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Redescription of *Pionosyllis procera* (Polychaeta: Syllidae), with comments on its reproduction and systematic position

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Abstract : Several specimens of *Pionosyllis procera* Hartman, 1965 (Syllidae), previously known only from an incomplete original description, were collected near Cuba. This species does not reproduce by epigamy, the typical condition in Eusyllinae, but rather by sexual stolons. Both male and female stolons are produced by schizogamic scissiparity, a reproductive method previously reported for Syllinae. The systematic position of this species is problematic, as it presents many morphological characters typical of Eusyllinae as well as a few of Syllinae. This paper redescribes *Pionosyllis procera*, and describes its stolons for the first time.

Key words : Redescription, reproduction, systematic position, *Pionosyllis procera*.

In the study of the polychaetes collected during the " I Expedición Cubano-Española a la Isla de la Juventud y Archipiélago de los Canarreos (Cuba)", several specimens of the species described as *Pionosyllis procera* Hartman, 1965, were found. These species was only known from the very incomplete original description. Many of the collected specimens have sexual stolons attached posteriorly; free sexual stolons, both male and female, were also collected. The stolons are similar to those named Dicerous or *Chaetosyllis*, Potts (1911), San Martin (1984), but are provided with four antennae and smooth dorsal cirri. The species was originally placed in the genus *Pionosyllis* Malmgrem (1867). (Eusyllinae) by Hartman (1965); however, members of this subfamily characteristically display epigamous reproduction. The recognition of schizogamous scissiparity by this species allies it with members of the Syllinae, San Martín (1984), Garwood (1991); although other diagnostic characters are typical of Eusyllinae.

MATERIAL AND METHODS

Observations and measurements were made by means of a microscope with interference contrast optics (Nomarsky). Ilustrations were done with a camera lucida. Length measurements exclude antennae and anal cirri; width measurements were taken at proventricular level, excluding dorsal cirri and setae. Specimens are preserved in 70 % alcohol and microscopical preparations made with glycerine jelly. Vouchers are deposited in the authors's collection and in the Museo Nacional de Ciencias Naturales de Madrid (MNCNM)

Pionosyllis procera Hartman, 1965

Pionosyllis procera Hartman, 1965: 79- 80, figs. 10 c, d.

Material examined: Cuba, between Punta del Este, Isla de Pinos, and Cayo Matías, Archipiélago de los Canarreos; algae; 18 m

