ENGLISH NATURE

England's best wildlife and geological sites

The condition of Sites of Special Scientific Interest in England in 2003

working today
for nature tomorrow

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Foreword

At the World Summit on Sustainable Development in Johannesburg in 2002, the Government committed itself to reducing the rate of biodiversity loss by 2010. The condition of our nationally important wildlife and geology provides a strong indicator of the Government's commitment to protect our finest natural resources.

The publication of this report marks the culmination of six years' work and provides the first definitive assessment of the state of England's Sites of Special Scientific Interest (SSSIs). The Government's Public Service Agreement (PSA) target to bring 95% of all SSSIs into favourable condition by 2010 is challenging. The information presented here will, I hope, be a catalyst in binding the commitment of policy makers, legislators, public decision-makers and landowners to help meet this target.

This report details progress with bringing sites into favourable condition and some of the many management issues we face. I would like to draw special attention to the contribution already made by many of the 32,000 people who own and manage special sites. There are many innovative and inspiring stories of SSSI owners' careful stewardship of the nation's wildlife sites. Their efforts deserve our thanks and stand as an example of what we want everyone to achieve.

We are continuously improving our knowledge of the state of the SSSI series and the action needed to bring sites into favourable condition. I believe this report represents an important step in reporting progress towards achieving favourable condition of all our SSSIs and it is English Nature's intention to produce further reports of this nature on a regular basis. Furthermore, the information on which this report is based will soon be available on our website. This will enable anyone to search online for information about SSSIs, locally, regionally or nationally and learn about their special features, management and condition.

Finally, I would like to celebrate the work represented by this report and to thank all those English Nature officers whose efforts are evident in it and who, I know, are committed to delivering the PSA target in 2010.

Sir Martin Doughty
Chair

Summary

Sites of Special Scientific Interest (SSSIs) are valuable for a number of reasons, the most obvious being the protection and conservation of our most important wildlife and geology. They play a key role in achieving our biodiversity goals and contribute to people's quality of life. Ensuring their good condition is a key indicator of sustainable development.

There are 4,112 SSSIs in England, covering over 7% of England. The sites range from small areas that protect populations of a single species, to large expanses of upland moorland or coastal mudflats.

The Government has set a Public Service Agreement (PSA) target that 95% of SSSI land, by area, should be in favourable condition by 2010.

As the Government's English nature conservation agency, English Nature assesses the condition of SSSIs using categories agreed for the UK through the Joint Nature Conservation Committee. Condition is a measure of both the quality of the special habitat and species features on SSSIs, and of the land management in place to recover or conserve them. SSSIs are assessed as being in either a favourable, unfavourable recovering, unfavourable no change, or unfavourable declining condition. Sites that are in a favourable or unfavourable recovering condition are contributing to meeting the PSA target.

This report sets out the results of the first complete national assessment of SSSI condition. Over the last six years English Nature staff have assessed the condition of every SSSI unit at least once. This is the first time a full national assessment of this kind has been undertaken anywhere in the world.

Currently, 58% of SSSI land by area is in favourable or recovering condition, leaving 42% in unfavourable condition. English Nature believes that the target of 95% in favourable condition by 2010 is challenging but achievable.

English Nature has a special responsibility for the conservation of SSSIs, but on our own we cannot ensure their future protection. In order to achieve the PSA target we need urgently to address the 42% of SSSI land in unfavourable condition, in partnership with a wide range of organisations and individuals. For all sites not yet in favourable or recovering condition, the reasons for this must be identified, understood and addressed through a range of effective remedies. The major causes of unfavourable condition include overgrazing, inappropriate moor burning, drainage, undergrazing and neglect, inappropriate coastal management, diffuse pollution and fisheries. There is no one universal remedy for each reason for unfavourable condition across all SSSIs. Putting the remedy in place is often not in English Nature's gift. Government Departments, public decision-makers, legislators and regulators, voluntary conservation organisations and owners and managers of SSSI land all have a role to play.

We have summarised the major issues affecting SSSI condition and grouped them to reflect major land uses within which the remedies may be found.

For upland agriculture and moorland management it is essential to reduce the numbers of sheep that are causing overgrazing, whilst maintaining viable farm businesses. Future legislation is needed to regulate agriculture on Commons. A review of the *Heather and grass burning code*, together with burning plans agreed with the Moorland Association should help to address the restoration of moorland.

For lowland agriculture the links between wildlife sites, farm businesses and the rural economy must be restored. Better designed and targeted agri-environment schemes should focus resources more effectively to deliver favourable condition.

To bring freshwater SSSIs into favourable condition, direct and diffuse sources of pollution and water abstraction need to be better controlled. The water company price reviews (AMP 3 and AMP 4) and reviewing the impacts of direct point-source pollution and abstraction will need to make significant contributions. Nitrate Vulnerable Zones currently, and the Water Framework Directive in the future, must address diffuse pollution. To address the legacy of past damage to water levels on SSSIs from flood defence and drainage, all Water Level Management Plans need to be assessed and implemented.

For forestry there is a stock management issue, causing damaging browsing particularly from deer in the lowlands. Management of the deer population needs to be addressed. Elsewhere positive promotion of sustainable markets for wood products will encourage appropriate management.

On England's coasts management should be addressed at the strategic level through development and implementation of Shoreline Management Plans. Managed realignment will be a solution that needs greater commitment from stakeholders. Within European Union marine sites, fisheries activities need to be appropriately assessed to understand and address, with stakeholders, any damaging impacts.

Across England's countryside and coasts there is an urgent need for environmental recovery at a landscape scale. This report presents the current state of our best wildlife and geology, and identifies action to achieve their recovery. It requires us to sustain and deepen our partnership with owners and occupiers of SSSIs, and to work in a joined-up way across Government, public bodies and with private landowners.

1 Introduction

Sites of Special Scientific Interest (SSSIs) are England's most important areas for wildlife and geology. There are 4,112 SSSIs, covering an area of more than one million hectares, or about 7% of England. The sites range from small areas that protect populations of a single species, to large expanses of upland moorland or coastal mudflats and marshes. The roof space of Sylvan House Barn in Gloucestershire, a roost for the lesser horseshoe bat, is the smallest SSSI at seven metres square, whilst the largest is The Wash, 62,000 hectares of coastal and marine habitats of international importance for migratory and wintering birds.

It is the responsibility of the Government's nature conservation agency, English Nature, to select and protect SSSIs. Since 1981 we have had legislation available to notify these special areas to relevant authorities and to those who own and occupy the land. Initially protection could only halt potentially damaging activities, and we reported on the frequency of damage or destruction to SSSIs. During the 1990s, as a matter of policy, we aimed to influence more positively the management of SSSIs, to ensure that the quality of these sites is maintained into the future. The Countryside and Rights of Way (CRoW) Act in 2000 provided legislation to help recover and maintain the quality of our most important sites for wildlife and geology.

The Government's environmental responsibilities are now represented in a broader set of Public Service Agreement (PSA) targets, monitored by the Treasury. In the wider countryside there is a target to reverse the decline in farmland birds, whilst for special sites the PSA target is that 95% of SSSI land by area should be in favourable condition by 2010. This report is the first complete national assessment and analysis of SSSI condition, representing a significant milestone towards the achievement of the PSA target for SSSIs.

