

# The preliminary checklist of liverworts of the Komi Republic (Russia)

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**Abstract:** The first checklist of liverworts of the Komi Republic (Russia) is presented. It reports 164 species and 9 varieties of liverworts belonging to 61 genera and 28 families.

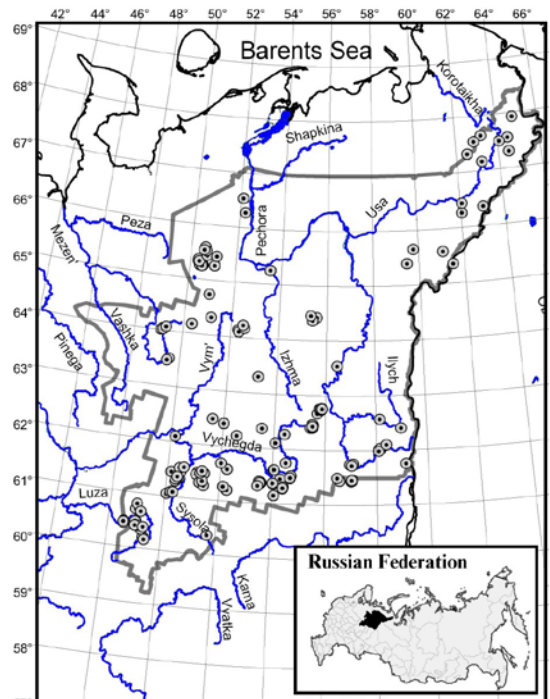
**Kokkuvõte:** Komi Vabariigi (Venemaa) esialgne helviksammalde nimestik

Komi Vabariigi (Venemaa) esimene helviksammalde nimestik. Nimestikus on 164 liiki ja 9 varieteeti, mis kuuluvad 61 perekonda ja 28 sugukonda.

## INTRODUCTION

The Komi Republic is situated in the North-East of European Russia in the taiga and tundra zone (Fig. 1). About 70% is covered by forests, mainly by spruce and pine forests (Atlas Komi ASSR, 1964). Its area is 416,000 km<sup>2</sup> which is larger than e.g. Finland (338,000 km<sup>2</sup>), Germany (357,000 km<sup>2</sup>) and Italy (301,000 km<sup>2</sup>). The territory is predominantly a plain but includes an ancient medium-height elevation, the Timan Ridge, with maximum elevation of 471 meters, and the ridges of the Northern, Sub-Polar and Polar Urals in the East with the highest mountain of 1900 m.

The liverwort flora of the Komi Republic has been studied for over 100 years. The works of Zikendrath (1900) and Pole (1915) contain the earliest data on the liverworts. At times of the early Soviet period there was almost no works devoted to liverworts. The study of the bryoflora of Komi restarted in early 1960-ies when bryologists I.D. Kildjushevsky and G.V. Zheleznova came to the Institute of Biology in Syktyvkar. They put in order all the accumulated collections of liverworts and published a series of works (Zheleznova, 1974; Zheleznova & Schljakov, 1976; Kildjushevsky & Zheleznova, 1974; Kildjushevsky, 1975). Besides, they collected in various parts of the Republic: the Middle Timan (Zheleznova, 1982b; 1985a,b,c), the Bolshezemelskaya Tundra (Gecen, 1978; Zheleznova, 1982a) and the Urals (Degteva, 1997; Zheleznova & Shubina, 1998 a, b; Bakalin et al., 2001). At the same time the geobotanic studies increased with several articles contain-



**Fig. 1.** The main collecting sites of liverworts in the Komi Republic.

ing data on liverworts (Katenin & Boch, 1970; Zinovjeva, 1973). At present active studies are done by M. Dulin and co-workers (Dulin, 2001, 2005, 2006, 2007; Bezkodov et al., 2003; Dulin, Konstantinova & Bakalin, 2003).

