Abstract

The aim of this thesis was to create potential distribution models for *Dicranum majus* (Greater Fork Moss) and *Polytrichum alpinum* (Alpine Haircap) in Bohemian Switzerland National Park. In the Czech Republic these bryophyte species occur in cold climatic regions typically with higher altitudes. In Bohemian and Saxon Switzerland they can occur in really low altitudes thanks to unique microclimatic conditions of deep inversion ravines. These bryophyte species had low number of occurence records in studied area before the start of my research (4 occurence localities for *Dicranum majus,* 8 occurence localities for *Polytrichum alpinum*). Predictive habitat suitability models can be an effective tool for selecting potential new occurence localities, planning field research or management design.

During field research I recorded 34 new occurence localities for *Dicranum majus* and 29 new occurence localities for *Polytrichum alpinum* in Bohemian Switzerland National Park. I used 8 topographic parameters derived from digital elevation model with 1 m resolution as environmental data. Using these data I created models of potential distribution of the most suitable habitats for both species with algorithms Artificial neural networks (ANN), Generalised linear model (GLM) and Random forest (RF). RF algorithm had the best predictive power in case of both training data set and independent evaluations for both studied species. The most important variable predicting occurence of *Dicranum majus* was the elevation. In case of *Polytrichum alpinum* it was the terrain ruggedness. Using the best models I did spatial interpolation of habitat suitability for both species. During field validation I recorded another 4 new localities for *Dicranum majus* and 2 new localities for *Polytrichum alpinum* in areas with the highest predicted suitability of habitats. Despite overall weak predictive power of created models, the spatial interpolation and the field validation were highly successful. Studied species were found on 20 % of validation localities. Moreover searching for new localities based on areas selected by model turned out to be much more effective than searching for new localities based on expert scientific knowledge.

Key words: *Dicranum majus, Polytrichum alpinum,* bryophytes, distribution, species distribution modelling, SDM, habitat suitability, microclimate, digital elevation model, Bohemian Switzerland National Park