

PORT PHILLIP SURVEY 1957–1963.

SIPUNCULOIDEA AND ECHIUROIDEA.

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SUMMARY.

Sipunculoids and echiuroids were poorly represented in the survey collections, but amongst the nine complete specimens collected, there were two possibly new species and two new records for Victoria. One species *Bonellia* sp., of which only the proboscis was collected, was in large numbers in the northern half of the bay.

INTRODUCTION.

Sipunculoids and echiuroids are wormlike, marine invertebrates. Although some similarities are found in their structure and habits they belong to two different groups or phyla of animals. Although they are regarded as belonging to "minor" phyla, sipunculoids and echiuroids, especially the former, are not uncommon and are found in tropical, temperate, arctic and antarctic waters. They have been collected between tide-levels from most of the sea-shores of the world and they have been dredged, sometimes at considerable depths, from the floor of the oceans.

They are detritus-feeders. They ingest large quantities of sand, mud, rock or coral fragments from their environment and extract from it any organic matter that it may contain.

Sipunculoids differ most noticeably from echiuroids in that they possess an anteriorly placed organ, called an introvert, which can be extended in front of the body of the animal or retracted within it. Echiuroids possess an anterior proboscis that extends in front of the animal but which cannot be retracted within the body. The anal aperture of a sipunculoid is an anteriorly placed structure and is always situated at the base of the introvert. The anal aperture of an echiuroid, on the other hand, is situated at the posterior extremity of the worm. A pair of setae is always present on the ventral surface of an echiuroid near its mouth.

The most recent and the most helpful papers on the classification of both sipunculoids and echiuroids are those of W. F. Fisher (Fisher 1946 and 1952). Papers on Australian sipunculoids are those of Edmonds (1955 and 1956) and of echiuroids those of Johnston and Tiegs (1920), Edmonds (1960 and 1963) and Nielson (1963). Keys to the Australian genera are given in Edmonds (1956 and 1963). A general account of the two phyla is contained in Hyman (1959).

The collection of animals from Port Phillip contained four sipunculoids and five echiuroids. The sipunculoids comprised three species and the echiuroids three, possibly four, species, one of which is represented only by its long proboscis.

Sipunculus angasi Baird was not collected on the present survey possibly because it is usually buried beneath the surface in the daytime when most of the collection was done. Edmonds 1955 records it from Portarlinton (Area 29), Brighton (Area 7), Black Rock (Area 14), Hobsons Bay (Area 2 and 3), Rosebud (69), Queenscliff (Area 58-9).

SPECIES AND LOCALITIES.

PHYLUM SIPUNCULOIDEA.

1. *Phascolosoma noduliferum* Stimpson: 1 specimen. Locality, Area 59 (24).
2. *Golfingia* sp.: 1 specimen. Locality, Area 68 (154) from sand, broken shell and weedy bottom.
3. *Dendrostomum* sp.: 2 specimens. Localities, Area 55 (144); Area 27.

PHYLUM ECHIUROIDEA.

1. *Anelassorhynchus adelaidensis* Edmonds: 1 specimen. Locality, Area 55 (39).
2. *Bonellia gigas* Nielsen 1 specimen. Locality, Area 30 (130) and two small specimens tentatively assigned to this species from locality Area 55 (39).
3. *Bonellia* sp.: 10 specimens. Localities Area 35 (121), 24 (122), 36 (76). Area 23 (7), Area 5 (-), Area 55 (35), Area 14 (4).
4. *Arhynchite hiscocki* Edmonds: 2 specimens. Locality, Area 48.

DETAILS OF SPECIES.

A. SIPUNCULOIDEA.

1. *Phascolosoma noduliferum* Stimpson, 1855.

This species was identified by (1) the structure of the papillae on the surface of its body and (2) the structure and size of the hooks on its introvert. The species was redescribed by Edmonds (1956). It has been reported previously from N.S.W., Victoria and Tasmania (Edmonds 1956).

2. *Golfingia* sp.

