

# Rediscovery of *Talehsapia annandalei* (Polychaeta: Pilargidae) in Songkhla Lagoon, Thailand<sup>1</sup>

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**Abstract:** The pilargid polychaete *Talehsapia annandalei* Fauvel, 1932, has been rediscovered in its type locality and its taxonomic affinities are clarified. The genus is set off from remaining synelmins based on possession of palps completely fused and absence of tentacular cirri. The “jawlike” structure is rather a symmetrical, discontinuous pair of denticulated bands and is not a true jaw.

FAUVEL (1932) DESCRIBED the polychaete *Talehsapia annandalei* based on two specimens collected in Taleh-Sap, Thailand (Taleh-Sap means the Songkhla inner sea or lagoon). The taxonomic affinity of this taxon was enigmatic because of the presence of atypical “jaws” and the species was originally regarded as incertae sedis; it did not seem to belong to any of the then known polychaete families and it was regarded, questionably, as a very aberrant eunicid. In a later monograph Fauvel (1953) retained it as incertae sedis but closely allied to Hesionidae and more specifically related to what we now call pilargids. However, Fauvel did not accept the Pilargidae as an independent family. Hartman (1947), in contrast, did regard Pilargidae as an independent family and included *Talehsapia* Fauvel in her revision, but for her it was a

little-known genus closely allied to *Loandalia* Monro. In her remarks, she commented that *Talehsapia* differs from *Loandalia* in the lack of palps and the presence of jaws. This affinity with *Loandalia* had already been stated by Fauvel (in Mesnil and Fauvel 1939:39–40) after he rejected its original apparent affinity with euniceans and placed the genus in the Hesionidae.

In her revision of the Pilargidae, Pettibone (1966) questionably regarded *Talehsapia* as a junior synonym of *Loandalia*. Fauchald (1977:78–79) kept the taxon as incertae sedis because of its atypical jaws and even rejected, following Emerson and Fauchald (1971), its recognition as a pilargid. This problematic genus was included in the Pilargidae but regarded as being different from other pilargids by Salazar-Vallejo (1987, Salazar-Vallejo and Solís-Weiss 1992) on the basis of lack of palps and presence of jaws. Licher and Westheide (1994:225–226) thought that this genus is a member of the Pilargidae.

The original description was published 70 yr ago, and until now, no new specimens have been available to clarify this situation. The second record of *Talehsapia* (Fauvel 1935) should be ascribed to *Loandalia*, as Fauvel himself indicated (in Mesnil and Fauvel 1939:39–40). The original specimens may be lost; in fact, several letters are still without reply from Indian colleagues, and the loss of these specimens has yet to be confirmed. We examined the single slide deposited in the collections of the Université Catholique de l’Ouest, Angers, and herein we present an analysis of the enigmatic features of this species on the basis of six additional specimens collected by one of us (S.A.). The pharynx has

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one pair of anterolateral glandular areas; internally, at the same level, there is a unique reinforcement structure that might explain the jawlike resemblance noted by Fauvel in the original description. The dorsal spine starts on setiger 8, ventral cirri start on setiger 4, and the pharynx can be 5–7 setigers in length. In most other features, the original description by Fauvel (1932) is fairly complete.

#### MATERIALS AND METHODS

All six specimens were collected by S.A. on 8 August 1998 in the Songkhla Lake (lagoon) (7° 29' 17" N, 100° 24' 34" E). Sediments were sampled using a Tamura's grab (Rigoshia Co., Japan, 0.05 m<sup>2</sup>) at 0.5-m water depth and were mainly silty-clay or silty-clay loam. Water salinity was 24 psu (range 0–24 psu), water temperature was 33°C, dissolved oxygen was 7.7 mg/liter, and pH was 7.1. The anterior region of two specimens was dissected to remove the pharynx; one pharynx was cross-sectioned close to the anterior end and the other was cut longitudinally. Reference materials are deposited in the following collections: Museum National d'Histoire Naturelle, Paris; The Natural History Museum, London; collections of the Prince of Songkla University, Hat Yai, Thailand; Coastal Museum of Natural History, Yoshio, Katsuura, Chiba, Japan; and El Colegio de la Frontera Sur, Chetumal. The slide IEA N-44', corresponding with the type specimens, deposited in the collection of the Université Catholique de l'Ouest, Angers, was examined.

