

Botanical results of the 8th Soil-ecological excursion across W Siberia, July 29 – August 19, 2002

compiled by Peter König

Introduction

This type of international excursions started in 1995 and are actually organized by members of the Siberian Institute for Ecological Initiatives (a NGO, headquarter in Novosibirsk) and the Institute of Ecology and Biology (TU Berlin). In 2002, the excursion – participated by the author – directs from Novosibirsk to the Karagem Pass close to the border of Mongolia, and offers a catena through the main vegetation types of western Siberia and the Altai, e.g. black taiga, forest steppe, steppe, mountain tundra, dry steppe and semi-desert, with special reference to the respective soil types (fig. 1).



Fig. 1: Excursion route 2002 with main localities (courtesy of C. Siewert).

The present article contributes to the floristic knowledge along the excursion route. The alphabetical list given in the Appendix contains all species mentioned and recognized during the journey within the groups

- ferns and seed plants (nearly complete), as well as
- bryophytes and ● lichens (so far more dominant in relevant vegetation types).

Species numbers add to a total of 779, 734 of them ferns and seed plants. **Key site numbers, localities and vegetation types** refer to the guide-book of SMOLENTSEVA et al. (2002).

Nomenclature and taxonomy

All *species names* are checked against relevant floras (e.g. Flora of Siberia, KRASNOBOROV et al. 2000–). For the **vascular plants**, the nomenclature follows CZEREPANOV (1995) who gives a critical inventory of the former USSR containing 22 000 species and subspecies. Nevertheless, some of the names used in this inventory are quite uncommon for European botanists and even not used during the excursion (e.g. SMOLENTSEVA et al. 2002). The following list gives some of the more important examples.

Achillea impatiens → *Ptarmica impatiens*
Achyrophorus maculatus → *Trommsdorffia maculata*
Ceratoides papposa → *Krascheninnikovia ceratoides*
Cnidium dubium → *Kadenia dubia*
Cornus alba → *Swida alba*
Cystopteris sudetica → *Rhizomatopteris sudetica*
Epilobium p.p. → *Chamaenerion*
Gnaphalium norvegicum → *Omalotheca norvegica*
Lasiagrostis splendens → *Achnatherum splendens*

Lysimachia thyrsoflora → *Naumburgia thyrsoflora*
Monotropa hypopitys → *Hypopitys monotropa*
Poa tibetica → *Arctopoa tibetica*
Polygonum alpinum → *Aconogonon alpinum*
Potentilla fruticosa → *Pentaphylloides fruticosa*
Rhaponticum carthamoides → *Stemmacantha carthamoides*
Senecio p.p. → *Tephrosieris*
Trichophorum pumilum → *Baeothryon pumilum*
Trifolium lupinaster → *Lupinaster pentaphyllus*

Other species look very similar why not identical to European species at first glance, in those cases synonyms are given to show taxonomic affinities, e.g.

Carex altaica = *C. bigelowii* subsp. *altaica*
Carex aterrima = *C. atrata* subsp. *aterrima*
Cirsium esculentum = *C. acaule* subsp. *esculentum*

Pinus sibirica = *P. cembra* subsp. *sibirica*
Salix krylovii = *S. helvetica* subsp. *krylovii*
Sambucus sibirica = *S. racemosa* subsp. *sibirica*

Family names give the reader an idea of the systematic position of the species.

