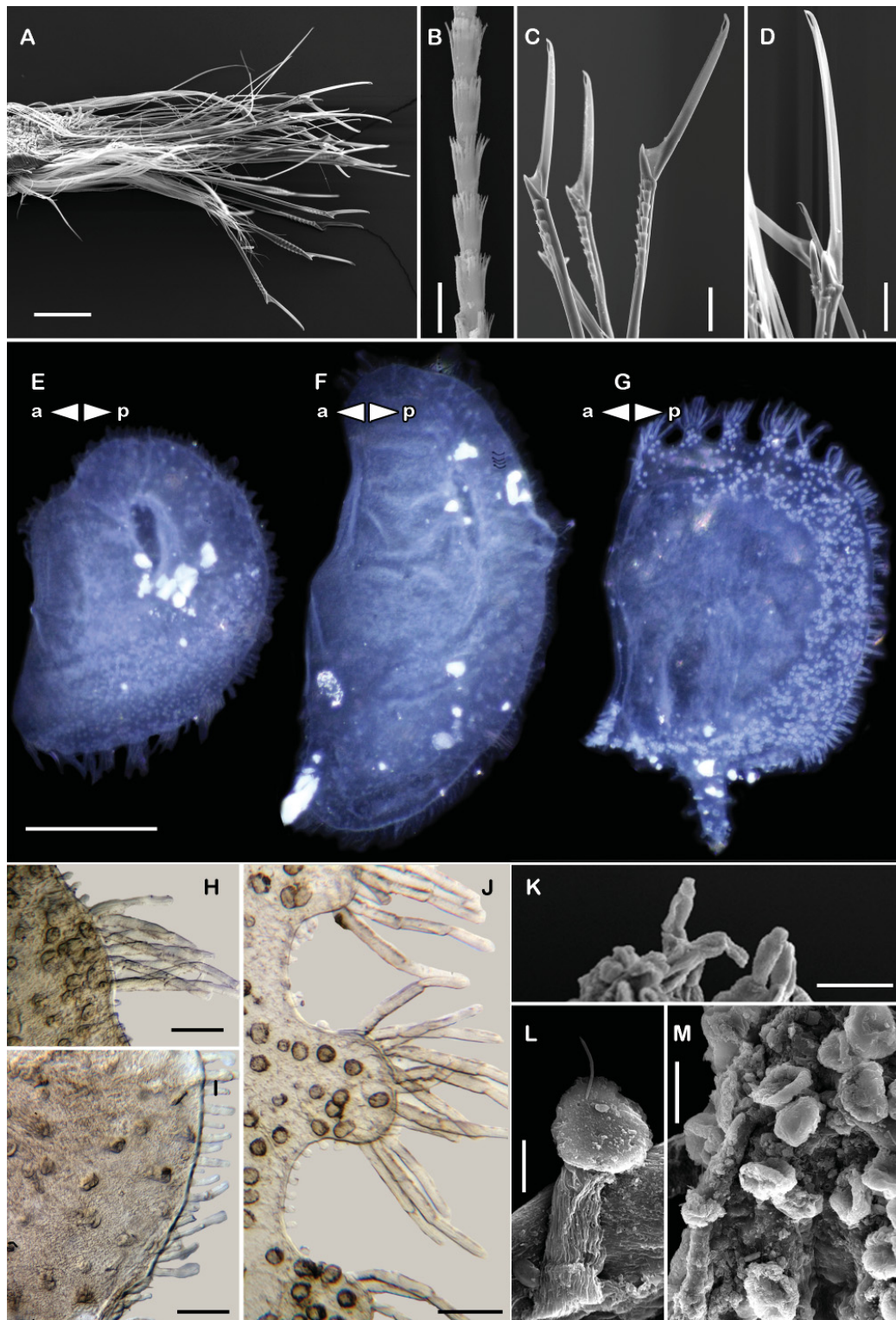
**RIGHT PARAPODIUM FROM SEGMENT III** (Fig. 5K). Notopodia heart-shaped, papillate, short, half as long as neuropodia. With up to 80 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones  $4\times$  as long (Fig. 5L). Neuropodia truncated, smooth (non-papillate), larger than notopodia, with one large oblong distal lobe (twice as long as neuropodia). Neurochaetae only falcigers: unit A, four falcigers with handles thick with 14–15 transverse rows of spines, blades long,  $14\text{--}16\times$  as long as wide (Fig. 5O); unit B, 12 falcigers with handles slender, smooth, blades long,  $12\times$  as long as wide (Fig. 5M); unit C and D undifferentiated, 13 falcigers with handles slender, smooth, blades medium-sized,  $8\text{--}10\times$  as long as wide (Fig. 5N). Unit A with bifid blades, units B and C with falcate blades.

**RIGHT PARAPODIUM FROM SEGMENT 81 (MIDDLE SEGMENT)** (Figs 5P, 6A). Notopodia, truncated, papillate, short, as long as half of neuropodia. With up to 120 simple verticillate notochaetae, shortest ones half as long as notopodia, longest ones  $4\times$  as long (Figs 5Q, 6B). Neuropodia leaf-shaped, papillate, larger than notopodia. Neurochaetae only bifid falcigers: unit A, nine falcigers with handles thick, with 5–10 transverse rows of spines, blades medium-sized,  $8\text{--}10\times$  as long as wide (Figs 5R, 6C); unit B, two falcigers with handle thick with 5–6 rows of spines, blades lost (in posterior segments, blades medium-sized,  $5\text{--}6\times$  as long as wide) (Figs 5S, 6C); unit C, 13 falcigers with handles thick, with 3–4 transverse rows of spines, blades medium-sized,  $5\text{--}6\times$  as long as wide (Fig. 5T); subunit 2, four falcigers with handles thick, smooth, blades long,  $20\times$  as long as wide (Fig. 5U); unit D, eight falcigers with handles slender, with two barely noticeable rows of denticles, blades long,  $15\text{--}20\times$  as long as wide (Figs 5V, 6D).

**POSTERIOR REGION.** Lost.



**Fig. 5.** *Hartmanipsamolyce pettiboneae* sp. nov., holotype (UMML 22.1087). **A.** Incomplete worm, dorsal view. **B.** Anterior end, dorsal view; arrowhead indicates ctenidia; asterisk indicates partially everted pharynx. **C.** Anterior end, ventral view (close-up in box); asterisk indicates partially everted pharynx. **D.** Dorsal papillae (close-up in box). **E.** Ventral papillae (close-up in box). **F.** Right parapodium from segment II. **G.** Notochaeta from same. **H.** Unit A. **I.** Unit B. **J.** Units C and D. **K.** Right parapodium from segment III, arrow indicates neuropodial lobe. **L.** Notochaeta from same. **M.** Unit B. **N.** Units C and D. **O.** Unit A. **P.** Right parapodium from segment 81. **Q.** Notochaeta from same. **R.** Unit A. **S.** Unit B. **T.** Unit C. **U.** Subunit 2. **V.** Unit D. Scale bars: A = 1 cm; B–C = 1 mm; D–F, K, P = 500 µm; G, L, Q = 40 µm; H–J, M–O, R–V = 100 µm.



**Fig. 6.** *Hartmanipsammolyce pettiboneae* sp. nov., holotype (UMML 22.10887). A–D, K–M. SEM micrographs. A. Right parapodium from segment 30. B. Notochaeta from same. C. Units A and B. D. Unit D. E. First right elytron. F. Second right elytron. G. Posterior right elytron. H. Proximal margin of E. I. Posterior margin from E. J. Posterior processes from G. K. Segmented long papillae. L. Pedunculate papilla with flat tip. M. Surface of E. Abbreviations: a = anterior; p = posterior. Scale bars: A = 200 µm; B = 5 µm; C–D, H–K = 50 µm; E–G = 1 mm; L = 10 µm; M = 20 µm.

### Remarks

*Hartmanipsammolyce pettiboneae* sp. nov. differs from *H. pendula* (Hartman, 1942) because in the former the large lobe on the margin of segment III is oblong; the middle segments have neurochaetal blades with long distal and subdistal teeth, even with tips touching each other; the first elytron is short, oval; and the posterior elytra have one large posterior process and 6–7 mid-distal projections with segmented, long dendritic papillae. By contrast, in *H. pendula* segment III has a balloon-like (Hartman 1965: 265, pl. 3 fig. a) or drop-like (Pettibone 1997: 24, fig. 15e) lobe; middle segments have neurochaetal blades with short distal and subdistal teeth (Hartman 1968: 265, pl. 3 fig. b; Pettibone 1997: 25, fig. 16b); first elytra are enlarged and oblong; and posterior elytra have one large posterior process and no medial processes, with entire, long dendritic papillae.

### Distribution

Caribbean Sea. Quintana Roo, Mexico.

Genus *Neopsammolyce* Pettibone, 1997

*Neopsammolyce* Pettibone, 1997: 10.

### Type species

*Psammolyce petersi* Kinberg, 1856 by original designation.

### Diagnosis

Pelogeniinae with prostomium oval, longer than wide. Upper lip with or without facial tubercle. Median antennal ceratophore bulbous, base without ctenidia. Segment II without middorsal lobe; neuropodia without appendages; neurochaetal blades bifid, falcate. Segment III without dorsal cirri; neuropodia without appendages; neurochaetal blades bifid. First pair of elytra enlarged, rarely deeply notched.

### Key to species of *Neopsammolyce* Pettibone, 1997

(modified from Pettibone 1997)

1. Elytra and neuropodia with segmented, long dendritic papillae.....  
.....*N. catenulata* (Amaral & Nonato, 1984), Brazil, Southwest Atlantic  
– Elytra and neuropodia with entire, long dendritic papillae..... 2
2. Palps slender, very long (exceeding segment eleven); first elytra deeply notched..... 3  
– Palps thick, long (barely reaching segment six); first elytra not deeply notched ..... 4
3. First elytra with narrow lobes separated by notch, lateral margin concave; neurochaetae from segment III with blades bifid or entire .....  
.....*N. occidentalis* (McIntosh, 1885), Antilles, Grand Caribbean  
– First elytra with wide lobes separated by notch, lateral margin convex; neurochaetae from segment III with blades only bifid.....*N. fragilis* sp. nov., Mexico, Grand Caribbean
4. Upper lip without facial tubercle; middorsal region of segment II with papillae; branchiae from segment III; neurochaetal handles smooth .....  
.....*N. petersi* (Kinberg, 1856), Mozambique, Indian Ocean  
– Upper lip with facial tubercle; middorsal region of segment II without papillae; branchiae from segment II; neurochaetal handles with transverse rows of spines ..... 5



5. Facial tubercle bulbous; posterior elytra with posterior processes; ventral cirri smooth, non-papillate, with basal knobs ..... *N. spinosa* (Hartman, 1939), Pacific, Costa Rica
  - Facial tubercle digitate; posterior elytra with or without posterior processes; ventral cirri papillate, without basal knobs ..... 6
6. Posterior elytra with posterior processes; neurochaetal blades from segment II falcate, soft; neurochaetae of posterior segments with bifid blades, subdistal tooth narrow .....
  - ..... *Neopsammolyce* aff. *floccifera*, Colombia, Caribbean Sea
  - Posterior elytra without posterior processes; neurochaetal blades from segment II tapered, hardened; neurochaetae of posterior segments with bifid blades, subdistal tooth wide .....
    - ..... *N. floccifera* (Augener, 1906), Dominica, Caribbean Sea

### Remarks

*Psammolyce sombreroana* was the name introduced by McIntosh (1885: 149) for *P. occidentalis* (= *N. occidentalis*), which possibly resulted from a confusion. In the discussion section of *P. fijiensis* [= *Pottsipelogenia fijiensis* (McIntosh, 1885)], McIntosh noted the name *P. sombreroana*, possibly referring to *P. occidentalis*, which was the first name that he came up for the species; however, since he kept this honest mistake in the final version of his contribution, the name *P. sombreroana* is a nomen nudum. In any case, the name *P. sombreroana* would reflect the fact that his specimens came from Sombrero Island, Antilles. On the other hand, *Neopsammolyce spinosa* (Hartman, 1939) was described from the Pacific coast of Costa Rica. According to Pettibone (1997), the record of this species from Galeta, Panama (Fauchald 1977: 62) corresponded to *Pelogenia anoculata* (Hartman, 1939), also described from the Pacific coast of Costa Rica. However, the form recorded by Fauchald (1977) is described below as *Pelogenia capitata* sp. nov.

### *Neopsammolyce floccifera* (Augener, 1906)

Figs 2G–H, 7–8

*Psammolyce floccifera* Augener, 1906: 109, pl. 2 figs 24–30.

*Psammolyce arenosa* – Augener 1933: 193. — Hartman 1944: 14 (partim, non delle Chiaje 1830).

*Neopsammolyce floccifera* – Pettibone 1997: 15, figs 9–10 (comb. nov., redescription).

### Material examined

VENEZUELA • 1 incomplete spec., 54 segments, 2.6 cm long, 1.7 cm to segment 30, 0.6 cm wide; off Las Isletas; 10°20' N, 65°02' W; R/V Pillsbury, Stn 727; depth 64 m; 21 Jul. 1968; UMML 6806-727.

TRINIDAD AND TOBAGO • 1 incomplete spec., 22 segments, 0.7 cm long, 0.25 cm wide; off Tobago Island; 11°11' N, 60°31' W; R/V Pillsbury, Stn 842; depth 70 m; 1 Jul. 1969; UMML 22.1089.

### Description

**BODY.** Pale yellow, short, broad (Fig. 7A). Middorsal line covered with sand grains attached to adhesive papillae (Fig. 7B). Venter covered with short globular and long papillae (Fig. 7C).

**PROSTOMIUM.** Oval, wider than long. Two pairs of regular eyes, anterior eyes larger and covered by the median antennal ceratophore, an accessory pair of small eyes right below anterior eyes (Fig. 7E). Lateral antennae small, bulbous; ceratophores as long as style, dorsally fused with tentacular segment and



covered by median antennal ceratophore (Fig. 7D). Median antenna with bulbous ceratophore, slightly longer than prostomium, with dorsal ridges; style long,  $3\times$  as long as prostomium. Middorsal lobe of segment II with longitudinal ridge (Fig. 7A). Facial tubercle short, visible between palps (Fig. 7F). First segment directed anteriorly; fused with tentacular segment (right and left parapodia fused anteriorly); biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral tentacular cirrus slightly shorter than dorsal one, but longer than neuropodia; palps short, reaching segment three, with inner palpal sheaths (Fig. 7C).

**ELYTRA.** First right elytron subrectangular, mid-proximally notched, covered with sand and three kinds of papillae (Fig. 8E): pedunculate papillae with truncated tip, more abundant in elytral center; long and short dendritic papillae along margins. Second right and left elytra missing. Posterior elytra round (Fig. 8F), surface with flat papillae, short, and long dendritic papillae, with one small lateral process (Fig. 8J–K), elytral margins with long dendritic papillae (Fig. 8H). Another posterior elytron round, with a medial process (Fig. 8G), elytral margins with very long dendritic papillae (Fig. 8I).

**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 7G). Notopodia conical, smooth (non-papillate), short, slightly shorter than neuropodia, notopodial flange leaf-shaped. With up to 100 simple verticillate notochaetae, shortest ones  $3\times$  as long as notopodia, longest ones thicker,  $4\times$  as long (Fig. 7H). Neuropodia leaf-shaped, papillate, larger than notopodia. Neurochaetae only falcate falcigers, units A–D undifferentiated, 16 falcigers with handles slender, completely covered with denticles, blades long,  $30\times$  as long as wide (Fig. 7I).

**RIGHT PARAPODIUM FROM SEGMENT III** (Fig. 7J). Notopodia conical, smooth (non-papillate), short,  $\frac{1}{3}$  as long as neuropodia, notopodial flange large, leaf-shaped. With up to 70 simple verticillate notochaetae, shortest ones twice as long as notopodia, longest ones  $3\times$  as long (Fig. 7K). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only bifid falcigers: unit A, two falcigers with handles thick with 3 transverse rows of spines, blades medium-sized,  $5\text{--}6\times$  as long as wide (Fig. 7L); unit B, eight falcigers with handles thick with 3–5 transverse rows of spines, blades medium-sized,  $8\text{--}9\times$  as long as wide (Fig. 7M); unit C, four falcigers with handles slender, smooth, blades long,  $20\times$  as long as wide (Fig. 7N); unit D, two falcigers with handles slender, smooth, blades medium-sized,  $6\times$  as long as wide (Fig. 7O).

**RIGHT PARAPODIUM FROM SEGMENT 43 (MIDDLE SEGMENT)** (Figs 7P, 8A). Notopodia conical, smooth (non-papillate), short,  $\frac{1}{3}$  as long as neuropodia. With up to 50 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones twice as long (Figs 7Q, 8B). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only bifid falcigers: unit A, six falcigers with handles thick, with 6–8 transverse rows of spines, blades long,  $12\times$  as long as wide (Figs 7R, 8C); unit B, four falcigers with handles thick, with 2 transverse rows of spines, blades long,  $10\text{--}12\times$  as long as wide (Figs 7S, 8D); unit C, five falcigers with handles thick, smooth, blades short,  $4\text{--}5\times$  as long as wide (Fig. 7T); subunit 2, six falcigers with handles thick, smooth, blades long,  $8\text{--}10\times$  as long as wide (Fig. 7U); unit D, two falcigers with handles slender, smooth, blades medium-sized,  $6\text{--}8\times$  as long as wide (Fig. 7V).

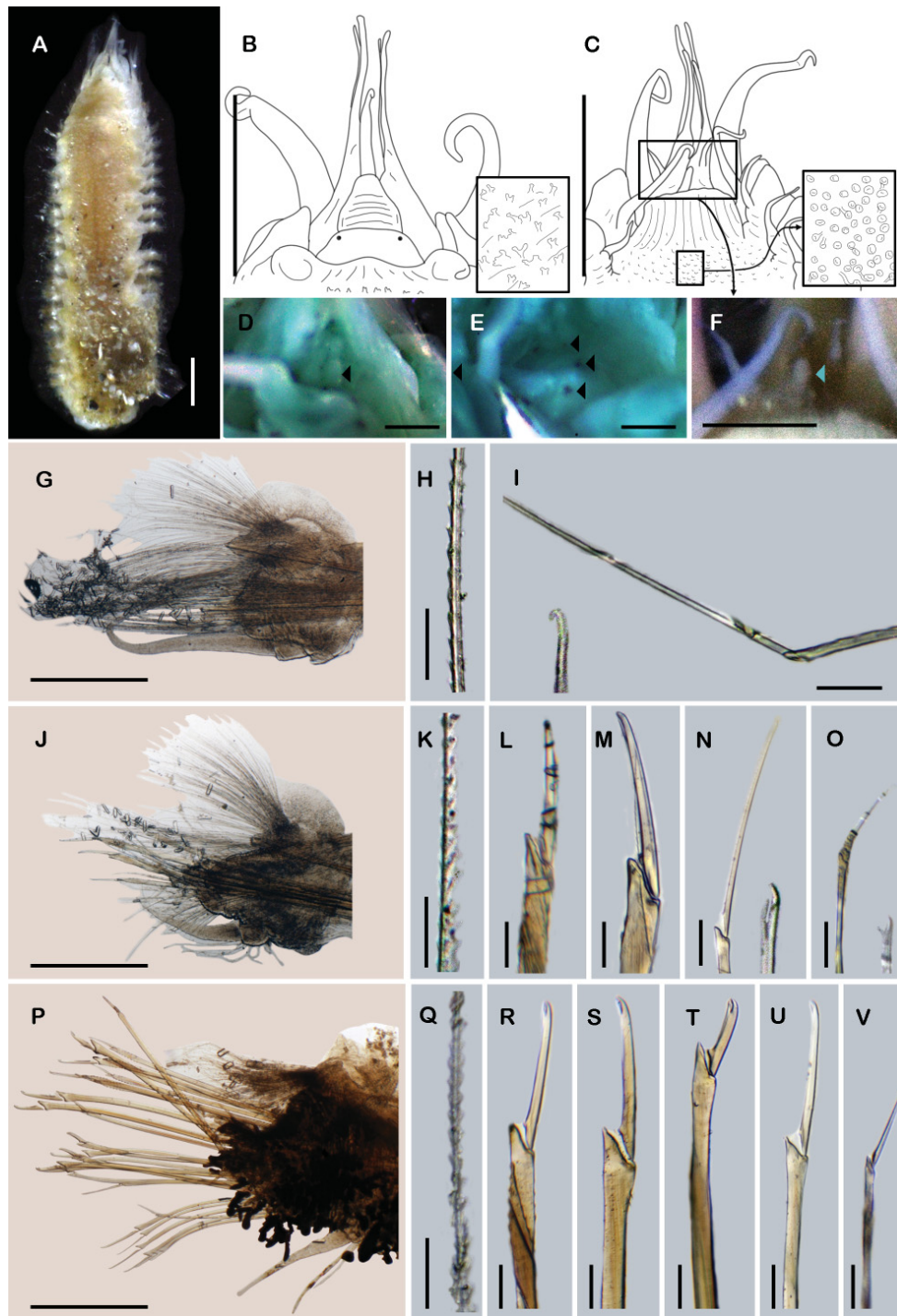
**POSTERIOR REGION.** Lost.

