Preslia, Praha, 63:205-226, 1991

Distribution of some vascular plant speoies in the Bukovské vrchy hills, NE Slovakia

Rozšíření některých druhů cévnatých rostlin v Bukovských vrších na severovýchodním Slovensku

Emil Hadač

Institute of Landscape Ecology, Czechoslovak Academy of Sciences, Bořivojova 35, 130 00 Praha 3, Czechoslovakia

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Keywords: species distribution maps, Bukovské vrchy hills, Slovakia

The flora of the Bukovské vrchy hills, NE Slovakia, contains about 960 species of vascular plants. Several distribution types according to the occurrence on the mountain ridge, valley botoms and sunny slopes are briefly discussed and provided with examples of typical species. Data on altitude and the soil reaction are also given. Localities of 57 species are presented on 34 species distribution maps.

The flora of the Bukovské vrchy hills is not rich. It contains about 960 species of vascular plants (Hadač et Terray, in preparation), among them several East Carpathian taxa not known in other parts of Czechoslovakia. Some species have their northernmost or easternmost localities here. On the other hand, a few species that are quite common elsewhere lack in this area, e.g. *Avenella flexuosa, Batrachium aquatile, Betula pubescens, Berteroa incana, Falcaria vulgaris, Galeobdolon montanum, Holosteum umbellatum, Juncus filiformis, Melampyrum pratense, M. sylvaticum, Persicaria amphibia, Phleum pratense, Saxifraga granulata, Sedum acre, Steris viscaria, Veronica hederifolia.* Even those species as *Calluna vulgaris, Sanguisorba officinalis* or *Bistorta major* are known from the only one locality in the area.

As the accurate distribution of vascular plants in NE Slovakia is relatively little known, the author presents here distribution maps of 57 species that are interesting from the phytogeographical point of view (Fig. 3-36). The list of localities of all the species mapped will be published in the Flora of the Bukovské vrchy hills (Hadač et Terray, in preparation). Some data on the species occurrence were taken from Soják (1959), Májovský et al. (1970-1978) and L'. Dostál (1980). The data on soil reaction were taken from Hadač, Hadačová et Potoček (1988). The nomenclature follows mostly J. Dostál (1982); if not so, the names of the authors are given.

Fig. 1 shows the altitudinal differentiation of the area under the question.

The distribution of 23 species occurring at the only locality is presented on Fig. 2. The following species were found in the "Lúky pod Ruským" nature reserve (460 m a.s.l.): *Bistorta major* (found by Terray, Klescht), *Dactylorhiza incarnata* (L'. Dostál 1980), *Juncus atratus* (Terray, Klescht), *Orchis laxiflora* subsp. *elegans* (Májovský et Murín in Májovský et al. 1970-78), *Ornithogalum ruthenicum, Sanguisorba officinalis* (Terray, Klescht). It is difficult to find why this locality is so rich in rare species. It may be due to rich alluvial soil with sufficient water supply and protection against cold winds (Fig. 2A).

Rjabá skala with its steep slopes at the altitude of 1000-1188 m and with debris of loose sandstone is another rich locality. *Cystopteris sudetica* (Terray, Klescht), *Conioselinum tataricum* (Májovský in Májovský et al. 1970-78), *Orchis pallens* and *Spiraea media* (Jeník, Osbornová et al.) were found at this locality (Fig. 2B).

The hill Stinská (1092 m) with calcium-rich sandstone rocks is the only place in Czechoslovakia where *Festuca saxatilis* (Krahulec 1987), *Ranunculus carpaticus* (Májovský in Májovský et al. 1970-78) and *Silene dubia* (Soják 1959) are growing. It is also the only locality in the Bukovské vrchy hills where the following species occur: *Aconitum anthora* (Soják 1959, Hadinec), *Jovibarba hirta* subsp. *glabrescens* (Trávníček, Žíla et al.), *Pedicularis hacquetii* (Hadač, Terray, Klescht), *Phyteuma orbiculare* (Soják 1959), *Ranunculus oreophilus* (Májovský in Májovský et al. 1970-78), *Sedum annuum* (Soják 1959), *Valeriana collina* (Žíla, Trávníček), *Veronica austrica* subsp. *jacquinii* (Soják 1959), *Vincetoxicum hirundinaria* (Hadinec et al.) and *Woodsia ilvensis* (Hadinec, Lepš).

Some species growing on the main ridge between Kremenec and Černiny hills occur on the Velký Bukovec and Stinská hills (information on the phytosociological unit, altitude and soil reaction are given in brackets):

Melampyrum herbichii (Homogyno-Vaccinietum and *Campanulo-Nardetum*, 1100-1210 m, pH 3.7-4.0)
Athyrium distentifolium (Acero-Fagetum and other communities, 906-1221 m, pH 3.5-3.8-4.3)
Campanula serrata (Acetoso-Deschampsietum caespitosae, Campanulo-Nardetum or *Homogyno-Vaccinietum*, 855-1200 m, pH 3.7-4.0-4.4)
Cirsium waldsteinii (subalpine meadows, 1000-1200 m)
Gnaphalium norvegicum Gunn. (*Campanulo-Nardetum* or *Acetoso-Deschampsietum*, 840-1201 m, pH 3.9-4.1-4.7)
Hieracium prenanthoides (Achilleo-Calamagrostidetum arundinaceae, 930-1190 m, pH 4.0-4.2-4.3)
Leucanthemum waldsteinii (Lunario-Aceretum and some spring communities, 600-1201 m, pH 3.9-4.9-6.3)
Phleum rhaeticum (subalpine meadows, 1000-1201 m, pH 4.1-4.2-4.4)
Ranunculus platanifolius (subalpine meadows, 1120-1221 m, pH 3.8-4.0-4.3)
Tithymalus sojakii (Chrtek et Křísa)Holub (*Calamagrostion arundinaceae*, 922-1221 m)
Viola dacica (Calamagrostion arundinaceae, Campanulo-Nardetum, 800-1201 m, pH 4.0-4.3-4.7)

Some species have their main distribution on the main ridge, with few localities at lower altitudes:

Campanula abietina (Campanulo-Nardetum, Calamagrostion arundinaceae, 600-1188 m, pH 4.1-4.3-4.7)
Dianthus compactus Kit. (*Campanulo-Nardetum, Calamagrostion arundinaceae*, 500-630-1201 m, pH 3.9-4.3-5.7)
Salix silesiaca (490-1200 m, pH 4.7-7.1)
Tephroseris papposa (Calamagrostion arundinaceae, 1159-1188 m, and *Caricetum goodenowii*, 645-660 m)
Tozzia carpatica Wołoszcz. (660-1020-1200 m)

Their counterpart are the species that occur only in the valley:

Arum alpinum (in woods and coppices: *Lonicero-Coryletum, Matteucio-Alnetum, Tilio-Carpinetum*, 200-520 m, pH 4.8-5.4-7.5)
Lapsana grandiflora Bieb. (grey alder woods, 270-545-905 m)
Matteucia struthiopteris (Matteucio-Alnetum incanae, 220-670 m)
Salix triandra (along brooks, 200-330-520 m)
Symphytum angustifolium (Carpinion, Matteucio-Alnetum, Lonicero-Coryletum, 280-410-1040 m, pH 4.3-4.8-7.2)

The following species also belong to this group: *Valeriana montana*, found only in the eastern part of the area, *Cerastium sylvaticum*, frequent mainly in the neighbourhood of the village Stakčín, and *Hacquetia epipactis*, recorded in the neighbourhood of Ubla.

