

**Note on the taxonomy of the family Notobranchaeidae and description
of *Notobranchaea bleekerae* n. sp., a species new to science
(Gastropoda, Pteropoda)¹**

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INTRODUCTION

During the Amsterdam Mid North Atlantic Plankton Expedition 1983 (AMNAPE, 1983) (see Van der Spoel, in prep.), a gymnosomatous pteropod species new to science was collected. The single specimen, obtained in waters of the North Atlantic Drift with a rectangular midwater trawl, belongs to the family Notobranchaeidae Pelseneer, 1886. According to Tesch (1950) the family consists of two genera, viz., *Notobranchaea* Pelseneer, 1886, and *Prionoglossa* Tesch, 1950. However, a close taxonomic study has revealed that a division into two genera is doubtful, as no grouping of characters could be found at all.

TAXONOMY

According to Van der Spoel (1976) the Notobranchaeidae comprise the following species: *Notobranchaea macdonaldi* morpha *macdonaldi* Pelseneer, 1886; *Notobranchaea macdonaldi* morpha *pelseneeri* Pruvot-Fol, 1942; *Notobranchaea inopinata* Pelseneer, 1887; *Notobranchaea grandis* Pruvot-Fol, 1942; *Microdonta tetrabranchiata* (Bonnieve, 1913); *Microdonta valdiviae* (Meisenheimer, 1905); *Microdonta hjorti* Bonnieve, 1913; *Microdonta longicollis* Bonnieve, 1913. *Microdonta*, however, is a homonym incorrectly re-introduced by Van der Spoel (1976).

Basing herself on 1910 Michael Sars Expedition material, Bonnieve (1913) described a new genus *Microdonta* with the new species *M. longicollis*, and in the genus *Fowlerina* (family Clionidae) the species *F. hjorti*, but clearly figured additional denticles besides the jaw. *Microdonta* should be characterized by such small additional denticles on the outer rim of the buccal cavity, and therefore should also comprise "*hjorti*". In addition, one of the syntypes of this species showed no additional denticles and another footlobe structure than described by Bonnieve. The type material, description and figures of "*hjorti*" indicate that Bonnieve was dealing with two taxa, viz., one which agrees with the characters of the genus *Microdonta* and one which does not.

Tesch (1950) considered *Notobranchaea tetrabranchiata* and *N. valdiviae* to belong to a separate genus for which he proposed the name *Prionoglossa*. He expected *Fowlerina hjorti* and *Microdonta longicollis* to be synonymous with *Prionoglossa tetrabranchiata*. *Prionoglossa* should differ from *Notobranchaea* in having no buccal cones (but "*tetrabranchiata*" shows rudimentary ones), a posterior gill with four crests (but "*valdiviae*" shows only three

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crests) and a crescent-shaped serrate median radula plate (another dubious discriminatory character).

The validity of the two genera *Microdonta* and *Prionoglossa* is therefore dubious, and anyway, the name *Microdonta* is not available. Any grouping of characters in the species of this family could not be found, so that it is proposed to bring all the species into one genus *Notobranchaea*.

The typical characters of the species are given in table 1; for characters on which no data exist because of the poor description of the species concerned, a question mark is shown.

The taxonomy proposed for the family Notobranchaeidae is now as follows:

Notobranchaea macdonaldi morpha *macdonaldi* Pelseneer, 1886

synonymy: *Clione longicaudata* (non Souleyet, 1852) Verrill, 1884: 215

Notobranchaea macdonaldi Pelseneer, 1886: 225

Notobranchaea macdonaldi morpha *pelseneeri* Pruvot-Fol, 1942

synonymy: *Notobranchaea macdonaldi* var. *pelseneeri* Pruvot-Fol, 1942: 37, figs. 43, 47-53

Notobranchaea inopinata Pelseneer, 1887

synonymy: *Notobranchaea inopinata* Pelseneer, 1887: 40, pl. 3 figs. 5, 6

Notobranchaea grandis Pruvot-Fol, 1942

synonymy: *Notobranchaea grandis* Pruvot-Fol, 1942: 31, figs. 33-37

Notobranchaea tetrabranchiata Bonnevie, 1913 (figs. 1a, b, c, d)

synonymy: *Notobranchaea tetrabranchiata* Bonnevie, 1913: 63, figs. 52-55, pl. 8 figs. 61, 62

