

A new species of *Orbiniella* (Orbiniidae: Polychaeta) from Marion Island, Indian Ocean

Patrick Gillet

Laboratoire d'Ecologie Animale, Institut de Recherche Fondamentale et Appliquée,
U.C.O. BP 808, 49008 Angers Cedex 01, France

Abstract.—After the Marion Dufresnes MD/03 Expedition in 1974, a new expedition Marion Dufresnes MD/08 was undertaken to study benthic invertebrates from the South West Indian Ocean. *Orbiniella marionensis*, a new species of Orbiniidae, Polychaeta from Marion Island, Indian Ocean is described. This species was collected during the Marion Dufresnes BENTHOS Expedition around subantarctic Islands. *Orbiniella marionensis* is compared with other species of the genus *Orbiniella* Day, 1954 and differs in having only one preanal segment and by the absence of modified setae in the posterior region.

Materials and Methods

Polychaetes collected during the Marion Dufresnes BENTHOS Expedition from Marion and Prince Edward Islands were described by Gillet (1991). A description of the sampling site of the MD/08 BENTHOS Expedition is provided by Arnaud & Hureau (1979). Different sampling methods were used: Charcot dredge, Okean grab, Lithods nets and Trawl. Specimens were conserved in 70% ethanol and observed by light microscopy with an Olympus CHT2 and by scanning electron microscopy with an Olympus JSM 5200.

Material has been deposited at the Institut de Recherche Fondamentale et Appliquée, Angers-France and a duplicate collection in the Museum National d'Histoire Naturelle de Paris, France and in the South African Museum, Cape Town, South Africa.

Family Orbiniidae Hartman, 1942

The name Orbiniidae was used by Hartman (1942) in place of Ariciidae with the type genus *Orbinia*, Quatrefages, 1865.

The orbiniids have been studied by Hartman (1957), Pettibone (1957) and more re-

cently reviewed by Day (1973). The orbiniids have lateral parapodia in the thoracic region and dorsal parapodia in the abdominal region. The prostomium is without appendages and is followed usually by one or two asetigerous segments. The setae are simple capillaries and simple hooks, sometimes with furcate or crenulate setae. Hartman (1957) divided the family in two subfamilies: Orbiniinae, including the larger orbiniids with one achaetous segment behind the prostomium and, Protoariciniinae with two achaetous segments behind the prostomium. The Protoariciniinae was revised by Solis-Weiss & Fauchald (1989).

Genus *Orbiniella* Day, 1954

Type species.—*Orbiniella minuta* Day, 1954: 22–23, fig. 3 g–k.

Prostomium round. First two segments without setae. Setigerous segments without gills or appendages. Setae include crenulate capillaries and simple acicular. In Fauchald (1977) the genus *Orbiniella* lacks branchiae. Buzhinskaja (1992) suggested that *Falklandiella annulata* Hartman (1967) be transferred to *Orbiniella*. Buzhinskaja (1992) suggested that *Orbiniella branchiata*

be referred elsewhere. Blake (1996) suggests that some species of *Orbiniella* might be juveniles of other orbiniids such as *Naineris*. In the natural world, 10 species of *Orbiniella* are known.

Orbiniella marionensis new species
Figs. 1A–D, 2A–D; Table I

Material examined.—Holotype: Marion Island 26.03.1976; station 18 (BB 108) 46°49.8'S, 37°56.2'E, complete, 29 setigers, 7 mm long, 1.3 mm wide with parapodia and 1.0 mm wide without parapodia. Paratypes: Marion Island station 12 (BB 79), 46°55.7'S, 37°54.1'E, 6 exemplars; station 15 (BB 88), 46°57.7'S, 37°59.9'E, 1 exemplar; station 18 (BB 108) 46°49.8'S, 37°56.2'E, 12 exemplars; station 34 (BB 168), 46°50.2'S, 37°51.2'E, 4 exemplars. Material deposited IRFA Angers IRFA-ORB.015.

Description.—Holotype colorless in ethanol, with one preanal achaetous segment. The prostomium is rounded, 0.2 mm long and 0.4 mm wide, large and eyeless. The second and third segments are achaetous and without parapodium (Figs. 1A, 2A, B). The following segments are setigerous, without gills and ventral cirri and with dorsal cirri (Figs. 1D, 2D). Setae include crenulate capillaries (Fig. 1B) and from the first setiger 2 to 4 simple acicular spines (Fig. 1C). The pygidium is round with one preanal segment (Fig. 2C).

