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## 5. Physical and Ecological Aspects of the Poole Harbour Reedbeds

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UK reedbeds are a high priority habitat to protect as so many have been lost to agricultural improvements. In 2000, the Purbeck Biodiversity Reedbed Working Group commissioned a survey of the 13 most significant reedbeds within Poole Harbour, to assess their condition and conservation value. It concluded that most of the reedbeds were in good condition supporting a number of notable species. Of the six nationally rare Red Data bird species cited in the *UK Costed Habitat Action Plan for Reedbeds*, Marsh Harrier, Cetti's Warbler and Bearded Tit are regular users of the Purbeck reedbeds. Some problems highlighted were: damage by Sika Deer, scrub encroachment, varying water quality control, limited conservation management, rising sea levels, loss by erosion and habitat change. The survey report proposed a number of possible practical management opportunities and some theoretical areas for reedbed expansion.

### Introduction

The reedbed habitat, characterized by the dominance of the common reed *Phragmites australis*, forms on permanently wet or frequently flooded freshwater or tidal land. Reedbeds are noted for their importance to a range of specialized species, several limited solely to reedbeds. Over the last century, many UK reedbeds have been lost to agricultural improvements as their value for thatching declined or as part of larger wetland reclamation schemes. Reedbeds with their specialized wildlife have, therefore, become a high priority habitat to protect.

As relatively little is known about the reedbeds of Dorset, the Purbeck Biodiversity Reedbed Working Group (as part of the Biodiversity Action Plan for reedbeds) commissioned this survey of the 13 most significant reedbeds or groups of reedbeds within Poole Harbour to assess their condition and conservation value. They were surveyed in October/November 2000 (Table 1). For full details, refer to Cook (2001).

## Poole Harbour and its reedbeds

Poole Harbour and its margins are internationally important for wildlife. The harbour and most of the reedbeds associated with it are included within European and UK designations designed to protect wildlife. All the reedbeds are Sites of Special Scientific Interest (SSSIs) and most are within the Poole Harbour Special Protection Area (SPA) classified in 1999, and the Ramsar Site boundary.

Estimates of areas of reedbeds are likely to vary as they often have transitional zones with other habitats. However, Dorset's reedbeds occupy at least 285 ha – about 47% of the whole reedbed area of south-west England. The bulk of these (174.55 ha) are within the Poole Harbour environs, representing over 60% of the county's reedbeds and about 30% of the reedbed total for the south-west of England.

Some reedbeds merge into the harbour down the river valleys, e.g. the Moors is an extension of the reedbeds lining the edge of the River Frome, the South Middlebere reedbeds grow alongside the Corfe River and the northern parts of the Holton Lee reedbeds grow alongside the Sherford River. Others are part of the natural zonation of the harbour edge: above the saltmarsh and below fringing carr woodlands and bogs such as at Holton Heath and Lychett Bay.

Some beds, such as the Moors and Swineham, are on the harbour side of a seawall and are mainly tidal, cut off from significant freshwater influence. Others are inside the seawall or far enough up a valley to have a large freshwater influence: Brownsea, Salterns, Slepe and the Middlebere reedbeds show this. Brownsea reedbed 1 and the South Middlebere reedbeds are the only ones studied which are purely freshwater, the rest being tidal to some degree. Shag Looe and Bucks Cove are outliers, growing on spits in the harbour and surrounded by saltmarsh.

## Threats to the Poole Harbour reedbeds

Though after this survey most beds have been classified as stable within the context of a short time-scale (say 5 years), in the long term, many could decline in quality from:

- Increasing deer damage – deer are a particular problem at East Holton but all reedbeds, excluding Swineham Point, had evidence of deer and most had some localized grazing or worse.
- Drying out causing curved and sparse reed growth. Curving also occurs where there is a change from saline to freshwater. Curved reeds often grow partly parallel to the ground being of less value to nesting Reed Warblers and creating a dense mat that can prevent access to the reedbed floor by Snipe and Water Rails.
- Increase of salinity in artificially maintained freshwater beds where water control systems are not functioning well – Salterns and Slepe reedbeds are artificially freshwater, the saline influence being partly held back by a seawall and sluices.

