

CONTRIBUTION TO THE HEPATIC FLORA OF MONGOLIA. 2.

ДОПОЛНЕНИЕ К ФЛОРЕ ПЕЧЕНОЧНИКОВ МОНГОЛИИ. 2.

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Abstract

We continue a revision of hepatic collections from Mongolia which are deposited in the Botanical Institute of of Mongolian Academy of Science (Ulaanbaatar). About 70 specimens were studied; 27 liverwort species were identified. Among them, 13 species new for the hepatic flora of Mongolia were revealed: *Cephaloziella microphyllum*, *Chiloscyphus minor*, *Frullania inflata*, *F. parvistiphula*, *Lophozia wenzelli*, *Pedinophyllum truncatum*, *Plagiochasma rupestre*, *Plagiochila arctica*, *Porella revoluta*, *Radula lindbergiana*, *Scapania massalongoi*, *S. scandica* and *S. tundrae*.

Резюме

Мы продолжаем определять ранее собранных коллекций печеночников Монголии, хранящиеся в Ботаническом институте Монгольской Академии Наук в Улан-Баторе. Нами были изучены 70 образцов и определены 27 видов печеночников. Среди них 13 видов являются новыми для Монголии: *Cephaloziella microphyllum*, *Chiloscyphus minor*, *Frullania inflata*, *F. parvistiphula*, *Lophozia wenzelli*, *Pedinophyllum truncatum*, *Plagiochasma rupestre*, *Plagiochila arctica*, *Porella revoluta*, *Radula lindbergiana*, *Scapania massalongoi*, *S. scandica* and *S. tundrae*.

KEYWORDS: hepatics, flora, new records, Mongolia.

Liverwort flora of Mongolia remains greatly underexplored. First data on hepatics were provided by Tsegmed *et al.* (2012); 44 species were listed by these authors, among them 16 new for Mongolia.

The present study is based on identification of some additional herbarium specimens deposited in the Botanical Institute of of Mongolian Academy of Science (Ulaanbaatar). These collections were gathered by the senior author (TsTs) in Bulgan Somon, Hyalganat in 1990, in Khangai District and in Khustai range in 2002 and in Saryn gol region of Mongol Daur district in 2005-2006. We also studied some collections made by lichenologists, N.S. Golubkova and U. Tsogt, in 1970th and some collections of E. Enkhjargal from Prukhubsugulie (2007-2009).

About 70 specimens were studied, it resulted in a list of liverwort 27 species. Among them, 13 species are new for the hepatic flora of Mongolia. We provide an annotated list of species. Annotations include label information. Species new for Mongolia are marked with asterisk.

LIST OF SPECIES

GRIMALDIACEAE

***Reboulia hemisphaerica*** (L.) Raddi – **Khangai**: Bulgan aimag, Saikhan sum, basin river Orkhon, lake Khuntyn rashaan, stream Ar gol, rocky slope near stream, on rock, 20.VIII.1994, #11545.

***Mannia fragrans*** (Balb.) Frye et Clark – **Khangai**: Arkhangai aimag, Tsetserleg sum, river Tsetserleg, under rock, 23.X.1930, coll. E.G. Pobedimova #838; Bulgan aimag, Teshig sum, north slope of mountain Dulaankhaan, river Egiin gol, rocky cliff, on rock, 16.VIII.1991, #10950; same aimag, Hyalganat sum, range Buteeliin nuruu, river Shavart, rocky slope, on soil, 25.VIII.1994, # 11575; **Khentei**: environment of Ulaanbaatar, mountain Bogdkhan Uul, valley Shajin Khurah, south slope of a mountain, 1600 m, 1.VII.1994, #11302; same place, on summit of a mountain, 1700 m, #11326; **Mong. Daur.**: Darkhan uul aimag, Khongor sum, valley Ar Gakhait, 1210 m, southern rocky slope, in crevices of rock, 22.VIII.2006, #14526; **Gobi Altai**: Bayankhongor aimag, Bogd sum, northern slope of mountain Ikh-Bogd, upper course of river Shatat, 2900 m, along river, in crevices of rock, 1.VII.2001, #12668.

\****Plagiochasma rupestre*** (G. Forst.) Steph. – **Khangai**: Bulgan aimag, Khyalganat sum, range Buteeliin nuruu, river Shavart, rocky SE slope of mountain, on rock, 1994 08 25, № 11576; same range, basin river Selenge, valley Khailant, birch (*Betula plathyphylla* Suckach.)-pine (*Pinus selvestris* L.) forest, on soil, 1994 08 26, № 11618; **Gobi Altai**: Umnugobi aimag, Noen sum, range Khuren khana, ravine river Saryn gol, on soil, 2001 06 25, № 12358; **Dornogobi**: Dornogobi aimag, Dalanjargalan sum, Ikh Nart's natural resource land, Burgast Creek, northern plateau of stream Burgast, 1200 m, on the rock of Cliff formation, 07 09 08, № 14655.

