

FESTUCA PULCHELLA SCHRAD. IN CROATIA

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There are some records in the older botanic literature that the species *Festuca pulchella* is present in Croatia, but the localities are not mentioned. In this paper the species is confirmed for the flora of Croatia. It was found at two localities, on Snježnik (Risnjak National Park) and on Zavižan (North Velebit National Park), above the altitude of 1400 m a.s.l., in the composition of non-forest vegetation.

Key words: alpine flora, *Poaceae*, Snježnik, Risnjak National Park, Zavižan, North Velebit National Park

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U starijoj botaničkoj literaturi postoje zapisi da je vrsta *Festuca pulchella* prisutna u Hrvatskoj, međutim ne navode se lokaliteti. U ovome radu je vrsta potvrđena za floru Hrvatske. Utvrđena je na dva lokaliteta, na Snježniku (Nacionalni park Risnjak) i na Zavižanu (Nacionalni park Sjeverni Velebit). Vrsta je zabilježena na nadmorskoj visini iznad 1400 m i to u sastavu nešumske vegetacije.

Ključne riječi: planinska flora, *Poaceae*, Snježnik, Nacionalni park Risnjak, Zavižan, Nacionalni park Sjeverni Velebit

INTRODUCTION

The grass *Festuca pulchella* Schrad. (syn. *F. scheuchzeri* Gaudin, *F. nutans* Host) develops in mountainous regions of Europe: in Austria (ENGLMAIER, 1994, 2005), Germany (WISSKIRCHEN & HAEUPLER, 1998), France (CONERT, 1994), Italy (MARKGRAF-DANNENBERG, 1982), Slovenia (MARTINČIČ *et al.*, 1999; JOGAN, 2001), Switzerland (LAUBER & WAGNER, 1998), and dubious findings in Romania (MARKGRAF-DANNENBERG, 1980).

The species grows on soil rich in calcium carbonate, in the composition of various types of vegetation (OBERDORFER, 2001). The ecological requirements in the hab-

itats differ between the two subspecies. *Festuca pulchella* subsp. *pulchella*, according to CONERT (1994), is mostly present in stands of the association *Caricetum ferrugineae* Lüdi 1921 and the alliance *Caricion ferrugineae* G. Br.-Bl. et J. Br.-Bl. 1931, and more seldom in the associations *Cicerbitetum alpinae* Beg. 1922 and *Alnetum viridis* Br.-Bl. 1918. It grows on deep soil rich in humus, most often on the north-facing slopes of mountains, at altitudes of 1200–2700 m. *Festuca pulchella* subsp. *jurana*, according to CONERT (1994), develops in communities of the order *Thlaspietalia rotundifolii* Br.-Bl. in Br.-Bl. et Jenny 1926, and the class *Elyno-Seslerietea* Br.-Bl. 1948. It appears in pioneering vegetation on shallow skeletal soil poor in humus, mostly in extreme positions on rocky peaks, at altitudes of 1200–2400 m.

In Croatia, the species *Festuca pulchella* was mentioned in the monograph of HACKEL (1882), but without indication of localities. MARKGRAF-DANNENBERG (1979) placed a spot on the distribution map of *Festuca pulchella* in the area of either Slovenian Snežnik or Croatian Snježnik, but without any further information.

In the comprehensive floristic works of Croatia (SCHLOSSER & FARKAŠ-VUKOTINOVIĆ, 1869; HIRC, 1903–1912; HAYEK, 1932–1933; DEGEN, 1936; DOMAC, 1984, 1994; ILIJANIĆ & TOPIĆ, 2000; <http://hirc.botanic.hr/fcd>) the species has not been recorded.

Through overviewing the botanic literature that relates to the floristic and phytosociological research of Croatian mountains (FORENBACHER, 1990, 2001; HIRC, 1896; HORVAT, 1930, 1931; VRBEK & BUZJAK, 2002) it has been ascertained that the species *Festuca pulchella* is not mentioned.

In this paper, *Festuca pulchella* is noted at two localities in Croatia, which confirms the presence of the species in the Croatian flora.

