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The occurrence of *Kickxia cirrhosa* (L.) Fritisch in Montenegro supports the earlier records of this species for the Balkan Peninsula

Abstract

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During the floristic investigation of the Great Beach of Ulcinj and hinterland, *Kickxia cirrhosa* (L.) Fritsch was found for the first time in Montenegro. According to Flora Europaea the area of this species is in W Mediterranean and SW Europe, but the presence on former SFR Yugoslavia is doubtful. The record of *K. cirrhosa* (L.) Fritsch in the hinterland of Great Beach of Ulcinj confirms the presence of this taxon in the flora of Balkan Peninsula.

Introduction

Velika Plaža (Great Beach) in the vicinity of Ulcinj, the part of Ulcinjsko Polje field, is the longest (12 km) beach in the eastern Adriatic coast. It is the best preserved habitat of psamofitic vegetation in Montenegrin coastal area and on whole eastern Adriatic coast as well.

The psamophitic vegetation here is ass. *Xanthio-Cakiletum maritimae* (Beg.) Pign. that inhabits the area exposed to intensive influence of the sea and characterised by poor floristic contents, and ass. *Agropyretum mediterraneum* (Kuhn.) Br.-Bl. bordering the previous and characterized by more significant floristic diversity (Mijović 1994). Beyond the psamohalophytic area there are swamp habitats with dominant ass. *Juncetum maritime-acuti* H-ić. In the hinterland it is also very well developed the vegetation of typical xerophyts whose edificators are: *Petrorhagia saxifraga* L., *Teucrium polium* L. and *Lagurus ovatus* L.

Material and methods

The investigations were carried out from June 2003 to July 2004, and the species presented here was found in June. The specimens are identified following Fernandes (1972) and Pignatti (1982). The vouchers are entrusted to the Natural History Museum of Montenegro in Podgorica.

Results and discussion

The species *Kickxia cirrhosa* (L.) Fritisch (Fig. 1) was found for the first time in Montenegro at only one place on Velika Plaža (hinterland) growing in very small population (Fig. 2). The plant inhabits the sand substrate along the periphery of ass. *Juncetum maritime-acuti* H-ić, and regarding the other elements of the flora the dominant at this habitat are: *Petrorhagia saxifraga* (L.) Link., *Teucrium polium* L., *T. chamaedrys* L., *Sanguisorba minor* Scop., *Lagurus ovatus* L. (Fig. 3).

Fig. 1. *Kickxia cirrhosa* (L.) Fritisch.

