

1.10 BROAD CHARACTER: CULTURAL TOPOGRAPHY

1.10.2 CHARACTER TYPE: CULTURAL TOPOGRAPHY (LANDWARD)

REGIONAL PERSPECTIVE: EAST ANGLIA

INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES

Generally the foreshore of the region is backed by cliffs, dunes or shingle ridges. This landward area also contains a series of saline lagoons and wetlands and is punctuated by numerous watercourses.

Cliffs occur all along this stretch of coastline, from North Norfolk to California and Scratby in the north of the study area to the Naze in the south. Sections of cliff vary in length from c 0.5 km to 6 km and are especially prominent in the north and central zones of the area.. The cliffs vary in height from c. 2 to 14 m and are generally composed of a varied sequence of Norwich Crag formation sediments.

Sand dunes are less common, again occurring mainly in the area around Winterton and Great Yarmouth and in the north of the overall region around the North Norfolk coast. Short sections of narrow dunes exist around Walberswick, Minsmere, Sizewell and Thorpeness in Suffolk. In particular the Blyth estuary is fronted by a narrow and fragile sand-dune system (the Denes). Sand dunes are also found in the southern part of the region behind Walton Backwaters.

Bodies of water, watercourses and wetlands are ubiquitous within this region, often irrevocably linked to one another and to the North Sea. At the heart of these systems are the rivers and estuaries which extend landward from the sea. In the southern half of the area these include the Stour and Orwell, the Deben, the Alde/Ore/Butley complex and the Blyth (see also cultural topography intertidal). The Stour and Orwell rivers are relatively straight and busy with commercial and recreational traffic whilst in the Blyth and the Alde boating is limited to the lower reaches as extensive areas of drained marsh encroach on the navigable river (Countryside Agency 1999).



Reed swamp at Iken on the River Alde

These are linked to separate elements of watery landscape such as the extensive reed beds around Snape on the River Alde and reedbed and swamp around the Butley. Man made features include Looipit Lake, the artificial fishing lake hard against the northern shore of the Orwell, separated only by an artificial bank and a number of reservoirs in the vicinity of the estuaries such as Alton Water and Delf Pond.

1.10.2 CHARACTER TYPE: CULTURAL TOPOGRAPHY (LANDWARD)

Towards the north of the region lie the Broads, a vast area of inland waterways, much valued both as an area of recreational boating and nature reserve. This area comprises over 200 km of navigable waterways and more smaller watercourses, almost all subject to tidal influence. These are associated with a series of c. 60 'broads' stretches of open water, situated adjacent to the river channels, ranging from tiny isolated lakes to large expanses such as Hickling Broad (5.9 km² of open water), most less than 4 m deep (http://en.wikipedia.org/wiki/The_Broads). The waterways and lakes are surrounded by areas of extensive wetland dominated by reeds, rushes and sedge totalling 303 km².



A secluded channel off the River Ant in the Broads

Another significant area of wetland (2018 ha) exists between Minsmere and Walberswick on the Suffolk coast. This includes elements of brackish – fresh water reedbed, open water, wet woodland and swamp. Much of this now belongs to the RSPB and is run as a nature reserve.

Saline lagoons are an important element of the coastal landscape in the East Anglian region, most notably in North Norfolk and along the Suffolk coast. Saline lagoons are a complex habitat comprising areas of shallow, coastal saline water, wholly or partially separated from the sea by sandbanks, shingle or rock (Defra 2002, 13), these can be manmade or formed naturally. In total 188 lagoons covering 133 ha can be found in Suffolk alone. Most notably a series of lagoons exists between Benacre and Easton Bavents and from Orfordness to Shingle Street.

HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY

The form of landward cultural topography within the region is a product of both natural and manmade processes throughout history. The land is shaped by the underlying geology, chiefly the product of glaciations in what has been described as the 'quintessential region of glacial deposition' (Williamson 2006, 13).

In the coastal area the geology comprises crag deposits, a varied collection of clays, gravels and shelly sands dating to 3.5-1.6 million years ago. These rest upon the foundation of the London Clay. The smoothing of existing rock formations by the successive glaciations produced the mainly 'muted' topography we see today (ibid, 15).

It is these deposits which make up the region's cliffs. For example the cliffs around Clacton to Holland on Sea are composed of a series of Pleistocene gravels, termed Lower Holland and Wigborough gravels, sands and laminated estuarine clays, which represent the deposits of a much older course of the Thames (D'Olier 2002). The Pakefield cliffs are composed of Corton formation sand underlain by silty sand of the Cromer Forest bed formation; this Corton formation is overlain by Lowestoft Till in the Kessingland cliffs. Sand dunes are a younger product of weathering and their form depends on location as well as drift geology.