### Remarks

The examined material agrees with *N. floccifera* described by Augener (1906) and redescribed by Pettibone (1997). According to Pettibone (1997), part of the material from the Caribbean Panamanian region, which was previously examined by Hartman (1944), and the specimen from Barbados examined by Augener (1933), both identified as *P. arenosa*, belong to *N. floccifera*.

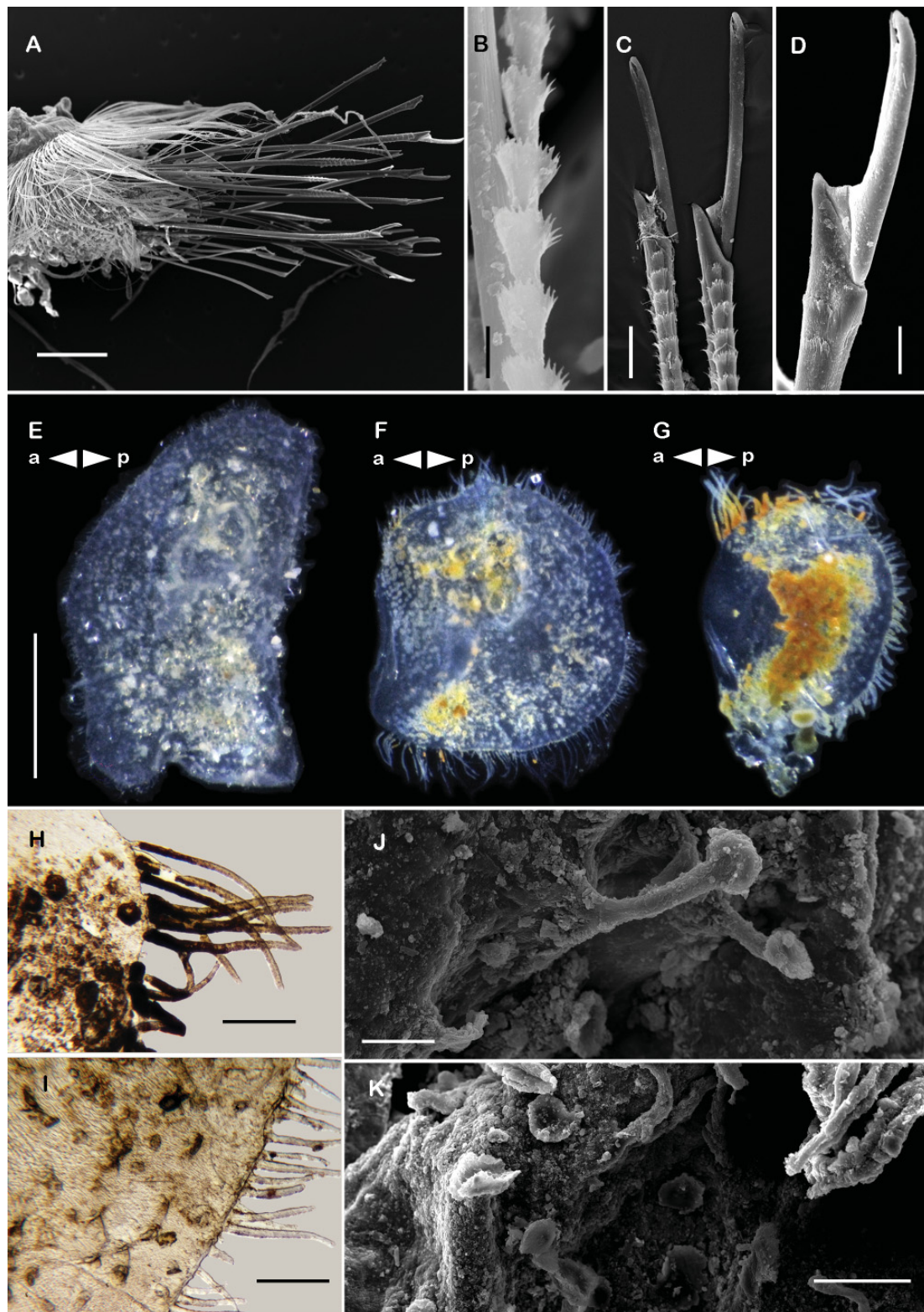
### Distribution

Caribbean Sea. From Florida to Venezuela.



**Fig. 7.** *Neopsammolyce floccifera* (Augener, 1906), non-type material (UMML 6806-727). **A.** Incomplete worm, dorsal view. **B.** Anterior end, dorsal view (insert: dorsal papillae). **C.** Anterior end, ventral view (insert: ventral papillae). **D.** Anterodorsal section of prostomium, arrowhead indicates lateral antenna. **E.** Prostomium, arrowheads indicate the three pairs of eyes. **F.** Anteroventral view of prostomium, arrowhead indicate facial tubercle. **G.** Right parapodium from segment II. **H.** Notochaeta from same. **I.** Units A–D. **J.** Right parapodium from segment III. **K.** Notochaeta from same. **L.** Unit A. **M.** Unit B. **N.** Unit C. **O.** Unit D. **P.** Right parapodium from segment 43. **Q.** Notochaeta from same. **R.** Unit A. **S.** Unit B. **T.** Unit C. **U.** Subunit 2. **V.** Unit D. Scale bars: A–C = 1 mm; D–F = 200  $\mu$ m; G, J, P = 500  $\mu$ m; H, K, Q = 40  $\mu$ m; I, L–O, R–V = 50  $\mu$ m.





**Fig. 8.** *Neopsammolyce floccifera* (Augener, 1906), non-type material (UMML 6806-727). A–D, J–K. SEM micrographs **A.** Right parapodium from segment 26. **B.** Notochaetae from same. **C.** Unit A. **D.** Unit B. **E.** First right elytron. **F–G.** Posterior elytra. **H.** Long dendritic papillae. **I.** Short dendritic papillae. **J.** Pedunculate papillae with flat tips. **K.** Flat papillae. Abbreviations: a = anterior; p = posterior. Scale bars: A = 200  $\mu$ m; B = 2  $\mu$ m; C–D, H–J = 20  $\mu$ m; E–G = 1 mm; K = 50  $\mu$ m.

*Neopsammolyce fragilis* sp. nov.

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Figs 9–10

**Diagnosis**

A species of *Neopsammolyce* with long palps, exceeding segment eleven; with first elytra oval and notched with expanded lobes separated by the notch, and lateral margin convex; second elytra oval with one posterior process; elytra and parapodia with papillae entire; neurochaetae from segment III with blades bifid.

**Etymology**

The specific name of the species is derived from the Latin singular adjective '*fragilis* (-e)', meaning 'fragile' or 'easily broken'. The name indicates the brittleness and fragility of the elytra, and it is in feminine to match the generic gender (ICZN 1999, Art. 31.2).

**Material examined**

**Holotype**

MEXICO • incomplete spec.; Quintana Roo, off Tzucx; 18°58' N, 87°28' W; R/V Pillsbury, Stn 604; depth 979 m; 17 Mar. 1967; UMML 22.1088.

**Paratype**

MEXICO • 1 incomplete spec., 69 segments, 2.9 cm long, 0.9 cm to segment 30, 0.6 cm wide; same collection data as for holotype; UMML 22.1018.

**Other material**

MEXICO • 1 incomplete spec., 12 segments, 0.4 cm long, 0.2 cm wide; Yucatán shelf; 23°30' N, 88°33' W; O/V UAT 1 CIDIPORT; depth 57 m; 4 Sep. 2016; Sara B. Balam leg.; ECOSUR-P3224 • 2 incomplete specs, 57–78 segments, 1.4–2.4 cm long, 0.7–1.1 cm to segment 30, 0.2–0.3 cm wide; Yucatán shelf; 21°53'18" N, 90°31'10" W; O/V Justo Sierra; depth 49 m; 14 Sep. 2010; Anabel León leg.; ECOSUR-P3225 • 1 incomplete spec., 40 segments, 1.6 cm long, 1.2 cm to segment 30, 0.5 cm wide; Quintana Roo, off Xahuayxol; 18°30' N, 87°37' W; R/V Pillsbury, Stn 607; depth 751 m; 17 Mar. 1967; UMML 6802-607.

UNITED STATES OF AMERICA • 1 incomplete spec., 42 segments, 3.2 cm long, 1.4 cm to segment 30, 0.6 cm wide; Florida; 24°40' N, 80°04' W; R/V Gerda, Stn 226; depth 803 m; 23 Jan. 1964; UMML 6402-226.

**Description (holotype)**

**BODY.** Pale yellow, cylindrical, broad (Fig. 9A–B); 47 segments, 2 cm long, 1.2 cm to segment 30, 0.6 cm wide. Middorsal line covered with white foreign particles and foraminifera attached to adhesive papillae (Fig. 9F). Venter covered with short bulbous and long dendritic papillae (Fig. 9G).

**PROSTOMIUM.** Spherical. Two pairs of poorly defined eyes, anterior eyes larger, covered by the median antenna ceratophore. Lateral antennae short, bulbous; ceratophores as long as styles, dorsally fused with tentacular segment, covered by median antennal ceratophore (Fig. 9E). Median antenna with tapered ceratophore, slightly longer than prostomium, with dorsal ridges; style short, as long as prostomium (Fig. 9B–C). Middorsal lobe of segment II with a longitudinal ridge. Facial tubercle short, visible between palps (Fig. 9D). First segment directed anteriorly; fused with tentacular segment; biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral

tentacular cirrus shorter than dorsal one; palps long, reaching segment 11, with inner palpal sheaths (Fig. 9D).

ELYTRA. First right elytron subtriangular deeply notched, covered with foraminifera and coarse sand (Fig. 10F), two kinds of papillae: flat papillae, and pedunculate papillae with flat tips, more abundant in elytral center; elytral margins with short dendritic papillae (Fig. 10J–K). Second right elytron oval notched, with one posterior process (Fig. 10G), same kinds of papillae on elytral surface, elytral margin with short and long dendritic papillae (Fig. 10I). Posterior elytra oval with one medial process (Fig. 10H), same kinds of papillae on elytral surface, elytral margin with short dendritic papillae. All elytra very brittle.

RIGHT PARAPODIUM FROM SEGMENT II (Fig. 9H). Notopodia conical, papillate, short, half as long as neuropodia, notopodial flange leaf-shaped. With up to 70 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones  $4\times$  as long (Fig. 9I). Neuropodia conical, papillate and larger than notopodia. Neurochaetae only falcigers, most blades falcate, bifid: unit A, two falcigers with handles slender with 8–9 transverse rows of spines, blades long,  $28\text{--}30\times$  as long as wide (Fig. 9J); unit B, four falcigers with handles thick with 41–48 barely perceptible transverse rows of denticles, blades long  $21\text{--}23\times$  as long as wide (Fig. 9K); unit C, six falcigers with handles slender with 30–34 barely perceptible transverse rows of denticles, blades soft, long,  $40\times$  as long as wide (Fig. 9L); unit D, four falcigers with handles slender with 8–10 barely perceptible transverse rows of denticles, blades long,  $10\text{--}12\times$  as long as wide (Fig. 9M).

RIGHT PARAPODIUM FROM SEGMENT III (Fig. 9N). Notopodia conical, short, papillate,  $\frac{1}{3}$  as long neuropodia, notopodial flange leaf-shaped. With up to 80 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones twice as long (Fig. 9O). Neuropodia truncated, papillate, larger than notopodia. Neurochaetae only bifid falcigers: unit A, two falcigers with handles slender with 9–10 transverse rows of spines, blades long,  $19\times$  as long as wide (Fig. 9P); unit B, three falcigers with handles thick with 8–12 barely perceptible transverse row of denticles, blades long,  $9\times$  as long as wide (Fig. 9Q); unit C, 10 falcigers with handles slender, smooth, blades long,  $28\text{--}30\times$  as long as wide (Fig. 9R); subunit 1, two falcigers with handles thick, smooth, blades long,  $8\text{--}10\times$  as long as wide (Fig. 9S); unit D, six falcigers with handles slender, smooth, blades long,  $25\times$  as long as wide (Fig. 9T).

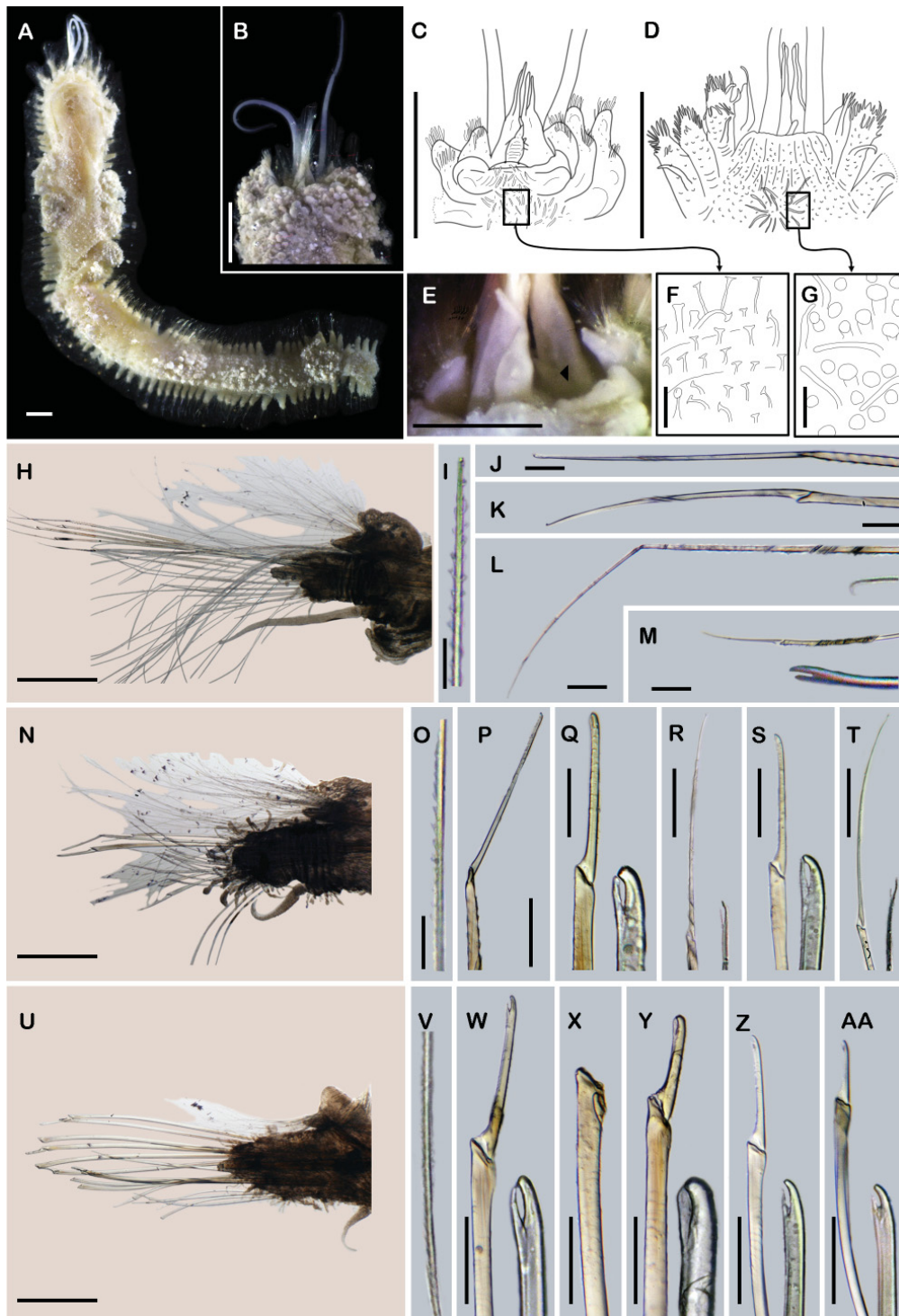
RIGHT PARAPODIUM FROM SEGMENT 31 (MIDDLE SEGMENT) (Figs 9U, 10A). Notopodia conical, smooth (non-papillate), short,  $\frac{1}{3}$  as long as notopodia; notopodial flange bulbous. With up to 50 simple verticillate notochaetae, shortest ones twice as long as notopodia, longest ones  $3\times$  as long (Figs 9V, 10B). Neuropodia truncated, papillate, larger than notopodia. Neurochaetae only bifid falcigers: unit A, two falcigers with handles thick, barely noticeable 2 rows of denticles, blades long,  $9\text{--}10\times$  as long as wide (Fig. 9W); unit B, two falcigers with handles thick, smooth, blades lost (posterior segment, blades medium-sized,  $5\text{--}6\times$  as long as wide) (Figs 9X, 10C); unit C, six falcigers with handles thick, smooth, blades short,  $4\times$  as long as wide (Figs 9Y, 10C); subunit 1, two falcigers with handles slender, smooth, blades medium-sized,  $6\times$  as long as wide (Figs 9Z, 10E); unit D, four falcigers with handles slender, smooth, blades short,  $4\times$  as long as wide (Fig. 9AA).

POSTERIOR REGION. Lost.

