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Creating a Saltmarsh Habitat

World Context

The Ramsar Convention on Wetlands, Iran 1971, provides the framework for the conservation and wise use of wetlands and their resources. There are 1820 wetland sites, totalling 168 million hectares, in the Ramsar List of Wetlands of International Importance. (Ramsar, 2008) This averages at 92,000 hectares per site.

Local Context

Fig 1. East Head in West Sussex shelters a saltmarsh of barely 5 hectares. It is just inside Chichester Harbour, listed as Ramsar Site 338 and is the Western limit of the Manhood Peninsula: the whole site area is 5810 hectares. (See Appendix 1)

All around the rest of the Harbour, where there is any saltmarsh, it is between mud flats and the land. East Head is between sand dunes and farmed arable land and pasture.

Importance

Estuaries are the most valuable ecosystems in the world - for tourism, as nurseries for commercial fishing, a buffer for flood defences and as a barrier trapping pollutants. (Girling, 2007) Some saltmarshes host significant percentages of world populations of bird species (Atkinson *et al*, 2001)

The feasibility of creation of saltmarsh has been the subject of much research as it is a requirement when reducing the impact of development of ports. (Grant, 2005)

Biodiversity and local BAP

Birds

Fig 2. For birds, the 1979 EU Birds Directive required the establishment of Special Protection Areas (SPAs).

The constant high levels of human disturbance, and the limited number of wide areas of open flat countryside mean that the actual number of breeding birds is low here compared to North Norfolk, which is a stopover point for migrating birds. However, there have been signs that global warming may change these migration patterns (BTO, 2006)

Fig 3. Continental birds such as *Egretta garzetta* (Little Egret) first colonized the UK in the 1990s at this part of the South coast, a bird on the RSPB's Amber List (RSPB, 2008)

Fig 4. Natural shingle banks have been created by longshore drift and colonised by nesting *Thalasseus sandvicensis* (Sandwich Tern) and other Terns.

Birds can colonise within a very short time, one or two years, if food is available. (Atkinson *et al*, 2001)

Invertebrates

The food value to birds of such as *Scrobicularia* and *Mya* spp., whose siphons are browsed and regrow, is very high when these molluscs are large and healthy, but they take years to colonise new habitats. (Atkinson *et al*, 2001) *Hydrobia* spp. which are much smaller and eaten whole, are more likely to be imported to the new site by tides.

Crepidodera impressa, (Leaf Beetle) is a saltmarsh specialist as are *Mythimna favicolor* (Matthew's Wainscot), *Apamea oblonga* (Crescent Striped) and *Cucullia asteris* (Starwort) moths which feed on saltmarsh plants. (BAP, 1999)

Plants

Fig 5. The 1992 Habitats Directive defines Special Areas of Conservation (SACs) for habitats and for other species than birds. This habitat is important for scarce plant species such as *Frankenia laevis* (Sea Heath), *Inula crithmoides* (Golden Samphire), *Limonium humile*

(Sea Lavender), Saltmarsh Grasses *Puccinellia fasciculata* and *P. rupestris* and Glassworts *Salicornia perennis* and *S. pusilla*.” (BAP, 1999)

A common plant species is Cordgrass, *Spartina anglica*, a polyploid hybrid of native *S. maritima* and American import *S. alterniflora*, introduced to Southampton (not far from Chichester Harbour) when trans-Atlantic trade began. The aggressive hybrid mutated in 1890, and has been unwisely used in sea defences ever since. (Rackham, 2003)

Threats

The EC Habitats Directives require authorities to manage threats to SPAs and SACs which comprise the Natura 2000 network of protected areas. (JNCC, 2008)

Fishing and trade have declined, but tourism and leisure is of major importance. Sailing and other sports on the water and walking and relaxing on the shoreline and in adjoining villages, together with holiday visitor numbers have had major impact in more recent years.

