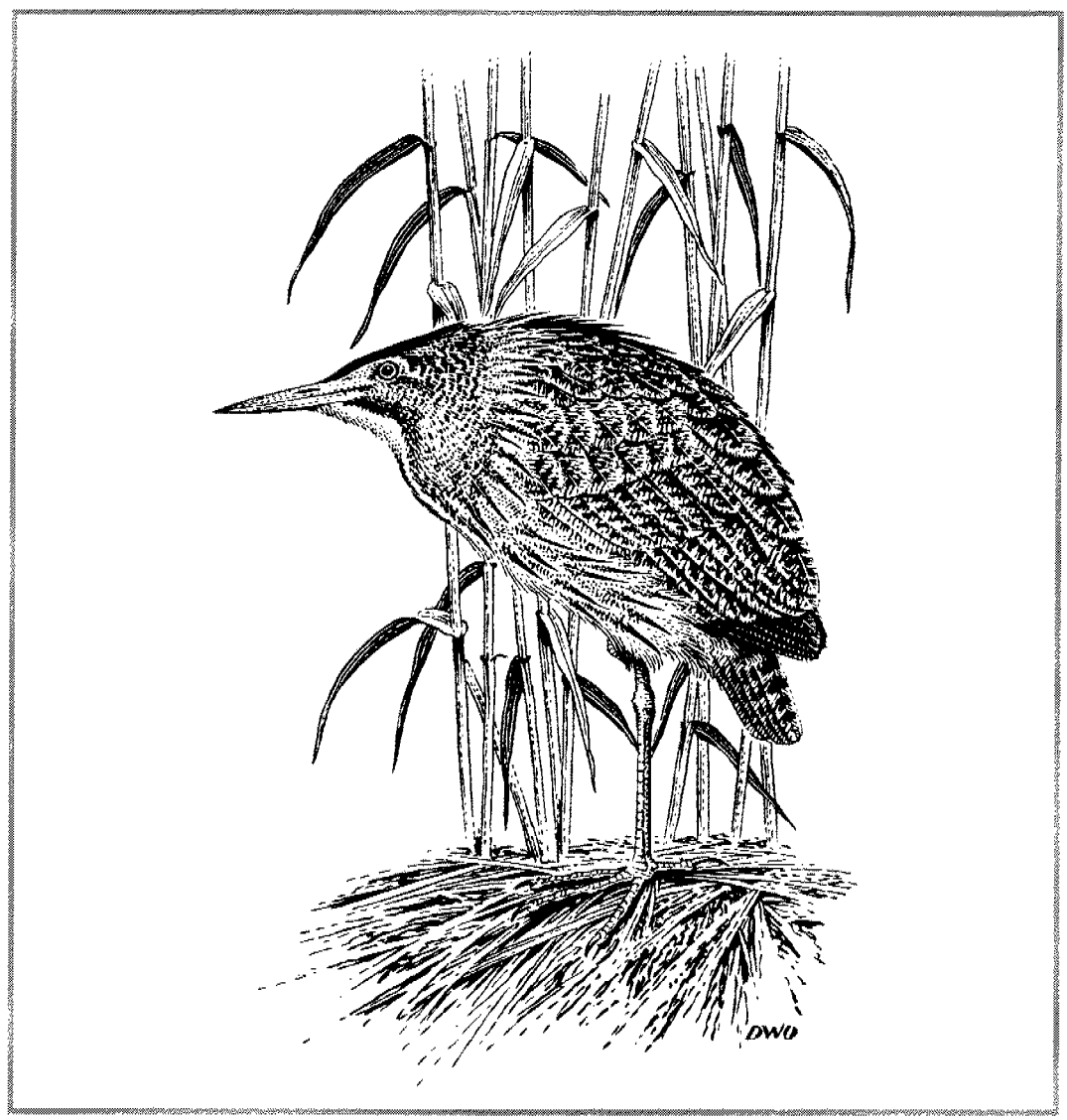
ENGLISH NATURE

Towards a strategy for the conservation of coastal habitats in north Norfolk

A discussion paper

No. 74 - English Nature Research Reports



working today
for nature tomorrow

ENGLISH NATURE RESEARCH REPORTS
No 74

TOWARDS A STRATEGY FOR THE CONSERVATION OF COASTAL HABITATS IN NORTH NORFOLK

A DISCUSSION PAPER

BY

A F Brown
P V Grice
G P Radley
R N Leafe
P Lambley

Further copies of this publication may be obtained from:

ORNITHOLOGY SECTION
ENGLISH NATURE
NORTHMINSTER HOUSE
PETERBOROUGH
PE1 1UA

ISSN 0967-876X

1. Introduction

A key element of English Nature's strategy for the conservation of our marine heritage is to encourage the construction of Coastal Zone Management Plans for each of the coastal process cells around our shores (English Nature 1993). These coastal process cells are sections of coastline within which any natural change or process does not generally affect adjacent sections. Within such cells there may also be distinct sub-cells. Coastal Zone Management Plans seek the strategic allocation of environmental, socio-cultural and institutional resources to achieve the conservation and sustainable use of the coastal zone.

The coast of north Norfolk, from the drift divide around Sheringham to the end of the open coast at Snettisham (littoral drift sub-cell 3a, see Motyka and Brampton 1993) is one of the most outstanding areas for wildlife and natural features in England. Its range of geomorphological features, in particular the sand and shingle formations, its saltmarshes and associated plant communities, and its breeding and wintering bird populations are unparalleled and of international importance. Virtually all the coast is designated as a Site of Special Scientific Interest, an Area of Outstanding Natural Beauty and a National Heritage Coast under domestic legislation, a Special Protection Area under EC law and a Biosphere Reserve and Ramsar site under international treaties. Much is also either a National Nature Reserve or is owned and managed by voluntary conservation organisations including the Royal Society for the Protection of Birds, The Norfolk Naturalists' Trust and The National Trust. This document is English Nature's first attempt to explore the management options available and we hope that its publication will open up debate about the future sustainable management of this outstanding natural area.

In common with other parts of the coastline of south-east Britain, the level of the sea relative to that of the land is rising: a result of isostatic readjustment since the last ice age causing land in the south east to sink against a background of globally rising sea levels. Sea levels may possibly rise at an accelerated rate should global warming occur. In a natural situation, this would lead to a steady landward movement of the coast, with an accompanying landward movement of coastal features and wildlife interest, except where land rises rapidly in height from the coast and prevents this. Hard coastal defences such as sea-walls, built to protect agricultural land or built-up areas from flooding, also prevent this landward movement, resulting in erosion and subsequent loss of valuable coastal habitats in front of the sea wall. This phenomenon is known as *coastal squeeze*. The sea defences themselves become increasingly threatened not only by rising water levels but by ever greater exposure to the erosive power of waves as the natural protection afforded by saltmarshes and other natural habitats to their seaward is lost.

Along much of the north Norfolk coast, there is at present a healthy balance between sediment accumulation and erosion. This is a dynamic coast and areas of accretion and erosion change, often rapidly, with time. Erosion can thus weaken sea defences in areas formerly accreting. Sea defences at several key points in north Norfolk are insufficient to protect the land behind them. The breaches of the shingle ridge at Cley in 1978 and February 1993 are recent examples.

Hard sea defences disrupt the natural processes which lead to erosion and deposition of sediments: protection of a cliff from erosion, for example, will lead to the starvation of some other part of the coast of the materials of which it is composed. That part of the coast thus

erodes away. Attempting to solve the 'problems' of one part of the coast with hard defences usually shifts that particular problem, or causes a new problem to appear elsewhere along the coast. Sea level rise may exacerbate these problems. It may lead to a shift in the pattern of erosion and deposition due to changes in wave refraction and may cause freshwater flooding on inland lowland wet grasslands and arable farmland.

For these reasons, English Nature is calling for a strategic approach to coastal conservation. Our overall objective is the maintenance of coastal wildlife habitats and natural features at a level equivalent to their 1992 distribution in a sustainable condition (English Nature 1992). New or replacement sea defences should not exacerbate coastal squeeze or the disruption of natural systems, and should reverse these processes wherever possible. On sections of coastline of high conservation value, we favour the unrestrained operation of natural coastal systems unless there is an overwhelming case for safeguarding an irreplaceable habitat or feature or when there is little prospect of establishing an area of equivalent value locally if it were to be lost. Where natural systems have been disrupted, we will encourage their reinstatement.