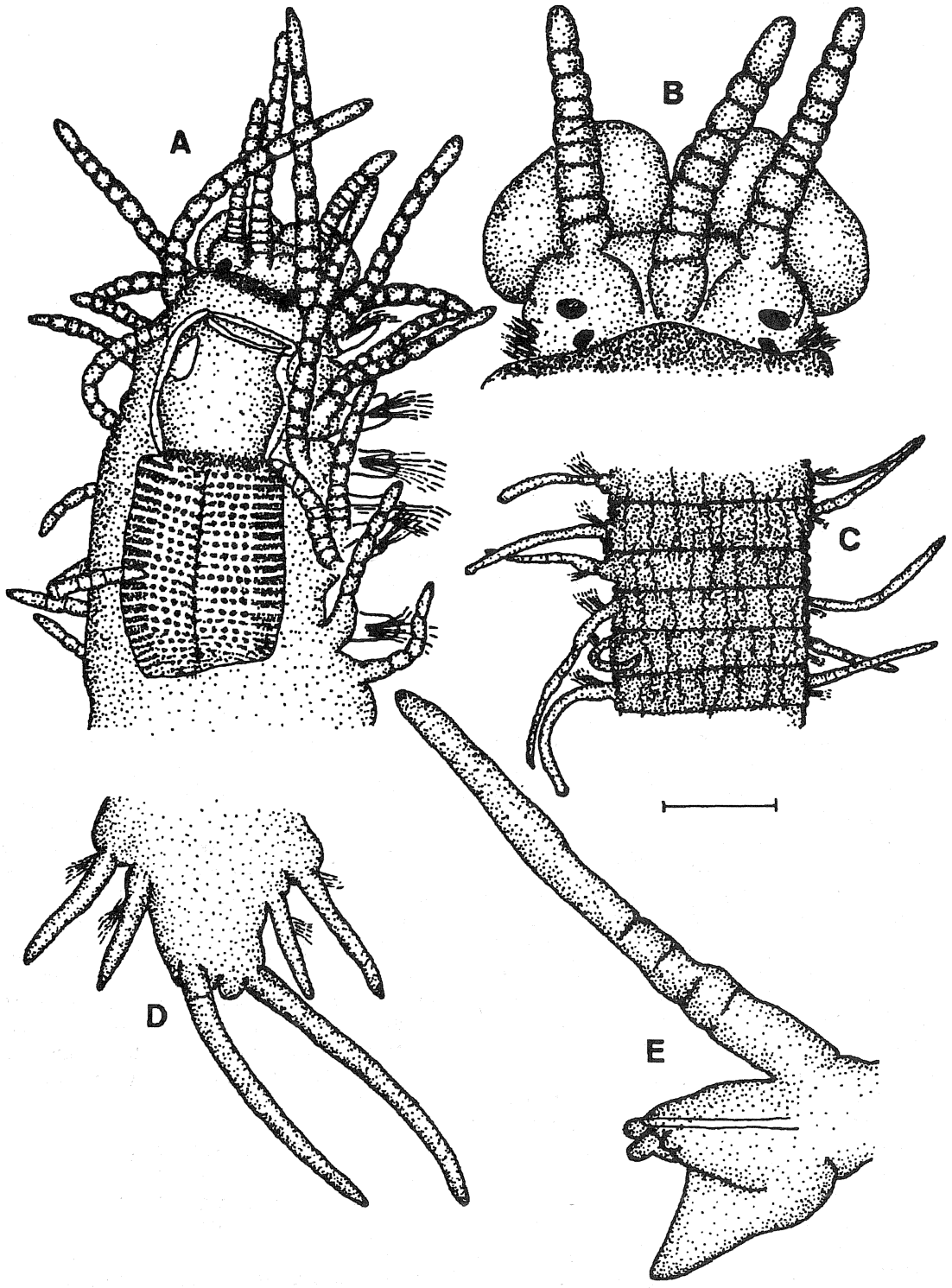

Fig. 1.- *Pionosyllis procera* Hartman, 1965.- a, anterior end, dorsal view. b, detail of prostomium, dorsal view. c, segments of midbody, dorsal view. d, posterior end, dorsal view.e, parapodium, midbody. Scale: a, c, d: 0.13 mm. b: 64 um. e: 32 um.

