

***Carex* ×*gogelana* Podp.: clarification of its identity and typification of the name**

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ŘEPKA R. & TARAŠKA V. 2022: *Carex* ×*gogelana* Podp.: clarification of its identity and typification of the name. *Acta Musei Moraviae, Scientiae biologicae* 107(1–2): 49–54. – Frequent hybridisation and difficult identification of hybrids lead to many nomenclatorial ambiguities in the genus *Carex*. Here we focus on the puzzling name of *C. ×gogelana* described by J. Podpěra as a hybrid of *C. distans* and *C. oederi*, which is applied to various hybrids in the literature. Syntype specimens were found to represent several taxa, but none of them corresponding to the abovementioned hybrid combination. A plant of *C. demissa* in the BRNM herbarium best conformed to the protologue in terms of plant appearance as well as collecting locality, and it was thus selected as lectotype.

Keywords. *Carex*, Cyperaceae, hybrid, Moravia, taxonomy, typification

Introduction

Hybridisation is a common phenomenon in vascular plants and has great importance in plant speciation (BARTON 2001, MALLET 2005, VALLEJO-MARÍN & HISCOCK 2016, HÖRANDL 2022). Relatively frequent interspecific hybridisation occurs in genus *Carex* L., which is one of the reasons why the genus is considered taxonomically difficult (CAYOUILLE & CATLING 1992, JERMY *et al.* 2007, KOOPMAN 2011, ŘEPKA *et al.* 2014, STACE *et al.* 2015). However, the number of genuine *Carex* hybrids is often overrated. For example, as many as 174 hybrids with binomial names are recognised in Europe, and a further 126 are mentioned by their hybrid formula only, which is a high number compared to the 222 species of *Carex* growing in Europe (KOOPMAN 2011). The frequency of hybridisation in the genus varies strongly between different subgenera and sections. Hybrids are more frequently found in e.g. sections *Phacocystis*, *Ceratocystis*, *Paludosae*, *Glareosae* and *Vesicariae* of subgenus *Carex* (CAYOUILLE & CATLING 1992, STACE *et al.* 2015) and some sections of subg. *Vignea* (WIECLAW & WILHELM 2014). In recent decades the problem of hybridisation has been addressed in several papers focused on the genus *Carex* (e.g. SMITH & WATERWAY 2008, KORPELAINEN *et al.* 2010, KOOPMAN *et al.* 2021), especially in section *Ceratocystis* (SCHMID 1982, BLACKSTOCK & ASHTON 2010, JIMÉNEZ-MEJÍAS *et al.* 2012, 2014, WIECLAW & KOOPMAN 2013). On the other hand, some of the presumed hybrids have been proved to be just misidentified plants (e.g. ŘEPKA *et al.* 2014, ESCUDERO *et al.* 2014). The taxonomic identity of supposed hybrids must thus be critically assessed.

In Czechia, a total of 29 hybrids have so far been confirmed in *Carex*, while five more hybrid names recognised in the country actually relate to misidentified plants (i.e. putative hybrids). Two have an uncertain taxonomic identity (including *C. ×gogelana* Podp.) and another 42 are only mentioned in the literature, but not documented by herbarium specimens (GRULICH & ŘEPKA *in press*). Generally, the highest number of *Carex* hybrids in the Czech flora is found in sections *Ceratocystis* and *Phacocystis*.

Famous Moravian botanist Josef Podpěra (1878–1954) reported 29 *Carex* hybrids in his important but fragmented work *Flora of Moravia*. Species of section *Ceratocystis* participated in five hybrid combinations (*C. ×gogelana*, *C. ×leutzii* Kneuck., *C. ×muelleriana* F.W. Schultz, *C. ×pauliniana* F.W. Schultz and *C. ×xanthocarpa* Degl.; see PODPĚRA 1930: 356). Josef Podpěra, custodian of the BRNM herbarium for several years (1909–1914), already handled the early collections of parson František Gogela, who collected plants in the Carpathian part of Moravia, more often in the Hostýnské vrchy and Vsetínské vrchy Mts. In Gogela's collection, Podpěra recognised some *Carex* plants from Podhradní Lhota village in the Hostýnské vrchy Mts as hybrids of the putative species combination *C. distans* L. × *C. oederi* Retz. (s.l.) and published the binomial name *Carex ×gogelana* (PODPĚRA 1914: 62). This name had already appeared in his *Flora of the Haná Region* (PODPĚRA 1911: 329), but remained invalid (*nomen nudum*). The first correct description of the taxon is provided in *Additions to the Flora of Moravia* (PODPĚRA 1914: 62), characterizing *C. ×gogelana* as follows: small herbs with stem up to 26 cm tall, obtuse, smooth, straight or slightly curved, longer than leaves; leaves greyish, approx. 4 mm wide, rigid; female spikes ovoid, supported by long bracts, remote; perigynia distinctly ribbed, almost horizontal in the lower part of the spike. Male spike narrowly cylindrical, narrowed on both sides, scales rusty with a green central stripe. Podpěra mentioned the name of the hybrid again in the *Flora of Moravia*, where he repeated a brief description of the nothospecies and the location of the find from the protologue (PODPĚRA 1930: 319).