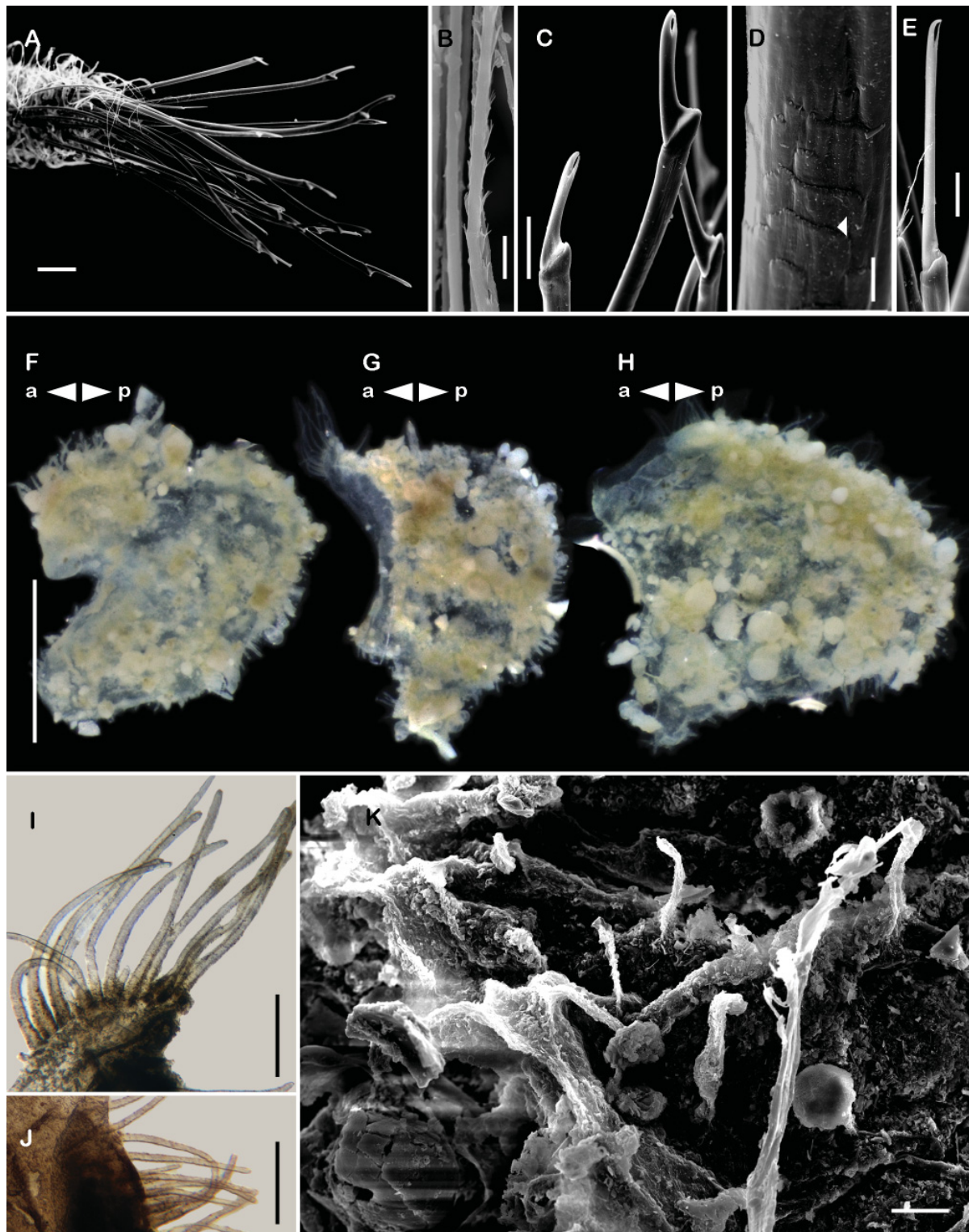
## Remarks

*Neopsammolyce fragilis* sp. nov. resembles *N. occidentalis* (McIntosh, 1885) as described and illustrated by Pettibone (1997), in having long palps, first elytra notched, notopodia reduced, and neuropodia highly papillate. However, both species differ in the shape of the first and second elytra, and the neurochaetae from segment III. Specimens of *N. fragilis* sp. nov. have an oval and notched first elytra with two expanded





**Fig. 9.** *Neopsammolyce fragilis* sp. nov., holotype (UMML 22.1088). **A.** Incomplete worm, dorsal view. **B.** Anterior end, covered by elytra. **C.** Anterior end, dorsal view. **D.** Anterior end, ventral view. **E.** Detail of prostomium, arrowhead indicates lateral antenna. **F.** Dorsal papillae (close-up in box). **G.** Ventral papillae (close-up in box). **H.** Right parapodium from segment II. **I.** Notochaeta from same. **J.** Unit A. **K.** Unit B. **L.** Unit C. **M.** Unit D. **N.** Right parapodium from segment III. **O.** Notochaeta from same. **P.** Unit A. **Q.** Unit B. **R.** Unit C. **S.** Subunit 1. **T.** Unit D. **U.** Right parapodium from segment 31. **V.** Notochaeta from same. **W.** Unit A. **X.** Unit B. **Y.** Unit C. **Z.** Subunit 1. **AA.** Unit D. Scale bars: A–D = 1 mm; E, H, N, U = 500  $\mu$ m; F–G = 50  $\mu$ m; I–M, O–T, V–AA = 100  $\mu$ m.



**Fig. 10.** *Neopsammolyce fragilis* sp. nov., holotype (UMML 22.1088). A–E, K. SEM micrographs. A. Right parapodium from segment 24. B. Notochaetae from same. C. Units B and C. D. Close-up of unit A, arrowhead indicates subdistal denticle. E. Subunit 1. F. First right elytron. G. Second right elytron. H. Right posterior elytra. I. Detail of margin from G. J. Detail of margin from H. K. Surface of H, flat papillae and pedunculate papillae with flat tips. Abbreviations: a = anterior; p = posterior. Scale bars: A, I–J = 100 µm; B, D = 5 µm; C, E = 50 µm; F–H = 1 mm; K = 20 µm.

lobes, and lateral margin convex; an oval second elytra with a posterior process, and neurochaetae from segment III with blades bifid; whereas specimens of *N. occidentalis* have first elytra subrectangular and notched with two narrow lobes, and a concave lateral margin (Pettibone 1997: 14, fig. 8d); an oval second elytra, notched, without processes (Pettibone 1997: 14, fig. 8e), and neurochaetae from segment III with blades bifid and entire (Pettibone 1997: 13, fig. 7f).

### Distribution

Gulf of Mexico. From Florida to Quintana Roo.

### *Neopsammolyce* aff. *floccifera* (Augener, 1906)

Figs 2K–L, 11–12

### Material examined

COLOMBIA • 1 incomplete spec.; off Caño La Balsa; 09°46' N, 76°11' W; R/V Pillsbury, Stn 393; depth 87 m; 16 Jul. 1966; UMML 6607-393.

### Description

**BODY.** Fragile, pale yellow, posteriorly translucent, long, broad (Fig. 11A), 56 segments, 2.3 cm long, 1.2 cm to segment 30, 0.4 cm wide. Middorsal line covered with sand grains attached to adhesive papillae (Fig. 11D). Venter covered with only pedunculate globular papillae (Fig. 11E).

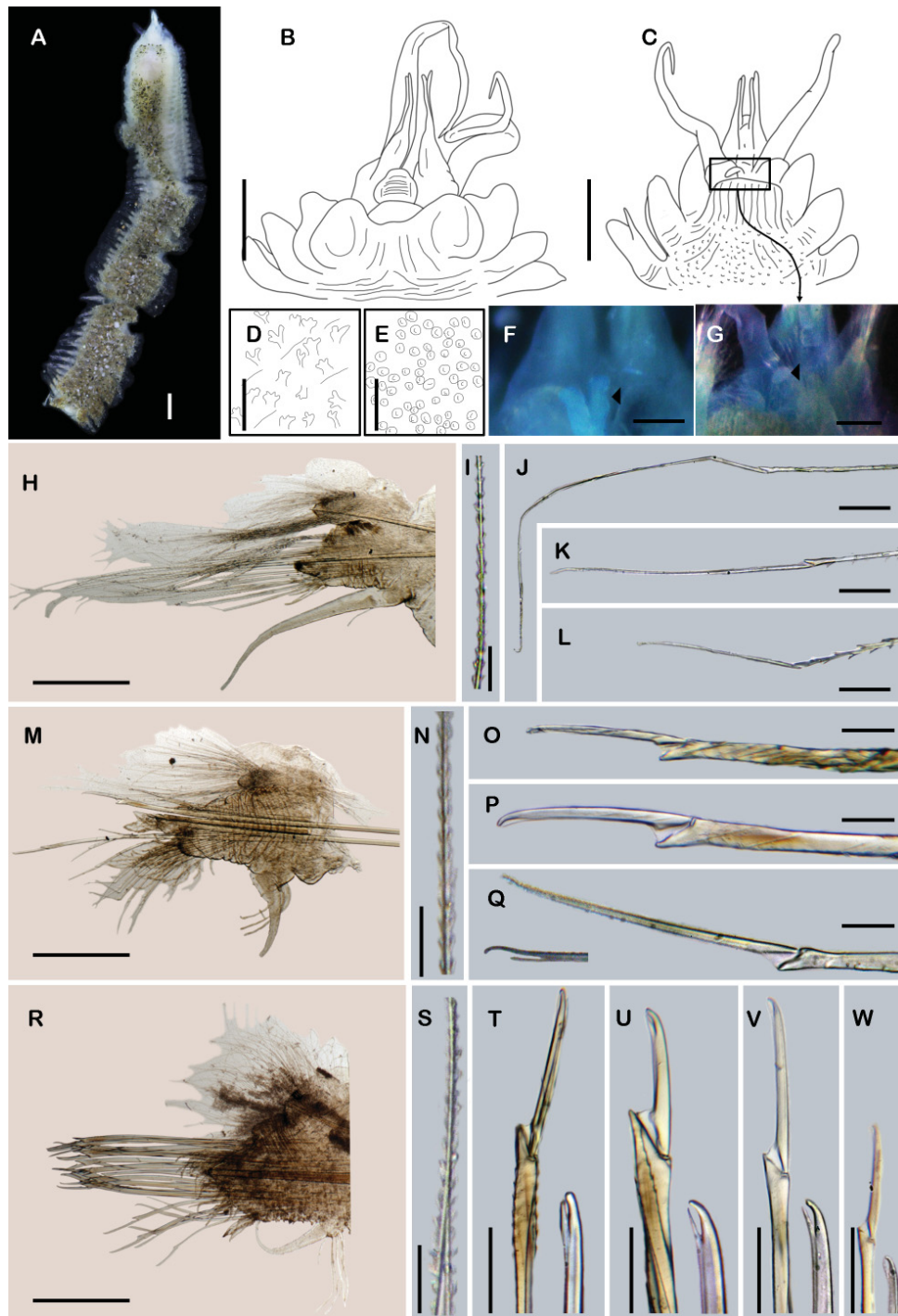
**PROSTOMIUM.** Spherical. Two pairs of eyes, anterior eyes larger and covered by median antennal ceratophore (Fig. 11B). Lateral antennae small, bulbous, ceratophores as long as styles, dorsally fused with tentacular segment (Fig. 11F). Median antenna with bulbous ceratophore, slightly longer than prostomium, with dorsal ridges; style missing. Middorsal lobe of segment II with longitudinal ridge. Facial tubercle short, visible between palps (Fig. 11G). First segment directed anteriorly; fused with tentacular segment (right and left parapodia fused anteriorly); biramous, chaetae simple verticillate. Dorsal tentacular cirrus laterally displaced, longer than neuropodia including chaetae, ventral tetacular cirrus slightly shorter than dorsal one, but larger than neuropodia; palps short, reaching segment four, laterally displaced, with inner palpal sheaths (Fig. 11C).

**ELYTRA.** First right elytron missing. First left elytron oval, covered with few sand grains (Fig. 12E), with several kinds of papillae; elytral surface with flat papillae, and pedunculate papillae with flat tips, more abundant in elytral center; elytral margin with long and short dendritic papillae (Figs 2K–L, 12H). Second right elytron missing. Third right elytron slightly larger than first (Fig. 12F), same distribution and types of papillae as second elytra. Posterior elytra round, only one medial process (Fig. 12G, I–J), with same kind of papillae, but less abundant than anterior elytra (Fig. 12K).

**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 11H). Notopodia truncated, smooth (non-papillate), short, slightly shorter than neuropodia, notopodial flange leaf-shaped. With up to 50 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones 3 × as long (Fig. 11I). Neuropodia leaf-shaped, papillate, larger than notopodia. Neurochaetae only falcate falcigers: unit A, 18 falcigers with handles slender, covered by denticles, blades long soft, 75 × as long as wide (Fig. 11J); unit B, four falcigers with handles slender, covered with denticles, blades long, 22 × as long as wide (Fig. 11K); unit C and D undifferentiated, 11 falcigers with handles slender, covered by denticles, blades soft, long, 14 × as long as wide (Fig. 11L).

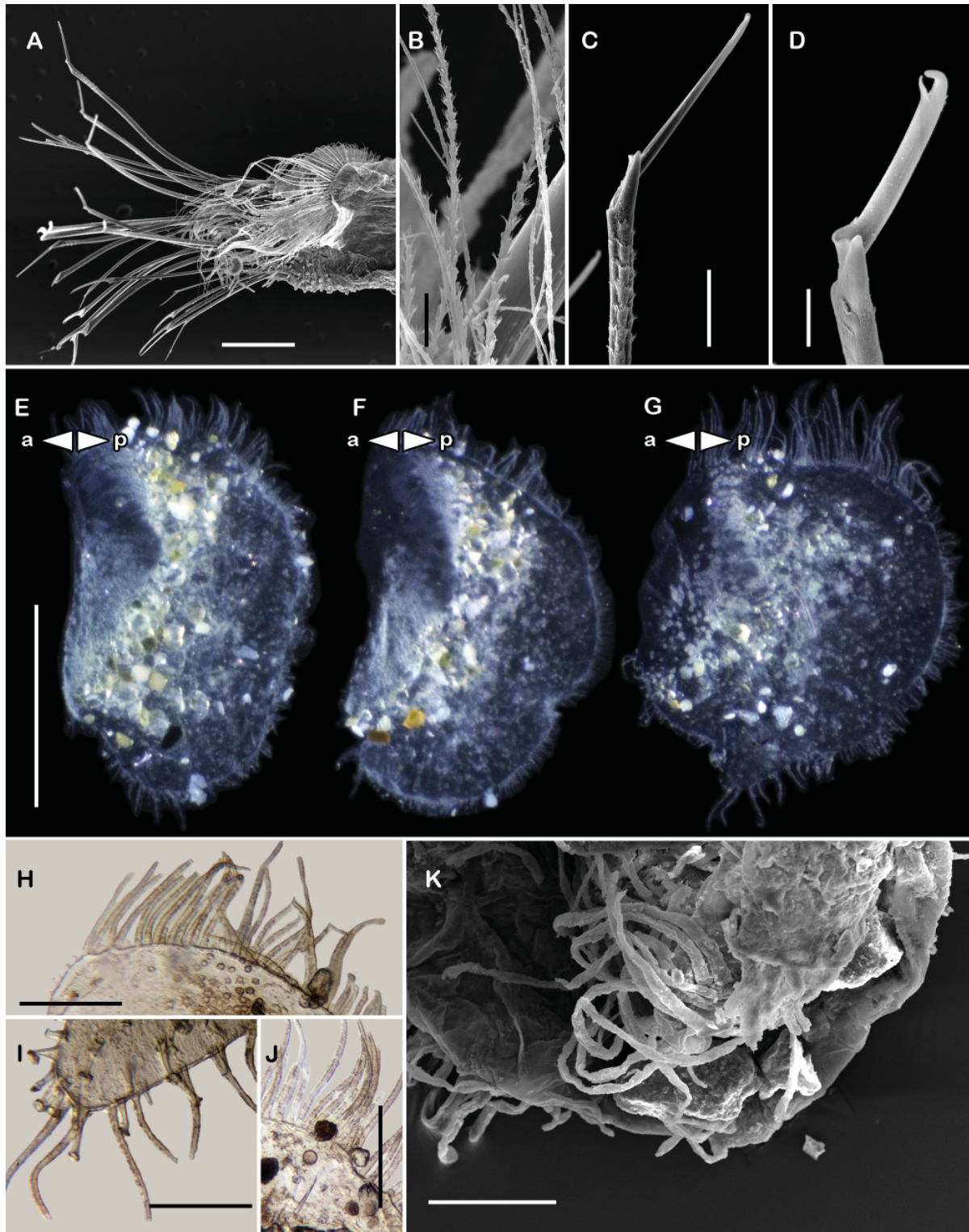
**RIGHT PARAPODIUM FROM SEGMENT III** (Fig. 11M). Notopodia truncated, smooth (non-papillate), short, 1/3 as long as neuropodia, notopodial flange leaf-shaped; notacacula missing. With up to 80 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones twice as long (Fig. 11N). Neuropodia





**Fig. 11.** *Neopsammolyce* aff. *floccifera* (Augener, 1906), non-type material (UMML 6607-393). **A.** Incomplete worm, dorsal view. **B.** Anterior end, dorsal view. **C.** Anterior end, ventral view. **D.** Dorsal papillae (close-up in box). **E.** Ventral papillae (close-up in box). **F.** Close-up of B, arrowhead indicates lateral antennae (median antenna displaced). **G.** Close-up of C, arrowhead indicates facial tubercle. **H.** Right parapodium from segment II. **I.** Notochaeta from same. **J.** Unit A. **K.** Unit B. **L.** Units C and D. **M.** Right parapodium from segment III. **N.** Notochaeta from same. **O.** Unit A. **P.** Unit B. **Q.** Units C and D. **R.** Right parapodium from segment 61. **S.** Notochaeta from same. **T.** Unit A. **U.** Unit B. **V.** Unit C. **W.** Unit D. Scale bars: A = 2 mm; B–C = 1 mm; D–E = 50  $\mu$ m; F–G = 200  $\mu$ m; H, M, R = 500  $\mu$ m; I, N, S = 40  $\mu$ m; J–L, O–Q, T–W = 50  $\mu$ m.





**Fig. 12.** *Neopsammolyce* aff. *floccifera* (Augener, 1906), non-type material (UMML 6607-393). A–D, K. SEM micrographs. A. Right parapodium from segment 27. B. Notochaetae from same. C. Unit A. D. Unit B. E. First left elytron. F. Third right elytron. G. Right posterior elytron. H. Detail of margin from E. I. Medial process from G. J. Margin from G. K. Surface of posterior elytron. Abbreviations: a = anterior; p = posterior. Scale bars: A = 200  $\mu$ m; B = 10  $\mu$ m; C, H–J = 50  $\mu$ m; D = 20  $\mu$ m; E–G = 1 mm; K = 100  $\mu$ m.

conical, papillate, larger than notopodia. Neurochaetae only bifid falcigers: unit A, two falcigers with handles thick, with 5 transverse rows of spines, blades medium-sized,  $8\times$  as long as wide (Fig. 11O); unit B, four falcigers with handles thick, with 0–2 transverse rows of spines, blades medium-sized,  $8\times$  as long as wide (Fig. 11P); units C and D undifferentiated, 10 falcigers with handles with 3 barely perceptible transverse rows of spines, blades long,  $15\text{--}19\times$  as long as wide (Fig. 11Q).

RIGHT PARAPODIUM FROM SEGMENT 61 (MIDDLE SEGMENT) (Figs 11R, 12A). Notopodia truncated, smooth (non-papillate), short,  $\frac{1}{3}$  as long as neuropodia, notopodial flange round. With up to 80 simple verticillate notochoetae, shortest ones as long as notopodia, longest ones twice as long (Figs 11S, 12B). Neuropodia leaf-shaped, papillate, larger than notopodia. Neurochaetae only bifid falcigers: unit A, four falcigers with handles thick, with 3–6 transverse rows of spines, blades medium-sized,  $8\text{--}9\times$  as long as wide (Figs 11T, 12C); unit B, five falcigers with handles thick, with 3 transverse rows of spines or denticles, blades medium-sized,  $7\times$  as long as wide (Figs 11U, 12D); unit C, three falcigers with handles thick, smooth, blades long,  $10\times$  as long as wide (Fig. 11V); unit D, three falcigers with handles slender, smooth, blades medium-sized,  $6\times$  as long as wide (Fig. 11W).

POSTERIOR REGION. Lost.

### Remarks

*Neopsammolyce* aff. *floccifera* resembles *N. floccifera* (Augener, 1906) in a digitiform facial tubercle, a middorsal hump on segment II, and a ventral cirri papillate. However, *N. aff. floccifera* subtly differs by having first elytra small, as long as posterior ones, posterior elytra with long medial process, and neurochaetal blades bifid with subdistal tooth slender; while *N. floccifera* has a long first elytra, almost  $2\times$  longer than posterior ones, posterior elytra with a short medial process, and neurochaetal blades bifid with subdistal tooth thick. This specimen should be revised carefully in order to confirm its identity.

### Distribution

Caribbean Sea. Colombia.

Genus *Pelogenia* Schmarda, 1861

*Pelogenia* Schmarda, 1861: 159.

*Pelogenia* – Pettibone 1997: 30.

### Type species

*Pelogenia antipoda* Schmarda, 1861 by monotypy.

### Diagnosis

Pelogeniinae with prostomium oval, either wider than long or vice versa. Upper lip with or without facial tubercle. Median antennal ceratophore bulbous, base without ctenidia. Segment II without middorsal lobe; neuropodia without appendages; neurochaetal blades falcate, bifid and entire. Segment III with dorsal cirri; neuropodia without appendages; neurochaetal blades bifid. First pair of elytra not enlarged.

