
Druidston Haven

Highlights

This site shows the best exposure of Devensian Irish Sea till in southern Preseli, at a position taken to be close to the southern limit of ice during the last glaciation. The till and periglacial sediments lie within a channel interpreted as evidence of an even earlier glaciation.

Introduction

Druidston Haven (Druidston) [SM 862 172] on the west-facing shore of St Brides Bay, contains one of the most extensive and best exposed sections through Irish Sea glacial sediments in south-west Wales. The sequence of deposits shows a succession of marine, periglacial and glacial episodes during the Late Pleistocene. Although dating of the sequence has proved difficult, some regard the site as the southernmost occurrence of Late Devensian till *in situ* in the area. The site was first investigated by Cantrill *et al.* (1916) and has featured in studies by Bowen (1966, 1973a, 1973b, 1974, 1977b, 1984), John (1965a, 1967, 1968a, 1969, 1970a, 1971a) and John and Ellis-Gruffydd (1970). Detailed accounts of the sequence and its interpretation are provided by John (1965a, 1970a).

Description

The exposures extend laterally for about 150m and comprise a sequence of:

6 Sandy loam (0.3m)

5 Upper head

4 Irish Sea fluvioglacial sands

3 Irish Sea till (c. 15m)

2 Lower head (up to 2m)

1 Raised beach deposits

The sediments occupy a deeply-cut rock channel, interpreted by John (1965a, 1970a) as a glacial meltwater channel.

The raised beach sediments recorded at Druidston (for example, Bowen 1973a, 1973b, 1974, 1977b, 1984; John 1968a, 1970a, 1971a) occur at the base of the section. This gravel, stained and cemented, has not been relocated in recent years. John recorded that this bed was overlain by blocky quartz sandstone head, also stained with iron oxide. These head deposits are succeeded by highly calcareous Irish Sea till containing northern erratics, numerous fragments of marine molluscs (sixteen species from both cold and warm environments recorded) and pieces of carbonised wood, including *Pinus* sp. (John 1967). The till is decalcified to a depth of c. 1.3m at the top and in a thin layer at its base. The upper layers of till contain a high proportion of sand and gravel, and these grade upwards into interbedded outwash sands (bed 4), layers of till and, finally, solifluction deposits (bed 5) (John 1970a).

Interpretation

Dating of the sequence at Druidston has proved difficult. A Late Devensian age for the till was suggested by John (1970a) for two main reasons. First, the glacial and periglacial sediments were considered to overlie raised beach deposits of presumed Ipswichian age. Second, a series of radiocarbon dates from sites in south-west Wales was used as evidence (John 1965b, 1967, 1968c) for a Middle Würm (Devensian) interstadial in the region. He argued that the

subsequent ice advance, which incorporated the organic remains, must therefore have been of Main Würm (Late Devensian) age. A date of >36,300 BP (1–1687) from a bulk sample of marine mollusc fragments from the till, however, did not help to establish its age any more precisely (John and Ellis-Gruffydd 1970). The faunal assemblage was, however, similar to that at other sites in the region (where finite dates indicating a Late Devensian age for the sediments had been obtained), but John and Ellis-Gruffydd admitted the possibility that the till at Druidston could be pre-Devensian.

Bowen (1966) originally suggested that the till was of pre-Devensian age and that it had been rearranged by solifluction onto a Hoxnian raised beach during the Devensian. John (1965a, 1970a), however, maintained that fabric analysis of the till showed that it was *in situ*, and this was agreed by Bowen (1973a, 1973b, 1974, 1977b, 1984) who regarded the site as an important stratigraphic locality for the association of Ipswichian (not Hoxnian) raised beach sediments and Late Devensian Irish Sea glacial sediments. Druidston is the southernmost limit of the raised beach overlain by till in this part of south-west Wales (Bowen 1974, 1977b). At localities to the south, for example at Milford Haven, the beach is succeeded by periglacial head deposits only. The evidence was therefore seen to place important restrictions on the maximum limit of the Late Devensian ice-sheet in south-west Wales. In contrast to Porth Clais, to the north, where site conditions had promoted redeposition of glacial sediments during the Devensian, the till at Druidston is substantially *in situ*, preserved within the steep walls of a coastal valley (Bowen 1977b).

Also using evidence from the adjacent area, John (1965a, 1970a) interpreted the following sequence of events. During high relative sea-levels in the Ipswichian Stage, raised beach sediments (bed 1) were deposited. This was followed by the accumulation of autochthonous head deposits (bed 2) during a prolonged period of periglacial climate in the Early and Middle Devensian. During the Late Devensian, Irish Sea ice moved onshore from the north-west (John 1971a) depositing shelly Irish Sea till (bed 3). The wasting phase of the ice-sheet was marked by the deposition of fluvio-glacial sediment (bed 4). The upper head (bed 5) formed in a later, shorter periglacial phase, probably during Pollen Zones I-III of the Late Devensian late-glacial (John 1969).

As at Abermawr, John (1970a) argued that the sediments occurred within the walls of a glacial meltwater channel. Following his premise that the sequence at Druidston consisted of an Ipswichian raised beach overlain by a series of cold-climate Devensian sediments, he considered that the channel must therefore be pre-Devensian, and probably Saalian in age.

Although dating of the sequence has proved controversial, Druidston provides an important record of changing environmental conditions during the Late Pleistocene. In several respects, it is comparable with other stratigraphic sites in the region; it demonstrates a period of high interglacial sea-levels, probably during the Ipswichian Stage, followed by periglacial and glacial conditions in the Devensian Stage. However, whereas raised beach deposits are better developed at Poppit Sands and Porth Clais, and the glacial succession at Abermawr more fully established within the regional Pleistocene chronology, Druidston can be regarded as a reference site for the Irish Sea till in south-west Wales, and it helps to establish former patterns of ice movement in the region. Its position, as the southernmost exposure of unequivocal undisturbed till in southern Preseli, provides a crucial reference point for the maximum limit of Late Devensian ice in this part of Wales.

Druidston provides the best exposure through Irish Sea till in southern Preseli. The sequence is important for demonstrating a succession of marine, periglacial and glacial episodes in a single section. It is particularly valuable as the southernmost occurrence of Irish Sea till *in situ* in the region, and therefore helps to establish the maximum extent of Late Devensian ice in southwest Wales.

Conclusions

Druidston Haven shows a thick sequence of last ice age deposits. The deposits which have traditionally been interpreted as glacial in origin, could also have dropped into a sea from floating or grounded ice. The extensive exposures in these deposits makes Druidston an important site for future work.

[References](#)