

A new species of *Synelmis* (Annelida, Polychaeta, Pilargidae) from New Zealand and designation of a neotype for *S. albini* from the Canary Islands

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ABSTRACT

A new species of *Synelmis* Chamberlin, 1919 (Annelida, Polychaeta, Pilargidae), *Synelmis knoxi* n. sp., is described from the continental shelf and slope of New Zealand. The new species differs from others of the genus in having relatively long cirriform antennae with the lateral ones arising over the mid-palps, cirriform tentacular and parapodial cirri, relatively thick amber-coloured notopodial spines starting on chaetigers 4 to 6, and 2 or 3 notoacicularae per parapodium. This new species, previously confused with *S. albini* (Langerhans, 1881), is the only currently known species of *Synelmis* from the New Zealand-Australia region. A neotype is designated for *S. albini*, a widely reported species of the tropics and subtropics, in order to clarify its taxonomic status.

KEY WORDS

Annelida,
Polychaeta,
Pilargidae,
Synelmis,
neotype,
New Zealand,
Canary Islands,
new species.

RÉSUMÉ

Une nouvelle espèce de Synelmis (Annelida, Polychaeta, Pilargidae) de Nouvelle-Zélande et désignation d'un néotype pour S. albini des îles Canaries.

Une nouvelle espèce de *Synelmis* Chamberlin, 1919 (Annelida, Polychaeta, Pilargidae), *Synelmis knoxi* n. sp., est décrite du plateau continental et de la pente de la Nouvelle-Zélande. La nouvelle espèce diffère des autres espèces du genre par des antennes cirriformes relativement longues avec les latérales insérées au-dessus des palpes médians, des cirri tentaculaires et parapodiaux cirriformes, des épines notopodiales relativement épaisses et de couleur ambre commençant sur les chétigères 4 à 6, et 2 ou 3 notoacicules par parapode. Cette nouvelle espèce, précédemment confondue avec *S. albini* (Langerhans, 1881), est la seule espèce actuellement connue de *Synelmis* de la région de Nouvelle-Zélande-Australie. Un néotype est désigné pour *S. albini*, une espèce largement rapportée des régions tropicales et subtropicales, afin de clarifier son statut taxonomique.

MOTS CLÉS

Annelida,
Polychaeta,
Pilargidae,
Synelmis,
néotype,
Nouvelle-Zélande,
îles Canaries,
nouvelle espèce.

INTRODUCTION

The genus *Synelmis* Chamberlin, 1919 has only been reported once previously in New Zealand waters, based on a single specimen identified as *Synelmis albini* (Langerhans, 1881) collected on the continental shelf off the west coast of New Zealand (Stull 1979). Despite a supposed widespread global distribution in the tropics and subtropics (Pettibone 1966), Stull's record remains the only report of the species in the Australasian region. There are no other species of *Synelmis* currently known from either New Zealand or Australian waters. During a taxonomic study of New Zealand Pilargidae from the collections of the National Institute of Water & Atmospheric Research (Wellington) and the Museum of New Zealand Te Papa Tongarewa (Wellington), more worms resembling Stull's specimen were found in samples from a variety of localities on the continental shelf and slope around New Zealand. This material is described here as a new species following comparison with *S. albini* collected from the type locality, Canary Islands, held at the Museo de Ciencias Naturales (Santa Cruz de Tenerife, Tenerife). A neotype is designated for *S. albini* in order to clarify the concept of this widely reported species, and to facilitate comparison with several recently described new species of *Synelmis* (Salazar-Vallejo 2003).

ABBREVIATIONS

| | |
|----------|--|
| LACM-AHF | Los Angeles County Museum of Natural History, Los Angeles (formerly Allan Hancock Foundation); |
| MNHN | Muséum national d'Histoire naturelle, Paris; |
| MONZ | Museum of New Zealand Te Papa Tongarewa, Wellington; |
| NIWA | National Institute for Water & Atmospheric Research, Wellington; |
| TFMC | Museo de Ciencias Naturales, Santa Cruz de Tenerife, Tenerife. |

SYSTEMATICS

Order PHYLLODOCIDA Dales, 1962

Family PILARGIDAE Saint-Joseph, 1899

Genus *Synelmis* Chamberlin, 1919

Synelmis Chamberlin, 1919: 177. — Salazar-Vallejo 2003: 21.

Synelmis "complex A" – Fitzhugh & Wolf 1990: 4. — Licher & Westheide 1994: 225.

TYPE SPECIES. — *Synelmis simplex* Chamberlin, 1919, by original designation.

