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A new species of *Harmothoe* (Polychaeta: Polynoidae) from the Chafarinas Islands (Alboran Sea, Western Mediterranean)

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Abstract : A new species of polynoid polychaete is described: *Harmothoe notochaetosa*. This species is characterized by the shape of the elytra as well as the great number and development of notochaetae. The material was collected from several hard substrata in the Chafarinas Islands (W Mediterranean).

Résumé : *Une nouvelle espèce d'Harmothoe (Polychaeta : Polynoidae) des Iles Chafarinas (Mer d'Alboran, Méditerranée occidentale).* Une nouvelle espèce de polychète polynoidé est décrite : *Harmothoe notochaetosa*. Cette espèce est caractérisée par la forme de ses élytres et le nombre important, ainsi que le développement de ses soies dorsales. Le matériel a été récolté sur différents substrats rocheux des Iles Chafarinas.

Keywords : Annelida; polychaeta; Polynoidae; Mediterranean Sea.

Introduction

Recently, a study on the benthic invertebrate communities of the Chafarinas Islands was undertaken, paying special attention to polychaetous annelids, isopod crustaceans, pycnogonids, bivalve molluscs, and nemerteans. Information about the study area can be found in earlier works devoted to Polychaeta from Chafarinas Islands (López 1995; López *et al.* in press). Three specimens of an undescribed species of *Harmothoe* Kinberg, 1856 (Polynoidae: Polychaeta) were found on different substrata. In this work, the taxonomic description of this species is given.

Material and Methods

The whole material, from several animal or vegetal substrata on hard bottoms, was collected by scuba diving. The material was fixed, without staining, in 5% formalin and, after identification, preserved in 70% ethanol. Some structures (parapodial lobes, elytra) were preserved as permanent microscope slides in glycerine jelly. Observations, measurements, and drawings were made using an interference contrast (Nomarsky) microscope, with an incorporated camera lucida.

The complete type series is deposited in the collection of Museo Nacional de Ciencias Naturales, Madrid (MNCNM).

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Results

Family **Polynoidae** Kinberg, 1856
Subfamily Harmothoinae Willey, 1902
Genus *Harmothoe* Kinberg, 1856
Harmothoe notochaetosa sp. nov.
Figs. 1-2

Material examined. Holotype, harbour of Isabel II Island (35°10'48"N-2°25'03"W), on *Astroides calycularis* and algae, -3 m. One paratype, Rey Francisco Island

(35°10'44"N-2°25'06"W), on *Mesophyllum lichenoides* from a *Posidonia oceanica* bed, -6 m. One paratype, Isabel II Island (3°10'49"N-2°24'57"W), epibiontic fauna of the gorgonacean *Ellisella paraplexauroides* -24 m.

Etymology.- The specific name *notochaetosa* refers to the great development of notochaetae, which is one of the most characteristic features of this new species.

Description.- The holotype measures 6.65 mm in length for 24 chaetigers (incomplete) and 1.4 mm in width (at chaetiger 7 level, from the middle of one elytrophore to the middle of the other). The body lacks colour markings.

Prostomium (Fig. 1 A) bilobate, with two small cephalic peaks. Two pairs of eyes in an open trapezoidal arrangement; anterior pair very large and ventrolateral, posterior pair smaller and dorsal. Median antenna lost on all specimens; only median ceratophore remains, inserted in middle of prostomium, well developed. Lateral ceratophores inserted between the cephalic peaks, in ventral position (Fig. 1 A); only one paratype retains a short style covered with fine papillae, and tapering to an acute tip. Palps lost, except one in holotype which is long, slender, without papillae (Fig. 1 A); its insertion and the remaining scars observed in one paratype are lateral and ventral to the cephalic peaks.

Tentacular segment (chaetiger 1) not visible dorsally; with one aciculum and one or two simple chaetae similar to the short notochaetae of other chaetigers on each side. Dorsal tentacular cirri provided with long cirrophores, lateral to palp insertions; only the holotype retains a long style, covered with filiform papillae (Fig. 1 A). All specimens have lost the ventral tentacular cirri, but insertion scars remain.

