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Historical vs. present populations of the sedge *Carex repens*: a comparison on the basis of molecular data

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Abstract

Polish historical and present populations of *Carex repens* (= *C. posnaniensis*) were compared with southern European populations of this plant on the basis of their nuclear ITS and chloroplast IGS DNA sequences. It follows from the analysis of the available data that (1) there are no differences in ITS1 and ITS2 sequences between the present populations occurring nearby the Jajtawy population (Poland), where in 1896 Spribille described *C. posnaniensis*, (2) the taxonomic distance between all the populations is relatively small (the greatest was reported between the populations from Poland and Italy), (3) the similarity between the populations decreases with an increasing geographical distance between them. Two populations from Italy exhibit the highest taxonomic distance from the Polish ones. We attribute this finding to the difference in age between these populations, as the Polish populations are much younger relative to the Italian ones and they could have appeared only after the Baltic glaciation ice sheet had receded.

Key words: *Carex* sect. *Ammoglochin*, central population, *Cyperaceae*, marginal population, phenetic analysis

Introduction

Carex repens Bellardi (1793: 42) is one of seven species of sedge of the *Ammoglochin* Dummert section, subgenus *Vignea* (*Cyperaceae*), see Chater (1980). This is a species whose range of occurrence covers the European countries of France, Italy, Germany, Austria, the Czech Republic, Hungary, Romania, and Poland. Spribille described the new species *C. posnaniensis* Sprib. in Kneucker (1896: 184), which was for some time considered to be a Polish endemic (Szulczewski 1932). The specimen described by Spribille was collected in Jajtawy, situated between Toruń and Bydgoszcz. In 1909 Kükenthal proposed this taxon to be synonymous to *C. repens*, and this was commonly accepted by subsequent authors.

In Poland *C. repens* is not considered to be highly threatened, but it occurs only in seven localities at the lower Wisła River between the town of Nieszawa and Chełmno, the latter being the marginal and most northern locality of this species. *Carex repens* is mostly found in sandy proglacial stream valleys, and the valley of the Wisła River, it is particularly found in dry and warm sites at the edges of the upland (Ceynowa-Giełdon 1969, 2001). The aim of our study is to answer the following queries: (1) whether and how the Polish current populations of *C. repens* are similar to the populations of historical localities, (2) how similar are the Polish populations of *C. repens* to its central populations, and (3) to what extent does the geographical distance affect the similarity of the populations.

Population variation was established using nuclear molecular markers ITS (Internal Transcribed Spacer) rDNA. The internal transcribed spacers between genes 18S and 5.8S (ITS 1) and between 5.8S and 26S (ITS

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