#### RESULTS

Two specimens were incomplete posteriorly. One of the complete ones was dissected to examine the pharynx, and an anterior fragment was also dissected. Specimens average 98 setigers (range 55–157) and 27 mm in length (15–52 mm). The body has the general *Loandalia*-like appearance; the anterior end is swollen and there frequently are pigmented glands along the sides of the body (Figure 1a). The prostomium is rounded, anteriorly smooth, with completely fused palps and without antennae (Figures 1a–c). The

fusion of palps can be detected due to a slight depression on the anterior border of the prostomium or by the longitudinal shallow furrow over the ventral side (Figure 1d). The peristomium is without tentacular cirri. The anterior swollen portion includes setigers 1–5. Most specimens have cerebral eyes (Figure 1c). The first parapodium is uniramous. Dorsal spines start on setiger 8 and a ventral cirrus is present from setiger 4. Notosetae consist of the emergent dorsal spine and a thin, smooth, short capillary; neurosetae consist of, up to nine per bundle, finely spinulose capillaries arranged as about half supracirculars and half subcirculars (Figure 1c). The anal plate is a slightly swollen pigmented bulb with three anal cirri; the two laterals are slightly longer than the smaller midventral one. The anus is dorsal.

The eversible pharynx is in two rings but in none of the specimens was it completely everted. The length of the everted portion is equivalent to the first four setigers. The muscular region extends over 5–7 setigers. The posterior muscular portion of the pharynx is an expanding cylinder, wider anteriorly; the proximal ring is thin with two lateral glandular areas that can be stained with rose-bengal; the distal ring is thick, heavily muscular, similar to a proventricle (Figure 2a). Internally, at the same level, there is a complex set of symmetrical, discontinuous denticulated bands at its anterior end (Figure 2b). In cross section, these bands are arranged as two curved, fusiform, oblique structures that become thinner toward their lateral joint (Figure 2c). There are a few truncated papillae pointing toward the inside of the pharynx (Figure 2d); the denticulated bands are rugose due to many tiny denticles (Figure 2e). These areas project posteriorly and can be seen from the outside of the body as two short, thin, darker lateral lines; if seen in cross section, they are slightly thicker or provided with more pigment.

A ventral dissection of the pharynx (Figure 3a) shows that there are two rows of alternating marginal papillae, with eight rounded papillae on the outer ring (Figure 3b), and one or two inner, distally truncated papillae (Figure 3c). The darker portions correspond

