

Occurrence of *Obtusella intersecta* in the Barents Sea (Mollusca: Gastropoda: Rissoidae)

Присутствие *Obtusella intersecta* в Баренцевом море (Mollusca: Gastropoda: Rissoidae)

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Obtusella intersecta (S. Wood, 1857) was recorded from several sites of the Murman Coast which is the most northeast locality for this species and the first case of finding of *O. intersecta* in the Barents Sea and Russian waters. The description of the shell, the soft body and the female reproductive system of found specimens is provided.

Obtusella intersecta (S. Wood, 1857) указан для Мурманского побережья, что является самым северо-восточным местонахождением этого вида и первым случаем находки *O. intersecta* как в Баренцевом море, так и в российских водах. Приведено описание раковины, мягкого тела и женской половой системы найденных экземпляров.

Key words: molluscs, marine biodiversity, reproductive system, anatomy, Barents Sea, Rissoidae, *Obtusella*

Ключевые слова: моллюски, морское биоразнообразие, половая система, анатомия, Баренцево море, Rissoidae, *Obtusella*

INTRODUCTION

The diversity of molluscs of the family Rissoidae is poorly studied for the Russian waters. Most rissoid species are easy to overlook due to their small sizes and in some cases because of complexity of identification. Only 16 species of this family have been recognized for the Russian part of the Barents Sea (Golikov, 1995; Golikov et al., 2001; Kantor & Sysoev, 2006). Recent investigation of the fauna of the Barents Sea have led to discovery of some species previously unknown from this area and also revealed several mistakenly recorded species (Nekhaev, 2013a; 2013b; Nekhaev et al., 2014). The goal of this brief note is to describe finding of one more minute rissoid species previously unrecorded from the Russian waters.

MATERIALS AND METHODS

Material was collected during the cruises of the R/V Dalnie Zelentsy along the Murman Coast (Barents Sea). Samples were collected using by 0.1 m² van Veen grab and then were fixed with 4% buffered formalin. The molluscs were stored in 75% ethanol after sorting by hand in laboratory.

Some specimens of *Obtusella intersecta* kept in Swedish Museum of Natural History (Stockholm, Sweden) and representatives of some common species of the family Rissoidae from author's personal collection were used for comparison.

Shells and soft bodies of the molluscs were studied with a Motic K400 stereomicroscope. Number of whorls of both protoconch and teleoconch was counted accord-

ing to Warén (1974). The terminology offered by Ponder (1984) was used to describe the morphology of soft body.

RESULTS

Family RISSOIDAE

Genus *Obtusella* Cossmann, 1921

Obtusella intersecta (S. Wood, 1857)

(Figs 1 a–b, 2)

Rissoa intersecta S. Wood, 1857: 318.

Rissoa alderi Jeffreys, 1858: 127 pl. 5 fig. 5 a–c.

Rissoa soluta: Clark, 1852: 258–259; Jeffreys, 1867: 45–46.

Putilla (Obtusella) cantarainei: Nordsieck, 1972: 156–157, fig. RIII35.

Cingula alderi: Fretter & Graham, 1978: 156–158, figs. 133–134.

Cingula intersecta: Verduin, 1984: 58–60, figs. 4, 23, 72.

Obtusella intersecta: Ponder, 1984: 68–69, figs. 44 D–F, 118 A–E; Warén, 1989: 11, fig. 8 A–B, E; Bouchet & Warén, 1993: 693–694, figs. 1626–1627, 1633; Warén, 1996: 215, fig. 12 E.

Material examined. **Barents Sea, Murman coast:** Teriberskaya Bay, 69°12.580'N 35°06.880'E, 40 m, 3 July 2004 (coll. E.A. Garbul), 7 specimens (2 females dissected); Teriberskaya Bay, 69°11.694'N 35°08.542'E 30 m, 3 June 2009 (coll. E.A. Garbul), 1 empty shell; Yarnyshnaya Inlet, 69°07.802'N 36°02.114'E, 80 m, 3 June 2009 (coll. A.A. Frolov, A.M. Ilyustchenko, L.V. Pavlova), 2 specimens, 1 empty shell; **Norwegian Sea, Trondheimsfjorden:** 1 km of Trondheim Biological Station, 2–6 m, 30 April 1992 (coll. C. Schander), 10 empty shells (Swedish Museum of Natural History).