### Key to species of *Pelogenia* Schmarda, 1861

(Modified from Pettibone 1997)

- 1. Segment III dorsal cirri with styles longer than cirrophores ..... 2
- Segment III dorsal cirri with styles as long as cirrophores ..... 5
- Segment III dorsal cirri with styles shorter than cirrophores ..... 12

2. Posterior elytra with balloon-like papillate medial and posterior processes, surface without numerous long papillae..... *P. hartmanae* Pettibone, 1997, Puerto Rico, Caribbean Sea  
 – Posterior elytra with cylindrical medial and posterior processes, surface with numerous long papillae ..... 3
3. Middorsum of segment II without papillae; neurochaetal handles from segment II with few transverse rows of spines ..... *P. philippinensis* (McIntosh, 1885), Philippine Islands, Western Pacific  
 – Middorsum of segment II with papillae; neurochaetal handles from segment II with numerous transverse rows of spines ..... 4
4. Neurochaetae from segment II with whorled handles; neurochaetae from middle segments with smooth handles and short blades ..... *P. capitata* sp. nov., Mexico, Caribbean Sea  
 – Neurochaetae from segment II with spinous handles; neurochaetae from middle segments with handles with 2–5 transverse rows of spines and medium-sized blades .....  
 ..... *P. anoculata* (Hartman, 1939), Costa Rica, Eastern Pacific
5. Posterior elytra without posterior processes ..... 6  
 – Posterior elytra with 1–5 posterior processes ..... 9
6. Middorsum of segment II with papillae..... *P. popeae* Pettibone, 1997, Australia, South Pacific  
 – Middorsum of segment II without papillae ..... 7
7. Numerous ventral cirrostyles, each with one basal knob, cirrophores with long papillae ..... 8  
 – Ventral cirrostyles without basal knob, cirrophores with two long papillae.....  
 ..... *P. paxtonae* Pettibone, 1997, Australia, Indian Ocean
8. Dorsal and ventral surfaces densely papillate; notochaetae all spinous capillaries.....  
 ..... *P. antipoda* Schmarda, 1861, New Zealand, South Pacific  
 – Dorsal and ventral surfaces very finely papillate; notochaetae of two kinds: spinous capillaries and fine, hair-like chaetae ..... *P. inhacaensis* Pettibone, 1997, Mozambique, Indian Ocean
9. Middorsum lobe on segment II present; palps easily exceed segment four ..... 10  
 – Middorsum lobe on segment II absent, notched; palps barely reach segment four.....  
 ..... *P. brevialpata* sp. nov., Mexico, Grand Caribbean region
10. Middorsum lobe of segment II rounded; neurochaetal handles with 0–3 transverse rows of spines, blades entire or bifid ..... *P. fimbriata* (Hartman, 1939), Mexico, Eastern Pacific  
 – Middorsum lobe of segment II subtriangular; neurochaetal handles with more than 3 transverse rows of spines, blades entire..... 11
11. Anterior segments with few adherent dorsal papillae; palps long ( $11 \times$  prostomial length).....  
 ..... *P. arenosa* delle Chiaje, 1830, Gulf of Naples, Mediterranean Sea  
 – Anterior segments with several adherent dorsal papillae; palps short ( $7 \times$  prostomial length) .....  
 ..... *P. kinbergi* (Hansen, 1882), Brazil, Southwest Atlantic
12. Posterior elytra with medial processes papillate, without posterior processes; middle segments neurochaetae with handles with 5–9 transverse rows of spines .....  
 ..... *P. semiglabra* (Monro, 1936), New Zealand, South Pacific  
 – Posterior elytra with medial process papillate, with 1–6 posterior processes; middle segments neurochaetae with handles with 0–4 transverse rows of spines ..... 13

13. Middle segments neurochaetae only with entire blades ..... *P. rigida* (Grube, 1868), Red Sea  
– Middle segments neurochaetae with entire and bifid blades ..... 14
14. Posterior elytra without long dendritic papillae on central regions, lateral borders not scalloped and with only one medial process ..... *P. farquhrensii* (Potts, 1910), Madagascar, Indian Ocean  
– Posterior elytra with long dendritic papillae on central regions, lateral borders scalloped and with 2–7 medial processes ..... 15
15. Notopodia with dorsal lobe in all segments; middorsal ridge on median antennal ceratophore; posterior elytra with seven medial processes.....  
..... *P. salazarvallejoi* sp. nov., Saint Martin, Caribbean Sea  
– Notopodia without dorsal lobe; median antennal ceratophore smooth; posterior elytra with two medial processes ..... *P. zeylanica* (Willey, 1905), Indian Ocean

*Pelogenia brevipalpata* sp. nov.

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Figs 13–14

**Diagnosis**

A species of *Pelogenia* with short palps, barely reaching segments 3–4; middorsal lobe of segment II absent; neurochaetae from segment II with smooth basal surface; neurochaetae from posterior segment with blades long; papillate medial processes in posterior elytra.

**Etymology**

The specific name of the species *brevipalpata* is a combination of the Latin singular adjective ‘*brevis* (-es)’, meaning ‘short’, and the noun ‘*palpus* (-i)’, adding the suffix ‘-ata’, meaning ‘having tentacles or tentacled’. The name indicates that the palps are very short, and it is feminine to match the generic gender (ICZN 1999, Art. 31.2).

**Material examined**

**Holotype**

MEXICO • complete spec.; Quintana Roo, Banco Chinchorro, C. Norte; approximately 18°44′07″ N, 87°20′11″ W; May 1998; ECOSUR 289.

**Paratype**

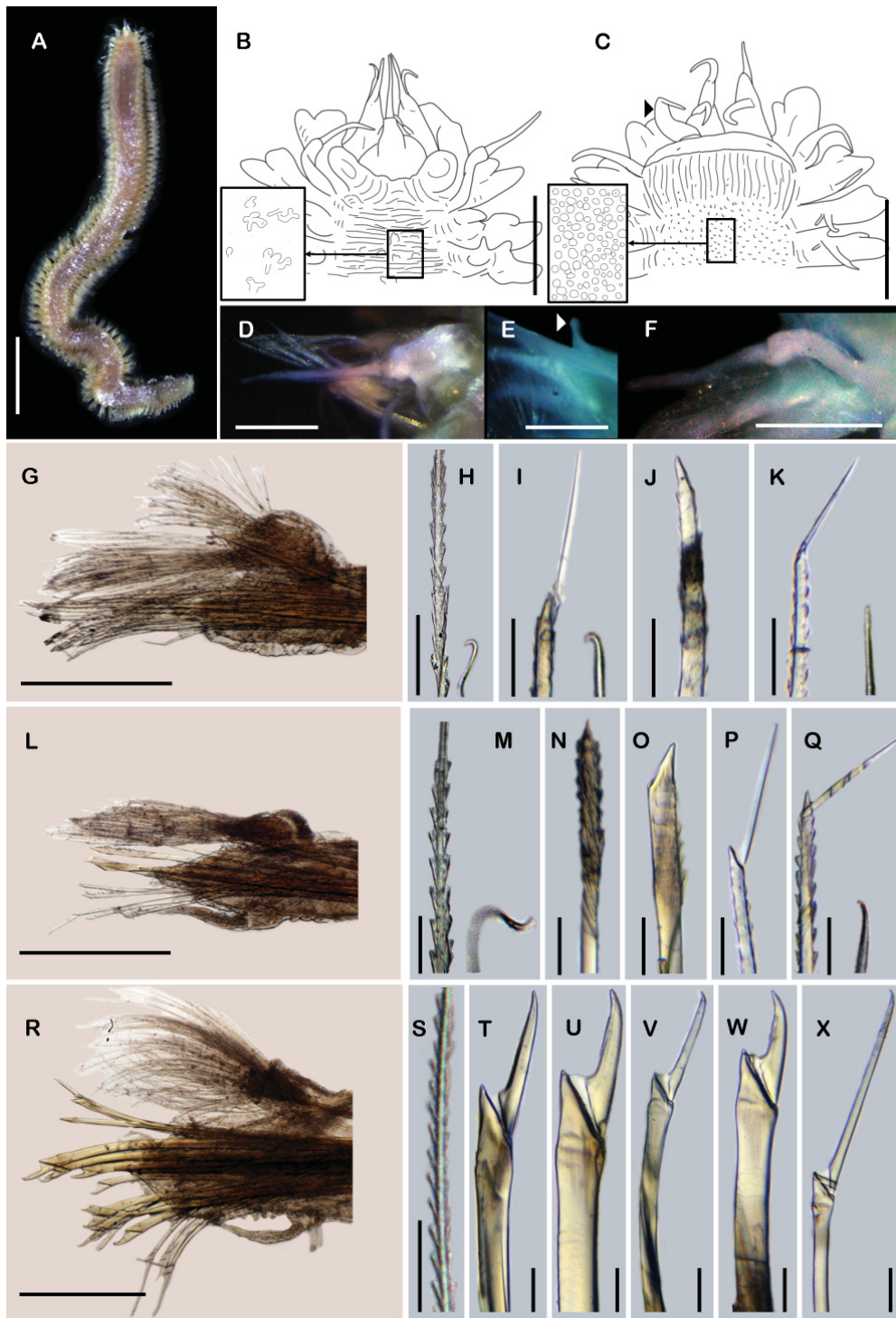
MEXICO • 1 incomplete spec., 52 segments, 0.9 cm long, 0.6 cm to segment 30, 0.6 cm wide; Quintana Roo, Punta Herradura; 18°32′23″ N, 87°44′32″ W; depth 2 m; 28 October 1997; S.I. Salazar-Vallejo and L.F. Carrera-Parra leg; dead coral; ECOSUR 290.

**Description (holotype)**

**BODY.** Pale orange, long, broad (Fig. 13A); 120 segments, 3.2 cm long, 0.8 cm to segment 30, 3.2 cm wide. Middorsal line covered with white foreign particles attached to adhesive papillae (Fig. 13B), and only one damaged elytron remaining attached to the body; paratype with no remaining elytra. Venter covered only with large globular papillae (Fig. 13C).

**PROSTOMIUM.** Oval, wider than long. Two pairs of eyes, anterior eyes larger, inserted anteriorly. Lateral antennae short, slender; ceratophores short, styles as long as ceratophores, dorsally fused with tentacular segment, partially covered by median antennal ceratophore (Fig. 13D–E). Median antenna with bulbous ceratophore, slightly longer than prostomium, with a longitudinal ridge; style very slender, short, as



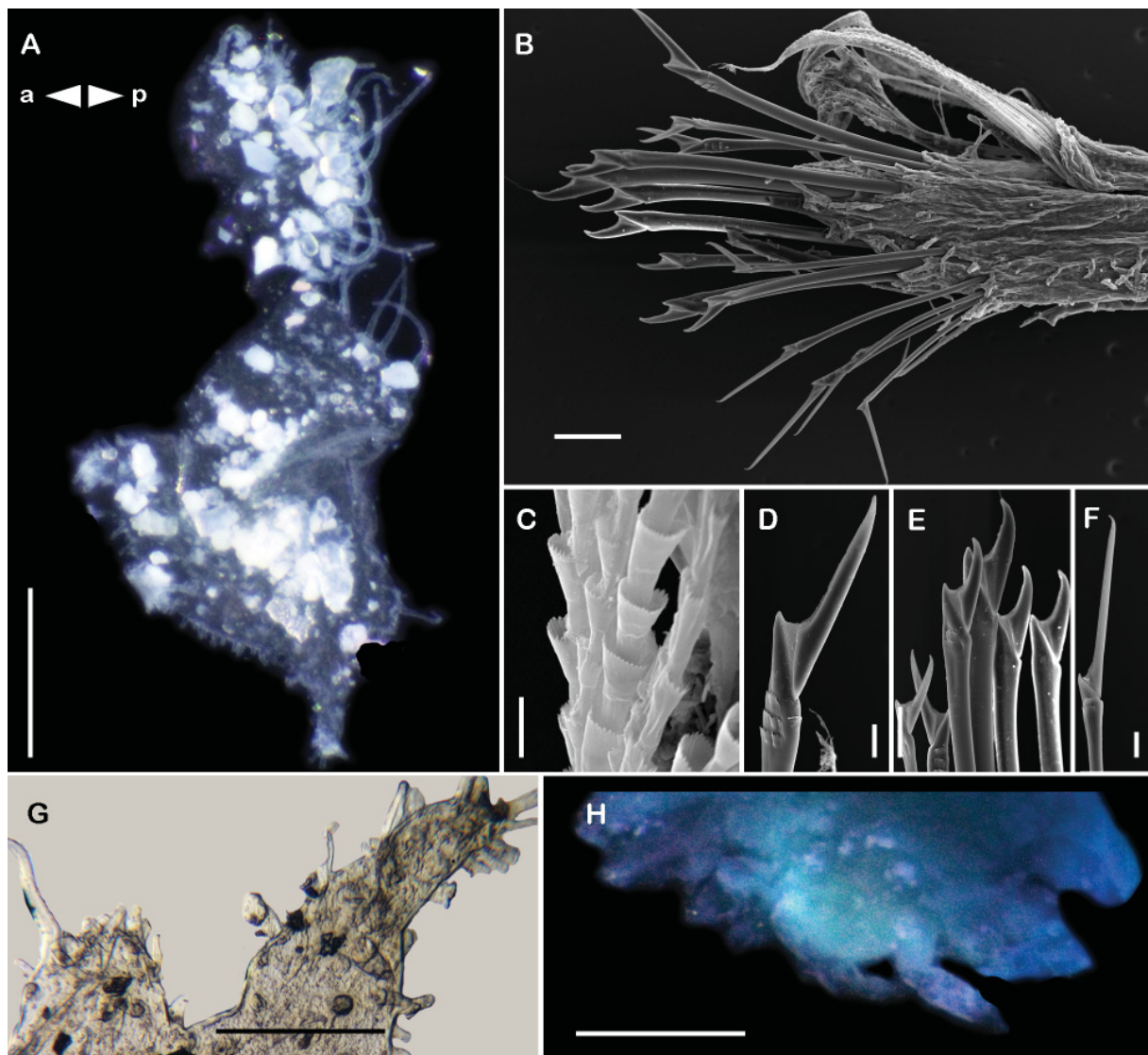


**Fig. 13.** *Pelogenia brevipalpata* sp. nov., holotype (ECOSUR 289). **A.** Complete worm, dorsal view. **B.** Anterior end, dorsal view (insert: dorsal papillae). **C.** Anterior end, ventral view, arrowhead indicates palp (insert: ventral papillae). **D.** Median antenna. **E.** Lateral antenna. **F.** Right dorsal cirrus from segment III. **G.** Right parapodium from segment II. **H.** Notochaeta from same. **I.** Unit A. **J.** Unit B. **K.** Units C and D. **L.** Right parapodium from segment III. **M.** Notochaeta from same. **N.** Unit A. **O.** Unit B. **P.** Unit C. **Q.** Unit D. **R.** Right parapodium from segment 28. **S.** Notochaeta from same. **T.** Unit A. **U.** Unit B. **V.** Unit C. **W.** Subunit 1. **X.** Unit D. Scale bars: A = 5 mm; B–C = 1 mm; D–G, L, R = 500  $\mu$ m; H, M, S = 40  $\mu$ m; I–K, N–Q, T–X = 50  $\mu$ m.

long as prostomium (Fig. 13D). Middorsal lobe of segment II absent. First segment directed anteriorly, fused with tentacular segment; biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral tentacular cirrus as long as dorsal tentacular cirrus; palps short reaching segment three, with inner palpal sheaths, left palp missing (Fig. 13C).

ELYTRA. Only one posterior elytron was found. Damaged posterior right elytron oval, with three posterior processes, anteriorly notched (Fig. 14A); surface with flat papillae, marginal papillae short and long dendritic (Fig. 14G).

RIGHT PARAPODIUM FROM SEGMENT II (Fig. 13G). Notopodia conical, smooth (non-papillate), short, as long as neuropodia; notopodial flange smooth (non-papillate), small. With up to 100 simple verticillate notochaetae, tips hooked, shortest ones  $\frac{1}{3}$  as long as notopodia; longest ones  $3\times$  as long (Fig. 13H).



**Fig. 14.** *Pelogenia brevipalpata* sp. nov. B–F. SEM micrographs. Holotype (ECOSUR 289). **A.** Posterior damaged elytron. **B.** Right parapodium from segment 28. **C.** Notochaetae from same. **D.** Unit A. **E.** Units C and subunit 1. **F.** Unit D. **G.** Close-up from A, median margin. **H.** Pygidium. Abbreviations: a = anterior; p = posterior. Scale bars: A, H = 500  $\mu\text{m}$ ; B, G = 100  $\mu\text{m}$ ; C = 10  $\mu\text{m}$ ; D, F = 20  $\mu\text{m}$ ; E = 50  $\mu\text{m}$ .

Neuropodia truncated, smooth (non-papillate), with a truncated lobe (Fig. 13G). Neurochaetae falcigers and spinigers; all blades entire with hooked tips, but in units C and D, tapered: unit A, six falcigers with handles slender, covered by transverse rows of spines, blades long,  $10\times$  as long as wide (Fig. 13I); unit B, four neurochaetae with handles thick, covered by transverse rows of spines, blades lost (Fig. 13J); units C and D undifferentiated, one spiniger with handle slender, covered by transverse rows of spines, blade long,  $13\times$  as long as wide (Fig. 13K).

RIGHT PARAPODIUM FROM SEGMENT III (Fig. 13L). Dorsal cirrophore as long as cirrostyle (Fig. 13F). Notopodia conical, smooth (non-papillate), short, slightly shorter than neuropodia; notopodial flange rounded. With up to 30 simple verticillate notochaetae, tips hooked, shortest ones twice as long as notopodia, longest ones  $3\times$  as long (Fig. 13M). Neuropodia conical, papillate, short (Fig. 13L). Neurochaetae only falcigers; blades entire, slightly falcate: unit A, one neurochaeta with handle slender with 9 transverse rows of spines, blade lost (Fig. 13N); unit B, four neurochaetae with handles thick with 7–9 transverse rows of spines, blade lost (Fig. 13O); unit C, three falcigers with handles slender with 8–12 transverse rows of spines, blades long,  $10\times$  as long as wide (Fig. 13P); unit D, four falcigers with handles slender with 13–15 transverse row of spines, blades long,  $9\text{--}10\times$  as long as wide (Fig. 13Q).

RIGHT PARAPODIUM FROM SEGMENT 28 (MIDDLE SEGMENT) (Figs 13R, 14B). Notopodia conical, short, smooth (non-papillate), half as long as neuropodia. With up to 80 simple verticillate notochaetae, tips hooked, shortest ones twice as long as notopodia, longest ones  $3\times$  as long (Figs 13S, 14C). Neuropodia conical, papillate. Neurochaetae only falcigers; all blades entire, falcate: unit A, three falcigers, handles thick with transverse rows of denticles, blades medium-sized,  $6\times$  as long as wide (Figs 13T, 14D); unit B, three falcigers with handles thick with barely perceptible transverse rows of denticles, blades medium-sized,  $5\times$  as long as wide (Fig. 13U); unit C, two falcigers with handles slender, smooth, blades medium-sized,  $6\text{--}7\times$  as long as wide (Figs 13V, 14E); subunit 1, four falcigers with handles thick with barely seen transverse rows of denticles, blades short,  $3\text{--}4\times$  as long as wide (Figs 13W, 14E); unit D, four falcigers with handles slender, smooth, blades long,  $14\text{--}16\times$  as long as wide (Figs 13X, 14F).

PYGIDIUM. Rounded with two anal cirri (Fig. 14H).

### Remarks

*Pelogenia brevipalpata* sp. nov. is grouped with other species that have posterior elytra with papillate medial processes and some posterior processes, such as *P. arenosa* delle Chiaje, 1830, *P. fimbriata* (Hartman, 1939), and *P. kinbergi* (Hansen, 1882). However, *P. brevipalpata* sp. nov. differs from these three species in having short palps barely reaching segment 4 and lacking a middorsal lobe on segment II. Well-preserved specimens might enhance the morphological details of the species, regarding elytra and neurochaetae from anterior segments.

### Distribution

Caribbean Sea. Quintana Roo, Mexico.

### *Pelogenia hartmanae* Pettibone, 1997

Figs 15–16

*Pelogenia hartmanae* Pettibone, 1997: 65, figs 47–48.

### Material examined

HONDURAS • 1 incomplete spec.; off Santa Rosa de Augán;  $16^{\circ}07' \text{ N}$ ,  $85^{\circ}38' \text{ W}$ ; R/V Pillsbury, Stn 1369; depth 56 m; 2 Feb. 1971; UMMML 7101-1369.



