

Rorippa behcetii (Brassicaceae), a new species from Turkey

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Rorippa behcetii A. İlçim *sp. nova* (Brassicaceae) from Turkey is described and illustrated. It is compared with the closely similar *R. amphibia* and *R. austriaca*.

Key words: Brassicaceae, marsh plants, new species, *Rorippa*, taxonomy

Brassicaceae is one of the largest angiosperm families, comprising approximately 340 genera and more than 3350 species (Al-Shehbaz 1988) representing some 13–19 tribes (Onyilagha *et al.* 2003). In the system of Hayek (1911), the Brassicaceae were divided into ten tribes; Schulz (1936) recognized 19 tribes, and Janchen (1942) presented a comprehensive natural system with 15 tribes.

The genus *Rorippa* belongs to the tribe Arabideae (Garnock-Jones 1978) and is one of the most widespread genera in the Brassicaceae. It has about 80 species distributed on all continents except Antarctica. Nearly 25 species are native to Europe and Asia, 23 to North America, 12 to Africa, 11 to South America, and the remainder to Australia, New Zealand, New Guinea, and Polynesia (Al-Shehbaz 1988, 1991, Dreyer & Jordan 2000). Nine species are known from Turkey (Yıldırım 2001, Coode & Cullen 1965).

The species described here was first collected from Kahramanmaraş, Turkey by the author in 2005. At a first glance it resembled *R. amphibia* and *R. austriaca*. The specimens were cross-checked with the keys provided by Coode and

Cullen (1965) and the *Rorippa* accounts given in various relevant publications, such as Valentine (1964), Bleeker (2003) and Garnock-Jones (1978). The specimens were cross-checked with the material housed at various herbaria (ANK, GAZI, VANF and KSUH).

Rorippa behcetii A. İlçim, *sp. nova* (Figs. 1–2)

Rorippa amphibiae affinis sed planta pilosis (non omnino glabra nec sparsim pilosus); petiolis 2–8 cm longis, (non brevibus); foliis exauriculatis, inaequalibus, basi truncatis, (non auriculatis, aequalibus, nec basi cuneatis); siliquis 2.5–3.5 mm longis (non 3–6 mm longis); seminibus 25–30 in quoque loculis (non 11–14) differt.

TYPE: Turkey, C6 Kahramanmaraş: Türkoğlu, Gavurgözü (marsh) Bataklığı, 400 m, 3.IV.2005, A. İlçim 1617 (holotype KSUH; isotypes VANF, YILDIRIMLI).

ETYMOLOGY: Named in honour of the Turkish botanist, Prof. Dr Lütfi Behçet, Yüzüncü Yıl University, Van, Turkey.

Annual herbs, stem erect or stoloniferous,



Fig. 1. Habit of *Rorippa behcetii* (holotype).

50–75 cm tall, simple or sometimes branched in flowering part, terete, smooth, covered with sparse to dense simple hairs. Aquatic stem ± glabrous. Leaves crowded in lower and middle parts of stem; basal leaves simple, lyrate, pinnate to pinnatifid, 12–20 × 3–7 cm (incl. petiole) crenate, dentate, petiole 2–8 cm long, aquatic leaves somewhat fleshy, pinnatisect ± glabrous, cauline leaves simple, 8–14 × 3–8 cm, ovate, oblong; crenate, dentate; petiole 3–4 cm long, sometimes with 1–3 small lateral segments; upper stem leaves 1.1–5 × 0.5–2 cm, shortly petiolate or sessile but not auriculate, narrowly ovate, oblong, unequal and truncate at base, crenate and dentate at margin, obtuse-apiculate at apex. Inflorescence a raceme, racemes ebracteate, globose, fruiting raceme elongated, 3–6 cm long; pedicels slender, divaricate, straight or horizontal, 8–10 mm long. Sepals glabrous, dirty white, like carina, 2–2.5 mm long, slightly saccate or not, erect or spreading; petals spatulate, yellow, 4–4.5 mm long, erect or spreading; filaments 2–2.5 mm long; anthers 0.5–0.6 mm long, ovate or oblong, obtuse or rarely apiculate

