

Rivasmartinezia cazorlana sp. nov. (Apiaceae) from southern Spain

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Rivasmartinezia cazorlana, from southern Spain, is newly described, illustrated, and compared with other species of the genus. The new species is characterized by a stock with abundant coarse fibres, basal leaves 4–5(–6)-ternate with the petiole shorter than the limb and acicular ultimate segments, few-rayed umbels, and mericarps with numerous vallecular and commissural vittae.

The family Apiaceae (Umbelliferae) is composed of some 455 genera and 3000–3750 species (Constance 1971, Pimenov and Leonov 1993, Downie et al. 2000), widely distributed across temperate regions (Sheh et al. 2005, Zhou et al. 2009, Banasiak et al. 2013).

Recently, a new genus was described from northern Spain: *Rivasmartinezia* Fern. Prieto & Cires (Fernández Prieto and Cires 2014), with one species, *R. vazquezii* Fern. Prieto & Cires. This species is a perennial herb with a stout stock, with abundant coarse fibres, a simple or 1–4-branched stem that is leafy and solid, 3–5(–6)-ternate leaves with entire, acicular to filiform lobes, compound umbels with 5–9 rays, more-or-less deciduous or sometimes absent bracts, bracteoles, very small sepals, white, homogeneous, obcordate petals with inflexed apex, conical stylopodium, ellipsoidal, slightly dorsally compressed fruits with 5 more-or-less equal and prominent primary ridges, mericarps with pentagonal cross section, monomorphic vallecular and commissural vittae, and seeds with slightly concave endosperm on the commissural side.

During a study of the flora of the Sierra de la Cabrilla, within the limits of the municipality Cazorla (Jaén province, southern Spain), we collected specimens of a rare and unusual plant which vegetatively closely resembled *Peucedanum officinale* L., having 4–5(–6)-ternate leaves with acicular ultimate segments, which we at first associated with the genus *Ligusticum* for having mericarps with numerous vallecular and commissural vittae. This genus has a circumboreal distribution (Leute 1971, July 2003, Sun et al. 2008) and, according to recent molecular analyses, it is polyphyletic (Spalik et al. 2004, Zhou et al. 2008, 2009, Downie et al. 2010), leading to the segregation of several separate genera (Pimenov et al. 2003, Fernández Prieto and Cires 2014).

After studying the proposal by Fernández Prieto and Cires (2014) and reviewing the most important regional floras (Willkomm and Lange 1874–1880, Willkomm 1893, Coste 1903, Fiori 1925–1929, Coutinho 1939, Shishkin 1950, Tutin et al. 1968, Valdés et al. 1987, Bolòs and Vigo 1990, Nieto Feliner et al. 2003, Blanca et al. 2011) we concluded that we had found a new species, which we describe and illustrate in the present paper, together with a discussion of its characteristics, distribution, and habitat.

Rivasmartinezia cazorlana Blanca, Cueto, Benavente & J. Fuentes sp. nov. (Fig. 1–2)

Differs from the *R. vazquezii* Fern. Prieto & Cires by being more robust; stems 40–65 cm, branched, finely striate, with 2(–3) branches at each node and with 2(–3) axilliant and unequal leaves; basal leaves 4–5(–6)-ternate, with the petiole shorter than the limb; ray-umbels 5–7(–8), striate; bracts shorter to almost as long as the rays; petals 1.0–1.4 mm; mericarps 4.5–6.0 × 1.2–1.5 mm, with numerous vallecular and commissural vittae.

Type: Spain, Jaén province, Cazorla, Parque Natural Sierras de Cazorla, Segura y las Villas, Sierra de la Cabrilla, Tranco del Lobo, 1680 m a.s.l., 12 Jun 2013, A. Benavente, G. Blanca and J. Fuentes 62518 (holotype: GDA, isotypes: HUAL, MA, MGC).

Etymology

The specific epithet refers to the municipality of Cazorla (Jaén province, eastern Andalusia, southern Spain) where the species was found.

