

SYSTEMATIC STUDIES ON *DRABA* L. (CRUCIFERAE JUSS.) IN LATVIA

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Two species of genus *Draba* L. – *D. nemorosa* L. and *D. sibirica* (Pall.) Thell. were recorded in Latvia. The aim of the present study was to identify and clarify occurrence and distribution of *Draba* species in Latvia. For each species scientific nomenclature was compiled, morphological features, distribution in Latvia and worldwide was described and geographical distribution maps in Latvia were compiled.

Key words: *Draba*, *Cruciferae*, flora, distribution, Latvia.

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INTRODUCTION

Draba L. is one of the largest genera from *Cruciferae* Juss. family, comprising about 300 species worldwide (Al-Shehbaz 1984). Genus *Draba* distributed primarily in mountainous areas of Eurasia and the Americas and at lower places in the Arctic (Price & Rollins 1988) from submeridional to boreal zone. A large number of species are highly restricted in their geographical distributions and habitats, while others are quite widespread and may have much greater ecological amplitude (Price & Rollins 1988). Two species from *Draba* – *D. nemorosa* L. and *D. sibirica* (Pall.) Thell. were recorded in Latvia. The aim of the present study was to identify and clarify occurrence and distribution of *Draba* species in Latvia.

MATERIAL AND METHODS

The study of *Draba* was based on herbarium material investigation, literature survey and field work. Herbarium material was checked at the Laboratory of Botany, Institute of Biology, University of Latvia (LATV), the Herbarium of the Museum of Botany, University of Latvia (RIG), the Herbarium of the Natural History Museum of Latvia (LDM), the Herbarium of Daugavpils University (DAU) and at the Laboratory of Botany private collection of botanist Alfrēds Rasiņš (RAS).

Species descriptions were created by the Latvian plant material. Descriptions of species consist of scientific nomenclature, description of habitats, distribution in Latvia and worldwide

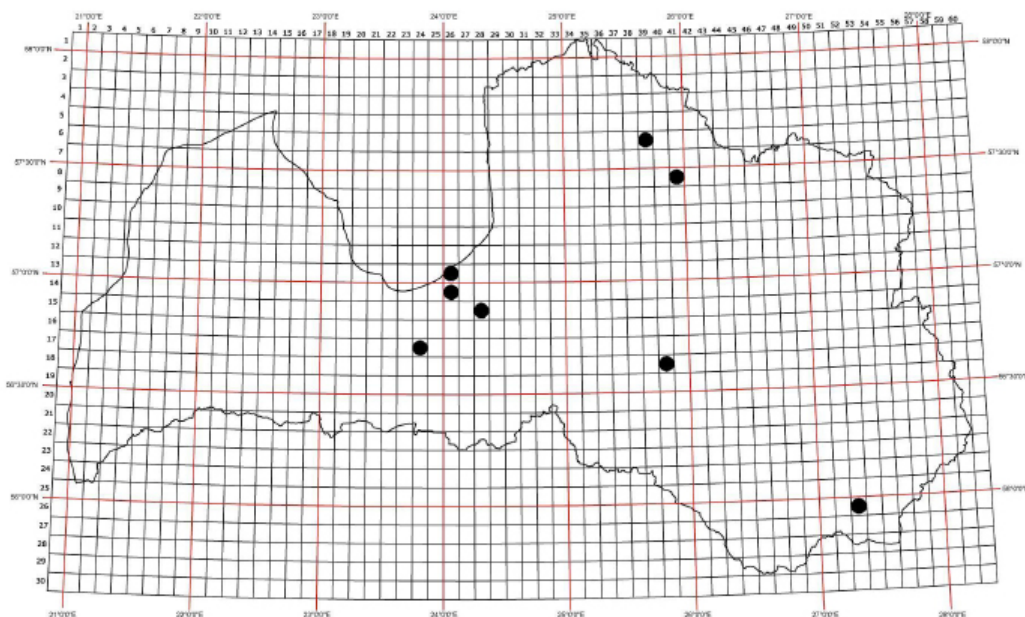


Fig. 1. Distribution of *D. sibirica* in Latvia.

distribution. Distribution maps were compiled for geographical distribution. Maps were prepared using the square method, which is related to the geographical coordinates where one square is 7,6 x 9,3 km (Табака et al. 1980). Evaluation scale was used for species distribution accepted by Laboratory of Botany Institute of Biology: very rare (1-10 records), rare (11-30 records), rather rare (31-100 records), not rare (101-250 records), rather frequent (251-500 records), frequent (501-750 records), and very frequent (more than 751 records) (Fatare 1992). In maps localities were marked in two ways: ● – herbarium data, ○ – University of Latvia Institute of Biology lists of species. Geographical distributions were characterized according to geographical regions of Latvia – Coastal Lowland, Western Latvia, Central Latvia and Eastern Latvia (Ramans & Zelčs 1995).