The species frequent both in valley bottoms and on mountains ridges represent an interesting group. They perhaps require higher air moisture. The following species have such distribution:

Aconitum moldavicum (Tilio-Carpinetum, Lunario-Aceretum, 280-740-1200 m, pH 5.5-7.20)
Aposeris foetida (in alpine meadows, hazel coppices etc., 200-740-1190 m, pH 4.2-4.5-7.5)
Galanthus nivalis (Tilio-Carpinetum, Dentario-Fagetum, Helleboro-Coryletum, 240-520-950 m, pH 4.8-5.2-7.2)
Helleborus purpurascens (hornbeam woods, *Helleboro-Coryletum, Gentiano-Acetosetum* etc., 240-612-1190 m, pH 4.9-5.1-5.6)
Lathyrus laevigatus (hornbeam and beech woods, but also in subalpine meadows, 250-1160 m)
Adoxa moschatellina (Tilio-Aceretum, Alnetum incanae, 250-650-1092 m, pH 3.9-4.9-6.4)
Symphytum cordatum (Fagion, Tilio-Acerion, Alnion incanae, Carpinion etc., 269-680-1201 m, pH 3.7-4.3-7.1)

There are also thermophilous species confined to the south-exposed slopes with calcium-rich soils, e.g. *Dorycnium herbaceum (Cirsio-Brachypodion pinnati*, 250-380-600 m, pH 4.8). The distribution of *Genistella sagittalis* is difficult to explain, because it grows in pastures at various altitudes and expositions. The above mentioned groups of species may be considered as the local area types of the flora of the Bukovské vrchy hills.

Souhrn

Květena Bukovských vrchů není příliš bohatá; bylo zde zjištěno asi 960 druhů. Některé byly nalezeny jen na jediné lokalitě, jako *Ranunculus carpaticus, Conioselinum tataricum, Juncus atratus* aj., jiné jsou omezeny na hraniční hřeben, např. *Athyrium distentifolium*. Některé druhy rostou pouze v údolí (např. *Arum alpinum*); druhy jako *Galanthus nivalis* jsou rozšířeny jednak v údolích, jednak na hřebenech hor. Jsou tu i druhy výslunných strání, nejčastěji tam, kde jsou flyšové vrstvy bohatší na vápník (*Dorycnium herbaceum*). Pozoruhodná je také absence druhů, které jsou jinde běžně rozšířeny, jako *Avenella flexuosa* nebo *Persicaria amphibia*. Podrobný výčet lokalit bude uveřejněn v chystané Květeně Bukovských vrchů.

Acknowledgements

I am indebted to Ing. Ján Terray, Director of the Protected landscape area East Carpathians, Humenné, RNDr. Viliam Klescht of the same institution, J. Hadinec from the Charles University Prague, RNDr. J. Andresová, Dvůr Králové nad Labem, and several other colleagues for their help during my excursions. My thanks are due to Prof. Ing. J. Jeník, CSc., RNDr. J. Osbornová, CSc., RNDr. J. Štěpánková and RNDr. J. Štěpánek, CSc., MUDr. M. Král, B. Trávníček and Dr. V. Žíla for providing their field notes.

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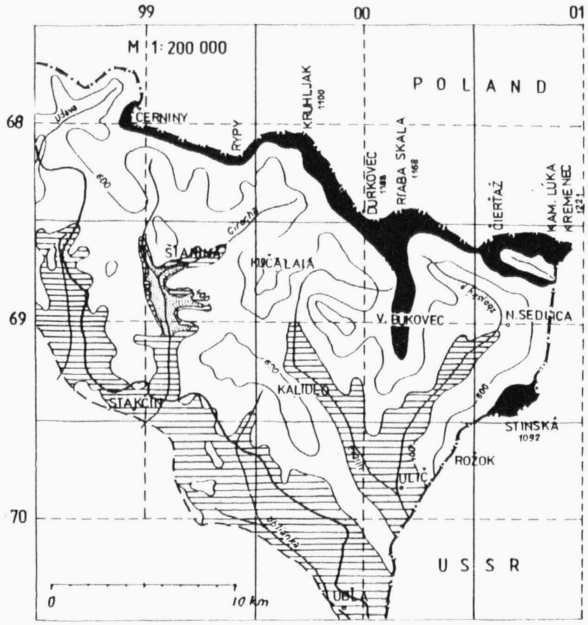

Fig. 1. Map of the Bukovské vrchy hills. The area above the altitude of 800 m is black, the part below 400 m is marked out with lines.

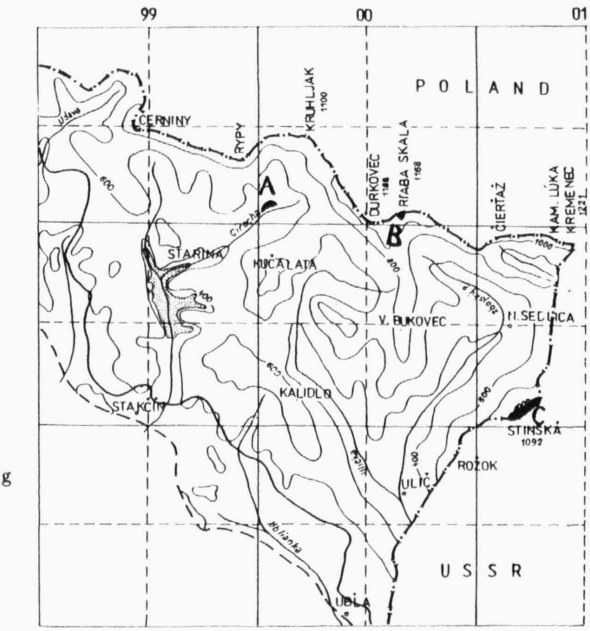

Fig. 2. Distribution of 23 species, occurring in the area investigated in one locality only. Lok. A. Lúky pod Ruským, group of *Bistorta major* (see p. 206), loc. B. Rjabá skala, group of *Cystopteris sudetica* (see p. 206), loc. C. Stinská, group of *Aconitum anthora* (see p. 206)