**MATERIALS AND METHODS**

This checklist is based on the liverwort collections kept in the herbarium of the Institute of Biology of the Komi Science Center UB RAS (SYKO). The collection includes over 8000 specimens from which 4500 samples were collected and determined by the author since 1997. In addition literature reports were used.

The taxa are arranged in alphabetic order. Nomenclature follows Konstantinova, Potemkin & Schljakov (1992) with some updates from recent literature (Konstantinova & Vasiljev, 1994; Konstantinova & Potemkin, 1996; Grolle & Long, 2000; Damsholt, 2002). Taxonomy of *Lophozia* (Dumort.) Dumort. follows Bakalin (2005). Species which occurrence in the region is doubtful are marked with (\*) symbol.

**CHECKLIST OF THE KOMI REPUBLIC LIVERWORTS**

- ANASTROPHYLLUM MICHAUXII (F.Weber) H.Buch  
 ANASTROPHYLLUM SPHENOLOBOIDES R.M.Schust.  
 ANEURA PINGUIS (L.) Dumort.  
 ANTHELIA JURATZKANA (Limpr.) Trevis.  
 ARNELIA FENNICA (Gottsche) Lindb.  
 ATHALAMIA HYALINA (Sommerf.) S.Hatt.  
 BARBILOPHOZIA BARBATA (Schmidel ex Schreb.)  
 Loeske  
 BARBILOPHOZIA HATCHERI (A.Evans) Loeske  
 BARBILOPHOZIA LYCOPODIOIDES (Wallr.) Loeske  
 BLASIA PUSILLA L.  
 BLEPHAROSTOMA TRICHOPHYLLUM (L.) Dumort. var.  
 TRICHOPHYLLUM  
 CALYPOGEIA AZUREA Stotler et Crotz  
 CALYPOGEIA INTEGRISTIPULA Steph.  
 CALYPOGEIA MUELLERIANA (Schiffn.) Müll.Frib.  
 CALYPOGEIA NEESIANA (C.Massal. et Carestia) Müll.  
 Frib.  
 CALYPOGEIA SPHAGNICOLA (Arnell et J.Perss.) Warnst.  
 et Loeske  
 CALYPOGEIA SUECICA (Arnell et J.Perss.) Müll.Frib.  
 \*CEPHALOZIA AFFINIS Lindb. ex Steph.  
 CEPHALOZIA AMBIGUA C.Massal.  
 CEPHALOZIA BICUSPIDATA (L.) Dumort. var.  
 BICUSPIDATA  
 CEPHALOZIA CONNIVENS (Dicks.) Lindb.  
 CEPHALOZIA LEUCANTHA Spruce  
 CEPHALOZIA LOITLESBERGERI Schiffn.  
 CEPHALOZIA LUNULIFOLIA (Dumort.) Dumort.  
 CEPHALOZIA MACOUNII (Austin) Austin  
 CEPHALOZIA PLENICEPS (Austin) Lindb.  
 CEPHALOZIELLA DIVARICATA (Sm.) Schiffn.  
 CEPHALOZIELLA ELACHISTA (J.B.Jack ex Gottsche et  
 Rabenh.) Schiffn.  
 CEPHALOZIELLA GRIMSULANA (J.B.Jack ex Gottsche  
 et Rabenh.) Lacout  
 CEPHALOZIELLA HAMPEANA (Nees) Schiffn.  
 CEPHALOZIELLA RUBELLA (Nees) Warnst.  
 CEPHALOZIELLA SPINIGERA (Lindb.) Warnst. (syn. C.  
 SUBDENTATA Warnst.)  
 CHILOSCYPHUS FRAGILIS (A.Roth) Schiffn.  
 CHILOSCYPHUS PALLESCENS (Ehrh. ex Hoffm.)  
 Dumort.  
 CHILOSCYPHUS POLYANTHOS (L.) Corda  
 CHILOSCYPHUS RIVULARIS (Schrad.) Hazsl.  
 CLADOPODIELLA FLUITANS (Nees) H.Buch  
 CLADOPODIELLA FRANCISCI (Hook.) Jørg.  
 CONOCEPHALUM CONICUM (L.) Dumort.  
 CROSSOCALYX HELLERIANUS (Nees ex Lindenb.)  
 Meyl.  
 CROSSOGYNA AUTUMNALIS (DC.) Schljakov  
 DICHITON INTEGERRIMUM (Lindb.) H.Buch  
 DIPLOPHYLLUM ALBICANS (L.) Dumort.  
 DIPLOPHYLLUM OBTUSIFOLIUM (Hook.) Dumort.  
 DIPLOPHYLLUM TAXIFOLIUM (Wahlenb.) Dumort.  
 GEOCALYX GRAVEOLENS (Schrad.) Nees  
 GYMNOCOLEA INFLATA (Huds.) Dumort.  
 GYMNOMITRION APICULATUM (Schiffn.) Müll.Frib.  
 GYMNOMITRION CONCINNATUM (Lightf.) Corda  
 GYMNOMITRION CORALLOIDES Nees  
 HAPLOMITRION HOOKERI (Sm.) Nees  
 HARPANTHUS FLOTOVIANUS (Nees) Nees  
 HARPANTHUS SCUTATUS (F.Weber et D.Mohr)  
 Spruce  
 ISOPACHES BICRENATUS (Schmidel ex Hoffm.)  
 H.Buch  
 JUNGERMANNIA EUCORDIFOLIA Schljakov  
 JUNGERMANNIA PUMILA With.  
 KURZIA PAUCIFLORA (Dicks.) Grolle  
 LEIOCOLEA COLLARIS (Nees) Schljakov (syn. L.  
 ALPESTRIS (F.Weber) Isov.)  
 LEIOCOLEA BADENSIS (Gottsche) Jørg.  
 LEIOCOLEA BANTRIENSIS (Hook.) Jørg.  
 LEIOCOLEA GILLMANII (Austin) A.Evans  
 LEIOCOLEA HETEROCOLPOS (Thed. ex Hartm.) H.Buch  
 var. HETEROCOLPOS  
 var. ARCTICA (S.W.Arnell) Mårtensson ex  
 S.W.Arnell  
 LEIOCOLEA RUTHEANA (Limpr.) Müll.Frib.  
 LEPIDOZIA REPTANS (L.) Dumort.  
 LIOCHLAENA LANCEOLATA Nees  
 \*LOPHOCOLEA BIDENTATA (L.) Dumort.  
 LOPHOCOLEA HETEROPHYLLA (Schrad.) Dumort.  
 LOPHOCOLEA MINOR Nees