Authors for taxa were given in accordance with R.K. Brummit and C.E. Powell (1992). Literary sources were cited in the original language and abbreviations correspond to the accepted standard (Mill 1993). For works not included in this work, abbreviations were formed using

similar principles as the accepted standard. Works cited in nomenclature part are literature where the taxon was first mentioned in the flora of Latvia, as well as Latvijas PSR flora (Elekšis 1955), Флора СССР (Толмачев 1939) and Flora Europaea (Walters 1964).

RESULTS

Genus *Draba* is characterized by raceme inflorescence. Flowers hermaphrodite, actinomorphic. Sepals four, free, erect or patent, glabrous or with rare hairs. Petals four, free, white or yellow, with short claw. Stamens six; two lateral shorter, four median longer, free, filaments not dilated at the base. Nectar glands at the base of shorter stamens, median glands absent. Stigma capitate. Style short or distinct. Fruit silicule. Valves flat or slightly convex. Seeds in two rows in each loculus. Perennial, rarely annual or biennial herbs with entire leaves, basal leaves in rosette, blade margins entire or dentate.

1. Stem erect, pubescent, leaves oblong ovate, margine dentate, petals pale yellow, 2-4 mm long,

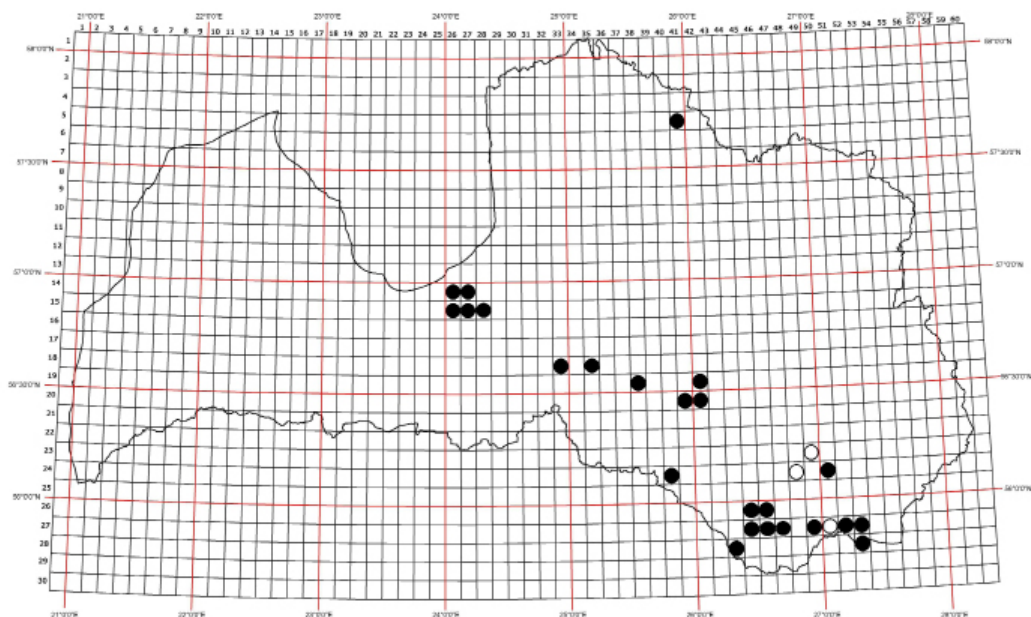


Fig.2. Distribution of *D. nemorosa* in Latvia.

silicula with simple hairs, rarely glabrous

.....2. *D. nemorosa*.

- Stem scapose, creeping, hispid, leaves oblong lanceolate, margine entire, petals yellow, 4-6 mm long, silicula glabrous.....1. *D. sibirica*.

1. *Draba sibirica* (Pall.) Thell.

Draba sibirica (Pall.) Thell. 1906, in Mitt. Bot. Mus. Zürich **28**: 318; Толм., 1939, Фл. СССР, **8**: 445; Walters, 1964, Fl. Europ. **1**: 310; Pētersone, 1980, in Pētersone un Birkmane, Latv. PSR augu noteic., 2. izd.: 155. – *Lepidium sibiricum* Pall. 1776, Reise **3**: 34. – *D. repens* M. Bieb. 1808, Fl. Taur.-Cauc. **2**: 93; Kupffer, 1934, Korrb. Naturf.-Ver. Riga, **61**: 204.