- Rising sea levels – it has been predicted that within the next 80 years there could be a 12–67 cm rise in sea level that would significantly change the area and quality of most of the beds. Erosion at the harbour edge is already evident in western beds, e.g. Swineham Point.
- Scrub encroachment in freshwater beds. Scrub is not a problem in tidal areas and is partly held back by deer elsewhere. The South Middlebere beds have a strong invasion of sallow and bog myrtle.
- Uncontrolled cattle grazing – this is only a local problem in Middlebere (north-west of the stream and north) and Wych Lake east where cattle trample reeds and degrade the habitat.
- Lack of beneficial wildlife monitoring and management.

## **Poole Harbour reedbed survey summary**

### **Reedbed dossiers**

The survey during October and November 2000 provided a set of dossiers in which current information about a bed is centralized in whole or summary form. This includes recent past wildlife records, conservation management and historical information and the survey results. Each reedbed was photographed to record significant features and the photographs are recorded on CD ROM.

### **Reedbed condition**

Reedbed condition was assessed by recording:

- (i) straightness, width and height of the reed stems – curved, narrow, short reeds are a negative feature
- (ii) number of reed stems per square metre (averaged from several counts per bed) – low reed counts are a negative feature
- (iii) hardness/softness of reed stems – soft reeds are a negative feature
- (iv) depth of litter and surface water – lack of surface water is a negative feature in freshwater beds
- (v) evidence of negative features such as grazing and trampling, scrub encroachment, drying out
- (vi) the hydrology – salinity (recorded by a salinity meter), presence or absence of flowing freshwater, open water and ditches
- (vii) adjacent land use – adjacent land of low ecological value scored as a negative feature
- (viii) current management and management features including sluices and reedbed cutting.

Data were recorded in detail within the dossiers on Reedbed Assessment Forms to enable surveys to be easily repeated in the future. From these forms an assessment of reedbed condition, based on the above factors, has been summarized in Table 1.

**Table 1 Reedbed condition**

Location	Area (ha)	Grid ref.	Condition	State	Main problem
1. Lytchett Bay	16.62	SY975925	Good	Stable except for...	Drying at edges Sika Deer grazing
2. East Holton (Holton Lee)	35.26	SY965915	Good to poor	Declining	
3. Holton Heath	17.31	SY950901	Very good	Stable	Minor grazing, some scrub
4. Keyworth reedbeds (five sub-areas)	Total: 25.5	SY934886 east to SY947896	Good	Stable	Could improve water control in main bed
5. Swineham Point	9.01	SY944878	Very good	Stable	Erosion at harbour edge
6. The Moors	22.53	SY953874	Good	Stable	Minor deer damage
7. Slepe	12.77	SY960865	Good	Stable to slight decline	Saline influx
8. Salterns	10.77	SY966869	Good	Stable	Saline influx, minor deer damage
9. Middlebere	7.1	SY965868	Good	Part declining	Cattle damage
10. Middlebere - Wych Lake west	.61	SY967853	Poor	Declining	Drying out
11. South Middlebere	9.87	SY961847	Good	Slow decline	Scrub invasion
12. Wych Lake east	1.57	SY986857	Good to poor	Declining in parts	Cattle grazing
13. Brownsea Island	5.63	SY028878	Very good to average	Reedbed 2 declining	Slow drying out in 2, minor deer damage elsewhere
Total area	174.55				

Locations 2, 9, 10, 11, 12 and part of 13 require immediate management. Others need a management plan and/or work, though no urgency is required.

The Poole Harbour reedbed resource is impressive and of great value to wildlife including many notable species. Generally the structure of the Poole Harbour reedbeds was good, the condition of the Holton Lee bed being the only one of serious concern because of the deer damage. Brownsea 1, Salterns, Slepe and South Middlebere had the greatest diversity with flowing freshwater, associated mires and carr and good reed condition. Holton Heath and Lytchett Bay possess the largest expanses of dense extensive reed cover. In the mainly tidal/saline areas, reeds grow tall, strong and dense, often becoming weaker and curved towards dry land.

### **Hydrology**

Most of the Poole Harbour reedbeds are tidal with varying levels of salinity. Many have some freshwater areas and a few are purely freshwater. Saline beds are important for several key species including Bearded Tits, but will be less diverse than a similar freshwater bed, which will have a wider variety of invertebrate interest and thus more potential for feeding birds, Water Voles and a mix of marsh flora.

Most harbour tidal reedbeds do not need any significant management to maintain their existing state (excluding deer and grazing problems). Tidal beds generally had less leaf litter where they were regularly inundated. Freshwater beds have the deepest leaf litter and scrub encroachment.

