POLYCHAETES FROM CENTRAL AMERICAN SANDY BEACHES

KRISTIAN FAUCHALD

Reprinted from BULLETIN OF THE SOUTHERN CALIFORNIA ACADEMY OF SCIENCES
Vol. 72, No. 1, April 1973
pp. 19–31
Made in the United States of America

POLYCHAETES FROM CENTRAL AMERICAN SANDY BEACHES

KRISTIAN FAUCHALD[1]

ABSTRACT: Twenty-six species of polychaetes are reported from sandy beaches in Colombia, Panama, and Costa Rica from the Atlantic and Pacific Oceans. Two new species and one new genus are described.

The polychaete fauna of Central America has been the subject of several studies; early literature was summarized by Monro (1928, 1933a, 1933b). Hartmann-Schroder (1959) described polychaetes in shallow-water quantitative samples from mangrove areas of El Salvador. Sandy beaches, however, have been largely neglected until recently.

The present collections were made under the supervision of Deborah M. Dexter of California State University, San Diego, over a period of two years for the purpose of comparing the total fauna of the sandy beaches of the Atlantic and Pacific Oceans of Central America.

STATION LIST

Several beaches were collected at different times, so the list contains location only. Because of the complex coastlines, the stations are listed alphabetically within each country.

ATLANTIC OCEAN

Colombia:
Boca Grande, Cartagena, 10°30′ N, 75°40′ W
Isla San Andres, 12°32′ N, 81°34′ W
Pradomar Beach, Puerto Colombia, 11°08′ N, 75°09′ W
Rodadero Beach, Santa Marta, 11°15′ N, 74°13′ W
Costa Rica:
Airport Beach, Limon, 9°58′ N, 83°01′ W
Cahuita North, 9°45′ N, 82°52′ W
Cahuita South, 9°44′ N, 82°50′ W
Playa Bonita, Limon, 10°01′ N, 83°04′ W
Puerto Viejo, 9°40′ N, 82°44′ W
Panama:
Pina Beach, 9°20′ N, 80°05′ W
San Blas, 9°30′ N, 79°20′ W
Shimmey Beach, 9°23′ N, 79°57′ W

PACIFIC OCEAN

Colombia:
Playa Juan Chaco, N of Buenaventura, 4°10′ N, 77°30′ W
Costa Rica:
Boca de Barranca, Puntarenas, 9°58′ N, 84°45′ W
Jaco, 9°37′ N, 84°38′ W
La Punta, Puntarenas, 9°59′ N, 84°52′ W
Playa Cocal, Quepos, 9°26′ N, 84°10′ W
Playa Espadilla, Quepos, 9°24′ N, 84°10′ W
Playita Blanca, Playas del Coco, Coco, 10°34′ N, 85°42′ W
Samara, 9°53′ N, 85°38′ W
Tamarindo, 10°19′ N, 85°50′ W
Panama:
Naos Island, 8°53′ N, 79°33′ W
San Carlos, 8°29′ N, 79°58′ W
Venado Beach, 8°55′ N, 79°36′ W

Family Sigalionidae

Sthenelais maculata Hartman, 1939

Figure 1f–g

Sthenelais maculata Hartman, 1939, pp. 64–65, pl. 15, figs. 176–187.

Material examined: Boca Grande, 8 April 1971 (2); Naos Island, 30 June 1969 (2), 29 August 1969 (1); Jaco, 21 March 1971 (1); Playa Cocal, 28 February 1971 (2).

Distribution: *Sthenelais maculata* was originally described on material from Peru, Panama, and Mexico. The present records cover Pacific beaches in Costa Rica and Panama and one beach on the Atlantic side of Colombia.

Remarks: The present specimens fit very well with the specimens originally described by Hartman (1939). The superior part of the presetal lobe is deeply bifid (Fig. 1f); the distal tooth of the composite falcigers (Fig. 1g) is strongly curved.

Family Pisionidae

Pisione remota (Southern, 1914)

Figure 2a

Praegeria remota Southern, 1914, pp. 61–64, pls. VII and VIII, figs. 15a–k.

[1] Allan Hancock Foundation, University of Southern California, Los Angeles, California 90007.

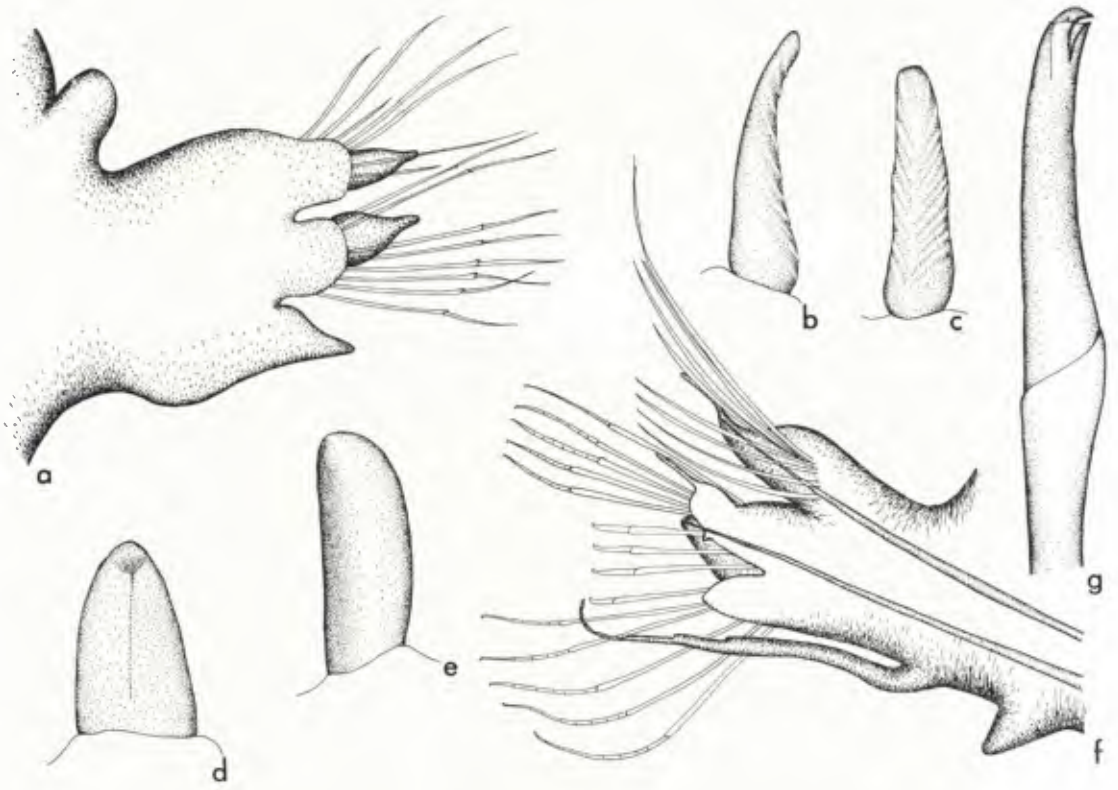


Figure 1. *Glycera abranchiata* Treadwell: a, median parapodium, posterior view, × 95; b, tall proboscideal organ, lateral view, × 385; c, tall proboscideal organ, frontal view, × 385; d, short proboscideal organ, frontal view, × 385; e, short proboscideal organ, lateral view, × 385; *Sthenelais maculata* Hartman: f, parapodium 85, anterior view, × 95; g, composite falciger, parapodium 85, × 950.

