Lowland dry acid grassland

Acid grassland occurs on the nutrient-poor, freely-draining soils with a pH ranging from 4-5.5. It is found mainly in the Sandlings and Breckland areas of Suffolk.

1 Definition

This plan includes all the acid grassland which occurs in Suffolk as an integral part of the Sandlings and Breckland heathland landscape. Smaller areas of acid grassland can also be found on stretches of vegetated shingle along the coast.

Acid grassland is characterised by a species-poor plant community dominated by sheep's fescue, sheep's sorrel and common bent. Other species which are often present in the sward include sand sedge, wavy hair grass, tormentil, and heath bedstraw. The summer-parched soils in Suffolk often support stands of acid grassland which are rich in both mosses and lichens. In addition, acid grassland in Suffolk is noted for a number of rare and nationally scarce spring annual plants. These include several clovers e.g. clustered and suffocated, mossy stonecrop and in the Breckland area, a number of early flowering plants such as spring and breckland speedwells. Birds of conservation concern which are associated with acid grassland include woodlark,stone-curlew and nightjar. Many of the invertebrates occurring in acid grassland are species which do not occur elsewhere. Ground-dwelling and burrowing invertebrates particularly favour the open acid grassland swards which typically contain bare sandy areas.

2 Current status

2.1 Local

The loss of unimproved acid grassland mirrors the loss of other unimproved grassland types in Suffolk. Agricultural intensification, particularly the use of agrochemicals and irrigation has resulted in a substantial loss of acid grassland in the county. Extensive afforestation in the Sandlings and Breckland has also contributed to the drastic loss of the habitat. Further losses can be attributed to an increase in urban development particularly around Ipswich. Recent assessments of the county's resource of this habitat are 820 hectares (2.7% of the national resource).

2.2 Natural Areas

Suffolk Coast and Heaths, Breckland and the Fens, East Anglian Plain.

3 Current factors affecting the habitat in Suffolk

- Agricultural improvements through ploughing and reseeding, liming, irrigation, fertiliser and herbicide applications.

- Reduction in the rabbit population leading to an encroachment of open acid grassland heath with self-sown pines, birch and bracken.
- Afforestation.
- Mineral extraction.
- Other development including airbases, housing, roads, golf courses.
- Atmosheric pollution, the effects of which have not been fully assessed.

4 Current action

- A number of Special Protection Areas (SPAs) in Suffolk e.g. Minsmere-Walberswick Heaths and Marshes contain stands of acid grassland where they form part of a complex mosaic of important habitats.
- Significant areas of acid grassland are designated as SSSI or non-statutory sites (County Wildlife Sites).
- Significant areas of acid grassland are in coastal areas and being regenerated in Breckland.
- Agri-environment schemes in Suffolk i.e the Environmentally Sensitive Areas scheme and the Countryside Stewardship scheme provide the main financial incentives to encourage appropriate management of unimproved grassland.
- The Sandlings, Suffolk Coasts and Heaths and the Breckland projects manage extensive areas of heathland which include a significant proportion of the acid grassland resource.
- Project Officers also provide landowners with advice on conservation management and grant aid where appropriate.

5 Action plan objectives and targets

1 *Maintain extent of ecologically valuable acid grassland.*

2 *Secure restoration management for all significant stands of acid grassland with the aim of achieving favourable status by 2010.*

3 *Seek to promote the establishment of acid grassland through agri-environment schemes or wherever feasible as part of new developments such as industrial or housing estates.*

6 Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
Ensure that conservation requirements are taken into account in the review and development of agri-environment schemes	MAFF/FRCA	*	*	*	*	*
Support policies in the Structure Plan, Local Plans and other policy documents such as forestry management and planting schemes to conserve acid grassland and protect from damaging developments	SCC, LAs, FE, SWT	*	*	*	*	*
Develop strategies to enhance and create acid grassland in environmental appraisals and as part of development schemes	LAs, SWT, SCC	*	*	*	*	*
B. Site safeguard and management						
Secure favourable management of SSSIs where acid grassland occurs	EN	*	*	*	*	*
Develop new management techniques e.g. for weed control or grazing registers to encourage appropriate management	SWT, SCC, FWAG, Countryside Projects	*	*	*	*	*
Secure positive management on acid grassland sites both in private and public ownership and in the ownership of conservation organisations	SWT, SCC, FWAG, MAFF/FRCA, FE, MoD, RSPB	*	*	*	*	*
Seek the implementation of relevant species action plans associated with acid grassland	SWT, RSPB, FWAG	*	*	*	*	*
Monitor sites in agri-environment schemes to ensure sites are being maintained in a favourable condition	SWT, MAFF/FRCA, FWAG	*	*	*	*	*
D. Advisory						
Continue to provide conservation advice to landowners and managers of acid grassland sites	SWT, SCC, FWAG, MAFF/FRCA, RSPB	*	*	*	*	*

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
Encourage, develop and disseminate best practice for management of dry grassland to promote the integration of conservation management into agricultural practice	SWT, SCC, FWAG, RSPB	*	*	*	*	*
E. Future research and monitoring						
Continue to monitor condition of all acid grassland sites	SWT, FWAG, SCC, RSPB	*	*	*	*	*
Review research on the effects of climate change and atmospheric pollution on acid grassland	SWT, RSPB	*	*	*	*	*
Monitor conservation benefits of agri-environment schemes on acid grassland as part of national efforts	FRCA, MAFF/FWAG, SWT, SCC	*	*	*	*	*
F. Communications and publicity						
Seek opportunities to present conservation of acid grassland in press and popular media	SWT, RSPB, SCC	*	*	*	*	*
Encourage public access for education and recreation activities on acid grassland sites where appropriate and through countryside stewardship	SWT, RSPB, SCC, MAFF/FRCA	*	*	*	*	*

Coastal Vegetated Shingle

Globally, coastal features dominated by shingle are relatively rare. North-west Europe is one of the main locations where shingle beaches and structures occur in any quantity. Shingle systems are recognised as an internationally important, but disappearing resource coming under increasing threat from damaging processes such as development and aggregate extraction as well as from 'coastal squeeze' in the face of rising sea-levels and coastal erosion. The mobile nature of shingle means that most of the world's shingle features are largely bare of vegetation so it is significant that Britain holds approximately one third of all the vegetated shingle in Europe. Shingle beaches represent a rare ecosystem and should be regarded as important in their own right as geomorphological features as well as supporting a highly specialised and important flora and fauna.

1 Definition

Coastal shingle can occur in a number of geomorphological forms. In Suffolk two main types are found – embayment beach ridge plains such as those at Thorpeness and Kessingland where a series of relict storm beach ridges and an active shore system partly or wholly infills a former embayment; and barrier spits where a single spit made up of relict storm ridges and a shore system lies parallel to the open coast, partially blocking a harbour and estuary, such as at Orford Ness.

Shingle deposits are simply a coarse sediment with particle sizes in the range of 2 to 200mm, i.e. between that of boulders and sand. All shingle beaches consist of a mixture of these particle sizes, some being well sorted, some poorly sorted. In terms of particle size, shingle beaches can be classified into three types – those composed entirely of gravel (Orford Ness); those with the upper foreshore composed of gravel and the lower foreshore of sand separated with a marked break of slope (Thorpeness); and those where there is no clear spatial separation between gravel and sand (Sizewell, Dunwich).

Classic vegetated shingle communities which develop out of reach of the normal tide cover only 4000 ha to 5000ha in Britain. Over half of this occurs on two sites – Orford Ness and Dungeness. Colonisation of shingle is dependant on three main factors – degree of disturbance and mobility of shingle due to factors such as wave action; presence or absence of fines in the shingle matrix; and the availability of moisture.

2 Current Status

2.1 National

In Britain, beaches with an important shingle component occur along approximately 19000km of shoreline, with pure shingle beaches forming almost 3500km. Approximately one-third of the coastline of England and Wales is bordered by shingle and about 900km of this is pure shingle. Many of the important shingle beaches occur along the coast of East Anglia and the English Channel and are made up of a high proportion of flint and chert.

2.2 Local

In Suffolk there are 859 ha of vegetated shingle which represents approximately 20% of the national resource. These sites are some of the most 'natural' places in the country. Shingle structures sufficiently stable to support perennial vegetation are a rare feature even in the UK. Orford Ness, as well as forming a cuspate foreland, also has the finest example of a pure shingle spit in Europe, extending for 16 km. Other significant areas of vegetated shingle in Suffolk occur at Landguard Point, Thorpeness Haven and Shingle Street and also on open coast at Felixstowe Ferry, Bawdsey, Kessingland, Minsmere Beach, The Dingle and Benacre.

3 Current factors affecting coastal vegetated shingle in Suffolk

- The main source of new material for most shingle structures comes from coastal cliff erosion and reworking of other existing shingle deposits.
- Shingle features are rarely stable in the long term. Many structures exhibit continuous longshore drift with shingle being transported and sorted by wave action. This dynamic nature is an important aspect of the habitat.
- In recent years approaches to erosion protection and flood defence on shingle beaches have significantly changed from predominately hard defences to beach recharge and maintenance. Shingle areas have high wildlife interest and important coast protection functions, however, when coupled with economic value these are often in conflict.
- Threat from development causing damage to fragile coastal vegetated shingle features. This has occurred in Suffolk most obviously at Sizewell (nuclear power station), Landguard (port development) and Orford Ness (military test site).
- Coastal vegetated shingle habitats are extremely fragile; the effects of access on foot, and particularly by vehicles has degraded many sites with loss of vegetation and lack of regeneration. Vehicle access to beaches by is also an issue, and recreational use (Thorpeness/Aldeburgh, Landguard, Shingle Street).
- Grazing by domestic livestock only occurs on a few shingle sites such as Simpson's Saltings on the Alde-Ore Estuary where the shingle vegetation is within a matrix of other vegetation types. Over-grazing in these situations will damage damage shingle 'heath'.

4 Current action

4.1 Legal status

The majority of shingle features in Suffolk are under some form of protection. A total of 685 ha of shingle have been designated as SSSI, whilst a further 174 ha have been identified as County Wildlife Sites. Landguard Point is a Local Nature Reserve managed by SWT. Orford Ness is also a Special Area of Conservation (SAC) under Annex 1 of the EU Habitats Directive (Annual vegetation of drift lines, perennial vegetation of stony banks). It is also a Special Protection Area (SPA). Vegetated shingle at Sizewell beach (restored in front of power station and natural towards Dunwich, Minsmere and Dingle are all candidate SACs.

4.2 Management and research

Much of the coastal vegetated shingle in Suffolk is under low input management by various conservation bodies.

Landguard Point potentially receives the greatest visitor pressure as it is situated near to a large centre of population. An estimated 250,000 visitors are attracted to the LNR annually, which leads to excessive trampling of shingle vegetation. This is reduced by interpretation, education, wardening, temporary fencing, boardwalks and sign posting. Sea pea (*Lathyrus japonicus)* is monitored regularly by Suffolk Wildlife Trust.

Shingle Street is privately owned and compared with Landguard Point receives relatively few visitors. Access points are mainly around the one parking area. The Suffolk Coasts and Heaths Project have erected an interpretation board, which highlights shingle vegetation and the need for protection.

Simpson's Saltings is part of the Alde-Ore Estuary SSSI and is owned by SWT. The site is lightly summer grazed with cattle which has an effect on the shingle vegetation. The island in the estuary is not grazed and here the lichen-rich shingle vegetation is best developed. Boat landing is not encouraged.

Orford Ness is owned and managed by the National Trust. Public access is restricted to ferry crossings from Orford Quay. The visitor route follows concrete/tarmac tracks except for a 300m section along the foreshore. Vehicular access is restricted at the Slaughden end to members of the Orford Ness Angling Club under annual agreement with the National Trust.

EU LIFE funding has provided funds for research on nutrient enrichment, monitoring of *Lathyrus japonicus* and an experimental re-construction of the ridge system on a damaged site. An EIA is currently being carried out at the northern end of the spit near Slaughden.

Thorpeness Haven is managed by the SWT. Visitor numbers are a potential problem for the shingle vegetation. The road verge is the most vulnerable area within this site as it is subject to severe erosion from cars driving on the verge. This area supports several nationally rare plant species, such as sand catchfly *Silene conica*, which require slight (not heavy) disturbance. The area has been suggested as a proposed Roadside Nature Reserve.

Sizewell Beach is managed by the SWT. There is a mixture of naturally established shingle flora to the north and a restoration project in front of the power station Public pressure is a potential issue in the areas close to the public car parks and in front of the power station. There is some four-wheel drive activity to the north.

5 Action plan objectives and targets

1 *Maintain the existing 859 ha of coastal vegetated shingle in Suffolk with no net loss*
2 *Prevent, further exploitation of, or damage to, existing vegetated shingle sites through human activities, and maintain the quality of existing plant and invertebrate communities. Where necessary restore to a favourable condition. Promote importance of habitat to users/ public.*
3 *Ensure conditions are suitable on damaged sites for natural recovery of vegetated shingle.*
4 *Continue the monitoring of experimental restoration sites to assess the potential and feasibility for carrying out further restoration of severely damaged habitats.*

6 Coastal Vegetated Shingle: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure coast protection measures outlined in Shoreline Management Plan, Coastal Habitat Action Management Plans (CHAMPs) and Suffolk Coast and Heaths Management Plan make reference to this habitat.	2004 2005 2006 2007	**EA,** EN, WDC, SCDC
Ensure that any unprotected coastal vegetated shingle sites of nature conservation importance are granted appropriate designation and protection.	2006	**EN,** SCC, SWT
Ensure that nature conservation interests and issues relating to coastal vegetated shingle are fully represented in Local Plans.	2004 2005 2006 2007	**SCDC, WDC**
SITE SAFEGUARD AND MANAGEMENT		
Through management of public access by foot or vehicle, limit damage and degradation through trampling on vegetated shingle areas, especially Orford Ness, Landguard Point and Shingle Street.	2005	**EN, NT,** SWT, RSPB, SCHU, SCDC, WDC
Agree management briefs for all coastal vegetated shingle habitats of conservation importance with a view to maintaining or improving ecological value.	2005	**EN, NT**, SWT, RSPB, EA, SCDC, WDC
Through local planning system ensure coastal defence or other construction works avoid any degradation of coastal or other natural processes which might lead to the loss of coastal vegetated shingle and associated habitats.	2004 2005 2006 2007	**SWT**, EA, EN, NT, RSPB, SCDC, WDC
RESEARCH AND MONITORING		
Continue to contribute records of key vegetated shingle species, to Suffolk Biological Records centre. Eg; Bright wave moth, *Lathyrus japonicus, Silene conica*	2004 2005 2006 2007	EA, EN, NT, RSPB, SWT, BC, SNS
Assess the current extent of damage to shingle vegetation and geomorphology in order to inform the setting of restoration targets. Undertake 5 yearly survey of all sites.	2004 2009	EN, EA, SBRC, NT

ADVISORY		
Encourage the appropriate management of coastal vegetated shingle through the dissemination of appropriate literature, guided walks and information on grants/schemes, to key organisations, landowners and managers.	2005	**SCHU,** EA, EN, DEFRA, SWT, RSPB, NT, EN, SCDC, WDC
Establish local or regional links to technical experts on the relationships between coastal vegetated shingle, nature conservation and public access.	2004	**EN,** EA, NT, SWT, RSPB, SCHU, SCDC, WDC
COMMUNICATIONS AND PUBLICITY		
Raise public awareness, especially amongst key user groups (fishermen & boating groups) of the nature conservation importance, and fragility of coastal vegetated shingle and its value for a variety of interests.	2004 2006	EA, EN, NT, SWT, RSPB, DEFRA, SCHU, SCDC, WDC
Hold an educational awareness day (activities) relating to coastal vegetated shingle.	2005	**SCHU,** EN, EA, NT, RSPB, SWT, DEFRA, SCDC, WDC

Eutrophic standing waters

Eutrophic standing waters have high levels of plant nutrients, often supporting algal blooms in mid summer and dark, anaerobic silts rich in organic matter. In their natural state, these waters have high biodiversity with plankton, submerged vegetation, numerous species of invertebrates and fish. Many natural bodies of open water in Suffolk are eutrophic or mesotrophic/eutrophic (medium rich in nutrients). The shallow lakes and ditch systems of the Broads are some of the richest areas for scarce plants in England.

1 Definition

The national action plan covers natural and man made still waters such as gravel pits, reservoirs and lakes but it excludes small pools, field ponds and brackish waters. There are no accurate estimates of the amount of this habitat in the UK but it is likely to be around 1785 sq.km.

As an addition to the national action plan this Local BAP includes small ponds as well as large areas of open water. Actions with respect to ponds cannot strictly be reported as part of the process of the HAP. Eutrophic standing waters are important for certain priority BAP species eg Great crested newt, otter, water vole and rare snails as well as local character species eg. water shrew.

2 Current status

2.1 Suffolk

In the Suffolk Broads, there are large water bodies (Fritton Lake, Flixton Decoy and Oulton Broad). Elsewhere in the county there are a number of lakes and meres which are of considerable wildlife value eg Redgrave, Culford and Great Livermere. Framlingham Mere has recently undergone restoration after silting up and Thorpeness Meare is a boating lake.

The construction of artificial areas of open water has been very significant within Suffolk. The largest of these is Alton Water reservoir which is host to large numbers of wintering wildfowl.

There have been many excavations for gravel in river valleys and when flooded these are often used for fishing and water sports eg Weybread and Gipping valley pits although Lackford Lakes SSSI are gravel workings specifically restored with wildlife in mind.

Suffolk is said to have a very high density of ponds and according to the recent OS digital pond location gazetteer commissioned by the Suffolk Ponds Group, the estimate is 22,635 ponds. These have been considered to be stronghold for the Great crested newt, a priority species. Many landowners have taken advantage of grant aid and management advice available from Suffolk County Council for the restoration and creation of ponds over the past decade. Wildlife often thrives in isolated water bodies as they are cut off from main water courses which are much more likely to suffer from pollution or degradation.

2.2 Natural Areas

East Anglian Chalk, The Fens, The Brecklands, East Anglian Plain, Suffolk Coast and Heaths, The Broads.

3 Current factors affecting the habitat in Suffolk

- Water quality is affected by agricultural and urban run-off and sewage effluent which has not been phosphate stripped; organic and inorganic fertilizers and the atmospheric deposition of nitrogen can cause nutrient enrichment of the water, with consequent damage to plant and animal communities.

- Use of standing waters for recreation and sporting purposes causes detrimental impacts e.g. disturbance to wildfowl & trampling of vegetation; stirring up of sediments by the action of boats destroys aquatic plants and contributes to enrichment.

- Succession/lack of management plays an important role where there is no longer a viable reason for landowners to keep ponds. Grant aid schemes do not cover all ponds and there is often no incentive to pay the remainder of the cost involved.

- Infilling still occurs due to farming and development. Ponds are not valued highly and are often seen as expendable.

- The introduction of non native plants and animals including fish affect the biodiversity of this habitat by establishing inappropriate waterside habitat. Some types of recreational fishing may lead to the loss of natural populations and may affect plant and invertebrate communities.

- A substantial change in water supply and throughput e.g. due to water abstraction, alters the character of water bodies. A rise in temperature will produce wide ranging effects e.g. acceleration of plant growth.

4 Current action

4.1 Legal status

- Some eutrophic waters are designated as SSSIs or CWS in Suffolk. Part of the Broadland SPA falls within Suffolk.

- ESAs include measures designed to benefit water courses and other water features and Suffolk has three; The Broads, The Suffolk River Valleys and The Brecks. Other agri-environment schemes which can benefit eutrophic water courses are Habitat Schemes, Countryside Stewardship and Wildlife Enhancement Schemes.

- The introduction of fish and fish spawn into inland waters, apart from fish farms, is subject to written consent from the Environmen Agency (EA).

- A Nitrate Vulnerable Zone (NVZ) has been identified for the Waveney catchment under the EC Nitrates Directive and a NVZ Action Programme is being undertaken by the Environment Agency. The EC Water Framework Directive (yet to be

finalised) will require that measures are taken to ensure the ecological status of surface waters.

4.2 Management, research and guidance

- The Suffolk Ponds Group commissioned Ordnance Survey to summarise a list of features labelled "pond" from digital maps. Unpublished work by Jim Foster and Rosie Norton in Sibton and Peasenhall parishes has shown that some ponds listed by the OS were infilled over a decade ago so the OS 3 yearly revision programme is not fully recording changes to ponds. Further ground surveys of ponds is needed to compare with mapped ponds.

- The Environment Agency will be implementing a national strategy for the control of eutrophication at a local level through Local Environment Action Plans.

- English Nature, the Broads Authority and the Environment Agency have commissioned a recent survey of the flora & invertebrate fauna of grazing marshes & ditches in the Waveney Valley.

- EN has published an agenda for the sustainable management of freshwaters.

- BA is developing an angling strategy for the Broads.

5 Action plan objectives and targets

1 *Await national classification by EA by 2002 of eutrophic water bodies in Suffolk into three tiers according to naturalness, biodiversity and restoration potential. (The exact criteria for these categories have yet to be agreed and the total number of sites falling into each tier confirmed).*

2 *Ensure protection & continuation of favourable condition of eutrophic standing waters classified in Suffolk as Tier 1 by 2005.*

3 *Restore 50% of Tier 2 sites damaged by human activity to favourable condition by 2020.*

4 *Ensure no further deterioration in water quality & wildlife of Tier 3 resource. This means no net loss.*

5 *Set up a pilot community pond initiative involving a network of volunteer wardens.*

6 Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
Establish list of sites in Suffolk comprising Tiers 1 & 2	EA, EN	*	*	*	*	
Establish site specific plans to achieve appropriate water quality and assign priorities; issues raised to be addressed through LEAPs	EA, DETR, EN	*	*	*	*	*
Promote buffer strips in agri-environment schemes	MAFF, EA	*	*	*	*	*
Ensure forestry grant schemes & felling licences take full account of the need to safeguard water quality & features	FC	*	*	*	*	*
Promote legislation on the control of sale and release of exotic plant & animal species	DETR, BA,EN		*			
Set targets for acceptable Phosphate levels in the Broads area	BA,EN,EA		*			
B. Site safeguard and management						
Aim to maintain condition of all Tier 1 eutrophic standing waters and to improve condition of Tier 2 sites.	EA, MAFF					*
Prepare & where possible implement site management plans for eutrophic standing waters notified as SSSIs	EN	*	*	*	*	*
Maintain or introduce appropriate fishery management. Where appropriate institute restorative measures such as phosphorous control, biomanipulation and species reintroduction	BA, EA, EN		*	*	*	*
Prepare catchment management plans for Tier 2 sites not designated SSSI	EA					*
Ensure local planning mechanisms take account of wildlife interest of all eutrophic waters: there should be no net loss of this habitat	LAs, EA, BA, EN	*	*	*	*	*
Continue LCG and 5b programmes of grant aid for restoration and creation of ponds	SCC	*	*	*	*	*

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
Support pond wardens in of pilot community project stimulating community action aimed at restoring ponds	SPG		*	*		
D. Advisory						
Provide advice for managers and users of eutrophic waters to promote appropriate management	FWAG, EN, SWT, BA, LAs, MAFF		*			
Encourage pond wardens of pilot community project to gather and disseminate information and advice about the condition and management needs of ponds within their parishes.	SALC, SPG		*	*		
Promote best practice in farming and encourage farmers to prepare and implement Farm Waste Management Plans in catchments of vulnerable eutrophic standing waters	MAFF, FWAG		*	*	*	*
Develop guidelines for best practice in fishery management	EA		*			
E. Future research and monitoring						
Apply systems for testing water quality classification of lakes to all Tier 1 and 2 eutrophic water bodies	EA		*	*	*	*
Promote research into the role and transport of phosphorus and nitrogen in freshwaters and into the quantification of risks posed by diffuse-source pollution, including atmospheric nitrogen	EA, MAFF		*	*	*	*
Continue experimental work on remedial action for nutrient-enriched standing waters and monitor results of procedures already taken	BA	*	*	*	*	*
Investigate the impact of introduced species on eutrophic standing waters and develop strategies to mitigate their effects	EA, MAFF	*	*	*	*	*
Promote research into the likely effects of climate change and sea level rise on eutrophic standing waters	EA	*	*	*	*	*
Promote further research into the role of non-point source pollution and how	EA		*	*	*	*

to quantify and control this

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
F. Communications and publicity						
Promote the interchange of information between Suffolk and European countries on management techniques, conservation and research relevant to eutrophic waters eg TEN Interreg II project, NORcoast projects	SCC, EN, BA, SWT	*	*	*	*	*
Ensure information on well-studied eutrophic standing waters is made readily available	BA, EA, EN		*	*	*	*
Publish good management practice targeting site managers and policy makers	EA, EN, FWAG		*			
Pursue community pond project	SALC, SPG	*				
Publicise control of release to the wild of non-native plant & animal aquatic species	BA, EA	*	*	*	*	*
Develop use of suitable waters for educational purposes and as interpretive centres, in order to increase public awareness of the value of eutrophic standing water	BA, LAs, SWT		*	*	*	*

Fens Local habitat Action Plan

1 Definition

Fen habitats are permanently waterlogged wetland habitats made up of a mosaic of plant communities. These range from wet heath with sphagnum moss and patches of heather, to swamps of tall neglected reeds, open pools, species-rich grazed meadows and wet fen woodland of alder and willow.

Unlike bogs and mires which rely on rainwater to keep them saturated, fens can be fed by either ground water, surface water run-off or rainfall. This gives a higher level of nutrients within the peaty soil and also a less acidic pH (4.5-7.5) than bogs. There are no true bogs in Suffolk due to the low rainfall. The complex hyrdrology of fen habitats contributes to the diversity of plant communities. Where fens are water-logged, scrubbing over with willow and alder is prevented. Fens would have been periodically grazed and/or burned to maintain grassland habitats. Fen habitats support a diversity of plant and animal communities. Some can contain up to 550 species of higher plants, a third of our native plant species; up to and occasionally more than half the UK`s species of dragonflies, several thousand other invertebrate species, as well as being an important habitat for a range of aquatic beetles and breeding birds.

Fens can be described as `poor-fens` or `rich-fens`. Poor-fens, where the water is derived from base-poor rock such as sandstones occur mainly in the uplands, but are also associated with lowland heaths. They are characterized by short vegetation with a high proportion of bog mosses *Sphagnum* spp. and acid water (pH of 5 or less). Rich-fens are fed by mineral-enriched calcareous waters (pH 5 or more) and are mainly confined to the lowlands. The ‘rich fens’ predominate in Suffolk and are characterised by an open vegetation structure of mosses and species-rich grassland. There are two main types; valley fens and floodplain fens.

Valley fens occur in the Little Ouse valley and tributaries, the Waveney Valley, Suffolk Coastal river valley fen meadows and the Stour Valley. There are only 43 valley fens in the UK and a high proportion of these are in East Anglia. Although floodplain fens are more widespread in the UK as a whole, they only occur around the broadland area of north Suffolk, in the lower Waveney valley at Barnby Broad, Carlton and Oulton Marshes.

Habitats covered by this Plan include rushy pastures and fen meadows. All sites with substantial fen interest should be regarded as eligible for inclusion in this Action Plan. There may be overlap with the following habitats: grazing marsh; reedbeds; lowland heath, eutrophic standing waters; and wet woodland. Other species associated with fens include Otter, Water Vole, a rare leaf beetle (Pashford Poors), Desmoulin's Whorl Snail and Fen Raft Spider.

2 Current status

2.1 National

The area of fen in the UK has declined markedly throughout the Twentieth Century through agricultural intensification, scrub encroachment, drainage, and water abstraction. The UK is thought to hold a substantial proportion of the remaining European resources.

2.2 Local

The area of fen in Suffolk is not known precisely but is thought to be less than 250ha (Beardall & Casey, 1994). There are a few large sites with a range of valley and floodplain fen communities, and probably the majority of fen habitat is within these few sites. Most are protected as Sites of Special Scientific Interest (SSSIs) and some also have international protection. There are many smaller sites with a narrower range of fen communities. Many are remnant stands of tall herb fen or fen meadow in a degraded state, often part of larger wet grassland sites. Many of these sites are designated as County Wildlife Sites (CWS).

3 Current factors affecting fens in Suffolk

- A number of key fen sites are outside conservation management and sympathetic ownership, despite the availability of agri-environment scheme support or other positive management agreements.
- Sites or parts thereof are still being lost to agricultural improvement, particularly the smaller, more vulnerable ones.
- There is a lack of livestock for grazing in arable areas. This is exacerbated by many sites being very small and below the critical size for economic management, which leads to their neglect.
- Fens are dynamic semi-natural systems and in general, management is needed to maintain open-fen communities and their associated species richness. Without appropriate management (e.g. mowing, grazing, burning, peat cutting, scrub clearance and maintenance of adequate water levels), natural succession will lead to scrub and woodland forming.
- Priorities for sustainable management are lacking. Old methods of fen management are too labour-intensive and expensive to be sustainable. Lack of, or inappropriate management of existing fens leading to drying, scrub encroachment and succession to woodland.
- Most fen sites are low fertility sites, now isolated in a high fertility agricultural landscape. Consequently there are chronic long-term water quality problems, raising fertility within the fen.

- Some Water Level Management Plans have not been adequate to provide the required hydrological regime, and do not cover issues of groundwater or water quality. Flooding, drainage and abstraction can all impact upon fens.
- Valley fens are particularly susceptible to agricultural run-off and afforestation within the catchment.
- Many fens have historically been neglected and there is a big backlog of restoration work required. This work is progressing, for example the fens in the Waveney and Little Ouse valleys.

4 Current Action

Legal Status

- The majority of fens are notified as Sites of Special Scientific Interest (SSSI) and many are notified as Wetlands of International Importance under the Ramsar Convention and as Special Protection Areas (SPAs) under the EC Birds Directive. Several types of fen are listed in the Habitats Directive including transition mire, poor and rich fen, and alkaline fens (rich-fen). A number of fens have been proposed as SACs under the EC Habitats Directive for these types.

- Many smaller fen sites are notified as County Wildlife Sites. This designation *can help protect* sites from development but not from neglect, agricultural improvement or mis-management.

- A new Fen Tier has been established in the Broads Environmentally Sensitive Area (ESA) & Suffolk River Valleys ESA schemes. The Breckland ESA is also considering fen management options. The Broads ESA and Suffolk River Valleys ESA both play an important role in protecting the fens.

- The Environment Agency (EA) is reviewing abstraction licences and discharge consents which may have an impact on Special Protection Areas (SPAs) and Special Areas of Conservation (SACs). This review is anticipated to be complete by 2006. New licences are often refused and water level and quality management improved in and around some of the more important fen sites.

4.2 Management, research and guidance

- The water quality and water availability are key issues in managing these sites. Water Level Management Plans have been produced for all sites that are designated as SSSI.
- The statutory conservation agencies have negotiated several management agreements on SSSIs to help secure sympathetic fen management.

- Many fens are subject to water-level management plans (WLMPs) prepared by flood defence operating authorities (EA, IDBs, LAs) under a MAFF and Welsh Office initiative. Monitoring and survey work is on-going to facilitate implementation of the WLMPs.

5 Action Plan Objectives and Targets

1 *Through survey of existing fen resource, come up with a definition and more accurate picture of extent and variation in Suffolk's fenland resource.*

2 *Ensure by 2010 the long-term sustainable management (including water resources) of all fens over 5ha, which are currently in favourable condition or will be brought into favourable condition following restoration.*

3 *Promote the rehabilitation of degraded or declining fens, and encourage the creation of new fens providing the environmental conditions to allow the development of target fen communities or species to exist.*

4 *Maintain and enhance populations of key BAP species associated with Suffolk fens.*

6 Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure compliance with Habitats Directive for designated fens in all Strategic Plans, Development Plans and Policy documents.	2007	**EN, EA, LAs, BA**
Incorporate water quality and quantity standards for fens into agri-environment schemes, by targeting key land within fen catchments for enhanced water levels and reduced fertiliser loadings.	2004 2005 2006 2007	**Defra, EA**
Consider modifying or expand existing habitat schemes and countryside schemes such as the ESA' s, Countryside Stewardshi and Nitrate Sensitive Areas to encourage the protection of fens from agricultural contaminants.	2004 2005 2006 2007	**Defra, EA, EN**
SITE SAFEGUARD AND MANAGEMENT		
Prepare and implement water level management plans for all Suffolk fens.	2007	**EA, IDBs**, EN, LAs, Defra,
Review each WLMP as they fall due, to implement agreed water quality/quantity standards. WLMPs to be produced or reviewed as part of restoration proposals, and before on-site works commence where possible.	2004 2005 2006 2007	**EA, IDBs,** Defra, BA, EN
Ensure site safeguard measures are in place to protect core fen resources. Notify as SSSI remaining sites, which meet current criteria and are threatened.	2007	**EN,** EA, SWT,
Ensure sustainable management of 80% of key fen sites for the long term, including sites subject to restoration proposals by 2010.	2004 2005 2006 2007	EN, Defra, EA, NT, RSPB, SWT

Promote reversion to fen tier (probably an addition to current grassland reversion tiers) in agri-environment schemes.	2004 2005 2006 2007	**Defra**, EN, SWT, RSPB, BA
RESEARCH AND MONITORING		
Establish the extent and diversity of Suffolk's fen resource through analysis of digital mapping and field survey.	2004	**BAP Wetland Working Group, SBRC**, EA, SWT,
Using information gathered from survey and digital mapping, produce a description of Suffolk's fen resource and draft habitat management guidelines.	2005	**BAP Wetland Working Group,** EA, SWT, SBRC
Install hydrological monitoring on international sites and maintain stations where already installed. All priority 1 sites by 2005, 50% of SSSI sites by 2010.	2005 2006 2007	**EA**, EN
Draw up and implement on-going review of water quality standards for each site on a 10-year cycle, following 10-year review of site monitoring data and review of relevant national research.	2004 2005 2006 2007	**EA**
Promote research into the ecology of fen species, particularly in relation to water quality, water quantity and management requirements using student projects and analysis of historical data.	2004 2005 2006 2007	**BAP Wetland Working Group,** EA, SWT, RSPB, EN, Defra
ADVISORY		
Organise seminar to disseminate results of research and progress with sustainable fen management techniques and publicise good practice.	2004 2005 2006 2007	**BAP Wetland Working Group,** EA, SWT, RSPB, EN, SCC, Local Authorities, Defra, BA
Organise a workshop to outline importance of Suffolk's fen habitats and their usage by key species.	2005	**BAP Wetland Working Group,** EA, SWT, RSPB, EN, Defra, BA
COMMUNICATIONS AND PUBLICITY		
Hold at least one media and demonstration event at local sites to raise awareness of the value and management of fens.	2005	**BAP Wetland Working Group,** EN, RSPB, SWT, BA

Cereal Field Margins

Cereal field margins provide valuable habitat for a wide range of animals and plants. Up to 75% of the biodiversity within an arable field can be found in the margins, regardless of the farming practice. Swings in cropping practice and underlying changes through farming reform and the agri-environment review all have the potential to alter this habitat, either positively or negatively.

1 Definition

This Action Plan recognises the term 'Cereal field margin' as referring to the land lying between a cereal crop and the field boundary. This area can be cropped, left fallow or managed as a temporary grassland habitat or a more permanent tussocky grassland strip.

Sympathetically managed cereal field margins can provide nesting and feeding sites for birds and is also an important habitat for invertebrates and small mammals. In turn mammals may be predated upon by owls and raptors. Where a tussocky growth can be allowed to develop bumblebees may find suitable sites to develop colonies, amphibians and bats can benefit from the extra habitat to buffer and link water bodies. Changes in farming practice and the increasing effectiveness of herbicides has meant that some arable plants are now found mostly within the margins of arable crops. Rare arable plants found within cereal field margins include Cornflower, Corn Parsley, Red-tipped Cudweed, Shepherd's Needle, Spreading-hedge Parsley and Narrow-fruited Corn Salad.

Key National Biodiversity Action Plan species in Suffolk which use Cereal field margins are Brown Hare, Skylark, Grey Partridge, Song Thrush, Linnet and Corn Bunting.

2 Current Status

2.1 Suffolk

The area that can be identified under this habitat is subject to fluctuation, not only through cropping swings but also between autumn and spring plantings, thus no reliable figures are available. Nationally the habitat is also thought to be under threat due to changes in farming practices.

2.2 Natural Areas

All (East Anglian Chalk, The Fens, The Brecklands, East Anglian Plain, Suffolk Coast and Heaths, The Broads).

3 Current factors affecting cereal field margins in Suffolk

Some of these factors are especially important on the lighter soils in east Suffolk.

- Availablity of grant funded margin management through Defra Agri-environment schemes.
- Large scale farming reform through the CAP .

Reduction in rotation of cereal crops with other land covers eg; grass leys and fallows. For example;

- Increased cane sugar imports causing a contraction of the UK sugar beet hectarage. [Sugar beet is often followed by a spring sown cereal].
- Continued volatility of the malting market leading to a reduction in plantings of barley.
- Increase in alternative crops such as turf, outdoor pigs and vegetables which provide greater returns than cereals.
- Shift to winter cropping and associated loss of winter stubbles.
- Potential to "trade" set aside between holdings (possibility for less productive land to be placed under "semi-permanent" set aside).
- Continued sympathetic management of field margins to recognise Local Reduction in the Application of Pesticides (LERAP), Nitrate vulnerable zone (NVZ) obligations.

4 Current Action

Appropriate management is key to the success of this habitat. All cereal field margins offer a degree of biodiversity, those offering a high biodiversity benefit can be identified as follows:

- Defra agri-environment scheme grass margins, particularly where a six metre strip is managed with an un-managed tussocky portion.
- Set aside sited as boundary strip.
- Conservation headlands managed within the crop through reduced inputs.
- Game cover, wildlife seed-mixture or pollen and nectar strips or plots adjacent to the field boundary. These strips can be grant aided although not for ordinary game cover.
- Field boundaries managed through a shallow annual cultivation to promote populations of arable plants.

5 Action Plan Objectives and Targets

1. *Continue promotion of appropriate management, taking into account the species present*

2. *Recognise the value of soil type, particularly with regard to maintaining populations of declining arable plants through annual cultivation techniques.*

3. *Encourage examination of crop management techniques favouring biodiversity. [New generation seed treatments / varietal resistance]*

4. *Ensure farmers, land managers and their agronomic advisers recognise the importance of Habitat Action Plans, particularly with regard to species associated with them.*

5. *Promote the adoption of a user-friendly guide to farmland biodiversity, easily accessible to farmers, land owners and their advisers, emphasising the link between BAP species and habitats and Agri-environment schemes.*

6 Cereal Field Margins: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure partners input fully into review of Defra Agri-environment schemes to ensure that the new schemes can properly address the management requirements of this habitat in Suffolk.	2004 2005 2006 2007	**FWAG, RSPB, SWT, EN**
SITE SAFEGUARD AND MANAGEMENT		
Support and promote uptake of Defra agri-environment Schemes to encourage appropriate management for cereal field margins	2004 2005 2006 2007	**Defra**, RDS
RESEARCH AND MONITORING		
Collect data on appropriate species on different soil types so that there can be better targetting focussed on natural areas and pass all data to SBRC	2004 2005 2006 2007	FWAG, SWT, EN, RSPB
Produce data on the hectarage of field margins managed through Defra agri-environment schemes (where information is available for the County)	2004 2005 2006 2007	**Defra**
ADVISORY		
Continue to promote appropriate management through on-farm events	2004 2005 2006 2007	**FWAG**
Ensure "Defra first visit" facility through FWAG is available to all farmers / landowners as required.	2004 2005 2006 2007	**FWAG**
Provide annual training courses encouraging farmers and agronomists to recognise a wide variety of biodiversity, particularly targetted courses such as Farmland Birds.	2004 2005 2006 2007	**FWAG**

COMMUNICATIONS AND PUBLICITY		
Produce easily accessible, user-friendly farmland biodiversity guide.	2004	**Farmland HWG**
Promote to landowners the benefits of favourable margin management through a variety of means including mail shots, press articles, training courses and farm walks – especially in areas where alternative crops are on the increase.	2004 2005 2006 2007	**FWAG**, Defra, RSPB, EN, SWT

Coastal and Floodplain Grazing Marsh

1 Definition

This type of grassland is found on low-lying alluvium around estuaries and along floodplains of rivers. It is characterised by a water table at or above ground level for some part of the year.

Grazing marsh is defined as periodically inundated pasture or meadow, with ditches to maintain the water levels. Coastal grazing marshes can contain standing brackish or fresh water. Almost all areas are grazed and some are cut for hay or silage. Sites may contain seasonal ponds with emergent swamp communities, but not extensive areas of tall fen species like reeds; although they may merge with fen and reed swamp communities. The mosaic of habitats within these sites provides diverse conditions, which support a wide range of plants, invertebrates, birds and animals.

These areas of flat, grazed land are especially important for breeding, roosting and feeding waders and wildfowl. Ditches are especially rich in plants and invertebrates. Large losses of this habitat have occurred throughout the UK in the last century.

Coastal grazing marshes and their associated dyke systems are an important brackish habitat for many estuarine species. They lie at or below sea level, and are almost all enclosed by seawalls, having originally been reclaimed from saltmarsh. These brackish water dykes are an important habitat nationally and locally.

2 Current status

2.1 National

There is about 300,000ha of coastal grazing marsh in the UK. The vast majority of this has been agriculturally improved by draining, fertilising and reseeding, or converting to arable. Nationally about 10,000 ha remains semi-natural in the UK.

2.2 Local

In Suffolk there is over 10,000ha of grazing marsh. Between 1955 and 1958 some 20% of grazing marsh in Suffolk was converted to arable. The exact extent of wet coastal grazing marsh of nature conservation importance in Suffolk is not known but approximately 2,000ha of wet grassland occurs in SSSIs and County Wildlife Sites and livestock grazes most of this grassland. This represents 20% of the total potential area of grazing marsh in Suffolk.

Most of the botanically rich grazing marshes, with the exception of significant areas at Sizewell and Minsmere are located away from the coast. The seasonal inundation of water gives the vegetation a distinct composition, with species such as Orange foxtail *Alopecurus aequalis,* Creeping bent *Agrostis stolonifera*, Southern marsh orchid *Dactylorhiza praetermissa*, and Lesser Spearwort *Ranunculus flammula*. Many improved grazing marshes have regionally important dyke systems such as at Kessingland.

Important components of the grazing marsh ecosystem are the ditches that often form the field boundaries. These can support a variety of marginal and aquatic plant species, including water soldier *Stratiotes aloides,* arrowhead *Sagittaria sagittifolia*, frogbit *Hydrocharis morsus-ranae* and water violet *Hottonia palustris*. These ditches also support a variety of animals including water vole *Arvicola terrestris* and invertebrates such as the Norfolk Hawker dragonfly *Aeshna isosceles.*

The grazing marshes in Suffolk are also particularly important for breeding, passage and wintering birds. Typical breeding birds of grazing marsh include Redshank (*Tringa tetanus*), Snipe *Gallinago gallinago* and Lapwing (*Vanellus vanellus*). Rarer species like Ruff *Philomachus pugnax* also breed on these areas. Internationally important populations of wintering wildfowl also occur including Wigeon (*Anas penelope*) and Shoveler (*Anas clypeata*).

2.3 Natural Areas

Suffolk coasts and heaths natural area

3 Current factors affecting coastal and floodplain grazing marsh in Suffolk

- Neglect through decline in levels and extent of traditional grazing, including grazing of marginal vegetation.
- Impacts of drought and ground water abstraction.
- Ecologically insensitive flood defence.
- Saltwater intrusion from periodic inundation allowing brackish habitat.
- Agricultural intensification, including over grazing, ‘over-efficient’ dredging of dykes, maintenance of low water levels and spray drift from surrounding agricultural land.
- The Suffolk River Valley Environmentally Sensitive Area (ESA), Essex Coast ESA, the Broads ESA and the Brecks ESA encourage sensitive management of grazing marshes.
- Coastal squeeze impacts upon grazing marsh in instances where managed realignment takes place, grazing marsh may be lost.

4 Current action

4.1 Legal Status

- Some 800ha of grazing marshes are designated as SSSI and most of these are also protected through such international designations as SPA and Ramsar sites. About 90ha are also designated as SACs.
- The Suffolk River Valleys ESA and the Broads ESA currently provides the principle mechanism for encouraging the management of grazing marsh. Countryside Stewardship is able to support grazing marsh outside the ESA area.
- The Environment Agency, Water Companies, Inland Drainage Boards and Local Authorities have a statutory duty to further conservation where consistent with purposes of enactment relating to their functions.
- Water Level Management Plans are required for all SSSIs. The Environment Agency, where they are the drainage authority, has written these.
- The Environment Agency is currently reviewing all consents that potentially impact on any of the European designated sites as a result of the Habitats Directive.

4.2 Management, research and guidance

Within the ESA areas, farmers can voluntarily enter into an agreement in which they receive payment for adopting or maintaining traditional farming practices on areas of grassland. Additional management guidelines designed to benefit wildlife attract a higher tier of payment. Such guidelines include the maintenance of a high water table, restrictions on grazing and the use of machinery during the bird breeding season, and controls on the use of pesticides and inorganic fertilisers.

Most of the ecologically important grazing marshes are managed by either English Nature as National Nature Reserves, the RSPB, the National Trust or the Suffolk Wildlife Trust. A wealth of technical expertise has been accumulated which would be valuable in advising and guiding other landowners wishing to manage or recreate ecologically important grazing marsh. This advisory role has proved effective in Renewing the Alde Habitat Restoration Project. The TEN (Transnational Ecological Network) Project in the Little Ouse and Waveney valley should also fulfil this role as it progresses.

A survey of breeding waders on coastal grazing marsh was undertaken by the Suffolk Wildlife Trust, RSPB and English Nature in 1997 and the BTO in 2002, both revealed large declines in numbers since the last surveys in 1988.

5 Action Plan objectives and targets

1 *Improve knowledge of extent and quality of coastal and floodplain grazing marsh.*

2 *Maintain the existing extent of biologically important grazing marsh, ensure no net loss.*

3 *Take steps to restore and re-create 200ha of grazing marsh by 2018.*

4 *Integrate grazing marsh restoration into initiatives for reedbed and fens creation.*

5 *Ensure there is no net loss of coastal grazing marsh during the implementation of flood defence strategies in Suffolk's estuaries, which may involve managed realignment schemes.*

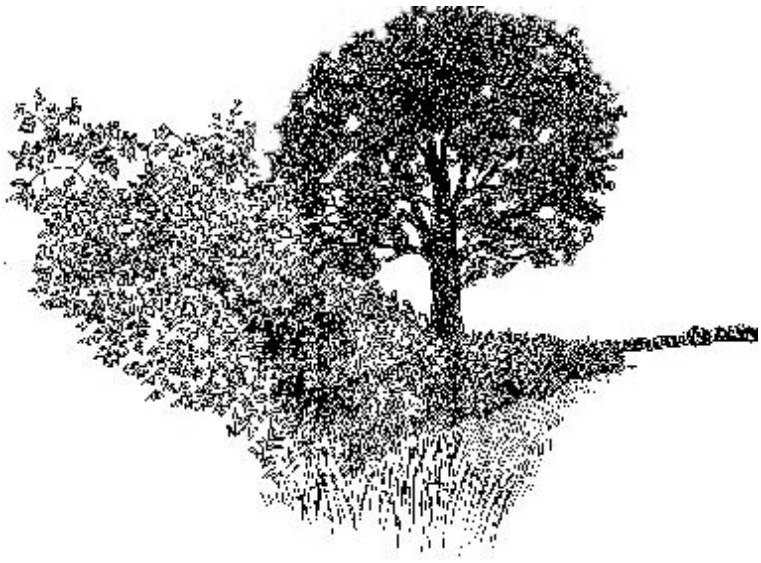
6 *Encourage the restoration and improvement of degraded grazing marsh.*

6 Coastal and floodplain grazing marsh: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure compliance with Habitats Directive for designated grazing marsh in all Strategic Plans, Development Plans and Policy documents.	2004 2005 2006 2007	**EN, EA, LAs, BA**
Include grazing marsh targets in relevant Strategic Plans, Development Plans and Policy documents.	2004 2005 2006 2007	**EN, Defra, EA, SWT, RSBP, LAs, BA, NT**
SITE SAFEGUARD AND MANAGEMENT		
Improve water quality and water availability by reviewing existing abstraction licences and discharge consents affecting SPA grazing marshes by 2006.	2004 2005 2006	**EA,** EN
Implement positive management agreements on appropriate grazing marshes through agri-environment schemes, SSSI Management Plans.	2004 2005 2006 2007	**EN, Defra**
Ensure important grazing marshes have SSSI status and where appropriate SPA and Ramsar designation by 2007.	2007	**EN,** SBRC, Defra, SWT
Complement information gathered during Lifescapes project and improve knowledge of the quality and extent of grazing marshes.	2004 2005 2006 2007	**SBRC**, EA, EN, SWT,
RESEARCH AND MONITORING		
Continue to monitor impact of agri-environment management on nature conservation interests. Use interpretation of results for future management recommendations.	2005 2007	**Defra**, SBRC
ADVISORY		
Promote the creation of high quality grazing marsh and provide management advice through the planning process and dissemination of information, on site advisory visits, fact sheets and appropriate literature.	2004 2005 2006 2007	**Wetland HWG**, EA, LAs, SWT, RSPB, BA, NT, Defra, FWAG
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the importance of Suffolk's grazing marshes, the decline in traditional grazing and hydrological management of these sites.	2004 2006	**Wetland HWG**, Defra, RSPB, EN, SWT, NT

Ancient and/or Species-rich Hedgerows

Hedges are boundary lines of trees and/or shrubs, sometimes associated with banks, ditches, and grass verges. They are an important reservoir of biodiversity in the farmed landscape as well as being of, cultural historical and landscape importance. Hedges act as wildlife corridors, linking habitats of high biodiversity value such as woodland and wetland, thus enabling bats, small mammals and insects to move around under cover from predators.



1 Definition

Ancient hedgerows, which support a greater diversity of plants and animals than subsequent hedges, may be defined as those, which were in existence before the Enclosure Acts, passed mainly between 1720 and 1840. By the time of the Parliamentary enclosures, most of the East Anglian Plain was already enclosed and well hedged, but large numbers of common pastures and greens were enclosed in the late 18th and early 19th centuries. Large areas of Breckland and the Suffolk Coast and Heaths were enclosed at this time. These hedges were after-planted as single species, (usually Hawthorn).

Species-rich hedgerows contain five or more native woody species on average in a thirty-metre length. Hedges, which contain fewer woody species but a rich basal flora, may also be considered as ancient. The Hedgerow Regulations 1997 define 'important' hedgerows as those with seven woody species, or six woody species in a 30m length plus other defined features.

Key National Biodiversity Action Plan species in Suffolk which use hedges (including associated features such as grassy verges) are Brown Hare, Skylark, Grey Partridge, Song Thrush, Linnet, Turtle Dove, Corn Bunting, Tree Sparrow, Bullfinch, and Pipistrelle Bat.

Other fauna using hedges include small mammals, such as Dormice in the south of the county, hibernating reptiles and amphibians, and invertebrates such as White-letter Hairstreak butterfly in Elm hedges.

2 Current Status

2.1 Suffolk

The number or length of ancient and/or species-rich hedgerow in Suffolk is unknown but total hedgerow length, regardless of whether it is ancient or species-rich, is estimated to be in the region of 12,500-15,000km. These figures have been extrapolated from three hedge surveys in small parts of Suffolk.

Stanton Branch of the National Farmers Union recorded 599.8km of farm hedges in 1985, and in 1993 ADAS surveyed 15km^2 of the Suffolk River Valleys ESA and found 62km of hedges. This can be extrapolated to give an estimate of 12,589 for the whole county.

Parker (2000) undertook a hedge survey using selected 1km grid squares across the county and estimated 13,800 km. He also provides some data on rates of new creation (Suffolk Naturalists Society 2000).

The national action plan surmises that 42% of all hedges are ancient and/or species-rich. Applied to Suffolk, this provides the following estimates of ancient and/or species-rich hedgerow length for the county.

Length of hedgerows in Suffolk	Estimated ancient/ species-rich proportion	Min/max estimates of ancient/species-rich hedgerow in Suffolk
10,000km	40%	4000km
20,000km	45%	9000km

With better data it is hoped that % of ancient hedges can be broken down by Natural Area; it is known that the Claylands have a greater proportion of ancient hedges than the Brecks and the Suffolk Sandlings but no figures are available at present.

2.2 Natural Areas

All (East Anglian Chalk, The Claylands, The fens, The Brecklands, East Anglian Plain, Suffolk Sandings.)

3 Current factors affecting Ancient and/or species rich hedgerows in Suffolk

Inappropriate management:

- Ancient and/or species-rich hedges are still occasionally removed by farmers, to facilitate arable operations, although the Local Planning Authority should give consent.
- Under-management and neglect of hedges leads to a reduction in their nature conservation interest and structural coherence (and occasionally leads to complete disappearance).
- Too frequent flailing of hedges is causing a reduction in their nature conservation interest.
- Few hedges have grass strips separating them from arable land, so ploughing can damage shrub and tree roots.
- Fertiliser and pesticide drift degrades plant and invertebrate populations, especially where the crop extends to the hedge base.

- The reduction in numbers of livestock enterprises has led to a loss of agricultural function for many hedges.
- The number of hedgerow trees (often veteran trees, a feature of Suffolk landscapes) is declining; losses are not being replaced fast enough.
- Many private nature reserve owners are planting new species-rich hedges.

4 Current Action

4.1 Legal Status

The Hedgerows Regulations (Section 97 of the Environment Act 1995) were introduced to protect this characteristic element of the countryside. The Regulations prevent the removal of most countryside hedgerows without first submitting a hedgerow removal notice to the local planning authority.

Article 10 of the 1992 Habitats Directive encourages the management of linear features such as hedgerows to aid the migration, dispersal and genetic exchange of wild species.

The Countryside and Rights of Way Act 2000(Section 74) places a duty on Local Authorities to have regard to the purposes of conserving biological diversity. This includes habitats such as Ancient and or Species-rich hedges.

An individual hedge can be subject to a Tree Preservation Order (TPO) although this is not common. It is more common for individual hedgerow trees to be protected by a TPO.

Indirectly a hedgerow may be protected where it forms a habitat for a legally protected species under the Wildlife and Countryside Act 1981 or the Conservation (Natural Habitats, & c.) Regulations 1994.

4.2 Management, research and guidance

- Defra's Countryside Stewardship (CS) pays for an agreed programme of hedge management and/or planting. The new Entry Level Scheme (ELS) may to improve prospects for hedge management in the county, although it may not include planting.
- Since 1991 approximately 400km of hedgerows have been planted and restored. During the lifespan of the Suffolk BAP (1998-2003) the figure equates to approximately2200 km of the above total through Defra's Countryside Stewardship scheme.
- The Suffolk River Valley ESA pays for hedge management but only a tiny proportion of hedges in the ESA have been entered into the scheme. It is a condition of receiving ESA payments that hedges on agreement land are retained. The Breckland and Broads ESAs also support hedge restoration.
- Suffolk County Council offer a 40% Landscape Conservation grant (up to £500) for hedge planting, although resources are limited. Over 13km of new hedge were planted in 2002/03 under this scheme.
- The Suffolk Hedgerow Survey has been completed by around 15 parishes, but data quality is variable and remains paper based. Other parishes are currently taking part.

5 Action Plan Objectives and Targets

Comprehensive survey work to establish the status of the habitat is still urgently required. Although the Lifescapes project (Suffolk Coasts and Heaths) has assessed some of the species-rich hedgerow resource, the area has never been an important on for this habitat.

The Suffolk Hedgerow Survey has been undertaken by some parishes but data quality is variable and remains paper based.

The objectives for this HAP are as follows:

1 *Obtain an up to date picture of the status and extent of ancient and/or species rich hedgerows in the county.*

2 *Ensure that most existing field boundaries are hedged, by encouraging planting along currently un-hedged boundaries (where this would have been a typical landscape feature), retaining hedgerow trees and the planting up of gaps.*

3 *Planting schemes should take account of the historical and cultural context, that is, local traditions and structures of boundary features.*

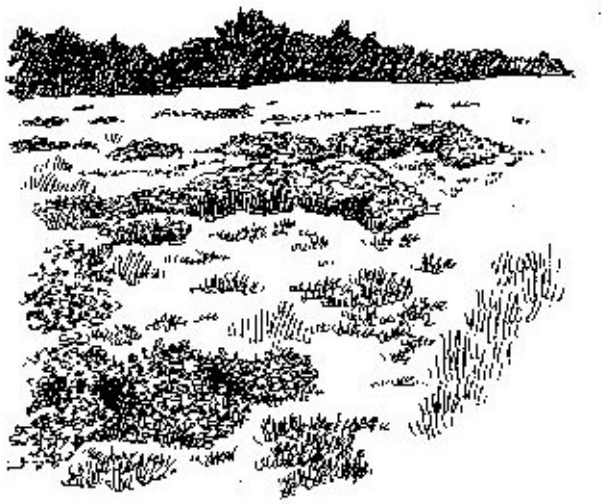
6 Ancient & Species-rich hedgerows: Proposed local action with lead agencies

Action	**Date**	**Partners**
POLICY AND LEGISLATION		
Encourage uptake of Agri-environment schemes, which provide for grass field margins alongside ancient and /or species-rich hedgerows. As well as favourable hedge management.	2007	**FWAG,** Defra/ RDS, , SWT
Ensure that the conservation status and associated biodiversity species of all hedges affected by development proposals is assessed.	2007	SCDC, WDC, BDC, FHDC,SEBC, MSDC, SCC
SITE SAFEGUARD AND MANAGEMENT		
Promote the favourable management of ancient and/or species-rich hedgerows throughout the Suffolk Countryside. Particularly replanting and gap-filling where seedbank is thought to have been retained.	2007	**FWAG**, EN, LAs, SWT, Defra/RDS
Encourage the use of set aside strips, (where regulations allow) to protect hedge bases from damage by agricultural operations.	2007	**FWAG**
Safeguard existing hedgerow trees and encourage the planting of new ones.	On-going	**FWAG**, SWT, Parish Tree Wardens

RESEARCH AND MONITORING		
Improve data on existing hedges through continuation of Parish Hedgerow Surveys.	2007	**SWT**
Find funds and proceed to map ancient and semi-natural hedgerow resource using parish survey data, historic maps and GIS.	2005	**SBRC**
Produce local data on the amount & length of hedge planted under new AES throughout the lifetime of these schemes (where possible to obtain data).	2004 2005 2006 2007	**Defra**
ADVISORY		
Continue where possible to promote hedge planting to farmers and parish groups, through grant schemes.	2007	**FWAG**, Defra/RDS, SHG
COMMUNICATIONS AND PUBLICITY		
Promote to the general public an awareness of the importance of hedgerows as a habitat, how much new hedge is planned and that the era of massive hedge loss is over. Undertake sites visits, farm walks and press coverage.	2007	**FWAG**, SWT, SHG

Lowland Heathland

Lowland heaths lie below 300m altitude and are characterised by vegetation dominated by dwarf shrubs, in particular various species of heather. They are characteristically found on acidic, sandy, free-draining soils that are nutrient-poor.



1 Definition

Heathland in Suffolk is characterised by a mixture of vegetation communities. In the Sandlings area, these include dwarf ericaceous shrubs, acid grassland, bracken, scrub and trees. In Breckland, the habitat is a more complex combination of different communities, reflecting the mix of acid and chalky soils. The mixture of communities found in Breckland is unique in Britain. Because acid grassland is a component of heathland in Suffolk, this plan runs concurrently with the one for acid grassland.

2 Current status

2.1 National

Lowland heath is a rare and threatened habitat internationally and the UK has 20% of the global total. Suffolk has over 3,000 ha of lowland heathland, out of a total of 58,000ha in the UK, which is 5.3% of the national resource.

2.2 Local

Two important regions of lowland heathland are found in Suffolk: the Sandlings, along the coastal belt; and Breckland on the Norfolk/Suffolk border. Heathland in Suffolk is largely confined to these areas although smaller areas can be found in the upper Waveney Valley at Wortham Ling and Redgrave and Lopham Fens.

In the Sandlings 1,600ha of heath remain, approximately 8% of what were once extensive heaths. From 1932-1983 83% of Sandlings heaths were lost, largely to forestry (30%), agriculture (30%), buildings (9%) and military bases (5%). There are 42 Sandlings heaths ranging from 247ha at Minsmere and Walberswick to fragments under 2ha.

Breckland heath has declined more dramatically than Sandlings heaths. Between 1934-1980 86% of Breckland heathland was lost largely to forestry, agriculture and military bases. In Breckland as a whole 4,500ha of heath remain of which more than 2,200ha are found in Suffolk. There are 55 heathland sites in Suffolk Breckland ranging in size from Lakenheath Warren (570ha) to those less than 3ha.

Key National Biodiversity Action Plan species that use heathlands in Suffolk include Stone curlew, Nightjar, Woodlark, Skylark, Linnet, Natterjack Toad, Silver-studded Blue butterfly, Red-tipped Cudweed, Tower Mustard, Perennial Knawel and Small Alison. In addition two Suffolk Character Species adder and antlion, now have individual Local Action Plans.

2.3 Natural Areas

Brecklands, Suffolk Coast and Heaths.

3 Current factors affecting Lowland Heathland in Suffolk

In previous decades agriculture and forestry have been the primary cause of loss of heathland but this is no longer the case. Current factors include:

- Neglect is the main threat to lowland heathland; lack of management leads to encroachment by trees and scrub. In the Sandlings (1986) only 38% of heaths were dominated by true heathland communities. Of the remaining heathland areas 16% disappeared to woodland, 13% to scrub and 33% were dominated by dense bracken stands.
- Development and change of land use are still a threat to heathlands. Examples include road schemes, development at Red Lodge, activities on both redundant and active MOD land and pressure to develop land around Ipswich.
- Recreational pressures: heathlands are very popular habitats for informal recreation. Some heathland species are susceptible to disturbance and are not compatible with public access.
- Summer fires: these are a problem particularly in the urban-edge heaths around Ipswich. They have the potential to wipe out Silver-studded Blue colonies, kill reptiles and destroy the nests and young of ground-nesting birds.
- Inappropriate grazing: although grazing is generally beneficial some practices can be damaging such as under or over grazing and supplementary feeding.
- Run off from agricultural land: soil and water washed off tillage and outdoor pig fields can contain high levels of nutrients which will result in vegetation changes and high volumes of material can smother invertebrate colonies such as Silver-studded Blue butterflies. Spray drift is also a problem where there are no buffer zones.
- Inappropriate management of heathland by golf clubs can lead to a loss of acid grassland through irrigation and additions of fertilisers and lime.
- Atmospheric deposition of nitrogen is contributing to nutrient enrichment and degradation of habitat loss in the Sandlings and Breckland. This is a prime issue for future research.
- Lack of protective designations of areas of potential heathland. Sandy, nutrient-poor soils can be reverted to heath if appropriately managed.

4 Current action

4.1 Legal Status

- Seventeen Breckland heaths are designated as SSSIs in Suffolk, and most of the larger heaths are designated as pSPA and cSAC because of their European importance for rare habitats and species.
- On the Sandlings, 85% of the heathland area is designated as SSSI and most of the larger heaths are designated SPA or cSAC.
- Some heathland sites have no designation as either SSSI or county wildlife site.

4.2 Management

General

- Forest Enterprise (FE) have drawn up and agreed management plans with English Nature for its heathland areas and heathland rides in Thetford Forest and the Sandlings forests.
- Heathland Opportunity Mapping Project currently being undertaken through the East Anglian Region. A partnership lead by EEDA.

Sandlings

- The management of the Sandlings heaths has benefited from a high degree of partnership since 1980 with the formation of the Sandlings Group and has continued with the Sandlings Walks project.
- In 1989 FE took 78ha out of forest production for permanent reversion to heathland as a result of the 1987 Storm.
- By 2003 most of the Sandlings heaths were under some form of management either directly through sympathetic ownership or through the Sandlings Group.
- The main funding mechanism for management has been Countryside Stewardship (CS), English Nature's Wildlife Enhancement Scheme (WES) and the Tomorrows Heathland Heritage programme (THH) funded by the Heritage Lottery Fund.

Re-establishment

- 'The Sandlings Walks' was launched to support heathland restoration work in the Sandlings. The successful project has been led by the Suffolk Wildlife Trust's Sandlings Project but involves all the partners on the Suffolk Coast and Heaths Sandlings Group. The 5 year project finishes in November 2003 and has contributed to the successful restoration of much of the remaining area of Sandlings heaths, encouraged the linking of fragmented areas and supported the re-establishment of heathland on arable land at Minsmere and Sizewell. The RSPB is involved in a major project to re-establish 158ha of lowland heath on arable land at Minsmere and in the future along with the National Trust convert Mount Pleasant Farm, Dunwich.

- Other reversion projects include SWT's work at Sizewell and other smaller sites in agri-environment Schemes.

  A total of 246.46ha has been re-established but is still short of the 570ha target set in the previous plan. A further 100ha has already been secured for re-establishment during this plan period. Sheep Wildlife Enhancement Scheme established 2003, for five years. Funded by English Nature and Defra.

Breckland

- The Breckland ESA, funded by Defra and introduced in 1988, has been the main mechanism for funding management of the Breckland heathlands. The scheme has successfully reintroduced grazing to many sites and has undoubtedly prevented the loss of heathland by tree and scrub encroachment.

- By December 1996 2,668ha had been entered into the ESA heathland management tier representing 63% of eligible heathlands.

- Tomorrow's Heathland Heritage Project in the Breckland (English Nature) was established in 2001.

Re-establishment

- The Breckland ESA had funded the re-establishment of 127ha of heathland by December 1996. Forest Enterprise are recreating 300ha of heathland from forestry in Thetford Forest by 2006, 72 ha of which is in Suffolk.

5 Action plan objectives and targets

Targets in this plan are short-term and based on current knowledge, assumptions about the ecological functionality and limits imposed by current funding streams and competition from other land uses. Targets should be regularly revised taking account of improved knowledge of species requirements, climate change and the amount of habitat required to achieve ecological functionality.

1 *Secure without damage or loss, all existing areas of heath and implement restoration management where it is needed.*

2 *Identify, and secure sympathetic management for all designated heathland areas with the aim of achieving favourable status by 2010.*

3 *Maintain and improve the wildlife value of existing heathland through appropriate and sustainable grazing management systems where this is feasible.*

4 *Encourage the establishment of heathland in the Sandlings and in Breckland (Norfolk and Suffolk) from arable and forestry use where possible. The Lifescapes heathland potential model should be used to target links between fragmented heaths for re-establishment to create sustainable heathland units.*

5 *Maintain and strengthen populations of key BAP species associated with heathland.*

6 Lowland Heathland: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Protect good examples of remnant heathland as County Wildlife Sites.	2005 2007	**SWT**, LAs
SITE SAFEGUARD AND MANAGEMENT		
Ensure heathland sites are not adversely affected by development by ensuring enforcement of relevant policy.	2004 2005 2006 2007	**SWT,** LAs, EN,
Ensure SSSI site action plans include proposals for management, restoration and re-establishment.	2004	**EN**
Ensure golf course management enhances conservation value of heathland; Thetford, Rushmere, Thorpeness and Ipswich. Produce management statements to facilitate appropriate management.	2006	**SWT**, EN
Facilitate issue of felling licenses for removal of trees from heathland.	2004 2005 2006 2007	**FC**
Manage heath of FE owned land in Breckland and Sandlings with the aim of maintaining favourable condition and status.	2004 2005 2006 2007	**FC**
Secure funding to continue to manage and restore heathland sites, and aquire where necessary.	2004	**SCHU, BCP, SWT, EN, RSPB, NT, FC, LAs**
Encourage heathland re-establishment as after-use of mineral workings in Sandlings and Breckland.	2004 2005 2006 2007	**SCC**

RESEARCH AND MONITORING		
Exchange experience and ideas on heathland management through Breckland Wildlife Partnership and Sandlings Group and national interest groups eg; THH projects and GAP.	2004 2005 2006 2007	**SCHU, BHH,** SWT, EN, , RSPB, FC, NT, Defra, SCC Countryside Projects
Ensure co-ordinated monitoring of effects of heathland management techniques (EN Common Standards monitoring). Monitor heathland management and re-establishment.	2004 2005 2006 2007	**SWT, EN**, SCHU, RSPB, FE, NT, SCC Countryside Projects
ADVISORY		
Continue to promote uptake of Defra agri-environment schemes and EN schemes to lachieve management restoration and re-establishment targets.	2004 2005 2006 2007	**Defra**, EN
Provide conservation advice to heathland owners and managers through Agri-environment schemes and other projects.	2004 2005 2006 2007	**SWT**, Defra, EN, FWAG
COMMUNICATIONS AND PUBLICITY		
Develop education activities relating to heathland.	2004 2005 2006 2007	**Heathland Habitat Working Group.**

Lowland Meadow

Plan Lead SWT

1 Definition of habitat or species

This plan incorporates a number of unimproved grassland types in Suffolk. Of particular ecological value are the species-rich hay meadows associated with the boulder clay soils of the county. Often termed 'Old meadows', these grasslands are characterised by a long history of traditional management by hay making and have not been altered through ploughing or the use of agricultural chemicals. The plan is not restricted to grasslands that are cut for hay but also includes unimproved neutral pasture where livestock grazing is the main land use.
In addition to a wide range of flowering plants and mosses, unimproved grasslands are habitat for other groups including invertebrates, birds and small mammals

2 Current status: national, regional, and local (including trends and losses)

The loss of unimproved grassland in Suffolk (96% since 1939) mirrors the drastic loss that has occurred elsewhere in lowland England and Wales. In 1984, it was estimated that semi-natural grassland had declined by 97% over the past 50 years. It is now estimated that only 15000 hectares of species-rich neutral grassland remains in the UK. In Suffolk recent estimates indicate that there are less than 2000ha of the resource left.

