

ON MOSS FLORA OF THE SOKHONDINSKY STATE NATURE BIOSPHERE  
RESERVE (ZABAİKALSKY TERRITORY)

К ФЛОРЕ МХОВ СОХОНДИНСКОГО ГОСУДАРСТВЕННОГО  
ПРИРОДНОГО БИОСФЕРНОГО ЗАПОВЕДНИКА  
(ЗАБАЙКАЛЬСКИЙ КРАЙ)

OLGA M. AFONINA<sup>1</sup>

ОЛЬГА М. АФОНИНА<sup>1</sup>

Abstract

The preliminary data on the moss flora of Sokhondinsky State Nature Biosphere Reserve are presented. They are based mainly on the bryofloristic exploration of the upper forest belt in the upper course of Bukukun River in 2008, as well as on some moss collections made by staff of the Reserve and of the Botanical Garden of the Far Eastern Branch of RAS. Annotated list includes 186 species and two varieties, 18 species among them are new for the moss flora of Zabaikalsky Territory. The findings of some rare species, e. g. *Aongstroemia orientalis*, *Bryoerythrophyllum latinervium*, *Ochyraea mollis*, *Pohlia tundrae*, *Schistidium subjulaceum*, *Sematophyllum substrumosum* *Syntrichia laevipila* are of interest for the moss flora of Russia as a whole.

Резюме

Приводятся предварительные данные по флоре мхов Сохондинского государственного природного биосферного заповедника, основанные на бриофлористических исследованиях, проведенных в 2008 г. в верховьях р. Букукун и охватывающие в основном верхний лесной пояс. Были изучены также коллекции, собранные сотрудниками заповедника и Ботанического сада ДВО РАН в разные годы. Представленный здесь аннотированный список мхов включает 186 видов и 2 разновидности, из них 18 видов являются новыми для Забайкальского края. Определенный интерес представляют находки таких редких видов для флоры мхов России, как *Aongstroemia orientalis*, *Bryoerythrophyllum latinervium*, *Ochyraea mollis*, *Pohlia tundrae*, *Schistidium subjulaceum*, *Sematophyllum substrumosum*, *Syntrichia laevipila*.

KEYWORDS: mosses, Bryophyta, flora, Russia, Siberia, Zabakalsky Territory, Sokhondinsky State Reserve, phytogeography

INTRODUCTION

Sokhondinsky State Nature Biosphere Reserve was founded in 1973. The reserve is situated in Kyra district of Zabaikalsky Territory in the highest part of Khentei-Chikoi Upland, its area occupies 2110 sq. km. The upland is strongly cut by rivers and has average mountain erosion-denudated relief. In the center of the reserve there is So-

khondo mountain massif with two flat dome tops, Bolschoe and Maloe Sokhondo of 2508 and 2404 m elev. correspondingly. In geological respect Sokhondo Range is a granite intrusion of complex petrographic composition surrounded by sedimentary rocks (limestones, sandstones, schists, siltstones). In the territory of the reserve there are some other mountains: Sopka-Yan (2332 m), Bal-

<sup>1</sup> – V. L. Komarov Botanical Institute Rus. Acad. Sci., Prof. Popov Str., 2, St. Petersburg, 197376 Russia – Россия 197376, Санкт-Петербург, ул. Проф. Попова, 2, Ботанический институт им. В. Л. Комарова РАН; e-mail: stereodon@yandex.ru

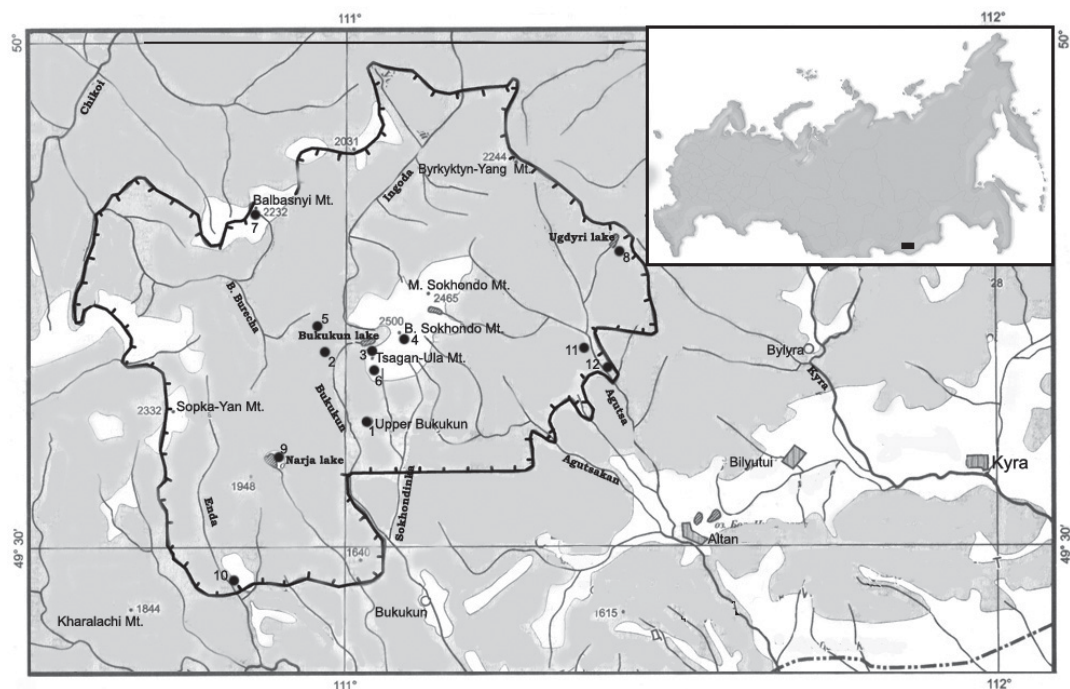


Fig. 1. Collecting localities of mosses in Sokhondinsky State Nature Biosphere Reserve:

1. **Upper Bukukun River**, surroundings of winter hut "Upper Bukukun", Ernisty, Zagadochnyi Creeks. [A.V.Galanin, A.V.Belikovich, 2000; O.M.Afonina, 2008]
2. **Upper Bukukun River**, surroundings of winter hut "Bukukun Lake" [A.V.Galanin, 1983; A.V.Galanin, A.V.Belikovich, 2000; O.M.Afonina, 2008]
3. **Upper Bukukun River. Bukukun Lake** [A.V.Galanin, 1983; O.M.Afonina, 2008]
4. **Sokhondo Mountain** [A.V.Galanin, 1983; A.V.Galanin, A.V.Belikovich, 2000]
5. **Burecha River**, Valley of Burecha River, Schergen-Daban Creek [I.S.Efimova, 1982; A.V.Galanin, 1982; Kurbatova, Z.A.Vasilchenko, 1982; Z.A.Vasilchenko, E.Baranova, 1983; A.A.Korobkov, 2005]
6. **Tsagan-Ula Mountain** [A.V.Belikovich, 2000]
7. **Balbasnyi Mountain, Balbasnay River** [Z.A.Vasilchenko, 1981]
8. **Ugdyri Lake** [I.S.Efimova, 1982; A.V.Galanin, 1982]
9. **Narja Lake** [I.S.Efimova, 1982]
10. **Enda River** [A.V.Galanin, A.V.Belikovich, 2000; A.V.Galanin, A.V.Belikovich, 2003; A.A.Korobkov, 2005; L.S.Yakovchenko, 2006]
11. **Upper Buninda River** [A.V.Galanin, 1982; A.V.Galanin, A.V.Belikovich, 2001]
12. **Agutsa River** [A.V.Galanin, A.V.Belikovich, 2001; G.P.Urbanavichus, 2000; L.S.Yakovchenko, 2006]

basnyi (2232 m), Tsagan-Ula, etc. Climate of this territory is ultracontinental and is characterized by great differential of daily and yearly temperatures and high insolation. The mean annual temperature is  $-2.9^{\circ}\text{C}$  and annual precipitation is 340 mm in valleys and 650-700 mm in mountains, the most quantity (60-80%) is falled in July-August.

