

Ruscus hypoglossum L. in Slovakia

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ABSTRACT: *Ruscus hypoglossum* L., a rare plant species of the Slovak flora, is distributed in SE, part of the Malé Karpaty Mts. (SW Slovakia). Data on taxonomy, syntaxonomy, morphology, phenology, chorology, endangerment and conservation of *Ruscus hypoglossum* are presented in this paper. Geological, pedological and climatic characteristics of its habitat are given, as well, on the basis of the author's observations, particularly from 1983 to 1985, and on data obtained from the literature.

KEYWORDS: *Ruscus hypoglossum*, Liliaceae, Morphology, Distribution, Site conditions

Introduction

The localities of *Ruscus hypoglossum* L. on the territory of Slovakia represent the northernmost, isolated occurrence, of the whole distribution area. The species grows only in the southeastern part of Malé Karpaty Mts. at a very limited number of localities. It also belongs to the critically endangered species of the Slovak flora (MAGLOCKÝ 1983).

The paper represents a review of biology of *Ruscus hypoglossum*, based on our own observation results, particularly from 1983 to 1985 and the knowledge from literature.

Taxonomy

Ruscus hypoglossum L., Sp. Pl. 1041 (1753).

Typus: Herb. Linneanum in H. Kewensi ex Hortus Cliffortianus (BM, lectotypus)

Syn.: *R. hypophyllum* L. subsp. *hypoglossum* (L.) DOMIN - Pl. Čechosl. Enum. 20 (1935); in Preslia 13-15:20 (1936)

R. alexandrinus MOTTE - Bull. Soc. Bot. France 86: 162 (1939), pro parte, nom. illegit.

R. troadensis E. D. CLARKE - Travels 2(1): 146 (1812)

R. hypophyllum L. var. *hypoglossum* (L.) BAKER - Journ. Linn. Soc. London (Bot.) 14: 630 (1875)

R. humilis SALISB. - Prodr. 255 (1796), nom. illegit.

The genus *Ruscus* L. is very often classified to the *Liliaceae*, or to *Asparagaceae*, when the family is understood more narrowly (eg. TAKHTAJAN 1969). HUTCHINSON recommended to use a separate family *Ruscaceae* (sec. HEGNAUER 1963), involving the genera *Ruscus*, *Danaë* and *Semele*. The same classification is adopted by TACHTADŽJAN (1987). YEO (1968) divided the genus *Ruscus* into 2 sections: *Ramosae* and *Simplices*, and suggests *R. hypoglossum* to belong to the section *Simplices*.

MURIN and MAJOVSKÝ (1974) estimated the karyotype of *R. hypoglossum* on the plants from the Malé Karpaty as follows: $2n=40=2x$ (Vs, J, J, J, J, J, Js, J, V, V, V, V, V, V, V, V, V, V, V, V). The same chromosome number was also found by MARTINOLI (1951), POPOVA and ČESCHMEDJIEV (1978) and YEO (1980).

Morphology

1. Description

Ruscus hypoglossum is a perennial, evergreen dioecious rhizomatous geophyte. Rhizomes are irregularly thickened with remnants of died shoots, horizontal, 1-5 cm under the soil surface. From the rhizomes 6-25 simple straight roots directed downwards originate. Stem is simple, straight or crooked, up to 40 cm long (in Slovak populations preferably to 20 cm). Leaves alternate in the axils of tiny (max. 0.5 cm) bracts of a red-brownish colour, two terminal leaves nearly opposite. When leaves more numerous the lower ones are mostly arranged in a whorl. Leaves are oblanceolate, the lower ones often ovate or broadly ovate, gradually narrowing. In the centre of the above surface of the adult shoot leaves is an inflorescence bract. It never occurs on the most terminal leaf, sometimes it is lacking from the lower leaves, either. The bract is herbaceous, 13-15 mm long and 4-16 mm wide, on the basis coalesced with the leaf. In the axil of the bract, 1-5 tiny, unisexual flowers originate. Male flowers have normally developed stamens and the ovary is reduced; in the female flowers the situation is opposite. Flowers with 5-8 mm long flower petioles have 6 light green tepals in two circles. The tube of coalesced filaments is cylindrical, slightly narrowing towards the base. On the apical end of the cylinder well developed blue anthers are present. The cylindrical tube of the female flowers is narrow, of a dark violet colour and tapering upwards. Anthers are indistinctly developed, rudimentary. Simple ovary has two ovules. The fruit is a berry (2 cm in diameter) with one or two seeds. The mature berry is red.