The paratype material generally resembles the holotype closely. The number of setigers varies between 14 (4 mm long) and 29 (7 mm long) and width varies from 1.3 mm with parapodia to 1.0 mm without parapodia.

Discussion.—*Orbiniella marionensis* differs from *Orbiniella minuta* Day, 1954, described from Tristan da Cunha (Day 1954) and from Marion and Prince Edward Islands (Day 1971) by the presence of dorsal cirri (Table I). *Orbiniella marionensis* has two to four acicular setae from the first setiger. It differs by the absence of modified

crenulate setae in the posterior region and by having only one preanal achaetous segment. *Orbiniella uniformis* Hartman, 1967 lacks dorsal cirri and has only one falcate acicular spine from setiger 15. *Orbiniella drakei* Hartman, 1967 has ventral and dorsal cirri and a modified posterior region with very long segments. *Orbiniella marionensis* also differs from *O. dayi* Branch, 1998 which has no preanal segments and cirri are absent. For the same reasons, it differs from *O. hobsonae* Blake & Hilbig, 1990. These two species differ by the kind of setae, simple acicular and crenulate capillaries in *O. dayi* but barbed acicular and bristled capillaries in *O. hobsonae*. *Orbiniella aciculata* Blake, 1985 has an unsegmented posterior region. *O. annulata* Hartman (1967) *O. nuda* Hobson, 1974 and *O. plumisetosa* Buzhinskaja, 1992 have eyes in the anterior region and have different setae: *O. plumisetosa* has plumose cirrate setae, *O. nuda* has spinous capillaries and *O. annulata* has crenulate capillaries.

Habitat.—Infralittoral from 95 to 210 meters depth on sand, clay-sand or mud.

Subantarctic distribution.—Marion Islands.

Etymology.—The specific name *marionensis* refers to Marion Islands and is a Latin adjective.

Key to the genera *Orbiniella* Day, 1954

- 1. Eyes present 2
- Eyes absent 4
- 2. Body colored, plumate cirrate setae present *O. plumisetosa*
- Body without pigment, plumate cirrate setae absent 3
- 3. Acicular setae present from setiger 1 ..
- *O. nuda*
- Acicular setae appearing from setiger 12–15 ..
- *O. annulata*
- 4. Dorsal or ventral cirri present 5
- Dorsal or ventral cirri absent 6
- 5. Both dorsal and ventral cirri present.
- Two preanal segments one acicular seta ..
- *O. drakei*
- Only dorsal cirri present, one preanal