SSSI condition is a measure both of the quality of the special habitat and species features on SSSIs, and the management measures in place to recover and conserve those features. In essence, if an SSSI is in favourable or recovering condition, it means that the habitats and species are in a healthy state and are being conserved for the future by appropriate management. If an SSSI is assessed as unfavourable, this means there is a current lack of appropriate management, or that there are damaging impacts which need to be addressed.

In March 2003, the baseline figure for sites in favourable or recovering condition was 56.9%.

Currently, 58% of SSSI land by area is in favourable or recovering condition, leaving 42% in unfavourable condition to be addressed over the next six years.

The recent legislation and the Government's PSA target are extremely useful in focusing effort towards the positive conservation of the most important wildlife and geology in England. The information in this report is highly significant, representing a world first in detailed

knowledge about the current state and future management requirements of a countrywide network of protected areas.

In addition to recording the condition of SSSIs, we provide here information on the reasons for unfavourable condition on 42% of SSSI land. This is the key to establishing the action required to meet the target by 2010. English Nature has a special responsibility for the conservation of SSSIs, but on our own we cannot ensure their future protection. The reasons for unfavourable condition will have to be addressed by a range of legislative, policy and funding decisions across Government, and we are working with a broad group of stakeholders to make this happen. For example, there are 12 groups of organisations who, between them, own or manage roughly half the area of SSSIs in England. These 'major landowners' share the special responsibility for the stewardship of their SSSI estates. Public organisations have a new duty under the CRoW Act to further the conservation of SSSIs, and we will be ensuring that this generates appropriate effort to move more SSSIs into favourable condition.

We acknowledge the support and efforts of many who have helped to get over half of SSSI area into a healthy state. Often this has built on the work of farmers, foresters and other landowners over many years of careful stewardship that takes proper account of the environment. Enabling people to have sustainable livelihoods on the land must be part of achieving the conservation of our natural heritage. There is still much to be done. English Nature is proud to provide, in this report, the information and knowledge to focus effort across Government, other organisations and individuals to take action to bring all our SSSIs into favourable condition.

2 The condition of SSSIs in England in 2003

As at 30 September 2003, the proportion of SSSI land by area in favourable condition was 44.6%, unfavourable recovering 13.7%, unfavourable no change 25.2%, unfavourable declining 16.4% and destroyed or part destroyed 0.2%.

Favourable condition means that special habitat and species features are in a healthy state and are being conserved for the future by appropriate management. A site in favourable condition is meeting its conservation objectives.

Paul Glendell/English Nature 25, 331

Unfavourable recovering condition means that all necessary management measures are in place to address reasons for unfavourable condition. Special habitat and species features will 'recover' to a healthy state, but in many cases this takes time. For example, neglected woodland may take several years to establish a working coppice cycle, or a drained peat bog may need decades to recover its important *Sphagnum* bog-moss plant communities. Sites in unfavourable recovering condition often demonstrate important and innovative conservation management and are benefiting from resources and effort to put things right.

Peter Wakely/English Nature 20,128

English Nature

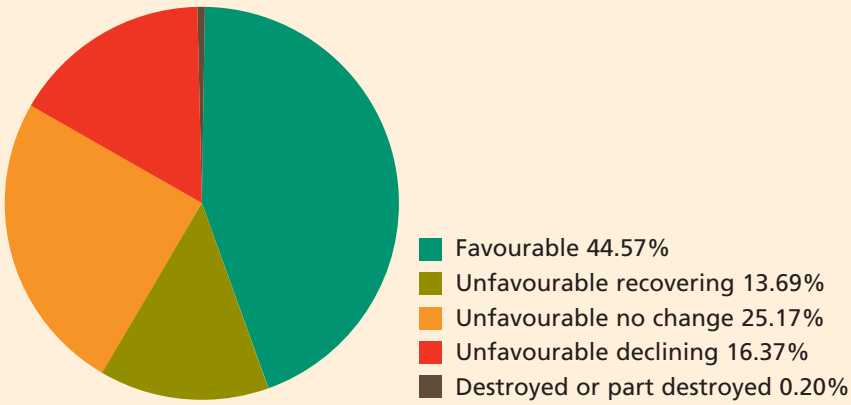
Unfavourable no change or **unfavourable declining condition** include sites where some beneficial management measures are in place, but not all, and which may be generally improving but we cannot be sure that they will recover to favourable condition. Both mean that a site is not being adequately conserved. Special habitat or species features are either in poor condition and not improving across all the reasons for their unfavourable condition, or their quality is bad and getting worse. For example, where scrub is encroaching onto chalk grassland it will eventually shade out the special plants. Or, where burning is too frequent on upland heath, this will detrimentally affect the structure of the dwarf shrubs. Without establishing appropriate management or addressing damaging impacts, these sites will not reach favourable or recovering condition.

Peter Wakely/English Nature 10,574

For a very small number of sites there has been fundamental and lasting damage which means the special habitat and species features may have been lost forever. These sites are assessed as **part destroyed** or **destroyed** and we cannot recover their condition. English Nature Area Teams devote considerable effort to limiting or preventing damage to SSSIs through the planning and other regulatory regimes. In doing so we are supported by stronger legislation (both national and European) and local and national policy which is supportive of the protection of SSSIs.

SSSIs contributing to meeting the PSA target in favourable or recovering condition are shown in **green**, and those sites failing to contribute towards the target are in **red**. This convention is used throughout the report.

Condition of SSSIs by area



SSSIs in favourable or recovering condition

The 44.6% of SSSIs in a favourable condition and the 13.7% of SSSIs land currently unfavourable but recovering all contribute to meeting the PSA target. 58.3% of the area of SSSIs is the headline figure showing progress towards the target. We recognise the achievements of farmers, foresters, conservation organisations, and public and private companies who own and manage this land effectively for nature conservation.

SSSIs in unfavourable no change or declining condition

41.5% of SSSIs are in an unfavourable no change or unfavourable declining condition. This is SSSI land that is not yet being adequately conserved. A wide range of organisations and individuals must act to ensure acceptable progress towards the PSA target of 95% of SSSIs in favourable condition by 2010.