In the early 20th century, when Podpěra published the name *C. ×gogelana*, botanists did not yet distinguish between *C. oederi* s. str. and *C. demissa* Hornem. (= *C. oederi* subsp. *oedocarpa* Andersson). It is thus unclear which of these two taxa, besides *C. distans*, Podpěra considered to be a parent species of *C. ×gogelana*. Other nomenclatorial ambiguities in recent literature are connected with the name of *Carex ×luteola* Sendtn. (= *C. distans* × *C. viridula* Michx. s.l.), by various authors considered a hybrid of *C. distans*, and some taxa of *C. flava* agg., namely *C. viridula* subsp. *viridula* (= *C. oederi*), *C. viridula* subsp. *brachyrrhyncha* (Čelak.) B. Schmid (= *C. lepidocarpa* Tausch) and *C. viridula* subsp. *oedocarpa* (Andersson) B. Schmid (= *C. demissa*). All of these hybrids have been reported from the territory of Great Britain (JERMY *et al.* 2007). STACE *et al.* (2015) mentioned the hybrid *C. distans* × *C. viridula* subsp. *oedocarpa* without a binomial name, while using the name of "*C. ×gogeliana*" for a hybrid of *C. distans* × *C. viridula* subsp. *viridula*, which they reported from two localities in Great Britain, i.e. Orlock Pint, Co. Down and Tywyn Burrows, Carmarthenshire (see PRYCE & PRYCE 2007). Furthermore, they apply the name *C. ×luteola* to the hybrid *C. distans* × *C. lepidocarpa*, which consequently turns to a synonym of *C. ×binderi* Podp. In contrast,

KOOPMAN (2011: 330) regarded *C. ×gogelana* to be a hybrid of *C. demissa* and *C. distans*, mentioning this nothospecies not only from Czechia and Great Britain, but also from France, Germany, Italy and Slovakia.

The hybrids *C. distans* × *C. oederi* or *C. distans* × *C. demissa* are not considered members of the Czech flora (GRULICH & ŘEPKA 2019). However, *C. ×gogelana* is mentioned among *Carex* hybrids uncertain by their taxonomic identity in the *Flora of the Czech Republic* (GRULICH & ŘEPKA *in press*). Regardless of this, the interpretation of the name remains ambiguous, since a type specimen has not been selected to date, and it is not even certain that it relates to a hybrid combination (see above). In order to resolve these ambiguities, we traced F. Gogela's herbarium specimens and selected the lectotype of the name *Carex gogelana*.

Materials and methods

Herbaria BRNM, BRNU, GM and OLM (see THIERS 2022), where the major part of F. Gogela's collection is located, were examined in order to find syntypes of *C. ×gogelana*. All of these specimens were scrutinised and a lectotype was selected in congruence with the ICN (TURLAND *et al.* 2018).

Typification

***Carex gogelana* Podp.**, *Časopis Moravského Musea Zemského* **14**: 62, 1914.

= *C. demissa* Hornemann in Oeder, *Flora Danica* 8/23: tab. 1342, 1808.

Type identification: „Podhradní Lhota u Rajnochovic (Gogela)“.

Lectotype (designated here): „Moravské Karpaty. Podhradní Lhota“, sine anno, leg. F. Gogela [ut *C. oederi* Ehrh., later re-identified as *C. gogelana* Podp.], BRNM 04207/26 ! (Fig. 1).

Another specimen examined. *Carex demissa* Hornem. + *C. cf. hostiana* DC. × *C. oederi* Retz. + *C. cf. lepidocarpa* Tausch (admixtum). [Herbarium Jos. Podpěra]. „Moravia. Rajnochovice“, 1907, leg. F. Gogela [ut *C. distans* × *oederi*], rev. R. Řepka 2022, BRNU 42418 ! (paralectotype).