Pisione remota Hartman, 1968, pp. 181–182, 5 figs.

Material examined: Playa Espadilla, 1 March 1971 (1); Playita Blanca, 9 February 1971 (8).

Distribution: *Pisione remota* has been reported from shelf-areas off Ireland and on the west coast of the Americas; the present records are from the Pacific side of Costa Rica.

Remarks: The present specimens agree with *P. remota* as characterized by Hartman (1968) and with Laubier's (1967) review of the species of *Pisione*. The simple bifid hooks have a series of long, neatly organized hairs between the two teeth (Fig. 2a). This brush-border is usually illustrated as being considerably less extensive than it is in the present specimens. Paired bosses are present lateral to the base of the secondary tooth in all simple hooks.

Pisionidens indica (Aiyar and Alikuhni, 1940)

Pisionella indica Aiyar and Alikuhni, 1940, pp. 89–107, pls. 1–2, 9 text figs.

Pisionidens indica Aiyar and Alikuhni, 1943, p. 120; Siewing, 1954, pp. 81–83, pl. 23; Day, 1967, p. 133, fig. 4.1.f–j.

Material examined: Cahuita South, 1 April 1971 (2); Pradomar Beach, 21 April 1971 (1); Rodadero Beach, 26 April 1971 (22).

Distribution: *Pisionidens indica* is known from India, South Africa (Day, 1967) and has been reported from El Salvador and Brazil (Siewing, 1954). The present records are from the Atlantic side of Colombia and Costa Rica.

Remarks: The present specimens fit very well with the species as originally described and later revised by Siewing (1954).

Family Amphinomidae

Hermodice carunculata (Pallas, 1766)

Hermodice carunculata Fauvel, 1914, pp. 113–116, pl. 8, figs. 22–27, figs. 31–32; Monro, 1933a, p. 4; Hartman, 1951, pp. 22–25, fig. 1.

Material examined: Pina Beach, 24 July 1969 (1); San Blas, 19 August 1969 (1).

Distribution: *Hermodice carunculata* was originally described from the West Indies; it has been reported extensively from warm water areas in the Atlantic Ocean and is apparently limited to this ocean.

Remarks: *Hermodice carunculata* resembles *Eurythoe complanata* with which it is often confused by non-specialists, in that both species are long-bodied fire-worms. The two species differ most noticeably in the development of the caruncle. This structure is long and flexuose with poorly developed, usually completely hidden, lateral folds in *E. complanata*; it is wide and ovate, with very obvious lateral folds in *H. carunculata*.

Family Phyllodocidae

Anaitides near *multiseriata* Rioja, 1941

Anaitides multiseriata Rioja, 1941, pp. 684–687, pl. 1, figs. 2–6; Hartman, 1968, pp. 237–238, 4 figs.

Material examined: Playa Juan Chaco, 5 September 1971 (1); Venado Beach, 14 July 1969 (17).

Distribution: *Anaitides multiseriata* is known from western Mexico and Southern California; the present records are from Pacific Panama and Colombia.

Remarks: The present specimens agree with *A. multiseriata* in most characters, but differ in the color pattern. *Anaitides multiseriata* has a series of dark transverse bars with light-colored mid-dorsal spots; the specimens reported herein are nearly uniformly grey. In addition, *A. multiseriata* has a characteristic H-shaped pattern on the prostomium; this pattern is absent in the present specimens. The dorsal cirri are slightly more pointed in the present specimens than in *A. multiseriata*. Further identification will have to await a complete re-evaluation of the specific characters used to separate the many species in the genus *Anaitides*.

Family Nereidae

Ceratonereis mirabilis Kinberg, 1866

Ceratonereis mirabilis Kinberg, 1866, p. 170.

Ceratonereis tentaculata Kinberg, 1866, p. 170; Monro, 1933a, p. 45; Hartman, 1940, p. 218, pl. 35, fig. 47.

Material examined: Naos Island, 30 June 1969 (1); Rodadero Beach, 20 April 1971 (1).

Distribution: *Ceratonereis mirabilis* is widespread in warm waters and may be circumtropical; it has been reported more frequently from rocky shores than from sandy beaches.

Remarks: *Ceratonereis mirabilis* has a distally bifid prostomium and very long antennae. The dorsal cirri are greatly prolonged in posterior setigers giving the specimens a slightly ragged appearance.

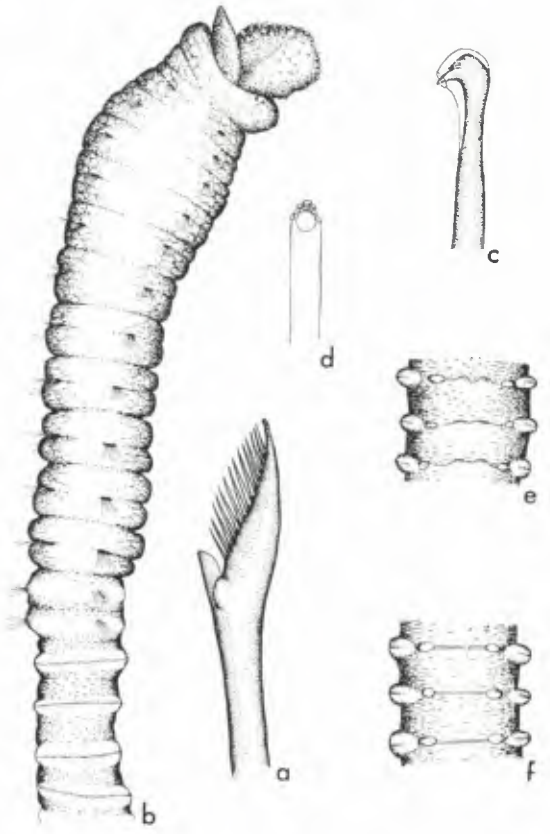


Figure 2. Pisione remota (Southern): a, simple hook, × 1900; *Notodasus dexterae*, new species: b, anterior end, lateral view, × 16; c, hooded hook, lateral view, × 950; d, hooded hook, frontal view, approx. × 950; e, abdominal setigers 8–10, dorsal view, × 16; f, abdominal setigers 15–17, dorsal view, × 16.

