

NEW DATA ON THE DISTRIBUTION OF *Veronica linearis* (Bornm.) M. M. Mart. Ort. (Plantaginaceae), LOCAL ENDEMIC OF THE FLORA OF THE REPUBLIC OF NORTH MACEDONIA

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Abstract. *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., is a rare plant endemic to the Republic of North Macedonia. According to current data, this species is widespread only in a few localities. During the floristic researches in the northwestern region of North Macedonia, another new locality of *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., was discovered, which represents a new record of the distribution of this local endemic species in the flora of Republic of North Macedonia. Specimens examined: Dry Mountain, over the village of Sedlarevo (Sallarevë): 1368 m, 41°52'42.198"N, 21°8'6.804"E, May 2025.

Keywords: new locality; Plantaginaceae; Republic of North Macedonia; *Veronica linearis*.

INTRODUCTION

Veronica (Plantaginaceae) is a genus of 450 species found in temperate regions of both hemispheres [33]. They are mainly cosmopolitan species, while a small number are invasive species [1-3, 5, 11, 27]. In the most recent taxonomic arrangement of *Veronica* four subsections were recognized within this subgenus: *V.* subsect. *Pentasepalae* Benth (1846: 469), *V.* subsect. *Armeno-Persicae* Stroh (1942: 385), *V.* subsect. *Orientalis* (Wulff 1915: 59) Stroh (1942: 386), and *V.* subsect. *Petraea* Benth (1846: 476). The first one, which is the focus of this revision, is a monophyletic group [30] distributed in Europe, with three species occurring in Siberia and one in North Africa. The last three subsections are distributed in SW Asia, although some representatives occur in SE Europe [e.g., *Veronica thymifolia* Sibthorp & Smith (1806: 6), *Veronica multifida* Linnaeus (1753: 13)]. *Veronica* subsect. *Pentasepalae* comprises circa 20 taxa that grow on meadows and stony places, from lowlands to high alpine zones [28]. A significant number of these species are endemic to the Balkans, including *Veronica kindlii* Adamović. It is a perennial and grows primarily in the temperate biome. The native range of this species is Central Balkan Peninsula [1-3, 5, 26]. *Veronica linearis* was first published as a variety of *Veronica kindlii* Adamović (another species from *Veronica* subsect. *Pentasepalae* that is endemic to the Balkans) and then elevated to the species rank in Taxon [28, 29]. In the flora of North Macedonia it was first described in 1937 by Bornmüller, with the synonym *Veronica kindlii* var. *linearis* Bornm [6]. Considering its distinctive morphological features, such as retrorse hairs covering the stem, linear leaves, and villose sepals, a specific rank for it was recently proposed, as a separate species (*Veronica linearis*) by Rojas-Andrés et al., [28-30].

The native range of this species is Republic of North Macedonia. It is a perennial and grows primarily in the temperate biome. Stems 3-7.5 cm long, ascending to erect, indument tomentose to villose,

composed by subpatent-retrorse eglandular hairs (0.3) 0.5-1.3 (1.9) mm long, not arranged in 2 opposite lines along the stem; apical shoot bearing (3) 10-15 pairs of leaves. Leaves (4) 8-23 (26) × 1-3 (3.3) mm; the basal ones linear or oblanceolate, sometimes obovate, rarely narrowly elliptic; the medium ones linear or oblanceolate; attenuate at the base, entire or crenate, revolute, glabrous or sparsely to densely covered by hairs 0.2-1.0 mm long, sessile or shortly petiolate; apical shoot leaves opposite, linear or oblanceolate, entire or crenate, revolute. Racemes axillary, usually solitary (i.e., each pair of leaves bearing one raceme), sometimes 2 opposite, bearing 20-55 flowers, loosely to densely arranged; peduncles 1.3-9 cm long, covered by the same type of indument as that of the stem, although not less dense; bracts (2) 2.5-7 (8) mm long, linear to narrowly elliptic, entire, pilose or villose; pedicels (2) 3-8 (10.7) mm long. Calyx (2.8) 3-4 (5) mm long, (4) 5 sepals, lanceolate to linear-lanceolate, usually shorter than the capsule, pilose or villose, with eglandular hairs. Corolla circa 4-10 cm, blue or pink. Capsule (2.9) 3-5 (5.3) × (2.7) 3-5 (5.9) mm, longer than wide, wider than long or as long as wide, elliptic to oblate, rounded at the base, emarginate, sinus up to 0.7 mm depth, pilose or villose, with eglandular hairs. Style 3-5 mm long. Seeds 1.4-1.8 × 1.2-2.0 mm, circa 2-11 per capsule (Fig. 1). Dry meadows, shrublands and glades of *Quercus* sp. forests, siliceous soils [4, 9, 14].

