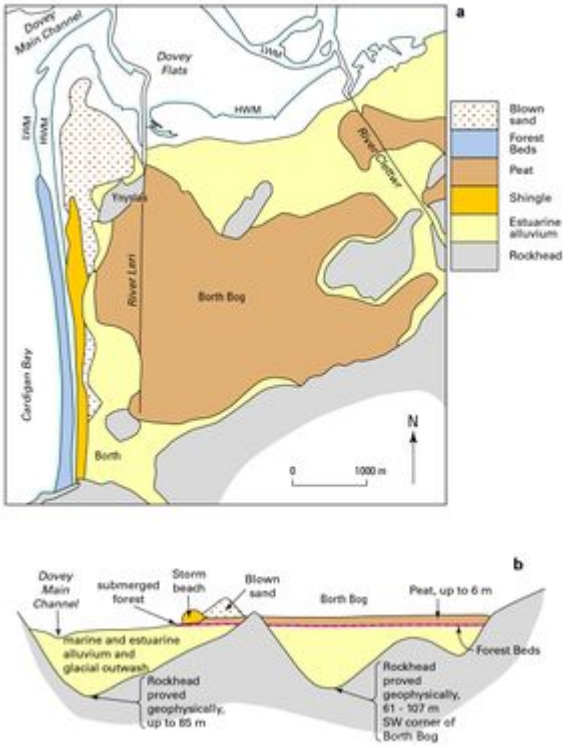
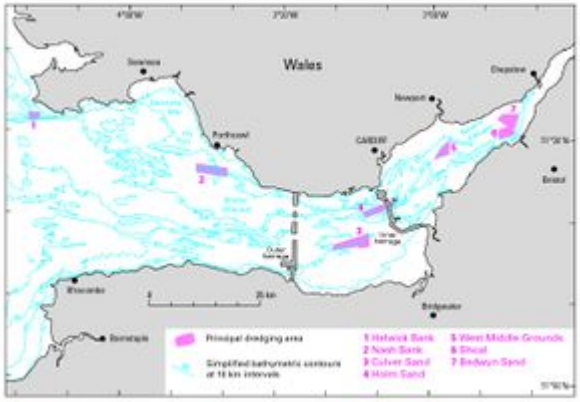
Holocene of Wales

From Earthwise
Jump to navigation Jump to search

From: Howells, M F. 2007. British regional geology: Wales. Keyworth, Nottingham: British Geological Survey.



Superficial deposits south of the Dyfi estuary (adapted from Godwin, 1943). a Map of Borth Bog b Cross-section, Borth Bog and Dyfi estuary. P916214.



Licensed aggregate dredging locations in the Bristol Channel (after James et al., 2005; for current holdings see http://www.thecrownestate.co.uk). P916215.

At the beginning of Holocene times, some 10 000 years before present (BP), the climatic amelioration that had been briefly interrupted during the Loch Lomond Stadial (Younger Dryas)

continued. A temperate deciduous mixed forest, with regional variations, developed across Wales, particularly below 500 m OD. The forest was progressively modified by increasing human occupation, but the main clearance did not occur until early Roman times, some 2000 years ago.

At the maximum growth of the Late-Devensian ice sheet, about 21 000 BP, sea level was at its lowest, approximately 100 m below present OD. From Late Devensian into Holocene times, sea level changes were induced by melting of the ice sheet and isostatic rebound, and between 18 000 and 15 000 years BP there was a temporary land bridge between Wales and Ireland. Current sea level was attained about 5000 years ago, although movements have continued. The principal postglacial deposits, apart from the extensive tracts of river alluvium, occur in the vicinity of the coast where, locally, swathes of blown sand impede drainage and separate large tracts of alluvium from the shoreline. Such relationships are common, but the most notable are probably those between Porthcawl and Swansea, east of Pendine, at Ynyslas (P916214) near Borth, at Morfa Harlech, at Newborough Warren on Anglesey and at the mouth of the Vale of Clwyd between Abergele and Prestatyn. In Cardigan Bay, the beach material is mainly transported northwards and in many instances, for example at Ynyslas, ridges of beach gravels form a foundation for the dunes. At Ynyslas, the dunes separate the submerged forest and associated beds on the foreshore from Borth Bog to the east; the site has been extensively studied and provides an important record of coastal and environmental changes over the past 7000 years. The submerged forest beds are most commonly exposed at or below high-water mark in a setting where they could not be formed at the present time; tree bases in growth positions are common. In the excavation for the major dock and shoreline installations in Glamorgan, postglacial peat beds were particularly well exposed, down to 30 m below current sea level at Barry. The peat beds are interbedded with marine and estuarine clays, which contain a characteristic fauna that indicates some pauses in the gradual drowning. At Crymlyn Bog (Swansea), the youngest peat, up to 12 m thick, at and above current sea level, was probably formed some 3000 years ago. Associated with the plants in the peat beds are insect remains and mammal bones, particularly of deer species that no longer frequent the Welsh countryside. In the bays of south Wales, the peat beds have yielded flint artefacts, indicating that the forests were temporarily dry enough to encourage Neolithic and early Bronze Age human habitation.