RESULTS AND DISCUSSION

The species *Festuca pulchella* was recorded at two localities in Croatia (Fig. 1):

- Snježnik, Risnjak National Park; at an altitude of 1480 m a.s.l.; date 16/07/2001.
- Zavižan, North Velebit National Park; at an altitude of about 1500 m a.s.l.; date 21/07/2001.

On Snježnik the species was found in a nitrophilous habitat in the immediate vicinity of the hiking or mountaineering lodge, which is occasionally visited by horses bringing up the requisites of the lodge. The soil is moderately humid and deep. The plant is lushly developed in this habitat, but over a small area of just a few square metres.

On Zavižan the species was recorded in the composition of grassland vegetation, where it was exposed to occasional grazing from horses, and perhaps from game.

It could be assumed that the species grows in the composition of non-forest vegetation in the mountain regions of Croatia, and new localities could be expected in future investigations.

Specimens of both localities have been determined as *Festuca pulchella* subsp. *pulchella* and are stored in the private herbarium collection of Zvezdana Stančić (Fig. 2).

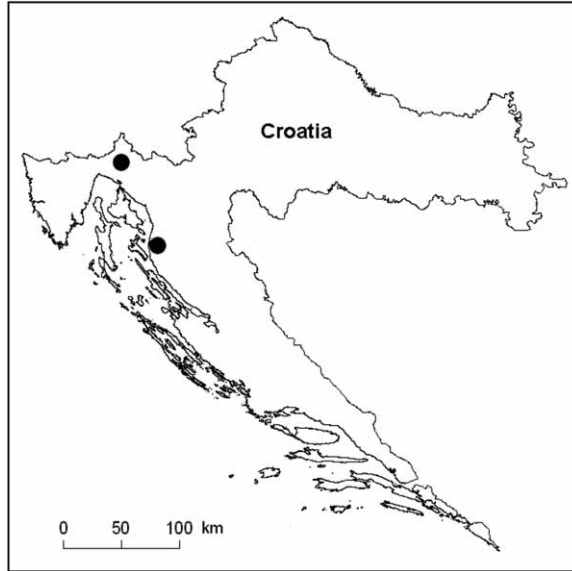


Fig. 1. Distribution map of *Festuca pulchella* Schrad. in Croatia.



Fig. 2. Specimen of *Festuca pulchella* Schrad. in the herbarium collection of Zvezdana Stančić.

For distinguishing between species of the genus *Festuca*, the cross-sections of leaves are very important, as shown in Fig. 3. Furthermore, during the determination of plants of species *Festuca pulchella* in Croatia, a discrepancy was noticed in the size of the spikelets. According to the literature sources (MARKGRAF-DANNENBERG, 1980; ENGLMAIER, 1994, 2005; CONERT, 2000) spikelets are 6–8 mm long, but the specimens from Croatia exhibit smaller spikelets, about 4 mm long (Fig. 4).

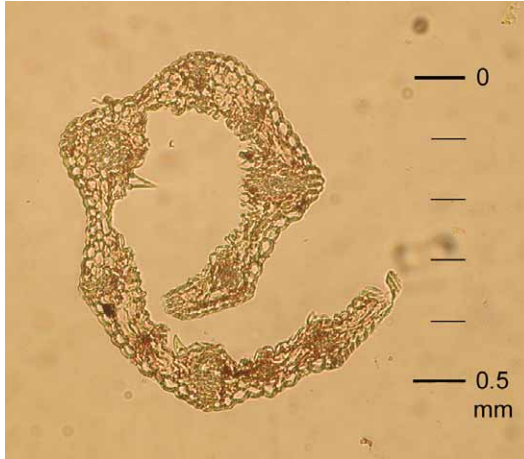


Fig. 3. Cross-section through a leaf of *Festuca pulchella* Schrad.

