

A REVISION OF THE GENUS *LOANDALIA* MONRO WITH DESCRIPTION OF A NEW GENUS AND SPECIES OF PILARGIID POLYCHAETE¹

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ABSTRACT: A re-examination of the genotype of *Loandalia*, *L. aberrans* Monro (1936) demonstrated several unique morphological features not previously noted. A new genus, *Parandalia*, is established to contain the other species usually considered in *Loandalia*. Type species is *Parandalia ocularis*, new species; others include *P. americana*, *P. fauveli*, *P. gracilis* and *P. indica*.

During the examination of some polychaetous annelids from the Santa Barbara Channel, California taken in connection with a study of oil spill, January 1969, a new species of a pilargiid polychaete was recognized. It became apparent that the genus *Loandalia* Monro (1936) as presently accepted (Pettibone, 1966) contained two different groups of species. The holotype of *Loandalia aberrans* Monro (1936), which is the genotype, was borrowed from the British Museum (Natural History) and re-examined. As a consequence of these studies it was found that *Loandalia* can be accepted only as a monotypic genus; all the species presently included in that genus are here removed to a new genus, *Parandalia*.

The possibility that *Talehsapia* Fauvel (1932) could be a valid generic name for these species was considered and discarded. *Talehsapia* differs from all known pilargiids in the presence of jaws. Further, prostomial features do not resemble the pilargiids as presently accepted. *Talehsapia* is here considered *incertae sedis* and is not accepted as a valid genus in the family Pilargiidae.

Ancistargis Jones (1961) was considered a synonym of *Ancistrostylis* McIntosh (1879) by Pettibone (1966). A median antenna is present in *Ancistrostylis* and absent in *Ancistargis*. The median antenna is often difficult to detect in species of *Ancistrostylis* as remarked by Pettibone, but the character is here considered to be of sufficient importance to warrant maintaining the generic status of *Ancistargis*.

The family includes nine genera; *Ancistargis* Jones (1961) from Gulf of Mexico, *Ancistrostylis* McIntosh (1879) from Greenland, *Cabira* Webster (1879), *sensu* Pettibone (1966), *Loandalia* Monro (1936) off Angola, Africa, *Otopsis* Ditlevsen (1917) from near Iceland, *Parandalia*, new genus, *Pilargis* Saint-Joseph (1899) from France, *Sigambra* Müller (1858) from Brazil and *Synelmis* Chamberlin (1919) from the south Pacific Ocean.

The holotype and paratype specimens of the

new species have been deposited in the collection of the Allan Hancock Foundation.

Key to Genera of Pilargiidae

1. Notopodia with stout emergent hooks or spines 2.
Notopodia without emergent hooks or spines 7.
2. Notopodia with recurved emergent hooks 3.
Notopodia with stout, straight spines 6.
3. Peristomium dorsally entire *Ancistargis*
Peristomium dorsally incised 4.
4. Dorsal and ventral cirri reduced or absent; parapodia reduced, body subcylindrical *Cabira*
Dorsal and ventral cirri well developed, parapodia well developed, body dorso-ventrally flattened 5.
5. Antennae shorter than palps; integument papillated *Ancistrostylis*
Antennae longer than palps; integument smooth *Sigambra*
6. Prostomial antennae and peristomial cirri present, parapodia sharply set off from the body *Synelmis*
Prostomial antennae and peristomial cirri absent, parapodia distinct, but not set off from the body *Parandalia*
7. Prostomial antennae and peristomial cirri absent *Loandalia*
Prostomial antennae and peristomial cirri present 8.
8. Prostomium with two antennae, biarticulate palps present *Pilargis*
Prostomium with three antennae, palps without palpostyles *Otopsis*

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Parandalia, new genus

Type species: *Parandalia ocularis*, new species.
The anterior part of the body is somewhat inflated; median and posterior parts of the body are cylindrical. A pair of eyes may be present on the anteriormost segments.

The small prostomium is indistinct; a pair of well developed, biarticulate palps with button-shaped palpostyles is present. The peristomium is separated from the prostomium by a shallow, indistinct segmental groove. Peristomial cirri are absent. The proboscis is cylindrical when eversed and may terminate with several sensory papillae. The proximal surface of the proboscis is smooth.