DIAGNOSIS. — Pilargids with long stiff, wiry body; integument smooth with iridescent cuticle, lacking papillae. Prostomium broadly rounded (wider than long), hindbrain bilobed; three antennae; pigmented prostomial eyes; large, well separated biarticulate palps each bearing *ventrolateral papilla* (new generic feature); achaetous tentacular segment bearing two pairs of tentacular cirri. Parapodia with reduced notopodia bearing emergent straight or slightly curved spines; neuropodia bearing capillary and furcate chaetae, acicular spines absent. Pygidium with one pair of short anal cirri (modified from Pettibone 1966; Fitzhugh & Wolf 1990; Licher & Westheide 1994).

REMARKS

Synelmis was originally placed in the family Syllidae Grube, 1850. Both the genus and type species *Synelmis simplex* were overlooked in the revision of Hartman (1947). Pettibone (1966) placed *Synelmis* into Pilargidae and assigned *Glyphohesione* Friedrich, 1950, represented by a single species, *G. klatti* Friedrich, 1950, as a junior synonym. Fitzhugh & Wolf (1990) recognised that *Synelmis* comprised three distinct groups: one represented only by *S. klatti*; complex A (includes *S. albini*, *S. rigida* (Fauvel, 1919) and *S. simplex*); and complex B (includes *S. acuminata* Wolf, 1986 and *S. ewingi* Wolf, 1986). Together, these three groups were found to be non-monophyletic by Fitzhugh & Wolf (1990) and Licher & Westheide (1994). Complex A was found to be monophyletic based on the presence of furcate neurochaetae (Fitzhugh & Wolf 1990) or prostomial pigmented eyes (Licher & Westheide 1994), but neither study could identify a synapomorphy for complex B; therefore both studies recommended combining complex B species with *Litocorsa* Pearson, 1970. The combined group was characterised by having a prostomium longer than wide, bearing two or three antennae (or antennae absent), with palps fused to varying degrees, and having neuropodial spines (Licher & Westheide 1994). Fitzhugh & Wolf (1990) recommended that *S. klatti* be returned to its nominal genus

Glyphohesione, which was done formally by Licher (1994).

In view of the above studies, a restricted concept of *Synelmis* is used here, which is the same as that used by Salazar-Vallejo (2003) in his revision of the genus. *Synelmis* s.s. currently includes *S. albin*, *S. simplex*, *S. rigida*, *S. sinica* Sun & Chen, 1990, a few unnamed species including some resembling *S. albin* (Wolf 1984; Dean 1998) and the new species described herein. Salazar-Vallejo (2003) relegates *S. simplex* to a junior synonym of *S. rigida*.

Interestingly, the furcate neurochaetae considered to be an autapomorphy of *Synelmis* s.s. were thought by Pettibone (1966) to be an artefact, representing fractured longer capillary chaetae. This is an understandable conclusion since the furcate neurochaetae appear to occur irregularly in the parapodia of the two species examined here. However, it is more likely that the furcates being short and slender are easily obscured by the longer, more numerous capillaries. Most recent descriptions of *Synelmis*, with the exception of Imajima (1987), describe and illustrate the furcate chaetae and this is followed here. Given the difficulty in observing this feature however, the chaetae of *Synelmis* would be best studied using SEM.

The ventrolateral papillae present in the two species described here have been widely reported previously for *S. albin*, for example, Pettibone (1966), Westheide (1974) and Imajima (1987). Presumably the feature has been regarded as a character at the species level because it has not been included in a generic diagnosis previously. Further, the ventrolateral papillae appear to have been overlooked in cladistic studies mentioned above. Some workers possibly confused the ventrolateral papillae with palpostyles because of their position at the end of the palpophore and because the palpostyle is often withdrawn in preserved material. The ventrolateral papillae are present in all *Synelmis* s.s. and possibly it is a general feature among Pilargidae since they appear to be present in several taxa including in *Sigambra* Müller, 1858 (Licher & Westheide 1994: fig. 1c) and *Ancistrosyllis* McIntosh, 1879 (Fitzhugh & Wolf 1990: fig. 1C).

Synelmis albin (Langerhans, 1881)

(Fig. 1)

Ancistrosyllis albin Langerhans, 1881: 107, 108, fig. 16a-d.

Synelmis albin – Núñez *et al.* 1984: 128 [list]. — Núñez 1991: 251-253. — Brito *et al.* 1996: 159, 160, fig. 8A-F.