Nereidae, indeterminable

Material examined: Rodadero Beach, 20 April 1971 (fragment).

Remarks: This fragment cannot be further identified; it appears different from *Ceratonereis mirabilis* reported from the same beach.

Family Glyceridae

Glycera abranchiata Treadwell, 1901

Figure 1a–e

Glycera abranchiata Treadwell, 1901, pp. 200–201, fig. 49; Jones, 1962, p. 183, figs. 41–48.

Material examined: Naos Island, 31 July 1969 (8).

Distribution: *Glycera abranchiata* is known from Puerto Rico, Jamaica, and the Lesser Antilles. The present record is from Pacific Panama and is the first record of the species outside the western Atlantic Ocean.

Remarks: The present specimens resemble *G. tesselata* Grube (1863) in general body proportions and in the shape of the parapodia. The two postsetal lobes (Fig. 1a) are somewhat more distinct in *G. abranchiata* than in *G. tesselata* and the two presetal lobes are somewhat longer in the former than in the latter.

The proboscideal organs are of two different kinds. The most numerous kind (Fig. 1b–c) is narrow and slender and has 13 to 14 ribs in an oblique pattern. The other kind (Fig. 1d–e) is considerably wider and show a broad flattened shape; this second kind lacks ribs.

The distinctness of *G. abranchiata* was recognized by Jones (1962) who re-examined the type material. These types were also examined during the present investigation and were found to be as described by Jones.

Hemipodus armatus Hartman, 1950

Hemipodus armatus Hartman, 1950, pp. 83–84, pl. 12, figs. 1–5.

Material examined: Boca Grande, 28 April 1971 (3); Cahuita South, 1 April 1971 (1); Puerto Viejo, 2 April 1971 (1); Samara, 8 April 1971 (9); Tamarindo, 9 April 1971 (1 large, several small).

Distribution: *Hemipodus armatus* is known from western Mexico in shallow-water; the present records come from sandy beaches on both Atlantic and Pacific sides of the isthmus of Panama.

Remarks: The present specimens agree with *H. armatus* in that the tall proboscideal organs have numerous transverse ridges and in that the presetal lobes of median and posterior parapodia have slender digitate distal processes.

Family Nephtyidae

Nephtys singularis Hartman, 1950

Nephtys singularis Hartman, 1950, pp. 98–100, pl. 15, figs. 1–6.

Material examined: Naos Island, 30 June 1969 (6); Jaco, 27 March 1971 (3); La Punta, 14 March 1971 (8); Samara, 8 April 1971 (2); Tamarindo, 9 April 1971 (28).

Distribution: *Nephtys singularis* was described from Guatemala and western Mexico; all present records are from the eastern Pacific Ocean in somewhat lower latitudes.

Remarks: The present specimens agree with the original description. Interramal cirri are present from setiger 4 in nearly all specimens, but can be identified from setiger 3 in very large specimens. The superior neuropodial lobes are best developed in setigers 8–15 and are completely reduced posterior to setiger 30 in all specimens.

Family Onuphidae

Americonuphis, new genus

Type species: is *A. magna* (Andrews, 1891, as *Diopatra*); *A. hartmanae* (Friedrich, 1956) and *A. reesei*, new species also belong to this genus.

Description: *Americonuphis* includes macropodous onuphids with the anterior five or more parapodia enlarged and armed with composite falcigers. More posterior parapodia have simple limbate and pectinate setae, and distally bifid subacicular hooks. The prostomium has five occipital tentacles, each has a multiannulate base and a long, tapering style. The peristomium has a pair of tapering cirri. The thick, long, enlarged parapodia are armed with composite falcigers; the setal shafts are limited to their respective segments. The long, cirriform dorsal and ventral cirri taper distally. Farther back the ventral cirri are replaced by thick, glandular pads. Branchiae are present behind the modified segments and are continued through many segments; each has many filaments in a pectinate arrangement. The maxillary apparatus resembles that of other onuphids.

Remarks: *Americonuphis* is most nearly allied to *Rhamphobrachium* in having five or more, instead of two or three, anterior parapodia greatly enlarged and armed with special setae. The two genera differ in that the former have composite falcigers instead of scythe-like curved spines in these setigers and in that the shafts of the setae are limited to one segment rather than continued through several segments.

Americonuphis reesei, new species

Figure 3a–e

Material examined: Gulf of Panama, 27 m, mud, coll. E. Reese (1, Holotype); Naos Island, 3 July 1969 (1).

Description: The large holotype has been removed from a thick, mud-walled tube and is broken into several pieces; the posterior end is absent. The anterior fragment, with 80 setigers, measures 85 mm long and 8 mm wide; more posterior segments bring the total length to 230 mm and the width to 9 mm; the total number of segments exceeds 300. The anterior ventrum and the parapodial bases are mottled with black pigment. The tube has an inner lining of a tough parchment-like material and is externally covered with a thick layer of mud.

The small prostomium is a flat rectangular lobe, slightly longer than wide on top of the thick, biarticulate palps. A pair of tapering frontal antennae are present. The thick ventral palps are basally fused and are deeply divided distally; their bases are large and overlie the oral aperture (Fig. 3a). The ventral lip is formed by the thick, broad anterior edge of the peristomium. A pair of eyes is at the outer bases of the inner lateral occipital tentacles.

The five occipital tentacles are arranged so that three are in a row across the posterior end of the prostomium; the other two are in front of the inner lateral pair and at the sides of the prostomium. The ceratophores are annulated; each of the median and inner lateral ones has six short and a much longer distal article; the outer lateral ceratophores have only five short articles in addition to the distal long one. The long ceratostyles are tapering; the median is the longest and reach setiger 11. The peristomium is longer than the succeeding segments; its cirri are long, smooth and tapering; each is nearly twice as long as the peristomium.

The first five pairs of parapodia (Fig. 3a) are enlarged; the first are at the sides of the prostomium, and the others are increasingly ventral so that the two of a pair nearly meet medially and are separated by a quadrate mid-ventral pad. Parapodia are subbiramous; the notopodia are represented by a fascicle of slender acicula projecting into the long, tapering dorsal cirri; the ventral cirri are similar, but only about half as long (Fig. 3b). The base of the first parapodium is transversely wrinkled as though capable of great lateral extension. Pre- and postacicular lobes are distally prolonged to extend beyond the setal tips. Setae number twelve to fourteen in a fascicle; each is a composite falciger (Fig. 3c) terminating on a bifid tip and a short hood. These falcigers are accompanied by three to five simple, capillary setae resembling the imbedded notacicula.