## Description

**BODY.** Pale maroon, long, very broad (Fig. 15A); 65 segments, 5.1 cm long, 1.4 cm to segment 30, 0.8 cm wide. Middorsal line covered with coarse sand and foraminifera attached to adhesive papillae (Fig. 15E). Venter covered with short globular and long dendritical papillae (Fig. 15F).

**PROSTOMIUM.** Spherical. Two pairs of eyes, anterior eyes slightly larger, inserted anteroventrally. Lateral antennae long, ceratophores longer than styles (Fig. 15B), dorsally fused with tentacular segment, visible below median antennal ceratophore. Median antennal ceratophore bulbous, as long as prostomium, with a transverse ridge; style long,  $3\times$  as long as ceratophore (Fig. 15D). Middorsal lobe of segment II absent. First segment directed anteriorly; fused with tentacular segment; biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral tentacular cirrus slightly shorter than dorsal tentacular cirrus, but longer than neuropodia; palps reaching segment six, with inner palpal sheaths (Fig. 15C).

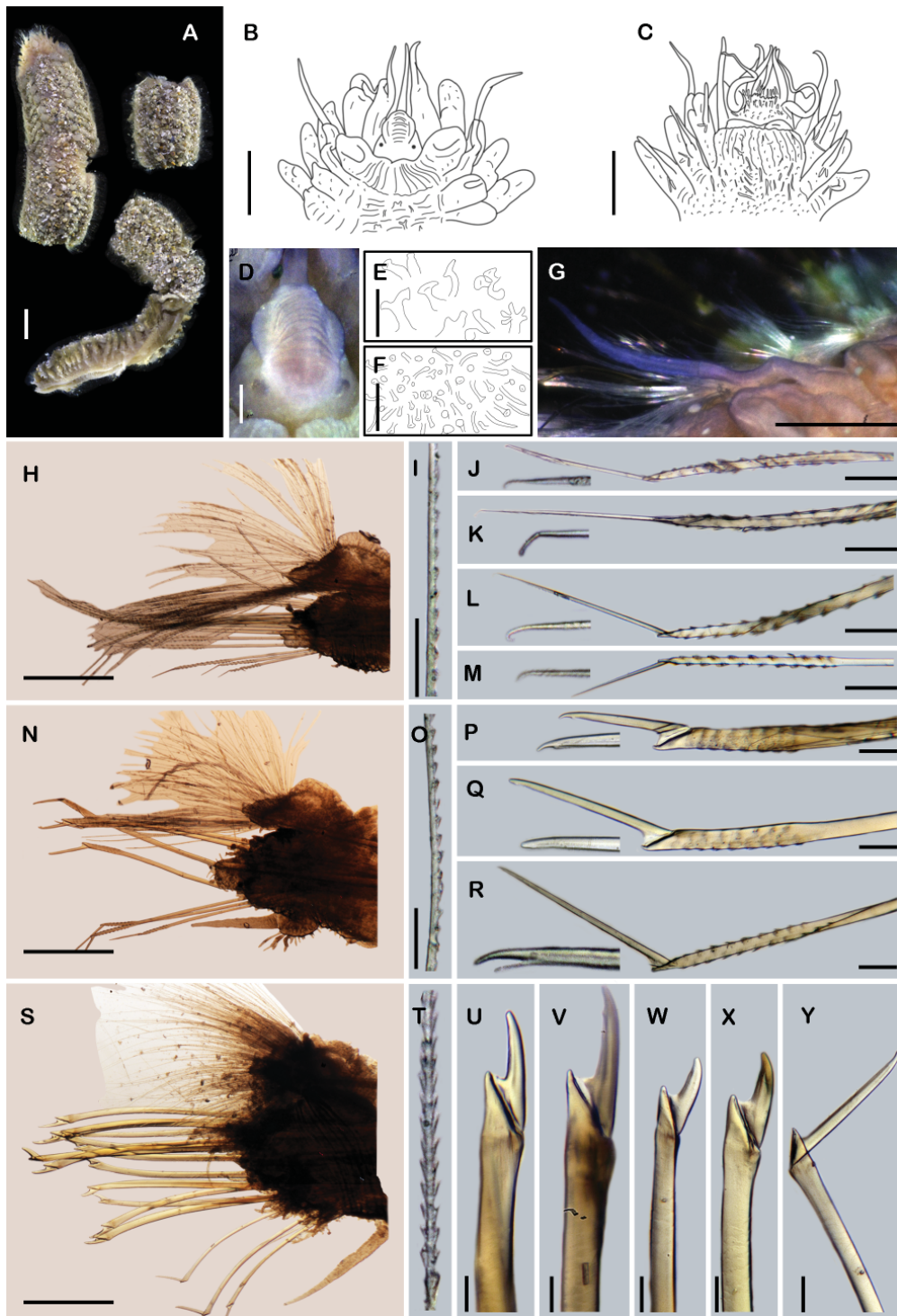
**ELYTRA.** First right elytron oval, longer than wide, with one medial process, covered with coarse sand, spicules and foraminifera (Fig. 16E), two kinds of papillae; elytral surface with short flat and pedunculate papillae with flat tips, more abundant on elytral center; elytral margin with short pedunculate papillae with puffed tips (Fig. 16G). Second and third right and left elytra lost. Posterior elytra subtriangular with three short medial processes, and two posterior processes, all enlarged, globose (Fig. 16F, H–I); four kinds of papillae: elytral surface with flat papillae and pedunculate papillae with flat tips; elytral margin with short dendritic papillae with and without puffed tips, and long dendritic papillae (Fig. 16J–K).

**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 15H). Notopodia conical, smooth (non-papillate), large, as long as neuropodia; notopodia flange rounded, papillate. With up to 60 simple verticillate notochaetae, falcate tips, shortest ones twice as long as notopodia, longest ones  $3\times$  as long (Fig. 15I). Neuropodia truncated, papillate, larger than notopodia. Neurochaetae only falcigers, all blades entire, falcate: unit A, three falcigers with handles slender with 12–13 transverse rows of spines, blades long,  $17\text{--}18\times$  as long as wide (Fig. 15J); unit B, three falcigers with handles very long, slender with 17–22 transverse rows of spines, blades long,  $25\times$  as long as wide (Fig. 15K); unit C, nine falcigers with handles slender, handle with 17–19 transverse rows of spines, blades long,  $28\text{--}29\times$  as long as wide (Fig. 15L); unit D, two falcigers with handles slender with 7–8 transverse rows of spines, blades long,  $20\times$  as long as wide (Fig. 15M).

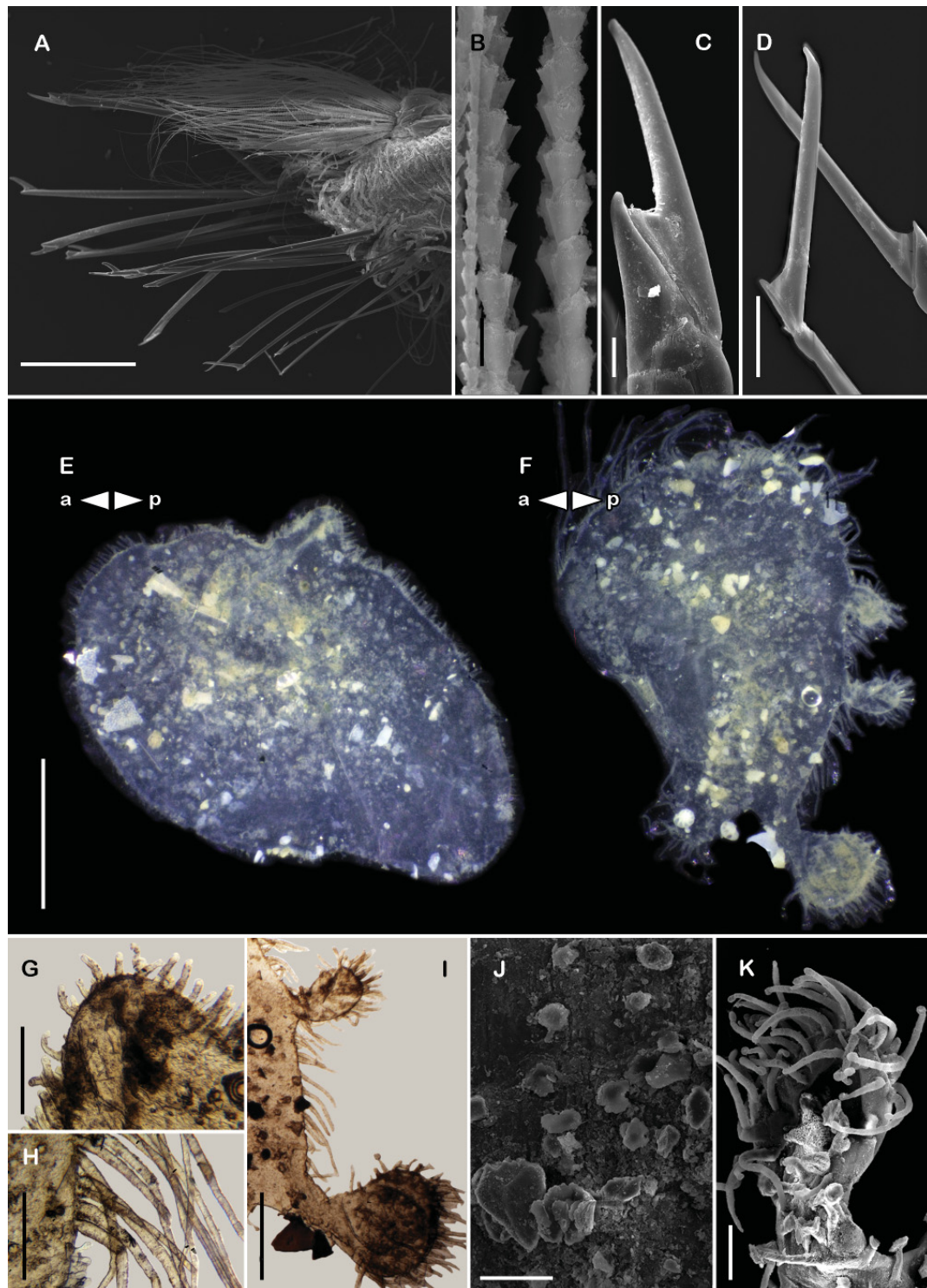
**RIGHT PARAPODIUM FROM SEGMENT III** (Fig. 15N). Dorsal cirrophore slightly shorter than cirrostyle (Fig. 15G). Notopodia truncated, smooth (non-papillate) short, slightly shorter than neuropodia; notopodia flange round, papillate. With up to 70 simple verticillate, falcate tips, shortest ones as long as notopodia, longest ones twice as long (Fig. 15O). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only falcigers; most blades with subdistal tooth broken, unit D bifid: unit A, two falcigers with handles thick with 7–9 transverse rows of spines, blades medium-sized,  $8\times$  as long as wide (Fig. 15P); unit B, two falcigers with handles thick with 7–8 transverse rows of spines, blades long,  $12\text{--}13\times$  as long as wide (Fig. 15Q); unit D, three falcigers with handles slender with 8 transverse rows of spines, blades long,  $19\times$  as long as wide (Fig. 15R).

**RIGHT PARAPODIUM FROM SEGMENT 26 (MIDDLE SEGMENT)** (Figs 15S, 16A). Notopodia conical, smooth (non-papillate), slightly shorter than neuropodia. With up to 120 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones twice as long (Figs 15T, 16B). Neuropodia conical, papillate, longer than notopodia. Neurochaetae only falcigers; all blades unidentate, falcate: unit A, three falcigers with handles thick with subdistal transverse rows of denticles, blades short,  $3\text{--}4\times$  as long as wide (Figs 15U, 16C); unit B, two falcigers with handles thick with subdistal transverse rows of denticles, blades short,  $4\text{--}5\times$  as long as wide (Fig. 15V); unit C, eight falcigers with handles slender with subdistal transverse





**Fig. 15.** *Pelogenia hartmanae* Pettibone, 1997, non-type specimen (UMML 7101-1369). **A.** Incomplete fragmented worm, dorsal view. **B.** Anterior end, dorsal view. **C.** Anterior end, ventral view. **D.** Detail of median antenna ceratophore. **E.** Dorsal papillae (close-up in box). **F.** Ventral papillae (close-up in box). **G.** Right cirrus from segment III. **H.** Right parapodium from segment II. **I.** Notochaeta from same. **J.** Unit A. **K.** Unit B. **L.** Unit C. **M.** Unit D. **N.** Right parapodium from segment III. **O.** Notochaeta from same. **P.** Unit A. **Q.** Unit B. **R.** Units C and D. **S.** Right parapodium from segment 26. **T.** Notochaeta from same. **U.** Unit A. **V.** Unit B. **W.** Unit C. **X.** Subunit 1. **Y.** Unit D. Scale bars: A = 2 mm; B–C = 1 mm; D = 50  $\mu$ m; E–F = 20  $\mu$ m; G–H, N, S = 500  $\mu$ m; I, O, T = 40  $\mu$ m; J–M, P–R, U–Y = 50  $\mu$ m.



**Fig. 16.** *Pelogenia hartmanae* Pettibone, 1997, non-type material (UMML 7101-1369). A–D, J–K. SEM micrographs. A. Right parapodium from segment 25. B. Notochaeta from same. C. Unit A. D. Unit D. E. First right elytron. F. Posterior elytron. G. Distal expansion from E. H. Margin from F. I. Posterior process from F. J. Surface of posterior elytron with flat papillae and pedunculate papillae with flat tips. K. Posterior process, long dendritic papillae and pedunculate papillae with flat tip. Abbreviations: a = anterior; p = posterior. Scale bars: A = 500  $\mu$ m; B = 10  $\mu$ m; C = 20  $\mu$ m; D, J = 50  $\mu$ m; E–F = 1 mm; G–I, K = 100  $\mu$ m.

rows of denticles, blades short,  $2-3 \times$  as long as wide (Fig. 15W); subunit 1, one falciger with handle thick, smooth, with subdistal transverse rows of denticles, blade short,  $2 \times$  as long as wide (Fig. 15X); unit D, four falcigers with handles slender with transverse rows of denticles, blades long,  $12 \times$  as long as wide (Figs 15Y, 16D).

POSTERIOR REGION. Lost.

### Remarks

This specimen agrees with the original description by Pettibone (1997).

### Distribution

Caribbean Sea. From Puerto Rico to Honduras.

### *Pelogenia kinbergi* (Hansen, 1882)

Figs 2C–D, I–J, 17–18

*Psammolyce kinbergi* Hansen, 1882: 5, pl. 1 figs 10–13.

*Pelogenia kinbergi* – Pettibone 1997: 56, figs 41–42 (syn., comb. nov.).

### Material examined

GUYANA • 1 incomplete spec.; off Georgetown;  $08^{\circ}28' \text{ N}$ ,  $58^{\circ}12' \text{ W}$ ; R/V Pillsbury, Stn 0694; depth 80 m; 15 Jul. 1968; UMML 6806-0694.

### Description

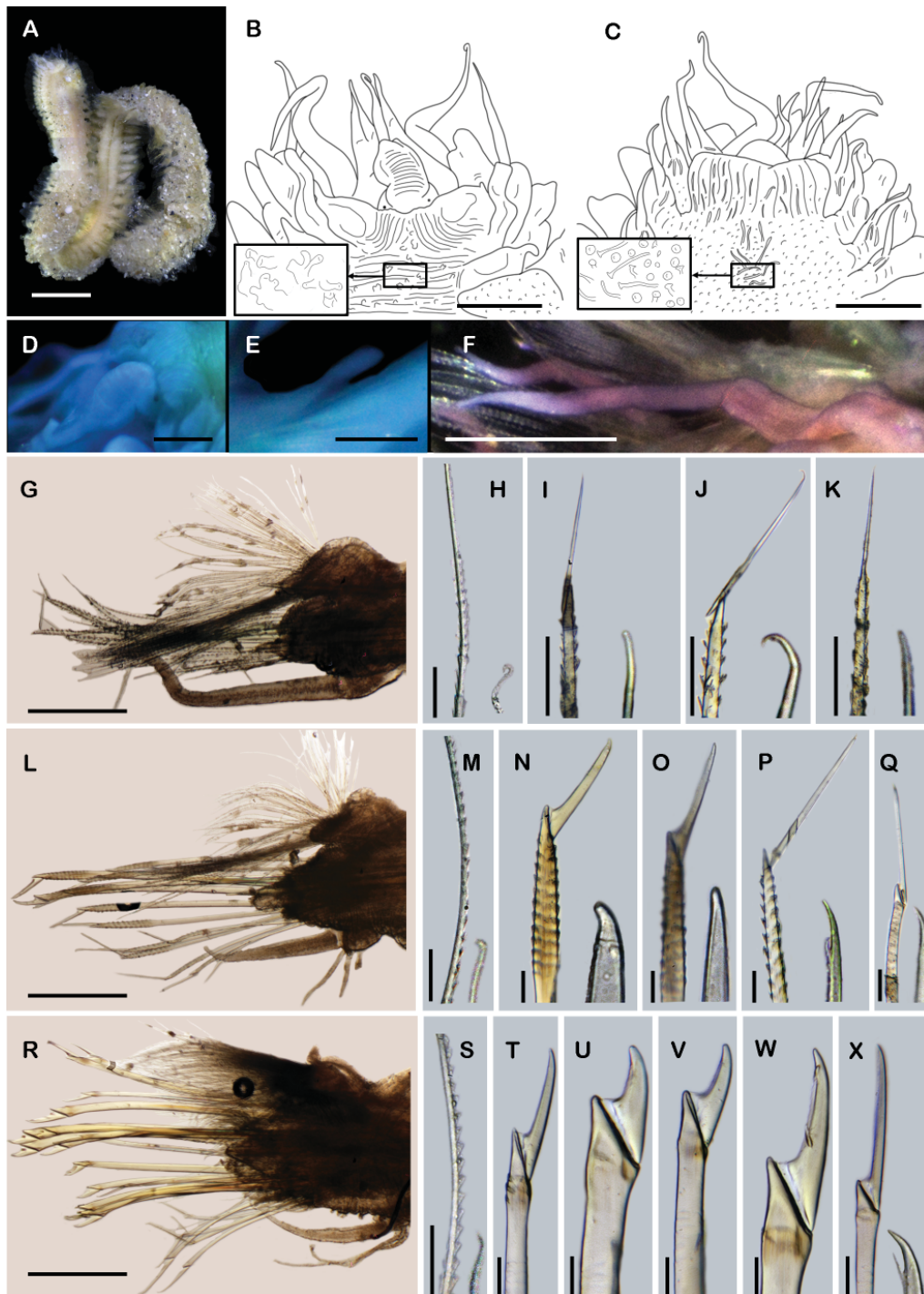
**BODY.** Pale yellow, long, broad (Fig. 17A); 67 segments, 4.5 cm long, 1.5 cm to segment 30, 0.5 cm wide. Middorsal line covered with coarse sand attached to adhesive papillae (Fig. 17B). Venter partially covered with short globular and long dendritic papillae (Fig. 17C).

**PROSTOMIUM.** Spherical. Two pairs of eyes, anterior eyes slightly larger and inserted anteroventrally (Fig. 17D). Lateral antennae long, slender; ceratophores longer than style, dorsally fused with tentacular segment, completely covered by median antennal ceratophore (Fig. 17E). Median antenna with bulbous ceratophore, twice as long as prostomium, with transverse ridges; style long, slightly shorter than ceratophore (Fig. 17D). Middorsal lobe of segment II absent. First segment directed anteriorly; fused with tentacular segment (left and right parapodia fused anteriorly); biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral tentacular cirrus as long as dorsal tentacular one, longer than neuropodia; palps short, reaching segment five, with inner palpal sheaths (Fig. 17B).

**ELYTRA.** First right elytron oval, with one large medial process, with two kinds of papillae (Fig. 18E): surface with flat papillae, elytral margin with pedunculate papillae with puffed tips (Fig. 18G). Posterior elytra oval notched, with two short medial processes, and four posterior enlarged processes, each distally expanded (Fig. 18F); four kinds of papillae: on the surface flat papillae, and pedunculate papillae with flat tips, concentrated along the largest process; elytral margin with pedunculate with puffed tips, and long dendritic papillae (Figs 2C–D, I–J, 18H–I).