Taxonomic remarks and discussion

One herbarium sheet with material designated as *C. distans* × *oederi* and collected by F. Gogela around the *locus classicus* (“Rajnochovice”) was found in BRNU. It comprises one complete plant of *C. demissa* and two fragments of plants from the same *Carex* section; out of them, one probably represents *C. hostiana* × *C. oederi* and one (only a part of stem and inflorescence) is *C. lepidocarpa*. The only well-collected, clearly identifiable plant thus belongs to *C. demissa*. Moreover, the fragments of the other two plants may have been attached to the sheet additionally, as these taxa usually grow in different habitats, and are unlikely to occur together at one locality.

Another sheet with a single specimen held under the name *C. ×gogelana* was found in BRNM. This plant was revised as *C. tumidocarpa* Andersson (syn. *C. demissa*) by

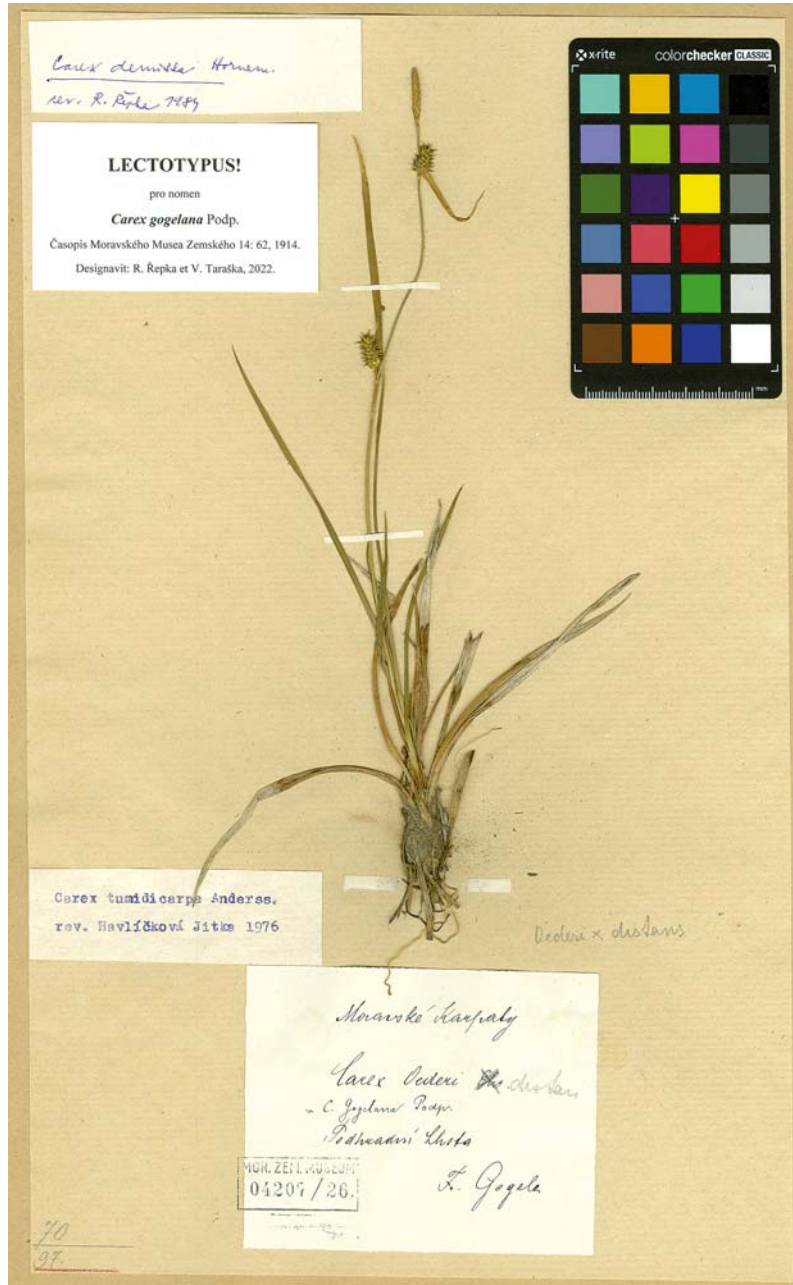


Fig. 1. Lectotype of *Carex togelana* Podp. (BRNM 04207/26).

J. Štěpánková-Havlíčková in 1976 and confirmed to be *C. demissa* by the first author of this paper in 1984. The location literally corresponds to the protologue („Podhradní Lhota“) and the plant well conforms to the protologue, being 26 cm tall, with slightly curved stem, long bract under the inflorescence and ribbed perigynia. This plant is likely to be the one described by J. Podpěra and it is thus most appropriate to be selected as lectotype.

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