



HAL
open science

NEREIPHYLLA PUSILLA (POLYCHAETA, PHYLLODOCIDAE) REDISCOVERED AND REDESCRIBED FROM SICILY

F Pleijel, a S y Mackie

► **To cite this version:**

F Pleijel, a S y Mackie. NEREIPHYLLA PUSILLA (POLYCHAETA, PHYLLODOCIDAE) REDISCOVERED AND REDESCRIBED FROM SICILY. *Vie et Milieu / Life & Environment*, 1993, pp.155-160. hal-03045784

HAL Id: hal-03045784

<https://hal.sorbonne-universite.fr/hal-03045784v1>

Submitted on 8 Dec 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

NEREIPHYLLA PUSILLA (POLYCHAETA, PHYLLODOCIDAE) REDISCOVERED AND REDESCRIBED FROM SICILY

F. PLEIJEL¹ and A. S.Y. MACKIE²

¹ Swedish Museum of Natural History, Box 50007, S-104 05 Stockholm, Sweden.
Address for correspondence : Tjärnö Marine Biological Laboratory, Pl. 2781, S-452 96 Strömstad, Sweden

² National Museum of Wales, Cathays Park, Cardiff CF1 3NP, Wales, U.K.

POLYCHÈTES
PHYLLODOCIDAE
NEREIPHYLLA PUSILLA
REDESCRIPTION
MÉDITERRANÉE

RÉSUMÉ – Redescription de *Nereiphylla pusilla* (Claparède, 1870). Un néotype est désigné parmi des spécimens récoltés sur la côte est de la Sicile. Cette espèce se distingue des autres espèces de *Nereiphylla* européennes par la combinaison de la petite taille à la maturité (3-5 mm), de la grande dimension des œufs (environ 150 µm), et de cirres dorsaux, ventraux et pygidiaux courts et gonflés. Elle est connue du nord-est de la Méditerranée seulement. *Phyllodoce nana* Saint-Joseph, 1906, décrite de Cannes, est considéré comme un synonyme plus récent. L'espèce est comparée avec d'autres espèces de *Nereiphylla*, et *N. mimica* Eibye-Jacobsen, 1992, de Belize, est considérée comme l'espèce la plus proche.

POLYCHAETA
PHYLLODOCIDAE
NEREIPHYLLA PUSILLA
REDESCRIPTION
MEDITERRANEAN

ABSTRACT – *Nereiphylla pusilla* (Claparède, 1870) is redescribed and a neotype designated from newly collected specimens from eastern Sicily. It is distinguished from other European members of the genus by the combination of small size at maturity (3-5 mm long), possession of large eggs (about 150 µm in diameter) and short swollen dorsal, ventral and pygidial cirri. The species is currently known only from the north-western Mediterranean, *Phyllodoce nana* Saint-Joseph, 1906 from Cannes being a junior synonym. Comparisons with other species of *Nereiphylla* are provided, and *N. mimica* Eibye-Jacobsen, 1992 from Belize is considered the closest related species.

INTRODUCTION

Anaitis pusilla was originally described from Naples by Claparède (1870). Since then the species has rarely been reported. This is probably due, at least in part, to a lack of both type material and of subsequent descriptions. In addition, its generic affinities have been uncertain; the species being variously referred to *Phyllodoce* (in Fauvel 1923), *Paranaitis* (in Hartman 1959) and *Genetyllis* (in Campoy 1982).

Dredge samples taken during scientific investigations off eastern Sicily in May 1990 yielded numerous specimens which correspond well to Claparède's original description, and the species is redescribed below as *Nereiphylla pusilla* comb. nov.

MATERIALS AND METHODS

Most specimens were relaxed in 7 % magnesium chloride, fixed in 4 % formaldehyde in sea-

water for a few days, rinsed in fresh water and subsequently transferred to 70 % alcohol. A few specimens (NMW.Z.1992.002.6, 9 & 11) were fixed (approx. 10 % formaldehyde in seawater) in unsorted samples without being relaxed, while several others (NMW.Z.1992.002.7-8) were relaxed using menthol. In both cases the specimens were later rinsed and preserved in alcohol as above. All drawings were prepared with the aid of a camera lucida.

