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POLYCHAETOUS ANNELIDS FROM LOWER CALIFORNIA AND THE PHILIPPINE ISLANDS IN THE COLLECTIONS OF THE AMERICAN MUSEUM OF NATURAL HISTORY

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Leodicidae

Leodice viridis Gray

Figure 1

Palola viridis GRAY (STAIR), 1847, pp. 17, 18.
Leodice viridis TREADWELL, 1922, pp. 131-133, Pl. I, figs. 1-7, text figs. 1, 2. See this paper for other references.

A single mutilated specimen collected at Digos, Gulf of Davao, Philippine Islands, by W. G. Van Name. Comparison of this specimen with some collected by myself in Samoa in 1920 established the identity of the specimen, and a rereading of the literature enables me to make the following corrections. Gray's original spelling of the generic name was *Palola*. The dorsal cirri are longer and the ventral pads carrying cirri on their outer ends more prominent than is indicated in Treadwell's figures 3 and 4 (1922). The teeth on the outer large maxillary plate are more prominent than is shown in figure 6. Also, what I overlooked in my earlier study of the Samoan material but which appeared in a reexamination of one specimen is that occasionally two or three branched gills appear (Fig. 1). In this respect it agrees with *L. cariboea* of the West Indies (Treadwell, 1921, p. 47). Most of the "palolo" literature gives little attention to structural details, dealing almost exclusively with the phenomena of the swarming. Ehlers (1898, p. 7) and Treadwell (1922, p. 7) both described the gills as single filaments, and the above observation seems to be new.

A close relative of *L. viridis* is *L. sicilensis* Grube which has the reputation of being a cosmopolitan species, it having been described from widely separated localities. I have a strong suspicion that polychaete taxonomists have classed as *sicilensis* all specimens having heavy mandibles, feebly developed maxillary plates

and single (or apparently single) branched gills, without giving their material a sufficiently careful examination. I, for example, Treadwell (1901, p. 196), listed *sicilensis* from Porto Rico but later, after comparing these specimens with *L. cariboea* Grube from the Dry Tortugas (Treadwell, 1921, p. 49), concluded that the Porto Rico specimen was *cariboea*. Munro (1933, p. 63) put my *cariboea* back into *sicilensis* but gave no evidence of having made any reexamination of either material or literature. I have made a careful comparison of my description of *cariboea* with that given by Ehlers (1864-1868, pp. 353-358) of *sicilensis*, and there appear to be important differences between them in the structure of parapodia, jaws and setae. I see no reason to change my opinion expressed in 1921.

A suggestion was earlier made by Treadwell (1922, p. 130) that the species of *Leodice* characterized by the possession of heavy mandibles, feebly developed maxillary plates and few gill branches form a group sufficiently different from other species of this genus to merit at least a subgeneric name. Hartman (1938a) proposed such a grouping in a new genus to which she gave the name *Palolo* as being the name given it by Gray. Gray's diagnosis was based exclusively on swarming posterior ends, his "tentacles" being the anal cirri, but there is no reason why his term should not be employed. If used it should be spelled *Palola*.

Nereidae

LEPTONEREIS KINBERG

Leptonereis mexicana, new species

Figures 2 to 9

Three bottles contained material of this species, two of them outside Topolobampo Bay

