Ruthenica, 1996, 6(2): 167-172.

Short communication

Portlandia aestuariorum (Mossewitsch, 1928) [Bivalvia, Nuculanidae] in its relation to salinity

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Отношение к солености *Portlandia aestuariorum* (Mossewitsch, 1928) [Bivalvia, Nuculanidae]

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Portlandia aestuariorum (Mossewitsch,1928) is a typical species of Arctic estuarine ecosystems of Eurasia which is distributed as isolated brackish-water populations between the Pechora Bay in the Barents Sea and Anadyr Bay in the Bering Sea. The presence of this species in the Amur liman, based on a single record of empty valve [Ushakov, 1948], needs further confirmation. The greatest population inhabits the Ob-Yenisey estuarine aquatory [Mossewitsch, 1928; Filatova, 1951, 1957; Scarlato, 1981].

All reseachers are unanimous in emphasizing the remarkable salinity and temperature tolerance of the estuarine *Portlandia* (between over 20‰ and 1-2‰ of salinity, and even below, and temperature range from below zero to +12°C). This evidence has been obtained from assessment of conditions accompanying biological sampling. Experimental evidence on salinity tolerance and response of *Portlandia aestuariorum* to salinity variations is altogether missing in the literature. The present paper reports data on response of *P. aestuariorum* to sharp desalination of environment, the latter phenomenon representing a real ecological condition characteristic of Arctic estuaries.

Material and methods

Mollusks with the shell length 12 to 15 mm were collected in the Yenisey Bay near Krestovsky Island (72°23' N, 80°47,6 E) by "Ocean" bottom grab from 14 m depth; type of bottom deposit: soft silt. The surface salinity was 2.24‰, near-bottom one — 29.23‰; surface temperature was +10.9°C, near-bottom one — -0.28°C. The animals in the thermostatic bottles were transported to St.Petersburg, where they were placed in a wide flask with artificial sea water of 30‰ salinity into refrigerator at temperature between +2–+4°C.

The mollusks were kept in the refrigerator for three weeks during which time the salinity was reported to rise to 41‰ due to evaporation. In these conditions mollusks did not feed, however their valves were open and the water flow through siphons was well distinguishable.

The osmotic pressure of external and mantle media was determined cryoscopically by semi-microprocedure. With the aid of available table [Khlebovich, 1990], the obtained data on freezing point depression might be converted into the values of osmolarity or salinity. A drop of sample of mantle fluid was taken by a capillary after the destruction of the anterior shell portion with pincers.

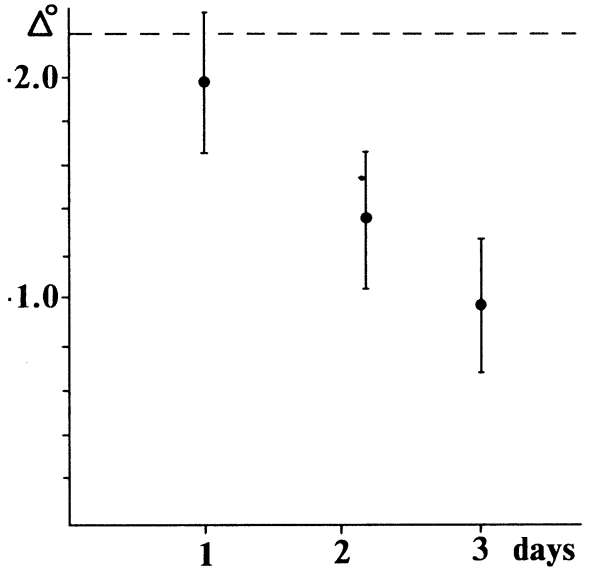

FIG. 1. Freezing point depression of the *Portlandia aestuariorum* mantle fluid after transfer of mollusks from 41‰ (dashed line) to distilled water. Abscissa — exposure in days, ordinate — freezing point depression in °C and corresponding salinity in ‰.

РИС. 1. Депрессия точки замерзания мантийной жидкости *Portlandia aestuariorum*, перенесенных из 41‰ (контроль, обозначен пунктиром) в дистиллированную воду. По абсциссе — экспозиция, сутки; по ординате — депрессия, °С и соответствующая соленость, ‰.