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List of vascular plants, lichens and mosses of the Gremjačaja Valley, Barguzinskij Range, East Siberia

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ABSTRACT: The authors report the results of the survey of vascular plants, lichens and mosses of the Gremjačaja Valley in the Barguzinskij Range, East Siberia. The list of plant taxa, consisting of 372 plant names, is based on the material and field notes acquired during the expedition to Buryatia in August 1994.

KEYWORDS: flora, Buryatia, Lake Baikal, Russia.

Introduction

During a research project dealing with the flora and vegetation of the Zabaikaľskij National Park in Buryatia, Russia, the less known part of the Barguzinskij Range, Gremjačaja Valley, was studied. The expedition was organized by the International Centre for Research and Conservation of Siberia, Praha, in August 1994.

The Gremjačaja Valley is situated in the southern part of the Barguzinskij Range on its eastern slopes outside the Zabaikaľskij National Park. The flora and vegetation of the western part of the Barguzinskij Range is comparatively well known (TJULINA 1976, 1981; TROICKAJA & FEDOROVA 1989; BOJKOV et al. 1991; ANENKHONOV et al. 1992; CHYTRÝ et al. 1993, 1995; GRULICH 1994;

DANIHELKA & CHALOUPKOVÁ 1995; DANIHELKA et al. 1995a, 1995b). However, its eastern part including also the Gremjačaja Valley has not been studied in detail until recently. In spite of the fact that Gremjačaja Valley is "only neighbouring" with the Zabaikal'skij National Park, the species survey of it seems to be very important for the knowledge of the total floristic diversity in the aforementioned protected area.

The species survey presented is the first one of studies dealing with the Gremjačaja Valley. The survey of vegetation types will be published in the separate paper.

Study area

The study area is situated near the eastern coast of Lake Baikal (109°5´ E; 53°6´ N). The Gremjačaja River begins as several springs from the Čivirkujskoe Plateau in the southern part of the Barguzinskij Range at about 1500 m a.s.l. In general, the streams flow to the south-east through the eastern slope of the Barguzinskij Range. In the middle part of the valley they merge and cut the relatively low Peredovoj Range. In the lower part of the valley (about 500 m a.s.l.) the Gremjačaja River runs out into the flat Barguzin River Basin (Fig. 1). The Gremjačaja Valley is flat, its surrounding mountain branches being ornamented with solitaire block towers. The total length of the valley is about 13 km.

The southern part of the Barguzinskij Range is formed by the crystalline Upperproterozoic and Lowerpaleozoic granitoids. Together with them, granosyenites, granodiorites, syenites, diorites, and various kinds of granites are found. In the lower part of the Gremjačaja Valley, the Quarternary alluvial, lacustrine, and gravel deposits are accumulated.

The climate of the area studied is extremely continental. Generally, climatic conditions are influenced by the location of the area in the "wind shade" of the Barguzinskij Range which protects the Gremjačaja Valley from the influence of Atlantic cyclones and Lake Baikal. In particular, there is a great difference between the temperatures and annual precipitation of the high altitude of the Gremjačaja Valley and its plain mouth. The annual temperature in the settlement of Barguzin - 3 km to the NE from the Gremjačaja Valley mouth (about 500 m a.s.l.) is 2.8°C, the annual precipitation 267 mm (TATARNIKOV 1993). The annual temperature around the saddle (1550 m a.s.l.) can reach –12.8°C, the annual precipitation can be about 600 mm.

Materials and Methods

Along the whole valley, vascular plants, lichens and mosses were collected. Special attention was paid the distribution of plants every fifty or hundred altitudinal meters. The altitude was measured by the altimeter - Altiplus D2. The nomenclature and taxonomy of vascular plants follow namely ČEREPANOV (1995) and MARHOLD (1998), those of lichens PIŠÚT (1998) and POELT (1969), and those of mosses KUBINSKÁ & JANOVICOVÁ (1998). Families of vascular plants, the

mosses and lichens are listed alphabetically. The voucher specimens are deposited in the herbarium SAV, in the paper they are indicated by asterisks.