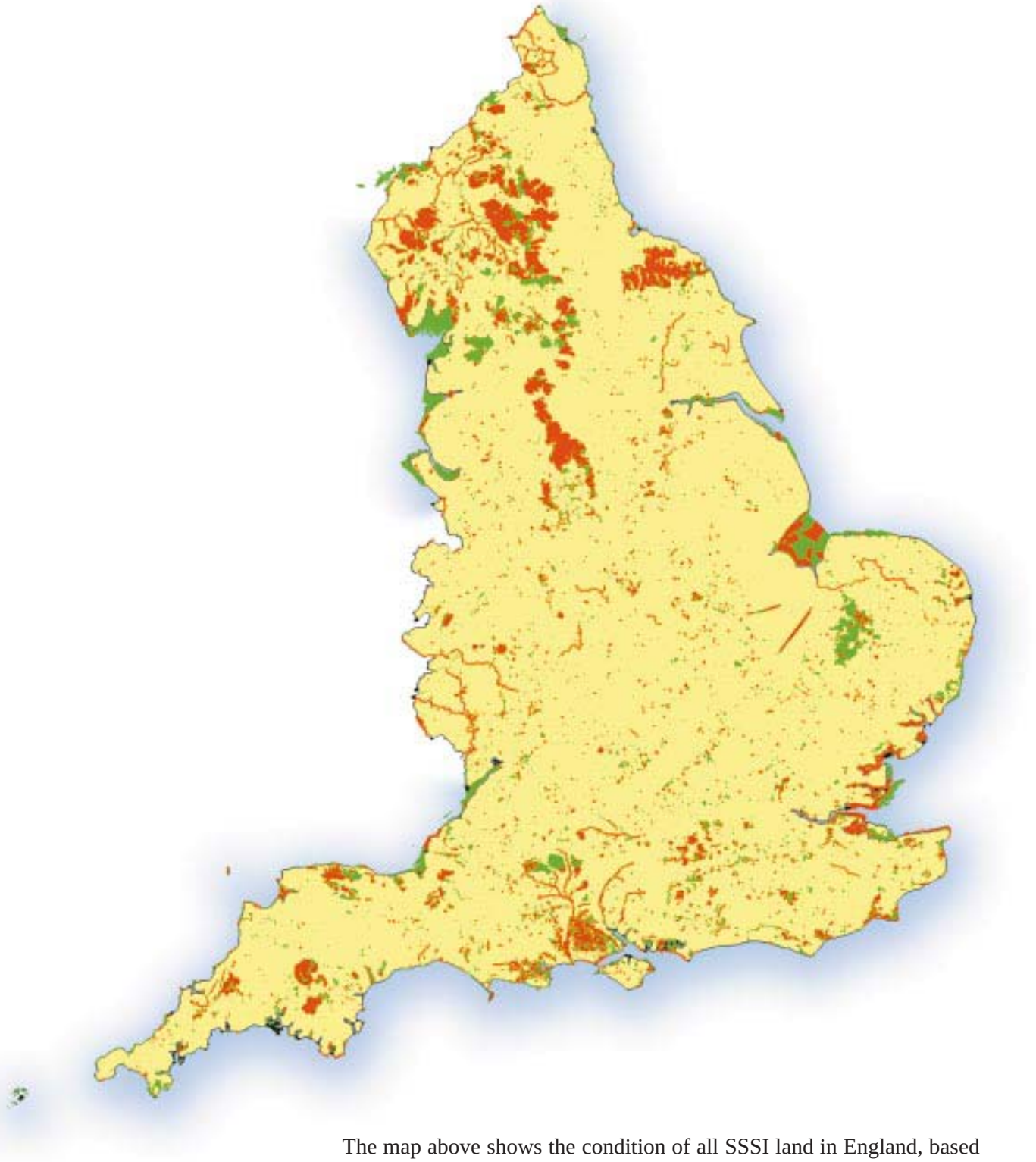
SSSIs destroyed or part destroyed

The area of SSSI land destroyed (or part destroyed) is relatively very small.

Area contributing to meeting the PSA target (favourable and recovering) and sites not contributing (unfavourable no change and unfavourable declining)

Map of England showing condition of SSSI land

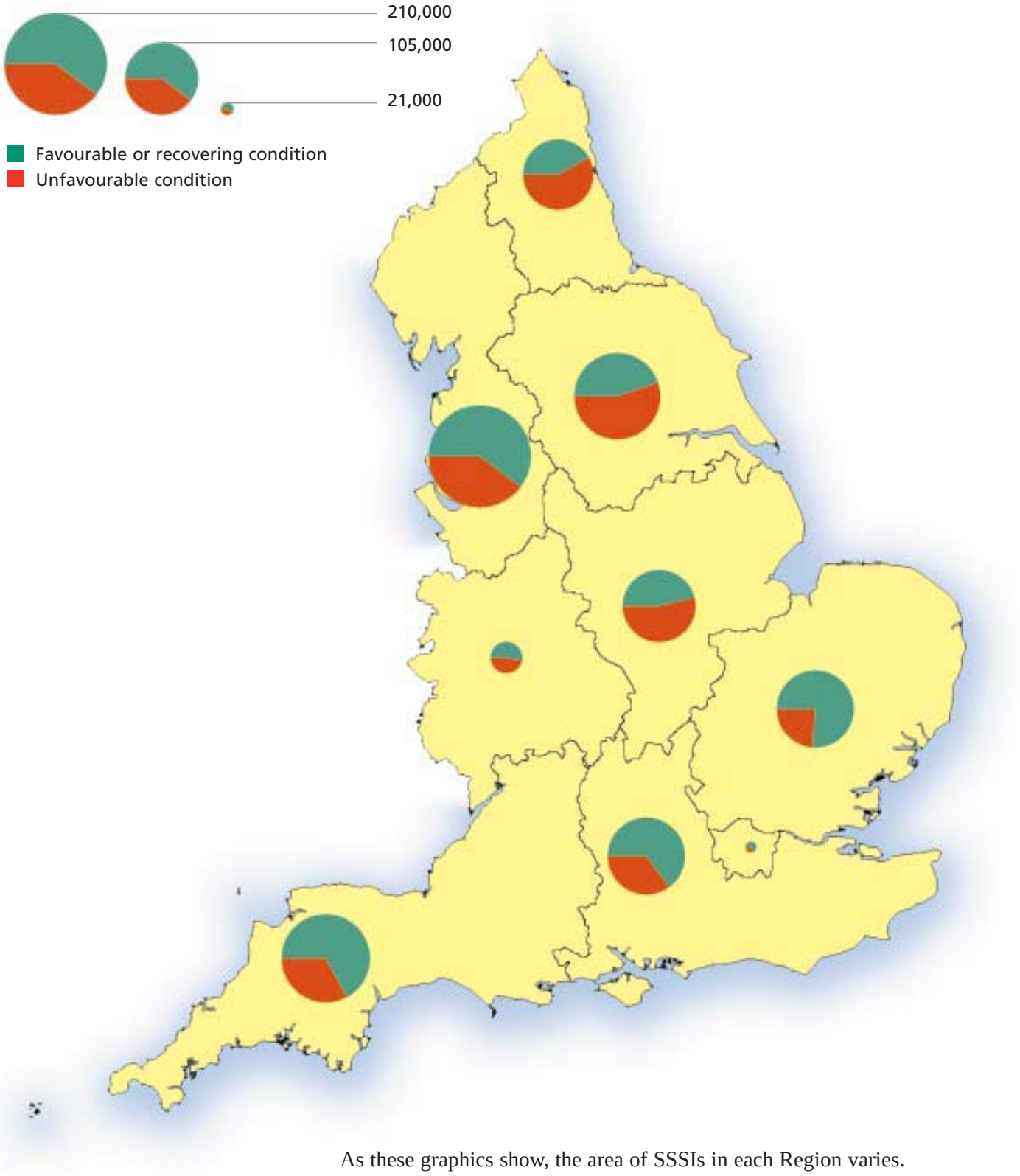
Favourable or recovering condition
Unfavourable condition



The map above shows the condition of all SSSI land in England, based upon the latest assessments carried out from 1997-2003. The map that follows summarises the detail according to Government Region.

