

BRYOPHYTE VEGETATION OF BASHKIRIA (SOUTH URALS). III.
EPIPHYTIC AND EPIXYLIC COMMUNITIES OF WESTERN BASHKIRIA
РАСТИТЕЛЬНОСТЬ МОХООБРАЗНЫХ БАШКИРИИ (ЮЖНЫЙ УРАЛ).
III. ЭПИФИТНЫЕ И ЭПИКСИЛЬНЫЕ СООБЩЕСТВА ЗАПАДА БАШКИРИИ

ELVIRA Z. BAISHEVA¹

ЭЛЬВИРА З. БАИШЕВА¹

Abstract

Epiphytic and epixylic bryophytic communities of Western Bashkiria were studied. The paper presents 6 associations, 2 subassociations and 1 community from 2 classes, 3 orders and 4 alliances of moss vegetation. Ass. *Orthotrichetum pallentis* Ochns.1928 and 1 community are new for Bashkiria.

Резюме

В результате изучения эпифитных и эпиксильных бриосообществ западных районов Башкирии было выявлено 6 ассоциаций, 2 субассоциации и 1 безранговое сообщество, принадлежащих к 2 классам, 3 порядкам и 4 союзам моховой растительности. Ассоциация *Orthotrichetum pallentis* Ochns.1928 и 1 сообщество описаны в Башкирии впервые.

INTRODUCTION

Epiphytic and epixylic moss vegetation of Western Bashkiria (Davlekanovo, Belebej, Chekmagush, Ilish and Djurtjuli Districts) was investigated according the Braun-Blanquet approach. The studied area is situated within 54°10'-55°30'N and 54°15'-55°5'E, at 120-370 m elevation. It belongs to forest-steppe zone. The climate is continental. The mean annual temperature ranges between 1,7-2,6°C. The frostless period is about 114-125 days (Kadilnikov et al., 1964). Forest covers from 5% to 53% of them territory within individual districts. The forest territory was declined in the recent past by clear cutting, and now the declination continues due to intensive grazing. The investigations were carried out in broad-leaved forests (cl. *Quercofagetea*) dominated by *Tilia cordata*, *Acer platanoides*, *Quercus robur* (al. Aconito-Tilion Solomeshch et al. 1993), flood-plain alder forest (al. *Alnion incanae* Pawlowski in Pawlowski et Wallisch 1928); in flood-plain willow and poplar stands (cl. *Salicetea purpurea*) and secondary *Populus tremula*, *Betula pendula* forests.

METHODS

About 180 geobotanical releves were carried out on 1994. The most typical, often repeated sites

of the bryophytic cover on the tree trunks and decaying wood were selected. The particular attention was given to the ecological homogeneity of the sample plots (moisture, illumination, exposition, homogeneity of surface). The area of sample plots ranges from 1 to 8 dm². The abundance of species was evaluated according to the Braun-Blanquet abundance scale (Mirkin et al., 1989). In the field experiment was evaluated only preliminary abundance of species, real abundance was defined in the laboratory after determination of species with microscope. The names of syntaxa follow the Code of Phytosociological Nomenclature (Barkman et al., 1986). The nomenclature of mosses is after Ignatov & Afonina (1992), of hepatics – Konstantinova et al.(1992), vascular plants – of Czerepanov (1995). The system of high syntaxa is after Marstaller (1993). The specimens are deposited at the herbarium of Institute of Biology of Ufa Science Centre of Russian Academy of Sciences.

THE LIST OF SYNTAXA

CL. FRULLANIO DILATATAE-LEUCODON-
TETEA SCIUROIDIS Mohan 1978 em. Marst.1985
Ord. **Orthotrichetalia** Had. in Kl. et Had.1944
Al. *Ulotion crispae* Barkm.1958

¹ – Institute of Biology of Ufa Science Center of Russian Academy of Sciences, October-av., 69, Ufa 450054 Russia. – Россия 450054 Уфа, пр.Октября, 69. Институт биологии УНЦ РАН.