2. Notes on the morphological peculiarities of the species

A number of authors dealt with morphological peculiarities of the genus *Ruscus*. LINNÉ and the botanists in that period considered the assimilation organs to be the true leaves, and LINNÉ named the species with flowers and fruits on the bottom part of the leaves as *Ruscus hypophyllum*, and species which has them on the upper part of the leaf under the ligule (lat. glossa) as *Ruscus hypoglossum*. Turpin's opinion (1820) was that the assimilation organs are of stem origin, that they are flattened lateral stems - phylokladia (sec. SCHLITTER 1953). For this opinion stood up DE CANDOLLE, ASKENASY (sec. ČELAKOVSKÝ 1893), ČELAKOVSKÝ (1893), KAUSMANN (sec. SCHLITTER 1960). Other authors preferred the leaf origin of assimilation organs - eg. KOCH, VAN

TIEGHEM, DUVAL-JOUVE (sec. ČELAKOVSKÝ 1893). Another theory says that the assimilation organs are widened, winged stems coalesced with the enlarged bract (VELENOVSKÝ, DANĚK - sec. KOMAR 1961). The latest results of SCHLITTER (1953, 1960) show they are coalesced leaves and inflorescence, with the predominant presence of the leaves. This is in agreement with the opinions of MARKGRAF (1974) that has been respected also in this paper. In our literature an opinion is accepted on the rotation of the *Ruscus* leaves. In DOSTÁL (1950: 1785) writes: "the leafy phylloclady rotates during the flowering and the berry (2 cm in diameter) is then on the bottom of it". Such description does not agree with the reality. The leaves do not rotate and the fruits are on the above side of the leaf.

Phenology

Young shoots start to grow in the second half of April. From one rhizome 1-3 new shoots originate. Within one month, the shoots reach the length of perennial shoots, differing only by a little lighter colour. This difference disappears at the end of May. The flower buds appear on the shoots by the second half of June, some of them flower in autumn. My observations in 1982: It seems, that those flowers are retarded, both the stamens and the ovaries are rudimentary in flowers collected at 5.12.1982. Most of buds flower at spring time - April and May (rarely by the end of March). By the second half of May the first green berries can be seen. They ripen in summer, by September they are completely red. Most often the fruits stay on the plants till next spring.

Chorology

1. General geographical distribution

MEUSEL, JÄGER et WEINERT (1965) characterize the area where *Ruscus hypoglossum* occurs as "disjunctive westmediterranean-eastsubmediterranean-colchical". This characterization is in contradiction with the data of YEO (1980), postulating the western boundary of area in northwest Italy ("southeast Europe, the east part of central Europe, in west the area reaches to the north-west of Italy"). The occurrence of *Ruscus* is put by him to Italy, Austria, former Czechoslovakia, Hungary, Yugoslavia, Rumania, Bulgaria, Greece, Turkey, former USSR - Crimea (YEO 1968, 1980). The data proves that the assertion about the occurrence of *Ruscus hypoglossum* in the west Mediterranean area is not true.

The eastern border of *Ruscus hypoglossum* occurrence is represented by the findings in Turkey - Eastern Paphlagonia between Ünye and Niksar (YEO 1968), the northernmost point of its occurrence is in Slovakia: the Malé Karpaty Mts., approximately 48°24' N (HALADA 1985). There is a record from Polish part of the Pieniny Mts. by BOSNIAKOVSKI (1877), but it was never proved, and KULCZYNSKI stated that it represents *Polygonatum odoratum* (MILL.) DRUCE (sec. PTAČOVSKÝ 1959). The nearest localities to our territory are those in Austria - Wiener Wald (YEO 1968) and Hungary - Dunántúli középhegység, Dél-Dunántúl (SOÓ 1973).

More detailed data on the occurrence of the species is in the paper of YEO (1968). The area of distribution of *Ruscus hypoglossum* is on Fig. 1.