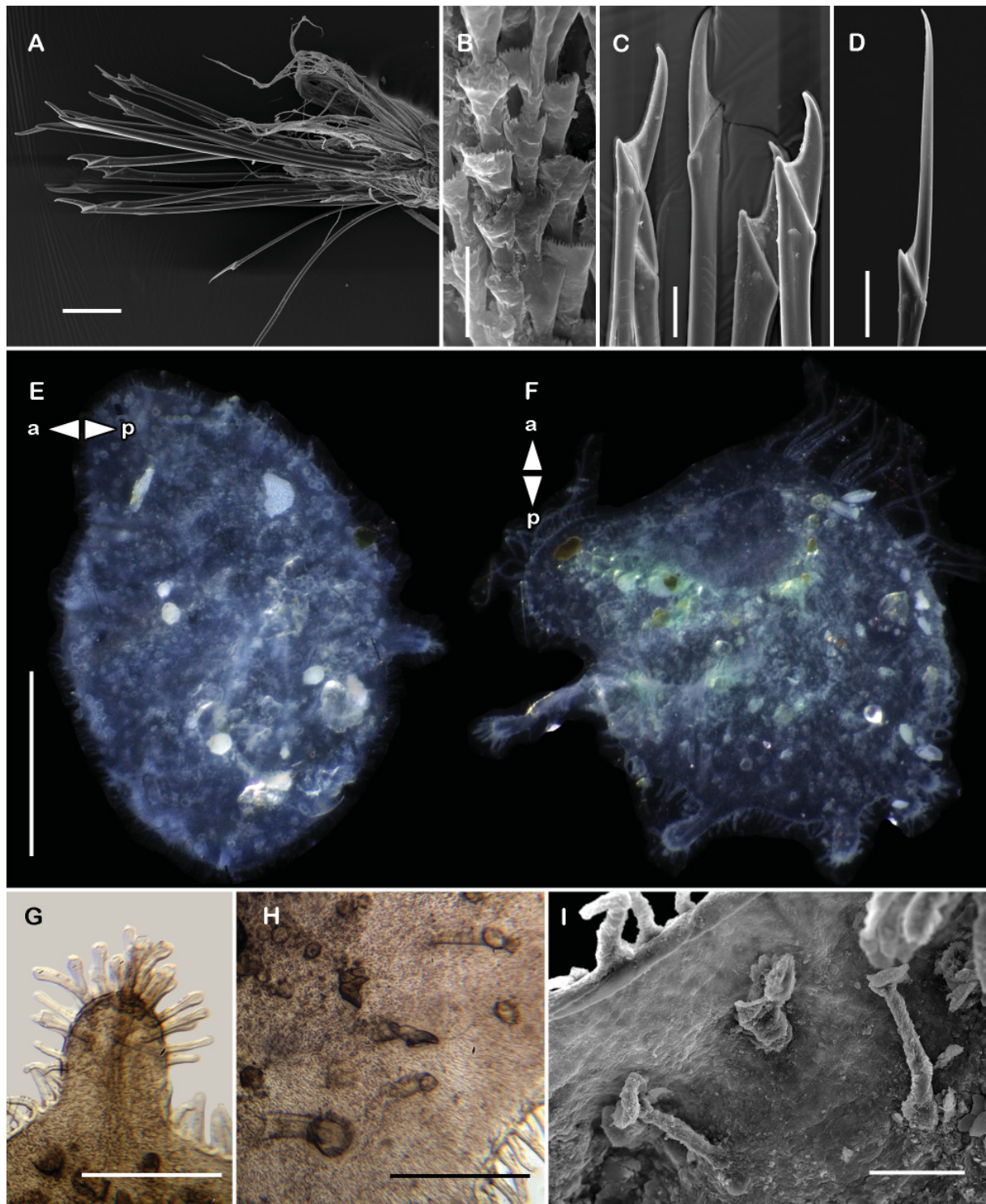
**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 17G). Notopodia conical, papillate, as large as neuropodia; notopodial flange round, papillate. With up to 80 simple verticillate chaetae, tips hooked (Fig. 17H), shortest ones as long as notopodia, longest ones twice as long. Neuropodia truncated, short, papillate; with a truncated appendage (Fig. 17G). Neurochaetae only falcigers; all blades entire, slightly falcate: unit A, six falcigers with handles slender, with 19–21 transverse rows of spines, blades long,  $12-13 \times$  as





**Fig. 17.** *Pelogenia kinbergi* (Hansen, 1882), non-type specimen (UMML 6806-0694). **A.** Incomplete worm, dorsal view. **B.** Anterior end, dorsal view (insert: dorsal papillae). **C.** Anterior end, ventral view, pharynx partially everted (insert: ventral papillae). **D.** Detail of median antenna ceratophore. **E.** Lateral antenna. **F.** Right dorsal cirrus form segment III. **G.** Right parapodium from segment II. **H.** Notochaeta from same. **I.** Unit A. **J.** Unit B. **K.** Units C and D. **L.** Right parapodium from segment III. **M.** Notochaeta from same. **N.** Unit A. **O.** Unit B. **P.** Unit C. **Q.** Unit D. **R.** Right parapodium from segment 21. **S.** Notochaeta from same. **T.** Unit A. **U.** Unit B. **V.** Unit C. **W.** Subunit 1. **X.** Unit D. Scale bars: A = 5 mm; B–C, F = 1 mm; D, G, L, R = 500  $\mu$ m; E = 200  $\mu$ m; H, M, S = 40  $\mu$ m; I–K, N–Q, T–X = 50  $\mu$ m.





**Fig. 18.** *Pelogenia kinbergi* (Hansen, 1882), non-type specimen (UMML 6806-0694). A–D, I. SEM micrographs. A. Right parapodium from segment 25. B. Notochaetae from same. C. Units A and B. D. Unit D. E. First right elytron. F. Right posterior elytron. G. Posterior process from E. H. Margin from E. I. Surface of posterior elytron, marginal dendritic papillae and pedunculate papillae with flat tips. Abbreviations: a = anterior; p = posterior. Scale bars: A = 200 µm; B = 10 µm; C–D, I = 50 µm; E–F = 1 mm; G–H = 100 µm.

long as wide (Fig. 17I); unit B, five falcigers with handles slender, with 29–31 transverse rows of spines, blades long, 13–14 × as long as wide (Fig. 17J); units C and D undifferentiated, two falcigers with handles slender with 11–13 transverse rows of spines, blades long, 14–15 × as long as wide (Fig. 17K).

RIGHT PARAPODIUM FROM SEGMENT III (Fig. 17L). Dorsal cirrophore as long as cirrostyle (Fig. 17F). Notopodia conical, short, smooth (non-papillate), half as long as neuropodia; notopodial flange conical, non-papillate. With up to 60 simple verticillate notochaetae, tips hooked, shortest ones as long as notopodia, longest ones twice as long (Fig. 17M). Neuropodia larger, conical, papillate. Neurochaetae only falcigers; units A and B with entire tips; units C and D with bifid tips: unit A, two falcigers with handles thick with 12–13 transverse rows of spines, blades medium-sized, 8 × as long as wide (Fig. 17N); unit B, four falcigers with handles thick with 8–12 transverse rows of spines, blades long, 9–10 × as long as wide (Fig. 17O); unit C, four falcigers with handles slender with 7–8 transverse rows of spines, blades long, 19–20 × as long as wide (Fig. 17P); unit D, two falcigers with handles slender with barely perceptible 8 transverse rows of denticles, blades long, 15 × as long as wide (Fig. 17Q).

RIGHT PARAPODIUM FROM SEGMENTS 21 AND 25 (MIDDLE SEGMENT) (Figs 17R, 18A). Notopodia conical, short, smooth (non-papillate), half as long as neuropodia; notopodial flange large, rounded. With up to 120 simple verticillate notochaetae, shortest ones twice as long as notopodia, longest ones 3 × as long (Figs 17S, 18B). Neuropodia larger, conical, papillate. Neurochaetae only falcigers; units A–subunit 1 with blades unidentate, falcate; unit D with bifid tips: unit A, two falcigers with handles slender with 2 rows of spines, and two subdistal rows of denticles, blades medium-sized, 4–5 × as long as (Figs 17T, 18C); unit B, three falcigers with handles thick with barely perceptible transverse rows of denticles, blades short, 2 × as long as wide (Figs 17U, 18C); unit C, six falcigers with handles slender with transverse rows of denticles, blades short, 2–3 × as long as wide (Fig. 17V); subunit 1, one falciger with handle thick with one transverse row of spines and subdistal rows of denticles, blade massive medium-sized, 2 × as long longer than wide (Fig. 17W); unit D, six falcigers with handles slender with transverse rows of denticles, blades long, 12–13 × as long as wide (Figs 17X, 18D).

POSTERIOR REGION. Lost.

### Remarks

Pettibone (1997) redescribed *P. kinbergi* using Hansen's (1882) description and topotype specimens. Moreover, through examination of the holotype and the original description of *Eupholoe nuda* Treadwell, 1936, described from Bermuda, she concluded that this species should be regarded as its junior synonym. The specimens here examined agree with the description by Pettibone (1997), except for the proportion of the cirrophore and the style of the dorsal cirri from segment III. The specimen illustrated by Pettibone (1997: 57, fig. 41d) shows the dorsal cirri with a long cirrophore, and slightly shorter style, while the specimen here examined present the cirrophore slightly shorter than the style. The distortion of the cirrophore might be caused by fixation.

Also, intraspecific differences were noted in the elytra: the specimen here examined has a well-developed medial process on the first right elytron while the specimen examined by Pettibone has a barely expanded region at the same site (Pettibone 1997: 58, fig. 42a); the examined specimen has posterior elytra with four medial processes, while Pettibone (1997: 58, fig. 42c) indicated only three. According to Pettibone (1997: 56) there is no existing type material of the species. However, Augener (1934: 123–125) redescribed the type material, originally deposited in Leiden, The Netherlands, but it might have been reidentified and placed elsewhere. Although the specific status is solved, it would be useful to confirm whether the type material is not lost.

### Distribution

Grand Caribbean Region, from Florida to off João Pessoa, Brazil.

*Pelogenia capitata* sp. nov.

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Figs 2Q–R, 19–20

? *Pelogenia anoculata* – Pettibone 1997: 62 (non Hartman, 1939).

**Diagnosis**

A species of *Pelogenia* with short palps reaching segments 3–5; middorsal lobe of segment II absent, surface papillate; neurochaetae from segment II with dentate basal surface; neurochaetae from posterior segment with short thick blades; papillate medial process in posterior elytra with capitate papillae.

**Etymology**

The specific name of the species is a Latin singular adjective ‘*capitata* (-us, -um)’, meaning ‘capitate’. The name indicates the presence of capitate papillae on the elytral surface, and it is feminine for matching the generic gender (ICZN 1999, Art. 31.2).

**Material examined**

**Holotype**

MEXICO • complete spec.; Quintana Roo, Isla Contoy, in front of CONANP station; 21°28'21.09" N, 86°47'23.87" W; 1 Mar. 2001; ECOSUR 291.

**Paratype**

MEXICO • 1 incomplete spec., 47 segments, 0.9 cm long, 0.6 cm to segment 30, 0.2 cm wide; Quintana Roo, Isla Contoy; approximately 21°27'37.06" N, 86°47'19.34" W; 12 May 1983; ECOSUR 292.

**Other material**

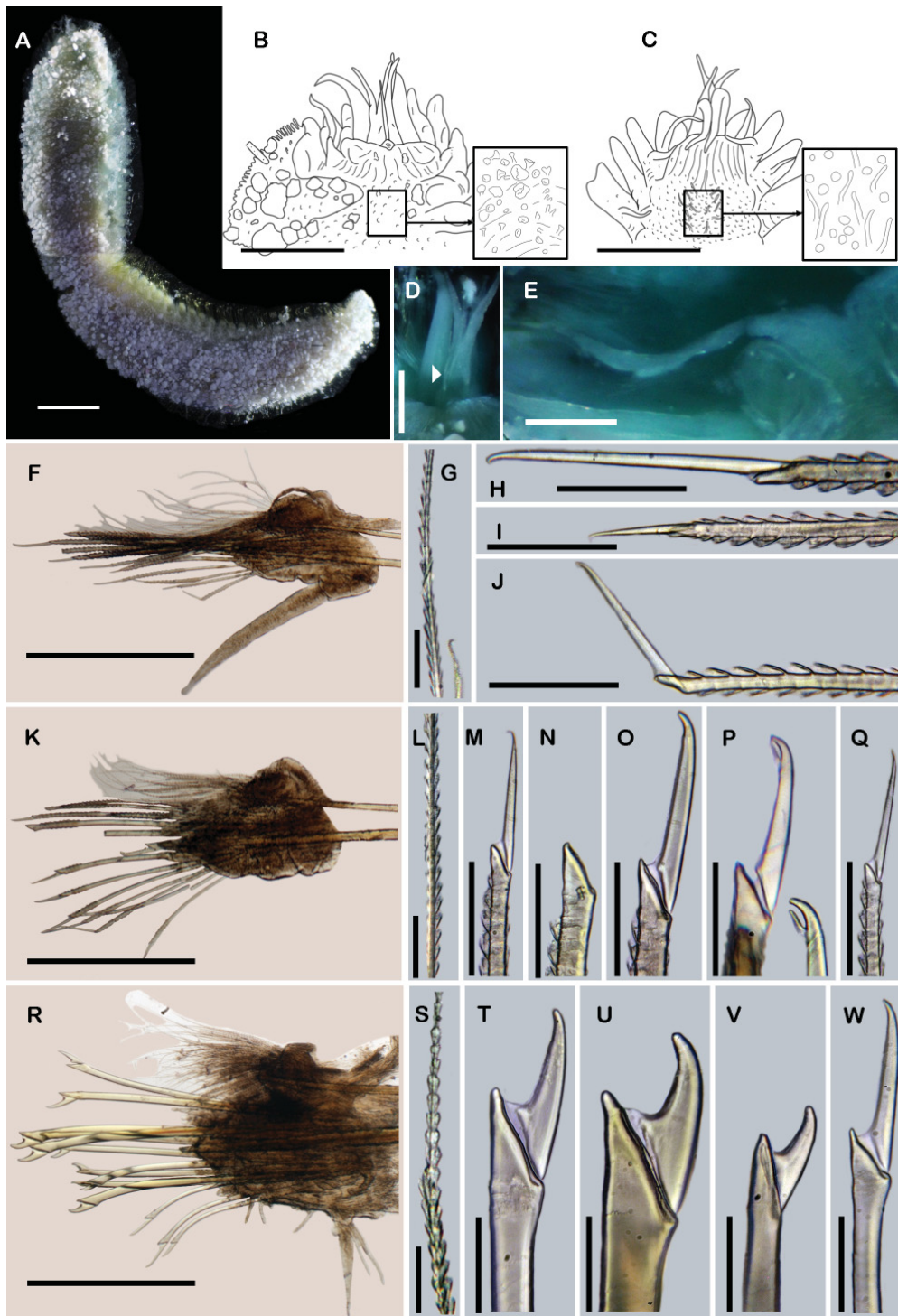
MEXICO • 1 complete spec., 69 segments, 1.8 cm long, 0.8 cm to segment 30, 0.3 cm wide; Quintana Roo, Mahahual Sur; approximately 18°42'44.74" N, 87°42'32.01" W; 4 Jun. 1998; depth 40 cm; on *Thalassia testudinum*; S.I. Salazar-Vallejo and L.F. Carrera-Parra leg.; ECOSUR-P3226 • 1 complete spec., 80 segments, 1.9 cm long, 0.7 cm to segment 30, 0.3 cm wide; Quintana Roo, Mahahual Norte; 18°43'28" N, 87°42'05" W 19 Jan. 2001; ECOSUR-P3227 • 1 incomplete spec., 33 segments, 3.5 cm long, 3.2 cm at segment 30, 0.1 cm wide; Quintana Roo, Mahahual; 18 Mar. 2001; Kristian Fauchald leg.; ECOSUR-P3228 • 1 complete spec., 56 segments, 1.4 cm long, 0.8 cm to segment 30, 0.25 cm wide; Quintana Roo, Xcalac; 29 Aug. 2002; ECOSUR-P3229 • 2 specs, 78–86 segments, 1.5–2 cm long, 0.6–0.7 cm to segment 30, 0.4–0.6 cm wide; Quintana Roo, Banco Chinchorro, Cayo Norte; 18°45'46" N, 87°15'84" W; Edwin Link Submersible; depth 60 m; Elva Escobar and Luis Soto leg.; ECOSUR-P3230.

**Description (holotype)**

**BODY.** Pale yellow, short, broad (Fig. 19A); 59 segments, 1.7 cm long, 0.8 cm to segment 30, 0.3 cm wide. Middorsal line covered with white foreign particles attached to adhesive papillae (Fig. 19B). Venter covered with long papillae and short globular papillae (Fig. 19C).

**PROSTOMIUM.** Retracted, oval, wider than long. Two pairs of eyes, anterior eyes larger. Lateral antennae long, ceratophores short, as long as styles, dorsally fused with tentacular segment and partially covered by median antennal ceratophore. Median antennal ceratophore bulbous, slightly longer than prostomium, with a longitudinal ridge; style slender, long, twice as long as ceratophore (Fig. 19D). Middorsal lobe of segment II absent, surface papillate. First segment directed anteriorly; fused with tentacular segment; biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral tentacular cirrus slightly shorter than dorsal tentacular cirrus, but longer than neuropodia; palps short, barely reaching segment three, with inner palpal sheaths (Fig. 19C).





**Fig. 19.** *Pelogenia capitata* sp. nov., holotype (ECOSUR 291). **A.** Complete worm, dorsal view. **B.** Anterior end, dorsal view (insert: dorsal papillae). **C.** Anterior end, ventral view (insert: ventral papillae). **D.** Close-up of B, arrowhead indicates median antenna. **E.** Right dorsal cirrus from segment III. **F.** Right parapodium from segment II. **G.** Notochaeta from same. **H.** Unit A. **I.** Unit C. **J.** Unit D. **K.** Right parapodium from segment III. **L.** Notochaeta from same. **M.** Unit A. **N.** Unit B. **O.** Unit C. **P.** Subunit 1. **Q.** Unit D. **R.** Right parapodium from segment 25. **S.** Notochaeta from same. **T.** Unit A. **U.** Unit B. **V.** Unit C. **W.** Unit D. Scale bars: A = 2 mm; B–C, F, K, R = 500  $\mu$ m; D–E = 200  $\mu$ m; G, L, S = 40  $\mu$ m; H–J, M–Q, T–W = 50  $\mu$ m.





ELYTRA. First right elytron subtriangular without perceptible processes, instead, an expanded rounded lobe on anterior margin, covered with coarse sand and four kinds of papillae (Fig. 20I); elytral surface with pedunculate papillae with puffed tips; elytral margin with pedunculate capitate papillae (Fig. 20L). Second right elytron pear-shaped with one medial process (Fig. 20J); four types of papillae, elytral surface with wide pedunculate papillae with puffed tips, scattered on the elytron; on the margin, short dendritic papillae and pedunculate capitate papillae, some of them bifurcated. Posterior elytron oval with one large medial process (Fig. 20K), elytral surface with pedunculate papillae with puffed tips (Fig. 20M–O).

RIGHT PARAPODIUM FROM SEGMENT II (Fig. 19F). Notopodia rounded, papillate, short, half as long as neuropodia. With up to 30 simple verticillate notochaetae, tip hooked, shortest ones as long as notopodia, longest ones  $4\times$  as long (Fig. 19G). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only falcigers; all blades unidentate, falcate: unit A, one falciger with handles thick, whorled with 17–13 transverse rows of spines, blades long,  $15\text{--}16\times$  as long as wide, basally dentate with several rows of denticles randomly distributed (Figs 19H, 20F–H); unit C, five falcigers with handles slender, whorled with 12–14 transverse rows of spines, blades medium-sized,  $8\times$  as long as wide (Fig. 19I); unit D, two falcigers with handles slender, whorled with 8–9 transverse rows of spines, blades long,  $9\times$  as long as wide (Fig. 19J). Unit B, apparently absent.