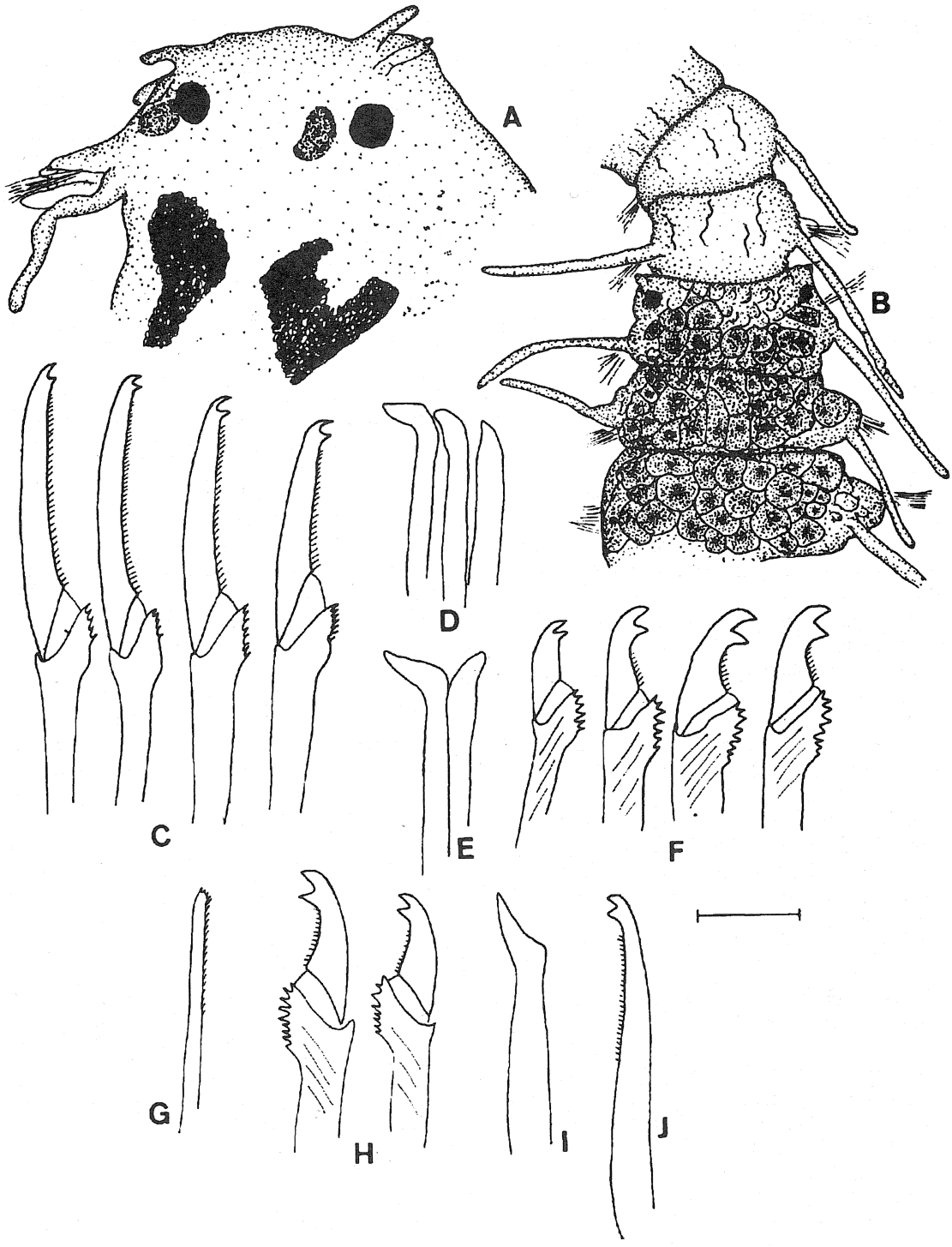

Fig. 2.- *Pionosyllis procera* Hartman, 1965.- a, free male stolon, anterior end, dorsal view. b, attached female stolon,anterior end, dorsal view. c, anterior compound setae. d,anterior aciculae. e, midbody aciculae. f, midbody compound setae. g, dorsal simple seta. h, posterior compound setae. i, posterior aciculum. j, ventral simple seta. Scale: a, b: 0.13 mm. c, d, e, f, g, h, i, j: 10 um.

depth; 33 specimens. Off Punta del Francés; Isla de Pinos; inside coralline rock from rubble and pavement zone; 1 m depth; 24 specimens. Off Cayo Matías; algae *Halimeda* sp.; 3 m depth; 10 specimens. Between Punta del Este and Cayo Matías; *Halimeda* sp. in *Thalassia testudinum* beds; 3 m depth; 7 specimens. Off Cayo Matías; algae *Turbinaria turbinata;* 3m depth; 27 specimens. Off Punta Pedernales; Isla de Pinos; inside coralline rock from rubble and pavement zone; 4m depth; 1 specimen. Off Cayo Matías; algae *Stypopodium zonale;* 3 m depth; 2 specimens. Off La Herradura, NW from La Habana; algae; 1-3 m depth; 1 specimen. Off Punta del Francés; algae; 4 m depth; 13 specimens.

Bermuda: Holotype and paratypes (Allan Hancock Foundation, Los Angeles, California, USA)

Description: Body very long, thin from post-proventricular segments, brown-yellowish, with a red area dorsally on peristomium (Fig. 1 a, b); greater than 150 mm long, 0.56 mm wide at proventricular level, 0.32 mm wide at midbody, 103 setigers. Post-proventricular segments rugose dorsally (Fig. 1 c) and ventrally. Prostomium subrectangular, about twice as wide as long, with rounded margins, and two lateral swellings (Fig. 1 a, b). Four lensed, red eyes in open trapezoidal arrangement (Fig. 1 b). Antennae, tentacular cirri and anterior dorsal cirri articulated (Fig. 1 a, b), progressively irregularly wrinkled, not articulated and rough from midbody (Fig. 1 c, d). Median antenna originating on middle of prostomium, with variable (9-14) number of articles, longer than prostomium and palps combined. Lateral antennae originating from anterior margin of prostomium, shorter than median antenna, with 9-13 articles (Fig. 1 a, b). Palps large, broad, long, ventrally folded, free from each other over most of their length (Fig. 1 a, b), but slightly fused at their base. Peristomium overlaps prostomium dorsally (Fig. 1 a, b). Dorsal tentacular cirri similar in length to median antenna, ventral tentacular cirri similar in length to the lateral antennae. Dorsal cirri alternating long cirri, approximately half of length of body width, and shorter cirri; dorsal cirri from anterior end relatively longer than remaining cirri. Parapodia conical, with a distal, rounded lobe and two other similar ventrolateral lobes, one anterior and one posterior (Fig. 1 e). Ventral cirri long, cirriform, anteriorly triangular, foliaceous, longer than parapodial lobes (Fig. 1 e). Setae compound with heavy heterogomph falcigers and serrated shafts. (Fig. 2 c, f, h). Anterior parapodia each with approximately 15 compound setae, reduced to 7 posteriorly, bidentate, blades long, thin, slightly curved, minutely dentate along the cutting edge. Blade lengths 24 µm ventrally to 40 dorsally in the setae bundle. Blades of compound setae shorter and wider, and more markedly bidentate from post-proventricular segments; shafts more strongly serrated posteriorly (Fig. 2 f, h). Anterior parapodia each with 3-4 aciculae, one with sharply curved tip the remainder straight (Fig. 2 d). A single geniculated aciculum in posterior parapodia (Fig. 2 i). A single simple dorsal seta in posterior segments, apparently unidentate with short spines on ventral margin (Fig. 2 g). A single simple ventral seta in far posterior setigers, recurved heavily bidentate, with short, straight subdistal spines on ventral margin (Fig. 2 j). Pygidium bilobed; two cylindrical anal cirri, smooth, greater than twice as long as posterior dorsal cirri (Fig. 1 d). Pharynx short, wide, surrounded anteriorly by 10 long, broad, soft lobes, extending through 3 segments (Fig. 1 a). Pharyngeal tooth pointed, triangular, slightly posterior to pharyngeal rim (Fig. 1 a). Proventriculus short, barrel-shaped, extending through 3 1/2 segments, somewhat longer than pharynx, with about 25 muscle cell rows; a red coloured ring visible at the junction of the pharynx and proventriculus.

