

SABELLIDES MANRIQUEI NEW SPECIES FROM THE EASTERN
PACIFIC, AND REDESCRIPTION OF *SABELLIDES OCULATA*
WEBSTER FROM THE NORTHWESTERN ATLANTIC
(POLYCHAETA: AMPHARETIDAE)

Sergio I. Salazar-Vallejo

ABSTRACT

Sabellides manriquei new species has two eyespots; paleae larger or of the same size as following notosetae; branchiae 1.5–2.0 times longer than tentacles, reaching setigers 8–9; branchiae in two separated groups with three in front and one behind; thoracic uncini with 4–5 teeth in a row. *Sabellides oculata* Webster is redescribed from two syntypes and has two eyespots; paleae absent; branchiae reach setigers 4–5; branchiae in two groups with three in front and one behind, groups medially fused; thoracic uncini with two rows of 5 teeth each. A key to all species in the genus is included.

Ampharetidae Malmgren, 1865

Ampharetids are surface deposit feeders that thrive in soft bottoms from the intertidal down to abyssal depths; their abundance seems to be especially high in sublittoral depths, especially in temperate waters. Sixteen genera and 34 species have been recorded from Mexico and 24 species have been recorded from the Gulf of California (Salazar-Vallejo et al., 1989). However, many undescribed species remain; for example, in a recent work 10 species of ampharetids were recorded and perhaps three of these represent undescribed taxa (Hernández-Alcántara, 1992).

Day (1964) reviewed the Ampharetidae Malmgren 1865; his approach was taxonomic as was the earlier review by Hessle (1917) and not encyclopaedic like the much detailed study by Fauvel (1897). Day stressed that the taxonomy of ampharetids should take into account that there are a fixed character and two distortions along the body. The fixed character is the presence of two achaetous segments preceding the branchiae, thus making segment III the first branchifer. The distortions involve: 1) the dorsal fusion of the peristomium with the first segment, and 2) the forward telescoping of branchiferous segments. Other morphological diagnostic features are the type of oral tentacles, the type and arrangement of branchiae and the number of thoracic uncinigers. On these grounds, Day reduced the number of genera from 49 to 33 and redefined the two subfamilies: Melinninae Chamberlin, 1919 and Ampharetinae Malmgren, 1865. Melinninae have fine acicular setae in the first few neuropodia, lack paleae and may have postbranchial hooks; Ampharetinae lack both neurosetae in the first few setigers and postbranchial hooks, and may have paleae. Fauchald (1977) followed Day (1964) in his key to subfamilies and genera. Two recent papers by Jirkov (1994a, 1994c) are challenging the use of paleae as a robust taxonomic character. In fact, the palea is widely employed as a characteristic feature in keys (see Fauchald, 1977, or Holthe, 1986) though they are missing in the generic key made by Day (1967).

Chardy and Desbruyères (1979) made a multivariate analysis of the Ampharetinae which by then had already increased to 15 monospecific genera. They used 24 characters and included in their analysis over 130 species (not all described or named) of which four are relevant to this paper. They concluded (p. 530) that *Sabellides* was a well defined genus, and their figure 2 (p. 530) shows the two

groups of the genus, called C7 and C8, very closely packed but their dendrogram (fig. 4, pp. 532–533) shows the two groups divided along their axis 3. Such groups were called *Sabellides*: I (=C7) with *Asabellides oculata* Berkeley and Berkeley, 1956 and *Neosabellides elongatus* Ehlers, 1913, and II (=C8) with *Asabellides littoralis* (Annenkova, 1934), *S. octocirrata* (Sars, 1835) and *S. borealis* Sars, 1856. The sixth species, *S. capensis* Day, 1961 does not fit into either *Sabellides* group I or II. If such groups are to be accepted as different genera then new generic names are needed for group I, and *S. capensis*, as *S. octocirrata* is the type species of the genus *Sabellides*.

Since there has been an expressive interest in reducing the number of monotypic or quasi-monotypic genera as the justification for the reviews by Day (1964) and by Chardy and Desbruyères (1979) [and of another one in preparation by A. Jirkov], it is surprising that Chardy and Desbruyères found 26 genera-groups, 18 containing only two or three species and 36 additional species might represent monotypic genera. This striking fact is either a distinctive feature of the (sub-) family, or it is an artifact and more powerful reviews should be attempted based upon type specimens, not merely on descriptions. As a result of this, Jirkov (1994b) has recently reduced the number of genera morphologically akin to *Sosane* Malmgren 1866 and *Mugga* Eliason 1955.

