Typification of Ranunculus binatus Kit. ex Rchb. (Ranunculaceae)

Author: Dunkel, Franz G.

Source: Willdenowia, 41(2) : 239-243

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: https://doi.org/10.3372/wi.41.41204

FRANZ G. DUNKEL[1]

Typification of *Ranunculus binatus* Kit. ex Rchb. *(Ranunculaceae)*

Abstract

Dunkel F. G.: Typification of *Ranunculus binatus* Kit. ex Rchb. *(Ranunculaceae)*. – Willdenowia 41: 239–243. December 2011. – Online ISSN 1868-6397; © 2011 BGBM Berlin-Dahlem.
Stable URL: http://dx.doi.org/10.3372/wi.41.41204

Reichenbach published *Ranunculus binatus* in his Flora Germanica Excursoria in 1832, based on a specimen collected by Welden in Transylvania, Romania, and attributed the name to Kitaibel. Since then, the identity of *R. binatus* has been a focus of discussion by Schur, Janka, Schiller, Jasiewicz and further botanists, in particular since Schiller considered *R. binatus* a corner stone in the evolution of the *R. auricomus* complex. To clarify the concept of *R. binatus* and settle the application of the name, it is here typified. Because no specimen used with certainty by Reichenbach appears to be extant, a well preserved specimen in the herbarium Kitaibelianum, Budapest, identified by Kitaibel himself as *R. binatus,* collected by Genersich in northern Slovakia and morphologically agreeing well with the original description, is designated as the neotype of the name *R. binatus*.

Additional key words: *Ranunculus auricomus* complex, neotype, Romania, Slovakia

A *Ranunculus binatus* Kit., mely egykor önálló fajként ragyogott a botanika egén, ily módon lassan-lassan elhomályosult a kételkedés sürü felhöi közt, mit már-már el nem tünt a szemünk elöl.

[*Ranunculus binatus,* which was to admire as a lucent star at the botanical heaven, was pushed slowly, very slowly behind the clouds, and then we lost sight of it.]

Zs. Schiller (1917: 376)

Introduction

There are few nomenclatural problems in the *Ranunculus auricomus* complex (Goldilocks buttercup) compared to those of other apomictic species or the sunflower family genus *Hieracium*. On all taxonomic levels, the number of names in the literature of the 18th and 19th century for the *R. auricomus* complex is manageable. Linnaeus (1753: 551) knew only *R. auricomus,* Wimmer & Grabowski (1829: 127–129) listed five, Ascherson & Graebner (1898: 336–337) six and Hegi (1912: 607) nine varieties of *R. auricomus*. Most of these taxa are not attributable to any microspecies (Ericsson 1992).

The situation changed, after Rozanowa (1932) had detected the apomictic pseudogametic mode of reproduction in the *Ranunculus auricomus* complex. In analogy to other apomictic genera this fact has justified the treatment of the taxa of the *R. auricomus* complex at species level (Ericsson 1992). Since then about 800 species have been described and analysed.

Ranunculus binatus Kit. ex Rchb. was published in the Flora Germanica Excursoria by H. G. L. Reichenbach (1832: 723) on material from Romania. No other taxon of the *R. auricomus* complex initiated such a discussion concerning its characteristics and morphology. Reichenbach placed *R. binatus* equally to the species *R. auricomus, R. flabellifolius* and *R. cassubicus*. Already in 1856 Janka noted that *R. binatus* was classified by several authors partly as a good species close to *R. au-*

1 Am Saupurzel 1, 97753 Karlstadt, Germany; e-mail: f.g.dunkel@t-online.de

Fig. 1. *Ranunculus binatus* – A–C: neotype (A) and isoneotype (B, C) at BP-Kitaibelianum; D–E: fruits (D) and pilose receptacle (E) from specimen Rózsahegy, 23.5.1907, *B. Lányi* (BP 62976).

ricomus and *R. cassubicus,* partly as a variety of the latter (Grisebach & Schenk 1853: 313; Janka 1856: 346). Schur (1853: 26–27, 1866: 23), however, attached *R. binatus* more closely to *R. auricomus* due to its growth in damp eutrophic meadows and grassy orchards. Hegi (1912) synonymised *R. binatus* with the typical variety of *R. auricomus*. A heyday of debate was achieved by the publication of an article by Zsigmond (Sigmund) Schiller (1917). He regarded *R. binatus* as a stem form of *R. auricomus* s.l. According to Schiller's view, *R. binatus* and *R. flabellifolius* represent the corner stones of the whole complex. Consequently, all plants of the complex are derived as hybrids of the main species *R. auricomus, R. binatus, R. cassubicus* and *R. flabellifolius,* and could be explained by different hybrid formula (e.g. *R. binatus-cassubicus, R. cassubicus-binatus, R. binatus-auricomus, R. auricomus-binatus,* according to the morphological preponderance). He argued against all the botanists who reduced *R. binatus* to a form or variety of *R. auricomus*. In agreement with Schur, Schiller (1917) stated that *R. binatus* is readily identifiable by its small flowers, slender appearance, linear cauline leaves and its occurrence in damp meadows and meadow orchards.

