

# The Ages of the Fossvogur Layers and the Álftanes End-Moraine, SW-Iceland

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## ABSTRACT

The Reykjavík area is well known in Iceland's geology for its fossiliferous sediments. Two localities, Elliðavogur and Fossvogur, are classic locations for shell-bearing sedimentary layers of late Quaternary age. The Elliðavogur layers underlie the Reykjavík olivine tholeiite basalt group, whereas the Fossvogur layers were deposited on top of this lava unit. The shell-bearing Fossvogur Layers have been thought to be an interglacial formation, most likely from the end of the Saale Glacial, or the beginning of the Eemian Interglacial. Their age was previously estimated at about 120,000 years BP. However, new radiocarbon age determinations have given the unexpected age of 11,000 years BP (conventional radiocarbon years). The Fossvogur layers, the former type locality for the Eemian Interglacial in Iceland, now seem to have formed during late Weichselian. This conclusion calls for a revision of the late Pleistocene and early Holocene time-scale of the Reykjavík area. The till in the uppermost section of the Fossvogur layers must now be considered to have formed during Younger Dryas or in Preboreal times. This indicates a much more extensive glaciation of the Reykjavík area at the very end of the Weichselian glaciation than previously assumed.

Sedimentary layers in Kópavogur are considered to be of the same age as the Fossvogur layers. They are covered with a series of terminal moraines which must be a little younger than the uppermost till of the Fossvogur layers. The outermost of those moraines seem to tie up with the so-called Álftanes

ridge, which has hitherto been considered the type locality for the Older Dryas stadium in Iceland. This must now be considered to be of Younger Dryas or Preboreal age.

## INTRODUCTION

The Fossvogur sedimentary layers are a series of till and marine sediments (Fig. 1). They can be traced for about 1.7 km from the head of the Fossvogur bay to the Reykjavík Airport. They cover the Reykjavík olivine tholeiite basalt group at the Airport and the area between the University and the Old Cemetery on Suðurgata. The layers are also visible on the coast of the Skerjafjörður bay (Einarsson, 1968; Geirsdóttir, 1982).

Many naturalists have investigated the Fossvogur layers. Since 1840 between 30-40 written accounts deal with the sediments. Péturss (1904) was the first to recognize that the layers were formed during Pleistocene:

"Till on top of the shell-bearing layers is now, according to the situation on each site, proof beyond doubt that these layers are not younger than the Ice Age; that they are not older than the Ice age has often been shown, but they must, however, have formed after the glacier moved across the area; which must have been ice-free when the *Mya truncata* lived in the silt that is now a hard consolidated rock surrounding their shells. The glacier readvanced and deposited the till on top of the shell-bearing layers, whereas in most places it eroded the layers away" (Transl. Ó.B. Smáráson).

The Icelandic geologist Dr. Helgi Péturss (1872-1949), was one of the first to realize that the Ice Age was not just one long lasting and ice-cold winter,