Holthe (1986a, 1986b) established that *Sabellides* Milne-Edwards, 1838 contains ampharetins provided with papillose tentacles, four pairs of branchiae, reduced paleae, and 11 setigers with notosetae and uncini. There are five species currently recognized: *S. borealis* Sars, 1856, *S. octocirrata* (Sars, 1835), *S. capensis* Day, 1961, *S. oculata* Webster, 1879 and *S. pusilla* (Verrill, 1873). In this paper, *Sabellides manriquei* new species is described from the eastern Pacific, from localities off southern California and in the Gulf of California. Sampling methods and general data about the stations in the Gulf of California can be found in Hendrickx (1990). *Sabellides oculata* Webster, 1879, from the northwestern Atlantic, is redescribed because some differences were observed between type material and the original description.

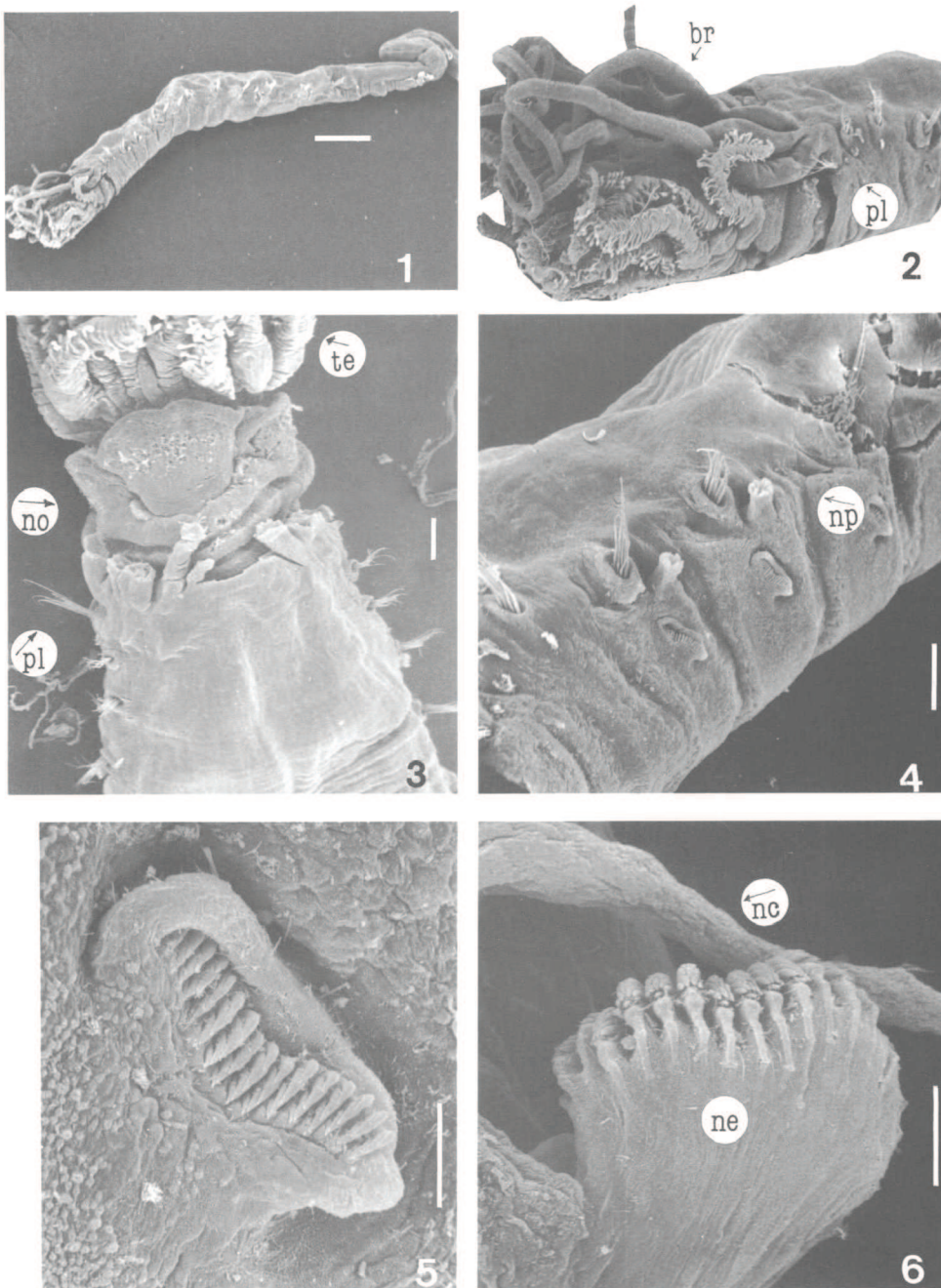
Ampharetinae Malmgren, 1865
Ampharetini Holthe, 1986
Sabellides Milne-Edwards, 1838

