



short communication / kratko priopćenje

## *FESTUCA HERCEGOVINICA* MARKGR.-DANNENB. (*POACEAE*) IN THE FLORA OF CROATIA

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**Alegro, A.: *Festuca hercegovinica* Markgr.-Dannenb. (*Poaceae*) in the flora of Croatia. Nat. Croat., Vol. 15. No. 4., 237–242, 2006, Zagreb.**

*Festuca hercegovinica* Markgr.-Dannenb. is an endemic Balkanic species, whose distribution area also encompasses the southernmost parts of Croatia. To date, its localities are known from the surroundings of Dubrovnik, i.e. the Konavle region with Mt Sniježnica and the island of Šipán. The general distribution and taxonomical level of this species are discussed, the general distribution in Croatia is completed, and a determination key for distinction from similar taxa is enclosed.

**Key words:** *Festuca hercegovinica*, *Poaceae*, Flora, Croatia

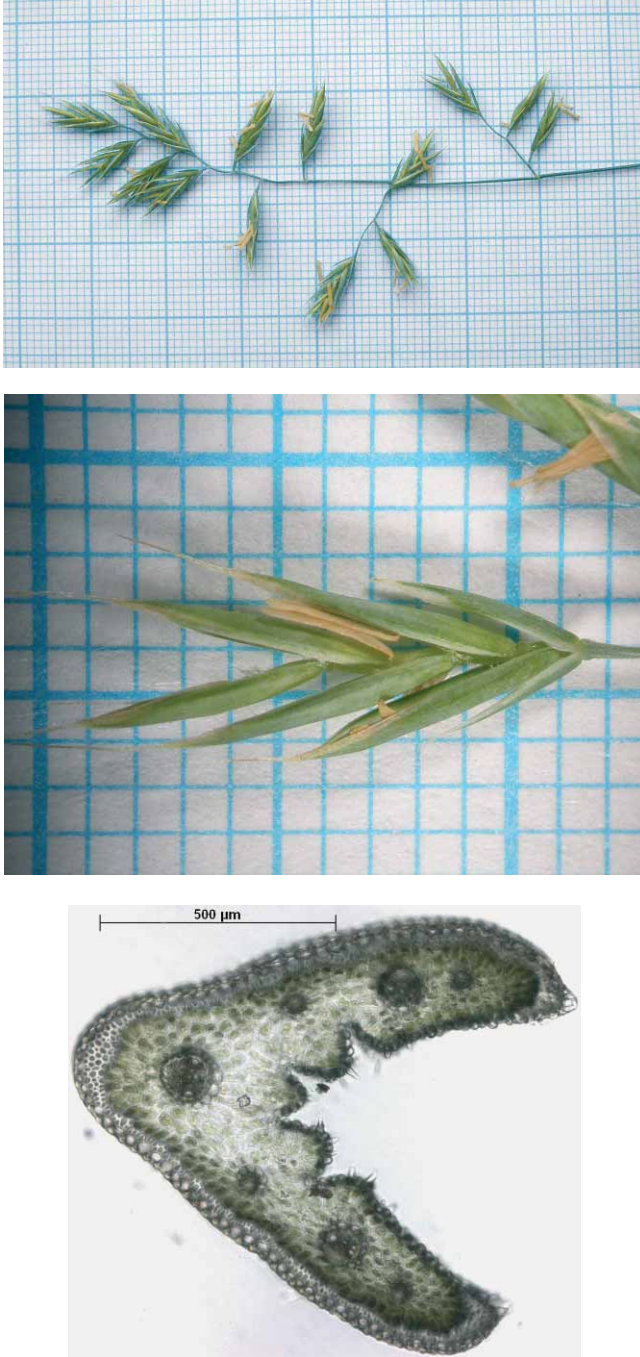
**Alegro, A.: *Festuca hercegovinica* Markgr.-Dannenb. (*Poaceae*) u hrvatskoj flori. Nat. Croat., Vol. 15. No. 4., 237–242, 2006, Zagreb.**

*Festuca hercegovinica* Markgr.-Dannenb. je endemična balkanska vrsta čiji areal zahvaća i krajnje jugoistočne dijelove Hrvatske. Do danas su njena nalazišta poznata iz okolice Dubrovnika, Konavala sa Sniježnicom i otoka Šipana. Daje se osvrt na opću rasprostranjenost i taksonomski rang ove vrste, a priložen je i ključ za determinaciju i razlikovanje od sličnih vrsta.