Results

List of habitats

1. windblown ridges and open places in alpine belt (1650–1500 m a.s.l.)
2. rock boulders and screes (1600–1500 m a.s.l., 1200–1100 m a.s.l.)
3. dwarf shrubs tundra (ca.1550 m a.s.l.)
4. alpine short grasslands (1550–1400 m a.s.l.)
5. krummholz stands (1550–1200 m a.s.l.)
6. subalpine tall herb communities and springs (1250–1000 m a.s.l.)
7. deforested landslide in forest belt (ca. 1000 m a.s.l.)
8. taiga aspen forests (1100–900 m a.s.l.)
9. larch and pine taiga forests (950–700 m a.s.l.)
10. taiga fir forests (950–700 m a.s.l.)
11. forest's bogs (ca. 800 m a.s.l.)
12. forested block streams (ca. 650 m a.s.l.)
13. trampled and ruderal places (750–550 m a.s.l.)
14. scotch pine forests (600–550 m a.s.l.)
15. wet places along streams (800–600 m a.s.l.)

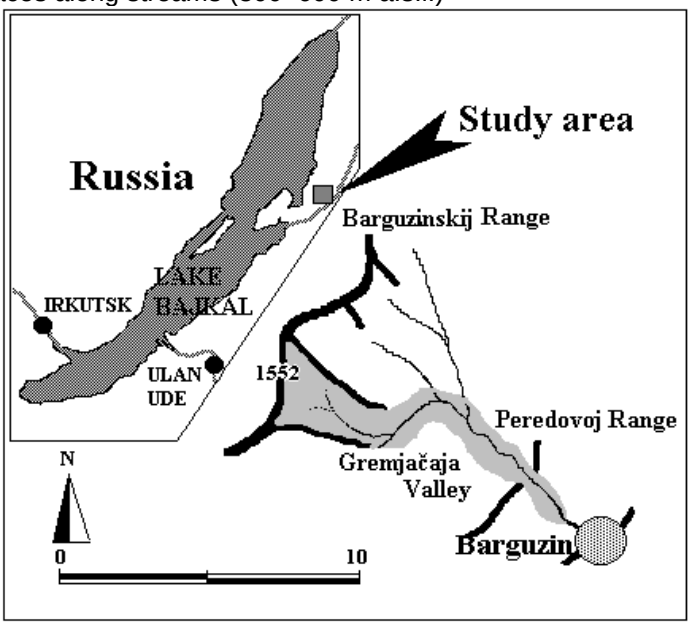

Fig. 1: The Gremjačaja Valley situated south-eastern from saddle (1552 m a.s.l.). On opposite slope lay Malyj Čivirkuj Valley.

Vascular platns

Adoxaceae
Adoxa moschatellina L. - 6, 11.

Alliaceae*:*
Allium chamarense M. M. IVANOVA - 7; **A. splendens* WILLD. ex SCHULT. et SCHULT. f. - 2, 7, 9.

Apiaceae*:*
**Anthriscus sylvestris* var. *nemorosa* (BIEB.) TRAUTV. - 6; *Aegopodium alpestre* LEDEB. - 6, 8, 9, 10, 11; *Angelica decurrens* (LEDEB.) B. FEDTSCH. - 6; *A. saxatilis* TURCZ. ex LEDEB. - 2; **Bupleurum triradiatum* ADAMS ex HOFFM. - 4, 5; *Carum carvi* L. - 13; **Phlojodicarpus popovii* SIPL. - 13; *Pleurospermum uralense* HOFFM. - 6, 8.

Asteraceae*:*
**Antennaria dioica* (L.) GAERTN. - 4, 5, 8, 9, 14; **Artemisia gmelinii* WEB. - 13; **A. furcata* M. BIEB. - 1; **A. sericea* WEB. - 13; **A. vulgaris* L. - 13; **Cacalia hastata* L. - 6, 13; *Cirsium helenioides* (L.) HILL - 6; **Crepis sibirica* L. - 7; **C. tectorum* L. - 13; **Dendranthema zawadskii* (HERBICH) TZVELEV - 1, 2, 5, 7, 8, 9, 12, 14; **Erigeron politus* FR. - 13; **Hieracium ganeschinii* ZAHN - 5, 8; **H. umbellatum* L. - 5, 8; **H. robustum* FR. - 7, 8; **H. krylovii* NEVSKI ex SCHLJAK. - 7; **H. narymense* SCHISCHK. et SERG. - 8; *Inula britannica* L. - 13; **Leucanthemum vulgare* agg. - 13; *Lepidotheca suaveolens* (PURSH) NUTT. - 13; *Stemmacantha uniflora* (L.) DITTRICH - 12; **Saussurea elongata* DC. - 9; *Scorzonera radiata* FISCH. ex LEDEB. - 9, 14; **Solidago dahurica* KITAG. - 4, 5, 6, 8, 9; *Tanacetum vulgare* L. - 13; **Youngia tenuifolia* (WILLD.) BABC. et STEBBINS - 1, 2, 13.