The second, third, and fourth parapodia are more modified and directed forward on the ventrum; their setae resemble those in the first setiger. The ventral cirri are cirriform in these setigers; thereafter they are replaced by thick pads.

Branchiae are first present from setiger 6 with three filaments in a pectinate arrangement. The maximal number of branchial filaments is seven and is found on the twelfth branchial setiger (Fig. 3d). The dorsal cirri in these setigers are short and tapering.

Parapodia behind the modified setigers have long, limbate setae and one or two yellow subacicular hooks, first present from setiger 15; they are distally bifid. Pectinate setae are numerous; each is distally flared and terminated in many short dentitions (Fig. 3e). Acicula number two or three in a ramus; each is yellow, nearly straight and terminates in a slightly acute tip.

The maxillary apparatus (seen in dissection) is well developed. Maxilla I is the forceps; maxilla II has ten teeth left and twelve right; III has fourteen left and nine right; IV has four left and is absent on the right-hand side; V has one tooth on each side.

Distribution: *Americonuphis reesei* is known from two localities in the Gulf of Panama, one in muddy bottoms in 27 m, the other intertidally in a sandy bottom.

Remarks: *Americonuphis reesei* differs from *A. hartmanae* (Friedrich, 1956) in that it has five anterior modified setigers rather than six. The composite falcigers are bifid in the former and entire in the latter. In addition, *A. reesei* differs from *A. magna* in the number of teeth on the different jaw-pieces and *reesei* has about six, rather than twelve branchial filaments where the branchiae are best developed.

Americonuphis hartmanae (Friedrich, 1956), new combination

Rhamphobrachium hartmanae Friedrich, 1956, pp. 63–65, fig. 5a–c.

Distribution: Playa de las Flores, El Salvador in an intertidal sandy beach.

Remarks: The specimens described by Friedrich (1956) appear to have been as large as those described for *A. reesei*. The first six parapodia are enlarged and ventrally directed; parapodia 7 and 8 are transitional; the remainder of the parapodia are not modified and are lateral in position. Eyes are absent and the median occipital tentacle reaches back to setiger 5; its ceratophore has eight rings; each of the inner lateral occipital tentacles has twelve or thirteen basal rings. The modified anterior parapodia have equally long dorsal and ventral cirri and postsetal lobes. These parapodia are armed with weak simple superior setae and about four dark brown, thick, distally curved composite hooks. From setiger 7 the postsetal lobe is short. Branchiae are first present from this setiger as a single filament; the maximum number of branchial filaments is five–seven at setiger 12. Dorsal cirri are shorter than the branchial filaments; each has a curved fleshy spur at the base. Anterior ventral cirri are long through seven setigers and are absent posterior to setiger 18. Postmodified setigers have numerous limbate setae and a pair of light brown subacicular hooks. Pectinate setae are present from setiger 11 and number three or four in a fascicle.

Diopatra obliqua Hartman, 1944

Diopatra obliqua Hartman, 1944a, pp. 57–61, pl. 2, figs. 24–36, pl. 16, figs. 331–333; Fauchald, 1968, pp. 9–10, pl. 2, fig. a.

Material examined: Naos Island, 29 August 1969 (1).

Distribution: *Diopatra obliqua* is common along the coast from Golfo de California, Mexico to Peru in the eastern Pacific Ocean.

Remarks: *Diopatra obliqua* has bidentate hooded hooks in anterior setigers and strongly oblique pectinate setae. Details of the first parapodia were described by Fauchald (1968).

Diopatra splendidissima Kinberg, 1856

Diopatra splendidissima Hartman, 1944a, pp. 56–57, pl. 1, figs. 21–23; Fauchald, 1968, pp. 12–13, pl. 2, fig. j.

Material examined: Venado Beach, 14 July 1969 (1).

Distribution: *Diopatra splendidissima* is known from southern California to Equador in the eastern Pacific Ocean.

Remarks: *Diopatra splendidissima* has bidentate hooded hooks in the anterior setigers; the pectinate setae are transverse; each has a few coarse teeth. A description of the first parapodia was added by Fauchald (1968).

Family Lumbrineridae

Lumbrineris monroi Fauchald, 1970

Lumbrineris monroi Fauchald, 1970, pp. 99–102, pl. 16, figs. e–i.

Material examined: Naos Island, 30 July 1969 (1).

Distribution: *Lumbrineris monroi* is known from western Mexico in shallow water; the present record is from a sandy beach in Pacific Panama.

Remarks: The present specimen differs from the species as originally described in that the simple hooded hooks are present from setiger 12 rather than from setigers 18–24 and in that the posterior postsetal lobes are slightly prolonged. The specimen is similar in size to the holotype.

Lumbrineris zonata (Johnson, 1901)

Lumbriconereis zonata Johnson, 1901, pp. 408–409, pl. 9, figs. 93–100.

Lumbrineris zonata Hartman, 1944a, pp. 146–147; Fauchald, 1970, pp. 112–113, pl. 18, figs. e–i.

Material examined: Venado Beach, 14 July 1969 (1).

Distribution: *Lumbrineris zonata* was described from Washington on the west coast of North America and has previously been reported as far south as Baja California. The present record is from the Pacific coast of Panama.

Remarks: *Lumbrineris zonata* has hooded hooks present from the first setigers and the postsetal lobes are short in all setigers. The present specimens do not appear to differ from specimens found in southern California or off western Mexico.

Family Orbiniidae

Orbinia johnsoni (Moore, 1909)

Aricia johnsoni Moore, 1909, pp. 260–262, pl. 8, figs. 30–33.

Orbinia johnsoni Hartman, 1969, pp. 33–34, 4 figs.

Material examined: Samara, 8 April 1971 (13).

Distribution: *Orbinia johnsoni* is previously known from central and southern California and from Costa Rica, where the present record is from.

Remarks: *Orbinia johnsoni* has the transition between thorax and abdomen between setigers 16–19 according to Hartman (1969). The present specimens all have this transition at setiger 18. Branchiae are present from setiger 15 in all specimens. The ventral row of papillae on the transitional setigers is rather poorly developed.

Family Paraonidae

Paraonides platybranchia (Hartman, 1961)

Paraonis platybranchia Hartman, 1961, pp. 86–87.

Paraonides platybranchia Hartman, 1969, pp. 73–74, 2 figs.

Material examined: Naos Island, 30 June 1969 (154).

Distribution: *Paraonides platybranchia* was originally described from southern California; the present record is the first from other areas and may indicate a wider distribution in the Pacific Ocean.

Remarks: The present specimens agree with *P. platybranchia* in that they have branchiae present from setiger 4 through setigers 29–30. They lack antennae and modified setae.