MATERIAL EXAMINED. — **Canary Islands.** Tenerife, Playa de la Tejita, mesolitoral, algas, 4.IV.1976, coll. J. Núñez No. PO-183-88, neotype by present designation (TFMC-BMAN/000214); 1 specimen (Núñez personal collection).

TYPE LOCALITY. — Tenerife, Playa de la Tejita (determined by neotype).

DISTRIBUTION. — Known with certainty only from shallow subtidal rocky reefs of Tenerife and Fuerteventura, Canary Islands.

DESCRIPTION

Neotype complete, but broken into two halves; combined length 15.0 mm, 0.6 mm wide (without parapodia) and 0.7 mm (with parapodia); 63 chaetigers.

Body translucent, metallic sheen, creamy white except for reddish glandular dorsal and ventral cirri and subcutaneous reddish pigment on venter of posterior half of body either side of the midline. Body slender, arched dorsally, flatter ventrally (shape somewhat distorted), weak mid-ventral groove discernible (Fig. 1A, B).

Prostomium ill-defined, wider than long, slight mid-dorsal depression (Fig. 1A). Lateral antennae short, cirriform, much less than prostomium length, inserted at lateral base of palps; median antenna similar to laterals, arising from posterior edge of prostomium (Fig. 1A). One pair lateral eyespots on posterolateral prostomium, faded and barely visible. Palps large, weakly biarticulate; palpostyle globular, not clearly demarcated from palpophore (palps in extended state). Short palpal papilla arising from ventrolateral junction of palpophore and palpostyle, not extending beyond palpostyle. Hindbrain not clearly visible through body wall. Pharynx partially everted, muscle bands of posterior portion visible through body wall, extending posteriorly to about chaetiger 6 (Fig. 1A); thereafter muscular

oesophagus extends posteriorly to about chaetigers 16-17, where intestine begins.

Tentacular cirri weakly fusiform, similar in size to corresponding cirri on first chaetiger. Parapodia with fusiform dorsal and ventral cirri, broadening slightly and becoming strongly fusiform with acuminate tips posteriorly; dorsal cirri about one and a half times larger than ventral cirri throughout (Fig. 1C-E). Chaetal lobe subconical, slightly smaller than dorsal cirrus anteriorly, decreasing in relative size posteriorly. Notopodial spines clear, straight and tapering to a rounded tip (Fig. 1F), present in every parapodium from chaetiger 10, only one spine per notopodium, slightly emergent at dorsal base of dorsal cirrus; thicker than notoacacula over entire body. Neurochaetae of three types in each parapodium: a few long limbate chaetae with faintly serrated wing (visible under $63 \times \text{obj.}$) (Fig. 1G); one or two shorter capillaries (Fig. 1H); and one to three very short furcate chaetae with tines of similar thickness but distinctly different lengths (Fig. 1I). A single notoacacula per parapodium. Neuroacaculae not visible in anterior parapodia, but discernable posteriorly (Fig. 1E).

Pre-pygidial region comprising three segments with very small cirri, lacking chaetal lobes and chaetae (Fig. 1B). Pygidium bearing pair of short cirriform anal cirri.

Variation

Other specimen collected at the same time and place as the neotype complete, 16.5 mm long, 0.5 mm wide (without parapodia), 0.6 mm (with parapodia) at chaetiger 10; 70 chaetigers. Both mid-ventral groove and lateral grooves (in line of parapodia) present. Eyes absent, probably faded. Pharynx fully everted, visible through body wall, extending posteriorly to about chaetiger 4; thereafter muscular oesophagus extends posteriorly to about chaetiger 14. Notopodial spines from chaetiger 9.

REMARKS

Langerhans' type material originally housed in the Science Museum (Freiburg, Germany) was destroyed during the World War II according to

Brito *et al.* (1996). They re-described *Synelmis albini* based on five specimens from the Canary Islands; two were the specimens studied here from Tenerife, and the other three were specimens from Majanicho, Fuerteventura. The same five specimens were described earlier in the unpublished thesis of Jorge Núñez (Núñez 1991), and in the same work the Majanicho specimens were identified as potential neotypes. Subsequently, the three Majanicho specimens were registered as "neotipos" with the Museo de Ciencias Naturales (Santa Cruz de Tenerife, Tenerife) (TFMC-AN/0178) (Brito *et al.* 1996). However, this must be regarded as an invalid neotype designation (irrespective of whether or not the thesis satisfies the ICZN as a valid publication) because among other reasons it was not accompanied by a statement identifying a particular specimen as *the* neotype and the specimens were not from near the original type locality, the rocky coast of Puerto de la Orotava, northern Tenerife (see Langerhans 1881: 95).