Vegetation corresponds with five altitudinal belts. The upper one, "goltsy" belt (above 2000-2100 m alt.), occupies the tops of Sokhondo, Tsagan-Ula and Balbaschnyi Mts. Vegetation of this

belt is represented by *Dryas* and moss-lichen tundras, nival alpine shortgrass meadows with pools. Mosses are mostly on rocks: *Andreaea rupestris* var. *papillosa*, *Grimmia elatior*, *G. incurva*, *G. longirostris*, *Racomitrium lanuginosum*; or on fine soil spots: *Anomobryum julaceum*, *Aongstroemia orientalis*, *Dicranum groenlandicum*, *D. spadiceum*, *Ditrichum heteromallum*, *Encalypta ciliata*, *Loeskyppnum badium*, *Ochyreae mollis*, *Oligotrichum falcatum*. "Subgoltsy", or elfinwood belt (1900-2000 m alt.) is characterized by the presence of formations of *Pinus pumila* or *Pinus*

*sibirica* forests with *Pinus pumila*. Mosses together with lichens form dense cushions on boulders (*Dicranum acutifolium*, *Hedwigia ciliata*, *Pleurozium schreberi*, *Rhytidium rugosum*, *Sanionia uncinata*) or between boulders (*Grimmia jacutica*, *Paraleucobryum longifolium*, *Polytrichastrum alpinum*, *Stereodon plicatulus*); rock surfaces are covered by *Cynodontium asperifolium*, *Grimmia elatior*, *Ulota curvifolia*.

The upper forest belt (1700-1900 m alt.) is represented by forests with *Larix dahurica* and *Pinus sibirica*, sometimes with admixture of *Betula platyphylla* and *Populus suaveolens*. Moss cover in these forests is well developed, the main dominants are *Dicranum polysetum*, *D. spadiceum*, *Pleurozium schreberi*, *Polytrichum commune*, *Ptilium crista-castrensis*, *Sanionia uncinata*; in wet forests *Aulacomnium palustre* and *Sphagnum* spp. are common; on trunk bases there are *Dicranum flagellare*, *D. montanum*, *Platygyrium repens*, *Plagiothecium laetum*, *Pylaisia polyantha*; on rotten wood *Brothera leana*, *Dicranum fragilifolium*, *D. montanum*, *Eurhynchiastrum pulchellum*, *Tetraphis pellucida* usually occur. Rather great diversity of mosses in upper forest belt is a result of the diversity of habitats: stones, boulder fields, rock outcrops, banks of creeks, streams and lakes. In these habitats some rare species were collected: *Didymodon gaochienii*, *D. hedysarifformis*, *Grimmia mollis*, *Isopterygiopsis alpicola*, *Pohlia tundrae*, *Schistidium sordidum*, *S. subjulaceum*, etc.

Forests of the lower forest belt (1400-1700 m alt.) are formed by *Larix dahurica*, *Pinus sylvestris*, *Betula platyphylla*, *Populus tremula*. Vegetation of the forest-steppe belt (700-1400 m alt.) covers mainly steep south-facing slopes in south and south-east parts of the reserve. Bryofloristic investigation of the two latter belts in territory of the reserve was not carried out, some fragmentary data were obtained in the course of identification of some specimens collected by geobotanists.

Sokhondo Mountain has attracted attention of the researchers for a long time. First botanical collections were made by N.P. Sokolov, participant of P.S. Pallas' expedition in 1770. Many other botanists collected mosses during exploration of this area. The extensive moss collections were

made by staff of Sokhondinsky Reserve. First collections of a professional bryologist, L.V. Bardunov, were made in 1964, but unfortunately no results were published. Only the data on findings of *Aongstroemia orientalis* and *Lindbergia brachyptera* were included into Handbook of mosses of Central Siberia and the Red Data Book of Chita Province and Agin-Buryat Autonomous Area (Bardunov, 1969, 2002). In 2008 the upper course of Bukukun River was explored by the author. Identification of moss collection gathered here as well as of other collections kept in the reserve results in the annotated list of 187 species. Collecting localities on territory of Sokhondinsky Reserve are shown in Fig. 1.

#### ANNOTATED LIST OF MOSSES

In the following list the nomenclature of mosses is given according to Ignatov, Afonina, Ignatova et al (2006). After the species name the numbers of localities where the species has been collected are given in bold (cf. Fig. 1), further the main types of habitats are given, for rare species the label data are cited with indication geographical coordinates and elevations. The numbers of specimens collected by the author are listed at the end of paragraph with indication of presence of sporophytes; for the specimens gathered by other collectors their names are given. New species for Zabailalsky Territory are marked by asterisk (\*). All cited specimens are kept in LE.

*Abietinella abietina* (Hedw.) M.Fleisch. – **1,2,3**; rather common on dry rocks, boulders, on soil in larch forests with *Rhododendron dauricum* and *Pinus pumila* on south-facing slopes, # 04808, 05308, 05408.

*Amblystegium serpens* (Hedw.) Bruch et al. var. *serpens* – **1**: 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops on left river bank, # 07208.

*A. serpens* (Hedw.) Bruch et al. var. *juratzkanum* (Schimp.) Rau & Herv. – **5**: flood plain forb larch forest, 21.VIII.1982, Galanin.

*Amphidium lapponicum* (Hedw.) Schimp. – **5**: on rocks, 22.VII.1983 fr., Vasilchenko, Baranova.

*Andreaea rupestris* Hedw. var. *papillosa* (Lindb.) Podp. – **1,2,3**: common on rocks in mountain *Dryas* tundra, on rocks and boulders of rock fields, # 05908 fr., 06008, 06508, 06708, 06908; 07408 fr., 08808 fr.

*Anomobryum julaceum* (Schrad. ex P.Gaertn., B.Mey. & Scherb.) Schimp. – **3**: 49°42'N, 111°03'E, alt. 2138 m, in *Dryas* tundra in "goltsy" belt, # 06808, with *Ditrichum heteromallum*.