Map of England showing the extent and condition of SSSI land by English Regions

Size of pie indicates the area (ha) of SSSI within Region

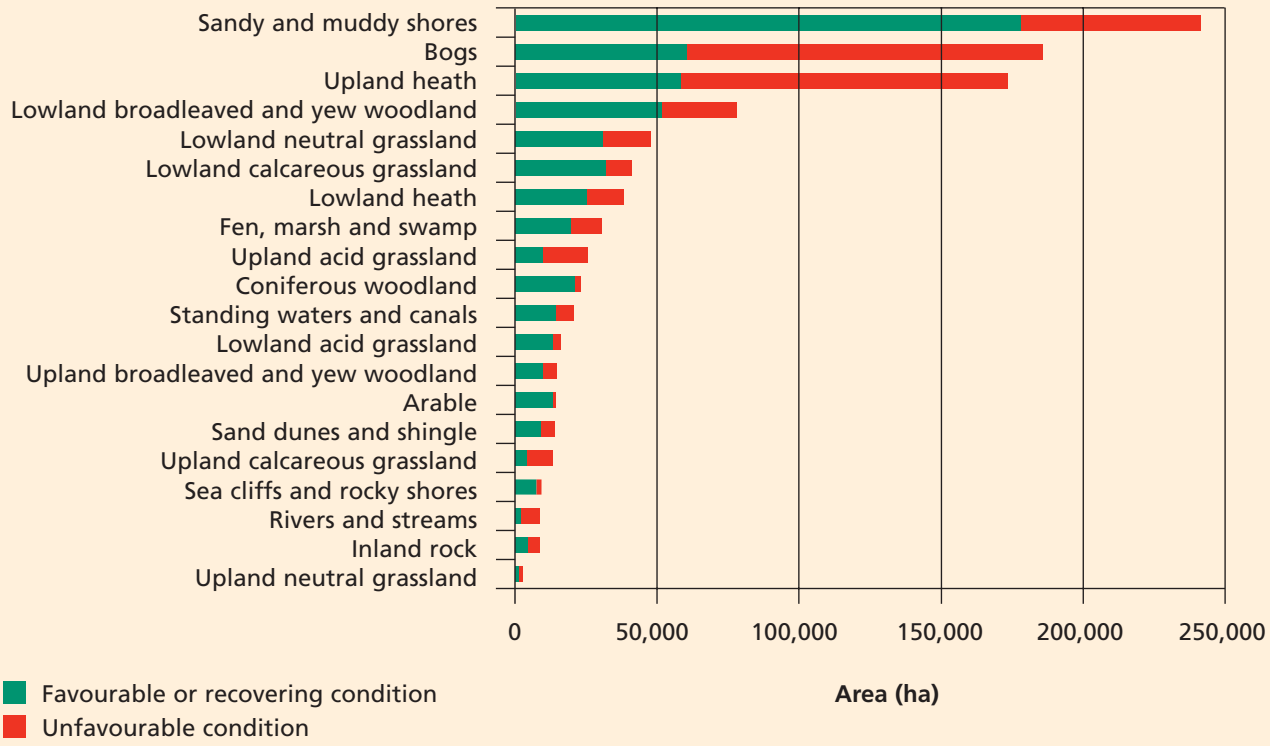


As these graphics show, the area of SSSIs in each Region varies. London and West Midlands have the smallest areas of SSSIs, with the North West the largest. These figures also show, for example, that a higher proportion of SSSIs in the South West are in a favourable or recovering condition when compared to the North East. Understanding these regional variations is complex and they should not simply be attributed to regional differences in attitude or effort. For example, they may be the result of differences in the range and extent of individual habitat types, and different pressures from, and sensitivity to, land management and other pressures.

SSSI condition across England

The extent and condition of SSSIs varies across England. It also varies for different habitats.

Condition of habitats on SSSIs

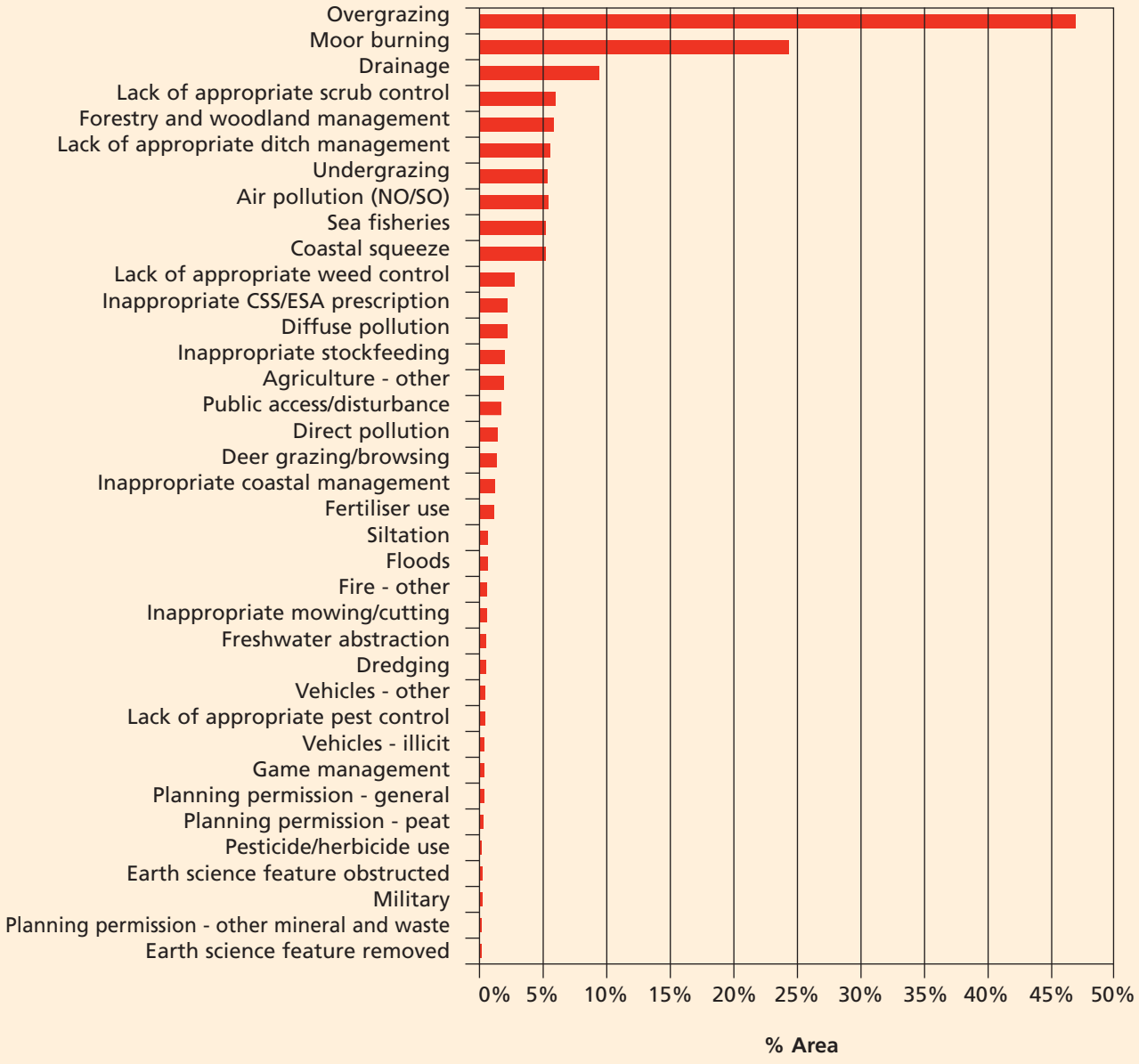


3 Major issues causing unfavourable condition on SSSIs

When condition is assessed as unfavourable, the reason(s) is noted. Across the whole series of SSSIs the main causes of unfavourable condition include overgrazing, inappropriate moor burning, lack of scrub control, inappropriate forestry and woodland management, lack of appropriate ditch management, sea fisheries and coastal squeeze.

