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THE FIRST RECORD OF *RUBUS APRICUS* IN HUNGARY – ON THE SOUTHERNMOST POINT OF THE DISTRIBUTION AREA

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Abstract: *Rubus apricus* Wimmer, a species of *Rubus* ser. *Hystrix*, is reported from Hungary for the first time. This Central European nemophilous bramble species was found at one locality in the Belső-Somogy region, SW Hungary; this record represents by far the southernmost point of the distribution area. The paper presents the morphological features and the distribution of the species, the characterisation of the newly discovered locality and the assessment of the possible ways of the introduction. The Hungarian locality is situated in an approximately 80 years old, mixed Scots pine plantation on mesic-slightly wet acidic sandy soil. The origin of the stand is dubious, both the introduction by saplings or seeds used during forest regeneration and a natural colonisation as a consequence of a long distance endozoochorous dispersal event are possible. The latter variation is strengthened by the presence of several other Central European bramble species in the pine plantations of the region.

Key words: distribution, floristics, long distance dispersal, Pannonian Basin, zoochory

INTRODUCTION

The subgenus *Rubus* L. with nearly one thousand European species is a taxonomically complicated group of vascular plants. The representatives of the subgenus form a complex of few sexual diploid species and many apomict polyploids. *Rubus* subsect. *Hiemales* E. H. L. Krause ser. *Hystrix* Focke includes species originating via hybridisation of glandular and non-glandular, prickle-rich biotypes (HOLUB 1992, WEBER 1995). The number of the species in this series is approximately 50; the centre of their distribution is in northwestern Europe (see KURTTO *et al.* 2010, map 4436).

The Pannonian Basin was practically unexplored from the point of view of modern batology (KIRÁLY *et al.* 2013a, b), and although there are old records of the ser. *Hystrix* from Hungary, they are useless from taxonomic point of view. These accounts (e.g. GÁYER 1925, HESLOP-HARRISON 1968, KISS 1951, 1966) base on the monograph of SUDRE (1913) and contain repeated misinterpreta-

tions. The modern assessment of *Rubus* in Atlas Florae Europaeae (KURTTO *et al.* 2010) did not document any representatives of the ser. *Hystrix* occurring in Hungary. In this paper the author presents the first record of *Rubus apricus* (as the only representative of ser. *Hystrix*) in Hungary, based on both comprehensive herbarium revisions and field studies.

MATERIAL AND METHODS

The field study was carried out between 2009 and 2015 at approximately 800 localities with brambles in Hungary; the author also visited several localities of *Rubus apricus* in Austria, Germany and the Czech Republic (for the list of these reference sites and collections see Appendix 1). The coordinates of each locality were determined using a Garmin GPSMAP 64 handheld device in WGS 84 projection. The quadrant numbers of the Central European Flora Mapping System are as presented by NIKLFELD (1971), grid units of the Atlas Florae Europaeae (AFE) are as defined by KURTTO *et al.* (2010).

The material of the following herbaria was searched for previous records of *Rubus* ser. *Hystrix* in the area studied: BP, BPU, DE, GJO, GZU, LJU, JPU, OL, PECS, SAMU, W, ZA (acronyms defined by THIERS 2015). The morphological characterisation of *R. apricus* was based on literature sources (HOLUB 1995, WEBER 1995, ZIELIŃSKI 2004), and, additionally, on the examination of 5 specimens from the single Hungarian locality, and of further 10 specimens collected by the author in other Central European countries. First-year stems with well-developed leaves were examined together with the flowers and fruits of living material; abnormal and injured plants were not included in the assessments. The terms that were adopted in the ecological characterisation of the species are those defined by WEBER (2001).

RESULTS AND DISCUSSION

Rubus apricus Wimmer

Rubus apricus Wimmer, Jahresb. Schles. Ges. Vaterl. Cult. 33: 87, 1856. ≡ *Rubus koehleri* Weihe et Nees subsp. *apricus* (Wimmer) Sudre, Rubi Eur. 184, 1912.