- LOPHOZIA ASCENDENS (Warnst.) R.M.Schust.  
 LOPHOZIA DEBILIFORMIS R.M.Schust. et Damsh.  
 LOPHOZIA EXCISA (Dicks.) Dumort. var. EXCISA  
 LOPHOZIA LONGIDENS (Lindb.) Macoun  
 LOPHOZIA PELLUCIDA R.M.Schust. var. PELLUCIDA  
     var. MINOR R.M.Schust.  
     var. RUBRIGEMMA (R.M.Schust.) Bakalin  
 LOPHOZIA PERSSONII H.Buch et S.W.Arnell  
 LOPHOZIA PROPAGULIFERA (Gottsche) Steph.  
 LOPHOZIA SAVICZIAE Schljakov  
 LOPHOZIA SILVICOLA H.Buch  
 LOPHOZIA SUDETICA (Nees ex Huebener) Grolle var.  
     SUDETICA  
     var. ANOMALA (Schljakov) Schljakov  
 LOPHOZIA VENTRICOSA (Dicks.) Dumort. var.  
     VENTRICOSA  
     var. LONGIFLORA (Nees) Macoun  
     var. GUTTULATA (Lindb. et H.W. Arnell)  
     Bakalin  
 LOPHOZIA WENZELII (Nees) Steph. var. WENZELII  
     var. GROENLANDICA (Nees) Bakalin  
     var. LAPPONICA H.Buch et S.W.Arnell  
     var. LITORALIS (Arnell) Bakalin  
 MANNIA PILOSA (Hornem.) Frye et L.Clark  
 MARCHANTIA ALPESTRIS (Nees) Burgeff  
 MARCHANTIA POLYMORPHA L. (syn. M. AQUATICA (Nees)  
     Burgeff)  
 MARCHANTIA STELLATA Scop. (syn. M. POLYMORPHA  
     auct.)  
 MARSUPELLA BREVISSIMA (Dumort.) Grolle  
 MARSUPELLA CONDENSATA (Ångstr. ex C.Hartm.)  
     Kaal.  
 MARSUPELLA EMARGINATA (Ehrh.) Dumort.  
 MARSUPELLA SPHACELATA (Gieseke ex Lindenb.)  
     Dumort.  
 MARSUPELLA SPRUCEI (Limpr.) Bernet  
 METZGERIA FURCATA (L.) Dumort.  
 MOERCKIA HIBERNICA (Hook.) Gottsche  
 MYLIA ANOMALA (Hook.) Gray  
 NARDIA BREIDLERI (Limpr.) Lindb.  
 NARDIA GEOSCYPHUS (De Not.) Lindb.  
 NARDIA INSECTA Lindb.  
 NARDIA JAPONICA Steph.  
 NARDIA SCALARIS Gray  
 OBTUSIFOLIUM OBTUSUM (Lindb.) S.W.Arnell  
 ODONTOSCHISMA DENUATUM (Mart.) Dumort.  
 ODONTOSCHISMA ELONGATUM (Lindb.) A.Evans  
 ODONTOSCHISMA MACOUNII (Austin) Underw.  
 ORTHOCAULIS ATLANTICUS (Kaal.) H.Buch  
 ORTHOCAULIS ATTENUATUS (Mart.) A.Evans  
 ORTHOCAULIS BINSTEADII (Kaal.) H.Buch  
 ORTHOCAULIS FLOERKEI (F.Weber et D.Mohr)  
     H.Buch  
 ORTHOCAULIS KUNZEANUS (Huebener) H.Buch  
