

that the three individual temperate episodes of MIS 7 may be represented at the site. Further investigation of this will help to establish a framework for MIS 7 sites in the British Pleistocene.

Vascular plants

Although vegetation communities of the peninsula have been significantly affected by the cement industry and construction of the Channel Tunnel Rail Link (CTRL), there are surviving fragments of habitats that are representative of a former more extensive marshland. These include intertidal mudflats, saltmarsh, sea wall corridor with transitional grasslands, grazing marsh with extensive reed-lined ditch networks, winter wet low-ways and scattered scrub. In addition to this, the relatively recent habitats of free-draining grassland and extensive scrub, and the increased range of waterbodies with brackish transitions, have collectively formed a habitat mosaic that has enabled characteristic and scarce plants to survive and establish.

The site supports nationally scarce species characteristic of coastal grazing marsh and transitional grassland, such as divided sedge *Carex divisa*, annual beard-grass *Polypogon monspeliensis*, stiff saltmarsh-grass *Puccinellia rupestris*, Borrer's saltmarsh-grass *Puccinellia fasciculata* and slender hare's-ear *Bupleurum tenuissimum*. The saltmarsh is rather species-poor, when compared with more expansive outer Thames areas but does support the nationally scarce golden samphire *Limbarda crithmoides* in one of its most upriver locations within the Thames Estuary.

The open grassland areas across the site support large populations of legumes, including the nationally scarce yellow vetchling *Lathyrus aphaca* and Bithynian vetch *Vicia bithynica*. The presence of the nationally rare hairy vetchling *Lathyrus hirsutus* and the endangered man orchid *Orchis anthropophora* provide additional interest in grassland areas associated with scattered scrub. A sustainable population of the nationally scarce round-leaved wintergreen *Pyrola rotundifolia* subsp. *maritima* is found amongst denser scrub.

Invertebrates

The site supports over 1,700 species of invertebrate and four nationally important assemblages. Brownfield areas support assemblages of species chiefly associated with bare sand and chalk and open short swards. These assemblages are rich in bee and wasp species which use the open substrates for nesting, prey collection and basking, and the rich wild flower resource for nectar and pollen. Significant species within the assemblage include the critically endangered distinguished jumping spider *Sitticus distinguendus*, rare five-banded weevil-wasp *Cerceris quinquefasciata* and provisionally nationally scarce Phoenix fly *Dorycera graminum*. Nationally scarce species include the sea aster mining bee *Colletes halophilus*, black-headed mason wasp *Odynerus melanocephalus*, brown-banded carder bee *Bombus humilis* and chalk carpet moth *Scotopteryx bipunctaria*.

Wetland areas, primarily Black Duck Marsh and ponds resulting from construction of the CTRL support assemblages chiefly associated with open water on disturbed mineral sediments and saltmarsh and transitional brackish marsh. The marshland was formerly extensive and evidence of a possible prehistoric staked woven trackway is recorded at the mouth of a creek in Broadness.

These wetlands support 84 species of water beetle. This represents over a quarter of the UK water beetle fauna. This richness derives from a mix of fresh and brackish water. Species of note include the nationally scarce *Enochrus halophilus*, which is generally associated with brackish pools and ditch saltmarsh and the nationally rare great silver water beetle *Hydrophilus piceus*, found in marshes, drains and especially coastal grazing marshes. Other nationally scarce water beetles include the crawling water beetle *Peltodytes caesus* and whirligig beetle *Gyrinus paykulli* associated with well-vegetated margins, and the diving beetle *Rhantus frontalis*, which occurs in waterbodies with more exposed substrates characteristic of grazing marshes. Other species such as the nationally scarce soldier fly *Stratiomys singularior* develop as larvae feeding on detritus within the shallow sometimes temporary pools of these brackish coastal marshes and fens.

Breeding birds

The wetlands, grasslands, scrub, saltmarsh and intertidal mud within the SSSI support a range of breeding birds.

Notable species associated with the fen and swamp habitats of Black Duck Marsh and the CTRL wetlands include bearded tit *Panurus biarmicus*, marsh harrier *Circus aeruginosus* and the elusive water rail *Rallus aquaticus*. Wetland habitats across the site also support reed bunting *Emberiza schoeniclus*, sedge warbler *Acrocephalus schoenobaenus* and reed warbler *Acrocephalus scirpaceus*, with the last of these often providing host nests for cuckoo *Cuculus canorus*. The wetland mosaic with scrub supports Cetti's warblers *Cettia cetti*.

Scrub varies in density across the site. Species such as grasshopper warbler *Locustella naevia* prefer the scattered patches in open habitats on Broadness, while nightingale *Luscinia megarhynchos*, bullfinch *Pyrrhula pyrrhula* and garden warbler *Sylvia borin* favour the denser scrub areas of Botany Marsh East and the chalk pits. Long-tailed tits *Aegithalos caudatus* favour areas of scrub with more open margins, whilst linnets *Linaria cannabina* and lesser whitethroats *Curruca curruca* are typically associated with the scrub mosaic of the former landfill tips and areas north of the CTRL wetlands, respectively.

Botany Marsh West is a surviving fragment of a formerly more extensive grazing marsh, providing damp grassland habitat for lapwing *Vanellus vanellus* and greylag goose *Anser anser*. Shelduck *Tadorna tadorna*, little egret *Egretta garzetta* and grey heron *Ardea cinerea* utilise a number of wetland habitats and forage within the intertidal habitats of the adjacent River Thames. Little egret and grey heron nest in the heronry south of Black Duck Marsh. The water bodies, particularly the larger examples within the CTRL wetlands and Black Duck Marsh, also support a number of breeding waterfowl including pochard *Aythya ferina*, tufted duck *Aythya fuligula*, gadwall *Mareca strepera*, shoveler *Spatula clypeata*, mute swan *Cygnus olor* and little grebe *Tachybaptus ruficollis*.