| Linzer biol. Beitr. | 38/1 | 65-70 | 21.7.2006 |
|---|---|---|---|

# Zoogeographical peculiarities of Euroasian north continental water-bodies – Phylactolaemata and Eurystomata

A.V. VINOGRADOV

A b s t r a c t: This report continues the study of geographical distribution of Phylactolaemata and Eurystomata in continental water-bodies. Their distribution is variable. It can be cosmopolitan, holarctic, wide regional, endemical (regional or local). Other brackish-water Eurystomata species (neolymnic component) have a marine distribution. The species composition of Phylactolaemata and Eurystomata in Arctic continental water-bodies is known from some works. Sea Bryozoa distributes in the sea bays, with neolymnic forms. The northern range of Eurasian freshwater Phylactolaemata and Gymnolaemata is limited by environmental temperature. Most northern Phylactolaemata discoveries are by statoblasts only. The occurrence of freshwater and marine bryozoan species in the provinces of Novaja Zemlia, Zemlia of Franz-Josef (Zemlia of Franz-Josef Subprovince, Spitzbergen Subprovince), Lapland, Dvyna River, Pechora River, Lower Ob River, Lower Yenisei River (Taymir Subprovince), Lena River, Kolyma River, Kamchatka, Chukotka, Preockhot-Sea, Severnaja Zemlia, Novosibirsk Islands, and Vrangel Island is given.

K e y w o r d s: Distribution, freshwater, marine, brackish-water, Bryozoa.

## Introduction

This report continues the study of geographical distribution of Phylactolaemata and Eurystomata in continental water-bodies (ABRICOSOV 1926, 1933, 1948, 1959a, b, c; LACOURT 1968; D'HONDT 1983; VINOGRADOV 1985, 1989a, b, 1992, 1993, 1994, 1995, 1996a, b, c, 2000, 2003a, b, 2004, 2005). The distribution of recent Phylactolaemata and Eurystomata is variable. It can be cosmopolitan, holarctic, wide regional, endemical (regional or local). Other brackish-water Eurystomata species (neolymnic component) have a marine distribution.

The species composition of Phylactolaemata and Eurystomata in Arctic continental water-bodies is known from some works (ABRICOSOV 1926, 1933, 1968; PIROZSCHNIKOV 1937; GRESE 1947a, b, 1953, 1957a, b; KOZSHOV & TOMILOV 1949). Sea Bryozoa distributes in the sea bays, with neolymnic forms (USCHAKOV 1930; PIROZSCHNIKOV 1936; ABRICOSOV 1948; KLUGE 1962).

The northern range of Eurasian freshwater Phylactolaemata and Gymnolaemata is limited by environmental temperature. Most northern Phylactolaemata discoveries are by

statoblasts only. This document describes the occurrence of freshwater and marine bryozoan species in the provinces of Novaja Zemlia, Zemlia of Franz-Josef (Zemlia of Franz-Josef Subprovince, Spitzbergen Subprovince), Lapland, Dvyna River, Pechora River, Lower Ob River, Lower Yenisei River (Taymir Subprovince), Lena River, Kolyma River, Kamchatka, Chukotka, Preockhot-Sea, Severnaja Zemlia, Novosibirsk Islands, and Vrangel Island.

## Palearctic Region

### Europe-Siberia Subregion

Novaja Zemlia Province

The list of artic findings of Phylactolaemata and continental water-bodies Eurystomata includes *Paludicella articulata*, *Fredericella sultana duplessisi* (= *F. sultana sultana*), *Cristatella mucedo*, *Plumatella repens* and *P. fruticosa* (ABRICOSOV 1933, 1968). Statoblasts of *P. repens* are from the Arctic Russian territory (Novaja Zemlia, half-island Belushyi, lake Bolshoe Sidorovskoje). Marine bryozoan come only from the Novaja Zemlia sea bays (USCHAKOV 1930; GOSTILOVSKAJA 1962, 1984).

### Zemlia of Franz-Josef Province

Zemlia of Franz-Josef Subprovince

Marine Bryozoa findings are in water-bodies near the sea (DENISENKO & PANTELEEVA 1985).

Spitzbergen Subprovince

Phylactolaematae statoblasts findings are at Spitzbergen, as well as in Greenland and Iceland (ABRICOSOV 1968).

Lapland Province

Species in continental water-bodies: *Fredericella sultana sultana*, *F. australiensis* (probably, introduced), *Plumatella fruticosa*, *P. emarginata*, *P. repens*, *P. fungosa*, *P. coralloides*, *Hyalinella punctata*, *Cristatella mucedo*, *Paludicella articulata*, *Electra baltica* (= *E. crustulenta* var. *baltica*).

