

## Saline Lagoons and Associated Species

*Saline lagoons occur in a range of dynamic environmental conditions, which give rise to varied forms and salinity. They support a distinctive fauna and flora, which in Suffolk includes the Starlet Sea Anemone, (*Nematostella vectensis*), the snails (*Hydrobia ventrosa*) and (*H. neglecta*), the Lagoon Cockle, (*Cerastoderma glaucum*), the Lagoon Sand Shrimp, (*Gammarus insensibilis*) and the Avocet (*Recurvirostra avosetta*). Saline lagoons occur as part of a complex mosaic of coastal habitats, including vegetated shingle, saltmarsh and coastal and floodplain grazing marsh, which are priority habitats in the UK Biodiversity Action Plan.*



*Species statements for Starlet Sea Anemone and Lagoon Sand Shrimp are included as an annex to the action plan.*

### 1 Definition

Saline lagoons are natural or artificial bodies of saline water that are partially separated from the sea. They retain a proportion of their water at low tide, which may be brackish, saline or hyper-saline.

Four types of saline lagoon occur in Suffolk:

- Small rivers that have been ponded back by shingled bars, which are occasionally over-topped by the sea (examples are Benacre, Easton and Covehithe Broads)
- Pools enclosed within a shingle beach (for example at Shingle Street)
- Shallow pools on clay trapped behind ridges of shingle, through which there is percolation of sea water (for example at Dingle Marshes)
- Bodies of water behind sea walls that are fed by both rainwater and sea water via percolation, sea spray or sluices (for example on Havergate Island)

### 2 Current status

#### 2.1 National

Saline lagoons are relatively rare in the UK with only around 5200ha remaining. A variety of factors, including coastal erosion and pollution, are leading to the loss or damage of saline lagoons. Saline lagoons are a priority habitat under the EU Habitats Directive.

#### 2.2 Local

There are 188 saline lagoons in Suffolk, covering an area 133 hectares, which accounts for 2.6% of the UK resource. Benacre-Easton Barents SSSI, Minsmere-Walberswick SSSI and Orfordness (part of the Alde-Ore Estuary

SSSI) have been designated Special Areas of Conservation (SAC's) because of their saline lagoons.

## **2.3 Natural Areas**

Suffolk Coast and Heaths, Suffolk Coast Maritime

### **3 Current factors affecting saline lagoons in Suffolk**

- The main threats to saline lagoons and other coastal habitats in the region are associated with sea level rise. The problem is aggravated by the gradual sinking of south eastern regions of the country caused by isostatic tilt of the UK mainland. This process is predicted to occur at a rate too rapid for coastal habitat formation to keep pace with.
- Bar-built sedimentary barriers, such as the ones at Benacre, Covehithe and Easton Broads tend to move naturally landwards over time, eventually leading to the broads being filled in by sediments.
- Diffuse and point source pollution from agricultural runoff and sewage discharges can cause nutrient enrichment, which can have major detrimental effects.
- Coastal defence works can prevent the movement of sediments along the shore and lead to a gradual loss of natural coastal structures within which many coastal lagoons are located.
- Encroachment by common reed (*Phragmites australis*).
- Damage to existing lagoons by removal of material or via access routes during maintenance of coastal defence structures.

### **4 Current Action** **Legal Status**

- The importance of saline lagoons is recognised at international and national level. The Habitats Directive (EEC 1992) requires coastal lagoons to be designated as Special Areas of Conservation
- Roughly two-thirds of Suffolk's saline lagoons are designated as SSSIs, and some have the additional protection of Special Areas of Conservation (SAC) designation.
- All of the Suffolk saline lagoons lie within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty.
- The Environment Agency (EA) and local authorities have a statutory duty to further conservation where consistent with purposes of enactments relating to their functions, and this duty therefore covers saline lagoons.
- Eleven lagoon species are protected under Schedules 5 and 8 of the Wildlife and Countryside Act 1981 (as amended). Two of these, starlet sea anemone and lagoon sand shrimp, occur in Suffolk.
- The Avocet (*Recurvirostra avosetta*) is protected by Special Protection Area (SPA) designation.

Almost 4ha of saline lagoons have been created since 1995. These areas include 1.9ha at Orford Ness and 1.5ha at the eastern end of Benacre Broad.