The first parapodia are uniramous, further back all parapodia are biramous. A thick, stout, straight, crystal-clear spine emerges from the median and posterior notopodia. All notopodia are poorly developed and have at most one or two capillary setae in addition to the spine. Neuropodia where fully developed, are slightly tapering with blunt, evenly rounded tips. Dorsal cirri are absent; ventral cirri are present as small, papillar lobes. Branchiae are absent.

The neuropodia have several geniculate, pointed, simple setae. Each seta has a cylindrical stalk and a blade provided with numerous transverse rows of slender teeth.

The pygidium is an anal plaque which may have one to several short, blunt anal cirri.

Parandalia as defined above includes all species previously assigned to *Loandalia* with the exception of the type species of the latter genus. A re-examination of the type specimen of *Loandalia aberrans* Monro (1936) showed that notopodial spines are absent and that branchiae are well developed in the posterior part of the body. In addition, the two first neuropodia have thick, black acicula; a feature not found in any other described pilargiid. The species presently assigned to *Parandalia* include: *P. americana* (Hartman, 1947); *P. gracilis* (Hartman-Schröder, 1959); *P. fauveli* (Berkeley and Berkeley, 1941); *P. indica* (Thomas, 1963); and the genotype, *P. ocularis*, new species.

The different species in the genus can be differentiated as indicated in the key below and in the discussion of *P. ocularis*, new species.

Key to Species of *Parandalia*

1. All parapodia biramous 2.
Anteriormost parapodia uniramous,
all others biramous 3.
2. A single notopodial seta present;
four-five neuropodial setae present ... *P. gracilis*
Two notopodial setae present; four-twelve
neuropodial setae present *P. indica*

3. Eyes present; six-seven neuropodial
setae in each parapodium *P. ocularis*
Eyes absent; twelve-fifteen neuropodial
setae in each parapodium 4.
4. Emergent notopodial spine from
setiger 2 *P. americana*
Emergent notopodial spine from
setiger 7 *P. fauveli*

Parandalia ocularis, new species

Material examined: AHF VELERO 12856, April 3, 1969, 34°23'12"N, 119°38'18"W, 24 fms silty-clay, gear: Campbell grab, paratype (1). AHF VELERO 12860, April 3, 1969, 34°22'58"N, 119°38'05"W, 23 fms, silty-clay, gear: Campbell grab, HOLOTYPE. AHF VELERO 12864, April 4, 1969, 34°21'15"N, 119°38'00"W, 25 fms, coarse sand, gear: Campbell grab, paratype (1).

Description: Three complete individuals were collected. Length of the holotype specimen is 41 mm. Width in the widest region at the third or fourth setiger is 0.5 mm without parapodia which are poorly developed in the anterior segments. Posterior to the inflated region at about setiger 20 the width is 0.4 mm without and 0.6 mm with parapodia. The number of segments is 93.

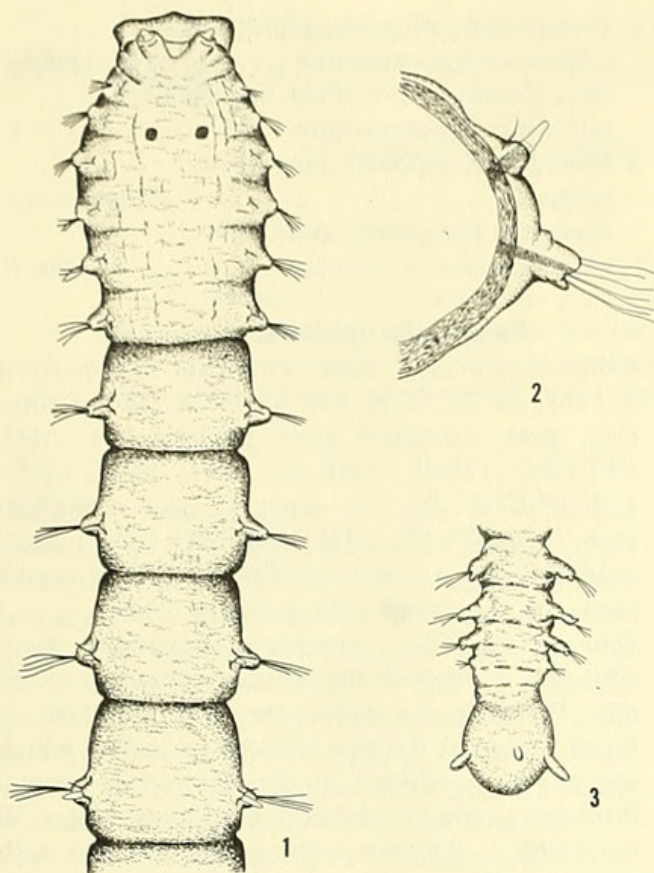
The body is a pearly white with some evidence of reddish brown colored patches on a few segments primarily near the parapodial lobes. Sections of an annulated skelopodium (chitinized secretion) cover some of the posterior segments producing a continuous reddish brown appearance. The body is cylindrical, the anterior region through the first 6 setigers is areolated and slightly dorsolaterally flattened. A pair of conspicuous, subcutaneous eyes is present on the dorsal surface between the second and third setiger. Each eye is subcircular, indicating the possible presence of a lens (Fig. 1).