The typical plant community (MG5 in the National Vegetation Classification) of hay meadows and pastures on Suffolk boulder clay soils is now localised, fragmented and in small stands. In Suffolk there is less than 100 hectares remaining, 2% of the national resource. In non-agricultural settings, good examples can be found in churchyards, on road verges and village greens and commons. MG4 wet grassland would also be included in this plan.

3 Current factors affecting the species or habitats

Although largely an historical influence, agricultural improvement remains a threat at some sites: drainage, ploughing, reseeding, fertiliser treatment and application of herbicides.

Neglect through a decline in the level of livestock grazing and the low agricultural value of hay and species-rich pasture.

Isolation within the farmed landscape – very few meadows are part of a mixed farm system, being instead isolated within an intensive arable system making grazing/haycutting difficult and uneconomic.

Reduction in the availability of appropriate type and size of farm machinery for traditional hay making on small sites.

Abandonment leading to rank over growth and scrub encroachment

Changes in plant communities through inappropriate grazing/cutting regimes e.g. intensive grazing (often horse) or regular topping.

Dehydration through lowered water tables due to surface and ground water abstraction and effects of drought.

Lack of resources/labour for long term appropriate management of non-agricultural sites e.g. churchyards

Eutrophication through atmospheric pollution and run-off (particularly salient to RNRs)

Climate change apparently increasing growth rates and therefore altering/increasing necessary management

4 Current action

Just under 2000 hectares of unimproved neutral grassland are designated as SSSI or as non statutory site (County Wildlife Sites). These designations help attract grant funding for management in the new Environmental Stewardship scheme.

The former agri-environment schemes in Suffolk i.e. the Environmentally Sensitive Areas scheme and the Countryside Stewardship scheme continue to provide financial incentive to encourage appropriate management of unimproved grassland and have played a vital role in maintaining the condition of many sites. As these schemes come to a close, it is hoped that the new Environmental Stewardship Scheme will provide similar support.

The Suffolk Wildlife Trust Unimproved grassland project aims to provide landowners of grassland sites with advice on conservation management and grant aid. Regular contact is maintained with County Wildlife Site owners, private nature reserve owners and communities to ensure that grassland sites are managed appropriately. A graziers database and a hay cutters database has been set up to help facilitate management of grassland sites.

Promoting the importance of unimproved grasslands helps ensure their correct management. Suffolk Wildlife Trust offers training and information on grassland management including courses on churchyard management and community grassland and a range of fact sheets on grassland management and creation.

The protected Roadside Nature Reserve scheme has been reviewed and revitalised by SCC and all grassland RNRs are now designated as CWSs.

Countryside Management projects and volunteers provide significant practical help in managing a number of sites publicly and privately owned including County Wildlife Sites.

The extent of the resource of herb-rich grassland has been increased through a number of grassland creation projects across the county using green hay and the SWT/Natural England seed harvester to collect seed from CWSs and SSSI unimproved grassland. It is estimated that to date 2.5 hectares has been created in the last two years.

5 Targets

Maintain as a minimum the current extent of unimproved grassland resource of approximately 2000 ha in Suffolk for 2010, 2015 and 2020

Expand the current resource of unimproved grassland resource by creating 0.5 –1ha of new herb-rich grassland per annum up to 2010 through green hay and seed harvesting.

Aim to restore and therefore reduce the number/area of sites currently in unfavourable condition.

Baseline 2005, targets for 2010, and identify targets for long term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Policy & Legislation		
Ensure that the LDF documents incorporate the lowland meadow BAP targets.	2006-7	**SCC**, LAs, NE, SWT.
Site safeguard and management Or species protection/management		
Ensure that the conservation requirements of unimproved lowland meadows continue to be taken into account and targeted in Environmental Stewardship applications	2006-2010	**NE**, SWT, FWAG
Maintain and develop grazing and haycutters database to facilitate sympathetic management	2006-2010	**SWT**/FWAG
Investigate uses/disposal of cut and collected material that is not suitable for hay e.g. community composting, local authority recycling	2006-2010	**SWT**/LA

Continue to target and support landowners of unimproved grassland to take up Environmental Stewardship	2006-2010	**SWT**/NE/FWAG
Encourage the creation of buffer habitat (through Environmental Stewardship) around unimproved grassland not only to protect from factors such as spray drift, but also to make them a more viable grazing/haycutting unit e.g create some dry winter grazing grassland near a wet grassland that needs summer conservation grazing	2006-2010	**SWT**/FWAG/NE
Create linking habitats between unimproved grassland to make them part of the wider ecological networks Integrate with opportunities generated by ES e.g. grass margins	2006-2010	**SWT**/FWAG/NE
Create new grasslands using local sources of green hay/harvested seed to expand the extent of herb-rich grassland (Target 1 new site a year)	2006-2010	**SWT**/NE/FWAG
Research and monitoring		
Maintain a programme of site visits to non-statutory unimproved grassland sites in agri- environment schemes to ensure sites are maintained in favourable condition	2006-2010	**SWT**/FWAG
Maintain a programme of site visits to non-statutory unimproved grassland sites not in agri- environment schemes to assess condition and increase number in favourable condition	2006-2010	**SWT**
Monitor SSSI grassland under common standards monitoring scheme	2006-2010	**NE**
Advisory		
Provide advice to landowners and managers of unimproved grassland including statutory and non statutory sites, churchyards, commons, community sites and road verges	2006-2010	**SWT**/NE /FWAG/SCC
Encourage, develop and disseminate best practice for management of unimproved grassland to promote the integration of conservation into agricultural practice, including through agri-environment schemes	2006-2010	**SWT**/NE/ FWAG
Advise on grassland creation opportunities	2006-2010	**SWT**/FWAG

to ensure use of locally sourced seed		
Communications and publicity		
Where it is compatible with the conservation value of sites, encourage public access, particularly where they are focal to the community e.g. churchyards	2006-2010	**SWT**/NE
Seek opportunities to promote conservation of unimproved grasslands e.g. through publications such as ES newsletter, CLA magazine, Site matters etc	2006-2010	**NE**/SWT/FWAG/SCC
Run training courses in grassland management for both agricultural scale sites and for smaller community and private sites	2006-2010	**SWT**/FWAG
Promote community involvement in grassland management through work parties in churchyards and community grassland sites.	2006-2010	**SWT**/SCC
Highlight the importance of unimproved grassland through awards such as the East Anglian Wildflower Award and the FWAG awards	2006-2010	**SWT**

NB Most of the action achieve by dates are 2006-2010 this means they need to be achieved or worked towards by 2006 and annually renewed until 2010.

Objectives currently not achievable by the plan partners:

This section should include objectives that the working group relevant to this plan would like to fund and achieve but due to constraints can't currently. By recognising these in the plan, means they aren't lost from the BAP : A list of bullet points

Setting up a hay cutting machinery ring for small landowners

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

SWT Susan Stone and Dorothy Casey
NE Monica O'Donnell and Alison Collins
All District Council SBP Representatives
Suffolk County Council Andrew Murray-Wood
SBRC Martin Sanford
Suffolk biodiversity partnership officer Mary Norden
FWAG Phil Watson
RSPB Kirsty Coutts
SOG Steve Piotrowski

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SUFFOLK LOCAL
BIODIVERSITY
ACTION PLAN

Maritime cliffs and slopes

1 Definition of habitat

Maritime cliffs and slopes are defined as sloping to vertical faces on the coastline where breaks in the slopes may be formed by slippage and/or coastal erosion. Whilst there is no defined minimum height or angle of slope to distinguish a cliff, the extent of the cliff-top, also covered in this plan, is determined by the landward extent of the maritime influence, (i.e. the limit of salt spray deposition). On the seaward side the plan extends to the limit of the supralittoral zone (immediately above high water) and so includes splash zone lichens and/or other species which occupy this habitat. Maritime cliffs are broadly classified as either hard or soft depending upon their underlying geology. In Suffolk there are only soft cliffs and slopes.

2 Current status

The UK BAP estimates that approximately 4000 km of the UK coastline is classified as maritime cliff and slope habitat.

In Suffolk there are approximately 44 km of maritime cliffs and slopes and around 20% of these have cliff-tops comprising agricultural land. Semi-natural habitat, principally scrub, woodland and more rarely heathland and acid grassland occurs on around 40% and the remainder is almost exclusively developed, either within or close to built up areas.

The steeper cliffs, where slippages and erosion frequently occur, provide important breeding sites for sand martins (Riparia riparia) and the unusual combination of friable soils, hot, dry substrates and open conditions is able to support invertebrates which occur rarely elsewhere. There are recent records of fulmars, (*Fulmarus gracialis)* nesting on one stretch of maritime cliff.

Only a small proportion, 6.9 km (c. 16%) of the soft cliffs and slopes in Suffolk have been notified as SSSI. However some 0.7 km has also been included in Special Protection Areas under the EC Birds Directive and 1.4 km in Special Areas of Conservation under the EC Habitats Directive. The nature conservation value of the maritime cliffs is also recognised through the inclusion of approximately 2 km on County Wildlife Sites register.

Some 7% of the maritime cliff and slope is in the ownership or control of non-governmental organisations and English Nature. Almost all of the cliffs and slopes lie within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty.

3 Current factors affecting the species or habitats

There is currently no clear indication of trends in the status of maritime cliffs and slopes on the Suffolk coast however the following factors are considered to have a significant influence.

- Coastal erosion is a highly significant factor but does not necessarily result in a loss of biological or geological interest. Erosion is an important process which ensures the renewal of geological exposures and the commencement of botanical succession.
- Coast protection works, involving the construction of hard revetments in front of the cliff face or the re-profiling of cliffs and slopes and re-vegetating with non-native species can result in a reduction in biodiversity.
- There are a variety of cliff-top developments on parts of the Suffolk coastline ranging from individual houses to holiday camps to a nuclear power station. Such development can result in increased demand for further coast protection works which in turn may further reduce the biodiversity interest.
- The post-war intensification of agriculture has resulted in the loss of natural or semi-natural vegetation from many cliff-tops. Arable farming and outdoor pig-rearing have increased the frequency of runoff which has the potential to affect both the composition of plant communities and the rate of erosion of cliffs where land drains discharge from the cliff face.
- The popularity of some undeveloped parts of the coastline for informal recreation has resulted in some soft cliffs and slopes suffering from increased rates of erosion. The proposed introduction of improvements to coastal access, if not carefully planned and managed, could exacerbate this situation.

4 Current action

Work has commenced on the preparation of a replacement Shoreline Management Plan for Sub-cell 3C covering the coast from Lowestoft to Landguard Point. The table of features and issues prepared at the outset of the plan preparation records the presence of Maritime Cliff and Slope BAP habitat at all appropriate locations. The coast north from Lowestoft south beach to the county border with Norfolk is covered by the Shoreline Management Plan for Sub-cell 3B.

5 Targets

The targets established in this plan are in accordance with the UK Biodiversity Action Plan for Maritime Cliff and Slope and aim to maintain, restore and where possible expand the extent of maritime cliff and slope.

- Seek to maintain the 2006 baseline of existing resource of maritime cliff, cliff top and slope habitat (as mapped by Suffolk Biological Records Centre by 2010.

- Maintain wherever possible free functioning of coastal physical processes acting on maritime cliff and slope habitats.

- Ensure that all maritime cliffs and slopes of SSSI or county wildlife site status are in favourable condition or unfavourable recovering by 2010 and 2020 respectively.
- Retain the amount of maritime cliff and slope habitats unaffected by coastal defence and other engineering works.
- Where possible increase the amount of maritime cliff and slope habitats unaffected by coastal defence and other engineering works.
- Increase the area of cliff-top semi-natural habitats by a minimum of 15% by 2020

6 Actions
(for a five year period then reviewed using 2006 as the baseline).

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Policy & Legislation		
Wherever feasible in the preparation of SMP2 apply policies that encourage the free functioning coastal process. At minimum ensure the undefended cliffs & slopes remain so.	2010	SMP Steering Group ICZM Initiative
Ensure planning policy discourages development close to retreating cliff-tops	2009	Local Planning Authorities
Consider the feasibility of relocating existing vulnerable cliff-top developments	Annual	Local Planning Authorities (considering exceptions to LDF policy)
Target environmental stewardship schemes to encourage the restoration of semi-natural cliff-top habitats	2007 -2010	Natural England
Site safeguard and management		
Apply conservation designations to all remaining maritime cliff and slope that meet national or international criteria and ensure appropriate management	2011	Natural England
Promote the management of cliff-top maritime grassland and heath by scrub control and/ or grazing, to ensure all CWSs are under sympathetic management.	2007-2011	Natural England, SC&HU, SWT, Suffolk FWAG
Apply Higher Level Stewardship schemes to encourage the restoration and management of semi-natural cliff-top habitats(5% of total area)	2007-2011	Natural England, SC&HU, Suffolk FWAG
Research and monitoring		
Review the impact of agricultural land drainage on cliffs and slopes, especially in SACs and review the effectiveness of the consents	**?**	Natural England, Environment Agency

procedure.		
Monitor the changes in the quality and extent of maritime cliff and slope before and following the implementation of the Suffolk SMP.	2010	SMP Steering Group, SBRC
Advisory		
Encourage the uptake in HLS schemes with objectives of restoring semi-natural vegetation on cliff tops by advising landowners. Two schemes per year.	2009 and annually thereafter	Natural England, Suffolk FWAG
Communications and publicity		
Promote awareness of importance of maritime cliffs & slopes and objectives of this action plan by publishing guidance and publicising successful initiatives.	2008 and annually thereafter	SC&HU, Coastal Habitats Working Group

Objectives currently not achievable by the plan partners:

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Suffolk Lowland Mixed Deciduous Woodland

1 Definition of habitat

This type includes all broadleaved stands and mixed broadleaved and coniferous stands which have more than 80% of the cover made up of broadleaved tree species. It also includes patches of scrub of above 0.25ha which form a continuous canopy. Areas of recently felled broadleaved woodland and other successional stages are also included in this type, along with other integral features of woodland such as glades and rides.

These woods have been managed historically as coppice, coppice with standards, wood-pasture, high forest and minimum intervention. They are often found as intricate mosaics with other woodland communities. The wood-pasture and parkland element is dealt with in another Habitat Action Plan, although some of the issues apply to this plan also.
Ancient semi-natural woodland contains some of the most important assemblages of wildlife of any habitat. A significant proportion of the Lowland Mixed Deciduous Woodland in the county falls into this category. Mixed deciduous woodland may be found on both Ancient Woodland and Recent sites. Some Recent Woodland sites may be of significant conservation importance.

Ancient Woodland – Land that has had continuous woodland cover since at least 1600 and may be:
Ancient Semi-natural Woodland – Ancient Semi-natural Sites that have retained the original native tree and shrub cover that has not been planted, although it may have been managed by coppicing or felling and allowed to regenerate naturally.
Planted Ancient Woodland Sites (PAWS) – Ancient woodland sites where the original tree cover has been felled and replaced by planting, usually with conifers and during the last century.

Recent Woodland - Land that has become woodland since 1600 and may be:
Recent Semi-natural Woodland – Recent Semi-natural Sites that have native tree and shrub cover that has not been planted. It may have been managed by coppicing or felling and allowed to regenerate naturally.
Planted Recent Woodland Sites – Recent woodland sites which have been planted, often with cricket bat willow, poplars, or with mixed woodlands.

This Habitat Action Plan covers woodland growing on a full range of soil conditions, from acidic to base-rich, and includes most of the semi-natural ancient woodland sites in Suffolk. However it does not include wet woodlands which have their own BAP plan. Most woodlands were traditionally managed coppice with standards, particularly those on moderately acid to base-rich soils. Coppicing ceased gradually with the discovery of coal as a fuel source as new materials were introduced and labour became more expensive.

Lowland Mixed Broadleaved Woodland has been classified by the National Vegetation Classification (NVC) (Rodwell 1991); in Suffolk the following stand types have been identified: W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland; W10 *Quercus robur - Pteridium aquilinum - Rubus fruticosus* woodland and lesser amounts of W16 *Quercus* spp. - *Betula* spp. - *Deschampsia flexuosa* woodland. Locally, these may form a mosaic with other types, including patches of beech woodland, and small areas of wet woodland. Rides and edges may grade into grassland and scrub types. *Quercus robur* is most frequent although *Quercus petraea* may be locally abundant.

Woodlands that have developed on the Suffolk Boulder Clay are typically, dominated by ash-maple (the NVC W8 stands). Free-draining sandy soils are often defined by oak-birch woodland (W10).

2 Current status

UK SMART targets BAP review recent estimates of native woodland in England are:

Of the 535 000ha of native broadleaved woodland (given in National Inventory of Woodland and Trees NIWT) 200 000ha are ancient semi-natural woodland, 284 000ha recent semi-natural woodland (>80% broadleaved), and 51 000ha of planted broadleaved or restored (PAWS) sites.

The Forestry Commission's NIWT (2002) estimates lowland mixed deciduous woodland in Suffolk at 15,466 ha, of which 4,250 ha is on ancient woodland sites although this figure does not include stands where deciduous is mixed with conifer woodland.

Woodland in the East of England (hectares)			
Total woodland area	*Ancient semi-natural woodland*	*Plantation on ancient woodland sites*	*Recent Plantation*
113,300 ha	18800 ha	8200 ha	86300 ha

Source: Forestry Commission (2002)

The bulk of deforestation in Suffolk took place during the Neolithic times. The Domesday Book suggests that Suffolk as a whole was not a well-wooded county, it has been estimated that only 9% of the county was wooded at that time. Ancient woodland cover in Suffolk is now just over 1% of the land area. In more recent times there has been an increase in woodland area in Suffolk as large conifer forestry plantations and new broadleaf woodland have been developed.

3 Current factors affecting the species or habitats

- Under-management and neglect are major causes of loss and decline of woodland biodiversity. Cessation of traditional management practices (particularly coppicing) has caused a reduction in the structural and species diversity within many woods, particularly through the loss of temporary open space.
- Fragmentation of woodlands, reduced the ecological value of sites
- Intensification of management between woodland fragments reduces the ecological value of edge habitats and the connectivity between woodland blocks in the landscape.
- Overgrazing through expansion of deer populations is leading to change in woodland structure, impoverishment of ground flora and low rates of regeneration, especially in coppice. Over-grazing by rabbits and hares, and damage to trees by squirrels is also a problem in woodlands.
- Invasion by sycamore and other species that are generally not native to mixed deciduous woods, leads to changes in their composition. Although the perceived target composition of woodlands will change in response to climate change effects on woodlands.
- Dutch elm disease has changed the structure and composition of many woods since the early 1970s, and recurrences are still affecting them. Canopies opened by disease may be subject to higher rates of wind throw, and invasion of gaps by elder that can form climax scrub.
- Direct and indirect losses of woodland through development, and trunk road improvements have destroyed or caused deterioration of many woods, and continues to threaten others.
- Replacement of native trees with planted conifers occurred extensively in the 1960s and 1970s. Some of these woodlands are now being restored.
- Agricultural practices have led to simplification of landscapes and ecological isolation of woods. These include major losses of woodland in the past, removal of hedgerows, isolated trees and small patches of scrub in fields, deep drainage of adjacent arable fields, and cultivation hard up to woodland boundaries.

- Impact of air pollution and other environmental influences originating from distant sources. Locally sourced pollution from agriculture, industry and traffic – nutrient enrichment and chemical run-off or spray drift from adjoining agriculture – can impact on soil conditions, flora and fauna.
- Management of woodlands for pheasant rearing and shooting, and other game species can sometimes conflict with the biodiversity value of woodlands, however there is often compatibility between game management and managing the biodiversity of woodland where management is undertaken well.
- Climate change will result in changes to vegetation composition of woodland and the other species that use them.
- Economic factors have caused a decline in woodland management; competition from imported woodland products, poor quality timber and lack of knowledge of local hardwood markets has all contributed.

4 Current action

- National forestry policy includes a presumption against clearance of broad-leaved woodland for conversion to other land uses.
- Felling licences from the Forestry Commission (FC) are normally required for tree felling.
- Tree Preservation Orders can be applied to individual trees, or in rare cases, cluster of trees or woodland by the Local Authority.
- Further protection may be afforded by presence of species designated under the Wildlife & Countryside Act (1981). This act covers species such as bats and dormice.
- The Regional Woodland Strategy recognises the importance of semi-natural woodland and contains a number of specific actions, including targeting restoration and expansion activity to specific cluster areas. This information can be downloaded from: www.woodlandforlife.net
- Planning Policy Statement 9 (PPS9) On biodiversity and geological conservation makes specific recommendations on the protection of woodlands when considering planning applications.
- PPS 9 makes specific recommendations to aim for landscape scale management and refers to the use of hedgerows etc to link areas, this is highly relevant to woodland habitats.
- Around 40% of the Ancient Woodland Sites in Suffolk are designated as Sites of Special Scientific Interest (SSSI) (Beardall & Casey, 1995). One lowland mixed deciduous woodland in Suffolk includes habitats identified under Annex 1 of the EC Habitats Directive, old acidophilous oakwoods with *Quercus robur* on sandy plains.
- There are around 4950 ha mixed deciduous woodlands recognised as County Wildlife Sites in Suffolk. This designation protects from development but not from neglect, agricultural improvement or mis-management.
- Significant areas of Suffolk are included within agri-environmental schemes that target the isolation, fragmentation and neglect of natural habitats in the county.

- Significant areas of Suffolk woodlands are currently within forestry schemes which will aim to address isolation, neglect and deer browsing issues.

5 Targets

The targets established in this plan aim to maintain, restore and where possible expand the extent of lowland mixed native broadleaf woodland:

- Maintain the 2007 current extent and distribution of mixed deciduous woodland.
- Restore 7 hectares of mixed deciduous woodland on PAWS sites by 2010, 17 by 2015 and 27 by 2020.
- Achieve favourable condition or favourable recovering of 95% of the Sites of Special Scientific Interest mixed deciduous woodlands by 2010.
- Link existing woodlands by expansion or joining to other biodiversity habitat wherever possible and where this will not be detrimental to other habitats of biodiversity value.

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Policy & Legislation		
Ensure regional and local strategies make provision for lowland mixed deciduous woodland. Local Authorities (LA) should be encouraged to prepare Tree & Woodland Supplementary Planning Guidance. This will require consultation and adoption to carry weight.	2008	**Mid Suffolk**, LAs, SLOG, FC, SCC, NT and SWT.
Safeguard deciduous woodland from direct and indirect impact of development though development control processes (500m from Ancient Woodland). Ensure no loss of deciduous woodland to development except in cases of over-riding public need and in such cases losses should be compensated.	2007 and annually	**Mid Suffolk**, LAs, SCC, SWT, NE
Woodlands are threatened by fragmentation and permitted development, esnure that robust woodland policies are identified in LDF policies	2007 and annually	**Mid Suffolk**, LAs, SCC, SWT, NE
Site safeguard and management		
Promote management solutions to reduce the impact of arable farming on woodland	2007 and	**NE**, FWAG, SWT, NT, landowners/managers.

edges through agri-environrment schemes	annually	
Ensure that 95% of SSSIs are in a favourable and/or recovering condition by 2010.	2010	**NE,** Landowners/managers, FC & DI
Reduce damage by deer and other pests through co-ordinated management programmes.	2007 and annually	**DI**, NE, FC, AWP, FWAG, SWT, NT, & Landowners/managers
Implement relevant legally protected species and woodland BAP species plans through the integration of management requirements and advice.	2007 and annually	**FC,** NE, LAs, SCC, FWAG, SWT,Suffolk Bat Group, PTES, NT.
Promote the use of long term aims in management plans (25yr +) by woodland owners.	2007 and annually	**FC**, FWAG, NT
Ensure woodland in Local Authority ownership is FSC certified and all woodlands have management plans that take account of local biodiversity.	2008 and annually	**SCC**, LAs, FC.
Create at least three new woodland LNRs by 2010.	2010	**LAs**, SCC, NE, Greenlight Trust.
Create 200 ha of new mixed deciduous woodlands by 2010 use the ecological network maps and woodland mapping work (SBRC) to target creation.	2010	**LAs**, GLT, FC, SCC, WT, Landowners, NE
Research and monitoring		
Set up recording system to monitor progress of restoration on private PAWS sites.	2007	**FC**, NE, FC, LAs, SCC, SWT.
Update map of all ancient semi-natural woodland in Suffolk and prioritise areas for restoring with native species.	2007	**SBRC,** FC, LAs, SCC, NE, NT, SWT.
Establish extent and condition of lowland mixed broadleaf woodland (including PAWS) in Suffolk to feed into State of Nature Report for Suffolk.	2007	**SBRC**, FC, NE,
Action	**Achieve by date**	**Delivery partners**
Hold 3 woodland working group meetings each year with Suffolk Lowland Mixed	2007 and annually	**SCC,** FC, LAs, SWT, NE NT.

Deciduous Woodland on each agenda.		
Advisory		
Hold Woodland HAP events at woodland sites where management techniques and species monitoring are undertaken and examples of good practice can be demonstrated to woodland owners.	2007 and annually	**AWP**, FC, NE, SCC, LAs, GLT, SWT, NT, landowners/managers.
Communications and publicity		
Produce an annual Woodland Working Group report that's formatted to provide appropriate monitoring information for BARS.	2007 and annually	**SCC**, FC, LAs, SWT, NE.
Consolidate, refresh and develop literature to fill any significant gaps in advisory materials.	2007	**SCC**, FC, LAs, SWT, NE.
Promote the creation of at least three new woodland LNRs by 2010.	2010	**LAs**, GLT, SCC**.**
Raise awareness amongst planners of the value of BAP woodland habitats – engage with Suffolk Biodiversity Partnership Planning sub-group to achieve.	2007	**Mid Suffolk**, LAs, SCC, SWT, NE
Increase public understanding and awareness of the value of deciduous woodlands by hosting woodland management events. Aim to hold three events each year.	2007 and annually	**SCC**, FC, NE, AWP, DI, LAs, FWAG, NT, GLT.

Objectives currently not achievable by the plan partners:

Expand Ancient Woodland inventory to include those sites between 1-2 ha. This action is currently unachievable by the group.

The following organisations have written this plan and committed to delivering the actions:

Forestry Commission Simon Leatherdale, Rachel Riley and Trevor Wright
Natural England Patrick Robinson
Deer Initiative David Hooton
Suffolk Biological Records Centre Martin Sanford
National Trust Stuart Warrington
Mid Suffolk District Council David Mitchell
Suffolk Biodiversity Partnership officer Mary Norden
Gary Battell Anglia Woodfuel Project

Other consultees:
Suffolk Wildlife Trust Dorothy Casey
Green Light Trust Grenville Clarke
People Trust for Endangered Species
FWAG Tim Schofield
DCs (all except Mid Suffolk)
Suffolk Landscape Officers Group via Peter Holborn
Suffolk County Council Landscape Officer Phil Watson
County Archaeologists Keith Wade and Edward Martin
Local Authorities

References:

Beardall C and Casey D (1995) Suffolk's Changing Countryside, Suffolk Wildlife Trust.

Rodwell J S (1991) British Plant Communities Volume 1 Woodlands and Scrub, Cambridge Press.

Published: July 2007.

Mudflats

1 Definition

Mudflats are sedimentary intertidal habitats found in estuaries and other sheltered areas. The sediments generally consist of silts and clays with a high organic content. Mudflats frequently occur as part of the natural sequence of habitats between the sub-littoral zone and vegetated saltmarshes. Like most other intertidal areas they dissipate wave energy and thus have an important role to play in reducing the risk of erosion damage to saltmarshes and coastal defences, and of tidal flooding in low-lying coastal areas.

Mudflats are typically highly productive habitats supporting a high biomass but relatively low species diversity with few rare species. The precise nature of the biota reflects both the prevalent physio-chemical conditions and the degree of enrichment by, for example, sewage pollution.

Mudflats are very important habitats that support huge numbers of birds and fish. They provide both feeding and resting areas for internationally important populations of waders and waterfowl and also act as nursery areas for flatfish. The main importance of the mudflats to wildfowl and waders derives from their high productivity and consequent high biomass of prey items. They are also important as resting areas, a function that is enhanced by their relative inaccessibility and freedom from disturbance.

2 Current status

2.1 National

The total UK estuarine resource has been estimated as c. 588,000 ha, of which 55% is intertidal area, mostly mud and sandflats with a lesser amount of saltmarsh. Intertidal flats cover about 270,000 ha.

2.2 Local

There are approximately 3523 ha of mudflat within Suffolk, about 1.3% of the national resource. The table below summarises the areas of mudflat within the county.

Estuary	**Total mudflat Area (ha)**
River Blyth	214
River Deben	489
River Alde/Ore	541
River Butley	57
River Stour [1]	1534
River Orwell	663
Total	**3523**

[1] The River Stour is partly in Suffolk and partly in Essex, but here figures for the entire estuary are included.

3 Current factors affecting mudflats in Suffolk

Sea level rise; this 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 mudflat formation to keep pace with. Land claim, for urban and transport infrastructure and industry has removed about 25% of Great Britain's estuarine intertidal mudflats.

- Discharges from agriculture, industry and urban areas can create abiotic areas or produce algal mats, which may affect invertebrate communities living within mudflats.
- Coastal defence works, port development and dredging of shipping lanes may be affecting sediment cycles. Sediments are vital to the build up of mudflat.
- Fishing and bait digging can have an adverse impact on community structure and substratum. Suction dredging for shellfish may have significant impacts on important predator populations.
- Human disturbance affects bird populations' roosting and feeding areas.
- The introduction of non-native species such as cord-grass *Spartina anglica* has vegetated some upper-shore mudflat areas with important ecological consequences.
- Ownership of mudflat can have an influence on their management for conservation purposes. Much of Suffolk's mudflat habitat is owned by the Crown Estate.

4 Current Action

Legal Status

- The Environment Agency (EA) has a statutory duty to further conservation where consistent with purposes of enactments relating to their function. Suffolk's mudflats are protected the following designations; Alde-Ore Estuary SSSI, Deben Estuary SSSI, Minsmere-Walberswick Heaths and Marshes SSSI, Orwell Estuary SSSI, Stour Estuary SSSI (also a Special protection area (SPA) and wetland of International Importance, under RAMSAR).

Management, research and guidance

- The Alde/Ore, Blyth and Deben Estuaries have been assessed by the EA with the aim of developing a long-term strategic plan for flood defence. The EA concede that there are likely to be further losses of current mudflat habitat, whichever management plan is initiated for these estuaries. They accept their statutory obligations under the EU Habitats Directive and UK Biodiversity Action Plan to maintain and enhance the area and quality of saltmarsh habitat. If sea levels rise as predicted, maintenance of mudflat at present levels would require managed retreat schemes, as accretion of new sediment is unlikely to keep pace with rapid erosion.
- Local government planning guidelines identify the consultation required on wetland habitat development. The publications *Strategy for Flood and Coastal Defence* (MAFF/WO, 1993) and *Towards Best Practice for Coastal Zone Management* (Department of the Environment, 1996) also consider mudflat habitats in the light of proposed developments.
- Stour-Orwell Scheme of Management (European Marine Site).

5 Action Plan Objectives and Targets

1. Maintain total extent of habitat (3523 ha in 2006), there should be no net loss subject to natural change by 2010. This takes account of the dynamic nature of the habitat.

2. Expand their extent to 1992 levels (thus aim to increase by 50ha), by 2015, to offset any losses since then (year of adoption of Habitats Directive) due to a gradual squeeze.

3. Achieve condition, achieve favourable or recovering condition, by appropriate management XX, of mudflat systems currently in unfavourable condition by 2015.

6 Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure that mudflats of nature conservation importance are granted appropriate designation.	2007-2011	**NE**, SCC, SWT
Ensure the implementation of more environmentally sensitive coast protection measures through the Shoreline Management Plan and Suffolk Coast and Heaths Management Strategy.	2007-2011	**EA,** SCHU, SCDC, WDC, BDC
Investigate opportunities for mudflat creation as part of local flood defence schemes.	Annual	**EA**, DEFRA
Ensure that nature conservation interests and issues are fully represented in Local Development Frameworks and Community strategies.	2007-2011	**SCDC, WDC, BDC**, SCHU
SITE SAFEGUARD AND MANAGEMENT		
Ensure that, as far as possible, coastal defence or other construction works avoid any disruption of coastal or other natural processes, which might lead to the loss of mudflat.	Annual	**EA, NE**, SCDC, BDC, WDC, SCHU
Consider available mechanisms for the creation and management of mudflat when developing strategies for the management of coastlines.	On-going	**EA**, **NE**, **SCDC, BDC, WDC,** SWT, RSPB
RESEARCH AND MONITORING		
Identify suitable sites for creation of mudflat habitat. Complete study into regulated tidal exchange and seek sites for practical demonstration.	On-going	EA, **NE**, SCDC, WDC, BDC, SWT, RSPB, **SBRC**

Carry out a wildlife survey of mudflats, including NVC mapping, invertebrate survey and breeding and roosting birds. Pass all information to SBRC.	2007-2011	NE, SWT, RSPB, Local specialists, EA, SBRC
Collect information on changes in the extent and quality of mudflat resource in Suffolk.	2007-2011	**EA**, NE, SWT
Develop the use of remote sensing techniques and GIS to help monitor and predict the rate and extent of change.	2007-2001	**NE, EA, SBRC**
ADVISORY		
Encourage the appropriate management of mudflat through the dissemination of guidance material and advice, and information on grants/schemes, to key organisations and landowners and managers.	2007-2011	**SCHU,** EA, NE, DEFRA, FWAG, SWT, RSPB, NT
Promote and develop certain sites as demonstrations of successful saltmarsh management and creation, e.g. RSPB at Havergate Island and National Trust at Orfordness.	2007-2011	**RSPB**, **NT**, SWT
Maintain local or regional links to technical experts on the relationships between mudflat, nature conservation and flood defence.	2007-2011	EA, **NE**, SWT, RSPB
Encourage coastal defence management partnerships to participate in the implementation of the plan, emphasising mudflat as a flood defence resource.	2007-2011	**EA**, NE, SWT, RSPB, SCDC, WDC, BDC
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the nature conservation importance, wildlife, and mobile nature of mudflats and their value for a variety of interests including coastal processes, flood defence, fisheries and amenity and recreation.	2007-2011	**SCHU,** EA, NE, SWT, RSPB, DEFRA

Monitoring of progress:

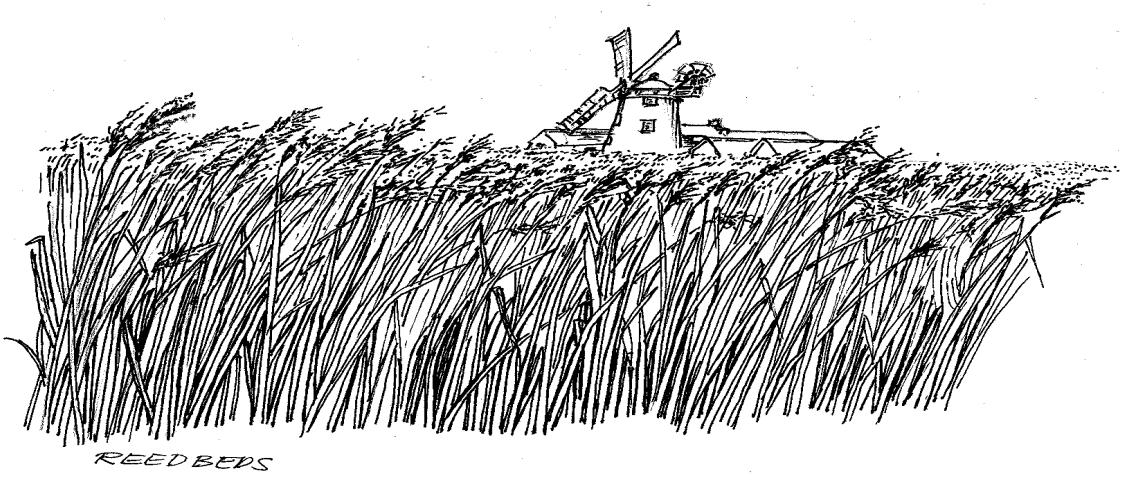
Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Consultation:
Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Ian Paradine
Natural England John Jackson and Darren Kidney
Suffolk County Council Sue Hooton
SWT Dorothy Casey
Suffolk Biological Records Centre (SBRC) Martin Sanford
Suffolk Coasts and Heath Unit Simon Hooton
Environment Agency Julia Stansfield
National Trust Grant Lohoar

Waveney District Council Sara Nicholls
Suffolk Coastal District Council John Davies
Babergh District Council Peter Berry
FWAG Diane Ling

Reedbeds



1 Definition

Reedbeds are a type of fen community dominated by reeds that primarily occur in the coastal regions of Suffolk. They provide breeding habitats for many rare and migratory birds and invertebrates, and important wintering habitats for birds from elsewhere in the UK. East Anglia contains the majority of the reedbeds that remain in the UK. The three largest reedbeds in England are all on the Suffolk coast.

Reedbeds are characterised by a dominance of Reeds *Phragmites australis* and occur in a wide range of permanently and periodically waterlogged habitats. Smaller stands occur around lakes and ponds, in estuaries and on saltmarsh, and along dykes and canals. They tend to incorporate areas of open water and ditches, and small areas of wet grassland and carr woodland may be associated with them.

There are strong links between this plan and that of bittern, water vole, and white-mantled wainscot. Most sites are a mix of reedbed, fen, eutrophic open water, and wet woodland. Sea-level rise issues that are also featured in plans for the coastal habitats affect many key reedbeds.

2 Current status

2.1 National

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.

Reedbeds are amongst the most important habitats for birds in the UK. They support a distinctive breeding bird assemblage including six nationally rare Red Data Birds; 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.* Five GB Red Data Book invertebrates are also closely associated with reedbeds including Red Leopard Moth *Phragmataecia castanaea* and a rove beetle *Lathrobium rufipenne*.

2.2 Local

The RSPB Reedbed Inventory suggests over 840 ha of reedbeds in Suffolk - almost 15% of the UK resource. RSPB are in the process of creating 147 ha of reedbed habitat at Lakenheath and SWT have created 36ha of reedbed at Hen reedbed reserve. However, the definition of reedbed used for this inventory was wider than that proposed here. There are five key sites in Suffolk that are over 20ha, totalling 430ha (Benacre Broad, Easton Broad, Minsmere, Shottisham & Ramsholt and Walberswick). This is 51% of the total area of reedbed in Suffolk.

Some 56 species of conservation concern (which meet the criteria for the UK Biodiversity Action Plan) in Suffolk depend fully or partly on reedbeds and associated fens. However further research is necessary to fully identify the status of many species.

3 Current factors affecting reedbeds in Suffolk

- The three largest reedbeds in Suffolk are threatened by coastal erosion and increasingly frequent saline incursion. The Suffolk CHaMP predicts that 445 hectares (over half of Suffolk's reedbed, and 72% of that within reach of the sea) will be lost in the next 30-100 years. At Benacre Broad, this has already led to a substantial reduction in the size and quality of the reedbed.

- Lack of biological information, particularly concerning reedbed invertebrates, hinders adoption of appropriate management Sites or parts thereof are still being lost to agricultural improvement, particularly the more vulnerable County Wildlife Sites. Current payment rates for established agri-environment and other grant schemes usually underestimate the expense of managing fen sites.

- Lack of appropriate management of some existing reedbeds leading to dehydration, scrub encroachment, and loss of open water (which is a vital component of the reedbed ecosystem for many of its key species). In particular, the wetter parts of reedbed systems are quickly lost if not actively managed.

- Lack of hydrological information which leads to inappropriate water level management as well as impacts from water abstraction and fluvial flooding which both threaten key species either through direct losses (desiccation and drowning), or by impairing management operations.

- Threat to species within some reedbeds from both drying out and fluvial flooding, either through direct losses or by imparing management operations.

4 Current Action

4.1 Legal Status

- All but two of the 12 largest reedbeds in Suffolk are designated as SSSIs and are also protected through such international designations as SPA and Ramsar sites. Eight of these sites are also designated as SACs. The two sites not recognised as SSSIs have a local designation as County Wildlife Sites.

- The Suffolk ESAs currently provide the principle mechanism for encouraging the management of reedbeds. Countryside Stewardship is able to support reedbed outside the ESA areas.

- The Environment Agency, Water Companies, Inland Drainage boards and Local Authorities have a statutory duty to further conservation where consistent with purposes of enactment relating to their functions.

- The Environment Agency is currently reviewing all consents that potentially impact on any of the European designated sites as a result of the Habitats Directive.

- The Environment Agency has written Water Level Management Plans for all SSSI where they are the drainage authority.

4.2 Management, research and guidance

- English Nature has management agreements with landowners of most of the SSSI sites.

- Minsmere, Walberswick and Lakenheath will benefit from a second three-year EU-funded LIFE project for reedbed management for Bitterns.

- RSPB have created 200 ha of new reedbed on ex-arable land at Lakenheath and Suffolk Wildlife Trust have also created several ha of new reedbed on the Hen river near Southwold over the last 5 years.

- All reedbeds that are not designated as SSSIs are County Wildlife Sites and management advice is given for these sites by Suffolk Wildlife Trust.

- RSPB/EN/Broads Authority/British Reed grower` s Association published a leaflet `*Reedbed Management for Bitterns*` and the management guide `*Reedbed Management for Commercial and Wildlife Interests Handbook*` to encourage the management and creation of reedbeds.

- All partners of the Wetland Working Group can provide advice to a range of reedbed owners on appropriate management, rehabilitation, extension and creation.

5 Action Plan Objectives and Targets

1 *Maintain existing overall area and quality as a minimum. This will require the creation of at least 445 hectares in the next 20 years to replace any losses through natural coastal processes, and should be as near as possible to existing sites on areas of low current nature conservation interest.*

2 *Enhance reedbed habitat and also manage for key reedbed species ensuring all main reedbeds contain habitat at all stages of the hydrosere, and have sufficient reed/open water interface*

3 *Develop new reedbeds away from the coast, particularly broad reed-dominated pool margins. Investigate post extraction management of gravel workings and flood-plain restoration schemes.*

5 *Ensure newly created reedbeds are targetted to areas of most benefit eg; linking separate blocks of habitat such as between Suffolk coast and reedbeds on the Broads and also mid Suffolk reedbeds to link with large reedbed creation projects on the edge of the Fens.*

6 Reedbeds: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure compliance with the Habitats Directive for designated reedbeds in all strategic plans, development plans and policy documents.	2004 2005 2006 2007	**EN, EA, SWT, RSPB, BA, LAs, SCHU, Defra**
Include reedbed targets in relevant strategic plans, management plans and policy documents.	2004 2005 2006 2007	**EA, EN, SCHU, LAs**
SITE SAFEGUARD AND MANAGEMENT		
Consider Waveney Ronds, Shottisham and Ramsholt, and Falkenham Creek reedbeds for SSSI designation, and consider other sites upon completion of reedbed audit.	2004 2005 2006 2007	**EN**, SBRC
Improve water quality for all key reedbeds, by reviewing all discharge consents and abstraction licences impacting upon SPA reedbeds by 2006.	2004 2005 2006	**EA**
Promote reedbed after-use for any mineral-extraction site in Suffolk County minerals plan.	2004 2005 2006 2007	**SCC** & Aggregate companies
Ensure all of Suffolk's ESAs offer effective incentives for reedbed management & creation.	2004 2005 2006 2007	**Defra**
Extend WLMP process to include non-SSSI key reedbed sites by 2005.	2004 2005	**EA, IDBs**
Ensure favourable condition of 90% of reedbeds using English Nature's methodology, particularly to safeguard against both drying out and excessive flooding particularly during the nesting season.	2004 2005 2006 2007	**RSPB**, EN, SWT, NT, SBRC, EA, BA, Defra
Identify sites above 10 ha and prioritise them for management.	2004 2005 2006 2007	**BAP Wetland Working Group**

RESEARCH AND MONITORING		
Commission research into ecology of key reedbed dependent species, particularly invertebrates and their habitat requirements.	2004 2005 2006 2007	**BAP Wetland Working Group,** Defra
Undertake strategic identification of feasible re-creation sites to complement Lifescapes Study area.	2004 2005 2006 2007	**SBRC**, EN, EA, RSPB, SWT, NT
Standardise monitoring of abiotic factors and establish guidance on water quality for reedbeds to ensure habitat quality. Identify gaps in this data and commission research.	2004 2005 2006 2007	**EA**, EN, SWT, RSPB, NT, BA
ADVISORY		
Actively seek to promote the creation of reedbed as a water treatment mechanism through consultation in planning process and general information dissemination.	2004 2005 2006 2007	**EA,** Water Companies
Advise landowners and mineral extraction companies about creation of reedbeds on existing agricultural land and mineral workings.	2004 2005 2006 2007	**RSPB**, SCC, SWT, Defra, EN, EA
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the importance of Suffolk's reedbeds, the threat of coastal erosion and flooding to them and the need to create new reedbeds in advance of predicted losses.	2003 2004 2005 2006 2007	**EA,** EN, RSPB, SWT, BA, NT, BA, SCHU

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 Bavents 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
POLICY AND LEGISLATION		
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**

SITE SAFEGUARD AND MANAGEMENT		
Agree management briefs for undesignated saline lagoons of conservation importance with a view to maintaining or improving their ecological value.	2005	**SWT, RSPB**
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	**EA**, EN, SCDC, WDC
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	**EA**, AW
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	DEFRA, EA, EN, SCDC, WDC, SWT, RSPB
RESEARCH AND MONITORING		
Identify suitable sites for creation of saline lagoons using the Lifescapes model.	2004	**SBRC, EN**, EA, , LAs, SWT
Carry out biennial macrophyte and invertebrate surveys of saline lagoons and nearby small brackish pools and ditches of key species.		SWT, SNS, SBRC
Carry out biannual surveys of the extent and quality of saline lagoons in Suffolk.	2005	EA, SWT, RSPB, SBRC
Develop the use of remote sensing techniques and GIS to help monitor and predict the rate and extent of change.	2005	**SBRC**, EA
ADVISORY		
Promote and develop certain sites as demonstrations of successful saline lagoon re-creation, i.e. National Trust at Orfordness, through open days.	On-going	**NT**
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the nature conservation importance of saline lagoons through open days or events.	2005	**SCHU,** EA, EN, SWT, RSPB, DEFRA,
Raise public awareness of the essential mobility of soft coasts and encourage multi-agency approach to coastal zone development and management.	2003	**SCHU,** EA, EN, SWT, RSPB,

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.

Natural Areas
Suffolk Coast Maritime

Current factors causing loss or decline
- Pollution of lagoons, especially nutrient enrichment.
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- Local increases in the coverage of water plants.

Current Action
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Objectives for the species
- Maintain and protect viable populations at all known localities in the county.
- 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.

Saltmarsh

Saltmarshes are highly productive habitats and are home to many invertebrates. They are areas with high plant diversity owing to the differing zones created between high and low water. Saltmarshes are important habitats for wintering and passage birds and in some areas, breeding waders. Historically, large areas of saltmarsh have been lost as a result of land claim.

1 Definition

Saltmarshes are areas of intertidal land colonised by halophytic plants i.e. plants adapted to high salinities and able to withstand immersion in seawater. They extend from the mean high water of neap tides to the mean high water of spring tides where only occasional inundations will occur. Saltmarsh occurs around coasts which have conditions suitable for the net accumulation of sediment and receive shelter from strong wave action. Species which are highly salt tolerant will be present along the lower pioneering edge of the marsh and will help to trap sediment. Further inland in the mid - upper marsh zone, more complex, species rich communities can develop. At the upper limits of the saltmarsh, transition communities may occur whose characteristics depend on the habitat type adjacent to the marsh and the physical characteristics of the transition zone, e.g. slope, presence of sea walls etc. Saltmarshes have traditionally been grazed and where this occurs vegetation will be shorter and dominated by grasses.

2 Current status

2.1 National

Saltmarsh is a relatively rare habitat in the UK with only around 40 000 ha remaining. A variety of factors are leading to the loss of around 100 ha per year nationally.

2.2 Local

Suffolk has 1107 ha of saltmarsh, which accounts for around 2% of the national resource. Between 1971 and 1998, 296ha of salmarsh are known to have been lost around the Suffolk coast. The table below summarises the areas of saltmarsh in Suffolk and indicates rates of loss. All of these estuaries are losing saltmarsh, the greatest loss being on the Stour estuary. The Deben estuary is also losing saltmarsh at a very significant rate.

Estuary	Total saltmarsh area (ha) 2006	Total saltmarsh Area (ha) 1998	Net change 1971-1998 (ha lost)
River Alde/Ore	334	257	8
River Deben	325	241	71
River Stour [1]	196	107	157
River Butley	105	87	9
River Blyth	73	63	5
River Orwell	74	54	46
Total	**1107**	**809**	**296**

(*Note: The apparent increase in saltmarsh area between 1998 and 2006 is due to a change in the survey method used, rather than an actual increase in the amount of saltmarsh).*

Pioneer vegetation on the Deben saltmarsh is only about 10% suggesting little accretion is taking place. Virtually all pioneer vegetation comprises of the introduced and invasive cord grass (*Spartina anglica*).

Suffolk saltmarshes are important for several nationally rare, scarce or threatened species of plant including the Dittander (*Lepidium latifolium*), Cord Grass (*Spartina maritima*) and Shrubby Seablite (*Suaeda fruiticosa*). As part of the estuarine ecosystem, saltmarshes help to support significant numbers of breeding waders such as Redshank and Oystercatcher and are grazed by wildfowl such as Wigeon and Teal. Twite spend the winter on Suffolk saltmarshes and are listed on the red list of Birds of Conservation Concern in the UK. The Deben Estuary is internationally important for the overwintering Dark-bellied Brent Geese which feed on saltmarsh. One of Britain's rarest land snails, the Narrow-mouth Whorl Snail (*Vertigo angustior*) (a Suffolk BAP species), occurs in the transition zone just above saltmarsh at Martlesham Creek, Deben Estuary.

3 Current factors affecting saltmarsh in Suffolk

- The main threats to saltmarshes in the region are associated with sea level rise. This 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 saltmarsh formation to keep pace with. Furthermore, the required saltmarsh retreat is prevented in many areas by embankments and floodbanks, which lead to a gradual squeeze of these habitats.
- Coastal defence works and dredging of shipping lanes may be affecting sediment cycles. Sediments are vital to the build up of saltmarsh.
- Port development and dredging, particularly on the river Stour have affected saltmarsh. These activities affect habitat directly but also sediment budgets and may cause loss of habitat though erosion.
- In-appropriately located managed retreat schemes may increase river flow. This may cause further erosion and alter sediment deposition.
- Pollution from agricultural runoff and sewage discharges can cause nutrient enrichment. Concern has been raised about industrial discharges in the

[1] The River Stour is partly in Suffolk and partly in Essex, but here figures for the entire estuary are included.

Brantham area of Stour Estuary and their effects on local saltmarshes. Oil pollution has been implicated in saltmarsh die-back and this may be a threat in the more industrialised Orwell and Stour Estuaries.

- Common cord grass (*Spartina anglica*) readily colonises mudflats and has been planted in the past to aid their stabilisation. This often produces extensive monoculture swards of little intrinsic value to wildlife and is considered a threat to bird feeding areas.
- Recreational activities such as walking and bird watching may disturb wader and wildfowl populations using the habitat. Footpaths allowing public access may cause or exacerbate erosion on sites. Water sports and boating on the estuary may disturb wildlife and increase wave action leading to erosion.

4 Current Action

4.1 Legal Status

- The Environment Agency (EA) and local authorities have a statutory duty to further conservation where consistent with purposes of enactments relating to their functions. All the Suffolk saltmarshes fall within Sites of Special Scientific Interest (SSSIs), and are also protected under Special Protection Area (SPA) under the 1979 EU Birds Directive and Ramsar designations under the 1971 Ramsar convention. In addition, parts of Alde/Ore Estuarine saltmarsh are located within the Orfordness - Shingle Street Special Area of Conservation (SAC), a National Nature Reserve (NNR) around Havergate Island and the Orfordness spit. The estuaries and their saltmarsh habitats are part of the Suffolk River Valleys ESA and the Suffolk Coast and Heaths Area of Outstanding Natural Beauty.

4.2 Management, research and guidance

- The Alde/Ore, Blyth and Deben Estuaries have been assessed by the EA with the aim of developing a long-term strategic plan for flood defence. The EA concede that there are likely to be further losses of current saltmarsh habitat, whichever management plan is initiated for these estuaries. They accept their statutory obligations under the EU Habitats Directive and UK Biodiversity Action Plan to maintain and enhance the area and quality of saltmarsh habitat. If sea levels rise as predicted, maintenance of saltmarsh at present levels would require managed retreat schemes, as accretion of new sediment is unlikely to keep pace with rapid erosion.
- The DEFRA Habitat Scheme has been taken up at two sites in the Alde/Ore Estuary, to re-create a total of 38.1 ha of saltmarsh by a managed retreat process. The work was carried out by the RSPB on Havergate Island and the National Trust at Orfordness**.** There has also been a managed realignment scheme at Trimley Marshes which has created 16.5 ha of intertidal saltmarsh.
- The Suffolk Coast and Heaths Management Strategy states a commitment to preventing further loss of intertidal habitat and where this does occur due to sea level rise, to replace these losses by creating new habitat.
- Managed grazing of saltmarsh has been reintroduced at Orfordness under ESA guidelines.

5 Action Plan Objectives and Targets

5.1 Maintain total extent of saltmarsh habitat (1107 ha in 2006), there should be no net loss subject to natural change by 2010. This takes account of the dynamic nature of the habitat.

5.2 Expand. Increase the area of saltmarsh in Suffolk by 50 ha by 2015. This will help to offset losses nationally in the recent past (100ha has been lost between 1992 and present) and to offset likely losses due to coastal squeeze.

5.3 Achieve condition - achieve favourable or recovering condition by appropriate management of XX hectares of saltmarshes currently in unfavourable condition by 2015.

6 Saltmarsh: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure that saltmarshes of nature conservation importance are granted appropriate designation.	2007-2011	**NE**
Ensure the implementation of more environmentally sensitive coast protection measures through the Shoreline Management Plan and Suffolk Coast and Heaths Management Strategy.	2007-2010	**EA,** SCDC, WDC, BDC,
Investigate opportunities for saltmarsh creation as part of local flood defence schemes.	Annual	**EA,** SCDC, WDC, BDC, DEFRA, SCHU
Ensure that nature conservation interests and issues are fully represented in relevant Local Development Frameworks and Community Strategies.	2007-2011	**SCDC, WDC, BDC**
SITE SAFEGUARD AND MANAGEMENT		
Ensure where possible, coastal defence or other construction works avoid any disruption of coastal or other natural processes which might lead to the loss of saltmarsh.	Annual	**EA**, NE, SCDC, WDC, BDC
Consider available mechanisms for the creation and management of saltmarsh when developing strategies for the management of coastlines, including the use of dredged material.	Annual	**EA, NE,** SCDC, WDC, BDC, SWT, RSPB, HHA
Create saltmarsh on seaward side of retreated defence line at Kessingland Levels, as identified in Suffolk SMP.	2010	**EA**, WDC, NE, SWT, RSPB, landowners.
RESEARCH AND MONITORING		
Identify suitable sites for recreation of saltmarsh habitat. Complete study into regulated tidal exchange and seek sites for practical demonstration.	On-going	**EA, NE**, SCDC, WDC, BDC, SWT, RSPB, HHA

Carry out a wildlife survey of saltmarshes, including NVC mapping, invertebrate survey and breeding and roosting birds.	2007-2010	EN, SWT, RSPB, Local specialists, SCDC, WDC, BDC, SBRC
Collect information on changes in the extent and quality of saltmarsh resource in Suffolk.	2007-2011	**EA**, NE, SWT, RSPB, SBRC
Research saltmarsh formation and erosion including estuarine dynamics and sediment cycles, to identify physical factors affecting the habitat.	2007-2011	**EA**, NE
ADVISORY		
Encourage the appropriate management of saltmarsh through the dissemination of guidance material and advice on grants/schemes, to key organisations and landowners and managers.	2007-2011	EA, **NE**, FWAG, SWT, RSPB, NT
Promote and develop demonstrations sites and good examples of creation, eg; Havergate Island and Orfordness.	2007-2011	**RSPB, NT**
Establish local or regional links to technical experts on the relationships between saltmarsh, nature conservation and flood defence.	2007-2011	**NE,** EA, , SWT, RSPB, SCHU
Encourage coastal defence management partnerships to participate in the implementation of the plan, emphasising saltmarsh as a flood defence resource.	2007-2011	**EA, NE**, SWT, RSPB, SCDC, WDC, BDC, SCHU
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the nature conservation importance and mobile nature of saltmarshes and their value for coastal processes, flood defence, fisheries and amenity and recreation.	2007-2011	**SCHU,** EA, NE, SWT, RSPB, DEFRA.
Develop education activities relating to saltmarsh and hold education event.	2007-2011	**SCHU, SWT**

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Consultation:
Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Ian Paradine
Natural England John Jackson and Darren Kidney
Suffolk County Council Sue Hooton
SWT Dorothy Casey
Suffolk Biological Records Centre (SBRC) Martin Sanford
Suffolk Coasts and Heath Unit Simon Hooton
Environment Agency Julia Stansfield
National Trust Grant Lohoar
Waveney District Council Sara Nicholls
Suffolk Coastal District Council John Davies
Babergh District Council Peter Berry
FWAG Diane Ling

Coastal sand dunes

1 Definition

Coastal sand dunes develop where there is an adequate supply of sand (sediment within the size range 0.2 to 2.0 mm) in the intertidal zone and where onshore winds are prevalent. It is critical that the beach plain is large enough so that the surface dries out between high tides. The dry sand is blown landwards and deposited above high water mark, where it is trapped by dune-building grasses, which grow up through successive layers of deposited sand.

Sand dune vegetation forms a number of zones, which are related to the time elapsed since the sand was deposited, the degree of stability and the local hydrological conditions. Embryonic and mobile dunes occur where sand deposition is occurring and in blow-outs. The vegetation is typically species-poor, usually dominated by Marram grass (*Ammophila arenaria).*

Semi-fixed dunes occur where the rate of sand accretion is slower, but still has predominantly a bare sand surface. Marram grass is still a common component of the vegetation, but there are an increasing number of other species.

Fixed dune grassland has largely closed swards, with little significant accretion, a stable surface and some soil development. Dunes acidified due to leaching develop into dune heaths, which are usually dominated by heather (*Calluna vulgaris*). Acidic dunes that are heavily grazed by rabbits may support acid grassland flora and lichen communities. Dune slack vegetation occurs in wet depressions between dune ridges. Fixed dunes and dune heath are particularly threatened habitats and are regarded as priorities under the EC Habitats Directive.

2 Current status

2.1 National

There are approximately 56,000 hectares of sand dunes in the UK, with 11,897 ha in England.

2.2 Local

There are 66 hectares of sand dunes in Suffolk (0.1% of the UK resource). Due to its limited extent in Suffolk, the habitat is considered to be of local significance only. Suffolk sand dunes are important for a nationally scarce moss, *Campylium polyganum*.

3 Current factors affecting sand dunes in Suffolk

- The main threats to sand dunes in the region are associated with sea level rise. This 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 sand dune formation to keep pace.
- Sand dunes are usually readily accessible. Excessive pedestrian use may cause or exacerbate erosion.
- Sea defence structures and artificial stabilisation measures such as fencing can result in sediment starvation down-drift.

4 Current Action

Legal Status

- Almost all Suffolk sand dunes fall within SSSIs, or County Wildlife Sites.
- The Suffolk sand dunes fall within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty and the area designated as Heritage Coast.
- 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 sand dunes.

4 Management, research and guidance

- The Shoreline Management Plan for the Suffolk Coast is currently under revision.
- The Suffolk Coasts and Heaths Management Strategy has a priority objective of safeguarding and extending the area of semi-natural habitats with an associated action of extending the area of coastal habitats and heathland through management or where necessary through acquisition by appropriate bodies.

5 Action Plan Objectives and Targets

1 *Protect existing area and nature conservation status of sand dunes from further losses to anthropogenic factors. Management may be required especially in areas holding rare species.*

2 *Offset any losses since 1992 (year of adoption of Habitats Directive) and expected losses due to natural causes over 20 years by allowing new dunes to accrete and by allowing mobile dune systems to move inland.*

3 *Improve knowledge of extent, quality and current level of threat to Suffolk sand dunes.*

4 *Promote the importance of sand dunes.*

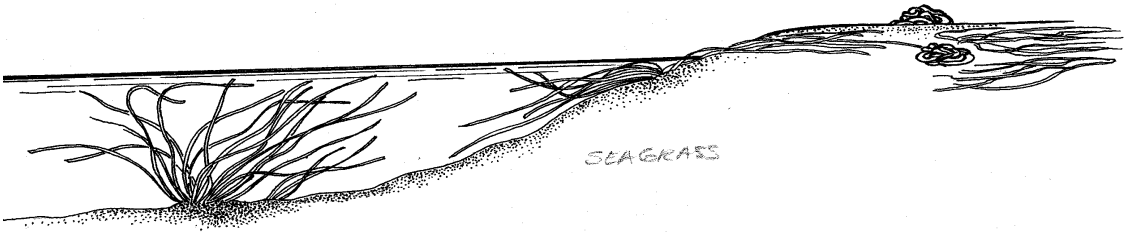
6 Sand dunes: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure that sand dunes of nature conservation importance are granted appropriate designation where this has not already been done.	2005	**EN**, SCC, SWT
Ensure the implementation of more environmentally sensitive coast protection measures through the Shoreline Management Plan and Suffolk Coast and Heaths Management and ensure these documents make reference to coastal sand dune habitats.	2005	**EA,** EN, SCDC, WDC
Ensure EN/EA Coastal Habitat Action Management Plans (CHAMPs) identify the scale and impact of likely potential losses of sand dunes and set area targets for habitat creation that recognises both the need for replacement habitats and delivery of UK biodiversity targets.	2005	**EA, EN**, RSPB, SWT
Develop and promote planning policies and procedures which will aim to prevent further losses of sand dune habitat to development and exploitation and minimise them where they are unavoidable.	2005	**SCDC, WDC**
SITE SAFEGUARD AND MANAGEMENT		
Agree management briefs for all sand dunes of conservation importance with a view to maintaining or improving their ecological value.	2005	**EN**, SWT, RSPB
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 sand dunes.	On-going	**EA**, EN, SCDC, WDC
RESEARCH AND MONITORING		
Identify suitable sites for landward migration of sand dunes and produce map.	2004	**EN, SBRC,** EA, SCDC, WDC, SWT, RSPB
Collect information on changes in the extent and quality of sand dune resource in Suffolk.	2005	EA, EN, SWT, RSPB, SBRC
Produce GIS maps to help monitor and predict the rate and extent of change locally.	2005	**SBRC,** EA, EN

ADVISORY		
Encourage the appropriate management of sand dunes through the dissemination of guidance material and advice, and information on grants/schemes, to key organisations and landowners and managers.	2005	EA, EN, DEFRA, SWT, RSPB, NT
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the nature conservation importance of sand dunes, coastal processes, and their value for a variety of interests including amenity and recreation using open days and guided walks.	2005	**Coastal HWG**

Sea-grass beds (*Zostera* spp.) Habitat statement

Inter-tidal sea-grass beds are an important food source for a number of bird species including brent goose and widgeon. Zostera species are higher plants with strap-like leaves and inconspicuous flowers, occurring only on the female plants. Sea-grass can be colonised by a range of micro and macro algal species. In some areas the habitat is an important nursery area for flatfish.



Current status
Three species of seagrass (*Zostera*) occur in the UK. These are; *Z. noltii*, the dwarf eelgrass, which is found highest on the shore; *Z. angustifolia*, the narrow-leaved eelgrass which if found on the mid to lower shore and seagrass, *Z. marina*, which is predominantly sub-littoral. All thee species are considered to be scarce. Preferred habitats are intertidal or shallow sub-tidal sands and mud which are sheltered from significant wave action. Eelgrass is distributed sparsely around the UK's coastline with populations clustered on less exposed coasts and in estuaries.

The only location where sea-grass beds are known to exist in Suffolk is in the Estuary of the River Stour where an area covering 0.25km^2 was known to exist around 1997. The area is designated as a SSSI and Special Protection Area (SPA) on account of its wading bird populations.

Natural Areas
Suffolk Coast Maritime

Current factors causing loss or decline
- *Zostera* habitats are limited to intertidal sites throughout the action plan area. It is likely that the turbid nature of the estuarine water precludes any sub-tidal distributions.

- Compared with other parts of the UK, East Anglian estuaries generally receive enhanced nutrient loadings from the fresh water catchments. While this does not always have an environmental impact, where suitable solid substrates occur, blanketing growths of *Enteromorpha* can occur. Such growths could potentially impact on the *Zostera* bed in Suffolk.

Current Action
A viral infection decimated many of the *Zostera* beds around the UK coastline during the 1930s but the situation is not thought to have worsened recently. The *Zostera* population in the Stour Estuary was mapped by survey teams of the Environment Agency during 1992 and 1993. The beds are not thought to have regenerated since the viral infection and little remains of them. The Environment Agency plans to re-survey the areas in the Stour Estuary in 2004. Anecdotal evidence exists that *Zostera* is present on Nacton foreshore, River Orwell and also at Covehithe Broad in the north of the county.

Objectives for the species
- Maintain and where possible enhance seagrass beds in Suffolk

Proposed action
- Re-survey area of seagrass in Stour estuary in 2004
- Determine presence of seagrass at Nacton and Covehithe during 2005-6

Little can be done restore the habitat in Suffolk estuaries through direct local action, due to the combined effects of viral infection and nitrate enrichment. The action plan for seagrass beds has thus been replaced with this statement. Monitoring of the Stour Estuary will continue and if the habitat shows signs of a natural recovery, the plan can be resumed.

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Traditional Orchards

1 Definition of habitat

a) Ecological
Traditional orchards are the products of historic land management systems, and represent a vegetation structure rather than being a particular plant community. In Suffolk it seems likely that this structure comprises mostly large, mature or over mature open-grown fruit trees at various densities, in a grazed mown or uncut grassland, but other structures, including hedges, may be present .
b)Horticultural
A mixed plantation of fruit (and/or nut) tree varieties (or species), which may include planted hedges, with trees propagated on traditional rootstocks, or on their own roots, and grown as coppice (in the case of nuts especially), half standards or standards.

This ecosystem is likely to be of interest for invertebrates (especially the saproxylics), epiphytes, lichens, bryophytes, fungi, bats as well as Bullfinch and Lesser Spotted Woodpecker, Song Thrush and Spotted Flycatcher.

2 Current status

National
The UK BAP review 2005 estimated that there were 28000 ha of traditional orchards in England based on Ordnance Survey area minus area of commercial orchards in census of 2000 defined as intensive (84%) by lack of fully grassed orchard floor (Central Science Laboratory data).

Historical data gathered from England show that over the whole country orchard area has declined by 57% since 1950

Local

Based on mapping comparative areas of orchards on 1920 OS mapping and modern data it has been possible to scope the number of potential remnant traditional orchard sites. The number of sites in 2007 is estimated at 271 with an estimated area of 81.14 ha.

However, this work is at an early stage and there is a great deal of scope for follow up surveys.

In addition the specific character of orchards both in and within Suffolk appears to be highly variable. Across England as a whole traditional management styles and practices are extremely varied and within Suffolk there is some evidence to suggest this habitat falls in to several types dependent largely on soil type and economic factors.

i. High Suffolk Clayland
ii. Fenland
iii. Coasts and heaths
iv. South Suffolk

Although it is expected that a range of species (see section one) is associated with this habitat there is no direct evidence of this locally because the habitat has not been recognised and specifically surveyed. Also because the sites are small records any records from orchards are not necessarily tied to that site

Natural Areas

Traditional orchards occur in all natural areas of Suffolk although the largest number are found in the Claylands

3 Current factors affecting the species or habitats

This habitat is generally found in small patches within or adjacent to settlement therefore it is extremely susceptible to piecemeal loss from construction projects and conversion to gardens or pony paddocks

All orchard production is under considerable commercial pressure and traditional orchards are less economically viable in the current market place. However there has been some recent change with an increasing area of organic production and attempt to market some traditional varieties more aggressively. However the old small orchards especially in the claylands are under severe pressure.

Site management issues:

Neglect of trees and inappropriate pruning

Inappropriate grazing, and/or lack of tree protection from grazing animals

Poor management of grassland around the trees

Failure to replace trees as they are lost

4 Current action

Action has been limited to some initial mapping work by SBRC so far.

5 Targets

Maintain current extent as at 2007 by 2010.

Expand the habitat in Suffolk creating two new sites (of local genetic stock) by 2010.

Improve condition of one traditional orchard sites annually by implementing appropriate management.

Locate, identify and record sources of clonal material of local and traditional top fruit and nut cultivars, (following, or in parallel with, the identification and surveying of orchard sites in the county), that can be made available for propagation, and the planting of new traditional orchards.

Identify varieties and cultivar clones, traditional management methods and orchard structures that favour orchard habitat biodiversity in the county (to provide data for future advise and guidance on new planting and habitat restoration.