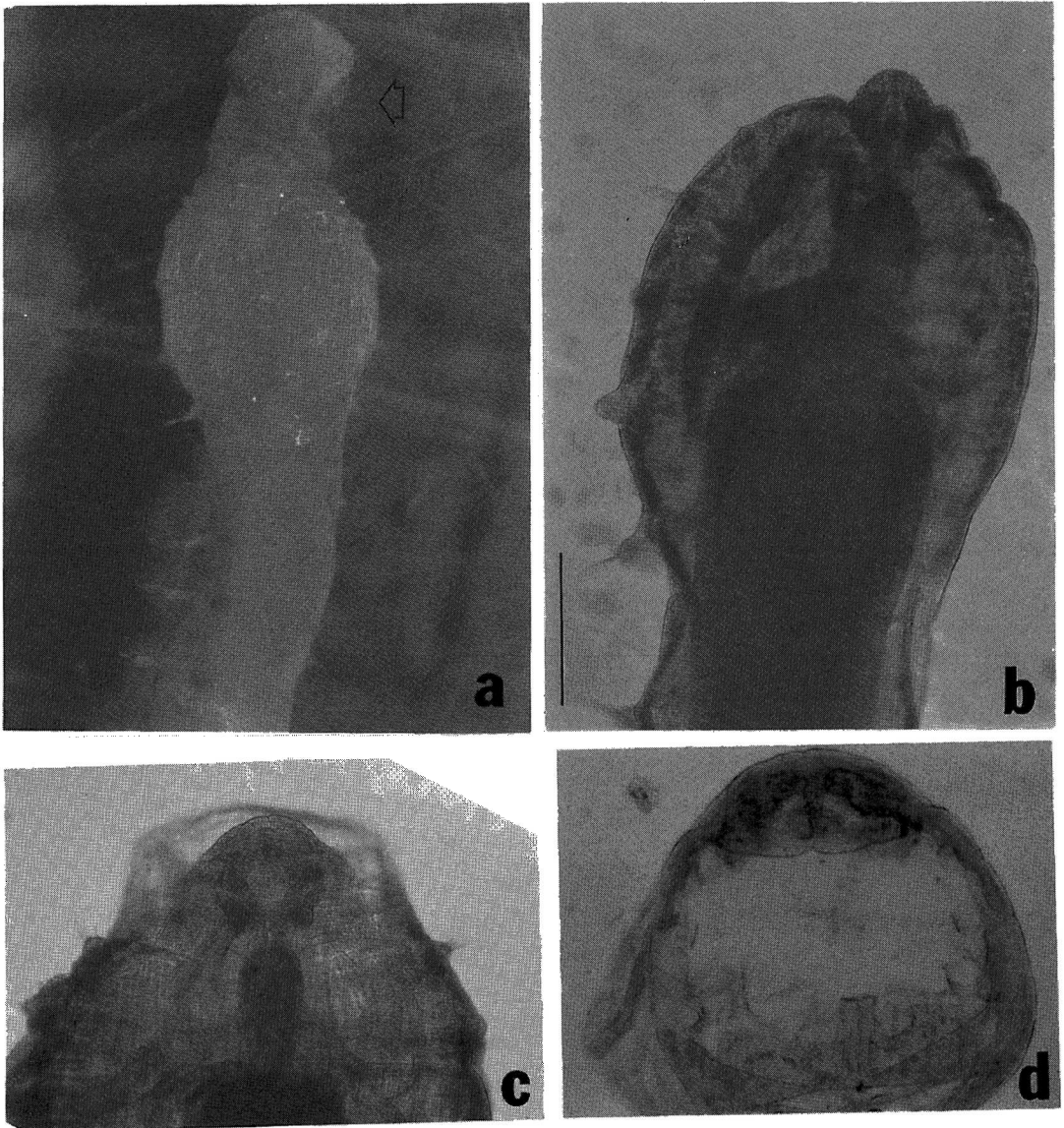


FIGURE 1. *Talehsapia annandalei* Fauvel. *a*, Anterior end of a complete specimen with the pharynx everted; note the lateral glands on the pharynx and pigmented lateral glands on the body; *b-c*, anterior end of other specimens showing its completely fused palps; *d*, cross section of a specimen showing the midventral depression on the prostomium (scales: *a*, 1 mm; *b*, 0.5 mm; *c*, 0.3 mm; *d*, 0.1 mm).

to two groups of lateral, symmetrical, discontinuous denticulated bands that taper at both ends; each seems to be provided with a posterior projection (Figure 3*c*). Upon closer inspection (Figure 3*d*), the lateral bands are slightly different because the ventral one is

longer than the dorsal one. They have polyhedral denticles, and over the darker adjacent areas there are other slightly wider polyhedral denticles. Some of the denticles are located over the inner margin of the band (directed posteriorly) and appear longer than the rest.