In order to rectify the situation, one of the two specimens described here from Playa de la Tejita, Tenerife, is here designated as the neotype, and a new registration number (TFMC-BMAN/000214) applied. The previous number (TFMC-AN/0178) has been cancelled (F. Hernández Martín pers. comm.). The neotype designated here is topotypic and is consistent with what is known about the former name-bearing type according to Langerhans (1881) and the descriptions of Núñez (1991) and Brito *et al.* (1996). The only discrepancies between Núñez (1991) and Brito *et al.* (1996) and the present description can be attributed to the larger body size (their largest specimen measured 20 mm in length, 0.5 mm wide and 110 chaetigers), and the slightly better condition of the Fuerteventura specimens. A pair of eyes is obvious in the Fuerteventura specimens, lateral antennae arise anterolaterally on the prostomium (the mid-lateral position on the present material is probably the result of distortion of the prostomium as a result of the eversion of the pharynx); notopodia have one or two notoacaculae whereas I observed only a single notoacacula.

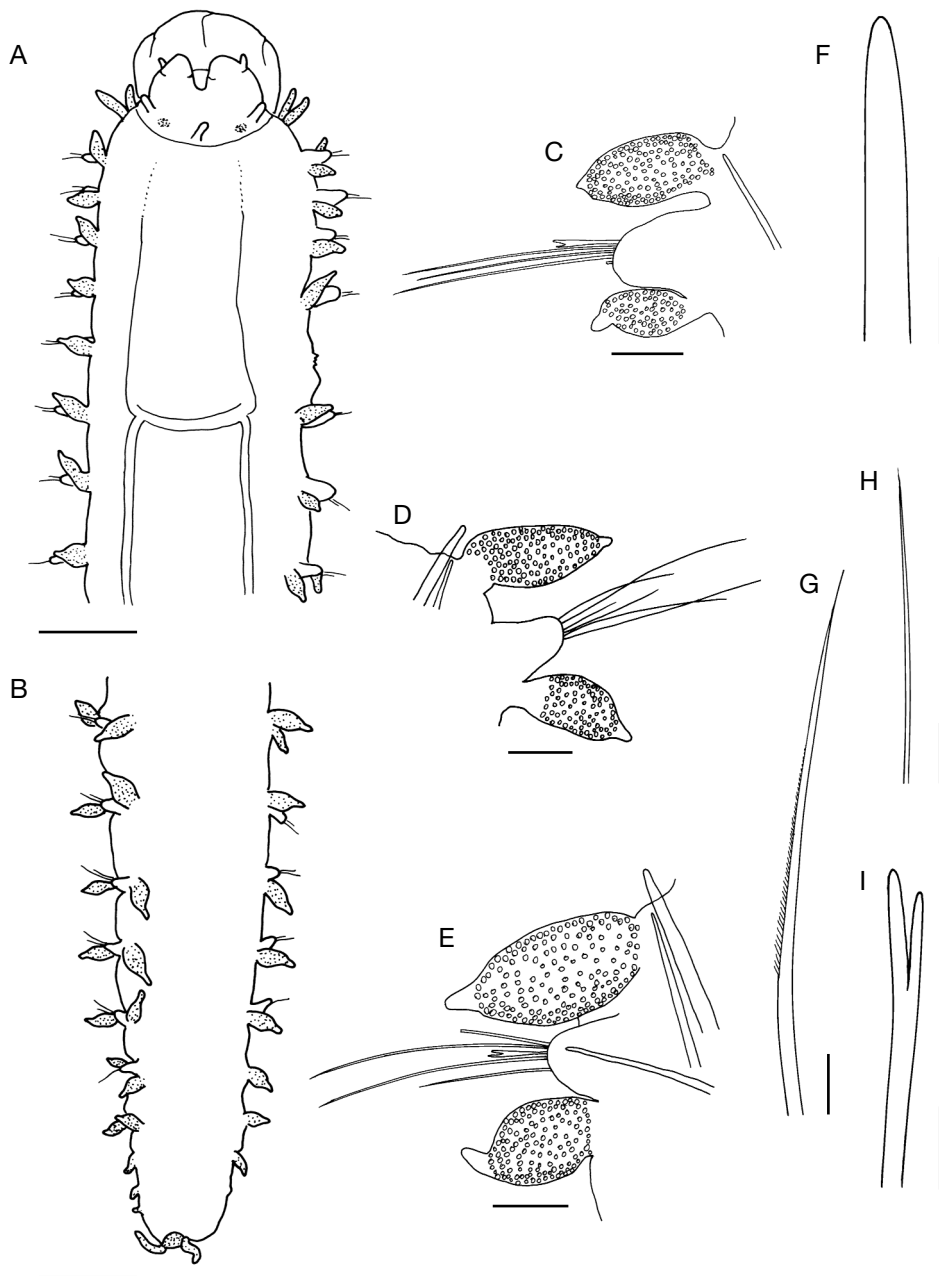


FIG. 1. — *Synelmis albini* (Langerhans, 1881), neotype (TFMC-BMAN/000214); **A**, anterior end, dorsal view, pharynx partially everted, right side parapodium 5 removed; **B**, posterior end, dorsal view; **C**, parapodium from chaetiger 9, left side, posterior view (one capillary chaeta broken); **D**, parapodium from chaetiger 31, right side, posterior view; **E**, parapodium from chaetiger 52, left side, posterior view (one capillary chaeta broken); **F**, notopodial spine from parapodia of chaetiger 31; **G**, **H**, two types of capillaries from parapodia of chaetiger 31; **I**, furcate chaeta from parapodia of chaetiger 52. Scale bars: A, B, 0.25 mm; C-E, 0.05 mm; F-I, 0.02 mm.

Brito *et al.* (1996) describe the notopodial spines as starting anywhere between chaetigers 5 to 20, but this most likely is based not only on observations made from their specimens, but also on Pettibone (1966), who held a wide view of the species. Notopodial spines in the Playa de la Tejita specimens are present from chaetigers 9 or 10. Langerhans (1881) states that the notopodial spines begin on segment 7 (= chaetiger 6) and that they gradually become thicker and are prominent