6 Actions

Action (apply SMART Specific, Measurable, Achievable, Realistic, Timebound) approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Policy & Legislation		
Develop LDF policy for traditional orchards that can be used by District Councils in their LDFs in Suffolk.	2007	SLOG, DCs, SCC, NE.
Site specific allocations should be checked against habitat data for traditional orchards.	2007-2010	**SCC,** DCs.
Site safeguard and management		
Integrate protection of this habitat in to the planning system at district level	2007	SCC SLOG DC's
Ensure that traditional orchard BAP data is available to planning officers through GIS layers provided by SBRC to DCs.	**2007**	SBRC, DCs.
Include data on the distribution of this habitat in the En Check system	2007	**SCC**
Develop draft criteria for Trad orchard County Wildlife Sites panel. (CWS) panel.	2010	**CWS panel** & EEAOP
Safeguard Traditional orchards using Tree Protection Orders where required.	2007 and ongoing	**Mid Suffolk DC**, DCs.

Research and monitoring		
Develop a pilot scheme to assess the type and the extent of the habitat in each Joint Character Area in Suffolk, drawing from best practice in other parts of the region.	2007 – 2010 annually	**SWT**, SCC SBRC
Identify a programme of survey needs engaging local volunteers in survey and identify and apply for funding if needed.	2007 ongoing	**SWT**, EEOAP, SCC SBRC
Form a specialist team for in depth	2008	**SBRC Recorders,**

survey of selected Traditional orchard sites target known areas of known potential development (this team could also be used for wood pasture)		Suffolk bat group**?**
Advisory		
Provide advice to owners and managers of traditional orchard concerning appropriate management	2007 -on-going	**FWAG**, DCs, NE, SCC, landowners and managers.
Communications and publicity		
Devise a launch event for this HAP that engages the public.	Autumn 07 or spring 2008	FWAG **SCC** EEAOP , SWT.
Support and work in partnership with other BAPs in the East Of England to support community lead traditional orchard initiatives.	2007 – 2010 Annual	SCC, SWT, EEAOP..

NB Lead partners who lead the particular action are in bold.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Objectives currently not achievable by the plan partners:

None identified.

List of organisations that have been or will be consulted regarding this plan and have agreed to aim to deliver their organisations commitments

Paul Read – Independent Expert
Phil Watson Suffolk County Council
Andrew Murray- Wood Suffolk County Council
Mary Norden Suffolk Biodiversity Partnership
Peter Holborn Suffolk Landscape Officers Group
Diane Ling FWAG
SBRC Martin Horlock

Martin Sanford Suffolk Naturalists and SBRC
SWT Dorothy Casey
RSPB Simon Tonkin
SCHU Lynn Allen

Others groups consulted:

Greenlight Trust
District Councils
EEOAP Martin Skipper

Urban Habitats

Urban habitats are very diverse. They may include fragments of ancient woodland, grassland and wetlands within urban areas along with industrial land, urban commons, gardens and buildings. These can offer unique habitats, which may support uncommon species and unique assemblages of plants and animals.

1 Definition

Suffolk is not generally thought of as an urban county. However, there are a many built up areas that contain a variety of valuable urban wildlife sites. These include SSSIs, Local Nature Reserves and County Wildlife Sites.

However, nature conservation in towns and cities is not only about providing for wildlife. Wildlife can also play an important part in people's life and therefore should not be restricted to nature reserves and the countryside. As 54% of people in Suffolk live in towns (with populations of over 10000) the need for a healthy environment in urban areas is particularly important. Parks, cemeteries, canals, allotments, 'derelict' land and gardens can support a huge range of animals and plants and play a crucial role in maintaining the wildlife resource of towns and cities. These places are accessible to all age groups and cultures and can provide ideal places to learn about biodiversity. The character of urban areas is continually altering, through landscape improvements, development and the changing demands on land. If we are to retain the wildlife in urban areas, it must be recognised, valued, protected and managed as a vital component of the townscape.

2 Current status

2.1 Local

Urban areas are generally defined as having a population of over 10,000. However, many actions in this plan refer to people and wildlife and therefore can include any settlement where there is potential for wildlife, education and access to wild places. The major urban area in Suffolk is in the south east of the county consisting of Ipswich and associated towns. The other major urban areas are Lowestoft, Bury St Edmunds, Newmarket and Haverhill. Many of the larger market towns such as Stowmarket and Sudbury also have urban wildlife habitats. There is also pressure for additional housing allocations throughout the county, which will substantially increase the size of some towns and villages.

Within towns and villages the wildlife character is diverse and reflects the surrounding landscape as well as the unique environment arising from dense development, historic land use, industry and the influence of people. 'Urban habitats' can include:

i. **Relic natural systems:** for example - veteran trees, rivers, brooks and springs**.**
ii. **Encapsulated countryside:** enclosed 'semi-natural' habitats such as unimproved grassland, heath, hedgerows and ancient woodland. In some cases these are associated with former historic parks that are now encapsulated within urban areas.
iii. **Managed habitats:** Park grassland, road verges, gardens, allotments, churchyards, hospital grounds and street trees, that reflect intensive land-use.
iv. **Man-made habitats:** which **support 'urban' plant and animal assemblages,** such as urban commons, industrial land, railway sidings, buildings and walls. Although these habitats do occur in Suffolk they form a relatively small percentage of the urban wildlife habitats and are principally found in Ipswich and Lowestoft.

There are number of species associated with urban habitats that are subject to national and

local biodiversity action plans. These include song thrush, stag beetle and pipistrelle bat. In addition there are a number of other species which, would not normally occur in Suffolk, which have taken advantage of urban sites. These include black redstart, which nest on old industrial buildings in Lowestoft and the colony of kittiwakes that nest on artificial ledges in Lowestoft harbour.

There is relatively good information on the extent, distribution and value of these urban habitats and the species. SSSIs, Local Nature Reserves and County Wildlife Sites identify the majority of the sites of high ecological interest within urban areas. However, the value of urban habitats for amphibians and reptiles has only recently been fully appreciated and further County Wildlife Sites have been designated during the last year. An Urban Wildlife Report was prepared for Ipswich Borough Council in 1992. Wildlife Audits of Haverhill and Bury St Edmunds were prepared by Suffolk Wildlife Trust for St Edmundsbury Borough Council in 1996. However there has not been any countywide audit of urban habitats. Suffolk Wildlife Trust ran an urban wildlife project in Lowestoft between 1986 and 1992 and the Trust started a three year Community Wildlife Project in Haverhill and Bury St Edmunds in 1996.

2.2 Natural areas

Urban habitats occur within all natural areas.

3 Current factors affecting the habitat in Suffolk

- Lack of up to date information on the whole spectrum of urban wildlife resources.
- Poor perception of site value - especially open and disturbed ground. This is exacerbated by the perception that the development potential for sites is more important than the wildlife potential.
- Conflicting pressures for land use and the consequent loss of habitat. Many urban sites are subject to existing outline planning permission for development.
- Changes to planning policy that encourage development of brownfield sites may increase the pressure on the remaining urban wildlife sites.
- Inappropriate management of valuable habitats to create 'tidy' landscapes.
- Lack of management of wildlife sites, often due to numerous small and dispersed sites increasing costs.
- Disturbance, trampling and heavy use on sensitive sites.
- Lack of buffer zones to protect existing urban wildlife sites.

4 Current action

- Local authorities play a major role in urban nature conservation across Suffolk. Site protection, wildlife management and maintaining a diversity of linked natural networks to enhance biodiversity have been clearly defined in PPG9, and local authorities help meet these responsibilities in urban areas through:

i. Protection of sites and wildlife features. There a number of Local Plan policies acknowledging and protecting wildlife in urban areas at the District level
ii. Strategic land use allocation.
iii. Maintaining up-to-date scientific information on urban natural resources.
iv. Minimising the impacts of development on biodiversity.
v. Management of wildlife sites and green open space.
vi. Declaration of statutory Local Nature Reserves in urban areas - there are currently 8 Local Nature Reserves in Suffolk that are within urban areas.
vii. Habitat protection and creation in relation to development proposals.
viii. Setting up an Environmental Appraisal process (to include biodiversity) to look at sites and policies when updating Local Plans.

- Several districts and boroughs have Countryside Ranger Services that deal with policy issues, management of specific sites and are involved in community participation and education in urban areas which can lead to increased awareness and 'ownership' of wildlife sites by local communities. Suffolk County Council also manages Country Parks in some urban areas, which provide a base for information and education about biodiversity.

- There are a number of conservation volunteer teams based in urban areas of Suffolk. Greenways Project and Gipping Valley Project volunteers work along the valleys and the urban fringes of Ipswich. Suffolk Wildlife Trust volunteer teams from Ipswich and Lowestoft also work on urban sites but concentrate their work on trust reserves.

- Ipswich Wildlife Group manage many urban wildlife sites within the town and promote a wide range of urban wildlife initiatives including allotment forestry, brimstone and buckthorn project, reedbed rehabilitation and river corridor restoration.

- Suffolk Wildlife Trust's "Wildlife on Your Doorstep" project is a three year project (started in August 1999) funded by the National Lottery Charities Board which uses environmental arts and a community development approach to stimulate and support community environmental projects in the urban areas of Haverhill, Bury St Edmunds, Newmarket, Mildenhall, Brandon, Sudbury and Great Cornard. A parallel two year project will start in Lowestoft in August 2000.

5 Action plan objectives and targets

1. To ensure biodiversity issues contribute significantly to the development of sustainable green towns and cities.

2. To develop up-to-date and accessible information on urban ecological resources. To maintain and enhance the value and integrity of key wildlife sites, wildlife features and strategic natural networks across urban areas

3. To increase awareness and understanding of the value and management of the range of 'urban' habitats, especially those supporting key populations of important species.

4. To provide accessible natural open space for environmental education and the informal enjoyment of nature within 300m of every home.

5. To stimulate local action to benefit wildlife, through LA21 and other community initiatives.

6 Proposed local action with lead agencies

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
All reviewed Local Plans or Supplementary Planning Guidance (e.g. Nature Conservation Strategy) to include the following: i. The identification and protection of statutory wildlife sites, RIGGS, natural networks and wildlife features within urban areas. ii. Retention, management and enhancement of habitats related to new developments, through planning agreements. iii. Mitigation / replacement of lost habitats to maintain net ecological resource (identifying truly re-creatable habitats versus irreplaceable habitats). iv. Positive management of land within LA ownership. v. Provision of Local Nature Reserves and accessible natural open space to recommended levels (English Nature 1996: A Space for Nature). vi. Statement of intent to support SBAP targets.	LAs, GOER, DETR, EN, EA, all Local Plan consultees	*	*	*	*	*
Develop and implement a long term strategy for land use and land management in all major urban areas - to maintain and improve natural networks of wildlife sites and green space. Target: As supplementary planning guidance for next Local Plan Review or by 2004.	LAs, SWT, CMPs	*	*	*	*	*
Lobby Town and Country Planning Institute to include biodiversity issues / ecological design / wildlife law into planners' syllabus.	LAs	*	*	*	*	*
B. Site safeguard and management						
Suffolk Biological Centre to annually update planning departments on 'County Wildlife Sites' which hold key habitats and species (priority BAP species and habitats, protected species etc.) in urban areas.	SBRC, LAs	*	*	*	*	*
Continue to survey and identify new County Wildlife Sites where appropriate.	SWT, SCC	*	*	*	*	*

ACTION	KEY LOCAL PARTNERS	2000	2001	2002	2003	2004
Identify and declare urban Local Nature Reserves (biological and geological) to above recommended minimum levels of 1ha per 1000 population.	LAs, EN	*	*	*	*	*
Increase levels of accessible natural greenspace and educational sites in areas of identified deficiency, to recommended minimum standards (EN 1996).	LAs, CMPS	*	*	*	*	*
Identify and implement at least one habitat creation and restoration project per year across the county to improve degraded habitats along natural networks of wildlife sites and green space. For example wetland/river restoration.	LAs, EA, SWT,	*	*	*	*	*
Develop management plans for all local authority owned urban wildlife sites (with County wildlife Sites as priority) by 2004.	LAs, SWT,IWG	*	*	*	*	*
Target owners of all urban wildlife sites (with County Wildlife Sites as priority) for advice on land management for biodiversity.	LAs, CMPs, FWAG	*	*	*	*	*
Support/establish volunteer teams and support local communities in carrying out conservation work in urban areas.	SWT, LAs, IWG	*	*	*	*	*
Promote the management of school grounds for wildlife and learning about biodiversity.	SCC, LAs, SWT	*	*	*	*	*
C. Advisory						
Hold a county / regional conference for urban land managers and conservation organisations about biodiversity and best practice on site management and public participation.	SWT, SCC, LAs		*			
Produce guidance on best practice ecological design for planners and developers, including species protection, habitat / species requirements, biodiversity, surface water treatment, lighting etc.	LAs, EN, SWT, EA, SCC		*			
D. Future research and monitoring						
Survey urban areas to identify green space and green corridors in addition to SSSI and CWS designations.	LAs, SWT		*	*	*	*

ACTION	KEY LOCAL PARTNERS	2000	2001	2002	2003	2004
Undertake public surveys of 'urban' species (particularly Biodiversity Action Plan species associated with urban areas) and habitats involving schools, community groups and the general public.	LAs, SWT, CMPs	*	*	*	*	*
Assess levels of natural and accessible open space, identify deficiency areas (as defined using EN criteria) and monitor changes in levels	LAs			*	*	*
E. Communications and publicity						
Set up demonstration projects in accessible areas, showing and interpreting land management (coppice, hedge laying, heathland / grassland restoration and hay making etc.). For example in town centre formal parks and LNRs.	LAs, CMPs, IWG	*	*	*	*	*
Seek opportunities for increased promotion and participation in urban wildlife, through interpretation of sites (especially LNRs and County Wildlife Sites), events, publicity, guided walks etc.	LAs, CMPS	*	*	*	*	*
Develop local groups (or strategies for engaging the local community) for all LNRs and LA owned CWSs to promote better communication between users and managers, especially regarding land management.	LAs					
Develop a network of voluntary wildlife wardens, within urban areas, to increase communication between the public and site managers. Provide 'training' and liaison with appropriate local authority conservation staff.	LAs, SWT		*	*	*	*
Promote biodiversity issues within all existing LA21 groups, to offer opportunities for local people to develop urban wildlife projects and integrate biodiversity into other community initiated plans.	LAs,	*	*	*	*	*
Local authorities to establish wildlife forums (urban or district wide) to develop local wildlife priorities and feedback on action for biodiversity.	LAs	*	*	*	*	8

Wet woodlands

Wet woodlands occur on land that is waterlogged or seasonally waterlogged soils. They are frequently associated with river valleys, flood plains, flushes and plateau woodlands.

1 Definition

Wet woodlands can be found in a variety of situations where a high water table results from poorly drained or seasonally wet soils. Wet woodland habitats may be identified as containing a range of National Vegetation Classification (NVC) stand types. In Suffolk the following are likely to occur.

- Grey willow - common marsh-bedstraw woodland *Salix cinerea - Galium palustre* woodland (W1),
- Grey willow - downy birch - common reed woodland *Salix cinerea - Betula pubescens - Phagmites australis* woodland (W2)
- Downy birch – purple moor-grass woodland *Sphagnum* sub-*community betula pubescens - Molinia caerulea* woodland*: Sphagnum* sub-community (W4c)
- Alder - greater tussock sedge woodland *Alnus glutinosa - Carex paniculata* woodland (W5)
- Alder - common nettle *Alnus glutinosa - Urtica dioica* woodland (W6)

These stands are found on flood plains as successional habitats on fens and mires, along rivers and streams, by flushes and in peaty hollows. The wet woodlands on the Boulder Clay in Suffolk tend to be considered as part of the ash - field maple - dog's mercury woodland *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodlands (W8 in the NVC) and are excluded from this habitat plan. These will form part of the wood pasture/ parkland and mixed woodland plans.

The habitat supports a number of important BAP species in Suffolk. It is believed to be of primary importance for the weevil *Melanapion minimum* and a jumping weevil *Rhynchaenus testaceus.* It is of subsidiary importance for two birds (spotted flycatcher *Muscicapa striatus* and the song thrush *Turdus philomelos*) and the lesser horseshoe bat *Rhinolophus hipposideros*. Wet woodlands are believed to be used by a number of other BAP species that include a leaf-rolling weevil *Byctiscus populi*, the liverwort veilwort *Pallavicinia lyelli*, barbastelle and pipistrelle bats (*Barbastella barbastellus* and *Pipistrellus pipstrellus*) and the otter *Lutra lutra.*

2 Current status

2.1 National

This habitat type has been poorly recorded both in Suffolk and

nationally. An estimate for the total area of wet woodland is 50,000–70,000 ha in the national Habitat Action Plan. The Nature Conservancy Council estimated in the late 1980s that nationally there was between 25,000 and 30,000 ha of wet woodland.

2.2 Local

East Anglia is noted in the national context for the concentration of wet woodlands, particularly those on fens. It is estimated that in Suffolk there is less than 100 ha of W5 woodland and 170 ha of flood plain woodlands.
The commonest type of wet woodland in Suffolk is probably the alderwoods, the bulk of which are to be found in the river valleys. These frequently have a history of being coppiced, but are now largely neglected. The strongholds for these woodlands are the Suffolk Broads, the Waveney and Little Ouse Valleys and the Suffolk River Valleys ESA.

Many of the wet birch woods and willow woodlands have developed on open wetland habitats, sometimes after the end of active management.

2.3 Natural Areas

Breckland, Suffolk Coast & Heaths, The Broads, East Anglian Plain, The Fens

3 Current factors affecting the habitat in Suffolk

Wet woodland in the county is affected by numerous direct or indirect factors.

- Recession in low intensity grazing of wetland is increasing the area of wet woodland.
- Fen habitats as they deteriorate frequently develop wet woodland habitats when unmown or undergrazed.
- Direct loss of the habitat through restoration to other land uses (for example fen restoration work).
- Succession causing changes to other drier woodland types brought on by the dumping of silt, cessation of management or changes in water levels.
- Inappropriate or no management causing changes in the structure and flora, leading to poor regeneration and changes in the floristic diversity.
- Loss of disturbance -succession systems due to the loss of natural surface water processes, flooding etc.
- Poor water quality leading to changes in the flora and invertebrate communities.
- Changes in the flow patterns in the land drainage systems causing changes to woodland hydrology.
- Colonisation of the woodland by non-native species for example Himalayan balsam.
- Climate change may have a significant impact on the hydrology and biology of these woods.

4 Current action

- In Suffolk some areas of wet woodland have been given statutory conservation status. Some have been designated within the boundaries of Sites of Special Scientific Interest (SSSIs). Others have the additional protection of being within internationally important sites. These include Ramsar sites, Special Protection Areas (SPAs) and in candidate Special Area of Conservation (cSAC).
- The Suffolk Wildlife Trust have identified County Wildlife sites (CWSs) which have some protection through the local planning authorities development plans. A number of conservation bodies in the county have reserves that include wet woodland habitats. Tree preservation orders and other policy decisions may also be

responsible for the protection of some woods.

- There is within national forestry a presumption against the loss of broad-leaved woodland to other land uses. Felling licences from the Forestry Authority are usually required if the woods are not covered by plans approved by them. The relevant hydrological policy issues include water level manager plans, Local Environment action Plans (LEAPs), impoundment licences and consents for abstraction and land drainage issued by the Environment Agency.

5 Action plan objectives and targets

1 *Improve knowledge of extent, distribution and quality of wet woodlands in Suffok.*

2 *Identify wet woodlands that may need clearance to restore higher priority habitats.*

3 *Improve the targeting of the Woodland Grant Scheme to assist in wet woodland habitats.*

4 *Maintain the existing extent of high quality wet woodland.*

5 *Initiate measures to achieve favourable condition in 100% of wet woodlands within SSSIs and Special Areas of Conservation, and in 80% of the total resource by 2004. Achieve favourable conservation condition over 70% of the designated sites and 50% of the total resource by 2020 where appropriate.*

6 *Fully restore to site native species 50% of the sub-optimal wet woodlands by 2010 and complete this by 2015 where appropriate.*

7 *Maintain and strengthen populations of key BAP species associated with wet woodlands including, a weevil Melanapion minimum, a jumping weevil Rhynchaenus testaceus.*

8 *Achieve the favourable management of 25% of wet woodlands by 2005 and of 50% by 2010.*

9 *Develop new wet woodlands.*

10 *Develop favourable conservation status guidance.*

6 Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
Develop Suffolk guidance on the appropriate balance of minimum intervention, coppice and high forest across the variation of the wet woodlands	EN, FC, LAs, SBRC, SWT		*	*	*	*
Encourage the development of forestry/landscape strategies to provide a context for, and to compensate for losses due to, other habitat restoration projects, and to promote the expansion and positive management of wet woodlands	CA, EA, EN, FC, LAs		*	*	*	*
Evaluate implications of water level management plans and LEAPs for the expansion, restoration and management of these woods and seek changes as appropriate	EA, EN, FC, MAFF/FRCA, IDBs	*	*	*		
B. Site safeguard and management						
Designate those wet woodlands approved by the EC as SACs under the Habitats Directive	EN, DETR					*
Ensure that the SSSI coverage of wet woodland sites is adequate through periodic review of the sites in the series	EN					*
Promote the use of long-term management plans (20yr+) by woodland owners aimed at integrating the appropriate diversity of species and structure, to benefit nature conservation, and other management objectives	AW, EN, FC			*	*	*
Continue to support existing agricultural, woodland and landscape schemes and initiatives that benefit wet woodlands. Encourage new schemes in areas not covered by existing ones. Review existing schemes to ensure better management for wet woodlands	CA, EN, FC, LAs, MAFF/FRCA	*	*	*	*	*

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
Promote and implement the management, compensatory planting where cleared for other habitat restoration, and restoration of wet woodland in all woodlands through e.g. Forest Design Plans	FC, FE, AWP, EN, FWAG, LAs, private owners	*	*	*	*	*
Identify priority areas for woodland expansion, for example around small sites, to connect sites, to restore hydrological zonation of woodland; to create new large floodplain forests, whilst avoiding other priority habitats	CA, EA, EN, FC,					*
Implement relevant priority species action plans, through the integration of management requirements and advice	EN, FA, LAs, SCC	*	*	*	*	*
D. Advisory						
Develop and promote training on the conservation management of semi-natural woodland including the special features and conditions that apply in wet woods in Suffolk	AWP, EA, EN, FC, LAs, SWT		*	*	*	*
Encourage and provide advice on the marketing and sustainable use of products from wet woods as a means of supporting appropriate management	AWP, FA, LAs	*	*	*	*	*
Provide advice to woodland managers on appropriate management regimes for wet woodland. Include grazing regimes within wet woods and promote the management of deer in areas where they are, or might become, a significant limitation on the regeneration and spread of wet woodland	AWP, EA, EN, FC, MAFF/FRCA, FWAG, LAs	*	*	*	*	*
E. Future research and monitoring						
Implement systems for recording the occurrence, distribution, management and composition of wet woods	EN, EA, FC, SBRC, SWT		*	*	*	*
Research developing a small suite of demonstration wet woodland sites where detailed structure, process and species monitoring is carried out to complement condition assessments adopted by the statutory agencies	EA, FC				*	

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
Consider developing a site in Suffolk for the re-creation of flood-plain forest, including both hydrological, wildlife conservation, economic and amenity considerations	EA, EN, FC, LAs, SWT				*	
Implement appropriate surveillance and monitoring programmes to assess progress towards action plans targets	EN, FC, SBRC	*	*	*	*	*
F. Communications and publicity						
Devise a Suffolk strategy for the distribution of appropriate advisory material to woodland managers	EA, EN, FC, LAs			*		
Produce advisory leaflets to fill any significant gaps in the advisory materials	EA, EN, FC, LAs			*		

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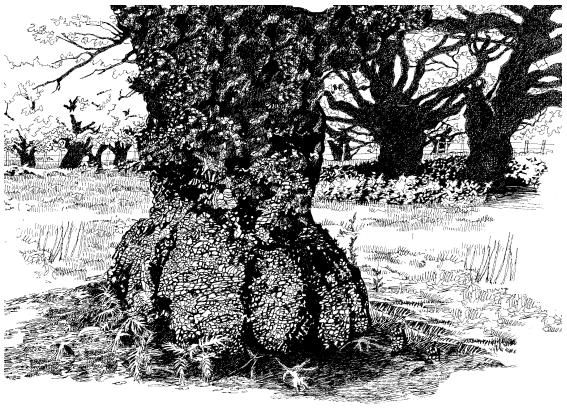


Wood-pasture and parkland

1 Definition of habitat

Lowland wood-pastures and parkland are the products of historic land management systems, and represent a vegetation structure rather than being a particular plant community. Typically this structure consists of large, open-grown or high forest trees (often pollards) at various densities, in a matrix of grazed grassland, heathland and/or woodland floras.

In Suffolk there are both the remnants and the active practice of a tradition of using the same land to grow trees and graze animals. Today this land is defined as wood-pasture (*Silva pastillis*).

In many cases today's parklands have evolved through a complex series of changes starting with the medieval deer park. Consequently much of the parkland we see today is quite different to its medieval origins. New species of trees and shrubs have been introduced into this country and there have been fashions for designed landscapes. This rich variety of historic landscapes has provided a wealth of habitats and niches for wildlife.

Lowland woodland-pasture and parkland habitats have been classified in the National Vegetation Classification (NVC) system. In Suffolk, the following stand types are likely to occur.

- *Quercus robur – Pteridium aquilinum – Rubus fruiticosus* woodland (W10)
- *Quercus robur- Betula spp. – Deschampsia flexuosa* woodland (W16)
- *Fraxinus excelsior – Acer campestre Mercuralis* woodland (W8)

This habitat does include urban parks with veteran trees including exotics where grazing/browsing is present.

For the purposes of target setting the following definition is made between restoration and creation. Creation is on sites for which no record of previous wood-pasture and parkland use exists and restoration is where remnants are still present.

This ecosystem is likely to be of interest for invertebrates (especially the saproxylics), epiphytes, bryophytes, fungi, bats and woodland birds and links to other BAP plans are recognised (see below).

2 Current status

National

There are no reliable statistics either nationally, nor has the current rates of degradation or loss of this type of habitat been surveyed accurately.

The UK Biodiversity Action Plan reporting round of 2005, estimated 22,000 ha of wood-pasture and parkland existed in England. The new SMART (Specific, Measurable, Achievable, Relevant and Timebound targets for the UK BAP are based on the number of sites not area; for England this has been estimated at 6,000 sites.

This habitat is better represented in lowland Great Britain than elsewhere in Europe, although scattered examples are to be found throughout Europe. Parklands may be a seed pool for distinctive local phenotypes. These areas are of outstanding European importance.

Local

Suffolk has a rich heritage of wood-pasture and parkland. Early maps and documents describe the county as having vast numbers of free standing trees in pastures and parks.

This habitat type has been poorly recorded in Suffolk with parkland often being tagged onto woodland or grazing land surveys; as a result parkland estimates for Suffolk are highly varied.The historical atlas of Suffolk also holds information on these habitats in a mapped form http://www.suffolk.gov.uk/Environment/Archaeology/Publications/HistoricalAtlas.htm . The number of sites of wood-pasture and parkland for Suffolk will be mapped during 2007, Suffolk Biological Records Centre and Woodlands officer Suffolk County Council using data from the veteran tree survey, existing mapped data from Natural England and liaison with Suffolk Landscape Officers Group (SLOG). It is important that this work is also cross-referenced with the Historic Landscape Character mapping work, which is under implementation. It is likely that from the above process a list of sites will need field validation to establish whether they still qualify as wood-pasture and parkland or could be restored.

Certain species such as the barbastelle bat (through survey work in Suffolk and the UK) appears to be indicating that this bat species is associated with veteran trees and therefore is strongly associated with the wood-pasture and parkland. Further research will be undertaken by Suffolk Bat Group and others to establish the bat populations of wood-pasture and parkland and mixed deciduous woodland sites. Other surveys are needed to establish the

status of oak polypore, saproxylic *Coleoptera* (deadwood beetles) and golden hover flies. Wood-pasture is known to be of primary importance to eight national priority species that occur in Suffolk and for a number of saproxylic Coleoptera (deadwood beetles) and Diptera (Flies).The significance of this habitat for saproxylic coleoptera is identified on the following website http://thasos.users.btopenworld.com/sqi.htm
Three of the sites are not protected/designated as Sites of Special Scientific Interest.

All of these are UK Priority BAP species action plans or grouped species plans. Opportunities to undertake these should be explored with organisations such as Suffolk Naturalists Society.
All current Suffolk BAP plans can be viewed at www.suffolk.gov.uk/Environment/Biodiversity and National Plans at www.ukbap-reporting.org.uk/plans/national

Natural Areas

The majority of medieval parks are usually on clay, with the post-medieval deer parks being on the junctions of clay and sand. Soil types may have been a consideration, but the siting of parks was more complex than just juxtaposition of soils. Access to large houses and significant views may have been a deciding factor too. They occur in all of the Natural Areas in Suffolk.

3 Current factors affecting the species or habitats

Wood-pasture and parkland in the county is affected by numerous direct or indirect factors. These include:

Site management issues:

- Lack of maintenance for newly planted trees.
- A lack of new pollarding to maiden trees within a location of veteran pollards (Pollards are not a feature in post-medieval parks).
- A lack of structural and age diversity
- Unsympathetic tree surgery (often due to Health & Safety implications).
- Inappropriate management and not using local phenotype for restocking where appropriate.
- The removal of too much deadwood.
- Intensive grazing has led to a decline in the floristic value of woodland pasture.
- The use of drugs to treat parasites in cattle has led to a decline in invertebrate species associated with dung.
- Damage to trees by grazing animals; bark stripping, root damage, soil compaction and poaching under tree canopies.
- Modern agricultural practices, including ploughing too close to trees.

- Cutting away lower branches which are the first on the tree to produce a deadwood habitat.
- Bracken and other invasive species
- Fire.
- Destruction & improvement of the grassland/heathland components - drainage, fertilisers, re-seeding, fungicides etc

Other factors affecting wood pasture and parkland habitat:

- Wilful damage to fragile habitats; hollow trees and standing deadwood.
- Public safety concerns – removing dead wood.
- New inappropriate access that for example may lead to unwanted fires and compaction around trees.
- Fragmentation of habitats, lack of understanding about the value of the ecology of these sites.
- Direct loss of the habitat through change to other land uses e.g. arable farming, golf courses road building, expansion of villages, commercial encroachment, and the colonisation of secondary woodland.
- Lower water tables & pollution.
- Oak and Dutch elm disease dieback and *phytophera* infection.
- Increased use of fertilisers, herbicides and insecticides.
- Reduction in plant nectar shrubs providing less food for emergent adult insects e.g. hawthorn *(Crataegus monogyna)*
- Climate change - more extreme weather may impact negatively upon veteran trees and the semi-natural habitat on the ground. Change of ownership and the severance of house from the parkland.

4 Current action

In Suffolk, some areas of Wood-Pasture and Parkland have been given statutory conservation status by English Heritage and further details are available in the Register.

Two sites have been designated Sites of Special Scientific Interest (SSSIs) Sotterley Park (123.6 ha) and Staverton Park (84.28 ha). Staverton Park has also been designated a Special Area of Conservation (SAC) which recognises the sites internationally importance. Some other sites are protected by Tree Preservation Orders, or are within Special Landscape Areas and/or Areas of Outstanding Natural Beauty.

The Suffolk Wildlife Trust has identified County Wildlife Sites (CWS) that have some protection through the local planning authorities development plans (Supplement on Planning Guidance, Suffolk Coastal District Council). Tree Preservation Orders and Conservation Area Status may also be responsible for the protection of some wood-pasture and parkland.

The Suffolk Biological Records Centre (SBRC) is also producing a list so that further survey can be undertaken to assess the CWS potential.

Ancient trees that have been mapped nationally can be viewed on the Ancient Tree Forum's website (www.woodland-trust.org.uk/ancient-tree-hunt/index.htm.) There are a number of examples in Suffolk.

Species such as bats and some birds which utilise ancient trees are fully protected under the Wildlife & Countryside Act 1981 and the Countryside and Rights of Way act 2000 (CROW). This also gives some protection to their place of shelter. Planning Policy Statement 9 (2005) and the new Local Development Frameworks (LDFs), that are replacing local plans, make it essential that Local Authorities must protect and enhance Biodiversity Action Plan habitats and species in their LDFs. This should mean that planning officers and Local Planning Authorities (LPAs) make informed decisions regarding planning applications and aim to enhance biodiversity where possible. The Steering Group of the Suffolk Biodiversity Partnership is guiding various BAP planning initiatives in Suffolk to support district councils (DCs), further information can be obtained from the Suffolk BAP officer (email mary.norden@sbrc.globalnet.co.uk). The ecological network approach is also being incorporated into LDFs, which has implications for the location of new development sites. Positive management can be achieved through forestry grant schemes and agri-environment schemes (some wood – pasture is already in HLS in Suffolk).

5 Targets

- During 2007, map the current extent of these habitats and then by 2010 map the historic extent.
- Maintain the extent of wood-pasture and parkland based on current baseline data (2007)
- Ensure favourable condition or recovering condition of the two known SSSIs by 2010.
- Areas of derelict wood-pasture and parkland, three sites by 2010.
- Identify potential CWS sites, assess condition and designate by 2008.
- Expand the area of wood-pasture and parkland, in appropriate areas to help reverse fragmentation and reduce the generation gap between veteran trees identify and create three new sites in Suffolk by 2010.

6 Actions

Action (apply SMART Specific, Measurable, Achievable, Realistic, Timebound) approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Policy & Legislation		
Develop LDF policy wood-pasture and parkland that can be used for LDFs in Suffolk.	2007	**Mid-Suffolk DC.,** SLOG,
Respond to consultations on HLS targeting statements and documents include wood-pasture and parkland where appropriate.	2007 and ongoing	**NE**, SCC, DCs, FC, NT.
Site safeguard and management		
Identify and create new areas of wood-pasture and parkland, adjacent to or near existing sites using local provenance trees from the existing site (to maintain gene pool) or allowing natural regeneration where suitable.	2007 and ongoing.	**FC , SCC** , NE, NT, DCs, SWT, RSPB, landowners and managers.
Work with Rights Of Way managers to ensure new footpaths do not encourage casual access to vulnerable sites such as Staverton Park.	2007	**SCC,** DCs,
Ensure that both SSSIs are in an unfavourable recovering or in favourable condition by 2010.	2010	**NE**, landowners/managers, DCs.
Renew management plans for wood-pasture and parkland sites as required.	2007 on-going	**NE**, FWAG, DCs,, FC, landowners/managers.
Investigate coverage of parkland and woodpasture SSSI sites.	2007 on-going	**SBRC**, NE**,** , SWT.
Notify new ones that meet the selection criteria as soon as possible.	2007 on-going	**NE**, FWAG, DCs,, FC, landowners/managers.
Advocate and provide advise to landowners and managers the use of long-term historic landscape plans to restore sites.	2007 and ongoing	**NT** ,NE, FWAG, SCC, DCs, English Heritage, FC, landowners and managers, County archaeologists.
Ensure protection of BAP species and protected species associated with wood-pasture and parkland.	2007 and ongoing	**NE**, SCC, DCs, FC, NT, SWT.
Implement relevant priority species and protected species action plans through the integration of species management requirements in habitat management.	2007	**NT**, NE, FWAG, DCs, landowners and managers.
Safeguard veteran trees using Tree Protection Orders where possible.	2007 and ongoing	**Mid Suffolk DC**, DCs.

Research and monitoring		
Identify the list of potential sites currently undesignated.	2007	**SBRC**, SCC, SWT.
Map existing resource and then validate this with further field survey.	2007	**SBRC**, NE, SCC, NT, SWT
Identify those sites that need re-surveying.	2007	**SBRC**, SCC, SWT.
Identify a programme of survey needs and identify and apply for funding if needed.	2007 ongoing	**SWT**, NT, SBRC, FC.
Engage specialists such as Suffolk Naturalists. and Suffolk bat group to partake in a survey programme.	2008	**SBRC,**, SWT, FC, Suffolk Naturalists and Suffolk Bat Group.
Designate suitable sites as CWS if they meet the criteria.	2008	**SWT**, SCC, SBRC.
Notify NE if any of these sites are potential SSSI sites.	2008	**SBRC,** SCC, SWT, NE.
Advisory		
Highlight good (bad) practice in terms of planning for BAP via Biodiversity Partnership and Steering Group.	2007	**SCC**, NE, SWT, DCs.
Provide advice to owners and managers of wood-pasture and parkland concerning appropriate management	2007 -on-going	**NT**, FWAG, DCs, NE, SCC, landowners and managers.
Publicise and encourage Environmental Stewardship ELS/HLS . to partners and landowners..	2007	**NE,** FWAG, SWT, LAs, landowners/managers.
Promote and disseminate guidance notes to landowners and mangers on the desired management of lowland wood-pasture and parkland.	2008	**NT**, NE, DCs, AWP, SCC, landowners and managers.
Communications and publicity		
Hold 3 Woodland Working Group meetings each year with wood-pasture and parkland on each agenda.	2007	**SCC**, NE, FWAG, DCs, NT,
Encourage awareness raising with general public events, at locations such at suitable locations at least two events per year.	2007	**SCC**, NT
Host annual wood-pasture and parkland management days to include ancient tree management for managers include funding discussion such as HLS.	2007 & on-going	**NT**, AWP, DCs, FWAG, NE, landowners and managers.

NB Lead partners who lead the particular action are in bold.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Objectives currently not achievable by the plan partners:

None identified.

List of organisations that have been or will be consulted regarding this plan and have agreed to aim to deliver their organisations commitments

Anglia Woodfuel Project Gary Battell
Mid Suffolk District Council David Mitchell
Suffolk County Council Andrew Murray-Wood
Forestry Commission Simon Leatherdale, Rachel Riley and Trevor Wright
Natural England Patrick Robinson
Deer Initiative David Hooton
Suffolk Biological Records Centre Martin Sanford
National Trust Stuart Warrington
Suffolk Biodiversity Partnership Officer Mary Norden

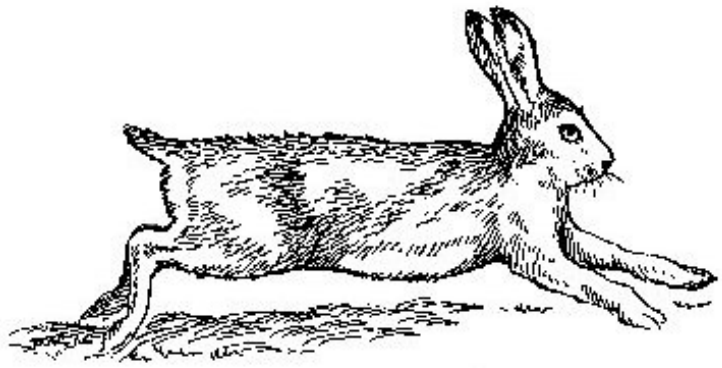
Other Consultees:
FWAG Tim Schofield
Suffolk Wildlife Trust Dorothy Casey
DCs (all except Mid Suffolk)
Suffolk Landscape Officers Group via Peter Holborn
Suffolk County Council Landscape Officer Phil Watson
County Archaeologists Edward Martin and Keith Wade
Suffolk bat group Alison Collins

An Historical Atlas of Suffolk Edited by David Dymond & Edward Martin
Suffolk County Council 1999 (3rd edition)

Published July 2007

Brown Hare *(Lepus europaeus)*

The Brown Hare is a familiar mammal of open arable land and rough pasture throughout most of Britain. It is primarily nocturnal and feeds on grasses and occasionally cereals and root crops. They may have been introduced to Britain around the time of the Romans, although the archaeological evidence is not conclusive.



1 Definition

Brown Hares are adapted to living in open habitat and are well adapted for running. In Britain, they are usually associated with lowland pasture and arable farmland, feeding mainly on grasses and herbs as well as agricultural crops. Unlike Rabbits, they do not make a burrow, but hide in shallow depressions in the ground or in long grass, known as forms. Woods and hedgerows also provide day-time shelter, particularly in winter. Although they are normally nocturnal, their activity can extend into mornings and evenings during summer.

Hares are usually born between February and October and a female can produce up to three litters of 1-4 young (leverets) per year. Fox predation of young Hares can be heavy, causing a significant reduction in the recruitment of young Hares to the population. Hares can also experience high losses due to disease, but this tends to occur only when they are living at higher densities.

During the last century, there has been a gradual decline in Hare numbers and agricultural intensification is thought to be the main factor. The decline has been most pronounced in the western regions where increased stocking densities of livestock and a greater reliance of silage cutting have been the main causes. There have been less dramatic changes in arable areas, but hare numbers have still declined in these areas because of a reduction in habitat richness, such as a change to large fields with less crop diversity. More recently, a change to winter-sown cereals has led to a reduction in higher-quality food in early summer, leading to food shortages and a lower leveret survival rate.

Losses elsewhere mean that East Anglian populations are more important. Suffolk has a responsibility for a significant percentage of the national Brown Hare population. It is difficult to estimate the impact of field sports on hare numbers. Whilst there is little evidence that this has a long-term effect on population levels, these effects may be more significant where hare numbers are low or at certain times of the year. For example, a Hare shoot in February can remove 60% of the breeding stock.

2 Current status

2.1 National

The Brown Hare has declined substantially, by about 80% over the last 100 years with a sharper decline since the early 1960s. National surveys indicate that numbers have remained largely stable over the last 10 years. Current estimates are in the region of 800,000 animals. It remains widespread, being particularly numerous in East Anglia, but is scarce in Cornwall and is absent from the north-west and Highlands of Scotland.

2.2 Local

Information supplied by The Game Conservancy Trust demonstrates that although numbers fluctuate from year to year, there is no evidence that populations have declined in East Anglia during the last five to ten years. The Brown Hare is still widespread in Suffolk and there is little evidence of any large decline in recent years.

3 Current factors affecting the Brown Hare in Suffolk

- Conversion of grassland to arable farmland leading to a reduction in habitat richness and potential food shortages at certain times of year.

- Loss of general habitat diversity in the agricultural landscape such as field margins and hedgerows as well as crop diversity.

- Changes in planting and cropping regimes.

- Prolonged wet weather during the spring is thought to have adverse effects on breeding performance.

- Foxes are important predators of leverets and changes in their numbers are likely to have as much impact as agricultural changes.

4 Current Action

4.1 Legal Status

Brown Hares do not have protection under the Wildlife and Countryside Act 1981, but are protected by a complex set of older acts such as the Game Laws, the Ground game Act 1880 and the Hare Preservation Act 1892.

4.2 Management, research and guidance

National surveys in the winters of 1991-93 and 1997-99 have played an important role in highlighting the status of the Brown Hare. In addition, the Game Conservancy Trust, as one of the Lead Partners, monitors regional and national changes through game bag records. There have been no specific surveys of Brown Hare in Suffolk.

Whilst existing populations of Brown Hare appear to be being maintained, being able to meet the long term national target of doubling spring numbers in Britain by 2010 is dependent upon significant improvements to their habitat.

The Game Conservancy Trust has produced a set of guidelines to promote Hare conservation through improving cover and food availability. On cereal farms, game crops, hedgerows and small woodlands will particularly benefit Hares in winter, by providing cover and shelter whilst in summer grassy field margins provide food for adult Hares and leverets. On livestock farms, fencing off ditches, banks and other features will allow long grass to develop providing leverets with protection from predators. Many of these measures are grant-aided through agri-environment schemes and these incentives will play an important role in ensuring that existing populations are maintained and expanded.

5 Action Plan Objectives and Targets

1 *Maintain existing Brown Hare populations.*

2 *Influence farmland management by developing a conservation strategy for the Brown Hare.*

6 Brown Hare: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Incorporate needs of Brown Hare in Breckland and Suffolk River Valleys ESAs.	2004	**Defra**
SITE SAFEGUARD AND MANAGEMENT		
Promote appropriate management practices through Defra agri-environment schemes.	2004 2005 2006 2007	**FWAG,** Defra
SPECIES MANAGEMENT AND PROTECTION		
Ensure landowners are aware of the importance of avoiding Hare shoots in late winter.	2004 2005 2006 2007	**FWAG**, Defra
RESEARCH AND MONITORING		
Encourage other local research or survey, especially when linked to farmland management.	2004 2005 2006 2007	**Defra**
Promote counts of Brown Hare by land managers. Ensure data is passed on to SBRC.	2004 2005 2006 2007	Defra, GCT
ADVISORY		
Provide information on Brown Hare management and biology to landowners.	2004 2005 2006 2007	**Defra**, GCT
COMMUNICATIONS AND PUBLICITY		
Produce guidance leaflet on habitat management for Brown Hares.	2004	**Defra**, SWT

Dormouse *(Muscardinus avellanarius)*

Dormice are closely associated with ancient semi-natural woodlands, although they also occur in scrub and ancient hedges. They are largely confined to southern England and the Welsh borders, with isolated records from Wales and eastern England. In Suffolk, they are found mostly in the south of the county.

1 Definition

The Dormouse is a nocturnal animal which lives and feeds within the shrub and tree layer of woodlands and hedgerows. Because they rarely descend to the ground, except to hibernate, they require good arboreal connectivity. Their diet includes flowers, insects, fruit and nuts with hazel, oak, bramble and honeysuckle being particularly valuable food sources, but they will feed on and within a wide range of other tree and shrub species. The characteristic way that dormice open hazel nuts has long been used as a survey tool to determine their presence in woodland.

Food availability alters with the seasons, so not only does the dormice rely on a sequence of suitable arboreal foods from May until October, it also requires this diversity to be available within a very small area, as it rarely travels 100 meters from its nest in a night. Dormice therefore have very specific habitat requirements, which can be characterised in terms of its structure and diversity.

Dormice construct woven nests in bushes and shrubs and also use hollow tree branches and old birds nests. An average of four young are usually born between July and August and in most years a female will successfully raise only one litter. Second litters are rarely born before late August and there is often insufficient time for the young animals to reach a critical body weight prior to hibernation. Reproductive success is also influenced by climatic factors, particularly cold and wet weather in spring, which can delay the start of the breeding season or result in the deaths of early born young.

Dormice are unusual amongst other small mammals in that they are relatively long lived and a female can be expected to have up to three breeding seasons. The impacts of predation and disease are also thought to be at low levels. However, Dormice also occur at much lower densities than other small mammals, typically 5-8 animals per hectare. This means that populations in small, isolated woodlands are extremely vulnerable to habitat change and this can result in localised extinctions.

2 Current status

2.1 National

Dormice are thought to have disappeared from about half of their original range in 120 years and recent surveys confirm that it is now extinct from six counties. Within the southern counties they are still widespread but their distribution is patchy. Elsewhere in England and Wales populations are very localised. They are largely absent from central England and the north of England. Dormice are included with English Nature's Species Recovery Programme and there have been re-introductions to 11 sites to date. A national monitoring scheme has been set up to record data from key sites throughout England and Wales.

Research published through English Nature in 2002 showed that there has been a 64% decline of Dormouse occurrence in hedgerows since the late 1970s. This loss is of high conservation concern because Dormouse is an indicator of biological diversity and its loss is likely to reflect losses of other species also.

2.2 Local

Suffolk is on the edge of the Dormouse's range and they have never been common in the county. Ticehurst in The Victorian County Histories (1911) reported them being commonest in the area between the South of Bury St Edmunds and Long Melford, with records from the east of the County in Belstead and Bentley. Their current distribution reflects a contraction of range further south, with populations known from Assington, Polstead, Raydon and Bentley. Isolated records exist within other Parishes in the south of the County. Dormice were recorded in Bradfield Wood until the mid 1990s, but subsequent surveys have failed to record them.

Dormice were reintroduced to Priestley Wood in Barking in 2000, as part of the Species Recovery Programme and they are believed to have subsequently spread to southwards to Bonny Wood, following their discovery in this woodland in 2002 and again in 2003.

3 Current factors affecting Dormice in Suffolk

- Decline of coppicing in ancient woodlands leading to loss of structural and species diversity within woods and therefore loss of food sources.

- Isolation of small woodlands resulting in highly vulnerable relic populations

- Intensive management of existing hedgerows rendering them unsuitable as permanent habitat or as dispersal corridors.

4 Current Action

4.1 Legal Status

Dormice are listed on Schedule 5 of the Wildlife & Countryside Act 1981 (as amended, 1988) and Schedule IV of the Conservation (Natural Habitats &c.) Regulations 1994 (which also implements the Berne Convention 1979, where dormouse is listed in Appendix III).

4.2 Management, research and guidance

Since 1998, Suffolk Wildlife Trust has been undertaking surveys of ancient woodlands within the dormouse's historical range. This is to confirm that Dormice are still present at those sites recorded by Roughton in 1988, but also to discover new sites where they had previously been overlooked. Although there are 23 sites in Suffolk where dormice have been recorded since 1999, many of these are isolated and vulnerable and in at least two cases, further monitoring in 2002 failed to record their presence.

A nesting tube, devised by researchers at Royal Holloway College has been highly effective in recording Dormice, particularly in the absence of fruiting hazel. These tubes were first used in Suffolk in 2001 and are now employed as the standard survey technique in both woodlands and hedgerows. This lightweight design enables them to be placed on relatively small branches, which is particularly useful for hedgerow survey work. In addition, work at Tiger Hill Local Nature Reserve has shown that, compared with heavier nest boxes, they are preferentially used by Dormice. In order to comply with the legislation, an English Nature licence holder must check the tubes. In 2003 there are about 12 sites where this method is employed, but because it is a survey technique numbers vary every year. There are currently five sites with nest boxes but in 2002 only one site had occupied boxes.

Since 2002 there has been an additional focus on surveying Dormice in hedgerows and highlighting their presence and habitat needs to landowners. FWAG have been given guidance on parishes which have or may have Dormice and also training on recognising hedgerows for Dormice. Future work should also concentrate on identifying areas where reinstatement of hedgerows or less intensive hedgerow management would be desirable to improve connectivity between Dormouse sites.

Two sites in Suffolk (Tiger Hill and Priestley Wood) contribute to the National Dormouse Monitoring Scheme.

5 Action Plan Objectives and Targets

1 Continue to identify sites where dormice occur

2 Maintain and enhance dormouse populations at these sites

3 Wherever possible link dormouse populations to reduce chances of local extinctions

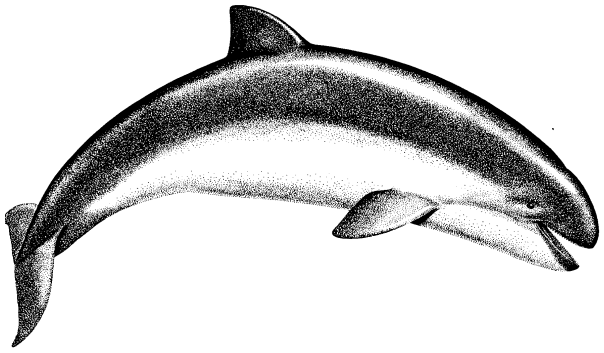
6 Dormouse: Proposed action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure protection of hedgerows in areas where Dormice occur by ensuring Local Authority Planning Departments are aware of WCA (1981), Conservation (Natural Habitats &c) Regulations (1994) and Hedgerow Regulations (1999).	2004	Babergh DC, SCDC, SWT, EN, SCC
Ensure Dormouse sites are designated as County Wildlife Sites.	2004 2005 2006 2007	LAs, SWT, SCC
SITE SAFEGUARD AND MANAGEMENT		
Promote appropriate management of woodlands and hedgerows to maintain current populations and prevent further habitat fragmentation. Liaise with five land owners per year.	2004 2005 2006 2007	SWT, FE, Babergh DC, SCDC, DV&SVP
Ensure appropriate management practices are incorporated into agri-environment schemes in areas where Dormice may occur	2004 2005 2006 2007	DEFRA, FWAG
Ensure that all bodies responsible for woodland management work are aware of the presence of Dormice before undertaking work. Distribute information sheet to all woodland contractors used by SBAP partners.	2004 2005 2006 2007	SWT, AWP, FA, Babergh DC, SCDC
Reinstate hedgerows to link Dormouse populations – aim for one hedgerow per year.	2004 2005 2006 2007	DEFRA, FWAG, SCC, SWT, FA, DV&SVP

SPECIES MANAGEMENT AND PPROTECTION		
Support future applications for reintroduction into suitable sites. Aim for one suitable site by 2007 if outcome of survey work is favourable.	2007	EN, SWT, FA
RESEARCH AND MONITORING		
Continue National Dormouse Monitoring scheme at Tiger Hill and Priestley Wood by undertaking twice-yearly monitoring	2004 2005 2006 2007	SWT
Continue survey work in woodland and hedgerows to determine extent of Dormouse distribution and degree of habitat fragmentation.	2004 2005 2006 2007	SWT, FC
ADVISORY		
Liase with landowners and land managers of Dormouse sites to ensure appropriate management and also neighbouring landowners in parishes where Dormice occur. Distribute relevant literature.	2004 2005 2006 2007	SWT, FWAG, FC, DV&SVP
COMMUNICATIONS AND PUBLICITY		
Produce guidance leaflet on habitat management for Dormice in Suffolk	2004	SWT
Publicise Dormouse and its habitat requirements by using local media. Aim for one article/press release in regional newspapers or farming press per year	2004 2006	SWT, FWAG
Involve public in identifying potential hedgerows within current Dormouse range for follow-up surveys by undertaking one workshop per year.	2004 2005 2006 2007	SWT

Harbour Porpoise (*Phocoena phocoena*) Species statement

The Harbour Porpoise is the smallest British cetacean, no more than 2m in length, and occurs in schools in all coastal waters. It is the only porpoise in British waters where it feeds on small fish and crustaceans.



Current status
There is some evidence of a decline in the numbers of Harbour Porpoise in the UK since 1940s. Generally the conservation status around the UK is not known, however a recent survey of small cetaceans in the North Sea, Channel and Irish Sea indicated a population of 350,000.

The species is found off the Suffolk coast although its local status is not known. Occasional sightings are received most years.

Natural Areas
Suffolk Coast Maritime

Current factors causing loss or decline
The current factors affecting this species are not clear but may include the following:
- Incidental capture and drowning in fishing nets
- Environmental contaminants (toxic substances at sea, marine debris, disease and noise disturbance)
- Environmental change (effects of fishing and possibly climate change)

Current Action
Post mortems and tissue studies are carried out on stranded specimens to establish the cause of death and condition of the animals at time of death
Suffolk Wildlife Trust have published articles to encourage members to send in sightings of the species

Objectives for the species
- Continue to encourage local people and Suffolk Wildlife Trust members to send in sightings of Harbour Porpoise to SBRC.

- Lobby for changes to national policies where opportunities arise.

Proposed action
Little can be done to protect this species unless changes to national fishing policy are implemented by DEFRA. Although the species is still present off the Suffolk Coast little can be done to protect it through direct local action thus the action plan has been replaced by a Species Statement. Continued awareness-raising with regard to clean seas and encouraging the public to send in records should continue.

European Otter *(Lutra lutra)*

The otter is the most familiar animal of waterways in the UK. It was regarded as common 50 years ago but then underwent a rapid decline to the point of becoming absent from much of England. It inhabits rivers and other waterways with clean water, healthy fish stocks and well-developed bankside vegetation for cover and breeding.

1 Definition

Due to their secretive and largely nocturnal habits, otters are rarely seen in the wild. Their presence can be detected by distinctive field signs (spraints and footprints) and these provide an essential part of field surveys for this species.

Otters can exploit a wide range of aquatic habitats from rivers, lakes, estuaries and coasts to small streams, dykes and ditches. Their presence in a habitat is dependent upon the availability of food and suitable places for shelter and breeding. Otters feed primarily on fish, but other animals, such as amphibians, smaller mammals and birds, are also eaten at certain times of the year. As one of Britain's largest carnivores, it is a 'top' predator and therefore an important biological indicator of the health of our rivers and wetlands- a so-called 'flagship' species.

Otters were generally regarded as common and widespread 60 years ago but they subsequently underwent a rapid decline, becoming absent from much of England. The primary cause is now attributed to run-off from organochlorine pesticides introduced in the 1950s for seed dressings and in sheep dips, subsequently withdrawn from use. The four national otter surveys, carried out at seven-year intervals since the late 1970s, have shown that otter populations have been gradually recovering and this trend has also been seen from recent county-wide surveys of Suffolk.

Although otter populations in England are increasing, factors limiting the spread of otters are still poorly understood. It is likely that road mortality is a crucial element and also habitat quality within catchments is a significant factor.

2 Current status

2.1 National

The fourth national otter survey of England was carried out from January 2000 to February 2002. Signs of otter were found at 34% of the 3,327 sites visited and this confirms that the increase in otter distribution seen since the first survey in 1977-79 is continuing. Population strongholds originating in the west and north have expanded, whilst in the Anglian region there have been major increases following re-introductions. The scale of the increase varies considerably across the country but it is significant that the leading edge of the recovering population is continuing to expand. This appears to be creating large areas with otter populations at low density followed by consolidation which seems to occur some years after the leading edge has passed.

2.2 Local

Formerly widespread but almost extinct by the 1970s. In the mid-1980s a successful reintroduction programme by the Otter Trust was initiated on selected river stretches. Coupled with the withdrawal of organochlorine insecticides and cessation of otter hunting throughout the UK, this has resulted in a strong population recovery in Suffolk. Since 1996/97 otters have been recorded on every river catchment in the County, although it is difficult to estimate their abundance or breeding success. In the Fourth Otter Survey of England 2000-2002, signs of otter were found at 26% of the 728 sites surveyed in the Anglian region. In this survey, one 50km survey square (TM n/w) corresponded to the much of central and east Suffolk and here it is interesting that signs of otter were found at 40% of the 121 sites surveyed, indicating that populations are well distributed and appear to be recovering well in this area.

3 Current factors affecting otters in Suffolk

- Lack of suitable bankside habitat for shelter and breeding
- Insufficient prey due primarily to poor habitat quality and to a lesser extent, poor water quality.
- Incidental mortality, primarily by road deaths
- Accumulation of biotoxins, such as polychlorinated biphenyls (PCBs).

4 Current Action

4.1 Legal Status

Otters are listed on Schedule 5 of the Wildlife and Countryside Act 1981 and Schedule II and IV of the Conservation (Natural Habitats &c.) Regulations 1994 (which also implements the Berne Convention 1979, where otter is listed in Appendix II).

4.2 Management, research and guidance

The Anglian Otters and Rivers Project, a three year partnership during 1999-2002 between the Wildlife Trusts, Anglian Water, Essex and Suffolk Water and The Environment Agency, made a significant contribution towards meeting the Biodiversity Action Plan targets for otter and a range of other wetland species and habitats. This initiative has now developed into the Water for Wildlife project, which continues to play a vital role in implementing essential action for wetland species and habitats.

In 1996/97, a county-wide survey was carried out by Suffolk Wildlife Trust / Environment Agency, visiting 275 sites. This baseline study focused on looking for signs of otter beneath road bridges over the Suffolk main rivers as well as a stretch of bank either side of each bridge. The River Stour was surveyed as part of a separate study by Dr C Mason at Essex University, the River Waveney was surveyed by Norfolk Wildlife Trust. Signs of otter were found on all catchments surveyed and signs of otter were found at 22% of survey sites. This survey was repeated in 2001/02, co-ordinated by the Anglian Otters and Rivers Project. 236 sites were surveyed and signs of otter were found at 46% of survey sites (excluding Stour and Waveney). These figures correspond well to the data collected through the National Survey (2000-02) for central and Eastern Suffolk. This survey should be repeated in 2006/07 to monitor the predicted recovery of otter populations in Suffolk.

Otters require clean rivers with an abundant, varied supply of food and plenty of bankside vegetation offering secluded sites for their holts. Some are known to use 40km or more of river habitat. Riversides often lack the appropriate cover for otters to lie up in during the day. Such areas can be made more attractive to otters by establishing 'otter havens' which may include planting bankside trees, leaving areas as undisturbed scrub and leaving uncultivated buffer zones along watercourses and managing riverside land sympathetically. Wet grassland, fen, reedbeds and their associated dyke networks are also important habitats for otters. The creation of artificial otter holts can also provide valuable refuge areas in the short term, in conjunction with longer term habitat enhancement.

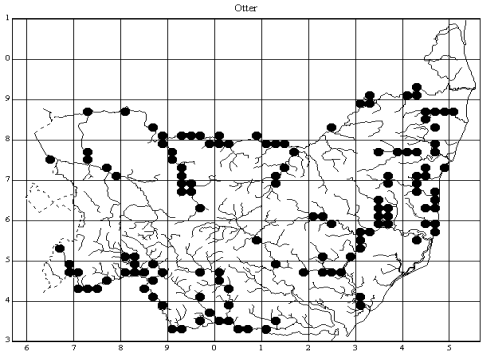
The Anglian Otters and Rivers Project reported that there had been an increase in otter road deaths during the last seven years. This may be attributed to greater movements of otters as populations increase, incidences of flooding after heavy rain and also other factors affecting the clear passage under the bridge. Road mortality may be a major limiting factor for otter populations within some catchments, but a safer route can be provided by the construction of ledges or culverts under road bridges.

Although there have been widespread improvements in water quality, there are still continued concerns about the potential role of bio-accumulating toxins in otters, such as PCBs, which may lead to impaired breeding success. As this species represents a critical indicator of the health of our rivers and wetlands, a high level of environmental surveillance needs to be maintained.

5 Action Plan Objectives and Targets

1 Maintain and expand existing otter populations

2 *Otters breeding in every catchment by 2010*



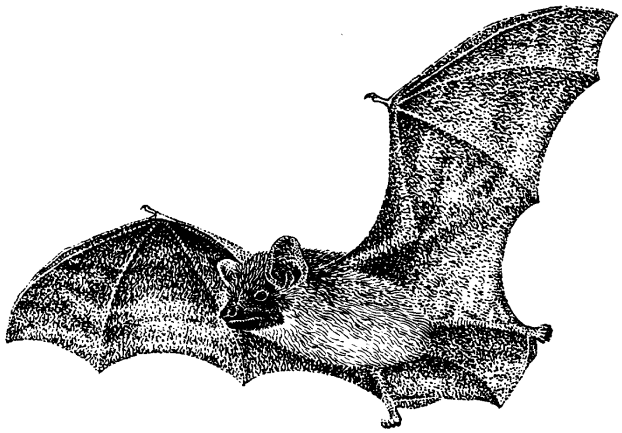
6 Otter: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Enforce EA National Fisheries Bylaw regarding the fitting of Otter guards to all eel nets and traps.	2004 2005 2006 2007	**EA**
SITE SAFEGUARD AND MANAGEMENT		
Secure appropriate management of riparian habitats to maintain Otter populations through setting up of five'Otter havens' each year on main rivers and their tributaries.	2004 2005 2006 2007	**SWT,** EA, FWAG
Continue to identify known Otter holts as riverine County Wildlife Sites and consider designation of SACs where appropriate in accordance with European legislation.	2004 2005 2006 2007	**SWT**, SCC, EN
Seek opportunities for habitat enhancement through EA flood defence maintenance programme of river maintenance.	2004 2005 2006 2007	**EA,** SWT, BA
SPECIES MANAGEMENT AND PROTECTION		
Cease reintroduction of captive-bred otters and promote expansion of existing populations by natural recolonisation.	2004 2005 2006 2007	**EN**
Limit accidental killing by identifying two black spot bridges per year where appropriate measures can be implemented to ensure safe passage of otters.	2004 2005 2006 2007	**SCC**, EA
Make provision for the safe movement of otters during all bridge repair and construction works. Ensure that appropriate measures to prevent otter road deaths are incorporated into design of new bridges.	2004 2005 2006 2007	**SCC,** EA, Local Authorities

RESEARCH AND MONITORING		
Collect information on prey productivity, biomass and pollution on main rivers. Assess sections of rivers most at risk from pollution.	2004 2005 2006 2007	**EA**
Collect otter carcasses to identify road death black spots and to contribute to national research on pollution monitoring.	2004 2005 2006 2007	**EA**, SWT
Repeat survey of 2001/02 in 2006/2007 to assess whether populations are self-sustaining.	2006 2007	**SWT,** EA
Undertake annual monitoring within all catchments to record otter activity.	2004 2005	**SWT**
ADVISORY		
Encourage provision of Otter havens by riparian landowners.	2004 2005 2006 2007	**SWT**, EA, SCC Countryside Management Projects
Provide advice to owners of still water fisheries to help reduce conflicts between fish farming and otter predation.	2003 2005 2006 2007	**EA**, SWT
COMMUNICATIONS AND PUBLICITY		
Use Otter to publicise importance of water quality and riparian habitats to biodiversity.	2003 2005 2006 2007	**SWT**, EA, BA

Pipistrelle Bat (*Pipistrellus pipistrellus*)

The Pipistrelle Bat is one of the smallest bats in Britain. It is most frequently seen just after sunset over open water and wet meadows, where it feeds on small insects caught in flight. Summer roosts and hibernating animals occur in confined spaces, such as roofs and occasionally trees.



1 Description

The common Pipistrelle is one of the smallest British bats, with a wingspan of about 20cms and weighing around 6 grams. It is now thought to be two separate species; *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus*; distinguishable by their echo location calls and small differences in physical appearance.

Female bats form maternity roosts of upto several hundred adults from May, often in house roofs and give birth to a single young around July. These colonies, which may divide or move to other sites will disperse gradually once the young are flying and weaned. Males are much more solitary. Hibernation takes place from November to March in houses, barns and other structures. Pipistrelles forage for small insects in varied habitats but woodland edges, hedgerows and waterways are particularly important.

2 Current status

2.1 National

The most abundant and widespread bat species but thought to have declined by about 70% between 1978 and 1993. It is now considered that there two separate species of Pipistrelle Bat; *Pipistrellus pipistrellus* and *Pipistrellus pygmaeus* and both are now regularly recorded throughout the county.

2.2 Local

The commonest bat in the county and both species of Pipistrelle are widespread. The national decline is likely to have been mirrored locally.

2.3 Natural Areas

All

3 Current factors affecting the Pipistrelle bat in Suffolk

- Reduction in insect prey abundance due to intensive farming practices and loss of wetlands, hedges and other suitable prey habitats.

- Loss of winter roosts in buildings, barns and old trees – often through human intervention.

- Barn conversions, renovations and modifications to other buildings such as fascia board replacement, roof repairs and flood lighting.

4 Current Action

Legal status

The Pipistrelle is protected under Schedule 5 and 6 of the Wildlife and Countryside Act 1981, the EC Habitats and Species directive (Annex IV), the Bern Convention (Annex 3), the Conservation Regulations 1994 and is included in the Bonn Convention's Agreement on the Conservation of Bats in Europe.

Management, research and guidance

- All known roosts are contained on the SBRC database which is updated on an annual basis and supplied to Local Authorities. Suffolk Bat Group also has a current copy.

- English Nature have engaged Suffolk Bat Group to undertake all practical work associated with bat conservation to enable EN to provide statutory advice to householders, developers, timber treatment companies.

- Suffolk Bat Group advises and deals with over 200 English Nature enquiries a year, additional public enquiries and gives 12-15 talks per year.

- Suffolk Bat Group in conjunction with English Nature has trained **5** new bat workers in the last 5 years.

- The species is a target for the National Bat Monitoring Programme being developed by the Bat Conservation Trust with funding from DETR.

4 Action plan objectives and targets

1. *Maintain existing populations and range*
2. *Achieve significant restoration of the Suffolk population s to pre-1970 numbers*
3. *Aim to reduce the incidence of damage to Pipistrelle roosts caused during building works / re-development work and road improvement schemes*
4. *Develop monitoring proceedures that will indicate likely causes of population change*

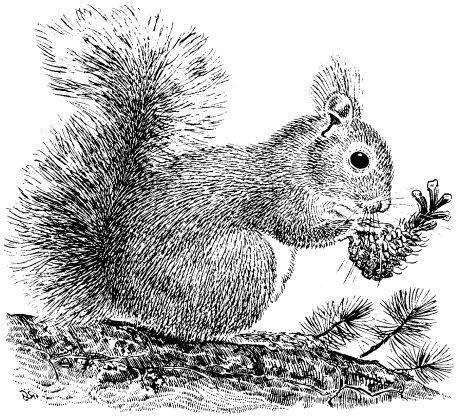
6 Pipistrelle Bat: Proposed action with lead agencies

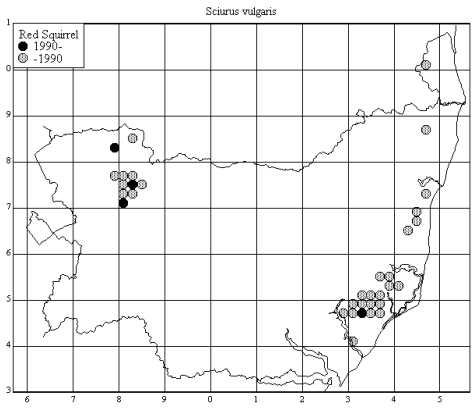
Action	Date	Partners
POLICY AND LEGISLATION		
Seek to improve water quality levels through LEAPs to support aquatic insects on which Pipistrelles feed.	On-going	EA
Ensure that planning process picks up known Pipistrelle roosts and where permission is granted, these roosts are safeguarded during building works/development.	On-going	SWT, LAs, SBG
Promote Defra agri-environment schemes that will support the creation of hedges, ponds and other suitable farmland habitats.	On-going	FWAG, SWT
SITE SAFEGUARD AND MANAGEMENT		
Identify and protect known roost sites by updating roost site records on an annual basis.	On-going	SBG, EN, LAs, SBRC
Encourage leaving of dead and dying trees wherever appropriate.	On-going	FWAG, SWT, LAs, Defra
Promote wildlife gardening, as gardens are important food sources in both urban and rural areas.	On-going	SWT
SPECIES MANAGEMENT AND PPROTECTION		
Ensure continued support for conservation work of Suffolk Bat Group.	2007	EN, SWT
RESEARCH AND MONITORING		
Contribute to national initiatives for population assessment and monitoring, linking population changes to environmental factors.	2007	SBG, EN
Ensure data collected during site visits and surveys is passed on to SBRC for central collation.	On-going	EN, SWT, SBG, FE, LAs
ADVISORY		
Liaise with landowners and land managers of Pipistrelle sites to ensure appropriate management of sites and surrounding habitats. Distribute relevant literature.	On-going	EN, SWT, SBG, FE, LAs, FWAG

COMMUNICATIONS AND PUBLICITY		
Distribute guidance leaflet on habitat management for Pipistrelle Bats in Suffolk.	On-going	EN, SWT, SBG, FE, LAs, FWAG
Maintain current numbers of licensed bat workers and encourage additional volunteers to train to ensure adequate county coverage it the future.	On-going	EN, SBG
Maintain and improve advisory system through education, training and publicity programmes.	On-going	SBG, SWT, EN, FWAG

Red squirrel *(Sciurus vulgaris)*

The Red Squirrel was formerly widespread in the UK in woodlands and forests before the introduction of the Grey Squirrel. It is now absent from most of England. It is particularly adapted to conifers, but also occurs in deciduous woods in the absence of Grey Squirrel.





