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# Northward Bight, St Martin's

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## Highlights

This site shows controversial evidence for two raised beach deposits separated by periglacial head. Different interpretations of this sequence have important implications for the age and sequence of Quaternary events on the Isles of Scilly.

## Introduction

In 1906 Barrow identified a single raised beach deposit at the base of the Pleistocene sequence on the Isles of Scilly. Mitchell and Orme (1967) proposed a more complicated sequence consisting of two raised beaches separated by periglacial and glacial sediments. They argued that the lower beach was typified by the exposure at Chad Girt (see above; (Figure 8.1)) and was typically erratic-free, whereas the upper beach, with a type-site at Porth Seal (see above; (Figure 8.1)), contained abundant erratic material derived from the underlying glacial sediments. In their 1967 study Mitchell and Orme were unable to identify a site where the two beaches could be observed strictly in stratigraphic succession, but subsequently Syngé (*in* Stephens, 1970a; p. 294) described such a complete sequence from Porth Seal. The upper beach was reinterpreted by Bowen (1981) as a body of granite corestones, and by Scourse (1985a) as soliflucted beach sediment derived from the lower beach.

Mitchell (1986) identified Northward Bight as a second site where the two beaches could be observed in stratigraphic succession.

## Description

Northward Bight [SV 944 159] is the northernmost of two deep gullies trending south-west to northeast on the north-eastern side of St Martin's Head. Mitchell (1986) identified the following Pleistocene sequence, overlying bedrock, at this site:

4. Head with erratics Devensian
3. Unconsolidated beach with large cobbles Ipswichian
2. Head without erratics but with shattered beach cobbles Wolstonian
1. Consolidated beach with small cobbles Hoxnian

## Interpretation

Mitchell (1986) correlated the upper unconsolidated beach deposit (bed 3) with the Porth Seal Raised Beach and the lower consolidated beach (bed 1) with the Chad Girt Raised Beach (Mitchell and Orme, 1967). He thus reinforced his belief that two raised beach deposits, of different ages, are present on the Isles of Scilly, assigning the earlier to a 'pre-glacial' Hoxnian sea-level event, and the later to a 'post-glacial' Ipswichian event. Such an interpretation therefore constrained the glaciation of the Isles of Scilly to the Wolstonian (Mitchell and Orme, 1967).

However, Scourse (1986) does not accept this interpretation. As in the case of Porth Seal (Scourse, 1991), he interprets the upper of the two 'beaches' at Northward Bight as beach material reworked by solifluction from the lower beach. Therefore, he recognises only one *in situ* raised beach deposit at this site. In discussion of the number of raised beach deposits present in the Pleistocene succession of the Isles of Scilly and Cornwall, Scourse (1987, 1991) points out that at

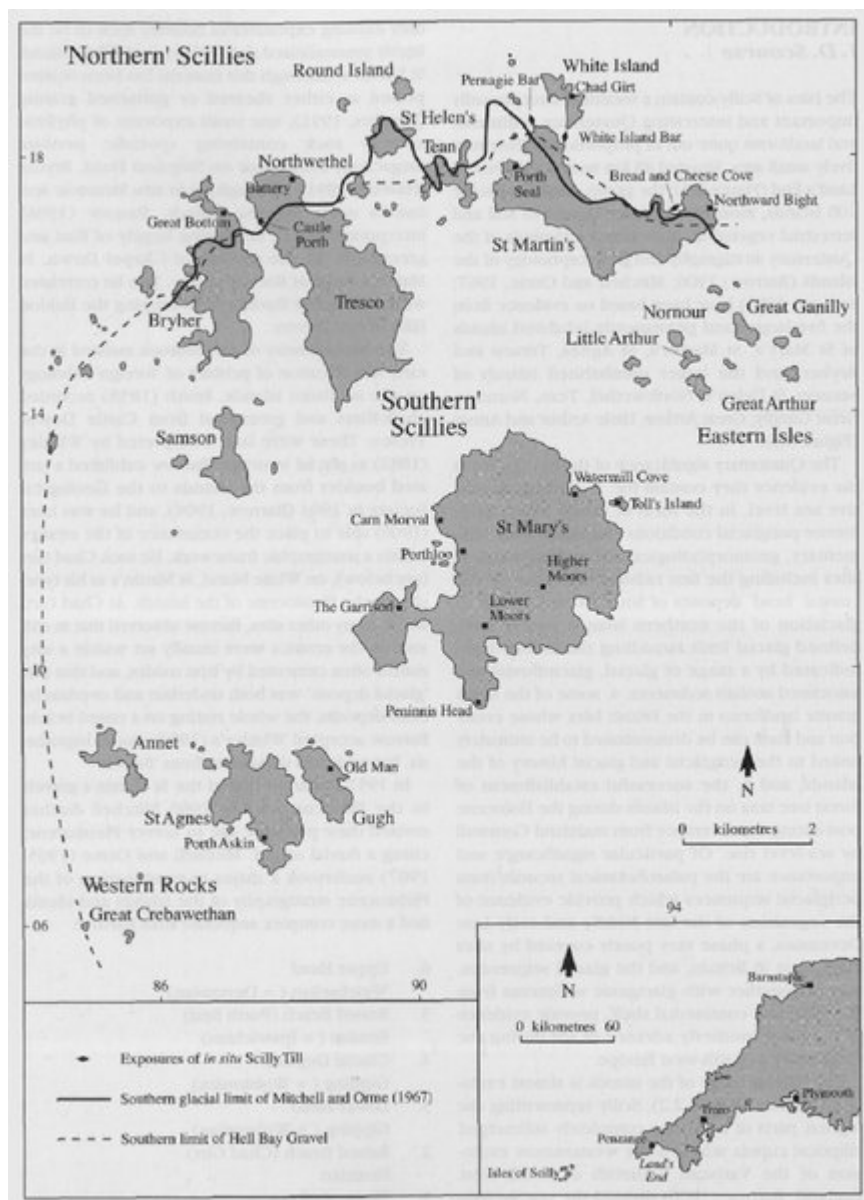
nearly all sites where raised beach sediments have been overridden by solifluction lobes and sheets, 'tongues' of incorporated beach material can be observed in the overlying solifluction deposits. These can often appear as two stratigraphically distinct 'raised beach' units in section; in a facies model of solifluction deposits from this area he defines such incorporation of underlying materials as facies Aa 'deformation breccia' (Scourse, 1987).