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## MARCHANTIACEAE

*Marchantia polymorpha* L. – **Khangai**: Bulgan aimag, Khyalganat sum, range Buteeliin nuruu, mountain Budlan, 70 km north from Khyalganat, on soil, 13.IX.1993, coll. G. Tsedendash; **Mong. Daur.**: Darkhan uul aimag, Sharyn gol sum, valley Monostoi, stream Monostoi, birch forest, on soil near rotten log, 22.VIII.2006.

## METZGERIACEAE

*Apometzgeria pubescens* (Schrank) Kuwah. – **Khentei**: Ulaanbaatar surroundings, mountain Bogdkhan uul, valley Zalaat, cedar (*Pinus sibirica* Du Tour.)-larch open forest, on moist rock, 9.VIII.1994, #11413; **Mong. Daur.**: Tuv aimag, Altanbulag sum, Khustai range, valley Ekhen Us, on rocky summit of mountain, in crevices of rock, 20.VII.2002, #13202.

## LOPHAZIACEAE

*Barbilophazia barbata* (Schmidel ex Schreb.) Loeske – **Khangai**: Bulgan aimag, Teshig sum, northern slope of mountain Dulaankhaan, river Egiin gol, rocky slope, on rock, 16.VIII.1991, #10967; same aimag, Hyalganat sum, range Buteeliin nuruu, river Shirmen, northern slope of mountain, sedge-red bilberry-larch forest, on soil, 8.VIII.1991, #10772; same place, upper course of river Shirmen, summit of mountain, 1460 m, on rock, 9.VIII.1991; **Khentei**: Ulaanbaatar surroundings, mountain Bogdkhan uul, 1900 m, cedar-larch open forest, on moist rock, 9.VII.1994, #11409; same mountain, valley Zalaat, on summit of mountain, 2070 m, rock fields, on rock, 9.VII.1994; **Mong. Daur.**: Tuv aimag, Altanbulag sum, Khustai range, valley Ekhen Us, on rocky summit of mountain, in the crevices of rock and under rocks, 20.VII.2002, ##13197, 13201.

*Leiocolea gillmanii* (Austin) A. Evans – **Prukhub.**: Khubsugul aimag, Renchinlkhumbé sum, valley Tsagaan Nokhoit, mountain, Khar Zurh uul, fir (*Picea obovata* Ledeb.)-cedar-larch forest, on rock, 15.VII.2006, #846, coll. E. Enkhjargal.

*Lophozia ventricosa* (Dicks.) Dumort. – **Prukhub.**: Khubsugul aimag, Renchinlkhumbé sum, valley Ulaan Shoroot, mountain Khar Murugu uul, 1850 m, birch-larch forest, on soil, 18.VI.2006, #358, coll. E. Enkhjargal; same sum, mountain Sul uul, larch-cedar forest, under rock, 4.VI.2007, № 952, coll. E. Enkhjargal.

\**L. wenzelii* (Nees.) Steph. – **Prukhub.**: Khubsugul aimag, Renchinlkhumbé sum, valley Tsagaan Nokhoit, mountain Khar Zurh uul, fir-cedar-larch forest with rock-fields, on rock, 15.VII.2006, #846, coll. E. Enkhjargal.

*Sphenobolus saxicola* (Schr.) Steph. (= *Anastrophyllum saxicola* (Schr.) R.M. Schust.) – **Khentei**: environment Ulaanbaatar, mountain Bogdkhan uul, valley Zalaat, summit of mountain, 2070 m, rocky fields, on rock, 9.VII.1994, #11461.

*Schistochilopsis obtusa* (Lindb.) Potemkin – **Prukhub.**: Khubsugul aimag, Ulaan Uul sum, pass Buren Busyn davaa, valley Atraat Khyaraa gol, shrubby marshland, on moist soil, 15.VII.2009, #2635, coll. E. Enkhjargal.