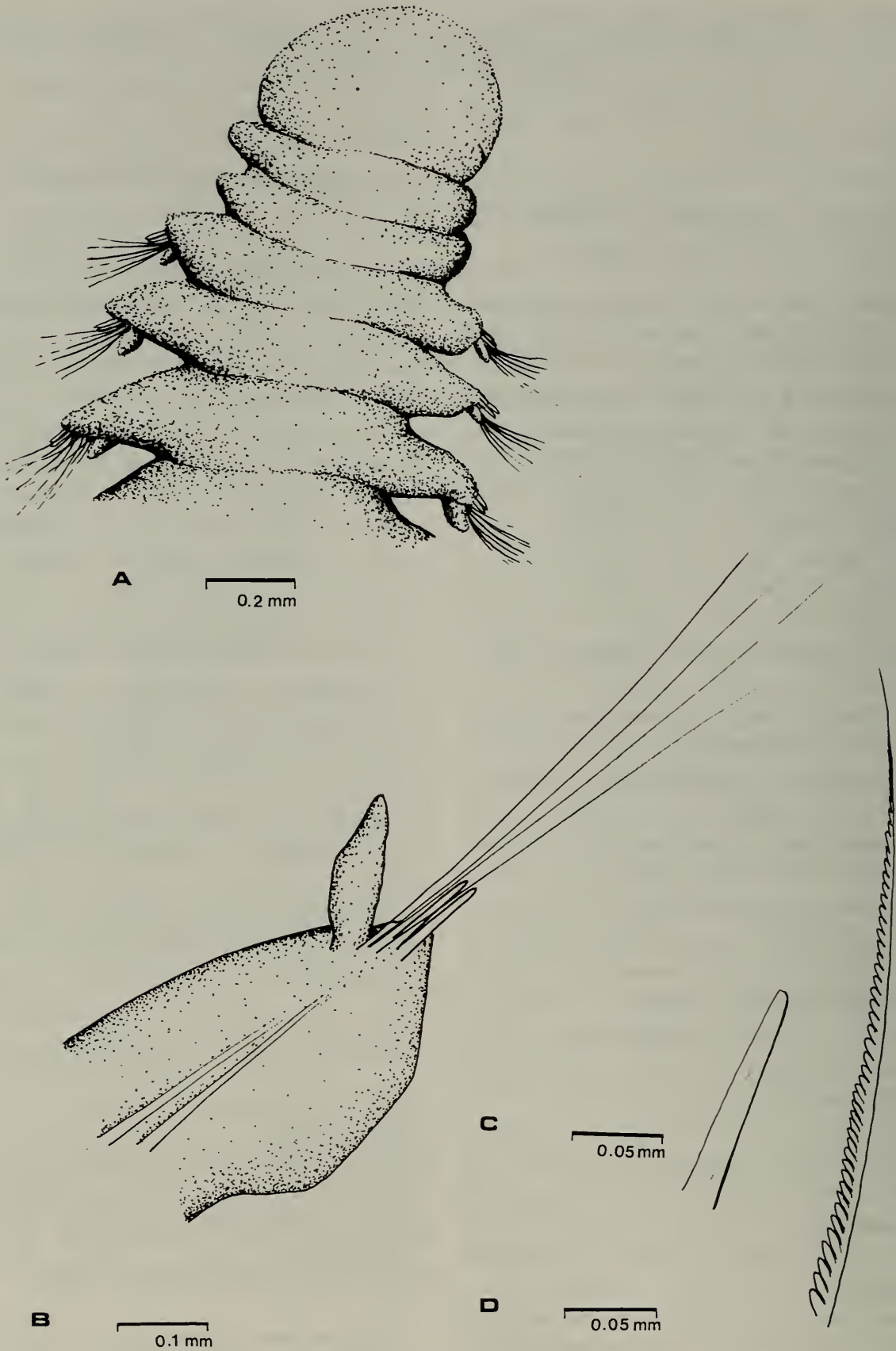


Fig. 1. *Orbiniella marionensis*, n. sp. (Holotype, I.R.F.A. ORB.015) A: Anterior region; B: Crenulate seta; C: Acicular seta; D: Parapodium.