The cliffs and sand dunes change their form dramatically as a result of processes of erosion and deposition along the coastline. In general, erosion is an ongoing problem along the East Anglian coast, with historical rates of erosion as high as 8 m per year in Suffolk (Defra 2002, appendix a), although rates have been slower in recent years (see below). The erosion of the cliffs is a result of weathering, poor drainage above the predominant London Clay and localised longshore drift. Material washed from the base of the cliffs tends to be deposited to the south, further complicating the processes. Erosion is ultimately a product of natural factors, although the influence of man on such processes as sea level rise and increased storminess is well documented. The presence or indeed absence of flood or storm defences or cliff support works can also significantly affect the location and scale of erosion.

Humans have also had a significant effect on the watercourses and expanses of water which are so important to the character of this region. Perhaps the most significant area of which is the Broads in the north of the region. As outlined above this comprises a large area of low-lying wetlands and bodies of water focused on a complex of rivers. Originally this area contained large deposits of peat formed by successive periods of marine transgressions on the muted landscape. For many years it was thought that the Broads themselves were 'natural' formations, however the work of Dr Joyce Lambert in the 1950s proved these water bodies to be the result of peat extraction (see Lambert and Smith 1960).

Peat was probably extracted in the area as early as the Roman period, although the industry flourished chiefly in the Middle Ages. In the 12th century AD east Norfolk was recorded as being the most densely populated area in Britain and timber stocks were dwindling. The natural peat resource was consequently used as an alternative fuel. As a result of the extent of the peat deposits, peat digging became a major industry between the 12th and 14th centuries with almost every settlement in the area digging its own pit, or turbarry, for extracting peat (<http://www.broads-authority.gov.uk>). Historical records show that these pits gradually filled with water and peat digging had been abandoned by the 14th century. As the pits flooded the area became a wetland (ibid).

1.10.2 CHARACTER TYPE: CULTURAL TOPOGRAPHY (LANDWARD)

The complex of rivers and peat extraction pits became essential channels of communication and commerce in the 16th century when Norwich became the second largest city in Britain. Wool, weaving and agricultural products were exported through Great Yarmouth (see Ports and Docks) via the broads, with a series of quays, known as 'staithe' developing in the Broads villages and the Norfolk wherry becoming the distinctive mode of transport. The wetlands continued to be maintained for commercial purposes which included harvesting reeds, rushes and sedges for thatch, animal feed etc. In the 1800s the character of the Broads was dramatically altered by the arrival of the railway which also brought tourists to the wetlands. Since this time tourism and recreation have dominated the area (see Recreation).



Reed for thatching on the Broads



Mechanical harvester, harvesting reeds on the Broads

In the absence of the large scale industrialisation seen elsewhere in the country the wetlands persisted in East Anglia and became important landscape characteristics in the 17th century due to the introduction of duck decoys from Holland. These distinctive wildfowl traps were prominent features of the landscape up to the 19th century when the wetlands and estuaries teemed with wildfowl (Williamson 2006, 201). More than 90 decoys were recorded in East Anglia, almost all of which were close to the coast. Early examples were recorded in Purdis Farm, Hemsby and Flixton. Most had dwindled by the second half of the 19th century due to changes in diet and drainage (Williamson 2005; 2006) (see Reclaimed Land), although Fritton continued in use into the 1950s.

As wetlands decreased in importance many were drained in the 19th and 20th century to provide more agricultural land (see Reclaimed Land). This includes the area now known as the Minsmere to Walberswick marshes. However the levels were allowed to re-flood during the 1940s to act as protection against invasion. Following the war the importance of this landscape was recognized and the marshes were leased by the RSPB in 1947 and ultimately purchased in 1976 in order to create a nature reserve. This encompasses 9.69 square km of reed bed, lowland heath, lowland wet grassland, and shingle vegetation and is used to demonstrate successful reed bed management (http://en.wikipedia.org/wiki/The_Broads). The Minsmere reserve contains a number of artificial saline lagoons known as the Scrape, deliberately created in the post war years to encourage birds such as avocets.

