

COUNTY: WEST SUSSEX

SITE NAME: BRACKLESHAM BAY

DISTRICT: CHICHESTER

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: CHICHESTER DISTRICT COUNCIL

National Grid Ref: SZ 775975, SZ 844930 Area: 201.9 (ha.) 499.01 (ac.)

Ordnance Survey Sheet 1:50,000: 197 1:10,000: SZ 89 SW, NW & SZ 79 NE

Date Notified (Under 1949 Act): 1980 Date of Last Revision: –

Date Notified (Under 1981 Act): 1986 Date of Last Revision: 1989

Other Information:

Part of this site will be listed in 'A Geological Conservation Review'.

Reasons for Notification:

This site consists of a long stretch of coast with some rough unimproved grazing pastures which are important for the bird populations they support. This importance is elevated as agricultural improvement continues to threaten and erode a habitat-type already scarce within the county. The coastal habitats include a small area of salt marsh, shingle bank, the rifes (wide flowing ditches) and associated reed beds, together with a long stretch of intertidal exposures of high geological interest.

Biological Interest

The most important habitat in terms of size and wildlife interest is the area of unimproved pasture subject to seasonal flooding. Grasses such as red fescue *Festuca rubra*, sea couch *Elymus pycnanthus*, creeping bent *Agrostis stolonifera* and sweet vernal-grass *Anthoxanthum odoratum* form a distinctive sward in which a variety of herbs grow, including viper's-bugloss *Echium vulgare*, lady's bedstraw *Galium verum* and buck's-horn plantain *Plantago coronopus*.

In the extreme west and east of the pasture and on the banks of the rifes rough grassland is dominated by sea couch, with small amounts of sheep's fescue *Festuca ovina* and creeping bent grasses and local abundancies of common saltmarsh grass *Puccinellia maritima* bordering the shingle. A number of saltmarsh and sea plants including sea aster *Aster tripolium* and sea-purslane *Halimione portulacoides* occur throughout this rough grassland type. In the north of the pasture some degree of improvement (re-seeding) has occurred where the dominant grass in a lush sward is red fescue, although some crested dog's-tail *Cynosurus cristatus*, sheep's fescue and cocks foot *Dactylis glomerata* grasses remain.

The major rife is regularly inundated with emergent communities dominated by common reed *Phragmites australis* and sea club-rush *Scirpus maritimus*, with reed-grass *Glyceria maxima* also present. Drainage ditches which dissect the pastures support a rather depauperate flora due to ditch clearance.

The shingle bank is not extensively vegetated but common stork's-bill *Erodium cicutarium*, yellow horned-poppy *Glaucium flavum*, mayweed *Tripleurospermum maritimum* and the locally-distributed sea-kale *Crambe maritima*, all occur in places.

A small area of saltmarsh has developed in a depression behind the shingle wall. Here glasswort *Salicornia dolichostachya* is dominant, whilst in more stable parts of the marsh thrift *Armeria maritima*, prickly saltwort *Salsola kali*, common cord-grass *Spartina anglica* and sea aster form a small but distinct community.

The areas of seasonally flooded grassland together with the rife and shingle banks are of considerable ornithological importance for both breeding and overwintering birds. Redshank, ringed plover, snipe and lapwing all breed here; the lapwing population on this site is of considerable significance in Sussex and may represent up to 10% of the total county population. Wintering birds include large flocks of brent geese, ruff and golden plover with smaller numbers of teal, pintail, black-tailed godwits and curlew. In addition this site is probably the most important in Sussex for overwintering short-eared owls and holds up to twelve individuals annually.

Geological Interest

The geological exposures on the beach between West Wittering and Selsey consist of a complex series of Eocene (Tertiary) age beds with some overlying younger Pleistocene (Quaternary) deposits.

The Tertiary exposures are the type locality of the Bracklesham Beds or Group. These were deposited during a number of marine transgressions and regressions which resulted in a strongly cyclical stratigraphy. This 120m section is important in the palaeographic reconstruction during the middle Eocene and is essential to stratigraphic studies in the Hampshire Basin. The beds are highly fossiliferous for the most part and yield a high diversity marine fauna, while some beds contain a brackish-water fauna with strong terrestrial affinities.

In addition this is the only site among British Tertiary localities with plant fossils in rocks of the late lower and early middle Eocene, and it affords the only opportunity to study large beds of this age. At least sixteen horizons here are known to yield plant fossils including angiosperm fruits and seeds, coniferous leafy shoots, *Nipa* palm fruits and sea grass plants. The *Nipa* bed includes numerous scattered fruits which prove the proximity of the *Nipa*-dominated coastal mangrove vegetation at this time. The sea grass beds are the only example of their kind in Europe. Both these and other horizons in the site are the subject of current research and have considerable future research potential. This is a critical site for European Tertiary Palaeobotany and coastal palaeoecology.

Bracklesham is a historically important Eocene fish site, known since about 1850, from which one hundred and sixty species have so far been described. Because of the long history of collecting at this site it is the type locality for a great many species. Despite being an established and well-known Eocene fish site the locality has great potential for future research with much new and undescribed material still being discovered. This is the only exposure where fish from the Bracklesham Beds may be collected *in situ*. The beds represent repeated cycles, with evidence of a marine transgression at the base, then sediment indicating shallowing upwards, through to continental beds. The fish occur in the bottom half of a cycle, and each of the rapidly changing facies had its own fauna. By these times the Eocene 'North Sea' had contracted and the beds deposited were sandier and were interfingering with continental deposits. This is the only place where this marginal sandy facies of the Eocene sea can be seen.

At Earnley there is a highly important Quaternary site with a sequence of marine deposits of middle Pleistocene interglacial age providing a unique record of sea level changes. Evidence from the sediments, and the pollen microfaunas they contain, indicates deposition in an intertidal channel at a time of falling sea level, probably during the late Hoxnian or late Cromerian interglacial.

In the south east of the site Selsey West Beach is a key Quaternary site for a sequence of fresh-water and estuarine deposits of Ipswichian interglacial age. Evidence from the sediments here, and the pollen microfaunas they contain, indicates rapid climatic amelioration at the beginning of the interglacial and a marine transgression at about 1.8m OD in zone IIb. Raised beach deposits formed during the high sea levels in the late

Ipswichian interglacial overly estuarine deposits and extend up to 7m OD west of Selsey Bill.