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THE MOSS FLORA OF THE HUSTAI NATIONAL PARK (MONGOLIA)
ФЛОРА МХОВ НАЦИОНАЛЬНОГО ПАРКА ХУСТАЙ (МОНГОЛИЯ)

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Abstract

Hustai National Park is located 95 km West of Ulaanbaatar, in Hentei Mountain area, mostly at 1300-1500 m elev., max. = 1843 m. Moss flora of Hustai includes 98 species. Annotated list provides information on habitats and substrate for each species and distribution within the area. The research revealed that in the area among common species are *Bryum algovicum, Haplocladium angutifolium, Tortula pagorum, T. submontana, Eurohypnum leptothallum, Brachythecium rotaeanum, Fabronia ciliaris, Didymodon gaochienii, Orthotrichum iwatsukii*.

Резюме

Национальный парк Хустай расположен в 95 km западнее Улан-Батора, в горах Хэнтея, б. ч. на высотах 1300-1500 m над ур. м., max. = 1843 m. Флора мхов парка насчитывает 98 видов. Аннотированный список включает информацию о местообитании, субстрате и распространении видов по территории парка. Среди частых видов парка отмечены *Bryum algovicum, Haplocladium angutifolium, Tortula pagorum, T. submontana, Eurohypnum leptothallum, Brachythecium rotaeanum, Fabronia ciliaris, Didymodon gaochienii, Orthotrichum iwatsukii*.

Hustai National Park is located 95 km West of Ulaanbaatar, capital of Mongolia, at 105°40'–106°37'N and 47°35'–47°52'E. The total area of the park is 50600 hectares.

Hustai mountain range, a part of the Hentei Mt. Range, stretches from Northeast to Southwest. The highest peak is Ikh Ovoo Mt, with altitude of 1843 m. Most of mountains are of 1300-1500 m elevation. The main part of the Hustai range is cut by large ravines and valleys such as Ekhen us, Hushuut, Southern and Northern Moilt, the mountain has gentle and open back slopes, however, there are some cliffs and steep rocky slopes on the southern slope of ridge and around the summit.

This area of Hustai range belongs to Mongol Dahur steppe-forest region by vegetation-geographical classification (Grubov, 1955; Ulziihutag, 1989).

The most common types of vegetation in the park are dry steppe and different types of *Stipa* steppes. On the nortern slope of the main part of Hustai range, in the upper part of Ekhen us Valley and Hushuut Valley and near the main peak, there are open birch forests of several types: herbaceous-grassy, grassy-sedgy, herbaceous-sedge, shrubby and also with aspen. The eastern part of Hustai Range, the mountain Shuvuun davaa, has herbaceous-shrubby birch forest, composed by young trees. However, birch forests of the main Hustai range are old and have many rotten and fallen birch trees. Here the forest is quite open, favoring shrubs and herbaceous plants.

The forest consists of *Betula platyphylla* Sukacz., average height 8 m, and aspen, *Populus trimula* L., average height 6 m. Among shrubs are: *Cotoneaster melanocarpa* L. *Rosa acicularis* Lindl., *Spiraea media* F. Schmidt. etc.

Aspen groves occur in a southern slope of mountain (ravine Moilt) and northern slope of some mountains. The aspen trees are younger than birch and appear to be growing better.

Since the reintroduction of the Takhi (Prezewalskii horses) in the Hustai range in 1993, there have been several studies on the vegetation, including pasture composition, soil characteristics and the water resources. N. Manibazar and A.Bulgan studied flora of vascular plants, vegetation cover and published lists of vascular plant flora (Manibazar, 1996; Manibazar & al., 1999; Bulgan, 2002), and the map of vegetation of the area. Also, Herlenchimeg studied the Fungi (Kherlenchimeg, 2002) and Enkhtuya studied lichens (Enkhtuya, 2002) of the Hustai National Park.