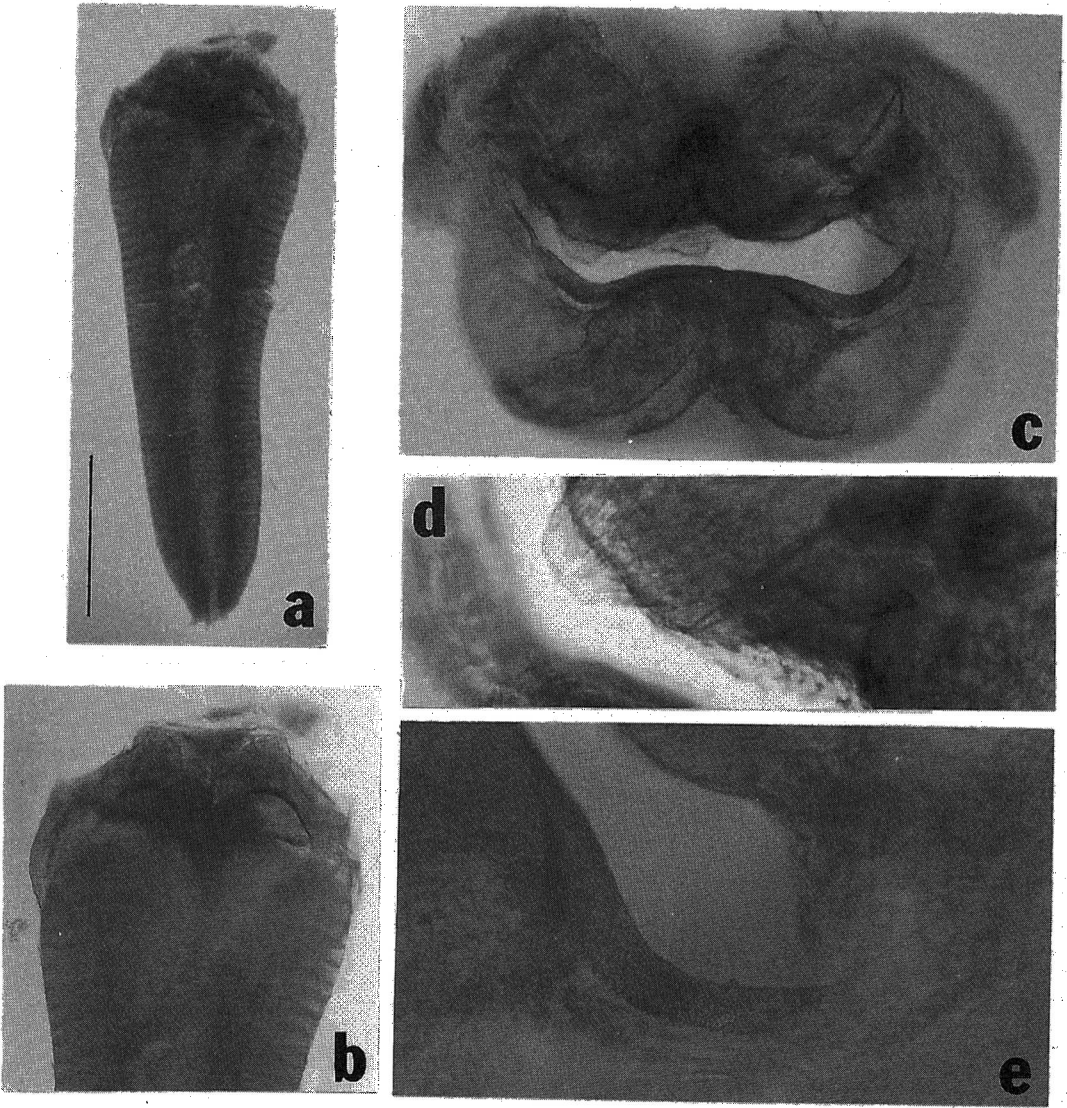


FIGURE 2. *Talehsapia annandalei* Fauvel. *a*, Dorsal view of the pharynx (dissected), widest at the anterior end; *b*, anterior end enlarged, note the laterally duplicated structures; *c*, cross section of the pharynx (ventral side is up), note the lateral discontinuity of the structures; *d*, close-up of an inner papilla showing truncated tip; *e*, close-up of the dorsal denticulated band showing tiny denticles (scales: *a*, 450  $\mu\text{m}$ ; *b*, 270  $\mu\text{m}$ ; *c*, 360  $\mu\text{m}$ ; *d*, *e*, 120  $\mu\text{m}$ ).

The slide IEA N-44' is labeled as "*Talehsapia annandalei* Fauvel n. gen., n. sp., Taleh-Sap, St. 27." It contains three parapodia but it is partly dried and because of the adsorbed salt over the setae, their fine spinulation cannot be observed. These parapodia are similar

to the original illustrations by Fauvel and the ventral cirri, where present, can still be seen.

These specimens are consistent with the original description of *Talehsapia annandalei* Fauvel and because they come from the type locality, we consider them to belong to the

