

***Stachys babunensis* Micevski (Lamiaceae), rare endemic in the flora of the Republic of North Macedonia**

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Abstract

The aim of this study is to provide further insight into the distribution and ecology of *Stachys babunensis* in the flora of North Macedonia. It is a Macedonian endemic species, described by Micevski, in 1992, in the Babuna River Gorge (Pešti locality), near the city of Veles. In addition to this gorge, *S. babunensis* has also been found in another one – the Raec River Gorge (near Kavadarci). A review of the findings (based on the available herbarium specimens), since Micevski's discovery indicates that *S. babunensis* is indeed a rare species in the flora of North Macedonia. This conclusion is supported by the results of several visits to the Babuna River Gorge this year (2025), during which only two specimens were found. A list of characteristic species associated with *S. babunensis* in the Babuna River Gorge is presented.

Keywords: *Stachys babunensis*, endemic, rare, gorge, North Macedonia.

Introduction

Stachys babunensis is a Macedonian endemic species, described by Micevski (1992) based on a single specimen. This material, a very hairy *Stachys* taxon ("einen grossen Polster einer stark behaarten *Stachys*-Sippe"), was found on the left side of the gorge entrance and did not match any

previously known species of the genus. Matevski (2021) included this species in *Stachys* gr. *recta*, together with *S. recta* (subsp. *recta* and subsp. *rhodopaea*), *S. atherocalyx*, *S. beckeana*, and *S. angustifolia*. *S. babunensis* occurs alongside limestone cliffs (Micevski, 1992; Matevski, 2021).

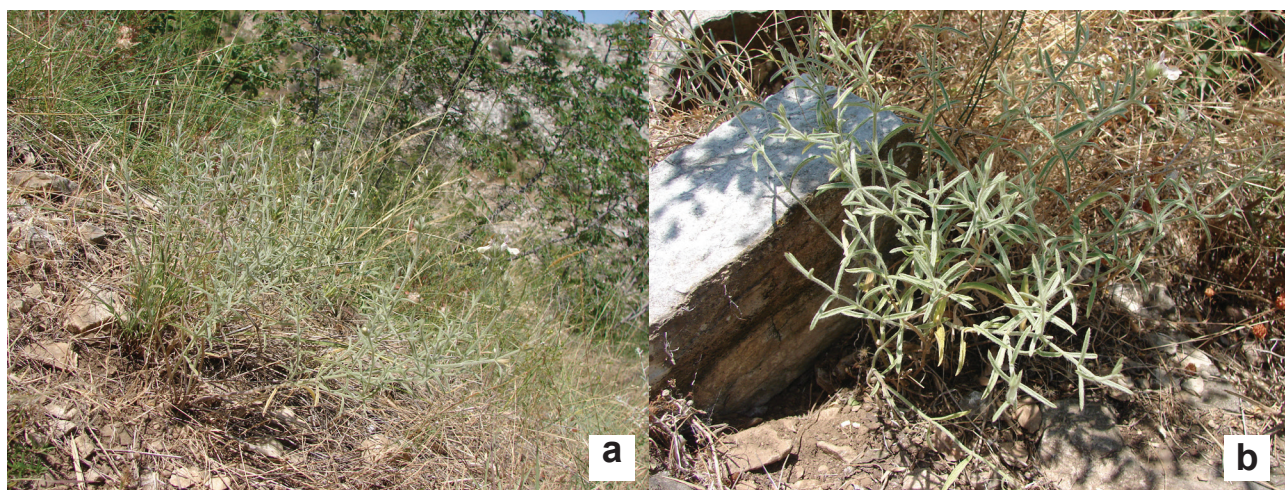


Fig. 1. *Stachys babunensis* Micevski (Babuna River Gorge) - a, b) habitus
(Photo: Z. Nikolov).

Materials and methods

The Babuna River Gorge (Pešti locality) was visited repeatedly in 2025. The initiative came from Milana Ranimirović, a PhD candidate from Belgrade working on *Stachys* gr. *recta*, to which *S. babunensis* also belongs. The primary purpose of the visit was to collect material in silica gel for subsequent laboratory analysis. The initial joint visit, conducted on 27 May 2025, yielded negative results. During subsequent individual visits (on 8, 13, 18, and 28 June 2025), I found only two specimens of *S. babunensis* (Fig. 1a–b). Herbarium specimens collected during these visits were deposited in the collection of the Natural History Museum in Skopje (HMMNH).

Nomenclature and sources

The valid name of the studied species is *Stachys babunensis* Micevski. Contributions, Sec. Biol. Med. Sci., MASA, Skopje 13, 1/2:29-32 (1992). Data concerning *S. babunensis* were sourced from the literature published by Micevski (1992) and Matevski (2021). The nomenclature follows the two most current and relevant sources: Euro+Med PlantBase and POWO (2025). Photographs of living plants in their natural habitats are provided.