RIGHT PARAPODIUM FROM SEGMENT III (Fig. 19K). Dorsal cirrus with cirrophore short, style long,  $3\times$  as long as cirrophore (Fig. 19E). Notopodia truncated, smooth (non-papillate) and short, slightly shorter than neuropodia. With up to 30 simple verticillate notochaetae, tips hooked, shortest ones slightly shorter than notopodia, longest ones  $3\times$  as long (Fig. 19L). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only falcigers; units A and D with blades unidentate, falcate; units C and subunit 1 with blades bifid, most of the blades with subdistal tooth broken: unit A, four falcigers with handles thick, whorled with 15–17 transverse rows of spines, blades medium-sized,  $6\times$  as long as wide (Fig. 19M); unit B, two neurochaetae with handles thick, whorled with 10 transverse rows of spines, blades lost (Fig. 19N); unit C, two falcigers with handles thick, whorled with 6 transverse rows of spines, blades medium-sized,  $6\text{--}7\times$  as long as wide (Fig. 19O); subunit 1, one falciger with handles thick with 4 transverse rows of spines, blades medium-sized,  $5\times$  as long as wide (Fig. 19P); unit D, four falcigers with handles slender, whorled with 8–9 transverse rows of spines, blades long,  $9\text{--}10\times$  as long as wide (Fig. 19Q).

RIGHT PARAPODIA FROM SEGMENT 25 (MIDDLE SEGMENT) (Figs 19R, 20A). Notopodia conical, smooth (non-papillate), short, half as long as neuropodia. With up to 50 simple verticillate notochaetae, tips hooked, shortest ones as long as notopodia, longest ones  $2\times$  as long as notopodia (Figs 19S, 20B–C). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only falcigers; all blades unidentate, falcate: unit A, four falcigers with handles thick with subdistal transverse rows of denticles, blades short,  $2\times$  as long as wide (Figs 19T, 20D); unit B, two falcigers with handles thick with barely perceptible subdistal transverse rows of denticles, blades short, less than  $2\times$  as long as wide (Figs 19U, 20D); unit C, four falcigers with handles slender with transverse subdistal rows of denticles, blades short,  $2\times$  as long as wide (Fig. 19V); unit D, three falcigers with handles slender with subdistal transverse rows of denticles, blades medium-sized,  $5\text{--}7\times$  as long as wide (Figs 19W, 20E).

PYGIDIUM. Rounded with two anal cirri (Fig. 20P).

### Remarks

*Pelogenia capitata* sp. nov. resembles *P. anoculata* Hartman, 1939 from the Pacific coast of Costa Rica, in having neurochaetae with short blades, and elytra with only one process. However, both species show morphological discrepancies. Specimens of *P. capitata* sp. nov. have neurochaetae with very short

blades, handles with grooves, and posterior elytra with pedunculate capitate papillae on their surface and margins. On the contrary, specimens of *P. anoculata* have neurochaetae with short blades, handles with transverse rows of spines (Hartman 1939: 142, pl. 22 figs 271–272), and posterior elytra with pedunculate papillae with puffed tips on their surface and margins (Hartman 1939: 142, pl. 22 figs 269–270). However, *P. capitata* sp. nov. resembles *P. anoculata* sensu Pettibone (1997: 62); she redescribed the species by combining the type material from the Pacific Ocean with other from the Caribbean Sea (Turks and Caicos, Venezuela, Panama) and Florida, and her illustrations were based on specimens from the Caribbean coast of Panama (with material previously identified by Fauchald (1977) as *P. spinosa* Hartman, 1939). It is possible that specimens from the Caribbean Sea, described and illustrated by Pettibone (1997), belong to this novel species.

### Distribution

Caribbean Sea. Quintana Roo to Panama.

### *Pelogenia salazarvallejoi* sp. nov.

urn:lsid:zoobank.org:act:E7E2B8FA-8454-48FE-A7E9-C9A863389BCC

Figs 21–22

### Diagnosis

A species of *Pelogenia* with short palps reaching segments 5–7; middorsal lobe of segment II absent, surface papillate; neurochaetae from segment II with smooth basal surface; neurochaetae from posterior segment with short slender blades; papillate medial process in posterior elytra.

### Etymology

This species is named after Dr Sergio I. Salazar-Vallejo, a Mexican specialist on polychaetes, in recognition of his generous advice and guidance during my continuous training on systematics. The epithet is a noun in the genitive case (ICZN 1999, Art. 31.1.2).

### Material examined

#### Holotype

SAINT MARTIN • complete spec.; Chicot, windward side of Tintamarre Island; 18°06'7" N, 62°58'58" W; depth 13–19 m; 23 Apr. 2012; Arthur Anker leg.; reef in sand; UF 2757.

#### Paratype

SAINT MARTIN • 1 complete spec., 106 segments, 4.3 cm long, 1.1 cm to segment 30, 0.4 cm wide; Le Galion; 18°04'40" N, 63°00'53" W; depth 1–2 m; 21 Apr. 2012; John Slapcinsky leg.; sand and seagrass; UF 2764.

#### Other material

UNITED STATES OF AMERICA • 1 incomplete spec., 68 segments, 4.8 cm long, 1.5 to segment 30, 1.8 cm wide; Florida, Bear Cut; approximately 25°43'56" N, 80°09'37" W; low tide; 23 Aug. 1965; J.A. Jones leg.; on *Thalassia* sp.; UF.

### Description (holotype)

BODY. Pale whitish, short, broad (Fig. 21A), 84 segments, 3.9 cm long, 1.2 cm to segment 30, 0.3 cm wide. Middorsal line covered with foreign white particles attached to adhesive papillae (Fig. 21B). Venter covered only with short globular papillae (Fig. 21C).

**PROSTOMIUM.** Oval, longer than wider. Two pairs of eyes, anterior eyes larger, inserted anteriorly. Lateral antennae long, ceratophores as long as styles, dorsally fused with tentacular segment and partially covered by median antennal ceratophore (Fig. 21D). Median antenna ceratophore bulbous, slightly longer than prostomium, with a longitudinal ridge; style as long as ceratophore (Fig. 21D). Middorsal lobe of segment II absent, but surface papillate. First segment directed anteriorly; fused with tentacular segment (right and left parapodia fused anteriorly); biramous, chaetae simple verticillate. Dorsal tentacular cirrus longer than neuropodia including chaetae, ventral tentacular cirrus slightly shorter than dorsal tentacular cirrus, but longer than neuropodia; palps short, reaching segment five, with inner palpal sheaths (Fig. 21C).

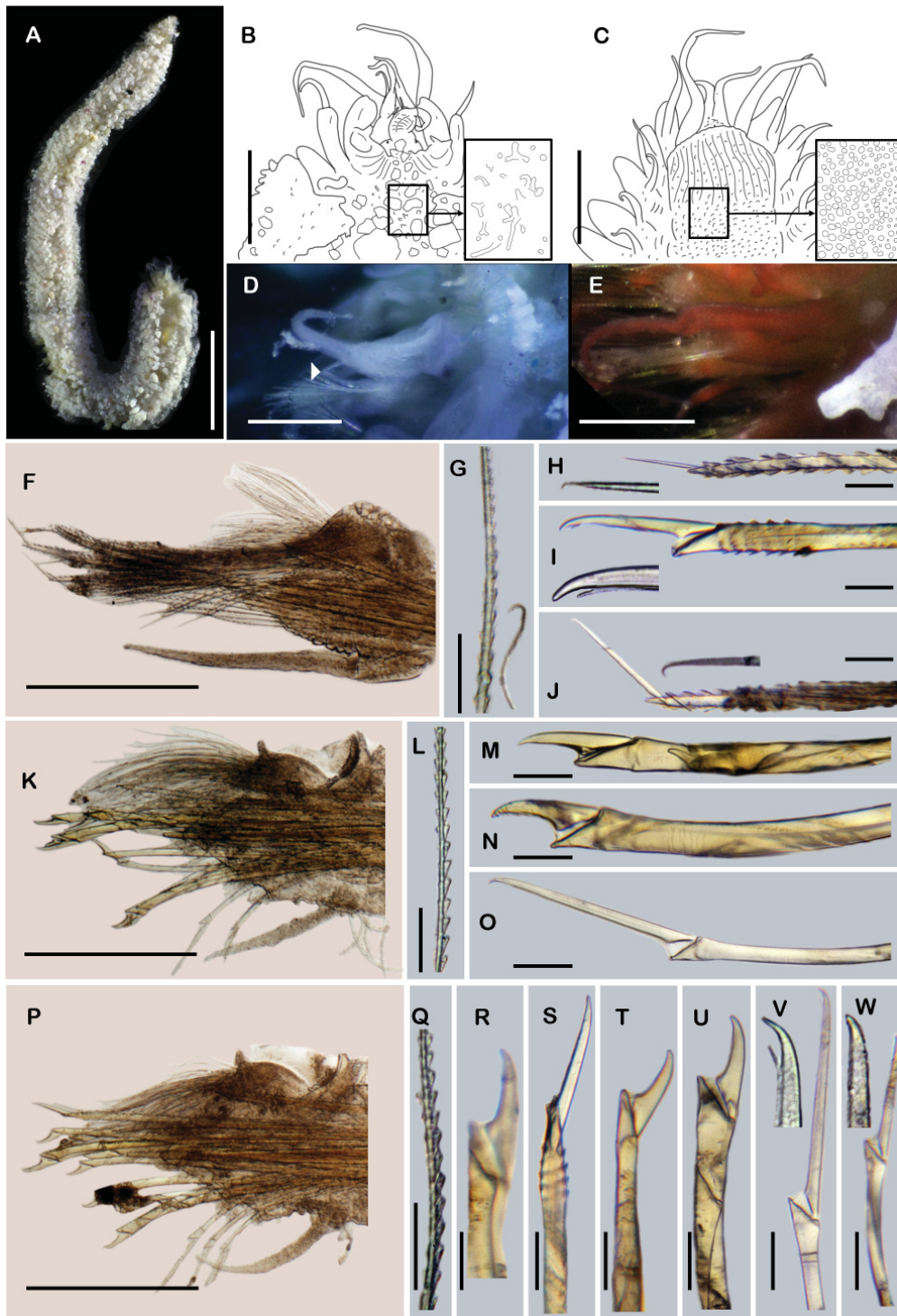
**ELYTRA.** First three right elytra missing. First left elytron subrectangular with one medial process (Fig. 22F), covered with coarse sand; two kinds of papillae: elytral surface with pedunculate papillae with flat tips, elytral margin with dendritic papillae. Second left elytron subrectangular, with three posterior and two medial processes, separated by a median notch (Fig. 22G); two kinds of papillae: elytral surface with pedunculate papillae with flat tips, elytral margin with short dendritic papillae, longer papillae over elytral processes (Fig. 22I). Posterior right elytron oval with five posterior processes and two large medial processes, separated by a median notch (Fig. 22H), elytral surface with pedunculate papillae with flat tips, elytral margin with short and long dendritic papillae (Fig. 22J–L).

**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 21F). Notopodia truncated, papillate, slightly shorter than neuropodia, with an antero-dorsal distal lobe. With up to 80 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones  $3\times$  as long as neuropodia (Fig. 21G). Neuropodia conical, papillate, larger than notopodia. Neurochaetae only falcigers, bifid with most blades with subdistal tooth lost, falcate: unit A, two falcigers with handles completely covered with transverse rows of spines, blades medium-sized,  $8\times$  as long as wide (Fig. 21H); unit B, two falcigers with handles thick with 4 transverse rows of spines, blades medium-sized,  $6\text{--}7\times$  as long as wide (Fig. 21I); units C and D undifferentiated, six falcigers with handles thick completely covered by transverse rows of spines, blades long,  $14\text{--}16\times$  as long as wide (Fig. 21J).

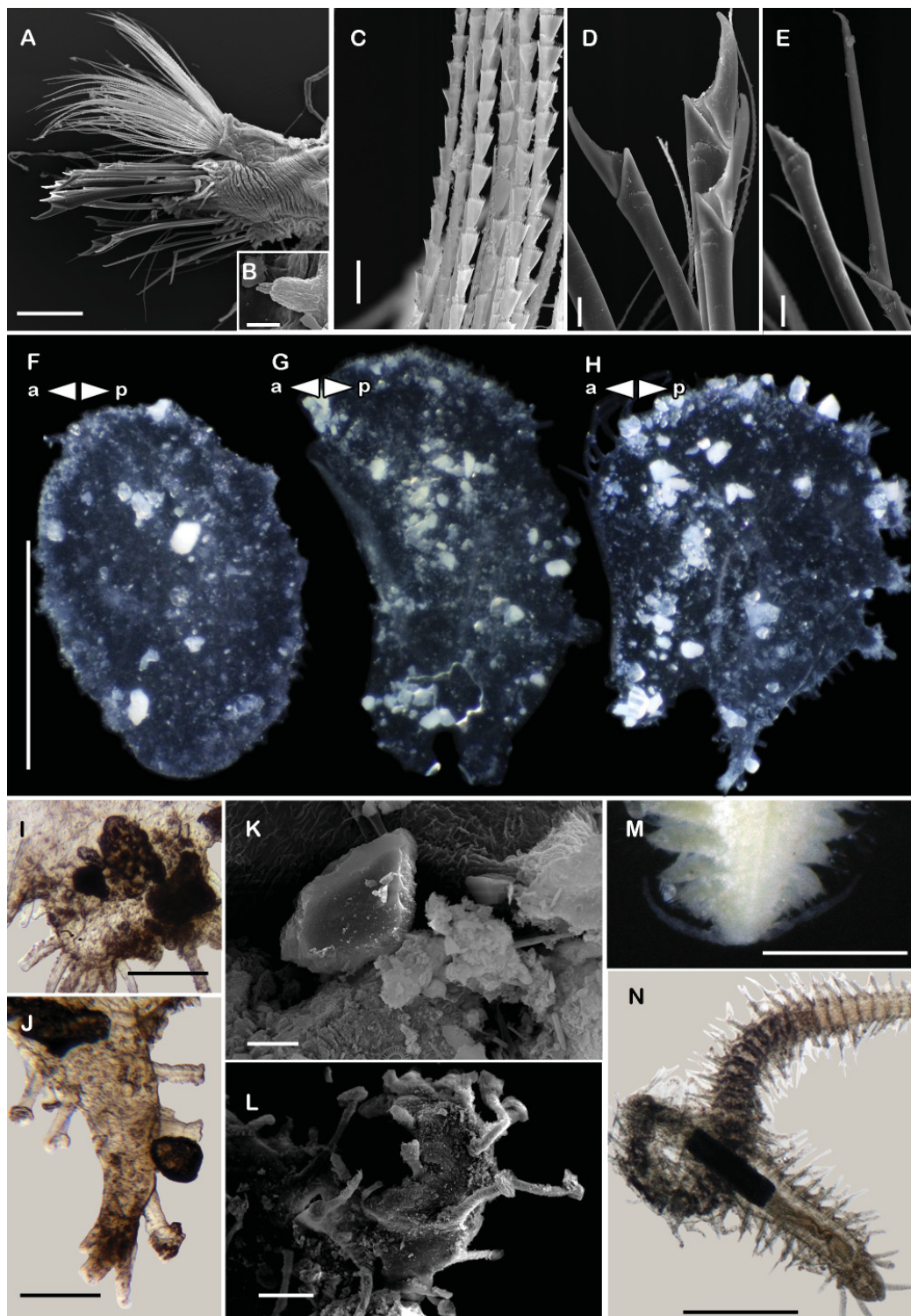
**RIGHT PARAPODIUM FROM SEGMENT III** (Fig. 21K). Notopodia truncated, papillate, slightly shorter than neuropodia, with an antero-dorsal dendritic distal lobe. Dorsal cirrus with cirrophore half as long as cirrostyle (Fig. 21E). With up to 50 simple verticillate notochaetae, shortest ones as long as notopodia, longest ones  $3\times$  as long as notopodia (Fig. 21L). Neuropodia leaf-shaped, papillate, larger than notopodia. Neurochaetae only falcigers; all blades unidentate: unit A, four falcigers with handles thick, with 3 transverse rows of spines, blades short,  $2\text{--}3\times$  as long as wide (Fig. 21M); unit B, five falcigers with handles thick, with one transverse rows of spines, blades short,  $2\times$  as long as wide (Fig. 21N); units C and D undifferentiated, two falcigers with handles slender, smooth, blades long,  $10\text{--}11\times$  as long as wide (Fig. 21O).

**RIGHT PARAPODIUM FROM SEGMENT 27 (MIDDLE SEGMENT)** (Figs 21P, 22A). Notopodia conical, smooth (non-papillate), short, half as long as neuropodia. With up to 50 simple verticillate notochaetae, tips hooked, shortest ones half as long as notopodia, longest ones  $4\times$  as long as notopodia (Figs 21Q, 22C). Neuropodia conical, papillate (Fig. 22B), larger than notopodia. Neurochaetae only falcigers; most blades unidentate, units D and subunit 2 with blades bifid: unit A, two falcigers with handles thick, smooth, blades short,  $2\times$  as long as wide (Figs 21R, 22D); unit B, one falciger with handle thick with 5 transverse rows of spines, blades long,  $11\times$  as long as wide (Figs 21S, 22D); unit C, four falcigers with handles thick with  $8\text{--}10$  transverse rows of spines, blades short,  $2\text{--}3\times$  as long as wide (Fig. 21T); subunit 1, one falciger with handle thick, smooth, blade short,  $2\times$  as long as wide (Fig. 21U); subunit 2, two falcigers with handles slender, smooth, blades long,  $11\text{--}12\times$  as long as wide (Figs 21V, 22E);





**Fig. 21.** *Pelogenia salazarvallejoi* sp. nov., holotype (UF 2757). **A.** Complete worm, dorsal view. **B.** Anterior end, dorsal view (insert: dorsal papillae). **C.** Anterior end, ventral view (insert: ventral papillae). **D.** Detail of median antenna ceratophore, arrowhead indicates lateral antenna. **E.** Left cirrus from segment III. **F.** Right parapodium from segment II. **G.** Notochaeta from same. **H.** Unit A. **I.** Unit B. **J.** Units C and D. **K.** Right parapodium from segment III. **L.** Notochaeta from same. **M.** Unit A. **N.** Unit B. **O.** Units C and D. **P.** Right parapodium from segment 27. **Q.** Notochaeta from same. **R.** Unit A. **S.** Unit B. **T.** Unit C. **U.** Subunit 1. **V.** Subunit 2. **W.** Unit D. Scale bars: A = 5 mm; B–C = 1 mm; D–F, K, P = 500  $\mu$ m; G, L, Q = 40  $\mu$ m; H–J, M–O, R–W = 50  $\mu$ m.



**Fig. 22.** *Pelogenia salazarvallejoi* sp. nov., holotype (UF 2757). A–E, K–L. SEM micrographs. A. Parapodium from segment 23. B. Neuropodial papilla with ‘thick cilia’. C. Notochaetae from A. D. Units A and B. E. Subunit 2. F. First left elytron. G. Second left elytron. H. Posterior right elytron. I. Medial process of G. J. Medial process of H. K. Flat papillae from posterior elytron. L. Medial process from posterior elytron. M. Pygidium. N. Syllid associated between posterior elytra. Abbreviations: a = anterior; p = posterior. Scale bars: A = 200 µm; B = 5 µm; C = 10 µm; D–E = 20 µm; F–H = 1 mm; I–L, N = 50 µm; M = 500 µm.

unit D, three falcigers with handles slender, with transverse rows of denticles, blades medium-sized, 6–7 × as long as wide (Fig. 21W).

PYGIDIUM. Round with two anal cirri (Fig. 22M).