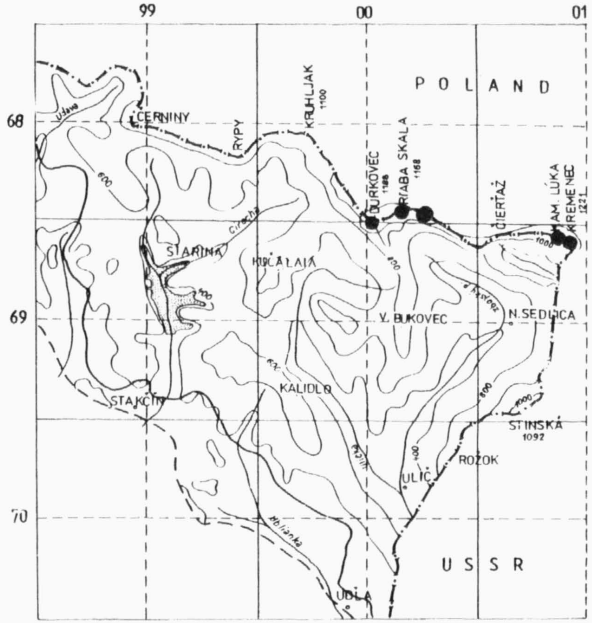

Fig. 3. *Melampyrum herbichii*

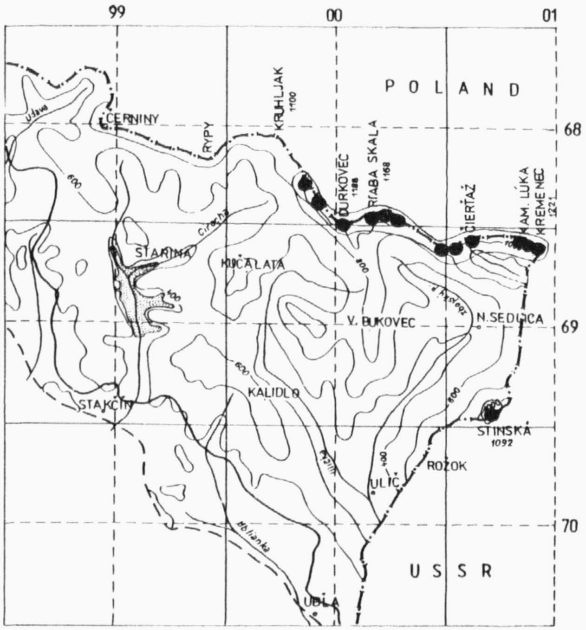

Fig. 4. *Athyrium distentifolium*

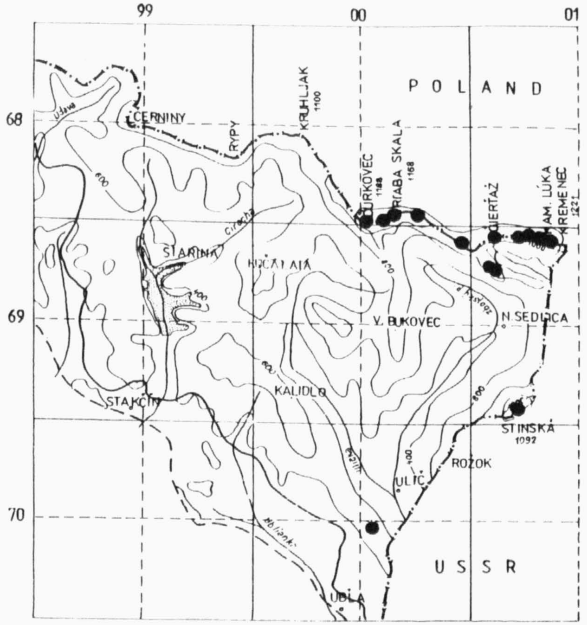

Fig. 5. *Campanula serrata*

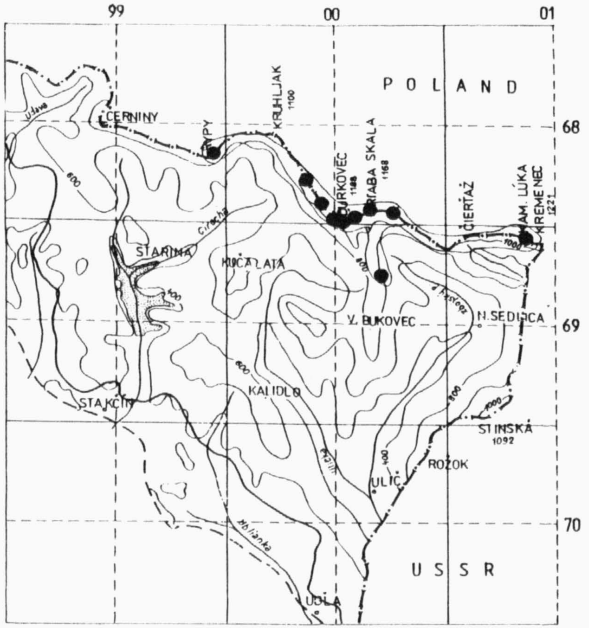

Fig. 6. *Cirsium waldsteinii*

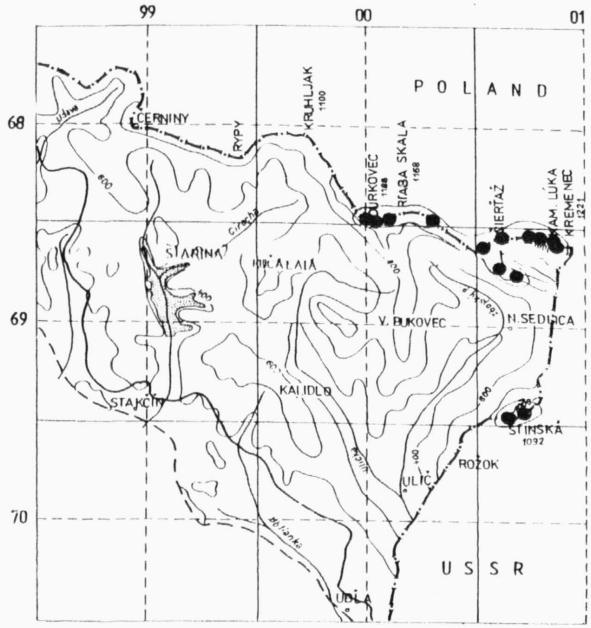

Fig. 7. *Gnaphalium norvegicum* Gunn.