Athyriaceae*:*
**Athyrium distentifolium* TAUSCH ex OPIZ - 9; **Cystopteris fragilis* (L.) BERNH. - 2; **Diplazium sibiricum* (TURCZ. ex KUNZE) KURATA - 9; **Gymnocarpium dryopteris* (L.) NEWMAN - 2.

Betulaceae*:*
**Betula divaricata* LEDEB. - 4, 5, 8; **B. divaricata* × *B. exilis* - 3, 5; **B.* cf. *humilis* SCHRANK - 5; **B. exilis* SUKACZ. - 1, 4, 3; **B. pendula* ROTH - 6, 8, 9, 10, 14; **B. pubescens* EHRH. - 5; **Duschekia fruticosa* (RUPR.) POUZAR - 3, 5, 6, 8, 9, 10, 11.

Boraginaceae*:*
**Myosotis nemorosa* BESSER - 6, 15.

Botrychiaceae*:*
**Botrychium lunaria* (L.) SW. - 6.

Brassicaceae*:*
**Arabis sagittata* (BERTOL.) DC. - 13; **Borodinia tilingii* (REGEL) BERKUTENKO - 1, 2; **Cardamine macrophylla* WILLD. - 6, 10, 11; *Erysimum* sp. - 13; **Lepidium densiflorum* SCHRAD. - 13; **Turritis glabra* L. - 13.

Campanulaceae*:*
**Campanula rotundifolia* agg. - 1, 2, 4, 5, 6, 7, 8, 9, 13.

Caprifoliaceae*:*
**Linnaea borealis* L. - 5, 6, 8, 9, 10.

Caryophyllaceae*:*
**Cerastium holosteoides* FRIES - 13; **Dianthus speciosus* REICHENB. - 4, 5, 6, 8, 9; **D. versicolor* FISCH. ex LINK - 13; **Sagina procumbens* L. - 13; **Stellaria longifolia* MUEHL. ex WILLD. - 11; **Minuartia arctica* (STEV. ex SER.) GRAEBN. - 1, 4; **M. biflora* (L.) SCHINZ et THELL. - 1, 4; **Moehringia lateriflora* (L.) FENZL - 6, 9; **Silene chamarensis* TURCZ. - 1; **S. jenisseensis* WILLD. - 1; **S. repens* PATRIN - 2, 5, 6, 7, 8, 13.

Chenopodiaceae*:*
**Chenopodium album* agg. - 13.

Convallariaceae*:*
Maianthemum bifolium (L.) F. W. SCHMIDT - 1, 5, 6, 8, 9, 10; **Smilacina trifolia* (L.) DESF. - 10.

Crassulaceae*:*
**Aizopsis hybrida* (L.) GRULICH - 2; *Orostachys spinosa* (L.) C. A. MEY. - 13.

Cupressaceae*:*
Juniperus sibirica BURGSD. - 4.

Cyperaceae*:*
Carex* cf.** *alticola* POPL. ex SUKACZ. - 1; **C. amgunensis* F. SCHMIDT - 8; **C. aterrima* HOPPE - 4; **C. cinerea* POLLICH - 4, 11; **C. duriuscula* C. A. MEY. - 13; **C. ensifolia* TURCZ. ex V. KRECZ. - 4, 3; **C. ericetorum* POLLICH - 4, 5, 8; **C. globularis* L. - 10, 11; **C. iljinii* V. KRECZ. - 4, 3, 5; **C. loliacea* L. - 11; **C. pediformis* agg. - 4, 5, 6, 7, 9, 12; **C. rhynchophysa* C. A. MEY. - 11; **C. rupestris* ALL. - 1.

Dryopteridaceae*:*
**Dryopteris fragrans* (L.) SCHOTT - 2, 12.

Empetraceae*:*
**Empetrum subholarcticum* V. N. VASSIL. - 4, 3.

Equisetaceae*:*
Equisetum arvense L. - 13; **E. fluviatile* L. - 10, 11; **E. hyemale* L. - 10; *E. palustre* L. - 6, 11; **E. pratense* EHRH. - 6, 10, 11; **E. scirpoides* MICHX. - 10, 11; *E. sylvaticum* L. - 6, 10, 11.

