A Review of Late Weichselian Studies in the lower Part of the Borgarfjörður Region, western Iceland

ÓLAFUR INGÖLFSSON
University of Lund, Department of Quaternary Geology,
Sölvegatan 13, S-223 62 Lund, Sweden

ABSTRACT

The lowlands of the Borgarfjörður region are blanketed by fossiliferous sediments of a Late Weichselian age, which have caught the attention of geologists for the past 200 years. An increasing amount of stratigraphical, palaeontological, morphological and sedimentological data have been gathered in the region. The present paper survey the geological literature concerning the lower part of the region. The results of the most important contributors are summed up, and other evidence of value for the understanding of the Late Weichselian environments and climate of the region is accounted for. The literature survey shows that many problems remain unsolved, and that interpretations of the available data are controversial. It is concluded that much of the data need to be reexamined in order to construct a concise picture of the Late Weichselian glacial stratigraphy and chronology of the Borgarfjörður region. This paper outlines the most important aspects of such a revision and brackets the potential significance of future research.

INTRODUCTION

Borgarfjörður is the common name for a shallow and broad fjord opening from the northeast into the Faxaflói bay, and the adjacent region situated in the southern part of central West Iceland (Fig. 1). The main topographical features of the region consist of a coastal plain (Hjulström 1954), flanked to the east by a steep sided plateau of Tertiary basalts (Kjartansson 1968). Series of valleys of varying length are cut into the plateau. Another conspicuous topographic feature is the Hafnarfjall-Skardsheiði volcanic massif (1055 m) of Late Pliocene age (Fridleifsson et al. 1977). Both the Skardsheiði massif and Mount Akrafjall are remnants of a Late Pliocene basaltic plateau (Fridleifsson et al. 1977). The variety of acid and basic volcanic rocks in the bedrock of the region (Kjartansson 1960, 1968, Sæmundsson and Einarsen 1980) is reflected in the sediments of the region (Ashwell 1975).

Due to the geographical location of the Borgarfjörður region, it has been frequented by geologists since the beginning of geological research in Iceland in the mid 18th century. It has been recognized for a long time that the sediments blanketing the Borgarfjörður lowlands are of Late Pleistocene age (Keilhack 1884, Thoroddsen 1892). Subfossil marine molluscs have been discovered widely in the sediments (Ólafsson 1772, Bárðarson 1923). Because of the rapid coastal erosion and down-cutting by the rivers, the sediments are well exposed in many sections in the area (Bárðarson 1923, Ashwell 1967, 1975, Ingólfsson 1981) and thus accessible for lithostratigraphical mapping. There are ample features in the region that indicate ancient sea levels higher than the present sea level in the region (Bárðarson 1923), and Thorarinsson (1958) suggested it as an excellent spot for detailed investigations on sea level changes in Iceland.

The present paper is a review of the literature concerning the Late Weichselian in the area between Andakill-Skorradalur in the north and Hvallfjörður in the south (Fig. 1). The review is a part of a larger project on Late Weichselian glacial stratigraphy and chronology of the region, being worked on at the Department of Quaternary Geology, University of Lund. It is paralleled by two other similar projects at the University of Lund, carried out on the central north and extreme northwest coasts of Iceland. The aim of the literature survey is to evaluate the present state of knowledge of the glacial geology of the