421

GENETIC DIVERSITY OF PHOTOBIONTS IN LICHENS COLONISING AN ANTARCTIC INLAND ECOSYSTEM

S. Ott[1], A. Engelen[1], P. Convey[2]

[1]Botanisches Institut, Heinrich-Heine-Universitaet, Universitaetsstr. 1, 40225 Duesseldorf, Germany, [2]British Antarctic Survey, High Cross, Madingley Road, Cambridge CB 3 0ET, United Kingdom

Inland sites provide a challenging perspective on the evolution of Antarctic ecosystems and may provide insight on the first initial stages in the development of communities and successional processes. Coal Nunatak, southern Alexander Island (72°03'S 68°31'W) can be described as an Antarctic inland site on the southwest coast of the Antarctic Peninsula. The research presented focuses on the genetic diversity of photobionts of lichens colonising Coal Nunatak. Lichens dominate the Antarctic flora in terms of species diversity and in terms of total biomass. Unlike higher plants, lichens are not a single organism, but a fungus, usually an ascomycete (the mycobiont) and a photosynthesizing organism (the photobiont), which can be either a cyanobacterium or a eukaryotic green alga, usually a member of the genus *Trebouxia* (Chlorophyceae).The diversity and distribution patterns of lichen communities on terrestrial sites of the Antarctic mirrors a combination of relict flora, long-distance dispersal and recent colonisation.

For the first time results will be presented on the genetic diversity of photobionts in lichens colonising an isolated terrestrial inland site. The molecular systematics has been characterised using the internal transcribed spacer (ITS) of the nuclear ribosomal DNA. The diversity of the photobionts on Coal Nunatak differ substantially to former results achieved in studies at coastal sites. The results of both studies will be compared.

There are clear differences in the dominance of photobiont species. Environmental conditions may contribute to a preference toward a particular photobiont and might influence the distribution pattern and genetic diversity. The results will permit conclusions on the dynamic of initial colonisation processes, the development of species diversity taken especially into consideration the potential of the lichen symbiosis and its bionts.The use of locations such as Coal Nunatak as models to better describe these colonisation processes will improve the understanding of the mechanisms of biological response to changing climate.