The holotype of *Phyllodoce nana* Saint-Joseph, 1906, was examined in the Muséum National d'Histoire Naturelle, Paris (MNHN). For comparative purposes, type materials of other species referable to *Nereiphylla* were also examined: holotype of *Phyllodoce magnaoculata* Treadwell, 1901 (USNM 15951), syntypes of *Phyllodoce ferruginea* Moore, 1909 (USNM 17361) and *Phyllodoce fragilis* Webster, 1879 (USNM 535) from the National Museum of Natural History, Smithsonian Institution, Washington D.C.; holotype of *Prochaetoparia gruai* Rullier, 1973 from the Université Catholique, Angers (UCA); syntypes of *Genetyllis lutea* Malmgren, 1865 (BMNH 1865.9.23.5 and SMNH 2416) from the Natural History Museum, London, and the Swedish Mu-

seum of Natural History, Stockholm. Non-type material of other *Nereiphylla* species was also examined: *Carobia castanea* Marenzeller, 1879 (NMW.Z.1986.079. 134-141; 13 specimens from Hong Kong) from the collections of the National Museum of Wales, and *Nereiphylla paretii* Blainville, 1828 (about 20 specimens from around the British Isles and the western Mediterranean) and *Phyllodoce* (*Carobia*) *rubiginosa* Saint-Joseph, 1888 (about 50 specimens from western Ireland, English Channel, west-coasts of France and Spain, Italy, Yugoslavia and Greece) from a number of polychaete collections (including those of the MNHN, SMNH & NMW).

SYSTEMATICS

Nereiphylla pusilla (Claparède, 1870) (Figs. 1-3)

Anaitis pusilla Claparède, 1870 : 460-461, pl. IX, fig. 6.

Phyllodoce pusilla. Fauvel, 1923 : 157, fig. 56f.

?*Phyllodoce nana* Saint-Joseph, 1906 : 223-224, pl. V, figs. 96-98. Fauvel, 1923 : 156, fig. 55h-i.

Genetyllis cf. *pusilla*. Campoy, 1982 : 144-146.

Non *Phyllodoce pusilla*. Cazaux, 1965 : 1-15, pl. 2-5 [= *Nereiphylla rubiginosa* (Saint-Joseph, 1888)]

Material examined

France : Cannes, holotype of *Phyllodoce nana* (MNHN). ITALY, eastern Sicily : sample T1, off Capo Mulini (near Aci Trezza), 37°34.35'N 15°11.65'E, large rock blocks, 30-40 m, 8 specimens (SMNH), 12.5.90; sample T14, off Capo Mulini (near Aci Trezza), 37°34.45'N 15°11.8'E, base of rock face, 40 m, 2 specimens (NMW.Z.1992.002.6), 17.5.90; sample T19/20, off Capo Mulini (near Aci Trezza), 37°34.45'N 15°11.8'E, large rock blocks, 35 m, 1 specimen (SMNH), 1 specimen (NMW.Z.1992.002.7), 18.5.90; sample T33, off Capo Campolato (NE of Brucoli), 1-3 m, neotype (NMW.Z.1991.002.5), 2 specimens (SMNH), 22.5.90; sample T36/40, off Capo Campolato (NE of Brucoli), 37°17.1'N 15°15.55'E, rock, 24 m, 1 specimens (NMW.Z.1992.002.8), 1 specimen (SMNH), 23.5.90; sample T46/49, off Valtur (NW of Brucoli), 37°17'N 15°11'E, boulders/muddy sand/seagrasses, 17-24 m, 19 specimens (SMNH), 3 specimens (NMW.Z.1992.002.9-10), 25.5.90; east of Cozzo dei Turchi, 37°17'N 15°10.1'E, algae/coarse sand, 2-4 m, 4 specimens (NMW.Z.1992.002.11), 29.5.90.

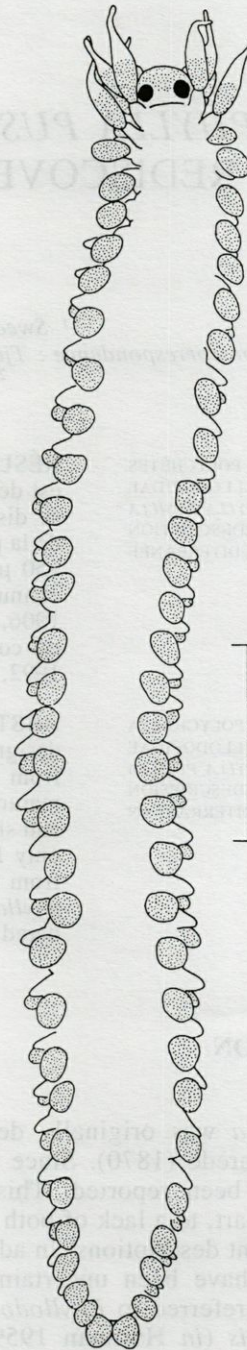


Fig. 1. – *Nereiphylla pusilla*. Neotype, dorsal view of entire animal. Scale line 0.5 mm.