The remaining saline lagoons in the study area were formed through a number of different processes. The series of three large lagoons on the coast between Benacre and Easton Bavents were formed by the dynamic processes of the coastline (see Intertidal). Here shifting shingle bars have ponded back small rivers; seawater enters the lagoons via percolation or overtopping the barriers. The largest of these, Benacre Broad, was created by the closure of a haven by a shingle barrier in 1737. It is likely that these were also partly the result of peat cutting as seen in the Broads area.

A fourth lagoon (Benacre Denes) to the north of this was formed through gravel extraction during WWII and is fed by seawater percolation and rainfall. This was originally the site of three lagoons, however the other two have been lost to erosion in recent years. Similarly, two areas of lagoons on Orfordness are the result of clay extraction. Ephemeral lagoons are also found at Shingle Street, but are constantly changing, and are fed by percolation and overtopping.

The processes which have shaped the watercourses of the region are intricately related to ports and commercial transport as well as intertidal deposits.

VALUES AND PERCEPTIONS

This character type, although not fully maritime in nature is significantly linked to the sea and is very much perceived as being part of the coast in this area. One of the most significant reasons this character type is valued in East Anglia is for the wealth of wildlife which it attracts, in particular birds. The wildlife in turn attracts enthusiasts who frequent the area. This is reflected in the number of designated areas (eg the Broads, Benacre to Easton Bavents) and nature reserves in the region (eg Minsmere, Halvergate island) (see below). The Broads landscape stands out within the region as having its own

micro-character. This is partially related to its wildlife, as well as the well-established tourist industry focused on boating. The waterways of the region as a whole are a haven for sailing enthusiasts as well as anglers in some places. There is good pedestrian access to this character type including well-established coastal paths and it is therefore valued by walkers.

Overall this character type is perceived as being very 'natural' and 'unchanged'. There is a perception of serenity and tranquillity which has been fostered by the lack of transport infrastructure bringing industry and commercial interests into the study area.

From an historical and archaeological point of view the waterways, including the Broads, are steeped in history associated with the heyday of the East Anglian ports in the Middle Ages (see the Character Type text for Ports and Docks). The Norfolk wherry characterises this industry and restored examples can still be seen on the Broads. The cliffs are also important from a much longer view into the past. These act as repositories for fossils including evidence of the earliest occupation of northern Europe (see the Palaeolandscape Character Type text).

RESEARCH, AMENITY AND EDUCATION

This character type has huge potential for research and education both in ecological and historical terms. The landscape attracts rare wildlife and flora which can be studied in its natural environment. This has been outlined above in terms of wetlands in particular, however the cliffs provide rare nesting habitat for birds such as sand martins and unusual plant colonies are found in both cliffs and sand dunes (English Nature 1997). This is reflected by organizations such as the Minmere RSPB reserve and the Broads Authority which have well-established education strategies.

In recent years a programme has been set up in the Broads to retrain a workforce in the techniques of the traditional marsh men in an effort to manage the wetlands. As such a long abandoned way of life can now be seen in its original context. Much of the reed from the area is still used for thatching roofs in the traditional local manner.



Traditionally thatched boathouse on the Broads

The cliffs in the area are particularly valuable for palaeontological research as a result of the land and sea fossils exposed within the cliff face. These include the remains of subtropical fish, sharks teeth and birds (English Nature 1997). The potential educational importance of the cliffs for increasing public understanding for finds such as these is well represented by the English Nature (now Natural England) on-site noticeboard and leaflets at the West Runton findsite of the fossil remains of an early woolly mammoth, the well known West Runton Elephant. Recently the remains of early hominins have been found in the north of the region at Pakefield and Happisburgh (see the Palaeolandscape Character Type text).

CONDITION AND FORCES FOR CHANGE

One of the greatest factors of change for this character type in East Anglia is erosion, as mentioned above. Rates of erosion have varied over time and tend to be intermittent, with higher rates of loss during storm events followed by quieter periods. For example, between 1836 and 1903 the Minsmere cliffs, south of the sluice, retreated by c 156 m, between 1903 and 1976 there was very little change, although erosion continued at a slow pace (Pye and Blott 2006). As a result of erosion some of the cliffs and sand dunes in the area are in a poor condition and many of the water bodies are threatened (see below).

This effect is being monitored by the scheme of Shoreline Management Plans (SMPs). These are large-scale assessment of the risks associated with coastal processes which aim to reduce these risks to people and the developed, historic and natural environments (<http://www.environment-agency.gov.uk>).