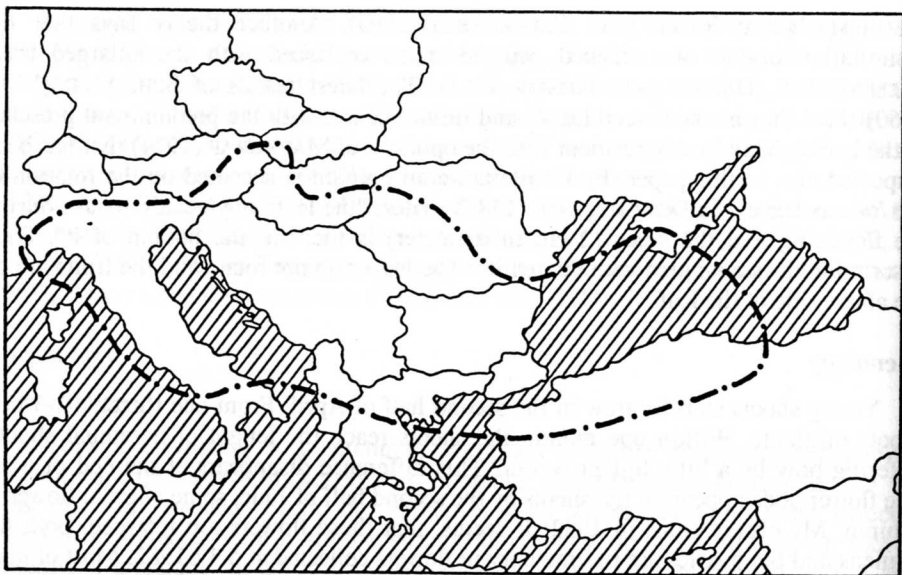


Fig. 1 - Geographical distribution area of *Ruscus hypoglossum* L. (according to YEO 1968)

2. Distribution in Slovakia

The first reports on occurrence of *Ruscus hypoglossum* in Slovakia are from 1791 - in "Flora Posoniensis" (LUMNITZER 1791). In this flora and also in a later one with the same title (ENDLICHER 1830) a few sites are listed around Bratislava: Jur and Pezinok. KRZISCH (1856) found *Ruscus hypoglossum* also at Čierna skala at Lošonec in the Malé Karpaty Mts. The locality was sometimes wrongly interpreted as Lučenec (Losoncz) by POLÍVKA, DOMIN, PODPĚRA (1928) and YEO (1968). Neither the locality at Čierna skala was proved, in spite of effort of NEVOLE (ex DOMIN ms.) and PTAČOVSKÝ (DOMIN 1925). Unsuccessful were my attempts in 1984 and 1986 as well, but the occurrence of the species there is still possible.

The existing data on distribution of the species in territory of Slovakia are as follows (the herbarium collection of Bratislava herbaria, with the name of the author, year of collection and the abbreviation of the herbarium: BRA, SLO, SAV; literature data are quoted with author names and year of publication):

Pannonicum - 5. Devinska Kobyla

Bratislava - Patrónka, Zoological garden (Májovský 1981 SLO; lit.: HALADA 1985) - Bratislava, in forest at Patrónka (Schidlay 1936 BRA, SLO)

Carpathicum - 10. Malé Karpaty

Bratislava - Krasňany, Chlmec hill (Murín 1967 SLO; Murín 1971 SLO; lit.: MURÍN, MÁJOVSKÝ 1974; HALADA 1985) - Bratislava, Šinweg - Pekná cesta (Ptačovský 1918 SAV; lit.: PTAČOVSKÝ 1959) - Bratislava, Rača, Veľká Baňa hill (lit.: PTAČOVSKÝ 1959; HALADA 1985) - Jur, Fajčokrova búda (lit.: HALADA 1985) - Jur, Fanglovske údolie, Fangl (lit.: PTAČOVSKÝ 1959; HALADA 1985) - Jur, chestnut garden (lit.: HALADA 1985) - Jur, Biely Kameň castle (Ptačovský 1930 SAV; Schidlay 1941 SLO, BRA; lit.: HALADA 1985) - Jur, hillfort Neštich (Schidlay 1930

