A new species of *Loxosomella* from the White Sea (Entoprocta: Loxosomatidae)

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A new species of Entoprocta, *Loxosomella marisalbi* sp. n., from the White Sea is described and compared with *L. nordgaardi* (Ryland, 1961). The distinctions between these species are discussed.

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Introduction

The fauna of Entoprocta from the White Sea is very poorly known. Only one short communication (Krylova, 1986), which treats 11 species, is published. Krylova (1985) also described two new species. Problems with identification prompted a review of the literature and revealed that the recently collected material represented an undescribed species.

The samples were taken by boat dredging and SCUBA at 5-10 m depth near the Marine Biological Station of St.Petersburg State University (White Sea, Kandalaksha Bay, Chupa Inlet, 66°17′N, 33°40′E) during summer (June-September) in 1995-1999. The specimens were collected from colonies of several bryozoan species (*Scrupocellaria scabra, S. elongata, Dendrobeania fruticosa, Tricellaria gracilis, Eucratea loricata, Tegella armifera, Arctonula arctica*) encrusting fronds of various red algae (*Odontalia dentata, Ptilota pectinata, Phycodris rustica, Phyllophora broduei*) that overgrow rhizoids of the brown alga *Laminaria saccharina*. In the laboratory, the specimens were placed in glass containers with filtered and aerated seawater.

The live animals under observation were kept in small glass containers and Petri dishes at the temperature from 5 to 10 °C. In the study of *Loxosomella* development, we waited for the buds to attach to the bottom of the dish in laboratory. After that, the dishes were installed at the same place where the material had been collected, and were observed daily.

When it was necessary, the specimens were narcotized in 4.9% aqueous solution of $MgCl_2$.

Both narcotized and non-narcotized animals were fixed with 4% glutaraldehyde in 0.1 M phosphate buffer (pH 7.4) for making final drawings. The drawings were made using a JENAVAL-7 microscope.

Loxosomella marisalbi sp. n.
(Figs 1–3)

Holotype. **Russia**, White Sea, Kandalaksha Bay, Chupa Inlet (66°17′N, 33°40′E), SW of Marine Biological Station of St.Petersburg State University, depth 5-10 m, salinity 21-23‰; V.1995, for habitat see Introduction. Lox02 total prepararion of narcotized animal deposited in the collection of the Department of Invertebrate Zoology, St.Petersburg State University.

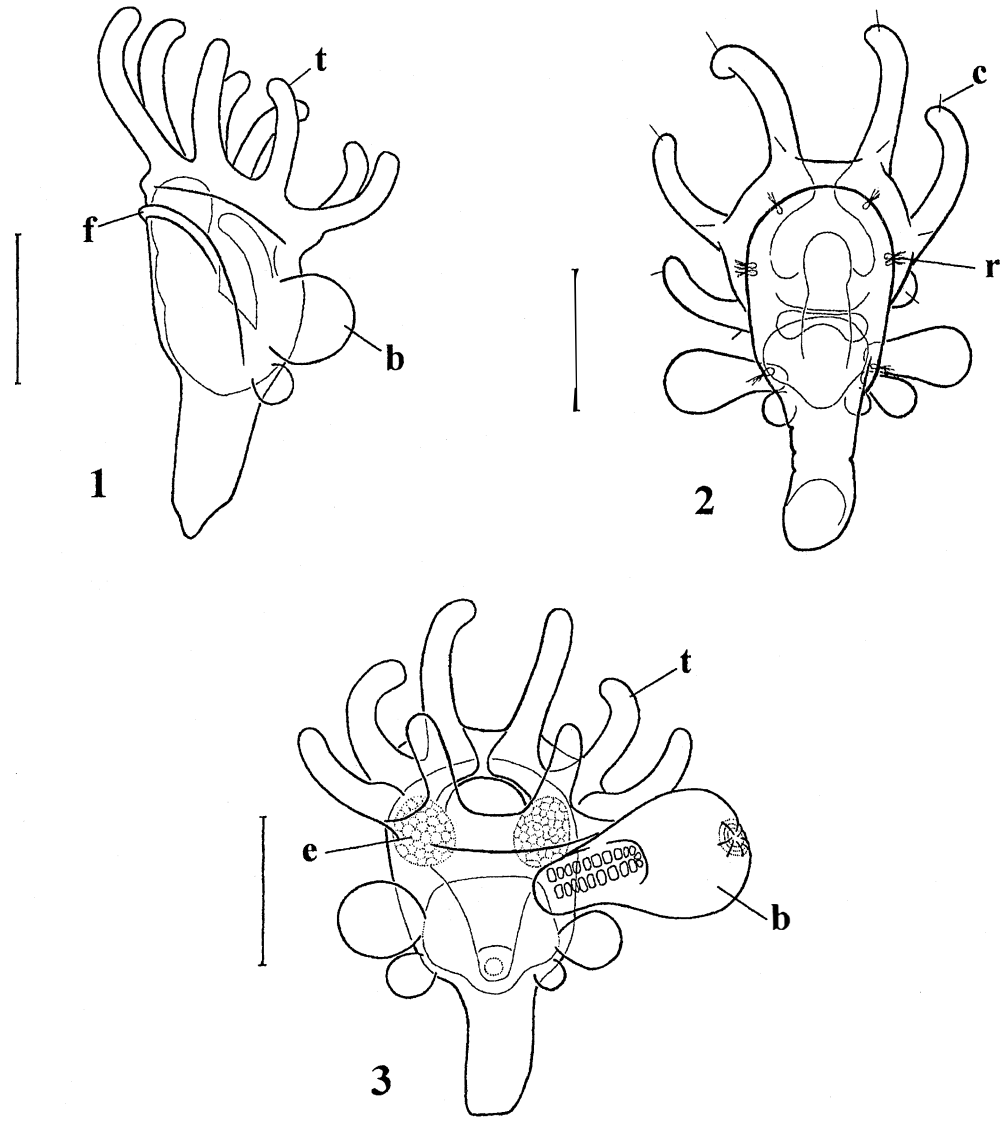
Paratype. The same data as in holotype.