Prionoglossa tetrabranchiata Tesch, 1950: 27, figs. 15-16, 26

During AMNAPE 1983 one specimen was found at sta. 84, haul 77; 35°09.6'N 31°31.7'W, depth 1000-1700 m, 7-VI-1983. Dissection showed two pairs of rudimentary buccal cones under the anterior hood. A generic difference with *Notobranchaea* sensu Tesch (1950) based on buccal cones is thus absent. The anterior tentacles and wings in this specimen are dark brown in colour as was described for *N. grandis* by Pruvot-Fol (1942), and as is also seen in some specimens of *N. valdiviae*.

Notobranchaea valdiviae Meisenheimer, 1905

synonymy: *Notobranchaea valdiviae* Meisenheimer, 1905: 55, pl. 27, figs. 1, 2, 4-7

Prionoglossa valdiviae Tesch, 1950: 27

Notobranchaea hjorti (Bonnevie, 1913) (figs. 2a, b, c, d)

synonymy: *Fowlerina hjorti* Bonnevie, 1913: 64, fig. 57, pl. 8 figs. 63-66 (and not pl. 8 figs. 67, 68)

Prionoglossa tetrabranchiata Tesch, 1950: 27

The group shown by Bonnevie (1913) in pl. 8 figs. 67 and 68 and on which she probably based the description of the lateral footlobes cannot be identified with certainty. The material Bonnevie (1913) had at her disposal must have consisted of at least six specimens to conclude from the five soft bodies and the three slides which are preserved in the Zoological Museum of Bergen, Norway (ZMUB).

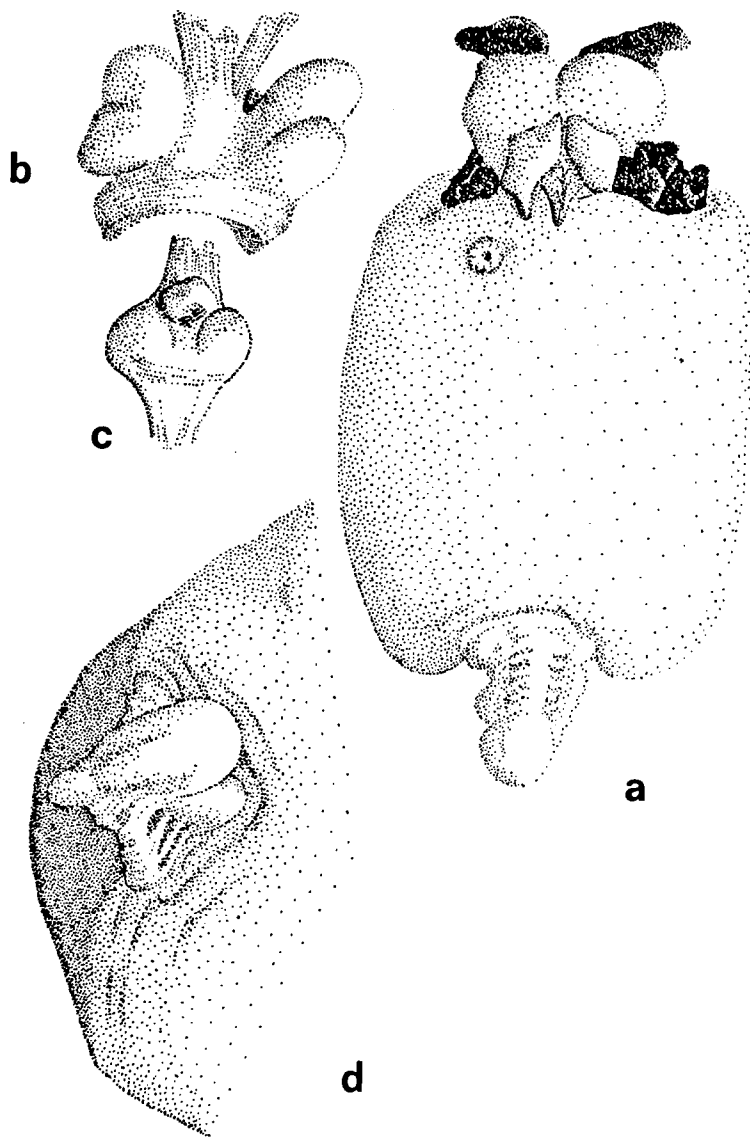


Fig. 1. *Notobranchaea tetrabranchiata*. a, specimen from ventral; b, buccal wall with four rudimentary buccal cones; c, buccal mass with radula and hook-sacks when the part shown in b is removed; d, posterior point with the four gill crests.