It may not always be possible to allow important wildlife habitats to retreat fully due to topography or the existing use of the land that they back onto. Even partial setback of the sea defences in such cases will lead to a loss of coastal habitats, particularly those dependent on freshwater. Replacement areas where such habitats can be created must therefore be identified and managed elsewhere along the coast as part of the strategic process.

Such operations will not be cheap. We call for a strategic re-direction of existing sea defence budgets favouring sustainable sea defences, with gains for wildlife, natural features and the economy. Opportunities for habitat improvement, especially the conversion of arable to wet grassland may also arise through MAFF's long-term set aside scheme, the Countryside Stewardship Scheme or a specific Wildlife Enhancement Scheme. Land acquisition or long-term leasing and management by statutory and voluntary conservation bodies might also be appropriate in certain circumstances.

The north Norfolk coast provides an ideal opportunity to trial this approach given the immediate threats to the nationally and internationally important wildlife habitats and natural features. It will call for the full cooperation of many interested statutory and voluntary bodies. These plans may sound ambitious, but wetland restoration/creation can be achieved, as has been proven on the north Norfolk coast itself, notably at Titchwell and Holkham. Not all habitats are re-creatable, of course, but saltmarshes, large reedbeds and important elements of wet grasslands may be. We need to start to work together now and not wait until Cley and Titchwell are lost beneath the waters of the next storm surge.

2. Potential habitat losses in north Norfolk

It is essential that we identify the likely habitat losses along the coast in order to target the management of suitable replacement areas as compensation, thereby ensuring there is no net loss in wildlife habitats within the coastal cell. Where possible, replacement areas should be located within or near to local management units. Map 1 shows the current distribution of coastal habitats within the north Norfolk coastal cell. At several points the coastal habitats are unable to retreat fully because they back onto urban areas or higher relief. Partial set-back or upgraded sea walls immediately in front of these areas will result in losses to both

saline and freshwater habitats that must be compensated for in other areas within the coastal cell. Map 2 show the likely losses in coastal habitats over the next 25 years, based on current estimates of relative sea level rise along the north Norfolk coast of 1.5 mm $year^{-1}$. The major losses will be of freshwater grazings and reedbeds, totalling an estimated 588 ha, with the main areas of loss being at Titchwell and Cley-Salthouse. Two lengths of cliffed coast are subject to some erosion; 1.5km at Hunstanton and some 5.75 km between Sheringham and Weybourne.

3. Identifying replacement areas

At some locations, full coastal retreat onto adjacent agricultural land may be possible, allowing the regeneration of saltmarshes and the creation of saline and freshwater wetland habitats. The creation of a range of saline, brackish and freshwater habitats on abandoned farmland at Titchwell Marsh, following the breach of the sea wall in 1953, provides a good example of what can be created with the appropriate management (Becker & Sills 1988).

It is not always the case, however, that sufficient freshwater habitats can be created in areas where the coast retreats. Along much of the north Norfolk coast land rises relatively steeply away from existing natural and semi-natural coastal habitats. We need, therefore, to identify and manage additional replacement areas on suitable low-lying land elsewhere within the coastal sub-cell, perhaps further inland. Where there is little potential for the creation of habitats such as grazing marsh within the coastal cell, we may wish to press for their protection using soft engineering techniques.