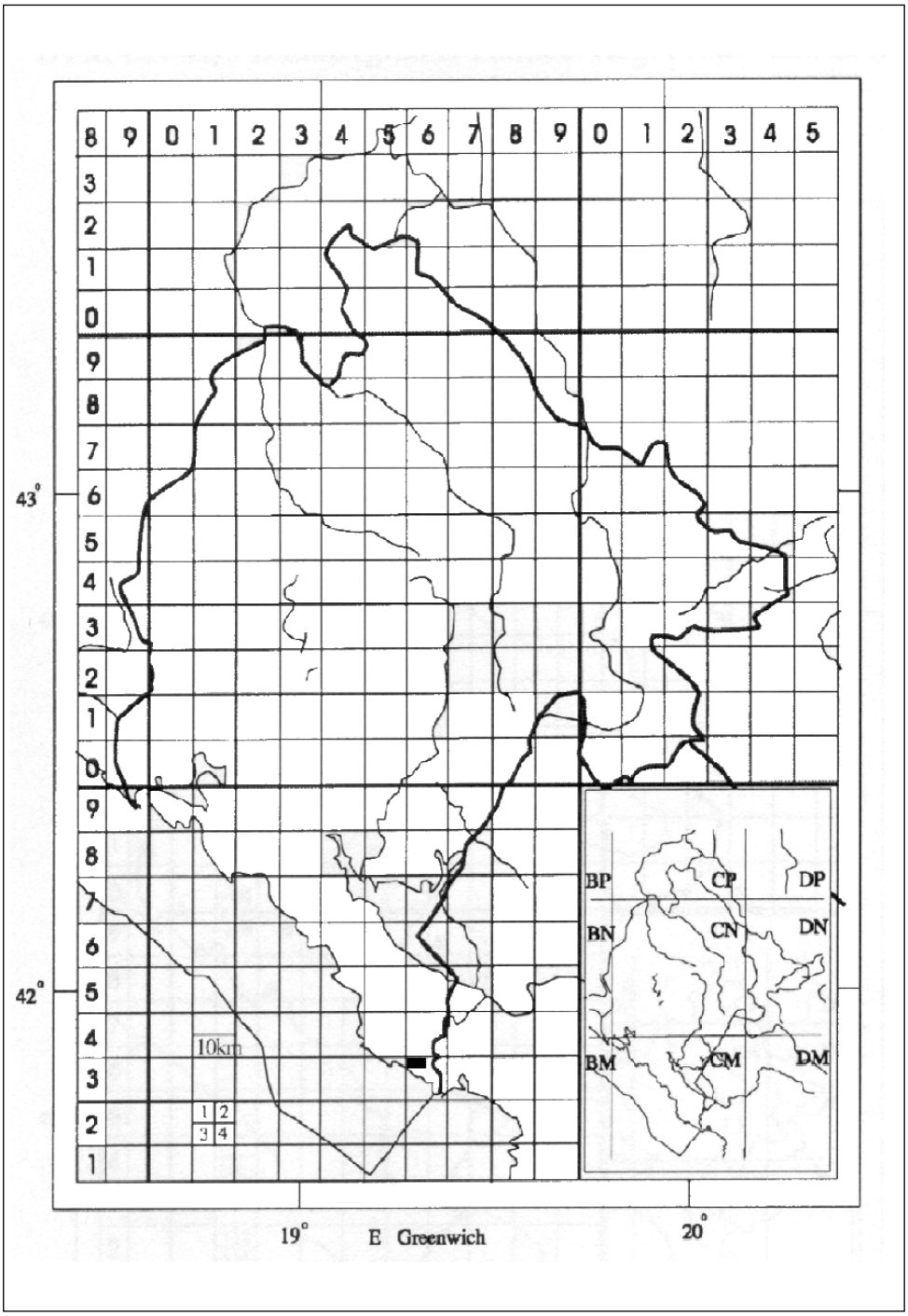

Fig. 2. *Kickxia cirrhosa* (L.) Fritisch in Montenegro (UTM: CM 63/1).

Fig. 3. Habitat of *Kickxia cirrhosa* (L.) Fritsch.

The genus *Kickxia* Dumort. is represented in Europe with 5 species whose centre of dispersion is the Mediterranean region (Fernandes 1972). According to the existing data, *K. spuria* (L.) Dumort., *K. commutata* (Bernh. ex Reichenb.) Fritsch and *K. elatine* (L.) Dumort are known in Montenegro (Rohlena 1942). *Kickxia cirrhosa* (L.) Fritsch is clearly morphologically distinct from all these species as it could be seen from Table 1.

The presence of *Kickxia cirrhosa* in the Balkan Peninsula was reported under: *Linaria cirrhosa* W. for Dalmatia (Hvar, Visiani 1847) and Greece (Crete, Halacsy 1902), and as *Kickxia cirrhosa* for Dalmatia, Albania, Greece and Crete (Hayek 1924-1933). It should be noted that in recent regional floras (Domac 1994, Qosja & al. 1996), there are no data on its presence in the respective countries. According to Flora Europaea (Fernandes 1972) the range of this species is in W Mediterranean and SW Europe, with question mark regarding its presence in the former SFR Yugoslavia. Since the taxon for the former SFR Yugoslavia is reported only on Hvar island, the question mark probably refers to this data. In addition, there are not data on the presence of *Kickxia cirrhosa* in Albania and Greece where grows *K. commutata* (Bernh. ex Reichenb.) Fritsch (*K. commutata* subsp. *graeca*) (Fernandes 1972).

On the basis of morphological characters of the collected material it is clear that the plants from Montenegro belong to *Kickxia cirrhosa* (L.) Fritisch, and not to *K. commutata* subsp. *graeca* (Bory & Chaub.) R. Fernandes.

Table 1. Morphological characters of the Montenegro *Kickxia* species.

Kickxia	leaves	corolla	capsule
cirrhosa	lanceolate-hastate to narrowly lanceolate-sagittate glabrous	4-6 mm violet to whitish tinged with violet	1.5-2mm globose
commutata	ovate-hastate to lanceolate-sagittate villous	11-15 mm whitish upper lip bluish-violet lower lip yellow	2.5-4 mm globose
elatine	ovate, sagittate or hastate	7-15 mm yellowish or bluish upper lip violet	4-4.5 mm subglobose
spuria	ovate, truncate or rounded at base	10-15 mm yellow upper lip deep purple	3-5 mm depressed globose

Conclusion

A finding of *Kickxia cirrhosa* in the hinterland of the Velika Plaža in the vicinity of Ulcinj, clearly confirm its presence in the Balkan Peninsula. In relation to Flora Europaea this record significantly extends the species range towards the south-east. It may be expected that future explorations will confirm Hayek's data on the presence of *Kickxia cirrhosa* (L.) Fritisch in Albania and Greece.

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