The single specimen was small and its introvert almost completely retracted. No hooks or spines were found on the introvert when it was dissected. The tentacles were of the type found in *Golfingia* and not in *Dendrostomum*. The fact that four retractor muscles were present indicates that the species is not *Golfingia margaritacea adelaidensis* Edmonds 1956, known from South Australia. Possibly it is a new species but more specimens will be required for examination before this can be decided.

3. *Dendrostomum* sp.

Both specimens were small and under 1 cm. in length. This makes dissection difficult. They were both of the genus *Dendrostomum* but whether *D. cymodoceae* Edmonds, 1956 or *D. signifer* Selenka, 1883, was not able to be determined.

B. ECHIUROIDEA.

1. *Anelassorhynchus adelaidensis* Edmonds, 1960.

The specimen consisted of a sac-like structure about 90 mm. long and a slender, deciduate proboscis about 55 mm. long that was flattened somewhat anteriorly. The musculature of the body wall was continuous and not divided into bundles. On dissecting the specimens two pairs of nephridia, arising posteriorly to the level of the setae, were found to be present. The nephrostomal lips of the nephridia were spirally coiled. No cloacal caecum was present. The colour of the animal preserved in alcohol was pale pink but since the alcohol was greenish in colour it is probable that in life the animal was green. I have found the specimen similar to specimens of *A. adelaidensis* that I have in my possession.

A. adelaidensis was described from specimens found among the sand and debris that accumulates amongst the roots of marine angiosperms and the holdfasts of algae in St. Vincent Gulf, South Australia. This is the first record of the animal in Victoria.

2. *Bonellia gigas* Nielsen, 1963.

The anterior extremity of the proboscis of a bonellid is forked. The trunk of the specimen from area 31 was sac-like and about 35 mm. long and 23 mm. wide (maximum). The proboscis was about 40 mm. long and its forked arms about 15 mm. The intestine was filled with small elliptically shaped pellets of faecal material. No intestinal caecum was present. A single nephridium that contained a male animal and about 100 eggs was present. The nephrostomal opening was placed towards the distal end of the nephridium and its lips were much folded and wrinkled. There seems to be little doubt that the animal is a smaller specimen of *B. gigas* described from Victoria by Nielsen (1963).

Two other bonellids, much smaller in size, were also contained in the collection. Both were damaged to some extent. The shape of the setae corresponded with that *B. gigas* rather than *B. haswellianus* Johnston and Tiegs (1920). Both were green in colour and possessed a single nephridium. I have tentatively assigned them to *B. gigas*. *B. gigas* has been found only in Victoria.

3. *Bonellia* sp.

At least ten probosces of this species were collected and large numbers of others were seen extruded and seeking food on the surface of the sandy mud which they inhabit. In spite of numerous efforts to collect the whole animal all attempts have so far failed.

The portion collected is flat approximately 18 mms. wide and anything up to a metre in length. According to divers' reports, it moves with an undulating motion over the surface. As soon as it is disturbed it is rapidly withdrawn or if touched at the point of extrusion above the surface, breaks off and swims free." The nature of the substratum, fine silty sand or sandy mud, makes digging difficult as holes tend to fall in immediately and at the same time any movement stirs up the fine surface sediments reducing visibility to nil.

4. *Arhynchite hiscocki* Edmonds, 1960.

The two specimens were long and slender, grey-green in colour with prominent white papillae as preserved in formalin. The length of the trunk of the two specimens was 11 and 12 cm. and the maximum width (in the middle third of the animal's length) 1·1–1·2 cm. The proboscis is short—much shorter than that of the type specimen—and is deciduate. It is flattened at its anterior extremity so as to resemble a shallow spoon. Two prominent setae are present and are placed just near the mouth. The nephridia are long (about one third of the body length) and slender and the nephrostomal lips are frilled and leaf-like. The interbasal and setal muscles are very well developed. There are two long, brownish-coloured anal vesicles that are fixed in position by mesenteries to the alimentary canal and to the posterior region of the body wall. *A. arhynchite* was described from Dunwich, Brisbane. This record from Port Phillip is new.

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DOI: <https://doi.org/10.24199/j.mmv.1966.27.10>

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