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Remarks on the taxonomy of *Thalictrum petaloideum* L.,
Th. podolicum Lecoy. and
Th. uncinatum Rehmman (Ranunculaceae)

RALF HAND

ABSTRACT

HAND, R. (2005). Remarks on the taxonomy of *Thalictrum petaloideum* L., *Th. podolicum* Lecoy. and *Th. uncinatum* Rehmman (Ranunculaceae). *Candollea* 60: 79-86. In English, English, French and German abstracts.

Thalictrum uncinatum Rehmman, thought to be an endemic of Ukraine, does not have discontinuous characters when compared to its close relative *Th. petaloideum* L. from Asia and should be treated as synonym of the latter. *Thalictrum podolicum* Lecoy. is another synonym for the European plants. The few occurrences in Europe are remarkably isolated from the main area in Central and East Asia. A map of the area of *Th. petaloideum* is provided for the first time.

RÉSUMÉ

HAND, R. (2005). Remarques sur la taxonomie de *Thalictrum petaloideum* L., *Th. podolicum* Lecoy. et *Th. uncinatum* Rehmman (Ranunculaceae). *Candollea* 60: 79-86. En anglais, résumés anglais, français et allemand.

Entre *Thalictrum uncinatum* Rehmman, jusqu'alors considéré comme une plante endémique de l'Ukraine de l'Ouest, et *Th. petaloideum* L. d'Asie, il n'existe pas de différences morphologiques qui pourraient justifier leur séparation comme espèces. Par conséquent, *Th. uncinatum* n'est plus qu'un synonyme de *Th. petaloideum*. Quant au nom *Th. podolicum* Lecoy. il s'agit d'un autre synonyme de la population européenne. Les rares stations européennes se trouvent remarquablement éloignées de celles existant en Asie centrale et orientale. L'aire de répartition de *Th. petaloideum* dans toute l'Eurasie est illustrée pour la première fois par une carte.

ZUSAMMENFASSUNG

HAND, R. (2005). Anmerkungen über die Taxonomie von *Thalictrum petaloideum* L., *Th. podolicum* Lecoy. und *Th. uncinatum* Rehmman (Ranunculaceae). *Candollea* 60: 79-86. In Englisch, englische, französische und deutsche Zusammenfassungen.

Zwischen *Thalictrum uncinatum* Rehmman – bisher als Lokalendemit der westlichen Ukraine betrachtet – und dem asiatischen *Th. petaloideum* L. gibt es keine morphologischen Unterschiede, die eine Trennung der Sippen rechtfertigen würden. *Thalictrum uncinatum* sollte als Synonym von *Th. petaloideum* betrachtet werden. Bei dem Namen *Th. podolicum* Lecoy. handelt es sich um ein weiteres Synonym für die europäischen Populationen. Die wenigen europäischen Vorkommen liegen bemerkenswert weit entfernt vom Hauptareal der Art in Zentral- und Ostasien. Eine Karte des Gesamtareals von *Th. petaloideum* veranschaulicht erstmals die Verbreitung in Eurasien.

KEY-WORDS: RANUNCULACEAE – *Thalictrum* – Ukraine – Taxonomy – Chorology

Introduction

Among 15 accepted European species of *Thalictrum* L., *Th. uncinatum* Rehmman has been described last (AKERROYD, 1993). According to JALAS & SUOMINEN (1989), this endemic of the western Ukraine occurs in three units of the *Atlas Florae Europaeae* mapping system only.

Surprisingly, there is no comment on the somewhat problematic taxonomy of this species in *Flora Europaea* (AKERROYD, 1993). This might be explained by the turbulent history and changing botanical traditions of the region. Knowledge about *Th. uncinatum* might have been lost. Until 1918, the area was part of Galicia within the Austrian-Hungarian empire, it changed to Poland after World War I and became part of the Soviet Union after World War II. Now the region belongs to the independent Ukraine.