1 Definition

The Red Squirrel is the only native British squirrel. Its fur colour varies from bright ginger to red or dark brown and it can be tinged with grey in winter. Other distinguishing features are the large ear tufts, which appear in mid-winter and disappear by the summer. An adult Red Squirrel weighs around 350g.

Red Squirrels are active during the day, but in summer they may rest for an hour around mid-day. They nest in dreys; round structures made of twigs in a tree fork or hollow. They are lined with hair, mosses or grass. Several Squirrels may share the same drey.

The main food source is tree seeds such as hazel nuts and seeds from conifer cones. Red Squirrels will also eat tree flowers, shoots and fungi growing on tree bark. Grey Squirrels are thought to eat hazel nuts before they are fully ripe, which the reds cannot. Reds can survive on smaller seeds such as conifers, hence their occurrence in several conifer woodlands.

2 Current status

2.1 National

Red Squirrel populations have suffered a marked decline in the UK over the last 50 years with the introduced Grey Squirrel replacing the species throughout most of England and Wales. The Red Squirrel is now largely confined to Scotland, Ireland, northern England and parts of Wales, although isolated populations persist in southern England at Poole Harbour Dorset, Isle of Wight and Thetford Forest in East Anglia.

Grey Squirrels appear to be better adapted to the current fragmented British woodland and displace Red Squirrels within 15 years of their arrival. The current population of Red Squirrels is estimated to be about 160, 000 (30,000 in England) (JNCC, 1995).

2.2 Local

There has only been one possible sighting of Red Squirrels in Thetford in the last two years (2001 – 2003). When the re-introduction programme was shut down (2001) the remaining Squirrels from the breeding pen were released into the wild, but no recent survey has been undertaken to establish numbers. In Suffolk Red Squirrels only occur within the Brecklands Natural Area including Thetford Forest.

3 Current factors causing loss or decline of the Red Squirrel in Suffolk

- The spread of Grey squirrels and subsequent competition with them
- Disease (Parapox virus)
- Fragmentation of suitable habitat

4 Current Action

4.1 Legal Status

The Red Squirrel is fully protected and listed on Appendix III of the Bern Convention, and is protected by Schedules 5 and 6 of the Wildlife and Countryside Act 1981.

4.2 Management, research and guidance

- A 2000-hectare Red Squirrel reserve at Thetford Forest has been established. Translocation of 22 Squirrels into this area took place in the summer of 1996.

- A breeding programme was undertaken with the objective of planned release to maintain the population. This was discontinued in 2001 because the project had run its planned period. It was demonstrably not practical to remove all Grey Squirrels from the study area. There was also the strong likelihood of the animals succumbing to parapox. It was decided not to continue releases until either a vaccine could be found or at least the answer to how the parapox virus was transferred from greys to reds was understood.

- The Red Squirrel is subject to a English Nature Species Recovery Programme which operates nationally.

- A six month trapping project has just been completed (2003) with funding from FC and FE. A report on location of traps, bait types etc. is expected by the end of the year.

5 Action Plan Objectives and Targets

1 Maintain the 2000 ha reserve in Thetford Forest in suitable condition for Red Squirrel, until research work provides answers to the parapox virus issues. This involves maintaining a larger level of Scots Pine than in other areas of the forest and keeping broadleaf areas to a minimum for landscape purposes.

2 Keep up to date on national research which could benefit the Red Squirrel population remaining within the reserve area. Contribute to national research where feasible and implement results of any findings. The three main threads of research which are/ need to take place;

- Methodology for trapping greys
- The way the parapox virus is carried by greys and transferred to reds
- Parapox vaccine research

6 Red Squirrel: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to ensure that the needs of Red Squirrels are taken into account when reviewing or preparing Indicative Forestry Strategies.	Ongoing	**FC**, LAs
SPECIES MANAGEMENT AND PROTECTION		
Continue to record any sightings of Red Squirrel within Thetford forest and pass details to SBRC.		**FE**
Undertake forest management within the reserve until research provides assurance that the population can be sustainable (see Objective 1).	2007	**FC**, FE
RESEARCH AND MONITORING		
Ensure that any national research into Red Squirrel ecology, bait hoppers, Red/Grey interactions, methods of grey squirrel control, habitat management etc are available to inform any future re-establishment projects.	On-going	**FC**
Pass information gathered during survey and monitoring work to SBRC & JNCC in order that it can be incorporated in a national database and contribute to the maintenance of an up to date Red list.	On-going	**FC**, EN, PTES
ADVISORY		
Ensure that any guidance on forestry design to benefit Red Squirrels is available to relevant forest managers.	On-going	**FC**, EN, PTES
COMMUNICATIONS AND PUBLICITY		
The balance between Red and Grey Squirrel populations is an emotive issue. Produce a leaflet to give clear information explaining the relationship between reds and greys. Make available to the public and landowners, especially where control measures are being undertaken.	2007	**FC,** PTES

Water shrew *(Neomys fodiens)*

This small insectivore is usually associated with clear, fast-flowing, unpolluted streams and rivers and also ponds, drainage ditches and reed beds. Its population status is not clear as data is scarce, but it is likely to be vulnerable to habitat loss and the effects of pollution. The water shrew has been identified as a 'character' species of Suffolk.

Current Status

1.1 National

Widespread distribution throughout mainland Britain, but nowhere is it common. Insufficient information available on which to assess population changes.

1.2 Local

Widespread distribution but few records.

1.3 Natural Areas

East Anglian Plain, Suffolk Coast and Heaths, Breckland.

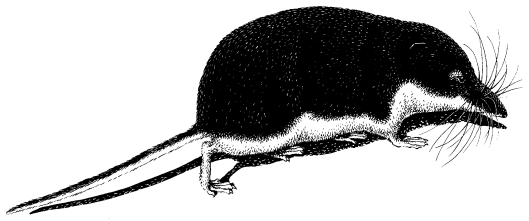
1.4 Protection

All shrew species are protected under the Wildlife and Countryside Act, 1981 (Schedule 6); it is illegal to capture or kill them except under licence.

Current factors causing loss or decline

- There is recent concern, although lacking in firm evidence, that water shrews may be declining due to habitat destruction and disturbance through modification of riverbanks, and clearance of vegetation. Water shrew populations associated with drainage ditches, ponds and other aquatic habitats may also be similarly affected.

Recommended management includes: avoiding disturbance during the breeding season; carrying work out from one bank leaving the opposite bank intact or leaving at least one third of the watercourse intact to act as a refuge; where possible, de-silting should not interfere with banksides and spoil should be carefully disposed of.



- The effects of lowered water quality are unclear, but may be significant in reducing water shrew numbers.

2 Current action

- Local surveys to record the presence of water shrews are being promoted by Suffolk Wildlife Trust and the Suffolk

Naturalists' Society/Suffolk Biological Records Centre.

- The Water shrew is listed as a target species within the Anglian Otters and Rivers Project (1999-2001), a joint project between Suffolk and Norfolk Wildlife Trusts, Water Authorities and the Environment Agency.

Action plan objectives and targets

1 *Identify sites where water shrews occur.*

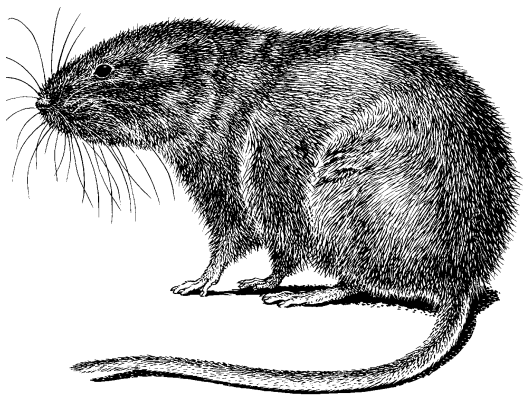
2 *Maintain and enhance water shrew populations at these sites through appropriate management.*

Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation Ensure management needs of water shrews are incorporated in relevant agri-environment schemes, WLMPs and LEAPs at consultation	ALL	*	*	*	*	*
Ensure all Suffolk LEAPs incorporate appropriate water quality objectives	EA	*	*	*	*	*
B. Site safeguard and management Include water shrew conservation in all LEAPs	EA	*	*	*	*	*
Secure the sympathetic management of wetland sites which are known to or are likely to support water shrew	EA, SWT	*	*	*	*	*
C. Species management and protection Continue to licence all studies involving the capture of this species which contribute to objectives of action plan	EN	*	*	*	*	*
D. Advisory Advise landowners and land managers on presence and requirements of water shrews	SWT, EA	*	*	*	*	*
E. Future research and monitoring Undertake survey to identify sites where water shrews are present using non-captive methods	SWT, SNS, SBRC	*	*	*		
Use survey information to contribute to national research on habitat requirements	SWT	*	*	*		
F. Communications and publicity Ensure landowners and agencies are aware of the requirements of the water shrew, particularly when habitat management work is to be carried out	EA, SWT	*	*	*	*	*
Raise public awareness through survey and follow-up action	SWT	*	*	*	*	*

Water Vole *(Arvicola terrestris)*

The Water Vole was formerly common along the banks of rivers, streams, ditches, dykes, lakes and ponds throughout mainland Britain. Its decline is thought to be largely due to changing management of watercourses and predation by the introduced American mink.



1 Definition

Water Voles were once a familiar waterside animal, often known locally as a water rat. Their blunt faces and small ears, along with other characteristics readily distinguish them from common rats, which may also inhabit waterside habitat. Whilst it is relatively easy to observe Water Voles in the wild, they also leave distinctive field signs which form the basis of field surveys. These include distinctive small, blunt-ended droppings, frequently deposited in piles known as latrines, burrow systems with their distinctive holes on the river bank and characteristic neat piles of cut vegetation at feeding stations near the waters edge.

Water Voles are almost wholly vegetarian, feeding on a wide range of plants. They need luxurious bankside vegetation, particularly grasses and sedges, to provide food and cover from predators. They also favour steep bank angles of 35º or more to allow them to construct extensive burrow systems.

During the breeding season females hold exclusive territories and density will be dependent in part on food availability. Peak densities can vary from 20-114 animals per km of waterside habitat. Occasionally water voles have been reported living at high densities in ponds and moats in Suffolk and this can lead to bankside damage.

Although Water Voles are widely distributed in Britain, they are suffering from one of the most rapid and serious declines of any mammal in recent years. This decline is attributed to habitat loss, such as through river management and drainage, but this has been exacerbated by predation from American Mink. This species was originally brought to the UK in the 1920s and 1930s, but by the mid 1950s they were reported as breeding in the wild, following escapes from fur farms and they are now widespread. Predation by mink has led to localised extinctions and fragmentation of remaining populations of water vole, threatening their long-term viability.

2 Current status

2.1 National

A national survey in 1989-90 reported that there had been an overall loss of at least two thirds of Water Vole sites since 1900, with a marked loss in the 1980s. A further survey carried out between 1996-1998 showed a further loss of two thirds of the occupied sites and nine tenths of the remaining population in only seven years. In the Anglian Region, 72% of survey sites were found to be occupied in the first survey, but only 30% by the second survey. It is significant that the Anglian region holds over one third of England's (one fifth of Britain's) remaining Water Voles.

2.2 Local

Surveys in 1997, undertaken by Suffolk Wildlife Trust and the Environment Agency showed that Water Voles were largely absent from the west and north of Suffolk, which could be correlated with the presence of mink in this area. Water voles were present in central and eastern areas of the county including populations along the River Gipping, upper reaches of the River Alde, Thorpeness Hundred, Sizewell Belts, River Fynn, River Deben and River Wang. Overall, signs of water vole were found at a third of sites surveyed and the River Deben was notable because three quarters of sites surveyed had Water Voles. As yet, this countywide survey has not been repeated, but a survey of the Deben catchment in 2003 showed a reduction in positive sites from 75% in 1997 to 46% in 2003.

Water Vole are also known to occur on non-riverine sites, such as reedbeds, dykes, ditches, ponds and moats. These habitats provide a valuable haven for them, particularly because the impacts of mink predation may be reduced.

3 Current factors affecting water voles in Suffolk

- Habitat change through neglect, causing scrub encroachment and over-shading
- Overgrazing, causing poaching of watercourse, banks and denuding of vegetation.
- Insensitive watercourse dredging leading to habitat loss and fragmentation.
- The spread of American Mink (*Mustela vison*) in combination with previous factors leading to predation and local extinction throughout Suffolk
- Un-seasonal flooding especially during the nesting season
- The threat to reedbeds from sea-level rise

4 Current Action

4.1 Legal Status

Listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended 1998) in respect of Section 9 (4) only. This provides protection of Water Vole places of shelter only. In the 5 yearly review of the Act in 2002 it was recommend that protection should be extended to the Water Voles themselves. The outcome of the review is still awaited.

4.2 Management, research and guidance

Survey work to identify new sites occupied by water vole, combined with monitoring of the remaining Water Vole populations is an essential element of the conservation effort.

This provides information about the types of habitats occupied by Water Voles as well as assessing population changes and the impacts of management and predation by Mink. Three Key Areas for Water Vole have been identified on the eastern coast of Suffolk through a National research programme, but other large, viable populations are designated as Local Key Areas.

The Anglian Otters and Rivers Project (AORP) (1999-2002) undertook an evaluation of Water Voles in grazing marsh managed through the Suffolk River Valley and Essex Coast ESA schemes. This habitat was found to support good populations (three quarters of sites surveyed had Water Voles) and this was attributed to favourable management regimes. A conservation strategy was developed for both these schemes to ensure that best practices are implemented during future habitat management. This project also carried out a survey of ponds and moats and 30 new sites were recorded. However, this study also observed that occasionally Water Voles can cause damage to plants and bank erosion.

The AORP also initiated a pro-active approach towards Mink control by targeting river catchments (Stour, Alde and Fynn (Deben)) where earlier surveys had indicated a good population of Water Vole and where there was an increasing Mink presence. Training and guidance on appropriate methods was provided and some traps made available for loan. This work has been continued by the Water for Wildlife Project (WFWP), which has followed on from the AORP.

As well as ensuring that the Environment Agency's Flood Defence Programme is carried out with minimal impact upon Water Voles, there are also opportunities for habitat enhancement and creation. The Water for Wildlife Project works closely with the Environment Agency to develop this.

5 Action Plan Objectives and Targets

1 Halt the decline and possible extinction of Water Vole in Suffolk.

2 Ensure management of watercourses and wetlands which facilitate the above.

3 Promote appropriate Mink control methods throughout Suffolk, but particularly where Water Vole populations still occur.

4 Investigate post-extraction management of gravel workings and flood-plain restoration schemes, to develop new reedbeds and broad reed-dominated pool margins, as a means of developing new populations away from the coast.

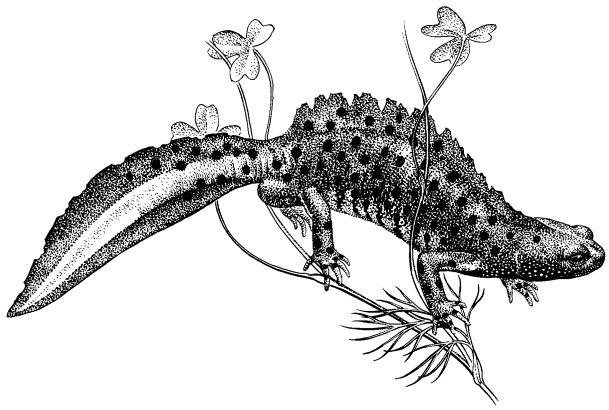
6 Water vole: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure compliance with Schedule 5 of the Wildlife and Countryside Act (1981).	2004 2005 2006 2007	**ALL**
Ensure management needs of Water Vole are incorporated in relevant agri-environment schemes, Water Level Management Plans and other relevant policy at consultation.	2004 2005 2006 2007	**EA, SWT, DEFRA**
SITE SAFEGUARD AND MANAGEMENT		
Continue to identify large, viable populations of the Water Vole in Suffolk. Designate these as 'key areas' (Riverine County Wildlife Sites) and ensure management and monitoring.	2004 2005 2006 2007	**SWT**, EA, SCC
Promote Water Voles habitats into all wetland conservation initiatives and work with landowners to promote good habitat management practices.	2004 2005 2006 2007	**SWT**, EA, DEFRA, EN, IDBs, LAs, Landowners
Ensure that development schemes in Suffolk do not affect the integrity of Water Vole populations.	2004 2005 2006 2007	**LAs,** SWT, EA
Using survey and research information, identify sites in Suffolk which are suitable for re-establishing populations.	2004 2005 2006 2007	**SBRC**, EA, SWT
SPECIES MANAGEMENT AND PROTECTION		
Implement a strategy for effective and appropriate mink control in Suffolk (particularly in designated key areas). Advise landowners on appropriate methods and reasons for control.	2004 2005 2006 2007	**SWT**, EA, DEFRA, FWAG
Co-ordinate a programme of translocation and re-introductions of Water voles in Suffolk where it is deemed appropriate and effective.	2006 2007	**SWT**, EN

RESEARCH AND MONITORING		
Participate in national monitoring scheme. Carry out surveys of Suffolk.	2004 2005 2006 2007	**SWT**, EA
Encourage submission of data collated locally to BRCs for incorporation into a national database and to facilitate easier access to information.	2004 2005 2006 2007	**SBRC,** EA, SWT
ADVISORY		
Provide advice conservation and management advice to managers and landowners of habitats with Water vole.	2004 2005 2006 2007	EA, SWT, DEFRA, FWAG, **BAP Wetland Working Group**
COMMUNICATIONS AND PUBLICITY		
Produce co-ordinated publicity programme for Water voles and raise awareness of the range of habitats that can support them.	2005 2006 2007	EA, SWT, FWAG, Defra, **BAP Wetland Working Group**
Distribute nationally and locally prepared material on Water vole conservation.	2004 2005 2006 2007	EA, SWT, LAs, DEFRA **BAP Wetland Working Group**

Great Crested Newt (*Triturus cristatus)*

This amphibian lives during the spring and early summer in ponds with clear water where there is a variety of aquatic vegetation. In late summer and autumn it leaves water to live under stones or in soil, feeding on invertebrates before hibernating.



1 Definition

The Great Crested Newt (*Triturus cristatus*) is the largest of the three newt species native to Britain, with adult males reaching on average 140-150mm and females being slightly larger. Both males and females have dark, often black, warty skin speckled with tiny white spots. The belly is bright orange or yellow with black blotches. Males have a high jagged crest along the back and another down the tail, and a silvery blue streak along each side of the tail. Both crest and colouration become more pronounced during the breeding season. Females lack the crest but have the orange-yellow strip running along the underside of their tail.

2 Current status

2.1 National

A species with an unfavourable conservation status in Europe. The British population is thought to be amongst the largest in Europe. Although still widespread, studies indicate a colony loss of 2% over five years in the 1980s. Great Crested Newts are believed to be present in c.18,000 ponds, although only 3,000 have been identified.

2.2 Local

Suffolk is believed to be a stronghold for the Great Crested Newt, particularly in the north-east of the county where there is a higher percentage of ponds. At least 115 ponds in Suffolk have populations of Great Crested Newts but survey data is inadequate and the figure is likely to be much higher.

2.3 Natural Areas

Particularly associated with the East Anglian Plain (Claylands) where there is a higher density of ponds than elsewhere in the county.

3 Current factors affecting Great Crested Newts in Suffolk

- Loss of suitable breeding ponds largely caused by in-filling as a result of agricultural intensification, scrub encroachment, shading and gradual silting up.
- Decline in the quality of ponds through pollution and toxic effects of agro-chemicals and lowering of the water table.
- Introduction of fish to ponds; Great Crested Newt larvae are vulnerable to predation.
- The loss and fragmentation of terrestrial semi-natural habitat around ponds often as a result of building.

4 Current action

4.1 Legal Status

- Great Crested Newts are protected by both national and international law under Schedule 5 of the Wildlife and Countryside Act 1981, Annex 2 and 4 of EC Species and Habitats Directive, the Bern Convention and Schedule 2 of the Conservation Regulations (Natural Habitats etc) 1994.
- A list of known sites is maintained by SBRC and supplied on a regular basis to Local Authorities and conservation organisations.
- Developers are often advised to undertake Great crested newt surveys where land use changes are proposed.
- Surveys for Great Crested Newts were undertaken in 1997 and 1998 by the Suffolk Amphibian and Reptile Group (SARG). SARG is involved in obtaining landowner information for sites and advising on habitat management.
- Several local parishes have undertaken survey for great crested newt during 2001-3. These include Stanton and Parham.

4 Action plan objectives and targets

1 *Maintain the range, distribution and viability of existing Great Crested Newt populations.*

2 *Establish approximate population size within the county and number of breeding sites to give baseline for further restoration and management work.*

3 *Restore or create populations on three sites per year to compensate for sites previously lost to development or through neglect.*

4 Encourage parish groups to record presence of great crested newts in village ponds and also to undertake pond restoration projects.

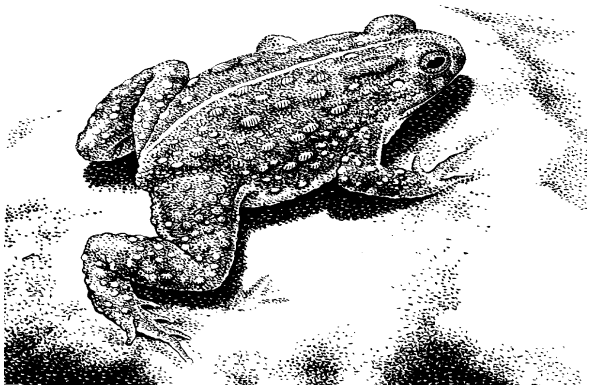
6 Great Crested Newt: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Update SBRC site Register annually to include new Great Crested Newt sites.	2004 2005 2006 2007	**SWT**, SBRC, Local Authorities, SARG, County Recorder
Ensure farmers and landowners are advised on Great Crested Newts when suitable habitats are entered for Countryside Stewardship and ESA schemes, especially in Claylands Natural Area.	2004 2005 2006 2007	**FWAG**, SWT, Defra
Ensure enforcement of WCA (1981) to prevent loss of breeding sites and Great Crested Newt populations.	2004 2005 2006 2007	**EN,** Local Authorities
Ensure that Local Authorities and Highways Agency are informed of methods for assessing mitigation schemes.	2005	**EN**
SITE SAFEGUARD AND MANAGEMENT		
Monitor and survey all Great Crested Newt breeding sites on a five year rolling programme.	2004 2005 2006 2007	**SARG**, SWT, EA
Promote favourable management of known sites by offering management advice to land owners and parish groups (5-10 areas annually).	2004 2005 2006 2007	**SARG**, SWT, FWAG, Defra
Consider suitable sites for SSSI and designate where appropriate.	2004 2006	**EN,** SWT
SPECIES MANAGEMENT AND PROTECTION		
Draw up a list of sites for restoration and indicate the 10 most important ones.	2004	**SARG,** SWT, SBRC
Maintain number and distribution of sites through restoration of population and/or key habitat on 20 sites.	2007	**SWT**, SARG, LAs

Identify 10 parishes with potential Great Crested Newt habitat and encourage groups to undertake restoration work and make annual population counts.	2007	**SWT**, SARG
RESEARCH AND MONITORING		
Undertake surveys of least recorded areas of the county eg; west Suffolk.	2004	**SARG,** SWT
Compile all Great Crested Newt records and send to SBRC annually.	2004 2005 2006 2007	**SBRC**, SWT, EN, SARG, FWAG, Highways Agency
Produce distribution maps showing all recent (last 5 years) records, every 6 months.	2004 2005 2006 2007	**SBRC**
ADVISORY		
Develop a trained volunteer survey team to provide management advice and to undertake survey work. Visit at least 10 sites per year.	2004 2005 2006 2007	**SARG**, SWT
COMMUNICATIONS AND PUBLICITY		
Ensure distribution of EN/Farmland Habitat Working Group Great Crested Newt leaflet to farmers, landowners and other interested parties.	2004 2005 2006 2007	**EN, FWAG**, SWT, SCC, SARG

Natterjack Toad (*Bufo calamita*)

The Natterjack Toad is a pioneer species adapted for life in open habitats. In Britain, it relies on the hot conditions provided by sand dunes, lowland heath or upper saltmarshes (merse). Natterjack Toads breed shallow freshwater pools, which heat up quickly and allow the tadpoles to develop rapidly to metamorphosis un-hindered by the presence of other species.



1 Definition

The Natterjack Toad is the rarest of the six native amphibians currently extant in the British Isles. The narrow yellow stripe down its back and small size distinguish the Natterjack from the more familiar Common Toad.

Natterjacks live in the open, early successional habitats and thereby avoid competition from the Common Frog and Common Toad. When they are ready to spawn, the loud rasping call of the males attracts females to freshwater, temporary pools, with a circum-neutral pH, where they breed. This loud rasping call also gives the toad its common name. The long breeding season (late April to July) and is an adaptation that enables Natterjacks to use their ephemeral breeding pools when they become available. Spawn is laid in strings as with the Common Toad and tadpoles are small and black. They develop quickly in the shallow warm water and the yellow dorsal stripe is clearly visible on young toadlets. These shallow, ephemeral pools also lack predators.

Natterjacks have relatively short hind legs so that they can run rather than hop (hence the latin name *Bufo calamita* which refers to its running action). They are active predators and need large areas of bare ground or very short vegetation for hunting their invertebrate prey. Their legs are also used to dig burrows where they can avoid extremes of temperature and dryness. Several individuals often share the same burrow and in winter they dig deeper to hibernate.

2 Current status

2.1 National

The Natterjack Toad has suffered a substantial decline in numbers and range during the 20th century. The decline was particularly marked on heathland compared to dune and merse sites. Excluding translocation sites where populations have been recently re-established, the species can be found at four natural sites in Scotland and 35 in England, but has become extinct in Wales. The Natterjack Toad has now been introduced to 13 sites, including two in Wales.

2.2 Local

The last Natterjack Toad colonies in Suffolk became extinct during the 1950s and 1960s. This species was formerly found in colonies, at sandy locations, scattered all down the east coast from the Waveney to the Deben. They were extremely abundant at some places within the district of Lothingland where they were found at Burgh Castle, Bradwell, Belton, Caldecott Hall, Fritton, St Olaves, Herringfleet, Lound, and Gorleston.

Elsewhere Natterjacks were found at Easton Warren, Wangford Wood, Southwold, Walberswick, Coldfair Green, Aldeburgh, Alderton and at Bawdsey. Inland they formerly occurred at Wortham Ling and at Tostock.

2.3 Natural Areas

Suffolk Coast and Heaths, East Anglian Plain and Suffolk Coast Maritime.

3 Current factors affecting the Natterjack Toad in Suffolk

- Significant reduction in the area, of formerly suitable habitat due to the loss of heathland to agriculture, forestry, lack of grazing and to scrub encroachment.

- Loss of former breeding ponds due to the lowering of the water table, the change of drainage patterns, infilling and, perhaps, acidification.

- Habitat fragmentation preventing the dispersal of animals to new sites and genetical isolation may become a problem for existing populations. Predation by rising levels of corvids due to presence of outdoor pig units and waste disposal sites.

4 Current Action

4.1 Legal Status

The Natterjack Toad is listed on Appendix II of the Bern Convention and Annex IVa of the EC Habitats Directive. Also protected by Schedule 2 of the Conservation (Natural Habitats etc.) Regulations 1994, and Schedule 5 of the Wildlife and Countryside Act 1981.

4.2 Management, research and guidance

- The Natterjack has been the subject of conservation action by both statutory and voluntary organisation for over twenty-five years (The Herpetological Conservation Trust - HCT).
- A National Species Recovery Programme, funded by English Nature and the Countryside Council for Wales, was completed in June 1995. This included habitat management, research and translocations to suitable sites.
- The HCT, as sole lead partner for this species, now undertakes this work and works with others to promote the national Species Action Plan.
- The HCT maintains the rare species database and updates the Natterjack Toad Site Register annually.
- In Suffolk management work has involved the creation of ponds at the reintroduction sites and the removal of scrub on heathland. Under the Species Recovery Project spawn from a site in Norfolk was translocated to the site at Walberswick. The two translocation sites at Westleton and Walberswick (1985 and 1995), are monitored annually by RSPB and EN.
- Creation of further suitable habitat on the Sandlings heaths close to the translocated populations was undertaken in 2000. Four new ponds were created/restored in 2003 as part of the Suffolk Sandlings Project and two ponds at RSPB Minsmere are currently being relined (2003). The third is to be relined in 2004.

5 Action Plan Objectives and Targets

1. *Maintain and enhance the existing colonies of the Natterjack Toad – linking them with suitable habitat if feasible.*
2. *Monitor the existing Natterjack Toad populations.*
3. *Identify further reintroduction sites within the historical range of the species in Suffolk and ideally link to existing colonies at Westleton and Walberswick.*
4. *Initiate at least one more re-introduction by 2007within the area specified in Target 3.*

6 Natterjack Toad: Proposed action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Maintain the two existing SSSIs where Natterjack toad populations occur, in favourable condition.	2005	**EN**, RSPB
SITE SAFEGUARD AND MANAGEMENT		
Ensure that suitable management work (particularly water levels) is undertaken bi-annually, or as necessary, on Sandlings Heaths to maintain translocated populations.	2003 - 2007	**RSPB**, **EN**, HCT
Provide additional pools, where feasible, to increase the breeding range of the toads, within range of the Walberswick and Westleton colonies.	2003 - 2007	**EN, RSPB**, HCT
Seek opportunities to re-establish heathland at sites between Westleton and Walberswick to form a habitat link between the two colonies. Draw up a map of suitable sites.	2003 - 2007	**EN, RSPB**, FC, SBRC
Update site management plans to incorporate new proposals for enhancing the existing Natterjack Toad colonies.	2003 - 2007	**EN, RSPB**,
SPECIES MANAGEMENT AND PPROTECTION		
Prepare a list and map of sites suitable for translocations.	2004	HCT, SBRC
Maintain and protect existing sites at Walberswick and Westleton	2005	EN, RSPB, **SARG**
RESEARCH AND MONITORING		
Undertake bi-annual monitoring to assess the breeding success of populations at Westleton and Walberswick and produce a report bi-annually.	2003 – 2005 2007	**SARG,** EN, RSPB
Ensure that national research into the ecology and management of this species is available and implemented at a local level.	On-going	**HCT,** EN, RSPB, University of Sussex

Ensure that survey information gathered is passed on to SBRC and HCT (National Natterjack Toad lead partner).	On-going	**RSPB,** EN
ADVISORY		
Liase with landowners and land managers of Natterjack sites to ensure appropriate management of key sites and adjacent suitable habitat.	2003 - 2007	**RSPB,** EN, SWT, HCT
COMMUNICATIONS AND PUBLICITY		
Raise awareness of the species and its habitat by including progress summary in Sandlings Annual Report.	2007	SCHU, SWT, RSPB,

Barn Owl
(*Tyto alba*)

The Barn Owl was voted as the most loved of all British birds in a poll organised BBC Wildlife magazine. However, it has declined markedly in Suffolk and elsewhere since the 1930s. It enjoys protected status under Schedules 1, 3 and 4 of the Wildlife and Countryside Act 1981 and appears on the "Amber List" of Birds of Conservation Concern. Currently, Barn Owls are virtually restricted within Suffolk to the eastern half of the county, with the highest densities in the northeast. Its decline has been attributed to a lack of feeding opportunities and nest sites. Dutch Elm disease has resulted in the loss of many large hollow trees and the demolition and conversion of barns has had a detrimental effect.

1. Definition

The Barn Owl was once a relatively common bird of lowland farmland, hunting at dusk over rough grassland, which supports its main prey, the Short-tailed vole. The numbers of Barn Owls have declined since the 1930s, and the availability of suitable nest and roost sites are crucial to maintain the species successfully in an area. The Barn owl, with its evocative ghostly form, is an important flagship species for encouraging the maintenance and creation of rough grassland habitat.

2. Current status: national, regional, and local

Barn Owls were once a common feature of farmland and other rough grazing but have suffered a severe decline since the 1930s, with the population estimated in the late 1980s at less than half of that recorded formerly. The 1988-91 Atlas of Breeding Birds indicated a UK population of 1,110 breeding pairs and a decline of 37.5% in Britain since the 1968-72 survey. However, it recognises that the species is particularly difficult to survey and that its numbers show considerable annual variation, related to the three-year cycle of its main food supply, voles.
The Suffolk Bird Report describes the Barn Owl as a *"fairly common resident"*. In the early years of the 20th century, the Barn Owl was generally well distributed throughout the county and was the commonest of the owls. Up until 1945, it was a familiar sight on most Suffolk farms, but numbers fell sharply thereafter and, in the mid-1970s, it was recorded from only 40 parishes. Using the same criteria as that for the 1988-91 Atlas of Breeding Birds, Suffolk's breeding population stood at around 100-125 pairs, which represents about 10% of the national population (estimate can be inputted onto BARS - status trends and losses. However, the latest estimates for the UK were 4,000 pairs (Baker *et al*. 2006) and, extrapolating down, means that the County population could be over 400 pairs. The Suffolk Ornithologists Group's (SOG) Raptor and Owl survey of 1995-1998 recorded Barn Owls in 187 tetrads, including 50 reports of breeding. This, together with the records of the Suffolk Bird Report, suggests that its numbers are currently stabilising and possibly increasing in

some areas. The most striking feature of the recent years is the concentration of the species in the northeastern part of Suffolk, most markedly along the Waveney Valley and the coastal belt. Records indicate its total absence from large areas of west and central Suffolk.

The Barn Owl is additionally protected under Schedule 1 of the Wildlife and Countryside Act (1981), which makes it an offence to disturb the birds or their dependent young at the nest.
The Barn Owl is on the "Amber List" of Birds of Conservation Concern.
Although the Barn Owl is not a national UK BAP species, it has been identified as a Suffolk character species as Suffolk holds 10% of the UK population and because of the rapid decline of the Suffolk population from the 1940s to the 1980s.

3. Current factors affecting Barn Owls

Loss of feeding opportunities:
The Barn owl is dependent on rough grassland for its prey. The favoured prey, Short-tailed Vole, Wood Mouse and Common Shrew, require rank or rough grassland with a thick sward and deep litter layer. Although large areas of such grassland, for example old parkland and coastal marshes, are valuable, it is the unmanaged grassland of field margins associated with open ditches and hedgerows that are particularly important. Such areas need periodic management to prevent scrub invasion.
Agricultural intensification has reduced the extent and quality of prey-rich habitat. Within Suffolk 96% of unimproved grassland has been lost since 1939. More intensive management of field margins, watercourses, hedgerows, woodland edges and roadside verges has also been a factor in reducing the availability of feeding habitat.
Improved methods of crop storage have reduced the availability of rats and mice, a winter food source.

Fragmentation of feeding habitats:
Fragmentation of feeding habitat, with a lack of linking corridors of suitable grassland, is detrimental to post breeding dispersal. The intensive agricultural character of much of central and western Suffolk may limit opportunities for the species to spread from its relative stronghold in the northeast.

Loss of nest and roost sites:
Rural development, especially barn conversions, is seen as an important factor in the decline of the Barn owl. Regulations requiring the exclusion of birds from buildings used for the production of foodstuffs may also reduce the availability of nest and roost sites.
Although Suffolk Barn Owls may find a suitable ledge or crevice within a barn or outbuilding, they predominately nest in hollow trees. With heavy rainfall less of a threat to owlets than in other parts of the country, 70% of nesting Barn Owls choose

tree sites in preference to any other, which is twice the national average. Old, isolated trees in pastures, parkland or hedgerows and remote from disturbance are used, with the nest in the main trunk or near the crown of pollards. Oak, English Elm, Ash and Willow are most favoured. The loss of such trees through disease, old age or removal for economic or safety reasons, limits the available nest sites.

Competition for tree cavity nest sites:
Barn Owls face competition from other hole-dwelling species, most notably Kestrels, Tawny and Little Owls, Jackdaws, Stock Doves and Grey Squirrels. On the Lothingland peninsula, this problem has been exacerbated by the high density of feral Egyptian Geese that often choose hollow trees as nest sites early in the breeding season. Although Barn Owls are able to tolerate most species, and will often share the same cavity, it cannot compete with Egyptian Geese or with the traffic of Jackdaws when raising their nesting platform by bringing in sticks.

Poisoning:
There is concern nationally over owl poisoning resulting from owls eating rodents, which have fed on pesticide sprayed cereals or second generation rodenticides (eg brodifacoum, flucomafen). However, harmful poisons used by farmers are usually administered through ignorance rather than with malicious intent.

Disturbance:
Suffolk barns are mostly unsuitable for breeding Barn Owls and many, which do choose to nest inside a building, tend to use bale stacks. These nests may become vulnerable in spring as the bales are removed and are prone to predation by rats and cats.

Predation:
The Barn Owl has few natural enemies and although, historically, its main predator was Man, this no longer remains a serious threat. Barn Owls hunting at night have little competition with other nocturnal hunters, but those out at twilight often attract the attention of local Kestrels who may "mug" the Barn Owl of its meal. The Goshawk is a more common avian predator elsewhere in Britain, but it is so rare in Suffolk that it does not pose a threat. Mink, Stoat, Weasel and Brown Rat have also been implicated in studies on mortality and, in all cases, involved incubating or brooding Barn Owls in vulnerable situations, usually low down or on the ground in hollow stumps and in fallen trees (Shawyer 1998).

Severe Weather:
Prolonged periods of snow cover will have a detrimental affect as prey remain below the snow blanket. This may have the affect of forcing Barn Owls to increase their foraging area and hunt roadside verges where they become susceptible to road kills. Female Barn Owls need to gain weight rapidly from February onwards if they are to commence egg-laying at the optimal time in April or May. Studies have shown that Barn Owl numbers are at their lowest when snow duration is greatest.
Continuous rainfall can also affect breeding success. Barn Owls are soft plumaged birds and their feathers can easily become wetted thus reducing their hunting ability.

Food supply:
The vole cycle peaks every 3-4 years and the availability of voles is critical to the fledging success and brood size of the Barn Owl. The Short-tailed Vole and the Common Shrew are the two most important prey species for the Barn Owl, but Bank Voles, Wood Mice and Pygmy Shrews are also commonly taken. During poor vole years, Moles and juvenile Brown Rats are also taken.

Traffic Kills:
Ringing data has shown that more Barn Owls die as a result of road traffic accidents than from any other cause. Construction of new roads and extra traffic has led to increased mortality of Barn Owls, though local information is limited. There are many minor roads that act as "rat runs" for people hurrying to and from work during early mornings and late evenings, at a time when Barn Owls are hunting. Barn Owls are naturally attracted to roadside verges as they form rich hunting grounds in areas where there are limited feeding opportunities on adjacent fields.

Drowning:
The second most common cause of mortality is drowning usually in water troughs and thought to be the result of Barn Owls plunging at their own reflection. Once in the water, their feathers soon become waterlogged and the owls are then unable to force their way out.

Lack of co-ordinated effort:
Although a number of studies are being carried out by Barn Owl enthusiasts in Suffolk, most are in isolation to each other and there is little co-ordinated effort. Some surveyors fail to forward records to the SBRC, which could result in the loss of the site through the ignorance of developers.

Lack of confidence with data security:
A significant number of landowners will only allow the erection of nest boxes and/or monitoring to take place if total secrecy is maintained. There are worries that the whereabouts of the site may attract the attention of birdwatchers, however well-meaning, who may cause unnecessary disturbance to the nest. Other landowners are much more cynical, fearing that any development potential to farm buildings may be hampered by the presence of nesting Barn Owls. Some surveyors are also suspicious as to how secure data is stored and its availability to outside bodies. Biological Records Centres do sell Barn Owl data to consultants, acting on behalf of developers, as a means of protecting the site and to allow mitigation work to be carried out prior to development.

Differing approaches by Planning Enforcement:
There is an apparent variation in the approach to Barn Owl surveys prior to potential development. Some Local Authorities insist on owl assessments being completed for all development in rural areas and others only if owls are suspected of nesting.

4. Current action

Managing land to increase feeding opportunities:
Farmers are being encouraged to enlist into agri-environment schemes and to provide six-metre buffer zones for improved feeding opportunities for the Barn Owl and other BAP species.

Increasing roost sites:
The Suffolk Wildlife teams are currently planning to erect 500 nest boxes within the county during the five-year period of 2006-2010. Up to 1st September 2006, a total of 120 sites have been identified for nest boxes and 31 have been erected from the 74 made (these figures will be revised as are currently manufacturing and erecting approximately three boxes/week).

Reducing poisoning:
An RSPB pamphlet on the Barn Owl is readily available which details harmful and less harmful pesticides.

Traffic issue:
As an action from the Farmland HWG, the feasibility of erecting "Quiet Lane" signs in areas that hold a high density of Barn Owls, is being explored with the Highway Authority.

Reduce disturbance/predation:
Farmers with owls nesting in bale stacks are being persuaded to erect nest boxes to minimise the risk of accidental disturbance and predation.

Enhance co-ordinated effort:
Most nesting sites are monitored and records sent to County Bird Recorders. The barn owl BAP is aiming to co-ordinate effort through SWT with the BAP partners to this plan. This will also ensure reporting of records to the Suffolk Biological Records Centre to provide county wide data and accurate data for Local Planning Authorities.

A seminar will take place at BTO HQ (4th November 2006) to which all Barn Owl specialists are invited. One of the main aims of the seminar is to co-ordinate all studies.

5. Targets

Target type	Definition	Reporting
Range	In 2006, the Barn Owls breeding range was virtually restricted to NE Suffolk with most pairs frequenting the river catchments of the Waveney, Hundred and Blyth. There were also some isolated pairs on the Alde/Ore and the upper reaches of the Deben, Stour and Lark. By 2010, the Barn Owl's range should be consolidated with densities increased in NE Suffolk. Its range should expanded from its current tenuous footholds away from coastal regions. By 2015, the Barn Owl's range should be further consolidated and densities increased throughout East Suffolk and parts of West Suffolk (e.g. Breckland) with all suitable habitats being utilised by breeding pairs. By 2020, the Barn Owl's range should be further consolidated and densities increased throughout Suffolk, with all suitable habitat being utilised by breeding pairs.	Reporting: Progress will be reported as the latest estimate of range (as defined by Lead Partners/LBAPs)
Population size	In 2006, the county's Barn Owl breeding population stood at around 150 pairs and there were signs of an increase. By 2010, the county's Barn Owl breeding population should be consolidated and increased to around 250 pairs in association with the anticipated range expansion as detailed above. By 2015, the county's Barn Owl	Reporting: Progress will be reported as the latest population size estimate.

	breeding population should be consolidated and increased to around 300 pairs in association with the anticipated range expansion as detailed above. By 2020, the county's Barn Owl breeding population should be consolidated and increased to around 350 pairs in association with the anticipated range expansion as detailed above.	

6. Actions

Action	Date	Partners
Policy & Legislation		
Support the Police and others (RSPB NE) in ensuring the legislation protecting barn owls is implemented	2006-2010	**RSPB**, SWT, NT, NE, LAs.
Ensure that planning guidance makes provision for Barn Owl requirements.	2007	**NE**, SCC, LAs
Ensure through training and liaison that the network of volunteers involved in barn owl monitoring and ringing are working safely within the law.	2007-2010	**SWT**, NT, NE, RSPB LAs
Ensure that barn owl are incorporated in Local Authorities new LDFs and that the requirements of barn owl can be incorporated in planning and planning decisions.	2006-2010	**SCC,** NE**,** SWT, LAs**.**
Species management and protection		
Promote the use of agri-environment schemes where resources are available to encourage sympathetic management and creation of suitable feeding habitat.	2006-2010	**NE**, FWAG, SWT
Promote the careful use of rodenticides in farming and other building management.	2006-2010	**RSPB**, FWAG, SWT
Lobby for further grant aid for the creation and restoration of field margins.	2006-2010	**FWAG**, RSPB, SWT
Review management of land owned or managed by BAP partner bodies to ensure it reflects the requirements of Barn Owls	2006	**SWT**, DCs, SCC RSPB, NT.

where appropriate.		
Investigate potential for introduction of artificial nest sites where potential for colonisation of suitable habitats is limited by availability of nest sites.	2006 2007	**SWT** and SCC
Identify sites for the erection of 90 nest boxes in East Suffolk and include for their manufacture, delivery and subsequent monitoring.	2007	**SWT**
Identify sites for the erection of 400 nest boxes in the whole of Suffolk by 31st March 2010 and include for their manufacture, delivery and subsequent monitoring.	2010	**SWT**
Research and monitoring		
Determine an accurate assessment of the Barn Owl population in Suffolk, determine densities (number of breeding pairs per occupied 10-km square)	2006-2010	**SWT**
Promote volunteer participation in Breeding Bird Survey.	2007-2010	**BTO**, SWT
Encourage local research and survey.	2006-2010	**SWT**
Ensure monitoring data is shared with SBRC this will ensure a County overview of the BAP species and will ensure LPAs have current knowledge of barn owl nesting sites.	2006-2010	**SBRC**
Instil confidence in the security of data.	2007	**SBRC**
Ensure LPAs make informed planning decisions using current monitoring data sourced from SBRC.	2006-2010	**LAs**, SBRC and SCC (E)
Advisory		
Encourage and assist applications to the Environmental Stewardship Scheme	2006	**NE**, FWAG, SWT
Provide advice on the protection of farm buildings used by Barn owls to ensure that they are not redeveloped to the detriment of Barn owls promote EN leaflet to planners, landowners and farmers.	2006/7	**SWT**, FWAG.
Raise awareness of farmers and landowners to the effects of potentially harmful pesticides.	2006/7	**RSPB**, FWAG, SWT.
Advise farmers and landowners on management guidelines for habitats used by Barn owls.	2006/7	**FWAG**, SWT
Advise farmers, who have open water troughs, to place a means of escape (e.g. –	2006/7	**FWAG**, SWT

floating raft of timber) for Barn Owls that may have become waterlogged.		
Discourage farmers involved in agri-environment schemes from planting buffer strips adjacent to busy roads. Instead grassland strips should be widened elsewhere on the farm as compensation. (There may be other good reasons for placing buffer strips in such a position, but this is certainly an important consideration in barn owl country).	2006/07	**FWAG**, SWT
Communications and publicity		
Ensure Otley College has management for Barn Owls and other farmland wildlife in agriculture courses.	2007-2010	**SCC**, SWT
Use Barn Owl as 'flagship' species for promoting biodiversity, the importance of rough grassland and habitat corridors to farmers, landowners and the general public.	2006-2010	**SWT,** FWAG
Investigate with Highways Authority and District and Parish councils the feasibility of quiet lanes and or signage in key barn owl locations.	2007	**SCC**, DCs and Parish Councils
Raise general levels of awareness through local press and tourist outlets: produce a leaflet for tourist outlets, and generate two press releases each year.	2006-2010	**SWT**
Make motorists aware of roadside verges used by Barn Owls	2006-2010	**SCC (E)**, SWT, FWAG

7. Current constraints of plan implementation

Funding

Currently, there are funds available to enable a programme of education and nest box manufacture and erection to continue until the end of 2007. Objectives can only be met if further funds are made available which are currently estimated to be around £26K.

Agri-environmental schemes

Objectives are only achievable if there is a significant uptake in agri-environment schemes and the subsequent increase in the availability of feeding habitats. Such uptakes need to be accelerated and any cessation or postponements would have a detrimental effect on achieving the targets in this BAP.

Personnel
Achieving objectives depends greatly on volunteer participation together with the appointment of accredited agents to work under the SWT barn owl plan. The Project will falter if the Project fails to recruit enough volunteers.

8. List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisation's commitments:

Natural England Monica O'Donnell and Alison Collins
Suffolk Wildlife Trust Dorothy Casey
National Trust Grant Lohoar
Royal Society Protection of Birds Kirsty Coutts
Farming Wildlife Advisory Group Caroline Blew

Local Authorities:
Suffolk Coastal DC John Davies
Waveney DC Richard Smith
Mid Suffolk DC David Hughes
Babergh DC Peter Berry
Forest Heath DC Guy Belcher
St.Eds DC John Smithson
Suffolk County Council (SCC) (E) Andrew Murray-Wood
Martin Sanford Suffolk Biological Records Centre
Minor sites SCC (CO) Countyside Officer Nick Dickson

The following countryside projects were also invited to comment:
Dedham Vale AONB Peter Ennis
Suffolk Coasts and Heaths AONB Simon Hooton
Brecks Project Abigail Stancliffe-Vaughan
Upper Waveney valley project Mark Timms

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Author: Steve Piotrowski SWT with input from Mary Norden

Bittern *(Botaurus stellaris)*

1 Definition

The Bittern is confined almost entirely to wetlands dominated by reeds, where it feeds on fish, amphibians and other small water animals. The bird re-colonised the UK after extinction last century but has declined steadily in the last 30 years due to degradation of its habitat through lack of appropriate management as well as eutrophication. The population is showing signs of recovery following targeted management at key sites, former sites and new sites. It is still one of the rarest UK breeding birds. Suffolk is by far the most important county in the UK for this species.

There are strong links between this plan and those of reedbed, eutrophic open water, and white-mantled wainscot. Sea-level rise issues that are also featured in plans for the coastal habitats affect many key reedbeds.

2 Current status

2.1 National

Declining, localised and rare in the UK, confined almost entirely to lowland marshes in East Anglia, Lincolnshire, and Lancashire. It is a red list species having declined by over 50% in the last 25 years. The UK population peaked at c.80 booming males in 1954 and declined to about 11 in 1997. Since 2002 the population has increased to 31. The number of nesting females in the UK has increased from 15 in 1997 to 26 in 2002. Continental immigrants boost numbers in winter.

2.2 Local

In 1997, eleven booming males were heard from two reedbeds on the Suffolk coast. In 2001 there were 26-32 booming males. The number of nesting females increased from 15 in 1997 to 21 in 2001. Nesting occurs in all five sites.

In 2002 the Suffolk coast supported 45% of the booming males, 65% of the nesting females, and over 76% of the fledged young in the UK.

These percentages are slowly decreasing as Suffolk birds continue to re-populate other parts of the country. The continued success of the Suffolk reedbeds is the most vital component of the UK bittern recovery programme.

The Suffolk Coast supports 57% of the booming males, 76% of the nesting females, and over 76% of the fledged young in the UK and is the most vital component of the UK bittern recovery programme.

	UK 1997	UK 2002	Suffolk 1997	Suffolk 2002
No of booming males	11	31	4	14
No of reedbeds with booming males	7	20	2	5
No of nesting females	15	26	8	17
No of reedbeds with nesting females	7	11	2	5

3 Current factors affecting the bittern in Suffolk

- Loss of suitable breeding and feeding areas in fens and reedbeds through natural succession and lack of appropriate management (particularly cutting and water management) and loss of appropriate open water/reedbed interface.
- Sea level rise impacting upon the reedbeds
- Policies for flood defence and the impact of managed retreat
- Degradation of habitat and fisheries through eutrophication
- Food availability, especially eels, affected by inappropriate management of watercourses
- Un-seasonal freshwater flooding, especially during the nesting season
- Vulnerability of species to severe winter weather
- Predation on nesting bittern

4 Current Action

4.1 Legal Status

- The Bittern is listed on Annex I of the EC Birds Directive and Appendix II of the Berne Convention.
- It is protected in the UK under Schedule 1 of the Wildlife and Countryside Act 1981.
- All remaining Bitterns breed on SSSIs and SPAs, which are managed as nature reserves.

4.2 Management, research and guidance

- RSPB continues to carry out detailed ecological studies of Bitterns.
- Successful management work has been carried out by EN and NGOs to benefit Bittern on all current breeding sites. EN has operated a Bittern Recovery Project and LIFE funding had been granted for three years to support management for bitterns at four sites in Suffolk. A second Bittern LIFE project includes improving management at two sites in Suffolk.
- The RSPB has created a large new reedbed (1997) to benefit bitterns at Lakenheath in the Suffolk Fens

Key requirements for bittern:

- A breeding site should include at least 20 hectares of wet reedbed, with 250 metres of open water/reedbed margin for each hectare of reed. Pool margins are better than ditch margins. Scrub should be minimal in these areas.
- Water depths should be 20-30cm within the reedbed for nesting and feeding, and these levels should be maintained from February onwards.
- Fish are the most nutritious food and so the fishery should be carefully managed.
- The water quality should be good enough to support high biomass of surface-feeding fish such as Rudd. The water should remain clear enough to enable bitterns to hunt fish.
- Eels are a preferred prey, so water control structures should enable eels to migrate into the site.
- Foraging bitterns use reeded ditches in adjacent habitats, if they support a good fish population.
- Wet reed is an early successional habitat, and so needs active management to prevent the habitat degrading.
- Efforts should be made to maintain areas of open water during prolonged freezes. Alternatively, supplementary feeding sites could be provided at such times.

More details are included in `Reedbed Management for commercial and wildlife interests' (Hawke & Jose, 1996, published by RSPB). Advice can sought from the RSPB's Advisory Department.

5 Action Plan Objectives and targets

1. *Increase the population to 25 booming males by 2010 by ensuring appropriate management of the existing large reedbeds where Bittern once occurred.*

2. *Increase the population of nesting females to 25 females by 2010 and 35 by 2020, including new reedbeds such as Lakenheath, and any on the coast.*

3. *Initiate work to secure the long-term future of Bitterns in Suffolk by providing suitable habitat for a population of not less than 35 booming males by 2020.*

4. *Allow movement and expansion of population to areas secure from the threat of sea level rise, by creating suitable habitat further inland.*

5. *Develop new reedbeds and broad reed-dominated pool margins as means of developing new populations away from the coast.*

6 Bittern: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Promote development and enhancement of suitable Bittern habitats through all partner organisations' policies and plans.	2004 2005 2006 2007	**EA, IDBs, EN, Local Authorities, RSPB, SWT,**
SITE SAFEGUARD AND MANAGEMENT		
Ensure reedbeds contain sufficient pools and ditches with wet reed margins for feeding Bitterns.	2006	**RSPB, EN, SWT**
Consider designation as SSSI, any sites which become important for Bittern.	2004 2005 2006 2007	**EN**, SBRC
Ensure all significant breeding and over-wintering sites are in favourable condition for Bittern by 2007 (see management, research, and guidance in section 4 above).	2007	**RSPB,** EN, SWT, EA, BA, DETR, IDBs
Promote creation of 2 new suitable sites for Bittern by 2007 such as mineral extraction sites, long term set-aside etc.	2007	**RSPB**, LAs, EN, SCC, EA
SPECIES MANAGEMENT AND PROTECTION		
Organise a co-ordinated mink culling programme along the Suffolk coast to form a protective umbrella for key sites (this will also benefit several other key species, notably water vole).	2005	**RSPB**, EA, EN, SWT
Maintain ice-free areas in reedbeds during spells of cold weather.	On-going	**RSPB, EN, SWT**
Consider desirability of supplementary feeding in severe winters (Guidance available from RSPB & EN).	On-going	**EN, RSPB, SWT**
Improve fisheries management to enhance population at key sites.	2004	**RSPB, EN, SWT, EA**

RESEARCH AND MONITORING		
Monitor reedbed habitats, food availability and water quality at key Bittern sites as part of the National monitoring programme.	2005 2007	**RSPB,** EN, EA, SBRC
Monitor and record number of booming Bitterns and number of nesting attempts.	2004 2005 2006 2007	**RSPB**, EN, SWT, SBRC
Undertake trial monitoring of east coast eel runs (food supply).	2006	**Wetland Habitat Working Group**
Assess the suitability and management of new and potential sites for Bitterns. Identify the features of each site and the principal actions required to create them.	2005 2006 2007	**SBRC, RSPB,** EN, SWT, BA, EA, , LAs
ADVISORY		
Advise reedbed owners and managers of Bittern requirements in order to take appropriate management for this species through site inspections, literature and advice.	On-going	**BAP Wetland Working Group,** EN, RSPB, BA,
Seek opportunities to promote reedbed creation schemes and provide management and creation advice to landowners, industry & Local authorities.	2004 2005 2006 2007	**BAP Wetland Working Group,** EN, RSPB, SWT, BA, SCC
COMMUNICATIONS AND PUBLICITY		
Use the Bittern to promote the importance of reedbeds and their conservation in Suffolk and raise awareness of the huge contribution Suffolk's reedbeds make towards the UK Bittern population.	2004 2005 2006 2007	**BAP Wetland Working Group,** EN, RSPB, BA, SWT, EA

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Bullfinch
(*Pyrrhula pyrrhula*)

1 Definition

The Bullfinch is a bird of woodland, orchards and farmland. It is fairly common and quite widespread in the county, but has declined on a national scale in recent years. It uses dense shrubs and tall untrimmed hedges as its preferred habitat. The staple winter food of bullfinches is often ash seeds.

2 Current status

National:

The bullfinch occurs throughout most of the UK, although scarce in the north and west. The long term national trend (1970 – 2005) is a decline of 57%, although this appears to have been most dramatic in the early stages of monitoring as the decline 1994 –2005 is 1% nationally.

Regional:

The East of England contained bullfinch in around 50% of 2km tetrads surveyed in the Provisional Suffolk Bird Atlas (1993), but has declined in Eastern England as a whole by 17% 1994-2005.

Local:

3 Current factors affecting bullfinch

Recent analyses of long-term data sets by BTO and RSPB have not pinpointed definite causes of the bullfinch decline. An analysis of CBC data has not found a correlation between the decline and the increase in the populations of sparrowhawk and magpie. Nor has ongoing work on ringing recoveries and nest record card data found strong evidence for a link between the decline and variations in breeding performance or survival. The bullfinch decline is likely instead to involve one or more of the following:

Habitat Loss:

Removal of farmland trees and hedgerows, and a reduction in the quality of remaining hedges due to frequent trimming. This impacts on bullfinches through loss of nesting habitat, particularly hedges and thickets, and loss of food source (buds, seeds and fruit).

Food supply:
Loss of winter food sources through the use of herbicides and loss of winter stubble fields (in common with other declining seed-eating farmland birds). However, the bullfinch does not forage far from hedgerows and woods, and so is much more confined to field margins than other farmland species.

4 Current action

Practical actions that may help to protect habitat for bullfinches include retention of hedgerows and infield trees. ELS options that may be beneficial include enhanced hedgerow management options, buffering woodland edges and hedges and retention and buffering of infield trees.

Bullfinch is a key target species within the Higher Level Stewardship opportunities for the Joint Character Area of Breckland.

Single farm payment cross compliance requirements for hedgerow management including margins and reinforcement of the Hedgerow regulations, may help to provide habitat for this species.

5 Targets

As a minimum, maintain existing 2007 population and range of bullfinch which will be derived from the survey planned for 2007/8.

Expansion targets to be set after the results of the first year surveys (2007) have been received.

6 Actions

Action	Date	Partners
Policy & Legislation		
Ensure Bullfinch, as an LBAP species, is recognised and protected in LDFs in accordance with PPS9.	Annual 2006-2010	**LAs, NE**, RSPB, SWT
Ensure understanding and compliance with the Hedgerow Regulations	Annual 2006-2010	**NE**, **LAs**, FWAG, SWT
Species management and protection		
Promote the uptake of agri-environment schemes which benefit this species including where appropriate hedge restoration and creation, gapping hedges with fruit trees/blackthorn, encouraging wide and tall (>4m) hedges and good trimming practise, encouraging hedgerow trees, especially ash.	Annual 2006-2010	**NE**, FWAG, RSPB, SWT

Develop a new BAP for traditional orchards, incorporate bullfinch specific needs where suitable.	2007	**FWAG**, SWT, RSPB, NE.
Research and monitoring		
Encourage local research and continued support of long-term surveys such as the Breeding Bird Survey	Annual 2006-2010	**BTO**, SOG, RSPB, NE
Further determine Suffolk bird population by undertaking detailed winter and breeding surveys of 10km squares, 8 tetrads in each to develop detailed baseline data in Suffolk.	2007 and 2008	**SOG**, BTO
Take all opportunities to feed the information into revision of the targeting of Environmental Stewardship	2007	**SOG,** NE, FWAG, SWT, RSPB, SCC.
Use hedgerow mapping project when complete to identify significant gaps in hedgerow distribution and combine this with above survey to identify target areas for new hedgerows that are strongholds for bullfinch.	2008	**SOG,** SBRC.
Advisory		
Promote the sympathetic management of hedgerows and farmland scrub - gapping up hedgerows with fruit trees/blackthorn, wide and tall hedgerows >4m high, good hedge trimming practice, the retention and planting of hedgerow trees especially ash as a winter food source.	Annual 2006-2010	**FWAG**, RSPB, SWT, NE.
Produce a Suffolk focused leaflet (one of a series of farmland bird leaflets from Suffolk BAP partners) for promotion to land managers/farmers.	2007	Farmland HWG.
Communications and publicity		
Promote the bullfinch as a species in need of conservation assistance and promote as part of new orchard BAP plan to lever new action.	2007	**FWAG**, SWT, RSPB, SOG, BTO.
Produce at least one LBAP press release per year that draws attention BAP species.	Annual 2006-2010	**FWAG**, RSPB, SWT, LAs

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Consultation:
Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Kirsty Coutts
FWAG Phil Watson
Natural England Monica O'Donnell, Ian Johnson and Alison Collins
Suffolk County Council Andrew Murray-Wood
SWT Dorothy Casey
Suffolk Biological Records Centre (SBRC) Martin Sanford
Suffolk Ornithologists Group SOG Steve Piotrowski

Published February 2007 Final Version

Corn bunting (*Miliaria calandra*)

The corn bunting is a bird of lowland arable land. It is widespread across the south of the UK, with a patchy distribution elsewhere. It has suffered a severe decline in recent years, along with a suite of other species of birds found on lowland farmland

1 Current status

1.1 National

The corn bunting is a characteristic resident species of lowland arable farmland and is one of the few British species largely dependent on cropped land. Its numbers and distribution have been declining in some areas since the last century and steadily, in most places, since the early 1970s, a trend which appears to be continuing. The results of the Common Birds Census suggest that there was a 76% decline in the breeding population between 1968 and 1991. In addition a decline of 32% in its British range between the two Breeding Atlas periods (1968-71 and 1988-91) has led to further fragmentation of the remaining high density areas. The Farmland Bunting Survey, organised by the BTO in 1993, recorded only around 20,000 territories remaining in Britain.

1.2 Local

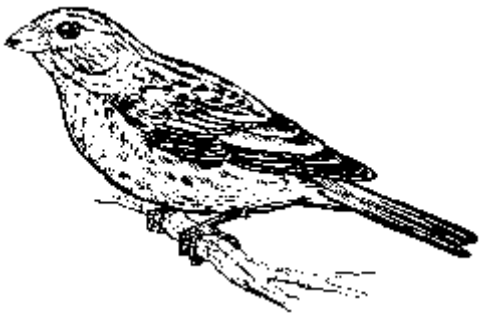
This species has disappeared from ten 10 km squares, and appeared in four other 10 km squares between the two national breeding atlases. This has reduced an already patchy distribution in East Anglia. The Provisional Suffolk Bird Atlas (1993) found this species in around 9% of 2 km tetrads, of which only 30 (33%) had confirmed breeding records.

1.3 Natural Areas

All.

1.4 Protection

The corn bunting is protected under the Wildlife and Countryside Act 1981, and the EC Birds Directive.



2 Current factors causing loss or decline

- Although we remain unclear of the precise factors, the loss of extensive mixed farmland would appear to be the key to the decline of the corn bunting.

- Loss of winter food is thought to be a key factor in the population decline. The BTO's winter corn bunting survey, in 1992-93, showed that weedy stubble fields were by far the most important feeding habitat during the winter. The area of winter stubbles has been greatly reduced in recent decades due to the switch from spring-sown to autumn-sown cereals, the decline in mixed farming and the disappearance of undersowing. In addition, increased herbicide and fertiliser use has reduced the weediness of the stubbles.

- Reduced breeding productivity. The intensification of farming practices, such as the increased use of pesticides and fertilisers, has reduced the availability of insects which are essential as chick food. Changes in grazing/mowing regimes may reduce nest site availability and breeding success on grassland, and the decline in mixed farming has led to the disappearance of insect-rich (and reduced input) undersown spring cereals.

3 Current action

- Until recently the corn bunting was not regarded as a species of conservation concern and, hence, little direct action has been taken to help it.

- BTO census work has highlighted the plight of the species, and a recently completed GCT/EN/RSPB research project in Sussex has investigated the causes of the decline, particularly with respect to agricultural intensification. This work suggested that breeding productivity was the most significant factor in the decline of corn bunting on the study site.

- Rotational set-aside will have benefited the species, although this has been significantly reduced in area in recent years. New prescriptions encouraging the growth of undersown spring-sown cereals and retention of winter stubbles in the pilot Arable Stewardship Scheme should also benefit the corn bunting but these need to be much more widely available in order to influence the county population.

- The Suffolk River Valleys ESA has a Buffer Strip Supplement to Tier 3 (Arable Reversion to Grassland) which may benefit this species by providing suitable weed seed in winter, and a source of insects for feeding to chicks.

- The Breckland ESA provides options within Tiers 3 and 4 which will help provide winter seed food and also habitat suitable for insects, which are used as chick food.

4 Action plan objectives and targets

1 *Assure the current range of the corn bunting by 2003. By 2008, the range should be extended to include other areas which were previously occupied in the 1976 Atlas.*

2 **Establish the breeding numbers to allow accurate monitoring of any change in the population size and range by 2003.**

5 Proposed action with key local partners

The objectives and targets will be delivered through identifying the causes of the decline of the corn bunting; encouraging beneficial changes in agricultural land management through government mechanisms; and ensuring monitoring is in place to assess the benefits of agricultural schemes to corn buntings. It is likely that implementation of this action plan will also be of benefit to the following farmland birds: Bullfinch, Grey partridge, Linnet, Reed bunting, Skylark, Song thrush, Tree sparrow, Turtle dove.

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and legislation						
Take the needs of the corn bunting and other farmland birds into account when reviewing the current agri-environment schemes in the region and also the success of the pilot Arable Stewardship Scheme	MAFF/FRCA	*	*	*	*	*
Where appropriate, consider incorporating new prescriptions within agri-environment schemes which will benefit this species, especially where the food supply of corn buntings can be protected (i.e. reduced pesticide use, provision for overwinter stubble fields and low-input spring cereals)	MAFF/FRCA, FWAG	*	*	*	*	*
B. Site safeguard and management						
No action proposed						
C. Species management and protection						
Consider implementing emergency measures to sustain important populations within the county should local extinction become a real threat.	RSPB, EN, FWAG, MAFF/FRCA	*	*	*	*	*
D. Advisory						
Promote further advice to landowners on the management of land for corn buntings as one of the farmland species of birds which are in decline	MAFF,/FRCA FWAG, RSPB	*	*	*	*	*
Update advice in the light of recent research on the corn bunting	MAFF/FRCA FWAG, RSPB	*	*			
E. Future research and monitoring						
Consider extending surveys to also include wintering habitat surveys, eg BTO's Winter Farmland Bird Survey	BTO, RSPB, EN, SOG	*	*	*		

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
Encourage local research and continued support of long-term surveys such as the Breeding Bird Survey	BTO, SOG, RSPB, EN	*	*	*	*	*
As this species seems to suffer from the same problems as many other farmland birds, consider its use as a representative bird species of farmland when examining the success of agri-environment schemes	FWAG, RSPB, MAFF/FRCA	*	*	*	*	*
F. Communications and publicity						
Promote the corn bunting as an example of a farmland bird species which is in decline	RSPB, FWAG, MAFF/FRCA	*	*	*	*	*
G. Links with other action plans						
This action plan should be considered in conjunction with that for cereal field margins		*	*	*	*	*

Grey Partridge (*Perdix perdix*)

1 Definition

The Grey Partridge was formerly widespread on arable land, as well as on heaths, rough pasture and even sand dunes. It depends on cover around fields for nesting and for providing abundant invertebrates for food. Both have declined through agricultural intensification.

2 Current status

2.1 National

The UK population of Grey Partridge declined by over 50% between 1969 and 1990 to a current estimated 150,000 pairs. Populations in mixed farming areas, especially in the north, seem stable but in more intensively farmed areas such as the south-east the species has declined.

2.2 Local

Now a rather patchy distribution in Suffolk, with concentrations in the Breckland, south-west Suffolk and coastal Suffolk, linked partly (but not exclusively) to light soils.