The graph below shows the causes of unfavourable condition for the SSSI series as a whole. As the numbers illustrate, a large proportion of SSSI land is affected by more than one factor. However, for individual habitats within the series, particular causes may have a much greater impact. This is shown for each habitat in a later chapter.

Reasons for unfavourable condition on SSSIs (as at 30/09/03)



Tackling the issues

In order to bring SSSIs into a favourable or recovering condition, the reasons for unfavourable condition need to be identified, understood and addressed through effective remedies. However, the situation is complex. For each reason, there may be no universal remedy for all SSSIs. It may require different remedies on different sites, depending on the habitat. For example, on moorland the problem of drainage could be resolved through agreement with an individual land manager. Elsewhere, such as on lowland grazing marsh, the solution to drainage problems would probably involve agreement between several land managers and public bodies, such as drainage and water supply regulators. Where there are several causes of unfavourable condition on an SSSI, it may be that one remedy will provide the solution. For example, in the uplands inappropriate burning, overgrazing and drainage are often signs of unsustainable sheep stocking. All of these might be resolved through one appropriately designed management agreement with the land manager.

The following sections give a summary of the major issues causing poor condition on SSSIs. They are grouped to reflect major land uses, within which the remedies lie:

- Upland agriculture and moorland management
- Lowland agriculture
- Freshwater
- Forestry and woodland management
- Coastal management

Each section outlines the issues and summarises actions needed. These actions inform the 'Delivering the PSA target' section that follows.

An example of overgrazing, with overgrazed land on the right, in contrast with suitable grazing on the left

Peter Wakely/English Nature 16,871

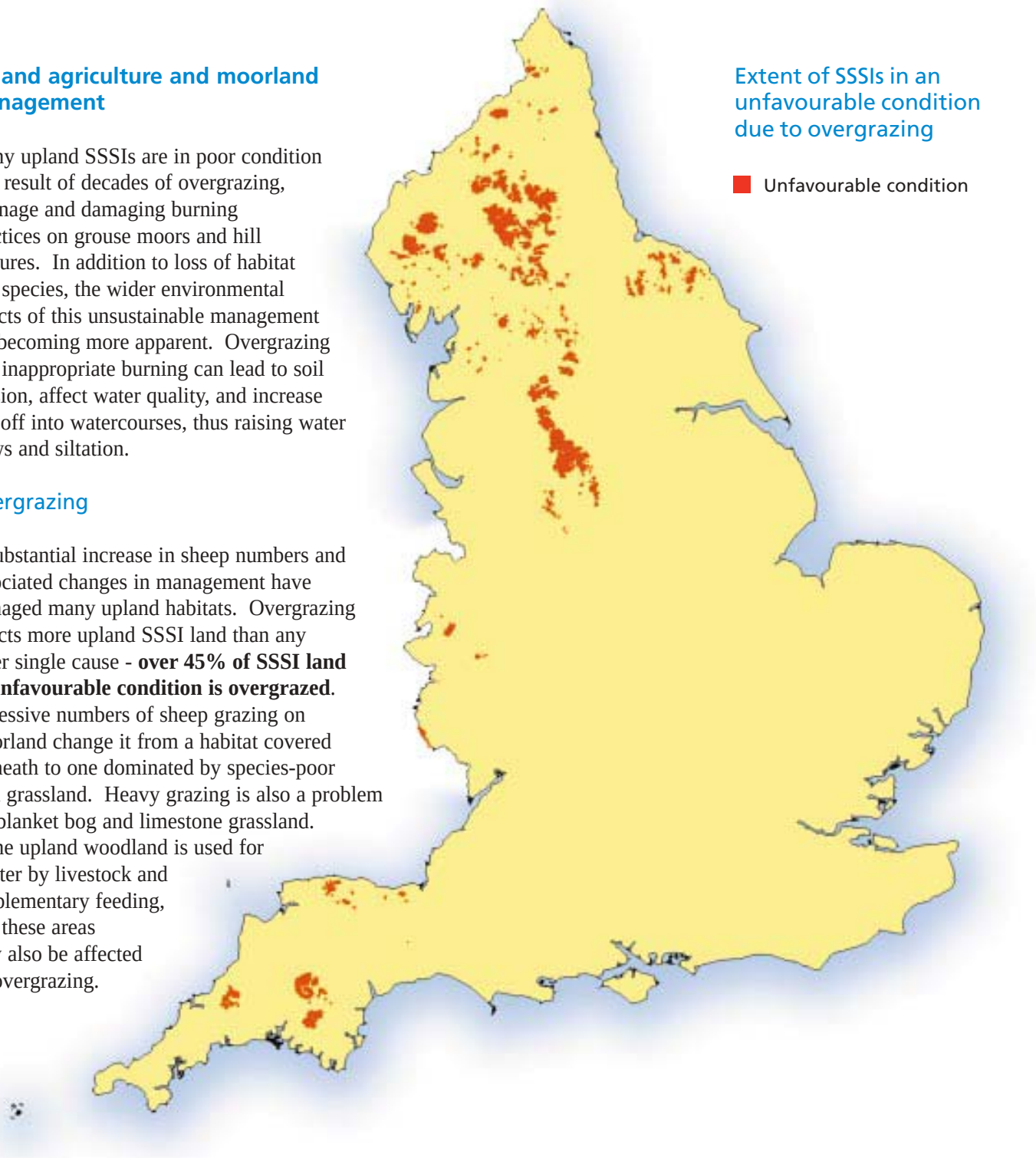
Upland agriculture and moorland management

Many upland SSSIs are in poor condition as a result of decades of overgrazing, drainage and damaging burning practices on grouse moors and hill pastures. In addition to loss of habitat and species, the wider environmental effects of this unsustainable management are becoming more apparent. Overgrazing and inappropriate burning can lead to soil erosion, affect water quality, and increase run-off into watercourses, thus raising water flows and siltation.

Overgrazing

A substantial increase in sheep numbers and associated changes in management have damaged many upland habitats. Overgrazing affects more upland SSSI land than any other single cause - **over 45% of SSSI land in unfavourable condition is overgrazed**. Excessive numbers of sheep grazing on moorland change it from a habitat covered by heath to one dominated by species-poor acid grassland. Heavy grazing is also a problem for blanket bog and limestone grassland. Some upland woodland is used for shelter by livestock and supplementary feeding, and these areas may also be affected by overgrazing.