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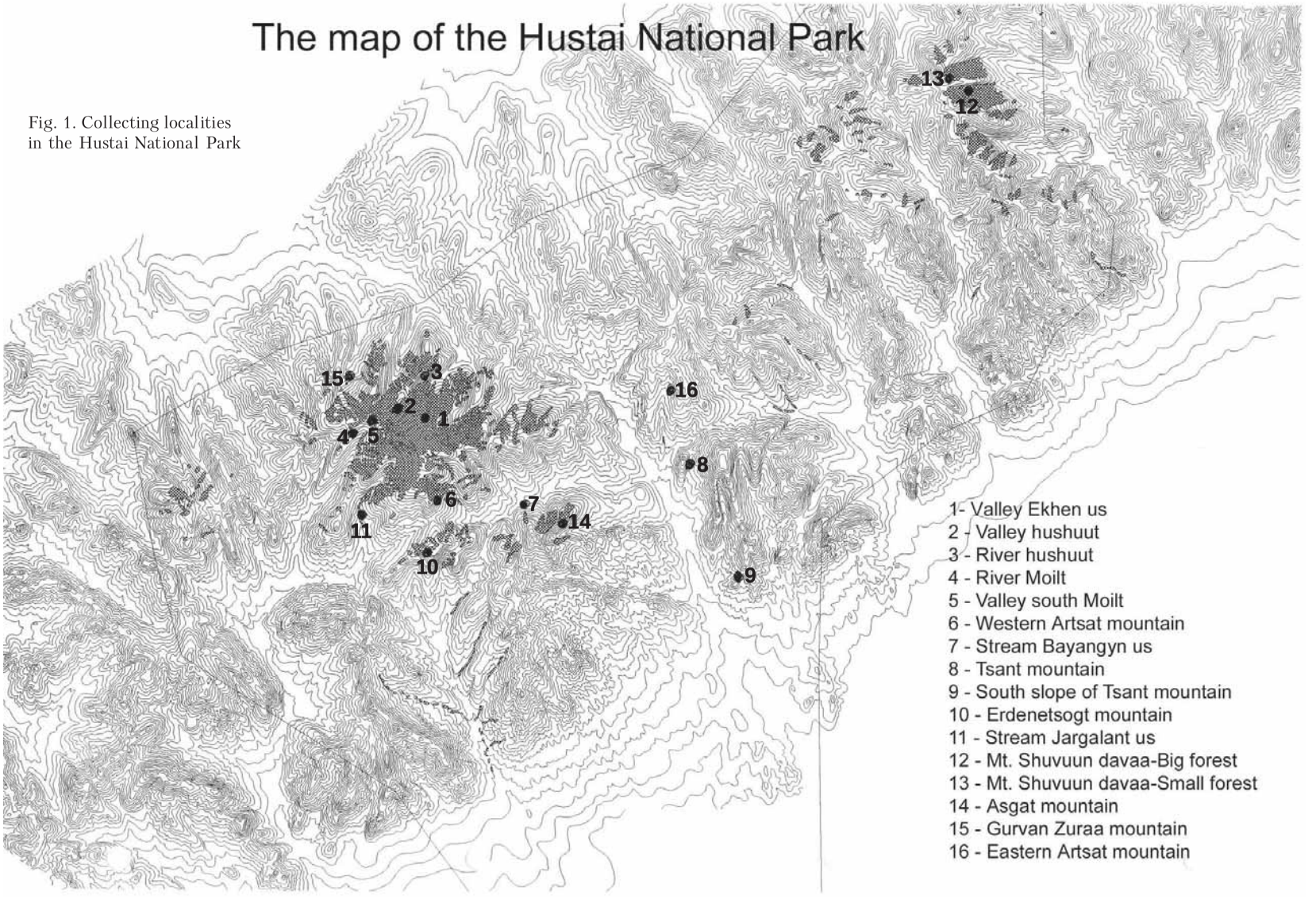

Fig. 1. Collecting localities in the Hustai National Park

In late July and August and beginning of 2002, I studied the moss flora of the Hustai National Park. It is the first research of the composition of moss species in area. Collecting localities of mosses are shown in Fig. 1. Collections were made:

20.VII.2002: Valley Ekhen us, northern slope Ikh Ovoo, herbaceous birch forest, rock walls.