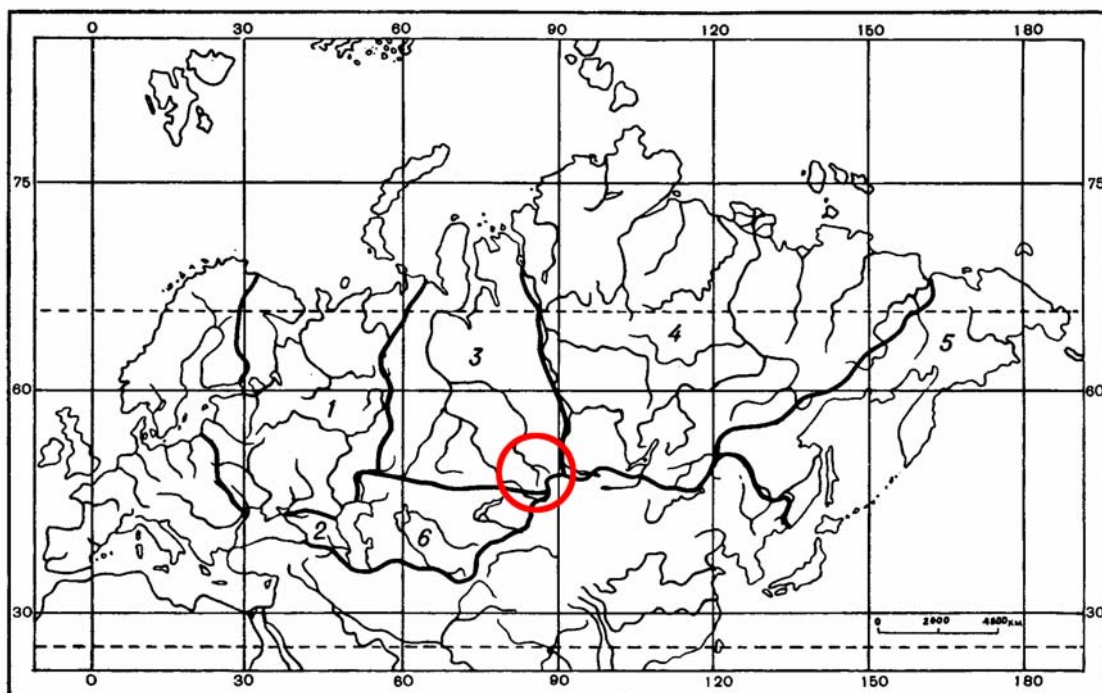


Fig. 2: Geographical regions of the former USSR. 1 Eastern Europe, 2 Caucasus, 3 Western Siberia, 4 Eastern Siberia, 5 Far East, 6 Middle Asia (CZEREPANOV 1995). ○ = Excursion area Novosibirsk to Beltir.

Geographical regions

During the excursion, a distance of about 1000 km was covered from Novosibirsk to Beltir in Altai mountains. Additionally, the site at Sagorsk near Moscow was included for comparison. The change in landscape, community types, and vegetation cover was obvious. To put the botanical impressions and results on a semi-quantitative basis, the assignment to six *geographic territories* (fig. 2) according to CZEREPANOV (1995) was used to get a rough phytogeographical picture of the transect localities by their species composition. Results are given in fig. 3 and fig. 4.

For the discussion, the following two items should be kept in mind.

(1) The site „birch forest“ at Sagorsk near Moscow was an intermediate station on the way to Novosibirsk and not part of the excursion themselves. Nevertheless, the outstanding features of this site are the fact that species composition shows 100 % E European affinity, the highest Caucasian percentage and a clear decrease in Siberian elements.

(2) During the excursion no relevés were done. Thus, the bases of calculation are species lists in the more or less zonal vegetation types. Azonal vegetation types like mires, lakes etc. were not always separable.

In fig. 3 and 4, the sites are arranged from N to S in analogy to the excursion route. The average of W and E Siberian species amounts to 96 % and 91 % respectively. E European and Caucasian relationship show a clear decrease in direction to Altai mountains.

Far East and Middle East are not clear cut in general but on lowest level for Far East species in dry steppe or semi-desert conditions (Kurai, Chagan-Uzun) and on highest peaks in steppe communities (Yurti, Barnaul).

Locality	Vegetation type	Key site	Number of species	Regions of the former USSR according to Czerepanov (1995)					
				E Europe	Caucasus	W Siberia	E Siberia	Far East	Middle Asia
Sagorsk	birch forest	-	53	100 %	85 %	77 %	66 %	42 %	53 %
Chebula	forest steppe	1-1/4	96	84 %	61 %	95 %	90 %	48 %	63 %
Yurti	salted meadow, steppe	2-1/2	85	87 %	60 %	95 %	89 %	60 %	81 %
Chrestinovski	Scotch pine forest	-	69	87 %	48 %	99 %	93 %	55 %	59 %
Salair	black taiga	3	81	81 %	49 %	99 %	89 %	48 %	56 %
Barnaul	forest steppe	4-1/2	68	90 %	62 %	99 %	87 %	46 %	85 %
Ust-Sema	Scotch pine forest	5	69	78 %	48 %	97 %	96 %	55 %	54 %
Kumalyr	larch forest	6	48	81 %	44 %	98 %	98 %	48 %	71 %
Kumalyr	steppe	-	59	64 %	36 %	95 %	88 %	49 %	75 %
Kumalyr	meadow, mire	-	51	78 %	41 %	94 %	92 %	63 %	61 %
Sarlik	Siberian cedar forest	7-1	66	64 %	23 %	91 %	91 %	52 %	61 %
Sarlik	tundra, mire	7-2	73	77 %	33 %	97 %	95 %	68 %	60 %
Aktash	spruce forest, pingos, mire	9-3	36	72 %	44 %	97 %	97 %	69 %	69 %
Kurai	dry steppe	10	22	41 %	23 %	95 %	95 %	23 %	64 %
Chagan-Uzun	semi-desert	11	61	36 %	18 %	93 %	82 %	21 %	64 %
Chagan-Uzun	mire, river	11	41	56 %	34 %	93 %	90 %	44 %	78 %

Fig. 3: Relationship of ferns and seed plants with geographical regions. Maximum values are bold typed for each line and column. Read the table as follows: At Sagorsk 100 % of the species shows a distribution in E Europe, 85 % in the Caucasus, 77 % in W Siberia and so on. Thus, species are mostly spread over more than one region but with different extent.