Description. Shell small, ovate-conic, not colored, rather translucent, with 3.6–4.1 convex whorls divided by deep suture; apical angle acute. Teleoconch sculpture consists of straight growthlines and weak spiral riblets visible with a stereomicroscope at 50–100×. Protoconch I consists of 0.5 whorls; protoconch II – of about 1.2–1.4 whorls, its diameter about 340 µm; diameter of nucleus 70–80 µm. Embryonic shell

lacking in sculpture visible under a stereomicroscope. A few thin spiral ribs (visible only with scanning electronic microscope) cover protoconch I whereas protoconch II is smooth (Warén, 1989; Bouchet & Warén, 1993). Aperture ovate, with rounded outer lip and distinct angle in the top part; umbilicus open and deep; operculum concave, thin, without peg, single growthline is more prominent than other ones.

The dimensions of largest specimen (mm): shell height = 1.47, shell width = 1.13, aperture height = 0.62, aperture width = 0.60, last whorl height = 1.13, whorls number is 4.1. According to published data, the shell height of *O. intersecta* attains 1.6 mm (Verduin, 1984).

Soft body not pigmented, with two black eyes, bilobed snout, pair of the head tentacles and a single narrow metapodial tentacle; pallial tentacle not found, opening of the posterior pedal gland is absent.

Female reproductive system with prominent spermal sac; the height of lower oviduct gland nearly equal to its width; upper oviduct gland not coiled, two times lesser than the lower one; seminal receptacle elongated lies perpendicularly to bursa copulatrix. Pallial genital opening narrow, slightly shorter than lower oviduct gland.

Comparison. *Obtusella intersecta* due to its small size may be confused with juveniles of other rissoid species. All of them differ from *O. intersecta* in having lesser whorls number (not more than 3) with the shell height of 1–1.3 mm (Fig 1 c). Within the rissoid molluscs of the Barents Sea three species: *Onoba semicostata* (Montagu, 1803), *Alvania punctura* (Montagu, 1803) and *Rissoa parva* (da Costa, 1778) are similar to *Obtusella intersecta* in size of embryonic shell as well as in having protoconch II but differ in the number of embryonic whorls and in the shell shape. *Onoba semicostata* have more slender shell and axial riblets in the initial whorls of teleoconch, its embryonic shell of about 1.5 whorls. The protoconch of *Alvania punctura* have more than 3 whorls, initial part, of teleoconch is