22.VII.2002: Valley Hushuut, summit of range Hustai, stream Hushuut, grassy birch forest with rocky field, rocky peak of mountain;

23.VII.2002: Valley south Moilt, river Moilt, rocky field of upper river, marshland;

25.VII.2002: south slope of mountain Artsat, stream Bayangyn us;

26.VII.2002: western slope of mountain Tsant – Ledge rock, rocky ravine;

28.VIII.2002: south slope of mountain Tsant, south slope of mountain Erdenetsogt, rocky ravine, stream Jargalant us, south slope Ikh Ovoo;

29.VIII.2002. mountain Shuvuun davaa- Big Forest, upper edge Small forest, birch forest on the northern slope;

30.VIII.2002: southern slope and peak of mountain Asgat, mountain Gurvan Zuraa;

31.VIII.2002: northern slope and peak of mountain Tsant, west Ledge rock;

2.IX.2002: stream Bayangyn us, southern slope and peak eastern Artsat.

Altogether 470 moss samples were collected. The moss habitats can be classified into four ecological types: 1) herbaceous birch forest and aspen grove; 2) rock walls which rise above the forest; 3) rocky peak and boulders, rocky southern slopes of mountain; and 4) wetlands along rivers and streams.

Herbaceous birch forests with shrubs and shrubbery poplar grove occupy the main range of Hustai and Mountain Shuvuun davaa. In these forests, mosses grow mainly on the trunks and rotten logs of birch, and at base of rock outcrops and separate boulders; otherwise mosses are rare, because of dense herbaceous vegetation and also shrubs. Here on trunks are common *Haplocladium angustifolium, Pylaisiella polyantha, Pohlia nutans, Plagiomnium cuspidatum, Amblystegium serpens* and *A. juratzkanum*. On soil in wet birch forest are found *Brachythecium salebrosum, B. rotaeanum, Rhodobryum roseum,* while soil banks along temporary streams have *Myuroclada maximowiczii, Plagiomnium thomsonii,* etc. On soil under shrubs occur *Entodon concinnus, Thuidium abietinum* and *Rhytidium rugosum*.

The birch forest at its upper limit is intermixed with numerous rock outcrops, ledges and cliff of the summit area of the mountain. This rocks are quite rich of mosses. All forest species occurs here, including those growing on soil, logs and trunks, and in addition, there are a lot of epilithic mosses: *Hedwigia ciliata, Didymodon gaochienii, Grimmia longicollis, Schistidium apocarpum, Orthotrichum rupestre, O. anomalum, Leskeella nervosa, Pseudoleskeella tectorum, Brachythecium velutinum, Polytrichum alpinum, Neckera oligocarpa, Eurohypnum lepthotallum, Mnium marginatum, M. spinosum, Encalyptha ciliata, Pohlia cruda, P. longicollis, Leptopterigynandrum austro-alpinum, Tortula pagorum, T. submontana,* etc. On dry rocks were found *Hypnum vaucheri, Fabronia ciliaris, Tortula ruralis,* etc.

There are rocky mountains without any forest in southern part of Hustai range. These are western and eastern Artsat, Asgat, Erdenetsogt and Tsant mountains, which appear very dry. Mosses grow here on rock outcrops, cliffs, boulders, but they are not so diverse; the most common are: *Hypnum vaucheri, Eurohypnum leptothallum, Polytrichum piliferum, Encalypta rhabdocarpa, Orthotrichum anomalum, Bryoerythrophyllum recurvirostrum, Ceratodon purpureus, Bryum argenteum, Grimmia longicollis, G. tergestina, G. anodon, Didymodon icmadophillus, Tortula ruralis, T. submontana,* etc.

Along rivers and streams *Cratoneurum filicinum, Drepanocladus aduncus, D. sendtneri, Bryum pseudotriquetrum, Desmatodon cernuus* are common. These species always prefer humid conditions.

After identifying 470 sample moss collections, I have registered 98 species from 24 families and 52 genera in the Hustai National Park. This is about 2/3 of mosses region registered in Mongolian Dahur (Abramova & Tsegmed, 1987). Therefore, the composition of moss species in Hustai range is significant.

As a result of this research we added to 27 species in the area Mongol Dahur, such as *Tortella fragilis, Tortula submontana, Molendoa sendtneriarna, Gymnostomum aeruginosum, Didymodon gaochienii, D. asperifolius, D. vinealis, Bryoerythrophullum ferruginascens, Grimmia laevigata, G. tergestina, G. poecilostoma, Pohlia longicollis, Bryum capillare, B. caespiticum, B. algovicum, B. amblyodon, B. intermedium, B.*

uliginosum, Plagiomnium acutum, Trachycystis ussuriensis, Mnium spinosum, Orthotrichum rupestre, O. iwatsukii, Leskeella nervosa, Lepthopterigynandrum austro-alpinum, Brachythecium velutinum, B. rotaeanum.