Extent of SSSIs in an unfavourable condition due to overgrazing



To bring upland SSSIs into favourable condition, it is essential to reduce the numbers of sheep on overgrazed areas.

However, it is also vital to maintain viable farm businesses in the uplands, both for the management of important wildlife areas and for social and economic sustainability. This can be achieved, with changes in agricultural payments available to farmers who provide environmental benefits.

It is important that farm payments following the Common Agricultural Policy reforms are made conditional on appropriate grazing management.

The Government has outlined intentions for future legislation on commons. English Nature believes that such legislation is vital if the Government's PSA target for SSSIs is to be met.

Many upland SSSIs are also common land. This represents 19.6% of the SSSI series by area. The lack of environmentally sustainable grazing management on common land is the most significant factor in damage to, and long-term deterioration of, the condition of SSSI commons. Whilst agri-environment and Wildlife Enhancement Scheme (English Nature's specialised incentive scheme for managing SSSIs) agreements can be used to tackle overgrazing on commons, the numbers of commoners involved and the existence of unexercised rights can make negotiation and agreement very difficult and time-consuming.

Moorland management and burning

Burning has been used to manage vegetation in Britain for centuries, principally for stimulating new growth of grasses (for livestock) or heather (for grouse). This can benefit the conservation of heather moorland, but inappropriate moor burning is the second most extensive cause of unfavourable condition on upland SSSIs. **24% of the area of SSSIs in an unfavourable condition is due to inappropriate moor burning.**

'Lollipop' heather - a sign of overgrazing

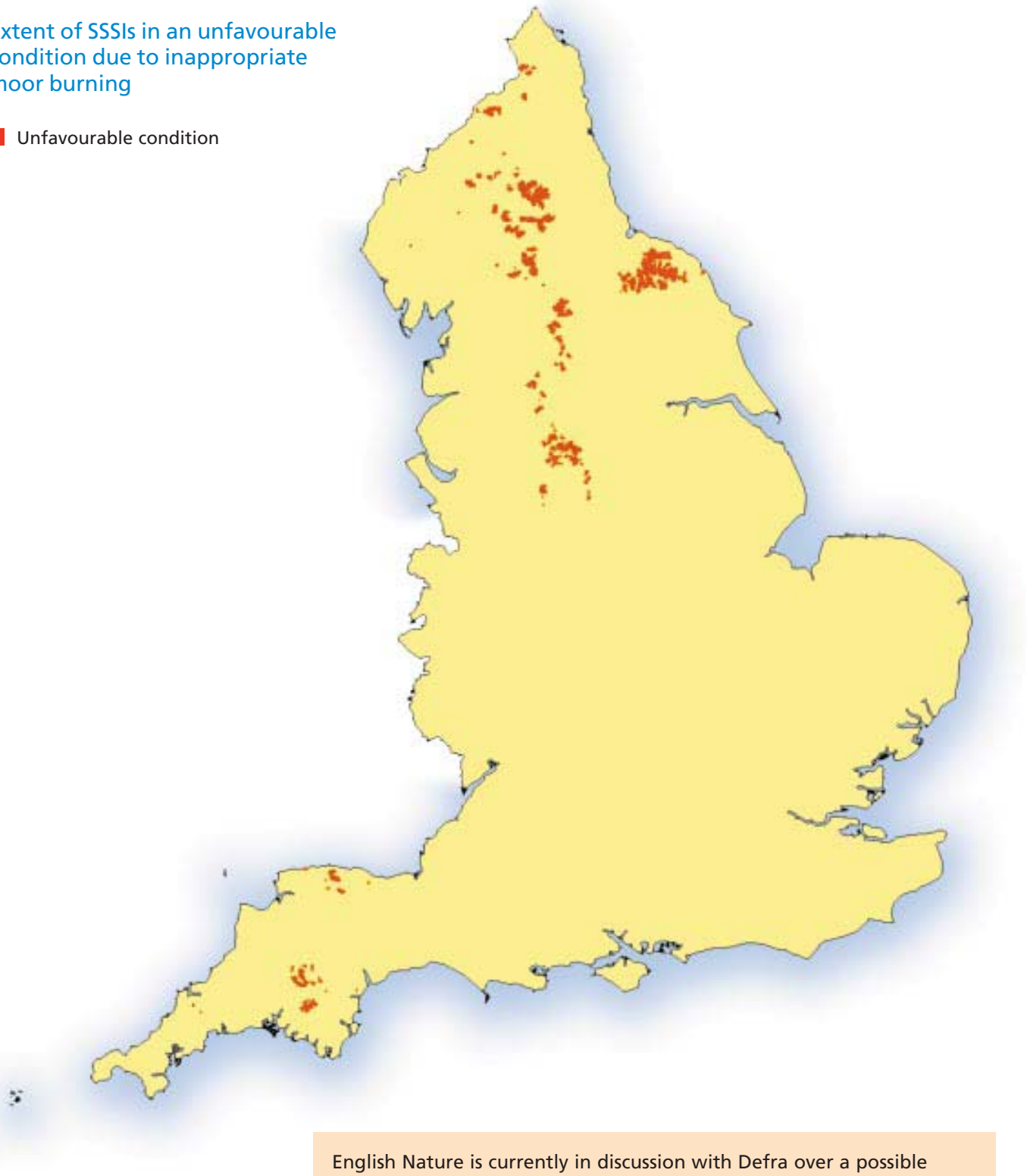
Peter Wakely/English Nature 18,290

Fires that are too frequent or too hot, set at the wrong time of year, or covering large areas can all be damaging. Burning vegetation on peat can expose the peat surface, drying it out and causing the loss of bog-moss cover. Fires can even ignite the peat, causing considerable long-lasting damage and leading to peat erosion. There are also potential associated impacts on water quality, with increased run-off into watercourses. When combined with natural drainage and artificial drains, the impacts of moor burning can be particularly severe. Where they exist on SSSIs, it is a priority that drains are blocked to prevent further damage to the blanket bogs.

Many of the birds that use moorlands (including grouse moors) for nesting and feeding can be affected by burning, either through displacement or removal of potential nesting habitat. There is also increasing evidence that moor burning in spring has destroyed nests and eggs. Burning is controlled by law and in the uplands it is allowed up until 15 April.

Extent of SSSIs in an unfavourable condition due to inappropriate moor burning

Unfavourable condition



English Nature is currently in discussion with Defra over a possible review of the current *Heather and grass burning code*.

English Nature and the Moorland Association are working together to agree burning plans on SSSIs and on the future development of moorland restoration techniques. English Nature will publish a moorland restoration guide in 2004.

Lowland agriculture

The intensification of agricultural land management practices and the decline in mixed farming systems since the 1950s are the principle causes of unfavourable condition of lowland SSSIs. This has led to a lack of grazing of some of our richest wildflower pastures, over-drainage of our wetlands, diffuse pollution of our rivers and lakes, and lack of scrub control on our chalk downland and heathlands. Many of our ditches, hedges, woodlands and rivers are being choked with invasive weeds.