Erosion

Fig 10. A major factor affecting saltmarsh, and its plants and animals, is erosion and “coastal squeeze”, where defences retreat back into any less valued land such as saltmarsh, squeezing it. In Chichester Harbour, Friends of the Earth local groups have raised awareness of threats of flooding, but focus on property related issues, not habitats. (FOE, 2007)

Fig 12. Some claim that old maps (www.conservancy.co.uk) show historic movement of the sand bar which protects Snowhill Creek and the East Head saltmarsh, but other sources do not confirm this. (Figs 1,12,13)

In 1978 the sea broke the dune wall at East Head, and subsequent management attempted to protect the area from erosion by the sea and by people. (Edom, 2006)

This was an unwise investment of effort, and to “defend” these coasts now conflicts with Defra’s 2003 points tariff used in the Shoreline Management Plan which is locally managed as they are all round the coast of Britain. Settlements of thousands of people are the only places which will qualify for protection. (Girling, 2007) The new “managed realignment” is emotionally described as “managed retreat” by the media.

Encroachment

All around Chichester Harbour, the residential and business properties need access, and pressure from inland has forced major roads nearer to the “waste land” near the shores. Piling, embankments, rock berms, wooden and concrete groynes and a variety of gabions have been used to hold back or modify longshore drift around the harbour. (Personal observation and Conservancy, 2008)

Making a New Saltmarsh

Fig 11. Discussion with Conservancy ecologists led to a revised site location.

Fig 13. Historic maps show that Chidham Point in Nutbourne Creek in the Harbour is a more sustainable site for new saltmarsh realignment.

Figs 14-19. Agricultural land was acquired by Chichester Harbour Conservancy in 2003. So far a classic second layer of defence has been built as described by Edom (2006). Footpaths have been rerouted and local newsletters informed, but the interpretation (Fig35) does not explain what is planned, and simply describes some local flora and fauna.

Plans for planting suitable trees outside the area have not been made, for which there is much historical precedence around the harbour. Fig 33

Fig 28. Similarly the topsoil in the “new saltmarsh” is improved agricultural soil and the plants therein are typical arable weeds and ruderal species where the new bunds have been built.

Fig 26. Scrapes could have been made while the heavy earth moving equipment was available, and the rich topsoil removed, avoiding eutrophication of the new ditches. (Figs 27,29)

Regular opening of sluices to allow high water tides into the area will take a few years to form a salt marsh. Atkinson *et al* (2001) describe the experimental use of slurries for this purpose.

Species which would colonise this new saltmarsh depend on the success with which we can engineer the habitat – Common Plover for example choose nest sites away from tree or scrub cover. Should we actually transplant from adjacent sites, plant seed from suppliers, or wait for the adjacent vegetation and the existing seed bank to determine what will come up? Even after 15 years, species composition may be different from surrounding areas.(Atkinson *et al*, 2001)

Future Plans

Future strategies implemented by the Conservancy will be coordinated with West Sussex BAP and Shoreline Management Plans, SMPs, produced by Standing Conference on Problems Associated with the Coastline (SCOPAC, 2008) in line with Defra’s 14-point *High Level Targets for Flood and Coastal Defence*.

Coastal Habitat Management Plans were set up in 2001, to comply with European Habitats and Birds Directives of 1979, for six sites around the East coast of the UK, and Chichester Harbour. Under the heading “Predicted changes to the shoreline”, the introductory document stated “*A best guess methodology will be developed ...*” Where it is not sustainable or feasible to maintain a site “... *the alternative option of habitat creation should then be considered*” and it appears that the new habitat might have a “*design-life*” of “*between 30 and 100 years*” (CHaMPs, 2001).

In a later description of the plans a dilemma was described as a “*coastal conundrum - How do you tackle situations where inter-tidal SACs and freshwater SPAs lie on an eroding coastline? Protecting the freshwater SPA from saltwater flooding can lead to damage of the adjacent inter-tidal SAC. On the other hand, removing sea defences lets the SAC adjust and evolve, but destroys the freshwater SPA.*”

(CHaMPs, 2003)