Elytrophores on chaetigers 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23 (incomplete number of setigers is 24). Elytra (Fig. 2 A) oval, with dark pigmentation in the central area and translucent margins, covered on almost their whole surface with conical microtubercles (Fig. 2 B) of increasing size from insertion zone to posterior edge. A band of macrotubercles of similar shape close to the lateral and posterior margins (Fig. 2 C) and a fringe of well developed filiform papillae along the posterior and lateral edges (Fig. 2 A). Dorsal cirri (Fig. 1 C) on cirrophores inserted at a somewhat lower level than elytrophores, with long styles covered with filiform papillae similar to those of antennae and tentacular cirri in the distal half. Ventral cirri (Fig. 1 C) small, tapering to fine tips; some of them provided with small papillae near insertion.

Parapodia biramous, with notopodial lobe smaller than neuropodial lobe. Notopodium small and conical (Fig. 1 C), with two large groups of simple notochaetae that originate between two lips anterior to the aciculum (Fig. 1 D). Notochaetae of the anterior group (Fig. 2 F) short, curved and finely spinous; notochaetae of the posterior group (Fig. 2 D) long (even longer than neurochaetae), straight, with conspicuous spines and an acute tip. Some notochaetae with intermediate features between both groups (Fig. 2 E). Neuropodium well developed; postchaetal lobe round and shorter than prechaetal (Fig. 1 C, D) lobe, this one with a subconical shape and a supra-acicular process (Fig. 1 C, D). Neurochaetae (Fig. 2 G, H) with slightly curved tips, subdistal swelling and transverse rows of fine spines not reaching the tip. Most neurochaetae unidentate but a few with a fine secondary tooth (Fig. 2 I); two or three upper long neurochaetae (length between swelling and tip 262.5 µm) (Fig. 2 G); a larger middle group with dorsoventral gradation in length (dorsalmost 214.5 µm, ventralmost 80 µm) and size of spines (Fig. 2 H). Aciculum thick, yellow and provided with an acute tips that surpasses neuropodial lobe (Fig. 1 C). From chaetiger 6 to 24, a well developed nephridial papilla near ventral parapodial insertion (Fig. 1 B).

Pharynx everted on holotype, with a crown of 9 pairs of soft papillae (Fig. 1 A), and two pairs of chitinous jaws.

Discussion

Many species of the genus *Harmothoe* Kinberg, 1866 have elytra provided with conical structures as sculpture and a fringe of papillae on the outer margin, but none have notochaetae so well developed as the new species described herein. In the Mediterranean Sea, *H. drachi* (Reyss, 1961) (Reyss 1961 as *Lagisca drachi*) has elytra that resemble those of *H. notochaetosa* sp. nov. but it has more slender cirri and antennae, as well as thicker neurochaetae lacking dorsoventral gradation. *H. viridis* Loshamn, 1981 (Loshamn 1981), from Scandinavia, has dorsal cirri, neurochaetae and prostomium very similar to those of *H. notochaetosa*, but its central ceratophore is much bigger and its papillae of elytral fringe are much shorter. *H. goreensis* Augener, 1918 (Augener 1918, Day 1967, Núñez 1990), from West Africa, also has similar dorsal cirri and prostomium, but its elytra have fringes of shorter papillae, its neurochaetae are always bidentate, and its ventral cirri are covered with papillae along the entire length. *H. aculeata* Andrews, 1891 (Gardiner 1976) from Northwestern Atlantic, has elytra and parapodial lobes resembling those of *H. notochaetosa*, but its cirri and antennae are covered with a greater number of papillae. *H. aequiseta* (Kinberg, 1855) (Day 1967), from South Africa, and *H. praeclara* (Haswell, 1883) (Hanley 1993, Pettibone 1993), from Australia, have similar elytra, dorsal cirri, and parapodial lobes, but they present strongly bidentate neurochaetae, ventral cirri always with papillae, and only one pair of eyes in the prostomium. *H. lagiscoides serrata* Day, 1963 (Day 1963, 1967), also from South Africa, is the most similar to *H. notochaetosa* species, with