Purely freshwater reedbeds are at South Middlebere, Middlebere - Wych Lake west, and Brownsea Island reedbed 1. Most other beds have a freshwater influence from the nearby higher ground in the form of flushes, mires and flowing water. Middlebere, Salterns, Slepe and Brownsea Islands 2 and 3 reedbeds all have a significant percentage of freshwater areas.

### **Poole Harbour reedbeds and wildlife**

The particular benefit of reedbeds to wildlife results from their physical structure, i.e. large areas of dense reeds growing to around 2 m in height with about 100–200 stems per square metre and subject to regular flooding, difficult to penetrate and with a limited and specialized food source seasonal in availability. Each year new stems grow and the previous year's stems persist as tough vertical straws giving the bed a characteristic golden colour until about midsummer, when the new green growth of that year's reeds pushes upwards. Pools, ditches, scrub and rushy areas or saltmarsh may add variety but reedbeds are generally quite monotonous habitats.

Only a few species are specialized enough to cope with these conditions, for example:

- Reed Warblers and Bearded Tits use the stems as nest supports
- Water Rails nest in tussocks and feed on invertebrates in the reedbed
- Water Voles eat young reed shoots as their main diet for much of the year

- a few insects, such as Wainscot Moths, are so specialized that their whole life cycle occurs in just a few square metres of a reedbed, even wintering in the hollow reed stems

several of these specialist species are now rare or declining.

### **Dorset's threatened reedbed wildlife**

Once more extensive reedbeds and adjacent marshes across the country supported a rich and interesting wildlife. Now they are relatively small, often invaded by scrub and separated by vast expanses of farmland causing some of these wildlife populations to diminish. Examples include the Bittern that demands large freshwater reedbeds and the Water Vole that survives best within a continuous network of wetland habitats. Other species, such as Wainscot Moths, are secure in very local areas. Future losses to their habitat by mismanagement or rising sea levels could bring the Dorset populations of reedbed species to local extinction.

Tables 2–6 show some of the key species that have been recorded in the Poole Harbour reedbeds over the last decade. Many are nationally or locally scarce and are associated almost solely with the reedbed habitat.

### **Status of Purbeck reedbed species**

Of the six nationally rare Red Data bird species cited in the *UK Habitat Action Plan for Reedbeds*, Marsh Harrier, Cetti's Warbler and Bearded Tit are regular users of the Purbeck reedbeds. The Bittern (only rarely recorded in Poole Harbour) and Marsh Harrier (once breeding and now usually only seen in the winter) are on the RSPB's 'Red' list (high conservation concern). The Bearded Tit and Cetti's Warbler (found breeding in only a few other sites around the UK) are on the 'Amber' list (of medium conservation concern). The RSPB surveyed Cetti's Warbler in Dorset in 1996 with the following results (Table 5).

**Table 2 Invertebrates more or less limited to reedbeds or associated habitats**

A spider	<i>Clubiona juvenis</i>
A stonefly	<i>Nemoura dubitans</i>
Flame Wainscot Moth	<i>Senta flammea</i>
Brown-veined Wainscot	<i>Archanara dissoluta</i>
Twin-spotted Wainscot	<i>Archanara gemipunctata</i>
Silky Wainscot	<i>Chilodes maritimus</i>
Obscure Wainscot	<i>Mythimna obsoleta</i>
Small Red Damselfly	<i>Ceriagrion tenellum</i>
Downy Emerald Dragonfly	<i>Cordulia aenea</i>
Ruddy Darter Dragonfly	<i>Sympetrum sanguineum</i>

**Table 3 Bird species more or less limited to reedbeds or associated habitats**

Marsh Harrier	<i>Circus aeruginosus</i>
Reed Warbler	<i>Acrocephalus scirpaceus</i>
Cetti's Warbler	<i>Cettia cetti</i>
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>
Aquatic Warbler	<i>Acrocephalus paludicola</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Bearded Tit	<i>Panurus biarmicus</i>
Eurasian Bittern	<i>Botaurus stellaris</i>

**Table 4 Some species, common and scarce, often found in reedbeds but not exclusively**

Hen Harrier	<i>Circus cyaneus</i>
Water Rail	<i>Rallus aquaticus</i>
Moorhen	<i>Gallinula chloropus</i>
Common Snipe	<i>Gallinago gallinago</i>
Jack Snipe	<i>Lymnocyptes minimus</i>
Stonechat	<i>Saxicola torquata</i>
Whinchat	<i>Saxicola rubetra</i>
Water Vole	<i>Arvicola terrestris</i>

**Table 5 Cetti's Warbler survey 1996**

Location	Numbers of singing males
Arne Moors/Ridge Farm (the Moors)	5–6
Keyworth	6–7
Lytchett Bay	2
Sherford River	2–3
Middlebere/Wych Channels	1
Swineham/Bestwall	12–13

Source: *British Birds*, March 1998.