The original description of *Fowlerina hjorti* gives 8 denticles on the outer rim of the buccal mass. There are one slide and two specimens (ZMUB 30413) which agree with this description. Bonnevie (1913) depicted a specimen without these denticles (pl. 8 fig. 67) and there is one specimen in the syntype series (ZMUB 17656) without denticles and one specimen with numerous (20) very small denticles, sometimes in pairs (ZMUB 30415). One syntype (ZMUB 30414) was dissected and probably used to make a radula slide. The lateral footlobe is given in the description as small and triangular (pl. 8 fig. 68), but in another specimen (pl. 8 fig. 65) it tends to be ribbon-like, but its buccal organ could not be checked. So it is clear that more than one taxon is represented in the syntype series.

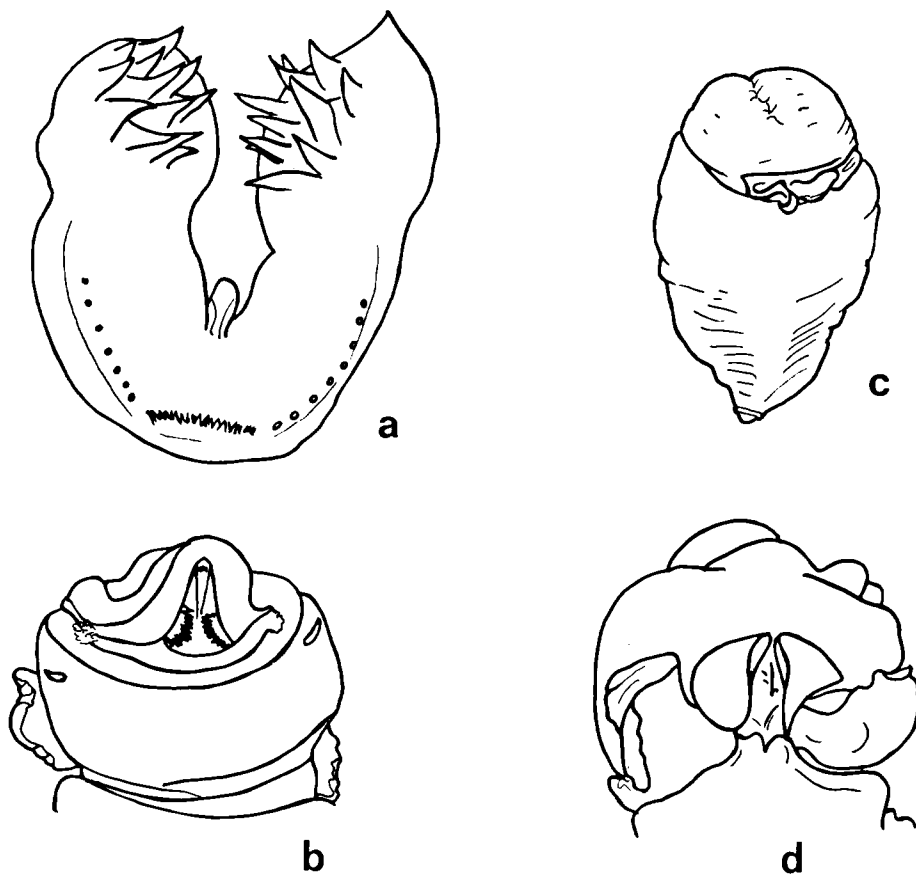


Fig. 2. *Fowlerina hjorti* (after Bonnevie, 1913). a, buccal organs with additional spines (fig. 57 of Bonnevie); b, buccal organs with additional spines (pl. 8 fig. 67 of Bonnevie); c, foot parts from ventral of typical *hjorti* (pl. 8 fig. 65 of Bonnevie); d, foot parts from ventral of atypical *hjorti* (pl. 8 fig. 68 of Bonnevie).