- Anomodon minor* (Hedw.) Fűrnr. subsp. *integerrimus* (Mitt.) Z.Iwats. – **5**: on rocks, 22.VII.1983, Vasilchenko, Baranova.
- Aongstroemia orientalis* Mitt. – **1**: 49°38'N, 111°03'E, alt. 1997 m, *Dryas*-sedge-lichen tundra, # 04208. Rare species included in the Red Data book of Chita Province and Agin-Buryat Autonomus Area (Bardunov, 2002).
- Arctoa fulvella* (Dicks.) Bruch et al. – **3**: 49°42'N, 111°03'E, alt. 2138 m, stony *Dryas* tundra in "goltsy" belt, # 06708; **4**: stony tundra with sparse vegetation, 1.VIII.2000, Galanin, Belikovich.
- Aulacomnium palustre* (Hedw.) Schwägr. – **1-12**: rather common in moss cover of wet forest and in moss communities along creeks, in bogs, # 04908, 05708; 9.VIII.1983, Galanin.
- A. turgidum* (Wahlenb.) Schwägr. – **5**: wet bushy-moss tundra, 22.VI.1982, Galanin; larch forest on gentle slope, 30.VI.1982, Galanin; **8**: *Sphagnum*+*Ledum* larch forest, 23.VII.1982, Galanin.
- Bartramia ithyphylla* Brid. – **1**: 49°37'N, 111°02'E, alt. 1756 m, on boulders along creek bed, # 07708, 08408; **10**: in flood-plain formation with *Betula fruticosa*, 25.VIII.2006, Yakovchenko.
- Brachytheciastrum trachypodium* (Brid.) Ignatov & Huttunen – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808; 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops, # 07208.
- Brachythecium erythrorrhizon* Bruch et al. – **1**: 49°37'N, 111°02'E, alt. 1756 m, on rotten wood in *Pinus sibirica* forest with larch, # 08508; **10**: in larch-birch forest on north-facing slope, 18.VIII.2003, Galanin, Belikovich.
- B. salebrosum* (F. Weber & D. Mohr) Bruch et al. – **1**: 49°37'N, 111°02'E, alt. 1756 m, on rotten wood in larch forest with *Pinus sibirica*, # 08608; **5**: on rocks, 22.VII.1983 fr., Vasilchenko, Baranova.
- B. udum* L. Hagen – **1**: 49°39'N, 110°59'E, alt. 1557 m, along forest stream bed, # 07308.
- Brothera leana* (Sull.) Müll. Hal. – **2**: 49°37'N, 111°00'E, alt. 1463 m, on rotten log in larch forest with *Pinus sibirica*, # 05408 among *Plagiothecium laetum*; **12**: in formation with *Betula fruticosa*, 9.VIII.2001, Galanin.
- Bryoerythrophyllum ferruginascens* (Stirt.) Giacom. – **5**: on rocks, 22.VII.1983 rather large cushion, Vasilchenko, Baranova.
- B. latinervium* (Holmen) Fedosov & Ignatova (*B. recurvirostrum* var. *latinervium* (Holmen) B.M. Murray) – **10**: flood-plain formation with *Betula fruticosa*, 25.VIII.2006, Yakovchenko. The first report of this rare species for Zabaikalskiy Territory (Fedosov & Ignatova, 2008) was based just on this specimen collected in Sokhondinsky Reserve.
- B. recurvirostrum* (Hedw.) P.C.Chen – **1**: 49°37'N, 111°00'E, alt. 1463 m, creek bed, # 04908 fr.; 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops, # 07208; 49°35'N, 111°02'E, alt. 1520 m, way side, # 08308.
- Bryum altaicum* Broth. – **1**: 49°37'N, 111°02'E, alt. 1756 m, on boulders along creek bed, # 07708, det. Zolotov. In Russia this species is known also in Altai (vicinity of Ongudai settlement and Terekhtinsky Ridge) (Brotherus, 1929; Bardunov, 1974).
- B. argenteum* Hedw. – **1**: 49°42'N, 111°02'E, alt. 1859 m, on rotten wood in forest with *Pinus sibirica*, 19.VII.2008 fr.; **11**: on boulders in pine forest, 19.VIII.2001 fr., Galanin, Belikovich.
- B. capillare* Hedw. – **3**: 49°42'N, 111°03'E, alt. 1906 m, on rotten wood in *Bergenia crassifolia*-moss *Pinus sibirica* forest with *Juniperus* and *Pinus pumila*, # 06108, and in niche among boulders, # 06308, det. Zolotov.
- B. creberrimum* Taylor – **1**: on rocks in creek beds, on rotten wood in *Pinus sibirica* forest with larch, # 04508, 04908, 05008, 08508, 08508, det. Zolotov.
- \**B. cyclophyllum* (Schwägr.) Bruch et al. – **1**: 49°35'N, 111°02'E, alt. 1520 m, forest stream bed, # 082083 with *Philonotis fontana*; **3**: 49°42'N, 111°03'E, alt. 2138 m, on soil spot in stony *Dryas* tundra, # 07008, det. Zolotov.
- B. intermedium* (Brid.) Blandow – **1**: 49°37'N, 111°01'E, alt. 1471 m, stony bank of stream, # 04508, det. Zolotov.
- B. pseudotriquetrum* (Hedw.) P.Gaertn., B.Mey. & Scherb. – **1,2,3,4,6,12**: common in moss communities on rocks along banks of streams, in willow stand on lake shore, in wet tundras in "goltsy" belt, # 04508, 04908 fr., 05008, 06008, 06808, 07708, 08208.
- \**Bucklandiella microcarpa* (Hedw.) Bednarek-Ochyra & Ochyra – **2**: 49°37'N, 111°00'E, alt. 1463 m, stony bed of Zagadochnyi Creek, # 04908 fr.; **3**: 49°42'N, 111°03'E, alt. 1906 m, rock field in forest with *Pinus sibirica*, # 06508; 49°42'N, 111°03'E, alt. 2300 m, rock outcrops on slope, # 06908.
- B. sudetica* (Funck) Bednarek-Ochyra & Ochyra – **2**: 49°42'N, 111°02'E, alt. 1859 m, on boulders in willow stand on lake shore, # 06008.
- Calliargon giganteum* (Schimp.) Kindb. – **5**: flood plain forb larch forest, 21.VIII.1982, Galanin; **10**: flood-plain formation with *Betula fruticosa*, forms cushions with *Philonotis fontana*, 25.VIII.2006, Yakovchenko.
- Calliargonella lindbergii* (Mitt.) Hedenäs – **1,2,3,5,10**: common in willow stands on lake shore, on boulders along creek beds, on soil in flood plain larch forests and in flood plain formation with *Betula fruticosa*, wet roadsides, # 06008, 07708, 07908.