**Ključne riječi:** *Festuca hercegovinica*, *Poaceae*, flora, Hrvatska

### INTRODUCTION

With 170 species (MARKGRAF-DANNENBERG, 1980), the genus *Festuca* L. is the richest among the family of grasses in Europe and one of the taxonomically most difficult. The modern era of *Festuca* studies began with HACKEL's fundamental works (1881, 1882). During a century of research, new species have been described, and the originally infraspecific statuses of many of Hackel's taxa have been raised to species level. As a result of this process, the number of recognised species has increased from 28 (HACKEL, 1882) to 170 (MARKGRAF-DANNENBERG, 1980).



**Fig. 1.** *Festuca hercegovinica*: a) panicle; b) spikelet; c) leaf cross section

One of these recently described species is *Festuca hercegovinica* Markgr.-Dannenb. 1978, a little-known species not included in the *Index Florae Croatiae* (ILIJANIĆ & TOPIĆ, 2000). The species belongs to subgen. *Festuca* sect. *Festuca*, a group characterised by thick leaves with a continuous ring of sclerenchyma and mostly seven nerves on the cross section. According to HACKEL's *Monograph* (1882: 83, 89–90) it could be treated as a member of *F. duriuscula* (*F. ovina* L. subsp. *euovina* var. *duriuscula* Hack.) organisation type. Consequently, LAKUŠIĆ (1999) included it in the *F. duriuscula* complex. However, the name *F. duriuscula* is a *nomen ambiguum* (cf. MARKGRAF-DANNENBERG, 1976) and therefore inappropriate for naming taxa; nevertheless, it can remain in use for the informal naming of group or aggregate. According to KOSTADINOVSKI (1999) *F. hercegovinica* is closely related to the species *F. hirtovaginata* (Acht.) Markgr.-Dannenb. as will be discussed later. Some other related species from the Balkan region are *F. thracica* (Acht.) Markgr.-Dannenb., *F. grandiaristata* Markgr.-Dannenb., *F. macedonica* Vetter, *F. koritnicensis* Vetter in Hayek and *F. polita* (Halácsy) Tzvelev.

The type specimen originates from Herzegovina (Republic of Bosnia and Herzegovina), between Uskoplje and Ivanica. As well as this this locus classicus MARKGRAF-DANNENBERG (1978) quoted some other localities of the species in Herzegovina, the southernmost parts of Croatia (the surroundings of Dubrovnik: Oštra Glavica, Gruž, Ombla valley), the Republic of Macedonia (SE from Ohrid) and Greek Macedonia (mountains above Pisosderion). Later, the species was found also in Montenegro (Mt Durmitor: in the Sušica canyon) by LAKUŠIĆ (1999), and in several more localities in Macedonia (predominantly in the western parts) by KOSTADINOVSKI (1999).

Conclusively, it can be stated that, according to the present state of knowledge, the species *F. hercegovinica* is an endemic species of the Balkans, distributed from Northern Greece, through Macedonia, southern Montenegro and the southernmost parts of Croatia to south-eastern Herzegovina.

The main purpose of this paper is to contribute to the knowledge of the chorology of *F. hercegovina* by recent field observation. Because of the observed variability and of difficulties in determination, a key has been prepared.

## RESULTS AND DISCUSSION

During field work in Konavle region (May, 2004), *F. hercegovinica* (Fig. 1) was found as a common species on calcareous, rocky, open habitats, distributed from the lowland almost to the top of the Mt Sniježnica (1234 m a.s.l.). Furthermore, additional revision of herbarium collections (ZA) showed that it is present even on the island of Šipan (the Elaphitic archipelago). The known distribution in Croatia is presented in Fig. 2.

Comparing the descriptions of the species *F. hercegovinica* and *F. hirtovaginata* (cf. MARKGRAF-DANNENBERG, 1980) it is difficult to find substantial differences between them. Furthermore, they are sympatric taxa sharing similar habitats. The species can be recognized only by the hairiness and openness of the sheaths and partially by



Fig. 2. Distribution of *Festuca hercegovinica* in Croatia

the lemma dimensions. *F. hercegovinica* should have glabrous sheaths closed in the lower quarter, and the lemmas  $6.2\text{--}7.5 \times 2.1\text{--}2.5$  mm; and the species *F. hirtovaginata* sheaths with dense, patent hairs, open nearly to the base, and lemmas  $5.4\text{--}7.1 \times 1.8\text{--}2.2$  mm. KOSTADINOVSKI (1999) investigated the range of variability of morphological characters of these species and came to the conclusion that it is much greater than presented by MARKGRAF-DANNENBERG (1978, 1980). Accordingly, he proposed a new taxonomical treatment of these taxa, separating them at the varietal level: *F. hirtovaginata* (Acht.) Markgr.-Dannenb. var. *hirtovaginata* and *F. hirtovaginata* var. *hercegovinica* (Markgr.-Dannenb.) Kostadinovski (this *comb. nova* has not been published validly previously and has to be considered as *nom. illeg.*). He also came to the conclusion that *F. hirtovaginata* var. *hirtovaginata* can have a larger number of veins and ribs on the leaf cross section.