Marine bryozoans live in several salt and brackish water-bodies. Subfossile marine bryozoan findings are in the deposits of lake Mogilnoje (GOSTILOVSKAJA & TARASOV 1971 1975): Cyclostomida – *Proboscina* sp., *Tubulipora flabellaris (*FABRICIUS), *T. uniformis* GOSTILOVSKAJA, *Tubulipora* sp., *Diplosolen* sp., *Crisiella producta (*SMITT*)*, *Crisia eburnea (*LINNAEUS*)*, *Crisia* sp., *Lichenopora verrucaria (*FABRICIUS*)*, *Lichenopora* sp.; Cheilostomida – *Eucratae loricata* (LINNAEUS), *Tegella armifera* (HINCKS), *T. arctica* (D'ORBIGNY), *Callopora lineata* (LINNAEUS), *C. craticula* (ALDER), *Cauloramphus cymbaeformis* (HINCKS), *Cauloramphus* sp., *Dendrobeania murrayana* (JOHNSTON), *D.*

*pseudomurrayana var. fessa* KLUGE, *Dendrobeania* sp., *Tricellaria ternata* (ELLIS & SOLANDER), *T. gracilis* (VAN BENEDEN), *Scrupocellaria scabra* (VAN BENEDEN), *Cribrillina annulata* (FABRICIUS), *C. punctata* (HASSALL), *Escharella immersa* (FLEMING), *Smittina minuscula* (SMITT), *S. rigida* LORENZ, *Porella acutirostris* SMITT, *Umbonula arctica* (SARS), *Schizoporella lineata* (NORDGAARD), *S. porifera* (SMITT), *Hippodiplosia reticulatopunctata* (HINCKS), *H. propinqua* SMITT, *Hippothoa hyalina* (LINNAEUS), *Harmeria scutulata* (BUSK), *Microporella ciliata* (PALLAS), *Microporella* sp., *Rhamphostomella spinigera* LORENZ, *R. radiatula* (HINCKS).

Our collection of recent bryozoans of Beloje Sea (White Sea), from Kandalaksha Bay, includes 30 species: Stenolaemata – *Tubulipora flabellaris*, *Diplosolen obelia obelia*, *D. obelia* var. *arctica*, *Filicrisia geniculata*, *Crisia aculeata*, *C. eburnea*, *C. eburneo-denticulata*, *C. denticulata*, *L. verrucaria*; Eurystomata – *Electra pilosa pilosa*, *E. pilosa* var. *dentata*, *Tegella armifera*, *Callopora lineata*, *C. craticula*, *C. craticula* var. *sedovi*, *C. aurita*, *Cauloramphus spiniferum*, *Amphiblestrum septentrionalis*, *Flustra membranaceo-truncata*, *Bugulopsis peachi*, *Tricellaria ternata*, *T. gracilis*, *Scrupocellaria scabra*, *S. minor*, *S. arctica*, *Cribrillina annulata*, *C. punctata*, *Escharella immersa*, *Umbonula arctica*, *Hippothoa hyalina*.

**Dvyna River Province**

Species (probably): *Fredericella sultana sultana*, *Plumatella fruticosa*, *P. repens*, *P. emarginata*, *Hyalinella punctata*, *Cristatella mucedo*, *Paludicella articulata*.

**Pechora River Province**

Species (probably): *Fredericella sultana sultana*, *Plumatella fruticosa*, *P. repens*, *P. emarginata*, *Hyalinella punctata*, *Cristatella mucedo*, *Paludicella articulata*.

**Lower Ob River Province**

Species (from publications): *Fredericella sultana*, *Plumatella fruticosa*, *P. repens*, *P. fungosa*, *P. emarginata*, *Hyalinella punctata*, *Cristatella mucedo*, *Paludicella articulata*.

Our data: *Fredericella sultana*, *Plumatella fruticosa*, *P. fungosa*, *P. emarginata*, *Hyalinella punctata*, *Cristatella mucedo*, *Paludicella articulata*. Findings of *Fredericella sultana* zoaria are from the Ob River delta, *Plumatella fruticosa* from the peninsula Gydanskyi (second finding at the Asian part of Russia, after one finding at Jakutia, the third in Asia, after Japan); *P. fungosa* – at the Ob River delta, *P. emarginata* – at the Yamal region, *Hyalinella punctata* – at the lower part of Taz River, *Cristatella mucedo* – at the peninsula Tazovskyi, *Paludicella articulata* – at the Ob River delta. They are the most north findings of species. In the south, at the Irtysh Province (Irtysh River basin, south of Tiumen Region) *Leptoblastella casmiana* zoaria (first findings in West Siberia and second in Siberia, after Middle Siberia, at the south of the Krasnoyarsk Region) and *Plumatella coralloides*.