- Campyloidium sommerfeltii* (Myrin) Ochyra – **10**: *Rhododendron dauricum*-larch-birch forest on north-facing slope, 18.VII.2003, Galanin, Belikovich; bank of stream, 29.VIII.2005, Korobkov.
- Ceratodon purpureus* (Hedw.) Brid. – **1-12**: common on disturbed places, also on rocks, # 04908 fr., 05408 fr.
- Climacium dendroides* (Hedw.) F. Weber & D. Mohr – **1,5,12**: common on banks of creeks, on soil in flood plain larch forests, dwarf shrub formations with *Betula* sp., in moss-lichen-bushy tundra, # 07708; 21.VII.1983 fr., Vasilchenko, Baranova; 9.VIII.2001, Galanin.
- Cynodontium asperifolium* (Lindb. & Arnell) Paris – **1,2,3,10**: very common on rotten wood and boulders in forests, on granite blocks and stones, in moss communities along banks of rivers and creeks, # 04608 fr., 04708, 04808 fr., 04908 fr., 05108, 05408 fr., 08408.
- C. strumiferum* (Hedw.) Lindb. – **2**: 49°37'N, 111°00'E, alt. 1463 m, larch forest with *Pinus sibirica*, in niche among boulders, # 05108 fr.; **3**: 49°42'N, 111°02'E, alt. 1859 m, *Pinus sibirica* forest with *Juniperus* sp.-*Vaccinium myrtillus*-moss cover, # 05708, fr.; **8**: moss-lichen-*Ledum palustre* larch forest, 23.VII.1982, Galanin.
- C. tenellum* (Schimp.) Limpr. – **1**: on wall of hole, # 07508 fr., with *Cynodontium asperifolium*.
- Dichelyma falcatum* (Hedw.) Myrin – **2**: 49°42'N, 111°02'E, alt. 1859 m, willow stand on lake shore, # 06008; **3**: 49°42'N, 111°03'E, alt. 1906 m, rock field in *Pinus sibirica* forest, in wet depression, # 06508.
- Dicranodontium denudatum* (Brid.) E. Britton – **12**: birch forest, 11.VIII.2001, Galanin, Belikovich.
- Dicranum acutifolium* (Lindb. & Arnell) C.E.J.Jensen – **1,2,3,12**: rather common on rocks, boulders, on soil in forests, # 04808 fr., 05908, 07108, 08408 fr.
- D. bonjeanii* De Not. – **10**: moss community along bank of river, 25.VIII.2006, Yakovchenko; **11**: food plain formation with *Betula fusca* and *B. fruticosa*, 1.VIII.1982, Galanin; **12**: pine forest with *Rhododendron dauricum*, 17.VIII.2001 fr., Galanin.
- D. elongatum* Schleich. ex Schwägr. – **1,3,4,7**: in moss communities covering granite blocks and boulders, in sedge and *Dryas* tundras, on soil in larch forests, # 04808; 05808 fr., 05908.
- \**D. drummondii* Müll.Hal. – **3**: 49°42'N, 111°02'E, alt. 1859 m, *Pinus sibirica* forest with *Juniperus* sp.-*Vaccinium myrtillus*-moss cover, # 05708.
- D. flagellare* Hedw. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808; **2**: 49°37'N, 111°00'E, alt. 1463 m, at bases of trunks in larch forest with *Pinus sibirica*, # 05408.
- D. flexicaule* Brid. – **1,3,8**: common in niches among boulders on stony slopes also on soil in forests and in *Dryas* tundras, # 04808, 06508, 08208, 08708.
- D. fragilifolium* Lindb. – **1,2,3**: very common on rotten stumps, rotten wood and soil in larch forest with *Pinus sibirica*, in niches among boulders, on roadsides, # 05108, 05308 fr., 05408, 05708, 06108, 07808.
- D. fuscescens* Turner – **1,2,3**: common on soil and rotten wood in larch and *Pinus sibirica* forests, in willow stands on lake shore, on and among stones in rock fields, # 04808, 05308, 05708, 06008, 06108, 06508
- \**D. groenlandicum* Brid. – **4**: alpine grass meadow near snowbed, 1.VIII.2000, Belikovich, Galanin.
- D. leioneuron* Kindb. – **6**: formation with *Pinus pumila*, 1.VIII.2000, Belikovich; **11**: on soil, 9.VIII.2001, Galanin.
- D. montanum* Hedw. – **2,3,12**: very common on rotten wood, on trunk bases in larch forest with *Pinus sibirica*, in niches among boulders, in *Dryas* tundra, # 05108, 05308, 05708, 06108, 06808, 07408.
- D. polysetum* Sw. – **1**: in *Dryas* tundra, # 08708 fr.; **2**: in larch forest with *Rhododendron dauricum*, # 05308 fr.
- D. spadiceum* J.E.Zetterst. – **3**: rock fields on lake shore and willow stand on lake shore # 05908, 06008; **4**: *Dryas* tundra, 7.VIII.1983, Galanin; **5**: in larch forest, 30.VI.1982, Galanin.
- D. spadiceum* var. *subscabrifolium* Schljakov – **1**: *Dryas*-sedge-lichen tundra, # 04208, and stony slope with granite blocks covered by mosses, # 04808; **2**: stony *Dryas* tundra in "goltsy" belt, # 06708; **3**: rock field on lake shore, # 05908.
- D. undulatum* Schrad. ex Brid. – there is no label data, only "n. 153", collector T. Arbuzova.
- Didymodon gaochienii* B.C.Tan & Y.Jia – **11**: on boulders in forest, 23.VII.2000, Urbanavichus. For Zabaikalsky Territory this species was reported for the first time from "Alkhanai" National Park (Afonina, 2008), the present record is the second one.
- D. hedysarififormis* Otnyukova – **2**: 49°42'N, 111°02'E, alt. 1859 m, on rocks, # 05608; 07208; on rotten wood in *Pinus sibirica* forest with larch, # 08508 with *Syntrichia ruralis*; **12**: on rocks, 28.VII.2000, Urbanavichus.
- D. zanderi* Afonona & Ignatova – **1**: common on boulders and rocks along creek beds, on rock outcrops, # 07108, 07208, 07708, 08408.
- Ditrichum heteromallum* (Hedw.) E. Britton – **3**: 49°42'N, 111°03'E, alt. 2138 m, in *Dryas* tundra in "goltsy" belt, # 06808 with *Aongstroemia orientalis*, det. Ignatova.
- Drepanocladus aduncus* (Hedw.) Warnst. – **5**: on rocks, 22.VII.1983, Vasilchenko, Baranova.
- \**D. arcticus* (R.S.Williams) Hedenäs – **2**: 49°42'N, 111°02'E, alt. 1859 m, willow stands on lake shore, # 06008 in cushion with *Calliergonella lindbergii*.
- D. polygamus* (Bruch et al.) Hedenäs – **2**: on soil in larch forest along river bed, 7.VIII.2000, Galanin, Belikovich.