2.3 Natural Areas

All

3 Current factors affecting Grey Partridge in Suffolk

- Loss of nest sites (such as hedge bottoms) to farm intensification.
- Reduced food supplies and sources for chick food through the use of pesticides and herbicides, as well as the loss of winter stubble feeding grounds for overwintering birds.
- Vulnerability of nests to predators in farmland with poor cover.
- Nest destruction caused by early mowing and other farm operations.

4 Current action

4.1 Legal status

Grey Partridge is protected in the close season in Britain under the Game Acts. It is also listed on Annex III/I of the EC Birds Directive and Appendix III of the Bern Convention.

4.2 Management, research and guidance

- The Game Conservancy Trust (GCT) encourages land managers to create suitable conditions for Grey Partridge, including suitable nest sites and cover, summer and winter feeding areas (eg, conservation headlands and winter stubbles), and control of predators and shooting. Some GCT work occurs in Suffolk.
- A National Species Action Plan has been prepared for this species by the RSPB, EN and the GCT.
- Farmland bird management guidelines for Grey Partridge are widely distributed by RSPB, FWAG and DEFRA.
- Breckland ESA conservation headlands prescription should help Grey Partridges.
- Many landowners seek to encourage Grey Partridges by providing suitable habitat on their land for Game Shooting.
- Many options available in Defra's CSS, including grass margins, conservation headlands and a variety of other arable options should help Grey Partridges. The same is true of the conservation headlands prescription in the Breckland ESA.

5 Action plan objectives and targets

1 *Maintain the current range of Grey Partridges in Suffolk as measured in the 1993 Provisional Atlas of Breeding Birds in Suffolk.*

2 *Enhance the current geographical range of Grey Partridge where biologically feasible.*

3 *Create and maintain suitable habitats for Grey Partridge through agri-environment schemes and landowner liaison.*

6 Grey Partridge: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure Entry Level and Higher Tier agri-environment schemes contain suitable prescriptions to benefit Grey Partridge on arable land	2004	**Defra**, RSPB, FWAG, EN
Promote opportunities for tailored management of set-aside land through agri-environment schemes	2007	**FWAG**, RSPB, SWT
Promote uptake of agri-environment scheme prescriptions that are likely to benefit Grey Partridge.	2007	**FWAG,** Defra,, RSPB
Ensure compliance with Game acts, annex III/I of EC Birds Directive and Appendix III of Bern Convention by reminding landowners and shoot organisers of relevant legislation.	2007	**Defra**, RSPB, FWAG
RESEARCH AND MONITORING		
Collate all Grey Partridge records annually and pass records on to SBRC.	On-going	**SBRC**, GCT, FWAG, SWT, Landowners, RSPB
Undertake survey, encouraging landowner participation to establish Grey Partridge numbers in Suffolk.	2005	SBRC, GCT, FWAG, SWT, Landowners, RSPB, Defra
ADVISORY		
Continue to provide conservation advice to land managers on field margins, set-aside management, etc to benefit Grey Partridge.	2007	**FWAG**, Defra, RSPB
COMMUNICATIONS AND PUBLICITY		
Undertake two farm walks per year for farmers and land owners which make reference to Grey Partridge and its habitat requirements.	2007	**FWAG**, DEFRA, SWT, RSPB

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Linnet
(*Carduelis cannabina*)

1 Definition

The linnet is a common and widespread species across the UK countryside, found on farmland wherever there is a plentiful supply of seeds throughout the year. Linnets use weedy fields, hedgerows, gorse thickets, heathland and scrub (particularly near the coast), and are dependant on sources of small seeds as food throughout the year. Part of the UK population winters in Spain and western France; birds remaining in the UK are joined by birds from northern Europe.

2 Current status

National:

Numbers declined by 56% on farmland between 1968 and 1991(based on data collected as part of the BTO's Common Bird Census). The UK range declined only slightly over this period and the UK population was estimated at 540,000 territories in the New Breeding Atlas (1988-91). The long term national trend (1970 – 2004) shows a 49% decline in linnet populations.

Regional:

The linnet population in East England has declined by 21% 1994 – 2005.

Local:

3 Current factors affecting linnet

The recent decline of the linnet has occurred at the same time as decreases in the numbers and/or range of other farmland birds which share its diet of grass, wildflower seeds and some cereal grains. Linnets are more dependent than other seed-eaters on wildflower seeds during the breeding season. It is likely that the decline in linnets may be due to changes in agricultural practice, both in the UK and in their wintering grounds in south-west Europe. These include the increased use of herbicides and fertilisers, the switch from spring-sown to autumn-sown crops and the consequent loss of winter stubble fields, and the general reduction in farmland habitat diversity due to the loss of mixed farming and increased specialisation.

Changes in management of pastoral areas may also have caused declines through the increased use of fertilisers, re-seeding of species-rich fields, more intensive grazing, early cutting for silage and the loss of the small proportion of arable fields that were typically present on such farms.

The removal of hedges, gorse thickets and other unmanaged scrub, combined with the increased frequency and severity of hedge trimming and heavy grazing in some areas, will have led to losses of suitable nesting habitat.

The linnet will utilise very young conifer plantations while the trees are still in a thicket stage. Conversion of suitable rough areas to plantation may affect linnets where no other suitable nesting sites are found.

4 Current action

Linnets seek places where they can find lots of seed food. Such areas include rotational set-aside, winter stubbles, root crops and break crops. Oil-seed rape and the associated broadleaved weeds provide ideal food for chicks in the spring.

Thick thorny hedgerow cover will benefit linnets. They also nest in scrub and bramble areas on grassland and waste ground.

ELS options that may benefit linnets include conservation headlands and uncropped cultivated margins.

Linnet is a key target species within the Higher Level Stewardship opportunities for the Joint Character Area of The Broads, part of which falls in Suffolk.

Single farm payment cross compliance requirements for hedgerow management including margins and reinforcement of the Hedgerow regulations, may help to provide habitat for this species.

5 Targets

As a minimum, maintain existing 2007 population and existing range of linnet which will be derived from the survey planned for 2007/2008.

Expansion targets to be set after the results of the first year surveys (2007) have been received.

6 Actions

Action	Date	Partners
Policy & Legislation		
Ensure understanding and compliance with the Hedgerow regulations.	Annual 2006-2010	**NE**, **LAs**, FWAG, SWT.
Ensure linnet as a LBAP species, is recognised and protected in LDFs in accordance with PPS9.	Annual 2006-2010	**NE**, **LAs**, RSPB, SWT.
Species management and protection		
Promote the uptake of agri-environment schemes which benefit this species, and	Annual 2006-	**NE**, FWAG, RSPB, SWT

consider the habitat and food requirements of this species when deciding the scheme options to be taken up, including the retention of scrub, especially all gorse, provision of seed-rich cover and gapping up of hedges	2010	
Explore current or new opportunities with land managers in areas where considerable gorse is found(e.g. on golf courses), advise on the management of gorse to benefit linnet, especially in connection with agri-environment schemes.	Annual 2007	**SWT,** NE, RSPB, FWAG
Research and monitoring		
Encourage local research and continued support of long-term surveys such as the Breeding Bird Survey.	Annual 2006-2010	**BTO**, SOG, RSPB, NE
Further determine Suffolk bird population by undertaking detailed winter and breeding surveys of 10km squares, 8 tetrads in each to develop detailed baseline data in Suffolk.	2007 and 2008	**SOG**, BTO
Take all opportunities to feed the information into revision of the targeting of Environmental Stewardship.	2007	**SOG,** NE, FWAG, SWT, RSPB, SCC.
Use hedgerow mapping project when complete to identify significant gaps in hedgerow distribution and combine this with the above survey to identify target areas that are strongholds for linnet	2008	**SOG,** SBRC
Advisory		
Promote sympathetic management of hedgerows including the gapping up of hedgerows with black/hawthorn and gorse and the retention of farmland scrub and the value of seed rich cover year round to all land managers.	Annual 2006-2010	**FWAG**, RSPB, NE.
Promote the uptake of boundary and infield options, such as uncroppped cultivated margins and conservation headlads through the summer period, and over wintering stubbles and wild bird seed mixtures through the winter period.	Annual 2006-2010	**FWAG,** RSPB, NE, SWT**.**
Ensure that all LBAP partners have copies of the RSPB Farming for Birds and Farming for Wildlife leaflets which include linnet.	2006	**RSPB**
Produce a Suffolk focused fact sheet for	2007	**SWT,** SOG.

linnet to promote to a range of land managers such as golf clubs.		
Communications and publicity		
Promote the linnet as a species in need of conservation assistance and produce at least one LBAP press release per year that draws attention to this species.	Annual 2006-2010	**FWAG**, RSPB, SWT, LAs

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

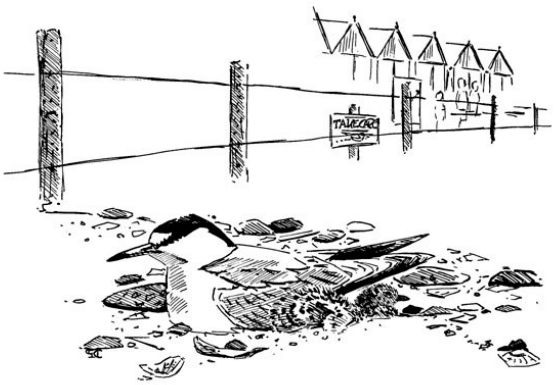
Consultation:
Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Kirsty Coutts
FWAG Phil Watson
Natural England Monica O'Donnell, Ian Johnson and Alison Collins
Suffolk County Council Andrew Murray-Wood
SWT Dorothy Casey
Suffolk Biological Records Centre (SBRC) Martin Sanford
Suffolk Ornithologists Group SOG Steve Piotrowski

Published February 2007 Final Version

Little tern

(Sterna albifrons)



Dan Powell

The little tern nests on beaches and so is vulnerable to disturbance, predation, and the effects of sea level rise. Suffolk has lost a staggering 88% of its breeding little terns in just 19 years. The long-term aim of this local plan is to restore the Suffolk population to the levels of the late 1980s. Actions will include: setting up a Little Tern Group, and network of local champions, to protect the beach colonies from disturbance and predation; informing beach users, and coastal managing authorities, about little terns; and providing safer island nesting sites in lagoons and sheltered coastal waters.

1 Definition

The little tern is the smallest of five species of tern breeding around the British coast. It usually nests on beaches and lagoon islands of shingle, sand, or shells; sometimes only metres from the high tide mark. This makes them susceptible to predation, human disturbance, and tidal inundation. Their nesting strategy is to breed in small, single species colonies that are abandoned when predation becomes too great; food becomes scarce; or more recently, when human disturbance becomes too great. The nest is an unlined scrape in which 1-3 camouflaged eggs are laid. Incubation is around 18-22 days, and the chicks fledge in 19-20 days. Little terns feed on small fish and crustaceans caught inshore, and occasionally from coastal freshwater bodies. They winter off the west coast of Africa.

2 Current status: national, regional, and local

About 10% of the European Union population breed around the British coast, concentrated in areas that have suitable beaches. East Anglia is the UK stronghold, supporting almost half of the UK population.

Declines in the UK population were noted in the late 1960s. This prompted greater protection of colonies, and by the late 70s, most colonies received some sort of management. The population rose to a peak of 2575 in the mid 80s but this peak has not been sustained. By 2000, it had declined by 24% to 2084 pairs.

The East Anglian population declined by a comparable 20%: but protection work in Norfolk has masked a larger decline of 61% in the Suffolk population. The Suffolk population now appears to be in free-fall, and just 43 pairs nested in 2005. **Suffolk has lost 88% of its breeding little terns in just 19 years**. The mean number of young fledged has halved over the same period, and is now about 0.22 young fledged per breeding pair (this is a third of the figure of 0.67 per breeding pair calculated to be necessary to maintain a stable population).

Year	UK Population		East Anglian Population		Suffolk Population	
	Count	% Change	Count	% Change	Count	% Change
1969	1602		659		80	
Mid 80s	2575	+61%	1256	+91%	378	+370%
2000	1947	-24%	1010	-20%	148	-61%
2005	1134	-42%	533	-47%	43	-71%

The little tern is protected under Schedule 1 of the Wildlife and Countryside Act (1981), which makes it an offence to disturb the birds or their dependant young at the nest. It is listed on Annex 1 of the EC Birds Directive and under Appendix 2 of the Berne Directive, which require the UK government to safeguard the little terns' nesting and feeding habitats.

The little tern is on the amber list of Birds of Conservation Concern, because it has an internationally important population in the UK; it has a localised population; and its population has declined moderately (by more than 25% but less than 50% in 25 years).

The little tern is not a national UK BAP species. It has been identified as a Suffolk character species because Suffolk has a large proportion of the UK population; the rapid decline of the Suffolk population; and its strong association with vegetated shingle (a European priority habitat under Annex 1 of the EU Habitats Directive, and a UK biodiversity priority habitat).

3 Current factors affecting little terns

Disturbance: Little tern colonies are very vulnerable to human disturbance. Walkers, fishermen, holidaymakers, dogs, motorbikes, four-wheel drive vehicles, quad bikes, helicopters, beach-fishermen, and egg collectors all pose a threat.

Predation: Almost anything seems to prey on little terns. However, the main culprits are foxes, rats, birds of prey, gulls and corvids. The natural defence of little terns is to live in ephemeral colonies. Colonies are often successful in their first few years, but local predators soon learn to exploit them. When predation gets too high, the terns move on, if they can find a new site.

Sea level Rise/Coastal squeeze: Climate change is eroding many of Suffolk's beaches and squeezing them against sea defences. The future management of the coastline and estuaries will be determined through the Suffolk Coastal Shoreline Management Plan and Suffolk Estuarine Strategy. It is likely that coastal realignment and other engineering works will be necessary in the future, and these have the potential for creating new suitable habitat for little tern colonies.

Bad weather: Productivity can be reduced by bad weather, or surge tides: killing chicks, or by forcing adults to abandon eggs or chicks.
Lack of coordinated effort: The mobile nature of the little tern's nesting strategy requires a countywide or regional response. Efforts must be flexible enough to move with the little terns to ensure that the best protection is given to each colony in its early, most productive years.
Food supply: The amount of food, how it varies along the coast, and whether it varies between seasons or years is not known. It may be a limiting factor determining where and when colonies are established and abandoned.
Expansion of Open Access designated land: The government intends to expand the land designated as Open Access Land under the Countryside Rights Of Way Act (2000) to include the whole of the UK coast. This could increase the disturbance to little tern colonies and reduce the ability to protect them.

4 Current action

Disturbance/predation: reserve staff usually fence off colonies on nature reserves. The fence varies, from a string fence with some signs to prevent human disturbance, to an electric fence to deter ground predators and dogs as well. Some fencing occurs at one or two colonies on public beaches.
The Suffolk Connect Scheme, purchased equipment for two electric `flying' fences in 2005, for use anywhere in Suffolk.
Lack of coordinated effort: the Connect purchase is the first step towards a coordinated effort to protect colonies throughout Suffolk.
Colonies are monitored and records sent to County Bird Recorders.
Sea level Rise/Coastal squeeze: little has been done to create new island colonies, although awareness is building amongst coastal management bodies.
Food supply: little is known about food availability along the Suffolk coast.
Expansion of Open Access designated land: the need to protect little tern colonies is being included, in consultation responses to the government's proposals for Coastal Open Access land.

5 Targets

As a minimum, maintain existing 2005 population of little tern.
Increase the number of potential colonies to 10 by 2010 (15 by 2015, 20 by 2020).
Increase population to 100 nesting pairs by 2010 (200 by 2015, 350 by 2020).

6 Actions

Action	Date	Partners
Policy & Legislation		
Highlight the importance of all potential colonies in local planning documents • Suffolk Coastal Local Development Framework • Suffolk Subcell 3c Shoreline Management Plan • Stour/Orwell Estuary Strategy • Deben Estuary Strategy • Alde-Ore Estuary Strategy • Blyth Estuary Strategy	2006, 2010	**DCs**, SCC. NE

Enforce protective legislation, and develop links with Police Wildlife Liaison Officers.	2006-2010	**RSPB**, SWT, NT, NE, DCs
Ensure safeguards in future CROW Act revisions.	2006-7	**NE**, RSPB, SWT, NT
Ensure that biodiversity enhancements are incorporated, where flood defence schemes are bought forward • Minsmere EA Sea Defence Strategy • Walberswick-Dunwich EA Sea Defence Strategy	2006-2010	**EA**, DCs, RSPB, SWT, NT
Species management and protection		
Establish a two-tier Suffolk Little Tern Group in 2006: a small team of site managers to monitor colonies, administer `flying fences' and encourage local support and colony `champions'; and a larger team to raise funds, and raise awareness.	2006	**RSPB**, SWT, NE, SCHU, EA
In 2006, establish a supply of fencing materials and shelters that can be deployed quickly anywhere in the county, sufficient to protect four colonies.	2006 2007	**RSPB,** NT, SCHU.
Achieve external funding to fund a seasonal Suffolk Little Tern Warden to start in 2007 to implement colony protection while tern numbers are critically low, and establish a network of colony champions to take over these duties in the longer term.	2007 - 2010	**SCHU,** RSPB, NT, SWT, DCs, SCC.
Look for opportunities to put nesting rafts on sheltered waters implement where suitable.	2007 - 2010	**RSPB,** NT, SWT, NE
Research and monitoring		
Undertake a desk survey to collate current data for example Harwich and Haven report includes detailed fisheries data which my inform below. Include data search for little tern in rest of the world especially other known colonies on the North Sea.	2007	**RSPB,** UEA, CEFAS.
Survey the food supply along the Suffolk coast to assess general levels of food available to little terns and identify hot spots.	2008	**NE**, UEA, CEFAS.
Ensure consistent monitoring of colony size and productivity. Send results to national coordinator and assess results in conjunction with Norfolk and Essex colonies.	2006-2010	**SWT.**
Study the historic colonies to look at productivity changes and identify possible	2006	**SWT**, RSPB, NT, SBRC.

reasons for abandonment.		
Advisory		
Continue to raise awareness with local police forces and community liaison officers.	2007	**SCHU,** SWT, RSPB, NT and DCs.
Advise Environment Agency and local authorities on measures to protect existing colonies, and opportunities to create new ones through Coastal/Estuary Management Schemes.	2006/7	**SCHU**, RSPB, NT,SWT, DCs.
Liase with Harwich and Felixstowe Port Authorities, so that any capital dredgings (such as Bathside Bay) can be used to create nesting islands in suitable sheltered locations (NB maintenance dredgings are too fine to be used).	2007	**SCHU**, EA, SWT, RSPB
Communications and publicity		
Investigate in advance the possibility of "dog free family beaches" if little tern colony arrives.	2007	**DC**, SCHU, RSPB, NT, SWT
Raise awareness and guidance with locals, and beach user-groups eg fishermen: members of SLTG to address two user groups each year, and write one article for a user group publication each year.	2007-2010	**SCHU,** SWT, NT, RSPB, DCs
Develop new interpretation boards including BAP coastal vegetated shingle and little tern; prioritise sites without existing interpretation liase between needed between partners.	2007/8	**SCHU,** DCs, SCC, SWT, RSPB, NT, NE
Develop a SLTG generic sign to be used by all partners, with some basic LT facts to be used with fencing near colonies.	2007	**RSPB,** NT, SCHU, SWT
Raise general levels of awareness through local press and generate two press releases each year.	2006-2010	**SCHU,** SWT, NT, RSPB, DCs
Encourage local residents to become colony or area champions, develop suitable training and work with SCHU Volunteer Ranger scheme to develop champions.	2006-2010	**SCHU**, RSPB, SWT, NT, DCs.

NB Where achieve by dates are 2006-2010 this means they need to be achieved or worked towards by 2006 and annually renewed until 2010.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Constraints to plan implementation:

Some of the actions are dependant upon achieving successful external funding, a fundraising steering group has been set up and it is anticipated that little tern will be part of a bid in early 2007 that will also highlight and implement action for the Habitat Action Plan for Coastal Vegetated Shingle, that the species is strongly associated with.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

SWT Mick Wright
RSPB Ian Paradine and Robin Harvey
NE Richard Rafe and Adam Burrows
NT Grant Lohoar
SCHU Simon Hooton
Suffolk Coastal District Council John Davies
SCC Sue Hooton
EA Merle Leeds and Madeline Fallon
Suffolk Biodiversity Partnership Officer Mary Norden

Published December 2006.

Nightjar (*Caprimulgus europaeus*)

1 Definition

The Nightjar is a summer migrant that utilises heathland and young conifer plantations as nesting and feeding habitat. Its range declined drastically over the last century, but has now begun to increase in numbers. The Nightjar has a very fragmented and localised range.

2 Current status

2.1 National

The Nightjar has been declining in numbers and range for much of this century, reaching a low point of 2,100 (adjusted from 1784) males in 1981, with a decline in range of 52% between 1968-72 and 1992. There was a partial recovery in the population which reached 3,400 (adjusted from 3093) males in 1992. In the national survey of 2004 the total number of males counted was 4131, adjusted to 4606 to account for unsurveyed habitat. The adjusted total represented a 36% increase in 12 years. Nightjars were recorded in 275 10km squares, a 2.6% increase since 1992. However there was evidence of population declines and range contractions in northwest Britain. In 2004 57% of Nightjars were associated with forest plantations (similar to 1992) and 59% with heathland (slightly higher than 1992). The continued increase in the population is probably due to habitat protection, management and restoration of heathland, and the continued availability of clear-fell/young plantations.

2.2 Local

Between 1981 and 1992, the population of males in Suffolk increased by 164% to 317 primarily as a result of increased suitable habitat created by the '87 storm. The number of sites where these individuals were found had also increased at a similar rate (see Appendix for list of known sites). The 2004 survey has revealed that contrary to the national trends the Suffolk population has declined by 11% with only 284 males recorded.
(NB. only unadjusted figures available)
.

2.3 Natural Areas

Breckland, Suffolk Coast & Heaths.

3 Current factors affecting Nightjars in Suffolk

- The area of heathland in the UK has undergone a dramatic reduction during the course of the last century due to agricultural land claim, afforestation and development. It is estimated that 40% of England's lowland heathland has been destroyed since the 1950s.

- Where heathland lacks appropriate management, it will become unsuitable as nesting habitat due to invasion by bushes and trees.

- Nightjars require extensive areas of suitable feeding habitat, especially uncultivated land. The loss of such habitats within a few kilometres of the nesting area may result in a decline in the number of birds.

- It is possible that a decline in the availability of large insects caused by changes in agriculture (such as the indirect effects of pesticides) and/or climatic change, may have affected Nightjar populations.

The agricultural environment schemes such as the Brecks ESA have been biased towards stone curlew to the detriment of nightjars

- In commercial forests, Nightjars nest in the young stages of plantations, while there is still bare ground between trees. If no other suitable habitat becomes available in other new or young stands, local population declines could occur as the recently planted blocks mature.

- In Thetford Forest, Nightjars declined from 420 males in 1998 to 349 males in 2004, following an earlier peak in the availability of clear-fell areas, but the 2004 total is still a near 10% increase on the 1992 total of 319 males.

- The steady increase in nightjar numbers that occurred in the 1990's now appears to have reversed with the 2004 survey indicating an 11% decline. The losses are most evident in the Sandlings forests where following the replanting after the 87' Storm many of the plantations have reached an age where they are unsuitable for nightjars.

- Research indicates that Nightjars are vulnerable to disturbance by people and particularly dogs. It is likely that Open Access will affect them. New housing developments near to heathlands could be detrimental to Nightjar.

4 Current action

4.1 Protection

The Nightjar is protected under the Wildlife and Countryside Act, and is listed on Annex 1 of the EC Birds Directive and Appendix II of the Bern Convention.

Both the Sandlings and Breckland strongholds were designated Special Protection Areas in 2002

4.2 Management, research and guidance

- Detailed research into the ecology of Nightjars nesting in Thetford Forest has been carried out by the RSPB with FC help. FC's forestry practice is now aimed at maintaining a constant area of young plantation as good habitat for breeding Nightjars (included in the Thetford Forest Design Plan) and will be incorporated into the Sandlings Forests plans

- Specific work by the Sandlings Group has demonstrated the potential benefit for Nightjars by restoring heathland and managing in ways appropriate to the individual locations.
- Monitoring the effects of Open Access on ground nesting birds will be important to inform visitor management.
- Heathland restoration and re-creation in the Sandlings continues to provide new and improved habitat to maintain and expand local populations.

5 Targets

1 *Maintain a local population of minimum 284 churring males (based on 2004 survey) in Suffolk by 2010.*

2 *Expand population to 350 by 2010*

3 *Maintain the current range of occupation on known sites by 2010 and 2015*

6 Nightjar: Proposed action with lead agencies

Action	Achieve by date	Partners
POLICY AND LEGISLATION		
Ensure that the needs of nightjars are included in agri-environment schemes and land management policies during SSSI and agri-environment reviews.	Anuual 2006 - 2010	**NE**, RSPB, SWT, FWAG
Ensure Nightjar friendly management in the regions Forests by including and implementing specific targets for available habitat in Forest design Plans.	Annual 2006-2010	**FC**, NE, RSPB
Ensure all relevant BAP species including nightjar are considered in the AONB management review discussions during 2007.	Annual 2007-2010	**SCHU**,FC, NE, RSPB, SWT, SCC, SCDC.
Review open access and its effects on ground nesting birds.	2010	**NE**
Ensure nightjar as an LBAP species and its habitat, is recognized and protected in Local Development Frameworks in accordance with PPS9.	Annual 2006-2010	**SCC**, NE, RSPB, SWT, FC, SCDC, SEBC, IBC and FHDC.
Encourage the creation of new recreational areas, including dog walking facilities, when building new developments to prevent added pressure on sensitive habitats and species.		**SCC**, NE, RSPB, SWT, FC, SCDC, SEBC, IBC and FHDC.
Further the development of SSSI conservation objectives for the nightjar within the SPA's.	Annual 2006-2010	**NE**
SITE SAFEGUARD AND MANAGEMENT		
Ensure existing Nightjar sites are appropriately managed to conservation objectives through condition assessment of SSSI/SPA features, annual counts on heathland, and the next national survey.	Annual 2006-2010	**NE**, FC, RSPB, SWT, NT, MOD, SCDC, Brecks Project, BTO.
Ensure nightjar sites are protected from development by monitoring planning permission requests.	Annual 2006-2010	**SCC, SCDC, FHDC, SEBC, SWT**, IBC, NE

Continue management of restored habitat on 300ha of Thetford forest to maintain its ecological value as potential feeding and nesting areas for Nightjar.	Annual 2006-2010	**FC,** NE, RSPB
Manage rotational clearfell in the Sandlings and Thetford Forests to optimize habitat for Nightjars within SPA's	Annual 2006-2010	**FC**
Seek opportunities to recreate heathland on forestry, arable and ex-mineral working sites, especially to extend or link existing sites using SBRC opportunity mapping data, Living Landscape initiative and agri-environment schemes.	Annual 2006-2010	**FC**, SWT, RSPB, NT, NE, SBRC, Brecks Project
RESEARCH AND MONITORING		
Ensure the impact of any changes in forest management practice, which could affect nightjar populations detrimentally are assessed before implementation.	Annual 2006-10	**FC**, NE.
Continue annual monitoring on heathland sites (see appendix 1). RSPB annual sample survey in Suffolk Brecks Forests, 6 yearly SPA survey and at least 3 yearly interim surveys in Sandlings Forests.	Annual 2006-10	**RSPB**, SWT, NE, SOG, FC, NT, SCDC, Brecks Project
Collate research on the effects of open access/human disturbance on ground nesting birds.	2010	**NE**, RSPB, BTO.
Monitor the effects of Open Access on ground nesting birds by logging visitor behaviour on Access land.	Annual 2006-2010	**NE**, SCC, RSPB, NT, SWT
Monitor the effects of habitat management and potential conflicts between the requirements for different species on populations of Nightjars.	Annual 2006-2010	**NE**
Encourage research into the use of habitat outside breeding areas for feeding and the effects of agricultural management on breeding and feeding sites.	2010	**NE**, SWT, RSPB, BTO
ADVISORY		
Provide advice to landowners and managers on management of sites for the benefit of nightjars.	Annual 2006-10	**RSPB**, SWT, NE,Brecks project, FWAG

Encourage the support of low intensity agricultural systems using Defra funded schemes in the wider countryside	2006-10	**NE**, SWT, RSPB, FWAG
COMMUNICATIONS AND PUBLICITY		
Use the nightjar as a flagship species to publicise the conservation and the sympathetic management of heathland to benefit all associated species. Undertake at least two press releases raising the profile of this BAP species each year. Produce a heathland leaflet and publicise on websites.	2006-10	**SCHU**, Brecks Project, SWT, RSPB, NT, FC, NE.
Engage with dog walkers and groups: distribute SCC Dogs and Access Land leaflet; include restrictions on signage; hold an awareness event for dog walkers.		**SCC,** NE, FC, SWT, NT, RSPB, Brecks Project, SCHU

References:

Conway, G et al 2005, The status and distribution of European Nightjars *Caprimulgus europaeus* in the UK in 2004. Bird Study (submitted)

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity ActionReporting system.

Objectives outside current action plan:

Encourage the creation of recreation areas, including dog walking facilities, near existing centres of population.	Annual 2006-2010	**SCC, SCDC, FHDC, SEBC**, IBC, SWT, NE

List of organisations that have been consulted regarding this plan and have agreed to deliver their organisations commitments:

Brecks Project, Abbigail Stancliffe-Vaughan
Forestry Commission (FC), Neal Armour-chelu
Farming Wildlife Advisory Group (FWAG), Phil Watson
Ministry of Defence (MOD), Piers Chantry
National Trust (NT), Stuart Warrington and Grant Lohoar
Natural England (NE), Bill Nickson, Monica O' Donnell, Nick Sibbet
Sandlings Group and RSPB Rob Macklin
Suffolk Wildlife Trust (SWT), David Mason

Suffolk Coastal District Council (SCDC), John Davies
Forest Heath District Council (FHDC), Guy Belcher
Suffolk County Council (SCC), Sue Hooton
Ipswich Borough Council (IBC) Steve Hunt
St. Edmundsbury Borough Council John Smithson
Suffolk Coasts and Heaths AONB Simon Hooton
British Trust for Ornithology (BTO) Mick Wright
Suffolk BAP officer Mary Norden

Appendix 1:
Sandlings Sites
Aldringham Walks
Blaxhall Common
Dunwich Forest
Dunwich Heath
Minsmere
Rendlesham Forest
Tunstall Common
Tunstall Forest
Sutton and Hollesley Heaths
Snape Warren
Walberswick
Westleton Heath

Brecks sites
Brandon
Cavenham Heath
High Lodge
Ickworth Park
Kings Forest
Knettishall Heath
Mildenhall Wood
Santon Downham
Thetford Heath
Thetford Warren
Wangford Warren

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Reed Bunting
(*Emberiza schoeniclus*)

1 Definition

Small seeding eating bunting generally nesting on open and semi open habitats with tall vegetation, attachment to fens bogs and marshes riversides etc occurs indirectly and is linked to vegetation type rather than any special need for water.

2 Current status

National:

Numbers declined by 41% on farmland between 1968 and 1999 (based on data collected as part of the BTO's Common Bird Census). However most of this decline was in the 1970's and there has been general stability on population at this lower level in the 1990's The UK range has undergone some contraction from Scotland and the North and south west of England between the two Atlas periods. The UK population was estimated at 192 - 211.000 pairs in 2000 (1988-91 Atlas updated using CBC/BBS & WBS trends). The long term national trend is a 48% decline 1968 – 1999. The decline over this period has been even more severe on wetlands than on farmland

Regional:

The BBS report produced by the BTO suggests in the E of England that the trend for Reed Bunting has seen a 20% increase in numbers between 1994-2005, recorded from a mean of 64 squares per year (although to 2004 this species was at –3%).

Local:

Anecdotal evidence indicates the species is increasingly present in Oilseed Rape. The Suffolk bird survey 07 will begin to inform this.

3 Current factors affecting Reed Bunting

It appears that the first Atlas period was associated with a peak in population as the species was moving into drier areas such as scrub and farmland. This expansion was then curtailed by the agricultural changes that have taken place since 1970. Data indicates falling productivity and recovery may have been being hampered by increasing nest losses.

Oilseed Rape is one of the most important breeding season habitats for Reed Buntings in lowland Britain, providing a relatively rich source of seed and invertebrate food and possibly protection from nest predators. Breeding in Oilseed Rape (OSR) reduces the dependence of Reed Buntings on nearby wet features. [Gruar et al 2006]

In addition tall vegetation on ditch banks provides important nesting and foraging habitat (as it is insecticide free). The management of this semi natural habitat and the

adjacent crop of OSR is key to improving breeding outcomes for this species on farmland

4 Current action

The importance of the management choices for oil seed rape cannot be stressed enough, desiccation will generally destroy broods prior to fledging whereas desiccation or natural ripening allow sufficient time for clutches to have fledged prior to harvest.

In addition sympathetic management of riparian and ditch side vegetation is vital to provide additional feeding and breeding opportunities on arable farms. The ditch management options of the entry level scheme are central to this.

There is a continuing need to highlight the importance of farmland for what is perceived as a "wetland" species

5 Targets

As a minimum, maintain existing 2007 population and exiting range of reed bunting which will be derived from 2007/2008 planned survey.

Propose the setting of expansion targets after the first year of the survey is complete in 2008.

6 Actions

Action	Date	Partners
Policy & Legislation		
Ensure reed bunting as an LBAP species is recognised and protected in LDFs in accordance with PPS9.	2006-2010 Annual	**NE,** LAs, SWT**.**
Promote the uptake of agri-environment schemes which benefit this species, and consider the habitat and food requirements of this species within the scheme options.	Annual 2006-2010	**NE**, FWAG, RSPB, SWT
Species management and protection		
Research and monitoring		
Further determine Suffolk bird population by undertaking detailed winter and breeding surveys of 10km squares, 8 tetrads in each to develop detailed baseline data in Suffolk.	2007 and 2008	**SOG**, BTO
Advisory		
Promote sympathetic management of crops and vegetation on farm for this species i.e. the use of desiccates instead of swathing.	Annual 2006-2010	**FWAG**, RSPB, SWT
Promote this species as a farmland species as well as wetland, highlight in advice and farmland walks.	Annual 2006-2010	**FWAG,** RSPB**.,** SWT
Promote the importance of thick vegetation, especially on ditch banks and in set-aside, as nesting habitat for this species	Annual 2006-2010	**FWAG,** RSPB**.,** SWT
Ensure that all LBAP partners have copies of the RSPB Farming for Birds and Farming for Wildlife leaflets which include reed bunting.	2006	**RSPB**
Encourage the longer retention of game covers and the provision of supplementary feeding in areas where the species is or may be present.	Annual 2006-2010	**FWAG**, NE, RSPB, SWT
Encourage the sympathetic management of wet habitats and waterside vegetation	Annual 2006-2010	**FWAG**, NE, RSPB, SWT, LAs
Communications and publicity		
Promote the Reed Bunting as a species in need of conservation assistance and produce at least one LBAP press release per year that draws attention to this species.	Annual 2006-2010	**FWAG**, SWT NE, RSPB, SWT, LAs

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Current constraints:

Identify opportunities for energy crop potential that may benefit reed bunting (corporate opportunities).

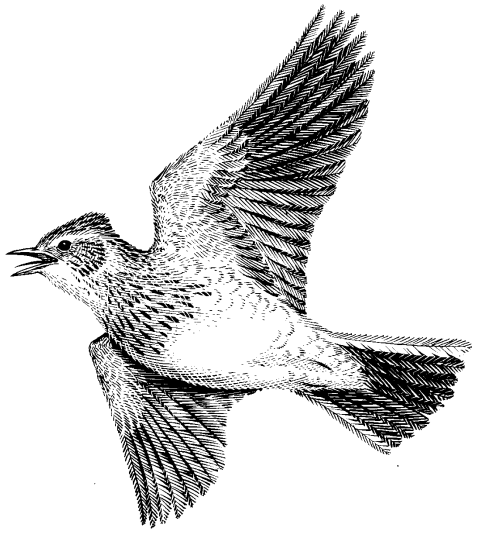
Consultation: Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Kirsty Coutts
FWAG Phil Watson and Diane Ling
Natural England Monica O'Donnell and Alison Collins
Suffolk County Council Andrew Murray-Wood
SWT Dorothy Casey
Suffolk Biological Records Centre (SBRC) Martin Sanford
Robin Harvey Wetland LBAP lead for this species
Suffolk Ornithologists Group Steve Piotrowski

Skylark *(Alauda arvensis)*

1 Definition

The Skylark is a bird of open habitats such as heathland, grassland, dunes and saltmarsh, and is characteristic of arable habitats in East Anglia. Although still common, it has undergone a large decline in recent years. It feeds amongst short vegetation and nests on the ground.



2 Current status

2.1 National

One of the most widespread birds of the British Isles, with over 2 million breeding pairs, the resident Skylark population is joined in winter by a significant proportion of the northern European population - possibly up to 25 million individuals. The UK breeding population of Skylark on lowland farmland declined by 61% between 1971 and 1995.

2.2 Local

The Skylark is common and widespread in Suffolk as a breeding and wintering bird throughout the open countryside. However, numbers have declined rapidly in central Suffolk, the main cereal-growing areas and the population is has declined throughout the county since the 1980s.

2.3 Natural Areas

All

3 Current factors affecting the Skylark in Suffolk

- Winter cereals grow too dense to allow Skylarks to raise more than a single brood. This is insufficient to sustain the population.
- Intensive management of arable fields has reduced broad-leaved weed seeds and insect prey through the use of agro-chemicals.
- Intensive management of grasslands and high stocking rates.
- Silage fields are often cut too frequently which destroys nests and exposes Skylarks to predators.
- Decline in area of weedy stubbles may reduce over-winter survival.

4 Current action

4.1 Legal Status

The Skylark is protected under the EC Birds Directive and the Wildlife and Countryside Act 1981.

4.2 Management, research and guidance

- The Sustainable Arable Farming for an Improved Environment (SAFFIE) Project is researching novel ways of making winter cereal fields more attractive to skylarks.
- A national Species Action Plan has been prepared and agreed by RSPB and the country agencies.
- Skylark plots have been included as an option in the pilot Entry Level Scheme, due to be rolled out nationally in 2005.
- Provision of cereal field margins in the Suffolk River Valleys ESA scheme has benefitted Skylark numbers recently.

5 Action plan objectives and targets

1 *Maintain the Breeding Bird Survey population index for Skylarks at or above the 1995 level.*

2 *Maintain the current range of Skylark in Suffolk as measured in the 1993 Provisional Atlas of Breeding Birds in Suffolk.*

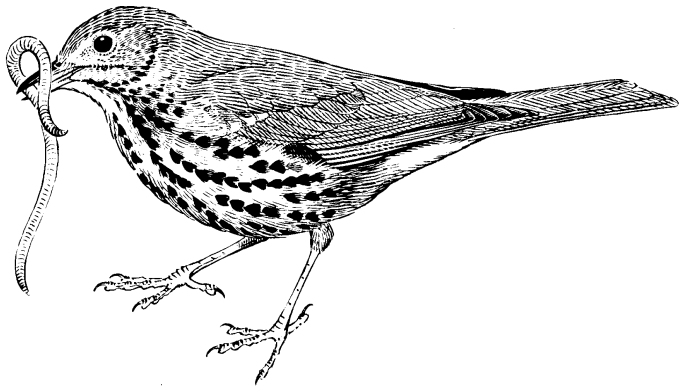
3 *Create and manage suitable Skylark habitat on farmland through uptake of Agri-environment schemes.*

6 Skylark: Proposed action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure Entry Level and Higher Tier agri-environment schemes contain suitable prescriptions to benefit Skylark on arable land.	2004	**Defra**, RSPB, FWAG, EN
Promote uptake of agri-environment scheme prescriptions that are likely to benefit Skylark.	2007	**FWAG,** Defra, RSPB
Ensure compliance with annex III/I of EC Birds Directive and the Wildlife and Countryside Act 1981 through provision of advice to landowners.	2007	**FWAG,** Defra, RSPB,
RESEARCH AND MONITORING		
Collate all Skylark records annually and pass records on to SBRC.	2004 2005 2006 2007	**SBRC**, FWAG, SWT, Landowners, RSPB, SOG
Undertake survey on farmland, encouraging landowner participation to establish Skylark numbers in Suffolk.	2005	SBRC, GCT, FWAG, SWT, Landowners, RSPB, Defra
ADVISORY		
Continue to provide conservation advice to land managers on field margins, set-aside management, etc to benefit Skylark.	2007	**FWAG**, Defra, RSPB, SOG, SWT
COMMUNICATIONS AND PUBLICITY		
Use the Skylark as example of farmland bird in decline and also 3 seek positive stories about management for Skylark in farming and local press.	2007	**FWAG**, SWT, Defra

Song Thrush *(Turdus philomelos)*

The Song Thrush is a widespread species that occurs almost anywhere there are trees, hedgerows and bushes, primarily in farmland, woodland and scrub habitats, as well as in large gardens and parks. Adults feed on berries, seeds and invertebrates (particularly molluscs) and chicks on a variety of invertebrates.



1 Definition

The Song Thrush is a common but declining resident of the British Isles. It is a partial migrant and a winter visitor. Some continental birds fly to Britain to spend the winter and some resident breeding birds spend the winter further south in Europe. The song thrush occupies a range of British habitats as mentioned above, but changes to farming practices in the last 50 years mean that some of its most suitable habitats are now less favourable.

2 Current status

2.1 National

Song Thrush numbers remained stable until the mid- 1970s after which they declined steadily, with an estimated reduction of 70% in farmland and 45% in woodland habitats between 1971 and 1995.

2.2 Local

Suffolk has a relatively high density of song thrushes with no marked gaps in distribution or density variation. There is no population estimate for the county.

2.3 Natural Areas

All

3 Current factors affecting the Song Thrush in Suffolk

Reasons for the decline on farmland are thought to be due to the loss of food-rich habitats, particularly in the summer, resulting in fewer nesting attempts being made.

4 Current action

4.1 Legal status

The Song Thrush is protected under the EC Birds Directive and the Wildlife and Countryside Act 1981.

4.2 Management, research and guidance

- Research work has been carried out into Song Thrush declines in Essex and Suffolk and the results used to produce conservation advice for land managers.
- A National species action plan has been prepared by the RSPB, in collaboration with JNCC and the country agencies.
- Wildlife gardening information available to public, including care with slug pellets (RSPB, SWT).
- SWT undertook a Song Thrush survey in 1999, using volunteers and local schools.
- Five years of survey work at North Warren (RSPB) is now beginning to show an increase in the population.

5 Action plan objectives and targets

1. *Maintain the geographical range of Song Thrush, particularly on farmland habitats, as measured in the 1993 Provisional Atlas of Breeding Birds in Suffolk.*
2. *Continue to monitor Song Thrush numbers through Common Bird Census and Breeding Bird Survey. Set up a series of sample sites of grid squares which are surveyed every year.*
3. *Restore suitable habitat on farmland encouraging uptake of Defra's agri-environment scheme options to benefit Song Thrush.*

6 Song Thrush: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure Entry Level and Higher Tier agri-environment schemes contain suitable prescriptions to benefit Song Thrush on arable land.	2004	**Defra**, RSPB, FWAG, EN
Promote uptake of agri-environment scheme prescriptions that are likely to benefit Song Thrush.	2004 2005 2006 2007	**Defra**, **FWAG**, RSPB
Ensure compliance with WCA (1981), CE birds Directive by provision of advice to farmers and landowners.	2004 2005 2006 2007	**FWAG**, Defra, , RSPB
SPECIES SAFEGUARD AND MANAGEMENT		
Continue to support Common Bird Census and Breeding Bird Surveys annually.	2004 2005 2006 2007	**SBG,** SNS, RSPB
Continue to monitor Song Thrush numbers at North Warren Reserve.	2004 2005 2006 2007	**RSPB**
RESEARCH AND MONITORING		
Collate all Song Thrush records annually and pass records on to SBRC.	2004 2005 2006 2007	SBRC, FWAG, SWT, Landowners, RSPB
Undertake survey, encouraging landowner and farmers to establish Song Thrush numbers on arable land in Suffolk.	2005	SBRC, FWAG, SWT, Landowners, RSPB, Defra
ADVISORY		
Continue to provide conservation advice to land managers regarding field margins, set-aside management and use of molluscicides to benefit Song Thrush.	2007	**FWAG**, Defra, RSPB, SWT

COMMUNICATIONS AND PUBLICITY		
Promote volunteer participation in Breeding Bird Survey by recruiting new volunteers to empty grid squares.	2004	**SOG**, RSPB
Raise awareness of human influence on Song Thrush numbers, research and conservation action by articles in media, local magazines and local events.	2007	**FWAG**

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Spotted flycatcher
(*Muscicapa striata*)

1 Definition

The spotted flycatcher is an insectivorous summer migrant which utilises open wooded habitats, large gardens and parks as nesting habitat. It has suffered a large decline in numbers, especially being seen less and less on farmland, in recent decades.

Preferred habitats are mature broad-leaved woodland (although it will also use mature conifers), hedgerows with mature trees, parkland and large gardens. Spotted flycatchers feed on invertebrates, either from the tops of trees or flying insects.

2 Current status

National:

The species has been in decline since the early 1960s. Common Bird Census data show a 62% decline in spotted flycatcher populations in woodland habitats and a 70% decline on farmland between 1968 and 1991, although the range had reduced by only 6.6% between the two breeding atlases (1968-72 and 1988-91). The UK population estimate derived from the New Breeding Bird Atlas is 120,000 territories which represents only a quarter of the estimate in the first Atlas.

The long term national trend (1970 – 2004) shows an 83% decline in spotted flycatcher numbers.

Regional:

Spotted Flycatcher has declined by 67% in the East of England between 1994 and 2005 (based on a mean number of 33 Breeding Bird Survey squares per year).

Local:

The Provisional Suffolk Breeding Bird Atlas (1993) shows that the spotted flycatcher is found in around 50% of 2 km tetrads within the county. There is evidence of a local decline in numbers, particularly in the west of the county (Suffolk Birds, 1997).

3 Current factors affecting spotted flycatchers

These are not well known, but may include one or more of the following:

Weather effects. These appear to be important and could have population impacts if long-term climate change occurs. The key factor appears to be summer weather conditions as more birds breed early if temperatures are warmer, and one study found that clutch sizes are larger when there is more sunshine.

Drought in the Sahel region. This has been implicated in the declines of a number of trans-Saharan migrants. The spotted flycatcher passes through the Sahel region en route to wintering grounds in southern Africa. Changes in conditions in the Sahel or the wintering areas could be a factor in the species' decline but no clear link has been established.

Changes in agriculture. Firm data on the importance of this for spotted flycatcher is lacking, but there is growing evidence that a range of birds found on lowland farmland are affected by low invertebrate availability during the summer.

Loss of nest sites. Many spotted flycatchers nest in large trees and there has been a large-scale loss of these in woodland, parks and hedgerows (especially following Dutch elm disease), which are favoured habitats. However, there are no quantitative data on the effect of these losses.

4 Current action

Until recently the spotted flycatcher was not regarded as a species of conservation concern, so little action has been carried out. However, some aspects of broad-leaved woodland management, particularly the creation and maintenance of clearings and wide rides, will have benefited the species.

Provision of nest-boxes (usually for other species) may also have helped spotted flycatchers, particularly in areas with few natural nest sites.

ELS options that will help to provide suitable spotted flycatcher habitat include buffering woodland edges, grass margins and very low input grasslands.

5 Targets

As a minimum, maintain existing 2007 population and range of spotted flycatcher which will be derived from 2007/8 planned survey.

Expansion targets to be set after the results of the first year surveys (2007) have been received.

6 Actions

Action	Date	Partners
Policy & Legislation		
Protect and enhance through planning process – e.g. tree protection orders and appropriate survey.	Annual 2006-2010	**LAs**, SCC, NE, SWT, RSPB
Ensure spotted flycatcher as an LBAP species is recognised and protected in LDFs in accordance with PPS9.	Annual 2006-2010	**LAs, NE,** SWT, RSPB
Species management and protection		
Consider the nesting requirements of the spotted flycatcher when providing nest boxes in areas where this species is found (e.g. country parks, nature reserves)	Annual 2006-2010	**SCC**, LAs, RSPB, SWT, National Trust
Undertake a survey involving the public for spotted flycatchers, instigate community engagement and provide conservation advise to landowners for this species.	2007	**SWT**.
Ensure data from survey is sent to SBRC to enhance county data.	2007	**SWT**, SBRC.
Explore and implement new nest boxes on other sites such as school/parish/common grounds where suitable habitat exists.	2007-2008	**SCC,** LAs, PCs, RSPB, NT, SWT.
Establish spotted flycatcher in the new built environment plan.	2007	**SCC**, SWT, RSPB, LAs.
Promote the importance of farmland ponds as a source of flying insect food for spotted flycatcher.	Annual 2006-2010	**FWAG,** SWT, RSPB
Consider further action when RSPB research has reported back later in 2007	2007	**RSPB**
Research and monitoring		
Encourage local research and continued support of long-term surveys such as the Breeding Bird Survey		**BTO**, SOG, RSPB, NT, NE
Further determine Suffolk bird population by undertaking detailed winter and breeding surveys of 10km squares, 8 tetrads in each to develop detailed baseline data in Suffolk.	2007 and 2008	**SOG**, BTO
Advisory		
Encourage uptake of agri-environment schemes to provide suitable habitat for spotted flycatcher.		**FWAG**, SWT, RSPB, NE
Produce a Suffolk focused fact sheet for	2007	**SWT,** SOG.

spotted flycather to promote to a range of land managers.		
Discuss with Woodland HWG how spotted flycatcher needs can be incorporated and opportunities in the woodland grant scheme.	2007	**BAP officer.**
Communications and publicity		
Promote the spotted flycatcher as a species in need of conservation assistance.		**SWT**, RSPB, SOG, LAs, NE
Produce at least one LBAP press release per year that draws attention BAP species.	Annual 2006-2010	**RSPB**, SOG, SWT, LAs

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Consultation:

Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Kirsty Coutts
FWAG Phil Watson
Natural England Monica O'Donnell and Alison Collins
Suffolk County Council Andrew Murray-Wood
SWT Dorothy Casey
Suffolk Biological Records Centre (SBRC) Martin Sanford
Suffolk Ornithologists Group SOG Steve Piotrowski
National Trust Stuart Warrington

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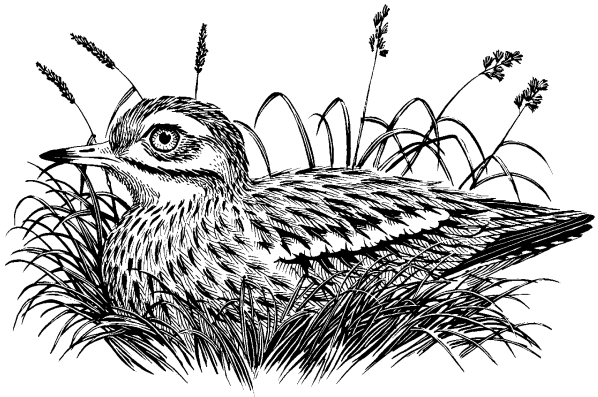
Stone Curlew *(Burhinus oedicnemus)*

1 Definition

The Stone Curlew is a migratory bird of dry, stony, open ground such as heathland and acid grassland. It is now largely confined to East Anglia, in particular the Breckland, where in recent years the species has adapted to breeding on open arable land. It is largely crepuscular or nocturnal and nests in scrapes on patches of bare earth.



2 Current status

2.1 National status

Rare and localised in the UK, Stone Curlew numbers have fallen by some 85% since the 1940s and the species is now largely confined to Wessex and the Breckland. The Stone Curlew is a UK Red list species, having declined by over 50% in the last 25 years, as well as being a rare breeder and a species with an unfavourable conservation status in Europe (SPEC 3).

2.2 Local status

Norfolk and Suffolk together held 183 pairs in 2000 (72% of UK breeding Stone Curlews). In Suffolk, these are largely confined to the Breckland although a small population also exists on the Suffolk coast.

2.3 Natural Areas

Breckland, Suffolk Coast and Heaths

3 Current factors affecting Stone Curlew in Suffolk

- Loss of semi-natural grasslands. The conversion to arable farmland or forestry of suitable short-grazed, sparsely vegetated grasslands, particularly chalk and heath grasslands, is thought to be the main reason for the decline in breeding Stone Curlews in England.
- Reduced grazing by Rabbits and livestock. The reduction or loss of grazing pressure by both Rabbits and livestock has resulted in areas becoming unsuitable for breeding stone curlews due to the growth of tall grass and scrub.

- Changes in farming systems. Breeding can occur on arable land, mostly spring-sown field crops since these retain their open structure (and therefore suitability as a breeding habitat) until June or July. The reduction in spring-sown crops and the general trend of agricultural intensification has led to a reduction in availability and suitability of this habitat. This is a less serious problem in Breckland than elsewhere in the UK.
- Agricultural operations such as mechanical hoeing can destroy eggs and young where nesting occurs on agricultural land.
- Fox, Crow and possibly stoat predation, particularly on grasslands.
- Disturbance prevents the species using some areas that are otherwise suitable.
- Egg collecting.
- Impact of noise or lights from roads.

4 Current action

4.1 Legal status

Stone Curlew is protected under Schedule 1 of Wildlife and Countryside Act 1981, Annex 1 of 1979 EC Birds Directive and Appendix II of the Bern Convention.

4.2 Management, research and guidance

- Most semi natural heathlands supporting Stone Curlew are SSSIs and are positively managed. EN also manage heathland nature reserves in the Brecks.
- Brecks ESA is encouraging grazing of heathlands for Stone Curlew and contains prescriptions for arable reversion. Take-up of reversion is currently poor.
- Countryside Stewardship OS3 (over-wintered stubble followed by spring fallow) option introduced by Defra to existing Countryside Stewardship scheme.
- Breckland Heathland Heritage five year project commenced 2001. Recreating 300ha of heath from forestry and carrying out management work on further 6000ha of Breck heath in both Norfolk and Suffolk.
- Breckland Farmland SSSI has been notified. Wildlife Enhancement (WES) Scheme for Stone Curlew plots is being taken up by farmers.
- The RSPB/EN Stone Curlew Recovery Project has been operating in Breckland since the mid-1980s. The project locates and monitors breeding birds and where necessary liaises with farmers and landowners to protect nests from destruction by agricultural operations. The project has allowed the population to expand gradually in recent years. RSPB also appoints a part-time Stone Curlew fieldworker in east Suffolk
- Awareness raising/advisory work by RSPB.
- Management plans have been prepared for many Breckland heaths.
- Set-aside has been beneficial for Stone Curlews. Guidance is available from Defra to create bare ground for breeding Stone Curlews.
- Liaison with Forest Enterprise by RSPB, EN, SWT to re-establish new areas of heath from forest clearance.
- LIFE funding was received from 1994 - 1996 by the Brecks Wildlife Partnership to part finance Stone Curlew protection.
- Elvedon Farms Monitoring – Elvedon Estate landowners are monitoring and ringing Stone Curlew.

5 Action plan objectives and targets

1. *Maintain the breeding population in Breckland (Norfolk as well as Suffolk) at no fewer than 172 pairs.*
2. *Increase the breeding population (east Anglia-wide) to at least 225 pairs by 2005.*
3. *Maintain a minimum of 3 breeding pairs in the Sandlings with a target of 7 breeding pairs by 2010.*
4. *Encourage Stone Curlews to return to semi-natural grasslands and grass heaths where their future would be more sustainable and less costly. Target is to achieve 55 breeding pairs on Brecks heath in 2010 (in Suffolk).*
5. *Maintain a minimum productivity of 0.70 fledged chick per pair by intervention on arable and reserve management where appropriate.*

6 Stone Curlew: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure that Higher Tier agri-environment scheme to be rolled out in 2005 contains prescriptions meeting Stone Curlew requirements and promotes grazing of heathland and habitat to reverse fragmentation.	2004	EN, SWT, RSPB,
SITE SAFEGUARD AND MANAGEMENT		
Seek to ensure that sites designated for their Stone Curlew interest are safeguarded from development.	2004 2005 2006 2007	**EN**
Ensure that all sites designated for their Stone Curlew interest are maintained in favourable conservation status for the species.	2004 2005 2006 2007	**EN**, RSPB, SWT
Seek to increase the range of Stone Curlew in east Suffolk through appropriate management of Sandlings heath.	2004 2005 2006 2007	**Sandlings Group**
SPECIES MANAGEMENT AND PPROTECTION		
Continue the current Stone Curlew protection work in the Brecks and on the Suffolk Coast.	2004 2005 2006 2007	**RSPB**, **EN**
Continue to promote the management of set aside for Stone Curlews.	2004 2005 2006 2007	**RSPB**, , FWAG
Promote English Nature Wildlife Enhancement Scheme in the Breckland.	2004 2005 2006 2007	**EN**, RSPB,
Promote Countryside Stewardship OS3 (over-wintered stubble/spring fallow) and its equivalent in the Higher Tier Scheme in areas where it may be used by Stone Curlew.	2005 2006 2007	**Defra**, RSPB

Determine through remote monitoring, the causes of pretation of Stone Curlew nests and implement necessary control measures where feasible.	2004 2005 2006 2007	**RSPB**, EN
Discourage egg collecting and seek to ensure offenders are prosecuted.	2004 2005 2006 2007	SOG, EN, **RSPB**
RESEARCH AND MONITORING		
Monitor Stone Curlew breeding population in Suffolk to assess whether the action plan is attaining its objectives.	2004 2005 2006 2007	**RSPB**, EN
Monitor the condition of SSSI heaths for Stone Curlew with particular attention to sward height and grazing levels and adjust management as necessary.	2004 2005 2006 2007	**EN**, RSPB
Analyse crop mapping survey to determine recovery potential for the Stone Curlew in east Suffolk.	2004	RSPB, EN
Investigate mechanisms determining the avoidance of major roads by Stone Curlew and make recommendations for the mitigation of these affects.	2004 2005 2006 2007	**RSPB**
ADVISORY		
Provide further training in Stone Curlew conservation for agri-environment scheme project officers and FWAG staff.	2004 2006	**RSPB**, EN
Advise major landowners, farmers and Defra staff on land management for Stone Curlew.	2004 2005 2006 2007	**RSBP**, EN, FWAG
COMMUNICATIONS AND PUBLICITY		
Highlight the decline and importance of the species and minimise the disturbance elsewhere by articles in popular nature magazines, press and at bird reserves.	2004 2005 2006 2007	**EN**, RSPB, Sandlings Group, Brecks Heathland Heritage Project
Encourage visitors wishing to see the Stone Curlew to go to Weeting Heath in the Norfolk Brecks where viewing facilities are provided.	2004 2005 2006 2007	**RSPB,** EN, SWT

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Tree Sparrow
(Passer montanus)

1 Definition

The Tree Sparrow was once a common and widespread species across the UK countryside, found on farmland wherever there is a plentiful supply of seeds throughout the year and insects in the breeding season. Availability of insect food for the young, and a good supply of nesting holes are essential for successful breeding.

2 Current status

National:

Numbers declined by 93% on farmland between 1968 and 1999 (based on data collected as part of the BTO's Common Bird Census). The UK range has undergone marked change between the two Atlas periods, with a contraction in the west and south of England, and has continued subsequently, with many local extinctions occurring during the 1990s. The UK population was estimated at 68,000 territories in 2000 (1988-91 Atlas update using CBC/BBS trend). The long term national trend is a 95% decline 1970 – 1999. BBS trend UK: 1994-2005 is +23% (2004-2005 = -15%), England 1994-2005: +8% (2004-2005 = -18%)

Regional:

The regional population has fluctuated over the course of BBS – 1994-2003: –15%, 1994-2004: +26% (1994-1996 population increased, but 1996-2003 was below 1994 level, 2004 was above 1994 level)

Local:

Results of the 2007 survey in Suffolk will inform this. V&FA data would assist with this but may not be accessible.

3 Current factors affecting Tree Sparrow

The recent decline of the Tree Sparrow has occurred at the same time as decreases in the numbers and/or range of other farmland birds which share its diet of grass, wildflower seeds and some cereal grains. It is likely that the decline in Tree Sparrow may be due to changes in agricultural practice, both in the UK and in their wintering grounds in south-west Europe. These include the increased use of herbicides and fertilisers, the switch from spring-sown to autumn-sown crops and the consequent loss of winter stubble fields, and the general reduction in farmland habitat diversity due to the loss of mixed farming and increased specialisation. Breeding performance has improved substantially as population sizes have decreased, suggesting that decreases in productivity were not responsible for the decline. It is more likely that

survival was the critical demographic measure, although ring-recovery analyses have produced equivocal results because of small sample sizes.

Tree sparrows tend to form loose local colonies and where these are supported with nest boxes and ample seed supplies local populations can be stable and increasing.

4 Current action

The remaining "colonies" of Tree sparrows tend to be concentrated in mixed farming areas with access to at least small wetland patches and artificial nest sites or old/pollard trees. There is usually abundant seed provision including supplementary feeding directly from gardens or indirectly from shooting interests.

Several of theses sites have been identified and new sites are being sought. Once identified it is important that the favourable management is maintained, and if possible enhanced using all possible means, both within and beyond the scope of agri- environment schemes.

Key to success is the plentiful supply of seeds throughout the year and this should include supplementary feeding to ensure over winter survival and maintain the condition of adults during the breeding season. There should be supplementary provision of nest sites to allow colonies to expand. New boxes should be in place by the end of the breeding season rather than in early spring, as new nest sites are partially established at the end of the breeding season. [Summers Smith 1995]

5 Targets

As a minimum, maintain existing 2007 colonies and implement all possible means to protect and enhance them which will be derived from the planned 2007/2008 survey. (Expansion targets to be set after the results of the first year surveys (2007) have been analysed).

6 Actions

Action	Date	Partners
Policy & Legislation		
Promote the uptake of agri-environment schemes which benefit this species, and consider the habitat and food requirements of this species within the scheme options.	Annual 2006-2010	**NE**, FWAG, RSPB, SWT
Species management and protection		
Encourage the longer retention of game covers and the provision of supplementary feeding in areas where the species is or may be present.	Annual 2006-2010	**FWAG**, NE, RSPB, SWT
Visit and survey current and new sites providing information and support to owners/managers	2007	**SWT** FWAG, RSPB
Promote conservation headlands, buffer strips, wetland features, set-aside, wild bird cover and over-wintered stubbles	Annual 2006-2010	**FWAG, NE, RSPB, SWT, LAs**
Encourage the retention and maintenance of pollards and other "hole" trees, as well as bushes and farm buildings that may contain nesting holes by all land managers.	Annual 2006-2010	**FWAG**, NE, RSPB, SWT, LAs
Research and monitoring		
Ask the public for information about sitings and breeding of this species in the county	Annual 2006-2010	**SWT**,**SOG**
Contact Shelly Folland at RSPB to discuss options for asking landowners to release Volounteer and Farmer Alliance data relating to tree sparrow.	2007	**FWAG,** RSPB
Identify the distribution extent and size of colonies across the county during the 2007 breeding season and continue monitoring in future years	2007-2010	**SWT,SOG,**RSPB, FWAG
Further determine Suffolk bird population by undertaking detailed winter and breeding surveys of 10km squares, 8 tetrads in each to develop detailed baseline data in Suffolk.	2007 and 2008	**SOG**, BTO
Undertake ringing and ringing recovery at known breeding and wintering locations	2007 2008	**SOG,** SBRC
Advisory		

Focus advice to individual land managers that support colonies of tree sparrow and use survey to inform this.	2007 - 2010	**FWAG, SOG, SWT.**
Communications and publicity		
Promote the Tree Sparrow as a species in need of conservation assistance and produce at least one LBAP press release per year that draws attention to this species.	Annual 2006-2010	**SWT** FWAG, NE, RSPB, SWT, LAs
See R & M 1	2007	**SWT**

Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Kirsty Coutts
FWAG Phil Watson
Natural England Monica O'Donnell and Alison Collins
Suffolk County Council Andrew Murray-Wood
SWT Dorothy Casey and Steve Piotrowski
Suffolk Biological Records Centre (SBRC) Martin Sanford

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Turtle Dove
(*Streptopelia turtur*)

1 Definition

The turtle dove is a summer migrant to the UK with its national stronghold in the south east of England. It is a bird of warm, dry arable areas, but like many other farmland birds, it has suffered a large decline in recent decades. It generally occurs below 350 m in a variety of fairly dry, sunny, sheltered habitats. Turtle doves need sources of seed as food from late April until August, as well as tall thorny hedges or scrub for nesting.

2 Current status

National:

The UK population of turtle doves has fallen by 81% between 1970 and 2004. The turtle dove population was at a high at the time of the first breeding atlas (1968-72). However, the Common Bird Census index has indicated a fall of around 60% in the population since this time, and the New Breeding Atlas (1988-91) shows a marked decrease in range of around 25%. The latest population estimate, taken from the new atlas, is approximately 75,000 territories.

Regional:

In the East of England region, the population of turtle doves declined by 46% between 1994 and 2005.

Local:

Between 1968-72 and 1988-91, this species disappeared from one 10 km square in Suffolk. The turtle dove is found throughout Suffolk and has been consistently found in over 50% of the squares surveyed by the Breeding Bird Survey.

3 Current factors affecting turtle doves

The decline of the turtle dove has occurred at the same time as decreases in the numbers and/or range of other farmland birds which share its diet of grass and weed seeds. It is therefore likely that its decline may be due, at least in part, to changes in agricultural practice such as the increased use of herbicides and fertilisers, which have reduced the quantity and variety of wildflowers on arable land.

Turtle doves nest in large hedges and mature scrub, and retreat to the safety of this dense vegetation when disturbed. The loss of features such as overgrown hedgerows and hawthorn thickets on farmland is likely to have had an adverse effect on the population.

As a long-distance migrant, the turtle dove faces threats, particularly from hunting, outside the UK. It is heavily shot in France and the Iberian peninsula. Tens of thousands of birds are also shot in their wintering areas, mainly Senegal, and many more are killed on migration through Morocco.

In the UK, turtle doves are associated with light soils in the drier parts of the country and the decrease in range of the species has been most marked in the north and west. Declines are probably driven by intensification of management and a loss of mixed farming.

Little is known of the effects of habitat or climatic changes in the wintering grounds of the species. Turtle doves spend part of the year, particularly February and March, in acacia scrub in the Sahel region, and recent drought conditions and habitat destruction there have coincided with a steep decline in numbers.

4 Current action

Until recently the turtle dove was not regarded to be a species of conservation concern, so little action for it has been carried out. However, turtle dove has been a target species for some agri-environment schemes in England for a number of years. The original National BAP plan was published in 1998.
However when arable options were added into the Countryside Stewardship Scheme in 2000 (following on from the Arable Stewardship Scheme pilot which ran in parts of western Suffolk) turtle dove was one of the 7 main target species and where the species was present, Agreements could be tailored to include suitable arable and hedge/trees options. Rotational set-aside will have benefited the species, although this has been significantly reduced in area in recent years.

ELS options that can benefit turtle dove include conservation headlands, uncropped cultivated field margins and fallow plots.

Turtle dove is a key target species within the Higher Level Stewardship opportunities for the Joint Character Areas of Suffolk Coast and Heaths, The Broads, south Suffolk and North Essex Claylands, and the South Norfolk and High Suffolk Claylands.

5 Targets

As a minimum, maintain existing 2007 population and the existing range of turtle dove which will be derived from the survey planned for 2007/2008.

Expansion targets to be set after the first year of the survey is complete in 2007.

6 Actions

Action	Date	Partners
Policy & Legislation		
Ensure turtle dove, as an LBAP species, is recognised and protected in LDFs in accordance with PPS9.	Annual 2006-2010	**NE, LAs,** SWT**,** RSPB
Ensure understanding and compliance with the Hedgerow regulations.	Annual 2006-2010	**NE**, **LAs**, FWAG, SWT.
Species management and protection		
Promote the uptake of agri-environment schemes which benefit this species and consider the habitat and food requirements of this species when deciding the scheme options to be taken up.	Annual 2006-2010	**NE**, FWAG, RSPB, SWT
Research and monitoring		
Undertake a survey involving the public for turtle dove, instigate community engagement and provide conservation advise to landowners for this species.	2007	**SWT**.
Ensure data from survey is sent to SBRC to enhance county data.	2007	**SWT**, SBRC.
Further determine Suffolk bird population by undertaking detailed winter and breeding surveys of 10km squares, 8 tetrads in each to develop detailed baseline data in Suffolk.	2007 and 2008	**SOG**, BTO
Use hedgerow mapping project when complete to identify significant gaps in hedgerow distribution and combine this with above survey to identify target areas for new hedgerows that are strongholds for turtle dove.	2008	**SOG,** SBRC.
Advisory		
Promote the uptake of boundary and infield options, such as uncropped cultivated margins and conservation headlands through the summer period.	Annual 2006-2010.	**FWAG,** RSPB, NE, SWT
Promote the gapping up of hedgerows with hawthorn/blackthorn, rotational coppicing of hedgerows with a complete hedge structure (avoid trimming), promote scrub and copses and cultivated uncropped	Annual 2006 - 2010	**FWAG,** RSPB, NE, SWT.

margins (to provide food source).		
Ensure that all LBAP partners have copies of the RSPB Farming for Birds and Farming for Wildlife leaflets which include turtle dove.	2006	**RSPB**
Produce a Suffolk focused fact sheet for turtle dove to promote to a range of land managers.	2007	**SWT,** SOG.
Communications and publicity		
Promote the turtle dove as a species in need of conservation assistance and produce at least one LBAP press release per year that draws attention to this species.	Annual 2006-2010	**SWT**, FWAG, NE, RSPB and SCC.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Consultation:

Organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB Kirsty Coutts
FWAG Phil Watson
Natural England Monica O'Donnell, Ian Johnson and Alison Collins
Suffolk County Council Andrew Murray-Wood
SWT Dorothy Casey
Suffolk Biological Records Centre (SBRC) Martin Sanford
Suffolk Ornithologists Group SOG Steve Piotrowski

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SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

WOODLARK
(Lullula arborea)

1. Definition

The woodlark is a species historically associated with heathland. More recently woodlarks have colonised clear-felled forestry plantations and farmland. This species has suffered a historic decline in numbers and range, but increased substantially throughout the 1990s and into the new millennium.This plan aims to encourage heathland and forestry management to provide optimum conditions for breeding woodlarks.