Description

Prostomium anteriorly rounded (Figs. 1, 2A). Paired antennae all basally swollen, widest subproximally, with distinct drawn-out tips (Fig. 2B). Ventral pair slightly smaller than dorsal, ventrally displaced and not usually visible from above. Eyes very large, rounded. Nuchal organs not observed. Proboscis long and thin, with diffusely distributed blunt conical papillae (Fig. 2C). Distal part not observed. Segment 1 dorsally fused with segment

2 (i.e. distinct delineation absent). All tentacular cirri similar; ampulliform, proximally swollen with distinct drawn-out tip. Dorsal pair of segment 2 longest, reaching about segment 5 if directed posteriorly; dorsal ones of segment 3 slightly shorter. Ventral pair of segment 2 and those of segment 1 shortest, of equal length (Fig. 2A). Several setae evident on segment 2, arising from small setigerous lobe fused to each cirrophore (Fig. 2B). Dorsal cirri of median segments swollen, but slightly flattened, semi-globular to ovoid, almost as long as wide (Fig. 2D). Setigerous lobes small, symmetrical. Setae about 10-12 per parapodium, all compound. Rostrum of setal shaft truncate with large number of acuminate teeth. Ventral cirri swollen, slightly longer than wide, obliquely oriented. Pygidial cirri swollen, almost

as wide as long, ovoid (Fig. 2E). Median pygidial papilla present. No ciliation observed.

Colour

Eyes of live specimens red, body bright yellow with darker yellow prostomium and cirri. Tentacular cirri only with proximal swollen part pigmented. Eggs of mature females dull pink. Acicula distinctly black. Preserved specimens with body light yellow and orange to dark brown cirri. Eyes brown.

Reproduction

Mature specimens found on eastern Sicily in May. Diameter of eggs about 150 μm , possibly

