

**A NEW SPECIES OF *BONELLIA* (ECHIUROIDEA, BONELLIIDAE)
FROM MADAGASCAR**

Alan J. DARTNALL

Tasmanian Museum, G.P.O. Box 1164 M, Hobart, Tasmania, 7001 Australia

SUMMARY

A new species of *Bonellia* is described. The specimens were collected from a flat channel of the Great Reef of Tuléar, south-western Madagascar. The new species is distinguished from other species of *Bonellia* by the fine hairs which invest the body. It is the first record of this genus at Madagascar.

RESUME

Une nouvelle espèce de *Bonellia* est décrite. Les spécimens ont été récoltés dans les sédiments du fond d'un chenal épircéfial du Grand Récif de Tuléar, Sud-Ouest de Madagascar. La nouvelle espèce se distingue des autres espèces de *Bonellia* par la présence de soies fines qui couvrent le corps. C'est la première espèce du genre signalée à Madagascar.

Phylum ECHIUROIDEA
Family BONELLIIDAE
Genus *Bonellia* Rolando

***BONELLIA PILOSA* sp. nov.**

DESCRIPTION OF FEMALE.

Body sac-like with a long proboscis, bifurcate at the tip. In one specimen the divergent arms of the proboscis are very short and probably in process of regeneration. The specimens before me are white in colour (preserved in formalin) but in life the animals were olive-green (pers. comm. B. Thomassin). The epidermis is verrucose; thin and translucent on the dorsal surface of the body and thicker on the ventral surface. The verrucae are most prominent around the proboscis. A striking feature is the presence of fine hairs irregularly arranged over the surface of the animal (fig. 1). I can find no regular pattern or arrangement of these hairs in the present specimens.

A pair of chaetae is present on the ventral surface between the mouth and the nephriodipore. The pores through which the chaetae protude are raised upon a slight eminence (fig. 2). Each chaeta is about 1.5 mm. in length and consists of a basal portion about 0.8 mm. in length and 0.22 mm. in width followed terminally by a narrower portion (c. 0.1 mm. width) about 0.7 mm. long. The tip is reflexed and asymmetrically spoon shaped (fig. 2)

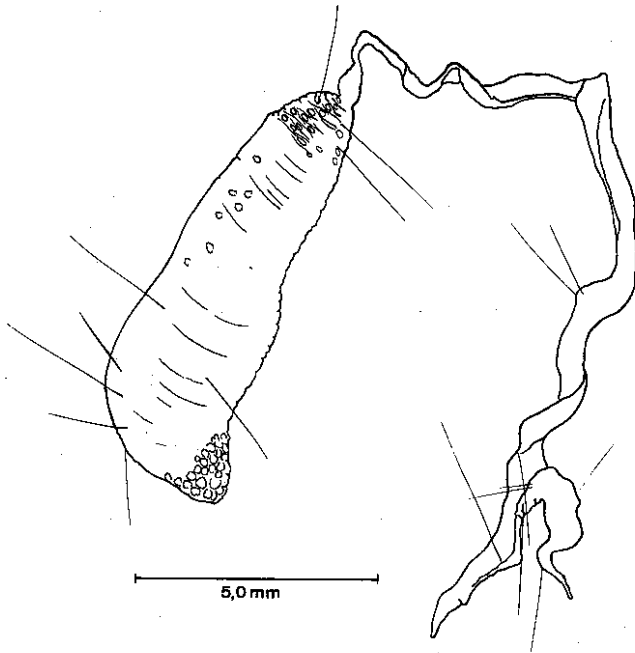


Figure 1 — *Bonellia pilosa* sp. nov. ♀.
Drawing of whole animal showing fine hairs.

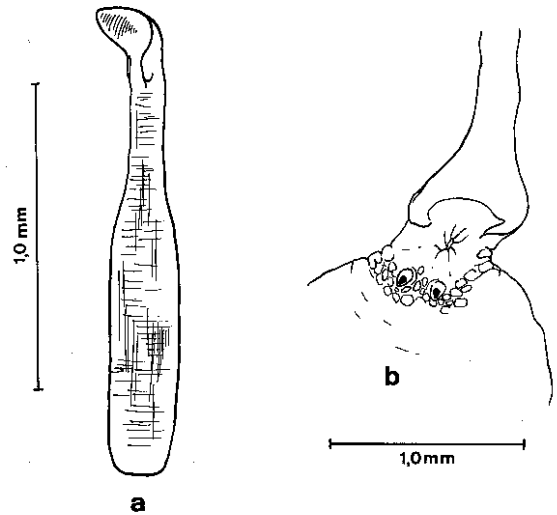


Figure 2 — *Bonellia pilosa* sp. nov. ♀.
a) Isolated ventral chaeta.
b) Base of proboscis, mouth and chaetal pores.