A number of data sources can be used to identify areas of land that may be suitable for the creation or, in some cases, re-creation/restoration of freshwater habitats inland of the coast. These include Phase 1 habitat survey data for the North Norfolk coast SSSI, information collected by NNT on second-tier semi-natural sites (County Wildlife Sites), aerial photographs (1988) and the maps of the English Nature lowland wet grassland survey (Dargie 1993). Map 3 indicates areas which might be brought into nature conservation management, particularly as reedbeds and wet grasslands, as compensation for habitat losses. Essentially, these consist of small areas of existing and former lowland wet grassland within the Glaven, Stiffkey and Burn valleys, former grazing marsh adjacent to existing areas of freshwater habitats within the north Norfolk SSSI (Wells, Holkham, Burnham Deepdale and Holme) and former grazing marsh on the eastern side of the Wash including the area south of Hunstanton, the linking of second tier sites behind Heacham harbour, and the large area inland of Snettisham RSPB reserve. The total area is some 1900 ha in 13 blocks (mean block size = 146 ha, minimum 5 ha and maximum 980 ha), with some 675 ha of this between Hunstanton and Cley. Full implementation of the proposals outlined in this document could lead to a net increase in the area of land under nature conservation management of some 1300 ha.

4. The way forward

Effective conservation of coastal habitats in north Norfolk requires a strategic approach. It needs the effective cooperation of a range of statutory and voluntary organisations in the identification of the potential losses and gains in coastal habitats and in selecting the most appropriate options for each management unit within the coastal cell. We hope that this document will stimulate appropriate discussion between all those concerned, and will result

in a coherent shoreline management plan and Coastal Zone Management Strategy for the area.

5. References

BECKER, D. and SILLS, N. 1988. The conversion of saltmarsh into fresh and brackish water habitats at Titchwell Marsh, Norfolk. *RSPB Management Case Study*, Sandy.

DARGIE, T. 1993. The distribution of lowland wet grassland in England. *English Nature Research Report* No. 49. English Nature, Peterborough.

ENGLISH NATURE 1992. *Coastal zone conservation: English Nature's rationale, objectives and practical recommendations*. English Nature, Peterborough.

ENGLISH NATURE 1993. *Conserving England's Marine Heritage: a strategy.* English Nature, Peterborough.

MOTYKA, J. M. and BRAMPTON, A.H. 1993. Coastal Management: mapping of littoral cells. Report number SR 328, H. R. Wallingford.

PYE, K 1992. Saltmarshes on the barrier coastline of north Norfolk, eastern England. *In* Allen, J.R.L. and Pye, K. 1992 *Saltmarshes: morphodynamics, conservation and engineering significance*, pp 148-178. Cambridge University Press.

APPENDIX 1. THREATS, OPPORTUNITIES AND MANAGEMENT OPTIONS IN THE NORTH NORFOLK COASTAL CELL

1. Sheringham-Kelling Quag

An area of eroding hard coast supplying much of the sediment that is deposited further west within the north Norfolk cell. Contains Weybourne Cliffs geological SSSI. Negligible nature conservation interest on cliff top, except where fringing semi-natural vegetation remains, notably the Weybourne reedbeds.

Action: Allow unrestricted erosion of cliff, maintaining geological exposures and permitting free transport of eroded material. Oppose groyne construction. Encourage the development of semi-natural cliff-top vegetation.

2. Kelling Quag-Cley Coastguards

A shingle ridge which, historically, has been moving landwards and westwards but is currently managed by beach re-profiling. This probably accelerates erosion. The ridge is regularly breached, most recently in February 1993, resulting in saline inundation of freshwater grazing marsh, reedbeds and open pools. The ridge protects a series of extremely valuable freshwater habitats, in part managed by the Norfolk Naturalists Trust as their most important coastal reserve. This is probably the most difficult stretch of the coast for which to find solutions, as all options have disadvantages.

Action: Five options:-

1. Continue re-profiling the shingle ridge. In the longer term this is not sustainable as it probably accelerates shingle loss and is damaging to the integrity of the ridge

2. Large scale nourishment of shingle ridge in current position. This option would minimise the impact on the existing freshwater habitats. There could, however, be a potentially significant environmental impact at the donor site, whether that was terrestrial or in the marine environment. This is also likely to be a very costly option.

3. Do nothing i.e. allow the shingle bank to re-profile itself as it does beyond Cley coastguards. This is very unlikely to be acceptable: losses to freshwater habitats would be considerable and human life in Cley and Salthouse would be at risk.