- Encalypta ciliata* Hedw. – **1**: 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops, # 07208; **2**: 49°42'N, 111°03'E, alt. 2138 m, in *Dryas* tundra in “goltsy” belt, # 06708 fr.
- Entodon concinnus* (De Not.) Paris – **5**: in flood plain larch forest, 21.VII.1983 with *Calliergonella lindbergii*, Vasilchenko, Baranova.
- Entosthodon muhlenbergii* (Turner) Fife – **5**: on rock, 21.VII.1983 fr., Vasilchenko, Baranova.
- Eurhynchiastrum pulchellum* (Hedw.) Ignatov & Hutunen – **1**: 49°37'N, 111°02'E, alt. 1756 m, on rotten wood in *Pinus sibirica* forest with larch, # 08508, with *Pohlia cruda*; **12**: on soil in birch forest, 11.VIII.2001, Galanin.
- Eurohypnum leptotallum* (Müll. Hal.) Ando – **12**: on rocks, 21.VII.2000, Urbanavichus.
- Fissidens bryoides* Hedw. – **2**: 49°42'N, 111°02'E, alt. 1859 m, on rock outcrops # 05608; 49°38'N, 110°59'E, alt. 1557 m, on rocks, # 07108, fr.
- F. osmundoides* Hedw. – **2**: 49°42'N, 111°02'E, alt. 1859 m, willow stand on lake shore, # 06008 with *Drepanocladus arcticus*; **3**: 49°42'N, 111°03'E, alt. 1906 m, rock field in forest with *Pinus sibirica*, # 06508.
- Grimmia elatior* Bruch ex Bals.-Criv & De Not. – **1,2,3**: rather common in upper forest and “goltsy” belts on rocks in bed of mountain streams and in *Dryas* tundra, on and among boulders in light larch forest with *Pinus pumila*, on rocks, # 05808, 06608, 06808, 07108, 07208, 08808.
- \**G. incurva* Schwägr. – **2**: 49°42'N, 111°03'E, alt. 2138 m, “goltsy” belt, stony *Dryas* tundra, # 06708; **3**: 49°42'N, 111°03'E, alt. 2300 m, rock outcrops on slope, # 06908; **4**: stony tundra, 7.VIII.1983, Galanin.
- G. jacutica* Ignatova, Bednarek-Ochyra, Afonina & J. Muñoz – **1,2,3,7**: very common in upper forest and “goltsy” belts on rocks, on and among boulders and stones, in *Dryas*-sedge-lichen tundra, # 04208, 04408, 04808 fr., 05108, 05908, 06508, 06708, 06808, 07408 fr., 07708, 08808.
- G. longirostris* Hook. – **1,2,3,9**: common on rocks and rotten wood in larch forests, on rocks, in stony *Dryas* tundra, # 04608, 04908 fr., 05008, 05308 fr., 06708, 06808, 07208.
- \**G. mollis* Bruch et al. – **3**: 49°42'N, 111°02'E, alt. 1859 m, on rocks in bed of mountain creek, # 05808 fr.
- G. muehlenbeckii* Schimp. – **1**: 49°39'N, 111°03'E, alt. 1977 m, stony creek bed, # 08908; **3**: 49°42'N, 111°03'E, alt. 2138 m, “goltsy” belt, *Dryas* tundra, # 06808. Rare species in Zabaikalsky Territory, it was reported from “Alkhanai” National Park (Afonina, 2007).
- G. pilifera* P. Beauv. – **12**: on rocks, 23.VII.2000 fr., Urbanavichus.
- G. reflexidens* Müll. Hal. – **1,2,3**: on rocks, on rocks in bed of mountain stream and in willow stand, on boulders in forests, in stony *Dryas* tundra, # 04908 fr., 05208, 05808 fr., 06408, 06808; 06908 fr., 08808 fr. This species was reported for the first time in Zabaikalskiy Territory from Kalar district (northern part of the Territory) on base of collections of V.R. Filin and T.N. Otnyukova (Ignatova & Muñoz, 2004).
- Haplocladium angustifolium* (Hampe & Müll. Hal.) Broth. – **1**: 49°37'N, 111°01'E, alt. 1471 m, on stone and at roadside in birch-larch forest on slope, # 04408, 08308; **2**: 49°37'N, 111°00'E, alt. 1463 m, larch forest with *Pinus sibirica*, # 05408; **10**: birch-larch forest with *Rhododendron dauricum* on north-facing slope, 18.VIII.2003, Galanin; in flood-plain formation with *Betula fruticosa*, 25.VIII.2006, Yakovchenko.
- Hedwigia ciliate* (Hedw.) P. Beauv. – **1-12**: very common on rocks in larch forest, on rocks and boulders, # 04808, 05308 fr., 05408.
- Helodium blandowii* (F. Weber & D. Mohr) Warnst. – **1**: flood plain willow stand, with *Tomentypnum nitens*, 8.VI.2000, Galanin, Belikovich; **5**: moss-lichen-bushy tundra on south-facing slope, 14.VIII.1982, Galanin.
- Homalia trichomanoides* (Hedw.) Bruch et al. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808; in cracks of outcrops, # 07208. **2**: 49°42'N, 111°02'E, alt. 1859 m, on rocks, # 05608.
- Hypoglypnella ochracea* (Turner ex Wilson) Ignatov & Ignatova – **1**: 49°37'N, 111°02'E, alt. 1756 m, on boulders along creek bed, # 07708; on rotten wood in *Pinus sibirica* forest with larch, # 08508; **10**: bank of stream, 29.VIII.2005, Korobkov.
- H. polaris* (Lindb.) Ignatov & Ignatova – **1,2,3**: common on boulders in creek and stream beds, # 05808, 06808, 06908, 07208, 07708, 08408. In the territory of the reserve form *falcatum* frequently occurs together with the type form, but its taxonomic status is not clear and needs further studies.
- Hylocomiastrum pyrenaicum* (Spruce) M. Fleisch. – **2**: 49°42'N, 111°02'E, alt. 1859 m, willow stand on lake shore, # 06008; **3**: 49°42'N, 111°02'E, alt. 1859 m., rock field on lake shore, # 05908.
- Hylocomium splendens* (Hedw.) Bruch et al. – **1-12**: common in forest, in shrub thickets, in moss communities on rocks and boulders, in tundras and bogs, # 05308.
- Hymenoloma crispulum* (Hedw.) Ochyra (*Dicranoweisia crispula* (Hedw.) Milde) – **3**: 49°42'N, 111°03'E, alt. 2300 m., rock outcrops on slope, # 06908 fr.
- Hypnum cupressiforme* Hedw. – **1,2,3,4**: common in moss communities on rocks, on rotten wood in forests, in *Dryas* tundra, # 04608, 04808, 06508, 07108, 07208, 07708, 08408, 08508.
- Isopterygiopsis alpicola* (Lindb. & Arnell) Hedenäs – **1**: 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops, # 07208 with *Brachytheciastrum trachy-*

- podium*; 49°37'N, 111°02'E, alt. 1756 m, on boulders along creek bed, # 07708.
- I. pulchella* (Hedw.) Z. Iwats. – **1,2,3**: in moss communities on and among granite blocks, on rocks, on rotten wood, roadsides in larch forest, on boulders along creek beds, in *Dryas* tundra, # 04808, 05308 fr., 06508, 06808, 07708, 08508, sometimes with gemmae.
- I. muelleriana* (Schimp.) Z. Iwats. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808, forms pure cushions in niches among boulders or grows with *Homalia trichomanoides*; 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops, # 07208; **2**: 49°37'N, 111°00' alt. 1463 m, in niche among boulders in larch forest with *Pinus sibirica*, # 05108.
- Iwatsukiella leucotricha* (Mitt.) W.R. Buck & H.A. Crum – **1,2,3**: rather common on rocks, in niches between boulders, # 04808, 05608, 06408, 06508; 06808; 7108; 07408, 07708, 08408.
- Leptodontium flexifolium* (Dicks.) Hampe (*L. styriacum* (Jur.) Limpr.). – **1**: 49°37'N, 111°01'E, alt. 1471 m, birch-larch forest on slope, # 04408; 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808; **12**: on boulders, 22.VII.2000, Urbanavichus; formation with *Betula fruticosa*, 9.VIII.2001, Galanin; birch forest, 11.VIII.2001, Galanin.
- Leptopterigynandrum austro-alpinum* Müll. Hal. – **12**: on rocks, 23.VII.2000, Urbanavichus.
- \**Lescuraea saxicola* (Bruch et al.) Molendo – **3**: 49°42'N, 111°03'E, alt. 1906 m, rock field in forest with *Pinus sibirica*, # 06508.
- Lindbergia brachyptera* (Mitt.) Kindb. – Bukukun: on rocks in rock fields (Bardunov, 1969, 2002).
- Loeskygnum badium* (Hartm.) H.K.G. Paul – **4**: sedge tundra, 7.VIII.1983, Galanin.
- Mnium lycopodioides* Schwägr. – **1**: 49°37'N, 111°02'E, alt. 1756 m, on boulders along creek bed, # 07708; **2**: on soil in spruce-larch forest with *Pinus sibirica*, 8.VIII.2000, Galanin, Belikovich.
- M. marginatum* (Dicks.) P. Beauv. – **1**: 49°37'N, 111°02'E, alt. 1756 m, on boulders in creek bed, # 08408.
- M. spinosum* (Voit) Schwägr. – **1**: 49°37'N, 111°02'E, alt. 1756 m, on boulders along creek bed, # 07708.
- M. thomsonii* Schimp. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808; 49°37'N, 111°02'E, alt. 1756 m, on boulders in creek bed, # 08408, 08508.
- Molendoa sendtneriana* (Bruch et al.) Limpr. – Bukukun village, mixed forest with larch, on north-facing rocks, 20.III.1910, P. Mihno.
- Neckera pennata* Hedw. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808 fr.; **2**: 49°37'N, 111°00'E, alt. 1463 m, larch forest with *Pinus sibirica*, in niche among boulders, # 05108; 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops, # 07208 fr.
- Niphotrichum canescens* (Hedw.) Bednarek-Ochyra & Ochyra – **1**: 49°37'N, 111°01'E, alt. 1471 m, birch-larch forest on slope, # 04408.
- \**N. ericoides* (Brid.) Bednarek-Ochyra & Ochyra – **1**: 49°37'N, 111°02'E, alt. 1756 m, boulder fields in larch forest with *Pinus sibirica*, in niche between boulders, # 07408.
- \**N. panschii* (Müll. Hal.) Bednarek-Ochyra & Ochyra – **1,2,3,4**: on stony banks of streams, in flood plain willow stand, in formation with *Pinus pumila*, in sedge tundra, on roadsides in larch forest, # 04508, 04908 fr., 05008, 05208, 05308, 06608, 06708, 08408.
- \**Ochyraea duriuscula* (De Not.) Ignatov & Ignatova – **3**: 49°42'N, 111°03'E, alt. 2300 m, rock outcrops on slope, # 06908.
- \**O. mollis* (Hedw.) Ignatov – **3**: 49°42'N, 111°03'E, alt. 2138 m, "goltsy" belt, in stream in *Dryas* tundra, # 06808, det. I.V. Czernyadjeva.
- O. norvegica* (Bruch. et al.) Ignatov & Ignatova – **1**: 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops, # 07208, det. I.V. Czernyadjeva; **2**: 49°37'N, 111°00' alt. 1463 m, larch forest with *Pinus sibirica* on stony slope, in niche among boulders, # 05108.
- \**Oligotrichum falcatum* Steere – **3**: 49°42'N, 111°03'E, alt. 2138 m, "goltsy" belt, near stream in *Dryas* tundra, # 06808.
- Oncophorus virens* (Hedw.) Brid. – **1,2,3,5**: very common in forest and "goltsy" belts, on rocks in beds and along banks of creeks and streams, in moist bushy-moss tundra, willow stand in flood-plain, #04508 fr, 05208 fr., 06808, 07008, 07308, 07708, 08508 fr., often forms pure cushions.
- O. wahlenbergii* Brid. – **1,2,3,11**: on boulders along creek beds, on rotten logs, on soil in flood plain formation with *Betula* sp. # 04708 fr., 04808 fr., 05408 fr., 07708, 08608.
- Orthotrichum speciosum* Nees – **12**: pine forest on slope, 17.VIII.2001, Galanin, Belikovich.
- Paludella squarrosa* (Hedw.) Brid. – **1**: 49°37'N, 111°01'E, alt. 1471 m, moss community along bank of stream, # 04508.
- Paraleucobryum longifolium* (Hedw.) Loeske – **1,2,3**: common on rocks and in niches between boulders, # 04808; 05908, 06408, 07108, 07408.
- Philonotis fontana* (Hedw.) Brid. – **3**: 49°42'N, 111°03'E, alt. 2138 m, "goltsy" belt, stream in *Dryas* tundra, # 06808; forest stream bed, # 08208.
- 10**: flood-plain formation with *Betula fruticosa*, 25.VIII.2006, Yakovchenko.