Leading families and genera of moss flora of the Hustai National Park are: Pottiaceae (20 species), Bryaceae (13), Grimmiaceae (8), Brachytheciaceae (8), Mniaceae (7), Amblystegiaceae (6), Hypnaceae (6), Orthotrichaceae (5). Leading genera are: *Bryum* (8), *Grimmia* (6), *Didymodon* (6), *Tortula* (4) and *Orthotrichum* (4). This account shows that rock is the most significant substrate for mosses in the area.

ANNOTATED LIST OF MOSSES

Collection of mosses (Tsegmed №13118-13391 and №13429-13628) of the Hustai National Park is kept in the Herbarium of the Institute of Botany of Mongolian Academy of Sciences.

POLYTRICHACEAE

Polytrichum alpinum Hedw. – On soil near rocks, in crevices of rocks at the upper border of forest, cliffs in summit area and rocky south slope of mountain. – 6, 8, 12, 14, 16.

P. juniperinum Hedw.– On soil in herbaceous birch forest with shrubs. – 12.

P. piliferum Hedw. – On soil between boulders, in crevices of rocks on the southern slopes and rocky peaks and in the rocky ravines of mountains. Common in rather dry, xeric conditions. – 6, 8, 14, 16, 10, 13, south slope of Ikh Ovoo.

DITRICHACEAE

Ceratodon purpureus (Hedw.) Brid. – On soil near rocks, on rocks and boulders, rotten logs and trunk of birch in herbaceous birch forest, in shrubby mires at course of streams, on rocky peaks, south slopes and rocky ravine of mountain. Common of bare soils, often with sporophytes. – 1, 4, 6, 8, 10, 14.

Distichium capillaceum (Hedw.) B.S.G. – Mainly on accumulated soil near rocks and stones, in rock crevices, rarely on rotten logs and on trunks of woods in shrubbery-grassy birch forest, on rock and rocky field of upper border of forest and cliffs in summit area. – 2, 5, 8, 12, 15, 16.

DICRANACEAE

Oncophorus wahlenbergii Brid. – On soil under shrubs in poplar grove with birch and shrubs. This species is common on rotten logs and on trunk of trees in herbaceous larch forest in neighboring parts of Mongolia, but rare in Hustai range – 15.

Dicranum brevifolium (Lindb.) Lindb. – On soil and near rock in herbaceous birch forest and at upper borders of forest. This species sometimes dominates on soil in herbaceous larch forest in other parts of Mongolia. – 12.

LENCALYPTACEAE

Encalypta ciliata Hedw. – On rock outcrops and boulders, on trunk, on soil in birch forest and cliff at upper border of forest. – 2, 12.

E. rhabtocarpa Schwaegr. – On tree trunks, in crevices of rock and near rock along streams, in poplar grove with birch and shrub, rocks of upper borders of forest, on rocky southern slope and on peak of mountain. – 5, 6, 8, 12, 15, 16, mountain Ikh Ovoo.

E. cf. *vulgaris* Hedw. – On rotten log of birch in herbaceous birch forest. Capsules have no peristome and not-ribbed urn, but they are somewhat undeveloped. – 1.

POTTIACEAE

Stegonia pilifera (Brid.) Broth. – On soil near stream. Rare species, usually growing in Mongolia in high mountains. – 5.

Desmatodon cernuus (Hueb.) B. S. G. – On wet soil along streams. – 7, 11.

Tortula mucronifolia Schwaegr. – On soil, in crevices of cliffs at upper border of forest, rocky places in summit area and rocky ravines. – 5, 8, 12, 16, southern slope of Ikh Ovoo.

T. pagorum Milde – On rock outcrops and boulders, and in rock crevices in grassy birch forest, cliffs at upper border of forest, rocky places on southern slope and in summit area, rocky ravines. Common on dry rocks. – 2, 5, 6, 8, 10, 12, 14, southern slope of Ikh Ovoo.

T. ruralis (Hedw.) Crome – On soil and on soil near rock in grassy birch forest, wall rock of upper border of forest, rocky paek and southern slope of mountain, rocky ravine. It is common dry soils and dry rocks. –1, 2, 5, 6, 10, 12.