All collected specimens from Croatia had glabrous sheaths, but mostly open nearly to the base, and seven veins on the leaf cross section. This combination of characters also supports Kostadinovski's point of view.

For a final solution of the classification of these taxa further study is needed in whole range of their distribution.

Without regard to its taxonomical level, the existence of a well distinguishable taxon within the flora of Croatia is clear, and the differential characteristics with respect to the other Croatian species (except *F. hirtovaginata* which is not member of the Croatian flora) are presented in the determination key. *F. hirtovaginata* and *F. hercegovinica* are presented at the specific level, but previous discussion has to be considered.

- 1 Young shoots intravaginal; with narrow, plicate leaves in diameter up to 1 mm; ligule short (developed as a narrow rim), 0.2–0.5 mm long, with auricles; leaf sheaths open or closed for not more than ? of their length; sclerenchyma in a ±complete ring . . . . . 2
- 1\* Young shoots with other combination of characteristics . not included in this key
- 2 Leaves with 5–7 veins on cross section . . . . . 3
- 2\* Leaves with (7–)9–11(–13) veins on cross section. . . . . *F. pallens* agg.
- 3 Lemma without awn, or with awn 0.2(–0.4) mm long, spikelets 4.7–5.2(–5.5) mm long, lemma 2.6–3.3 mm long . . . . . *F. filiformis* Pourr.
- 3\* Lemma with awn longer than 1 mm, spikelets longer than 5 mm, lemma longer than 3.5 mm . . . . . 4
- 4 Spikelets 4.8–6.5 mm long, upper glume 2.6–4.6 mm long, lemma (2.5–)3.3–4(–5) mm long, awn 0.8–1.5 mm long, width of leaf cross section 0.23–0.7 mm, rib 1 . . . . . *F. ovina* L.
- 4\* Spikelets 7.8–10 mm long, upper glume 4.6–6.9 mm long, lemma 5.4–7.5 mm long, width of leaf cross section 0.4–0.9 mm, ribs 3 or more . . . . . 5
- 5 Leaf sheaths ± hairy, leaf cross section with (5–)7(–13) veins and 3(–5) ribs, lemma 5.4–7.1 mm long . . . . . *F. hirtovaginata* (Acht.) Markgr.-Dannenb.
- 5\* Leaf sheaths glabrous, leaf cross section with (5–)7 veins and 3 ribs, lemma 6.2–7.5 mm long . . . . . *F. hercegovinica* Markgr.-Dannenb.

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## S A Ž E T A K

*Festuca hercegovinica* Markgr.-Dannenb. (*Poaceae*) u hrvatskoj flori

A. Alegro

*Festuca hercegovinica* Markgr.-Dannenb. endemična je balkanska vrsta čiji areal zahvaća i krajnje jugoistočne dijelove Hrvatske, no vrsta nije navedena u djelu »Index Florae Croatiae«. Ova vrsta rasprostranjena je od sjevera Grčke, preko Makedonije, juga Crne Gore i jugoistoka Hrvatske do jugoistoka Bosne i Hercegovine. Nalazišta iz Hrvatske poznata s dubrovačkog područja, iz Konavala i Sniježnice, te otoka Šipana (Elafitsko otočje) prikazana su kartom rasprostranjenosti. S obzirom da postoje vrlo male morfološke razlike između ove vrste i vrste *F. hirtovaginata* (Acht.) Markgr.-Dannenb., te da je njihova varijabilnost veća nego je to predočeno u originalnim opisima, postoji i gledište da ih valja razlučiti na razini varijeteta. Tako bismo imali sljedeće svojte: *F. hirtovaginata* (Acht.) Markgr.-Dannenb. var. *hirtovaginata* and *F. hirtovaginata* var. *hercegovinica* (Markgr.-Dannenb.) Kostadinovski. No, bez obzira na taksonomski status svojta *F. hercegovinica* je prepoznatljiv član hrvatske flore.