## East-Siberia Subregion

### Lower Yenisei River basin Province

### Taimyr Subprovince

Species: *Plumatella emarginata*, *P. articulata*, *Hislopia placoides* (endemic in Lake Baical), *Alcyonidium disciforme* (brackish-water Eurystomata).

### Lena River Province

Species: *Fredericella sultana*, *Plumatella fruticosa*, *P. fungosa*, *Hyalinella punctata*, *Cristatella mucedo*, *Paludicella articulata*.

### Kolyma River Province

*Plumatella* sp. statoblasts were found in the plankton of Kolyma River. Some Phylactolaemata findings are from the bottom of Ilyrneyskije Lakes (Magadan Region); statoblasts were found in the winter plankton.

### Kamchatka Province

Species: *Hyalinella punctata*, *Cristatella mucedo*.

### Chukotka Province, Preockhot-Sea Province, Severnaja Zemlia Province, Novosibirsk Islands Province, Vrangel Island Province

Phylactolaemata and Eurystomata have not been not studied yet.

## References

ABRICOSOV G.G. (1926): Bryozoa, collected by the Olonetz Scientific Expedition. — Trav. Exped. Sci. Olonetz **6**, 2: 39-45 [in Russian].

ABRICOSOV G.G. (1933 ): Die Süsswasserbryozoen des Arktischen Gebietes. — Fauna Arctica **6**: 384-388.

ABRICOSOV G.G. (1948): Class Bryozoa. Fauna and Flora Key of northern seas of the USSR. —Moscow, Soviet Sc.: 451-461, ill., Tab. 116-118 [in Russian].

ABRICOSOV G.G. (1959a): The problem of the geographical distribution of the Phylactolaemata, fresh-water Bryozoa. — Reports USSR Acad. Sci. **126**, 5: 1139-1140 [in Russian].

ABRICOSOV G.G. (1959b): The generic classification of the Phylactolaemata, fresh-water Bryozoa. — Reports USSR Acad. Sci. **126**, 4: 898-901 [in Russian].

ABRICOSOV G.G. (1959c ): The generic classification and geographical distribution of the Gymnolaemata, Bryozoa of the continental water-bodies. — Reports USSR Acad. Sci. **126**, 6: 1378-1380 [in Russian].

ABRICOSOV G.G. (1968): Phylum Bryozoa. — Life of Animals. Moscow, Education **1**: 533-542 [in Russian].

DENISENKO N.V. & PANTELEEVA N.N. (1985): New data about archipelag Zemlia of Franz-Josef Bryozoa. — Investigation and rationale expluatation of biological resourses of northern seas and northern Atlantic, Murmansk: 20-21 [in Russian].

GOSTILOVSKAJA M.G. (1962): To Novaja Zemlia Bryozoa fauna (strait Matochkin Shar and Moller bay). — Trav. MMBI **4**, 8: 64-96 [in Russian].

GOSTILOVSKAJA M.G. (1984): Bryozoa, finds at the Balanus at the Archangelskaja bay (Novaja Zemlia, Barentz Sea). — Benthos of Barentz Sea, Apatyty, Ed. of Kola branch of Acad. Sci. USSR: 51-71 [in Russian].

GOSTILOVSKAJA M.G. & G.A. TARASOV (1971): About fossil Bryozoa from deposits of lake Mogilnoje. — Nature and Economy of the North, Apatyty 3: 33-36 [in Russian].

GOSTILOVSKAJA M.G. & G.A. TARASOV (1975): Bryozoa. — Relict lake Mogilnoje. Leningrad, Science: 168-173 [in Russian].

GRESE V.N. (1947a): Lake Taymir. — Reports Geogr. Soc. USSR **79**, 3: 282-302 [in Russian].

GRESE V.N. (1947b): Zoobenthos anabiosis at the lake Taymir. — Zool. Zh. **26**: 1 [in Russian].

GRESE V.N. (1953): Lakes at the west boundary of Middle-Siberia flat-mountains. — Book to V.A. Obruchev. Tomsk branch of Geogr. Soc. Problems of Siberia Geography, Tomsk: 201-216 [in Russian].

GRESE V.N. (1957a ): Main hydrobiology characteristics of lake Taymir. — Trav. Hydrobiol. Soc. USSR **8**: 183-218 [in Russian].

GRESE V.N. (1957b): Food resourses for fishes of Yenisei River and its expluatacion. — Reports Fish Economy Inst. USSR (VNIIORH). Food Prom. Ed. **41**: 31-42 [in Russian].

D'HONDT J.L. (1983): Tabular keys for identification of the recent ctenostomatous Bryozoa. — Mem. Inst. Oceanogr. **14**: 1-134, ill.

KLUGE G.A. (1962): Bryozoa of the northern seas of the USSR. — Moscow, Leningrad, Acad. Sci. USSR Ed.: 1-582 [in Russian].

