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GENETIC VARIABILITY OF HEPATIC CALYPOGEIA INTEGRISTIPULA IN POLAND

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Genetic variability in leafy liverworts is the still unknown, because only a few species have been examined. Most genetic investigations involved thallose liverworts, that showed a low level of genetic variability. It would be interesting to know whether that similar pattern of genetic variability occurs in leafy liverworts. Calypogeia integristipula (Steph.) is one of the most common species in Poland. It occurs in lowlands and in mountains, mainly on decaying logs and directly on the soil. It reproduces sexually (monoecious) and it frequently produces mountains, mainly on decaying logs and directly on the soil.

Differentiation between populations was high (GST = 0.1833). The mean number of alleles per locus (A) was 1.6. The mean total genetic diversity (H) was 0.3047 and within populations (HS) it was 0.1833. Differennetiation between populations was high (GST = 0.3985). Genetic variability in C. integristipula was similar to genetic variability of thallose liverworts but lower than in other leafy liverwort species. This work was financially supported by grant no. N303 344235 from the Polish Ministry of Science and Higher Education.

GENETIC DIFFERENTIATION OF LIVERWORT CA- LYPOGEIA MUELLERIANA IN POLAND, INFERRED FROM ISOZYME AND MOLECULAR MARKERS

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Calypogeia muelleriana in Poland exhibits a marked morphological variation. The aim of our studies was to recognize the genetic differentiation of this species and correlate the genetic diversity with the morphological variation. In general 58 samples from different regions of Poland were examined for isozyme loci, ISSR markers and sequences of the chloroplast DNA. Obtained results revealed high genetic differentiation of the species. The dendrogram based on Nei's genetic distances showed the presence of cryptic speciation in at least three species. Two cryptic species were found in Calypogeia fissa, Cladodipelia fluitans, Fossombronia foeveolata, F. incurva, Odonthoschisma sphagnii, Pallavicinia lyelli, Riccardia chamedrifoli and R. incurva. The two species: Pallavicinia lyelli and Fossombronia incurva are endangered in Europe. Due to the presence of rare and endangered liverworts in the bryoflora of the area of Lower Lusatia, this area can be considered as one of the most interesting in Polish lowlands.

CRYPTIC SPECIATION IN THE GENUS ORTHOTRI- CHUM

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The genus Orthotrichum is a widespread moss group which includes approximately 157 species, which are distributed over all the continents. Preliminary phylogenetics studies based on an analysis of the sequences of nuclear and chloroplast genomes as well as genotyping with ISS and ISSR markers, revealed the presence of cryptic speciation in at least three species. Two cryptic species were found in Orthotrichum striatum, which belongs to the subgenus Gymnoporus. Two genetically distant haplotypes which occur sympatrically within the above species seem to be rather two phylogenetically different taxa with similar phenotypes. One of them is widespread over the entire distribution range; from Asia to the east coast of North America. The other is restricted to the Alps, Carpathians, Pyrenees and the Balkan Peninsula, where it grows sympatrically with the common form. While the widespread form differs significantly from the remaining members of the subgenus Gymnoporus, the rare form is genetically similar to O. affine, differing only with respect to the rpoB and rpoC genes. A different pattern of cryptic speciation was noted in common epiphytic moss, O. affine. In the case of this species, cryptic speciation is observed along an altitude transect. The switch between these two genetic forms occurs at 400–600 m a.s.l. However, O. affine remains a clearly monophyletic taxon, because the two cryptic species form sister clades.