Numerous specimens were collected with terminal male or female stolons attached. Several free stolons were also found in the collection. Stolons with two dorsal and two ventral large, red eyes (Fig. 2 a); head with 4 short, smooth, digitiform tentacles, 2 dorsally and 2 ventrally. Dorsal cirri smooth. One unattached male stolon of 25 setigers (Fig. 2 a), 25 mm in length and 0.48 mm in maximum width with natatory setae and notoaciculae present from setiger 2. An unattached female stolon of 15 setigers was 2.9 mm long and 0.48 mm in maximum width, with natatory setae and notoaciculae from setiger 2.

Remarks: The compound setae of *P. procera* are unusual but similar to those of *Typosyllis glandulosa* Augener (1913), Hartmann-Schröder (1979), originally described as an *Odontosyllis,* Augener (1913); *Typosyllis subantennata* Hartmann-Schröder

(1984) and *Pionosyllis micropharyngea* Hartmann-Schröder (1974). These species have a short proventriculus, a pharynx with a thick pharyngeal tooth close to the anterior margin, lateral antennae on the anterior margin of prostomium and similar parapodial structures to *P. procera.*

T. glandulosa and *T.subantennata* have been placed in the subfamily Syllinae based on their articulated to irregularly wrinkled dorsal cirri, while *P. micropharyngea,* with smooth dorsal cirri, is placed in the Syllinae.

Syllinae is characterized by: 1) palps either free or partially fused at the base, 2) long, articulated antennae and cirri, and 3) reproduction by schizogamic scissiparity. However, several species of *Pionosyllis and Eusyllis* (Eusyllinae) possess articulated dorsal cirri anteriorly and their palps are almost identical to those of the Syllinae. *Eurysyllis* and *Plakosyllis* (Syllinae) have all appendages composed of a solitary, spherical article, similarly to Exogoninae; differentiation of taxa at the subfamily level in the Syllidae is confused and Fauchald (1977), considered the division of the Syllidae into subfamilies of more practical than scientific value. The method of reproduction could be of great value in the recognition of the syllid subfamilies (Garwood, 1991).

Pionosyllis procera has morphological characters which ally it with both and *Syllis,* and, consequently, with Eusyllinae and Syllinae. Based exclusively on morphological characters, Hartman (1965) placed the species in the genus *Pionosyllis.* The recognition of schizogamic scissiparity in this species, a reproductive method typical of the Syllinae rather than the Eusyllinae, argues for its reassignment to the Syllinae; a decision must await a thorough revision of the genus *Pionosyllis.*

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RESUMEN

Se redescribe *Pionosyllis procera* Hartman, 1965, con base en un elevado número de ejemplares capturados en Cuba durante la "I Expedición Cubano-Española"; también, se ha consultado la serie tipo. La especie tiene estolones reproductores, desconocidos hasta el presente. Su método reproductor (esquizogamia) es diferente al que le correspondería como perteneciente a la subfamilia Eusyllinae (epigamia), por lo que resulta necesario considerar su reubicación en Syllinae.

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