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Yare Broads and Marshes SSSI

## 13. Reedbeds

Climate Change Sensitivity: **Medium**

## Introduction

Reedbed is highly sensitive to changes in the quantity of water supply, requiring an above surface or near surface water table throughout the year. Reedbeds are perhaps less sensitive to changes in water quality than other fens, being a relatively nutrient rich habitat, although the richest reedbed ecosystems are associated with water of high quality.

The combination of the direct impact of changes to precipitation and temperature and the indirect impacts of increasing demand for water leading to increased abstraction will pose a severe threat to reedbed and other lowland fen habitat.

Sea level rise and potential increased storminess will lead to increased saline intrusion on sites adjacent to the coast.

## Habitat Description

Reedbeds are early successional wetlands dominated by stands of the common reed *Phragmites australis*, where the water table is at or above ground level for most of the year. They tend to incorporate areas of open water and ditches, and small areas of more diverse fen, wet grassland and carr woodland may be associated with them.

Reedbeds are very important habitats for birds in the UK. They support a distinctive breeding bird assemblage including six bird species which are largely, or totally, restricted to this habitat during the breeding season; the bittern *Botaurus stellaris*, marsh harrier, *Circus aeruginosus*, crane *Grus grus*, Cetti`s warbler *Cettia cetti*, Savi`s warbler *Locustella luscinioides* and bearded tit *Panurus biarmicus*, and provide roosting and feeding sites for migratory species, including the globally threatened aquatic warbler *Acrocephalus paludicola*, and are used as roost sites for several raptor species in winter. Five GB Red Data Book invertebrates are also closely associated with reedbeds, including the red leopard moth *Phragmataecia castanaea* and a rove beetle *Lathrobium rufipenne*.

Reedbeds are found across England, from sea level to higher altitudes, and often fringe open water and watercourses. The largest areas are in coastal areas of East Anglia, with important reedbeds also found in the Somerset Levels, the Humber Estuary and north west England.

There are about 5000 ha of reedbeds in the UK, but of the 900 or so sites contributing to this total, only about 50 are greater than 20 ha, and these make a large contribution to the total area.

## Potential climate change impacts

Cause	Consequence	Implications
Warmer winters	Fewer frost days	<ul style="list-style-type: none"> <li>An increase in the population of pests such as wainscot moths could affect the commercial viability of harvesting reed and compromise its management.</li> </ul>
Hotter summers	Higher water temperature in ditch networks	<ul style="list-style-type: none"> <li>Higher water temperatures could lead to changes in the abundance and distribution of some species.</li> </ul>
Drier summers	Drought Increased abstraction for agriculture and domestic use leading to reduced water availability Increased threat of wildfire	<ul style="list-style-type: none"> <li>Drying out of reed beds in the summer could lead to the loss of aquatic species and changes in community composition. Reedbeds could be colonised by species more suited to lower water tables and drier conditions, such as willow.</li> <li>Specialist invertebrate and bird species could decline or be lost.</li> <li>Drying out could lead to sites becoming less favourable to species requiring very wet reedbeds, such as bittern.</li> </ul>
Wetter Winters	Increased incidence of winter flooding	<ul style="list-style-type: none"> <li>Continual water logging will make it difficult to manage sites by cutting or burning.</li> </ul>
Increase frequency of extreme rainfall events	Increased soil run-off and nutrient enrichment from catchment	<ul style="list-style-type: none"> <li>An increase in nutrient loading could have impacts on aquatic vegetation, invertebrates and fish.</li> </ul>
Sea Level Rise	Saline Intrusion Increased frequency of saline inundation	<ul style="list-style-type: none"> <li>Saline intrusion could lead to changes in community structure of sites near the coast, with a shift from freshwater to brackish communities, and ultimately a shift towards salt marsh.</li> <li>Saline inundation kills freshwater fish, so reducing the food supply for bitterns and other fish feeders in the short term.</li> </ul>

## Adaptation responses

Extensive reedbeds, as an early successional natural habitat, have been lost from most natural wetland ecosystems. Consequently, the largest and most biodiverse reedbeds are now largely found in modified, intensively managed sites. Water management and vegetation management are necessary to maintain conditions for the persistence of reed-dominated vegetation. The maintenance of a high water table is likely to be the main adaptation challenge. Management of the reed itself will need to be flexible in terms of timing and extent to respond to annual variations in ground conditions.

