

The aeolian dunes of Bonåsheden, central Sweden: a geomorphological, geophysical and geochronological case study

M. BERNHARDSON¹ AND H. ALEXANDERSON¹

¹*Department of Geology, Lund University, Sölvegatan 12, 223 62 Lund, SWEDEN*

*(*correspondence: martin.bernhardson@geol.lu.se)*

Despite its possible use as a palaeoenvironmental archive aeolian sediment in Sweden has been a low priority for the scientific community. The aeolian deposits have often been mapped, not least by the Swedish Geological Survey (SGU); however more detailed investigations, especially concerning their palaeoenvironment and geochronology, are uncommon.

Bonåsheden is the largest continuous dune field in Sweden, covers an area of ca 15.5 km² and is situated just north of the town of Mora, Dalarna, Sweden. The aim of this study was to describe the geomorphology of the dunes at Bonåsheden, interpret the local palaeoenvironment as well as determine the chronology of the sand drift events. The dunes were mapped using GIS softwares and LiDAR data. Remote sensing, ground penetrating radar and observations in the field showed that the majority of the dunes were transverse dunes, with some parabolic shaped dunes as well. This suggests that the majority of the dunes formed in an environment devoid of vegetation with an abundance of sediment available for sand drift. Most dunes displayed an orientation advocating formation of the dunes by north-westerly winds. At least two different generations of dunes, based on size and orientation, were identified through remote sensing, however only age determination of the larger generation of dunes is available at the present. Results from luminescence dating suggest ages of dune formation close to the deglaciation with a few minor subsequent events, mainly partial reactivation of the surface of the dunes.