Ericaceae*:*
**Arctostaphylos uva-ursi* (L.) SPRENG. - 5, 14; *Ledum decumbens* (AIT.) LODD. ex STEUD. - 3, 5, 10*; L. palustre* L. - 8, 9 10. *Oxycoccus microcarpus* TURCZ. ex RUPR. - 3; *Rhododendron aureum* GEORGI - 4, 3, 5; *R. dauricum* L. - 9, 13, 14; *Vaccinium myrtillus* L. - 4, 5, 6, 8; *V. uliginosum* L. - 3, 5; *V. vitis-idaea* L. - 1, 2, 4, 3, 5, 6, 8, 9, 10, 14.

Fabaceae*:*
Amoria repens (L.) C. PRESL - 10, 13; **Astragalus propinquus* SCHISCHK. - 5, 7, 8, 9, 13; *A. suffruticosus* DC. - 14; **A. trigonocarpus* (TURCZ.) BUNGE - 5; **Lathyrus humilis* (SER.) SPRENG. - 6, 8, 9, 14; **Lupinaster pentaphyllus* MOENCH. - 9, 14; **Oxytropis alpicola* TURCZ. - 1, 2; **O.* cf. *oxyphylla* (PALL.) DC. - 13; *Trifolium pratense* L. - 13; *Vicia cracca* L. - 13; *V. nervata* SIPLIV. - 1, 7, 8; **V. venosa* (WILLD. ex LINK) MAXIM. - 7, 8, 9, 10, 12.

Geraniaceae*:*
**Geranium albiflorum* LEDEB. - 4, 6, 8; **G. eriostemon* FISCHER - 13.

Grossulariaceae*:*
Ribes nigrum L. - 6, 9, 10.

Hypolepidaceae*:*
**Pteridium aquilinum* (L.) KUHN - 7.

Juncaceae*:*
**Juncus bufonius* L. - 13; **J. filiformis* L. - 13; **J. minutulus* V. I. KRECZ. ex GONTSCH. - 13; **Luzula confusa* LINDEB. - 1, 3; **L. pilosa* (L.) WILLD. - 9, 10; **L. sibirica* V. I. KRECZ. - 4, 5; **L. kamtschadalorum* (SAM.) GORODK. - 4.

Lamiaceae*:*
**Dracocephalum nutans* L. - 1, 4, 6, 7, 13; **Lamium album* L. - 6, 7, **Thymus* cf. *mongolicus* (RONN.) RONN. - 1, 12; **T.* cf. *pavlovii* SERG. - 1, 13.

Liliaceae*:*
Lilium pilosiusculum (FREYN)MISCZ. - 6, 7, 8, 9, 13; *Paris quadrifolia* - 6, 9, 10, 14

Lycopodiaceae*:*
**Diphasiastrum alpinum* (L.) HOLUB - 4, 5; **D. complanatum* (L.) HOLUB - 4, 5, 8, 9; **Lycopodium annotinum* L. - 9, 10; **L. clavatum* L. - 5.

Melanthiaceae*:*
Veratrum lobelianum BERNH. - 4, 5, 6, 8, 10.

Onagraceae*:*
Chamaenerion angustifolium (L.) SCOP. -1, 5, 6, 7, 8, 9, 10, 13; **Epilobium palustre* L. - 11; **E. ciliatum* RAF. - 13.

Orchidaceae*:*
**Dactylorhiza* cf. *fuchsii* (DRUCE) SOÓ - 11; **Goodyera repens* (L.) R. BR. - 9, 10; **Listera cordata* (L.) R. BR. - 10.

Papaveraceae*:*
Chelidonium majus L. - 13.

Pinaceae*:*
Abies sibirica LEDEB. - 5, 6, 8, 9, 10; *Larix sibirica* LEDEB. - 9, 10, 14; *Picea obovata* LEDEB. - 9, 10; *Pinus pumila* (PALL.) REGEL - 1, 2, 4, 3, 5, 6, 8, 9, 10; *P. sibirica* DU TOUR - 8, 9, 10, 14; *P. sylvestris* L. - 5, 8, 9, 10, 12, 14.

Plantaginaceae*:*
**Plantago depressa* WILLD. - 13; **P. major* L. - 13; **P. media* L. - 13.