Sabellides manriquei new species
Figures 1–10

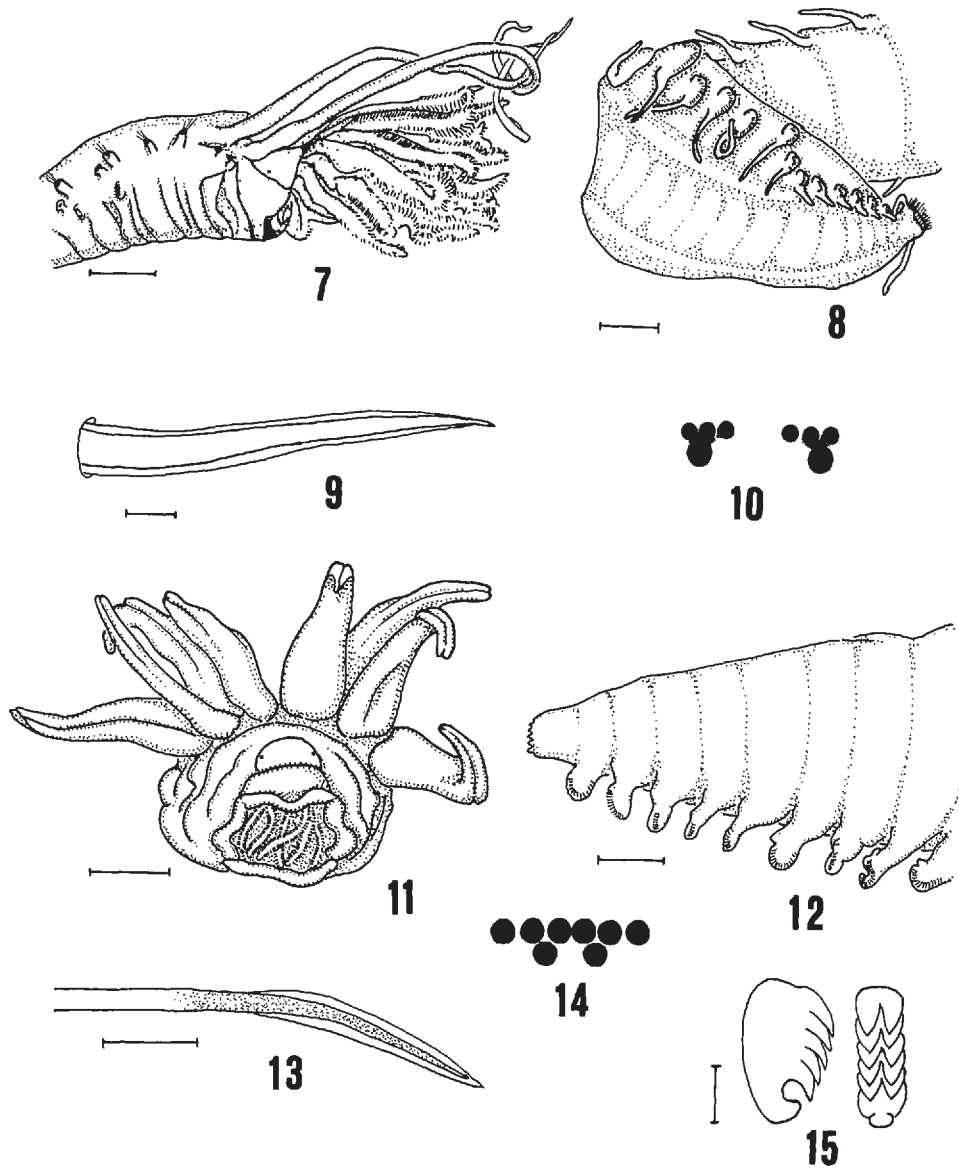
Material Examined.—GULF OF CALIFORNIA: Crucero Guaytec II, with the EL PUMA in the northern Gulf of California, Mexico. Stations 69b (11-VIII-87; 29°29'N, 113°22'W; 65–82 m), northeast of Angel de la Guarda island, and 70b (10-VIII-87; 28°47'N, 112°54'W; 360–380 m), north of Isla San Lorenzo. Twelve specimens, six from each station were analysed. SOUTHERN CALIFORNIA: City of San Diego, California, Monitoring Program: Stations off Point Loma/San Diego: A-2 (7-VII-87; 32°39.37'N, 117°16.68'W; 60 m, replicate 5, 2 specimens), B-1 (15-VII-87; 32°35.00'N, 117°16.18'W; 62.4 m, replicate 5, 2 tubes), B-7 (23-VII-87; 32°45.80'N, 117°17.41'W; 46.2 m, replicate 3, 1 specimen), B-1 (13-X-88; 32°35.00'N, 117°16.14'W; 61.2 m, replicate 4, 2 specimens).