From the dissected type material it is clear that *N. hjorti* shows a radula formula of 6-1-6 or 5-1-5 with a saw-like median plate, a jaw with 14 spines and 7 up to 10 additional denticles, a triangular lateral footlobe and a clearly pointed posterior footlobe, 8 up to 13 hooks, 4 posterior gill crests and no buccal cones.

As insufficient material is left to redescribe the "unarmed *hjorti*" (i.e., *hjorti* without denticles) a description of a separate species for this Bonnevie material has not been made. For the time being, these specimens are shown as "aberrant *hjorti*" (cf. table I). The lectotype cannot be ZMUB 17656. As a real lectotype can only serve the slide made from sta. 37 with hooks and radula. The type-locality of *N. hjorti* is thus also restricted to 45°26'N 09°20'W.

Notobranchaea longicollis (Bonnevie, 1913)

synonymy: *Microdonta longicollis* Bonnevie, 1913: 65, fig. 52c, pl. 9, figs. 69-78
Notobranchaea bleekerae n. spec.

Notobranchaea bleekerae n. sp. (fig. 3)

The holotype was collected by the AMNAPE 1983 expedition at station 81 haul 7, depth 100-200 m, 16.1-14.9°C, 36.05-35.18‰ S, position 41°00.3'N 35°32.1'W on June 11, 1983 at night. It is preserved in the Zoological Museum of the University of Amsterdam.

Description. — Body length 5 mm, maximum body width 3 mm. The body is roughly triangular in shape and the head parts are slightly broader than the body. The preserved specimen is yellowish, the anterior tentacles are brown. Though the specimen seems to be (almost) adult, a trace of posterior cilia is seen, the posterior gill shows four crests without fringes. The four crests end in one little knob. The wings are slender and narrow-based. The whole integument is transparent. The lateral footlobes together form a slender and long ribbon running transversely in between the wings. The posterior footlobe is separated from the lateral ones and in the space in between a median foot tubercle can be observed. The posterior footlobe is small and pointed. On the transition between the inside of the buccal cavity and the outside of the hood, six small denticles are visible at each side of the jaw. These denticles are probably a continuation of the jaw which is itself composed of 16 denticles with clear "growth lines" near their bases. The hook-sacks are shallow and contain 9 short curved hooks each. The radula formula is 2-1-2; the two laterals are short and claw-like, the median plate is crescentic and serrate (saw-like).

Etymology. — The species name is given in honour of Mrs. J. Bleeker who carried out the complete plankton sorting for the here involved and three other plankton expeditions.

Remarks. — This species is most closely related to *N. hjorti* from which it differs in the low number of lateral radula teeth, the larger number of denticles beside the jaw, the low number of hooks and probably the ribbon-like shape of the lateral footlobes. The new species cannot be considered to be identical with the aberrant syntypes of *N. hjorti*, as the latter have no additional denticles besides the jaw. *N. longicollis* does have

those additional denticles, but the number of laterals and the shape of the median plate distinctly differ from those described for the new species. The other species of the family clearly differ in the lateral footlobes and buccal mass.