## Management, research and guidance

The Shoreline Management Plan for the Suffolk Coast is currently under revision.

### 5 Action Plan Objectives and Targets

- 1 *Identify the extent of saline lagoons that were present in 1992, and use this as baseline data against which future changes are assessed*
- 2 *Maintain the favourable condition of existing saline lagoons in terms of species and community diversity.*
- 3 *Establish a programme of annual monitoring condition of existing lagoons and the rate of loss of saline lagoons for a five-year period, to quantify the average annual rate of loss.*
- 4 *Increase the extent of saline lagoons to 1992 levels (10 ha increase by 2010) to offset any losses since then (year of adoption of Habitats Directive).*
- 5 *Increase the area of saline lagoons in the most appropriate locations, to maintain baseline levels and take opportunities for recreation in appropriate locations to enhance the distribution and population levels of rare lagoon species, and to compensate for potential habitat loss through coastal erosion.*
- 6 *Encourage all estuary and coastal users to communicate so all needs are reconciled.*

### 6 Saline Lagoons: Proposed Action with Lead Agencies

Action	Date	Partners
<b>POLICY AND LEGISLATION</b>		
Ensure that the importance of saline lagoons is recognised and accommodated within the Shoreline Management Plan, Estuary Shoreline management Plan and the Suffolk Coast and Heaths Management Strategy.	2005	EN, EA, SCDC, WDC, SWT
Investigate opportunities for saline lagoon creation and create map showing areas.	2004	EN
Ensure the implementation of environmentally sensitive coast protection measures.	2005	EA, EN, SCDC, WDC
Ensure that nature conservation interests and issues are fully represented in the Local planning framework.	2005	SCDC, WDC

<b>SITE SAFEGUARD AND MANAGEMENT</b>		
Agree management briefs for undesignated saline lagoons of conservation importance with a view to maintaining or improving their ecological value.	2005	<b>SWT, RSPB</b>
Ensure that, as far as possible, coastal defence or other construction works avoid any disruption of coastal or other natural processes that might lead to the loss of or detrimental effects to saline lagoons.	On-going	<b>EA, EN, SCDC, WDC</b>
Ensure that the quality of lagoons is protected by ensuring that potential damage from large quantities of freshwater or nutrient enrichment derived from agriculture or water treatment works is avoided.	2005	<b>EA, AW</b>
Consider saline lagoons when developing strategies for the sustainable development and management of coastal zones. Realise all opportunities for the creation and management of saline lagoons through agri-environment schemes and other means.	On-going	<b>DEFRA, EA, EN, SCDC, WDC, SWT, RSPB</b>
<b>RESEARCH AND MONITORING</b>		
Identify suitable sites for creation of saline lagoons using the Lifescapes model.	2004	<b>SBRC, EN, EA, , LAs, SWT</b>
Carry out biennial macrophyte and invertebrate surveys of saline lagoons and nearby small brackish pools and ditches of key species.		<b>SWT, SNS, SBRC</b>
Carry out biannual surveys of the extent and quality of saline lagoons in Suffolk.	2005	<b>EA, SWT, RSPB, SBRC</b>
Develop the use of remote sensing techniques and GIS to help monitor and predict the rate and extent of change.	2005	<b>SBRC, EA</b>
<b>ADVISORY</b>		
Promote and develop certain sites as demonstrations of successful saline lagoon re-creation, i.e. National Trust at Orfordness, through open days.	On-going	<b>NT</b>
<b>COMMUNICATIONS AND PUBLICITY</b>		
Raise public awareness of the nature conservation importance of saline lagoons through open days or events.	2005	<b>SCHU, EA, EN, SWT, RSPB, DEFRA,</b>
Raise public awareness of the essential mobility of soft coasts and encourage multi-agency approach to coastal zone development and management.	2003	<b>SCHU, EA, EN, SWT, RSPB,</b>

## **Annex to the saline lagoon habitat action plan: Species**

### **Background**

A number of species found only, or predominantly, in saline lagoons are listed as priority species under the UK Biodiversity Action Plan. The species considered to be associated with saline lagoons that occur in Suffolk are:

Starlet Sea Anemone *Nematostella vectensis*

Lagoon Sand Shrimp *Gammarus insensibilis*

Given the intimate association of these species with saline lagoons, it is considered appropriate to link the species with the saline lagoon action plan. Consequently these species are addressed through species statements.