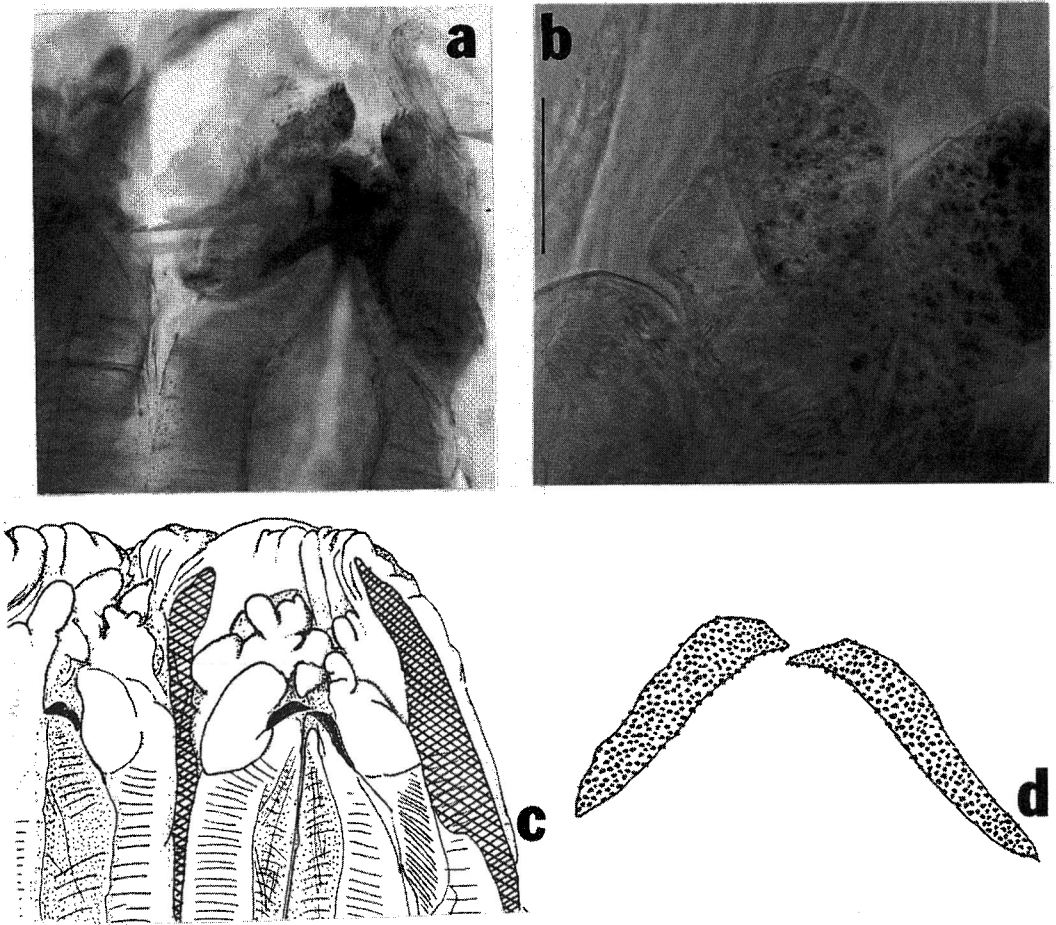


FIGURE 3. *Talebsapia annandalei* Fauvel. *a*, Everted pharynx from Figure 1*a*, dissected ventrally; *b*, close-up of the outer midventral rounded papillae; *c*, sketch from Figure 3*a* to illustrate the relative position and size of the denticulated bands; *d*, denticulated bands with granular appearance; the one on the right is ventral, note lateral discontinuity (scales: *a*, 110  $\mu$ m; *b*, 48  $\mu$ m; *c*, 140  $\mu$ m; *d*, 48  $\mu$ m).

same species. This pilargid is known only from the type locality: Taleh-Sap, Gulf of Thailand (formerly Gulf of Siam). Taleh-Sap means the inner sea of Songkhla (or Singora [7.12° N, 100.36° E]). Taleh-Sap is a large estuary on the eastern side of the Malacca Peninsula, opening to the Gulf of Thailand. Associated polychaete species are *Namalycastis indica* Southern (Nereididae), *Sigambra pukhetensis* Licher & Westheide (Pilargidae), and at least one species each in *Prionospio* (Spionidae), *Heteromastus* (Capitellidae), *Cera-*

*tonereis* (Nereididae), and *Nephtys* (Nephtyidae).