Holotype and one paratype in the National Museum of Natural History, Smithsonian Institution (Holotype USNM 172567), two paratypes in each of the following museums: Natural History Museum, London, Museum Nationale d'Histoire Naturelle, Paris, Instituto de Ciencias del Mar y Limnología UNAM, Mexico, and three paratypes in the Allan Hancock Polychaete collection in the Los Angeles County Museum of Natural History.

Description.—Body pale, subcylindrical, tapering posteriorly, with longitudinal ventral furrow (Fig. 1). Prostomium rounded, slightly notched anteriorly, wider in front (Fig. 3); one pair of small rounded lateral eyespots and two oblique,



Figures 1–6. *Sabellides manriquei* new species, non-type specimens; 1. Panoramic view of body with the exception of some abdominal setigers (scale 1 mm); 2. Same, lateral view of the anterior end, showing cirriform branchiae (br), papillose tentacles and small palea (pl); 3. Dorsal view of another specimen, branchia removed to show the nuchal organs (no) and the larger size of the palea (scale 0.1 mm); 4. Same, lateral view of thoracic setigers 2–5, note the emergent nephridiopores (np) in setigers 3 and 4 (scale 0.1 mm); 5. Same, frontal view of fifth thoracic neuropodium showing uncini with a single row of teeth (scale 20 μm); 6. Same, frontal view of a posterior neuropodium showing a neuropodial cirri (nc) from another setiger and several rows of accessory teeth in the uncini (scale 10 μm).



Figures 7–15. *Sabellides manriquei* new species, non-type specimens and *S. oculata* Webster, syntypes USNM 378; 7. *S. manriquei*, lateral view of anterior end showing the relation between branchiae and tentacles, the position of the eye and a glandular girdle in peristomium (scale 250 μm); 8. Same, posterior end showing the development of the neuropodial and anal cirri (scale 100 μm); 9. Same, thoracic bilimbate notosetae (scale 50 μm); 10. Same, schematic arrangement of branchial groups; 11. *S. oculata*, frontal view showing the position of the eyes, the lack of palea and the development of the branchiae (scale 500 μm); 12. Same, lateral view of the posterior end showing very short neuro-podial cirri and anus without cirri (scale 250 μm); 13. Same, thoracic bilimbate notosetae with color pattern (scale 50 μm); 14. Same, schematic arrangement of branchial groups; 15. Same, thoracic uncini (scale 10 μm).

longer lens-shaped nuchal organs located posteriorly (Figs. 3, 7). Many papillose tentacles (Fig. 2); peristomium with glandular girdle (Fig. 7).

Four pairs of cirriform branchiae, each filament of about same length and width, almost twice as long as tentacles (Figs. 2, 3, 7); arranged as two lateral transverse groups with three filaments each, basally fused on branchial lobe; additional branchia located posteriorly, between outer ones, and slightly wider than rest (Fig. 10); branchial groups widely separated in middle with two small nephridial papillae (Fig. 3).

Paleae well developed, larger or of about same size as adjacent posterior notosetae, placed slightly below than lateral basis of branchial groups (Figs. 2, 3).