- Plagiomnium ellipticum* (Brid.) T.J.Kop. – **1**: 49°39'N, 110°59'E, alt. 1557 m, rock outcrops along bank of river, # 07108; **2**: larch forest with *Pinus sibirica*, 4.VIII.1983, Galanin.
- Plagiothecium denticulatum* (Hedw.) Bruch et al. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808, 05808; **3**: 49°42'N, 111°02'E, alt. 1859 m, rock field on lake shore, # 05908.
- P. laetum* Bruch et al. – **1,2,3**: common on rotten wood and roadsides in forests, in niches between boulders, on rocks. # 04808, 05408, 05708, 06108 fr., 06308, 07408 fr., 08108.
- Platydictya jungermannioides* (Brid.) H.A.Crum – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808; 49°37'N, 111°02'E, alt. 1756 m, on boulders in creek bed, # 08408.
- Platygyrium repens* (Brid.) Bruch et al. – **1,2,3,12**: common on rocks and on trunk bases in forests, # 04708, 04808, 05408, 07108, 07208, sometimes grows with *Leptodontium flexifolium*.
- Pleurozium schreberi* (Brid.) Mitt. – **1-12**: very common in forests, on rocks, on rock fields, # 04208, 04608, 05308, 05708.
- Pogonatum dentatum* (Brid.) Brid. – **1**: 49°37'N, 111°02'E, alt. 1756 m, wall of old geological hole, # 07508.
- P. urnigerum* (Hedw.) P. Beauv. – **1,2,10**: on boulders in and along creek beds, on rotten wood in forests, in moss communities along river banks, on roadsides, # 05808, 07708, 07808, 08308.
- Pohlia andrewsii* A.J.Shaw – **1,3**: on soil and rotten wood in *Picea sibirica* forests with *Juniperus* sp.-*Vaccinium myrtillus*-moss cover, on boulders in creek beds, # 05708, 08408, 08508.
- P. cruda* (Hedw.) Lindb. – **3**: on banks of creeks, roadsides, on rocks in forests. # 04908 fr., 05308 fr.
- P. longicollis* (Hedw.) Lindb. – **1,2,3**: on rocks, in niches among boulders, on soil and rotten wood in forests, on roadsides. # 04808 fr., 05108, 08508.
- P. nutans* (Hedw.) Lindb. – **5**: wet bushy-moss tundra, 22.VI.1982, and on soil in larch forest on gentle slope, 30.VI.1982, Galanin.
- \**P. tundrae* A.J. Shaw – **2**: 49°37'N, 111°00'E, alt. 1463 m, larch forest with *Rhododendron dauricum*, roadside, # 05308. Rare species, known in Russia also in Yamal Peninsula and Kamchatka (Czernyadjeva & Ignatova, 2004).
- Polytrichastrum alpinum* (Hedw.) G.L. Sm. – **1,2,3**: on boulder field, among granite blocks on stony slopes, on rotten wood in *Bergenia crassifolia*-moss *Pinus sibirica* forests with *Juniperus* sp. and *Pinus pumila*, # 04808, 06108 fr., 07708, 08308.
- P. longisetum* (Sw. ex Brid.) G.L. Sm. – **3**: 49°42'N, 111°03'E, alt. 2138 m, "goltsy" belt, light larch forest with *Pinus pumila*, # 06608 fr.; **8**: *Sphagnum* + *Ledum* larch forest, 27.V.1982 fr., Efimova.
- P. formosum* (Hedw.) G.L. Sm. – **11**: flood plain dwarf shrub with *Betula* sp., 28.VIII.1982, Galanin.
- Polytrichum commune* Hedw. – **1,2,3,5**: in *Pinus sibirica* forests with *Juniperus* sp.-*Vaccinium myrtillus*-moss cover, larch forests, willow stands on lake shore, wet bushy-moss tundra. # 05708; 06008; 30.VI.1982, Galanin.
- P. juniperinum* Hedw. – **1,2,3,5**: on soil, boulders and rotten logs in different types of larch forests, # 05308, 05408.
- P. piliferum* Hedw. – **3**: on soil in open places, in *Pinus sibirica* forest with *Juniperus* sp.-*Vaccinium myrtillus*-moss cover, young larch forest with *Pinus sibirica*, # 05708; 27.VII.2000, Belikovich, Galanin.
- P. strictum* Brid. – **1,2,3,5,8**: common in wet larch forests and in wet bushy-moss tundra, # 05408, 05708; 23.VII.1982, Galanin.
- Pseudobryum cinclidioides* (Huebener) T.J.Kop. – **1**: 49°39'N, 110°59'E, alt. 1557 m, moss community along river bank, # 07108; **5**: in larch forest, IX.1982, Vasilchenko.
- Pseudoleskeella nervosa* (Brid.) Nyholm – **1**: 49°39'N, 110°59'E, alt. 1557 m, rock outcrops on left river bank, in cracks, # 07208.
- P. papillosa* (Lindb.) Kindb. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808; 49°39'N, 110°59'E, alt. 1557 m, rock outcrops on left river bank, in cracks, # 07208.
- \**Pterigynandrum filiforme* Hedw. – **1,2**: on rotten wood in larch forest, in niche among boulders in larch forest with *Pinus sibirica*, on boulders along creek beds, # 04608, 05108, 07708, 08408, 08508. This species is new for Zabaikalsky Territory; Bardunov (1969) reported it only for Sayan Mts.
- Ptilium crista-castrensis* (Hedw.) De Not. – **1,2,3,6,7,11,12**: common in soil and rotten wood in forest, also in moss communities on rocks, # 04208, 04208.
- Pylaisia polyantha* (Hedw.) Bruch et al. – **1,2**: rather common on rotten wood and trunks in larch forests, # 04608, 05408.
- \**P. selwynii* Kindb. – **12**: larch forest in flood plain, on bark of poplar, 24.VII.2000 fr., Urbanavichus.
- Racomitrium lanuginosum* (Hedw.) Brid. – **2**: 49°42'N, 111°03'E, alt. 2138 m, "goltsy" belt, *Dryas* tundra, # 06708; **4**: alpine tundra, I.VIII.2000, Galanin, Belikovich.
- Rhizomnium pseudopunctatum* (Bruch et al.) T.J. Kop. – **2**: 49°42'N, 111°02'E, alt. 1859 m, willow stand on lake shore, # 06008.