## PTILIDIACEAE

*Ptilidium ciliare* (L.) Hampe – **Khangai**: Selenge aimag, Zelter sum, range Buteeliin nuruu, summit of mountain,

1200 m, sedge-grassy larch forest, on soil, 25.VI.1987, coll. G. Tsedendash; Bulgan aimag, Hyalganat sum, range Buteeliin nuruu, valley of river Orooch, grassy larch forest, on trunk of tree, 31.VII.1991, #10652; **Khentei**: Ulaanbaatar surroundings, mountain Bogdkhan uul, valley Zalaat, summit of mountain, 1400 m, grassy larch forest, on moist soil, 9.VII.1994, #11374; **Mong. Daur.**: Darkhan uul aimag, Sharyn gol sum, valley Monostoi, birch forest, on trunks of trees, 22.VIII.2006, #14546; **East Mong.**: Dornod aimag, Sumber sum, Khyangan range, mountain Khalzan uul, birch forest, 19.VIII.1970, #1440, coll. N.S. Golubkova & U. Tsogt.

*P. pulcherrum* (Weber.) Vain. – **Khangai**: Bulgan aimag, Hyalganat sum, range Buteeliin nuruu, valley river Shirmen, sedge-red blueberry-larch forest, on soil, 9.VIII.1991, #10781; same place, river Shirmen, in forest, on rotten log, 9.VIII.1991, #10799; **Mong. Daur.**: Darkhan uul aimag, Sharyn gol sum, valley Monostoi, birch-pine forest, on rotten log, 16.VIII.2006, #14246.

## BLEPHAROSTOMACEAE

*Blepharostoma trichophyllum* (L.) Dumort – **Prukhub.**: Khubsugul aimag, Renchinlkhumbé sum, valley Tsagaan Nokhoit, mountain Khar Zurh uul, fir-cedar-larch forest with rock-fields, on rock, 15.VII.2006, #846, coll. E. Enkhjargal.

## CEPHALOZIELLACEAE

\**Cephalozia microphylla* (Steph.) Douin. – **Khentei**: Tuv aimag, Erdene sum, valley of river Terelj, 1840 m, larch-birch-aspen forest, on rock, 15.VI.1974, #29, coll. N.S. Golubkova & U. Tsogt, **Mong. Daur.**: Tuv aimag, Altanbulag sum, range Khustai, mountain Khoshoot, rocky summit of mountain, 1800 m, on rock, 23.VII.2002, #13276; same range, valley Ikh Ovoo, southern slope, in rock crevices, 28.VIII.2002, #13459.

## SCAPANIACEAE

\**Scapania massalongii* (Müll. Frib.) Müll. Frib. – **Prukhub.**: Khubsugul aimag, Renchinlkhumbé sum, East taiga, mountain Tsagaan Chuluut, rocky slope of mountain, on rock, 10.VI.2008, #1884, coll. E. Enkhjargal.

*S. paludosa* (Müll. Frib.) Müll. Frib. – **Prukhub.**: Khubsugul aimag, Ulaan Uul sum, valley Dooloon modny gol, range Doodbulag, moss-cedar-larch forest, on soil, 4.VII.2008, #2338, coll. E. Enkhjargal.

\**S. scandica* (Arnell & H. Buch.) Macvicar (= *S. parvipolia* Warnst.) – **Prukhub.**: Khubsugul aimag, Ulaan Uul sum, mountain Khollogiin Dongol, valley Khogiin gol, on soil, 29.VI.2008, #2296, coll. E. Enkhjargal; **Khentei**: Ulaanbaatar surroundings, mountain Bogdkhan uul, valley Zalaat, summit of mountain, 1400 m, grassy larch forest, on moist soil, 9.VII.1994, #11374.

\**S. tundrae* (Arnell.) H. Bruch – **Prukhub.**: Khubsugul aimag, Renchinlkhumbé sum, Prikhubugulie, mountain Sul uul, 2744 m, on soil near stream, 8.VIII.1972, #309, coll. U. Tsogt & E. Kukk.

## LOPHOCOLEACEAE

*Chiloscyphus pallescens* (Ehrh. ex Hoffm.) Dumort. – **Prukhub.**: Khubsugul aimag, Renchinlkhumbé sum, range Khoridol Saridag, shrubby larch-fir open forest in

marshland, on moist soil, 14.VII.2006, #695, coll. E. Enkhjargal; **East Mong.**: Dornod aimag, Sumber sum, range Khyangan, mountain Khalzan uul, birch forest, on soil, 19.VIII.1970, #1440, coll. N.S. Golubkova & U. Tsogt.