by segment 12. Therefore, until further material can be examined, *S. albini* is considered to have notopodial spines beginning from chaetigers 5-10. This narrower range in the starting point of the notopodial spines is in keeping with the findings of Salazar-Vallejo (2003), especially for species in which the spines start early. An interesting feature recorded by Langerhans (1881: fig. 16d) for *S. albini*, but not reported by other authors, is the presence of a ring or halo of fine hairs (= fimbriae), which are visible when the pharynx is everted. The fimbriae resemble those of certain hesionids. The fimbriae were not seen in the Tenerife specimens, probably because the degree of pharyngeal eversion was insufficient. However, fimbriae were observed in the new species of *Synelmis* from New Zealand. The generality of the presence of pharyngeal fimbriae in *Synelmis* (and other pilargids) is worthy of further investigation especially in regard to the phylogeny of the group.

Synelmis knoxi n. sp.
(Fig. 2)

Synelmis albini – Stull 1979: 29.

TYPE MATERIAL. — Holotype: New Zealand, M. V. *Kokinga*, off Twin Rocks, Bay of Islands, North Island, 35.17°S, 174.30°E, 46-73 m, 10.XII.1973 (MONZ ZW 1457); paratypes: west coast of New Zealand, stn B473, 43.33°S, 169.78°E, 215 m, 3.VI.1961, 1 specimen (MNHN POLY 1377); stn B686, 40.27°S, 172.54°E, 126 m, 8.X.1962, 1 specimen (NIWA P-1280); stn C168, 39.67°S, 172.22°E, 284 m, 3.IX.1959, 8 specimens (LACM-AHF POLY 2081); stn C169, 39.67°S, 172.42°E, 234 m, 3.IX.1959, 1 specimen (NIWA P-1281); stn C438, 40°S, 173.61°E, 84 m, 7.V.1960, 1 specimen (NIWA P-1282); stn S386A, 41.33°S, 170.68°E, 511 m,

4.II.1983, 1 specimen (NIWA P-1283); stn S386C, 41.33°S, 170.68°E, 515 m, 4.II.1983, 1 specimen (NIWA P-1284); stn S399C, 40.76°S, 171.33°E, 328 m, 9.II.1983, 1 specimen (NIWA P-1285); stn V415B, 42.54°S, 170.50°E, 475 m, 5.IX.1992, 1 specimen (NIWA P-1286).

TYPE LOCALITY. — Off Twin Rocks (35.17°S, 174.30°E), Bay of Islands, North Island, New Zealand.

ETYMOLOGY. — The species is named after Emeritus Professor George Knox for his great contribution to polychaete biology in the New Zealand region.

DISTRIBUTION. — Continental shelf and slope of New Zealand, currently known from north-east shelf of New Zealand and Challenger Plateau off west coast of New Zealand from 46 to 515 m depth.