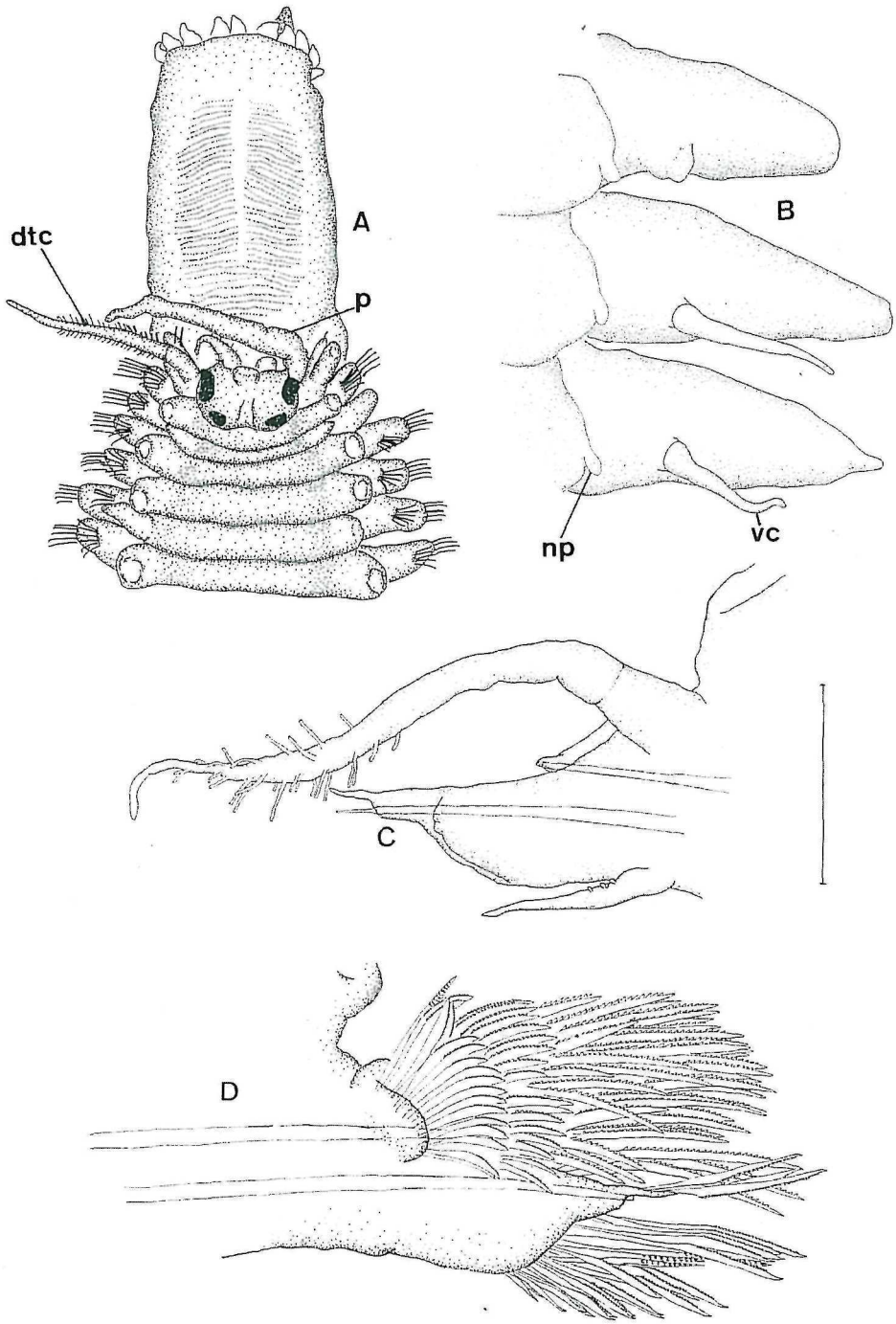

Figure 1. A: anterior end, dorsal view, showing prostomium, palp (p), first chaetiger with dorsal tentacular cirrus (dtc), and 5 following chaetigers (style of lateral antenna drawn from a paratype). B: midbody parapodia from a paratype (chaetigers 16 to 18), drawn without chaetae, ventral view (np: nephridial papilla, vc: ventral cirrus). C: parapodial lobe from chaetiger 12, drawn without chaetae, posterior view. D: parapodial lobe from chaetiger 13, with chaetae, anterior view.

Figure 1. A: partie antérieure, vue dorsale, montrant le prostomium, un palp (p), le premier sétigère avec un cirre tentaculaire dorsal (dtc) et les 5 segments suivants (style de l'antenne latérale dessiné d'après un paratype). B : parapodes de la région moyenne d'un paratype (sétigères 16 à 18), représentés sans les soies, vue ventrale (np : papille néphridienne, vc : cirre ventral). C : parapode du sétigère 12, dessiné sans soies, vue postérieure. D : parapode du sétigère 13, avec soies, vue antérieure.

Scale, Echelle: A 1.9 mm; B-D 0.39 mm.

