
Culbin, Moray

[NH 980 615]

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Introduction

The assemblage of coastal landforms along the southern shore of the Moray Firth (see Chapter 11) is comparable to the barrier beach assemblage of the north Norfolk coast. The saltmarshes that have developed behind The Bar at Culbin represent the most recent features in the sequence of landform development. The area is therefore important for studying the evolution and development of saltmarshes in a national context. The marshes at Culbin (see (Figure 10.1) for general location) are also distinctive in demonstrating a well-developed network of salt-pans, but unusually few creeks (Burd, 1989; Comber *et al.*, 1994).

Description

The active back barrier (Allen and Pye, 1992) saltmarsh at Culbin is 203 ha in area (Pye and French, 1993; see (Figure 11.5) In the present volume). The marsh edge varies from cuffed to ramped and the limited creek system is linear (Pye and French, 1993). Salt pans are common. Although the area includes both lateral erosion and accretion, Pye and French describe the site as accreting vertically. Present relative sea-level change is estimated to be close to 0 mm a⁻¹, but the area has undergone about 9 m of isostatic rise over the last 6500 years or so, over which time sea level has fallen to present level.

As part of an assemblage of coastal features, further description of the site is given in Chapter 11 of the present volume.

Interpretation

This benign environment has allowed saltmarsh to accrete rapidly on account of the western extension of the sheltering spit and bar features (Comber *et al.*, 1994). Intertidal sandflats and saltmarshes occur on the landward side of the Buckle Loch spit and The Bar in the shelter afforded by these large linear features. The saltmarsh areas are developing on an extensive sand-based intertidal zone. The seaward edge of the marsh may have a small undercut edge of c. 0.2 m (Ritchie *et al.*, 1978) or grade smoothly from sandflat to saltmarsh. The saltmarshes range from low developmental marsh surfaces characterized by intermittent stands of common saltmarsh-grass *Puccinellia* spp. and samphire *Salicornia* spp. to substantial areas of high marsh supporting a full vegetation cover merging to freshwater marsh species to the landward side. The two largest areas are identified as the marsh surface landward of the central section of The Bar and the area landward of Buckle Loch spit. The area of saltmarsh landward of Buckle Loch spit is expanding rapidly as distal extension of the spit continues to provide an increasingly lower-energy environment in which progradation can occur. Since the longshore extension of the protective spits is known (see (Figure 11.2)), then an approximate age can be placed on the initiation of saltmarsh: the marsh behind The Bar began to develop after 1858, whereas behind the Buckle Loch spit, saltmarsh was developing by 1730.

The extensive saltmarshes that have accreted in the shelter afforded by the two major spits may be susceptible to erosion by the landward migration of the protecting beach forms and the narrowing of their updrift proximal ends (Comber, 1993). Such activity is presently most severe at the neck of The Bar, where saltmarsh peat is exposed and is now being eroded on the foreshore. It is inevitable that since the sandflats and saltmarshes depend on the shelter provided by the Buckle Loch spit and The Bar, any erosion and movement in these protective features will force commensurate change in the sheltered areas behind.

Conclusions

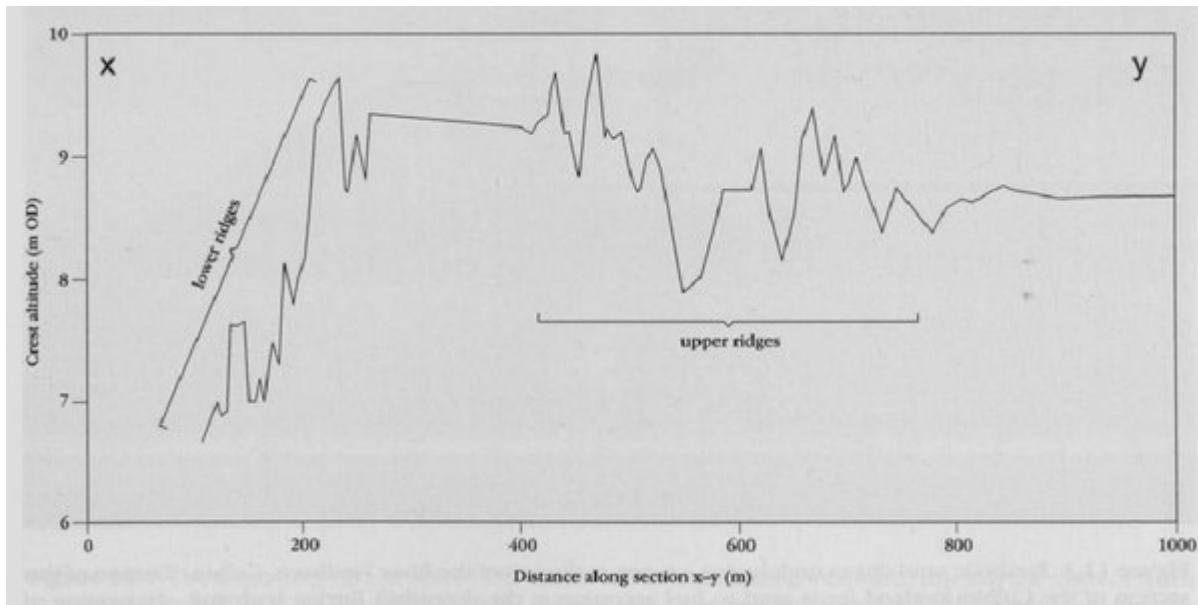
The saltmarshes of Culbin are youthful, having largely developed in the last few hundred years. They display an intimate relationship to the shelter provided by the westward-moving gravel features of the outer coast. Westwards accretion is rapid, but proximal, erosion has led to foreshore exposures of immature saltmarsh peat.



(Figure 10.1) The generalized distribution of active saltmarshes in Great Britain. Key to GCR sites described in the present chapter or Chapter 11 (coastal assemblage GCR sites): 1. Morrich More; 2. Culbin; 3. North Norfolk Coast; 4. St Osyth Marsh; 5. Dengie Marsh; 6. Keyhaven Marsh, Hurst Castle; 7. Burly Inlet, Carmarthen Bay; 8. Solway Firth, North and South shores; 9. Solway Firth, Cree Estuary; 10. Loch Gruinart, Islay, 11. Holy Island. (After Pye and French, 1993.)



(Figure 11.5) Spectacular recurves extend from the active outer beach ridges at The Bar at Culbin into the sheltered area behind. The inner recurved parts of the gravel ridges support small areas of heather, gorse, broom and pine whereas the intertidal flats between the gravel ridges support small areas of saltmarsh (see Figure 11.4). (Photo: P and A. Macdonald/SNH.)



(Figure 11.2) The gravel ridges over a 1000 m transect from x–y (see Figure 11.1) show two groups of emerged ridges, the most seaward of which decline rapidly in height towards the north-west. (After Comber, 1995.)