#### DISCUSSION

When working with the original material, Fauvel (1932) placed one specimen in lactic acid and compressed it, and he noticed a resistant paired structure that gave the impression of a horizontal jaw complex resembling the algebraic symbols  $\langle \rangle$ , which he regarded as a two-piece jaw. Without compression,

however, these reinforcements are arranged as two fusiform, oblique structures that are laterally discontinuous, which explains the original observation. The pharyngeal structure of *Talebsapia anmandalei* has a slight resemblance to the trepan of syllid polychaetes (Autolytinae or Eusyllinae). Although it resembles those found in *Autolytus magnus* Berkeley (Imajima 1966a:41, fig. 9c), *Eusyllis longicirrata* Imajima (1966b:95, fig. 30b), and *E. inflata* Marenzeller (Imajima 1966b:100, fig. 32b), the denticulated bands of *Talebsapia* are different with regard to several features. In *Talebsapia* they are discontinuous and almost symmetrical, and the teeth are abundant and less differentiated than in the syllids. Also, they are apparently not restricted to the lateral bands of the pharynx. This may be regarded, however, as a convergent feature. The pharynx of pilargin pilargids has been described as being provided with small denticles; Pettibone (1966:179, fig. 11c) noticed that *Cabira* Webster has oblique rows of small denticles, and Katzmann et al. (1974:10–11, figs. 4A,B) found that *Ancistrotyllis* McIntosh has an irregularly denticulated band with denticles of two sizes, the dorsal being larger than the ventral ones. The symmetrical, discontinuous denticulated bands in *Talebsapia* seem to be unique within the family.

*Talebsapia* is a pilargid and thus should be assigned to the subfamily Synelminae Salazar-Vallejo. Its independent generic status can be recognized because of its diagnostic features: completely fused palps, lack of antennae or tentacular cirri, and presence of symmetrical, discontinuous denticulated bands in the muscular portion of the pharynx. These structures are not true jaws because they lack prominent solid structures, cusps, or any of the other salient features typically associated with jaws; thus pilargids can be regarded as jawless polychaetes.

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#### Literature Cited

- Emerson, R. R., and K. Fauchald. 1971. A revision of the genus *Loamdalia* Monro with description of a new genus and species of pilargiid polychaete. Bull. South. Calif. Acad. Sci. 70:18–22.
- Fauchald, K. 1977. The polychaete worms: Definitions and keys to the orders, families and genera. Nat. Hist. Mus. Los Angel. Cty. Sci. Ser. 28:1–188.
- Fauvel, P. 1932. Annelida Polychaeta of the Indian Museum, Calcutta. Mem. Indian Mus. 12:1–262.
- . 1935. Annélides polychètes de l'Annam. Mem. Pont. Acad. Sci. Novi Lyncaei, sér. 3, 2:279–354.
- . 1953. The fauna of India, including Pakistan, Ceylon, Burma and Malaya. Annelida Polychaeta. Indian Press, Allahabad. 507 pp.
- Hartman, O. 1947. Polychaetous annelids, 8. Pilargiidae. Allan Hancock Pac. Exped. 10:483–523.
- Imajima, M. 1966a. The Syllidae (polychaetous annelids) from Japan, 2. Autolytinae. Publ. Seto Mar. Biol. Lab. 14:27–83.
- . 1966b. The Syllidae (polychaetous annelids) from Japan, 3. Eusyllinae. Publ. Seto Mar. Biol. Lab. 14:85–116.
- Katzmann, W., L. Laubier, and J. Ramos. 1974. Pilargidae (Annélides Polychètes errantes) de Méditerranée. Bull. Inst. Océanogr. (Monaco) 71:1–40.
- Licher, F., and W. Westheide. 1994. The phylogenetic position of the Pilargidae with a cladistic analysis of the taxon—facts

- and ideas. Mem. Mus. Natl. Hist. Nat. 162:223–235.
- Mesnil, F., and P. Fauvel. 1939. Polychètes sédentaires de l'Expédition du "Siboga": Maldanidae, Cirratulidae, Capitellidae, Sabellidae et Serpulidae. Siboga-Expeditie 24 (2): 1–42.
- Pettibone, M. H. 1966. Revision of the Pilargidae (Annelida: Polychaeta) including descriptions of new species, and re-description of the pelagic *Podarmus ploa* Chamberlin (Polynoidae). Proc. U.S. Natl. Mus. 118 (3525): 155–207.
- Salazar-Vallejo, S. I. 1987 (1986). Pilargidae (Annelida: Polychaeta) de México: Lista de especies, nueva especie y biogeografía. Cah. Biol. Mar. 27:193–209.
- Salazar-Vallejo, S. I., and V. Solís-Weiss. 1992. Biogeography of the pilargid polychaetes (Polychaeta Pilargidae) of the subfamily Synelminae. Tulane Stud. Zool. Bot. Suppl. Publ. 1:273–283.