

Mapping winter pastures for reindeer in Karasjok, Northern Norway, using LANDSAT 5-TM data.

Johansen, B. E. & Tømmervik, H.

FORUT, Box 2806 Elverhøy, N-9401 Tromsø

Abstract: The accessibility of food during winter time is the most important factor determining the size of the reindeer population in Finnmark. Mapping the winter grazing areas, the lichen heath vegetation, is therefore important for the monitoring of the reindeer population in Finnmark. In the period 1976–1988 the reindeer population in the area has increased dramatically, from about 90.000 in 1976 to present population of about 200.000 animals. Old estimates of the optimum level of the population size is about 150.000 animals. The present populations is well above this level. This large population size is now damaging parts of the winter grazing areas.

On this background FORUT was asked to investigate the primary production capacity in the winter grazing areas. The objectives of the investigation were to map the lichen heath and lichen forest vegetation in the area, to estimate the total biomass in the lichen dominated vegetation types, to detect the damage lichen areas and to give new computations of the optimum level of the reindeer population size.

During the project period a total area of about 10.500 square kilometer has been mapped by use of LANDSAT 5-TM data. The lichen heath and the lichen forest vegetation were detected by classification and interpretation of the data set. The interpretation of the classification results are based on field study and by spectral characteristics detection of the lichen dominated vegetation. The hierarchical relation between different vegetation types is analyzed by multivariate analyses.

The lichen dominated vegetation types are classified with an accuracy of 80–90 % compared to field study. These vegetation types are separated into two main types based on the affect of reindeer grazing. Areas affected by heavy grazing are dominated by the lichen species (*Stereocaulon alpinum* and *S. pascale*). In areas affected by more moderated grazing *Cladonia arbuscula*, *C. rangiferina* and *C. mitis* are dominating. This important difference in the lichen heath vegetation is easily reflected in the satellite data map.