Undergrazing and lack of scrub control

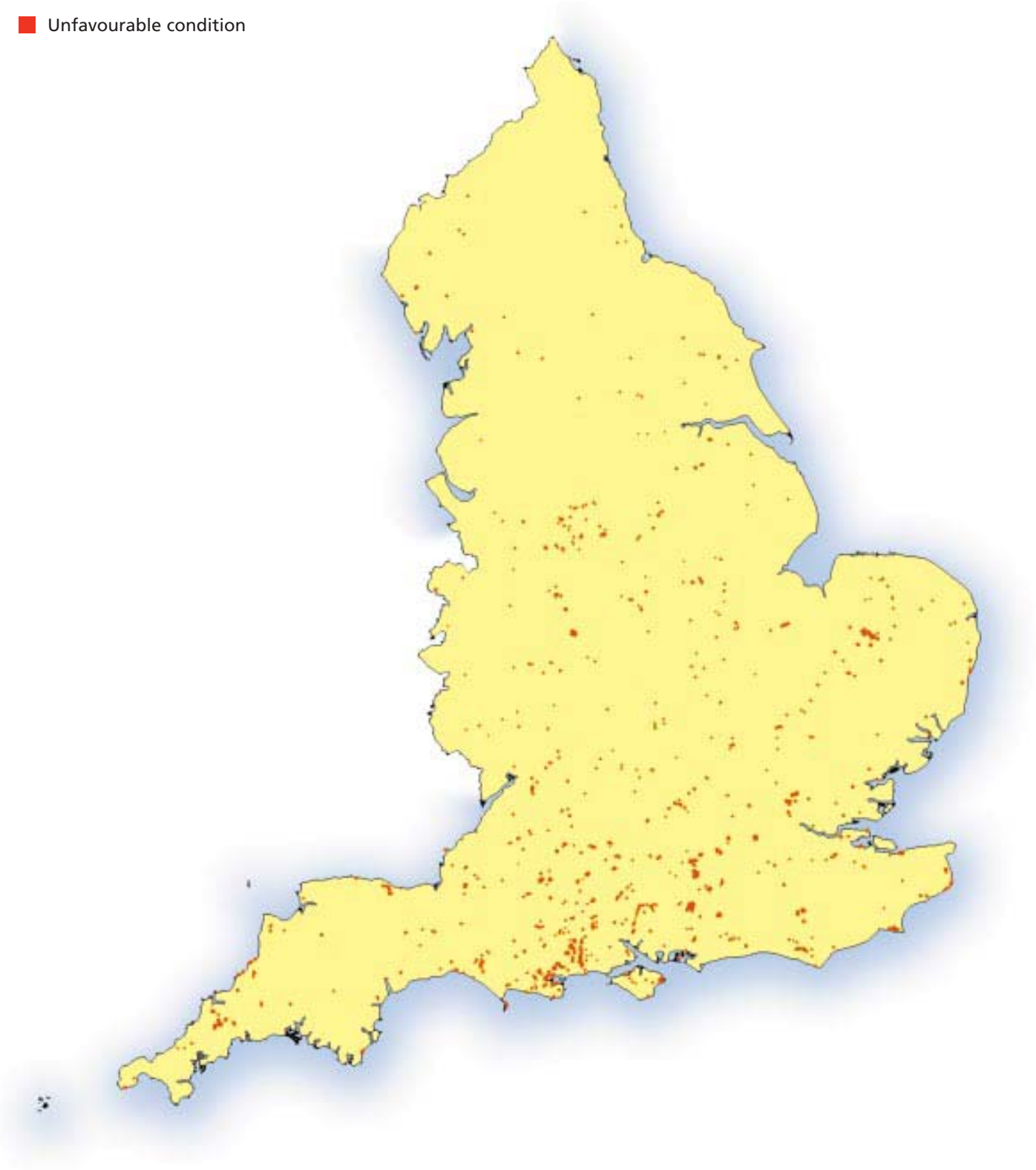
Many of our best lowland wildlife habitats, such as semi-natural grasslands, wetlands and heathlands, were once integral to mixed farming systems. These habitats were used for grazing by formerly commercial 'hardy' breeds of sheep and cattle, often at relatively low intensities. With the changes in agricultural systems, some of these habitats no longer have a useful economic function. As a result, their management has been neglected, often with rapid deterioration in their condition. In the south east and east of England, the shift from mixed farming to all-arable systems has left these special sites isolated from grazing systems. In the west of England the shift has been to all-grass farms, stocked with high-productivity breeds of dairy and beef cattle. They require high-nutrition feeds and they are unable to cope with the lower nutrition herbage on semi-natural habitats.

Lack of scrub control

Peter Wakely/English Nature 17,887

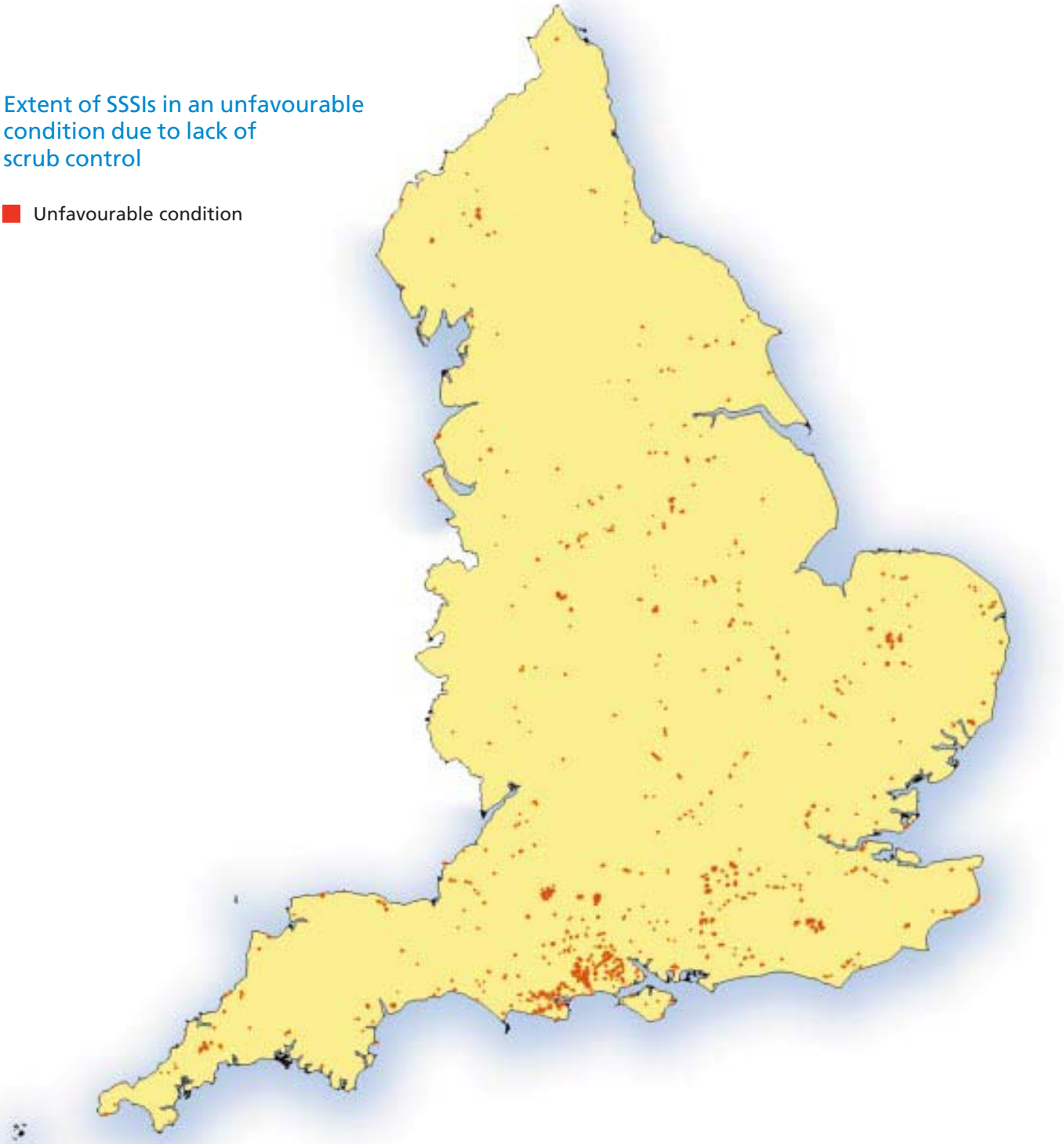
Extent of SSSIs in an unfavourable condition due to undergrazing