Results and discussion

Distribution

The Macedonian endemic species *Stachys babunensis* was originally described by Micevski (1992) based on material collected exclusively from the Babuna River Gorge. The species was subsequently recorded from a second locality, the Raec River Gorge, near Drenovo (Kavadarci), based on a specimen collected by Matevski in 2002. In the comprehensive edition *Flora of the RN Macedonia*, Matevski (2021) reaffirmed the species' distribution, providing a detailed description and confirming both

the original Babuna locality (where he and Nikolov had recorded it) and the Raec locality (noting its presence in degraded *Paliurus spina-christi* stands). Nevertheless, recent field investigations aimed at verifying the occurrence in the Raec River Gorge were unsuccessful. Consequently, the original record by Matevski, dated 11 June 2002 (voucher specimen is deposited in Macedonian National Herbarium, Faculty of Natural Sciences and mathematics, Skopje – MKNH) currently represents the sole evidence of the presence of *S. babunensis* in this gorge.

Chronology of findings at the locus classicus (Babuna River Gorge, “Pešti” locality)

The chronology of the findings is based on herbarium specimens made available during the processing of the genus *Stachys*, for the ‘*Flora of the RN Macedonia*’, and thereafter. The list of currently known records of *S. babunensis* from the Babuna River Gorge and Raec River Gorge is presented in chronological order:

- Micevski, K. (23.06.1991) – Babuna, six specimens (MKNH)
- Matevski, V. (3.06.2000) - Babuna, two specimens (MKNH),
- Matevski, V. (11.06.2002) – Raec, one specimen (MKNH),
- Nikolov, Z. (27.05.2012) – Babuna, one specimen (HMMNH: Nr. 10577-10578),
- Matevski, V. (28.06.2024) – Babuna, one specimen (HMMNH),
- Nikolov, Z. (08.06.2025) – Babuna, one specimen (HMMNH), and
- Nikolov, Z. (13.06.2025) – Babuna, one specimen (HMMNH).

From this chronological overview, it can be concluded that *S. babunensis* occurs sporadically, primarily as individual specimens.





Fig. 2. *Stachys babunensis* Micevski / a, b) stem with branches and leaves / c, d) inflorescence
(Photo: Z. Nikolov)



Fig. 3. *Stachys babunensis* Micevski - flowers (Photo: Z. Nikolov)