Description. Body consisting of stalk and calyx containing all internal organs (Figs 1-3). Upper part of body with horseshoe-shaped lophophore with 8 tentacles. Uppermost pair of tentacles longer than others (Figs 1-3). In relaxed animals, lophophore extending beyond calyx. When animal contracts, tentacles are completely retracted into atrial cavity, and lophophore compresses into an almost close ring. Epithelial fold located behind lophophore extending to lateral sides of calyx. Stalk not longer than calyx.

Body covered by thin cuticle. Atrial cavity and frontal tentacle surface formed by ciliated columnar epithelium. Epithelial cells of brood-chamber flattened.

Alimentary channel opening as slitlike mouth and passing to oesophagus and stomach; the latter followed by oval intestine and rectum, which opens by anus. Stomach three-lobed (Fig. 3).

Body surface with different sensory elements.



Figs 1–3. *Loxosomella marisalbi* sp. n. **1**, lateral view; **2**, abfrontal view; **3**, frontal view. Abbreviations: *b*, bud; *c*, sensory structure; *e*, embryo; *f*, epitelial fold; *t*, tentacle; *r*, receptor. Scale bar: 100 μm.

Abfrontal surface of each tentacle bearing two sensory structures, each with a single cilium: one of these structures situated near tentacle base and the other one, near its tip (Fig. 2). Epithelial fold of calyx with three pairs of receptors (Fig. 2). Uppermost and lowest pair of receptors each formed by a single cell with a tuft of 3-4 cilia, whereas each middle pair of receptors consisting of three such cells (Fig. 2).

Stalk with several muscle fibres under epithelium; some of them directed along stalk, others twisted in a coil. Muscle fibres of stalk located between epithelium and digestive tract and extending to calyx. Each tentacle with two longitudinal muscles. Base of lophophore with circular muscles. When they contract, the lophophore squeezes to a small ring concealing the tentacles, so that only the sensory structures situated

Table. Morphometric characters of *Loxosomella nordgaardi* and *L. marisalbi* (standard deviations are given in parentheses)

Measurements	*L. nordgaardi*	*L. marisalbi*
Average total length	402 (33) μm	256 (23) μm
Maximum total length	475 μm	356 μm
Average calyx length	313 (32) μm	162 (14) μm
Average stalk length	88 (15) μm	95 (8) μm
Average ratio of stalk length to calyx length	0.26 (0.05)	0.58 (0.8)

at the tentacle bases remain visible. Mature buds have the same capacity. Alimentary channel with sphincters; they were never found in histological sections, but their effect could clearly be observed in live animals.

A group of 8-10 large cells present in the centre of foot. In different specimens, foot shape varied depending on relief of substratum. For measurements see Comparison.

Data on reproduction and development. Several specimens had two oocytes situated laterally to the ganglion, and only few specimens had 2-4 embryos (Fig. 3). The larvae developed from these embryos were conical and possessed a ring of actively beating cilia at the base of the cone and a tuft of cilia at the apex.

Asexual reproduction takes place by budding. A specimen usually has 4-5, sometimes up to 7 buds. The buds are formed laterofrontally at the level of the lower part of stomach (Figs 1-3). The larger (i.e., the older) buds are situated above the smaller (younger) ones (Figs 1-3).

A completely formed bud has short tentacles and is able to feed independently. By this time, its sensory structures have already been developed. At this stage, the buds can produce 1-2 of their own buds. In nature, the bud developed into the adult animal in one week after settlement.

Diagnosis. The maximum registered length of *L. marisalbi* is 366 μm. The stalk is never longer than the body. The calyx is slightly flattened anteroposteriorly. The posterior surface possesses a horseshoe-shaped epithelial fold bearing eight tentacles. The abfrontal tentacle pair is longer than the others. There are three pairs of sensory structures on the epithelial fold of the calyx. The uppermost and lowest pairs of them consist of one cell with a cilia tuft, while the middle pair is formed by three cells, each of these structures with a tuft of ciliae. Each tentacle has two sensory structures represented by a single cilium: one apical and another positioned near the tentacle base. The trilobed stomach is situated in the lowest part of the calyx. The budding zone is on the laterofrontal side of the calyx at the level of lowest boundary of the stomach. The maximum bud number is 7 (3+4), but usually there are only 5 (2+3) buds. The bud has a clearly pronounced pedal gland.

Comparison. Using the key given by Nielsen (1989), the specimens investigated were initially identified as *Loxosomella nordgaardi* (Ryland, 1961). When the descriptions of *L. nordgaardi* by Ryland (1961) and Nielsen (1989) were compared with our material, several differences became apparent:

1. There are no sensory structures in *L. nordgaardi*, as distinct from *L. marisalbi*.

2. The maximum number of buds in *L. nordgaardi* is 5 (more often 3), while in *L. marisalbi* it is 7 (more often 5).

3. Two species differ in morphometry. We measured 20 specimens of *L. marisalbi* and obtained the data, clearly distinct from those reported by Ryland (1961) for *L. nordgaardi* (see Table).

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