4. Full scale retreat to coast road with new sea wall in front of houses. This would most likely result in the complete loss of the freshwater habitats of Kelling-Salthouse-Cley marshes. It may also increase the risk of flooding to properties along the coast road.

5. Partial setback of the sea defence line to a 1:20 year wall at an intermediate position. This may be over-topped in extreme conditions, but will protect both buildings and a smaller area (perhaps half) of high existing nature

conservation interest most of the time. Buildings could be further protected by 1:100 year wall along the coast road. Replacement areas for grazing marsh/reedbed creation should be sought in the Glaven Valley (NNT County Wildlife Sites 1110 and 1111) and elsewhere in north Norfolk as compensation. There are landscape implications and it is important that public access to the new bank should be carefully managed so that disturbance is minimised and the value of the area to birds is not reduced.

3. Cley Coastguards-Blakeney Point

A shingle ridge and spit, with active sand dunes enclosing a large area of saltmarsh either side of Blakeney channel and a large area of wet grassland at Blakeney freshes. The spit is moving gradually westwards along the coast and inland, with some net loss of saltmarsh. Apart from a short section near the coastguards, the spit profile is naturally maintained. This unit marks the end of the wave-dominated part of the north Norfolk coastal cell.

Action: Non-intervention; allow natural westward and landward movement of shingle spit system. Blakeney freshes are secure in the medium term. We should continue to work with the National trust to improve these grazings for wintering wildfowl and breeding waders and reedbed birds.

4. Stiffkey Saltmarshes-Wells Harbour

A large area of saltmarsh and intertidal sands, with some dunes. Parts of the area are retreating gradually, whilst others are accreting. The unit is probably in equilibrium.

Action: 1. Non-intervention.

2. Consider conservation management and re-creation of lowland wet grassland and reedbeds in Stiffkey valley to offset losses in freshwater habitats elsewhere within cell (link with NNT County Wildlife Site 1316). Encourage wet grassland or perhaps saltmarsh development on arable immediately to the east of Wells.

5. Wells-Gun Hill

A large area of sand dunes with extensive grazing marshes. There is net accretion within the unit, although there is local erosion at the Wells end. There are small-scale dredging operations in the Wells Harbour channel. Pioneer saltmarsh is beginning to form in front of the dunes and behind the developing barrier islands, but is subject to erosion by visitors at this popular tourist location. Areas of former grazing marsh have been deep drained and turned into arable land. The predominance of accretion suggests that this section of the coast will be defensible in the long-term. This, linked with the large area of land currently in arable farming, suggests that the area has considerable potential for developing freshwater habitats.

Action: 1. Encourage saltmarsh generation by preventing trampling of pioneer vegetation; construct boardwalks and implement other visitor management measures.

2. Encourage reversion of arable land within this block to grazing marsh and reedbeds, linking existing areas of freshwater habitats within Holkham NNR. Secure defence from saline inundation by maintaining walls at Burnham Overy and Wells Harbour, which are, in any case, required to protect the town.

6. Gun Hill-Brancaster Staithe (including Scolt Head Island)

Scolt Head Island consists of extensive sand dunes and shingle on the seaward side, and a large area of saltmarsh on the landward side. Extensive saltmarshes also occur on the mainland between Burnham Overy Staithe and Brancaster Staithe. Inland of the saltmarsh is an area of grazing marsh (Norton Marsh), adjacent to an area of former grazing marsh which is now arable land (Deepdale Marsh). The coastal processes in this unit are operating naturally, with Scolt Head Island moving slowly westwards and inland, and local losses and gains in saltmarsh.

Action: 1. Non-intervention; allow natural movement of Scolt Head Island and erosion and regeneration of saltmarsh.

2. Re-creation of grazing marsh and reedbeds on Deepdale Marsh, linking with the existing freshwater habitats of Norton Marsh. These can be protected by relatively inexpensive maintenance of the existing sea wall as the saltmarsh in front will continue to remain uneroded.

