



Saline lagoons

Habitat Action Plan

2009-2013

Plan Lead Organisation	INCA
Plan Coordinator	Geoff Barber
Action Group	Wetland and coastal
Associated Plans	None
Latest version	Draft April 2009



Description

Saline lagoons are among the UK's rarest habitats. They are bodies of saline water which are partially separated from the adjacent sea and may be either natural or artificial in nature. Such water bodies retain a proportion of their seawater at low tide and may develop as being brackish, full saline or hyper-saline. There are around 360 coastal saline lagoons in the UK, of around 5200 hectares in area.



Exchange of tidal water is largely restricted in saline lagoons, which creates conditions that are relatively stable. A high salinity creates extreme conditions under which specialised invertebrate and plant communities develop. Lagoonal invertebrates in turn support specialised wading birds such as the Avocet (*Recurvirostra avosetta*).



The salinity of individual lagoons can vary between 8 parts per thousand (brackish) to greater than 35 parts per thousand (hypersaline). This is influenced, among other factors, by the amount of rainfall, freshwater versus seawater inflow, the rate of evaporation and from percolation via the surrounding substratum (Symes & Robertson, 2004).



Lagoons with a stable summer salinity of less than 15 parts per thousand tend not to establish the highly specialised invertebrate communities which are seen in more saline conditions.



Current factors causing loss and decline

- ◆ Successional change leading to freshwater conditions and eventually to vegetation.
- ◆ Pollution, in particular eutrophication caused by agricultural runoff.
- ◆ Artificial control of freshwater and seawater into lagoons can have a profound influence on the habitat.
- ◆ Many lagoons are seen as candidates for infilling or land claim as part of coastal development.



Conservation Status

Coastal lagoons are listed as a priority habitat on Annex 1 of the EC Habitats Directive. Saline Lagoons are a UK BAP priority habitat.

The Habitat in the Tees Valley

In the Tees Valley a series of saline lagoons have formed in the Greatham Creek/Greenabella Marsh area where water gathers at the back of the coastal defences. These were recorded in the NCC inventory of Saline Lagoons of the late 1980s. The lagoons were greatly affected by the upgrading of the seawalls in the mid 1990s when seepage of saline water through the slag seawalls was halted and new sluices were installed. Over the following years the lagoons on No5 Brinefield gradually became freshwater.

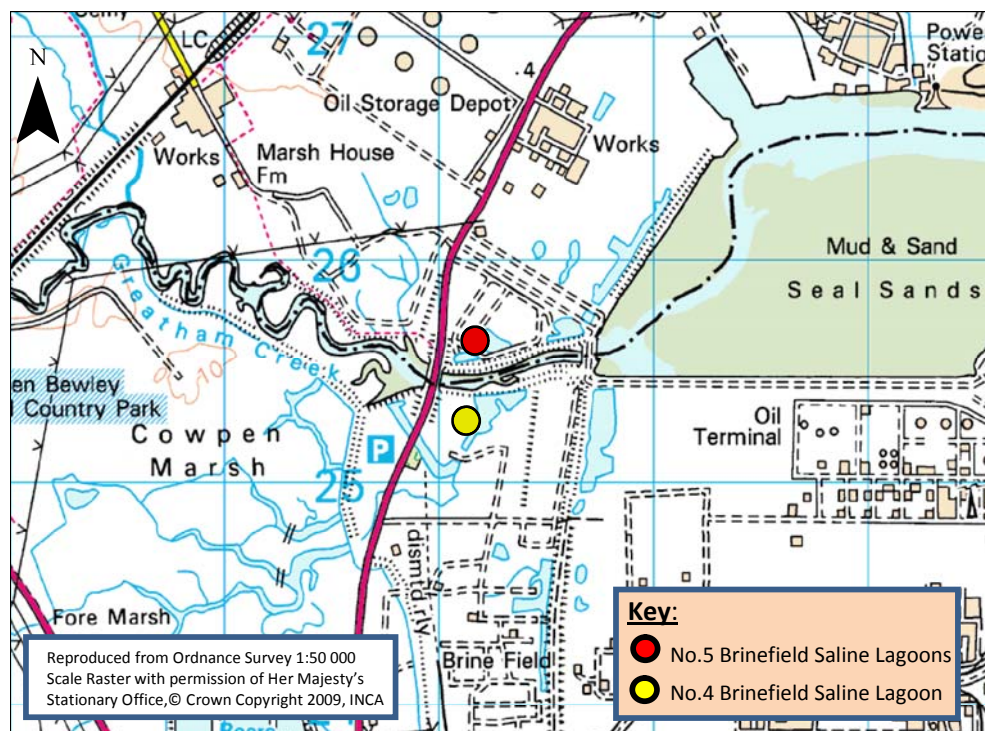
In 1999 a new lagoon of 0.8ha was created south of the Creek on No4 Brinefield which is fed from the adjacent tidal pool which itself is brackish. In 2002 a lagoon of 1ha was created and a sluice was installed in the sea wall north of Greatham Creek which once more allowed the controlled inflow of sea water into the connected series of pools across No5 Brinefield returning them to a brackish state. These lagoons have areas of 1.15, 1.0, 0.78 and 0.46 ha respectively. All are part of an operational industrial site, where deep underground cavities were formed by the abstraction of brine solution which has uses in the chemical processing industry.

