

The taxonomy, chorology and ecology of *Stachys menthifolia* Vis. (*Lamiaceae*) in the north-west part of its distribution area

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The taxonomy, chorology and ecology of *Stachys menthifolia* Visiani were studied in its north-west distribution area. Two new localities of the same species were discovered in the eastern part of the Biokovo Massif, showing that the species is spreading in a north-west direction. As these localities present the only sure and verified finding places in Croatia, and as they form the north-west border of its distribution area, the authors suggest including this species as a rare subendemic in the next edition of the »Red book«, the vascular flora of Croatia.

Key words: *Stachys menthifolia*, taxonomy, chorology, ecology, Biokovo mountain, Croatia

Introduction

More than 170 years ago Roberto VISIANI (1829) described the endemic species *Stachys menthifolia* Visiani of the west Balkan at the locality of »Ascrivium« – the classical name for Kotor (Montenegro). According to the Flora Europaea it is an endemic species of the Balkan peninsula, spread in Albania, Greece and Yugoslavia (BALL 1972). Later on the presence of this species was confirmed by HAYEK (1929) and ROHLENA (1942) in the Balkan peninsula and coastal part of Montenegro, respectively. Further to the north-west less and less of it could be found (ROHLENA, l. c., BECK et al. 1974), such as at the locality of Ragusa (Dubrovnik) in southern Croatia (VISIANI 1847). During our long-term exploration of vascular flora, we found this species spreading along the coastal and in the continental part of Montenegro. This species was not mentioned in the Flora of Croatia (DOMAC 1994). However, the species *Stachys menthifolia* was mentioned in Index Florae Croaticae (LOVAŠEN-EBERRHARDT 2000), which could be connected to Visiani's record (VISIANI 1847).

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During our floristic research on the eastern slopes of Mt Biokovo, we found two new separate populations of *Stachys menthifolia*. These findings are new for the flora of the Biokovo area.

Material and methods

To aim at thorough comparative studies and have better and more precise observations of this species, abundant herbarium material was collected from the Biokovo area, and at several Montenegrin localities: the surroundings of Kotor and Virpazar, Grahovo and Dvorsno field, the lower parts of Orjen and Rumija.

Results and discussion

New localities

Comparative studies have shown that individual specimens of *S. menthifolia* in the Croatian localities do not differ from those from Montenegro. All parts of collected plants, from the stalk to the nutlets, were included in the comparative study.

The new localities present the densest populations found to this day. In the Montenegrin localities this species always appears individually or in small groups. The differences are obvious in habitus. Examples in the new Croatian localities develop in exuberant clusters and the stalks are stiff and upright (Fig. 1).



Fig. 1. *Stachys menthifolia* Visiani in the Biokovo area, on the locality over the bridge over the Matica

The new localities of *S. menthifolia* were found at the locations shown in the UTM map of Croatia (Fig. 2).

- UTM XH 98 Croatia: Biokovo area: over the bridge of the Matica, up to the village of Vina (south of Vrgorac), in the span around 30 till 130 m s.m., S-exp.; Leg. D. et Č. Šilić, June 19, 1998; det. Č. Šilić (MAKAR).
- UTM YH 07 Croatia: Biokovo area: Plina near Ploče, ca 60 m s.m., NW-exp.; Leg. M. E. Šolić, June 30, 1999; det. Č. Šilić (MAKAR). The population consists of several hundred specimens, which cover an area of about 1000 m². The population under the village of Vina is bigger and more numerous than that of Plina near Ploče.

Herbarium specimens have been deposited in the scientific collection of the »Mountain and Sea« Institute in the »Herbarium of the Biokovo Region (Herbar Biokovskog područja)« (MAKAR).

The phenesis of the flowering occurs at the end of May and during June, followed by abundant fructification.

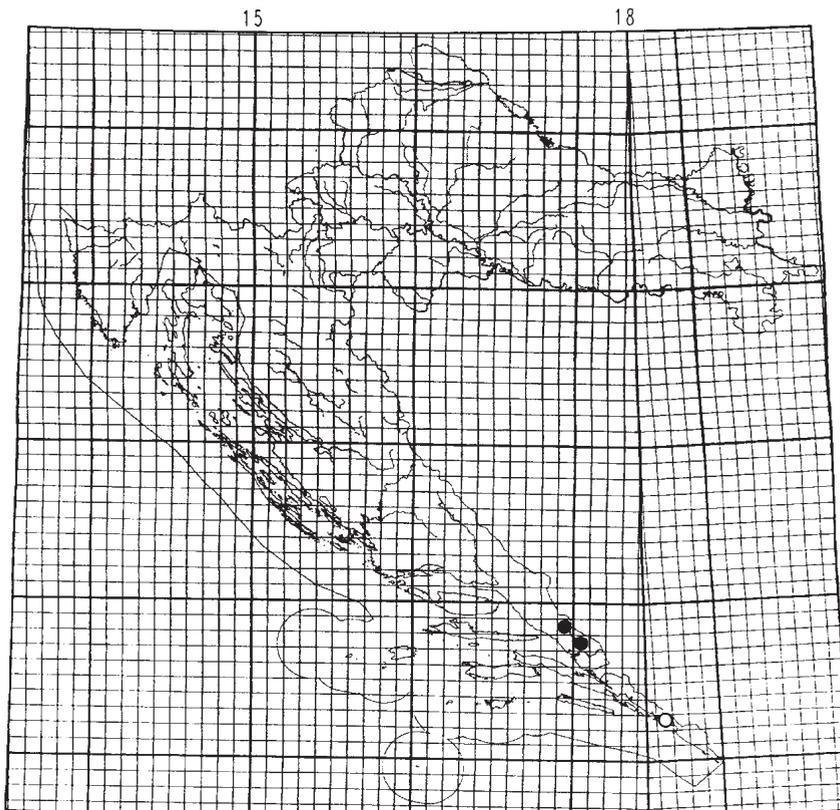


Fig. 2. Localities of species *Stachys menthifolia* Visiani in the south-east of Croatia. ● – a new localities: XH 98 and YH 07, ○ – old locality: BN 62

