

## MOSS FLORA OF IKH NART'S ROCK (DORNOGOBI DISTRICT, MONGOLIA)

### ФЛОРА МХОВ СКАЛЬНЫХ ВЫХОДОВ ИХ НАРТ (ВОСТОЧНОГОБИЙСКИЙ АЙМАК, МОНГОЛИЯ)

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Absrtact

Ikh Nart's Rock is a resource area in the Gobi desert zone. The summer is characterized by very hot weather with very rare rain. However shaded and sheltered faces of big rocks are suitable for abundant moss growth, although the species diversity is low, and only few species are present in many places here: *Tortula atrovirens*, *Syntrichia pagorum*, *Fabronia ciliaris*, and *Didymodon rigidulus*. Among 114 specimens collected in 2007 from the cliff formation near Argali and Yangir resource center in Ikh Nart's natural resource land, 26 species of 13 genera and 7 families were revealed.

Резюме

Скальные выходы Их Нарт являются ресурсным резерватом в пустыне Гоби. Для этого района характерно очень жаркое лето с чрезвычайно редкими дождями. Тем не менее затененные и защищенные от ветра поверхности крупных камней оказываются пригодными для обильного роста мхов, хотя их видовое богатство и невелико; лишь немногие виды встречаются повсеместно в пределах данной территории: *Tortula atrovirens*, *Syntrichia pagorum*, *Fabronia ciliaris* и *Didymodon rigidulus*. Коллекция из 114 образцов была собрана в 2007 г. в окрестностях Ресурсного центра по изучению архаров и горных козлов; в ней было выявлено 26 видов мхов из 13 родов и 7 семейств.

KEYWORDS: biodiversity, cliff formation, desert, Gobi, Mongolia, mosses, rock crevices

#### INTRODUCTION

Ikh Nart's Rock, a unique and glorious cliff formation, is located in the north-west of Dalanjargalan sum, Dornogobi aimag (Fig. 1). Since 1996 this area received an officially protected status as Ikh Nart's Natural Resource Land.

The area has elevation of 850-1200 m, where flat and hilly landscapes alternate (Figs. 2-5). In hilly places, almost all creek valleys have permanent or temporary streams, providing habitats for animal species, as mongolian antelope (*Gazella subgutturosa*), argali (*Ovis ammon*) and Siberian ibex, or yangir (*Capra sibirica*). The formation of small and big cliffs is very suitable for various predacious birds: *Falco cherrug*, *F. tinnunculus*, *Milvus migrans*, *Buteo hemilasius*, *Aquila chrysaetos*, *Aegypius monachus*.

Ikh Nart's Rock looks like a cliff island in the Gobi Desert. Its climate is continental, with the average temperature being +25°C in July and -21°C in January. Strong wind blows from the west throughout the year, resulting in frequent sandstorms, that affect plant and animal populations in the area (Reading *et al.*, 2006). The territory belong to the desert zone.

The vegetation is composed of *Cleistogenes squarrosa*, *Koeleria macrantha*, *Stipa gobica*, *Caragana leu-*

*cophloea*, *Ephedra glauca*, *Ajania trifida*, *Iris tenuifolia*, *Lilium pumilum*, *Limonium bicolor*, *Heteropappus hispidus*. In some years they form more or less abundant vegetation cover, while in dry years populations become quite sparse (Ulziikhutag, 1989).

In September, 2007, a research team undertook a trip to Ikh Nart's Rock and collected bryophytes in Burgast Stream area near Argali and Yangir Research center. That year the previous rain in the area was in June, so all the plants were strongly dried up, moreover the beginning of September had day temperatures at +40-43°C. Mosses grew only at shady sides of cliffs, but still were much burned by sun.

Naturally, most of material was very hard to identify and only after extensive comparison of all the specimens with each other, as well as with herbarium collections, we were able to name them. Only few species were more or less common and represented by many collections: *Tortula convoluta*, *Syntrichia pagorum*, *Fabronia ciliaris*, and *Didymodon rigidulus*.

Finally, after identification of 114 samples of mosses, 26 species of 13 genera, 7 families were revealed. Most of them are the same that occur in other parts of Gobi mountains (cf. Ignatov *et al.*, 2004), represented mostly by xerophytic epilithes from Pottiaceae and Grim-

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miaceae families. The occurrence of *Fabronia ciliaris* in cliff formation is interesting; this species grows usually as an epiphyte in more humid climate.

#### THE LIST OF MOSSES

All collections are from Burgast Stream area, at 1170-1200 m elevation. The collecting numbers of Tsedmed are given after collection dates.

#### ENCALYPTACEAE

*Encalypta raptocarpa* Schwägr. – plateau north and south of Burgast Stream, in the rock crevices of cliff formation, 4-8.IX.2007, № 14570, 14571, 14627, 14656, 14667; lower course of stream, northern slope of rocky mountain, rock crevice, 7.IX.2007, № 14639. Samples without capsules or all with destroyed capsules; however leaves with long hair-point indicate *E. raptocarpa* s.l. rather than *E. vulgaris*.

#### FISSIDENTACEAE

*Fissidens bryoides* Hedw. – plateau north of Burgast Stream, in rock crevices of cliff formation, 8.IX.2007, № 14614, 14625.

#### POTTIACEAE

*Barbula convoluta* Hedw. – plateau north of Burgast Stream, in rock crevices of cliff formation, 8.IX.2007, № 14668.