T. submontana Broth. – On soil, rotten logs, rocks and soil near rocks in birch forest, rocky places in summit area, on boulders on southern slope, and in rocky ravine. As common as previous species. – 1, 3, 4, 6, 16, 14, 8, 12.

Oxystegus tenuirostris (Brid.) Hilp. – On rotten log and trunk of birch, on rock outcrops and boulders in birch forests, rock ledge in upper forest and rocks near summit. – 1, 3, 12, 16.

Tortella fragilis (Hook. et Wils.) Limpr. – On accumulated soil near rocks on mountain steppe. – 2.

Weissia platyphylla Hedw. – On accumulated soil near rocks on rocky places on ridges and ravines. Rare species. – 6, 10, 15.

Molendoa sendtneriana (B.S.G.) Limpr. – On rock outcrops and boulders at upper border of birch forest and in summit area. – 1, 12.

Gymnostomum aeruginosum Sm. – On rock in summit area –1.

Didymodon asperifolius (Mitt.) Crum et al. – On accumulated soil near rock in summit area. – 6.

D. gaocheinii B.Tan et Y.Jia – On trunks of birch, rock outcrops and boulders in forests, cliffs at upper border of forest and rocky peak of mountain. This recently described species turns out to be not rare in Mongolia, particularly in Hustai. – 1, 2, 5, 12.

D. icmadophilus (Schimp.) Saito – On rock outcrops and boulders in mountain steppe, rocky southern slope of mountain and in rocky ravine. – 1, 8, 10, 14, 16, southern slope of Ikh Ovoo.

D. rigidulus Hedw. – On soil in rocky ravine. – 8.

D. validus Limpr. (=*Barbula rigidula var. validus* (Hedw.) Milde) – On rocks on wall rock upper border of forest, on rocky peak and rocky southern slope of mountain. – 6, 12.

D. vinealis Brid. – On rock in rocky peak of mountain. – 2.

Bryoerythrophyllum ferrugnascens (Stirt.) Giac. – On in summit area – 1.2.16.

B. recurvirostrum (Hedw.) Chen – On various substrates: soil, rotten log of birch, on thin soil near rock, in rock crevices in forest, cliffs at upper limit of forest zone, rocky peaks and rocky southern slope of mountain, rocky ravines, etc. Widespread species. – 1, 2, 4, 6, 8, 10, 12, 15, 16.

B. alpigenum (Vent.) Chen. – On rock in grassy birch forest. – 1.

GRIMMIACEAE

Schisitidium rivulare Brid. (=*Schistidium alpicola* auct. – On rock in dry stream bed. – 5.

S. apocarpum (Hedw.) B.S.G. – On rocks and stones in grassy birch forest, rocky ledges upper border of forest, on rocky peak and boulder southern slope of mountain, ravines of mountain. This is common on rocks and stones. – 1, 2, 4, 12, 15, 16.

Grimmia longirostris Hook. (=*G. affinis* Hornsch.) – On rock outcrops and boulders in birch forest, rocks at upper border of forest, on rocky places in summit area and on southern slope of mountain, and in slopes of ravines. The most widespread species of the genus; common in more dry forests and zone steppe. – 1, 3, 4, 6, 8, 10, 12, 15, 16, southern slope of Ikh Ovoo.

G. anodon B.S.G. – On dry rocks in summit area and on southern slope. This species is very common in southern areas of Mongolia. – 5, 6, 8, 16.

G. elatior Bruch ex Bals. et De Not. – On rocks in herbaceous birch forest, rock outcrops at upper border of forest, on rock places in summit area. Is common in rock fields of high mountains. – 3, 8, 12, northern slope of Ikh Ovoo.

G. laevigata (Brid.) Brid. – On rock in rocky ravine, on ledges of mountain. – 8, 10.

G. poecilostoma Card. et Seb. – On rocks on southern slope of mountain. – Southern slope of Ikh Ovoo.

G. tergestina Tomm. – On dry rocks on rocky southern slope, rocky ravine and dry stream bed. Plants were sterile and therefore can not be separated from *G. poecilostoma* for sure. – 5, 6, 8, 10, 14.

SPLACHNACEAE

Tayloria acuminata Hornsch. – On soil, rotten logs and accumulated soils near rock in herbaceous birch forest and in shrubs. – 1, 12, 13.