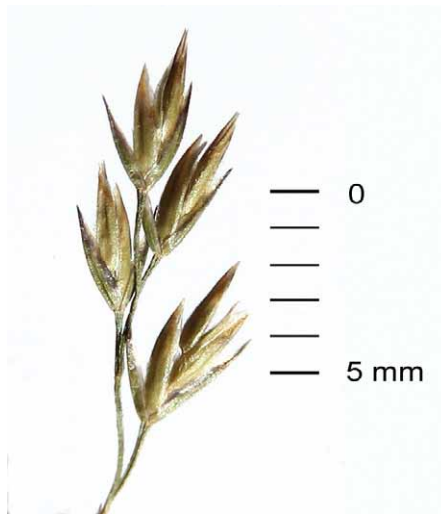


Fig. 4. Spikelets of *Festuca pulchella* Schrad.

The following is a determination key for the species *Festuca pulchella* Schrad. among other species within the genus *Festuca* from Croatia:

- 1 Leaves more than 2 mm wide 2
- 1 Leaves less than 1.5 mm wide
- F. alpina* Suter, *F. amethystina* L., *F. bosniaca* Kumm. et Sendtn., *F. circummediterranea* Patzke, *F. dalmatica* (Hack.) K. Richt., *F. halleri* All., *F. hercegovinica* Markgr.-Dann., *F. heterophylla* Lam., *F. illyrica* Markgr.-Dann., *F. lapidosa* (Degen) Markgr.-Dann., *F. nigrescens* Lam., *F. nitida* Kit., *F. ovina* L., *F. panciana* (Hack.) K. Richt., *F. pseudovina* Hack. ex Wiesb., *F. quadriflora* Honck., *F. rubra* L., *F. rupicola* Heuff., *F. stenantha* (Hack.) K. Richt., *F. stricta* Host, *F. tenuifolia* Sibth., *F. trachyphylla* (Hack.) Krajina, *F. trichophylla* (Ducros ex Gaudin) K. Richt., *F. vaginata* Waldst. et Kit. ex Willd., *F. valesiaca* Schleich. ex Gaudin, *F. varia* Haenke, *F. violacea* Schleich. ex Gaudin, *F. xanthina* Roem. et Schult.
- 2 Stem without swollen tuberous base 3
- 2 Stem with swollen tuberous base
- F. paniculata* (L.) Schinz et Thell.
- 3 Stem with stolons 4
- 3 Stem without stolons
- F. altissima* All., *F. arundinacea* Schreb. subsp. *arundinacea* (sometimes with stolons), *F. gigantea* (L.) Vill., *F. pratensis* Huds. subsp. *pratensis*, *F. pratensis* Huds. subsp. *apennina* (Notaris) Hackel ex Hegi, *F. spectabilis* Jan, *F. spectabilis* Jan subsp. *affinis* (Boiss. et Heldr. ex Hack.) Hack.
- 4 Leaves 2–4 mm wide 5
- 4 Leaves more than 5 mm wide
- F. arundinacea* Schreb. subsp. *arundinacea* (sometimes without stolons), *F. drymeja* Mert. Koch
- 5 Auricles ciliate
- F. arundinacea* Schreb. subsp. *fenas* (Lag.) Arcang.
- 5 Leaves without auricles
- F. pulchella* Schrad. subsp. *pulchella*

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S A Ž E T A K***Festuca pulchella* Schrad. u Hrvatskoj**

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U starijoj botaničkoj literaturi (HACKEL, 1882; MARKGRAF-DANNENBERG, 1979) vrsta *Festuca pulchella* se navodi za Hrvatsku, ali bez zapisa lokaliteta. U ovome je radu vrsta potvrđena za hrvatsku floru. Tijekom 2001. godine utvrđena je na Snježniku i Zavižanu. Na Snježniku je pronađena na nadmorskoj visini od 1480 m, na nitrofilnom staništu u blizini planinarskog doma. Na Zavižanu je zabilježena na nadmorskoj visini od oko 1500 m, u sastavu travnjačke vegetacije izložene povremenoj ispaši. Može se pretpostaviti da vrsta raste i na drugim planinskim lokalitetima u Hrvatskoj, čemu u budućim istraživanjima treba posvetiti više pažnje.