

## Notulae ad floram Sloveniae

### *Juncus minutulus* Krecz. et Gontsch.

#### New species of Slovenian flora found in Prekmurje Nova vrsta slovenske flore najdena v Prekmurju

9163/1 Slovenia: Prekmurje, Budinci, Bejčín Breg, 355 m s. m., in the Hungarian-Slovenian borderland eastward to the border-stone A115, (N46-52-36/E016-14-05). Leg. et det. G. KIRÁLY, 09. 09. 2009 (private herbarium of the author and LJU).

In the territory of Slovenia *Juncus minutulus* Krecz. et Gontsch. was found for the first time during the floristic research carried out in the Hungarian-Slovenian borderland. *Juncus bufonius* agg. is characterized by high morphological variability. This taxon belongs to the subgenus *Poiophylli* Buchenau within genus *Juncus*, however, the classification and identification of the included taxa are different in various European floras. Several synonyms, whose judgements are not uniform, make the question more complex. Apart from *J. bufonius* L. s. str., which is frequent all over Europe, also the rare *J. ranarius* Songeon et Perrier (*J. ambiguus* auct., *J. nastanthus* auct.) is accepted generally on species level (see LAUBER & WAGNER 1996, STACE 1997, JÁGER & WERNER 2002, KIRSCHNER & KUBÁT 2002, FISCHER & al. 2008, LÁJER & KIRÁLY 2009). Further, closely related taxon is the Mediterranean *J. hybridus* Brot., which does not exist in Central Europe. On the contrary, certain authors (COPE & STACE 1978, FERNÁNDEZ-CARVAJAL 1982, STACE 1997, VAN DER MEIJDEN 2005) consider *J. minutulus* Krecz. et Gontsch. as a subspecies or synonym of *J. bufonius* s. l., while the latest flora works of Central Europe handle this taxon on species level. *J. minutulus* can be distinguished from *J. bufonius* s. str. undoubtedly by observing the stamens: the number of stamens is 3 and the length of anther is up to 1/3 the length of filament. Size characters, such as the length of capsules, seeds and perianth of *J. minutulus* and *J. bufonius* are not completely reliable (Tab. 1). A further important characteristic is that flowers of *J. minutulus* are normally cleistogamous (HOLUB 1976, KIRSCHNER 2002b, FISCHER & al. 2008, confirmed by own observation as well).

Table 1: Important characteristics of *J. bufonius* s.str. and *J. minutulus* (after KIRSCHNER 2002b)

Characteristic	<i>J. bufonius</i> s.str.	<i>J. minutulus</i>
Length of anther (mm)	(0,3-)-0,5-1,0(-1,2)	0,2-0,5
Length of capsule (mm)	3,5-5	2,5-3
Length of seeds (mm)	0,40-0,50	(0,30-)-0,35-0,40
Width of seeds (mm)	0,25-0,35	c. 0,25

10 flowers and 10 capsules of 5 different herbarium specimens collected in Slovenia on the given locality were measured. Standard deviation of the examined values of each

characteristic was low, the sample was decidedly uniform. The length of anther is 0.30-0.38 (average 0.35) mm, the length of capsule is 3-3.5 (average 3.21) mm, the length of seed is 0.37-0.40 (average 0.39) mm, the width of seed is 0.25-0.28 (average 0.27) mm. Comparing to the data of Tab. 1. it is clear that the length of capsule falls within the transition range while the size of seed and anther shows identity to *J. minutulus*. The reason of this uncertainty is, that the morphometric research on the especially variable aggregate of *J. bufonius* cannot be considered finished, each taxon is not completely clarified. KIRSCHNER (2002b) proposed the possibility of hybrid development between these two taxa. However, hybrids are not common probably and this alone cannot explain the identification difficulties. Considering the present data, in my opinion it can be stated, that specimens identifiable as *J. minutulus* occur both in Hungary and in Slovenia.

The distribution area of *J. minutulus* is not clarified. Occurrences are known in Finland and Sweden (HARMAJA 2003), in the Czech Republic (HOLUB 1976, KIRSCHNER 2002a), in Slovakia (MARHOLD & HINDÁK 1998), in Hungary (KIRÁLY ined.), in Austria (FISCHER & al. 2008), in Germany (JÄGER & WERNER 2002), in Italy and Croatia (STARMÜHLER 2007), in France (<http://www.tela-botanica.org/eflore/BDNFF>), in Greece (GREUTER & al. 1985) as well as in Romania (HOLUB 1976).

Formerly it has not been reported from the territory of Slovenia (JOGAN 2001, MARTINČIČ 2007), its Istrian occurrence (STARMÜHLER 2007) is situated in the Italian part of the Trieste Gulf (STARMÜHLER ex litt.). *J. minutulus* was found in Slovenia in Prekmurje, close to Budinci. It exists in a Nanocyperion community of a shady road. To characterize this association the following relevé was prepared: 09. 09. 2009., G. KIRÁLY, E<sub>1</sub> 100%, Height of E<sub>1</sub>: 5-30 cm, plot size: 1 m<sup>2</sup>.

*Eleocharis carniolica* 15, *Glyceria declinata* 5, *Juncus minutulus* 25, *Juncus tenuis* 50, *Peplis portula* 5, *Poa annua* 10, *Ranunculus flammula* 10, *Sagina procumbens* +, *Stellaria alsine* +.

The surroundings of the locality (towards both countries) are covered by closed *Pinus sylvestris*-deciduous mixed forests of acidophil character and cultivated Scotch pine forests. According to the Hungarian observation, occurrence of *J. minutulus* is expectable mainly in areas of bare wet ground where few competitors exist. It often replaces *J. bufonius* s. str. in Nanocyperion community fragments emerged on the roads and lanes of closed forest. It is probable, that the regularly observed cleistogam characteristic of this species represents the adaptation of the fragmented populations. In the territory of Őrség region bordering Slovenia, occurrence of *J. minutulus* can be considered scattered, consequently, it is definitely present in other parts of the adjoining Slovenian territories. According to FISCHER & al. (2008) *J. minutulus* is a "(submontane) montane-subalpine" taxon, which means it reaches higher altitudes than *J. bufonius* s. str. This statement must be considered reservedly, as there are few data referring to the vertical range of *J. minutulus* in Central Europe. However, the phytogeographic character of Őrség and Prekmurje regions is in accordance with this description: moist hill-countries of lower altitudes with several montane-subalpine flora elements.

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