Habitat. Railway embankment slopes, railway tracks, roadsides, weed.

Distribution in Latvia. Non-native. Very rare: Rīga (13/26, P. Westberg, 1896, RIG; 14/26, I. Kabucis, 1991, LATV; 15/28, K. Birkmane, 1973, LATV), railway embankment Strenči – Valmiera (6/39, J. Šķipsna, 1923, RIG), railway Rīga – Jelgava (17/24, K. Kupffer, 1930, RIG), station Skaista (26/52, I. Fatore, 1976, LATV),

Smiltene (8/41, I. Fatore, 1985, LATV), railway near Gostiņi, Pļaviņas (18/40, I. Lodziņa, 1981, LATV) (Fig. 1).

General distribution. Eastern part of Europe, Caucasus, Asia, from submeridional to boreal zone.

2. *Draba nemorosa* L.

Draba nemorosa L. 1753, Sp. Pl. 643; Bickis, 1920, Latv. augu noteic. 1: 91; Толм., 1939, Фл. СССР, **8**: 451; Eleksis, 1955, Latv. PSR Fl., **2**: 341; Walters, 1964, Fl. Europ. **1**: 312. – *Draba nemoralis* Ehrh. 1792, Beitr. Naturk. 7: 154; J. Fleisch. und Em. Linden. 1839, in J. Fleisch., Fl. Esth. Liv. Kurl.: 230.

Habitat. Dry grasslands, roadsides, railway embankment slopes, quarries, weedy places, river terraces.

Distribution in Latvia. Rare, Central Latvia and Eastern Latvia (mostly along Daugava valley) (Fig.2).

General distribution. Europe, Asia, North America, submeridional to boreal zone. Close to the western border of distribution range in Latvia.

DISCUSSION

First record of the genus *Draba* in flora of Latvia is in the beginning of the 19th century by J. Fleischer and E. Lindemann (1839) where mentioned *D. nemorosa*. *D. sibirica* in literature is recorded from 1934 (Kupffer 1934) by synonym *D. repens* M. Bieb. though herbarium material is from 1896 Rīga, collected by P. Westberg (RIG). It was found on the lawn at the Mīlgrāvis station.

D. nemorosa was recorded in natural (dry grasslands, river terrace) as well as in anthropogenic habitats (roadsides, railway embankment slopes, quarries, weedy places). The main distribution range of this species is Europe, Asia, North America, submeridional to boreal zone. In Latvia occurs rarely, in Central Latvia and Eastern Latvia. *D. nemorosa* has been recorded in Red Data Book of Latvia in third category (Andrušaitis 2003) as rare species which is in such a small number or in so limited areas and specified sites that they may probably disappear. *D. nemorosa* also recorded in Red Data Book of the Baltic Region (Ingelög et al. 1993) as species which is at risk because of small total population within this area. *D. nemorosa* is close to the western border of distribution range in Latvia. The largest populations of the species are near the anthropogenic sites, especially related to the railway embankments. This environment is suitable for the existence of *D. nemorosa* due to low level of competition and unpretentious requirement of environmental factors.

D. sibirica in Latvia is non-native species and occurs very rarely as single specimens on railway embankment slopes, railway tracks and as a weed. It was introduced in Latvia by the Russian military during the World War I. Many species which were introduced by Russian military influence soon disappeared and in flora of Latvia did not become sustainable (Kupffer 1934). Species area covers Eastern part of Europe, Caucasus, Asia, from submeridional to boreal zone. *D. sibirica* is very rare in the Baltic region, sometimes cultivated and may be found escaping from culture (Kuusk et al. 1993).

D. incana L. was mentioned as another species in several botanical works from Latvia. For the first time the species was mentioned by J.J. Ferber (1784) in Kurzeme (Curland) without specified localities. E. Lehmann (1895) indicated that the species probably was recorded in Kurzeme, Ezere (Gross-Essern). Also other authors (Bickis 1920; Eleksis 1955) referred to this locality, indicating that species occurs not frequently or rarely. In studies of herbarium collections *D. incana* was not detected and species existence in flora of Latvia is not confirmed. Distribution range of *D. incana* is North Europe, Eastern part of North America and Greenland. *D. incana* is included in Red Data Book of the Baltic Region. The distribution range in Baltic region is Estonia, Sweden, Denmark and Finland. In Estonia *D. incana* is rather frequent on Western islands and in the coastal parts of West and North-West Estonia (Kuusk et al. 1993). *D. incana* is characterized by white petals, stem with hairs, basal leaves in rosette, cauline leaves numerous, oblong ovate, dentate. Silicule 2-5 longer than pedicel, valves slightly twisted.