Old records exist for the Reed Leopard Moth (a Red Data book species) in the Purbecks. In recent years other scarce moths, the Flame-, Obscure- and Blair's Wainscots have been found in some of the reedbeds. The Water Vole, though widespread, has suffered dramatic reductions in populations over the last 20 years, yet still survives in many of the freshwater reedbeds around the Purbecks.

The value of the reedbeds as roosting sites has been demonstrated by local bird watchers at Lytchett Bay (Table 6).

**Table 6 Sample high counts**

<b>Passage migrant</b>	<b>Year</b>	<b>Reedbed roost during</b>	<b>Peak</b>
Sand Martin	1995	July	2200 on 13th
	1996	July	c. 5000 on 18th
	1997	July	2300 on 14th
Swallow	1995	August	350 on 16th
	1999	Autumn	540 on 25th September
Pied Wagtail	1996	October	200 on 20th
	1999	October	200 on several dates

## Species lists and management plans

Few of the reedbeds had adequate recording of the wildlife or detailed management plans. Lytchett Bay, Holton Heath, Keysworth and Brownsea Island have some good species records. Others have some but these tend to be included with records for the whole area and include records for non-reedbed species. Much work still needs to be done to provide up-to-date records of reedbed wildlife.

A detailed management plan exists for the Brownsea beds. Holton Heath, East Holton, the Moors, Salterns and Slepe all have some management statements or plans though little work was scheduled at the time of the survey. Others have no management plans or policies. However, East Holton has put in new plans to reduce problems and Slepe, Salterns and the Moors were having management reviews at the time of the survey.

## Recommendations

### General

- The area of reedbed in Poole Harbour should be maintained at the current area and future work should seek to increase it (within the Biodiversity Action Plan targets) for wildlife conservation reasons and for any losses associated with rising sea levels.
- Efforts should be made to secure the good management of reedbeds that are suffering from damaging activities.
- Grazing by deer and cattle should be examined and monitored. Beds with severe grazing problems will need to be protected from the grazing.
- The Reedbed Working Group should further seek to improve the perception and status of the Poole Harbour reedbeds by informing land managers, landowners and interested parties about survey results and management opportunities.

### **Future management work**

- Management plans for all reedbeds should be drawn up to include managing peripheral habitats such as carr woodland.
- All reedbeds with surrounding carr woodland (all excluding Keyworth B to E, Swineham, the Moors, Middlebere and Wych Lake east) would benefit from coppicing/pollarding, scrape and pool creation and other reedbed margin improvement works.
- Options for buffer zones and the creation of more scrub along the margins of all reedbeds would benefit biodiversity and specifically aid Cetti's Warblers.
- All efforts should be made to maintain freshwater beds or freshwater components of beds where this is sustainable. An assessment of the values and future of existing or new sluices, banks and ditches should be done and sluices brought back into action where this fits in with conservation management.
- Scrub encroachment should be addressed where it occurs.

### **Opportunities for expansion**

Possible opportunities for reedbed expansion which may yield significant amounts of new wetland/reedbeds are at: the Moors (work already in hand by the RSPB), Keyworth and South Middlebere. Other opportunities may exist at Lytchett Bay south, Swineham and Holton Lee (north) and the lower Rivers Frome and Piddle. These are only theoretical and depend upon land ownership, land values to stock and other conservation issues.

### **Surveying and recording**

- All beds should be surveyed for breeding and wintering birds and a longer term approach to monitoring developed.
- Records held at the Dorset Environmental Records Centre (DERC) need sorting and those applicable to reedbeds need identifying.
- Specialists must be encouraged to research in reedbeds, especially for invertebrates.
- More searching at, e.g. Centre for Ecology and Hydrology, and private individuals could yield more species information.
- There are other reedbeds in Poole Harbour and its reaches that could be surveyed.

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