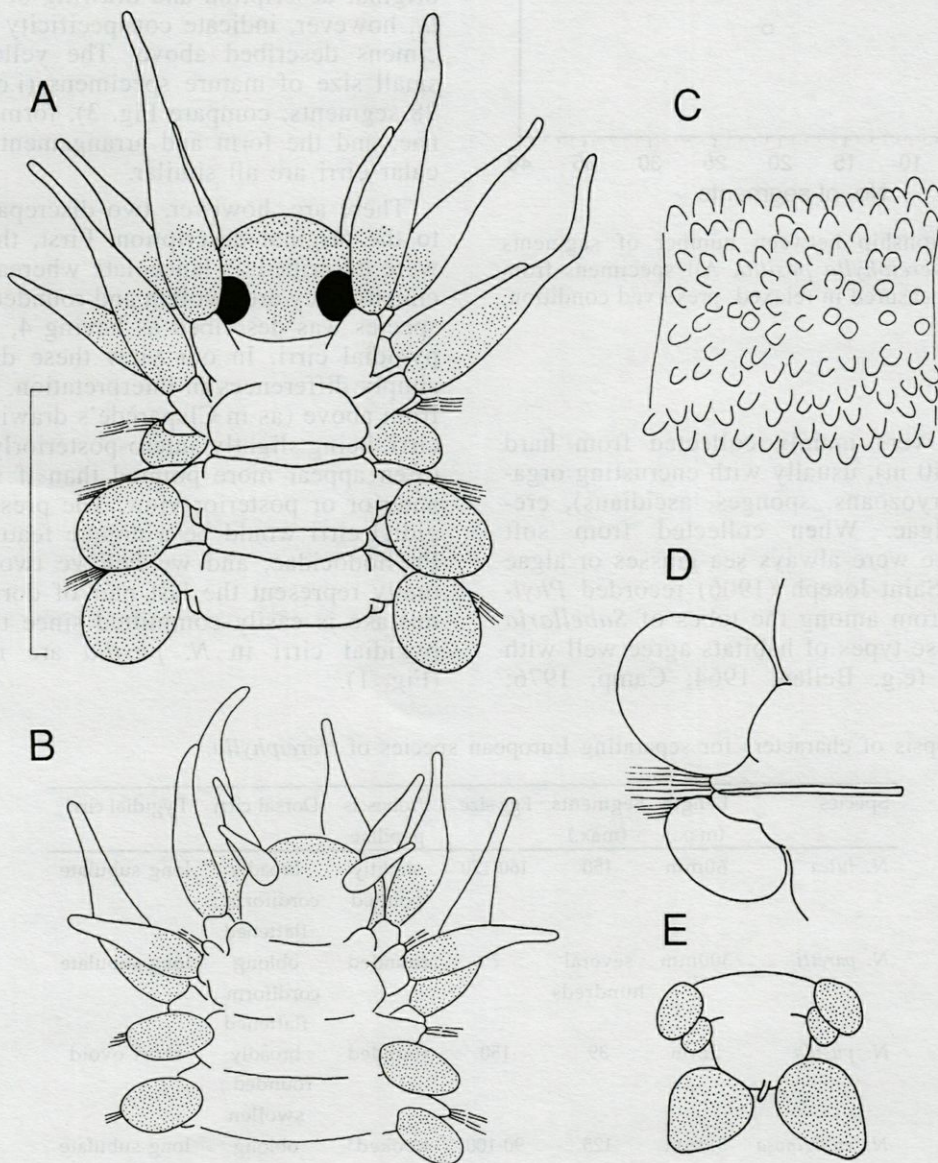


Fig. 2. - *Nereiphylla pusilla*. A, C, D & E specimens from Brucoli, Sicily, B from Acitrezza, Sicily. Scale line 0.25 mm. A. Anterior end, dorsal view. B. Anterior end, ventral view. C. Proboscis, subproximal part, dorsal view. D. Median parapodium, anterior view. E. Posterior end, ventral view.

indicating a lecithotrophic larval development. In the studied material mature specimens occurred from a size of about 3 mm, corresponding to about 30 segments.

Measurements

No specimens found with more than 39 segments and 5.0 mm long (Fig. 3).

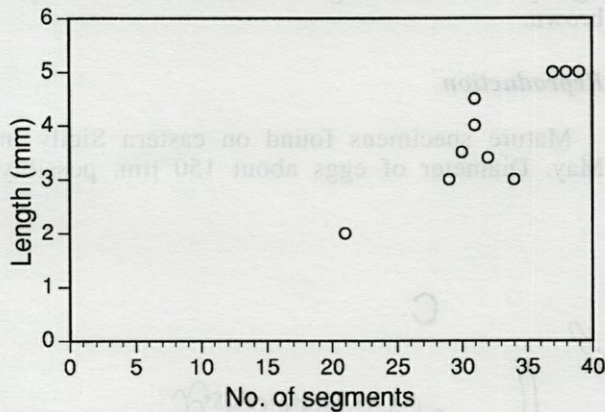


Fig. 3. — Relationship between number of segments and length in *Nereiphylla pusilla*. All specimens from eastern Sicily, measured in relaxed, preserved condition.

Habitat

Specimens were mainly collected from hard substrates (1-40 m), usually with encrusting organisms (e.g. bryozoans, sponges, ascidians), crevices and algae. When collected from soft sediments there were always sea-grasses or algae present also. Saint-Joseph (1906) recorded *Phyllodoce nana* from among the tubes of *Sabellaria alveolata*. These types of habitats agree well with other records (e.g. Bellan, 1964; Camp, 1976;

Campoy, 1982; Giangrande, 1986, 1988; Sardá-Borroy, 1987; Somaschini, 1988).

Distribution

Presently known only from the Mediterranean coast of France and the east coast of Sicily.

Remarks

As far as we are aware, there is no extant type material. Claparède strongly believed that the examination of live specimens was paramount and regarded the study of preserved museum material as a useless exercise (Claparède, 1868: 318). His original description and drawing of *Anaitis pusilla*, however, indicate conspecificity with the specimens described above. The yellowish colour, small size of mature specimens (i.e. 2.8 mm for 28 segments; compare Fig. 3), form of the antennae, and the form and arrangement of the tentacular cirri are all similar.