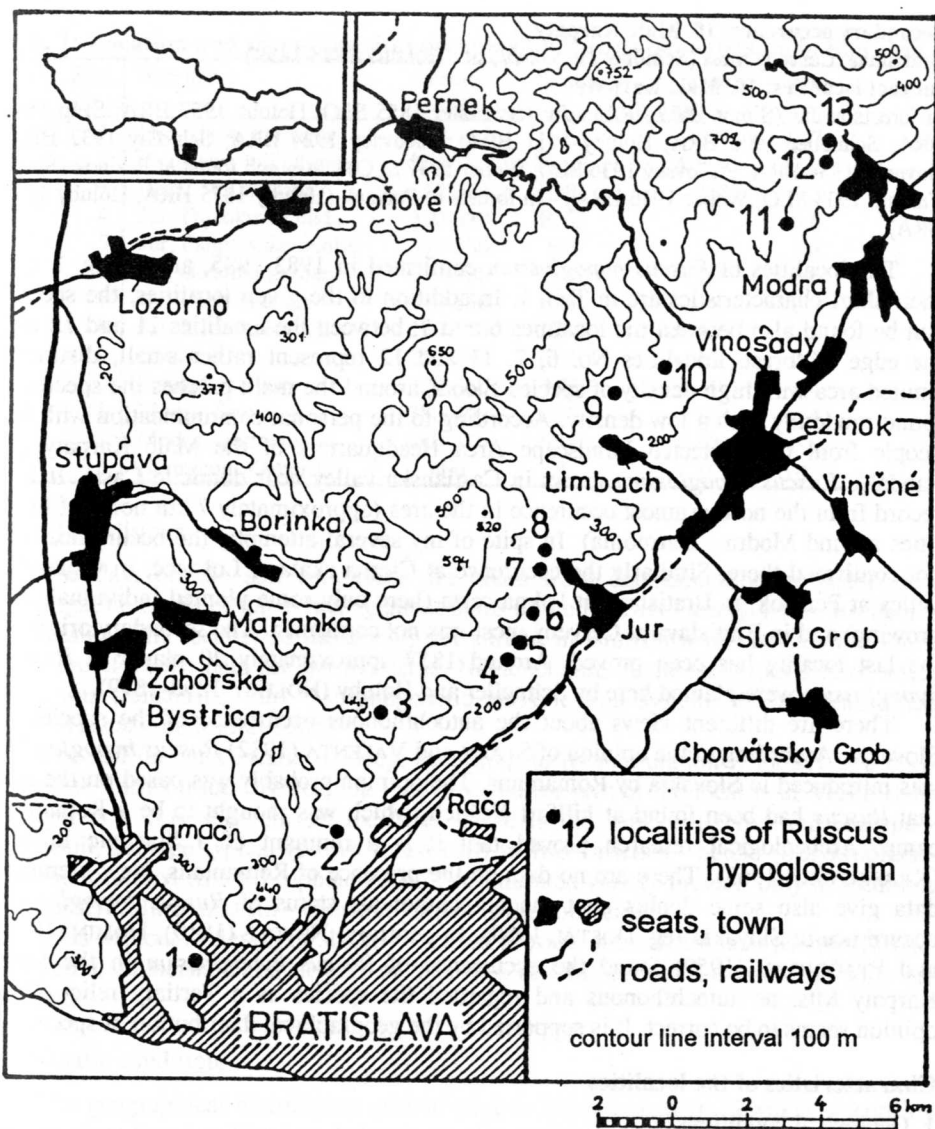


Fig. 2 - Distribution of *Ruscus hypoglossum* L. in the Malé Karpaty Mts. (SW Slovakia)

BRA; Valenta 1933 BRA; Dočolomanský 1963 BRA; lit.: STARÝ, VALENTA 1932; FUTÁK 1941; PTAČOVSKÝ 1959; NEUHÄUSLOVÁ - NOVOTNÁ 1970; HALADA 1985) - Limbach (Zigmundík 1915 BRA; lit.: DOMIN 1925; HALADA 1985) - Pezinok, calvary (lit.: HOLUBY 1916; PTAČOVSKÝ 1959; HALADA 1985) - Pezinok, Cajlanská dolina (lit.: HOLUBY 1916; PTAČOVSKÝ 1959) Modra, Široké (lit.: HALADA 1985) - Modra, Harmónia (lit.: HALADA 1985) - Modra, Harmónia, Zámčisko (lit.: HALADA 1985) - Lošonec, Čierna skala (lit.: KRZISCH 1856)