7. Brancaster Staithe-Thornham

A complex mix of coastal habitats including areas of saltmarsh, grazing marsh and sand dunes (including a golf course at Brancaster), with a mosaic of shingle, brackish and freshwater habitats at Titchwell RSPB reserve. The general pattern is of accretion at either end with erosion in the middle, notably at the golf course and at Titchwell RSPB reserve. Both areas should ideally be set-back. Hard coastal defences along the golf course disrupt the sand dune formation processes, preventing natural inland retreat. If these hard defences are maintained, the golf course will become a progressively larger headland, further disrupting the natural coastal processes operating across the frontage. Full retreat at Titchwell is prevented by higher relief inland. RSPB seem therefore to be adopting a policy of defence to protect the considerable interest of the site.

Action: 1. Oppose the extension of hard coastal defences along golf course. Encourage natural retreat of sand dunes. Discourage the extension of mattressing into dunes. Encourage course owners to follow these policies and, ultimately, to re-locate the club house.

2. Encourage RSPB to consider partial set-back at Titchwell, maintaining saline/brackish habitats (as at Benacre National Nature Reserve, Suffolk), and take-up the management of replacement freshwater habitats elsewhere along the coast as compensation.

8. Thornham-Hunstanton Golf Course

Large areas of saltmarsh, sand dunes, grazing marsh and other freshwater habitats, centered on Holme NNT reserve. There is a complex pattern of localised erosion and accretion, but these appear to be in equilibrium, with a healthy dune system overall. There are two large areas of former grazing marsh, now arable land, either side of an existing block of freshwater habitats which offer significant prospects for conservation gains.

Action: 1. Non-intervention on shoreline.

2. Re-creation of freshwater grazing marsh and reedbeds on two blocks of arable land.

9. Hunstanton Golf Course

A short section of coast experiencing some erosion. Groynes inhibit movement of material through area.

Action: Oppose the construction of further hard structures which inhibit longshore drift.

10. Hunstanton Cliffs SSSI

An important stretch of chalk cliff which is eroding into a public open space. Erosion of the cliff face maintains the geological interest of the site, which backs onto an affluent area of Hunstanton. The rate of erosion is slow and we should use the lack of an immediate threat to plan a long-term strategy for safeguarding the area: this is the first of three coastal management units in which defence of the coastline is required to protect urban areas.

Action: 1. Allow erosion of cliff face for as long as possible but consider soft engineering (eg beach feeding) compatible with the maintenance of geological interest for the future.

2. Encourage West Norfolk District Council to monitor and develop a model for cliff recession as a precursor for developing a management strategy for this and the next two stretches of coast.

3. Plans for this area should interface with the Wash Management Strategy to ensure a coherent and complimentary approach.

11. Hunstanton & Heacham Hard Defences

An area of hard coastal defence protecting the south of Hunstanton and the ribbon development along the coast. There is a large area of former grazing marsh inland of the developments but this is unlikely to be suitable for re-instatement of traditional management.

Action: 1. Soft engineering has now been implemented by the National Rivers Authority and should be continued.

2. Plans for this area should interface with the Wash Management Strategy to ensure a coherent and complimentary approach.

12. Heacham-Snettisham Scalp

A stretch of managed shingle beach in front of a strip of coastal scrub (NNT County Wildlife Site 477 & Country Park) and two areas of grazing marsh (NNT County Wildlife Sites 478 and 480).

Action:

1. Encourage beach feed scheme without using controlling structures such as groynes.

2. Extend and link up areas of existing grazing marsh by encouraging habitat re-creation on adjacent arable land.

3. Plans for this area should interface with the Wash Management Strategy to ensure a coherent and complimentary approach.

13. Snettisham Scalp-end of shingle spit

A stretch of managed shingle with a series of saline/brackish lagoons (Snettisham RSPB reserve) and a small remnant of grazing marsh (NNT County Wildlife Site 475). A large area of former grazing marsh stretches some distance inland towards Dersingham from behind the sea wall.

Action:

1. Encourage beach feed scheme without using controlling structures such as groynes.

2. Encourage the reversion of extensive areas of arable land behind the sea wall back to freshwater habitats. The creation of new grazing marsh and reedbeds in this area could offset losses in freshwater habitats elsewhere along the north Norfolk coast. Plans for this area should interface with the Wash Management Strategy to ensure a coherent and complimentary approach.