A few years after the description of *Th. uncinatum*, BŁOCKI (1883) already questioned its species rank. He compared it to *Th. petaloideum* L., a mainly Central Asian taxon not known to occur in Europe at that time. He cultivated material from the *locus typicus* and sent specimens to Garcke (Berlin) and Regel (St. Petersburg), the latter an excellent authority of the genus in Russia (see REGEL, 1861). Both confirmed the identity with *Th. petaloideum* (BŁOCKI, 1888). LECOYER (1885: 322), the monographer of the genus, did not see original material at all but a fragment of a plant from Ukraine labelled as *Th. uncinatum*, which he synonymized with *Th. petaloideum*. His opinion was shared by ZAPAŁOWICZ (1906) and later by PACZOSKI (1927). The latter included a brief discussion about the obviously minor differences of both taxa. *Thalictrum petaloideum* has been included in the flora of Romania based on an obviously doubtful record in the Northeast of the country, close to the Ukrainian occurrences; the author does not mention *Th. uncinatum* (NYÁRÁDY, 1953). On the other hand, *Th. uncinatum* is accepted as species without further discussion in modern floras and checklists of the Ukraine (most recently MOSYAKIN & FEDORONCHUK, 1999). This may have led AKEROYD (1993) to accept the microendemic species in the *Flora Europaea* treatment. TAMURA (1995) mentioned it as member of *Thalictrum* subsect. *Petaloides* Prantl. This group of taxa is characterized e.g. by corymbiform inflorescences, dilated filaments and strongly ribbed achenes.

However, no author even compared *Th. uncinatum* and *Th. petaloideum* in detail. No such studies could be found in the literature. Even though no original material of *Th. uncinatum* has been seen by the author, the existence of specimens collected by Rehmman at the type locality and specimens in the Berlin and Jena herbaria corresponding to BŁOCKI's statements (see above) gave a reliable basis to compare *Th. uncinatum* with a selection of *Th. petaloideum* specimens from different parts of Asia.

Results

Some taxonomically important characters, mentioned in literature cited and based on own studies, have been evaluated. The results are given in Table 1, completed by data from the literature.

Obviously, European and Asian populations have not yet developed clear discontinuities in their morphological characters. European plants tend to be more delicate in respect to general height, leaf and leaflet size. But such plants can be found in Asia as well. When comparing the results of own measurements and those given in the literature it becomes evident that even distinguishing geographically defined subspecies is not possible. No mature achenes of European plants have been seen but no relevant differences to Asian populations are mentioned in the literature. Most of the characters listed in Table 1 vary within populations or even single individuals. Thus, BŁOCKI's (1888) earlier recommendation to treat the European *Th. uncinatum* as a synonym of *Th. petaloideum* has been confirmed.

DEZHI & GUANGHUA (2001) accepted two varieties of *Th. petaloideum* (var. *supradecompositum* (Nakai) Kitag. and the typical one) occurring sympatrically in parts of north-eastern China. They differ only in shape of the leaflets (narrowly oblong, lanceolate, narrowly ovate in var. *supradecompositum*). It should be added that the original description of *Th. supradecompositum* Nakai

by NAKAI (1932) is contrary as regards leaflet shape (rotundate to broadly ovate). Generally, this character varies extremely within *Th. petaloideum*. Plants with predominantly entire leaflets occur sporadically, those with narrowly oblong, lanceolate or narrowly ovate leaflets occur mostly but not exclusively in the eastern half of the Asian area.

Until additional evidence by e.g. cultivation can be supplied, it is recommended to treat *Th. petaloideum* as species without subspecific differentiations. No well defined geographical and ecological differences correlated with morphological ones exist. Even the existence of well defined mere morphological varieties occurring sympatrically is still questionable.

Apart from the isolated, obviously relictual area in the western Ukraine, the species is known to occur in Russia, Kazakhstan, Kyrgyzstan, Mongolia, China and North Korea (see Fig. 1, based on own data and those by FRISEN, 1993; GRUBOV, 2001; LUFEROV, 1995; NIKITINA, 1955; PAVLOV, 1961; WANG, 2000). The map should be treated as provisional because of the fragmentary chorological knowledge in many parts of Asia.