Nyárády (1933: 87) adopted Schiller's hybrid system and presented an illustration of the supposed *Ranunculus binatus*. Also Jasiewicz (1956) tried to identify *R. binatus* in a correct manner. He equated the plants taken by Marklund as *R. auricomus* s.str. with *R. binatus* and described and emended the latter taxon consequently (*R. binatus* emend. Jasiev.). According to Ericsson (2001: 384), these plants are now classified as *R. acutiusculus* (Markl.) Ericsson. Finally, Soó (1964) disagreed with the conception of former authors, especially Schiller and Jasiewicz, and pointed out that *R. binatus* is rather heterophyllous according to the description obviously added by S. Jávorka (1935: 87). Plants matching the illustration by Nyárády (1933) and Jasiewicz (1956) were described by him as *R. pseudobinatus* Soó (1964).

The present paper aims at typifying the name *Ranunculus binatus,* to (a) settle the application of the name, and (b) clarify the concept of this taxon as a prerequisite to understand its role in the evolution of the *R. auricomus* complex.

Typification

The valid publication of the name *Ranunculus binatus* was effected in the Flora Germanica Excursoria (Reichenbach 1832: 723), were the name is attributed to P. Kitaibel (1757–1817) and the original material cited as "In Siebenbürgen: v. Welden". Hence, Reichenbach had a specimen at hand, which had been collected by Franz Ludwig von Welden (1782–1853) (Vegter 1988) in Transylvania, Romania, and which apparently had been identified with the unpublished Kitaibel species *R. binatus.* We do not know how Reichenbach received the specimen.

The corresponding specimen has not been traced in the Reichenbach collection now at Vienna (W), which is no surprise because (1) H. G. L. Reichenbach's herbarium at Dresden was destroyed in 1849 by fire (Stafleu & Cowan 1983) and (2) all *Ranunculaceae* specimens of the Reichenbach herbarium in Vienna, including those of H. G. L. Reichenbach's later herbarium, were destroyed by fire in 1945 (pers. comm. E. Vitek, Vienna).

It is also dubious that another specimen of *Ranunculus binatus* collected by Welden is extant. The personal collection of Welden is preserved at the Herbarium of Regensburg (REG) (Vegter 1988). There exists in fact a specimen collected 1817 and determined as *R. binatus,* but it is completely uncertain whether Welden is the collector (H. Gigglberger in litt. 2008). The label is not to decipher with certainty, but has no geographical indication of Transylvania. One word, can perhaps be identified as "Segesvar", a Transylvanian town now called "Sigişora". However, if Reichenbach had known this specimen, he would have indicated that provenance more precisely in the Flora Germanica Excursoria (Reichenbach 1832) analoguous to the entries for *R. flabellifolius* or *R. cassubicus*.

Furthermore, it is conspicuous that Reichenbach (1838–39) listed *Ranunculus binatus* in the index of his later Icones Florae Germanicae et Helveticae with the number 4600, but omitted this number and species entirely in the text and plates. This could suggest an early loss of such a specimen of *R. binatus* in his collection.

There is, on the other hand, a *Ranunculus binatus* sheet in the Herbarium Kitaibelianum of the Herbarium of the Natural History Museum Budapest (BP), with two plants, which are unambiguous and in a good condition. Kitaibel himself classified the plants as *R. binatus* (*"Ranunculus binatus* mihi*"*) (Fig. 1) and they agree well with Reichenbach's original description. Hence, this material represent *R. binatus* without doubt. Samuel Genersich (1768–1844), a Zipsian-German physician and botanist, collected the plants of this sheet in the ancient county of Liptov, a historical and geographical region in northern Slovakia. More detailed information about the type locality is not available.

As long as no original material is known to be preserved, it seems the most appropriate solution to use the material on that sheet in the Herbarium Kitaibelianum to designate a neotype. For this purpose the material is excellently qualified. The right plant of the specimen is chosen as neotype, the left one represents an isoneotype.

Ranunculus binatus Kit. ex Rchb., Fl. Germ. Excurs. 2: 723. 1832.

Neotype (designated here): [Slovakia], "E Liptovia ab Genersich, in vallibus sylvat[icis] / Herbar. Kitaibel 4811 / Mus. nat. hung. fasc. XVI, no. 171 / *Ranunculus binatus* mihi [Kitaibel]", [*S. Genersich*] the right plant (BP-Kitaibel; isoneotype: the left plant on the same sheet) – Fig. 1A–C.