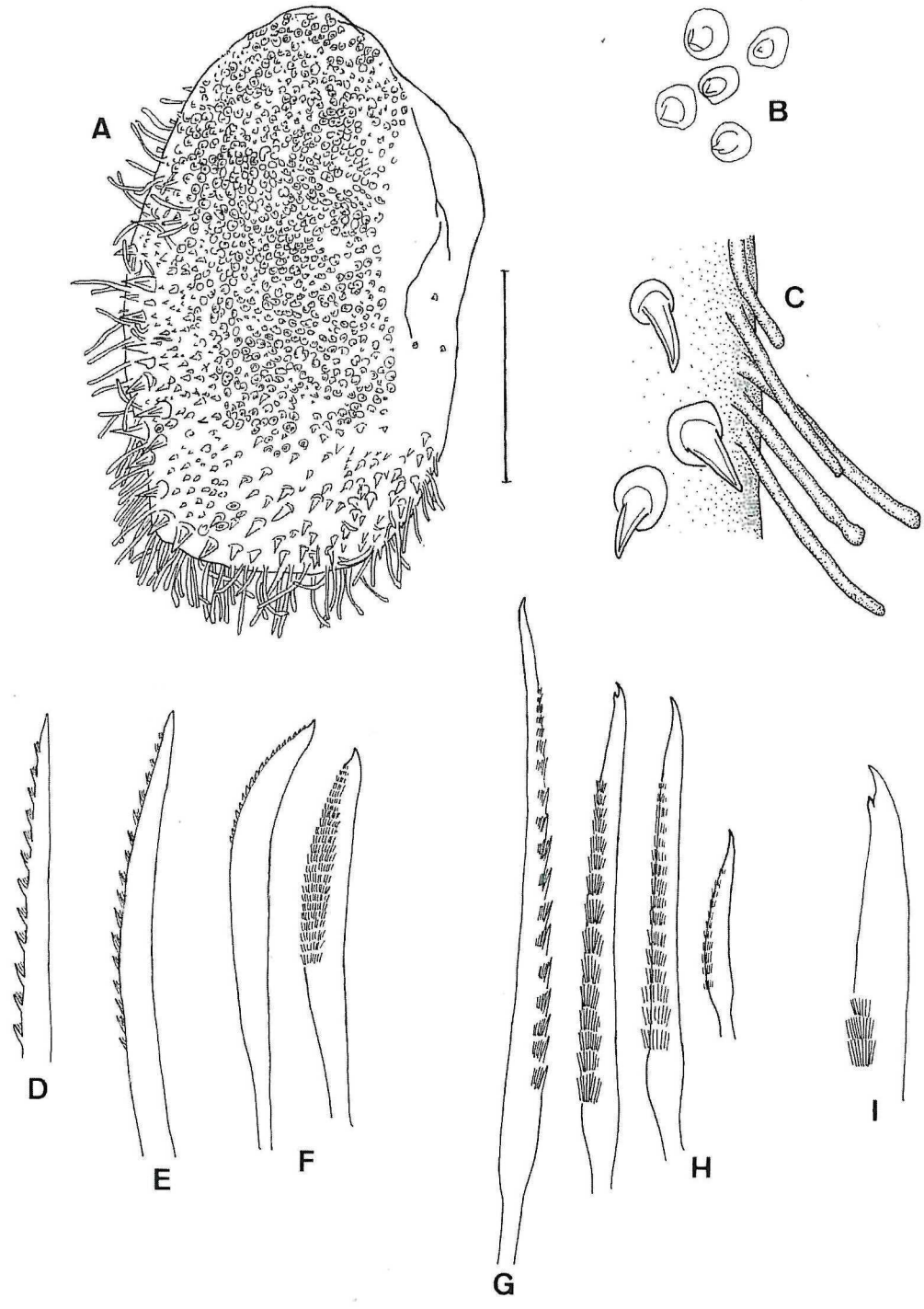

Figure 2. A: elytron. B: elytral microtubercles. C: elytral macrotubercles and outer fringe of papillae. D: tip of long notochaeta. E: median notochaeta. F: short notochaetae. G: upper neurochaeta. H: median and lower neurochaetae. I: tip of bidentate neurochaeta.

Figure 2. A : élytre. B : microtubercules des élytres. C : macrotubercules des élytres et bord extérieur des papilles. D : extrémité d'une soie dorsale longue. E : soie dorsale moyenne. F : soie dorsale courte. G : soie ventrale supérieure. H : soies ventrales moyennes et inférieures. I : extrémité d'une soie ventrale bidentée.

Scale, Echelle: A 0.5 mm; B, C, H 40 µm; D-G 96 µm.

well developed nephridial papillae and very similar elytra, ventral cirri, parapodial lobes and prostomium. Although we could not examine type series of *H. lagiscoides serrata*, Dr. M. H. Pettibone did it and, after examining our data on the new species, she sent us her notes and drawings on type series of *H. lagiscoides serrata,* which gave additional information to the original description. In our specimens most neurochaetae are unidentate (in *H. lagiscoides serrata* neurochaetae are mostly bidentate and seldom unidentate), notochaetae are more numerous and better developed, and dorsal cirri have papillae only in the distal half (in *H. lagiscoides serrata* dorsal cirri have papillae along their whole length); we consider these features of enough importance to include our specimens in a different species. Features similar to those of *H. notochaetosa* can be observed in other species which belong to genera closely related to *Harmothoe*. For example, in the genus *Paralepidonotus* Horst, 1915, which can be easily separated from *Harmothoe* due to the absence of cephalic peaks and the presence of well developed ventral lamellae, *P. heteropodus* Hanley, 1991 (Hanley 1991), from northern Australia, has parapodial lobes and notochaetae similar to those of *H. notochaetosa*, but has different dorsal cirri, with papillae all along their length, and a different elytral sculpture. *P. indicus* (Kinberg, 1856) (Day 1967, Hanley 1991), from India, is similar to *H. notochaetosa* in the shape of notochaetae and elytra, but its parapodial lobes and dorsal cirri are clearly different. *Eunoe uniseriata* Banse & Hobson, 1968 (Banse & Hobson 1968), from northeastern Pacific Ocean, has similar elytra and very similar parapodial lobes to those of *H. notochaetosa*, but its neurochaetae are all unidentate (as is typical of genus *Eunoe* Malmgren, 1865) and provided with strong spines. Moreover the palps are longer than those of *H. notochaetosa* and the prostomium lacks cephalic peaks.

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