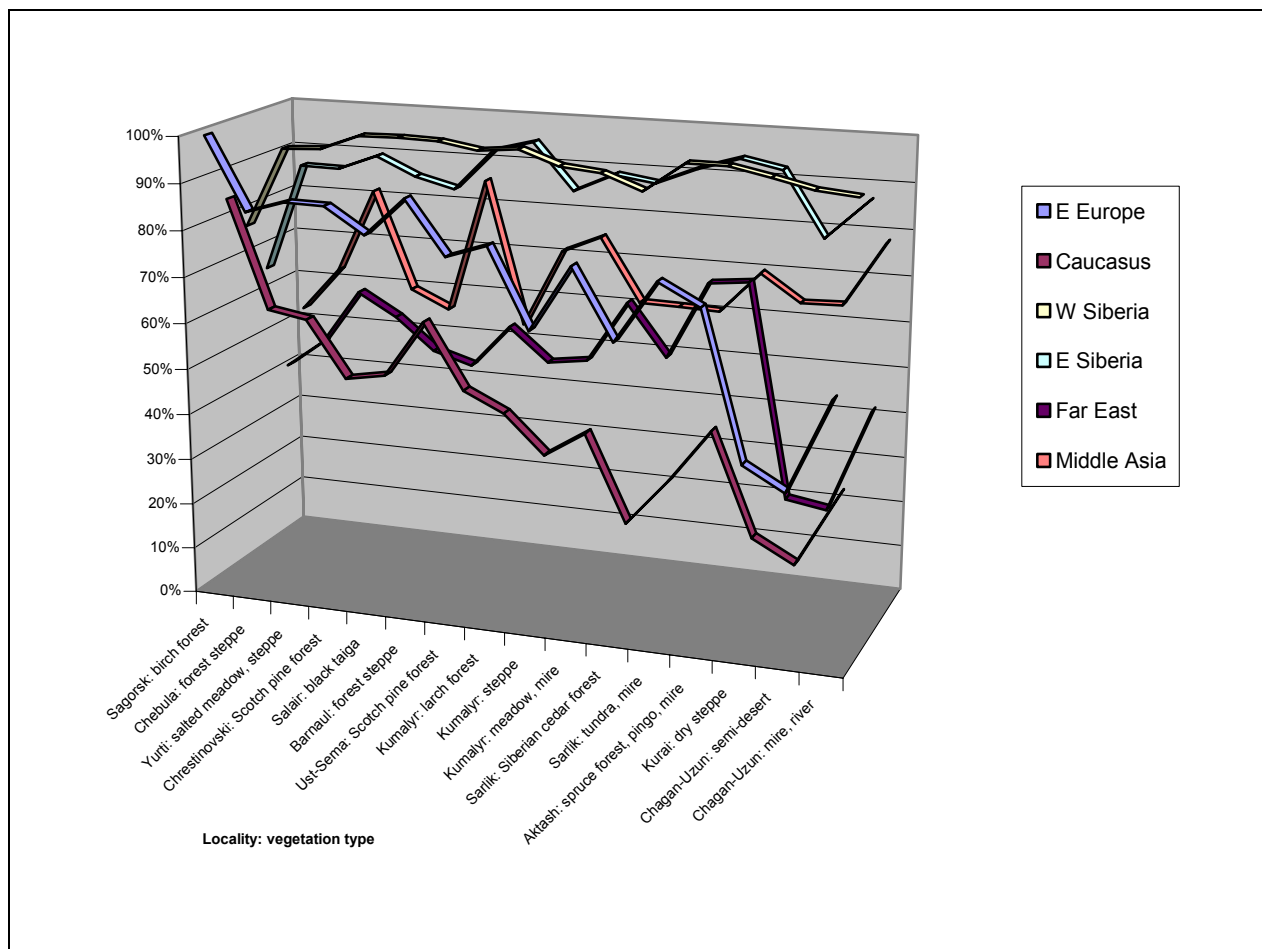


Fig. 4: Relationship of ferns and seed plants with geographical regions – graphic representation.

Acknowledgements

The outstanding preparation by the organizing committee (Russian team and Christian Siewert from German side) is kindly appreciated. Special thanks to great Kolja (Nicolai Lashinski), our botanist from Novosibirsk Botanical Garden, and to Sabrina Rilke (seed plants), Michael Manthey (bryophytes) and Birgit Litterski (*Aspicilla*) for supplementary remarks.

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