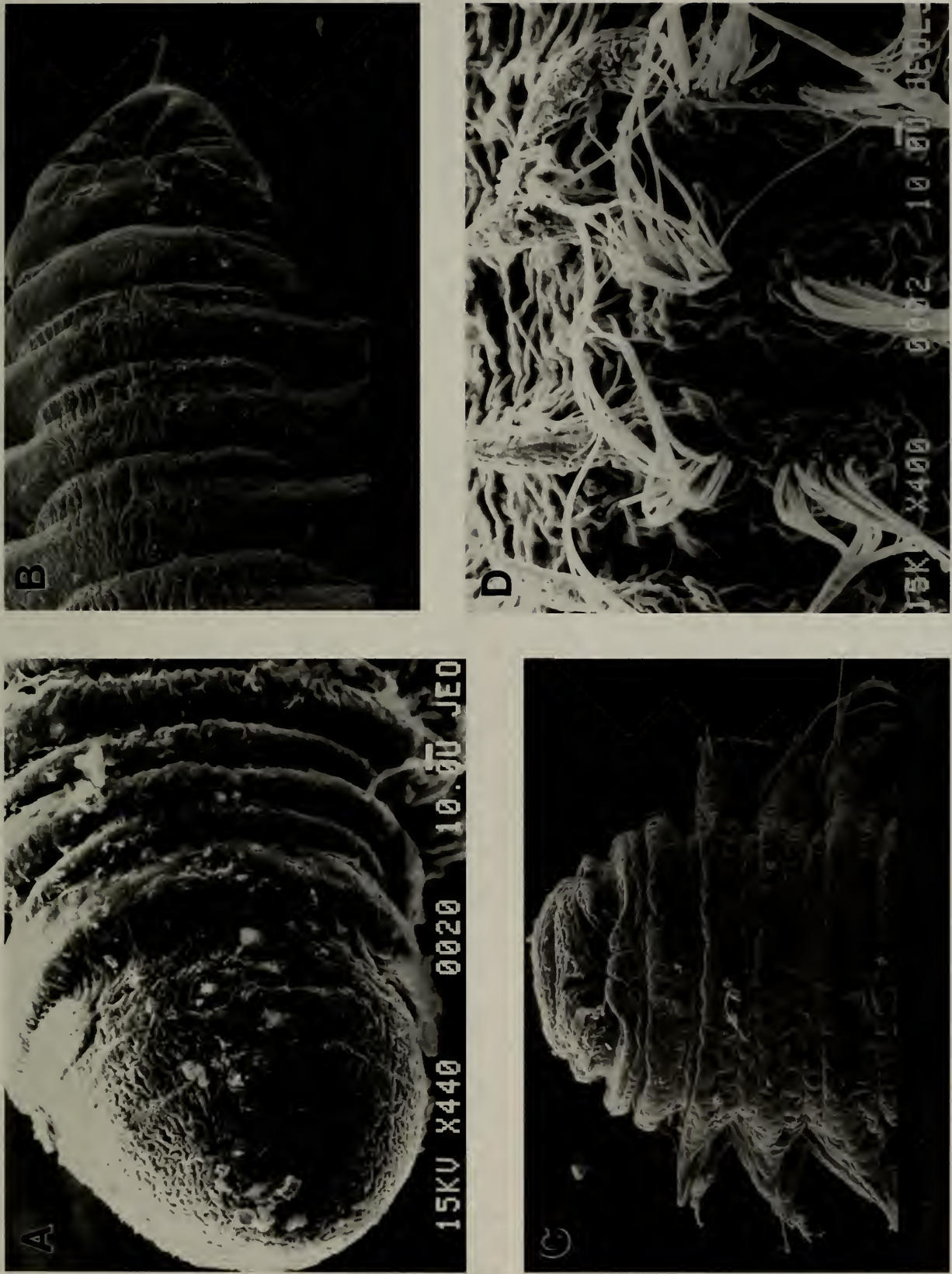


Fig. 2. Scanning Electron Microscopy photographs of *Orbinella marionensis*, n. sp. A: Anterior region dorsal view; B: Anterior region ventral view; C: Posterior region; D: Parapodium.

Table 1.—A comparison of some important characteristics in existing species of the genus *Orbiniella* Day, 1954.

Species	Type locality depth	Number of preanal segments	Eyes	Cirri	Kinds of setae
<i>O. aciculata</i> Blake, 1985	Galapagos Rift 2727–2730 m	unsegmented	absent	absent	smooth acicular spines long capillaries
<i>O. annulata</i> Hartman, 1967	Falkland Islands 646–845 m	0	present	absent	2–3 acicular setae crenulated capillaries
<i>O. dayi</i> Branch, 1998	Marion Island 5–15 m	0	absent	absent	acicular simple crenulate capillaries
<i>O. drakei</i> Hartman, 1967	Antarctic 3312–3532 m	2	absent	ventral dorsal	1 acicular setae capillaries
<i>O. hobsonae</i> Blake and Hilbig, 1990	Juan de Fuca Ridge	0	absent	absent	1–2 barbed acicular 2–5 bristled capillaries
<i>O. marionensis</i> <i>O. minuta</i> Day, 1954	Marion Island 95–204 m Tristan da Cunha Prince Edward Island 0–10 m	1 2	absent absent	dorsal absent	2–4 acicular capillaries 2 acicular setae crenulate capillaries
<i>O. nuda</i> Hobson, 1974	North American Pacific Ocean 0.6–2.4 m	–	present	absent	2–4 acicular setae 3–6 spinous capillaries
<i>O. plumisetosa</i> Buzhinskaja, 1992	Commander and Kurile Islands Littoral zone	0	present	absent	2–4 non plumose setae 1–7 plumose cirrate setae
<i>O. uniformis</i> Hartman, 1967	Antarctic 4 fms	2	absent	absent	1 acicular capillaries

segment, two-four acicular setae
 *O. marionensis*

6. Preanal segments present 7
 Preanal segments absent 9

7. Two preanal segments 8
 Preanal segment unsegmented
 *O. aciculata*

8. Crenulate setae present, two acicular setae *O. minuta*
 Crenulate setae absent, only one acicular seta *O. uniformis*

9. Acicular simple, crenulate capillaries
 *O. dayi*
 Acicular barbed, bristled capillaries
 *O. hobsonae*

Acknowledgments

I am grateful to James A. Blake, Battelle New England Marine Research Laboratory, Duxbury, U.S.A. for his help in bibliography and his careful review of the manuscript.