Current Activity in the Tees Valley

The saline lagoons of the 'Brinefields' are managed by the Industry Nature Conservation Association (INCA). They are subject to annual salinity measurements and where appropriate the salinity is adjusted in lagoons on the No.5 Brinefield by allowing tidal influx of seawater via opening of a Penstock valve. This is carried out by agreement with the site management group, of which Natural England is a part.

Management of the salinity in the lagoon on No.4 Brinefield is not possible. The salinity here fluctuates as the salinity of the water in the tidal pool changes with the freshwater flow in the Holme Fleet and tidal flow through the penstock.

The locations of these saline lagoons are shown on the map below.



Further Information

Symes. N., and Robertson.P., (2004). A practical guide to the management of saline lagoons. RSPB.
Bamber, R.N. (1997.) Assessment of saline lagoons within Special Areas of Conservation.English Nature Research Report No. 235, English Nature, Peterborough.
Smith, B.P. & Laffoley, D. (1992). Saline lagoons and lagoon-like habitats. English Nature Science No. 6, English Nature, Peterborough.

Vision Statement

To ensure that the existing network of saline lagoons is maintained in favourable condition and to investigate expansion of this habitat base in suitable areas of Teesmouth.

Targets

SL.T1 To manage the saline lagoons on the Brinefields to ensure that they have maximal potential for development of specialised invertebrate communities.

Goals: To maintain the salinity of the lagoons on No.5 lagoon salinity in the range 15 parts per thousand to 40 parts per thousand by penstock adjustment.

Actions

Code	Action	Organisational lead	Action contact	Partners	End date
SL.A1	To test salinity and conductivity of No.4 Brinefield lagoon and the No.5 Brinefield lagoons twice annually, at the start and end of the season.	INCA	Geoff Barber	Cowpen Marsh and Brinefields Management Group	Ongoing
SL.A2	To sample the lagoonal invertebrates in No.4 and No.5 brinefield lagoons twice annually, at the start and end of the season in order to inform management decisions.	INCA	Geoff Barber	Cowpen Marsh and Brinefields Management Group	Ongoing
SL.A3	To carry out annual management of salinity level according to best practice guidelines as required	INCA	Geoff Barber	Cowpen Marsh and Brinefields Management Group	Ongoing
SL.A4	Identify opportunities for future habitat creation	INCA	Geoff Barber	Cowpen Marsh and Brinefields Management Group	Ongoing