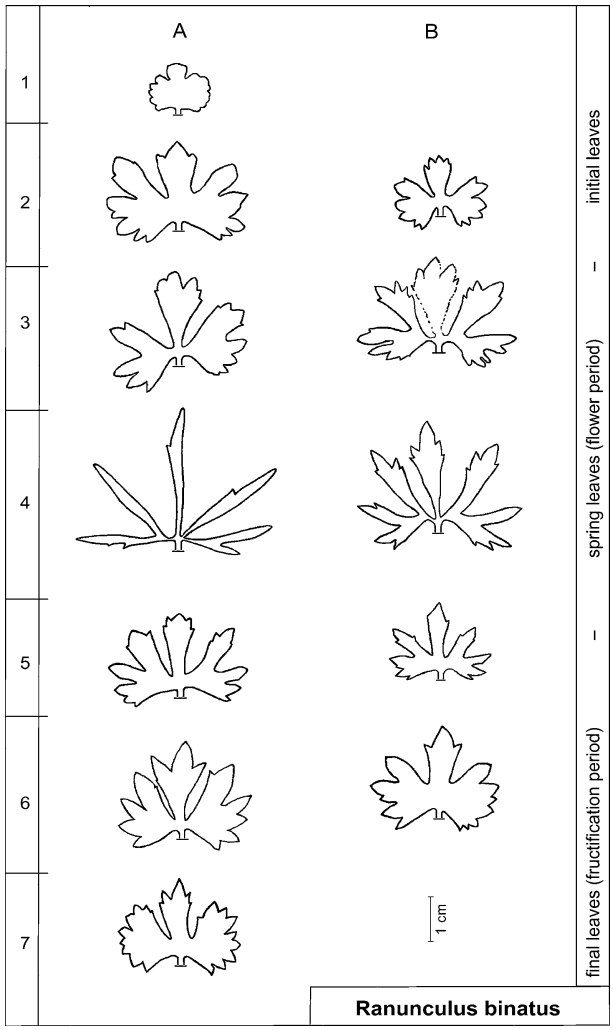

Fig. 2. Basal leaf cyle of *Ranunculus binatus* – A: neotype, compare Fig. 1A; B: isoneotype, compare Fig. 1B.

Identity and placement of *Ranunculus binatus*

The type material chosen (Fig. 1) allows us to clarify the concept of this taxon. Evidently, the basal leaves are moderately heterophyllous (Fig. 2), the flowers are small with 0–3 petals, the receptacle is densely pilose. In contrast, the similar *Ranunculus pseudobinatus* possesses a glabrous receptacle.

There is a further specimen of *Ranunculus binatus* from the same region as the neotype at BP: Rózsahegý [Ružomberok, bog next to the Military training area], 23.5.1907, *B. Lányi* (BP 62976). The pilose receptacle and fruits of this collection illustrate Fig. 1D–E. It would be desirable to find *R. binatus* in a bigger population in the Liptov region. Only then the variability of the pilosity of the receptacle can be judged.

The material clearly corroborates Soó's view (1964) that Schiller's (1917) interpretation of *Ranunculus binatus* is wrong. *R. binatus* is not a stem form of the whole *R. auricomus* complex but represents only one of the numerous microspecies. Already Schiller (1917) mentioned transition forms of *R. binatus* to *R. auricomus*. In the classical grouping of the complex *R. binatus* can easily be attributed to the *R. incdecorus* group (Borchers-Kolb 1985; Hörandl & Gutermann 1998).

Schiller (1917) knew of the Kitaibel collection at BR and even saw the plants here chosen as neotype and isoneotype of *Ranunculus binatus*. However, these plants did not conform to his concept of *R. binatus* and were not collected in Transylvania as indicated by Reichenbach. Although Schiller noticed the herbarium label by Kitaibel "*Ranunculus binatus* mihi", he did not deal with these specimens more intensely.

Although several efforts were taken to identify the Linnean *Ranunculus auricomus,* the debate concerning its identity is still ongoing (Benson 1954: 354; Marklund 1940; Koch 1939; Kvist 1987). In contrast to *R. auricomus,* and due to the well-preserved material, the effected typification of *R. binatus* is clear and non-ambiguous. The discussion concerning the characteristics of *R. binatus,* which has lasted over a hundred years, can now be ended.

Acknowledgements

I would like to sincerely thank the herbarium curators Z. Barina and D. Píkó (Herbarium of the Hungarian Natural History Museum Budapest, Hungary) and H. Giglberger (Herbarium of the University of Regensburg, Germany) for their kind support. I highly appreciate the assistance of A. Gordon (Göttingen, Germany) for improving the English text and of P. Péterfy (Karlstadt, Germany), for translating the Hungarian article of Sz. Schiller into German. I am grateful for helpful comments of two anonymous reviewers.