*B. unguiculata* Hedw. – plateau north and south of Burgast Stream, in rock crevices of cliff formation, 4-8.IX.2007, № 14582, 14597, 14611, 14616, 14621, 14646, 14659, 14662, 14665.

*Bryoerythrophyllum recurvirostrum* (Hedw.) P.C. Chen – plateau north of Burgast Stream, on rock of cliff formation, 4-5.IX.2007, № 14596.

*B. latinervum* (Holmen) Fedosov & Ignatova – plateau north and south of Burgast Stream, in rock crevices of cliff formation, 7.IX.2007, № 14636.

*Didymodon icmadophilus* (Schimp. ex Müll. Hal.) K. Saito – plateau north of Burgast Stream, in rock crevices of cliff formation, 4-8.IX.2007, № 14562, 14568, 14569, 14608, 14619, 14663, 14664, 14666; lower course of stream, northern slope of rocky mountain, rock crevice, 7.IX.2007, № 14638.

*D. rigidulus* Hedw. – plateau north and south of Burgast Stream, in rock crevices of cliff formation, 4-8.IX.2007, № 14553, 14559, 14567, 14589, 14617, 14619, 14632, 14634, 14636; lower course of stream, northern slope of rocky mountain, rock crevice, 7.IX.2007, № 14643.

*Tortula atrovirens* (Sm.) Lindb. (= *T. convoluta* (Hedw.) P. Gaertn., B. Mey. & Scherb.) – plateau north and south of Burgast Stream, in rock crevices of cliff formation, 5-8.IX.2007, № 14584, 14601, 14652.

*T. transcaspica* Broth. – plateau north of Burgast Stream, in rock crevices of cliff formation, 5.IX.2007, № 14657.

*Syntrichia pagorum* (Milde) J.J. Amann – plateau north and south of Burgast Stream, in rock crevices of cliff formation and on bases of rocks, 4-8.IX.2007, № 14562, 14571, 14572, 14579, 14581, 14585, 14592,

14614, 14618, 14615, 14646, 14653; lower course of stream, northern rocky slope of the mountain, rock crevice, 7.IX.2007, № 14641.

*S. sinensis* (Müll. Hal.) Ochyra – plateau north of Burgast Stream, in rock crevices of cliff formation, 5.IX.2007, № 14598.

*S. submontana* (Broth.) Ochyra – plateau north of Burgast Stream, in rock crevices of cliff formation, 5-8.IX.2007, № 14582, 14590, 14629, 14630, 14633, 14644, 14647.

#### GRIMMIACEAE

*Grimmia anodon* Bruch et al. – plateau north of Burgast Stream, on rock of cliff formation, 8.IX.2007, № 14659.

*G. laevigata* (Brid.) Brid. – plateau north and south of Burgast Stream, in rock crevices of cliff formation, 4-7.IX.2007, № 14554, 14555, 14558, 14566, 14586, 14595, 14611, 14620, 14623, 14625.

*G. longirostris* Hook. – plateau north of Burgast Stream, in rock crevices of cliff formation, 8.IX.2007, № 14622.

*G. ovalis* (Hedw.) Lindb. – plateau north of Burgast Stream, on rock of cliff formation, 4.IX.2007, № 14561, 14568.

*G. reflexidens* Müll. Hal. – plateau north of Burgast Stream, in rock crevices of cliff formation, 5 & 7.IX.2007, № 14659.

*G. tergestina* Tømm. ex Bruch et al. – plateau north and south of Burgast Stream, in rock crevices of cliff formation, 4-8.IX.2007, № 14566, 14580, 14581, 14583, 14603, 14610, 14625, 14628, 14649.

*Jaffueliobryum latifolium* (Lindb. & Arnell) Thér. – plateau north of Burgast Stream, in rock crevices of cliff formation, and on rock, 4.IX.2007, № 14564, 14573; lower course of stream, northern rocky slope of the mountain, rock crevice, 7.IX.2007, № 14637.

#### BRYACEAE

*Bryum argenteum* Hedw. – plateau north and south of Burgast Stream, on rock of cliff formation, 5-8.IX.2007, № 14584, 14601, 14652.

#### ORTHOTRICHACEAE

*Orthotrichum anomalum* Hedw. – plateau north and south of Burgast Stream, on rock of cliff formation, 4-5.IX.2007, № 14578, 14588, 14591, 14593.

*Zygodon viridissimus* (Dicks.) Brid. s.l. – plateau north of Burgast Stream, on rock of cliff formation, 4.IX.2007, № 14575.

#### FABRONIACEAE

*Fabronia ciliaris* (Brid.) Brid. – plateau north and south of Burgast Stream, in rock crevices of cliff formation and on bases of rocks, 4-8.IX.2007, № 14562, 14563, 14565, 14574, 14575, 14576, 14579, 14582, 14595, 14602, 14607, 14618, 14624, 14650, 14651, 14654, 14656, 14662; lower course of stream, northern slope of rocky mountain, rock crevice, 7.IX.2007, № 14645.

#### HYPNACEAE

*Hypnum vaucheri* Lesq. – plateau north and south of



Figs. 1-7. Location of Ikh Nart's Rock, with characteristic landscapes and common moss species. #1: map of Mongolia, with Ikh Nart's Rock marked by star; #2-5: views of collecting localities; #6: *Didymodon icmadophilus*; #7: *Grimmia anodon*.

Burgast Stream, in rock crevices of cliff formation, 4-8.IX.2007, № 14562, 14599, 14620, 14631, 14666; lower course of stream, northern rocky slope of mountain, rock crevice, 7.IX.2007, № 14643.

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