The area of *Th. petaloideum* is highly disjunct (see also GAJEWSKI, 1932). Distances of more than 3000 km between European and Asian areas are unusual but not unique in the European flora. *Sibiraea altaiensis*, *Waldsteinia ternata* or several closely related *Saussurea* taxa also have similarly disjunct distribution patterns in Eurasia (see e.g. GAJEWSKI, 1932; MEUSEL & JÄGER, 1991). Within the genus *Thalictrum*, *Th. foetidum* L., a taxon not closely related to *Th. petaloideum*, shows a similar distribution: a main area in Central and East Asia, disjunct small areas in the steppe belt of Eurasia (and additionally in several mountain ranges of Europe). Both taxa occur sympatrically in the western Ukraine. *Thalictrum foetidum* bridges the gap between this region and western Siberia by isolated occurrences in Bashkiria where *Th. petaloideum* is absent (see HAND, 2001). Both taxa are often to be found in parts of southern Siberia, where they occur in stony and sandy steppes (pers. observations); according to herbarium labels the few spots in the Ukraine concentrate on gypsum occurrences. The taxon is accompanied there by other remarkable steppe elements, e.g. *Allium strictum*, *Helictotrichon desertorum*, *Polygala sibirica* and *Schivereckia podolica* (GAJEWSKI, 1932).

European specimens seen (all from Ukraine). – “In stepposis Masin? [partly illegibly] (loc. class.), Podolia, prope Ostrowcu [= Ostrovets near Horodenka]”, 01.VI.1930, *T. Wiśniewski Pl. Polon.* 9761 (B); “Olejowa pow Horodeń [= Horodenka] ski wzgórze Huskylowskie”, s. d., *A. Rehmann* (B); “Bilcze (Südostgalizien) [near Borščiv], in einem Gypstrichter auf dem Felde [illegibly]”, V.1884, *B. Błocki* (B); “Galizien, Bilcze”, V.1888, *B. Błocki* (JE); “Bilcze pr. Borszczów [= Borščiv], Galiciae orient.-austr., in collibus gypsaceis”, V.1893, *B. Błocki* (JE).

The *Thalictrum podolicum* case

LECOYER (1885), an advocate of a wide species concept in *Thalictrum* compared to most authors of his time, surprisingly described another taxon similar to *Th. petaloideum*. Based on plants cultivated at the Berlin Botanical Garden he named it *Th. podolicum* Lecoy. The plant was discovered by “H. Hoch” in the Podolia region (the European occurrences of *Th. petaloideum* (see above) are from the western part of that region). No material of this enigmatic plant could be found in European herbaria so far. The species was accepted by PACZOSKI (1927; collector corrected in “Hochstetter”) and NEVSKII (1937) but their descriptions merely repeat Lecoyer’s text. It is also mentioned in the *Flora Europaea* (AKERROYD, 1993) but it is not accepted as species. By comparing Lecoyer’s description with *Th. petaloideum*, it becomes obvious that *Th. podolicum* is nothing else than a large form of the former. All the listed characters lie within the variability of *Th. petaloideum*. The low quality of Lecoyer’s figures has been criticized (FRITSCH, 1895). But figure IV 2 showing some achenes and stamens of *Th. podolicum* clearly matches those *Th. petaloideum* specimens with unusually straight achene beaks.

Height (up to 70 cm), relatively large leaflets and the few flowered inflorescences may have been the result of cultivation. On the other hand, the occurrence of “poils aciculaires” on the leaflets seem very unusual for *Th. petaloideum* which is a glabrous plant. But generally, many *Thalictrum*

taxa have developed glabrous and more or less pubescent forms (see HAND, 2001) so that this character often has no taxonomic value. It is recommended to treat *Th. podolicum* as a synonym of *Th. petaloideum*. Typification should not be carried out before additional herbaria in eastern Central Europe have been checked.

Synonymy

Thalictrum petaloideum L., Sp. Pl. ed. 2: 771. 1762.

Typus: [Russia] “Habitat in Sibiria”, neotypification in prep.

- = *Thalictrum stamineum* L. f., Suppl. Pl.: 271. 1781. – **Typus:** [Russia] “Habitat in Sibiria”.
- = *Thalictrum uncinatum* Rehmman in Spraw. Komis. Fizjogr. 7: 90. 1875 [n.v.; some authors give 1873].
- = *Thalictrum podolicum* Lecoy. in Bull. Soc. Bot. Belgique 24: 173. 1885. – **Typus:** [Ukraine] “Russie méridionale, Podolie”, s. d., *H. Hoch[stetter]*.
- = *Thalictrum supradecompositum* Nakai in Bot. Mag. (Tokyo) 46: 54. 1932. ≡ *Th. petaloideum* var. *supradecompositum* (Nakai) Kitag. in Rep. Inst. Sci. Res. Manchoukuo 3, App. 1: 227. 1939. – **Typus:** [China] “Chili: Wan-Li-Chang-Cheng vel The Great Wall, circa Min-Ling”, s. d., *A. Kikuchi* (TI).
- = *Thalictrum petaloideum* var. *latifoliolatum* Kitag. in Rep. Inst. Sci. Res. Manchoukuo 4: 82. 1940. – **Typus:** [China] “Prov. Chi-lin: in declivitate herbosa circa lacum Ching-yüeh-t’an”, 02.VII.1939, *M. Kitagawa* (probably TI).