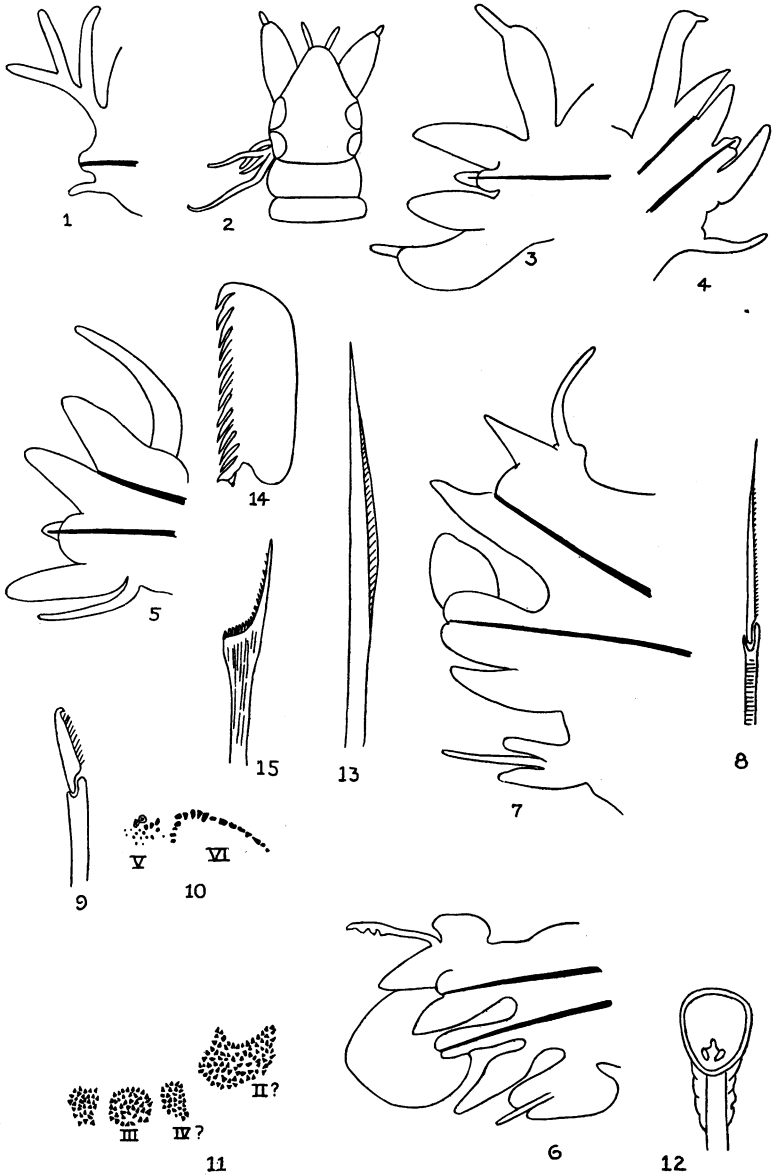


Fig. 1. Gilled parapodium of *Leodice viridis* Gray, $\times 14$.

Figs. 2-9. *Leodice mexicana*, new species. Fig. 2, head, $\times 5$; fig. 3, first parapodium, $\times 34$; fig. 4, seventh parapodium of male, $\times 14$; fig. 5, unmodified parapodium from anterior region of male, $\times 34$; fig. 6, epitokous parapodium of male, $\times 14$; fig. 7, epitokous parapodium of female, $\times 14$; fig. 8, neuroseta with slender distal joint, $\times 125$; fig. 9, neuroseta with short distal joint, $\times 125$.

Figs. 10-11. *Pisenoe coeruleus* Hoagland. Fig. 10, paragnaths of the basal ring much enlarged; fig. 11, paragnaths of the distal ring much enlarged.

Figs. 12-15. *Pomatoceros davaoensis*, new species. Fig. 12, operculum, $\times 2$; fig. 13, thoracic seta, $\times 185$; fig. 14, thoracic uncinae, $\times 250$; fig. 15, abdominal seta, $\times 250$.

at 25°30' N., 109°12'W.; the other, near Grande Pt. San Jose Bay, Lower California. All specimens are in the epitokous condition. The last and one of the other two bottles contain only a single male; the other bottle, both males and females. The single males are dark brown in color, the body stout and well rounded and somewhat over 55 mm. long. Both sexes in the other lot are shorter, not over 45 mm. long, the body very slender and entirely devoid of color except as this shows in the jaws, eyes and aciculae, the latter easily visible under a low magnification. In anterior somites these are brown; in posterior somites, black. If the pharynx is retracted the jaws are easily seen through the translucent body wall. There are no paragnaths. The superficial differences between these two lots are so great that they appear to belong to different species, but in all essential details of structure they are identical. I have chosen as types two of the smaller ones because here it is possible to compare the two sexes in individuals of approximately the same size. The male (type) is entire, has a length of about 45 mm. and a prostomial width of about 0.75 mm. In anterior somites the width of the body counting to the ends of the setae is 2 mm. In later somites it is somewhat wider due to the greater length of the epitokous setae. There is one pair of relatively long anal cirri. The female (cotype) is of approximately the same size as the male but is incomplete posteriorly. The epitokous part of the body is full of eggs.

The prostomium (Fig. 2) is drawn from one of the larger specimens, the only difference between this and the smaller ones being that in the latter the dorsal posterior tentacular cirrus is relatively longer and the tentacles closer together at their bases. The large brown eyes make up most of the lateral borders of the prostomium which narrows just in front of the anterior eyes and extends forward to a rounded apex. The tentacles are slender. The basal joint of the palp is heavy, the terminal joint unusually small and cirrus-like. The relative length of peristomium and tentacular cirri depends on the degree of contraction. In the smaller specimens the posterior dorsal tentacular cirrus is longer than is shown here, and the anterior dorsal one does not reach the second somite. The protruded pharynx is about 1 mm. long. The jaws are dark brown by reflected, much lighter by transmitted, light. Each has eight small rounded teeth. The first somite is about twice as long as the second, the following ones about as long as the second. In the male the first parapodium is uniramous; later ones, biramous. In some of the smaller specimens five, in others seven, of the first parapodia have the modified cirri characteristic of the epitokous male. Figure 3 is of the first parapodium showing the large dorsal and ventral cirri. Figure 4 is of the seventh and shows the large dorsal cirrus. The ventral one is much smaller than in the first. Behind these in the anterior region of the body the parapodia (Fig. 5) have two conical dorsal