The small prostomium is inconspicuous and has a pair of biarticulate palps. Each palp has a palpophore tipped with a single minute knoblike palpostyle. The palps are directed dorsally, an effect which may be somewhat accentuated by the partially everted proboscis.

The peristomial segment is slightly emarginated laterally but less distinct on the dorsal and ventral surfaces. It is similar in length to the first setiger; tentacular cirri are absent (Fig. 1).

A relatively large, cylindrical, muscular proboscis is present and terminates anteriorly with four small papillae (Fig. 4). The opening of the proboscis is horizontal.

The first 6 setigerous segments are inflated and the surface epithelium may be weakly areolated delimiting a distinct anterior region. The parapodia in this region are reduced but increase in size up



Figures 1-3. *Parandalia ocularis*, new species. Figure 1. Anterior end in dorsal view x50. Figure 2. Parapodium 14 from left side in anterior view x100. Figure 3. Posterior end in ventral view x50.

to the sixth, which is similar in size to the succeeding parapodia. The first podium of the first setigerous segment lie in notopodial positions but a gradual shift to the neuropodial positions is completed by setiger 3 or 4.

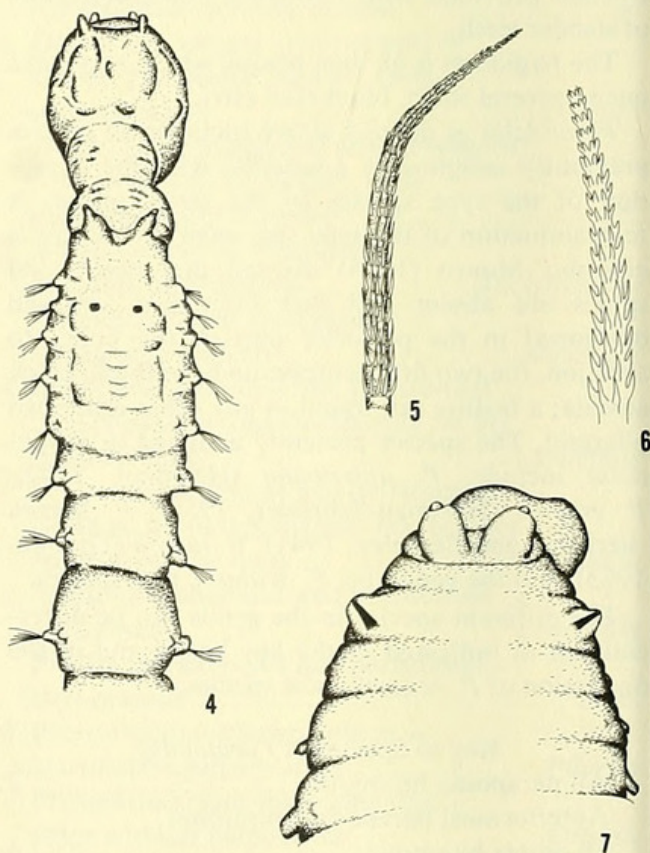
The first 2 setigerous segments have uniramous parapodia, all subsequent parapodia are unequally biramous. The first 3 notopodia on setigers 3-5 are reduced relative to those in subsequent segments, each notopodium bears 1 or 2 small, simple seta. The notopodia have become fully developed by setiger 9 or 10. A crystal-clear notopodial aciculum begins to protrude at setiger 9 becoming more fully exposed in succeeding segments.