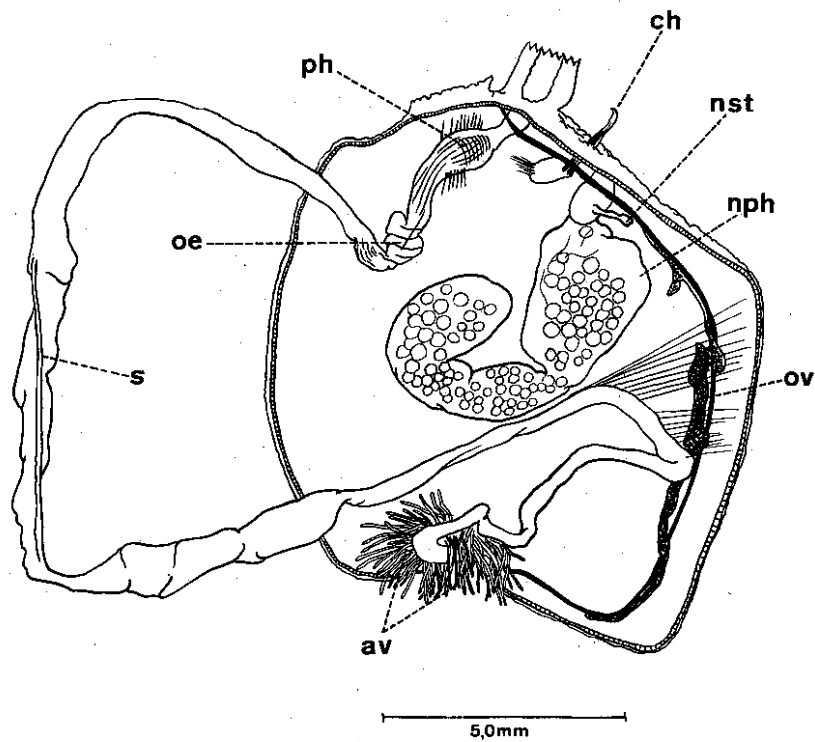


Figure 3 — *Bonellia pilosa* sp. nov. ♀.
Diagrammatic drawing of specimen dissected from ventral surface.
Key to abbreviations: — av, anal vesicle; ch, chaeta; nph, nephridium; nst, nephrostome; oe, oesophagus; ov, ovary; ph, pharynx; s, siphon.

The general anatomy of the female is illustrated in figure 3. The pharynx is muscular and attached to the body wall by a number of short, heavy mesenteric strands. The pharynx is followed by a convoluted oesophagus, a long fore-gut and a midgut with an intestinal siphon. The hind-gut is long and thinwalled and is attached to the body wall by a wide mesentery which inserts near to the ventral blood vessel.

Two anal vesicles are present. They consist of unbranched tubules, each tipped with a single, pedunculate, ciliated funnel, which opens into a basal bladder. Each bladder opens into the cloaca near the anus.

One nephridium is present, either on the right or the left side. It is simple with a basal nephrostome. Developing eggs were found in the nephridia of five specimens. No eggs were taken from the body cavity. The ovary is spread along the length of the ventral blood vessel. There is presumably, a branch vessel to the intestine which leaves the ventral vessel just posterior to the nephridiopore and connects with the intestinal vessel anterior to the intestinal siphon but in no specimen was this connection intact even though the free ends of the vessels were observed. It is suggested that in life, when the coils of the intestine are intact, the neurointestinal branch vessel does connect and lies across the junction of the oesophagus and foregut.

DESCRIPTION OF MALE (fig. 4).

The male is about 0.9 mm. in length, possesses two hooked chaetae, a vestigial gut and a single nephridium which opens subterminally. The ten males found were all present in the pharynx of the females. The males lie along the pharynx in the folds of the wall. No males were found in other parts of the body. No anal clasper is present though the tail may be reflexed. The males appear to maintain their position in the pharynx by hooking the chaetae to the gut wall. Four males was the largest number recorded from one female.

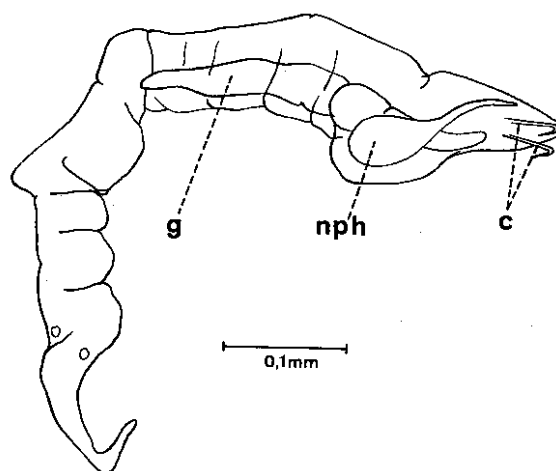


Figure 4 — *Bonellia pilosa* sp. nov. ♂.
Key to abbreviations : — c, chaetae ; g, gut ; nph, nephridium.