Description (see also Figs 1–2)

Shrub, usually up to 80 cm tall. First-year stems low-arching, rooting at apex, rounded or bluntly angled, 3–6 mm in diameter, usually reddish tinted to claret-red when exposed to sun, with numerous hairs and up to 2 mm long stalked glands.



Fig. 1. First-year stem of *Rubus apricus* (photo: G. Király; SW Hungary, Csömend, 21.08.2015).



Fig. 2. Infructescence of *Rubus apricus* (photo: G. Király; SW Hungary, Csömend, 21.08.2015).

Prickles of considerably diverse size, the longer ones 10–20 per 5 cm length of stem, straight or slightly declining, slender, 4–6 mm long, gradually passing into smaller acicles and stalked glands. Leaves pedate, (3–)5-foliolate; usually dark dull green above, with 10–50 adpressed hairs per cm² above; the underside is nearly glabrous, with few patent hairs on the veins. Terminal leaflets narrowly obovate or elliptical, rounded or slightly cordate at the base, apex acuminate, 10–20 mm long; petiolules 20–35% as long as its lamina. Basal leaflets often somewhat asymmetrical, narrowly ovate to ovate, their lamina 0.8–0.9(–1.0) times as long as the petiole of the leaf; petiolules 2–4 mm long. Indentation periodic, with incisions 2–5 mm deep, teeth ± wider as long, often recurved. Petioles hairy, with many ± sessile and stalked glands and acicles, and with 15–25 indistinctly curved prickles. Stipules filiform, with scattered hairs and stalked glands. Inflorescence paniculate, pyramidal to near cylindrical, with erecto-patent to almost patent branches; usually leafy to the apex, upper 1(–2) leaves simple, the ones below 3-foliolate; indumentum of inflorescence leaves is similar to those of the first-year stems. Inflorescence axis densely hairy with many longer patent hairs and stalked glands of various length. Prickles declining, conspicuously slender, straight or slightly curved, 2–5 mm long. Pedicels 0.5–1.5 cm long, densely hairy, with many stalked glands and slender prickles 2–3 mm long. Sepals patent or somewhat reflexed after anthesis, greyish-hairy with bristles and stalked glands; pricklets usually present. Petals not touching each other, white, ± elliptical, 9–12 mm long. Stamens longer than the styles; anthers glabrous. Carpels and receptacle glabrous or with few hairs. Flowering VI–VIII.

Iconography (selection): HOLUB 1995: 167 (fig. 32/1), PAGITZ *et al.* 2014: 204 (fig. 7), TRÁVNÍČEK and MAURER (1998): 98 (fig. 7), ZIELIŃSKI 2004: 194–195 (figs 168–169).

Rubus apricus is relatively easily distinguishable from all other Central European bramble species. *R. holzfussii* Sprib. and *R. siemianicensis* Sprib. have somewhat similar leaves but their first-year stem prickles and inflorescence are significantly different. However, local morphotypes created via hybridisation of taxa with and without stalked glands can cause serious difficulties. Such morphotypes occur mainly in mountain regions (also in Hungary) where types of *Rubus* ser. *Glandulosi* (Wimmer et Grab.) Focke are widespread.

Distribution area

Rubus apricus is a widely distributed Central European species occurring from Belgium through central Germany to the Czech Republic, southern Poland and the westernmost part of Ukraine (HOLUB 1995, KURTO *et al.* 2010, MOSYAKIN and FEDORONCHUK 1999, WEBER 1995, ZIELIŃSKI 2004); it is rare in Austria

(PAGITZ *et al.* 2014, TRÁVNÍČEK and MAURER 1998) and in Slovakia (Havliček *et al.* in KURTTÓ *et al.* 2010). The nearest occurrences to Hungary are situated in the Thaya Valley in Lower Austria (TRÁVNÍČEK and MAURER 1998), and in the Inovec and Zemplén Mts in Slovakia, respectively (Trávníček, pers. comm.). Furthermore, a single collection is known from the northeastern Carpathians not far from the state border (Ukraine, Beregszentmiklós = Chynadiyovo, leg. A. Margittai, July 1920, BP 470153), which probably belongs to *R. apricus*.