Ass. *Orthotrichetum pallentis* Ochn. 1928 (table 1, N1)

Ass. *Pylaisietum polyanthae* Felf. 1941 (table 1, N2)

Ass. *Pylaisielletum polyanthae-Leskeelletum nervosae* Baisheva et al. 1994 (table 1, N3)

Al. Leskeion polycarpae Barkm. 1958

Ass. *Brachythecio salebrosi-Amblystegietum serpentis* Baisheva et al. 1994

subass. *typicum* (table 1, N7)

subass. *plagiomnetosum cuspidati* Baisheva 1995 (table 1, N8)

Cl. CLADONIO-LEPIDOZIETEA REPTANTIS Jez. et Vondr. 1962 em. Marst. 1993

Ord. **Dicranetalia scoparii** Barkm. 1958

Al. Dicrano scoparii-Hypnion filiformis Barkm. 1958

Ass. *Platygyrietum repentis* Le Blanc 1963 (table 1, N4)

Ass. *Ptilidio pulcherrimi-Hypnetum pallentis* Barkm. ex Wilm. 1962

subass. *typicum* (table 1, N5)

subass. *callicladietosum haldaniani* Baisheva 1995 (table 1, N6)

Ord. **Cladonio-Lepidozietalia reptantis** Jez. et Vondr. 1962

Al. Tetrachidion pellucidae v. Krus. 1945

Pohlia nutans-Plagiothecium denticulatum – community (table 1, N9)

DESCRIPTION OF SYNTAXA

Association *Orthotrichetum pallentis* Ochn. 1928

Diagnostic species: *Orthotrichum pallens*.

The communities of association as well as the species *Orthotrichum pallens* Bruch. ex Brid. are new for Bashkiria. A lot of relevés were described in vicinity of lake "Asly-kul" (54°17'N–54°33'E) in mesoxerophytic litter covered maple and lime-tree forest. A part of relevés were carried out in mesophytic broad-leaved forests of Belebej and Ilish Districts. Communities have been mainly found on *Tilia cordata*, sometimes on *Acer platanoides*, *Quercus robur*, *Betula pendula*. They occur on tree trunks, sometimes on fallen and inclined trunks and prefer old trees with rough cracked bark. In Switzerland and Sweden *Orthotrichetum pallentis* occurs on the bases of old trees in mountain forests with good illumination and aeration (Hübschmann, 1986). In Bashkiria, they grow mostly in shaded forests and can reach up to 130 cm above the ground.

Ural's communities of *Orthotrichetum pallentis* differ from those described in Europe in character of ecological conditions, low abundance of hepatics, absence of *Homalothecium sericeum* and *Hypnum cupressiforme*. In Bashkiria two latter species are more typical for epilithic communities. European and Urals communities are similarly in codominance of *Leskeella nervosa* and high abundance of *Pylaisiella polyantha*.

Communities of *Orthotrichetum pallentis* have very scanty distribution area and are under protection in Europe (Hübschmann, 1986). Certainly, they should be preserved in Bashkiria, too.

Association *Pylaisielletum polyanthae-Leskeelletum nervosae* Baisheva et al. 1994

Diagnostic species: *Leskeella nervosa*, *Pylaisiella polyantha*.

Communities were described in broad-leaved forests and on isolated trees of *Tilia cordata* and *Betula pendula*. They occupy the bases of trees and trunks reaching the height up to 120 cm above the ground. Rarely also they have been found on stones and decaying wood. Communities of presented area are distinguished from those described in other parts of Bashkiria (Baisheva et al., 1994) on absence of *Leucodon sciuroides*, low constancy of *Orthotrichum* species, high presence of epixylic species *Brachythecium salebrosum* and *Amblystegium serpens*.

Association *Pylaisietum polyanthae* Felf. 1941

Diagnostic species: *Pylaisiella polyantha* (dom).

Association unites communities with predominance of *Pylaisiella polyantha* founded in xeromesophytic broad-leaved and mixed forests. They occur on the bark of *Tilia cordata*, *Quercus robur*, *Populus tremula* at the height from 30 up to 150 cm above the ground. Ecological conditions and floristic composition of communities from Western Bashkiria and those described in other regions of republic (Baisheva et al., 1994) are very similar.

Association *Brachythecio salebrosi-Amblystegietum serpentis* Baisheva et al. 1994

Diagnostic species: *Amblystegium serpens*, *Brachythecium salebrosum*.