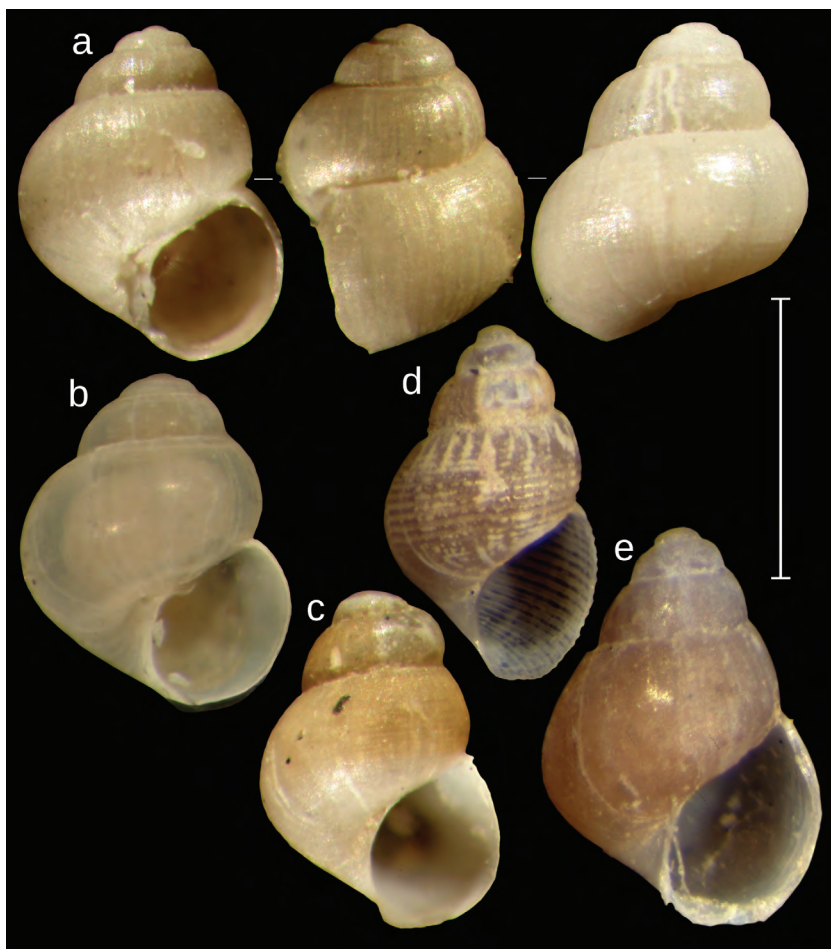


Fig. 1. Shells of *Obtusella intersecta* (a–b), juvenile *Onoba aculeus* (c), juvenile *Onoba semicostata* (d) and juvenile *Rissoa parva* (e): Teriberskaya Bay, 69°12.580' N 35°06.880' E, 40 m, 3 July 2004, shell height 1.17 mm, dried specimen (a); the same specimen captured in ethanol (b); *Onoba aculeus*, Kola Inlet, 69°07.433' N 33°24.001' E, 7 m, 1.06.2013, shell height 1.19, dried specimen (c); *Onoba semicostata*, Dalne-Zelenetskaya Bay, 69°07.29' N, 36°05.00' E, 9 m, 6.07.2009, shell height 1.4 mm, dried specimen (d); *Rissoa parva*, Varangerfjord, Bolshoy Aynov Isl., littoral, 29.05.08, shell height 1.4 mm, dried specimen (e). Scale bar: 1 mm.

also decorated by axial sculpture. The embryonic shell of *Rissoa parva* contains up to 4 slender moderately flattened whorls. Protoconch dimensions of other rissoid species known from the Barents Sea are considerable larger than that of *Obtusella intersecta*. For instance minimal observed protoconch diameter and diameter of nucleus were respectively 420 μm and 130 μm in *Obtusella tumidula* (G.O. Sars, 1878), 420 μm and

160 μm in *Onoba aculeus* (Gould, 1841). Both protoconch and teleoconch of the above-mentioned species have sculpture consisting of the frequent fine spiral ribs well visible under the stereomicroscope.

Distribution. The Eastern Atlantic coast from the the Gibraltar and the Mediterranean to the Murman, including the British Islands, the Faroe Islands and Iceland (Bouchet & Warén, 1993; Fretter & Gra-

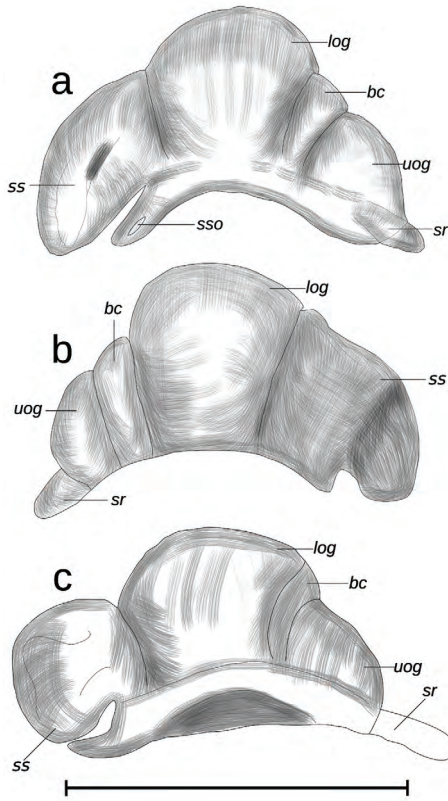


Fig. 2. Female reproductive system of *Obtusella intersecta*, Teriberskaya Bay, 69°12.580'N 35°06.880'E, 40 m, 3 July 2004 (**a, b**, same specimen; **c**, another specimen); *bc*, bursa copulatrix; *log*, lower oviduct gland; *sr*, seminal receptacle; *ss*, spermal sac; *sso*, spermal sac opening; *uog*, upper oviduct gland. Scale bar: 0.5 mm.

ham, 1978; Sneli et al., 2005; Warén, 1989; Høisæter, 2009; Nekhaev, this paper).