BRYACEAE

Leptobryum pyriforme (Hedw.) Wils. – On wet soil and on tree trunk along stream. – 4, 7.

Pohlia cruda (Hedw.) Lindb. – On soil near and under rocks, in rock crevices in birch forest, shrubby birch-poplar grove, rock outcrops at upper border of forest and summit area. Common on relatively wet rocks. – 12, 15, northern slope of Ikh Ovoo.

P. longicollis (Hedw.) Lindb. – On soil near rocks on rock outcrops at upper border of forest, along stream. Rather common on humid rocks at upper elevations. – 5, 12.

P. nutans (Hedw.) Lindb. – On trunk of trees in grassy birch forest. This is common on trunk of trees of forest belt. – 12.

Bryum algovicum Sendtn. – On soil near rocks and boulders and on wet soil in shrubby mire, on grassy birch forest, mountain steppe. – 2, 5, 7, 12.

B. amblyodon C. Muell. – On rock on southern slope of mountain, mountain steppe, in shrubbery-birch-poplar grove, cliffs at upper border of forest and mountain steppe. – 2, 12, 15.

B. argenteum Hedw. – On rock and on soil near and under rocks, in rock crevices in birch forest and shrubby birch-poplar grove, on rock outcrops at upper border of forest and rocky places in summit area and southern slope, and in rocky ravine. In wide range of habitats. – 1, 2, 5, 6, 8, 10, 12, 15, 16.

B. caespiticum Hedw. – On soil in grassy-birch forest. – 2.

B. capillare Hedw. – On rocks in birch forest, and on southern rocky slope of mountain. – 1, 2.

B. creberrimum Tayl. – On rock and on soil, rotten logs in grassy birch forest, in shrubby grove. – 1, 2, 12.

B. intermedium (Brid.) Bland. – On wet soil bank along river. – 5.

B. pseudotriquetrum (Hedw.) Schwaegr. – On wet soil banks along streams and on rock in water of stream. Common in wetlands. – 3, 4, 7.

B. uliginosum (Brid.) B.S.G. – On wet soil bank along river. – 7.

Rhodobryum roseum (Hedw.) Limpr. – On soil and on accumulated soil near rocks in grassy birch forest and shrubby birch-poplar grove. – 1, 15.

MNIACEAE

Trachycystis ussuriensis (Maack et Regel) T.Kop. (=*Mnium immarginatum* (C.Muell.) Broth.) – On soil near rock, in rock crevices on in summit

area and rocky southern slope. – 6, southern slope of Ikh Ovoo.

Mnium marginatum (With.) P. Beauv. (=*M. serratum* Brid.) – On soil near rocks, on tree trunk, on banks wet soil along river and rocks in summit areas. Common on wet rocks. – 5, 12.

M. spinosum (Voit.) Schwaegr. – On soil near rock outcrops and boulders in grassy birch forest, in summit areas. Common on rocky places. – 1, 12.

M. thomsonii Schimp. (=*M. orthorrhynchum* Brid.) – On rock outcrops at upper border of forest. – 12.

Plagiomnium acutum Lindb. (= *Mnium trichomanes* Mitt.) – On rock and soil near rocks in birch forest. – 1, 12.

P. cuspidatum (Hedw.) T.Kop. (= *Mnium cuspidatum* Hedw.) – On soil, on trunk of birch, on rocks in birch forest and at upper border of forest. – 1, 2, 5.

P. ellipticum (Brid.) T.Kop. (=*Mnium ellipticum* Brid., *M. rugicum* Laur.) – On wet soil bank along river. Locally common in wet places. – 4.

AULACOMNIACEAE

Aulacomnium palustre (Hedw.) Schwaegr. – On soil, in mire at upper border of birch forest, in shrubby mire near course of creek. This species is dominated on soil in some forests, mires and at upper elevations. – 5, 12, 13.

TIMMIACEAE

Timmia bavarica Hessl. – In rock crevices in herbaceous birch forest. – 2.

ORTHOTRICHACEAE

Orthotrichum anomalim Hedw. – On rock outcrops and boulders in birch forest, cliffs at upper border of forest, rocks in summit area and in ravine slopes. – 1, 2, 8, 10, 12, 15, northern slope Ikh Ovoo.

O. iwatsukii Ignatov – On tree trunks, rock outcrops and boulders in birch forest, cliffs at upper border of forest, rocks in summit area. – 1, 3, 5, 6, 12.