2. Current status: national, regional and local

National

The woodlark was formerly found across Britain, as far north as Yorkshire but then declined substantially to be found in only five core areas; Devon & East Dorset, southern Hampshire including the New Forest, the Surrey/Hampshire border, Breckland and the Suffolk Sandlings.There has been a recent range and population expansion in south Yorkshire with further colonisation in north Yorkshire, the Vale of York and Cannock Chase. In 2006 two pairs were found breeding in Wales. Results from the 2006 national survey showed 131 occupied 10-km squares in the UK, compared to 90 in 1997 – a range expansion of 46%.

Since 1986 (when the population was estimated at c.250 pairs) the population has increased with up to 620 breeding pairs in 1993, 1552 pairs in 1997 and 1740 pairs in 2006. The final population estimates for the UK of 3085 territories included a core population, 5km and 10km buffer sample estimates and a correction factor for squares visited less than four times. Nesting habitats include farmland, clear-felled forestry plantations (mainly in East Anglia) and heathland in southern England and the Suffolk Sandlings. Results from the 2006 survey suggest that 67% were breeding on heathland, 32% on forestry plantations and just 13% on farmland (*these figures relate to territorial individuals which may associate with more than one habitat type, hence the combined percentages exceed 100%).* In 1997 up to 50% of the population were breeding on set-aside and fallow fields. The continued increase in the population has resulted largely from new plantation habitats and improved heathland management within the core areas.

In winter some woodlarks can be found on farmland stubbles and some remain on the acid grassland breeding territories all year but there does appear to be a southward movement within England and to the continent.

Local

The 2006 national survey found a maximum of 370 breeding pairs in Suffolk (21% of the UK population). The 1997 national survey found between 403 and 457 breeding pairs in Suffolk (30% of the UK population). Nearly 340 pairs were found in Thetford Forest (Norfolk and Suffolk) and so represented a substantial proportion of the local and national population. The Suffolk Sandlings held around 16% of the national total and Suffolk Breckland around 14%.

The woodlark has disappeared from three 10km squares between the two Atlas periods in Suffolk although the national survey in 2006 does show an increase in numbers. However it has been found in two previously empty 10km squares. RSPB/FC research (1997) showed the woodlark to be increasing on all surveyed sites (except two where there was no change) within Thetford Forest and on the surrounding heaths. Numbers declined substantially by 48% between 2000 and 2005 especially in Santon and King's Forest but appeared to register a slight increase in 2006 (full survey results awaited).

The 1987 storm destroyed a large proportion of forestry plantings in the Suffolk Coastal Forests, subsequently re-stocked, although some areas have been retained as open space specifically to retain woodlark in the long term. However large areas of suitable habitat have become invaded by scrub and bracken making them unsuitable for breeding woodlarks. This situation is being rectified by partnership working between FC, the Suffolk Wildlife Trust and RSPB. The woodlark population has been in steady decline in recent years to just 146 territorial males in 2005 from 225+ in 1999, although there was a significant increase to 176 males in 2006.

The majority of the population are now breeding on open heathland and within forestry plantations with declining numbers using set-aside/fallow land. The woodlark populations in East Anglia tend to utilise those forestry plantations with trees aged 0-4 years, or areas of permanent open space, increasing to 0-9 years in the years with the highest population density. This means that regular clear-felling and re-planting plus regular management of permanent open space is required for a healthy population.

3. Current factors affecting woodlarks

Heathland Habitat Degradation: With 90% of the population now breeding on heathlands on the Suffolk Sandlings intensive heathland management, involving scrub & bracken control plus grazing, is essential to maintain a healthy breeding population.

Forestry Management: Permanent open space within the forests must be managed and maintained to attract breeding woodlarks. Clear-felling and re-stocking also have a very important role to play in this especially in the Brecks.

Set Aside/Fallow land: Increasing numbers of woodlarks are now breeding on this habitat although set-aside is due to be phased out in 2008. Unless other measures are put in place woodlarks numbers on farmland are set to go into steep decline.

Disturbance: Woodlarks are prone to human disturbance especially when accompanied by dogs. Recent research suggests that some grassland areas have been abandoned by woodlarks since increased public use following changes in legislation.

Predation: As ground nesting birds woodlarks are very susceptible to predation particularly from foxes and from corvids, especially when outdoor pig units are located close to important breeding areas.

Bad Weather: Severe winter weather, in particular snow cover, can have an adverse impact on woodlark populations.

4.Current action

a). All major heathland sites currently managed to include woodlark requirements.

b). Major areas of forestry at Dunwich to be returned to heathland through the Blyth/Alde partnership, particularly FC & RSPB.

c). Permanent open areas in Thetford Forest and within Tunstall and Rendlesham Forests managed for woodlarks.

d). Continuation of clearfell and re-stocking in Thetford, Tunstall & Rendlesham Forests taking account of woodlark requirements.

e). Breeding populations monitored annually in the Brecks and the Sandlings.

f). Woodlark population dynamics report (unpublished) by Lucy Wright and Paul Dolman through UEA completed in Jan.2006.

5. Targets

a). Maintain breeding population at 2006 level of 300 singing males – 176 on Suffolk Coast and 129 in the Brecks by 2010.

b). Maintain breeding range of 11 10Km squares by 2010.

c). Maintain current range of heathland and permanent open space within the forests.

d). Seek opportunities to increase the area of heathland both in the Brecks and on the Sandlings, principally through targeted HLS agreements and further acquisition.

6. Actions

Action	Date	Partners
Policy & Legislation		
Ensure the requirements of breeding woodlarks are included in forest design and management plans for Thetford and the	2007 - 2010	FC NE

Sandlings Forests. ⚜		
Encourage other landowners to include woodlark requirements in their land management policies, principally through targeted advice and ELS/HLS agreements	2007 - 2010	NE RSPB SWT FWAG
Ensure CROW access does not cause a reduction in woodlark numbers. Ensure all relevant BAP species including woodlark are considered in the AONB management review discussions during 2007 and further open access developments.	2007 – 2010 2007	NE FC, NE, RSPB, SWT, SCHU, SCC, SCDC
Ensure woodlark as a LBAP species is recognised and protected in LDFs in accordance with PPS9.	2007-2008	SCC, NE, RSPB, SWT, RC, SCDC, FHDC.
Ensure agri-environment scheme target reviews incorporate woodlarks.	2007	NE
Maintain favourable condition of SPAs and SSSIs in Breckland and the Suffolk Sandlings.	2007 - 2010	All landowners under NE supervision.
Species management and protection		
Ensure that suitable management (grazing, mowing & provision of bare ground) for this species is carried out on all SPAs, SSSIs and other nature reserves where woodlarks occur.	2007 - 2010	NE, RSPB, FC, SWT, NT, MOD, Sandlings Group.
Research and monitoring		
Monitor the core populations of breeding woodlarks in the Brecks and Sandlings from February to June. Investigate breeding reports outside of core areas as they arise.	2007 - 2010	RSPB, NE, FC, SWT, NT
Monitor the effects of Open Access on woodlarks through annual monitoring.	2007-2010	RSPB, NE, FC, SWT, NT
Continue woodlark population dynamics research on specific sites in the Brecks.	2007 - 2010	UEA, FC, RSPB, NE
Continue research on predator species of woodlarks in the Brecks.	2007 - 2010	UEA, FC
Advisory		
Provide advice to landowners and their staff on site management for the benefit of breeding woodlarks.	2007 - 2010	RSPB, SWT, NE

Encourage the uptake of agri-environment schemes , esp.HLS, to benefit breeding and wintering woodlarks. Ensure suitable options are included in HLS agreements where woodlarks are present.	2007 - 2010	NE, FWAG
Communications and publicity		
Use woodlark as a key species to promote responsible usage of heathland areas by the general public through press releases and articles in Coast & Heaths newspapers.	2007 – 2010 2007-2010	NE, RSPB, SWT, NT SCHU, NE, RSPB, SWT, NT
Maintain and monitor information points at open access areas to include ingormation on BAP species and associated threats.	2007-2010	RSPB, SWT, FC, NT, SCC

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

Constraints to plan implementation:

None

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

RSPB	Rob Macklin
SWT	Dave Mason
Suffolk Sandlings Group	Rob Macklin
NT	Stuart Warrington & Grant Lohoar
NE	Bill Nickson, Monica O'Donnell, Nick Sibbet & Darren Kidney
FWAG	Tim Schofield
FC	Neal Armour-chelu
Biodiversity Coordinator	Mary Norden
Suffolk County Council	Sue Hooton
Brecks Project	Abigail Stancliffe-Vaughan
Suffolk Coastal DC	John Davies
Forest Heath DC	Guy Belcher
MOD	???

Freshwater snail *(Anisus vorticulus)*

1 Definition

This nationally rare snail (*Anisus vorticulus)* is now confined to East Anglia and small areas of southern England. The snail lives in unpolluted, calcareous waters in well-vegetated marsh drains and ditches. It is associated with a rich assemblage of plants and other species of mollusc.

2 Current status

2.1 National

A rare snail known since 1965 from only Kent, Norfolk, Suffolk, Middlesex and Sussex. It is continuing to decline and has recently been lost from Middlesex. The marshlands of east Suffolk and Norfolk hold the principal UK populations. *Anisus vorticulus* is associated with other national rarities, including the priority Biodiversity Action Plan snail *Segmentina nitida.*

2.2 Local

This freshwater snail is found at Carlton Marshes (SWT reserve) and North Cove (outside SWT reserve). The former is one of the most important sites for the species in Britain with records from seven of 11 ditches sampled. At North Cove, the species was recorded from two of 10 ditches sampled. At both sites *A. vorticulus* is found at low density, although at Carlton marshes numbers have increased throughout the 1990s.

There have been records for Redgrave Fen (1907) and Knettishall (1906) but they are thought to be fossil records. A survey in 1999 of the Waveney grazing marshes showed this species occurring in low numbers. Nonetheless, the number of new locations for this species was extremely encouraging. The Waveney valley now appears to be the main stronghold for *Anisus vorticulus* in this country.

3 Current factors affecting *Anisus vorticulus* in Suffolk

Anisus vorticulus is believed to be declining nationally. The main threats appear to be over-frequent ditch clearance, nutrient enrichment of ditches from fertiliser run-off and the loss of grazing levels to arable.

4 Current Action

4.1 Legal status

The IUCN Red Data Book for Invertebrates (Bratton, 1991) places *Anisus vorticulus* on the Vulnerable list.

4.2 Management, research and guidance

Carlton Marshes is a SWT reserve and is managed for its wetland interest. However, ditch management cycles have been reviewed in the light of the species' requirements as they are currently maintained on a relatively short dredging cycle. The ditches on the privately owned North Cove site were at an advanced successional stage in 1997, although some were dug out that year. The Site Management Plan has been rewritten to incorporate the requirements of the species.

This species seems to have a preference for fairly wide (3 metres or more) and comparatively deep dykes (in excess of 1 metre) with little emergent vegetation. It also appears to tolerate channels where grazing takes place on the adjacent fields. This is in contrast to *Segmentina nitida. Anisus vorticulus* appears to tolerate eutrophic conditions and will quickly colonise newly dredged channels.

5 Action Plan Objectives and Targets

1 *Maintain all known sites*

2 *Enable existing populations to increase in size and spread in range*

6 *Anisus vorticulus*: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to include this snails habitat requirements in Strategic Plans, Development Plans and Policy documents in Suffolk.	2004 2005 2006 2007	EN, SWT, SBRC, EA, RSPB, NT, Defra, Local Authorities
SITE SAFEGUARD AND MANAGEMENT		
Develop a ditch management cycle that allows the recolonisation of cleared sections from adjacent sections for North Cove.	2004 2005 2006 2007	**SWT**, EN
SPECIES MANAGEMENT AND PROTECTION		
Prepare advice on ditch management to benefit this species, by the year 2007.	2007	**BAP Wetland Working Group,** EA, SWT, SBRC,
RESEARCH AND MONITORING		
Co-ordinate surveys of Carlton marshes, Barnby Marshes and North Cove on a 5 year cycle, firstly to determine distribution and ecology of species and to establish baseline distribution and population size.	2007	**BAP Wetland Working Group,** EN, SWT, EA, SBRC
Commission research to establish the ecological requirements of the species, particularly water chemistry and physical characteristics of ditches.	2006 2007 2008	**EA,** EN
ADVISORY		
Ensure that land managers are aware of the presence and vulnerability of the species and its management requirements Advise landowners on presence and requirements of snail.	2005 2006 2007 2008	**BAP Wetland Working Group**, EA, IDBs, SWT, SBRC
COMMUNICATIONS AND PUBLICITY		
Produce an information sheet for contractors and land managers.	2005 2006 2007	**BAP Wetland Working Group**

Antlion (*Euroleon nostras*)

1 Definition

Antlions are insect members of the order Neuroptera. In Great Britain they are found only in the Sandlings of Suffolk, where the larvae makes a pits in sand to trap ants, woodlice and other invertebrates which are killed and the nutrients sucked from their body. The adult emerges in late summer and within about a month the female mates and lays eggs.

2 Current Status

The status of the Antlion in Suffolk is not clear. The first confirmed record was in 1931 and since then there have been occasional reports of single adults. In 1997, 1998 and 2000 studies showed that there is a sizeable population present in the Suffolk Sandlings. These data may be interpreted to show that the insect has been present in the district for 70 years or more but because it needs experience to find and identify the Antlion pits and the concealed larvae it has largely gone unnoticed. Alternatively the region may have been colonised a number of times by mated females blown across the North Sea from the populations in mainland Europe.

2.1 National

It is thought to be confined to the Sandlings region of east Suffolk. However adults were found on the South coast in 1998 and it was suggested that they had bred locally.

2.2 Local

Antlion larvae and imagos have been recorded from Gorleston southwards to Bawdsey and eastwards approximately to the line of the A12. Larvae occur in areas where Norfolk crag, Red crag and other sands outcrop and where quarrying, forestry operations or other factors have destroyed the surface vegetation, exposing fine, loose sand.

2.3 Natural Areas

Suffolk Coast and Heaths

3 Current factors affecting the Antlion in Suffolk

The continued presence of Antlions depends on suitable habitat and climatic trends but little is known of their autoecology at present.

4 Current action

4.1 Legal status

The Antlion is not protected.

4.2 Management, research and guidance

The distribution, status and ecology of Antlions was studied in the Sandlings in 1997. Monitoring takes place at a number of sites to assess the status of the species and to observe changes in current sites due to colonisation by vegetation or destruction by the activity of animals or man. Pit counts have been published in the Sandlings Walks project annual report and new sites have been discovered since the 1997 report. More co-ordinated monitoring in the future would be useful. Awareness of the species has been raised by publications such as ‘The Sandlings Walk’ pack, the Transactions of the Suffolk Naturalists Society and the new Sandlings web site.

5 Action plan objectives and targets

1. Monitor the status of the Antlion both in distribution, and population size on all currently known sites.

2. Monitor and characterise the origin of new sites created by routine forestry operations, road verge management and conservation management.

3. Undertake further research to establish autoecology of the Antlion.

4. Continue to raise awareness about the species and its habitat requirements.

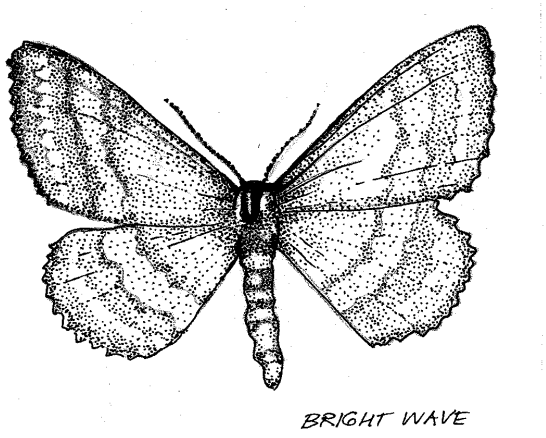
1 Antlion: Proposed action with key local partners

Action	Date	Partners
SITE SAFEGUARD AND MANAGEMENT		
Ensure all known Antlion sites have management plans that make reference to the species and its habitat requirements.	2005	**NT**, EN, RSPB
RESEARCH AND MONITORING		
Co-ordinate monitoring of the populations on an annual basis throughout the year to establish population dynamics of the species via the Sandlings Group.	2004 2005 2006 2007	EN, RSPB, **SWT**, NT
Monitor colonisation of new sites.	2005 2007	**RSPB**, EN, NT, Sandlings Group
Investigate Antlion ecology in more detail.	2005	**S**NS
ADVISORY		
Ensure landowners and site managers know about suitable management for the species.	2005	Sandlings Group
COMMUNICATIONS AND PUBLICITY		
Encourage interest in Antlion life history and conservation through articles and publications and through demonstration boards in visitor centres.	2005 2007	Sandlings Group
Ensure findings of research are circulated to relevant landowners and site managers.	2005	Sandlings Group

Bright Wave Moth (*Idaea ochrata cantiata*) Species statement

This moth has a bright orange ground colour and flies from late June to early August and over-winters as a larva. It inhabits coastal sandhills and sandy shingle beaches and rests during the day amongst small bushes or low herbage.

Current status
The moth is now only known to be present in Kent (from Walmer to Sandwich). Old records exist from near St Osyth in Essex and near Thorpeness Suffolk. The species is listed as rare on the GB Red List, but may be re-graded as vulnerable.



In Suffolk the moth has been recorded on a 3km stretch of coast from Thorpeness to Aldeburgh but has not been seen in the last five years. The land is managed as a Local Nature Reserve (with a management agreement with RSPB) and a Suffolk Wildlife Trust Reserve. The moth was recorded in 1982 (by B. Elliot and B. Skinner). Little is known about its ecology. It is presumed by local recorders as almost certainly extinct.

Natural Areas
Suffolk Coast Maritime

Current factors causing loss or decline
Recreational pressure on upper beaches.

Current Action
Survey work was undertaken in 1997 through English Nature's Species Recovery Programme, but without success.

Suffolk Moth Group and Suffolk Branch of Butterfly Conservation and the Suffolk Naturalists Society have undertaken survey work 1997 – 2003 along the coast from Aldeburgh to Minsmere but with no positive results. The moth is now presumed to be locally extinct.

Objectives for the species
Continue to survey for presence of Bright Wave Moth at known Suffolk site and to manage habitat in the known area favourably.

Proposed action
Little can be done to protect this species unless its presence in Suffolk is confirmed. The requirements of the species should be considered in the implementation of the Coastal Vegetated Shingle action plan, and the habitat managed appropriately.

Depressed or Compressed River Mussel *(Pseudanodonta complanata)*

1 Definition

The status of the Depressed River Mussel (*Pseudanodonta complanata*) is uncertain owing to lack of data, but it is thought to be rare and threatened throughout its European range. It occurs at scattered localities throughout England in lowland rivers and canals where it is usually found at low density.

2 Current status

2.1 National

The Depressed River Mussel has been recorded from 63 10km squares in England and Wales since 1950. The species is easily overlooked, however, and may be more common than thought. The UK probably has the healthiest population in Europe, with the possible exception of Finland.

2.2 Local

The Depressed River Mussel is found in the River Waveney, although it was not known here until 1973. Surveys undertaken over the last 5 years have proved that this snail is present along a greater stretch of the River Waveney than previously thought and is within the dykes and ditches of the Broads. Estimated population in the Waveney is 1.2 million ('Population Genetics, Ecology and Waterway Management in the Conservation of the Depressed River Mussel, Cambridge University).

3 Current factors affecting the Depressed River Mussel in Suffolk

The threats to the depressed river mussel are not fully known but are likely to include water pollution, physical disturbance of river banks and channels aswell as drought. The population on the Waveney is quite localised and potentially at high risk from disturbance.

There are a number of reasons that might explain the absence of depressed river mussel from many rivers. Firstly the rivers may not contain fish species that are suitable hosts for Depressed River Mussel larvae. Secondly the mussels rarely move large distances unless severely distressed and therefore rely on fish to transport larvae to new habitats. Thirdly the substrate may not be the correct sediment to allow successful survival and reproduction of this mussel. Dredging of rivers can have a large impact on this mussel and the frequency, timing, location and search of dredged silts can all influence the type of impact of the work.

4 Current Action

4.1 Legal status

The Depressed River Mussel is not protected in the UK. However it is listed as a priority species for conservation concern in the UK Biodiversity Action Plan. The section of the River Waveney in which it occurs in Suffolk is designated as a County Wildlife Site.

4.2 Management, research and guidance

There has been no recent survey for depressed river mussel in Suffolk.

5 Action plan objectives and Targets

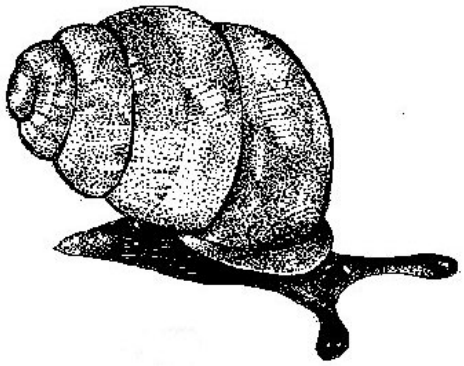
1 Determine the distribution of the Depressed River Mussel in Suffolk river catchments similar in character to the Waveney

2 Encourage appropriate habitat management for this species

6 Depressed river mussel: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to include this species' habitat requirements in Strategic Plans, Development Plans and Policy documents in Suffolk.	2004 2005 2006 2007	**EN, SWT, BA, SBRC, Defra, AW, WDC**
Ensure that Flood Defence and Navigational activities take account of species.	2004 2005 2006 2007	**EA, BA**
SPECIES MANAGEMENT AND PROTECTION		
Prepare advice on river management to benefit this species by 2005.	2004 2005	**BAP Wetland Working Group,** EN, SWT, EA, SBRC
RESEARCH AND MONITORING		
Survey other rivers in Suffolk that are tidal and flow through low lying, agricultural land, eg; Lark, Gipping and Stour.	2004 2005 2006 2007	**EA,** SWT, AW
Undertake research into dredging practices and the impact on depressed river mussel habitat, preferred sediment types etc. with a view to producing guidelines on dredging.	2005	**EA, BA, EN**
Commission research on the primary fish host and its distribution and links with larvae of depressed river mussel.	2005 2006 2007	**BAP Wetland Habitat Working Group** in conjunction with National BAP group
ADVISORY		
Provide advice to river managers in areas where mussel occurs.	2004 2005 2006 2007	**BAP Wetland Working Group,** IDBs, EA, BA, SWT
COMMUNICATIONS AND PUBLICITY		
Produce an information sheet for contractors and managers.	2005 2006	**BAP Wetland Working Group**

Desmoulins Whorl Snail (*Vertigo moulinsiana*)



1 Definition

Desmoulins Whorl Snail is a very small snail, roughly 2.2 – 2.7mm. It lives on tall swamp vegetation in summer such as sedges, reeds and reed sweet grass in wet situations. It is not an aquatic species.

2 Current status

2.1 National

In the UK, *Vertigo moulinsiana* is known from a series of sites stretching from Dorset to Norfolk.

2.2 Local

It is thought that previously *Vertigo moulinsiana* would have been quite widespread due to the evidence of fossil records. In Suffolk found on Whitecast Marsh at Carlton Marshes Reserve and Market Weston Fen.

A large thriving colony was discovered at Market Weston Fen in 1982. Although widespread over an extensive area of the fen, *Vertigo moulinsiana* appears to prefer the beds of saw sedge (*Cladium mariscus*) where it usually lives up on the sedge leaves and stems.

It seems likely that *Vertigo moulinsiana* may have been formerly quite common in the Little Ouse Valley system. It was found at Redgrave and Lopham Fen but the drying of the fen from borehole abstraction has caused disappearance of several wetland snail species.

3 Current factors affecting Desmoulin's Whorl Snail in Suffolk

- The reasons for decline are not clearly understood but the main threats are believed to be destruction of wetlands through changes in hydrological conditions, grazing pressure and physical disturbance.
- Encroachment by scrub leading to over-shading and drying of habitat.
- Over-grazing or cutting resulting in insufficient vegetation. Cutting of long, continuous strips of sedge along riverbanks should be avoided, although the snails will probably tolerate rotational cutting (every 3 years). Excessive riverbank tidying for angling is detrimental.

4 Current Action

4.1 Legal Status

The snail is listed on Annex II of the EC Habitats Directive, and is listed as rare in the GB Red List.

4.2 Management, research and guidance

- *Vertigo moulinsiana* occurs in long established swamps, fens and marshes usually bordering rivers or lakes, living on the stems and leaves of tall grasses, sedges and reeds.

- Management that reduces or eradicates tall grasses and sedges is obviously detrimental, although it can tolerate light grazing by cattle.

- Inhabited plants usually stand in shallow water or damp ground and the snail shuns dry fen. It also has a strong preference for open situations. It has recently been discovered that the snail will occupy and breed readily in translocated and newly created marsh. It is crucial that sites have areas of fen or reed on higher ground to provide refuges when rivers are in flood. Adults floated out of riparian 'hover' during winter flooding do not survive.

- Detailed surveys of the Little Ouse and Waveney valleys were undertaken in 1991.

- Market Weston Fen, Hopton Fen and Whitecast Marshes are all Suffolk Wildlife Trust Reserves and managed to maintain the conditions needed for wetland species.

- The hydrology and fen habitats of Redgrave & Lopham Fen, Suffolk Wildlife Trust Reserve are still responding to the restoration project undertaken as a major partnership project. Conditions may become suitable for *Vertigo moulinsiana.*

5 Action Plan Objectives and Targets

1 Maintain viable populations of snail across its current range.

2 Survey to determine the full extent of the snail's current distribution and precise habitat requirements.

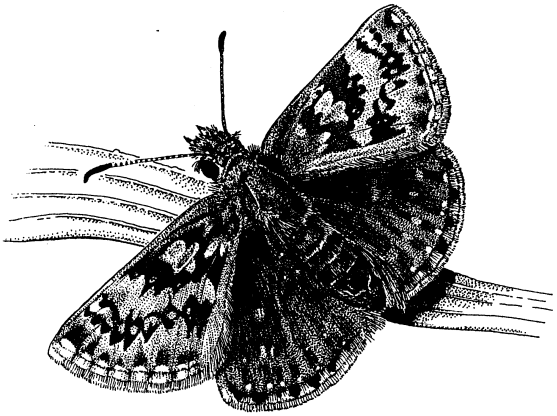
6 Desmoulins Whorl Snail: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure that strategies for floodplain management, strategic plans and policy documents take into account this species habitat requirements.	2004 2005 2006 2007	**EA, EN, LAs, Defra**
Ensure compliance with Habitats Directive in all development schemes in Suffolk that may affect known sites for Desmoulin's Whorl Snail.	2004 2005 2006 2007	**EN, SWT, EA, BA, LAs**
Ensure that development schemes in Suffolk do not affect the integrity of Desmoulins Whorl Snail populations.	2004 2005 2006 2007	**EN, LAs, SCC, SWT, EA**
SITE SAFEGUARD AND MANAGEMENT		
Seek to ensure that water abstraction policies take account of the need to protect the snail.	2004 2005 2006 2007	**EA,** EN
Determine the extent of Desmoulins Whorl Snail within other fenland areas in Suffolk. Identify which fall within protected areas. Survey Redgrave & Lopham Fen reserve.	2004 2005 2006 2007	**BAP Wetland Working Group,** EA, EN, SBRC, SWT
Ensure the requirements of this species are taken into account when considering any possible extension to the ESA areas. Also consider providing incentives for wetland management under the agri-environment schemes where this species is present.	2004 2005 2006 2007	**Defra**, FWAG
RESEARCH AND MONITORING		
Make links to national BAP for this species and commission research to identify the species requirement and distribution.	2005 2006 2007	**BAP Wetland Working Group**

ADVISORY		
Advise landowners on presence and requirements of snail where it is known to occur.	2005 2006 2007	**BAP Wetland Working Group,** EN, SBRC, SWT, FWAG, IDBs
COMMUNICATIONS AND PUBLICITY		
Produce positive publicity material to raise awareness of this species in Suffolk.	2004	**BAP Wetland Working Group,** EA, SWT, SBRC

Dingy Skipper *(Erynnis tages)*

The Dingy Skipper is a coastal or downland butterfly. It is a sedentary species that requires sheltered sunny sites kept short by grazing or disturbance where its caterpillars feed on Bird's Foot Trefoil or Horseshoe Vetch. Once considered common, the dingy skipper has undergone a dramatic decline in Suffolk due to habitat loss and fragmentation. It now survives in a handful of small colonies in the Breckland, mostly in clearings or rides in conifer plantations. The Dingy Skipper is probably Suffolk's most threatened butterfly.



1 Definition

The Dingy Skipper is a small grey-brown butterfly. It is unlikely to be confused with any other British butterfly but its dull colouring may make it more easily confused with certain day flying moths, some of which occupy the same habitat at the same time of year. It is primarily a grassland butterfly and it is found in habitats such as woodland rides, heathland and railway cuttings which are sunny but sheltered. It is also known to occupy disused industrial sites such as quarries and railway embankments. The larval food plant Birds Foot Trefoil (*Lotus corniculatus*) is the determining factor and this occurs most frequently on light sandy soils where rabbit grazing is prevalent.

2 Current Status

2.1 National

The Dingy Skipper was once regarded as a common butterfly in the south of England but since WWII it has been retreating from former strongholds. It is now rare through most of its range, apart from the South Downs and coast. It is absent from 40% of 10km squares in the UK that were occupied during a survey of 1970/1982.

2.2 Local

The Dingy Skipper is known from five sites within five tetrads in Suffolk. All of the colonies are on residual heathland in the Breckland, mostly where shelter is provided by coniferous forest. The strongest colony is on the RAF Barnham Training Area (SSSI); just to the west there have been recent records Center Parcs leisure development but none lately from Marmansgrave Wood. Further south, the former stronghold of the King's Forest still supports small populations in several rides.

2.3 Natural Areas

Breckland

3 Current factors causing loss or decline

Breckland clearings are a sub-optimal habitat, further threatened by the following:

- Fragmentation and isolation of sites caused by agricultural intensification.
- Lack of management of suitable sites. The populations at RAF Barnham are threatened by shading from the adjacent plantation and have declined over the last few years.
- Loss of open grassy rides in conifer plantations.
- Myxomatosis affecting rabbit grazing regime.
- Unsympathetic forestry operations.

4 Current Action

4.1 Legal status

The Dingy Skipper is a Species of Conservation Concern in the UK Biodiversity Action Plan, and a Top Priority species in Butterfly Conservation's Regional Action Plan. It is not protected in the UK.

4.2 Management, research and guidance

- Forest Enterprise is aware of the location of the remaining breeding areas in King's Forest. Rides supporting Dingy Skipper have been designated as conservation rides. A management prescription is in place and "dragons teeth" have been erected to exclude heavy plant from one key area.

- Center Parcs domain is managed sympathetically for wildlife, and the Dingy Skipper flies in a relatively small area of recently seeded wildflower rich grassland with a man-made embankment. A regular recording transect is conducted at Center Parcs.

- Butterfly Conservation has produced a National Species Action Plan (2000), and its recommendations have been incorporated into this plan, where relevant. Further information on ecological requirements may be forthcoming, as further research is being put in train as a (National) action in that plan.

- Good contacts have been established between Suffolk Branch of Butterfly Conservation and the landowners (Ministry of Defence, Center Parcs, & Forest Enterprise). As a result, the Dingy Skipper features in the management plans for RAF Barnham, Center Parcs and in the Forest Enterprise Conservation database used for forest management.

- Populations are monitored by site visits conducted on suitable days during the flight period (May /early June).

5 Action Plan Objectives and Targets

1. Enhance the existing population at current sites through appropriate management.

2. Identify areas where suitable habitat can be extended, with a view to natural re-colonisation.

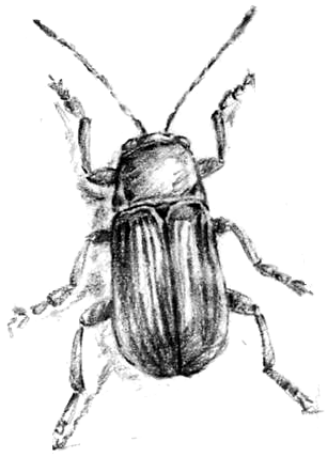
3. Further survey work on potential sites including a review of past records.

6 Dingy Skipper: Proposed action with lead agencies

Action	Date	Partners
POLICY		
None proposed.		
SITE SAFEGUARD AND MANAGEMENT		
Ensure the requirements of the Dingy Skipper are incorporated into management plans.	2006	RAF, FE, CP
Ensure continued appropriate management of sites.	2004 2005 2006 2007	RAF,FE,CP
Draw up list of sites where Dingy Skipper has been recorded since 1998 and consider whether management may restore suitable habitat.	2004	**BC**
Liaise with RAF to establish trial grazing to areas of RAF Barham training area.	2005	**EN,** RAF
Do not cull rabbits or introduce myxomatosis without considering the impact on Dingy Skipper.	2004 2005 2006 2007	RAF, FE, CP
Ensure development proposals do not affect present sites by checking any new planning applications.	2004 2005 2006 2007	**SWT**, EN, FHDC
SPECIES MANAGEMENT AND PROTECTION		
Manage sites to encourage natural re-colonisation by extending habitat.	2004 2005 2006 2007	**FE**, CP
Investigate the suitability for Dingy Skipper of any sites resulting from habitat creation schemes.	2004 2005 2006 2007	FE, SWT

In the event that natural re-colonisation fails, investigate the desirability of a possible re-introduction at selected sites (strictly following Butterfly Conservation code).	2007	**BC**, FE
RESEARCH AND MONITORING		
Continue monitoring at known sites annually.	2004 2005 2006 2007	**BC**, CP
Survey areas adjacent to known and former sites and any other potential sites.	2004 2005 2006 2007	**BC**
Liaise with other regional Butterfly Conservation branches (particularly Norfolk – Barham cross Common) to ensure dissemination of up to date information on the species.	2004 2006	**BC**
ADVISORY		
Maintain inputs to landowners conservation committees, and provide reports and feedback.	2004 2005 2006 2007	**BC**
Ensure site managers are aware of the habitat requirements of the Dingy Skipper.	2004	**BC**
COMMUNICATIONS AND PUBLICITY		
Organise and promote one training day per year to enable new people to help with the survey work.	2004 2005 2006 2007	**BC**
Improve awareness of status of the species through articles in appropriate publications.	2004 2005 2006 2007	**BC**, SWT, FWAG, SNS

A leaf beetle (*Cryptocephalus exiguus)*



1 Definition

This extremely rare beetle (*Cryptocephalus exiguus*) is only known from a single site in the UK, where it breeds among fen-meadow vegetation. Little is known of its ecology, but specimens are usually associated with herbs in damp hollows and larvae are likely to live amongst ground litter. Other members of the genus have been shown to be highly thermophilic, favouring small pockets of plant litter, with a very warm microclimate. It is not known if these characteristics apply to *Cryptocephalus exiguus*.

2 Current status

2.1 National

During the last century it was recorded from various sites in the Norfolk and Suffolk Broads and a valley mire in Lincolnshire but since 1954 it has only been known to occur at a single site, Pashford Poors Fen in West Suffolk. The beetle is listed as endangered on the GB Red List.

2.2 Local

A single male found in 1980 and a female in 1986. Following two unsuccessful searches for the beetle in 1993 and 1996, survey in 1997 found two individuals, suggesting that suitable habitat still occurs but only at a level capable of supporting a very small population. It may be that the species true habitat has still not been discovered and thus only specimens in atypical situations have been found.

Surveys in 1997, 1998 and 2000 recorded small numbers of *C. exiguus* in areas of Pashford Poors Fen, which are specifically managed for the species. Attempts to locate a second population along the River Lark in 2000 failed although a large area of potentially suitable habitat was found.

3 Current factors affecting *Cryptocephalus exiguus* in Suffolk

- Pashford Poors Fen is threatened by lowering of the water table due to drainage of the adjacent land.
- The current grazing regime for the site may be having an adverse impact on vegetation structure.

4 Current action

4.1 Legal Status

The beetle is listed as endangered on the Great Britain Red List for invertebrates but has no protection.

4.2 Management, research and guidance

- Pashford Poors Fen is a SSSI and a Suffolk Wildlife Trust reserve.
- The SSSI boundary was extended in 1996 to improve control over the adjacent drainage ditches, and additional bunds have been installed to try and hold water levels higher during the summer months.
- The management plan for the site has been written with greater emphasis on the vegetation management of the wet fen areas where *C. exiguus* has been found. This will primarily concentrate on reducing the level of grazing in autumn and early winter.
- Issues connected with the control of water resources on the site will be addressed through the implementation of the Water Level Management Plan.

5 Action plan objectives and targets

1. *Undertake further survey work to determine whether the beetle is still present at Pashford Poors Fen.*
2. *If found when site is re-surveyed, attempt to establish habitat requirements of the species and initiate monitoring of associated habitat features.*
3. *Review further possibilities for restoring the water table at Pashford Poors Fen through either additional bunding and/or land acquisition.*
4. *Maintain and enhance the surviving population at Pashford Poors Fen. Once established, and if feasible, translocate the beetle to at least two former sites in Suffolk by the year 2005.*

6 Leaf beetle: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to ensure that the ecological requirements of this species are taken into account in water management plans of the remaining or any newly discovered site.	2005 2006 2007	**EN, IDBs, EA**
SITE SAFEGUARD AND MANAGEMENT		
Ensure that management of Pashford Poors Fen is appropriate to maintain and enhance the beetle's habitat	2005 2006 2007	**SWT**, EN
RESEARCH AND MONITORING		
Ensure continued monitoring of leaf beetle population at Pashford Poors Fen	2005 2006 2007	SWT
Assess habitat requirements of species and obtain advice from National BAP group for the species.	2004	**BAP Wetland Working Group**
Pass information gathered during survey and monitoring to JNCC and SBRC so that it can be incorporated into National and Suffolk databases.	2005 2006 2007	**BAP Wetland Working Group**

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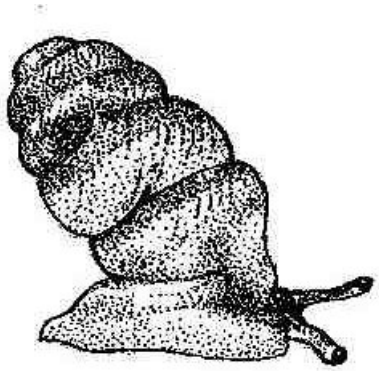
Narrow-mouth Whorl Snail (*Vertigo angustior*)



1 Definition

The Narrow-mouth Whorl Snail is generally found in permanently wet grassland or amongst moss in damp hollows in sand dunes. In Suffolk it occurs in the transition zone between grassland and saltmarsh where sedges are dominant.

2 Current status

2.1 National

One of Britain's rarest snails; it is found at only nine sites in the UK. It is in serious decline throughout its European range.

2.2 Local

The presence of Narrow-mouth Whorl Snail has been confirmed at one site in Suffolk at Martlesham Creek. Previously recorded at Aldeburgh and records of dead shells (possibly fossil) from Redgrave. The snail is no longer present at Market Western fen.

At Martlesham Creek it occurs at low density half-way along the southern side of the creek. It inhabits a narrow transition zone (c.10metres wide) just above saltmarsh and tidal drift-line deposits.

3 Current factors affecting narrow-mouthed whorl snails in Suffolk

- The reasons for decline are nor clearly understood but the main threats are believed to be changes in hydrological conditions, reduced grazing pressure and physical disturbance.
- The decline of *V. angustior* at Martlesham may be due to the *Iris/Carex* community becoming shaded by Reed canary-grass *Phalaris arundinacea* and tall herbs.

4 Current Action

4.1 Legal Status

Vertigo angustior is protected under the Annex II of the EC Habitats Directive.
It is listed as rare in the IUCN Red data list for Invertebrates in Great Britain (1991).

4.2 Management, research and guidance

- A survey was undertaken at Martlesham Creek in 1996 under contract to English Nature.
- Two surveys are being undertaken in the autumn of 2003, these are along the Blyth estuary and within Easton Broad valley, north of Southwold.
- The new information provided about this species indicates that the Narrow-mouthed Whorl Snail is inhabiting new types of habitat than previously thought. Part of the specification of the surveys being undertaken in autumn 2003 will be to establish habitat preference and to discover more about this species. These results are likely to be published in 2004.

5 Action Plan Objectives and Targets

1 Identify further sites where populations are thought to exist
2 Enable existing populations to increase in size and spread in range
3 Identify local habitat requirements of the species

6 Narrow-mouthed whorl snail: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure those Strategies for coastal management take into account this species' habitat requirements. Suffolk Estuaries Strategies being produced within the next 3 years.	2004 2005	**EA, EN**
Ensure compliance with Habitats Directive in all development schemes and agri-environment grants for all known sites.	2004 2005 2006 2007	**Defra, EN, EA, SWT, WDC**
SITE SAFEGUARD AND MANAGEMENT		
Seek to secure favourable management of Martlesham site. Requires urgent management work to control *Phalaris* grassland.	2004 2005 2006 2007	**Defra**
SPECIES MANAGEMENT AND PROTECTION		
Provide advice following results from 2003 surveys on species habitat requirements.	2004 2005 2006 2007	**BAP Wetland Working Group**
RESEARCH AND MONITORING		
Determine the extent of *Vertigo angustior* within other estuaries in Suffolk. Identify which fall within protected areas. Re-survey previous historical recorded sites.	2004 2005 2006 2007	**EA**, EN, SWT, SBRC
Establish habitat requirements of this species and publish results to allow widespread dissemination.	2004	**BAP Wetland Working Group,** EA, EN
ADVISORY		
Advise landowners on presence and requirements of snail.	2004 2005 2006 2007	**BAP Wetland Working Group,** EN, SWT, EA, SBRC
COMMUNICATIONS AND PUBLICITY		
Produce positive publicity material to raise awareness of this species in Suffolk.	2004	**BAP Wetland Working Group,** EA, EN, SWT, SBRC

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 Bavents 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
POLICY AND LEGISLATION		
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**

SITE SAFEGUARD AND MANAGEMENT		
Agree management briefs for undesignated saline lagoons of conservation importance with a view to maintaining or improving their ecological value.	2005	**SWT, RSPB**
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	**EA**, EN, SCDC, WDC
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	**EA**, AW
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	DEFRA, EA, EN, SCDC, WDC, SWT, RSPB
RESEARCH AND MONITORING		
Identify suitable sites for creation of saline lagoons using the Lifescapes model.	2004	**SBRC, EN**, EA, , LAs, SWT
Carry out biennial macrophyte and invertebrate surveys of saline lagoons and nearby small brackish pools and ditches of key species.		SWT, SNS, SBRC
Carry out biannual surveys of the extent and quality of saline lagoons in Suffolk.	2005	EA, SWT, RSPB, SBRC
Develop the use of remote sensing techniques and GIS to help monitor and predict the rate and extent of change.	2005	**SBRC**, EA
ADVISORY		
Promote and develop certain sites as demonstrations of successful saline lagoon re-creation, i.e. National Trust at Orfordness, through open days.	On-going	**NT**
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the nature conservation importance of saline lagoons through open days or events.	2005	**SCHU,** EA, EN, SWT, RSPB, DEFRA,
Raise public awareness of the essential mobility of soft coasts and encourage multi-agency approach to coastal zone development and management.	2003	**SCHU,** EA, EN, SWT, RSPB,

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.

Natural Areas
Suffolk Coast Maritime

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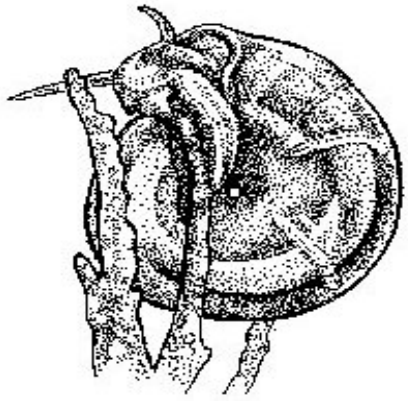
- Damage caused to lagoons during operations associated with coastal defence works.
- Changes to salinity as a result of modification of local drainage infrastructure, or as a result of damage caused by coastal erosion.
- In-filling of lagoons as a result of coastal erosion.
- Local increases in the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

Current Action
Saline lagoons are a priority habitat under the EC Habitats Directive. In Suffolk, Benacre-Easton Bavents and Orford Ness 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.
- 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.

Shining Ram's Horn Snail *(Segmentina nitida)*



1 Definition

The Shining Ram's Horn Snail lives in unpolluted, usually calcareous water, in the ponds and drains of grazing marshes. It favours shallow ditches often choked with a rich, diverse flora. Low intensity management and preservation of traditional grazing marshes may be keys to the survival of the species. It is often associated with a rich variety of freshwater.

2 Current status

2.1 National

In the early 20th Century the Shining Ram's Horn Snail was recorded from 90 sites across a wide area of lowland England. A national survey in 1996 found good populations in Norfolk, Sussex and east Kent.

2.2 Local

Although formerly recorded from a number of sites across Suffolk (Needham Market, Mildenhall and Brandon) it has only been recently recorded from Carlton Marshes and North Cove. At North Cove conditions are more suitable and *S. nitida* is frequent on some choked, shallow ditches.

3 Current factors affecting shining ram's horn snail in Suffolk

The reasons for decline are not clearly understood but the main threats are believed to be: over-frequent ditch clearance, eutrophication due to fertiliser run-off, and conversion of grazing levels to arable farming with associated water table lowering.

4 Current Action

4.1 Legal Status

Segmentina nitida is classified as Endangered in the IUCN Red Data book for invertebrates (Bratton, 1991).

4.2 Management, research and guidance

Carlton Marshes is managed as a reserve by the Suffolk Wildlife Trust. The marsh at North Cove is privately owned and outside the SWT reserve. Both sites are managed as SSSI. A Management Plan for this site has been completed and is in the process of being implemented.

Where the snail exists total ditch clearance should be avoided. Ditch management on a 7-year rotation, partial ditch clearance by dredging only one side and not clearing adjacent ditches in the same year are recommended.

5 Action Plan Objectives and Targets

1 Determine distribution of this species

2 Establish survey and monitoring programmes at Carlton Marshes and North Cove.

3 Enable existing populations to increase in size and spread in range

6 Shining ram's horn snail: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to include Species habitat requirements in Strategic Plans, Development Plans and Policy documents.	2004 2005 2006 2007	**EN, Local Authorities, SWT, RSPB, NT, EA, Defra**
SITE SAFEGUARD AND MANAGEMENT		
Consider the development of safeguards in SSSI management plans where the snail has the potential to colonise following survey results especially at Carlton Marshes.	2005	**EN**, SWT
SPECIES MANAGEMENT AND PROTECTION		
Prepare advice following results of surveys.	2006 2007	**BAP Wetland Working Group**
RESEARCH AND MONITORING		
Undertake prospective survey work to determine presence of snail in previously unexplored sites with suitable habitat, for example at Kessingland.	2005	**BAP Wetland Working Group**
Co-ordinate further survey work to determine the status of the species and its habitat requirements at North Cove and Carlton Marshes to assess ditch management techniques.	2005 2006 2007	**BAP Wetland Working Group,** SWT, EN, EA, SBRC
ADVISORY		
Produce land and water management guidelines for site managers and landowners.	2005 2006 2007	**BAP Wetland Working Group,** IDB, EN, SWT
COMMUNICATIONS AND PUBLICITY		
Produce an information sheet for contractors and land managers.	2005 2006 2007	**BAP Wetland working Group**

Silver studded blue butterfly

1 Definition of habitat or species

This is a butterfly characteristic of lowland heathland that was once widespread across the UK, but is now confined to southern England with outposts in East Anglia and Wales. As a caterpillar it feeds on heathers and gorse and has a complex relationship with black ants. Adults can occur at high density in favourable years on suitable patches of heathland.

2 Current status: national, regional, and local (including trends and losses)

2.1 National

The Silver-studded blue was widely distributed in England at the turn of the century, but has become extinct in all counties except those in the south and south-west, small parts of East Anglia (Norfolk and Suffolk), Wales and the west midlands. It is now common only in Dorset and Hampshire. It is absent from 65% of 10km squares that were occupied before 1940.

2.2 Local

The species was abundant in the Suffolk Brecklands, especially between Brandon and Tuddenham, as little as 50 years ago, but the last record was made in 1965. It is now confined to the Sandlings and here it was also formerly widespread, occurring on most heaths between Lowestoft and Ipswich. Strong colonies now occur only on the extensive heathlands of Westleton and Minsmere in the north and on a few heaths close to Ipswich and Hollesley in the south. Most are small by national standards and occupy patches of heathland of less than 2ha. Two sites were established by introductions in 1986 and one in 1998; one is now the largest colony in the county and has stimulated the colonisation of nearby heathland. A third introduction was made in 2007. Two new sites have been colonised naturally.

2.3 Natural Areas

Suffolk Coast & Heaths Natural Area (also formerly in Breckland).

3 Current factors affecting the species or habitats

- The species requires heathland on light sandy soils in an early stage of development after disturbance or burning that is characterised on the Sandlings by the presence of Bell heather (*Erica cinerea*), patches of loose soil and short turf. Conditions, once attained, can be prolonged by intense rabbit or sheep grazing or occasionally by mowing, but eventually soils will either grass or moss over and stabilise, or Ling (*Calluna vulgaris*) dominates, excluding large nests of the ants on which it depends (*Lasius niger* and *L. alienus*). Most colonies in Suffolk are on previous summer burns or areas of disturbance.
- Colonies in Suffolk are largely adequately managed and there are few factors causing further loss of colonies. However, management of many current colonies is seldom harsh enough to encourage fresh conditions for the butterfly and there is a general succession trend on many colonies. The small size of colonies restricts this type of management at many sites.

The following have been implicated in the historical loss of colonies and may become important again in the future. They are similar to factors afflicting the lowland heathland habitat as a whole:

- Destruction of heathland habitat through industrial, housing or recreational development particularly in the Ipswich area.
- Destruction of heathland for agriculture or forestry (the latter was probably largely responsible for the loss of the Breckland population).
- Decline in the traditional management such as grazing by livestock, cutting and burning that maintained heathland and prevented succession.

There are factors that currently limit the potential of the species for expansion to other parts of the Sandlings:

- Isolation of the current heathland sites.
- Colonisation of bare ground by the naturalised encrusting moss *Campylopus introflexus*

4 Current action

4.1 Protection

- Listed on the Wildlife and Countryside Act 1981 with respect to sale only.
- Most colonies occur on protected sites either heathland nature reserves, County Wildlife Sites or SSSIs.

4.2 Management, research and guidance

- Recovery plans for the species have been prepared for the Sandlings Group (1996) and Forest Enterprise (1997), giving details of necessary action to maintain the species and encourage spread on the Sandlings.
- The previous SAP included a possible reintroduction of the butterfly to the Brecklands but this is not currently a priority.
- The heathland of most colonies is managed with specific prescriptions for Silver-studded Blues and it has been a target species in recent restoration and maintenance programmes such as Tomorrow's Heathland Heritage.

- Reviews of the effects of management and monitoring of all populations, including those established at introduction sites, have occurred at regular intervals since 1985. Work on population sizes and their relation to recent management was carried out in 1994 and repeated for some sites in 2003.
- Sandlings Group members perform informal monitoring of populations annually, incorporating the input from volunteer groups including BC.
- The RSPB have established a colony at their reserve at Aldringham Walks; butterflies have colonised the heathland re-creation at Minsmere; three new areas have been colonised on the Sutton and Hollesley Heaths SSSI; a new site has been discovered at Ransomes Europark and partially protected as a CWS; an introduction was made at Blaxhall Common in 2007 by BC and SWT.
- Awareness about the butterfly and its needs has been raised through the Suffolk Coast and Heaths heathland leaflet of 2007, Tomorrow's Heathland Heritage reports, a new Sandlings website, and various events and press coverage.

5 Targets

1 Maintain the existing range of baseline survey 2005 (Butterflies for the new Millennium plus five) until 2010 and beyond.
2 Expand distribution of the silver-studded blue within current range by 2010.
3 Increase populations at existing colonies by 2010

Baseline 2005, targets for 2010, and identify targets for long term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead bold and support partners plain)**
Policy & Legislation		
Include the needs of the Silver-studded Blue where appropriate when reviewing agri-environment schemes (e.g. Environmental Stewardship)	2007-2010 Annual	**NE**
Support the re-establishment of heathland from afforested land where appropriate to the assist the conservation of the silver-studded blue	2007-2010 Annual	**FC**
Ensure ssb as an LBAP species and its habitat, is recognized and protected in Local Development Frameworks in accordance with PPS9.	Annual 2007-10	**SCC**, NE, RSPB, SWT, FC, **SCDC, IBC**.
Ensure all relevant BAP species including ssb are considered in the AONB management review discussions during 2007.	2007	**SCHU**
Or species protection/management		
Ensure development proposals do not affect SSB colonies or habitat	2007-2010 Annual	**SWT,** IBC, SCDC, SCC, NE,
Ensure all heathland sites that not otherwise protected are assessed for CWS status	2007-2010 Annual	**SWT**, SCC, NE
Ensure continued effective management at all	2007-2010	**SWT**, RSPB, NE, NT, SCDC,

Sandlings colonies of the Silver-studded blue including improved connectivity.	Annual	MOD
Ensure that the requirements of the Silver-studded blue are included in all heathland management, restoration or creation plans, including SSSI management plans	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, MOD,
Prepare heathland within gaps of former range of species on the Sandlings specifically for the species	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, IBC, Greenways, FC,
Investigate opportunities for establishing two new colonies on the Sandlings using introductions, especially in current gaps in former range such as in the vicinity of Snape, Blaxhall, Tunstall, Walberswick and within the forests of Rendlesham and Tunstall	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, BC, FC
If suitable habitat is found or prepared successfully, introduce the species to two sites on the Sandlings.	2007-2010 Annual	**BC**
Research and monitoring		
Undertake a five yearly review of the population size of colonies on the Sandlings and the effects of recent management.	2008	**BC**
Continue annual monitoring at specified sites	2007-2010 Annual	**BC**, SWT, RSPB, NE, NT, SCDC,
Ensure standardised techniques at monitored colonies	2007-2010 Annual	**BC**, RSPB, SWT
Monitor sites for new colonies	2007-10 annual	**BC,** SWT, RSPB, NE, NT, SCDC.
Continue research into the ecology of and habitat management for the ssb.	2007-10 annual	**BC**
Advisory		
Include in Environmental Stewardship agreements prescriptions that support the management of heathland for Silver-studded Blues; increase in the area of heathland and improve links between colonies.	2007-2010 Annual	**NE**
Ensure site managers are aware of the habitat requirements of Silver-studded blue	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, BC, IBC
Communications and publicity		
Use the SSB as a flagship species to publicise the conservation and the sympathetic management of heathland to benefit all associated species. Undertake at least two press releases raising the profile of this BAP species each year. Produce a heathland leaflet and publicise on websites.	2007-10 Annual	**BC**, SCHU, RSPB, NE, NT, SCDC, IBC, SWT
Undertake one event per year that draw attention to silver studded blue	2007-2010 Annual	**BC**, SCHU, RSPB, NE, NT, SCDC, IBC, SWT

Ensure future reporting and review of this action plan is forwarded to the National silver-studded blue steering group co-ordinated by BC & NE	2007-10 Annual	**NE**, BC, BAP.

NB Where achieve by dates are 2007-2010 this means they need to be achieved or worked towards by 2007 and annually renewed until 2010.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

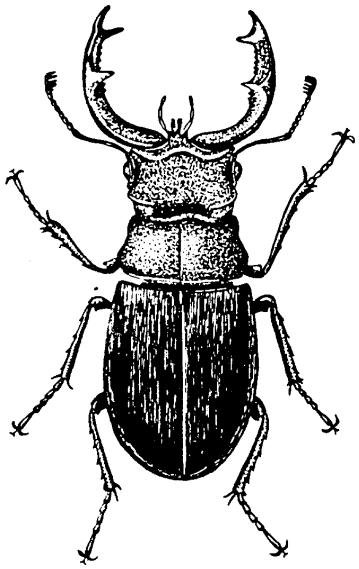
Suffolk Wildlife Trust- David Mason
RSPB and Sandlings Group- Rob Macklin
Natural England- Monica O'Donnell, Nick Sibbett, Bill Nickson
Butterfly Conservation- Rob Parker
Suffolk Coast and Heaths Unit- Malcolm Farrow
Suffolk Coastal District Council (SCDC)- John Davies
Greenways- James Baker
Ipswich Borough Council Steve Hunt
Suffolk Biodiversity Partnership officer- Mary Norden
Suffolk County Council- Sue Hooton
MOD

Published December 2007.

Stag Beetle (*Lucanus cervus*)

1.0 Definition

The Stag Beetle is the largest and most conspicuous terrestrial beetle in Britain. It can be found in a wide range of rural and urban habitats including broad-leaved woodland, parks, hedgerows, churchyards and urban gardens. The larvae live in and feed on the decaying wood of a wide variety of broad-leaved trees and shrubs, often in roots and stumps, at or below ground level, and may take up to five years to become fully grown. Metamorphosis takes place underground in the soil, during August, inside a cocoon built by the larva. Cocoons are the size of a chicken's egg and consist of soil and larval secretions. The pupal stage is short, lasting a maximum of six weeks. The resulting Stag Beetles break out of their cocoons after around 24 hours but remain under the ground for a further eight months before emerging in early summer. Mainly crepuscular, Stag Beetles can be seen flying at dusk on warm, still evenings in June and July.



2.0 Current status

2.1 National

The Stag Beetle is rare and protected in some European countries. In Britain the Stag Beetle is restricted mainly to southern England. Its main strongholds are London and the Thames valley, north Essex, south Suffolk, north Kent and areas along the south coast. Stag Beetles are found in the greatest abundance in the counties of Berkshire, Buckinghamshire, Dorset, Essex, Hampshire, Hertfordshire, Kent, Greater London, Oxfordshire, Suffolk and Surrey. There are outlying populations in the West Country, South Wales and the English Marches. They have been shown to prefer areas that have low average rainfall and high average temperatures. 75% of Stag Beetle records come from private gardens, with a further 22% from associated areas such as pavements, roads and local parks. Well-drained soil seems to be a requirement for the species.

2.2 Local

This nationally scarce beetle is widespread in the south-east of the county, but only relatively common in certain localities. Key sites in Suffolk are Ipswich, Woodbridge and Hadleigh, where beetles are present throughout the towns, and a large number of villages across the Shotley and Felixstowe peninsulas, e.g. Bentley, Holbrook, Nacton and Kirton. National and County surveys suggest that the most significant 'hotspots' are urban, suburban and rural gardens and local parks. Records suggest that 9 -13% of the national population occurs in Suffolk.

2.3 Natural areas

Suffolk coast and heaths and East Anglian Plain.

3.0 Current factors affecting Stag Beetles in Suffolk

- Loss of habitat through the removal of stumps and other dead wood.
- Beetle road casualties: large numbers of beetles are killed on the roads and pavements, accidental victims of vehicular and pedestrian traffic.
- Beetle predators: large numbers of beeles are taken by birds, especially magpies and other corvids. Some fall prey to hedgehogs. Larvae are taken by badgers and foxes.
- Collecting for sale or other purposes is not a contributory factor in the UK.

4.0 Current Action

4.1 Legal status

At present there is little protection for the Stag Beetle or its habitat in Britain.

- The beetle is listed on Schedule 5, Section 9(5) of the Wildlife and Countryside Act 1981(as amended) stating that it is illegal to trade in the species, and on Annex II of the EC Habitats Directive.
- One site, Richmond Park (Greater London), has been designated a SAC for the species. Two other sites have been proposed as SACs (Epping Forest, New Forest). Further candidates for SACs are Wimbledon Common, Dixton Common and Chiltern beechwoods
- Stag Beetle habitat may sometimes be indirectly protected if it occurs at sites with statutory conservation status (SSSIs, SACs). It may also be protected within Special Landscape Areas and/or AONB. County Wildlife Sites may give habitat protection in the same way. Conservation Area Status may also be responsible for the protection of some habitat. Local Planning Authority (LPA) Tree Preservation Orders (TPO) can indirectly protect Stag Beetle habitat. Babergh District Council (BDC) planning application No.B/03/00686/OUT). LPA regulations can also be used to conserve Stag Beetles (BDC planning application B/97/00884/FUL).
- Organisations with statutory duties: EN and JNCC
  National Lead Partner: PTES
  Suffolk Lead Partner (SLP): Colin Hawes, member of the PTES National Steering Group (reporting to the Suffolk BAP Steering Group)

4.2 Management, research and guidance

- The Stag Beetle has received wide coverage in the media, both locally and nationally, as well as through the newsletter of the Suffolk Naturalists' Society, raising awareness of threats to the species among local conservation groups and communities. Further publicity has come from exhibitions and talks given to a wide range of organisations including schools and colleges.
- A 'Stag Beetle Friendly Gardening' leaflet produced by the PTES (1998) has been widely distributed to conservation groups and other organisations in the county. A "Stags in Stumps" leaflet has also been produced by PTES (1998).
- Knowledge of the beetles' ecology and methods for monitoring are currently being researched by the Suffolk Lead Partner in collaboration with a PhD student at Royal Holloway University of London (RHUL).
- The beetles' life-cycle has been researched and details published in 2003 (RHUL).
- The distribution of the species in Suffolk together with key sites for the county was published by SNS in 1998. National surveys organised by PTES (1998 and 2002) confirmed these findings.
- Key sites are monitored annually and in tandem with any national monitoring. Data collected is passed to the SBRC, PTES, EN and JNCC.
- The range, distribution and viability of existing populations is being achieved by ensuring a continuous supply of dead, decaying, broad-leaved wood at known Stag Beetle locations and by encouraging the building of 'log pyramids'.
- Liaison with local planning authorities has enabled Stag Beetles and Stag Beetle habitat to be conserved (Babergh District Council and also Suffolk Coastal District Council).

5.0 Action Plan Objectives and Targets

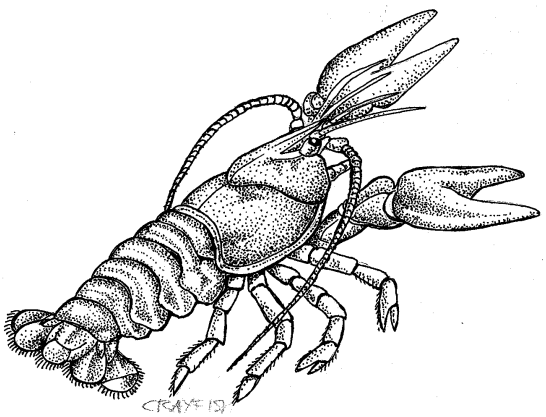
1. *Continue to raise awareness of threats to the species among the community on an annual basis.*
2. *Improve knowledge of the species ecology and methods of monitoring.*
3. *Monitor key sites annually for: presence or absence, abundance and population size (using methods developed at RHUL and by the Suffolk Lead Partner.*
4. *Maintain the range, distribution and viability of existing Stag beetle populations.*
5. *Undertake surveys to establish more precisely the beetles' distribution at the edge of its range.*
6. *Undertake surveys at sites where there are historical but no recent records for the insect.*
7. *Ensure liaison with local authority planning departments where Stag Beetles are present at proposed development sites.*

6 Stag Beetle: Proposed Action with Lead Agencies:

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure WCA (1981) status is enforced and Local Authority Planners are aware of their duties. Encourage them to consider mitigation measures – at least 1 per relevant LA.	2006	**BDC, SCDC**, Suffolk lead partner, SWT
SITE SAFEGUARD AND MANAGEMENT		
Ensure favourable management of County Wildlife Sites and Nature reserves, town and country parks where the Stag Beetle occurs, by inclusion of beetle's requirements in site management plans.	2004 2005 2006 2007	SWT, FA, BDC, SCDC,EN, Suffolk lead partner
Encourage appropriate habitat management, including retention and continuity of dead wood, for all sites where the beetle is known to occur.	2004 2005 2006 2007	**SWT**, EN, , FA, BDC, SCDC, Suffolk lead partner
Promote creation of artificial habitats in areas where the beetle is known to occur. Current research suggests that brickwood chippings and coarse sawdust (hardwoods) act as suitable habitat.	2004 2005 2006 2007	**SWT**, FA, BDC, SCDC
SPECIES MANAGEMENT AND PROTECTION		
Liaise with Local Planning Authorities where the Stag Beetle or its larvae are put at risk from proposed building or other development and seek to provide alternative habitats where development is unavoidable.		**SWT, Suffolk lead partner,** BDC, SCDC,
RESEARCH AND MONITORING		
Undertake research to determine monitoring methods as currently there is no quantitative replicable method available.	2004 2005 2006 2007	**PTES, RHUL**, Suffolk lead partner & volunteers
Undertake surveys to establish more precisely the current distribution of the beetle in Suffolk and identify key sites for conservation action.	2004 2005 2006 2007	**Suffolk lead partner**, SBRC, SNS
Undertake ecological and behavioural research to determine the beetles' precise microhabitat requirements.	2007	**PTES, RHUL,** Suffolk lead partner

Pass information gathered during survey and monitoring of this species to JNCC or PTES so that it can be incorporated in national databases.	2004 2005 2006 2007	All partners
ADVISORY		
Ensure landowners and managers are aware of the presence and importance of conserving this species, and appropriate methods of management for its conservation. Distribute relevant literature.	2005	SWT, SCC, BDC, SCDC, FWAG, Suffolk lead partner
COMMUNICATIONS AND PUBLICITY		
Distribute guidance leaflet on habitat management and gardening practices for Stag Beetles in Suffolk to key parishes and also amongst Local Authority planning staff.	2004	SWT, PTES, RHUL, Suffolk lead partner
Publicise Stag Beetle and its habitat requirements by using local media. Aim for one article/press release in regional newspapers or parish magazines per year.	2004 2005 2006 2007	**Suffolk Lead Partner,** SWT, , EN, FWAG, SNS
Involve public in identifying Stag Beetle locations using local media to publicise surveys and organising field meetings and workshops.	2004 2005 2006 2007	**Suffolk lead partner,** SWT, SNS

White clawed Crayfish (*Austropotamobius pallipes*)



1 Definition

The White-clawed Crayfish is the only native species of freshwater crayfish in the UK. It occurs only in clean calcareous streams, rivers and lakes. It prefers clear, well-oxygenated water and locations without too much fine sediment. Crevices and rocks, gaps between stones, submerged plants and tree roots are important for its survival.

The White-clawed Crayfish tends to be nocturnal and is omnivorous, feeding on a wide variety of vegetable and animal matter as well as detritus. It is eaten by many types of fish (for example perch, trout, chub, pike and eel) as well as birds, rats, mink and otters. Carnivorous insect larvae and nymphs such as beetles and dragonflies eat young crayfish. As with most crayfish species it is cannibalistic, particularly on recently moulted individuals.

Breeding usually occurs in the autumn and the female produces her eggs (rarely more than 100), which become attached in a cluster to the underside of her abdomen. She overwinters with her brood and in late spring to early summer the eggs hatch into relatively immobile miniature crayfish without a tailfan, which cling to her abdomen. They then moult to form a second stage, with a rounded hairy tailfan. This stage becomes more and more active, and they eventually leave their mother in early summer to become independent.

At the next moult they develop a typical crayfish form with an outspread tailfan. During their first full year such juveniles may undergo seven or more moults, but by the time they mature, after three to four years, they may moult only once a year. Average adults lifespan is estimated to be between 7 and 12 years. The timing of the lifecycle varies with latitude and altitude and females from colder areas may not release their juveniles until late summer.

Adult males have larger claws than females and they are more territorial, particularly in the mating season. Females develop a broader abdomen which accommodates the brood. Males can be distinguished by the specialised first two pairs of appendages on the underside of the abdomen.

2 Current status

2.1 National

The White-clawed Crayfish is widespread in England and Wales and occurs in a few areas in Northern Ireland, but many populations have been lost since the 1970s. It is classed as globally threatened by IUCN.

2.2 Local

White-clawed Crayfish are currently present in Chad Brook and were also known from the River Stour until 1991.

3 Current factors affecting White-clawed Crayfish in Suffolk

- This species is vulnerable to modifications to the management of rivers and changes in water quality.
- Native White-clawed Crayfish are out competed by non-native crayfish (Signal and Turkish) which are present in several rivers in Suffolk.
- Crayfish plague is present in the county and this affects the native species as well as the Turkish crayfish. The fungus Aphanomyces astaci causes crayfish plague. It infects only freshwater crayfish. North American species, such as the signal crayfish, can carry the fungus but seem to suffer no ill effects from it unless put under stress. All native European crayfish species are highly susceptible to the disease. The fungus causes a biochemical reaction (melanisation) in the exoskeleton resulting in brown patches, particularly on the underside of the abdomen and at the leg joints.