MATERIAL AND METHODS

The new data presented in this paper are based on plant material collected during the field research. Floristic researches in Dry Mountain was carried out during the spring period of 2024-2025. Herbarized specimens of *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., are preserved in the private herbarium of the authors and in herbarium of the Department of Biology, Faculty of Natural Sciences and Mathematics, University of Tetova (Fig. 3). Determination is based on careful observation of

morphological characteristics in herbarium specimens and living populations, and on morphometric data. The morphological and systematic description of the species is based on relevant taxonomic literature. Plant nomenclature and taxonomy is consistent with Euro+Med Plant base [8, 10].



Figure 1. *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., in the new locality, over the village of Sedlarevo (Sallarevë), May 2025

RESULTS

Veronica linearis (Bornm.) Rojas-Andrés & M. M. Mart. Ort., is a rare plant endemic to the Republic of North Macedonia. According to current data, in the territory of the Republic of North Macedonia, this species is widespread only in a few localities: Sivec –

Prilep [6], Studeničani – Skopje, near Nova Breznica - Sopište, between Modrište and Zdunje - Makedonski Brod, Gurgurnica and between Stenče and Gurgurnica – Bervenica [28, 29], Dry Mountain – Lukovica [31, 32].

As a result of the floristic researchs in the northwestern region of the Republic of North Macedonia, during the period 2024-2025, another new locality of *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., was discovered, which represents a new record of the distribution of this local endemic species in the flora of Republic of North Macedonia. Specimens examined: Dry Mountain, over the village of Sedlarevo (Sallarevë): 1368 m, 41°52'42.198"N, 21°8'6.804"E, May 2025 (Fig. 2).

DISCUSSION

The territory of the Republic of North Macedonia is quite rich in endemics, and this is conditioned by the geological past of this part of the Balkan Peninsula and its florogenesis [7, 13, 18, 24, 25]. For now, there are considered to be around 111 local endemic species, while among them there are also stenoendemic species, widespread only in one locality, such as: *Astragalus cernjavskii* Stoj., *Tulipa marianae* Lindtn., *Asplenium macedonicum* Kumm., etc. [15-17, 19-23]. This group of local endemics also includes *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., which has a limited distribution. In the territory of the Republic of North Macedonia, found in dry meadows, scrub and woodlands with *Quercus* sp., siliceous soils and limestone, from 478 m (between Modrište and Zdunje - Makedonski Brod) up to 1482 m (in Gurgurnica – Bervenica). The new, discovered locality in Dry Mountain, over the village of Sedlarevo (Sallarevë) is at an altitude of 1368 m, in short meadows on limestone. At the moment, this local endemic species is not considered endangered.

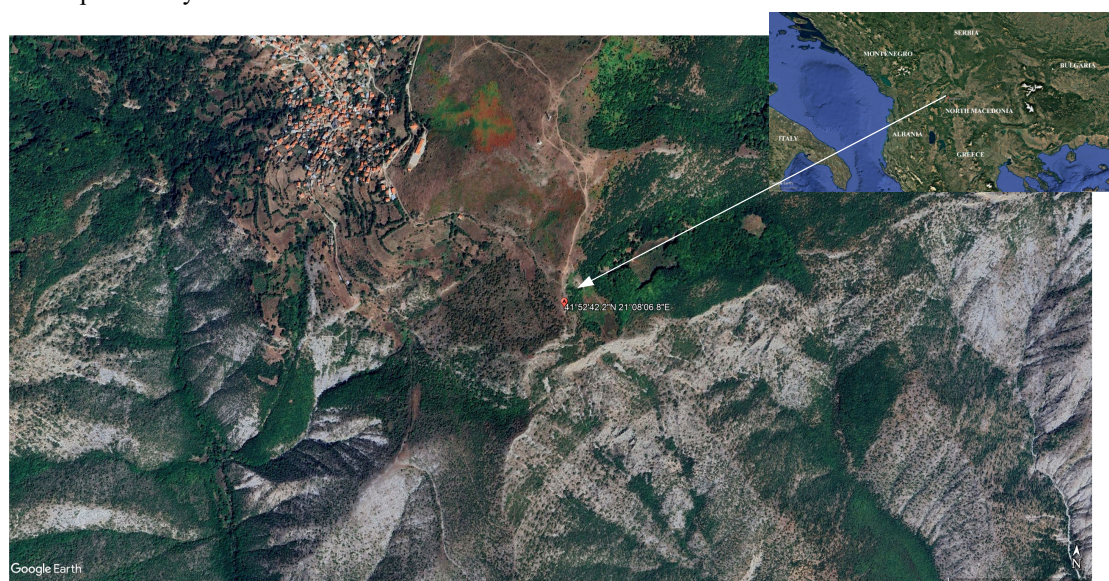


Figure 2. The new locality of *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., in Dry Mountain, over the village of Sedlarevo (Sallarevë): 1368 m, 41°52'42.198"N, 21°8'6.804"E, May 2025 (source: Google Earth)



Figure 3. *Veronica linearis* (Bornm.) Rojas-Andrés & M. M. Mart. Ort., herbarized material

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