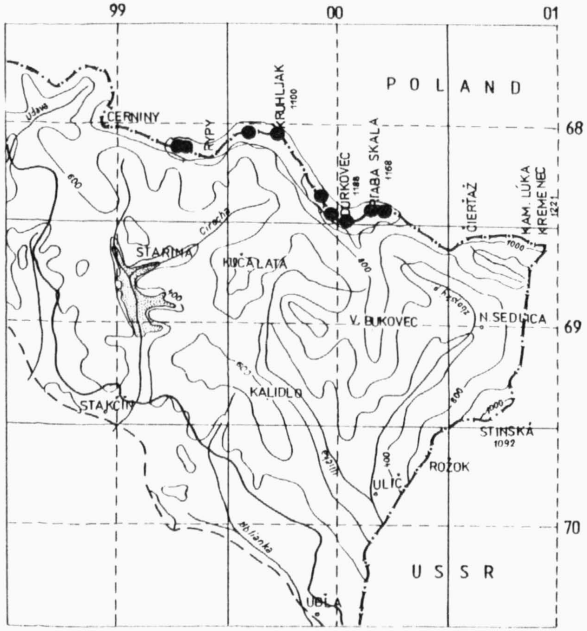

Fig. 8. *Hieracium prenathoides*

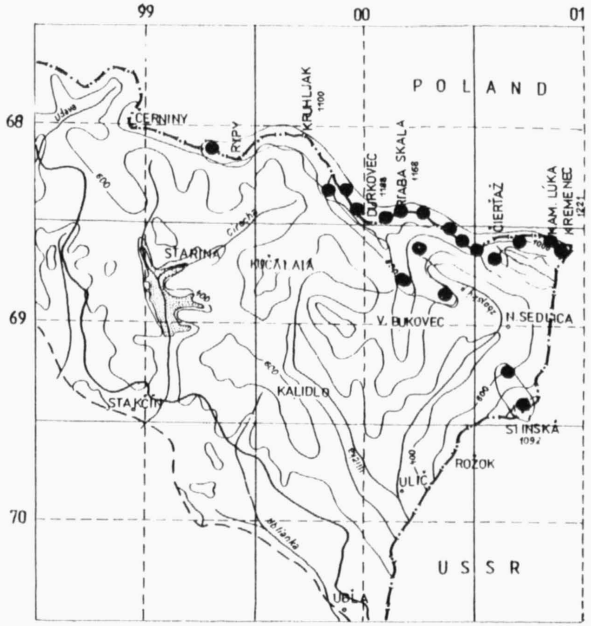

Fig. 9. *Leucanthemum waldsteinii*

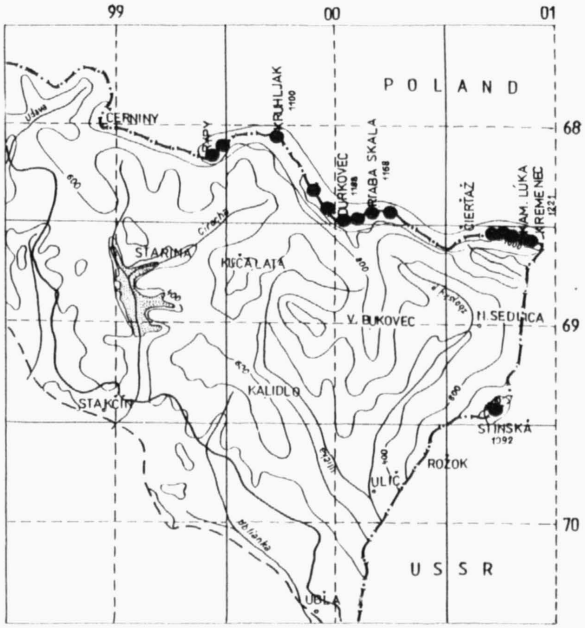

Fig. 10. *Phleum rhaeticum*

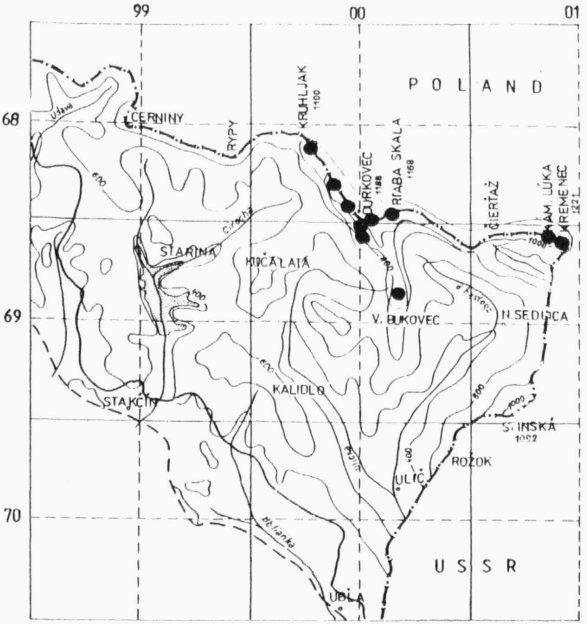

Fig. 11. *Ranunculus platanifolius*

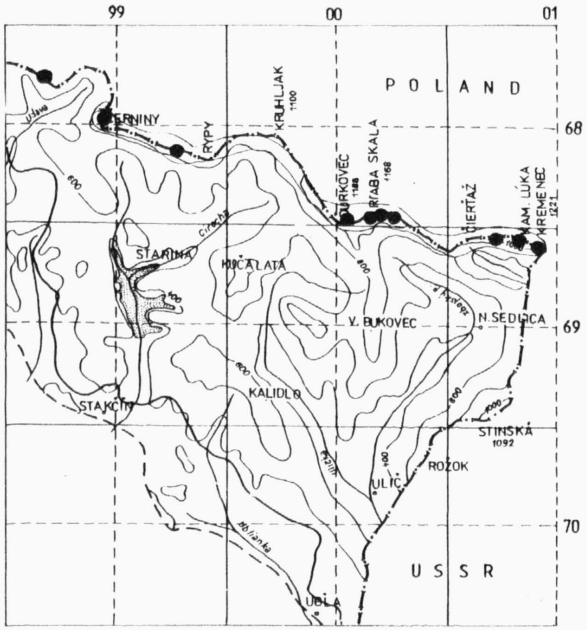

Fig. 12. *Tithymalus sojakii* (Chrtek et Křísa)Holub

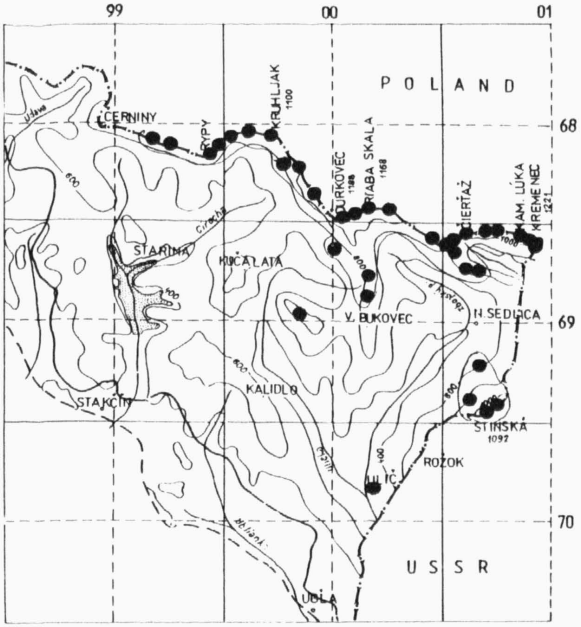

Fig. 13. *Viola dacica*