Thorax cylindrical with 13 setigers provided with notosetae, 11 with uncini. Setigers 1–7 with short notopodial lobe and notosetae, setigers 8–13 larger with well developed notopodia and notosetae. Neuropodia as low cushion in first five uncinigers, uncini start at setiger 3 (Figs. 4, 5), in posterior segments tori become larger but remain as low ear-shaped cushion. Notosetae of two kinds, small fine simple capillaries, and larger mostly straight bilimbate setae (Fig. 9). Thoracic uncini with single row of three to five denticles (Fig. 5). Nephridial papillae present between rami of setigers 4 and 5 (Fig. 4).

Transition between thorax and abdomen abrupt, thoracic setigers defined by presence of notosetae. Abdomen with 17 uncinigers. First two abdominal setigers without neuropodial cirri, remaining ones provided with long cirriform single cirri; anterior neuropodia lobulated, posterior ones smaller, distally expanded and markedly ventral (Fig. 8). First two abdominal segments with uncini similar to thoracic ones, with a single row of four to five denticles; remaining abdominal segments, uncini with a main fang surmounted by several denticles in two or three rows (Fig. 6).

Pygidium funnel-shaped with two long lateral cirriform cirri (Fig. 8); anus profusely ciliated with 4 small conical dorsal papillae. Tube made of protein fibres that trap fine sediment; free end collapses when animal retracts in tube.

Measurements.—Holotype 11 mm in length and 0.6 mm in width. Twelve additional specimens were measured and some structures were counted. Thus, *S. manriquei* new species is 9.8 mm in length (range 7.5–11.5), 0.6 mm in width (range 0.6–0.8), has 13 thoracic setigers (range 13–14) and 17 abdominal ones (range 16–19).

Comments.—By far, it was the most abundant polychaete species in station 70b in the Gulf of California. Depending on the relative size of notopodia and notosetae of setigers 7–12, two morphs were found, one with larger structures and another one, more common, with smaller structures. This difference is not regarded as specific. Likewise the relative size of paleal setae has no meaning as a specific character since they are not size-dependent, thus they could be of about the same size or slightly longer than first notosetae.

Discussion.—*Sabellides manriquei* new species seems to be closely allied to *S. borealis*, an arctic or subarctic species. They differ in the type of thoracic uncini since in *S. manriquei* they have teeth in a single row while in *S. borealis* there are two rows of denticles. Further, in *S. borealis* there are neuropodial cirri in posterior thoracic and in all abdominal segments while in *S. manriquei* such cirri appear from the third abdominal setiger. The body of ampharetids has been separated in thorax and abdomen by the presence of notosetae; this is a practical and useful way to find out the number of thoracic setigers but the presence of 'thoracic' uncini in abdominal (or transitional) setigers in *S. manriquei* indicates that

this distinction might be modified by employing additional information from the type of uncini. In some species that have the same type of uncini in thorax and abdomen, there is a difference in size but a better indication might come from the number of rows of accessory teeth, providing there is no size-dependence in such feature.

Etymology.—The species is named for Fernando Manrique, from the Instituto Tecnológico y de Estudios Superiores de Monterrey, Campus Guaymas, who has been deeply involved in the promotion of marine biology in northwestern Mexico for a long time.

Sabellides oculata Webster, 1879
Figures 11–15

Sabellides oculata Webster, 1879: 127, 1886: Pl. VIII (10), Figs. 67–69.

Material Examined.—Two syntypes, USNM 378. Collected in Great Egg Harbor, New Jersey, by H. E. Webster (No. 12893); dredged at 5 m in shelly bottom. One specimen complete, 9 mm long and 3.5 mm wide including setae; another one with thorax dissected, 9 mm long and 2 mm wide without setae (missing). Both with 14 thoracic setigers; the complete one with 4 normal and 7 regenerating abdominal setigers, the dissected one with 14 abdominal setigers.

Redescription.—Body massive, colorless, ventrally bent, tapering posteriorly. Prostomium trilobed, distally pointed, with two subepidermic eyespots over the lateral margins of lateral lobes (Fig. 11). Many tentacles papillated, partly invaginated. Eight branchiae reaching up to setigers 4 or 5; each branchia massive, dehiscent, basally swollen, medially flattened and tapering distally with median longitudinal furrow over its posterior face. Branchial groups dorsally fused, each has row with three filaments and posterior branchia placed between internal ones (Fig. 14).