lips with a slender cirrus extending beyond the dorsal lip and an acicula coming to the surface at the junction of the two lips. The neuropodium has a setal lobe with conical and rounded lips and a ventral lobe similar to those of the notopodium but more rounded at the end. The ventral cirrus is slender and does not reach the end of the lobe. This type of parapodium occurs in both large and small specimens. In the large individuals were some other irregularly distributed parapodia which I did not see in the smaller. They are large enough so as to be easily recognized under low magnification, especially in a dorsal view, because while the neuropodium is not especially modified and the notopodial lobes are about as in other parapodia, the whole basal portion of the notopodium is much enlarged and thickened. The dorsal cirrus is smaller and the ventral cirrus a mere rudiment. This last feature may have been accidental.

Behind the region of the fiftieth somite the parapodia have the characteristic epitokous form (Fig. 6). There is a lobulated dorsal cirrus with a wing-like lobe not attached directly to it but located on the body wall just mesad of the cirrus base. The notopodium has two broadly conical lobes with the acicula coming to the surface between their bases. The setal lobe of the neuropodium is rounded, with the acicula reaching the surface at its end. Ventral to this is a lobe with lanceolate outline. Posterior to these parts is a broad lobe which covers them and extends beyond the whole neuropodium. The ventral cirrus is a slender structure coming to the surface through a depression in the end of a broad wing-shaped lobe.

In the female the anterior somite and the prostomial structures resemble those of the male. In one specimen it appeared that the second as well as the first somite was uniramous but probably this was exceptional. The first parapodium has enlarged dorsal and ventral cirri; the others agree in general with the unmodified male ones. The epitokous parapodium of the female (Fig. 7) differs from that of the male in that the notopodium is much enlarged, though its terminal lobes are about as they are in the male, the dorsal cirrus is not lobulated and there is no wing near its base. The neuropodium is also much larger than it is in the male, but the lobe posterior to it is smaller. The ventral neuropodial lobe is heavier and is not constricted at its base, and the ventral cirrus is separated from it by a wider space. The extreme posterior parapodia do not show epitokous changes unless a thickened dorsal cirrus may be so interpreted.

The setal structure is essentially the same in both sexes. Notosetae are all homogomphous, the distal joints sharp-pointed, toothed along one edge and of varying lengths. The neurosetae are in two groups, one above and one below the acicula, the former similar to the notosetae, the latter heterogomph. Some (Fig. 8) are similar in other respects to the notosetae, others (Fig. 9) have short terminal joints, these

having rounded ends and a row of stout spikes along one margin. The epitokous setae all have very long and prominently cross-striated basal joints and broad paddle-shaped terminal ones, the latter toothed along one margin.

The type is Cat. No. 3222 in the collections of The American Museum of Natural History, Department of Living Invertebrates.

PISENOE KINBERG

Pisenoë coeruleus Hoagland

Figures 10, 11

Nereis (*Heteronereis*) *coeruleus* HOAGLAND, 1920, pp. 608-610, Pl. 47, figs. 13-16; Pl. 48, figs. 1-4.

Perinereis neocaledonica PRUVOT, 1930, pp. 50-54, Pl. 3, figs. 77-79, text fig. 4.

Pruvot suggested that his *neocaledonica* is synonymous with Hoagland's *coeruleus* and this was later confirmed by Hartman (1938b) after a reexamination of Hoagland's type in the United States National Museum. In all external features my specimens agree with both Pruvot's and Hoagland's descriptions. Concerning paragnath structures the case is not so clear. Diagnoses of the genus *Perinereis* (Kinberg, 1865, p. 175; Fauvel, 1923, pp. 352-358) call for the presence of paragnaths in all eight groups and peculiar oblong plates (probably to be regarded as a result of the fusion of separate paragnaths) in group VI. In *neocaledonica* Pruvot found I and II absent and no plates in VI. He recognized that this structure fitted the specimens into no genus as yet defined but put it in *Perinereis* on the ground that the arrangement of paragnaths in VI in a single row is an approach to the formation of such plates. Figure 10 represents groups V and VI of my material, VI being shown only on one side. Pruvot's and Hoagland's figures of these groups are essentially similar to this. VII and VIII also agree. Hartman found "plaques" in group VI of Hoagland's specimen, presumably meaning the long plates so noticeable in *Perinereis*. If this is correct, Hoagland's specimen belongs to a different genus from either Pruvot's or mine. Pruvot found no paragnaths in either group I or II, but Hoagland figures I as a small round group. Hartman says I is absent from Hoagland's specimen. Hoagland figures III as made up of three patches, while Pruvot figures it as a mass