Habitat. *Obtusella intersecta* is a typical coastal species occurs from upper subtidal to few tens of meters, occasionally to 100 and more meters (Bouchet & Warén, 1993; Høisæter, 2009). The samples used for present study were collected from sand, shell rock and gravel.

DISCUSSION

The shell morphology of *Obtusella intersecta* from Barents Sea generally corresponds to the previous descriptions (Fretter & Graham, 1978; Ponder, 1984; Verduin,

1984). Fretter & Graham (1978) pointed that the shells of *Obtusella intersecta* reach up to 2 mm in height. It is probably based on the original description of *Rissoa alderi* Jeffreys, 1858. However this description not completely corresponds to modern understanding of *O. intersecta* [see Verduin (1984) for details].

The descriptions of cephalopodium of *Obtusella intersecta* are contradictory to each other. Clark (1852) noted the absence of metapodial tentacles without any data on pallial ones. Jeffereys (1867) pointed on the presence of single very long metapodial tentacle as well as single conspicuous pallial tentacle on *Rissoa soluta*. Fretter & Graham (1978) describe single pallial tentacle without evidence on metapodial one. Ponder (1984) speculated that the *Setia inflata* described by Fretter & Patil (1961) is close to *Obtusella intersecta*. These authors pointed on the presence of short metapodial tentacle and absence of pallial one. The specimens studied by me have well developed metapodial tentacle. As small pallial tentacle is easy to overlook on fixed specimens, its absence on the specimens studied by me is not justified.

The only published description of internal morphology of *Obtusella intersecta* contains female genitalia drawings of a single specimen from Koster (Sweden) with the conspicuously coiled spermal sac and from Corsica (Mediterranean) with almost spherical spermal sac lacking visible bending; minor differences occur also in the shape of the lower oviduct gland (Ponder, 1984: fig 44). The snails from Murman Coast undoubtedly resembles Mediterranean specimen depicted by Ponder (1984) in the shape of both spermal sac and lower oviduct gland.

The specimens of *Obtusella intersecta* were previously found in the Sjona (Middle Norway, living molluscs) and Nordland (Northern Norway, empty shells) (Høisæter, 2009) and had not been previously reported neither from the Barents Sea nor from Russian waters. The Murman Coast is the most

northeast within the known localities of *Obtusella intersecta*, and hence this species have the same distributional pattern with *Alvania punctura* (Montagu, 1803), *Pseudosetia turgida* (Jeffreys, 1870), *Rissoa parva* (da Costa, 1778), *Littorina obtusata* (Linnaeus, 1758), *Eulima bilineata* Alder, 1848, *Haliella stenostoma* Jeffreys, 1858, *Nucella lapillus* (Linnaeus, 1758), *Trophonopsis barvicensis* (Johnston, 1851) and some other species distributed along NE coast of Atlantic ocean from the Mediterranean to Murman Coast. Distribution of these species in the high latitudes is probably limited by the relatively warm North Atlantic current and so, occurrence of *Obtusella intersecta* far to the East or to the North from Kola Peninsula is very unlikely.

Obtusella intersecta like Omalogyridae and some Skeneidae is one of the smallest gastropod species distributed along Scandinavian Peninsula. Discovery of *O. intersecta* in the Murman waters most likely caused by overlooking of this species during previous investigations due to small and inconspicuous shells lacking prominent sculpture and coloration. Hence it is likely that *O. intersecta* have wider distribution along coast of the Kola Peninsula and in Scandinavia.

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