Family Spionidae

Dispio uncinata Hartman, 1951

Dispio uncinata Hartman, 1951, pp. 87–90, pl. 22, figs. 1–5, pl. 23, figs. 1–4; Hartman, 1969, pp. 105–106, 3 figs; Foster, 1971, pp. 73–78, figs. 161–174.

Material examined: Naos Island, 30 June 1969 (4); Shimmey Beach, 15 August 1969 (1).

Distribution: *Dispio uncinata* is known from both coasts of North and Central America in shallow water and intertidal areas in sand.

Remarks: Foster (1971, pp. 76–78) discussed the possible relationship between the present species, *D. schusterae* and *D. remanei* Friedrich (1956) from El Salvador. The three species are very similar, but synonymizing the three species must await a re-examination of the type materials of all three.

Paraprionospio species indeterminable

Material examined: Naos Island, 30 June 1969 (1).

Remarks: The present specimen cannot be identified to species. It is small and rather badly preserved; two pairs of pennate brachiae are present starting on the third setiger; scars from branchiae on other segments could not be identified.

Foster (1971, pp. 79–112) revised the species usually assigned to *Prionospio* distributing them on several genera. The characters used were the number and structure of the branchiae. This makes generic identification of poorly preserved material difficult on occasion, but is probably the best alternative available.

Foster (1971, p. 112) also synonymized all species assigned to the genus *Paraprionospio* into a single species, *P. pinnata* (Ehlers, 1901, pp. 163–164). It is not clear from Foster's article that she had material of all the different species involved. Synonymies based solely on descriptions are not acceptable to the present author; experience has shown that differences often exist between populations of closely related species, and that these differences often have escaped description. It is thus necessary to compare materials directly, preferably of course type materials, but if such are not available, at least materials from the type locality or the immediate vicinity.

Scolelepis agilis (Verrill, 1873)

Nerinides agilis Hartman, 1956, p. 291.

Material examined: Airport Beach, 19 March 1971 (28); Boca Barrancas, 13 March 1971 (73); Boca Grande 28 April 1971 (11); Cahuita South, 1 April 1971 (2); Naos Island, 30 June 1969 (52); La Punta, 14 March 1971 (418); Playa Juan Chaco, 9 May 1971 (22); Pradomar Beach, 21 April 1971 (1); Puerto Viejo, 2 April 1971 (4); San Blas, 18 August 1969 (4); Shimmey Beach, 10 August 1969 (101).

Distribution: *Scolelepis agilis* is known from the western Atlantic coasts from New England to Central America; the present records are also from the Pacific side of Central America.

Remarks: Foster (1971, pp. 59–63, figs. 118–131) following Pettibone (1963, p. 92) synonymized this species with the European *S. squamata* (Müller, 1806, for complete reference see Pettibone, 1963). It is unclear from Foster and Pettibone whether they examined any material from European waters or used the current descriptions as the base for this synonymy. Until this point has been cleared up, it seems preferable to keep materials from the Americas separate from the European materials, even if the descriptions overlap.

Spionidae, species indeterminable

Material examined: Playita Blanca, 9 February 1971 (4).

Remarks: The present specimens are very badly preserved and can be recognized as spionids only on the distribution of the setae. The hooded hooks are bifid.

Family Magelonidae

Magelona riojai Jones, 1963

Magelona riojai Jones, 1963, pp. 9–14, figs. 22–35.

Material examined: Jaco, 27 March 1971 (3).

Distribution: *Magelona riojai* was originally described from Veracruz, Mexico, and Florida, USA. The present record is from Jaco, Costa Rica on the Pacific side of Central America.

Remarks: The present specimens fit very well with *M. riojai*; the anterior end is somewhat more truncate than as illustrated by Jones (1963, fig. 22) and the mucronate tips of the modified setae of setiger 9 are slightly slenderer than the ones illustrated by Jones.

Family Cirratulidae

Cauleriella alata (Southern, 1914)

Chaetozone alata Southern, 1914, pp. 112–113, pl. 12, figs. 27a–d.

Cauleriella alata Hartman, 1969, pp. 225–226, 3 figs.

Material examined: Naos Island, 30 July 1969 (8), 29 August 1969 (17).

Distribution: *Cauleriella alata* has been reported from sandy beaches from worldwide areas. The relationship between the different populations is unknown and it is doubtful that they can be adequately characterized on morphological characters alone.

Remarks: The present specimens agree with *C. alata* in that they have bifid hooks present from the first neuropodium and have a pair of deeply imbedded black eyes. The bifid condition of the hooks is less obvious than as originally described, but is distinct in all setigers.

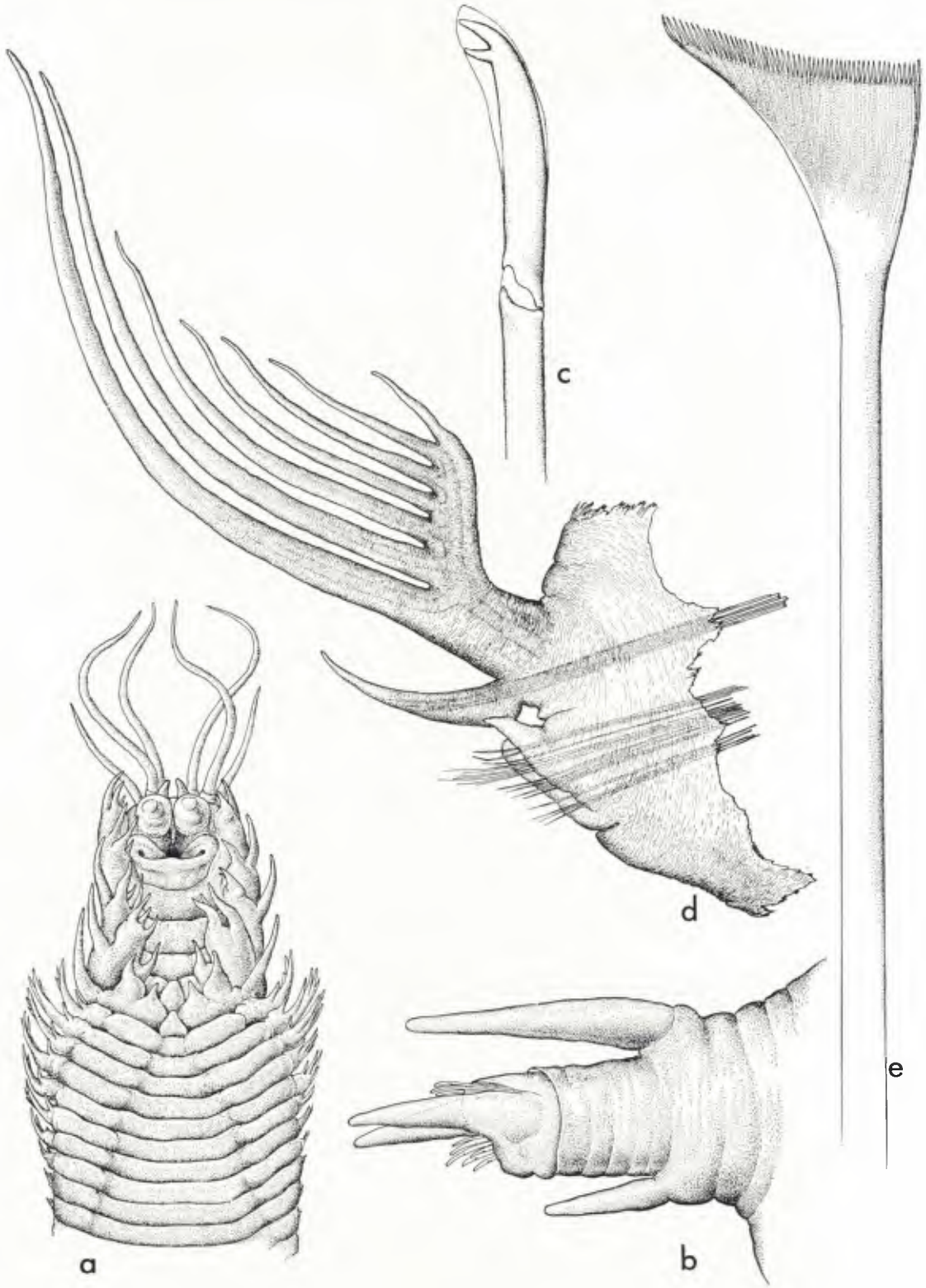
Cirratulus ? *cirratus* (Muller, 1776)