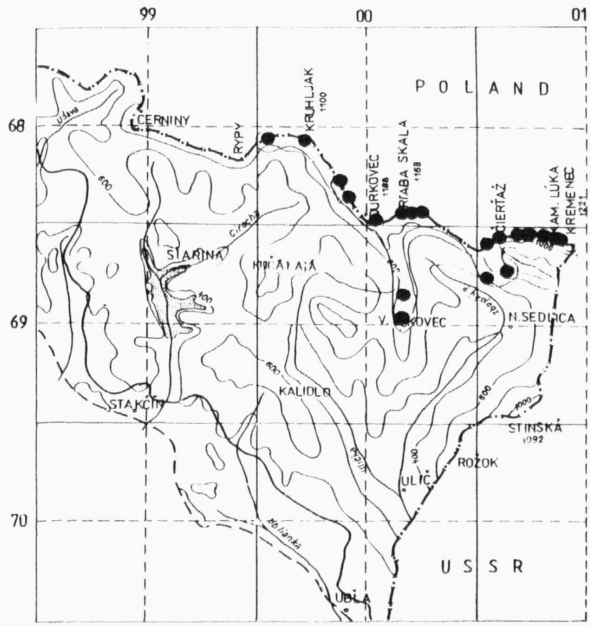

Fig. 14. *Campanula abietina*

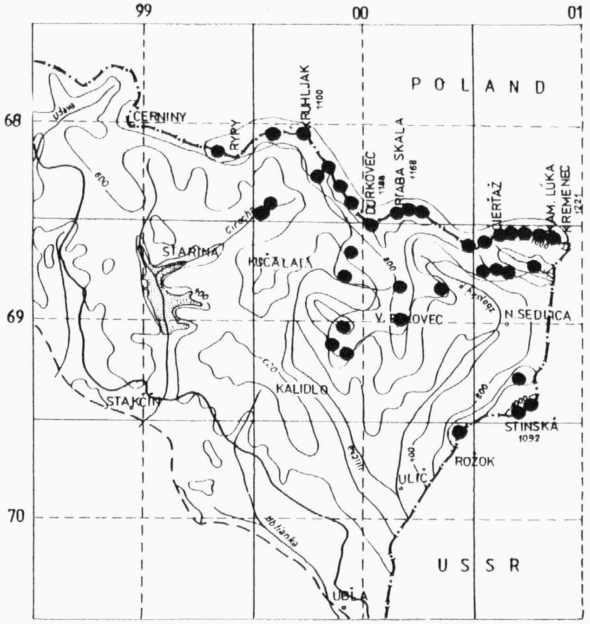

Fig. 15. *Dianthus compactus* Kit. in Schult.

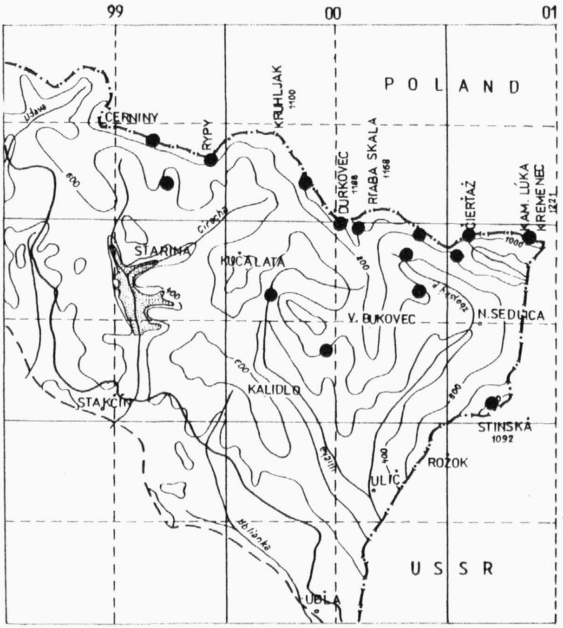

Fig. 16. *Dryopteris psedomas* (Wollast.)Holub et Pouzar

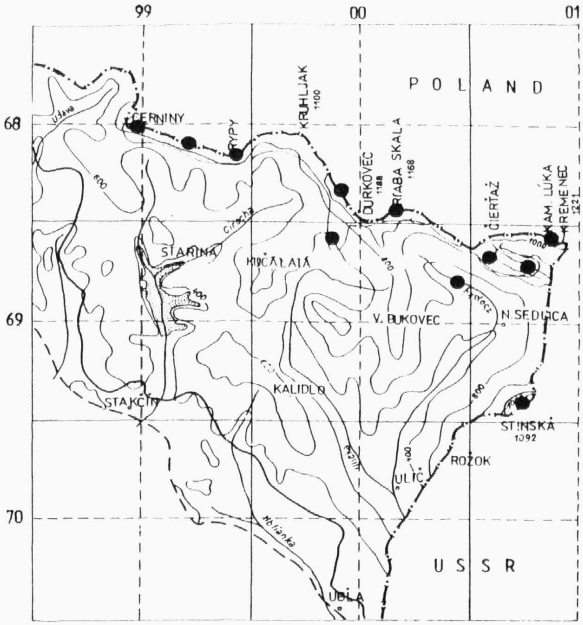

Fig. 17. *Salix silesiaca*

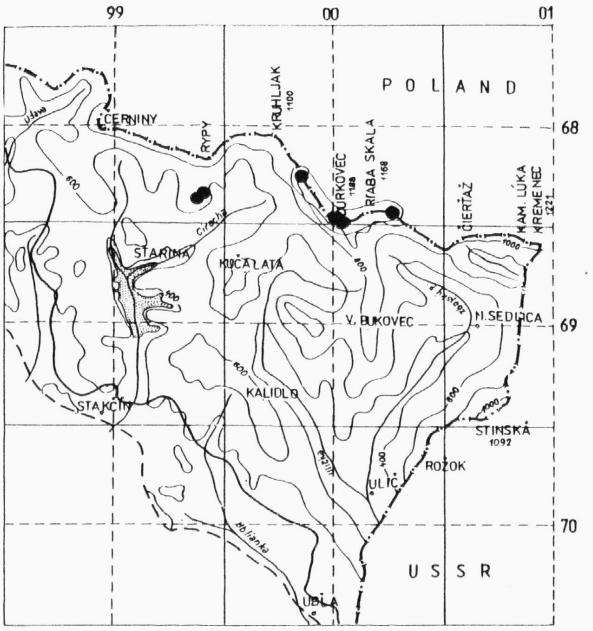

Fig. 18. *Tephroseris papposa*

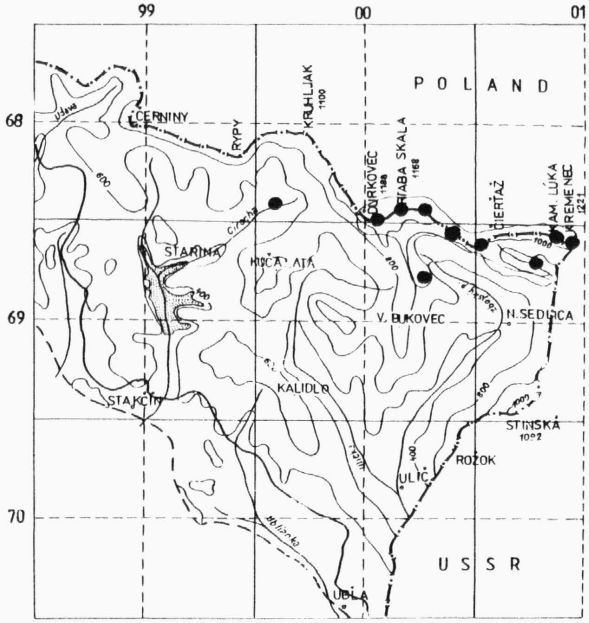

Fig. 19. *Tozzia carpatica* Woloszcz.