- Rhodobryum ontariense* (Kindb.) Kindb. – **12**: in pine forest with *Rhododendron dauricum* on slope and in formation with *Betula fruticosa*, 17.VIII.2001, Galanin.
- Rhytidadelphus triquetrus* (Hedw.) Warnst. – **1**: 49°37'N, 111°00'E, alt. 1463 m, formation with *Betula fruticosa*, 29.VII.2008; **5**: flood plain larch forest, 21.VIII.1982 and 28.VIII.1982, Galanin.
- Rhytidium rugosum* (Hedw.) Kindb. – **1-12**: common on soil and stones in forests, mainly on south-facing slopes, on rocks and boulders, # 04608, 05408.
- Saelania glaucescens* (Hedw.) Broth. – **1**: in cracks of rock outcrops, on soil on creek banks, # 07208.
- Sanionia uncinata* (Hedw.) Loeske – **1-12**: on granite blocks, stones, on soil and on trunk bases in different forest types, # 04808, 04908 fr., 05308 fr., 05408.
- Schistidium agassizii* Sull. & Lesq. – **1**: stony creek bed, # 05808 fr.; **10**: flood plain formation with *Betula fruticosa*, on stone in creek, 25.VIII.2006, Yakovchenko. This species was reported for the first time for Zabaikalsky Territory from “Alkhanai” National Park (Afonina, 2008).
- S. apocarpum* (Hedw.) Bruch et al. subsp. *canadense* (Dupert) H.H. Blom ex B.H. Alen & Pursell – **1,2,3**: common on boulders along creek beds and on rock outcrops, # 04908 fr., 05008, 07208, 07708, 08208.
- S. papillosum* Culm. – **1,2,3**: larch forests on stony slopes, stony stream banks, # 04508, 04608 fr., 04908 fr.
- S. platyphyllum* (Mitt.) Perss. – **3**: stony stream beds in forest and “goltsy” belts, rock outcrops, # 05808 fr., 06808, 06908 fr., 07108 fr.
- \**S. sordidum* I. Hagen – **1**: 49°39'N, 110°59'E, alt. 1557 m, stream bed, # 07308 fr.; 49°37'N, 111°02'E, alt. 1756 m, creek bed, on boulders, # 08408 fr.
- \**S. subjulaceum* H.H. Blom – **1**: 49°37'N, 111°00'E, alt. 1463 m, flood plain willow forest, # 05208 fr. Rare species in Russia, known also in Altai and Sayan Mts. (Blom, 1996) and in Karelia (Ignatova et al., 2006).
- Sciuro-hypnum latifolium* (Kindb.) Ignatov & Huttunen – **1**: 49°39'N, 111°03'E, alt. 1977 m, mountain terrace, stream bed in *Dryas* tundra, # 08708.
- S. plumosum* (Hedw.) Ignatov & Huttunen – **1**: 49°37'N, 111°01'E, alt. 1471 m, birch-larch forest on slope, # 04408; 49°37'N, 111°02'E, alt. 1756 m, on boulders along creek bed, # 07708; on boulders in creek, # 08408.
- Sematophyllum substrumulosum* (Hamper) E.Britton – **1**: 49°38'N, 111°03'E, alt. 1997 m, summit area, *Dryas*-*Carex*-lichen tundra, #04208. The locality of the species in Sokhondinsky Reserve is the only one in Russia (Ignatova et al., 2009).
- Sphagnum angustifolium* (Russow) C.E.O. Jensen – **1,2,5**: *Sphagnum*+*Ledum* larch forest, willow stand and moss communities on lake shore, moist bushy-moss tundra, # 06008; 30.VI.1982, Galanin.
- S. aongstroemii* C. Hartm. – **3**: lake shore, 7.VIII.1983, Belikovich; **8**: *Sphagnum*+*Ledum* larch forest, 23.VII.1982, Galanin.
- S. balticum* (Russow) C.E.O. Jensen – **3**: lake shore, 7.VIII.1983, Belikovich; **8**: *Sphagnum*+*Ledum* larch forest, 23.VII.1982, Galanin.
- S. jensenii* H. Lindb. – **11**: larch-birch forest with *Rhododendron dauricum* on north slope, 6.VI.1982, Galanin.
- S. girgensohnii* Russow – **1,2,3,5,9**: common in wet moss-*Ledum palustre* larch forests, in moss communities on lake shores, in wet niches between rocks in rock fields, # 07408, 08908; 9.VIII.1983, Belikovich; 3.VII.1982, Efimova.
- S. lenense* H. Lindb. ex L.I. Savicz – **8**: *Sphagnum*+*Ledum* larch forest, 23.VII.1982, Galanin.
- S. magellanicum* Brid. – **2**: lake shore, 7.VIII.2000, Galanin, Belikovich; **8**: *Sphagnum*+*Ledum* larch forest, 8.VI.1982, Efimova.
- S. majus* (Russow) C.E.O. Jensen – **2**: lake shore, 7.VIII.2000, Galanin, Belikovich.
- S. squarrosom* Crome – **1**: moss communities along creek, # 08408; larch forest with *Pinus sibirica* along creek, 30.VII.2000, Galanin, Belikovich.
- S. teres* (Schimp.) Ångstr. – **1,2**: flood plain willow and larch forests, willow stands on lake shore, # 05208, 06008; 5.VIII.1983, Galanin.
- S. warnstorffii* Russow – **3**: flood plain larch forest, 5.VIII.1983, Galanin; spruce-larch forest, 7.VIII. 2000, Galanin, Belikovich. **5**: lower course of Schergen-Daban creek, moist bushy-moss tundra 22.VI. 1982, and larch forest on gentle slope, 30.VI.1982, Galanin.
- Splachnum ampullaceum* Hedw. – **5**: flood plain grass larch forest, 21.VIII.1982 fr., Kurbatova, Vasilchenko.
- S. rubrum* Hedw. – **1**: larch forest with *Pinus sibirica*, 14.VII.2001 fr., Galanin; **5**: flood plain larch forest, 28.VII.1983 fr, Vasilchenko, Baranova.
- Stereodon holmenii* (Ando) Ignatov & Ignatova – **1**: among boulders on stony slopes, on boulders along creek bed, on rock outcrops, # 04808, 07108, 07708.
- S. pallescens* (Hedw.) Mitt. – **1**: rather common in larch forests with *Pinus sibirica*, grows also in moss communities on stony slope with granite blocks, # 04808, 06508, 07408 fr.
- S. plicatulus* Lindb. – **1,2,3,10**: on rotten logs and soil in different types forests, on stony slope with granite blocks covered by mosses, on boulders on lake shore, in *Dryas* tundra, on roadsides, # 04408, 04808, 05308, 05408, 05708, 05908, 06108, 06808, 07308, 07708, 08108, 08308, 08708 fr.
- Straminergon stramineum* (Dicks. & Brid.) Hedenäs – **1,2,5**: stony creek beds, moist bushy-moss tundra, wet larch forest, # 07308, 08908.