Cirratulus cirratus Hartman, 1969, pp. 245–246, 2 figs.

Material examined: Naos Island, 30 June 1969 (3), 29 August 1969 (2).

Distribution: *Cirratulus cirratus* is cosmopolitan in relatively shallow water; mostly in soft bottoms.

Remarks: The present specimens belong to the genus *Cirratulus* in that they have transverse rows


c
d
e
a
b

of tentacles on the first setiger and acicular spines present from an anterior setiger. Neuropodial spines are first present from setiger 12–14 rather than from setigers 6–11 as in *C. cirratus*. This character is considered important in identifying the different species of *Cirratulus*, so the present specimens are tentatively assigned to *C. cirratus*.

Family Flabelligeridae

Piromis americana (Monro, 1928)

Stylarioides capensis americana Monro, 1928, pp. 96–97, fig. 16; Monro, 1933b, pp. 1057–1058, text fig. 6.

Piromis americana Hartman, 1969, pp. 305–306, 3 figs.

Material examined: San Carlos, 4 August 1969, in tubes under rock at low tide (1).

Distribution: *Piromis americana* is known from Panama to central California.

Remarks: The present specimen agrees with those described by Monro, except that the neurosetae are somewhat less distinctly striated.

Family Opheliidae

Armandia ? *bioculata* Hartman, 1938

Armandia bioculata Hartman, 1938, pp. 105–106, figs. 51–54; Hartman, 1969, pp. 323–324, 3 figs.

Material examined: Naos Island, 30 July 1969 (2).

Distribution: *Armandia bioculata* is known from Washington to California in sandy intertidal areas. The present records come from Panama in a similar environment.

Remarks: Both specimens are incomplete posteriorly; they resemble in all identifiable characters specimens of *A. bioculata* from California.

Euzonus (*Thoracophelia*) *furciferus* (Ehlers, 1897)

Thoracophelia furcifera Ehlers, 1897, pp. 101–103, pl. 7, figs. 164–167.

Euzonus (*Thoracophelia*) *furciferus* Hartman, 1959, p. 431.

Material examined: Playa Espadilla, 1 March 1971 (2).

Distribution: *Euzonus furciferus* was originally described from intertidal areas in Punta Arenas, Chile; the present record comes from a similar environment in Pacific Costa Rica.

Remarks: The present two specimens fit with the species as originally described, including the numbers of setigers in the different parts of the body, the shape of the branchiae and the number and shape of the anal cirri.

Family Capitellidae

Notodasus dexterae, new species

Figure 2b–f

Material examined: Naos Island, 30 July 1969 (30, TYPE).

Description: The holotype is an incomplete specimen with 29 setigers that is 17 mm long and 1 mm wide. The anterior end is inflated; the rest of the body is cylindrical. The specimens are greyish yellow in color. The peristomium and the first five setigers are strongly areolated (Fig. 2b); the remainder of the thoracal setigers less so. All thoracal segments are biannulated; the abdominal segments are single-ringed.

The prostomium is a flattened conical structure; the peristomium is considerably wider and is anteriorly inflated. All eleven thoracal setigers are biramous and the setal bundles emerge from deep pockets.

The two first abdominal setigers have short, conical parapodia; both noto- and neuropodia are similar and setae emerge from conical protuberances rather than from pockets as in the thorax. All later abdominal setigers (Fig. 2e) are similar; the neuropodia are long welts that are separated ventrally only by the ventral nerve cord. The neuropodia are long enough laterally to be visible from the dorsal side. The large, nephridial papillae above the neuropodia are on the dorsal side, and medial to these papillae near the dorsal midline, are two slightly raised ridges which represent the notopodia. These ridges have setae only in the abdominal parapodia 3 to 14; further posteriorly, the notopodia are completely reduced. In these posterior setigers, (Fig. 2f), the nephridial papillae are connected across the dorsum by a ciliated ridge.

All thoracal setigers and the first two abdominal setigers have pointed, capillary setae only. The remaining abdominal setigers have hooded uncini only. Each uncinus (Figs. 2c–d) has a large main fang and a crest of nine smaller teeth. These teeth are arranged so that there are five in a lower row, three in the next row and a single tooth above the others. The margin of the hood is smooth.

←

Figure 3. Americonuphis reesei, new genus, new species: a, anterior end, ventral view, × 7; b, first parapodium, anterior view, × 45; c, distal end of composite falciger from first parapodium, lateral view, × 540; d, branchial parapodium, anterior view, × 46; e, pectinate seta, full view, × 1090.

TABLE 1. Geographical distribution of polychaetes reported from Central American sandy beaches.