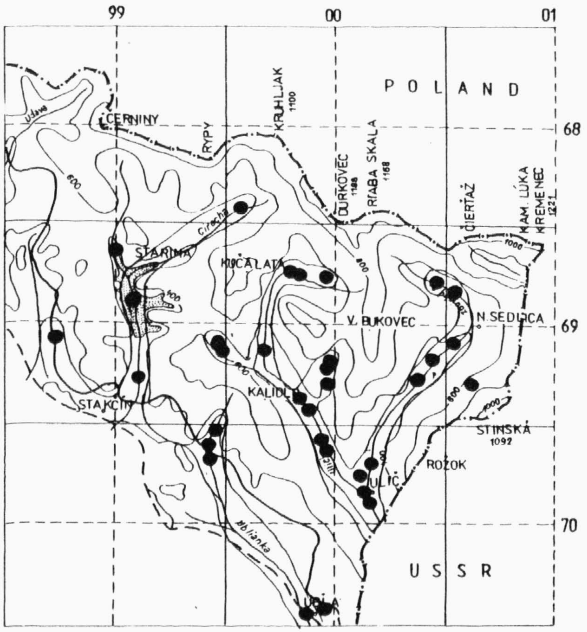

Fig. 20. *Matteuccia struthiopteris*

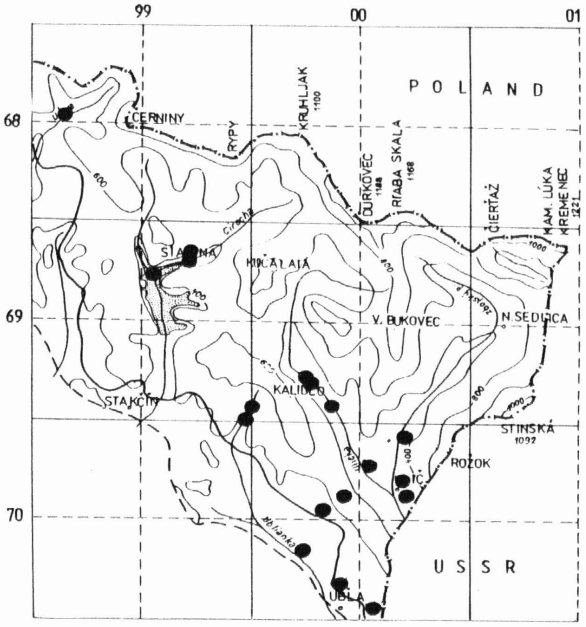

Fig. 21. *Arum alpinum*

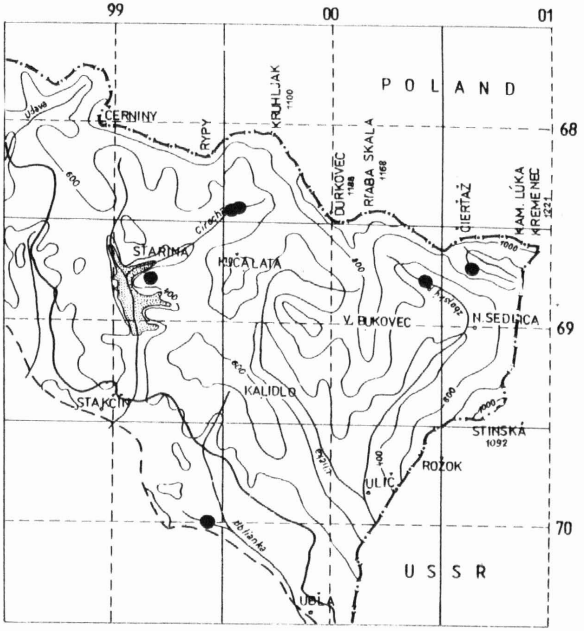

Fig. 22. *Lapsana grandiflora* Bieb.