extending laterally so as to be almost in contact with IV. Figure 11 shows the ventral paragnaths on the distal ring of my specimen, and the three groups at the bottom are exactly like Hoagland's figure of group III. The fourth, larger group at the right has a mate on the opposite side which is not shown in the figure. This patch is regarded as group IV by both Pruvot and Hoagland.

It seems reasonable to conclude that a study of a series of these annelids would show that I is absent and that VI is as represented by Pruvot, Hoagland and myself. As a tentative suggestion I would identify the groups of the distal ring as indicated in my figure 11, III being the centrally placed one while IV is made up of the smaller ones on either side of III. The larger ones on the margins represent II. In the normal position of the plates these groups are nearer the dorsal surface than is indicated in the flat drawing. If this is correct, this leaves only group I as absent, placing the specimen in genus *Pisenoë* Kinberg. In all other characters the specimen agrees with Kinberg's diagnosis of this genus.

Three specimens collected by W. G. Van Name, November 7, 1937, at Santa Cruz, Gulf of Davao, Philippine Islands.

Serpuidae

POMATOCEROS PHILIPPINI

Pomatoceras davaoensis, new species

Figures 12 to 14

In the type specimen the abdomen is 26 mm. long, the thorax 6 mm., the somewhat coiled gills 6 mm. The widest part of the abdomen measures 6 mm., all measurements being on preserved material. The body is uncolored except for dark blue patches on collar and thorax, being especially numerous on the dorsal surfaces of each. The operculum arises from the mid-dorsal line, being about equidistant from the bases of the two gills. The basal part of the opercular stalk is oval or cylindrical in cross section and has a smooth surface. In the type, 2 mm. from the bottom, this stalk widens and flattens to a width of 3 mm. and from here to the apex is composed of a central transversely wrinkled stem with, on either side, a thinner wing, each narrower than the stem (Fig. 12). On the ventral surface the distinction between stem and wing is less obvious than on the dorsal. The opercular plate is ovate in outline, with the broader end anterior. In most specimens the opercular spines seem to have been

eroded away, but apparently a normal condition would be three lying in a triangle toward the center of the plate, the anterior one almost in the center of the plate, the others lying posterior to this. All spines are relatively short and blunt-ended and show no trace of wings (Fig. 12).

The basal part of the gill is tightly coiled. The filaments in the type are basally united by a membrane to a distance of 1.5 mm. Beyond this membrane the filaments widen, and their tips are naked. The longest barbules are about twice as long as the diameter of the stalk, and there is no trace of either pigment or eyes. At base of dorsalmost gill filament on either side is a rounded twisted plate, and ventral to these a thin membrane extends across the body and at either end continues out into the bases of the gills. In one specimen (not the type), there is a yellowish pigment on the inner bases of the gills. The collar is very thin, more or less folded, its margins reflexed ventrally, its dorsal portion longest, reaching beyond the bases of the gill filaments. The thoracic membrane is feebly developed, its lateral width being less than the length of the dorsal setae.

There are seven thoracic somites, the first having setae only; the others have setae and uncini. The collar setae (those of the first somite) are long but protrude to only a short distance beyond the collar surface. The stalks are flattened and noticeably striated longitudinally. Near the apices they are slightly wider and geniculate and narrow to elongate acute points. The striation of the stalk continues into the terminal portion. In addition, finer striations start at about the middle of this wider portion and extend diagonally toward the convex margin where their ends form a marginal row of very fine teeth. In full face there are seen to be two toothed wings, giving the terminal portion a lanceolate outline. The setae of the other thoracic somites (Fig. 13) have central stalks ending in acute points and two wings which show as one when seen in profile. Striations similar to those of the first setae are present but in much lesser degree of development. The unciniae are pectinate (Fig. 14), with twelve teeth in addition to the large bifurcate basal one. Similar uncini occur in the abdomen.

The abdominal setae (Fig. 15) have slender stems, their apices broadened and flattened, one end being drawn out into a long slender process. There are prominent teeth along the terminal margin of this flattened portion, and smaller ones are on the margins of the lateral elongation. The stalk is noticeably elongated.

Collected at Padada, Gulf of Davao, Philippine Islands. The type is Cat. No. 3220 in the collections of The American Museum of Natural History, Department of Living Invertebrates.

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