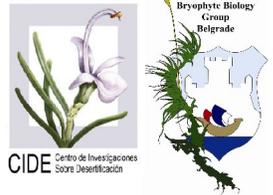




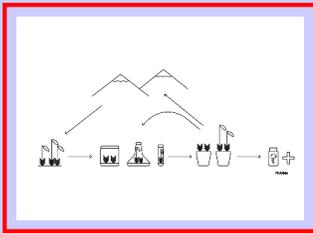
Ex situ conservation of European bryophytes: state, problems and progress

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Abstract



Bryophytes (liverworts, mosses and hornworts) are often overlooked in conservation initiatives despite their presence in most terrestrial habitats and being major contributors to the functioning and biodiversity of many of the world's ecosystems. The *ex situ* conservation of bryophytes faces many challenges including: insufficient amounts of plant material for implementing action plans; unresolved taxonomic problems; poor knowledge of the biology and ecology of target species; habitat degradation and/or loss and hence a lack of potential habitats for introduction; underdeveloped biotechnological processes for the establishment and propagation of both xenic and axenic cultures; genetic variability (problems with maintaining genetic variability in *ex-situ* stocks). The recently established European Bryophytes *Ex situ* Conservation Network (www.ebesconet.org) brings together for the first time all the information available on bryophyte *ex situ* conservation programs across Europe including species currently being conserved, protocols available, people involved, and thus aims to facilitate cooperation with the overall goal of saving threatened European bryophyte species. Progress in this area has been achieved by individual and group activities. So far, 16 liverwort and 53 moss species of national and wider conservation interest are to some extent conserved as *in vitro* cultures, with 51 additional bryophyte species maintained in living tissue collections for purposes other than conservation. Financial support is now urgently needed to boost current and develop further initiatives and collaborations in *ex situ* bryophyte conservation and thus to ensure the survival of rare and threatened species in a rapidly changing European environment.



So far, a rather good starting infrastructure for valuable *ex situ* conservation in Europe already exists. This can be documented by over 100 species already established in laboratory conditions. However, further development of *in vitro* and especially *ex vitro* cultures, acclimation processes and reintroductions are needed and ecological study on species particularities are required.