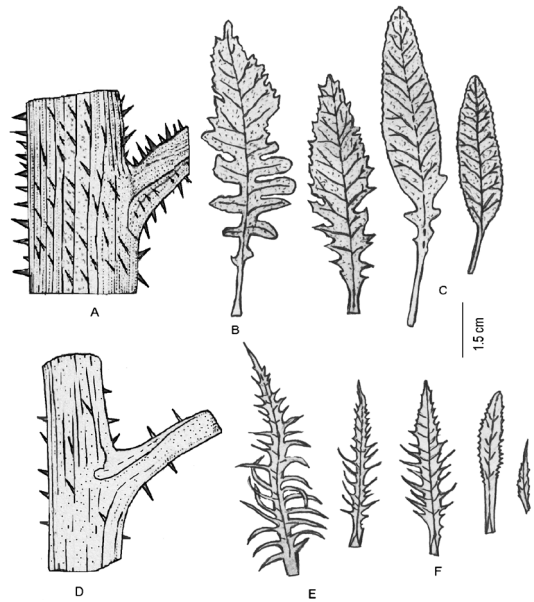


Fig. 2. A–C: *Rorippa behcetii* (from the holotype). — A: Leaf base. — B: Lower leaves. — C: Upper leaves. — D–F: *Rorippa amphibia* (A. İlçim 1312, KSUH). — D: Leaf base. — E: Lower leaves. — F: Upper leaves.

at apex, pistil 1.5–1.7 mm long; ovules 25–30 per loculus; silicule ovoid, veinless or obscurely veined, 2.5–3.5 × 0.7–1 mm. Stylus 1.8–2 mm long, shorter than fruit; stigma capitate. Seeds light brown, 0.6–0.7 × 0.3–0.4 mm, wingless, or with 0.1 mm wings, ovate to ellipsoid. Flowering and fruiting April–May.

Rorippa behcetii is an endemic species of the East Mediterranean element. It grows on marsh and summer-drained soils, in natural, semi-natural and anthropogenic habitats. The vegetation in this area is formed by herbaceous plants including *Salvinia natans*, *Apium nodiflorum*, *Lemna minor*, *Polygonum amphibium*, *Polygonum bistorta*, *Alisma plantago-aquatica*, *Ranunculus sphaerospermum*, *Plantago major*, *Potamogeton nodosus*, *Phragmites australis*, *Althaea officinalis*, *Arctedia squamata*, *Turgenia latifolia* and *Malva neglecta*.

Rorippa behcetii resembles *R. amphibia*, which is widespread in the south and central Europe, New Zealand, North America, Russia, Japan, Azerbaijan and Turkey. It also resembles *R. austriaca*, which occurs in Central and East Europe, Russia, United States and Turkey (Fig. 3). The three species are compared in Table 1.

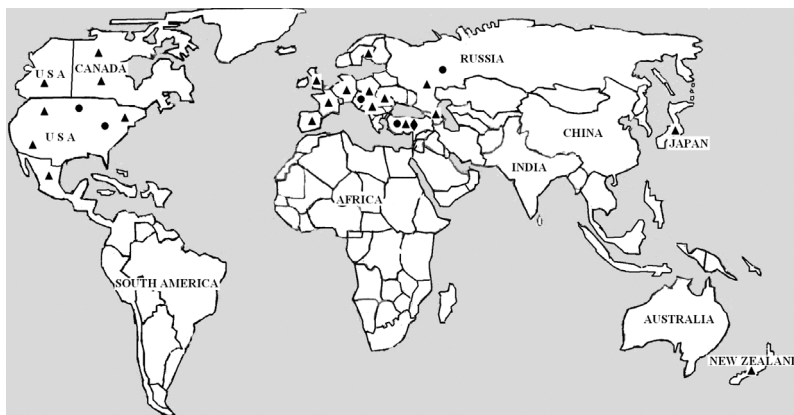


Fig. 3. Distribution of *Rorippa behcetii* (◆), *R. amphibia* (▲) and *R. austriaca* (●).