CONCLUSIONS

In vascular flora of Latvia are two species of genus *Draba* L. – *D. nemorosa* L. and *D. sibirica* (Pall.) Thell.

D. nemorosa has relatively wide ecological amplitude, as it occurs in natural and anthropogenic habitats.

In flora of Latvia presence of *D. incana* was not confirmed.

REFERENCES

- Al-Shehbaz I. A. 1984. The tribes of *Cruciferae* (*Brassicaceae*) in the southeastern United States. *Journal of the Arnold Arboretum*, 65: 343-373.
- Andrušaitis G. 2003. Latvijas Sarkanā grāmata [Red Data Book of Latvia]. 3. sēj. Rīga. 691

- lpp. (in Latvian).
- Bickis J. 1920. Latvijas augu noteicējs [Key-book of plants of Latvia]. 1. daļa. Cēsis. 136 (in Latvian).
- Brummitt R.K., Powell C.E. (eds.) 1992. Authors of Plant Names. Kew. pp. 732.
- Eleksis A. 1955. Drojenes – *Draba* L. [Whitlowgrasses – *Draba* L.]. Gr.: Galeniēks P. (red.) Latvijas PSR flora. 2. sēj. Rīga. 340.-342. (in Latvian).
- Fatare I. 1992. Sugu kvantitatīvās izplatības analīze [Study of species quantity distribution]. Gr.: Latvijas floras komponentu izplatības analīze un tās nozīme augu sugu aizsardzības koncepcijas izstrādāšanā. Rīga. 17. (in Latvian).
- Ferber J.J. 1784. Verzeichnis der Pflanzen, die in Kurland mehrentsils häufig vorkommen. In: Fischer J.B., Zusätze zu seinem Versuch einer Naturgeschichte von Livland. Riga. pp. 154-159.
- Fleischer J.G., Lindemann E. 1839. Flora der deutschen Ostseeprovinzen Esth-, Liv- und Kurland. Mitau, Leipzig. pp. 390.
- Ingelög T., Andersson R., Tjernberg M. (eds.) 1993. Red Data Book of the Baltic Region. Uppsala. 96.
- Kupffer K.R. 1934. Floristische und kritische Notizen über ostbaltische Pflanzen. *Korrespondenzblatt des Naturforscher-Vereins zu Riga*. 61: 199-225.
- Kuusk V., Rasiņš A., Jankevičienē R. 1993. *Draba* L. In: Laasimer L., Kuusk V., Tabaka L., Lekavičius A. (eds.) *Flora of the Baltic countries*, 1: 321-323.
- Lehmann E. 1895. Flora von Polnisch-Livland Archiv für Naturkunde Liv-, Ehst- und Kurlands, 2. ser., 11 (1): 1-432.
- Mill R.R. (ed.) 1993. Appendix II: Key to the abbreviations of titles of books cited in Volume 1; Appendix III: Key to the abbreviations of titles of periodicals and anonymous works cited in Volume 1. In: Tutin T.G., Burges N.A., Chater A.O., Edmondson J.R., Heywood V.H., Moore D.M., Valentine D.H., Walters S.M., Webb D.A. (eds.) *Flora Europaea*. Vol. 1. 2nd. edn. Cambridge. pp. 480-522.
- Price R.A., Rollins R.C. 1988. *Draba* (Cruciferae) in the White Mountains and neighbouring ranges. In: Hall C.A., Doyle-Jones V. (eds.) *Plant biology of eastern California*. Los Angeles. pp. 52-58.
- Ramans K., Zelčs V. 1995. Fizioģeogrāfiskā rajonēšana [Geographical division of regions]. Gr.: Kavacs G. (red.) *Latvijas daba: Enciklopēdija*. 2. sēj. Latvijas enciklopēdija, Rīga. 2. 74.-76. (in Latvian).
- Walters S.M. 1964. *Draba* L. In: Tutin T.G., Heywood V.H., Burges N.A., Valentine D.H., Walters S.M., Webb D.A. (eds.) *Flora Europaea*. Vol. 1. Cambridge, pp. 307-312.
- Табакa Л.В., Клявиня Г.Б., Фатаре И.Я. 1980. Метод картирования флоры Латвийской ССР и его использование при составлении „Атласа флоры Европы”. В кн.: Тихомиров В.Н. (ред.) *Картирование ареалов видов флоры европейской части СССР*. Москва. С. 21-24. (in Russian).
- Толмачев А.И. 1939. Крупка – *Draba* L. В кн.: Комаров В.Л., Буш Н.А. (ред.) *Флора СССР*. Т. 8, Москва, Ленинград. 371-454. (in Russian).

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