There are, however, two discrepancies relative to the original description. First, the dorsal cirri were described as lanceolate whereas, in our specimens, they are swollen and rounded. Second, the species was described as having 4, rather than 2, pygidial cirri. In our view these differences are simply differences in interpretation. When viewed from above (as in Claparède's drawing) the dorsal cirri, being slightly antero-posteriorly compressed, often appear more pointed than if seen in direct anterior or posterior view. The presence of 4 pygidial cirri would be a unique feature within the Phyllodocidae, and we believe two of these actually represent the last pair of dorsal cirri. This mistake is easily committed since the dorsal and pygidial cirri in *N. pusilla* are rather similar (Fig. 1).

Table I. — Synopsis of characters for separating European species of *Nereiphylla*.

Species	Length (max.)	Segments (max.)	Egg size	Proboscis papillae	Dorsal cirri	Pygidial cirri
<i>N. lutea</i>	60mm	150	160-170	slightly pointed	broadly cordiform ; flattened	long subulate
<i>N. paretii</i>	300mm	several hundreds	?	rounded	oblong cordiform ; flattened	long subulate
<i>N. pusilla</i>	5mm	39	150	rounded	broadly rounded ; swollen	short ovoid
<i>N. rubiginosa</i>	35mm	125	90-100	hooked*	oblong cordiform ; flattened	long subulate

*hooked papillae occurring on proximal part of proboscis

Brucoli on the east coast of Sicily is not too far from Claparède's original locality of Naples and, since the species is common in the area, we find this an appropriate place from which to select a neotype. The holotype of *Phyllodoce nana* Saint-Joseph, 1906, is in poor condition, but examination of the specimen and the original description suggests that it is a junior synonym of *Nereiphylla pusilla*. Our slight doubt as to this synonymy is due to Saint-Joseph's description of enormous (400 µm) eggs in an animal 480 µm wide including cirri! Such a large egg size differs markedly from those of all the other European species of *Nereiphylla* (Table 1), as well as from other phyllocidids.

Taking this synonymy into account, *N. pusilla* has been recorded from several widespread localities: Italy (Claparède, 1870; Cantone, 1971; Giangrande, 1986, 1988; Somaschini, 1988), south of France (Saint-Joseph, 1906; Bellan, 1964), northeast Spain (Camp, 1976; Campoy, 1982), Gibraltar Strait (Sardá-Borroy, 1987), Atlantic coast of France (Cazaux, 1965), Canary Islands (Nuñez *et al.*, 1991), Senegal (Rullier, 1964) and Ivory Coast (Intes & Le Lœuff, 1977). The descriptions provided by Saint-Joseph, Claparède, Campoy, Rullier and Nuñez *et al.* indicate a distribution throughout the western Mediterranean and along the northwest coast of Africa. The description of *Phyllodoce pusilla* from Arcachon (Cazaux, 1965), however, clearly relates to *N. rubiginosa*.

DISCUSSION

Following the proposed phylogeny of Pleijel (1991), the possession of the two shared derived characters (sub-proximally swollen frontal antennae and obliquely oriented ventral cirri) indicate membership within the subfamily Notophyllinae, and the absence of median antenna membership within the genus *Nereiphylla*.

Three other species of *Nereiphylla* occur in European waters: *N. lutea* (Malmgren, 1865), *N. paretii* Blainville, 1828 and *N. rubiginosa* (Saint-Joseph, 1888). Descriptions of these are provided in Pleijel and Dales (1991) and Pleijel (1993), and a summary of all four species is given in Table 1. *Nereiphylla pusilla* is readily distinguished from these species by its small size and possession of swollen (almost globular) dorsal, ventral and pygidial cirri. As to their distribution, *N. paretii* and *N. rubiginosa* partly occur sympatrically with *N. pusilla* with a distribution from the northern Mediterranean up to the British Isles, whereas *N. lutea* has a more northern distribution, ranging from the Irish Sea to northern Norway.

An additional European species that probably belongs to *Nereiphylla* is *Phyllodoce lugens* Eh-

lers, 1864. This species, described from the northern Adriatic, is known only from the original description. According to this, it is similar to *N. pusilla* in its small size at maturity and in the size of its eggs. It differs in being dark olivebrown to green, in having green eggs, and in having pointed flattened pygidial cirri. We have been unable to locate any type material and, for the present, consider this a *nomen dubium*.