DESCRIPTION

Holotype complete, 55 mm long, 1.0 mm wide at chaetiger 10; 158 chaetigers.

Body translucent, metallic sheen, creamy white, unpigmented. Body slender, long, dorsum highly arched, venter flatter with a deep, broad mid-ventral groove; lateral grooves also present following line of parapodia to at least midbody (Fig. 2A, B). Prostomium rectangular, about two times wider than long. Three cirriform antennae; lateral ones extend anteriorly to tip of palps, located anteriorly over mid palps; median antenna slightly longer than lateral ones, about three quarters length prostomium (Fig. 2A). Two patches of eyespots on posterolateral prostomium, each four or five small ocelli. Palps biarticulate, with spherical palpostyle. Slender palpal papilla arising from ventrolateral junction of palpophore and palpostyle, extends to level of palpostyle. Hindbrain bilobed, extends posteriorly to chaetiger 3. Pharynx everted, revealing rim of very fine hairs (fimbriae); muscle bands of posterior portion visible through body wall, extending posteriorly to about chaetiger 5 (posterior margin); thereafter muscular oesophagus extends from chaetiger 5 to about chaetiger 30, where intestine begins.

Tentacular cirri cirriform, similar in size to parapodial cirri of anterior chaetigers. Parapodia with cirriform (slightly enlarged base) dorsal and ventral cirri, about three times length of corresponding chaetal lobe, dorsal and ventral ones equal in