Species	Previously known distribution
I. SPECIES FOUND IN ATLANTIC BEACHES	
Pisionidens indica	Circumtropical
Hermodice carunculata	Western Atlantic, warm waters
II. SPECIES FOUND IN PACIFIC BEACHES	
Pisione remota	Cosmopolitan
Anaitides near *multiseriata*	Eastern Pacific, warm waters
Glycera abranchiata	Western Atlantic, warm waters
Nephtys singularis	Eastern Pacific, warm waters
Americonuphis reesei	Eastern Pacific, warm waters
Diopatra obliqua	Eastern Pacific, warm waters
D. splendidissima	Eastern Pacific, warm waters
Lumbrineris monroi	Eastern Pacific, warm waters
L. zonata	Washington-Baja California
Orbinia johnsoni	Eastern Pacific, warm waters
Paraonides platybranchia	Eastern Pacific, warm waters
Magelona riojai	Western Atlantic, warm waters
Cauleriella alata	Cosmopolitan
Cirratulus ?cirratus	Cosmopolitan
Piromis americana	Eastern Pacific, warm waters
Armandia ?bioculata	Washington-Southern California
Euzonus (Thoracophelia) furciferus	Chile
Notodasus dexterae	Eastern Pacific, warm waters
Chone minuta	Central and southern California
III. SPECIES FOUND ON BOTH SIDES OF THE ISTHMUS OF PANAMA	
Sthenelais maculata	Eastern Pacific, warm waters
Ceratonereis mirabilis	Circumtropical
Hemipodus armatus	Western Mexico
Dispio uncinata	The Americas, warm waters
Scolelepis agilis	Western Atlantic, warm waters

Distribution: *Notodasus dexterae* is known from intertidal sands on an island off Panama.

Remarks: The genus *Notodasus* was previously represented by one species; *N. magnus* which was described from deep water off western Mexico by Fauchald (1972:246–247, pl. 51, fig. a–c). *Notodasus magnus* has notopodia developed in all abdominal setigers and the neuropodium is absent in the first thoracal setiger whereas, *N. dexterae* lacks notopodia in posterior abdominal setigers and all thoracal setigers are complete.

It gives me pleasure to name this species after Deborah Dexter of California State University, San Diego who collected this very interesting material.

Family Sabellidae

Chone minuta Hartman, 1944

Chone minuta Hartman, 1944b, pp. 280–281, pl. 23, figs. 50–52, pl. 24, figs. 59–60; Hartman, 1969, pp. 671–672, 5 figs.

Material examined: Naos Island, 29 August 1969 (8); Playita Blanca, 9 February 1971 (1).

Distribution: *Chone minuta* is known from central and southern California in rocky areas. The present records are from Costa Rica and Panama in sandy beaches, but as indicated above, the specimens cannot be separated from *C. minuta* as presently described.

Remarks: The present specimens agree with *C. minuta* in that the spatulate setae are sharply mucronated; the radioloi are united very high up on the crown and the number of segments is similar to that described for the species from central California.

DISCUSSION

Twenty-six species were found in the present collections; nineteen were in material from the Pacific Ocean only (Table 1) and of these, fourteen have their total distribution limited to the eastern Pacific Ocean. Three species are presumed to be cosmopolitan, but have not been

found on the western Atlantic coasts of Central America. Two species previously were recorded from the Caribbean Sea only, but we did not find them in our collections from the Atlantic coasts. Two species have been found in beaches on the Atlantic coast only; one of these appears limited to warm water in the Atlantic Ocean; the other has a reported circumtropical distribution, but was absent from our eastern Pacific collections. Five species have been found in sandy beaches on both sides of the isthmus of Panama; two were previously known only from the eastern Pacific, one had been reported only from western Atlantic areas, another has been known from both coasts of the Americas, and one is circumtropical.

A total of 24 species were found in the Pacific beaches and only seven in the Atlantic beaches. This difference may appear puzzling since the eastern Pacific Ocean usually is considered impoverished when compared to other faunal areas at similar latitudes (Ekman, 1953:39–44). This is demonstrable for hard-bottom faunas, *e.g.* coral reefs, but a close investigation of the lesser known soft-bottom areas may very well change our views of the faunal relations between the two oceans.

Under some circumstances, the difference in numbers of species of polychaetes might be due to a sampling bias; this cannot be the case in this instance since the same investigators sampled beaches in both areas.

Dexter (1972) discussed the community structure of two Panamanian beaches, one on each side of the isthmus. Some of her material is treated above. Dexter demonstrated that the variation in the physical parameters was greater on the Pacific coast than on the Atlantic coast due to upwelling and that this upwelling had been associated with a greater primary productivity on the west coast. In terms of the organisms present, Dexter's survey shows that the whole fauna is distributed essentially as is the polychaete fraction with the numbers of species and the biomass very much higher on the Pacific than on the Atlantic coast. The species diversity is lower on the Pacific coast than on the Atlantic side. This lower species diversity is probably related to the lower stability in physical parameters on the Pacific coast. The higher numbers of species of polychaetes and the higher biomass probably are related to the higher productivity on the west coast. There is no contradiction between this result and the previous findings of a depauperized fauna on the Pacific side. The earlier conclusion was based on the coral reef fauna and the temperature variation on the Pacific coast is so great (Dexter, 1972:449) that only a limited number of reef species are able to survive. Species burrowing in sand and mud are apparently not as sensitive to temperature fluctuations as their hard-bottom relatives.

ACKNOWLEDGMENTS

The author is very grateful to Deborah M. Dexter, who collected the material. Olga Hartman made the first description of *Americonuphis reesei* and allowed the author to use this as the base for the present description. The excellent drawings of this species were made by Anker Petersen.

LITERATURE CITED

Aiyar, R. G., and K. H. Alikunhi. 1940. On a new pisionid from the sandy beach, Madras. Rec. Indian Mus., Calcutta, 42:89–107.

———. 1943. Change of the generic name *Pisionella* Aiyar and Alikunhi, 1940, into *Pisionidens* (Polychaeta). Current Sci., Bangalore, 12:120.

Andrews, E. A. 1891. Report upon the Annelida Polychaeta of Beaufort, North Carolina. Proc. U.S. Nat. Mus., 14:277–302.

Day, J. H. 1967. A monograph of the polychaeta of Southern Africa. Publ. British Mus. (Nat. Hist.), 656: XXIV and XVI, 878 pp.

Dexter, D. M. 1972. Comparison of the Community Structure in a Pacific and an Atlantic Panamanian sandy beach. Bull. Mar. Sci., 22:448–462.

Ehlers, E. 1897. Polychäeten. Hamburger Magalhaenischen Sammelreise. Friedrichsen & Co., Hamburg, 148 pp.

———. 1901. Die Polychäeten des magellanischen und chilenischen Strandes. Ein faunistischer Versuch. Festschrift zur Feier der Hundertfünfzigjährigen Bestehens des königlichen Gesellschaft der Wissenschaften zu Göttingen. (Abh. Math.-Phys.) Wiedemannsche Buchhandlung, Berlin, 232 pp.