Smaller scale forces for change include boatwash and pollution in the waterways. This is particularly significant in the Broads area where speeding boats have severely damaged riverbanks via boatwash as well as polluting. The silt released from the banks collects within the channels which have to be dredged. The Broads Authority has launched a campaign to try and prevent these effects.

Increasing pressure for development on the coast is also a force for change of landward cultural topography in the area, although this remains a lesser catalyst at present.

RARITY AND VULNERABILITY

Many of the sub-types included within this character type are rare to some degree. Sand dunes are rarer in southern and eastern England than elsewhere in the country and can support rare flora. Many in the region as a whole are protected including Great Yarmouth North Denes which is a Special Protection Area. The cliffs although a common sub type around the country, are particularly notable in this region for the fossil remains which they contain. The cliffs around the Naze are recognised for this in terms of designation as an SSSI. The cliffs at Pakefield and Happisburgh have proven so far to be unique in terms of redating hominin occupation in Northern Europe (<http://www.ahobproject.org>).

The wetlands and water bodies with the region are particularly significant. East Anglia contains a huge reedbed resource with 474 ha in Suffolk alone making up one fifth of the national resource (English Nature 1997). Reedbeds notably support breeding bird populations. Saline lagoons are internationally important (a primary habitat under the EU Habitats Directive) due to the small size of the

1.10.2 CHARACTER TYPE: CULTURAL TOPOGRAPHY (LANDWARD)

existing resource which support specialist and rare invertebrates. Minsmere – Walberswick as a wetland landscape contains a diverse assemblage of animal and plant communities including a number of nationally sparse species.



Dunes at Hemsby showing vulnerability

A good example of the significance of this landscape type is the Broads area which is afforded the same legal protection as a national park for its blend of wildlife, distinctive landscapes and buildings.

Many of the elements discussed within this character type are currently at risk. The majority of threats facing these sub types are related to sea level rise, in particular erosion. This threatens cliffs, sand dunes, wetlands and saline lagoons alike.

Cliff erosion is variable as discussed above but in some areas has been devastating, leading historically to the loss of settlements such as Dunwich and more recently Covehithe and Happisburgh to the north of the area. Rates of erosion have been recorded at up to 8 m per year between Benacre Ness and Easton Bavents (Defra 2002, appendix a), 3 m per year around Dunwich and 1.8 m per year at Pakefield (ibid). It has been estimated that the total effect of erosion at Dunwich has probably resulted in the loss of c. 8 km of land in the last 8000 years, and this suggests that the cliff face was once in the area equivalent to West Rocks, several km offshore (D'Olier 2002). Between Benacre and Easton Bavents the knock-on effect of this erosion is the threat to the saline lagoons. Without intervention the erosion of the cliffs will continue until the shingle bar fronting the lagoons would be breached, taking both lagoons and reedbed.



Eroding cliffs at Covehithe

Two of the broads at Benacre Denes have already been lost to erosion. This is exacerbated by pollution from agriculture and sewage and coastal defence works.

It is predicted that as the global climate changes sea level will rise further and storminess will increase leading to an consequent increase in erosion rates, leaving the cliffs, sand dunes and wetlands of east Anglia increasingly vulnerable.

BIBLIOGRAPHY

Countryside Agency 1999 Countryside Character. Volume 6: East of England. CA12. Countryside Agency, Cheltenham.

Department for Environment Food and Rural Affairs, 2002b, Suffolk Coast and Estuaries Coastal Habitat Management Plan Final Report. Defra

D'Olier, B., 2002, Appendix 10: A geological background to sediment sources, pathways and sinks, in Wallingford, H. R., CEFAS/UEA, Posford Haskoning and D'Olier, B., Southern North Sea Sediment Transport Study, Phase 2: Sediment Transport Report, Report EX 4526, August 2002, H R Wallingford
English Nature, 1997, Suffolk Coast Maritime Natural Area Profile. English Nature

Lambert, J. M. and Smith, C. T. 1960 The Norfolk Broads as Manmade Features. New Scientist 7 (176)

Pye, K. and Blott, S.J. (2006). Coastal processes and morphological change in the Dunwich - Sizewell area, Suffolk, UK. Journal of Coastal Research 22, 453-473

Williamson, T., 2005, Sandlands: the Suffolk coast and heaths. Windgather

Williamson, T., 2006, England's Landscape: East Anglia. English Heritage

Websites

http://en.wikipedia.org/wiki/The_Broads

(<http://www.broads-authority.gov.uk>).

<http://www.environment-agency.gov.uk>

<http://www.ahobproject.org>