KOZSHOV M.M. & A.A. TOMILOV (1949): About new finds of Baical fauna out of Baical. — Trav. Hydrobiol. Soc., USSR **1**: 224-225 [in Russian].

LACOURT A.W. (1968): A monograph of the freshwater Bryozoa Phylactolaemata. — Zool. Verhandel., Leiden **93**: 1-159.

PIROZSCHNIKOV P.L. (1936): Hydrobiology of Piasyna River. — Water resources of the USSR Handbook. Leningrad, CUEGMS Ed. **16**, Lena and Yenisei Region **1**: 877-878 [in Russian].

PIROZSCHNIKOV P.L. (1937): Marine and Baical elements of Yenisei fauna. — Bull. of the Moscow Soc. of Naturalists, ser. biol. **46**, 2: 165-172 [in Russian].

USCHAKOV P.V. (1930): To hydrology and fauna of relict Novaja Zemlia water-bodies. — Trav. of 2nd Hydrol. Conf. of the USSR. Leningrad **3**: 236-237 [in Russian].

VINOGRADOV A.V. (1985): Bryozoa. — The Trav. of Paleont. Inst. of Acad. of Sci. of the USSR, t.213. Moscow. The Jurassic continental biocenoses of South Siberia and bordering territories: 85-87, tab.7, fig. 1-4 [in Russian].

VINOGRADOV A.V. (1989a): The Bryozoa of the continental water-bodies of the USSR (recent and fossil). — Moscow, Paleont. Inst. of the Acad. of Sci. of the USSR, reference of dissertation: 1-26 [in Russian].

VINOGRADOV A.V. (1989b): To the knowledge of the Bryozoa fauna of the Middle Siberia continental water-bodies. — The problems of investigation of Siberia in scientific work of museums. Krasnoyarsk State Univ.: 189-192 [in Russian].

VINOGRADOV A.V. (1992): To the knowledge of freshwater Bryozoa fauna at the Middle Vilyui river, at the Yakutia. — Dep. in ONP NPC "Veras" and Inst. of Zool. Acad. of Sci. Bielorussia, Minsk: 7-42, **42**: 1-16 [in Russian].

VINOGRADOV A.V. (1993 ): To recent Bryozoa fauna of Transbaicalien water-bodies. — Dep. in ONP NPC "Veras" and Inst. of Zool. Acad. of Sci. Bielorussia, Minsk: 19-41, **269**: 1-4 [in Russian].

VINOGRADOV A.V. (1994): The Eurystomata of Russian and bordering territories continental water-bodies. — Fossil and living Bryozoa of the globe. Perm State Univ.: 57 [in Russian].

VINOGRADOV A.V. (1995): New fossil bryozoans from continental water-bodies of Russia and Kazakhstan. — Paleont. J. **4**: 43-53, tab. 2 [in Russian].

VINOGRADOV A.V. (1996a): The new Eurystomata from Cretaceous deposits of Transbaicaliensis region. — Paleont. J. **1**: 115-116 [in Russian].

VINOGRADOV A.V. (1996b): New fossil freshwater Bryozoans from the Asiatic Part of Russia and Kazakhstan. — Paleontol. J., USA **30**, 3: 284-292.

VINOGRADOV A.V. (1996c): New eurystomid Bryozoan from the Cretaceous of Transbaikalia. — Paleontol. J., USA **30**, 1: 110-111.

VINOGRADOV A.V. (2000): About East and Middle Siberian biodiversity conservancy. — Biodiversity of conserve territories, Moscow, Samara: 51-87 [in Russian].

VINOGRADOV A.V. (2003a): Continental water-bodies Bryozoa of Baltic Province. — Biol. Education investigations. To 100-th anniversary of Prof. D. N. Florov. Samara, State Pedagogical Univ. **3**, 1: 221-233 [in Russian].

VINOGRADOV A.V. (2003b): Bryozoa of West Siberia continental water-bodies. — Periphyton of continental waters: the present state of knowledge and prospectivies of further research. Int. Symp. Tiumen, State Univ.: 11-13 [in Russian].

VINOGRADOV A.V. (2004): Russian continental water-bodies bryozoology: 30 years studies. — Regional Studies Reports [Samara Region in the Russian History. Sci. conf. to 180$^{th}$ anniversary of P.V. Alabin], Samara **13**: 64-76 [in Russian].

VINOGRADOV A.V. (2005): Zoogeographycal analysis of Euro-Asia continental water-bodies Eurystomata and Phylactolaemata. — Biol. and Education investigations. Samara, State Pedagogical Univ.: 198-203 [in English].

Author's address: Anatoly V. VINOGRADOV
Biol.-Georg. Faculty
Samara State Pedagogical University
M. Gorky Street, 65/67
Samara
RUS-443099 Russia
E-mail: sfurao@obp.ru
avi06@inbox.ru