# BOTANICAL RESEARCH

During the 1982 and 1985 summer seasons, extensive vegetation research was carried out in northwest Sørkapp Land. The study area included marine terraces along the northern and western shores of Sørkapp Land, from the Lisbetelva river to the Vinda river, Hohenlohefjellet (614 m), as well as the western slopes of Sergeijevfjellet and Lidfjellet.

Western Sørkapp Land is diverse in terms of habitat conditions such as: topography, bedrock, hydrological and edaphic relationships and microclimate. Lichens and bryophytes are predominant along with a few flowering plants, creating a complex mosaic of vegetation (Fig. 4).

Phytosociological research led to the identification of 28 vegetation units in the study area. The basis for the identification was 285 phytosociological relevés, performed according to the Braun-Blanquet (1964) method. Relevés were taken at different locations in order to obtain a full picture of the variety of vegetation. Complete phytosociological tables were created for 28 plant communities (Dubiel, Olech 1990). Plant communities were selected on the basis of their floristic characteristics. In some cases, the presence of dominant species strongly influencing the physiognomy of patches was considered more important. A short description of the habitat as well as comments on the distribution were added to the descriptions of vegetation. Names of differential species and their ecological scale were given for each community. Community names derive from the names of differential species, which were often dominant species. No new names of associations were created, as that would be premature, given the current state of knowledge of the diversity of vegetation in Spitsbergen.

Next, field mapping was carried out. The arrangement of plant communities identified during phytosociological research was marked on a 1 : 25 000 map (Dubiel, Olech 1991). Vegetation units were marked on the map for four primary categories: a) homogeneous plant communities occupying large areas; b) examples of clear dominance of one community over others within a particular mosaic; c) arrangement of two or three neighboring communities creating a mosaic; d) large areas of transition between two or more communities.

In 2008, phytosociological research was repeated in the same plant communities, which had been identified in the 1980s (Dubiel, Olech 1990). The Braun-Blanquet method (1964) was used once again. In phytosociological relevés, all groups

Fig. 4. Central part of the Hornsundneset terraced coastal plain built of Early Carboniferous sandstones, siltstones and shales. A general view of the tundra vegetation and lakes (dammed by isostaticly raised coastal ridges) from the slopes of Sergeijefjellet, facing WNW. Photo: M. Węgrzyn, 2008

of plants and fungi contributing to the composition of communities were included. The repetition of the phytosociological study in the same geographic area provided an accurate record of the state of the vegetation, and also allowed to evaluate the speed and direction of changes. As was the case with earlier research (Dubiel, Olech 1990), the exact syntaxonomic position of certain plant communities was not precisely specified, since it was not the aim of the research. However, the synonyms of the names of plants and fungi were updated.

In order to obtain data about changes in the size of plant communities, vegetation mapping was repeated on a 1 : 25 000 scale map. Field GPS devices containing a rectified version of the vegetation map from the 1980s, with areas of different vegetation units marked, were employed during the fieldwork. In many cases, the location of certain hydro-geomorphological elements such as streams, rivers, lakes, slopes and shorelines, all of which create natural boundaries for plant communities, was adjusted as well.

Both vegetation maps were substantially improved. Relief was added to the maps, which created an opportunity for easier interpretation of the extent of each plant community. The final versions of both maps were prepared on the same scale of 1 : 50 000 in order to show vegetation changes more accurately (Maps 5 and 6).

Vegetation maps of the same geographic area created for different periods of time are the best way to show spatial changes in vegetation.