Literature Cited

Arnaud, P. M., & J. C. Hureau. 1979. Compte rendu de la campagne MD/08 BENTHOS (7 mars–26 avril 1976).—Comité National Français des Recherches Antarctiques 44:1–38.

Blake, J. A. 1985. Polychaeta from the vicinity of deep-sea geothermal vents in the eastern Pacific. I: Euphrosinidae, Phyllodocidae, Hesionidae, Nereididae, Glyceridae, Dorvilleidae, Orbiniidae and Maldanidae. In M. L. Jones, ed., The hydrothermal vents of the eastern Pacific: an overview.—Bulletin of the Biological Society of Washington No. 6:67–101.

———. 1996. Chapter 1. Family Orbiniidae Hartman, 1942. Pp. 1–26 in J. A. Blake, B. Hilbig, and P. H. Scott, eds. Taxonomic atlas of the Santa Maria Basin and western Santa Barbara Channel, vol. 6. Annelida, part 3. Polychaeta: Orbiniidae to Cossuridae.—Santa Barbara Museum of Natural History.

———, & B. Hilbig. 1990. Polychaeta from the vicinity of deep-sea hydrothermal vents in the eastern Pacific II: new species and records from the Juan de Fuca and Explorer Ridge Systems.—Pacific Science 44:219–253.

Branch, M. L. 1998. Four new species of Polychaeta

from subantarctic Marion Island.—Annals of the South African Museum 105(4):249–265.

Buzhinskaja, G. N. [1994] 1992. *Orbiniella plumisetosa* sp. n. First find of a polychaete of the subfamily Protoariciinae in the northwestern Pacific and characteristics of the genus *Orbiniella* (Polychaeta: Orbiniidae). [A. V. V. translation of Russian title] Pp. 76–81, figs. 1–3 in G. N. Buzhinskaja, ed., Polychaeta and their ecological significance. Explorations of the Fauna of the Seas 43 (51), Zoological Institute, Russian Academy of Sciences, St. Petersburg.

Day, J. H. 1954. The Polychaeta of Tristan da Cunha.—Results of the Norwegian Scientific Expedition to Tristan da Cunha 1937–1938. 29:1–35.

———. 1971. Polychaeta. Marion and Prince Edward Islands. E. M. Van Zinderen Bakker, J. M. Winterbottom, R. A. Dryer, eds., Cape Town: 383–390.

———. 1973. New Polychaeta from Beaufort with a key to all species recorded from North Carolina.—NOAA Technical Report 375:1–140.

Fauchald, K. 1977. The Polychaete worms definitions and keys to the orders, families and genera.—Natural History Museum of Los Angeles County, Science Series 28:160 pp.

Gillet, P. 1991. Biogeography and polychaete assemblages from Subantarctic Islands (Indian Ocean). Marion Dufresne Expedition to Marion, Prince Edward and Crozet Islands.—Bulletin of Marine Science 48(2):358–368.

Hartman, O. 1942. A review of the type of polychaetous annelids at the Peabody Museum of Natural History, Yale University.—Bulletin of the Bingham Oceanographic Collection 8:1–98.

———. 1957. Orbiniidae, Apistobranchidae, Paraonidae and Longosomidae.—Allan Hancock Pacific Expedition. 15:205–393.

———. 1967. Polychaetous annelids collected by the USNS Eltanin and Staten Island Cruises, chiefly from Antarctic Seas.—Allan Hancock Monograph in Marine Biology Los Angeles. 2:1–387.

Hobson, K. D. 1974. *Orbiniella nuda* new species (Orbiniidae) and nine new records of other sedentary polychaetous annelids from Washington and British Columbia.—Canadian Journal of Zoology 52:69–75.

Pettibone, M. H. 1957. North American genera of the family Orbiniidae (Annelida: Polychaeta) with descriptions of new species.—Journal of the Washington Academy of Science 47:159–167.

Solis-Weiss, V., & K. Fauchald. 1989. Orbiniidae (Annelida: Polychaeta) from mangrove root-mats in Belize, with a revision of Protoariciin genera.—Proceedings of the Biological Society of Washington 102:772–792.