O. rupestre Schleich. – On rocks in birch forest, rock ledges on slopes of mountain. Locally abundant on rocks. – 1, 8.

O. speciosum Nees – On rocks in birch forest and near its upper borders, and in dry stream bed. – 5, 12.

Stroemia obtusifolia (Brid.) Hag. – On rocks in birch forest. – 1.

HEDWIGIACEAE

Hedwigia ciliata (Hedw.) P. Beauv. – On rocks and stones in birch forest, rock ledge at upper border of forest, rocks in summit area and on southern slopes. Common on dry rocks within forest belt. – 1, 2, 8, 10, 12, 14.

NECKERACEAE

Neckera oligocarpa Bruch – On rock sides and overhanging surfaces in birch forest, as well as in summit area. This species is rather common on wet rocks in forest belt. – 3, 5, 12, northern slope of Ikh Ovoo.

FABRONIACEAE

Fabronia ciliaris Brid. – In rock crevices on cliffs at upper border of forest and in rocky places in summit areas, open rocky slopes and rocky slopes of ravines. – 6, 8, 10, 12, 14, Northern slope of Ikh Ovoo.

LESKEACEAE

Leskeella nervosa (Brid.) Loeske var. *rigidula* (Kindb.) Podp. - On rock in birch forest, cliffs at upper border of forest, rock fields on slope and in summit area, dry river bed. Common on rocks. – 1, 3, 5, 12, 15.

Pseudoleskeella tectorum (Funk.) Lindb. – On rock on rocky slopes of mountain. Locally common. – 5, 6.

THUIDIACEAE

Leptopteryginandrum austro- alpinum C. Muell. – On rocks in birch forest and summit area. – 2, 6.

Haplocladium angustifolium (Hampe) Broth. – On rotten birch and on tree trunks in herbaceous birch forest, in shruby birch-poplar grove and among shrubs, along streams and rarely on wet rock near river. Very common. – 1, 2, 3, 5, 7, 12, 15.

Thuidium abietinum (Hedw.) B. S. G. – On soil and on soil near rock, on tree trunk in birch forest, among shrubs, cliffs at upper border of forest, rocky places in summit area and southern slope, rocky slopes of ravine. This species is dominated on soil in subtaiga and pseuvdotaiga forest. – 1, 2, 5, 6, 10, 12.

CRATONEURACEAE

Cratoneurum filicinum (Hedw.) Spruce – On rocks in water of river. Common in wet places. – 4, 7, 11.

AMBLYSTEGIACEAE

Campylium hispidulum (Brid.) Mitt. – On trunks and rotten logs of birch, and on rock in birch forest and shrubs. – 1, 2, 12.

Amblystegium juratzkanum Schimp. – On trunks and rotten logs of birch, and on rock in birch forest and shrubby birch-poplar grove, and cliffs at upper border of forest. – 1, 2, 12, 15.

A. serpens B.S.G. – On trunks and rotten logs of birch, and on rock in birch forest. – 12.

Drepanocladus aduncus (Hedw.) Moenk. – On wet soil bank along streams and shrubby mire at source of creek. Abundant in wet places. – 5, 11.

D. sendtneri (Schimp.) Warnst. – Grow on wet soil along streams and shrubbery marsh in upper river. This is common as preceding species in wet places. - 5, 7.

D. uncinatus (Hedw.) Warnst. – On soil and trunks of birch in birch forest, and cliffs at upper border of forest. Sometimes dominated on ground in forest. – 12.

BRACHYTHECIACEAE

Brachythecium falcatulum (Broth.) Par. – On rock in grassy birch forest. – 2.

B. cf. glareosum (Broth.) Par. - On rock in grassy birch forest. - 1.

B. rotaeanum De Not. – On trunks of birch, on rocks in birch forest, in shrubbery-birch poplar grove, cliffs at upper border of forest. – 1, 3, 5, 8, 12, 15.

B. salebrosum (Web. et Mohr.) B.S.G. – On trunk of birch and soil under shrubs in birch forest, also in shrubby birch-poplar grove. – 1, 12, 15.

B. velutinum (Hedw.) B.S.G. – On rock in birch forest, cliffs at upper border of forest, rocky peak of mountain. – 1, 6, 12, 15.