1098 words

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Appendix 1

- Ramsar Profile for Chichester & Langstone Harbours. Registered 28/10/87; England; 5,810 ha; 50°48'N 000°55'W. Special Protection Area EC Directive; SSSI, Area of Outstanding Natural Beauty, Local Nature Reserve. Two large estuarine basins linked by a channel and including extensive intertidal mudflats, saltmarsh, sand and shingle spits, and dunes supporting reedbeds and some grassland. Numbers of wintering waterbirds regularly exceed 20,000 individuals and include internationally and nationally important numbers of several species. Human activities include recreation and dredging for oysters and clams. Ramsar site no. 378. Most recent RIS information: 1999.
http://www.ramsar.org/profile/profiles_uk.htm
- Ramsar Profile for Pagham Harbour. Registered 30/03/88; England; 637 ha; 50°46'N 000°46'W. Special Protection Area EC Directive; SSSI, Local Nature Reserve. An estuarine harbour with shingle beaches, intertidal mudflats and saltmarsh, giving way to brackish marsh supporting reedbeds and damp pasture. The site includes a nationally important vegetation community and small amounts of ancient woodland. Nationally and internationally important numbers of wintering or breeding waterbirds or waders use the site. Ramsar site no. 396. Most recent RIS information: 1999.

Appendix 2

Extract from CHICHESTER HARBOUR BIODIVERSITY ACTION PLAN (1999) 2.12 SALTMARSH S

Summary of existing resource: There are about 10 mixed saltmarsh sites of some size, though as the largest at Gutner is only just over 5ha none is of any great extent. There are a few other sites, which are 1.5ha or smaller. There are some sizeable *Spartina* stands. There are also several small areas of saltmarsh impounded behind sea walls, associated with coastal grazing marsh. Almost all are within the SSSI.

Species: None is technically rare, but this habitat is important for scarce plant species such as *Frankenia laevis*, *Inula crithmoides*, *Limonium humile*, *Puccinellia fasciculata*, *P. rupestris*, *Salicornia perennis* and *S. pusilla*. There are also several key invertebrate species, and the sites are important wader roosts.

Context: This habitat is of international importance as it is a component of the Estuary habitat listed in Annex 1 of the Habitats Directive. Chichester Harbour is now relatively poor in mixed saltmarsh, with few large areas; nevertheless, it makes an important contribution to regional biodiversity. The transitional habitat between saltmarsh and terrestrial habitats, especially woodland, is particularly important. In many places this has already been lost to sea defence works.

Main factors affecting the habitat: erosion, sea level rise, installation of sea walls (leading to coastal squeeze), eutrophication leading to smothering by green algae.

Priority: High

Targets: A total area of new mixed saltmarsh established equivalent to that lost by erosion since 1980.

Implementation: The Conservancy will continue to support the conservation of existing sites mainly through the SSSI and planning legislation.

The Conservancy will also continue to carry out research into processes affecting this habitat, in particular erosion, and also whether remedial measures such as wave breaks could be effective. Vegetation monitoring will also continue.

A small managed retreat initiative was begun at Thornham Point in 1996, where mixed saltmarsh was developing naturally. A similar process is taking place at Northney Boating Lake; the management of this will be formalised.

Additional sites for habitat creation will be sought, though not on sites with existing coastal grassland of high nature conservation value. As the alternative is largely high grade agricultural land, opportunities may be limited in the immediate future (compare reedbeds and lagoons).

Saltmarsh Creation
Chichester Harbour Autumn 2008



Fig.1



Fig.2

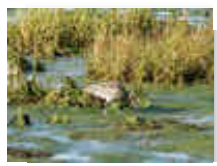


Fig.3



Fig.4



Fig.5



Fig.6



Fig.7



Fig.8



Fig.9



Fig.10



Fig.11



Fig.12



Fig.13



Fig.14



Fig.15



Fig.16

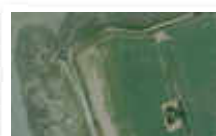


Fig.17



Fig.18

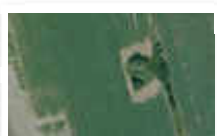


Fig.19



Fig.20



Fig.21



Fig.22



Fig.23



Fig.24



Fig.25



Fig.26



Fig.27



Fig.28



Fig.29



Fig.30



Fig.31



Fig.32



Fig.33



Fig.34



Fig.35