

Resolution of phylogenetic relationships within the fern genus *Botrychium* s.s. (Ophioglossaceae) using target enrichment sequencing

Darina Koubínová, Jason Grant

1 Institut of Biology, University of Neuchâtel, Rue Emile Argand 11, 2000 Neuchâtel, Switzerland

The representatives of the fern genus *Botrychium* s.s. (Ophioglossaceae; eusporangiate ferns) are widely distributed around the world. Many species are circumtemperate to circumboreal, and the presumed centre of diversity is considered to be located in the Western North America. There are currently more than 30 species of *Botrychium* s.s. recognized. Despite several taxonomic and systematic revisions in the last years, it is clear that more reevaluations are needed. Some of the species traditionally assigned to *Botrychium* are now placed into distinct genera *Botrypus* and *Sceptridium* (and together with *Botrychium* s.s. they are denominated as *Botrychium* s.l.). From the systematics point of view, the *Botrychium* group is very complex. The species are usually small and morphologically simple, and the whole diversity is certainly underestimated as many populations have not been sampled yet. Moreover, more than half of the species are polyploids which further challenges the comprehension of the phylogenetics and evolutionary history of the group. Molecular studies detected many cryptic species in certain *Botrychium* clades and possibility of the existence of many more was indicated recently.

In our study, we examined 84 selected *Botrychium* s.s. taxa from Northern America, Europe and Asia with the use of about 400 nuclear exons and flanking regions obtained by targeted enrichment sequencing. We use these newly obtained data to investigate the phylogenetic relationships in the group, estimate the parental lineages of certain hybrids and to detect potential cryptic species.