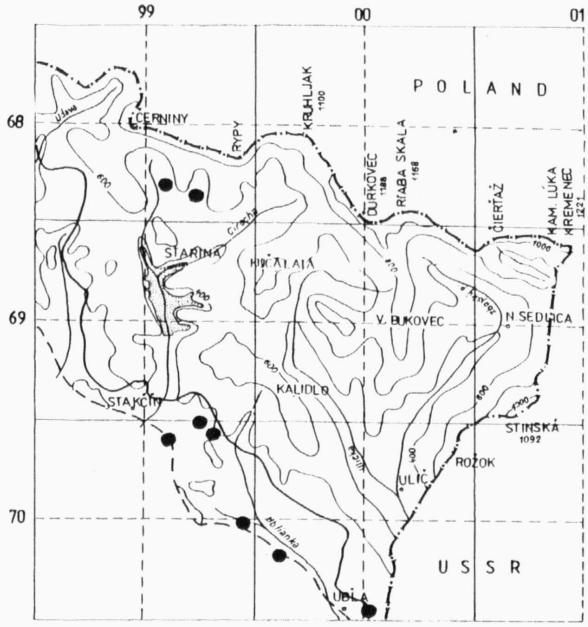

Fig. 23. *Salix triandra*

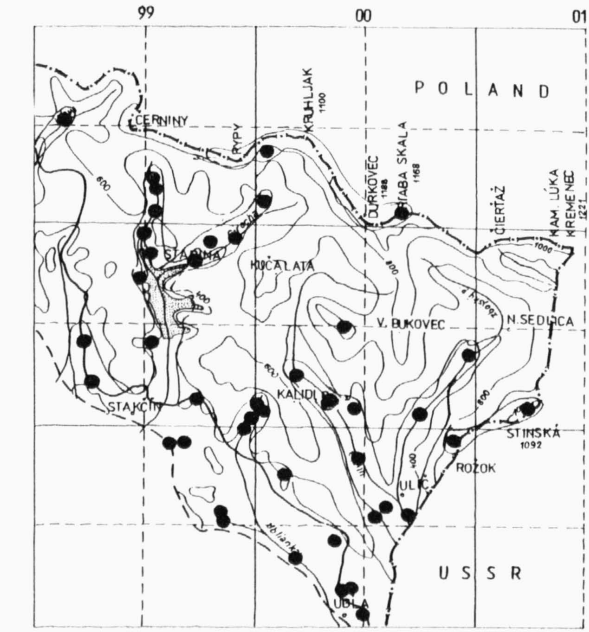

Fig. 24. *Symphytum angustifolium*

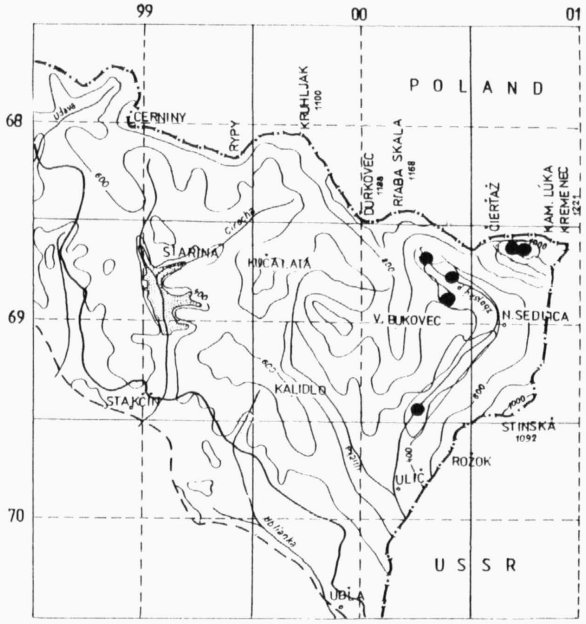

Fig. 25. *Valeriana montana*

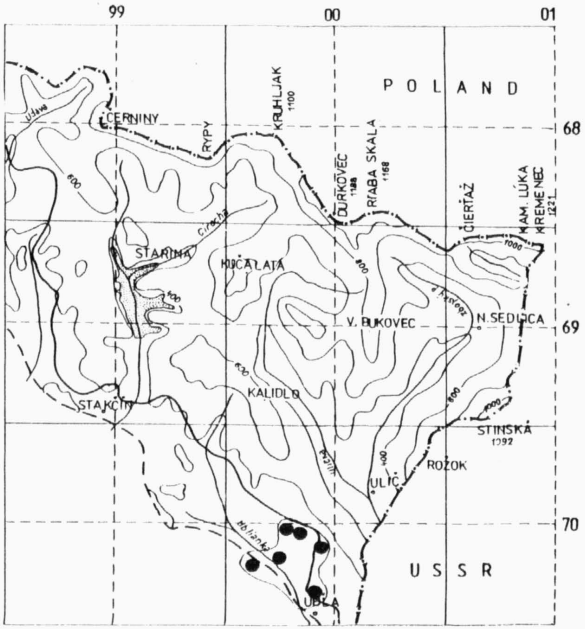

Fig. 26. *Hacquetia epipactis*

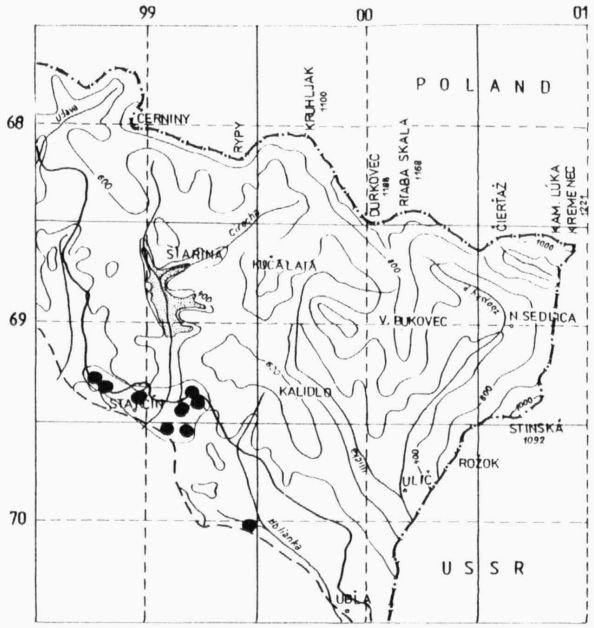

Fig. 27. *Cerastium sylvaticum*

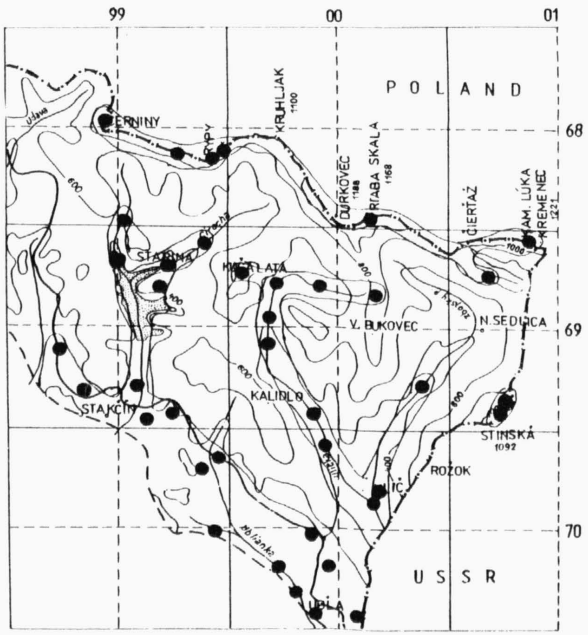

Fig. 28. *Aconitum moldavicum*

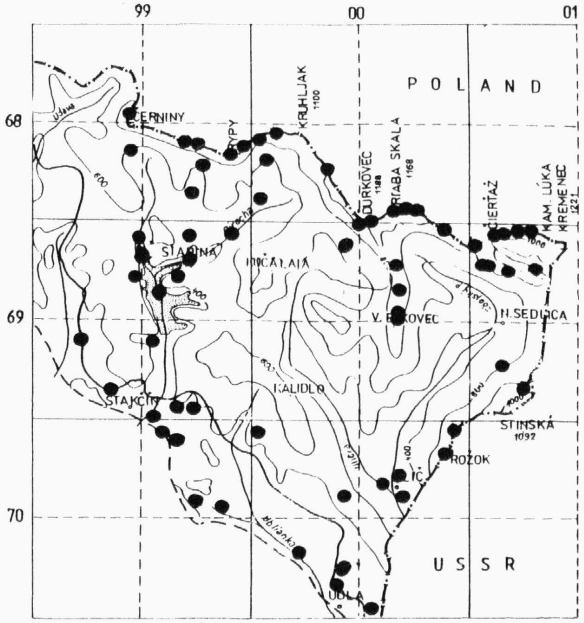

Fig. 29. *Aposeris foetida*