The history of the genus *Thalictrum* is another good example to corroborate the theory that the total number of described seed plants has been overestimated because of underestimated synonymy rates (SCOTLAND & WORTLEY, 2003). The estimated total number of species in the genus has been reduced considerably within the last decade: TAMURA (1993) c. 250, TAMURA (1995) c. 200, MABBERLEY (1997) 330, PARK & FESTERLING (1997) 120-200, DEZHI & GUANGHUA (2001) c. 150, HAND (2001) max. 100-120. The latter two estimates may be the most realistic if still open revisions of the genus in Central America and tropical parts of Asia will lead to species number reductions comparable to the results in North America (PARK & FESTERLING, 1997) or parts of the Old World (HAND, 2001). Species rank of some taxa recently accepted as Chinese endemics (DEZHI & GUANGHUA, 2001) also seems doubtful. Even in the well known European flora, two widely accepted *Thalictrum* species have been sunk into synonymy within the last ten years (this note and HAND, 1998).

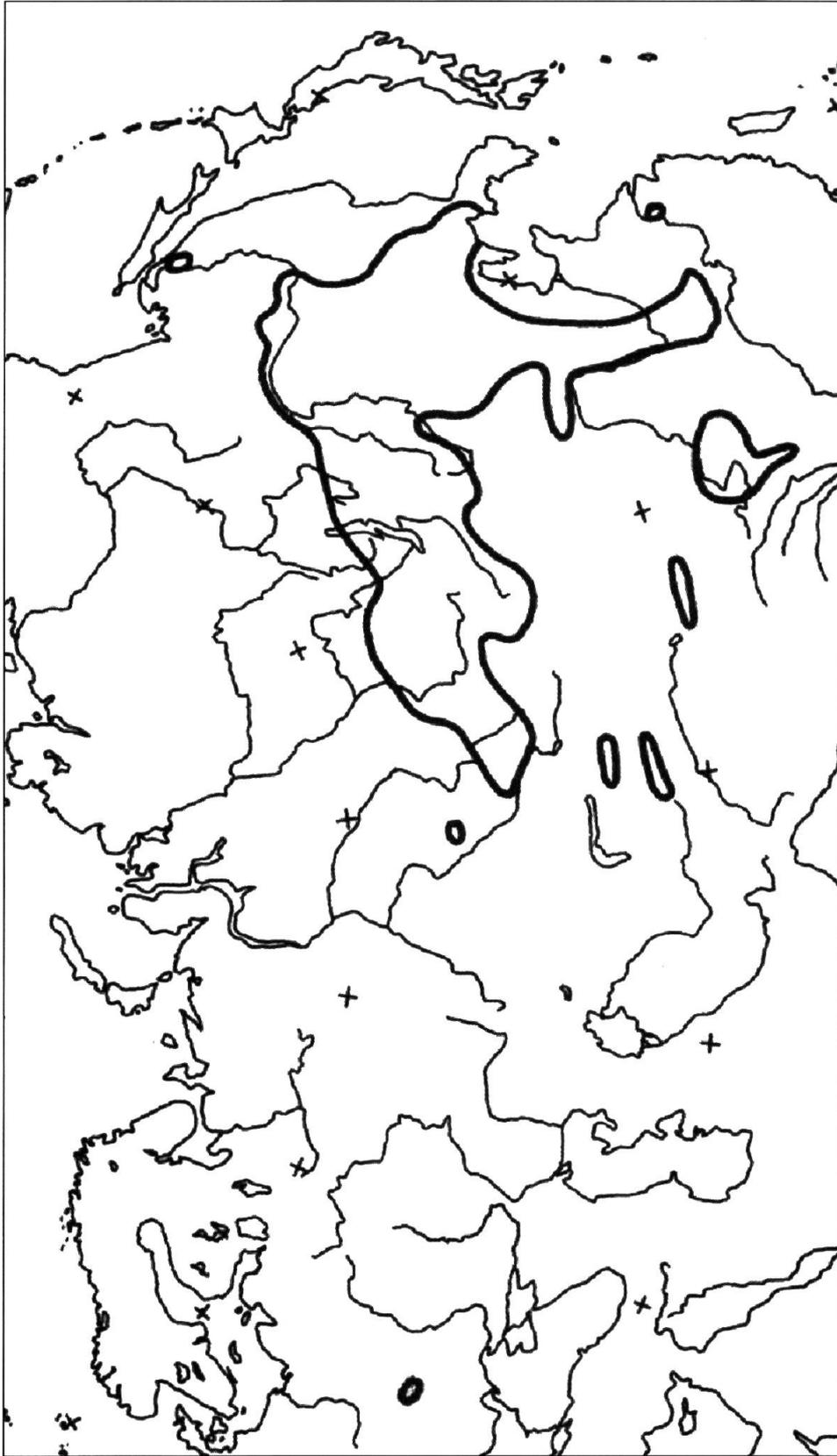


Fig. 1. — Distribution of *Thalictrum petaloideum* L. (for details see text).

Table 1. – Characters of European and Asian populations of *Th. petaloideum* L. in comparison.

	Europe		Asia	
	Specimens at B, JE	Zapařowicz (1906)	Specimens at B, JE, M	Lecoyer (1885) Nevskii (1937): former Soviet Union (15)20–40(50) Dezhi & Guanghua (2001): China
Stem height (cm)	11–25	15–30	23–73	18–80
Number of stem leaves (> 2 cm above base)	0–1	—	0–3	0 [but see fig. 133 in Wang & Wang (1979) with 2 stem leaves]