Poaceae*:*
**Agrostis clavata* TRIN. - 13; **A. stolonifera* L. - 13; **Anthoxanthum alpinum* A. LÖVE et D. LÖVE - 4, 5; **Calamagrostis* cf. *andrejewii* LITV. - 4; **C. epigejos* (L.) ROTH - 7; **C. korotkyi* LITV. - 1, 2, 5; **C. lapponica* (WAHLENB.) HARTM. - 1, 4; *C. obtusata* TRIN. - 6, 8, 9, 10, 11; **C. purpurea* agg. - 4, 5, 6, 8, 9, 10; **Elytrigia repens* (L.) NEVSKI - 13; **Festuca ovina* agg. - 2, 4, 5, 6, 8, 9, 14; **Hierochloe alpina* (SW.) ROEM. et SCHULT. - 1, 2; *Melica nutans* L. - 8; **Millium effusum* L. - 6, 8; *Poa attenuata* TRIN. - 1; *P. botryoides* (TRIN. EX GRISEB.) KOM. - 12; **P. pratensis* L. - 13; **P. sibirica* ROSHEV. - 6, 10, 12, 13; **P. supina* SCHRAD. - 13; **Setaria viridis* (L.) P. BEAUV. - 13, 14.

Polemoniaceae*:*
Polemonium chinense (BRAND) BRAND - 6, 11.

Polygonaceae*:*
**Aconogonon ochreatum* (L.) HARA - 1, 2, 4, 5; **Polygonum aviculare* agg. - 13.

Polypodiaceae*:*
**Polypodium sibiricum* Sipl. - 2.

Primulaceae*:*
**Androsace amurensis* PROBAT. - 13; **A. septentrionalis* L. - 1; *Trientalis europaea* L. - 6, 10.

Pyrolaceae*:*
**Moneses uniflora* (L.) A. GRAY - 10; **Orthilia secunda* (L.) HOUSE - 6, 5; **O. obtusata* (TURCZ.) HARA - 9; **Pyrola incarnata* (DC.) FREYN - 6, 9, 10; **P. chlorantha* SW. - 6, 9, 14; **P. minor* L. - 6, 10.

Ranunculaceae:
**Aconitum baicalense* TURCZ. ex RAPAICS - 10; *A. rubicundum* FISCH. - 6, 8; **Aquilegia sibirica* LAM. - 8; **Anemonastrum sibiricum* (L.) HOLUB - 1, 2, 4, 5; **Atragene sibirica* L. - 6, 8, 9, 10; **Caltha palustris* agg. - 6; **Pulsatilla flavescens* (ZUCC.) JUZ. - 4, 5, 7, 8, 9, 14; *Ranunculus propinquus* C. A. MEY. - 13; **Thalictrum minus* agg. - 6, 7, 8, 10; **T. simplex* L. - 14; **Trolius asiaticus* L. - 6, 8.

Rosaceae*:*
**Chamaerhodos erecta* (L.) BUNGE - 13; **Cotoneaster tjuliniae* POJARK. ex PEŠKOVA - 14; **Crataegus sanguinea* PALL. -14; * *Dryas punctata* JUZ. - 1; **Geum aleppicum* JACQ. - 13; **Potentilla bifurca* L. - 13; **P. elegans* CHAM. et SCHLECHT. - 1, 2; **P. longifolia* WILLD. ex SCHLECHT. - 13; **P. norvegica* L. - 13; **P. prostrata* ROTTB. subsp. *floccosa* SOJÁK - 1; **P. tergemina* SOJÁK - 13; **Rosa acicularis* LINDL. - 1, 2, 3, 6, 7, 8, 9, 10, 12, 14; **Rubus chamaemorus* L. - 3; **R. matsumuranus* LÉVL. et VANIOT - 2, 9, 13; **R. saxatilis* L. - 7, 9; *Sanguisorba officinalis* L. - 4, 5, 9, 13, 14; *Sibbaldia procumbens* L. - 2, 4; **Sorbaria pallasii* (G. DON fil.) POJARK. - 4; *S. sorbifolia* (L.) A. BRAUN - 9, 10, 13; *Sorbus sibirica* HEDL. - 9, 10; **Spiraea media* FR. SCHMIDT - 7, 8, 9, 14.

Rubiaceae*:*
**Galium boreale* L. - 8, 9; *G. uliginosum* L. - 10, 11; **G. verum* L. - 13.

Salicaceae*:*
Populus tremula L. - 5, 6, 7, 8, 9, 10, 12; **Salix abscondita* LAKSCH. - 6; **S.* cf. *caprea* L. - 9, 10, 12; **S. divaricata* PALL. - 3; **S. fimbriata* (A. K. SKVORTSOV) CZER. - 1; **S.* cf. *glauca* L. - 3; **S. krylovii* E. WOLF - 3, 5; **S. sphenophylla* A. K. SKVORTSOV - 1, 3; **S. pyrolifolia* LEDEB. - 13; **S. rorida* LAKSCH. - 13; **S. taraikensis* KIMURA – 11.