- Struckia enervis* (Broth.) Ignatov, T.J. Kop. & D.G. Long. – **1**: 49°37'N, 111°00'E, alt. 1463 m, stony slope with granite blocks covered by mosses, # 04808.
- Syntrichia laevipila* Brid. – **1**: 49°39'N, 110°59'E, alt. 1557 m, in cracks of rock outcrops on left river bank, # 07208.
- S. ruralis* (Hedw.) F. Weber & D. Mohr – **2,5**: stony *Dryas* tundra in "goltsy" belt, on rocks, # 06708, 07108, 08408, 08508.
- Tetraphis pellucida* Hedw. – **1,2**: 49°42'N, 111°03'E, alt. 1906 m, on rotten wood in *Bergenia crassifolia*-moss *Pinus sibirica* forest with *Pinus pumila*, # 06108 fr.; on rotten stump on stony slope, IX.2005, Korobkov.
- Tetraplodon angustatus* (Hedw.) Bruch et al. – **5**: on soil in pine forest, 21.VII.1983 fr., and in larch-birch forest, 26.VI.1983 fr., Vasilchenko, Baranova.
- T. mnioides* (Hedw.) Bruch et al. – **5**: in moist bushy-moss tundra, 28.VI.1982 fr., Efimova.
- Thuidium philibertii* Limpr. – **5**: on soil in larch forest, 1.VII.1983, Vasilchenko.
- Tomentypnum nitens* (Hedw.) Loeske – **1**: flood plain willow forest, 8.VIII.2000, Galanin.
- Tortella fragilis* (Hook. & Wilson) Limpr. – **3**: 49°42'N, 111°03'E, alt. 2138 m, on soil spots in stony *Dryas* tundra and near path in larch forest with *Rhododendron dauricum*, # 07008.
- Ulota curvifolia* (Wahlenb.) Brid. – **1,2,9**: on stony slope in niche among boulders covered by mosses, on granite blocks in *Pinus sibirica* forest and larch forest with *Rhododendron dauricum* and *Pinus pumila*, on rocks along river banks, in *Dryas* tundra, # 04808 fr., 05108 fr., 05308 fr., 05608 fr., 06408 fr., 06808 fr.
- Warnstorfia exannulata* (Bruch et al.) Loeske – **1**: in moss communities and on rocks along and in creek beds, # 07608, 08208, 08908.
- W. fluitans* (Hedw.) Loeske – **1**: 49°37'N, 111°02'E, alt. 1756 m, boulder field in larch forest with *Pinus sibirica*, in wet niche between boulders, # 07408 fr.
- W. sarmentosa* (Wahlenb.) Hedenäs – **1,4**: mainly in upper forest and "goltsy" belts, in moist sedge tundra, in moss communities and on boulders along nad in creek beds, # 07608, 07708, 08408, 08908.
- Zygodon sibiricus* Ignatov et al. – **1**: 49°39'N, 110°59'E, alt. 1557 m, rock outcrops on left river bank, in cracks, # 07208.

## ACKNOWLEDGEMENTS

I am very grateful to the director of Skhondinsky State Nature Biosphere Reserve V.I. Yashnov and colleagues from Botanical Garden of the Far

East Branch of Russian Academy of Sciences A.V. Belikov and S.B. Goncharova for the help with the field work; the help in identification was provided by E.A. Ignatova for *Schistidium*, V.I. Zolotov for *Bryum*, M.S. Ignatov for *Brachythecium*, I.V. Czernyadjeva for *Hygrohypnum*; I am very grateful also to lichenologists L.S. Yakovchenko and G.P. Urbanavichus for interesting moss collections from Agutsa River placed at my disposal. The work was partly supported by Scientific Program of the Far East Branch of Russ. Acad. Sci. "Complex exploration of the Amur River Basin."

## LITERATURE CITED

- [AFONINA, O. M.] АФОНИНА, О.М. 2007. Новые находки мхов в Забайкальском крае. – [New moss records from Zabaikalsky Territory] *Arctoa* **16**: 197-198.
- [AFONINA, O. M.] АФОНИНА, О.М. 2008. Мхи национального парка «Алханай» (Забайкальский край). – [The mosses of the "Alkhanai" National Park (Zabaikalie Territory)] *Бот. Журн. [Bot. Zhurn.]* **93**(12): 1878-1896.
- [BARDUNOV, L.V.] БАРДУНОВ, Л. В. 1969. Определитель листостебельных мхов Центральной Сибири. – [The Handbook of mosses of Central Siberia] *Л. Наука [Leningrad, Nauka]*: 319 pp.
- [BARDUNOV, L.V.] БАРДУНОВ, Л. В. 1974. Листостебельные мхи Алтая и Саян. – [Mosses of the Altai and Sayan Mts.] *Новосибирск, Наука [Novosibirsk, Nauka]*: 168 pp.
- [BARDUNOV, L.V.] БАРДУНОВ, Л. В. 2002. Мхи. – [Mosses] В кн.: Красная Книга Читинской области и Агинского Бурятского автономного округа. Чита. [Red Date book of Chita Province and Agin-Buryat Area. Chita]. 187-214 pp.
- BLOM, H.H. 1996. A revision of the *Schistidium apocarpum* complex in Norway and Sweden. – *Bryoph. Bibl.* **49**: 1-333.
- BROTHERUS, V. F. 1929. Musci novi asiatici. – *Rev. bryol.* **2** (1): 1-16.
- CZERNYADJEVA, I.V. & E.A. IGNATOVA 2004. *Pohlia tundrae* Shaw (Musci) in Russia. – *Arctoa* **13**: 29-32.
- FEDOSOV, V.E. & E.A. IGNATOVA 2008. The genus *Bryoerythrophyllum* (Pottiaceae, Bryophyta) in Russia. – *Arctoa* **17**: 15-30.
- IGNATOV, M.S., O.M. AFONINA, E.A. IGNATOVA et al. 2006. The check-list of mosses of East Europe and North Asia. – *Arctoa* **15**: 1-130.
- IGNATOVA, E. A., O.M. AFONINA, M.S. IGNATOV 2009. *Sematophyllum* (Sematophyllaceae, Bryophyta) – a new genus and family for Russia. – *Arctoa* **18**: 209-212.
- IGNATOVA, E., A. MAKSIMOV, T. MAKSIMOVA, O. BELKINA 2006. Notes on distribution of *Schistidium* species (Grimmiaceae, Bryophyta) in Murmansk Province and Karelia. – *Arctoa* **15**: 237-247.
- IGNATOVA, E. & J. MUÑOZ 2004. The genus *Grimmia* Hedw. (Grimmiaceae, Musci) in Russia. – *Arctoa* **13**: 101-182.