Only five non-European phyllocid species can be referred, with any degree of confidence, to *Nereiphylla* (checklist in Pleijel 1991): *N. castanea* (Marenzeller, 1879), *N. ferruginea* (Moore, 1909), *N. fragilis* (Webster, 1879), *N. gruai* (Rullier, 1973) and *N. mimica* Eibye-Jacobsen, 1992. An additional species, *Phyllodoce magnaoculata* Treadwell, 1901, may belong in the genus but the condition of the holotype does not permit any certain assignment. Of the aforementioned species, only *N. mimica* from Belize approaches *N. pusilla* in body size and form of the dorsal, ventral and pygidial cirri. It differs in having abruptly tapered tentacular cirri, the widths of which are almost uniform along their entire lengths, and in the pigmentation pattern of both live and preserved material. *Nereiphylla castanea*, *N. ferruginea* and *N. fragilis* all differ in their much greater size (40–50 mm maximum), their pigmentation, and in having large flattened foliaceous and cordiform dorsal cirri.

In its small size and thickened dorsal cirri, *Nereiphylla gruai* from the Kerguelen Islands appears superficially to resemble *N. pusilla*. Examination of the slide-mounted holotype proved inconclusive. The specimen was not sexually mature and its general aspect was very suggestive of it being a juvenile specimen of a larger species. In this respect we would like to advise caution when identifying small specimens of any *Nereiphylla* species. The thickness of the dorsal and ventral cirri is, to a certain degree, size-dependant. For example, the dorsal cirri of small specimens of *N. rubiginosa* can be somewhat swollen, but they become more flattened as the animals grow larger. This character should therefore not be used in isolation.

ACKNOWLEDGEMENTS – Thanks are due to P. Bouchet and the MNHN for allowing two polychaete workers to attend "The Fifth European Marine Malacological Workshop" in Sicily, 1990. A. Muir and D. George (BMNH), M.-N. Helleout and J. Renaud-Mornant (MNHN), P. Gillet (UCA), and K. Fauchald and L. Ward (USNM) kindly provided working facilities and loaned specimens. Travel grants for F. Pleijel were provided by Wallenbergstiftelsens Jubileumsfond and the Swedish Natural Science Research Council (contract no. 9555-302). The National Museum of Wales financed the attendance of A. Mackie.