Scourse (1986) assigns the basal raised beach deposit at Northward Bight (Mitchell's Chad Girt Raised Beach) to the Watermill Sands and Gravel Member of his lithostratigraphic classification (Figure 8.3), the 'head without foreign stones' and the Porth Seal beach' to the Porthloo Breccia, and the 'Head with foreign stones' to the Bread and Cheese Breccia. On the basis of radiocarbon dates from organic beds within the Porthloo Breccia at other sites on Scilly, he interprets the Porthloo Breccia as of late Middle or early Late Devensian age. The age of the Watermill Sands and Gravel he regards as uncertain.

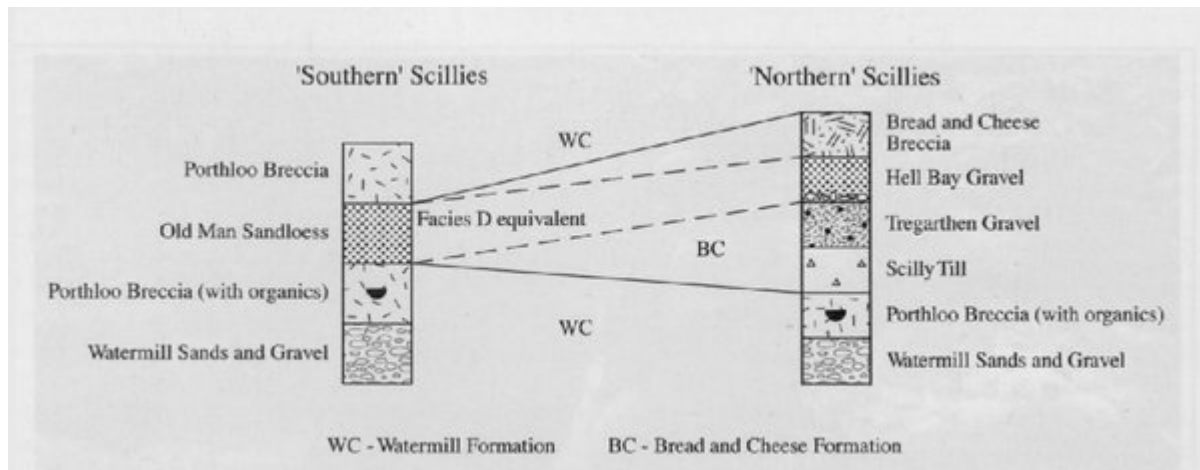
## Conclusion

Northward Bight contains a controversial sequence of deposits, the interpretation of which has considerable implications for the age of all the Pleistocene deposits of the Isles of Scilly. Mitchell (1986) identifies evidence of two high sea-level stands related to separate Pleistocene interglacials at this site, but Scourse (1986) denies that the upper beach is *in situ* and prefers a younger age for most of the succession.

## References



(Figure 8.1) The Isles of Scilly: critical sites, exposures of the Scilly Till, the southern limit of the Hell Bay Gravel and Mitchell and Orme's (1967) glacial limit. (Adapted from Scourse, 1991.)



(Figure 8.3) A lithostratigraphic model for the Isles of Scilly. (Adapted from Scourse, 1991.)