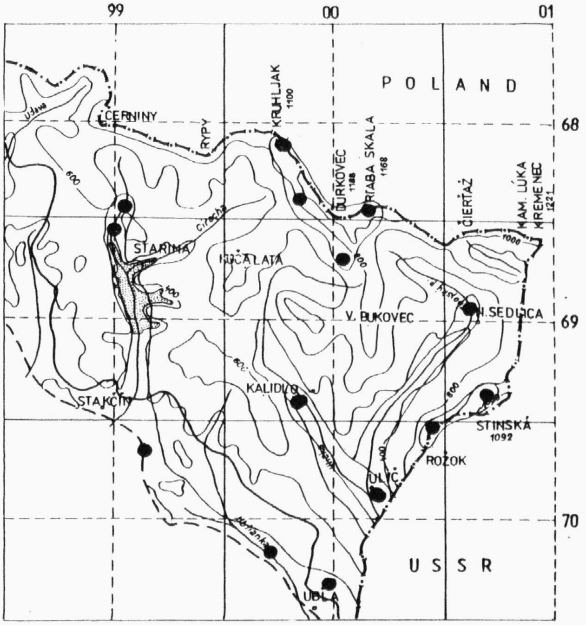

Fig. 30. Galanthus nivalis

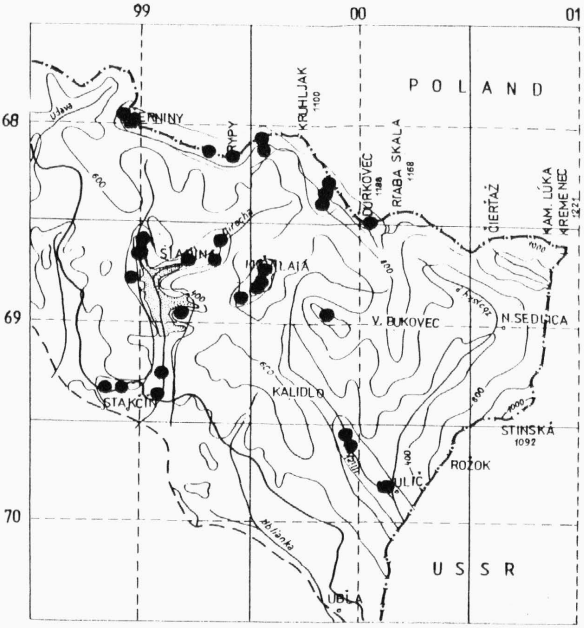

Fig. 31. *Helleborus purpurascens*

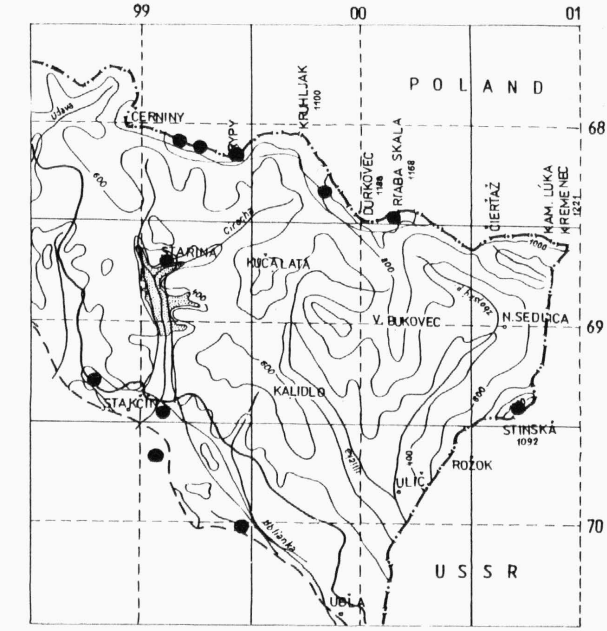

Fig. 32. Lathyrus laevigatus

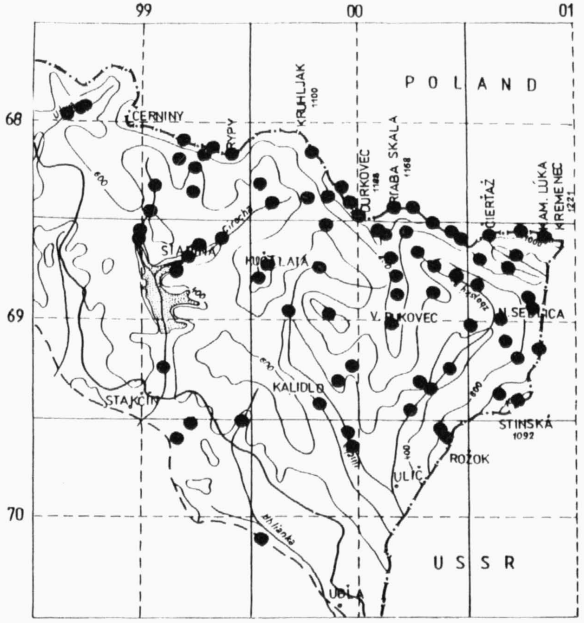

Fig. 33. *Symphytum cordatum*

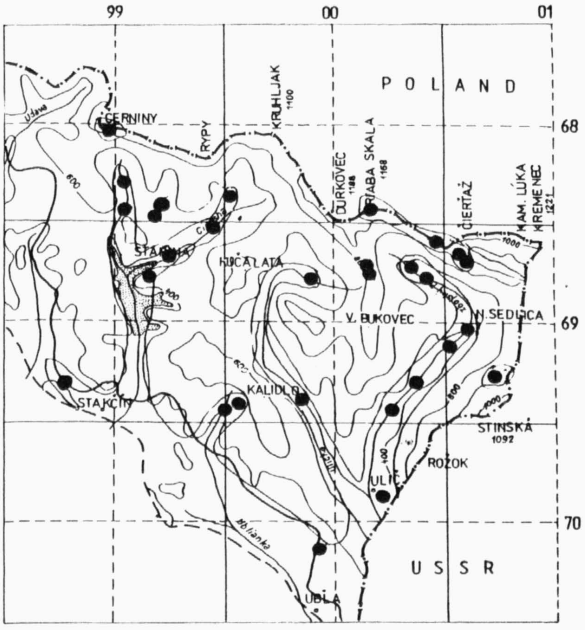

Fig. 34. *Adoxa moschatellina*

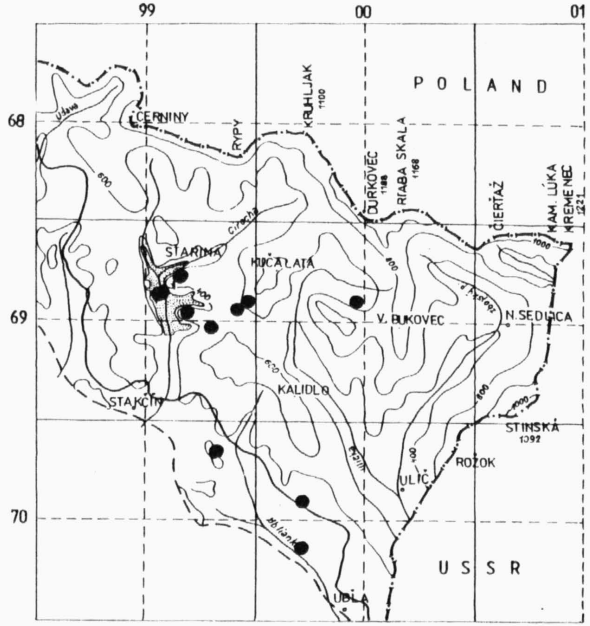

Fig. 35. *Dorycnium herbaceum*

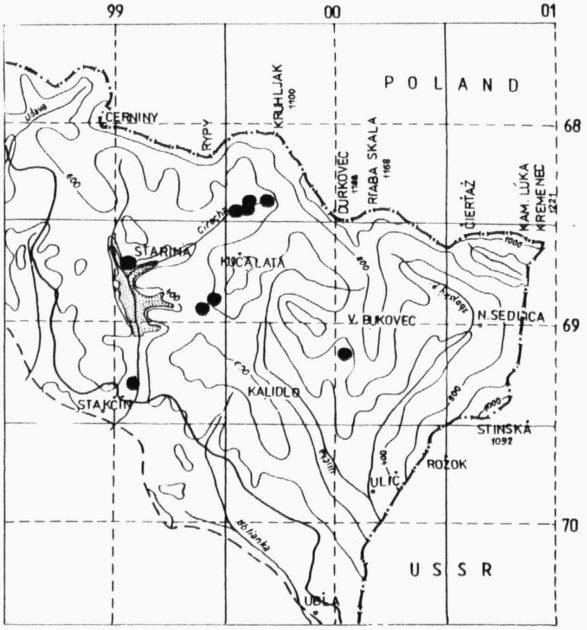

Fig. 36. *Genistella sagittalis*