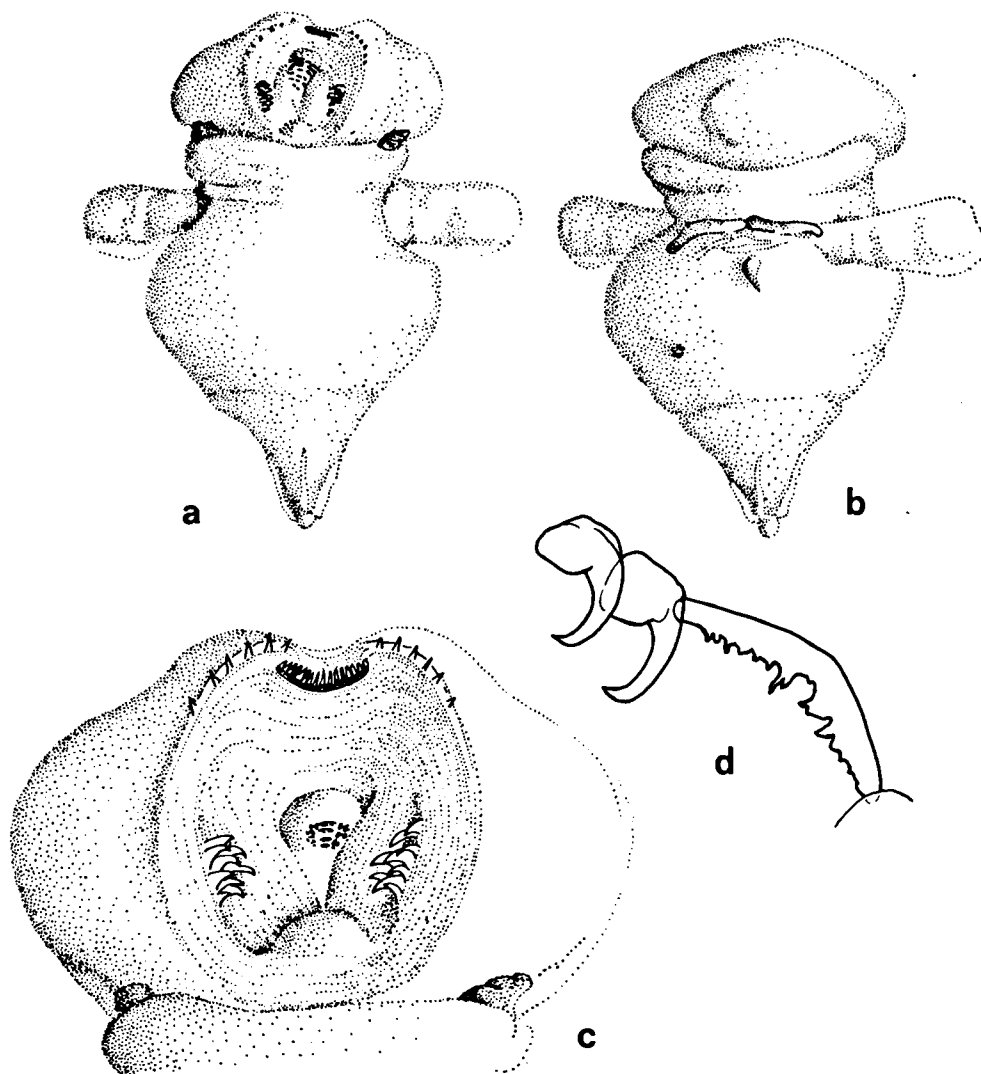


Fig. 3. *Notobranchaea bleekerae* n. sp. a, holotype from dorsal; b, holotype from ventral; c, buccal organs; d, radula plates.

	<i>M. macdonaldi</i>	<i>N. inopinata</i>	<i>N. grandis</i>	<i>N. tetrabrachiala</i>	<i>N. voldtviae</i>	<i>N. hjorti</i>	aberrant <i>N. hjorti</i>	<i>N. longicollis</i>	<i>N. bleekerae</i>
JAW - with additional denticles	13(14)	?	?	14(16)	14	8-14-8	14	5-9-5	6-16-6
RADULA	8-1-8 (12-1-12)	8-1-8	?	6-1-6 (5-1-5)	6-1-6	6-1-6 (5-1-5)	?	10-1-10	2-1-2
MEDIAN PLATE } uniscusoid	+	+	+	—	—	—	—	+	—
MEDIAN PLATE } saw-like	—	—	—	+	+	+	+	—	+
HOOKS	20	?	?	14	9	13	8?	17	9
LATERAL FOOTLOBE } triangular	+	+	+	+	+	+	+	—	—
LATERAL FOOTLOBE } ribbon-like	—	—	—	—	—	—	—	+	+
LATERAL FOOTLOBE } small	—	—	—	—	—	—	—	+	+
POSTERIOR GILLS	3(4)	3	3	4	3	4	4	4	4
BUCCAL CONES	2x2	2x2	2x2	reduced	—	—	—	—	—
SIZE (mm)	10	5	15	16	5.5	5(9)	6	7	5
POSTERIOR FOOTLOBE } short	—	+	+	+	+	+	+	+	+
POSTERIOR FOOTLOBE } pointed	+	—	+	+	—	+	+	+	+

* without central cusp but not saw-like either

Table 1. Taxonomic characters in the species of *Notobranchaea*.

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