Sambucaceae*:*
**Sambucus sibirica* NAKAI - 9, 10.

Saxifragaceae*:*
Bergenia crassifolia (L.) FRITSCH - 2, 4, 5, 6, 8, 9, 10; *Chrysosplenium alternifolium* L. - 6; **Saxifraga bronchialis* L. - 1, 2, 9.

Scrophulariaceae*:*
**Euphrasia pectinata* TEN. - 13; **Linaria acutiloba* FISCH. ex REICHENB. - 13; **Pedicularis labradorica* WIRSING - 8; **P. oederi* VAHL - 2, 4; **P. uncinata* STEPHAN - 6, 8; **Veronica incana* L. - 13.

Selaginellaceae*:*
**Selaginella rupestris* (L.) SPRING - 1, 2, 4, 5.

Thelypteridaceae*:*
**Phegopteris connectilis* (F. MICHX.) WATT - 9.

Urticaceae*:*
Urtica cannabina L. - 13; **U. dioica* L. - 6, 10.

Valerianaceae*:*
**Patrinia rupestris* (PALL.) DUFR. - 13; **P. sibirica* (L.) JUSS. - 1.

Violaceae*:*
**Viola altaica* KER GAWL. - 2; **V. brachyceras* TURCZ. - 5, 9, 10; **V. epipsiloides* A. LÖVE et D. LÖVE - 11; **V. sacchalinensis* BOISS. - 6, 8, 9, 10; **V. uniflora* L. - 6, 8, 9.

Woodsiaceae*:*
Woodsia ilvensis (L.) R. BR. - 2, 12.

Lichens

**Alectoria nigricans* (ACH.) NYL. - 1; **A. ochroleuca* (HOFFM.) A. MASSAL. - 1, 3; **Asahinea chrysantha* (TUCK.) W. L. CULB. et C. F. CULB. - 1; **Cetraria cucullata* (BELLARDI) ACH. - 1, 3; **C. islandica* (L.) ACH. - 1, 5; **C. nivalis* (L.) ACH. - 1; **Cladonia* sp. - 1, 8, 12; *C. amaurocraea* (FLÖRKE) SCHAER. - 1, 5; **C. arbuscula* (WALLR.) FLOT. subsp*. arbuscula* - 1; **C. arbuscula* subsp*. mitis* (SANDST.) RUOSS - 1, 3, 3, 5, 8; **C. bellidiflora* (ACH.) SCHAER. - 1; **C. carneola* (FR.) FR. - 3, 5; **C. cenotea* (ACH.) SCHAER. - 8, 12; **C. cervicornis* subsp. *verticillata* (HOFFM.) AHTI – 1, 3; **C. coccifera* (L.) WILLD. - 1, 3; **C. coniocraea* auct. non (FLÖRKE) SPRENG. - 9, 14; **C. cornuta* (L.) HOFFM. - 5; *C. crispata* (ACH.) FLOT. - 5, 8, 12; **C. deformis* (L.) HOFFM. - 5; **C. fimbriata* (L.) FR. - 3, 9, 14; **C. gracilis* (L.) WILLD. - 4, 5; **C. macrophyllodes* NYL. - 4, 5; **C.* cf*. multiformis* G. MERR. - 4; **C. phyllophora* HOFFM. - 4; **C. pleurota* (FLÖRKE) SCHAER. - 4, 5, 8, 12; **C. pyxidata* subsp. *chlorophaea* (FLÖRKE ex SOMMERF.) V. WIRTH - 4, 8; **C. rangiferina* (L.) WEBER EX WIGG. - 4, 5, 14; **C. stellaris* (OPIZ) POUZAR et VĚZDA - 1, 3, 5, 14; **C. stricta* (NYL.) NYL. - 2, 4, 12; **C. stygia* (FR.) RUOSS - 3; **C. sulphurina* (MICHX.) FR. - 4, 5; **C. uncialis* (L.) WEBER ex WIGG. - 4, 5; **Cornicularia divergens* ACH. - 1; **C. odontella* (ACH.) RÖHL. - 1; **Hypogymnia physodes* (L.) NYL. - 2; **Lecanora polytropa* (EHRH. ex HOFFM.) RABENH. - 1;

