



Mainstreaming geodiversity in Norwegian nature management

Lars Erikstad (1), Berit Husteli (2), Rolv Dahl (2), and Tom Heldal (2)

(1) NINA - Norwegian Institute for Nature Research, Oslo, Norway (lars.erikstad@nina.no), (2) NGU - Geological Survey of Norway, Trondheim, Norway (Rolv.Dahl@NGU.NO)

Geology and geomorphology are important elements of nature. Nature management has over the last few decades taken an increasingly bio-centred approach, even if the term “biodiversity” scientifically includes ecosystems, (which includes the abiotic environment). This has led to a need for new terms like geodiversity to balance the situation and support the traditional efforts of geoconservation. The focus of geoconservation has largely been on sites of high national and international value. Values at lower levels do, however, exist and should also be included in nature management strategies. There is a need to mainstream with nature management strategies locally, nationally as well as and internationally.

Norway has a system for nature type classification, called NiN (Nature in Norway). Here a gradient perspective is used to define nature types where environmental variables cause species differences of a certain magnitude. The system includes terrestrial as well as aquatic environments. The environmental variables may often have a geoscientific basis such as lime richness, water movement etc. NiN includes a comprehensive description system to be able to describe within-type variation. The description system includes geology as well as landforms. NiN includes also a system of landscape classification.

Practical use of NiN includes an updated Red list for Ecosystems and Habitat Types. Here the list of landforms from the description system of NiN is one of the themes. The methods use unbiased information such as published and unpublished geological maps as well as research articles supplemented with expert judgements when data is sparse. The Norwegian Biodiversity Information Centre (<https://www.artsdatabanken.no/>) is the institution responsible for the list. The methodology uses IUCN criteria and methods. The list of landforms that have been assessed comprises of 13 groups with 85 features. 28 were red listed, considered as critical threatened (2), endangered (1), vulnerable (12), near threatened (12) and one had data deficiency.

In NiN the landscape is divided into broad general geomorphological units where valleys, fjords, coastal plains, and mountain and hill landscapes are the most important. Further classification is made from a series of variables containing geomorphometric information as well as vegetation and human infrastructure. The system has been used in constructing a national computer-generated landscape type map. The mapped landscape units are from 2 – 30 km² in size and classified according to the system and can be filled with all types of additional data. This data can be used to define the landscape character including the geological character, which in turn can form the basis for local frameworks and to aid management in a policy where major geodiversity elements in the landscape will not erode in the planning system.

These two initiatives are a contribution to mainstreaming geodiversity, geoheritage and geoconservation in the Norwegian management system in according with Norwegian environmental legislation which states that it is an aim to conserve our geological, biological and landscape diversity.