Association is widespread in all investigated forests and bush stands of Western Bashkiria. The communities of subass. *typicum* are presented on decaying wood and tree bases of *Quercus robur*, *Populus tremula* and *Betula pen-*

dula. In contrast to nomenclature type described in flood-plaine forests (Baisheva et al., 1994) presented communities are characterized by lower constancy of *Leskea polycarpa*, *Pylaisiella polyantha* and high abundance of diagnostic species of order Brachythecietalia rutabulo-salebrosi Marst. 1987 (*Campylium sommerfeltii*, *Brachythecium reflexum*, *B. velutinum*). Perhaps, syntaxonomical position the association into Leskeion polycarpon should be revised. Sub-association *plagiomnietosum cuspidati* Baisheva 1995 (diagnostic species: *Plagiomnium cuspidatum*) unites sciophytic and mesophytic moss communities on rotten wood and the bases of living trees. The surfaces of substrates often are covered with soil fractions.

Association *Platygyrietum repentis* Le Blanc 1963

Diagnostic species: *Platygyrium repens*.

Communities of association are not widespread in the investigated area. They were found on the bark of *Tilia cordata*, *Betula pendula*, rarely also on rotten wood. In comparison with analogs described in North-Eastern Bashkiria (Baisheva, 1995) they have poor floristic composition (mean number of species in releve in the West Bashkiria is 3, in the North-East Bashkiria – 7) and low constancy of hepatics.

Association *Ptilidio pulcherrimi-Hypnetum pallescentis* Barkm. ex Wilm. 1962

Diagnostic species: *Ptilidium pulcherrimum*, *Hypnum pallescens*.

Communities of association were described in secondary *Betula pendula* and *Betula pendula+Quercus robur* forests. In comparison with analogs known from North-Eastern Bashkiria (Baisheva, 1995) they have poor floristic composition. Mean number of species in releves in communities of Western Bashkiria is 4, in those of North-East – 7. In investigated area the typical habitats of *Ptilidio-Hypnetum pallescentis* (tree bases of *Betula pendula* and rotten wood) are occupied by the pure mats of

Hypnum pallescens, while the second diagnostic species, *Ptilidium pulcherrimum*, has low abundance and constancy. Mesophytic communities of subass. *callicladietosum haldaniani* Baisheva 1995 (diagnostic species: *Callicladium haldianum*) were found occasionally on the bases of trunks of *Betula pendula*, *B. pubescens* and characterized by poor floristic composition, too.

***Pohlia nutans-Plagiothecium denticulatum*–community**

Community have been described on the bases of *Betula pubescens* and *Alnus incana* in swampy forests. Floristic composition of communities is closed to ones of association *Plagiothecio laeti-Pohlietum nutantis* Baisheva et al. 1994 founded on decaying wood in the swamps of North-East and North-West of Bashkiria (Baisheva et al., 1994). Presented community differ from association mentioned above by replacement of *Plagiothecium laetum* by *P. denticulatum* and high constancy of *Hypnum pallescens*. Probably, these communities are represented consecutive studies of succession.

CONCLUSION

In comparison with analogs known from forest and mountain zones of Bashkiria (Baisheva et al., 1994; Baisheva, 1995) epiphytic and epixylic moss vegetation of investigated area is rather poor in floristic composition and diversity of syntaxa. Presented communities have more xerophilous character reflected by lower mean number of species in releves, scarce abundance and constancy of hepatics. Probably, it connected with continental climate of south part of forest-steppe zone, restricted areas of forests and lack of bryological explorations in presented area. The locations of rare association *Orthotrichetum pallentis* (vicinity of lake “Asly-kul”) are recommended for protection.

ACKNOWLEDGEMENTS

I'm grateful to Dr. M. Ignatov for the help in identification of some specimens.

LITERATURE CITED

- BAISHEVA, E.Z. 1995. Bryophyte vegetation of Bashkiria (South Urals). II. Epiphytic and epixylic communities of North-Eastern Bashkiria. – *Arctoa* 4: 55-63.
- BAISHEVA, E.Z., A.I. SOLOMETCH & E.A. IGNATOVA 1994. Bryophyte vegetation of Bashkiria, South Urals. I. Epiphytic and epixylic communities. – *Arctoa* 3: 139-152.
- BARKMAN, J.J., J. MORAVEC & S. RAUSCHERT 1986. Code of phytosociological nomenclature. – *Vegetatio* 67: 145-195.
- [CZEREPANOV, S. K.] ЧЕРЕПАНОВ, С. К. 1995. Сосудистые растения России и сопредельных государств. – [Vascular plants of Russia and neighboring countries] СПб., Мир и Семья [St.-Peterburg, Mir i Semya], 990.