When fully developed, each neuropodium is slightly tapering with a blunt, evenly rounded tip in all segments. The anteriormost neuropodia are reduced and do not become fully developed until setiger 6 or 7 (Fig. 1). The neuro-aciculum is fully embedded in most segments but may protrude slightly from the neuropodial lobe. A small papillar ventral cirrus at the outer basal edge of the neuropodium begins to appear about setiger 8. The cirrus is somewhat larger posterior to setiger 10 but retains the same shape in all setigers from the tenth setiger on. (Fig. 2).

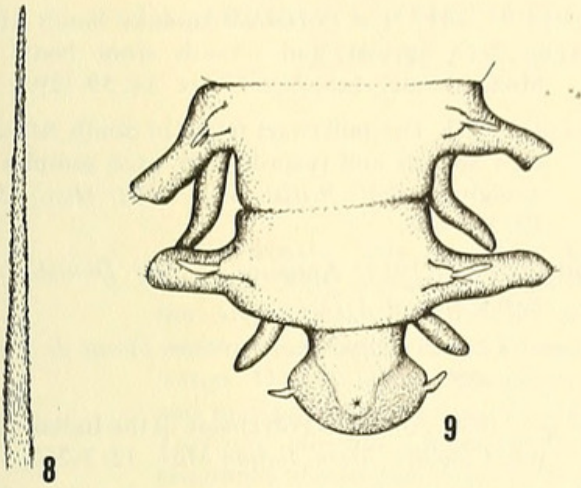
The first two neuropodial lobes each bear 4 geniculate, pointed, simple setae. The subsequent neuropodial setae are larger and may increase in number up to about 7. All neurosetae are born in a similar pattern (Fig. 2). Each neurosetae has a cylindrical stalk with an upper blade provided with many transverse rows of slender teeth (Fig. 5). The notopodial setae are short and nearly smooth.

The posterior end of the body tapers evenly and terminates in a rounded anal plaque (Fig. 3). Its margin is entire except for 3 anal cirrilike processes. Two cirri processes are lateral and one process is located mid-ventrally. The anal aperture is near the mid-ventral process and may be distinguished by a slight depression.

Discussion: Five species are known in the new genus *Parandalia*. Three specimens of *P. ocularis*, new species, were collected from the Santa Barbara Channel off southern California in silty-clay at depths of 23-25 fms. *P. fauveli*, Berkeley (1941) is known from the single type locality record in a mud flat near Newport Bay, California and generally from similar localities in southern California (Hartman, 1968). *P. americana* Hartman (1947) has been collected from sand flats at low tide near Biloxi, Mississippi and from the Gulf of Mexico



Figures 4-7. Anterior end in dorsal view x50 (4, 6) and distal end of neuroseta x950 (5, 7). Figure 4 and 5. *Parandalia ocularis*, new species, proboscis everted (4). Figure 6 and 7. *Loandalia aberrans*, Monro.



Figures 8, 9. *Loandalia aberrans*, Monro. Figure 8. Distal end of notoseta x950. Figure 9. Posterior end in dorsal view x50.

near San José Light, Guatemala in 12-13 fms. *P. indica* Thomas (1963) is known from the West Coast of India from muddy substratum in 7-10 fms. *P. gracilis* Hartman-Schröder (1959) has been collected off El Salvador.

P. ocularis is the only species having eyes; it is similar to *P. americana* and *P. fauveli* in that each has uniramous parapodia in the first segment and biramous parapodia continuous from the segment 2 or 3. *P. americana* and *P. fauveli* have emergent notopodial spines from the second and seventh setiger, respectively. These two species along with *P. gracilis* have been considered by Pettibone (1966) as synonymous with *P. fauveli*, although only the holotype of *P. fauveli* and two paratypes of *P. americana* were examined. *P. indica* is considered by the same author to be a doubtful species.

P. indica and *P. gracilis* are closely related species having biramous parapodia from the first segment. *P. gracilis* has 1 notopodial seta and *P. indica* has 2 notopodial setae on each segment.