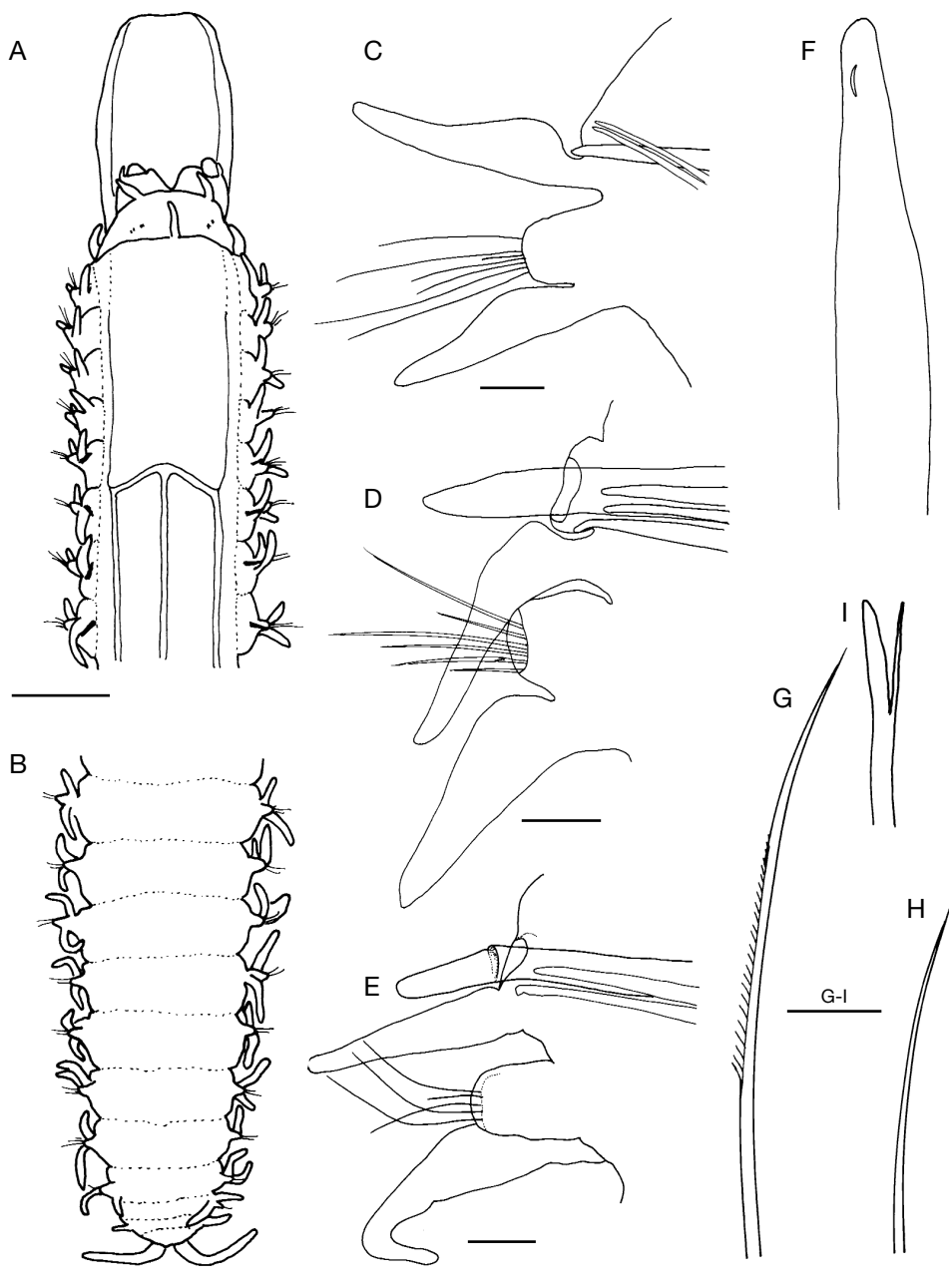


FIG. 2. — *Synelmis knoxi* n. sp., holotype (MONZ ZW 1457); **A**, anterior end, dorsal view, pharynx fully everted (terminal fimbriae too small to be illustrated); **B**, posterior end, dorsal view; **C**, parapodium from chaetiger 7, right side, anterior view; **D**, parapodium from chaetiger 130, left side, posterior view (notopodial spine broken); **E**, parapodium from chaetiger 47, left side, posterior view; **F**, notopodial spine from parapodia of chaetiger 47; **G**, long capillary chaeta from parapodia of chaetiger 7; **H**, short capillary chaeta from parapodia of chaetiger 47; **I**, furcate chaeta from parapodia of chaetiger 7. Scale bars: A, B, 0.50 mm; C-E, 0.05 mm; F-I, 0.02 mm.

length for most of body; ventral ones slightly longer in posterior segments (Fig. 2C-E). Chaetal lobe rounded to squarish. Notopodial spines amber-coloured, very robust and slightly curved, some with a minute distal notch, tapering to blunt tip (Fig. 2F); from chaetiger 5 to penultimate chaetiger, one per parapodium, emerging from dorsal base of dorsal cirrus to half its length (in mid and posterior chaetigers). Neurochaetae include capillaries of varying lengths, longer ones with a finely serrated wing (Fig. 2G), shorter ones apparently wingless (Fig. 2H) (12 capillaries in anterior parapodia, reducing to six in posterior ones); furcate chaetae very short, barely extending beyond chaetal lobe, tines similar in length, longer one much stouter than other (Fig. 2I) (three or four furcate chaetae in anterior parapodia, numbers reducing posteriorly to two posterior ones). Notoaciaculae considerably thinner than notopodial spine, two or three per parapodium. Neuroaciaculae not visible.

Prepygidial region comprising a single achaetigerous segment (though cirri present). Pygidium bearing pair of cirriform anal cirri, slightly longer than preceding parapodial cirri (Fig. 2B).

Variation

Other material smaller ranging in size from about 10 mm long, 0.3 mm wide for 60 chaetigers to 36 mm long, 0.7 mm wide for 87 chaetigers (incomplete specimen). Eyespots apparently fade easily and specimens from same sample can have eyes present, either one pair of large lensed eyes, or two patches of several smaller eyespots, or pigmented eyespots may be absent. Palpal papilla may extend just beyond palpostyle. Lobes of hindbrain extend posteriorly to chaetiger 2 or 3. Pharynx extending posteriorly to chaetigers 5-9 (depending on degree of pharyngeal eversion). Notopodial spines first appear in chaetigers 4-6. Relative lengths of tines of furcate chaetae range from approximately equal to slightly subequal. Specimen from station B473 is a mature male.

REMARKS

The material examined here includes the specimen identified by Stull (1979) as *Synelmis albini*

(NIWA P-1280). Comparison of this specimen and further material from New Zealand with that of the *Synelmis albini* from the Canary Islands shows that the New Zealand specimens represent a new species. *Synelmis knoxi* n. sp. differs from *Synelmis albini* in having relatively longer cirriform antennae with the lateral ones arising from over the mid-palps, the muscular oesophagus extends more posteriorly, parapodial cirri are cirriform rather than fusiform, notopodial spines are amber-coloured and relatively more robust (three to four times thicker than corresponding notoaciacula cf. about two times for *S. albini*) and begin more anteriorly, and there are two or three notoaciaculae per parapodium. Also *S. knoxi* n. sp. lacks glandular, pigmented parapodial cirri.