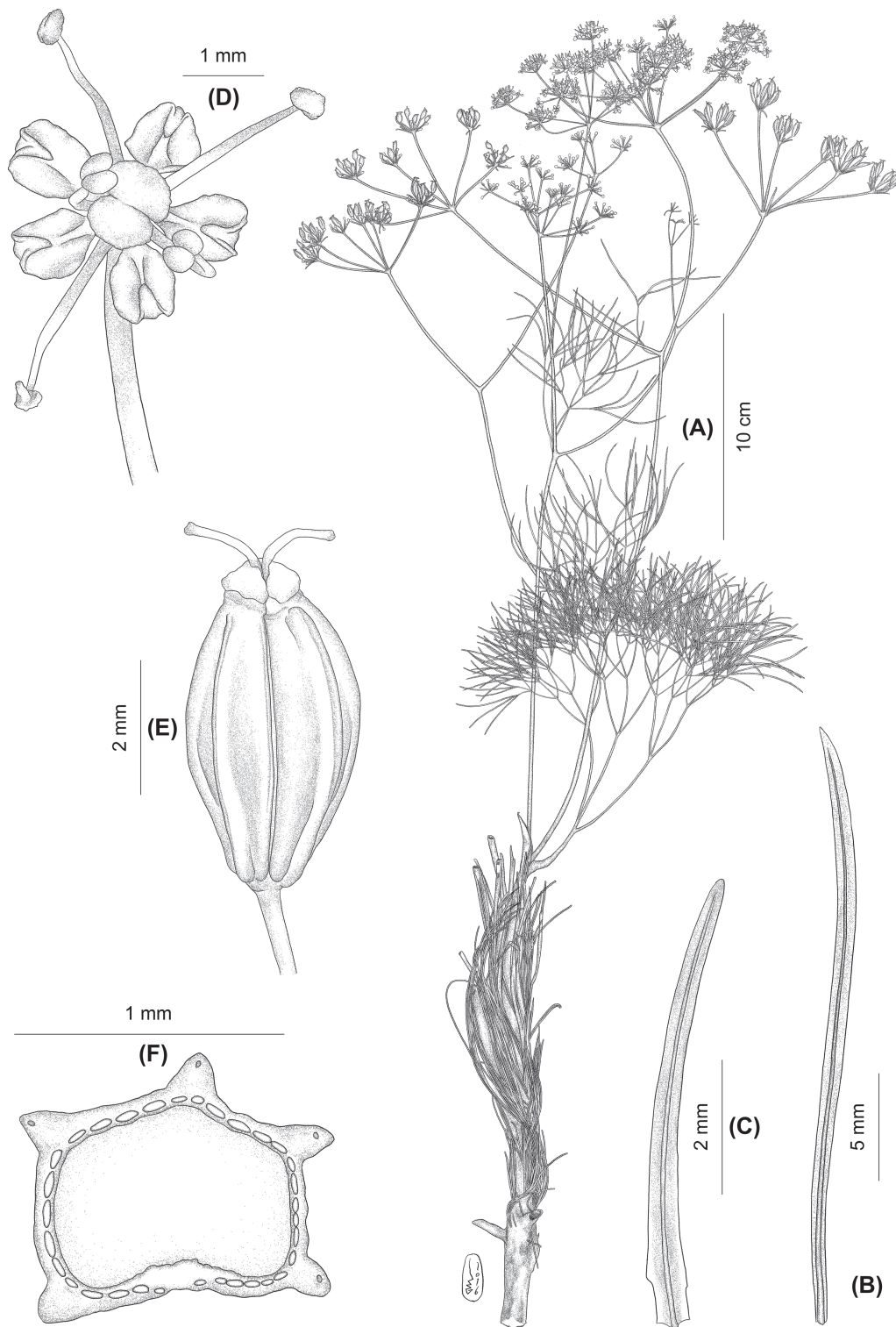


Figure 1. *Rivasmartinezia cazorlana* sp. nov. (A) habit, (B) umbel bract, (C) umbellule bracteole, (D) flower, (E) fruit, (F) cross section of mericarp. Drawn by D. Belchí from the holotype.