Genus *Loandalia* Monro, 1936
Loandalia aberrans Monro, 1936

Loandalia aberrans Monro, 1936.

Material examined: DISCOVERY 274, off St. Paul de Loanda, Angola. From 8°40'15" S, 13°13'45" E to 8°38'15" S, 13°13'00" E, 64-65 m, grey mud, trawl, one specimen, holotype British Museum Natural History type number 1936-2-8-3376.

Remarks: A re-examination of the type species of the genus *Loandalia* showed that there are some details previously not reported by Monro (1936).

The anterior part of the body including the first 6 setigers is slightly inflated and the surface has a slight areolation; the median and posterior parts of the body are cylindrical. The posterior end was in

regeneration when the specimen was collected. The specimen is dull yellow with dark brown bars on each side of the notopodia in median and posterior setigers.

The prostomium is short and wide; prostomial palps are large compared to the size of the prostomium. A single peristomial segment is present; peristomial appendages are absent (Fig. 7). The proboscis was dissected out by Monro and could not be described from the remnants present.

The first 2 pairs of neuropodia are stout and conical; the first is dorsolateral in position; the second is in the normal position, somewhat ventral to the midline and directed ventrolaterally. All neuropodia from setiger 3 are similar; each has a long base with nearly parallel sides and a truncate distal margin; a small, button-shaped ventral cirrus is present near the inferior margin. The first indication of notopodial structures is on setiger 3; the notopodia are fully developed from setiger 9 and all notopodia are similar in median and posterior setigers. Each is conical and has a digitate dorsal cirrus. Each notopodial seta is slender and is evenly dense with fine hairs.

Branchiae are present from setiger 33 in all posterior segments except for the pygidium (Fig. 9). The first 10-15 pairs are short; all others are long, cirriform and project from the inner posteroventral margin of the neuropodia.

The pygidium is a small circular disk; 2 short lateral anal cirri and a single, mid-ventral anal cirrus present. The anus is on a ridge near the middle of the pygidium. As noted above, the posterior end of the specimen is in regeneration; the pygidium is thus probably considerably smaller than normal for this species (Fig. 9).

Each of the two first pairs of neuropodia has a single, thick, black aciculum with a rounded, blunt tip; setae are absent in these neuropodia. All other neuropodia have 2 closely similar kind of simple setae; near the superior margin is found 1 or 2 setae with a very coarse denticulation. The middle and inferior portion of the neuropodial fascicles consist of setae with fine denticles in closely packed whirls (Fig. 6). The neuropodial acicula are less than half as thick as the acicula in the two first neuropodia; each is yellow and bluntly cone-shaped. Acicula are absent in the notopodia; each has 2 to 3 short, slender setae. Each of the notopodial setae is cylindrical and finely pilose. Furcate setae were not observed.

The re-description of the type-specimen of *L. aberrans* differs from the original description in the following features. The exact distribution of branchiae were not mentioned by Monro and may be of some importance in separating this from

related species. Dorsal cirri or at least remnants of dorsal cirri, were found to be present on all notopodia. Such cirri were said to be absent in the original description. Monro reported the presence of thick, broken spines in the notopodia; no trace of any notopodial spines or notopodial acicula could be found in the re-examination; it is here suggested that Monro mistook the dorsal cirri for the notopodial spines usually present in the pilargiids.

Two thick, black acicula are present in each of the first neuropodia; these were mentioned by Monro, but he also assigned setae to the first neuropodia (Monro, 1936); no setae other than the acicula and no remnants of setae in the parapodial base were observed in the re-examination of the type.

The prostomium, and the peristomial segment are clearly separated from each other and from the first setiger.

The structure of prostomium and relationship between the different parts of the parapodia in *L. aberrans* are similar to those in other pilargiids. The genus *Loandalia* differs clearly from all other pilargiids in the presence of large, thick acicula in the anterior neuropodia and in the absence of notopodial spines and acicula. The presence of dorsal cirri in all notopodia separates it clearly from other species usually assigned to *Loandalia*; also branchiae have not been reported from any other member of this genus.

Distribution: The holotype and only known specimen of *L. aberrans* comes from Angola, West Africa in shelf depths.

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