Maps (selection): KURTTÓ *et al.* (2010): 222 (map 4444, total range), WEBER (1990): 247 (Bavaria), ZIELIŃSKI (2004): 196 (map 170, Poland), ZÜNDORF *et al.* (2006: 218) (Thuringia).

Occurrence in Hungary (see also Fig. 3)

Rubus apricus was formerly reported by KISS (1966, repeated by Soó 1980) from the Zemplén Mts (“Labarla”) under the name “*R. koehleri* subsp. *apricus*”. However, voucher specimens are not presented, and, additionally, we could not find any former collections of the species in the herbaria examined. Knowing of the great number of taxonomic and/or nomenclatural misinterpretations made by Kiss, and also of his repeated misidentifications in the course of herbarium revisions in BP, this record could not be accepted. This applies in regard to other reports of KISS (1966) on representatives of ser. *Hystrix* as well.



Fig. 3. Distribution of *Rubus apricus* in Hungary.

Rubus apricus was recorded for the first time in Hungary in 2014 south of Lake Balaton in the Belső-Somogy region. The identification was also strengthened by B. Trávniček on the basis of the voucher specimens. This record represents by far the southernmost locality of the species.

SW Hungary, Somogy County, 1.1 km W–NW of Csömend village, forest along the road to Marcali, near the “Forester’s lodge”, 46.57543° N, 17.47319° E, 125 m (9470.2; AFE: 33TXM3), leg. G. Király, 20.06.2014, OL and herb. G. Király.; leg. G. Király, 21.08.2015, BP and herb. G. Király.

The stand of *Rubus apricus* covers here more than 100 m² large patches within an area of 1 hectare; based on its significant size, this stand is surely of respectable age. Field surveys for other occurrences at more than twenty locations in the neighbouring forest blocks were not successful. The origin of the stand is dubious, both the introduction by saplings or seeds used during forest regeneration, and a natural colonisation as a consequence of a long distance endozoochorous dispersal event are possible. The latter variation is strengthened by the presence of several other Central European bramble species (e.g. *R. ambrosius* Trávniček et Oklejewicz, *R. clusii* Borbás, *R. juennensis* Maurer, *R. styriacus* Halácsy) in the Scots pine plantations of the Belső-Somogy region.

Ecology

Rubus apricus belongs to a group of brambles preferring nutrient-rich, slightly acidic, semi-dry to wet and occasionally water-logged soils. As a nemophilous plant, it prefers areas with high relative humidity and usually occurs in half-shaded or shaded stands; sunny localities are conspicuously avoided. The specimens found at the peripheries of the distribution area in the direction of sub-continental regions (like in the single Hungarian stand) were typically weakly developed or even sterile. In Central Europe the species is originally connected with beech-dominated and mixed deciduous forests, but has recently expanded abundantly into degraded woodlands of conifers (first of all in Norway spruce plantations), often with a nitrophilous herbaceous plant layer, and is clearly tolerant of disturbance.

The Hungarian locality is situated in an approximately 80 years old, already mixed, bramble-rich Scots pine plantation on mesic-slightly wet, acidic sandy soil. The pine stand has already been opened, and several younger deciduous trees (e.g. *Carpinus betulus* L., *Populus tremula* L., *Quercus robur* L.) develop in the gaps, respectively. Due to the favourable light conditions, brambles have a carpet-like appearance in the forest. *R. apricus* grows here in a *Rubus* community together with *R. bifrons* Vest, *R. praecox* agg., *Rubus* ser. *Vestitii* (Focke) Focke and *Rubus* sect. *Corylifolii* Lindley; herbs (e.g. *Brachypodium sylvaticum* (Huds.) P. Beauv., *Carex sylvatica* Huds., *Dryopteris carthusiana* (Vill.) H. P. Fuchs, *Oxalis stricta* L., *Urtica dioica* L.) have relatively low cover.