Description

Perennial, glabrous, strongly aromatic herb. Rhizome (5–)7–15(–20) mm in diameter, woody; stock stout, with abundant coarse fibres. Stems 40–65 cm, solid, branched, finely striate, 2(–3) branches at each node with 2(–3) axilliant and unequal leaves. Basal leaves 20–42 × 11–20 cm, numerous,

triangular-flabellate in outline, 4–5(–6)-ternate; petiole 7–11 cm, sheathing at base, with limb 15–20 × 12–18 mm; ultimate segments 25–37(–41) × 0.5–0.7 mm, acicular, entire, mucronate. Lower cauline leaves 3–4-ternate, with petiole reduced to a sheath; the upper ones reduced, 1–3-ternate or -bifurcate or sometimes simple. Umbels 2–5 cm in



Figure 2. *Rivasmartinezia cazorlana* sp. nov. (A) habit, (B) detail of rhizomes, (C) base of the umbel showing the bracts, (D) flowering umbel.

diameter at flowering and 5–7 cm in diameter when fruiting, the lower-most of each branch often smaller and masculine; rays 5–7(–8), striate, unequal, 10–40 mm in flower and 23–45 mm in fruit; bracts (0–)1–4 (–5), deciduous, acicular, much shorter to almost as long as the rays. Partial umbels (umbellules) 7–15-flowered; pedicels (1.5–)2.0–5.0 mm at flowering and (2–)3–7 mm when fruiting; bracteoles (2–)3–6, persistent, narrowly linear, shorter or almost as long as the pedicels, with a narrow scarious margin in the lower third. Flowers epigynous, small, hermaphroditic or masculine; sepals 5, triangular, highly reduced; petals 5, homogeneous, 1.0–1.4 mm, obcordate with inflexed apex, white; stylopodium conical. Mericarps 4.5–6.0 × 1.2–1.5 mm, narrowly ellipsoidal, slightly compressed dorsally, glabrous, with 5 almost equal and narrowly winged primary ridges; styles ca 1 mm, patent or reflexed; vallecular and commissural vittae numerous (4–5 in each vallecule and 8–10 commissural), and additionally 0–1 near the apex of the ridges; seeds with endosperm slightly concave on the commissural side.

Phenology

Flowering occurs in May and June and fruiting in July and August. The basal leaves remain green even after fruit dispersal.

Distribution and ecology

Only one population is known (Fig. 3), distributed along some 2 km, with numerous individuals (more than 50 000). *Rivasmartinezia cazorlana* grows in the undergrowth of formations cleared of *Pinus nigra* subsp. *salzmannii* (Dunal) Franco, on a calcareous substrate, on very windy and cold

places, at the foot of rocky areas with a northern exposure, between 1580–1750 m a.s.l. The environmental characteristics of this site suggest that it is a relict species.

Conservation status

The place where *Rivasmartinezia cazorlana* grows is part of a protected area, the Natural Park of Sierras de Cazorla, Segura y Las Villas. Furthermore, the population occupies a remote area of Sierra de la Cabrilla with restricted access. The herbivores of the area, mainly large ungulates, do not constitute a threat as they do not consume this plant, perhaps for its penetrating odour. Nevertheless, this species could be affected by climatic change, because as indicated, it lives in very cold areas with a northern exposure, occupying the highest elevations of the mountaintops and thus has no possibility to ascend further if faced with a warmer climate. Thus, applying the red list categories (IUCN 2012), *Rivasmartinezia cazorlana* is ‘Critically Endangered’ (CR) B1ab(iii) + B2ab(iii).

Similar species

The relationship between the two species of *Rivasmartinezia* currently known appear very distant, not only for the geographic separation (*R. vazquezii* is endemic of the Asturias principality, northern Spain; see Fig. 3) but also for their ecological behaviour (*R. vazquezii* inhabits dry limestone fissures and travertines), and major morphological differences: i.e. *R. vazquezii* is far less robust, only 20–40 cm high, has basal leaves 3(–4–5)-ternate with the petiole longer than the limb, shorter petals (0.7–1.0 mm), and shorter mericarps (2.0–3.2 mm), with 1–2(–3) vittae in each vallecule, and 2–3 commissural ones.