The other presently known species of *Synelmis* s.s. can be differentiated from *Synelmis knoxi* n. sp. as follows: *Synelmis rigida* differs from *S. knoxi* n. sp. in having fusiform antennae and parapodial cirri and in the later appearance of notopodial spines (chaetigers 13-23) (Salazar-Vallejo 2003); *Synelmis sinica* differs from *S. knoxi* n. sp. in lacking eyes, having a very poorly-developed chaetal lobe, in the later appearance of notopodial spines (chaetigers 12-15) and in having pigmentation spots on the lateral body.

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REFERENCES

- BRITO M. DEL C., NÚÑEZ J., BACALLADO J. J. & OCAÑA O. 1996. — Anélidos poliquetos de Canarias: Orden Phyllodocida (Chrysopetalidae, Pisionidae, Glyceridae, Sphaerodoridae, Hesionidae y Pilargidae), in LLINÁS O., GONZÁLEZ J. A. &

- RUEDA M. J. (eds), Oceanografía y recursos marinos en el Atlántico centro-oriental. *Monografías del Instituto Canario de Ciencias Marinas* 1: 155-179.
- CHAMBERLIN R. V. 1919. — The Annelida Polychaeta. *Memoirs of the Museum of Comparative Zoology, Harvard* 48: 1-514.
- DEAN H. K. 1998. — The Pilargidae (Annelida: Polychaeta) of the Pacific Coast of Costa Rica. *Revista de Biología Tropical* 46 (Supl. 6): 47-62.
- FITZHUUGH K. & WOLF P. S. 1990. — Gross morphology of the brain of pilargid polychaetes: taxonomic and systematic implications. *American Museum Novitates* 2992: 1-16.
- HARTMAN O. 1947. — Polychaetous annelids. Part VIII. Pilargidae. *Allan Hancock Pacific Expeditions* 10: 483-523.
- IMAJIMA M. 1987. — Pilargidae (Annelida, Polychaeta) from Japan (Part 1). *Bulletin of the National Science Museum, Series A (Zoology)* 13: 151-164.
- LANGERHANS P. 1881. — Ueber einige canarische Anneliden. *Nova Acta der Kaiserlichen Leopoldina-Carolina-Deutschen Akademie der Naturforscher* 42: 95-124.
- LICHER F. 1994. — Resurrection of *Glyphohesione* Friedrich, 1950, with redescription of *G. klatti* Friedrich, 1950 and description of *G. longocirrata* (Polychaeta: Hesionidae). *Proceedings of the Biological Society of Washington* 107: 600-608.
- LICHER F. & WESTHEIDE W. 1994. — The phylogenetic position of the Pilargidae with a cladistic analysis of the taxon – facts and ideas, in DAUVIN J.-C., LAUBIER L. & REISH D. J. (eds), Actes de la 4^e Conférence internationale des Polychètes. *Mémoires du Muséum national d'Histoire naturelle* 162: 223-235.
- NÚÑEZ J. 1991. — *Anélidos Poliquetos de Canarias: Estudio Sistemático de los Órdenes Phyllodocida, Amphinomida y Eunicida*. Tesis Doctoral, Departamento de Biología Animal, Universidad de La Laguna, La Laguna, Tenerife, Islas Canarias, 610 p.
- NÚÑEZ J., BRITO M. DEL C. & BACALLADO J. J. 1984. — Catálogo provisional de los Anélidos Poliquetos del Archipiélago Canario. *Cuadernos Marisqueros Publicación Técnica* 7: 113-148.
- PETTIBONE M. H. 1966. — Revision of the Pilargidae (Annelida: Polychaeta), including descriptions of new species, and redescription of the pelagic *Podarmus ploa* Chamberlin (Polynoidae). *Proceedings of the United States National Museum* 118: 155-207.
- SALAZAR-VALLEJO S. I. 2003. — Revision of *Synelmis* Chamberlin, 1919 (Annelida, Polychaeta, Pilargidae). *Zoosystema* 25 (1): 17-42.
- STULL J. 1979. — Some benthic polychaetes from New Zealand. *New Zealand Oceanographic Institute Records* 4 (5): 25-43.
- WESTHEIDE W. 1974. — Interstitielle fauna von Galapagos. XI. Pisionidae, Hesionidae, Pilargidae, Syllidae (Polychaeta). *Mikrofauna des Meeresbodens* 44: 1-146.
- WOLF P. S. 1984. — Family Pilargidae Saint-Joseph, 1899. Chapter 29, in UEBELACKER J. M. & JOHNSON P. G. (eds), *Taxonomic Guide to the Polychaetes of the Northern Gulf of Mexico*. Volume 4. Barry A. Vittor & Associates, Inc., Mobile, Alabama: 1-41.

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