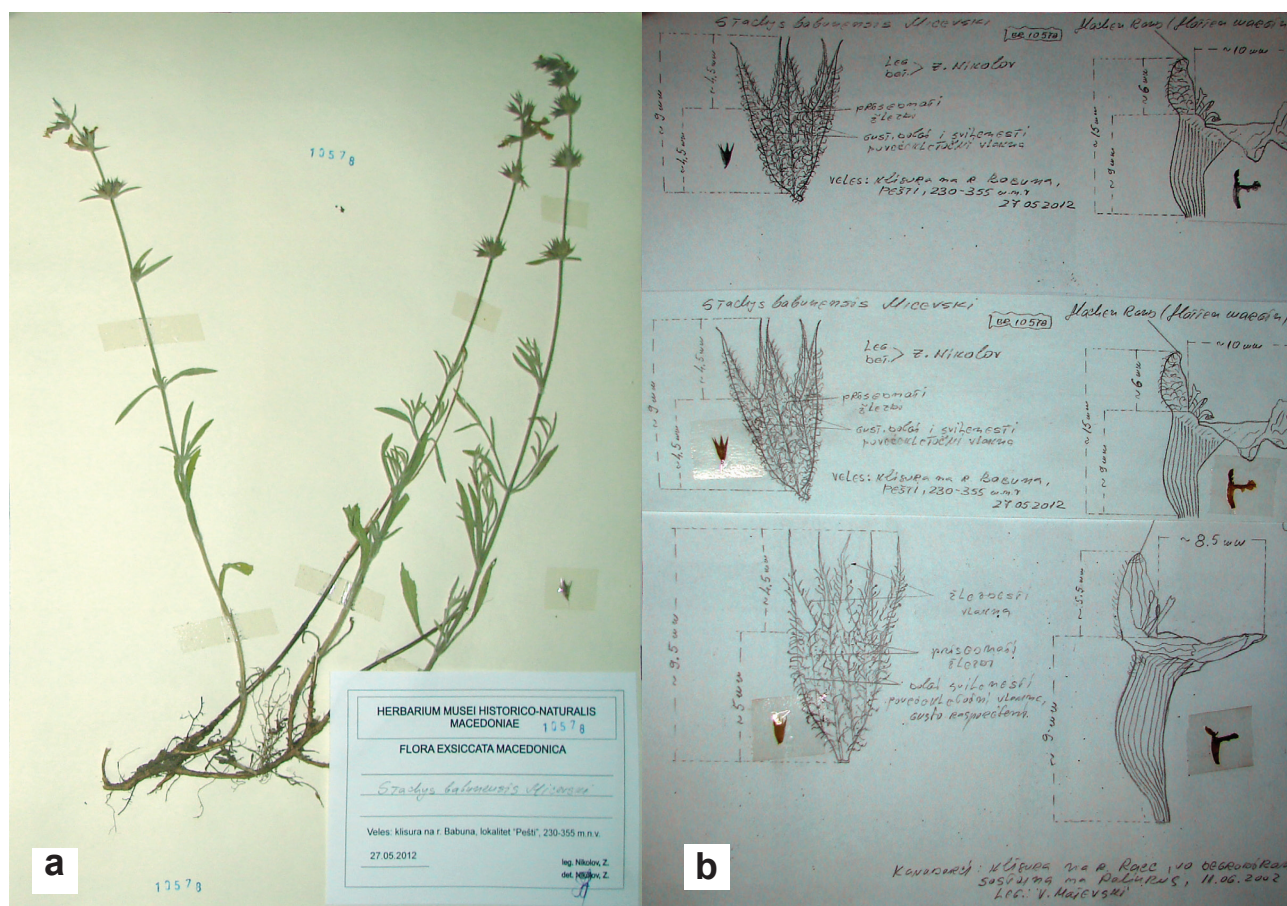


Fig. 4. *Stachys babunensis* Micevski
a) herbarium specimen b) drawings of calyx and corolla (Z. Nikolov)

Habitat and Associated Flora

Stachys babunensis occurs in dry, rocky, limestone habitats, specifically within the degraded *Paliurus spina-christi* community (Fig. 5). The grayish appearance of the plants allows them to blend into the environment, making them difficult to notice (Figs 1a–b, 2a–d, 3, 4a, 5). Characteristic associated species recorded during the visit on 28 June 2025 include: *Paliurus spina-christi*, *Asparagus acutifolius*, *Astragalus parnassi*, *Morina persica*, *Stachys horvaticii*, *Stachys recta* subsp. *rhodopaea*, *Teucrium capitatum*, *Crataegus monogyna*, *Prunus spinosa*, *Petrorhagia saxifraga*, *Micromeria juliana*, *Inula verbascifolia* subsp. *aschersoniana*, *Chondrilla juncea*, *Astragalus gladiatus*, *Astragalus vesicarius*, *Astragalus spruneri*, *Euphorbia myrsinites*, *Orobancha amethystea*, *Orobancha* gr. *minor* (hosts: *Inula verbascifolia* subsp. *aschersoniana*, *Haplophyllum albanicum*), *Eryngium campestre*, *Scabiosa rotata*, *Scabiosa micrantha*, *Scabiosa divaricata*, *Scabiosa argentea*, *Scabiosa triniifolia*, *Allium flavum* subsp. *flavum*, *Allium flavum* subsp. *tauricum*, *Allium guttatum* subsp. *sardoum*, *Allium sphaerocephalon*, *Campanula scutellata*, *Campanula lingulata*, *Ononis reclinata*, *Achillea ageratifolia*, *Centaurea graeca*, *Centaurea tymphaea*, *Carduus*

nutans, *Echinops albidus*, *Carthamus dentatus*, *Carthamus lanatus*, *Himantoglossum hircinum*, *Pistacia terebinthus*. Notably, along with both specimens of *S. babunensis* recorded in the Babuna River Gorge in 2025, specimens of endemic *S. horvaticii* Micevski (from *Stachys* gr. *iva*) were also found (Fig. 5).



Fig. 5. *Stachys babunensis* Micevski – habitat



Fig. 6. Distribution of *Stachys babunensis* Micevski in North Macedonia

Hypothesized Taxonomic Affinities

Morphologically, *Stachys babunensis* appears intermediate between *S. horvaticii* and *S. recta* subsp. *rhodopaea* (Velen.) Chrtek f. This suggests a potential hybrid origin, as both putative parental species are present at its locus classicus – the Babuna River Gorge (Pešti locality) (Fig. 7).



Fig. 7. *Stachys horvaticii* Micevski (a) and *S. recta* subsp. *rhodopaea* (Velen.) Chrtek f. (b), photographed at the locus classicus of *S. babunensis* Micevski (Babuna River Gorge).

Conclusion

Based on the chronological data and recent field investigations, we conclude that the Macedonian endemic *Stachys babunensis* is an extremely rare and sporadically occurring species in the flora of North Macedonia. Consequently, due to the exceptionally small number of individuals, the species should be categorized as Critically Endangered (CR) according to IUCN criteria and requires urgent conservation measures.

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