Reedbed has suffered widespread loss due to drainage, agricultural improvement and abandonment over the last century, and the remaining areas are often small and fragmented. Measures to increase their size, restore more natural hydrological regimes, and connect them to other wetlands will play an important role in increasing the resilience of remaining sites. In addition, significant habitat creation and restoration will be required to replace sites lost to saline intrusion at the coast. Opportunities will arise for the restoration and creation of reedbed as part of sustainable drainage systems and flood defence schemes, although the value of these for the core 'reedbed' species may be limited, depending on size and quality.

Some of the potential adaptation options for this habitat are outlined below.

- Ensure appropriate management through cutting or grazing, combined with scrub management where required, to ensure that habitats do not develop into scrub or woodland.
- Ensure management is sufficiently flexible to provide appropriate management under a range of growing and ground conditions.
- Manage ditch networks to increase their capacity to store high flows and flood water and maintain water table height in periods of low flows.
- Increase the heterogeneity of habitats on larger sites through varying management regimes to produce a range of age classes and areas of dead thatch.
- Make best use of available water (and acquire new sources of suitable water where practical ) to enable water tables to be maintained during the spring and summer.
- Identify and protect areas within sites where the security of water supply will be assured in the future.
- Where long term water availability is unlikely to be maintained, revise the objectives for the site and determine the most effective management options to facilitate change. For example, manage the site through cutting to facilitate the transition into a lowland fen type habitat, or allow and encourage scrub development and/ or undertake planting to move the site towards wet woodland, depending on local priorities and conditions.
- Seek opportunities to replace or create reedbed when flood management schemes within river floodplains are being designed. Significant reedbed creation will be required to replace sites lost near the coast.

Bearded tit on reed



## Relevant Environmental Stewardship options

### ***Maintenance of reedbeds (HQ03)*** ***Restoration of reedbeds (HQ04)***

These options are targeted at the maintenance and restoration of areas of wetland that are dominated by reeds. Many sites have been degraded through water extraction, drainage, lack of management and pollution. By re-introducing appropriate management techniques and ceasing damaging practices this option restores degraded reedbeds and associated fauna.

### ***Creation of reedbeds (HQ05)***

The aim of this option is to create areas of new reedbed on land of existing low conservation interest and to support wild bird and various invertebrate species that are associated with reedbed habitat.

### ***Wetland cutting (HQ11)***

The aim of this supplement is to support a cutting regime where this is the most appropriate form of management for the habitat. In addition this option may maintain local techniques and traditions otherwise at threat of loss.

## Further information and advice

### **Centre for Ecology & Hydrology [Wetland toolkit for Climate Change](#)**

The Wetland Toolkit for Climate Change guides the user in the application of tools developed to assess how climate change in the 2050s (2041-2070) might impact on wetland ecohydrology in England and Wales. The guidance and the tools are designed to be used by anyone concerned with the impacts of climate change on wetlands. It is anticipated that the main users will be site managers concerned with the status of their wetlands.

### **Scottish Natural Heritage [The Fen Management Handbook](#)**

This handbook produced by Scottish Natural Heritage aims to improve managers understanding of fens and how they function, to explain why fens need management and to provide best practice guidance.

### **Environment Agency (2004) [Ecohydrological Guidelines for lowland wetland plant communities](#), and (2010) [Fens and Mires update](#).**

White, G., Purps, J. & Alsbury, S. (2006). The bittern in Europe: a guide to species and habitat management. The RSPB: Sandy.

Hawke, C. J. & Jose, P. V. (1996). Reedbed Management for Commercial and Wildlife Interests. The RSPB: Sandy.

RSPB (2011) [Bringing Reedbeds to Life Wildlife Survey Programme Executive Summary](#)  
JNCC (2008) UK BAP habitat description [Reedbed](#).

## Relevant case study examples

### [The Great Fen project](#)

The Great Fen is a 50-year project to create a huge wetland area. One of the largest restoration projects of its type in Europe, the landscape of the fens between Peterborough and Huntingdon is being transformed for the benefit both of wildlife and of people.

### [Tackling Climate Change-Related Threats to an Important Coastal SPA in Eastern England](#)

[\(TaCTICS\)](#). A RSPB project aiming to protect the 12 ha of freshwater marsh and 17 ha of freshwater reedbed at Titchwell from the sea. An important secondary objective is to compensate for the unavoidable loss of the brackish marsh at Titchwell.

Norfolk Wildlife Trust. The [Hilgay wetland creation project](#) will create reedbed habitat on over 60 hectares of former agricultural site near to the village of Hilgay in west Norfolk. This will compensate for reedbed habitat that will eventually be lost due to an increased influx of saline water into freshwater areas at the Trust's Cley Marshes reserve on the North Norfolk Coast.