Cirriphyllum cirrosum (Schwaegr.) Grout – On rock in birch forest, cliffs at upper border of forest. Common at upper elevations. – 1, 3, 8.

Myuroclada maximowiczii (Borszcz.) Steere et Schof. – On trunk of birch, on accumulate soil near rock in grassy birch forest, cliffs at tree-line, rocky ravine and along stream. Common in rather wet places. – 1, 4, 8, 12.

Eurhynchium pulchellum (Hedw.) Jenn. – On tree trunk and on rock in birch forest, cliffs at upper border of forest, in shrubbery-birch poplar grove. – 1, 12, 13, 15.

ENTODONTACEAE

Entodon concinnus (B. Pyl.) De Not. – On soil, tree trunks, rock and boulders in birch forest, cliffs at upper border of forest, in shrubbery-birch poplar grove. This species is dominated on the ground in subtaiga forests. – 1, 12, 15.

PLAGIOTHECIACEAE

Isopterygium pulchellum (Hedw.) Jaeg. – On trunk of trees, on rock and boulders in birch forest, and on cliffs at upper border of forest. – 1, 3, 12, northern slope of Ikh Ovoo.

HYPNACEAE

Pylaisiella polyantha (Hedw.) Grout – On trunks and rotten logs of birch, on rock outcrops and boulders in birch forest, in shruby birch-poplar grove, rocky peak, rocky southern slope, and rocky ravine slope. Common in forest belt. – 1, 3, 6, 8, 10, 12, 15, southern slope of Ikh Ovoo.

Homomallum incurvatum (Brid.) Loeske – On rock in herbaceous birch forest. Rare species in Mongolia. – 3.

Eurohypnum leptothallum (C.Muell.) Ando (=*Hypnum leptothallum* (C.Muell.) Par.) – On rock outcrops and boulders in birch forest, cliffs at upper border of forest, rocky places in summit area and on southern slope, and rocky slopes of ravine. Very common. – 2, 5, 6, 8, 10, 12, 13, 14, 15, southern slope of Ikh Ovoo.

Hypnum cupressiforme Hedw. – In rock crevices on rock field in upper course of creek. – 5.

H. vaucheri Lesq. – On rock outcrops and boulders and on soil near rocks in birch forest, on cliffs at upper border of forest, rocky places in summit area and rocky southern slope, rocky ravine of mountain. Very common on dry rocks. – 2, 6, 7, 8, 14, 12, 16, southern slope of Ikh Ovoo.

RHYTIDIACEAE

Rhytidium rugosum (Hedw.) Kindb. – On soil and rocks in birch forest, among shrubs, rocky places in summit area and on southern slope of mountain. Usually dominated in subtaiga and pseuvdotaiga forests. – 1, 2, 12, 15.

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LITERATURE CITED

[ABRAMOVA, A.L. & TS. TSEGMED] АБРАМОВА, А. Л., Ц. ЦЭГМЭД 1987. Дополнения к флоре мхов Монгольской народной республики. – [Additions to the moss flora of Mongolian Narodnoi Respublic] *Новости сист. низш. раст. [Novosti sist. nizsh. rast.]* **24**: *185-188.*

BULGAN, A. 2002. Some results vegetation monitoring. – J.Tahki № 5/2: *66-74.*

ENKHTUYA, O. 2002. Lichen flora of Hustai National Park. – *J. Takhi* № 5/2: *93-97.*

[GRUBOV, V. I.] ГРУБОВ, В.И. 1955. Конспект флоры МНР. – [Conspect of flora of MNR] М.-Л., Тр. Монгольско. Комиссии АН СССР [Moscow-Leningrad, Trudy Mongolsk. Komissii AN SSSR] **67**: .

MANIBAZAR, N. 1996. On studying of vegetation and flora of Hustai range. – *J. Takhi.*

MANIBAZAR, N., A. BULGAN & D. A. BOLORMAA DUGERLHAM 1999. List of vascular plans of Hustai Steppe Reserve. – *J. Takhi* № 4/2: *53-80.*

ULZIIKHUTAG, N. 1989. Survey of vascular plant of Mongolia. – *Ulaanbaatar, 208 pp.*

KHERLENCHIMEG, N. 2002. Species composition of higher fungi in Mongolia. – *J. Takhi* № 5/2: *98-100.*