\***C. minor** (Nees.) J.J. Engel & R.M. Schust. – **Prukhubs.**: Khubsugul aimag, Renchinlkhumbe sum, range Khoridol Saridag, larch-strubby-fir open forest in marshland, on moist soil, 14.VII.2006, #695, coll. E. Enkhjargal; **Khangai**: Bulgan aimag, Teshig sum, mountain Dulaankhan, valley Egiin gol, rocky slope near of river, on rock, 16.VIII.1991, #10954; Ulaanbaatar surroundings, mountain Bogdkhan uul, valley Zalaat, summit of mountain, 1900 m, cedar-larch open forest, on moist rock, 9.VII.1994, #11413; **Gobi Alt.**: Umnugobi aimag, Khankhongor sum, south part of ravine of El, valley Modot, 2500 m, shrubby birch forest, on trunk of tree, 23.VI.2001, #12246.

#### PLAGIOCHILACEAE

\***Plagiochila arctica** Bryhn & Kaal. – **Khangai**: Bulgan aimag, Teshig sum, mountain Dulaankhaan, valley Egiin gol, rocky slope near of river, on rock, 16.VIII.1991, #10954.

**P. porelloides** (Torr. ex Nees.) Lindb. – **Gobi Alt.**: Bayankhongor aimag, Bogd sum, upper course of river Shatad, 2800 m, along river, on soil near rock, 1.VII.2001, #12618, 12666.

\***Pedinophyllum truncatum** (Steph.) Inoue – **Prukhubs.**: Khubsugul aimag, Renchinlkhumbe sum, valley Ulaan-shoroot, mountain Sul uul, larch-cedar forest, under rock, 4.VI.2007, #965, coll. E. Enkhjargal.

#### ARNELLIACEAE

**Arnellia fennica** (Gottsche) Lindb. – **Prukhubs.**: Khubsugul aimag, Renchinlkhumbe sum, valley Tsagaan Nokhoit, mountain Khar Zurh uul, fir-cedar-larch forest with rock fields, on rock, 2006 07 15, № 846, coll. E. Enkhjargal.

#### RADULACEAE

\***Radula lindbergiana** Gottsche ex C. Hartm. – **Mong. Daur.**: Tuv aimag, Altanbulag sum, range Khustai, valley Moilt, rocky summit of mountain, under rock, 23.VII.2002, #13315.

#### PORELLACEAE

\***Porella revoluta** (Lehm. & Lindenb.) Trevis. – **Prukhubs.**: Khubsugul aimag, Erdenebulgan sum, basin river Egiin gol, north from pass Urtyn Davaa, 1680 m, on soil, 23.VII.1972, #53, coll. U. Tsogt & E. Kukk; same aimag, Tsagaan uur sum, river Arigiin gol, mountain Ontsol uul, 1380 m, on rocks, 26.VII.1972, #134, coll. U. Tsogt & E. Kukk. **Mong. Daur.**: Tuv aimag, Altanbulag sum, range Khustai, mountain Artsat, southern slope of mountain, on soil near rock, 25.VII.2002, #13348; same range, mountain Sant, rocky slope, on rock, 2.VIII.2002, #13602.

#### FRULLANACEAE

\***Frullania inflata** Gottsche – **Mong. Daur.**: Darkhan uul aimag, Sharyn gol sum, valley Monostoi, birch-pine forest, on rotten log, 16.VIII.2006, #14246; Tuv aimag, Altanbulag sum, range Khustai, valley Ikh Ovoot, southern slope, in crevices of rock, 28.VII.2002, #13459; same range, mountain East Artsat, south slope, on rock, 28.VII.2002, #13625.

\***F. parvistiphula** Steph. – **Mong. Daur.**: Tuv aimag, Altanbulag sum, range Khustai, mountain West Artsat, rocky summit of mountain, 1700 m, on rock, 28.VII.2002, #13356.

**F. muscicola** Steph. – **Prukhubs.**: Khubsugul aimag, Erdenebulgan sum, basin of river Egiin gol, 2 km north from pass Urtyn Dabaa, 1680 m, on soil, 23.VII.1972, #53, coll. U. Tsogt & E. Kukk; **Mong. Daur.**: Tuv aimag, Altanbulag sum, range Khustai, mountain Artsat, southern slope of mountain, on soil near rock, 25.VII.2002, #13348; **East Mong.**: Dornod aimag, Bayan uul sum, mountain Bayan uul, on soil near rock, 21.VII.1974, #282, coll. N.S. Golubkova & U. Tsogt; same aimag, Sumber sum, river Numreg, on soil, 19.VII.1970, #53, coll. N.S. Golubkova & U. Tsogt.

#### LITERATURE CITED

ТӨСГӨМӨД, Т.С., Т.Н. ОТНЫУКОВА & Е. ЕНХЖАРГАЛ 2012. Contribution to the Hepatic Flora of Mongolia. – *Arctoa* 21: 71-76.