Taxonomy of the species

The proper scientific name of this subendemic species is:

Stachys menthifolia Visiani 1829: Flora (Regensb.) 12 (Ergänz. 1): 14

(Syn.: *St. grandiflora* Host (HOST 1831)

f. *menthifolia*

f. *puberula* (Rohlena) Hayek

(Syn.: *St. menthifolia* Visiani var. *puberula* Rohlena (ROHLENA 1902).

The distinctive feature of this taxon is that its stem is short, glandular, and pilose, and it is found only at one locality near Bar in Montenegro (ROHLENA, l. c.). This taxon was given the rank of variety (ROHLENA, l. c.), while HAYEK (1929) degraded it to the rank of form, which is more adequate to the morphological character.

Examples in the new localities in Croatia belong to the typological form.

Chorology of the species

The corresponding floristic literature, the material from the existing herbarium collection of Natural History section of the »Zemaljski muzej BiH« Sarajevo, as well as our field exploration have shown that these new findings in Croatia present the north-west boundary of its distribution area. The greatest population and, at the same time, the centre of the distribution is in the Montenegrin coastal area. The south-east part of the area is in Greece and Albania (BALL 1972). These new findings do not form a continuity in their area across Bosnian and Hercegovian territory (BECK et al. 1974), but present isolated exclaves and form the north-west boundary of area for this subendemic species. For this reason the new findings in Croatia are even more important for better knowledge of the chorology of *Stachys menthifolia*, an endemic species of the western part of the Balkan Peninsula.

Ecology of the species

Stachys menthifolia Vis. is a calciphilic plant, present in the fissures of limestone or in the open limy rocky grounds, as in the new Croatian localities. In the majority of the Montenegrin localities the plants grow individually or in small groups, often in the strata of thermophilic woods and the underbrush of pubescent oak (*Quercetalia pubescentis*), in stone fissures, in open surfaces, while the habitats of the new Croatian localities are mainly open limy rocky grounds with denser populations composed of a larger individuals. We present a list of species (in alphabetical order) in the locality under the village of Vina on Biokovo:

Acinos arvensis (Lam.) Dandy subsp. *villosus* (Gaud.) Sojak, *Aethionema saxatile* (L.) R. Br., *Anthemis* sp., *Asplenium trichomanes* L., *Brachypodium distachyon* (L.) Beauv., *Campanula pyramidalis* L., *Cardamine maritima* Portenschl. ex. DC., *Centaurea* sp., *Centaureum erythraea* Rafn, *Asplenium ceterach* L., *Chondrilla juncea* L. (separately), *Cichorium intybus* L., *Clematis flammula* L., *C. vitalba* L., *Colutea arborescens* L., (individually), *Cynoglossum columnae* Ten., *Ficus carica* L. (individually), *Foeniculum vulgare* Miller, *Galium corrudifolium* Vill., *Haplophyllum patavinum* (L.) G. Don fil., *Helichrysum italicum* (Roth) G. Don fil., *Hypericum perforatum* L., *Inula verbascifolia* (Willd.) Hausskn., *Dittrichia viscosa* (L.) Greuter, *Koeleria* sp., *Lactuca viminea* (L.) J. Presl et C.,

Linaria simplex (Willd.) DC., *Linum tenuifolium* L., *Melica ciliata* L., *Micromeria juliana* (L.) Rchb., *Misopates orontium* (L.) Raf., *Petrorhagia saxifraga* (Ser. ex DC.) Link, *Picnoman acarna* (L.) Cass., *Pistacia terebinthus* L. (individually!), *Punica granatum* L. (individually!), *Reichardia picroides* (L.) Roth, *Rubus heteromorphus* Ripart ex Genev., *Sanguisorba minor* Scop. subsp. *muricata* Brig., *Satureja montana* L. subsp. *montana*, *Scandix pecten-veneris* L., *Scrophularia canina* L., *Sedum hispanicum* L., *S. sexangulare* L., *S. ochroleucum* Chayx in Vill., *Stachys subcrenata* (Vis.) Briq., *Tordylium officinale* L., *Tragopogon porrifolius* L., *Trifolium arvense* L., *Vitex agnus-castus* L., (individually!).

The list was made on June 19, 1998. The nomenclature is adjusted according to the index of Croatian flora (NIKOLIĆ 1994, 1997, 2000).

Conclusion

During research into the vascular flora of the Biokovo mountain area, two new localities of *Stachys menthifolia* were discovered on the eastern part of the massif. A comparative study has been made with live- and herbarium material from Montenegro, which is the centre of the distribution. The chorology of this subendemic species shows its disjunctive area. Considering the north-west boundary of the distribution area of *Stachys menthifolia* on the territory of Croatia, and the presence of two separate populations with a relatively limited number of specimens, we propose that this species should be inserted in the new edition of the »Red Book« of the rare and potentially endangered vascular plants of the Republic of Croatia.

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