4 Current Action

4.1 Legal Status

- White clawed crayfish are listed on Schedule 5 of the Wildlife & Countryside Act 1981, which makes it illegal either to take it from the wild or sell it without a licence from the appropriate nature conservation agency. Equivalent protection is proposed for Northern Ireland.
- White clawed crayfish is also included in the IUCN Red Data List, Appendix III of the Bern Convention and Annexes II and V of the European Habitats Directive.
- Defra has set up no-go areas for crayfish farming and also issued guidance.

4.2 Management, research and guidance

The Environment Agency has undertaken surveys for native and non-native crayfish species in all the Suffolk rivers. This is to establish information of the distribution of the three species found in Suffolk.

Trapping of Signal Crayfish is undertaken at Wixoe pumping station. Trapping is for two purposes, firstly to try and stop the signal crayfish being transferred to the River Pant in Essex with the public water supply and also to try and reduce the spread of the Signal Crayfish along the River Stour.

The Environment Agency has produced a leaflet titled ‘Freshwater Crayfish in Britain and Ireland’. This is to raise the profile of the species and the importance of our native variety. It is also hoped that the publicity will result in more information being gained about the crayfish plague. The Environment Agency holds reports of the plague.

To prevent the spread of the crayfish plague it is necessary to eliminate the means by which it is spread. It is particularly important to realise how virulent crayfish plague is. Equipment such as nets, traps and waders used in waters where there are known to be non-native crayfish, or where a native White-clawed Crayfish mortality has occurred, should be left to dry out thoroughly. They should be treated with a proprietary disinfectant (and rinsed) before further use. There is at present no means of eliminating crayfish plague once it is established, or of eradicating Signal Crayfish, which is the principal host of the fungus.

5 Action Plan Objectives and Targets

1 *Maintain the present distribution of this species in Suffolk*

2 *Limit the spread of non-native species*

3 *Maintain and enhance appropriate habitat conditions*

4 *Investigate potential for translocation of White-clawed Crayfish into other suitable watercourses in Suffolk*

6 White-clawed crayfish: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Where crayfish farms are proposed, the full impact should be assessed and advice given to Defra, using Section 14 of Wildlife and Countryside Act (1981).	2004 2005 2006 2007	**EN,** EA, SWT, Defra
The use of bye-laws to control baiting with crayfish by anglers should be in line with national proposals.	2004	**EA**
Ensure that development schemes in Suffolk do not affect the integrity of the populations of White-clawed Crayfish.	2004 2005 2006 2007	**SCC, Babergh DC**, EN, SWT, EA
SITE SAFEGUARD AND MANAGEMENT		
Investigate possibility of Chad Brook for designation as SSSI for the White-clawed Crayfish.	2006	**EN**, SWT, EA
Continue sensitive management of Chad brook.	2004 2005 2006 2007	**EA**
SPECIES MANAGEMENT AND PROTECTION		
Undertake eradication programmes for non-native species and monitor success.	2004 2005 2006 2007	**EA**, Essex & Suffolk Water
If feasible, investigate re-introduction programmes at selected sites.	2006 2007	**EA,** EN
Licences should not be issued for release of non-natives where there are inadequate precautions to prevent escapes into no-go areas.	2004 2005 2006 2007	**Defra**, EN, EA

RESEARCH AND MONITORING		
Monitor known populations and survey sites to establish density and extent of population. Forward information to National databases including Nottingham University and Suffolk Biological Records Centre.	2004	**EA**, EN, JNCC,
Any suspected outbreaks of plague should be investigated and monitored.	2004 2005 2006 2007	**EA**
ADVISORY		
Provide advice to those involved in conservation of native crayfish and management of non-native crayfish. Disseminate management leaflet.	2004 2005 2006 2007	**EA**, Defra, EN
Provide advice on disinfection procedures to prevent transmission of plague for any development proposals or scheme within the river catchments where white clawed crayfish are present.	2004 2005 2006 2007	**EA**
COMMUNICATIONS AND PUBLICITY		
Disseminate information through at least 1 press release a year and distribute of leaflets. Target angling clubs about use of bait and crayfish plague.	2004	**EA**
Ensure landowners on and around Chad brook are aware of habitat requirements of White-clawed Crayfish.	2004	EA, EN, SWT, FWAG, DVSVP

White-mantled Wainscot Moth *(Archanara neurica)*

1 Definition

The White-mantled Wainscot Moth, which is now only known in Britain from the Suffolk coast, inhabits the drier peripheral areas of reed-beds. It spends the day concealed and flies over the tops of the reedbeds at dusk and amongst the reeds later in the night. The white-mantled wainscot is light brown in colour and flies from July to early August, over-wintering as an egg. The larva feeds in the stems of common reed. Suitable habitat for the larva appears to be found in drier reedy ditches, on the edges of reed-beds and locally within larger reed-beds in the drier areas.

2 Current Status

2.1 National

This moth was discovered in this country in 1908 at Pett Level in Sussex but the habitat at the site was destroyed during the Second World War. In 1939 it was re-discovered in Suffolk and this remains the only area of coast marsh where the moth is found in Great Britain. There are other records from around the country but these are generally discounted due to the confusion with the similar, more widespread - brown-veined wainscot (*Archanara dissoluta*).

2.2 Local

The moth is known to occur in the reed-beds of Minsmere and Walberswick. The moth has also been reported from Thorpeness/North Warren RSPB Reserve, Dingle Marshes, Walberswich, Benacre Broad and Darsham Marshes. Minsmere and North Warren are managed as nature reserves by the RSPB and Walberswick is managed as a nature reserve by English Nature

2.3 Natural Areas

Suffolk Coast & Heaths

3 Current factors affecting the White-mantled Wainscot Moth in Suffolk

- Loss of suitable areas of drier reed-bed
- Conversion of suitable habitat to wetter areas of reed-bed as part of conservation management for other species - notably the Bittern
- Loss of habitat as reed-bed becomes too dry to support the foodplant.

4 Current action

4.1 Legal Status

The species is classified as rare on the GB Red List and as a species of conservation concern in the UK BAP

4.2 Management, research and guidance

Survey work has been ongoing since 1998 by the British Entomological and Natural History Society, Butterfly Conservation and Suffolk Moth Group at Minsmere, Dingle Marshes, North Warren and Walberswick.

Survey work by the Suffolk Moth Group in 2003 aimed to record the species at Easton Broad and in a different part of the reed-bed at Minsmere. Both surveys produced negative results, although at the former site trapping was not undertaken in the most suitable part of the reedbed. The Suffolk Moth Group plan to return to these sites in 2004 to re-survey.

5 Action plan objectives and targets

1. *Establish current status and distribution of this species in Suffolk.*
2. *Maintain and where appropriate enhance populations of this species at extant sites.*
3. *Make available suitable habitat further inland to prepare for current habitat loss from coastal erosion*

5 White mantled wainscot moth: Proposed action with lead agencies

Action	Date	Partners
SITE SAFEGUARD AND MANAGEMENT		
Prevent damage to drier areas of reed-bed at existing sites.	2004 2005 2006 2007	**SCDC, RSPB, SWT, EN**
Ensure appropriate management of all occupied sites and of suitable sites within the moth's dispersal range.	2006 2007	BC, EN, SWT, RSPB
Attempt to link isolated colonies by suitable habitat management if feasible.	2004 2005 2006 2007	**BAP Wetland Working Group**, EN, RSPB, SWT
RESEARCH AND MONITORING		
Conduct research into the local status, habitat requirements, population dynamics and dispersal abilities of the moth to aid conservation management.	2004	**BC/ SMG**
Set up monitoring schemes at key sites to identify any changes in the distribution and status of this species.	2004 2006	**BC/SMG**, EN, NT, RSPB, SBRC
Identify & survey suitable areas for presence of the moth outside known sites.	2004 2005	**BC/SMG**, EN, NT, RSPB
Pass survey and monitoring information to SBRC for onward distribution to JNCC and National BRC.	2004 2005 2006 2007	**BC/SMG**, EN, SBRC
ADVISORY		
Produce a leaflet on the current status and breeding requirements of the moth for site owners and managers.	2005 2006 2007	**BAP Wetland Working Group**, BC/SMG, EN, HWG
COMMUNICATIONS AND PUBLICITY		
Promote opportunities for the appreciation and the conservation of the White-mantled Wainscot Moth and its habitat.	2004 2005 2006 2007	**BAP Wetland Working Group**, BC/SMG, RSPB, NT

Freshwater snail *(Anisus vorticulus)*

1 Definition

This nationally rare snail (*Anisus vorticulus)* is now confined to East Anglia and small areas of southern England. The snail lives in unpolluted, calcareous waters in well-vegetated marsh drains and ditches. It is associated with a rich assemblage of plants and other species of mollusc.

2 Current status

2.1 National

A rare snail known since 1965 from only Kent, Norfolk, Suffolk, Middlesex and Sussex. It is continuing to decline and has recently been lost from Middlesex. The marshlands of east Suffolk and Norfolk hold the principal UK populations. *Anisus vorticulus* is associated with other national rarities, including the priority Biodiversity Action Plan snail *Segmentina nitida.*

2.2 Local

This freshwater snail is found at Carlton Marshes (SWT reserve) and North Cove (outside SWT reserve). The former is one of the most important sites for the species in Britain with records from seven of 11 ditches sampled. At North Cove, the species was recorded from two of 10 ditches sampled. At both sites *A. vorticulus* is found at low density, although at Carlton marshes numbers have increased throughout the 1990s.

There have been records for Redgrave Fen (1907) and Knettishall (1906) but they are thought to be fossil records. A survey in 1999 of the Waveney grazing marshes showed this species occurring in low numbers. Nonetheless, the number of new locations for this species was extremely encouraging. The Waveney valley now appears to be the main stronghold for *Anisus vorticulus* in this country.

3 Current factors affecting *Anisus vorticulus* in Suffolk

Anisus vorticulus is believed to be declining nationally. The main threats appear to be over-frequent ditch clearance, nutrient enrichment of ditches from fertiliser run-off and the loss of grazing levels to arable.

4 Current Action

4.1 Legal status

The IUCN Red Data Book for Invertebrates (Bratton, 1991) places *Anisus vorticulus* on the Vulnerable list.

4.2 Management, research and guidance

Carlton Marshes is a SWT reserve and is managed for its wetland interest. However, ditch management cycles have been reviewed in the light of the species' requirements as they are currently maintained on a relatively short dredging cycle. The ditches on the privately owned North Cove site were at an advanced successional stage in 1997, although some were dug out that year. The Site Management Plan has been rewritten to incorporate the requirements of the species.

This species seems to have a preference for fairly wide (3 metres or more) and comparatively deep dykes (in excess of 1 metre) with little emergent vegetation. It also appears to tolerate channels where grazing takes place on the adjacent fields. This is in contrast to *Segmentina nitida. Anisus vorticulus* appears to tolerate eutrophic conditions and will quickly colonise newly dredged channels.

5 Action Plan Objectives and Targets

1 *Maintain all known sites*

2 *Enable existing populations to increase in size and spread in range*

6 *Anisus vorticulus*: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to include this snails habitat requirements in Strategic Plans, Development Plans and Policy documents in Suffolk.	2004 2005 2006 2007	EN, SWT, SBRC, EA, RSPB, NT, Defra, Local Authorities
SITE SAFEGUARD AND MANAGEMENT		
Develop a ditch management cycle that allows the recolonisation of cleared sections from adjacent sections for North Cove.	2004 2005 2006 2007	**SWT**, EN
SPECIES MANAGEMENT AND PROTECTION		
Prepare advice on ditch management to benefit this species, by the year 2007.	2007	**BAP Wetland Working Group,** EA, SWT, SBRC,
RESEARCH AND MONITORING		
Co-ordinate surveys of Carlton marshes, Barnby Marshes and North Cove on a 5 year cycle, firstly to determine distribution and ecology of species and to establish baseline distribution and population size.	2007	**BAP Wetland Working Group,** EN, SWT, EA, SBRC
Commission research to establish the ecological requirements of the species, particularly water chemistry and physical characteristics of ditches.	2006 2007 2008	**EA,** EN
ADVISORY		
Ensure that land managers are aware of the presence and vulnerability of the species and its management requirements Advise landowners on presence and requirements of snail.	2005 2006 2007 2008	**BAP Wetland Working Group**, EA, IDBs, SWT, SBRC
COMMUNICATIONS AND PUBLICITY		
Produce an information sheet for contractors and land managers.	2005 2006 2007	**BAP Wetland Working Group**

Antlion (*Euroleon nostras*)

1 Definition

Antlions are insect members of the order Neuroptera. In Great Britain they are found only in the Sandlings of Suffolk, where the larvae makes a pits in sand to trap ants, woodlice and other invertebrates which are killed and the nutrients sucked from their body. The adult emerges in late summer and within about a month the female mates and lays eggs.

2 Current Status

The status of the Antlion in Suffolk is not clear. The first confirmed record was in 1931 and since then there have been occasional reports of single adults. In 1997, 1998 and 2000 studies showed that there is a sizeable population present in the Suffolk Sandlings. These data may be interpreted to show that the insect has been present in the district for 70 years or more but because it needs experience to find and identify the Antlion pits and the concealed larvae it has largely gone unnoticed. Alternatively the region may have been colonised a number of times by mated females blown across the North Sea from the populations in mainland Europe.

2.1 National

It is thought to be confined to the Sandlings region of east Suffolk. However adults were found on the South coast in 1998 and it was suggested that they had bred locally.

2.2 Local

Antlion larvae and imagos have been recorded from Gorleston southwards to Bawdsey and eastwards approximately to the line of the A12. Larvae occur in areas where Norfolk crag, Red crag and other sands outcrop and where quarrying, forestry operations or other factors have destroyed the surface vegetation, exposing fine, loose sand.

2.3 Natural Areas

Suffolk Coast and Heaths

3 Current factors affecting the Antlion in Suffolk

The continued presence of Antlions depends on suitable habitat and climatic trends but little is known of their autoecology at present.

4 Current action

4.1 Legal status

The Antlion is not protected.

4.2 Management, research and guidance

The distribution, status and ecology of Antlions was studied in the Sandlings in 1997. Monitoring takes place at a number of sites to assess the status of the species and to observe changes in current sites due to colonisation by vegetation or destruction by the activity of animals or man. Pit counts have been published in the Sandlings Walks project annual report and new sites have been discovered since the 1997 report. More co-ordinated monitoring in the future would be useful. Awareness of the species has been raised by publications such as ‘The Sandlings Walk’ pack, the Transactions of the Suffolk Naturalists Society and the new Sandlings web site.

5 Action plan objectives and targets

1. Monitor the status of the Antlion both in distribution, and population size on all currently known sites.

2. Monitor and characterise the origin of new sites created by routine forestry operations, road verge management and conservation management.

3. Undertake further research to establish autoecology of the Antlion.

4. Continue to raise awareness about the species and its habitat requirements.

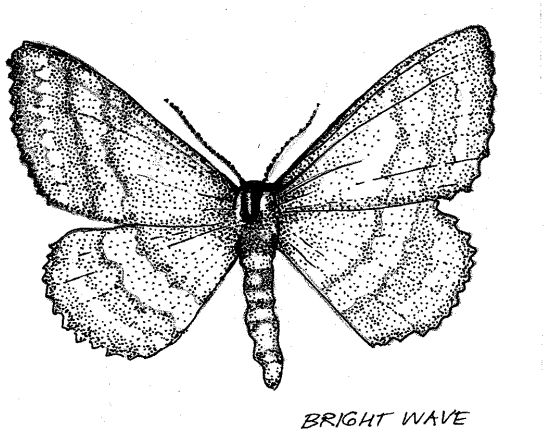
1 Antlion: Proposed action with key local partners

Action	Date	Partners
SITE SAFEGUARD AND MANAGEMENT		
Ensure all known Antlion sites have management plans that make reference to the species and its habitat requirements.	2005	**NT**, EN, RSPB
RESEARCH AND MONITORING		
Co-ordinate monitoring of the populations on an annual basis throughout the year to establish population dynamics of the species via the Sandlings Group.	2004 2005 2006 2007	EN, RSPB, **SWT**, NT
Monitor colonisation of new sites.	2005 2007	**RSPB**, EN, NT, Sandlings Group
Investigate Antlion ecology in more detail.	2005	**S**NS
ADVISORY		
Ensure landowners and site managers know about suitable management for the species.	2005	Sandlings Group
COMMUNICATIONS AND PUBLICITY		
Encourage interest in Antlion life history and conservation through articles and publications and through demonstration boards in visitor centres.	2005 2007	Sandlings Group
Ensure findings of research are circulated to relevant landowners and site managers.	2005	Sandlings Group

Bright Wave Moth (*Idaea ochrata cantiata*) Species statement

This moth has a bright orange ground colour and flies from late June to early August and over-winters as a larva. It inhabits coastal sandhills and sandy shingle beaches and rests during the day amongst small bushes or low herbage.

Current status
The moth is now only known to be present in Kent (from Walmer to Sandwich). Old records exist from near St Osyth in Essex and near Thorpeness Suffolk. The species is listed as rare on the GB Red List, but may be re-graded as vulnerable.



In Suffolk the moth has been recorded on a 3km stretch of coast from Thorpeness to Aldeburgh but has not been seen in the last five years. The land is managed as a Local Nature Reserve (with a management agreement with RSPB) and a Suffolk Wildlife Trust Reserve. The moth was recorded in 1982 (by B. Elliot and B. Skinner). Little is known about its ecology. It is presumed by local recorders as almost certainly extinct.

Natural Areas
Suffolk Coast Maritime

Current factors causing loss or decline
Recreational pressure on upper beaches.

Current Action
Survey work was undertaken in 1997 through English Nature's Species Recovery Programme, but without success.

Suffolk Moth Group and Suffolk Branch of Butterfly Conservation and the Suffolk Naturalists Society have undertaken survey work 1997 – 2003 along the coast from Aldeburgh to Minsmere but with no positive results. The moth is now presumed to be locally extinct.

Objectives for the species
Continue to survey for presence of Bright Wave Moth at known Suffolk site and to manage habitat in the known area favourably.

Proposed action
Little can be done to protect this species unless its presence in Suffolk is confirmed. The requirements of the species should be considered in the implementation of the Coastal Vegetated Shingle action plan, and the habitat managed appropriately.

SUFFOLK LOCAL BIODIVERSITY ACTION PLAN

Cornflower

(*Centaurea cyanus)*

Plan lead SWT

1 Definition of habitat or species

Cornflower is an arable plant, known to have occurred in Britain from the Iron Age, but has suffered a dramatic decline with the advent of seed-cleaning and agricultural intensification.

2 Current status: national, regional, and local (including trends and losses)

The UK population of Cornflower has declined from over 250 ten km squares between 1930 and 1960 to less than 78 after 1980. Haughley is the only site in Suffolk where cornflower is sustaining itself in an arable situation.

3 Current factors affecting the species or habitats

The following agricultural changes have largely been responsible for the decline of cornflower and these factors continue to constrain its recovery. In addition the seed is short-lived

Increased use of herbicides and fertilisers

Major improvements in seed cleaning techniques

The demise of crop rotations and the ability to grow monocultures over long periods

Deeper and more intensive cultivations

Loss of field edge refuges

Loss of winter stubbles

4 Current action

The Haughley site is a County Wildlife Site and is maintained in cultivated uncropped margins under a Countryside Stewardship Agreement. This CSS agreement also funds annual monitoring of cornflower margins.

Adjacent margins on the neighbouring farm are in similar management and a CSS agreement with the view to encouraging the spread of cornflower. These margins are also monitored annually.

The verge adjacent to the Haughley site is protected by Roadside Nature Reserve status to prevent it being eroded by adjacent traffic

Seed from the Haughley site has been collected and introduced to the arable plant area at the Museum of East Anglian Life.

In 1990 a further population of cornflower was found at Combs and this is also a CWS.

5 Targets

Maintain and enhance viable populations at current sites.

Establish and maintain two new populations of cornflower at Museum of East Anglian Life and in margins at Tothill farm adjacent to Haughley site by 2010 using seed from the Haughley population.

Baseline 2005, targets for 2010, and identify targets for long term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Site safeguard and management Or species protection/management		
Where appropriate, promote and support existing opportunities in Environmental Stewardship Entry level and Higher level schemes that promote arable wildflowers e.g. conservation headlands, uncropped margins	2006-2010	**FWAG** SWT**,** NE,
Endeavour to convert CSS agreements at	2007 and	**NE,** SWT, FWAG

Haughley into Environmental Stewardship (HLS) when CSS agreements expire	post 2010	
Maintain RNR at Haughley		**SCC**
Maintain and establish new populations at suitable sites, using seed from Haughley e.g at Museum of East Anglian Life to provide a population at another location and also on the adjacent farm at Haughley to ensure a larger population at this site and to help the case for transference to HLS when the time comes.	2006- 2010	**SWT**, FWAG, NE, MEAL
Research and monitoring		
Continue to annually monitor Haughley margins	2006-2010	**SWT**, NE
Resurvey site at Combs to see whether it is still existent and to assess management. Try and include in Environmental Stewardship if appropriate	2007	**SWT**, SBRC, NE, FWAG
Advisory		
Ensure landowners and managers are alert to its appearance in arable crops and headlands and advise on appropriate management	2006-2010	**FWAG**, SWT, SBRC
Support and advise on ES applications and options that benefit arable plants e.g. unsprayed cultivated margins, overwintering stubble etc	2006-2010	**FWAG**, SWT, NE
Communications and publicity		
Raise awareness of the species amongst farmers (e.g. produce articles to reassure landowner/farmer concerns), landowners and managers and the general public and the need to notify conservation bodies of new sites	2006 -2010	**FWAG**, SWT, SBRC, NE

NB Most of the action achieve by dates are 2006-2010 this means they need to be achieved or worked towards by 2006 and annually renewed until 2010.

Objectives currently not achievable by the plan partners:

This section should include objectives that the working group relevant to this plan would like to fund and achieve but due to constraints can't currently. By recognising these in the plan, means they aren't lost from the BAP : A list of bullet points

The production of a leaflet arable plants covering why they are important, how they can be incorporated into current farming practice.

Work in partnership with the Museum of East Anglian Life to continue to develop and promote their arable plant plot both as a refuge for arable plants and as an educational resource.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments: A list of organisations.

SWT Susan Stone and Dorothy Casey
NE Monica O'Donnell and Alison Collins
Mid Suffolk District Council SBP David Hughes
Suffolk County Council Andrew Murray-Wood
SBRC Martin Sanford
Suffolk biodiversity partnership officer Mary Norden
FWAG Phil Watson
RSPB Kirsty Coutts
SOG Steve Piotrowski
Museum of East Anglian Life

Published: April 2007.

Depressed or Compressed River Mussel *(Pseudanodonta complanata)*

1 Definition

The status of the Depressed River Mussel (*Pseudanodonta complanata*) is uncertain owing to lack of data, but it is thought to be rare and threatened throughout its European range. It occurs at scattered localities throughout England in lowland rivers and canals where it is usually found at low density.

2 Current status

2.1 National

The Depressed River Mussel has been recorded from 63 10km squares in England and Wales since 1950. The species is easily overlooked, however, and may be more common than thought. The UK probably has the healthiest population in Europe, with the possible exception of Finland.

2.2 Local

The Depressed River Mussel is found in the River Waveney, although it was not known here until 1973. Surveys undertaken over the last 5 years have proved that this snail is present along a greater stretch of the River Waveney than previously thought and is within the dykes and ditches of the Broads. Estimated population in the Waveney is 1.2 million ('Population Genetics, Ecology and Waterway Management in the Conservation of the Depressed River Mussel, Cambridge University).

3 Current factors affecting the Depressed River Mussel in Suffolk

The threats to the depressed river mussel are not fully known but are likely to include water pollution, physical disturbance of river banks and channels aswell as drought. The population on the Waveney is quite localised and potentially at high risk from disturbance.

There are a number of reasons that might explain the absence of depressed river mussel from many rivers. Firstly the rivers may not contain fish species that are suitable hosts for Depressed River Mussel larvae. Secondly the mussels rarely move large distances unless severely distressed and therefore rely on fish to transport larvae to new habitats. Thirdly the substrate may not be the correct sediment to allow successful survival and reproduction of this mussel. Dredging of rivers can have a large impact on this mussel and the frequency, timing, location and search of dredged silts can all influence the type of impact of the work.

4 Current Action

4.1 Legal status

The Depressed River Mussel is not protected in the UK. However it is listed as a priority species for conservation concern in the UK Biodiversity Action Plan. The section of the River Waveney in which it occurs in Suffolk is designated as a County Wildlife Site.

4.2 Management, research and guidance

There has been no recent survey for depressed river mussel in Suffolk.

5 Action plan objectives and Targets

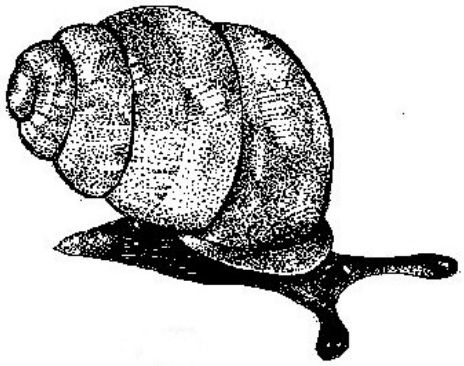
1 Determine the distribution of the Depressed River Mussel in Suffolk river catchments similar in character to the Waveney

2 Encourage appropriate habitat management for this species

6 Depressed river mussel: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to include this species' habitat requirements in Strategic Plans, Development Plans and Policy documents in Suffolk.	2004 2005 2006 2007	**EN, SWT, BA, SBRC, Defra, AW, WDC**
Ensure that Flood Defence and Navigational activities take account of species.	2004 2005 2006 2007	**EA, BA**
SPECIES MANAGEMENT AND PROTECTION		
Prepare advice on river management to benefit this species by 2005.	2004 2005	**BAP Wetland Working Group,** EN, SWT, EA, SBRC
RESEARCH AND MONITORING		
Survey other rivers in Suffolk that are tidal and flow through low lying, agricultural land, eg; Lark, Gipping and Stour.	2004 2005 2006 2007	**EA,** SWT, AW
Undertake research into dredging practices and the impact on depressed river mussel habitat, preferred sediment types etc. with a view to producing guidelines on dredging.	2005	**EA, BA, EN**
Commission research on the primary fish host and its distribution and links with larvae of depressed river mussel.	2005 2006 2007	**BAP Wetland Habitat Working Group** in conjunction with National BAP group
ADVISORY		
Provide advice to river managers in areas where mussel occurs.	2004 2005 2006 2007	**BAP Wetland Working Group,** IDBs, EA, BA, SWT
COMMUNICATIONS AND PUBLICITY		
Produce an information sheet for contractors and managers.	2005 2006	**BAP Wetland Working Group**

Desmoulins Whorl Snail (*Vertigo moulinsiana*)



1 Definition

Desmoulins Whorl Snail is a very small snail, roughly 2.2 – 2.7mm. It lives on tall swamp vegetation in summer such as sedges, reeds and reed sweet grass in wet situations. It is not an aquatic species.

2 Current status

2.1 National

In the UK, *Vertigo moulinsiana* is known from a series of sites stretching from Dorset to Norfolk.

2.2 Local

It is thought that previously *Vertigo moulinsiana* would have been quite widespread due to the evidence of fossil records. In Suffolk found on Whitecast Marsh at Carlton Marshes Reserve and Market Weston Fen.

A large thriving colony was discovered at Market Weston Fen in 1982. Although widespread over an extensive area of the fen, *Vertigo moulinsiana* appears to prefer the beds of saw sedge (*Cladium mariscus*) where it usually lives up on the sedge leaves and stems.

It seems likely that *Vertigo moulinsiana* may have been formerly quite common in the Little Ouse Valley system. It was found at Redgrave and Lopham Fen but the drying of the fen from borehole abstraction has caused disappearance of several wetland snail species.

3 Current factors affecting Desmoulin's Whorl Snail in Suffolk

- The reasons for decline are not clearly understood but the main threats are believed to be destruction of wetlands through changes in hydrological conditions, grazing pressure and physical disturbance.
- Encroachment by scrub leading to over-shading and drying of habitat.
- Over-grazing or cutting resulting in insufficient vegetation. Cutting of long, continuous strips of sedge along riverbanks should be avoided, although the snails will probably tolerate rotational cutting (every 3 years). Excessive riverbank tidying for angling is detrimental.

4 Current Action

4.1 Legal Status

The snail is listed on Annex II of the EC Habitats Directive, and is listed as rare in the GB Red List.

4.2 Management, research and guidance

- *Vertigo moulinsiana* occurs in long established swamps, fens and marshes usually bordering rivers or lakes, living on the stems and leaves of tall grasses, sedges and reeds.

- Management that reduces or eradicates tall grasses and sedges is obviously detrimental, although it can tolerate light grazing by cattle.

- Inhabited plants usually stand in shallow water or damp ground and the snail shuns dry fen. It also has a strong preference for open situations. It has recently been discovered that the snail will occupy and breed readily in translocated and newly created marsh. It is crucial that sites have areas of fen or reed on higher ground to provide refuges when rivers are in flood. Adults floated out of riparian 'hover' during winter flooding do not survive.

- Detailed surveys of the Little Ouse and Waveney valleys were undertaken in 1991.

- Market Weston Fen, Hopton Fen and Whitecast Marshes are all Suffolk Wildlife Trust Reserves and managed to maintain the conditions needed for wetland species.

- The hydrology and fen habitats of Redgrave & Lopham Fen, Suffolk Wildlife Trust Reserve are still responding to the restoration project undertaken as a major partnership project. Conditions may become suitable for *Vertigo moulinsiana.*

5 Action Plan Objectives and Targets

1 Maintain viable populations of snail across its current range.

2 Survey to determine the full extent of the snail's current distribution and precise habitat requirements.

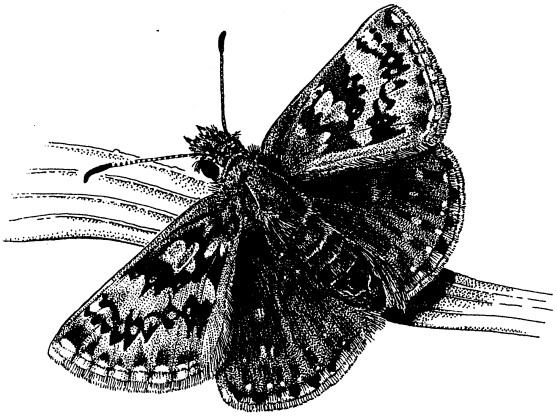
6 Desmoulins Whorl Snail: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure that strategies for floodplain management, strategic plans and policy documents take into account this species habitat requirements.	2004 2005 2006 2007	**EA, EN, LAs, Defra**
Ensure compliance with Habitats Directive in all development schemes in Suffolk that may affect known sites for Desmoulin's Whorl Snail.	2004 2005 2006 2007	**EN, SWT, EA, BA, LAs**
Ensure that development schemes in Suffolk do not affect the integrity of Desmoulins Whorl Snail populations.	2004 2005 2006 2007	**EN, LAs, SCC, SWT, EA**
SITE SAFEGUARD AND MANAGEMENT		
Seek to ensure that water abstraction policies take account of the need to protect the snail.	2004 2005 2006 2007	**EA,** EN
Determine the extent of Desmoulins Whorl Snail within other fenland areas in Suffolk. Identify which fall within protected areas. Survey Redgrave & Lopham Fen reserve.	2004 2005 2006 2007	**BAP Wetland Working Group,** EA, EN, SBRC, SWT
Ensure the requirements of this species are taken into account when considering any possible extension to the ESA areas. Also consider providing incentives for wetland management under the agri-environment schemes where this species is present.	2004 2005 2006 2007	**Defra**, FWAG
RESEARCH AND MONITORING		
Make links to national BAP for this species and commission research to identify the species requirement and distribution.	2005 2006 2007	**BAP Wetland Working Group**

ADVISORY		
Advise landowners on presence and requirements of snail where it is known to occur.	2005 2006 2007	**BAP Wetland Working Group,** EN, SBRC, SWT, FWAG, IDBs
COMMUNICATIONS AND PUBLICITY		
Produce positive publicity material to raise awareness of this species in Suffolk.	2004	**BAP Wetland Working Group,** EA, SWT, SBRC

Dingy Skipper *(Erynnis tages)*

The Dingy Skipper is a coastal or downland butterfly. It is a sedentary species that requires sheltered sunny sites kept short by grazing or disturbance where its caterpillars feed on Bird's Foot Trefoil or Horseshoe Vetch. Once considered common, the dingy skipper has undergone a dramatic decline in Suffolk due to habitat loss and fragmentation. It now survives in a handful of small colonies in the Breckland, mostly in clearings or rides in conifer plantations. The Dingy Skipper is probably Suffolk's most threatened butterfly.



1 Definition

The Dingy Skipper is a small grey-brown butterfly. It is unlikely to be confused with any other British butterfly but its dull colouring may make it more easily confused with certain day flying moths, some of which occupy the same habitat at the same time of year. It is primarily a grassland butterfly and it is found in habitats such as woodland rides, heathland and railway cuttings which are sunny but sheltered. It is also known to occupy disused industrial sites such as quarries and railway embankments. The larval food plant Birds Foot Trefoil (*Lotus corniculatus*) is the determining factor and this occurs most frequently on light sandy soils where rabbit grazing is prevalent.

2 Current Status

2.1 National

The Dingy Skipper was once regarded as a common butterfly in the south of England but since WWII it has been retreating from former strongholds. It is now rare through most of its range, apart from the South Downs and coast. It is absent from 40% of 10km squares in the UK that were occupied during a survey of 1970/1982.

2.2 Local

The Dingy Skipper is known from five sites within five tetrads in Suffolk. All of the colonies are on residual heathland in the Breckland, mostly where shelter is provided by coniferous forest. The strongest colony is on the RAF Barnham Training Area (SSSI); just to the west there have been recent records Center Parcs leisure development but none lately from Marmansgrave Wood. Further south, the former stronghold of the King's Forest still supports small populations in several rides.

2.3 Natural Areas

Breckland

3 Current factors causing loss or decline

Breckland clearings are a sub-optimal habitat, further threatened by the following:

- Fragmentation and isolation of sites caused by agricultural intensification.
- Lack of management of suitable sites. The populations at RAF Barnham are threatened by shading from the adjacent plantation and have declined over the last few years.
- Loss of open grassy rides in conifer plantations.
- Myxomatosis affecting rabbit grazing regime.
- Unsympathetic forestry operations.

4 Current Action

4.1 Legal status

The Dingy Skipper is a Species of Conservation Concern in the UK Biodiversity Action Plan, and a Top Priority species in Butterfly Conservation's Regional Action Plan. It is not protected in the UK.

4.2 Management, research and guidance

- Forest Enterprise is aware of the location of the remaining breeding areas in King's Forest. Rides supporting Dingy Skipper have been designated as conservation rides. A management prescription is in place and "dragons teeth" have been erected to exclude heavy plant from one key area.

- Center Parcs domain is managed sympathetically for wildlife, and the Dingy Skipper flies in a relatively small area of recently seeded wildflower rich grassland with a man-made embankment. A regular recording transect is conducted at Center Parcs.

- Butterfly Conservation has produced a National Species Action Plan (2000), and its recommendations have been incorporated into this plan, where relevant. Further information on ecological requirements may be forthcoming, as further research is being put in train as a (National) action in that plan.

- Good contacts have been established between Suffolk Branch of Butterfly Conservation and the landowners (Ministry of Defence, Center Parcs, & Forest Enterprise). As a result, the Dingy Skipper features in the management plans for RAF Barnham, Center Parcs and in the Forest Enterprise Conservation database used for forest management.

- Populations are monitored by site visits conducted on suitable days during the flight period (May /early June).

5 Action Plan Objectives and Targets

1. Enhance the existing population at current sites through appropriate management.

2. Identify areas where suitable habitat can be extended, with a view to natural re-colonisation.

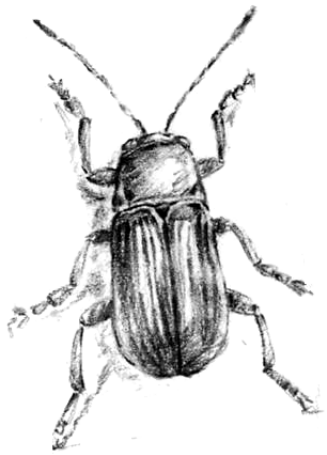
3. Further survey work on potential sites including a review of past records.

6 Dingy Skipper: Proposed action with lead agencies

Action	Date	Partners
POLICY		
None proposed.		
SITE SAFEGUARD AND MANAGEMENT		
Ensure the requirements of the Dingy Skipper are incorporated into management plans.	2006	RAF, FE, CP
Ensure continued appropriate management of sites.	2004 2005 2006 2007	RAF,FE,CP
Draw up list of sites where Dingy Skipper has been recorded since 1998 and consider whether management may restore suitable habitat.	2004	**BC**
Liaise with RAF to establish trial grazing to areas of RAF Barham training area.	2005	**EN,** RAF
Do not cull rabbits or introduce myxomatosis without considering the impact on Dingy Skipper.	2004 2005 2006 2007	RAF, FE, CP
Ensure development proposals do not affect present sites by checking any new planning applications.	2004 2005 2006 2007	**SWT**, EN, FHDC
SPECIES MANAGEMENT AND PROTECTION		
Manage sites to encourage natural re-colonisation by extending habitat.	2004 2005 2006 2007	**FE**, CP
Investigate the suitability for Dingy Skipper of any sites resulting from habitat creation schemes.	2004 2005 2006 2007	FE, SWT

In the event that natural re-colonisation fails, investigate the desirability of a possible re-introduction at selected sites (strictly following Butterfly Conservation code).	2007	**BC**, FE
RESEARCH AND MONITORING		
Continue monitoring at known sites annually.	2004 2005 2006 2007	**BC**, CP
Survey areas adjacent to known and former sites and any other potential sites.	2004 2005 2006 2007	**BC**
Liaise with other regional Butterfly Conservation branches (particularly Norfolk – Barham cross Common) to ensure dissemination of up to date information on the species.	2004 2006	**BC**
ADVISORY		
Maintain inputs to landowners conservation committees, and provide reports and feedback.	2004 2005 2006 2007	**BC**
Ensure site managers are aware of the habitat requirements of the Dingy Skipper.	2004	**BC**
COMMUNICATIONS AND PUBLICITY		
Organise and promote one training day per year to enable new people to help with the survey work.	2004 2005 2006 2007	**BC**
Improve awareness of status of the species through articles in appropriate publications.	2004 2005 2006 2007	**BC**, SWT, FWAG, SNS

A leaf beetle (*Cryptocephalus exiguus)*



1 Definition

This extremely rare beetle (*Cryptocephalus exiguus*) is only known from a single site in the UK, where it breeds among fen-meadow vegetation. Little is known of its ecology, but specimens are usually associated with herbs in damp hollows and larvae are likely to live amongst ground litter. Other members of the genus have been shown to be highly thermophilic, favouring small pockets of plant litter, with a very warm microclimate. It is not known if these characteristics apply to *Cryptocephalus exiguus*.

2 Current status

2.1 National

During the last century it was recorded from various sites in the Norfolk and Suffolk Broads and a valley mire in Lincolnshire but since 1954 it has only been known to occur at a single site, Pashford Poors Fen in West Suffolk. The beetle is listed as endangered on the GB Red List.

2.2 Local

A single male found in 1980 and a female in 1986. Following two unsuccessful searches for the beetle in 1993 and 1996, survey in 1997 found two individuals, suggesting that suitable habitat still occurs but only at a level capable of supporting a very small population. It may be that the species true habitat has still not been discovered and thus only specimens in atypical situations have been found.

Surveys in 1997, 1998 and 2000 recorded small numbers of *C. exiguus* in areas of Pashford Poors Fen, which are specifically managed for the species. Attempts to locate a second population along the River Lark in 2000 failed although a large area of potentially suitable habitat was found.

3 Current factors affecting *Cryptocephalus exiguus* in Suffolk

- Pashford Poors Fen is threatened by lowering of the water table due to drainage of the adjacent land.
- The current grazing regime for the site may be having an adverse impact on vegetation structure.

4 Current action

4.1 Legal Status

The beetle is listed as endangered on the Great Britain Red List for invertebrates but has no protection.

4.2 Management, research and guidance

- Pashford Poors Fen is a SSSI and a Suffolk Wildlife Trust reserve.
- The SSSI boundary was extended in 1996 to improve control over the adjacent drainage ditches, and additional bunds have been installed to try and hold water levels higher during the summer months.
- The management plan for the site has been written with greater emphasis on the vegetation management of the wet fen areas where *C. exiguus* has been found. This will primarily concentrate on reducing the level of grazing in autumn and early winter.
- Issues connected with the control of water resources on the site will be addressed through the implementation of the Water Level Management Plan.

5 Action plan objectives and targets

1. *Undertake further survey work to determine whether the beetle is still present at Pashford Poors Fen.*
2. *If found when site is re-surveyed, attempt to establish habitat requirements of the species and initiate monitoring of associated habitat features.*
3. *Review further possibilities for restoring the water table at Pashford Poors Fen through either additional bunding and/or land acquisition.*
4. *Maintain and enhance the surviving population at Pashford Poors Fen. Once established, and if feasible, translocate the beetle to at least two former sites in Suffolk by the year 2005.*

6 Leaf beetle: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to ensure that the ecological requirements of this species are taken into account in water management plans of the remaining or any newly discovered site.	2005 2006 2007	**EN, IDBs, EA**
SITE SAFEGUARD AND MANAGEMENT		
Ensure that management of Pashford Poors Fen is appropriate to maintain and enhance the beetle's habitat	2005 2006 2007	**SWT**, EN
RESEARCH AND MONITORING		
Ensure continued monitoring of leaf beetle population at Pashford Poors Fen	2005 2006 2007	SWT
Assess habitat requirements of species and obtain advice from National BAP group for the species.	2004	**BAP Wetland Working Group**
Pass information gathered during survey and monitoring to JNCC and SBRC so that it can be incorporated into National and Suffolk databases.	2005 2006 2007	**BAP Wetland Working Group**

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Man Orchid

(*Aceras anthropophorum*)

Plan Lead Suffolk County Council

1 Definition of habitat or species

Man orchid is a tuberous perennial herb found in old chalk pits and limestone quarries, calcareous grassland and road verges in lowland Britain.

2 Current status: national, regional, and local (including trends and losses)

Recent records for Man orchid show that it is found in only 48 ten km squares and largely confined to south east of a line running from the Humber to the Bristol Channel. It is nationally scarce. In East Anglia most of the populations had been destroyed by ploughing by 1930. There are a few remaining small populations in Suffolk, all but one of which are on roadside verges where chalk is near the surface in the Gipping valley and hinterland. A single plant was recorded at Sizewell in 2005.

3 Current factors affecting the species or habitats

Habitat loss and fragmentation largely due to agricultural intensification

Encroachment by scrub due to lack of appropriate grazing/hay cutting management

Vehicle Erosion – Road verge sites

Eutrophication due to road traffic pollution – Roadside verge sites

Land fill resulting in loss of quarry/pit locations

4 Current action

With the exception of the recent record at Sizewell, all existent sites are currently covered by County Wildlife Site designation (and protected under Road side nature reserve scheme RNR) or SSSI status.

Roadside nature reserve review has resulted in specific management prescriptions for each RNR site including necessary restorative management.

Green hay from SSSI site has been used for grassland creation project on former Man orchid Site (Bloodhill, Little Blakenham)

5 Targets

Maintain and monitor all known populations of man orchid in Suffolk and ensure their appropriate management

Endeavour to expand the range of man orchid to new sites.

Baseline 2005, targets for 2010, and identify targets for long term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Policy & Legislation		
Be aware of and allow opportunities for natural regeneration of man orchid and other associated species that may arise by chance (e.g. works specifications) through operations that create bare ground in suitable locations e.g. road works, cable installations etc. (Not applicable to SSSI)	2006-2010	**SCC,** SBRC, SWT
Site safeguard and management Or species protection/management		
Seek opportunities to buffer existing populations from threats e.g. spray drift, erosion including where appropriate, promote take up of Environmental Stewardship options that protect and buffer orchid e.g. buffering grass margins to protect form spray drift	2006-2010	**FWAG,** SWT, NE
Ensure that appropriate management of all	2006-2010	**SCC,** SBRC, SWT, NE

existing sites continues including restorative management and protection against erosion as required		
Ensure landowners of existing sites and adjacent landowners are aware of importance of man orchid	2006-2010	**SCC**, SBRC, SWT, NE
Endeavour to create new populations at suitable locations that are less vulnerable (e.g. away from RNRs) and where they can be sustainably managed.	2006-2010	**SCC,** SBRC, SWT, NE
Identify suitable recipient sites for seed/green hay to establish new populations of man orchid (preference to sites away from road verges)	2006-2010	**SWT,** SCC, SBRC.
Research and monitoring		
Research optimal management for Man orchid	2007	**SBRC**
Research appropriate propagation techniques for Man orchid with the aim of boosting existing populations and establishing new populations in suitable locations	2007	**SBRC**, SWT, SCC.
Identify historic and potential sites and carry surveys to establish whether man orchid is still present or could be re-established e.g. road verges of A14 at Creeting	2007	**SBRC**, SWT, SCC.
Advisory		
Ensure landowners and managers in Gipping valley and hinterland are alert to its appearance and management requirements	2007	**SCC,** SBRC, SWT, NE, MSDC
Support and advise on Environmental Stewardship applications and options that benefit man orchid e.g. grass margin buffers	2006-2010	**SWT,** SBRC, SCC, NE, FWAG
Communications and publicity		
Raise awareness of the species amongst farmers, landowners and managers (raise profile through publicity) and the general public and the need to notify conservation bodies of new sites E.g. partnership with Little Chef and conservation organisations at the A14 /A140 interchange	2007	**SCC**, SBRC, SWT, NE

NB Most of the action achieve by dates are 2006-2010 this means they need to be achieved or worked towards by 2006 and annually renewed until 2010.

Objectives currently not achievable by the plan partners:

This section should include objectives that the working group relevant to this plan would like to fund and achieve but due to constraints can't currently. By recognising these in the plan, means they aren't lost from the BAP : A list of bullet points

Investigate feasibility of micropropagation possibilities for man orchid and see whether Munton and Fison at Stowmarket still have facilities as they are in the heart of man orchid country

Monitoring of progress:

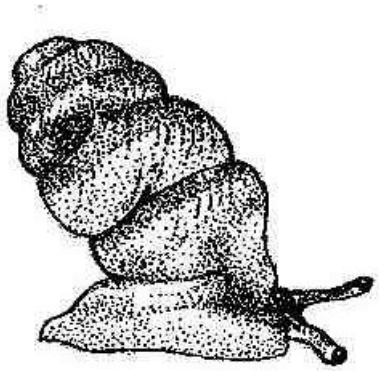
Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments: A list of organisations.

SWT Susan Stone and Dorothy Casey
NE Monica O'Donnell and Alison Collins
All District Council SBP Representatives
Suffolk County Council Andrew Murray-Wood
SBRC Martin Sanford
Suffolk biodiversity partnership officer Mary Norden
FWAG Phil Watson
RSPB Kirsty Coutts
SOG Steve Piotrowski

Published: April 2007.

Narrow-mouth Whorl Snail (*Vertigo angustior*)



1 Definition

The Narrow-mouth Whorl Snail is generally found in permanently wet grassland or amongst moss in damp hollows in sand dunes. In Suffolk it occurs in the transition zone between grassland and saltmarsh where sedges are dominant.

2 Current status

2.1 National

One of Britain's rarest snails; it is found at only nine sites in the UK. It is in serious decline throughout its European range.

2.2 Local

The presence of Narrow-mouth Whorl Snail has been confirmed at one site in Suffolk at Martlesham Creek. Previously recorded at Aldeburgh and records of dead shells (possibly fossil) from Redgrave. The snail is no longer present at Market Western fen.

At Martlesham Creek it occurs at low density half-way along the southern side of the creek. It inhabits a narrow transition zone (c.10metres wide) just above saltmarsh and tidal drift-line deposits.

3 Current factors affecting narrow-mouthed whorl snails in Suffolk

- The reasons for decline are nor clearly understood but the main threats are believed to be changes in hydrological conditions, reduced grazing pressure and physical disturbance.
- The decline of *V. angustior* at Martlesham may be due to the *Iris/Carex* community becoming shaded by Reed canary-grass *Phalaris arundinacea* and tall herbs.

4 Current Action

4.1 Legal Status

Vertigo angustior is protected under the Annex II of the EC Habitats Directive.
It is listed as rare in the IUCN Red data list for Invertebrates in Great Britain (1991).

4.2 Management, research and guidance

- A survey was undertaken at Martlesham Creek in 1996 under contract to English Nature.
- Two surveys are being undertaken in the autumn of 2003, these are along the Blyth estuary and within Easton Broad valley, north of Southwold.
- The new information provided about this species indicates that the Narrow-mouthed Whorl Snail is inhabiting new types of habitat than previously thought. Part of the specification of the surveys being undertaken in autumn 2003 will be to establish habitat preference and to discover more about this species. These results are likely to be published in 2004.

5 Action Plan Objectives and Targets

1 Identify further sites where populations are thought to exist
2 Enable existing populations to increase in size and spread in range
3 Identify local habitat requirements of the species

6 Narrow-mouthed whorl snail: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure those Strategies for coastal management take into account this species' habitat requirements. Suffolk Estuaries Strategies being produced within the next 3 years.	2004 2005	**EA, EN**
Ensure compliance with Habitats Directive in all development schemes and agri-environment grants for all known sites.	2004 2005 2006 2007	**Defra, EN, EA, SWT, WDC**
SITE SAFEGUARD AND MANAGEMENT		
Seek to secure favourable management of Martlesham site. Requires urgent management work to control *Phalaris* grassland.	2004 2005 2006 2007	**Defra**
SPECIES MANAGEMENT AND PROTECTION		
Provide advice following results from 2003 surveys on species habitat requirements.	2004 2005 2006 2007	**BAP Wetland Working Group**
RESEARCH AND MONITORING		
Determine the extent of *Vertigo angustior* within other estuaries in Suffolk. Identify which fall within protected areas. Re-survey previous historical recorded sites.	2004 2005 2006 2007	**EA**, EN, SWT, SBRC
Establish habitat requirements of this species and publish results to allow widespread dissemination.	2004	**BAP Wetland Working Group,** EA, EN
ADVISORY		
Advise landowners on presence and requirements of snail.	2004 2005 2006 2007	**BAP Wetland Working Group,** EN, SWT, EA, SBRC
COMMUNICATIONS AND PUBLICITY		
Produce positive publicity material to raise awareness of this species in Suffolk.	2004	**BAP Wetland Working Group,** EA, EN, SWT, SBRC

Native Black poplar *(Populus nigra ssp. betulifolia)*

The native Black poplar was formerly a component of floodplain woodland but now occurs as isolated specimens in wet meadows, along hedgerows, beside farm ponds and near to rivers. It has not reproduced naturally for many centuries and its current distribution reflects the once common practise of striking cuttings around farms. It has been in decline for the last 200 years and is now rare. Most surviving trees have reached old age and mortality rates are high. Suffolk has a significant proportion of the British population, especially the rarer female trees.

1 Current Status

1.1 National

There are an estimated 8000 native Black poplars in Britain, chiefly occurring south of a line from the Mersey to the Wash. Many of these are believed to be genetic clones so probably considerably less distinct genotypes exist. The tree has strongholds in Shropshire, Cheshire, Somerset, and the Vale of Aylesbury and East Anglia. The vast majority of the trees have reached maturity and there has been very little planting of new trees until recently. Female trees are particularly rare, with an estimated 400 nationally. Seed germination is restricted to the unvegetated banks and bars of low intervention river systems. Britain's well-managed rivers have lacked suitable habitats for centuries. Consequently, the current population reflects former planting preferences rather than any natural distribution pattern. Planting has been restricted to vegetative cuttings, and this is one reason why genetic diversity is low. Hybrid crosses of the European Black poplar (*Populus nigra ssp. typica*) and the American cottonwood (*Populus deltoides*) have been extensively planted in place of the native tree over the last 200 years. There has been much mis-identification of hybrids as natives and *vice versa*. (NP) A large number of street trees in Manchester and several other cities in the North-West have recently succumbed to disease, probably Poplar Scab (Venturia populina). This has reached epidemic proportions in these areas and most trees are expected to die. It is not clear at present whether the disease will affect other parts of the country, especially eastern areas where the drier climate and wider spacing between trees could its limit its ability to spread. Forest Research are investigating the matter.

1.2 Local

Formerly more common in Suffolk, now approximately 430 mature trees survive at about 270 locations. Of these, approximately 80 are females occupying about 40 locations. Almost half of the female trees and locations occur within a triangle between Saxmundham, Framingham and Wickham Market. Suffolk Coastal District contains 75% of the female trees. Males have a more even distribution, occurring in about a third
of all parishes. Many trees are in poor condition and mortality rates are high, with about a third of all the trees

recorded in the 1980s now deceased. There are known to be some young and medium aged trees but distinguishing them from hybrids can be difficult. Some young trees supplied from nurseries as native have turned out to be hybrids. Much of the new planting has not been recorded in terms of site or source.

1.3 Natural Areas

East Anglian Plain, Suffolk Coast and Heaths, Breckland.

1.4 Protection

Section 13 of the Wildlife and Countryside Act 1981, as amended, prohibits the unauthorised uprooting of any wild plant species. Black poplars are not on Schedule 8 of the Act (those protected from any picking, uprooting or destruction) and only benefit from the general protection mentioned above.
Some trees may be protected using Tree Preservation Orders under the Town and Country Planning (Trees) Regulations 1999. These are normally only served where it is known that a tree is under threat from felling. Some trees may lie within Conservation Areas associated with villages and flood meadows and would be afforded some protection. A Felling licence (Forestry Act 1967) may be required if a landowner wished to fell a number of trees.

Where a black poplar grows within a hedgerow the Hedgerows Regulations 1997 would afford some protection to the tree and hedge.

Current factors causing loss or decline

- Loss of both natural river systems and unstable floodplain sediments results in an absence of suitable habitat for natural regeneration.
- The lack of native male trees in close proximity to native females means there is very little opportunity for fertilisation.
- The presence of large numbers of hybrid trees means that seed from female trees is very likely to be hybridised.
- There are high losses of trees from natural factors such as old age, drought and windblow; the trees are often large isolated specimens.
- Removal of fallen trees which would otherwise survive in situ or regenerate from the stump.
- The widely dispersed population makes site based conservation more difficult.
- Widely available and commercially preferable hybrids have been planted in preference to native stock for the last 150 years.

2 Current action

- The survey produced by Edgar Milne-Redhead and Peter Webb is being updated, confirming presence of trees, sexing them, checking authenticity and gathering ownership details. Suffolk County Council hold a central register.
- Dissemination of information to owners of trees on an ad hoc basis.
- Collections of cuttings from about 150 recorded trees have been established at clone-banks at Daws Hall Nature Reserve, Lamarsh, Sudbury, and at Thrandeston in the Waveney Valley.
- The Dedham Vale & Stour Valley Project has been growing rooted cuttings derived from some of the clone-bank collection. 500 new trees have been planted in the Stour valley. About 100 trees have been supplied for planting elsewhere in Suffolk. Wherever possible new trees are supplied from a parent tree close to the planting site.
- Young trees are also supplied by two commercial nurseries in conjunction with the Local Authorities.
- The locations and parentage of most of these new trees is recorded and will be passed on to SBRC.
- Activities are co-ordinated through the Suffolk Black Poplar Working Group (LAs, EN, EA, RDS).

Future long term vision : Investigate the creation of at least one floodplain woodland incorporating native Black Poplar, ideally with conditions suitable for natural regeneration.

3 Action plan targets

1 Ensure the existing range of the species is maintained at 2005 distribution.

2 Conserve diversity and broaden the age structure of the population by undertaking new tree planting of local stock in local sites in the Gipping Valley/Mid Suffolk, Waveney and Brecks annually.

Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS (Lead partner – bold)	TIMETABLE				
		2006	2007	2008	2009	2010
A. Policy and Legislation						
Ensure LDFs, Community Strategies, HLS, and other relevant policy documents include Black Poplar statement.	**SCC Lead**, Districts, EA, RDS, FC.		*	*	*	*
B. Site safeguard and management						
Apply for funding to allow a new survey of all veteran trees in Suffolk, 2006/7.	**SCC Lead**, Districts, EA, RDS, FC.		*	*		
Maintain and update annually the register of all trees, historic site and new planting.	**Suffolk Biological Records Centre (SBRC) lead,** Suffolk County Council (SCC), Districts.),	*	*	*	*	*
Ensure that all relevant organisations have a copy of the update Black Poplar layer. Encourage and promote to all relevant colleagues the Black Poplar layer and feedback to SBRC.	**SBRC lead,** Districts, EA, RDS, FWAG, EN, SWT.	*	*	*	*	*
Provide all known owners of existing trees with management advice on current veteran trees and encourage new planting via leaflets.	**SCC lead**, RDS, FWAG, Countryside Projects and Districts	*	*			
C. Species management and protection						
Set up one and maintain two clone-banks.	**CMP –DVSVP, Waveney,Gipping lead**, SCC and Districts.	*	*	*	*	*
Identify and plant 50 trees in two new areas annually. (Keep male trees within river catchments, and have Suffolk Catchment areas for females – could add map showing catchment boundaries).	**CMPs-GVP and Waveney Project, lead,** RDS, FWAG Districts and SCC.	*	*	*	*	*
Co-ordinate a County tree warden event to encourage existing and encourage new tree wardens, in 2007.	**All Districts, lead.**		*	*		

D. Advisory						
Complete the production of the two leaflets on taking cuttings and pruning.	**SCC and Districts lead**	*	*	*		
Produce guidelines on propagating and planting new trees in appropriate locations	**DVSVP lead**, and Districts.	*	*	*		
Promote guidelines to all landowners in appropriate locations.	**SCC lead**, DVSVP, Gipping Valley project, Waveney Valley project, Brecks and Coast and Heaths, FWAG, EA, RDS.			*	*	*
E. Future research and monitoring						
Annually review research findings from DNA & environmental studies and report to the working group	**SCC lead.**	*	*	*	*	*
F. Communications and publicity						
Ensure that news from the working group is distributed to tree wardens.	**Districts lead.**	*	*	*	*	*
Use the display at a minimum of three events per annum.	**SCC lead,** Districts, BAP officer, CMPS**.**	*	*	*	*	*

January 2005 (Draft as discussed at Blk Pop Working Grp mtg 18.1.05) **modified 23rd Feb and 19th April. MN, 3 August 2006.**

Pillwort *(Pilularia globulifera)*

This sub aquatic plant, related to the ferns, has always been rare in East Anglia, though this may be due to under recording because of its grass-like appearance.

Current Status

1.1 National

Pillwort, though declining throughout its range across Western Europe, is widely scattered in Britain from the Outer Isles of Scotland to the south coast of England. It grows where there is occasional disturbance in shallow water and on bare land.

1.2 Local

Apart from two old records, it has only ever been recorded in Suffolk from the gently shelving banks of some of the natural reservoirs at Lound, which supply drinking water to the Lowestoft and Great Yarmouth areas. Since the northern part of Suffolk was transferred to Norfolk some years ago, the sites have been equally divided between the two counties, although they all remain in the Vice County of East Suffolk (VC 25).

1.3 Natural Areas

Suffolk Coast and Heaths.

1.4 Protection

Classified as Nationally Scarce (i.e. it occurs in between 16 and 100 ten km squares in Britain), it receives only general protection under the Wildlife and Countryside Act, 1981.

Current factors causing loss or decline

- Growth of competitive vegetation and lack of marginal disturbance due to reduced grazing by cattle, sheep or deer.
- Introduction of competitive alien vegetation with similar habitat needs, e.g. New Zealand pygmy weed *(Crassula helmsii)*.
- Lack of regular water level fluctuations.
- Due to the site being a reservoir for public water supply, many of the causes of loss or decline nationally do not apply at Lound.

Current Action

- The Lound site is designated as a County Wildlife Site.
- The site has been visited by Suffolk Wildlife Trust staff and A. C. Jermy (British Museum) in recent years to confirm that Pillwort was still present. Re-checked by Peter Lawson in 1998.
- Further new sites may be found as a direct result of the county-wide survey in process for Atlas 2000 and a new Suffolk Flora.

Action plan objectives and targets

1 *Maintain and, if appropriate, enhance the existing population at Lound.*

2 *Seek the highest level of protection for the site.*

Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
Seek SSSI status for Lound site	EN		*	*		
Investigate if the site would qualify for grant under Countryside Stewardship or Broads ESA schemes	MAFF/FRCA, SWT, NWT	*	*			
B. Site safeguard and management						
Work with site owners to ensure Pillwort is protected	SWT, NWT	*	*	*	*	*
Continue with earlier negotiations to set up joint SWT/E&SW nature reserve and visitor centre at Lound Water Works	E&SW, SWT	*	*	*	*	*
C. Species management and protection						
Establish best practice for pillwort management at Lound	NWT, SWT, EN	*	*	*	*	*
Work with site owners to put this into practice	SWT, NWT, E&SW, EN	*	*	*	*	*
Monitor annually for presence of New Zealand pygmy weed and seek to eradicate if found	E&SW, SWT, NWT	*	*	*	*	*
D. Advisory						
Ensure landowners and managers are aware of the presence of Pillwort and provide the most appropriate methods of habitat management	E&SW, SWT, NWT, EN	*	*	*	*	*
Liaise with Norfolk Wildlife Trust on Pillwort conservation, since the site is divided by the county boundary	SWT, NWT	*	*	*	*	*
E. Future research and monitoring						
Establish annual monitoring at Lound in terms of extent of colony and response to management initiatives	E&SW, SWT, NWT, EN	*	*	*	*	*
F. Communications and publicity						
Promote the issue of biodiversity and the need for safeguarding habitat at the proposed visitor centre on site	E&SW, SWT	*	*	*	*	*

Red-tipped cudweed *(Filago lutescens)*

This is an annual plant of disturbed light soils, flowering in late summer and autumn. Formerly most commonly reported from arable fields, it is now largely confined to track-sides, set aside fields, sand pits and heathland.

1 Current Status

1.1 National

It has always been confined to the south-eastern corner of England, but over the last fifty years Red-tipped cudweed has suffered a major decline, leaving Surrey and Suffolk with the largest and most stable populations at the present time.

1.2 Local

Red-tipped cudweed has been recorded from five sites in the Sandlings in recent years and it has just been found in four nearby areas of Breckland in Suffolk. It has persisted for over ten years in a field at Snape, where it was originally introduced.

1.3 Natural Areas

Suffolk Coast and Heaths, Breckland.

1.4 Protection

It is fully protected under Schedule 8 of the Wildlife and Countryside Act, 1981.

2 Current factors causing loss or decline

- Conversion of marginal arable land to permanent grassland or intensive crops.
- Earlier summer harvests followed by cultivations that destroy plants before they flower and set seed.
- Reduction in rabbit population following myxomatosis outbreaks, resulting in loss of soil disturbance on heathland.
- Habitat neglect, resulting in loss of open areas for regeneration.
- Changes to trackside habitats due to reduction in grazing and disturbance; fertiliser run-off and hard surfacing.

3 Current action

- Regular monitoring of all sites.
- Annual management by rotovation at Westleton Heath and Minsmere RSPB.
- Scarification of Breckland Forest sites as required.
- Ragwort pulling as required at Hollesley.
- Continue scientific experiments on introduction site at Snape Hall to find effects of different cultivation regimes.
- Further new sites may be found as a direct result of the county-wide survey in progress for a new Suffolk Flora.
- All natural sites, with the exception of Snape (Sailor's Path), are protected by SSSI designation.

4 Action plan objectives and targets

4.1 National targets

1. Achieve viable populations at all extant sites
2. Achieve the natural colonisation of new sites.
3. Restore or establish populations of red-tipped cudweed to three suitable sites by 2003

4.2 Local targets

1 Seek to ensure viable populations exist at all current sites

2 Apply the results of management research to all sites as appropriate.

3 Ensure suitable habitat is available for colonisation close to existing sites.

4 Re-establish the colony at Snape Sailor's Path

5 Red-tipped Cudweed: Proposed Action with Key Local Partners

Action	Date	Partners
A. POLICY AND LEGISLATION		
B. SITE SAFEGUARD AND MANAGEMENT		
Continue rotovation at Westleton Heath and Minsmere sites	2005 2006 2007 2008 2009	**Plantlife,** RSPB, SWT, EN
Rotovate an adjacent suitable site at Snape Sailor's Path to recover the species at this site.	2005	RSPB
Pull Ragwort as necessary at Hollesley	2005 2006 2007 2008 2009	**SWT**
Co-ordinate and continue monitoring at all sites	2005 2006 2007 2008 2009	**Plantlife,** RSPB, SWT, EN, FE
Encourage low key disturbance of soils in potential areas for establishment	2005 2006 2007 2008 2009	**EN,** RSPB, FE, SWT,
Scarify Breckland Forest sites as necessary. Reduce shading and leaf litter on Elveden site by cutting back of adjacent hardwoods.	2005 2006	**FE**
C. SPECIES MANAGEMENT AND PROTECTION		
Continue to encourage the uptake of agri-environment agreements which provide grants for appropriate management	2005 2006 2007 2008 2009	**FWAG**, Defra

D. ADVISORY		
Ensure landowners and managers are aware of and are alert to the possibility of the re-appearance of Red-tipped cudweed in arable headlands and set-aside	2005 2006 2007 2008 2009	**FWAG**, EN, SWT,
E.. RESEARCH AND MONITORING		
Continue regular annual monitoring at all sites		**Plantlife,** RSPB, BSBI, SWT, EN, FE
Continue research on experimental plots at Snape Hall and Minsmere	2005 2006 2007 2008 2009	**Plantlife,** RSPB, SWT
Encourage local research and survey, especially where it is linked to heathland management	2005 2006 2007 2008 2009	**EN,** SWT, BSBI, FWAG
Investigate 1942 record from Honington	2005 2006	**SBRC**
Consider re-introduction on land adjacent to Westleton Heath on land managed for Arable Stewardship as an alternative to the extinct site that is heavily rabbit grazed.	2005	**Plantlife**, RSPB, EN
F. COMMUNICATIONS AND PUBLICITY		
Raise awareness among landowners and managers of the importance of Red-tipped cudweed and the need to notify conservation bodies of new sites	2005	**FWAG**,EN, SWT
Provide advice on identification to separate it from Common cudweed	2005 2006 2007 2008 2009	**Plantlife**, SWT

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 Bavents 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
POLICY AND LEGISLATION		
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**

SITE SAFEGUARD AND MANAGEMENT		
Agree management briefs for undesignated saline lagoons of conservation importance with a view to maintaining or improving their ecological value.	2005	**SWT, RSPB**
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	**EA**, EN, SCDC, WDC
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	**EA**, AW
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	DEFRA, EA, EN, SCDC, WDC, SWT, RSPB
RESEARCH AND MONITORING		
Identify suitable sites for creation of saline lagoons using the Lifescapes model.	2004	**SBRC, EN**, EA, , LAs, SWT
Carry out biennial macrophyte and invertebrate surveys of saline lagoons and nearby small brackish pools and ditches of key species.		SWT, SNS, SBRC
Carry out biannual surveys of the extent and quality of saline lagoons in Suffolk.	2005	EA, SWT, RSPB, SBRC
Develop the use of remote sensing techniques and GIS to help monitor and predict the rate and extent of change.	2005	**SBRC**, EA
ADVISORY		
Promote and develop certain sites as demonstrations of successful saline lagoon re-creation, i.e. National Trust at Orfordness, through open days.	On-going	**NT**
COMMUNICATIONS AND PUBLICITY		
Raise public awareness of the nature conservation importance of saline lagoons through open days or events.	2005	**SCHU,** EA, EN, SWT, RSPB, DEFRA,
Raise public awareness of the essential mobility of soft coasts and encourage multi-agency approach to coastal zone development and management.	2003	**SCHU,** EA, EN, SWT, RSPB,

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.

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 Orford Ness 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.
- 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.

Shephard's Needle

(*Scandix pectin-veneris*)

Plan Lead FWAG

1 Definition of habitat or species

This annual plant was once common in arable fields, particularly on summer dry soils and often calcareous clays. It has suffered a dramatic decline due largely to agricultural intensification exacerbated by the low level of seed dormancy. The bulk of the seed germinates in autumn. It appears to be partially unaffected by some herbicides and competes well with intensively farmed winter cereal crops.

2 Current status: national, regional, and local (including trends and losses)

The UK population of shepherd's needle has declined dramatically since the 1950s, now being only found in a quarter of its previous locations. It is now restricted to east of a line from the Humber to the Bristol Channel. The species occasionally appears in large numbers on the chalky boulder clays of East Anglia. Suffolk is its stronghold where it is occasionally recorded as still occurring in pest proportions. It appears to have made something of a recovery from its past decline, doubling the number of 10km square records in the last ten years. However the Suffolk distribution appears to be stable.