Inland, solifluction processes have been active on hillslopes, and landslips are a prominent feature, and potential hazard, particularly within the deeply dissected valleys across the coalfield in south Wales. The postglacial sea-level changes and variations in the drainage patterns caused extensive terracing of the river alluvium. Most of the gentle upland slopes in Wales are covered with thin peat, which thickens locally in depressions, for example on Plynlimon. One of the most distinctive, romantic and probably thickest swathes of peat is that across Migneint, west of Arenig Fawr, which includes Llyn Conwy close to the source of the Conwy river. The River Teifi, near Tregaron, flows through one of the largest valley peat bogs (Cors Caron), which formed in the floor of the moraine-dammed lake; the oldest peat has been dated at about 10 000 years BP, dating the melting of the ice a little earlier.

Offshore, sea-bed sediments can be broadly divided into mobile sediments and gravelly lag deposits, which are actively involved in the current marine process. Where mobile sediments are absent, the sea bed is mantled by a shelly or pebbly gravel and coarse sand deposit, which undergoes constant winnowing and reworking, and it is this process that forms the mobile layer. In both St George’s Channel and Cardigan Bay, the gravelly deposits pass laterally into giant sand waves, up to 40 m high, and tidal sand ridges. In the central part of Tremadog Bay, the sand passes laterally into mud in which considerable volumes of gas have been recorded. Similar sand waves are well developed to the south and west of Gower in the Bristol Channel.

These offshore, unconsolidated sands and gravels are an important economic resource, which have been dredged in the outer Severn estuary (P916215) and in the linear tidal sand ridge, Nash Sand,

close to Porthcawl. It is in this area that the proposed Severn Barrage is likely to be sited; the idea for a barrage was originally put forward by Thomas Telford in the early 19th century. There have been two detailed investigations, an 'outer' location between Breaksea Point and Warren Point, and an 'inner' location between Lavernock Point and Brean Down. Sediment along the line of the inner location is less than 1 m thick, except at sandbanks where it is up to 10 m in places. The superficial sediments are underlain variously by Carboniferous limestone, in the vicinity of the Holm islands, Triassic mudstone, and Lower Jurassic limestone and mudstone. The deep-water channel between the Holm islands determined this to be the prospective site of the turbines.

Bibliography

BEVINS, R E, HORAK, J M, EVANS, A D, and MORGAN, R. 1996. Palaeogene dyke swarm, north-west Wales: evidence for Cenozoic sinistral fault movement. *Journal of the Geological Society of London*, Vol. 153, 177–180.

BROWN, E H. 1960. *The relief and drainage of Wales.* (Cardiff: University of Wales.)

CAMPBELL, S, and BOWEN, D Q (editors). 1989. *Quaternary of Wales*. *Geological Conservation Review Series,* No. 2. (Peterborough: Nature Conservancy Council.)

GEORGE, T N. 1974. The Cenozoic evolution of Wales. 341–371 in *The Upper Palaeozoic and post-Palaeozoic rocks of Wales*. OWEN, T R (editor). (Cardiff: University of Wales Press.)

GODWIN, H. 1943. Coastal peat beds of the British Isles and North Sea. *Journal of Ecology*, Vol. 31, 199–247.

JOHN, B S. 1970. Pembrokeshire. 267–314 in *The glaciations of Wales and adjoining regions*. LEWIS, C A (editor). (London: Longman.)

Contents

Coedana Complex

Blueschist Terrane

Monian Supergroup

Avalon Terrane

South-west Wales and the borders

Cambrian

Comley Series

St David’s Series

Merioneth Series

Ordovician

Tremadoc

Arenig

Llanvirn

Caradoc

Ashgill

Ordovician volcanism

Silurian

Llandovery

Wenlock

Ludlow

Přídolí

Caledonian orogeny

Devonian

Lower Old Red Sandstone

Lochkovian

Pragian—Emsian

Upper Old Red Sandstone

Carboniferous

Dinantian

Tournaisian

Visean

Silesian

Namurian

Westphalian

Coal

Variscan orogeny

Mineralisation

Mesozoic

Permian—Triassic

Jurassic

Lower Jurassic

Middle Jurassic

Upper Jurassic

Cretaceous

Lower Cretaceous

Upper Cretaceous

Oil and gas

Cainozoic

Palaeogene—Neogene

Quaternary

Pleistocene

Holocene

Geology and man

Retrieved from 'http://earthwise.bgs.ac.uk/index.php?title=Holocene_of_Wales&oldid=27819'
Category:

- Regional Geology of Wales

Navigation menu

Personal tools

- Not logged in
- Talk
- Contributions
- Log in
- Request account

Namespaces

- Page
- Discussion

□

Variants

Views

- Read
- Edit
- View history
- PDF Export

□

More

Search

Search Go

Navigation

- Main page
- Recent changes
- Random page
- Help about MediaWiki

Tools

- What links here
- Related changes
- Special pages
- Permanent link
- Page information
- Cite this page
- Browse properties

- This page was last modified on 5 May 2016, at 09:53.

- Privacy policy
- About Earthwise
- Disclaimers
-
-