Thorax massive with 14 setigers; notosetae appear from second branchifer. First notopodium slightly reduced, placed slightly more ventrally than remaining notopodia. Notopodia as small cones; uncini present from setiger 3; neuropodia conspicuous flattened lobes more or less set apart from body wall. Ventrums with 11 glandular shields on setigers 1–11, after that there is deep longitudinal furrow.

Abdomen with 11 uncinigers, each torus well developed, leaf-shaped. Neuropodial cirri reduced to small rounded lobe, sometimes inconspicuous (Fig. 12). Pygidium thick simple tube without accessory tori or cirri.

Thoracic notosetae of two types: 1) short, smooth capillaries and 2) large, bilimbate capillaries, subdistally bent, with slight dark pigmentation over distal portion (Fig. 13). Thoracic and abdominal uncini as toothed plaque with 4–5 pairs of denticles (Fig. 15); thoracic uncini larger each about 30 μm in length and abdominal ones about 20 μm in length. Tube unknown.

Remarks.—Both specimens were apparently fixed outside their tube.

Comments.—Webster (1879) stated “anal cirri short, obtuse.” These structures are here taken to be neuropodial, not anal, cirri. Other differences such as the general size or the relative size of the branchiae might be explained either because he was able to make observations on live specimens or, more probably, because he had additional specimens available; these specimens were not examined for the purpose of this study.

KEY TO SPECIES OF *SABELLIDES* MILNE-EDWARDS, 1838

- | | |
|---|---|
| 1a. Branchial groups dorsally fused; without paleae | 2 |
| 1b. Branchial groups dorsally separated by two nephridial papillae; paleae present although sometimes reduced | 3 |

- 2a. Prostomium with lateral eyespots; pygidium without anal cirri *S. oculata*
 2b. Prostomium without eyes; pygidium with two small slender anal cirri *S. pusilla*
 3a. Nephridial papillae long; abdominal neuropodia without cirri *S. capensis*
 3b. Nephridial papillae short; abdominal neuropodia with cirri 4
 4a. Branchiae long, arranged in a transverse line; paleae shorter than adjacent notosetae
 *S. octocirrata*
 4b. Branchiae short, arranged three in a transverse line and one slightly behind 5
 5a. Thoracic uncini with two rows of 4–7 teeth *S. borealis*
 5b. Thoracic uncini with a single row of 4–5 teeth *S. manriquei*

ACKNOWLEDGMENTS

A. van der Heiden (ICML-UNAM) supplied the materials from the Gulf of California. Specimens from southern California were kindly provided by L. Harris and the people of The City of San Diego Marine Biological Lab. K. Fauchald and L. Ward (Smithsonian) allowed my visit, provided lab-space and permitted me to study their collections. Through E. Suárez and A. Hoy, CIQRO, and by project P105 the CONABIO supported my visit to important museums of the United States and Europe. SCAMIT provided complementary funds during a short visit to Los Angeles. S. M. Arce and R. Hernández (Univ. Guadalajara) and Y. Hornelas (UNAM) were helpful in making SEM photographs. L. E. Calderón (CICESE) and S. Regino (CIQRO) made arrangements to support a trip to show this note as a poster in a conference on the Gulf of California, in Ensenada, Mexico. This paper was greatly improved by careful revisions of A. Muir (The Natural History Museum, London), T. Holthe (Naturforvaltning, Trondheim), L. Harris (Museum of Natural History, Los Angeles), and an anonymous reviewer.