### Remarks

*Pelogenia salazarvallejoi* sp. nov. belongs to the pelogenins with a short cirrostyle on segment III, and resembles *P. zeylanica* (Willey, 1905) from Sri Lanka (Ceylon). However, there are evident differences, the most important being the presence of a distal lobe on the dorsal notopodial margin on all segments except the first one, and by having a middorsal ridge on the medial antennal ceratophore. In *P. salazarvallejoi* sp. nov. the neurochaetae from segment II are falcigers with smooth handles, and the posterior elytra have five medial processes and two large posterior processes; while *P. zeylandica* has neurochaetae from segment II with transverse rows of spines (Pettibone 1997: 36, fig. 25d), and the posterior elytra only have two medial processes, and two posterior processes (Pettibone 1997: 37, fig. 26f). It should be noted that although most of the specimens examined show the short style in the dorsal cirri in segment III, the specimen from Florida shows a short right style but the left one is of similar length as the cirrophore. Additionally, in this material a small syllid was found attached to the dorsal side of the body, among posterior elytra (Fig. 22N).

### Distribution

Grand Caribbean region. From Florida to Saint Martin, French Antilles.

Genus *Psammolyce* Kinberg, 1856

*Psammolyce* Kinberg, 1856: 388.

*Psammolyce* – Pettibone 1997: 4.

### Type species

*Psammolyce flava* Kinberg, 1856 by subsequent designation (Hartman 1959: 117).

### Diagnosis

Pelogeniinae with prostomium oval, wider than long. Upper lip without facial tubercle. Median antennal ceratophore bulbous, base without ctenidia. Segment II with or without middorsal triangular lobe; neuropodia with long appendages; neurochaetal blades tapered bifid. Segment III without dorsal cirri; neuropodia without appendages; neurochaetal blades tapered bifurcate. First pair of elytra enlarged.

### Key to species of *Psammolyce* Kinberg, 1856

1. Segment II with middorsal triangular lobe; neuropodial lobe distally cylindrical; neurochaetae from middle region with bifurcate blades ..... *P. flava* Kinberg, 1856, Brazil, Grand Caribbean region
- Segment II without middorsal lobe; neuropodial lobe distally clavate; neurochaetae from middle region with bifurcate and entire blades ..... *P. horsti* Pettibone, 1997, Indonesia, Indo-Pacific Ocean

*Psammolyce flava* Kinberg, 1856

Figs 23–24

*Psammolyce flava* Kinberg, 1856: 388

*Psammolyce flava* – Kinberg 1858: 31, pl. 9 fig. 44, pl. 10 fig. 65. — Pettibone 1997: 4, figs 1–3 (syn., redescri.).



### Material examined

MEXICO • 1 incomplete spec.; Yucatán shelf; 23°04' N, 89°56' W; O/V Justo Sierra; depth 215 m; 27 Nov. 2012; Sara B. Balam leg.; ECOSUR-P3231.

UNITED STATES OF AMERICA • 1 incomplete spec., 43 segments, 1.7 cm long, 1.1 cm to segment 30, 0.6 cm wide; Florida; 26°15' N, 78°48' W; R/V Gerda, Stn 927; depth 476 m; 29 Sep. 1967; UMML 6720-927.

VENEZUELA • 1 incomplete spec., 45 segments, 2.4 cm long, 1.5 cm to segment 30, 0.6 cm wide; off Los Rayitos Beach; 10°55' N, 66°18' W; R/V Pillsbury, Stn 739; depth 257 m; 23 Jul. 1968; UMML 6806-739.

### Description (non-type specimen ECOSUR-P3231)

**BODY.** Pale orange, long, broad (Fig. 23A); 89 segments, 9 cm long, 1.8 cm to segment 30, 0.9 cm wide. Middorsal line visible, not covered with foreign particles (Fig. 23E–F). Venter partially covered only with globular papillae (Fig. 23G).

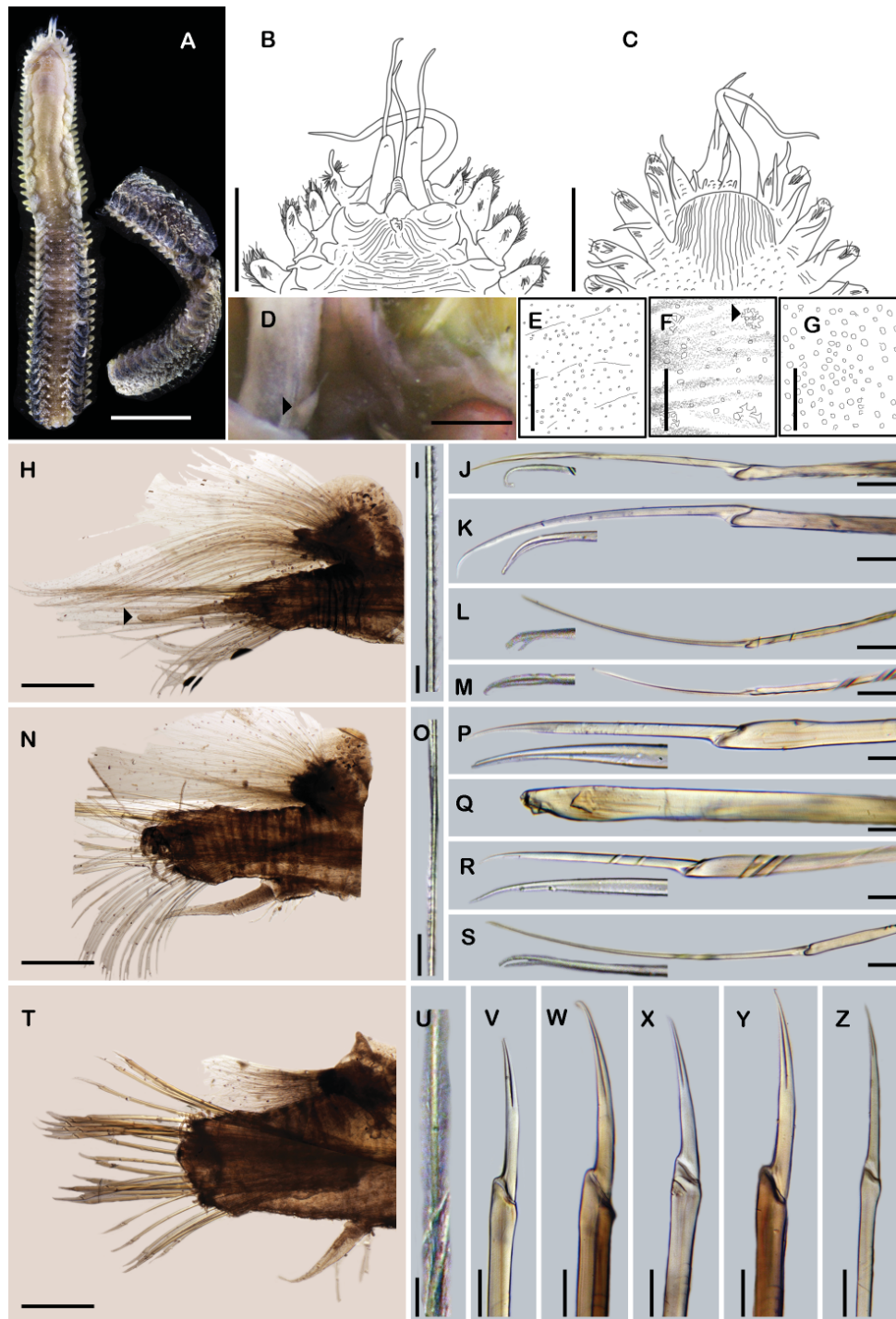
**PROSTOMIUM.** Spherical. Two pairs of eyes, anterior eyes larger, inserted antero-ventrally. Lateral antennae short, slender, with short bulbous ceratophores, styles shorter, dorsally fused with tentacular segment, partially covered by median antennal ceratophore (Fig. 23D). Median antenna with bulbous ceratophore, twice as long as prostomium, with transverse ridges; style slender, long, 6 × as long as ceratophore. Middorsal lobe of segment II absent. First segment directed anteriorly; fused with tentacular segment; biramous, chaetae simple verticillate. Dorsal tentacular cirri missing, ventral cirrus 2 × as long as neuropodia length; right palp lost, left palp long, reaching segment seven; with inner palpal sheath (Fig. 23C).

**ELYTRA.** First anterior elytra missing, posterior elytra oval with one medial process and two lateral processes (Fig. 24D), elytral surface with flat and pedunculate globular papillae, elytral margin with short or long dendritic papillae (Fig. 24H–K).

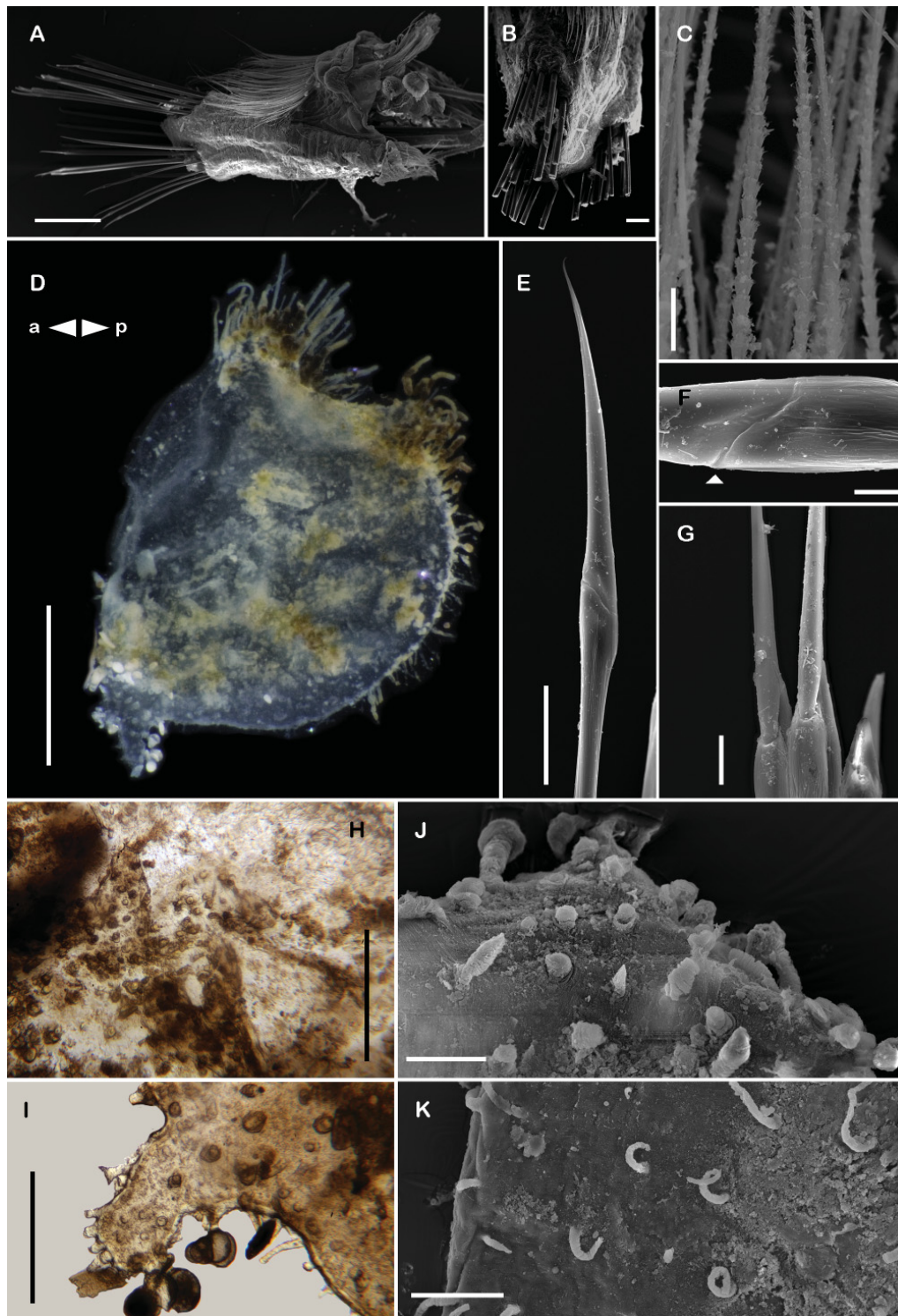
**RIGHT PARAPODIUM FROM SEGMENT II** (Fig. 23H). Notopodia conical, papillated, short, half as long as neuropodia, notopodial flange leaf-shaped. With up to 150 simple verticillate notochaetae, shortest ones  $\frac{1}{3}$  as long as notopodia, longest ones 4 × as long (Fig. 23I). Neuropodia conical, papillate, larger than notopodia; with a distal slender appendage, shorter than neuropodia. Neurochaetae only falcigers; all blades bifurcate, unit A with falcate tips: unit A, four falcigers with handles slender with 6 transverse rows of spines, blades long, 24 × as long as wide (Fig. 23J); unit B, two falcigers with handles thick with 6 transverse rows of spines, blades long, 28 × as long as wide (Fig. 23K); unit C, four falcigers with handles slender with 9 transverse rows of spines, blades long, 28–30 × as long as wide (Fig. 23L); unit D, eight falcigers with handles slender with 7–8 transverse rows of spines, blades long, 27–30 × as long as wide (Fig. 23M).

**RIGHT PARAPODIUM FROM SEGMENT III** (Fig. 23N). Notopodia conical, papillate, short,  $\frac{1}{3}$  as long as neuropodia; notopodial flange leaf-shaped, papillate. With up to 100 simple verticillate notochaetae, tips hooked, shortest ones half as long as notopodia, longest ones 4 × as long as notopodia (Fig. 23O). Neuropodia truncated, papillate, larger than notopodia. Neurochaetae only falcigers; all blades bifurcate: unit A, five falcigers with handles thick with transverse rows of denticles, blades long, 11–12 × as long as wide (Fig. 23P); unit B, two neurochaetae with handle thick with 1–2 transverse rows of spines and subdistal transverse rows of denticles, blades lost (Fig. 23Q); unit C, five falcigers with handles slender with subdistal transverse rows of denticles, blades long, 25–26 × as long as wide (Fig. 23R); unit D, 35 falcigers with handles slender, smooth, blade long, 38–40 × as long as wide (Fig. 23S).





**Fig. 23.** *Psammolyce flava* Kinberg, 1856, non-type specimen (UMML 6720-927). **A.** Incomplete fragmented worm, dorsal view. **B.** Anterior end, dorsal view. **C.** Anterior end, ventral view. **D.** Detail of anterior end, arrowhead indicates lateral antennae. **E.** Dorsal papillae on anterior end. **F.** Dorsal papillae on middle region; arrowhead indicates right lateral antenna. **G.** Ventral papillae. **H.** Right parapodium from segment II, arrowhead indicates neuropodial appendage. **I.** Notochaeta from same. **J.** Unit A. **K.** Unit B. **L.** Unit C. **M.** Unit D. **N.** Right parapodium from segment III. **O.** Notochaeta from same. **P.** Unit A. **Q.** Unit B, blade missing. **R.** Unit C. **S.** Unit D. **T.** Right parapodium from segment 23. **U.** Notochaeta from same. **V.** Unit A. **W.** Unit B. **X.** Unit C. **Y.** Subunit 1. **Z.** Unit D. Scale bars: A = 1 cm; B–C = 2 mm; D, H, N, T = 500 µm; E–G = 100 µm; I, O, U = 40 µm; J–M, P–S, V–Z = 50 µm.



**Fig. 24.** *Psammolyce flava* Kinbergi, 1856, non-type material (UMML 6720-927). A–C, E–G, J–K. SEM micrographs. A. Right parapodium from segment 30. B. Parapodium from segment 31, neurochaetae removed, dorsal view. C. Notochaetae from A. D. Posterior elytron. E. Unit D from A. F. Insertion of blade on the handle, arrow indicates ligament. G. Ventral view of unit A from A. H. Surface of posterior elytron. I. Medial process of posterior elytron. J. Surface of posterior elytron, globular papillae. K. Surface of posterior elytron, dendritic papillae. Abbreviations: a = anterior; p = posterior. Scale bars: A = 500  $\mu$ m; B = 100  $\mu$ m; C, G = 20  $\mu$ m; D = 1 mm; E, J–K = 50  $\mu$ m; F = 10  $\mu$ m; H–I = 300  $\mu$ m.

RIGHT PARAPODIUM FROM SEGMENT 23 (MIDDLE SEGMENT) (Figs 23T, 24A–B). Notopodia truncated, papillate, short,  $\frac{1}{3}$  as long as neuropodia. With up to 80 simple verticillate notochaetae, shortest ones  $3 \times$  as long as notopodia, longest ones  $5 \times$  as long (Figs 23U, 24C). Neuropodia truncated, papillate, larger than notopodia. Neurochaetae only falcigers; all blades bifurcate: Unit A, three falcigers with handles thick with subdistal transverse rows of denticles, blades medium-sized,  $8\text{--}10 \times$  as long as wide (Fig. 23V); unit B, four falcigers with handles thick with subdistal transverse grooves, blades long,  $11\text{--}12 \times$  as long as wide (Figs 23W, 24G); unit C, seven falcigers with handles slender with subdistal transverse rows of denticles, blades medium-sized,  $9\text{--}10 \times$  as long as wide (Fig. 23X); subunit 1, three falcigers with handles thick with subdistal transverse rows of denticles, blades long,  $12\text{--}13 \times$  as long as wide (Fig. 23Y); unit D, five falcigers with handles slender with subdistal transverse rows of denticles, blades long,  $15\text{--}16 \times$  as long as wide (Figs 23Z, 24E–F).

POSTERIOR REGION. Lost.

### Remarks

The original description of *P. flava* was based on a specimen from Rio de Janeiro and consisted of four lines (Kinberg 1856); later, the description was completed with illustrations, including of the jaws (Kinberg 1858). Hartman (1942a) redescribed the species with specimens from Puerto Rico, and, in the same paper, she suggested that *Eupholoe acuminata* Treadwell, 1934 should be regarded as a junior synonym of *P. flava*, she did, however, not study its type material. Subsequently, Pettibone (1997) redescribed *P. flava* using type and non-type material and kept *E. acuminata* as a synonym. The holotype of *P. flava* is from Rio de Janeiro, and the holotype of *E. acuminata* is from off N British Virgin Islands, indicating that this species has an apparent wide distribution in the Atlantic Ocean. Pettibone (1997) pointed out that the holotype is very damaged.

### Discussion

The present study revealed the specific composition of the subfamily Pelogeniinae within the tropical region of the Great Caribbean. Findings include four previously known species from the region and six new ones. The number of species of the genera *Pelogenia* and *Neopsammolyce* increased with the description of three and one new species, respectively. On the other hand, *Dayipsammolyce* and *Hartmanipsammolyce* are no longer monotypic genera due to the addition of a new species each one.

This study also explored the morphology of the subfamily Pelogeniinae, particularly the chaetae composition and elytral microstructures. The late Marian H. Pettibone (1997) emphasized the importance of prostomial features, as well as those on the anterior and middle body segments to properly study these worms; those guidelines were followed in this study. However, other relevant features, many times overlooked, such as chaetal morphology, composition, and position were recognized. Sigalionid descriptions reveal limited detail on the chaetae; typically, few are described and illustrated per species (e.g., Pettibone 1969, 1970a, 1970b, 1992, 1997; Aungtonya 2002, 2003; Aungtonya & Eibye-Jacobsen 2013, 2016, 2018). Here, a morphological pattern of the chaetae is recognized and linked to their position in the parapodia. As result, a practical classification to study chaetae is proposed. This new approach of study makes neurochaetae as informative as any prostomial feature and attempt to result in clearer descriptions, help in the morphological recognition of species and easily identify novelties. Moreover, these observations can be extrapolated to other scaled sigalionids.

With regard to elytral microstructures, these have been classified into two kinds: 1) microtubercles or tubercles, found on the elytral surface of Sigalioninae, Sthenelanellinae, Pholoinae and some Pelogeniinae; 2) papillae, found on the elytral surface and margins of Pelogeniinae and other sigalionids (Pettibone 1970a, 1970b, 1971, 1997; Anton-Erxleben 1977; Aungtonya 2002; Wehe 2007; Padovanni & Amaral 2014). These structures are easily detected and differentiated (Anton-Erxleben 1977); however,



the particular morphological differentiation among papillae had not been clearly explained. The present study proposes a classification of papillae through a revised glossary; however, in order to complete the present results and provide finer morphological detail, histological and histochemical studies are required.

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