* * *

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Összefoglaló: A dolgozat a *Rubus apricus* (*Rubus* ser. *Hystrix*) első magyarországi lelőhelyéről számol be, amely egyben a faj jelenleg ismert legdélebbi előfordulása. A ser. *Hystrix* elsősorban közép-európai, árnyas, üde erdőkben élő szederfajokat foglal magába, amelyek legfontosabb morfológiai bélyegei a növényt sűrűn borító különböző méretű tüskék és mirigyek. Bár a csoport (és a *R. apricus*) hazai előfordulását korábbi források is említik, ezek nem megfelelően dokumentáltak, erősen kétesek. A 2014-ben felfedezett magyarországi állomány Belső-Somogyban, Csömend község határában, egy idős telepített erdeifenyvesben található, ahol a faj mintegy 1 hektáros területen jelentős borítással fordul elő. Az állomány eredete nehezen tisztázható: felvetődik az erdészeti szaporítóanyaggal történő egykori behurcolás, ill. a madarak közvetítésével, természetes úton bekövetkező megtelepedés lehetősége is. Utóbbi változatot támogatják a térség fenyeveiben kimutatott más, távoli elterjedési centrummal rendelkező szederfajok (*R. ambrosius*, *R. clusii*, *R. juennensis*, *R. styriacus*) ismert populációi.

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Appendix 1. List of localities of *Rubus apricus* reference-material collections.

Austria: Vorarlberg, Schlins, forests S of Jagdberg, 47.20322° N, 9.70325° E, 546 m; leg. G. Király, 08.08.2014, herb. G. Király. – Vorarlberg, Schruns, along the forest road to Kloster Gauenstein, 47.08268° N, 9.90644° E, 700 m; leg. G. Király, 08.08.2014, herb. G. Király.

Czech Republic: 0.9 km W of Dolní Novosedly, coniferous forests and clearings, 49.33037° N, 14.18392° E, 513 m; leg. G. Király and B. Trávníček, 30.08.2013, herb. G. Király. – 0.2 km N of Strakonice, pine forest along the road to Únice, 49.27886° N, 14.183921° E, 473 m.; leg. G. Király, B. Trávníček and V. Žila, 31.08.2013, herb. G. Király. – 0.4 km W–SW of Třebýcinka, along the road to Švihov, forest fringes, 49.48426° N, 14.30784° E, 415 m; leg. G. Király, B. Trávníček and V. Žila, 31.08.2013, herb. G. Király. – 0.5 km E of Bezděkov, young crops along the road to Hráz, 49.47833° N, 14.34106° E, 441 m; leg. G. Király, B. Trávníček and V. Žila, 31.08.2013, herb. G. Király. – 0.1 km NW of Křemže-Pasíčka, spruce forest, 48.91172° N, 14.30040° E, 582 m; leg. G. Király and B. Trávníček, 01.09.2013, herb. G. Király. – 1.0 km E of Raspenava, along the road to Ludvíkov, mixed forests, 50.90609° N, 15.15918° E, 398 m; leg. G. Király, 25.08.2014, herb. G. Király. – 1.4 km W of Zlešička along the road to Nahořany, forest fringes, 49.13024° N, 13.84227° E, 691 m, leg. G. Király and M. Hohla, 27.08.2014, herb. G. Király.

Germany: Sachsen, 1.3 km W–NW of Bischdorf, “am Rotstein”, mixed forests, 51.10405° N, 14.75553° E, 338 m; leg. G. Király, 25.08.2014, herb. G. Király.