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Editorial

''Quality and Quantity: maintaining biological diversity in space and time''—Session II of the 5th Symposium of the International Association for Lichenology, Tartu, Estonia, 16–21 August 2004.

As naturalists and especially as lichenologists, we would all agree that lichen diversity is desirable for its own sake. A species-poor forest looks 'wrong' to an experienced outdoors-person, and, conversely, a lichen-rich forest is a delight, even if the viewer knows nothing about lichens *per se*. This is why many people, not just lichen-lovers, agonize over the loss of lichen diversity in our natural landscape.

The development and critical use of lichen diversity indicators of environmental health and for monitoring the effects of land-use change on biodiversity is now widely recognized, and the importance of maintaining lichen diversity has thus also become important because of what a diverse lichen vegetation tells us about our world. We now know much more about how pin lichens, cyanobacterial species, and taxa that reproduce with relatively few but large diaspores, can give us reliable information about forest-stand and -landscape continuity and connectivity. We are beginning to trace genetic patterns among populations and are learning to include this information in regional and global conservation strategies. Successful efforts to document rare and endangered lichens have resulted in lichens being included in lists of protected species in many countries, along with furry animals, tuneful birds and colourful orchids.

It therefore should come as no surprise that during the past 15 years, over 350 papers have been published that refer to 'conservation or biodiversity' of lichen forming fungi. However, there are still major gaps in knowledge both of biodiversity research and conservation biology of the lichen symbiosis. Most fundamental for comparing the diversity of lichens with the diversity of other organisms such as plants, birds and butterflies, is determining how lichen diversity can be assessed in a specific, efficient and reproducible way. Other 'scientific families' have long ago developed their 'standard protocols' that enabled them to share and compare data collected in different projects from different parts of the world.

In lichen conservation biology, major efforts in habitat protection have been made in the past. This is an important step ahead in conserving species that mainly depend on pristine habitats. However, lichen conservation in traditional anthropogenic, multifunctional, dynamic landscapes is highly complex and fraught with unanswered questions because maintaining the *status quo* cannot succeed in maintaining viable populations. Only with a truly integrative approach that includes, on the one hand, autecology, population biology, dispersal ecology and developmental biology, and, on the other hand, traditional land use or its substitute and society's valuation of biodiversity, can we reach the ambitious goals of the ''2010 Biodiversity Target'', that is to achieve by 2010 a significant reduction of the current rate of biodiversity loss. Last but not least, with appropriate scientific contributions and increased communication with Society, stakeholders and policy-makers, lichenologists have to bring lichen conservation to a higher level of priority. The fact that many of our nationally threatened species have a wide geographical distribution is often mistakenly used to give lichen conservation a low priority. Even if a species has

the same scientific name in North America, Europe, Asia and Africa, it does not mean that this species should be treated as one unit in conservation biology. The concept of evolutionarily significant units has to be accepted by lichenologists, although the symbiotic nature of lichens will make it difficult to adopt this concept as it is.

This issue of the Lichenologist is made up of seven papers from Session II that cover selected aspects of the topics discussed during the session.

We are most thankful to Peter Crittenden for accepting the papers for publication in The Lichenologist and we are very grateful to our Estonian colleagues, especially Tiina Randlane and Andres Saag, who so wonderfully brought lichens into focus during the 5th Symposium of the International Association for Lichenology.

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