3 Current factors affecting the species or habitats

The following changes in agriculture have largely been responsible for the decline of shepherd's needle and continue to affect its recovery

Increase use of herbicides and fertilisers

Major improvements in seed cleaning techniques

The demise of crop rotations and the ability to grow monocultures over long periods

Deeper and more intensive cultivations

Loss of field edge refuges

Loss of winter stubbles

4 Current action

The Great Waldingfield Airfield site is a County Wildlife Site

Shepherd's needle was harvested from an existing site (Elmsett) and introduced into the arable weed area at The Museum of East Anglian Life (2006)

5 Targets

Maintain viable populations at current sites and newly created sites

Baseline 2005, targets for 2010, and identify targets for long-term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Site safeguard and management Or species protection/management		
Where appropriate, promote take up of Environmental Stewardship (ES) options that encourage and support arable wildflowers e.g. conservation headlands, uncropped margins.	2006-2010	**FWAG,** NE, SWT
Survey Great Waldingfield Site to establish current management.	2006-2010	**SBRC**, SWT, FWAG
Establish whether the Great Waldingfield site and other good populations are in an agri-environment scheme, and apply for Environmental Stewardship as appropriate	2006-2010	**NE,** SWT, FWAG,
Research and monitoring		
Monitor the success of the introduction site at the museum of East Anglian Life	2006-2010	**SWT**, MEAL
Advisory		
Ensure landowners and managers are alert	2006-2010	**FWAG**, SWT, SBRC

to its appearance in arable crops and headlands and advise on appropriate management		
Communications and publicity		
Raise awareness and tolerance of the species amongst (e.g. articles, publicity relating to this species and to reassure landowner/ farmer concerns regarding uncropped margins and conservation headlands,) amongst farmers, landowners and managers and the general public and the need to notify conservation bodies of new sites.	2006 -2010	**FWAG,** SWT, SBRC, NE

NB Most of the action achieve by dates are 2006-2010 this means they need to be achieved or worked towards by 2006 and annually renewed until 2010.
Objectives currently not achievable by the plan partners:

This section should include objectives that the working group relevant to this plan would like to fund and achieve but due to constraints can't currently. By recognising these in the plan, means they aren't lost from the BAP : A list of bullet points

The production of a leaflet arable plants covering why they are important, how they can be incorporated into current farming practice.

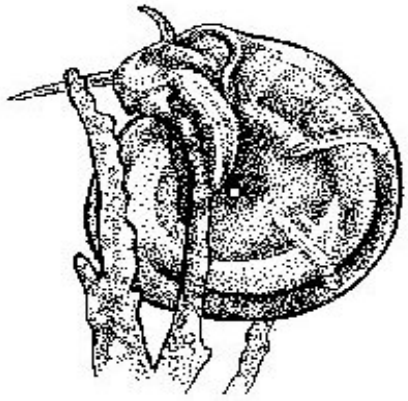
Work in partnership with the Museum of East Anglian Life to continue to develop and promote their arable plant plot both as a refuge for arable plants and as an educational resource.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:
SWT Susan Stone and Dorothy Casey
NE Monica O'Donnell and Alison Collins
All District Council SBP Representatives
Suffolk County Council Andrew Murray-Wood
SBRC Martin Sanford
Suffolk biodiversity partnership officer Mary Norden
FWAG Phil Watson
RSPB Kirsty Coutts
SOG Steve Piotrowski
Published April 2007.

Shining Ram's Horn Snail *(Segmentina nitida)*



1 Definition

The Shining Ram's Horn Snail lives in unpolluted, usually calcareous water, in the ponds and drains of grazing marshes. It favours shallow ditches often choked with a rich, diverse flora. Low intensity management and preservation of traditional grazing marshes may be keys to the survival of the species. It is often associated with a rich variety of freshwater.

2 Current status

2.1 National

In the early 20th Century the Shining Ram's Horn Snail was recorded from 90 sites across a wide area of lowland England. A national survey in 1996 found good populations in Norfolk, Sussex and east Kent.

2.2 Local

Although formerly recorded from a number of sites across Suffolk (Needham Market, Mildenhall and Brandon) it has only been recently recorded from Carlton Marshes and North Cove. At North Cove conditions are more suitable and *S. nitida* is frequent on some choked, shallow ditches.

3 Current factors affecting shining ram's horn snail in Suffolk

The reasons for decline are not clearly understood but the main threats are believed to be: over-frequent ditch clearance, eutrophication due to fertiliser run-off, and conversion of grazing levels to arable farming with associated water table lowering.

4 Current Action

4.1 Legal Status

Segmentina nitida is classified as Endangered in the IUCN Red Data book for invertebrates (Bratton, 1991).

4.2 Management, research and guidance

Carlton Marshes is managed as a reserve by the Suffolk Wildlife Trust. The marsh at North Cove is privately owned and outside the SWT reserve. Both sites are managed as SSSI. A Management Plan for this site has been completed and is in the process of being implemented.

Where the snail exists total ditch clearance should be avoided. Ditch management on a 7-year rotation, partial ditch clearance by dredging only one side and not clearing adjacent ditches in the same year are recommended.

5 Action Plan Objectives and Targets

1 Determine distribution of this species

2 Establish survey and monitoring programmes at Carlton Marshes and North Cove.

3 Enable existing populations to increase in size and spread in range

6 Shining ram's horn snail: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Seek to include Species habitat requirements in Strategic Plans, Development Plans and Policy documents.	2004 2005 2006 2007	**EN, Local Authorities, SWT, RSPB, NT, EA, Defra**
SITE SAFEGUARD AND MANAGEMENT		
Consider the development of safeguards in SSSI management plans where the snail has the potential to colonise following survey results especially at Carlton Marshes.	2005	**EN**, SWT
SPECIES MANAGEMENT AND PROTECTION		
Prepare advice following results of surveys.	2006 2007	**BAP Wetland Working Group**
RESEARCH AND MONITORING		
Undertake prospective survey work to determine presence of snail in previously unexplored sites with suitable habitat, for example at Kessingland.	2005	**BAP Wetland Working Group**
Co-ordinate further survey work to determine the status of the species and its habitat requirements at North Cove and Carlton Marshes to assess ditch management techniques.	2005 2006 2007	**BAP Wetland Working Group,** SWT, EN, EA, SBRC
ADVISORY		
Produce land and water management guidelines for site managers and landowners.	2005 2006 2007	**BAP Wetland Working Group,** IDB, EN, SWT
COMMUNICATIONS AND PUBLICITY		
Produce an information sheet for contractors and land managers.	2005 2006 2007	**BAP Wetland working Group**

Silver studded blue butterfly

1 Definition of habitat or species

This is a butterfly characteristic of lowland heathland that was once widespread across the UK, but is now confined to southern England with outposts in East Anglia and Wales. As a caterpillar it feeds on heathers and gorse and has a complex relationship with black ants. Adults can occur at high density in favourable years on suitable patches of heathland.

2 Current status: national, regional, and local (including trends and losses)

2.1 National

The Silver-studded blue was widely distributed in England at the turn of the century, but has become extinct in all counties except those in the south and south-west, small parts of East Anglia (Norfolk and Suffolk), Wales and the west midlands. It is now common only in Dorset and Hampshire. It is absent from 65% of 10km squares that were occupied before 1940.

2.2 Local

The species was abundant in the Suffolk Brecklands, especially between Brandon and Tuddenham, as little as 50 years ago, but the last record was made in 1965. It is now confined to the Sandlings and here it was also formerly widespread, occurring on most heaths between Lowestoft and Ipswich. Strong colonies now occur only on the extensive heathlands of Westleton and Minsmere in the north and on a few heaths close to Ipswich and Hollesley in the south. Most are small by national standards and occupy patches of heathland of less than 2ha. Two sites were established by introductions in 1986 and one in 1998; one is now the largest colony in the county and has stimulated the colonisation of nearby heathland. A third introduction was made in 2007. Two new sites have been colonised naturally.

2.3 Natural Areas

Suffolk Coast & Heaths Natural Area (also formerly in Breckland).

3 Current factors affecting the species or habitats

- The species requires heathland on light sandy soils in an early stage of development after disturbance or burning that is characterised on the Sandlings by the presence of Bell heather (*Erica cinerea*), patches of loose soil and short turf. Conditions, once attained, can be prolonged by intense rabbit or sheep grazing or occasionally by mowing, but eventually soils will either grass or moss over and stabilise, or Ling (*Calluna vulgaris*) dominates, excluding large nests of the ants on which it depends (*Lasius niger* and *L. alienus*). Most colonies in Suffolk are on previous summer burns or areas of disturbance.
- Colonies in Suffolk are largely adequately managed and there are few factors causing further loss of colonies. However, management of many current colonies is seldom harsh enough to encourage fresh conditions for the butterfly and there is a general succession trend on many colonies. The small size of colonies restricts this type of management at many sites.

The following have been implicated in the historical loss of colonies and may become important again in the future. They are similar to factors afflicting the lowland heathland habitat as a whole:

- Destruction of heathland habitat through industrial, housing or recreational development particularly in the Ipswich area.
- Destruction of heathland for agriculture or forestry (the latter was probably largely responsible for the loss of the Breckland population).
- Decline in the traditional management such as grazing by livestock, cutting and burning that maintained heathland and prevented succession.

There are factors that currently limit the potential of the species for expansion to other parts of the Sandlings:

- Isolation of the current heathland sites.
- Colonisation of bare ground by the naturalised encrusting moss *Campylopus introflexus*

4 Current action

4.1 Protection

- Listed on the Wildlife and Countryside Act 1981 with respect to sale only.
- Most colonies occur on protected sites either heathland nature reserves, County Wildlife Sites or SSSIs.

4.2 Management, research and guidance

- Recovery plans for the species have been prepared for the Sandlings Group (1996) and Forest Enterprise (1997), giving details of necessary action to maintain the species and encourage spread on the Sandlings.
- The previous SAP included a possible reintroduction of the butterfly to the Brecklands but this is not currently a priority.
- The heathland of most colonies is managed with specific prescriptions for Silver-studded Blues and it has been a target species in recent restoration and maintenance programmes such as Tomorrow's Heathland Heritage.

- Reviews of the effects of management and monitoring of all populations, including those established at introduction sites, have occurred at regular intervals since 1985. Work on population sizes and their relation to recent management was carried out in 1994 and repeated for some sites in 2003.
- Sandlings Group members perform informal monitoring of populations annually, incorporating the input from volunteer groups including BC.
- The RSPB have established a colony at their reserve at Aldringham Walks; butterflies have colonised the heathland re-creation at Minsmere; three new areas have been colonised on the Sutton and Hollesley Heaths SSSI; a new site has been discovered at Ransomes Europark and partially protected as a CWS; an introduction was made at Blaxhall Common in 2007 by BC and SWT.
- Awareness about the butterfly and its needs has been raised through the Suffolk Coast and Heaths heathland leaflet of 2007, Tomorrow's Heathland Heritage reports, a new Sandlings website, and various events and press coverage.

5 Targets

1 Maintain the existing range of baseline survey 2005 (Butterflies for the new Millennium plus five) until 2010 and beyond.
2 Expand distribution of the silver-studded blue within current range by 2010.
3 Increase populations at existing colonies by 2010

Baseline 2005, targets for 2010, and identify targets for long term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead bold and support partners plain)**
Policy & Legislation		
Include the needs of the Silver-studded Blue where appropriate when reviewing agri-environment schemes (e.g. Environmental Stewardship)	2007-2010 Annual	**NE**
Support the re-establishment of heathland from afforested land where appropriate to the assist the conservation of the silver-studded blue	2007-2010 Annual	**FC**
Ensure ssb as an LBAP species and its habitat, is recognized and protected in Local Development Frameworks in accordance with PPS9.	Annual 2007-10	**SCC**, NE, RSPB, SWT, FC, **SCDC, IBC**.
Ensure all relevant BAP species including ssb are considered in the AONB management review discussions during 2007.	2007	**SCHU**
Or species protection/management		
Ensure development proposals do not affect SSB colonies or habitat	2007-2010 Annual	**SWT,** IBC, SCDC, SCC, NE,
Ensure all heathland sites that not otherwise protected are assessed for CWS status	2007-2010 Annual	**SWT**, SCC, NE
Ensure continued effective management at all	2007-2010	**SWT**, RSPB, NE, NT, SCDC,

Sandlings colonies of the Silver-studded blue including improved connectivity.	Annual	MOD
Ensure that the requirements of the Silver-studded blue are included in all heathland management, restoration or creation plans, including SSSI management plans	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, MOD,
Prepare heathland within gaps of former range of species on the Sandlings specifically for the species	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, IBC, Greenways, FC,
Investigate opportunities for establishing two new colonies on the Sandlings using introductions, especially in current gaps in former range such as in the vicinity of Snape, Blaxhall, Tunstall, Walberswick and within the forests of Rendlesham and Tunstall	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, BC, FC
If suitable habitat is found or prepared successfully, introduce the species to two sites on the Sandlings.	2007-2010 Annual	**BC**
Research and monitoring		
Undertake a five yearly review of the population size of colonies on the Sandlings and the effects of recent management.	2008	**BC**
Continue annual monitoring at specified sites	2007-2010 Annual	**BC**, SWT, RSPB, NE, NT, SCDC,
Ensure standardised techniques at monitored colonies	2007-2010 Annual	**BC**, RSPB, SWT
Monitor sites for new colonies	2007-10 annual	**BC,** SWT, RSPB, NE, NT, SCDC.
Continue research into the ecology of and habitat management for the ssb.	2007-10 annual	**BC**
Advisory		
Include in Environmental Stewardship agreements prescriptions that support the management of heathland for Silver-studded Blues; increase in the area of heathland and improve links between colonies.	2007-2010 Annual	**NE**
Ensure site managers are aware of the habitat requirements of Silver-studded blue	2007-2010 Annual	**SWT**, RSPB, NE, NT, SCDC, BC, IBC
Communications and publicity		
Use the SSB as a flagship species to publicise the conservation and the sympathetic management of heathland to benefit all associated species. Undertake at least two press releases raising the profile of this BAP species each year. Produce a heathland leaflet and publicise on websites.	2007-10 Annual	**BC**, SCHU, RSPB, NE, NT, SCDC, IBC, SWT
Undertake one event per year that draw attention to silver studded blue	2007-2010 Annual	**BC**, SCHU, RSPB, NE, NT, SCDC, IBC, SWT

Ensure future reporting and review of this action plan is forwarded to the National silver-studded blue steering group co-ordinated by BC & NE	2007-10 Annual	**NE**, BC, BAP.

NB Where achieve by dates are 2007-2010 this means they need to be achieved or worked towards by 2007 and annually renewed until 2010.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

Suffolk Wildlife Trust- David Mason
RSPB and Sandlings Group- Rob Macklin
Natural England- Monica O'Donnell, Nick Sibbett, Bill Nickson
Butterfly Conservation- Rob Parker
Suffolk Coast and Heaths Unit- Malcolm Farrow
Suffolk Coastal District Council (SCDC)- John Davies
Greenways- James Baker
Ipswich Borough Council Steve Hunt
Suffolk Biodiversity Partnership officer- Mary Norden
Suffolk County Council- Sue Hooton
MOD

Published December 2007.

Small flowered catchfly

(*Silene gallica*)

Plan Lead FWAG

1 Definition of habitat or species

Small flowered catchfly is an annual plant usually associated with arable crops on light land. It germinates in autumn but its seedlings cannot tolerate low temperatures or winter wet soil and this probably helps explain its coastal distribution.

2 Current status: national, regional, and local (including trends and losses)

In common with many arable wildflowers, this formerly widespread species has suffered a dramatic decline largely due to agricultural intensification. It is now confined to relatively few small populations in lowland coastal locations. The species has also appeared as an introduction with imported clover seed.
In Suffolk, there are a few recent records, virtually all from the Sandlings area. Two appear to be stable populations in arable locations, whilst the other records are casuals of waste places.

3 Current factors affecting the species or habitats

The following agricultural changes have been largely responsible for the decline of small flowered catchfly and continue to affect its extent.

Increase use of herbicides and fertilisers

The development of highly competitive crop varieties

Major improvements in seed cleaning techniques

The demise of crop rotations and the ability to grow monocultures over long periods

Deeper and more intensive cultivations

Loss of field edge refuges

Loss of winter stubble
Early harvests (mid July can destroy before seed has set)

4 Current action

Current distribution is monitored by SBRC and the Westleton site is annually monitored by a voluntary recorder.

5 Targets

Maintain viable populations at current sites and aim to expand range.

Baseline 2005, targets for 2010, and identify targets for long term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Site safeguard and management Or species protection/management		
Where appropriate, promote take up of Environmental Stewardship(ES) options that encourage and support arable wildflowers e.g. conservation headlands, uncropped margins and overwintered stubbles.	2006-2010	**FWAG**, NE, SWT
Survey to establish current management .	2007-2010	**SBRC**, SWT, FWAG
Establish whether existing sites are currently in an agri-environment scheme, and target for Environmental Stewardship as appropriate	2006-2010	**SBRC,** NE, SWT, FWAG,
Using historic and recent survey information, identify suitable locations and opportunities for introduction to increase the Suffolk population of this species e.g. within wild bird mix, over-wintering stubble ES options. Aim for 2 new sites	2006-2010	**SBRC,** FWAG, SBRC, NE
Collect some seed to establish new populations in suitable locations	2007-2010	**SWT,** SBRC, FWAG
Research and monitoring		

Re-survey extant sites to establish current distribution and monitor these sites regularly in the future	2006-2010	**SBRC**, SWT, FWAG
Research optimal management for the species	2006-2010	**SBRC**
Monitor the success of any new introduction sites	2008-2010	**SBRC**, SWT, FWAG
Investigate the feasibility/desirability of including this species in wild bird and nectar mixes and where there are compatible measures to support farmland birds e.g. over-wintering stubble	2006-2010	**FWAG**
Set up monitoring at Covehithe Site	2007-2010	**SBRC**
Advisory		
Ensure landowners and managers are alert to its appearance in arable crops and headlands and advise on appropriate management	2006-2010	**FWAG**, SWT, SBRC
Support and advise on ES applications and options that benefit arable plants e.g. unsprayed cultivated margins, overwintering stubble etc	2006-2010	**FWAG**, SWT, NE
Communications and publicity		
Raise awareness of the species (e.g. articles, publicity relating to this species and to reassure landowner/ farmer concerns regarding uncropped margins and conservation headlands,) amongst farmers, landowners and managers and the general public and the need to notify conservation bodies of new sites.	2006 -2010	**FWAG**, SWT, SBRC, NE

NB Most of the action achieve by dates are 2006-2010 this means they need to be achieved or worked towards by 2006 and annually renewed until 2010.

Objectives currently not achievable by the plan partners:

This section should include objectives that the working group relevant to this plan would like to fund and achieve but due to constraints can't currently. By recognising these in the plan, means they aren't lost from the BAP : A list of bullet points

The production of a leaflet arable plants covering why they are important, how they can be incorporated into current farming practice.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

SWT Susan Stone and Dorothy Casey
NE Monica O'Donnell and Alison Collins
NT Philip O'Donoghue
SOG Steve Piotrowski
District Council- Suffolk Coastal only John Davies
Suffolk County Council Andrew Murray-Wood
SBRC Martin Sanford
Suffolk biodiversity partnership officer Mary Norden
FWAG Phil Watson

Published: April 2007.

Spreading hedge-parsley

(*Torilis arvensis*)

Plan lead FWAG

1 Definition of habitat or species

This species is an annual, rarely biennial plant once common in arable fields. It usually occurs in autumn sown cereals, but occasionally in other crops and on waste or disturbed ground. The species has poor seed dispersal so doesn't readily colonise new sites, but its seed can remain dormant in the soil for long periods.

2 Current status: national, regional, and local (including trends and losses)

Nationally, this species has suffered a dramatic decline, with over half of its sites already lost by 1930. This decline has accelerated through the 20th century and the species is now nationally scarce. It is now confined to central and southern England and is probably on the edge of its range in Britain.

In Suffolk spreading hedge-parsley was discovered on the edges of the disused runways of the former Great Waldingfield Airfield in 1996. The Sudbury area, particularly Great Waldingfield Airfield, continues to be the species' stronghold, but there are casual records from arable sites across the county.

3 Current factors affecting the species or habitats

The following changes in agriculture have largely been responsible for the decline of spreading hedge-parsley and continue to affect its extent.

Increase use of herbicides and fertilisers

The development of highly competitive crop varieties

Major improvements in seed cleaning techniques

The demise of crop rotations and the ability to grow monocultures over long periods

Deeper and more intensive cultivations
Loss of field edge refuges

Loss of winter stubble

4 Current action

The Great Waldingfield Airfield site is a County Wildlife Site (CWS)

5 Targets

Maintain viable populations at Great Waldingfield airfield CWS and at any new sites that are discovered.

Expansion target could be: Aim to expand the range via re-introduction of one site by 2010.

Baseline 2005, targets for 2010, and identify targets for long term species or habitat viability for 2015 and 2020 and longer term (if desired)

6 Actions

Action (apply SMART approach and include locations where relevant).	**Achieve by date**	**Delivery partners (identify lead and support partners)**
Site safeguard and management Or species protection/management		
Where appropriate, promote take up of Environmental Stewardship(ES) options that encourage and support arable wildflowers e.g. conservation headlands, uncropped margins and overwintered stubbles	2006-2010	**FWAG,** NE, SWT
Resurvey site at Great Waldingfield and ensure current management regime is maintaining the species and amend management regime if monitoring shows a decline in population size/extent	2007-2010	**SBRC** (Sudbury Flora Group), SWT, FWAG
Establish whether the Great Waldingfield site is currently in an agri-environment scheme, and target for Environmental Stewardship as appropriate	2006-2010	**SBRC,** NE, SWT, FWAG,
Using historic and recent survey information, identify suitable locations and opportunities for introduction to increase	2008-2010	**SBRC,** FWAG, SBRC, NE, SWT and MEAL.

the Suffolk population of this species e.g. where wild bird seed mix is already being sown, over-wintering stubble ES options, at Museum of East Anglian Life arable weed area		
If sustainable and not detrimental to existing population, collect some seed from Great Waldingfield CWS for use at suitable new locations	2007-2010	**SBRC**, SWT, FWAG
Research and monitoring		
Annually monitor Great Waldingfield CWS	2006-2010	**SBRC** (Sudbury Flora Group), SWT, FWAG
Research optimal management for the species	2006-2010	**SBRC**
Monitor the success of any new introduction sites	2008-2010	**SBRC**, SWT, FWAG
Investigate the feasibility/desirability of including this species in wild bird and nectar mixes and where there are compatible measures to support farmland birds e.g. over-wintering stubble	2006-2010	**FWAG**
Advisory		
Ensure landowners and managers are alert to its appearance in arable crops and headlands and advise on appropriate management	2006-2010	**FWAG**, SWT, SBRC
Support and advise on ES applications and options that benefit arable plants e.g. unsprayed cultivated margins, overwintering stubble etc	2006-2010	**FWAG**, SWT, NE
Communications and publicity		
Raise awareness of the species (e.g. articles, publicity relating to this species and to reassure landowner/ farmer concerns regarding uncropped margins and conservation headlands,) amongst farmers, landowners and managers and the general public and the need to notify conservation bodies of new sites.	2006 -2010	**FWAG,** SWT, SBRC, NE

NB Most of the action achieve by dates are 2006-2010 this means they need to be achieved or worked towards by 2006 and annually renewed until 2010.

Objectives currently not achievable by the plan partners:

This section should include objectives that the working group relevant to this plan would like to fund and achieve but due to constraints can't currently. By recognising these in the plan, means they aren't lost from the BAP : A list of bullet points

The production of a leaflet arable plants covering why they are important, how they can be incorporated into current farming practice.

Work in partnership with the Museum of East Anglian Life to continue to develop and promote their arable plant plot both as a refuge for arable plants and as an educational resource.

Monitoring of progress:

Reported annually on the UK BAP reporting system BARS Biodiversity Action Reporting system.

List of organisations that have been consulted regarding this plan and have agreed to aim to deliver their organisations commitments:

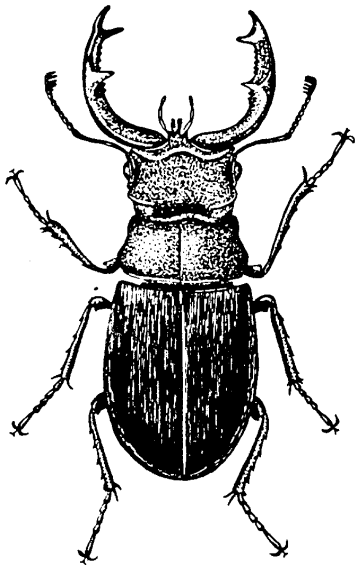
SWT Susan Stone and Dorothy Casey
NE Monica O'Donnell and Alison Collins
All District Council SBP Representatives
Suffolk County Council Andrew Murray-Wood
SBRC Martin Sanford
Suffolk biodiversity partnership officer Mary Norden
FWAG Phil Watson
RSPB Kirsty Coutts
SOG Steve Piotrowski
Sudbury Flora Group
Museum of East Anglian Life

Published: April 2007.

Stag Beetle (*Lucanus cervus*)

1.0 Definition

The Stag Beetle is the largest and most conspicuous terrestrial beetle in Britain. It can be found in a wide range of rural and urban habitats including broad-leaved woodland, parks, hedgerows, churchyards and urban gardens. The larvae live in and feed on the decaying wood of a wide variety of broad-leaved trees and shrubs, often in roots and stumps, at or below ground level, and may take up to five years to become fully grown. Metamorphosis takes place underground in the soil, during August, inside a cocoon built by the larva. Cocoons are the size of a chicken's egg and consist of soil and larval secretions. The pupal stage is short, lasting a maximum of six weeks. The resulting Stag Beetles break out of their cocoons after around 24 hours but remain under the ground for a further eight months before emerging in early summer. Mainly crepuscular, Stag Beetles can be seen flying at dusk on warm, still evenings in June and July.



2.0 Current status

2.1 National

The Stag Beetle is rare and protected in some European countries. In Britain the Stag Beetle is restricted mainly to southern England. Its main strongholds are London and the Thames valley, north Essex, south Suffolk, north Kent and areas along the south coast. Stag Beetles are found in the greatest abundance in the counties of Berkshire, Buckinghamshire, Dorset, Essex, Hampshire, Hertfordshire, Kent, Greater London, Oxfordshire, Suffolk and Surrey. There are outlying populations in the West Country, South Wales and the English Marches. They have been shown to prefer areas that have low average rainfall and high average temperatures. 75% of Stag Beetle records come from private gardens, with a further 22% from associated areas such as pavements, roads and local parks. Well-drained soil seems to be a requirement for the species.

2.2 Local

This nationally scarce beetle is widespread in the south-east of the county, but only relatively common in certain localities. Key sites in Suffolk are Ipswich, Woodbridge and Hadleigh, where beetles are present throughout the towns, and a large number of villages across the Shotley and Felixstowe peninsulas, e.g. Bentley, Holbrook, Nacton and Kirton. National and County surveys suggest that the most significant 'hotspots' are urban, suburban and rural gardens and local parks. Records suggest that 9 -13% of the national population occurs in Suffolk.

2.3 Natural areas

Suffolk coast and heaths and East Anglian Plain.

3.0 Current factors affecting Stag Beetles in Suffolk

- Loss of habitat through the removal of stumps and other dead wood.
- Beetle road casualties: large numbers of beetles are killed on the roads and pavements, accidental victims of vehicular and pedestrian traffic.
- Beetle predators: large numbers of beeles are taken by birds, especially magpies and other corvids. Some fall prey to hedgehogs. Larvae are taken by badgers and foxes.
- Collecting for sale or other purposes is not a contributory factor in the UK.

4.0 Current Action

4.1 Legal status

At present there is little protection for the Stag Beetle or its habitat in Britain.

- The beetle is listed on Schedule 5, Section 9(5) of the Wildlife and Countryside Act 1981(as amended) stating that it is illegal to trade in the species, and on Annex II of the EC Habitats Directive.
- One site, Richmond Park (Greater London), has been designated a SAC for the species. Two other sites have been proposed as SACs (Epping Forest, New Forest). Further candidates for SACs are Wimbledon Common, Dixton Common and Chiltern beechwoods
- Stag Beetle habitat may sometimes be indirectly protected if it occurs at sites with statutory conservation status (SSSIs, SACs). It may also be protected within Special Landscape Areas and/or AONB. County Wildlife Sites may give habitat protection in the same way. Conservation Area Status may also be responsible for the protection of some habitat. Local Planning Authority (LPA) Tree Preservation Orders (TPO) can indirectly protect Stag Beetle habitat. Babergh District Council (BDC) planning application No.B/03/00686/OUT). LPA regulations can also be used to conserve Stag Beetles (BDC planning application B/97/00884/FUL).
- Organisations with statutory duties: EN and JNCC
  National Lead Partner: PTES
  Suffolk Lead Partner (SLP): Colin Hawes, member of the PTES National Steering Group (reporting to the Suffolk BAP Steering Group)

4.2 Management, research and guidance

- The Stag Beetle has received wide coverage in the media, both locally and nationally, as well as through the newsletter of the Suffolk Naturalists' Society, raising awareness of threats to the species among local conservation groups and communities. Further publicity has come from exhibitions and talks given to a wide range of organisations including schools and colleges.
- A 'Stag Beetle Friendly Gardening' leaflet produced by the PTES (1998) has been widely distributed to conservation groups and other organisations in the county. A "Stags in Stumps" leaflet has also been produced by PTES (1998).
- Knowledge of the beetles' ecology and methods for monitoring are currently being researched by the Suffolk Lead Partner in collaboration with a PhD student at Royal Holloway University of London (RHUL).
- The beetles' life-cycle has been researched and details published in 2003 (RHUL).
- The distribution of the species in Suffolk together with key sites for the county was published by SNS in 1998. National surveys organised by PTES (1998 and 2002) confirmed these findings.
- Key sites are monitored annually and in tandem with any national monitoring. Data collected is passed to the SBRC, PTES, EN and JNCC.
- The range, distribution and viability of existing populations is being achieved by ensuring a continuous supply of dead, decaying, broad-leaved wood at known Stag Beetle locations and by encouraging the building of 'log pyramids'.
- Liaison with local planning authorities has enabled Stag Beetles and Stag Beetle habitat to be conserved (Babergh District Council and also Suffolk Coastal District Council).

5.0 Action Plan Objectives and Targets

1. *Continue to raise awareness of threats to the species among the community on an annual basis.*
2. *Improve knowledge of the species ecology and methods of monitoring.*
3. *Monitor key sites annually for: presence or absence, abundance and population size (using methods developed at RHUL and by the Suffolk Lead Partner.*
4. *Maintain the range, distribution and viability of existing Stag beetle populations.*
5. *Undertake surveys to establish more precisely the beetles' distribution at the edge of its range.*
6. *Undertake surveys at sites where there are historical but no recent records for the insect.*
7. *Ensure liaison with local authority planning departments where Stag Beetles are present at proposed development sites.*

6 Stag Beetle: Proposed Action with Lead Agencies:

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure WCA (1981) status is enforced and Local Authority Planners are aware of their duties. Encourage them to consider mitigation measures – at least 1 per relevant LA.	2006	**BDC, SCDC**, Suffolk lead partner, SWT
SITE SAFEGUARD AND MANAGEMENT		
Ensure favourable management of County Wildlife Sites and Nature reserves, town and country parks where the Stag Beetle occurs, by inclusion of beetle's requirements in site management plans.	2004 2005 2006 2007	SWT, FA, BDC, SCDC,EN, Suffolk lead partner
Encourage appropriate habitat management, including retention and continuity of dead wood, for all sites where the beetle is known to occur.	2004 2005 2006 2007	**SWT**, EN, , FA, BDC, SCDC, Suffolk lead partner
Promote creation of artificial habitats in areas where the beetle is known to occur. Current research suggests that brickwood chippings and coarse sawdust (hardwoods) act as suitable habitat.	2004 2005 2006 2007	**SWT**, FA, BDC, SCDC
SPECIES MANAGEMENT AND PROTECTION		
Liaise with Local Planning Authorities where the Stag Beetle or its larvae are put at risk from proposed building or other development and seek to provide alternative habitats where development is unavoidable.		**SWT, Suffolk lead partner,** BDC, SCDC,
RESEARCH AND MONITORING		
Undertake research to determine monitoring methods as currently there is no quantitative replicable method available.	2004 2005 2006 2007	**PTES, RHUL**, Suffolk lead partner & volunteers
Undertake surveys to establish more precisely the current distribution of the beetle in Suffolk and identify key sites for conservation action.	2004 2005 2006 2007	**Suffolk lead partner**, SBRC, SNS
Undertake ecological and behavioural research to determine the beetles' precise microhabitat requirements.	2007	**PTES, RHUL,** Suffolk lead partner

Pass information gathered during survey and monitoring of this species to JNCC or PTES so that it can be incorporated in national databases.	2004 2005 2006 2007	All partners
ADVISORY		
Ensure landowners and managers are aware of the presence and importance of conserving this species, and appropriate methods of management for its conservation. Distribute relevant literature.	2005	SWT, SCC, BDC, SCDC, FWAG, Suffolk lead partner
COMMUNICATIONS AND PUBLICITY		
Distribute guidance leaflet on habitat management and gardening practices for Stag Beetles in Suffolk to key parishes and also amongst Local Authority planning staff.	2004	SWT, PTES, RHUL, Suffolk lead partner
Publicise Stag Beetle and its habitat requirements by using local media. Aim for one article/press release in regional newspapers or parish magazines per year.	2004 2005 2006 2007	**Suffolk Lead Partner,** SWT, , EN, FWAG, SNS
Involve public in identifying Stag Beetle locations using local media to publicise surveys and organising field meetings and workshops.	2004 2005 2006 2007	**Suffolk lead partner,** SWT, SNS

Tassel stonewort (*Tolypella intricata*)

This internationally threatened species is declining throughout most of its range. It is listed as Vulnerable in the British Red Data Book and occurs at one site in Suffolk. It is a member of the Charophyceae (stoneworts), a small class of green algae with complex structures.

1 Current status

1.1 National

The species is restricted to small populations in southern England in Gloucestershire, Worcestershire, Cambridgeshire, Suffolk and Norfolk and is classed as Vulnerable in the British Red Data Book. Since 1970 it has only been found at seven sites (22 waterbodies).

1.2 Local

In Suffolk it occurs only in one small ditch between arable fields at Mickfield.

1.3 Natural Areas

East Anglian Plain.

1.4 Protection

None.

2 Current factors causing loss or decline

The type of habitat required by this species is in decline. Small ponds are still disappearing through neglect or infilling at an alarming rate. It is likely that the species requires fairly heavy poaching around the pond/waterbody to encourage germination. It may also suffer from shade, either directly or due to dense accumulation of leaf litter. Other threats include eutrophication from phosphate leachate from improved grassland, drainage of seasonally inundated grassland and decline in grazing. It is possible that the rarity of this species is a function of poor dispersal capability, rather than specialised ecological requirements.

3 Current action

- It is interesting to note that this species was found at the Mickfield site after a gap of 25 years. It is capable of surviving for some time as dormant buried oospores. These can be stimulated to germinate by poaching or ditch clearance.

- At the Mickfield site the water quality appears to be quite good despite the arable situation. There is a broad rough margin to both parts of the ditch that may help reduce the amount of leachate reaching the water.

- The ditches are normally cleared out every ten years and were last done about six years ago. It is likely that there are dormant oospores over a wider stretch of the ditch and that a larger population will emerge when the ditch is next cleared.

4 Action plan objectives and targets

1 *Halt any further decline in the population at the extant site*

2 *Designate the site as a County Wildlife Site.*

3 *Maintain optimum growing conditions at the site (i.e. keep the ditch cleared out to prevent build up of organic silt and reduce competition.*

4 *Persuade the owner to do further clearance to provide information on the extent and strength of the population.*

5 *Investigate ditches flowing both east and west from this site to see if there are further populations.*

5 Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
No action proposed						
B. Site safeguard and management						
Designate sole site as CWS	SWT, SCC	*	*			
Consult with landowner and undertake further ditch clearance	SWT			*	*	*
C. Species management and protection						
No action proposed						
D. Advisory						
Continue contact with landowner to ensure sympathetic management	Plantlife, BSBI	*	*	*	*	*
E. Future research and monitoring						
Establish optimum conditions for germination and growth of new plants	Plantlife	*	*	*	*	*
Estimate total number of plants every two years	Plantlife	*		*		*
F. Communications and publicity						
Ensure landowner is aware of importance of this site	Plantlife	*	*			

Tower mustard (*Arabis glabra)*

Definition
This plant is a biennial of light nutrient-poor, sandy soils, usually over chalk. Although its seeds appear to be viable for many years, they are dependent on open areas for germination. These conditions occurred in Breckland and the East Anglian Plain as a result of traditional management such as extensive grazing and occasional cultivation, but these are often no longer practical today.

1. Current status

1.1 National

Formerly fairly widespread in East Anglia and along the chalk ridge from Bedfordshire down to Hampshire and in Central England, it has suffered a severe decline since 1970, occurring in only about 30 10km squares between 1996 and 1999.

1.2 Local

A significant colony was discovered in 1998 on a roadside bank in Claydon Village, and there are a number of other earlier records, mainly from the Ipswich area, all of which are believed to be extinct. There are two recent records from Bury St Edmunds (2000 and 2004) and there is a number of other past records from this area. It has been regularly recorded at 3 sites in Breckland recently. Sporadic appearances have also occurred and more are likely. These may be due to its persistence in the seed bank or the accidental transfer of seeds by man (e.g. Mildenhall Woods).

1.3 Natural Areas

Breckland and East Anglian Plain

1.4 Protection

Classified as Vulnerable in 1999 Red Data Book. It has only general protection from uprooting under the Wildlife and Countryside Act.

2 Current factors causing loss or decline

The following changes in land management were largely responsible for the decline of Tower mustard and are now providing constraints on recovery.

- Habitat decline due to agricultural intensification.
- Habitat neglect, resulting in loss of open areas for regeneration.
- Overgrazing by rabbits, sheep, deer and cattle.

3 Current action

- Regular monitoring of Breckland sites.
- Regular monitoring of Claydon Roadside Nature Reserve.
- Further new sites may be found as a direct result of the countywide survey in progress for a new Suffolk Flora.
- Sussex University is currently undertaking research into this species on one of the Suffolk Breckland sites.
- Plantlife is also undertaking Autoecology studies on a site in Norfolk.

4 Action plan objectives and targets

4.1 National targets

1. Maintain the natural range of this species in Britain.

2. Establish populations at five sites within the historic range by 2008

4.2 Local targets

1 Maintain current sites and increase awareness.

2 Increase knowledge of former sites at Bury St Edmunds and Ipswich.

5 Tower Mustard: Proposed Action with Key Local Partners

Action	Date	Partners
A. POLICY AND LEGISLATION		
B. SITE SAFEGUARD AND MANAGEMENT		
Maintain and manage Claydon Roadside Nature Reserve	2005 2006 2007 2008 2009	**SCC**
Monitor and review Berner's Heath site to ascertain effectiveness of agreed actions.	2005 2006 2007	**EN**, SWT
Maintain suitable bare ground conditions at Mayday Farm FC depot.	2005 2006 2007 2008 2009	**FE**, EN
Consider Bury St Edmunds site for CWS status	2005 2006	**SCC**, SWT, SBRC
Continue to encourage the uptake of Breckland ESA agreements which undertake the management practices required to produce appropriate habitats	2005 2006 2007 2008 2009	**Defra,** FWAG
C. SPECIES MANAGEMENT AND PROTECTION		
D. ADVISORY		
Ensure landowners and managers are aware of its presence and the importance of conserving the species by appropriate methods of management	2005 2006 2007 2008 2009	**EN,** SWT

Ensure agri-environment officers are aware of its sites	2005 2006 2007 2008 2009	**FWAG,** EN, SWT
E. RESEARCH AND MONITORING		
Undertake regular monitoring of all extant colonies	2005 2006 2007 2008 2009	**EN,** SWT
Maintain communication with national autoecological research currently being undertaken in Norfolk.	2005 2006 2007 2008 2009	**FE,** EN, SWT
Encourage local research and survey, especially where linked to farmland and heathland management	2005 2006 2007 2008 2009	**EN,** FWAG, BSBI, SWT
F. COMMUNICATIONS AND PUBLICITY		
Provide information on the importance of this species for urban population of Claydon	2005	**SWT**
Raise awareness among farmers and landowners and the general public of the need for periodic disturbance to provide suitable habitat	2005 2006 2007 2008 2009	**FWAG,** SWT

Unspotted lungwort (*Pulmonaria obscura*)

This is a Red Data Book species occurring in three ancient woodland sites on boulder clay in north Suffolk. Although it is quite widespread on the Continent, these are the only sites for this species in the British Isles.

1 Current status

1.1 National

The species only occurs in one 10-km square in Britain and is classed as Vulnerable in the latest Red Data Book (Wigginton 1999). In the past, confusion with the similar species *P. officinalis* led to doubt about the native status of this species. However, there is now good reason to believe *P. obscura* is truly native in Suffolk since the habitat and associated species closely match those of native sites in Belgium and northern France. In 1994, the total population covered some 18 square metres and produced about 600 flowering stems.

1.2 Local

Suffolk has the entire British population of this species.

1.3 Natural Areas

East Anglian Plain.

1.4 Protection

None.

2 Current factors causing loss or decline

The major threat to this species is lack of management. Although it is a shade-tolerant plant, it flowers more freely, produces larger leaves, and grows more vigorously in light shade as is provided by early stages of the coppice cycle. Seedling establishment is more likely to occur in these lighter conditions and when there is less competition from other vegetation.

Current sites are all ancient woods with a history of management as coppice with standards. One other site in West Suffolk was destroyed in 1970 when electricity pylons were erected through the wood. The populations at two of the extant sites have apparently declined since the 1930s, probably because coppicing had ceased.

3 Current action

- One site is protected as a Site of Special Scientific Interest and the other two are County Wildlife Sites.
- Coppicing of two of the sites has been reinstated in recent years.
- Survey and monitoring of the sites on an annual basis.
- Plants from one of the sites have been transferred to Cambridge University Botanic Garden.

4 Action plan objectives and targets

1 Halt any further decline in the populations at the three extant sites.

2 Bring the two CWS sites into SSSI protection as one composite SSSI (all three sites are very close together).

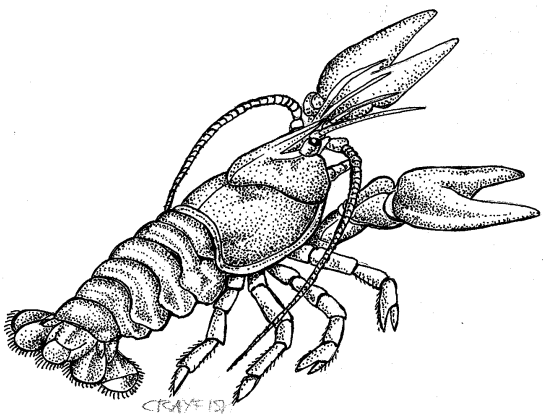
3 Trial further coppicing in the vicinity of existing populations to see if new plants arise either from the seedbank or from existing plants setting seed.

4 Collect seed for the Millennium Seed Bank.

Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
Consider notifying the two CWS as SSSI	EN	*	*			
B. Site safeguard and management						
Bring two CWS sites into SSSI	EN	*	*	*	*	*
Plan and reinstate coppice management at all sites						
C. Species management and protection						
Collect seed for Millenium Seed Bank	BSBI	*	*			
D. Advisory						
Continue contact with landowners to ensure sympathetic management	BSBI, EN	*	*	*	*	*
E. Future research and monitoring						
Establish optimum conditions for germination and growth of new seedlings	BSBI	*	*	*	*	*
Estimate total number of flowering stems and area of clumps every two years	BSBI		*		*	
F. Communications and publicity						
Encourage visitors to the sites to contact recorder first so that visits can be co-ordinated to avoid upsetting landowners	BSBI	*	*	*	*	*
Ensure shooting tenants and other users are made aware of the importance of protecting these sites	BSBI, EN	*	*	*	*	*

White clawed Crayfish (*Austropotamobius pallipes*)



1 Definition

The White-clawed Crayfish is the only native species of freshwater crayfish in the UK. It occurs only in clean calcareous streams, rivers and lakes. It prefers clear, well-oxygenated water and locations without too much fine sediment. Crevices and rocks, gaps between stones, submerged plants and tree roots are important for its survival.

The White-clawed Crayfish tends to be nocturnal and is omnivorous, feeding on a wide variety of vegetable and animal matter as well as detritus. It is eaten by many types of fish (for example perch, trout, chub, pike and eel) as well as birds, rats, mink and otters. Carnivorous insect larvae and nymphs such as beetles and dragonflies eat young crayfish. As with most crayfish species it is cannibalistic, particularly on recently moulted individuals.

Breeding usually occurs in the autumn and the female produces her eggs (rarely more than 100), which become attached in a cluster to the underside of her abdomen. She overwinters with her brood and in late spring to early summer the eggs hatch into relatively immobile miniature crayfish without a tailfan, which cling to her abdomen. They then moult to form a second stage, with a rounded hairy tailfan. This stage becomes more and more active, and they eventually leave their mother in early summer to become independent.

At the next moult they develop a typical crayfish form with an outspread tailfan. During their first full year such juveniles may undergo seven or more moults, but by the time they mature, after three to four years, they may moult only once a year. Average adults lifespan is estimated to be between 7 and 12 years. The timing of the lifecycle varies with latitude and altitude and females from colder areas may not release their juveniles until late summer.

Adult males have larger claws than females and they are more territorial, particularly in the mating season. Females develop a broader abdomen which accommodates the brood. Males can be distinguished by the specialised first two pairs of appendages on the underside of the abdomen.

2 Current status

2.1 National

The White-clawed Crayfish is widespread in England and Wales and occurs in a few areas in Northern Ireland, but many populations have been lost since the 1970s. It is classed as globally threatened by IUCN.

2.2 Local

White-clawed Crayfish are currently present in Chad Brook and were also known from the River Stour until 1991.

3 Current factors affecting White-clawed Crayfish in Suffolk

- This species is vulnerable to modifications to the management of rivers and changes in water quality.
- Native White-clawed Crayfish are out competed by non-native crayfish (Signal and Turkish) which are present in several rivers in Suffolk.
- Crayfish plague is present in the county and this affects the native species as well as the Turkish crayfish. The fungus Aphanomyces astaci causes crayfish plague. It infects only freshwater crayfish. North American species, such as the signal crayfish, can carry the fungus but seem to suffer no ill effects from it unless put under stress. All native European crayfish species are highly susceptible to the disease. The fungus causes a biochemical reaction (melanisation) in the exoskeleton resulting in brown patches, particularly on the underside of the abdomen and at the leg joints.

4 Current Action

4.1 Legal Status

- White clawed crayfish are listed on Schedule 5 of the Wildlife & Countryside Act 1981, which makes it illegal either to take it from the wild or sell it without a licence from the appropriate nature conservation agency. Equivalent protection is proposed for Northern Ireland.
- White clawed crayfish is also included in the IUCN Red Data List, Appendix III of the Bern Convention and Annexes II and V of the European Habitats Directive.
- Defra has set up no-go areas for crayfish farming and also issued guidance.

4.2 Management, research and guidance

The Environment Agency has undertaken surveys for native and non-native crayfish species in all the Suffolk rivers. This is to establish information of the distribution of the three species found in Suffolk.

Trapping of Signal Crayfish is undertaken at Wixoe pumping station. Trapping is for two purposes, firstly to try and stop the signal crayfish being transferred to the River Pant in Essex with the public water supply and also to try and reduce the spread of the Signal Crayfish along the River Stour.

The Environment Agency has produced a leaflet titled ‘Freshwater Crayfish in Britain and Ireland’. This is to raise the profile of the species and the importance of our native variety. It is also hoped that the publicity will result in more information being gained about the crayfish plague. The Environment Agency holds reports of the plague.

To prevent the spread of the crayfish plague it is necessary to eliminate the means by which it is spread. It is particularly important to realise how virulent crayfish plague is. Equipment such as nets, traps and waders used in waters where there are known to be non-native crayfish, or where a native White-clawed Crayfish mortality has occurred, should be left to dry out thoroughly. They should be treated with a proprietary disinfectant (and rinsed) before further use. There is at present no means of eliminating crayfish plague once it is established, or of eradicating Signal Crayfish, which is the principal host of the fungus.

5 Action Plan Objectives and Targets

1 *Maintain the present distribution of this species in Suffolk*

2 *Limit the spread of non-native species*

3 *Maintain and enhance appropriate habitat conditions*

4 *Investigate potential for translocation of White-clawed Crayfish into other suitable watercourses in Suffolk*

6 White-clawed crayfish: Proposed Action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Where crayfish farms are proposed, the full impact should be assessed and advice given to Defra, using Section 14 of Wildlife and Countryside Act (1981).	2004 2005 2006 2007	**EN,** EA, SWT, Defra
The use of bye-laws to control baiting with crayfish by anglers should be in line with national proposals.	2004	**EA**
Ensure that development schemes in Suffolk do not affect the integrity of the populations of White-clawed Crayfish.	2004 2005 2006 2007	**SCC, Babergh DC**, EN, SWT, EA
SITE SAFEGUARD AND MANAGEMENT		
Investigate possibility of Chad Brook for designation as SSSI for the White-clawed Crayfish.	2006	**EN**, SWT, EA
Continue sensitive management of Chad brook.	2004 2005 2006 2007	**EA**
SPECIES MANAGEMENT AND PROTECTION		
Undertake eradication programmes for non-native species and monitor success.	2004 2005 2006 2007	**EA**, Essex & Suffolk Water
If feasible, investigate re-introduction programmes at selected sites.	2006 2007	**EA,** EN
Licences should not be issued for release of non-natives where there are inadequate precautions to prevent escapes into no-go areas.	2004 2005 2006 2007	**Defra**, EN, EA

RESEARCH AND MONITORING		
Monitor known populations and survey sites to establish density and extent of population. Forward information to National databases including Nottingham University and Suffolk Biological Records Centre.	2004	**EA**, EN, JNCC,
Any suspected outbreaks of plague should be investigated and monitored.	2004 2005 2006 2007	**EA**
ADVISORY		
Provide advice to those involved in conservation of native crayfish and management of non-native crayfish. Disseminate management leaflet.	2004 2005 2006 2007	**EA**, Defra, EN
Provide advice on disinfection procedures to prevent transmission of plague for any development proposals or scheme within the river catchments where white clawed crayfish are present.	2004 2005 2006 2007	**EA**
COMMUNICATIONS AND PUBLICITY		
Disseminate information through at least 1 press release a year and distribute of leaflets. Target angling clubs about use of bait and crayfish plague.	2004	**EA**
Ensure landowners on and around Chad brook are aware of habitat requirements of White-clawed Crayfish.	2004	EA, EN, SWT, FWAG, DVSVP

White-mantled Wainscot Moth *(Archanara neurica)*

1 Definition

The White-mantled Wainscot Moth, which is now only known in Britain from the Suffolk coast, inhabits the drier peripheral areas of reed-beds. It spends the day concealed and flies over the tops of the reedbeds at dusk and amongst the reeds later in the night. The white-mantled wainscot is light brown in colour and flies from July to early August, over-wintering as an egg. The larva feeds in the stems of common reed. Suitable habitat for the larva appears to be found in drier reedy ditches, on the edges of reed-beds and locally within larger reed-beds in the drier areas.

2 Current Status

2.1 National

This moth was discovered in this country in 1908 at Pett Level in Sussex but the habitat at the site was destroyed during the Second World War. In 1939 it was re-discovered in Suffolk and this remains the only area of coast marsh where the moth is found in Great Britain. There are other records from around the country but these are generally discounted due to the confusion with the similar, more widespread - brown-veined wainscot (*Archanara dissoluta*).

2.2 Local

The moth is known to occur in the reed-beds of Minsmere and Walberswick. The moth has also been reported from Thorpeness/North Warren RSPB Reserve, Dingle Marshes, Walberswich, Benacre Broad and Darsham Marshes. Minsmere and North Warren are managed as nature reserves by the RSPB and Walberswick is managed as a nature reserve by English Nature

2.3 Natural Areas

Suffolk Coast & Heaths

3 Current factors affecting the White-mantled Wainscot Moth in Suffolk

- Loss of suitable areas of drier reed-bed
- Conversion of suitable habitat to wetter areas of reed-bed as part of conservation management for other species - notably the Bittern
- Loss of habitat as reed-bed becomes too dry to support the foodplant.

4 Current action

4.1 Legal Status

The species is classified as rare on the GB Red List and as a species of conservation concern in the UK BAP

4.2 Management, research and guidance

Survey work has been ongoing since 1998 by the British Entomological and Natural History Society, Butterfly Conservation and Suffolk Moth Group at Minsmere, Dingle Marshes, North Warren and Walberswick.

Survey work by the Suffolk Moth Group in 2003 aimed to record the species at Easton Broad and in a different part of the reed-bed at Minsmere. Both surveys produced negative results, although at the former site trapping was not undertaken in the most suitable part of the reedbed. The Suffolk Moth Group plan to return to these sites in 2004 to re-survey.

5 Action plan objectives and targets

1. *Establish current status and distribution of this species in Suffolk.*
2. *Maintain and where appropriate enhance populations of this species at extant sites.*
3. *Make available suitable habitat further inland to prepare for current habitat loss from coastal erosion*

5 White mantled wainscot moth: Proposed action with lead agencies

Action	Date	Partners
SITE SAFEGUARD AND MANAGEMENT		
Prevent damage to drier areas of reed-bed at existing sites.	2004 2005 2006 2007	**SCDC, RSPB, SWT, EN**
Ensure appropriate management of all occupied sites and of suitable sites within the moth's dispersal range.	2006 2007	BC, EN, SWT, RSPB
Attempt to link isolated colonies by suitable habitat management if feasible.	2004 2005 2006 2007	**BAP Wetland Working Group**, EN, RSPB, SWT
RESEARCH AND MONITORING		
Conduct research into the local status, habitat requirements, population dynamics and dispersal abilities of the moth to aid conservation management.	2004	**BC/ SMG**
Set up monitoring schemes at key sites to identify any changes in the distribution and status of this species.	2004 2006	**BC/SMG**, EN, NT, RSPB, SBRC
Identify & survey suitable areas for presence of the moth outside known sites.	2004 2005	**BC/SMG**, EN, NT, RSPB
Pass survey and monitoring information to SBRC for onward distribution to JNCC and National BRC.	2004 2005 2006 2007	**BC/SMG**, EN, SBRC
ADVISORY		
Produce a leaflet on the current status and breeding requirements of the moth for site owners and managers.	2005 2006 2007	**BAP Wetland Working Group**, BC/SMG, EN, HWG
COMMUNICATIONS AND PUBLICITY		
Promote opportunities for the appreciation and the conservation of the White-mantled Wainscot Moth and its habitat.	2004 2005 2006 2007	**BAP Wetland Working Group**, BC/SMG, RSPB, NT

Oak polypore *(Buglossoporus pulvinus)*

This rare fungus is known only from a single ancient dead oak tree in Staverton Park in East Suffolk. Its fruit bodies appear during the summer, but do not persist long making monitoring the species difficult. It is a heartwood rotting species that requires exposed, seasoned wood of mature or dead oak trees. It is restricted to wood pasture habitat due to the need for a long continuity of mature oak.

1 Current Status

1.1 National

This species is known only from six sites in Derbyshire, Herefordshire, Hertfordshire, Nottinghamshire, Oxfordshire and Suffolk. There is no evidence for an historic decline in England although it has become extinct through most of its European range, with recent records only from Latvia. It has been reported as far east as Japan. England is therefore the global stronghold of this species.

1.2 Local

Oak Polypore was first found at Staverton Park on a hollow dead oak during a field meeting of the British Mycological Society in 1985. It was found more recently by Ted Green in 1994 whilst ancient trees were being tagged. The record is therefore included in the ancient tree database for Staverton so the host can be relocated. As the 1985 record gives no precise location, it is not certain that the fungus was recorded on the same tree. The 1994 record shows the host tree to be a standing, hollowed bole with no limbs. Although the girth of the tree is somewhat smaller than average for the Park, it is likely to be very old. Recent finds in Windsor Great Park show that the fungus can thrive on fallen dead trees, so it is possible that it may occur in similar habitat in the adjacent Thicks where there is suitable open habitat. The possibility of bracken fires is considered to be a possible threat at Staverton. Collection of the fungus for the pot or for identification is not considered a threat as the site has no public access away from footpaths.

1.3 Natural Areas

Suffolk Coast and Heaths.

1.4 Protection

Oak polypore is classified as Endangered in Britain and is specially protected under Schedule 8 of the Wildlife and Countryside Act 1981.

2 Current factors causing loss or decline

- Lack of younger generation of host trees to ensure continuity of oak polypore habitat is a threat to the long term survival of the species.

3 Current action

No action being taken in Suffolk.

4 Action plan objectives and targets

1 *Establish current status and distribution of the species at Staverton and suitable habitat in the vicinity*

2 *Maintain and where appropriate enhance population of this species at Staverton Park and Thicks.*

3 *Consider use of material from Suffolk population for ex-situ cultivation and artificial establishment of this species at locations locally and nationally by 2010.*

4 *Seek information on the ecological needs of this species and apply new knowledge to Suffolk site.*

Proposed action with key local partners

ACTION	KEY LOCAL PARTNERS	TIMETABLE				
		2000	2001	2002	2003	2004
A. Policy and Legislation						
No action proposed						
B. Site safeguard and management						
Seek to establish favourable management for host tree	EN	*	*			
Ensure continuity of habitat within site by protecting and planting new saplings and creating new pollards as future host trees.	EN	*	*	*	*	*
C. Species management and protection						
Assess the possibility, subject to suitable techniques being devised, of translocating material of this species to suitable host trees at Staverton in the event of existing host becoming unsuitable	EN	*	*	*	*	*
Ensure that host tree is not felled	EN	*	*	*	*	*
D. Advisory						
Ensure full liaison with relevant individuals and organisations	EN	*	*	*	*	*
E. Future research and monitoring						
Monitor on an annual basis within May to December period	EN	*	*	*	*	*
Seek information on sites outside Suffolk	EN	*	*			
Seek further information into the needs of the fungus to assist management and circulate information acquired	EN	*	*			
F. Communications and publicity						
Discourage collection	EN	*	*	*	*	*

Orange-fruited Elm Lichen *(Caloplaca luteoalba)*

1.0 Definition

The Orange-fruited Elm Lichen has suffered a severe decline in the last century and is largely confined to the dry bark of mature elm trees in areas of parkland, old pasture or roadside locations with less than 75 mm of rainfall per year. It is a deadwood species that cannot survive as natural succession to a fungus community proceeds. Its distribution is not limited to Elm trees.

2 Current status

2.1 National

This lichen used to be relatively widespread in the UK, with a bias towards eastern, lowland Britain, but it has undergone a severe decline. The decline has been attributed initially to agricultural intensification, but has been compounded by the loss of the host plant through Dutch Elm disease. This species is listed as vulnerable on the Great Britain Red List.

2.2 Local

This species now has a very restricted distribution in East Anglia and in Suffolk it is only known to grow on a single tree at a site near Wickham Market.

2.3 Natural Areas

Suffolk Coast and Heaths.

3 Current factors affecting Orange Fruited Elm Lichen in Suffolk

- Loss of habitat due to Dutch Elm disease.
- Pollution arising from intensive agricultural practices and sulphur dioxide emissions.
- Felling of host trees

4 Current Action

4.1 Legal Status

The species is protected under Schedule 8 of the Wildlife and Countryside Act 1981.

4.2 Management, research and guidance

4.3

- Suffolk Coastal District Council and the land owner are aware of the presence of the lichen and there is no current threat to it or the host tree (a Black Poplar).
- The lichen is monitored bi-annually by the Suffolk Lichen Recorder.

5 Action Plan Objectives and Targets

1 *Maintain in viable condition, the only Suffolk site for the species.*

2 *Where appropriate encourage the spread of the lichen to nearby trees and branches of the existing host tree.*

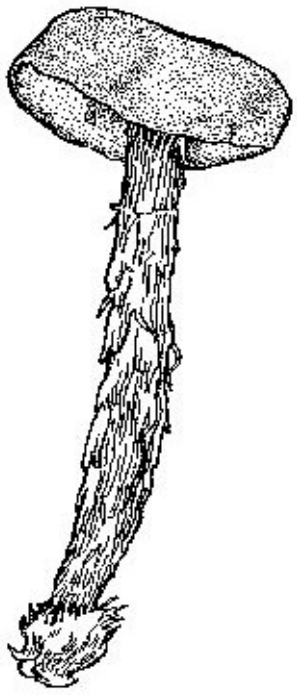
3 *Depending on feasibility, restore one population to a former site by 2005. This could be achieved by transplanting slivers of bark onto suitable host trees. Mature Elms that have either survived Dutch Elm disease or parkland and estate trees that have been treated against the disease would be appropriate.*

6 Orange-fruited Elm Lichen: Proposed local action with lead agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Aim to protect the only Suffolk site for this lichen with a Tree Preservation Order.	2005	SCDC
SPECIES SAFEGUARD AND MANAGEMENT		
Make contact with local project establishing disease-resistant Elms – with a view to planting in vicinity of host tree.	2005	SCDC
Identify suitable former sites for attempt to restore population to another site.	2005	EN, SCDC
Once suitable methods have been determined and sites identified, seek to restore one population to a former site.	2006	EN, SCDC
Seek to establish favourable management for key site occupied by this lichen.	2005	Landowner, SCDC
RESEARCH AND MONITORING		
Seek to establish suitable methods for translocation of the lichen to a former site or keep up-to-date with any national research in this field.	2005	SNS, SCDC
Ensure national research into ecology and management of this species is available and implemented at a local level.	2004 2005 2006 2007	EN
Undertake monitoring every 2 years at known site, to assess population size and identify potential threats.	2004 2006	SCDC, SNS
Subject to confidentiality and data ownership, pass information gathered during survey and monitoring of this species to SBRC.	2005 2006 2007	Lichen Recorder, SCDC
Undertake a survey of all known and former sites in the county to include Black Poplar, Horse Chestnut and Sycamore trees.	2005	SNS, SBRC
ADVISORY		
Ensure that local landowners, managers and naturalists are aware of the presence and importance of conserving this species, its legal protection and suitable methods for its conservation by liaison with landowner.	2005	SCDC, SNS

Sandy Stilt Puffball *(Battarraea phalloides)*

The Sandy Stilt Puffball fungus makes appearances in most years in Suffolk, but these remain the most predictable occurrences of the species in the country. Very little is known about its ecology apart from a liking for sandy soils. Hollow trees and perhaps stumps may also be important.



1 Definition

The Sandy Stilt Puffball (*Battarraea phalloides*) was first described from Britain and has a scattered distribution in western Europe. Although it was formerly known from much further north, its main areas of distribution became confined to sites in southern and eastern Europe.

2 Current status

2.1 National

The Sandy Stilt Puffball is one of only four fungi listed on Schedule 8 of the Wildlife & Countryside Act, it is also a Red Data Book species. This species has been recorded from a number of counties in southern England, but is only reliably known from Suffolk and Norfolk. *Battarraea phalloides* only appears to be known from about 30 UK sites, of which there are 7 in Suffolk. A number of specimens are held in the National Collection at Kew, mostly from Kent and Surrey, the latest being found in 1981. Those collected in Buckinghamshire and Gloucestershire are very old, though recent specimens come from Jersey and Norfolk (both 1996) and Oxfordshire (1997). Records exist for Somerset and possibly other southern counties.

Although rare in Europe, it has been recorded from most countries except those in the north, and it is also known from North America.

2.2 Local

There are seven known sites in Suffolk, (one of which remains confidential). Sandy Stilt Puffball has been noted in the parishes of Blyford, Melton, Campsea Ashe, Marlesford and Reydon. This rare fungus appears to have been seen first in England in 1782 in the area of Earsham and Kirby Cane, in south Norfolk, just north of the town of Bungay (Suffolk) and was formally described in 1785.

The first definite Suffolk record was made by a Mr. Davies of Yoxford, and his specimen was illustrated by Sowerby in 1803 and is included in the National Collection at Kew.

It has appeared at three sites since the last war, principally at Blyford near Halesworth, where over 80 were seen in the mid 1970s. It has appeared in much smaller numbers in most years since then, sometimes in spring as well as summer and autumn. In the period 1984-86 a few fruiting bodies occurred on a hedge bank at Campsea Ashe some 20 miles further south, but none have been recorded at this site since then.

A new location was discovered by D. & C. Orme at Melton, East Suffolk in August 1997, when two large fruiting bodies were noted on a small heap of sand excavated by rabbits under an old oak tree. This verge bank is dry and has little vegetation and faces east.

The Blyford bank faces east and has elm scrub and annual weeds over its 70 metre length. It is backed by a good hedge of Small leaved elm *(Ulmus minor)* for most of its length. The Campsea Ashe bank is less scrubby, but has the same elm at various stages from scrubby bushes to quite tall trees. It faces north and supports mainly weed species in its sandy soil.

At neither site has the fungus been seen inside hollow trees, a habitat mentioned in the National Biodiversity Action Plan, although at Blyford in late August 1997 two fruiting bodies appeared close to the base of a large elm which was felled some years earlier.

2.3 Natural Areas

Suffolk Coast & Heaths.

3 Current factors causing the loss or decline of the species in Suffolk

- Very little is known about this fungus. Of the 7 sites in Suffolk, only the dry sandy soil and possibly the fact they face north or east appear to be common factors.
- As it appears rather randomly, it is possible it has always been rare and therefore may not be significantly more threatened now than it was when discovered two centuries ago.

4 Current Action

4.1 Legal Status

Sandy Stilt Puffball is protected under Schedule 8 of the Wildlife and Countryside Act 1981(as amended).

4.2 Management, research and guidance

- All sites are monitored fairly regularly to check for fruiting bodies. The Reydon site has recently been involved in a planning enquiry, resulting in houses being built just behind the site. The site owner has volunteered to look after the site as a private nature reserve. The fungus is still present here (2003).

- The Blyford site will remain uncut until the winter (2003), when it is hoped local volunteers will remove dead vegetation and prune elm suckers. The fungus has not been seen here for the last couple of years.

- The confusion between *B. phalloides* and *B. stevenii* is currently being researched at the University of Kent. This research is funded by English Nature, Kew Gardens and Kent University). It is hoped the research will investigate the genetic diversity of *Battarraea phalloides* and *B. stevenii* at and between distinct sites across their natural range by comparison of specific DNA sequences to clear up uncertainties about their likely taxonomy. Molecular diversity measures should also be used to suggest the relative roles of mycelial growth and spore dispersal in population maintenance and spread.

5. Action Plan Objectives and Targets

1. *Maintain seven known Suffolk sites in favourable condition and ensure adequate protection.*
2. *Monitor all sites for appearance of fruiting bodies.*
3. *Encourage local wildlife recorders to search for the fungus at other suitable sites.*

6. Sandy Stilt Puffball proposed action with Lead Agencies

Action	Date	Partners
POLICY AND LEGISLATION		
Ensure Sandy Stilt Puffball remains on Schedule 8 of the Wildlife & Countryside Act (1981) and that relevant district councils are aware of its presence.	On-going	**EN**
SITE SAFEGUARD AND MANAGEMENT		
Maintain road verge sites as Roadside Nature Reserves and extend marker posts if the fungus appears again outside the posts.	On-going 2004	**SCC**
Notify all sites as CWS where not already protected as Roadside Verge Reserves.	2006	**SCC**, **SWT**
RESEARCH AND MONITORING		
Co-ordinate monitoring of all sites on an annual basis	On-going	**SCC**
Disseminate findings of national research into the needs of the fungus and its management to relevant people.	On-going	**EN** (Carl Borges), Kent University.
ADVISORY		
Protect from potential damage by roadworks, soil disturbance and trampling. By advising landowners and SCC Highways staff of its presence.	On-going	**SCC**
COMMUNICATIONS AND PUBLICITY		
Publicise the importance of the sites in local press and county naturalists' journals to increase local awareness and encourage sightings of the fungus.	On-going	**SBRC**, SWT, SCC,

Starry Breck Lichen (*Buellia asterella*) Species statement

The Starry Breck-Lichen grows in turf which is calcareous, sandy, lichen-dominated and rabbit grazed. As well as the UK, it is found in Germany, France, Norway and Switzerland.

Current status
The past eleven years have seen a dramatic contraction in the range of three rare and five notable Breckland lichens. One of them, Starry Breck Lichen has become extinct during the period 1991-2002. The Breckland area was the only area of the UK where this species occurred. The cause of this decline is that the previously open grassland has closed up due to the spread of higher plants and bryophytes, denying the lichens the light and calcareous mineral soil they require as a substrate.

Natural Areas
Breckland

Current factors causing loss or decline
The current factors affecting this species are not fully understood but may include the following:

- Lack of grazing by Rabbits and resultant invasion of open grassland by higher plants
- Invasion and resulting soil acidification caused by conifer seedlings spreading from nearby plantations
- Spray drift and nitrogen deposition may pose a threat

Current Action
The species has been the subject of an English Nature Species Recovery Programme Project to assess habitat requirements and also investigate the success of transplanting the lichen between Breckland sites. Six Breckland sites were assessed in 1991 and 2002. Transplanting populations of the lichen was not successful. At Lakenheath Warren, the last remaining site, sward closure due to aerial nitrogen inputs from agriculture or transport contributed to the demise of the lichen. Introduction of cattle grazing, to improve the condition of the grassland, may have caused trampling damage to the lichens but it is not likely that the lichens would have survived without grazing. Starry Breck Lichen is now believed to be extinct in the UK.

Objectives for the species

- Maintain Breckland calcareous grassland sites for benefit of rare lichens. There is a very small chance Starry Breck Lichen propagules could drift in naturally from the continent and could grow if habitat conditions were suitable.

Proposed action
The aim is to provide the appropriate habitat so that air-borne propagules may colonise. This will mean the provision of bare chalky compacted ground that can be created by digging away topsoil at places where chalk rock is close to the surface. There is a minimum patch size so that vegetative growth from the edge is proportionately small and it is most likely to be beneficial on former sites.