 ORTHOCAULIS QUADRILOBUS (Lindb.) H.Buch  
 PELLIA ENDIVIFOLIA (Dicks.) Dumort.  
 PELLIA EPIPHYLLA (L.) Corda.  
 PELLIA NEESIANA (Gottsche) Limpr.  
 PLAGIOCHILA ASPLENIODES (L. emend. Taylor)  
     Dumort.  
 PLAGIOCHILA PORELLOIDES (Torr. ex Nees) Lindenb.  
 PLECTOCOLEA HYALINA (Lyell) Mitt.  
 PLECTOCOLEA OBOVATA (Nees) Lindb.  
 PLEUROCLADULA ALBESCENS (Hook.) Grolle  
 PORELLA PLATYPHYLLA (L.) Pfeiff.  
 PREISSIA QUADRATA (Scop.) Nees  
 PTILIDIUM CILIARE (L.) Hampe  
 PTILIDIUM PULCHERRIMUM (Weber) Vain.  
 RADULA COMPLANATA (L.) Dumort.  
 RADULA LINDENBERGIANA Gottsche ex C.Hartm.  
 REBOULIA HEMISPHERICA (L.) Raddi  
 RICCARDIA CHAMEDRYFOLIA (With.) Grolle  
 RICCARDIA LATIFRONS (Lindb.) Lindb.  
 RICCARDIA MULTIFIDA (L.) Gray  
 RICCARDIA PALMATA (Hedw.) Carruth.  
 \*RICCIA CAVERNOSA Hoffm.  
 RICCIA FLUITANS L.  
 RICCIOCARPOS NATANS (L.) Corda  
 SACCOBASIS POLITA (Nees) H.Buch  
 SAUTERIA ALPINA (Nees) Nees  
 SCAPANIA APICULATA Spruce  
 SCAPANIA CURTA (Mart.) Dumort. var. CURTA  
 SCAPANIA CUSPIDULIGERA (Nees) Müll.Frib.  
 SCAPANIA GYMNOSTOMOPHILA Kaal.  
 SCAPANIA HYPERBOREA Jørg.  
 SCAPANIA IRRIGUA (Nees) Nees  
 SCAPANIA MUCRONATA H.Buch  
 SCAPANIA NEMOREA (L.) Grolle  
 SCAPANIA OBCORDATA (Berggr.) S.W.Arnell  
 SCAPANIA PALUDICOLA Loeske et Müll.Frib.  
 SCAPANIA PALUDOSA (Müll.Frib.) Müll.Frib.  
 SCAPANIA PRAETERVISA Meyl.  
 SCAPANIA SCANDICA (Arnell et H.Buch) Macvicar  
     var. SCANDICA  
 SCAPANIA SUBALPINA (Nees ex Lindenb.) Dumort.  
 SCAPANIA ULIGINOSA (Sw. ex Lindenb.) Dumort.  
 SCAPANIA UMBROSA (Schrad.) Dumort.  
 SCAPANIA UNDULATA (L.) Dumort.  
 SCHISTOCHILOPSIS HYPERARCTICA (R.M.Schust.)  
     Konstant. (syn. MASSULARIA HYPERARCTICA  
     (R.M.Schust.) Schljakov)  
 SCHISTOCHILOPSIS INCISA (Schrad.) Konstant. (syn.  
     MASSULARIA INCISA (Schrad.) Schljakov)  
 SCHISTOCHILOPSIS LAXA (Lindb.) Konstant. (syn.  
     MASULLARIA LAXA (Lindb.) Schljakov)  
 SOLENOSTOMA CAESPITICUM (Lindenb.) Steph.