Ekman, S. 1953. Zoogeography of the Sea. Sidgwick and Jackson, Ltd., London, XIV and 417 pp.

Fauchald, K. 1968. Onuphidae (Polychaeta) from western Mexico. Allan Hancock Monogr. Mar. Biol., 3:1–82.

———. 1970. Polychaetous annelids of the families Eunicidae, Lumbrineridae, Iphitimidae, Arabellidae, Lysaretidae and Dorvilleidae from western Mexico. Allan Hancock Monogr. Mar. Biol., 5:1–335.

———. 1972. Benthic polychaetous annelids from deep water off western Mexico and adjacent areas in the eastern Pacific Ocean. Allan Hancock Monogr. Mar. Biol., 7:1–575.

Fauvel, P. 1914. Annélides polychètes de San Thome (Golfe de Guinée) receuillis par M. Ch. Gravier. Arch. zool. exp. gen. Paris, 54:105–155.

Foster, N. M. 1971. Spionidae (Polychaeta) of the Gulf of Mexico and the Caribbean Sea. Studies on the Fauna of Curacao and other Caribbean Islands, 36:1–183.

Friedrich, H. 1956. Mitteilungen über neue und wenig bekannter Polychaeten aus Mittel- und Südamerika. Senckenbergiana, Biologica, 37: 57–68.

Grube, A.-E. 1863. Beschreibung neuer oder wenig bekannter Anneliden. Arch. Naturg., Berlin, 29:37–69.

Hartman, O. 1938. Descriptions of new species and new generic records of polychaetous annelids from California of the families Glyceridae, Eunicidae, Stauronereidae, and Opheliidae. Univ. California Publ. Zool., 43:93–112.

———. 1939. Polychaetous annelids. Pt. 1. Aphroditidae to Pisionidae. Allan Hancock Pacific Exped., 7:1–156.

———. 1940. Polychaetous annelids. Pt. 2. Chrysopetalidae to Goniadidae. Allan Hancock Pacific Exped., 7:173–287.

———. 1944a. Polychaetous annelids. Pt. 5. Eunicea. Allan Hancock Pacific Exped., 10:1–238.

———. 1944b. Polychaetous annelids from California, including the description of two new genera and nine new species. Allan Hancock Pacific Exped., 10:239–310.

———. 1950. Goniadidae, Glyceridae and Nephtyidae. Allan Hancock Pacific Exped., 15: 1–181.

———. 1951. The littoral marine annelids of the Gulf of Mexico. Publ. Inst. Mar. Sci., Texas, 2:7–124.

———. 1956. Polychaetous annelids erected by Treadwell, 1891 to 1948, together with a brief chronology. Bull. Amer. Mus. Nat. Hist., 109: 239–310.

———. 1959, 1965. Catalogue of the polychaetous annelids of the world. Allan Hancock Foundation Occas. Paps., 23:1–628, 1959; Supplement and index, 1–197, 1965.

———. 1961. Polychaetous annelids from California. Allan Hancock Pacific Exped., 25:1–226.

———. 1968. Atlas of errantiate polychaetous annelids from California. Allan Hancock Foundation, 828 pp.

———. 1969. Atlas of sedentariate polychaetous annelids from California. Allan Hancock Foundation, 812 pp.

Hartmann-Schröder, G. 1959. Zur Ökologie der Polychaeten des Mangrove-Estero-Gebietes von El Salvador. Beitr. Neotrop. Fauna, 1:69–183.

Johnson, H. P. 1901. The polychaeta of the Puget Sound region. Proc. Boston Soc. Nat. Hist., 29: 381–437.

Jones, M. L. 1962. On some polychaetous annelids from Jamaica, The West Indies. Bull. Amer. Mus. Nat. Hist., 124:169–212.

———. 1963. Four new species of *Magelona* (Annelida, Polychaeta) and a redescription of *Magelona longicornis* Johnson. Amer. Mus. Novit., 2164:1–31.

Kinberg, J. G. H. 1865. Annulata nova. Öfv. Vet. Akad. Stockholm, Förh., 21:559–574.

———. 1866. Annulata nova. Öfv. Vet. Akad. Stockholm, Förh., 22:167–179.

Laubier, L. 1967. Quelques annélides polychètes interstitielles d'une plage de Cote d'Ivoire. Vie et Milieu, Ser. A, 18:573–594.

Monro, C. C. A. 1928. On the polychaeta collected by Dr. Th. Mortensen off the coast of Panama. Vidensk. Medd. dansk Naturh. Foren., 85:75–103.

———. 1933a. The polychaeta errantia collected by Dr. C. Crossland at Colon in the Panama region and the Galapagos Islands during the expedition of the S. Y. St. George. Proc. Zool. Soc., London, 1933:1–96.

———. 1933b. The polychaeta sedentaria collected by Dr. C. Crossland at Colon in the Panama region and the Galapagos Islands during the expedition of the S. Y. St. George. Proc. Zool. Soc., London, 1933:1039–1092.

Moore, J. P. 1909. Polychaetous annelids from Monterey Bay and San Diego, California. Proc. Acad. Nat. Sci., Philadelphia, 61:235–295.

Müller, O. F. 1776. Zoologica Danicae Prodromus seu Animalium Daniae et Norvegiae indigenarum characters, nomine et synonyme imprimis popularium. Havniae, XXXII and 274 pp.

Pallas, P. S. 1766. Miscellanea Zoologica. Hagae, p. 77.

Pettibone, M. H. 1963. Revision of some genera of polychaete worms of the family Spionidae, including the description of a new species of *Scolelepis*. Proc. Biol. Soc. Washington, 76: 89–104.

Rioja, E. 1941. Estudios anelidologicos III. Datos para el conocimiento de les fauna de poliquetos de las costas del Pacifico de Mexico. Ann. Inst. Biol. Mexico, 12:669–746.

Siewing, R. 1954. Zur Verbreitung von *Pisionidens indica* Aiyar and Alikunhi. Kieler Meeresforschungen, 10:81–83.

Southern, R. 1914. Archiannelida and polychaeta. Clare Island Survey. Proc. Roy. Irish Acad., Dublin, 31:1–160.

Treadwell, A. L. 1901. The polychaetous annelids of Porto Rico. Bull. U.S. Fish. Comm., 20: 181–210.

Verrill, A. E. 1873. Report upon the invertebrate animals of Vineyard Sound and the adjacent waters, with an account of the physical characters of the region. Rept. U.S. Fish. Comm., 1871–1872:295–778.

Accepted for publication January 2, 1973.