TABLE 1. Syntaxa of epiphytic and epixylic moss vegetation of Western Bashkiria

Number of syntaxa	1	2	3	4	5	6	7	8	9
Number of relevés in syntaxa	18	9	14	6	10	7	25	18	14
Diagnostic species of associations									
<i>Orthotrichum pallens</i>	V								
<i>Pylaisiella polyartia</i>	V	V	III	II		I	I		
<i>Leskeella nervosa</i>	V		V	III	I	I	I	I	
<i>Platygyrium repens</i>				V					
<i>Hypnum pallenscens</i>		I	II	II	V	V	II	II	IV
<i>Ptilidium pulcherrimum</i>					III				I
<i>Callicladium haldanianum</i>						V			
<i>Brachythecium salubrosum</i>		I	III		III	IV	V	IV	II
<i>Amblystegium serpens</i>		II	I		I	II	IV	III	I
<i>Plagiomnium cuspidatum</i>	I	I	I					V	I
<i>Plagiothecium denticulatum</i>								I	V
<i>Pohlia nutans</i>					II	II	I		III
Diagnostic species of Frullanio-Leucodontetea and Orthotrichetalia									
<i>Orthotrichum speciosum</i>	II	II							
<i>Orthotrichum obtusifolium</i>	I	III							
<i>Orthotrichum</i> sp.	I	II	I						
<i>Leskea polycarpa</i>		II					I	I	
<i>Radula complanata</i>			I	II					
Diagnostic species of Cladonio-Lepidozetea									
<i>Lophocolea heterophylla</i>					I	II		I	IV
<i>Plagiothecium latum</i>									I
Diagnostic species of Dicranetalia									
<i>Orthodictyon montanum</i>			I	II	II	II	I		
<i>Dicranum scoparium</i>					II	II			II
Diagnostic species of Brachythecietalia									
<i>Brachythecium reflexum</i>			I			II	II	II	II
<i>Brachythecium velutinum</i>							I		
<i>Campylium sommerfeltii</i>							I		
Other species									
<i>Sanionia uncinata</i>					I	II	I	I	I
<i>Pleurozium schreberi</i>					I		I		
<i>Ceratodon purpureus</i>	I				I			I	I
<i>Lophocolea minor</i>			I				I	I	II
<i>Bryum caespiticium</i>							I	I	
<i>Eurhynchium hians</i>					I		I		I

Low constancy species: *Abietinella abietina* (3-I); *Brachythecium oedipodium* (9-I); *Bryum capillare* (8-I); *B. subelegans* (5-I); *B. sp.* (7-I); *Cladonia fimbriata* (9-I); *Climacium dendroides* (9-I); *Parmelia sulcata* (3-I); *P. olivacea* (2-I); *Rhytidiadelphus triquetrus* (7-I); *Tortula ruralis* (3-I).

- HÜBSCHMANN, A. VON 1986. Prodrum der Moosgesellschaften Zentraleuropas. – *Bryoph. Bibl.* **32**: 1-313.
- IGNATOV, M. S. & O. M. AFONINA (eds.). 1992. Check-list of mosses of the former USSR. – *Arctoa* **1**: 1-85.
- [KADILNIKOV, I. P. (ed.)] КАДИЛЬНИКОВ, И. П. (ред.). 1964. Физико-географическое районирование Башкирской АССР. – [Physiographic regions of Bashkiria Republik] *Уфа, Башкирский гос. ун-т [Ufa, Bashkirskij Gos. Univ.]*, 210.
- [KONSTANTINOVA, N. A., A. D. ПОТЕМКИН & R. N. SCHLJAKOV] КОНСТАНТИНОВА, Н. А., А. Д.

- ПОТЕМКИН, Р. Н. ШЛЯКОВ 1992. Список печеночников и антоцеротовых территории бывшего СССР. – [Check-list of the Hepaticae and Anthocerothae of the former USSR] *Arctoa* **1**: 87-127.
- MARSTALLER, R. 1993. Synsystematische Übersicht über die Moosgesellschaften Zentraleuropas. – *Herzogia* **9**: 513-541.
- [MIRKIN, B. M., G. S. ROSENBERG & L. G. NAUMOVA] МИРКИН, Б. М., Г. С. РОЗЕНБЕРГ, Л. Г. НАУМОВА. 1989. Словарь понятий и терминов современной фитоценологии. – [Dictionary of terms of modern phytocenology] *М., Наука [Moscow, Nauka]*, 223.