TYPE LOCALITY AND HABITAT.

The specimens were collected from the Great Reef of Tuléar, off south-western Madagascar, which is designated the type locality.

The animals were found on the edge of a flat reef channel in coarse and gravelly sands around the

margin of an intertidal sand cay at the northern end of the reef (Thomassin, 1969, fig. 14). The channel acts as a spillway from the reef flat and has a bed of sea grass. The associated infauna was: the polychaetes, *Eurythoe complanata*, *Glycera tessellata*, *Sthenelais zeylanica*, *Scoloplos johnstonei*; a sipunculid, *Golfingia misakiana*; crabs, *Portunus convexus*, *Kraussia rugulosa* and *Kraussia* sp. nov.; the echinoid *Metalia spatagus* (comm. B. Thomassin).

Collection details are as follows:

- station 25, 26/VIII/1965, 3 individuals in 50 dm³ of bottom.
- station 29, 15/IX/1965, 3 individuals (collected).
- station 31, 15/IX/1965, 1 individual (collected).
- station 32, 15/IX/1965, 3 individuals in 50 dm³ of bottom.

TYPE MATERIAL.

Holotype: Female; length of body 9.0 mm; length of proboscis (excluding divergent arms) 18.0 mm. Coll. B. Thomassin, 15/IX/1965. Entire specimen preserved in 10% buffered formalin. Muséum National d'Histoire naturelle, Paris, Reg. No. V36 — AA761.

Allotype: Male; stained light green; slide mount in Euparal. Muséum National d'Histoire naturelle, Paris, Reg. No. V37 — AA762.

Paratypes: All housed in the Tasmanian Museum, Hobart, Tasmania. Eight dissected female specimens in 10% buffered formalin. T.M. Registered numbers K.233 — K.240.

Males: Three mounted on a slide (T.M. Reg. No. K.243) and 4 mounted on a slide (T.M. Reg. No. K.244). Two specimens in alcohol, T.M. Reg. Nos. K.241 and K.242.

ETYMOLOGY.

The name of the new species is derived from the Latin *pilosa* = hairy.

DISCUSSION

Bonellia pilosa sp. nov. is simply distinguished from other species attributed to the genus by the fine hairs that invest the body. It is placed in the genus because the female is of typical *Bonellia* form, has one nephridium with a basal nephrostome and a pair of ventral chaetae. The male, bearing a pair of chaetae, shows some similarity to the male of *Bonellia fuliginosa*. This is the first record of a representative of the genus from Madagascar.

There has been no revision of the *Bonelliidae* since that of Fisher (1948). Since that time other species have been placed in the genus with the result that the definition of genus *Bonellia* (*sensu* Fisher) must be extended or restricted to contain some of the species only. Among these *Bonellia achaeta* Zenkevitch may belong to *Ikedella* Monro (1927) because it has, clearly, a subterminal nephrostome and no ventral chaetae (see Zenkevitch, 1958, p. 203, fig. 11 E). Three species are attributed to *Bonellia* from Australia, *viz.* *haswelli* Johnston and Tiegs, 1919; *gigas* Nielsen, 1963 and *tasmanica* Dartnall, 1970. Each of these possess subterminal nephrostomes and if Fisher's (*loc. cit.*) analysis of the family is to stand these must be removed to another genus. Investigations are in progress to test this supposition.

REFERENCES

- Dartnall A.J., 1970. A new species of *Bonellia* from northern Tasmania. *Proc. roy. Soc. Tas.*, 104: 69-71.
 Fisher W.K., 1948. A Review of the Bonelliidae (Echiuroidea). *Ann. Mag. nat. Hist.*, (11) 14: 852-860.
 Johnston T.H., Tiegs O.W., 1920. A new species of *Bonellia* from Port Jackson. *Rec. Aust. Mus.*, Sydney, 13: 73-76.

- Monro C.C.A., 1927. On the families and genera of the class Echiuroidea. *Ann. Mag. nat. Hist.*, (9) 10 : 615-620.
- Nielsen B.J., 1963. Description of a new species of *Bonellia* from Victoria. *Proc. roy. Soc. Vic.*, 76 (1) : 61-67.
- Thomassin B., 1969. Peuplements de deux biotopes de sables coralliens sur le Grand Récif de Tuléar, Sud-Ouest de Madagascar. *Rec. Trav. Sta. mar. Endoume*, (fasc. hors sér.) Suppl. 9 : 59-133.
- Zenkevitch L.A., 1958. Deep Sea Echiuroids of the North-West Part of the Pacific. *Trud. Inst. Okean.*, 27 : 192-203. (In Russian).

ACKNOWLEDGEMENTS

I thank Dr. B. Thomassin of the Station Marine d'Endoume and Centre d'Océanographie, Marseilles, for the opportunity to describe this animal. Also my thanks to Dr. D. Bick and Mr. E. Martin for translation from Russian texts.

Manuscrit déposé le 20 Octobre 1971