SOLENOSTOMA CONFERTISSIMUM (Nees) Schljakov  
 SOLENOSTOMA GRACILLIMUM (Sm.) R.M.Schust.  
 SOLENOSTOMA PUSILLUM (C.E.O.Jensen) Steph.  
 SOLENOSTOMA SPHAEROCARPUM (Hook.) Steph.  
 SPHENOLOBUS CAVIFOLIUS (H.Buch et S.W.Arnell)  
 Müll.Frib.  
 SPHENOLOBUS MINUTUS (Schreb.) Berggr.  
 SPHENOLOBUS SAXICOLA (Schrad.) Steph.  
 TETRALOPHOZIA SETIFORMIS (Ehrh.) Schljakov  
 TRITOMARIA EXSECTA (Schmidel) Schiffn. ex  
 Loeske  
 TRITOMARIA EXSECTIFORMIS (Breidl.) Loeske  
 TRITOMARIA QUINQUEIDENTATA (Huds.) H.Buch  
 TRITOMARIA SCITULA (Taylor) Jørg.

## DISCUSSION

Nowadays the liverwort flora of the Komi Republic includes 164 species and 9 varieties of liverworts belonging to 61 genera and 28 families. The records of three species (*Cephalozia affinis*, *Lophocolea bidentata* and *Riccia cavernosa*) in the region are doubtful. Specifically, the reports of Zinovjeva (1973) about *Cephalozia affinis* and *Lophocolea bidentata* for the Urals could be wrong, since the location of these specimens is unknown and we cannot check them. The note about *Riccia cavernosa* in the vicinity of Syktyvkar city (Pole, 1915) is also doubtful, since it was never found later and the original specimen has got lost. Not long ago the species *Lophozia savicziae* and *Lophozia debiliformis* were found in the liverwort flora of the Komi Republic (Novotný, Klimeš, 1991; Bakalin, 2005). The reference to species *Cephalozia lacinulata* J.B.Jack ex Spruce, *Geocalyx graveolens*, *Harpanthus scutatus* in the manuscript of I.D. Kildjushevsky (1975) is erroneous, as well as the reference to *Plagiochila arctica* Bryhn et Kaal. reported in the article by G.V. Zheleznova and R.N. Schljakov (1976).

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