Ophioparma ventosa (L.) NORMAN - 1; *P*armelia omphalodes* (L.) ACH. - 1; **P. somloensis* GYELN. - 1, 8, 12; **P. stygia* (L.) ACH. - 1; **Parmeliopsis hyperopta* (ACH.) ARNOLD - 9, 14; **Peltigera aphthosa* (L.) WILLD. - 3, 5; **P. malacea* (ACH.) FUNCK. - 9, 8, 12, 14; **P. neckeri* HEPP ex MÜLL. ARG. - 3; **P. polydactylon* (NECK.) HOFFM. - 14; **P. scabrosa* TH. FR. - 3; **Pseudephebe pubescens* (L.) CHOISY - 1; **Rhizocarpon geographicum* (L.) DC. - 1; **Stereocaulon alpinum* LAURER - 1; **S. glareosum* (SAVICZ) H. MAGN. - 1; **S. paschale* (L.) HOFFM. - 1, 4, 5; **Stereocaulon* sp. - 1; **Thamnolia vermicularis* (SW.) ACH. ex SCHAER. - 1; **Umbilicaria muehlenbergii* ACH. - 1, 8, 12; **Usnea* cf. *hirta* (L.) WEBER ex WIGG. - 2, 10; **Vulpicida pinastri* (SCOP.) MATTSON et M. J. LAI - 8, 9, 12, 14.

Mosses

**Aulacomnium palustre* (HEDW.) SCHWÄGR. - 3; **A. turgidum* (WAHLENB.) SCHWÄGR. - 3; **Brachytecium* sp. - 10; *B.* cf. *campestre* (MÜLL. HALL.) B. S. G. - 6; **B.* cf. *mildeanum* (SCHIMP.) MILDE - 6; **B. oedipodium* (MITT.) A. JAEGER - 6; **B. reflexum* (STARKE) B. S. G. - 6, 8, 10; **B. rivulare* B. S. G. - 15; **B. starkei* (BRID.) B. S. G. - 6; **Bryum pseudotriquetrum* (HEDW.) P. GAERTN., B. MEY. et SCHERB. - 14; **Calliergon richardsonii* (MITT.) KINDB. ex WARNST. - 6; **C. stramineum* (BRID.) KINDB. - 6; **Ceratodon purpureus* (HEDW.) BRID. - 4; **Dicranum bergeri* BLANDOW ex HOPPE - 8; **D. congestum* BRID. - 3, 5; **D. montanum* HEDW. - 8; **D. muehlenbeckii* B. S. G. - 5; **D. polysetum* SW. - 3, 5, 8, 11, 14; **D. scoparium* HEDW. - 5; **D. spadiceum* ZETT. - 3, 12; **Grimmia affinis* HORNSCH. - 12; **Hamatocaulis vernicosus* (MITT.) HEDENAS - 3; **Hedwigia ciliata* (HEDW.) P. BEAUV. - 2, 12; **Hylocomium splendens* (HEDW.) B. S. G. -11; **Hypnum cupressiforme* HEDW. - 2; **Marchantia polymorpha* L. - 6, 15; **Oncophorus virens* (HEDW.) BRID. - 1; **Plagiochila asplenioides* (L. emend. TAYLOR) DUMORT. - 14; **Plagiomnium rostratum* (SCHRAD.) T. J. KOP. - 6; **Plagiothecium denticulatum* (HEDW.) B. S. G. - 6; **Pleurozium schreberi* (BRID.) MITT. - 3, 5, 8, 10, 14; **Pohlia* cf. *cruda* (HEDW.) LINDB. - 10; **P. cruda* (HEDW.) LINDB. - 2; **P. nutans* (HEDW.) LINDB. - 4, 3, 8; **Polytrichum alpinum* HEDW. - 2; **P. commune* HEDW. - 3, 5; **P. juniperinum* HEDW. - 3, 5, 8; **P. piliferum* HEDW. - 1, 4, 3, 5, 8, 12; **P. strictum* BRID. - 1, 3, 5, 12; **Pseudobryum cinclidioides* (HUEBENER) T. J. KOP. - 6; **Ptilium crista-castrensis* (HEDW.) DE NOT. - 8, 9; **Racomitrium sudeticum* f. *kindbergii* FRISVOLL - 3; **R. sudeticum* (FUNCK) B. S. G. f. *sudeticum* - 2; **Rhizomnium pseudopunctatum* (BRUCH et SCHIMP.) T. J. KOP. - 6; **R.punctatum* (HEDW.) T. J. KOP. - 6; **Rhytidiadelphus triquetrus* (HEDW.) WARNST. - 10; **Rhytidium rugosum* (HEDW.) KINDB. - 1; **Riccardia multifida* (L.) GRAY - 10; **Sanionia uncinata* (HEDW.) LOESKE – 5, 8, 15; **Sphagnum angustifolium* (RUSSOW) C. E. O. JENSEN - 3; * *S. capillifolium* (EHRH.) HEDW. - 3; **S. fuscum* (SCHIMP.) H. KLINGGR. - 3; **S. girgensohnii* RUSSOW - 3; **S. palustre* L. - 3; **S. rubellum* WILSON - 3, 5; **Tetraphis pellucida* HEDW. - 10; **Thuidium abietinum* (HEDW.) B. S. G. - 2, 12; *Tortula ruralis* (HEDW.) P. GAERTN., B. MEY. et SCHERB. – 1.