Table 1. A morphological comparison of *Rorippa behcetii*, *R. austriaca* and *R. amphibia*.

Characteristic	<i>R. austriaca</i>	<i>R. amphibia</i>	<i>R. behcetii</i>
Stem indumentum	sparsely pilose	sparsely pilose	pilose, with simple hairs
Lower leaves	all simple, irregularly serrate	pinnate to pinnatifid	lyrate, pinnatifid
Stem leaf base	deeply cordate	cuneate	unequal to truncate
Stem leaves	lower shortly petiolate, upper sessile	lower shortly petiolate, upper sessile	lower long petiolate, sometimes with 1–3 paired lateral segment, upper short
Stem leaves	± entire, all auriculate at base	simple and serrate in upper half, auriculate or not	simple, petiolate, crenate to dentate, not auriculate
Petals (mm)	3–4.5	6	4–4.5
Fruit diameter (mm)	1.5–3.0	3.0–6.0	2.5–3.5
Style	as long as fruit	shorter than fruit	shorter than fruit
Seed number (per loculus)	16–21	11–14	25–30

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References

- Al-Shehbaz, I. A. 1988: The genera of Arabideae (Cruciferae; Brassicaceae) in the southeastern United States. — *Arnold Arbor.* 69: 85–166.
- Al-Shehbaz, I. A. 1991: *Rorippa beckii* (Brassicaceae), a new species from Bolivia. — *Novon* 1: 9–11.
- Bleeker, W. 2003: Hybridization and *Rorippa austriaca* (Brassicaceae) invasion in Germany. — *Mol. Ecol.* 12: 1831–1841.
- Coode, M. J. E. & Cullen, J. 1965: Genus *Rorippa*. — In: Davis, P. H. (ed.), *Flora of Turkey and East Aegean Islands*, 1: 431–433. Edinburgh Univ. Press, Edinburgh.
- Dreyer, L. L. & Jordan, M. 2000: Brassicaceae. — *Strelitzia* 10: 184–191.
- Garnock-Jones, P. J. 1978: *Rorippa* (Cruciferae, Arabideae) in New Zealand. — *New Zealand J. Bot.* 16: 119–122.
- Hayek, A. 1911: Entwurf eines Cruciferensystemes auf phylogenetischer Grundlage. — *Beih. Bot. Centralbl.* 27: 127–335.
- Janchen, E. 1942: Das System der Cruciferen. — *Oesterr. Bot. Zeitschr.* 91: 1–21.
- Onyilagha, J., Bala, A., Hallet, R., Gruber, M., Soroka, J. & Westcott, N. 2003: Leaf flavonoids of the cruciferous species, *Camelina sativa*, *Crambe* spp., *Thlaspi arvense* and several other genera of the family Brassicaceae. — *Biochem. Syst. Ecol.* 31: 1309–1322.
- Schulz, O. E. 1936: Cruciferae. — In: Engler, A. & Prantl, K. (eds.), *Die natürlichen Pflanzenfamilien* 17b: 227–658. Engelmann, Leipzig, Germany.
- Valentine, D. H. 1964: *Rorippa* Scop. — In: Tutin, T. G., Heywood, V. H., Burges, N. A., Valentine, D. H., Walters, S. M. & Webb, D. A. (eds.), *Flora Europaea*, vol. 1: 283–284. Cambridge Univ. Press, Cambridge.
- Yıldırım, Ş. 2001: The chorology of the Turkish species of Brassicaceae, Buddlejaceae and Buxaceae families. — *Ot Sistematiik Botanik Dergisi* 8(1): 141–171.