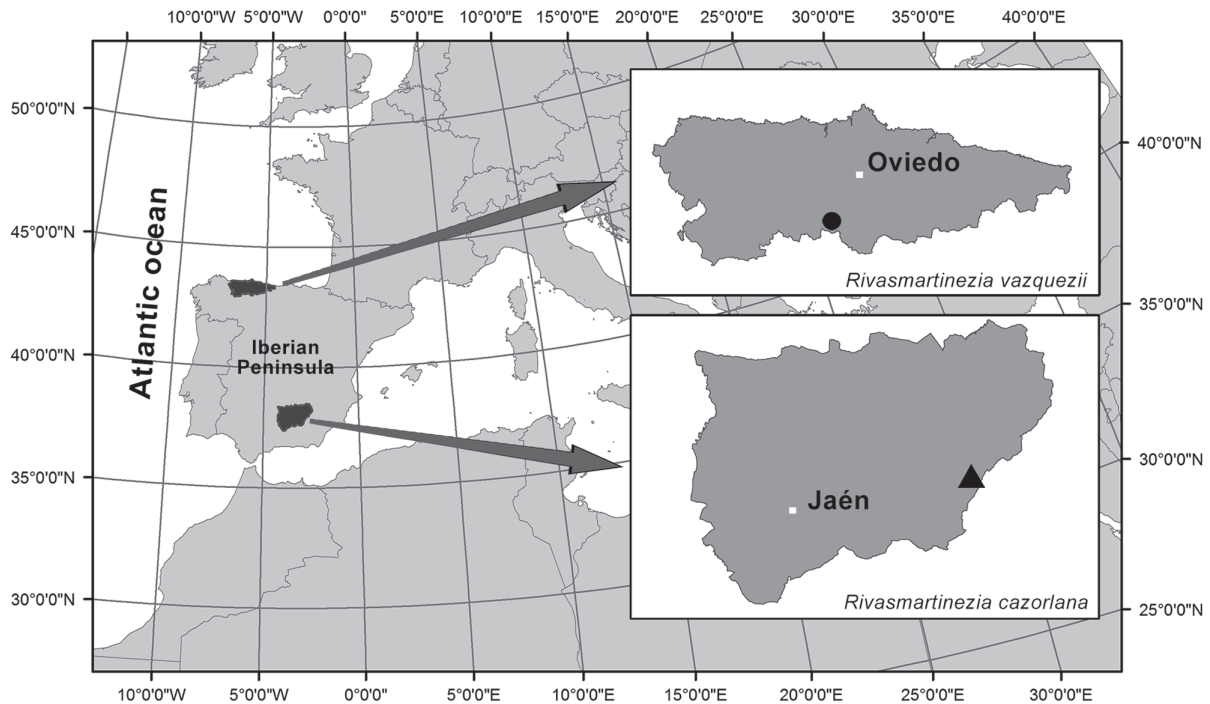


Figure 3. Distribution map of the two known species of *Rivasmartinezia*.

Additional specimens examined

Rivasmartinezia vazquezii Fern. Prieto & Cires, Spain. Asturias: Somiedo, Valle de Lago, La Bobia pr. La Ribachuenga, 1250 m a.s.l., 6 Oct 2011, V. M. Vázquez and J. A. Fdez. Prieto 32666 and 32666-1 (FCO).

Acknowledgments – We would like to thank P. A. Tiscar, F. J. Casas, F. Martínez and F. J. Jareño for help with the field work, and the directors M. A. Ruiz and M. T. Moro for facilitating means and staff, all members of the Natural Park of Sierras de Cazorla, Segura y Las Villas (Consejería de Medio Ambiente y Ordenación del Territorio, Junta de Andalucía). We are grateful to D. Belchí for the line drawings, to E. López-Carrique for assistance with Fig. 3, and to D. Nesbitt for the language editing. We also express our gratitude to the herbaria of GDA and FCO.

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