LITERATURE CITED

- Chamberlin, R. V. 1919. The Annelida Polychaeta. Mem. Mus. Comp. Zool. Harvard 48: 1–514.
 Chardy, P. and D. Desbruyères. 1979. La classification multicritère: Application à la révision de la sous-famille des Ampharetinae (Annélides Polychètes). Année Biol. 18: 521–537.
 Day, J. H. 1961. The polychaete fauna of South Africa, 6. Sedentary species dredged off Cape coasts with a few new records from the shore. Zool. J. Linn. Soc. London 44: 463–560.
 ———. 1964. A review of the family Ampharetidae (Polychaeta). Ann. South Afr. Mus. 48: 97–120.
 ———. 1967. A monograph on the Polychaeta of Southern Africa, Part 2. Sedentaria. British Museum (Natural History), London, Vol. 2.
 Fauchald, K. 1977. The polychaete worms: Definitions and keys to the orders, families and genera. Nat. Hist. Mus. Los Angeles Cty., Sci. Ser. 28: 1–190.
 Fauvel, P. 1897. Recherches sur les Ampharétiens, annélides polychètes sédentaires. Morphologie, anatomie, histologie, physiologie. Bull. Scient. France Belg. 30: 277–488.
 Hendrickx, M. E. 1990. The stomatopod and decapod crustaceans collected during the GuayTec II cruises in the central Gulf of California, Mexico, with the description of a new species of *Plesionika* (Caridea: Pandalidae). Rev. Biol. Trop. 38: 35–53.
 Hernández-Alcántara, P. 1992. Los poliquetos (Annelida: Polychaeta) de la plataforma continental del Golfo de California, México. Taxonomía, abundancia numérica y distribución geográfica. Tesis de Maestría, Instituto de Ciencias del Mar y Limnología, UNAM, México 427 p.
 Hesse, C. 1917. Zur Kenntnis der terebellomorphen Polychaeten. Zool. Bidr. Uppsala 5: 39–258.
 Holthe, T. 1986a. Polychaeta Terebellomorpha. Mar. Invert. Scandinavia 7: 1–192.
 ———. 1986b. Catalogue of the Polychaeta Terebellomorpha. Gunneria 5: 1–178.
 Jirkov, I. A. 1994a. [Two new species of the genus *Ampharete* (Polychaeta, Ampharetidae) from the North-Western Pacific with a discussion on the taxonomic significance of paleae in Ampharetinae.] Zool. Zh. 73(4): 28–32.
 ———. 1994b. [*Sosane holthei* sp. n. (Polychaeta, Ampharetidae) from the North-Western Pacific with the review of *Sosane* and related genera.] Zool. Zh. 73(4): 33–38.
 ———. 1994c. Towards generic revision of Ampharetidae. Mem. Mus. Hist. Nat. Paris Zool. 162: 626.
 Malmgren, A. J. 1865. Nordiska Hafs Annulater. Öfver. Vetens.-Akad. Förhandl. 5: 355–410.
 Milne-Edwards, M. H. 1836–41. Les Annélides. In Cuvier, G. Le Règne Animal distribué d'après son organisation, pour servir de base à l'histoire naturelle des animaux, et d'introduction à l'anatomie comparée. Paris 15:1–54, 16:1–26.
 Salazar-Vallejo, S. I., J. A. de Leon-Gonzalez and H. Salas-Polanco. 1989. Poliquetos (Annelida: Polychaeta) de México: Generalidades, Claves Ilustradas para Familias y Géneros, y Bibliografía-Lista de Especies. Libros Universidad Autónoma de Baja California Sur, La Paz. 212 p.

- Sars, M. 1835. Beskrivelser og Iagttagelser over nogle moerkelige eller nye i Havet ved den Bergenske Kyst levende Dyr af Polypernes, Acalephernes, Radiaternes, Annelidernes og Molluskerne's classer, med en kort Oversigt over de hidtil af Forfatteren sammesteds fundne Arter og deres Forekommen. Bergen, xii + 81 pp, 15 Pls.
- Sars, M. 1856. Nye Annelider. *Fauna Litt. Norvegiae* 2: 1-24.
- Verrill, A. E. 1873. Report upon the invertebrate animals of Vineyard sound and adjacent waters, with an account of the physical characters of the region. *Rep. U.S. Comm. Fish. 1871-72*: 295-778.
- Webster, H. E. 1879. Annelida Chaetopoda of New Jersey. *Ann. Rep. New York St. Mus. Nat. Hist.* 32: 101-128.
- . 1886. Annelida Chaetopoda of New Jersey (republished complete with plates). *Ann. Rep. New York St. Mus. Nat. Hist.* 39: 128-159, Plates (I) 4-(VII) 10.

DATE ACCEPTED: February 27, 1995.

ADDRESS: *El Colegio de la Frontera Sur, Departamento de Ecología Acuática, Apartado Postal 424, Chetumal, Quintana Roo 77000 MEXICO.* E-mail: salazar@xaway.ciqro.conacyt.mx