REFERENCES

- BELLAN, G., 1964. Contribution a l'étude systématique, bionomique et écologique des annélides polychètes de la Méditerranée. *Recl Trav. Stn. mar. Endoume* **49** (33) : 1-371.
- BLAINVILLE, H. de, 1828. Article Vers. *Dict. Sci. nat.* **57** : 368-501.
- CAMP, J., 1976. Comunidades bentónicas de substrato duro del litoral N. E. español. IV. Poliquetos. *Investigacion pesq.* **40** : 533-550.
- CAMPOY, A., 1982. Fauna de Anelidos Poliquetos de la Península Ibérica. *Publnes Biol. Univ. Navarra, (ser. Zool)* **7** : 1-781.
- CANTONE, G., 1971. Ricerche sui Policheti della Sicilia. I. *Boll. Sed. Accad. gioenia Sci. nat.* (4) **10** : 914-944.
- CAZAUX, C., 1965. Étude d'un Phyllodocidae peu connu *Phyllodoce pusilla* (Claparède). *Bull. Inst. océanogr. Monaco* **65** (1340) : 1-15.
- CLAPARÈDE, E., 1868. Les Annélides chétopodes du Golfe de Naples. Suppl. *Mém. Soc. Phys. Hist. nat. Genève* **19** : 313-584.
- CLAPARÈDE, E., 1870. Les Annélides chétopodes du Golfe de Naples. Suppl. *Mém. Soc. Phys. Hist. nat. Genève* **20** : 365-542.
- EIBYE-JACOBSEN, D., 1992. Phyllodocids (Annelida : Polychaeta) of Belize, with the description of three new species. *Proc. biol. Soc. Wash.* **105** : 589-613.
- EHLERS, E., 1864. Die Borstenwürmer (Annelida Chaetopoda) nach Systematischen und Anatomischen Untersuchungen. Wilhelm Engelmann, Leipzig.
- FAUVEL, P., 1923. Polychètes Errantes. *Faune Fr.* **5** : 1-494.
- GIANGRANDE, A., 1986. Policheti dei rizomi di *Posidonia oceanica* (L.) Delile (Helobiae, Potamogetonaceae) di una prateria dell'isola di Ischia (Napoli). *Mem. Soc. tosc. Sci. nat. (ser. B)* **92** : 195-206.
- GIANGRANDE, A., 1988. Polychaete zonation and its relation to algal distribution down a vertical cliff in the western Mediterranean (Italy) : a structural analysis. *J. exp. mar. Biol. Ecol.* **120** : 263-276.
- HARTMAN, O., 1959. Catalogue of the polychaetous annelids of the world. Part 1. *Occ. Pap. Allan Hancock Fdn.* **23** : 1-353.
- INTES, A. and P. LE LUFF, 1975. Les annélides polychètes de Côte Ivoire. I. Polychètes errantes compte rendu systématique. *Cah. Off. Rech. Sci. Tech. Outre-Mer, (ser. océanogr.)* **13** : 267-321.
- MALMGREN, A. J., 1865. Nordiska Hafs-Annulater. *Öfvers. K. VetenskAkad. Förh. Stockh.* **22** : 51-110.
- MARENZELLER, E. A. von, 1879. Südjapanische Anneliden. I. *Denkschr. Akad. Wiss. Wien* **41** : 109-152.
- MOORE, J. P., 1909. The polychaetous annelids dredged by the U.S.S. *Albatross* off the coast of Southern California in 1904. I. Syllidae, Sphaerodoridae, Hesionidae and Phyllodocidae. *Proc. Acad. nat. Sci. Philad.* **61** : 321-351.
- NUÑEZ, J., BRITO, M. C. and O. OCAÑA, 1991. Anelidos poliquetos de Canarias : Phyllodocidae. *Revta Acad. Canar. Cienc.* **3** : 9-23.
- PLEIJEL, F., 1991. Phylogeny and classification of the Phyllodocidae (Polychaeta). *Zool. Scr.* **20** : 225-261.
- PLEIJEL, F., 1993. Polychaeta, Phyllodocidae. *Mar. Invertebr. Scand.* **8** : 1-159.
- PLEIJEL, F. and R. P. DALES, 1991. Polychaetes : British Phyllodocoideans, Typhloscolecoidaeans and Tomopteroideans. *Synopses of the British Fauna (N.S.)* **45** : 1-202.
- RULLIER, F., 1964. Campagne de la *Calypso* : Iles du Cap Vert. 5. Annélides polychètes. *Annl. Inst. océanogr., Monaco* **41** : 113-218.
- RULLIER, F., 1973. Nouvelle contribution a l'étude des annélides polychètes des Iles Kerguelen. *CNFRA* **32** : 1-27.
- SAINT-JOSEPH, A. de, 1888. Les Annélides polychètes des côtes de Dinard. Seconde partie. *Annl. Sci. nat., Zool., (Sér. 7)* **5** : 141-338.
- SAINT-JOSEPH, A. de, 1906. Les Annélides polychètes des côtes de France (Océan et côtes de Provence). *Annl. Sci. nat., Zool., (Sér. 9)* **3** : 145-260.
- SARDÁBORROY, R., 1987. Asociaciones de anélidos poliquetos sobre sustrato duro en la región del estrecho de Gibraltar (S de España). *Investigacion pesq.* **51** : 243-262.
- SOMASCHINI, A., 1988. Policheti della biocenosi ad alghe fotopile (Facies a *Corallina elongata*) nel Lazio settentrionale. *Mem. Soc. tosc. Sci. nat., (ser. B)* **95** : 83-94.
- TREADWELL, A. L., 1901. The polychaetous annelids of Porto Rico. *Bull. U. S. Fish Commn* **20** : 183-210.
- USHAKOV, P.V., 1972. Polychaeta 1. Polychaetes of the sub-order Phyllodociforma of the Polar Basin and the north-western part of the Pacific. *Fauna SSSR* **102** : 1-271 (translated from Russian by the Israel Program for Scientific Translation, Jerusalem 1974).
- WEBSTER, H. E., 1879. Annelida Chaetopoda of the Virginian coast. *Trans. Albany Inst.* **9** : 202-269.

Reçu le 12 janvier 1993; received January 12, 1993

Accepté le 3 mars 1993; accepted March 3, 1993