References

Ascherson P. & Graebner P. 1898–99: Flora des Nordostdeutschen Flachlandes. – Berlin: Borntraeger.

Benson A. 1954: Supplement to a treatise on the North American *Ranunculi*. – Amer. Midland Naturalist **52:** 328–369.

Borchers-Kolb E. 1985: *Ranunculus* sect. *Auricomus* in Bayern und den angrenzenden Gebieten II. Spezieller Teil. – Mitt. Bot. Staatssamml. München **21:** 49–300.

Ericsson S. 1992: The microspecies of the *Ranunculus auricomus* complex treated at the species level. – Ann. Bot. Fenn. **29:** 123–158.

Ericsson S 2001: Microspecies within the *Ranunculus auricomus* complex. – Pp. 382–397 in: Jonsell B. (ed.), Flora nordica **2.** – Stockholm: Bergius Foundation.

Grisebach A. & Schenk A. 1852: Iter hungaricum anno 1852 susceptum. Beiträge zur Systematik der ungarischen Flora. – Arch. Naturgesch. (Berlin) **18(1):** 291–362.

Hegi G. 1912: Illustrierte Flora von Mitteleuropa **3.** – München: Hanser.

Hörandl E. & Gutermann W. 1998a: Der *Ranunculus auricomus*-Komplex in Österreich 1. Methodik; Gruppierung der mitteleuropäischen Sippen. – Bot. Jahrb. Syst. **120:** 1–44.

Janka V. 1856: Über einige *Ranunculaceen*. – Österr. Bot. Wochenbl. **6:** 345–347.

Jasiewicz A. 1956: Badania nad jaskrami z cyklu *Auricomi* Owcz. w okolicach Krakowa i w północnej części Karpat. De Ranunculis e circulo Auricomi Owcz. in regione Cracoviensi nec non in Carpatorum parte boreali crescentibus. – Fragm. Florist. Geobot. **2:** 62–110.

Jávorka A. 1935: Herbarium Kitaibelianum IV. – Ann. Mus. Nat. Hung. **29:** 55–102.

Koch W. 1939: Zweiter Beitrag zur Kenntnis des Formenkreises von *Ranunculus auricomus* L. – Ber. Schweiz. Bot. Ges. **49:** 541–554.

Kvist G. 1987: Identity of the material of the *Ranunculus auricomus* group in the Linnaean herbarium. – Ann. Bot. Fenn. **24:** 73–77.

Linnaeus C. 1753: Species plantarum. – Holmiae [Stockholm]: L. Salvius.

Marklund G. 1940: Einige Sippen der *Ranunculus auricomus*-Gruppe. – Memoranda Soc. Fauna Fl. Fenn. **16:** 45–54.

Nyárády E. I. 1933: Despre grupa *"Auricomus"* a genului *Ranunculus*. – Bul. Grăd. Bot. Univ. Cluj **13:** 85–101.

Reichenbach H. G. L. 1832: Flora germanica excursoria **2.** – Lipsiae [Leipzig]: Hofmeister.

Reichenbach H. G. L. 1838–39: Icones florae germanicae et helveticae **3.** – Lipsiae [Leipzig]: Hofmeister.

Rozanowa M. A. 1932: Опыт аиалитической моиографин conspecies *Ranunculus auricomus* Korsh. [Essay of an analytical monography of conspecies *Ranunculus auricomus* Korsh.]. – Trudy Petergofsk Estestv-Nauchn Inst. **8:** 19–148.

Schiller Sz. 1917: *Ranunculus binatus* Kit. philogenetikus-rendszertani kísérlet. – Math. Természettud. Ért. **35:** 361–447.

Schur F. 1853: Beiträge zur Kenntnis der Flora von Siebenbürgen. Fünfter Artikel, erste Reihe. Erläuterungen und Bemerkungen über die im Sert. flor. Transsilv. verzeichneten siebenbürgischen Pflanzen. – Verh. Mitth. Siebenb. Vereins Naturwiss. Hermannstadt **4(2):** 24–32.

Schur F. 1866: Enumeratio plantarum Transsilvaniae. – Vindobonae [Wien]: Braumüller.

Soó R. 1964: Die *Ranunculus auricomus* L. emend. Korsh. Artengruppe in der Flora Ungarns und der Karpaten **I.** – Acta Bot. Acad. Sci. Hung. **10:** 221–237.

Stafleu F. A. & Cowan R. S. 1983: Taxonomic literature 4. – Regnum Veg. **110.**

Vegter I. H. 1988: Index herbariorum, collectors 7. – Regnum Veg. **117.**

Wimmer F. & Grabowski H. 1829: Flora Silesiae **2(1).** – Vratislava [Breslau]: Korn.