Leaflet form	orbicular, reniform, ovate, obovate	subrotundate, obovate, ovate	orbicular, reniform, (broadly) ovate, obovate, lanceolate	rhombic, obovate, orbicular, narrowly oblong, lanceolate, narrowly ovate
Leaflet incision	entire, 3-lobed, 3-dentate	entire, 2–3-lobate	entire, 3(5)-lobed, (2)3(6)-dentate	3-lobed
Leaflet min./max. length × width (mm)	0.5–6.0 × 0.5–6.5	(2)3–5(6) × —	0.5–14.0 × 0.5–19.0	3–12 × 2–15
Leaflet base	cordate, subcordate, rounded, cuneate	—	cordate, subcordate, rounded, cuneate	cuneate, rounded cuneate
Leaflet apex	acuminate, rounded, obtuse, truncate	—	acuminate, mucronate, rounded, acute rounded, obtuse, truncate	lobes entire
Stamen length (mm)	4.3–5.7	—	4.8–9.6	5–12
Filament max. width (mm)¹	0.5–0.8	—	0.5–0.9	—
Anther width (mm)²	0.2	—	0.2–0.3	—
Relation filament/anther width	1.8–3.2	± 3	1.8–4.0	broader than anther almost twice
Anther length (mm)	0.9–1.4	—	0.9–1.5	0.5–1.0
Achene length (mm)	—	3.0–4.0	2.6–4.3	3.5–4.0
Style length (mm)	—	c. 1.0	1.0–1.4	0.25–0.5 c. 1.0

Table 1. – Characters of European and Asian populations of *Th. petaloideum* L. in comparison.

	Europe		Asia	
	Specimens at B, JE	Zapałowicz (1906)	Specimens at B, JE, M	Nevskii (1937): former Soviet Union Dezhi & Guanghua (2001): China
Beak form	strongly curved, sometimes nearly enrolled	uncinate	strongly curved, sometimes nearly enrolled, sometimes nearly straight	hamate or slightly curved distally
Number achene ribs	—	—	7-8	8 8 («6 nervures latérales»)
Number of carpels/flower	5-9	—	5-10	4-13 4-13

— Character not mentioned/not examined (cf. text)

¹ Maximum width varies. Inflation at anthesis.

² Measurements of emptied anthers; shortly before anthesis 1.2-1.6 times wider.

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