Discussion

In the Gremjačaja Valley 256 vascular plants, 57 lichens and 59 mosses have been recorded. Compared with the results of the vascular plants survey in the western part of the Barguzinskij Range (cf. DANIHELKA & CHALOUPKOVÁ 1995; DANIHELKA et al. 1995a), the flora of the Gremjačaja Valley seems to be poor in species. Although the altitudinal range of this valley is over 1000 m, and it comprises different habitats, only 256 taxa of vascular plants were recorded here. In comparison, in the Boľšaja Čeremšana Valley 330 taxa were recorded, and in the Boľšoj Čivirkuj Valley, even 450 taxa were found (both these valleys are situated inside of the Zabaikaľkij National Park). Probably greater diversity of habitats (mostly wetlands and vegetation near shoreline) and more humid climate (as a consequence of aspect of these valleys towards Lake Baikal) are responsible for the higher floristic diversity of these valleys.

In the Red Data Book of Buryatia (PRONIN 1988) four species are listed: *Lilium pilosiusculum*, *Listera cordata, Astragalus trigonocarpus* and *Borodinia tilingii*. *Borodinia tilingii* is included also in the Red Data Book of Russian Federation (TAHTAJAN 1988). *Lilium pilosiusculum* frequently occurs in coniferous, small-leaved and mixed forests of Baikal region. The species has been included in the Red Data Book of Buryatia because of decorative flowers (it was plucked by local people and tourists). In the Gremjačaja Valley it grows sporadically in the different types of forests. *Listera cordata* has just several localities within the territory of Buryatia. Obviously the species is located into small populations. The same situation we have found in the area studied. *Astragalus trigonocarpus* – the endemic species for the North Baikal region, distributed mostly within the Barguzin River Basin. Populations of *A. trigonocarpus* are comparatively frequent in the Gremjačaja Valley, but the number of plants per population is usually low. *Borodinia tilingii* has the disjunctive area. The first part is located on the Baikaľskij and Barguzinskij Range, the second one – in a distance of about 600 km east on the Kodar and Udokan Range, the third one – in a distance of about 1800 km east on the surroundings of Ohotskoe sea coast. First two parts of its area are situated in the East Siberia and third part – on the Far East. At the upper part of the Gremjačaja Valley *B. tilingii* is one of typical species of lichen tundra (association *Alectorio ochroleucae-Patrinietum sibiricae* CHYTRÝ et al. 1993) and sometimes it can be found in the rocky communities (probably related to alliance *Asplenion septentrionalis* OBERD. 1938). In the area studied *B. tilingii* is comparatively stable due to high density of populations (ANENKHONOV 1999).

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Book review

V. WIRTH & R. DÜLL [eds.]: Farbatlas Flechten und Moose.

Verlag Eugen Ulmer, Postfach 700561, 70574 Stuttgart, Germany, 2000, pp. 320, ISBN 3-8001-3517-5.

The handbook for basic identification of lichens and mosses is work of two well-known cryptogamologists, VOLKMAR WIRTH (famous lichenologist) and RUPRECHT DÜLL (famous bryologist).

Although this book is not extensive and contains near 300 colour photos of lichens and bryophytes, can be very useful source of informations on some striking or common taxa, especially in the field (keys, basic taxonomy, biochemistry, ecological informations and informations on related taxa). The photos are very realistic and first rate.

This book is a practical manual for lovers of nature without respect of age and degree of education and can be useful in the field (e. g. pollution monitoring studies). Is clearly written, well illustrated and pleasure to read. I highly recommend to use it.

M. BAČKOR