### **Objectives for the species**

The objectives for the habitat will by default contribute to the protection and conservation of the species, except where they occur outside of saline lagoons.

The following additional objectives apply to both species:

- Maintain, and where appropriate, enhance existing populations and, where appropriate, restore populations at former sites.
- Maintain the range and number of sites including, where appropriate, through introduction to adjacent localities where existing localities become unsuitable.

### **Proposed actions (generic for all species)**

- Ensure management and monitoring of relevant sites takes account of starlet sea anemone and lagoon sand shrimp and that species-related objectives and actions are incorporated into relevant site management plans.
- Ensure habitat creation initiatives in the vicinity of present and former localities; take into account the requirements of starlet sea anemone and lagoon sand shrimp.
- Where appropriate, determine the feasibility of former localities for the reintroduction of starlet sea anemone and lagoon sand shrimp.
- Where appropriate, consider further species-specific policy or legislative measures.
- Ensure that records of these species collected during surveys are passed on to Suffolk Biological Records Centre.

## **Starlet sea anemone (*Nematostella vectensis*) Species statement**

### **Current status**

The Starlet Sea Anemone occurs along the Atlantic and Pacific coasts of North America, but is only found in England in Europe. It occurs in a few coastal lagoons in the Isle of Wight, Sussex, Hampshire, Dorset and East Anglia. In Suffolk, it has been found in saline lagoons on King' s Marsh, Orfordness, Shingle Street, Havergate Island, Reedland Marshes (Dunwich), Corporation Marshes (Walberswick), Covehithe Broad and Benacre Broad. It has also been found in mud on the northern side of the Stour estuary. The species is listed as vulnerable by IUCN/WCMC and rare on the GB red list. It is protected under Schedule 5 of the Wildlife and Countryside Act 1981.

### **Natural Areas**

Suffolk Coast Maritime

### **Current factors causing loss or decline**

- Pollution of lagoons, especially nutrient enrichment.
- Isolation of pools leading to fragmentation of populations
- Damage caused to lagoons during operations associated with coastal defence works.
- Changes to salinity as a result of modification of local drainage infrastructure, or as a result of damage caused by coastal erosion.
- In-filling of lagoons as a result of coastal erosion.
- Local increases in the coverage of water plants.

### **Current Action**

Saline lagoons are a priority habitat under the EC Habitats Directive. In Suffolk, Benacre-Easton Bavents and Orfordness have been designated Special Areas of Conservation for their saline lagoons.

### **Objectives for the species**

- Maintain and protect viable populations at all known localities in the county.
- Assess the status of the species in the Stour Estuary and brackish ponds and ditches in the vicinity of known populations.
- Where appropriate, enhance existing populations and restore populations at former sites.

### **Proposed action**

The requirements of the species should be considered in the implementation of the saline lagoons action plan and associated species annex.

## **Lagoon sand shrimp (*Gammarus insensibilis*) Species statement**

### **Current status**

The lagoon sand shrimp (the amphipod crustacean *Gammarus insensibilis*) is a lagoonal specialist species. It is always associated with macrophytes, in particular, drifting mats of the green alga *Chaetomorpha linum*. Characteristics of sites where it has been found include: a regular tidal input of sea water; a small tidal range; low or absent freshwater input (other than rainfall or run-off from surrounding land); water retained at all stages of the tide and at all seasons and high salinity with seasonal variation. Outside the UK, lagoon sand shrimp occurs from the Black and Mediterranean seas to the Atlantic coast of Europe. In the Mediterranean, it can be found in fully marine conditions. Within the UK, it is widely distributed in lagoons along the south and east coasts of England between Dorset and Lincolnshire. In Suffolk, it has been found in saline lagoons at Shingle Street, Reedland Marshes (Dunwich), Corporation Marshes (Walberswick) and Benacre Broad. The species is listed as vulnerable by IUCN/WCMC and rare on the GB red list. It is protected under Schedule 5 of the Wildlife and Countryside Act 1981.

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