Unfavourable condition



Extent of SSSIs in an unfavourable condition due to lack of scrub control

Unfavourable condition



Consequently, it is becoming increasingly difficult to find the cattle to graze these special sites. Once grazing has been lost, scrub and invasive weedy plants quickly take over, with consequent losses of the wildflowers, butterflies, reptiles and other species characteristic of these sites. **Undergrazing and lack of scrub control each affect around 6% of SSSIs in unfavourable condition.**

Furthermore, the shift from hay to silage-making involves greater use of fertiliser and more frequent cuts. This has led to a massive loss of traditional hay meadows and their associated plants and animals. Remaining SSSI hay meadows are small and isolated, further divorcing them from viable farming systems.

Land drainage and diffuse pollution

Land drainage to maximise production has adversely affected wetland SSSIs, including fens, bogs, reedbeds and grazing marsh - **29% of fen, marsh and swamp SSSIs in unfavourable condition are adversely affected by drainage**. Other farming practices have resulted in diffuse agricultural pollution of SSSI rivers, lakes and coastal habitats – **of those river and stream SSSIs in unfavourable condition, 70% are adversely affected by diffuse pollution**. Such farming practices include growing potatoes and maize on steep ground and sandy soils, causing soil erosion; disposing of large amounts of artificial fertiliser and slurry onto fields; and soil erosion from overstocked pastures. Often the source of the pollution can be distant from the effects on special sites.

To ensure the survival of special wildlife sites, Government and its agencies, SSSI managers and conservation organisations are working to restore the links between wildlife sites, farm businesses and the rural economy.

English Nature will continue to press for further reform of European policies on agriculture and rural development. Recent Common Agricultural Policy reforms that break the link between farming subsidy and production are a major step forward and they will create opportunities to enhance the role of lowland SSSIs in farm business priorities.

However, farmers and landowners must also be supported in making wildlife-friendly decisions. The current re-design of agri-environment schemes in England will focus payments more effectively towards wildlife priorities, and stronger environmental baseline standards for farming would reduce the adverse impact of farming practices on SSSIs in the lowlands.

Freshwater

Freshwater SSSIs are adversely affected by pollution (nutrient enrichment), water abstraction, agriculture, drainage and flood defence works, many of which take place off-site. Achieving favourable condition will require changes to decision-making when carrying out or consenting these activities, changes to existing consents, controls on previously unregulated activities and programmes of habitat restoration.

Methods for assessing pollution, abstraction and siltation were developed during the six-year monitoring period, with standard guidance only available for later assessments. For many freshwater sites the attributes of water quality and quantity have not been recorded, and this omission is being addressed through a validation procedure.

To bring freshwater SSSIs into favourable condition both direct and diffuse sources of pollution need to be controlled.

In 2002, English Nature and the Environment Agency agreed targets for phosphorus concentrations in all river SSSIs that are of European importance. The Environment Agency is using these agreed levels in its review of consents under the Habitat Regulations. These have been extended to other river SSSIs for the forthcoming water company price review (Asset Management Planning AMP4). We are working with the Environment Agency to agree targets for lake SSSIs of European importance and work will continue to quantify the effects of phosphorus and nitrogen pollution in fen SSSIs.

In AMP3 (2000-05) English Nature secured schemes for phosphorus removal at 72 water company sewage works affecting SSSIs. The 2005-10 programme has proposed schemes at 260 sewage works. However, this does not address major industrial sources of pollution, such as paper-making and food-processing factories, or numerous small discharges into headwaters, lakes and wetlands.

The regulatory controls currently in place to address diffuse pollution are Nitrate Vulnerable Zones (which have standards relating to drinking water) and Water Protection Zones (Water Resources Act 1991). The implementation of the Water Framework Directive provides the opportunity for new regulatory powers by 2009, to address nutrient impacts from diffuse pollution. However, although this will address problems of pollution in the longer term, measures will not be in place until after 2010. In the shorter term, the Environment Agency and English Nature have identified the need for a strategic package of measures to address diffuse pollution affecting SSSIs. These include financial mechanisms and incentives, reform of the Common Agricultural Policy, and targeted use of existing regulatory powers, such as Works' Notices under the 1991 Water Resources Act.

Nutrient enrichment from direct and diffuse pollution

Phosphorus causes widespread eutrophication (excessive nutrient enrichment) in England's freshwater habitats, and is a major cause of unfavourable condition of freshwater SSSIs. Nutrients and silt running off arable land and intensive livestock areas, and from point-source discharges, affect many rivers, lakes and wetlands. Eventually filamentous algae, nettles and other plants that thrive in high-nutrient situations replace the characteristic natural vegetation. In basin fens, the *Sphagnum* bog-mosses are replaced by reed or willow scrub. In some SSSI rivers, silt smothers the spawning gravels of trout and salmon.

In 2002, English Nature started a two-year Lake Restoration Programme. Expanding this project to all lakes that need restoration work would require significant extra resources.

As well as controlling current sources of silt and nutrients, we need to address the legacy of past practices. For some lake SSSIs, this means removing excess silt by mud-pumping. This has proved successful in the Norfolk and Suffolk Broads, but the disposal of large quantities of silt is costly.

Abstraction

English Nature has been working with the Environment Agency to identify SSSIs affected or at risk from water abstraction. Groundwater-fed fens are particularly vulnerable to the lowering of water levels in, for example, chalk, limestone and sandstone areas.

At the moment, condition assessment is often based on a visual assessment of condition, rather than on quantitative water resource targets essential for the long-term sustainable functioning of that habitat. This means that the ecological integrity of a site could be at risk from a water resource problem before the impact is visible. It is often very important to take action to correct water levels before evidence of damage becomes visible.

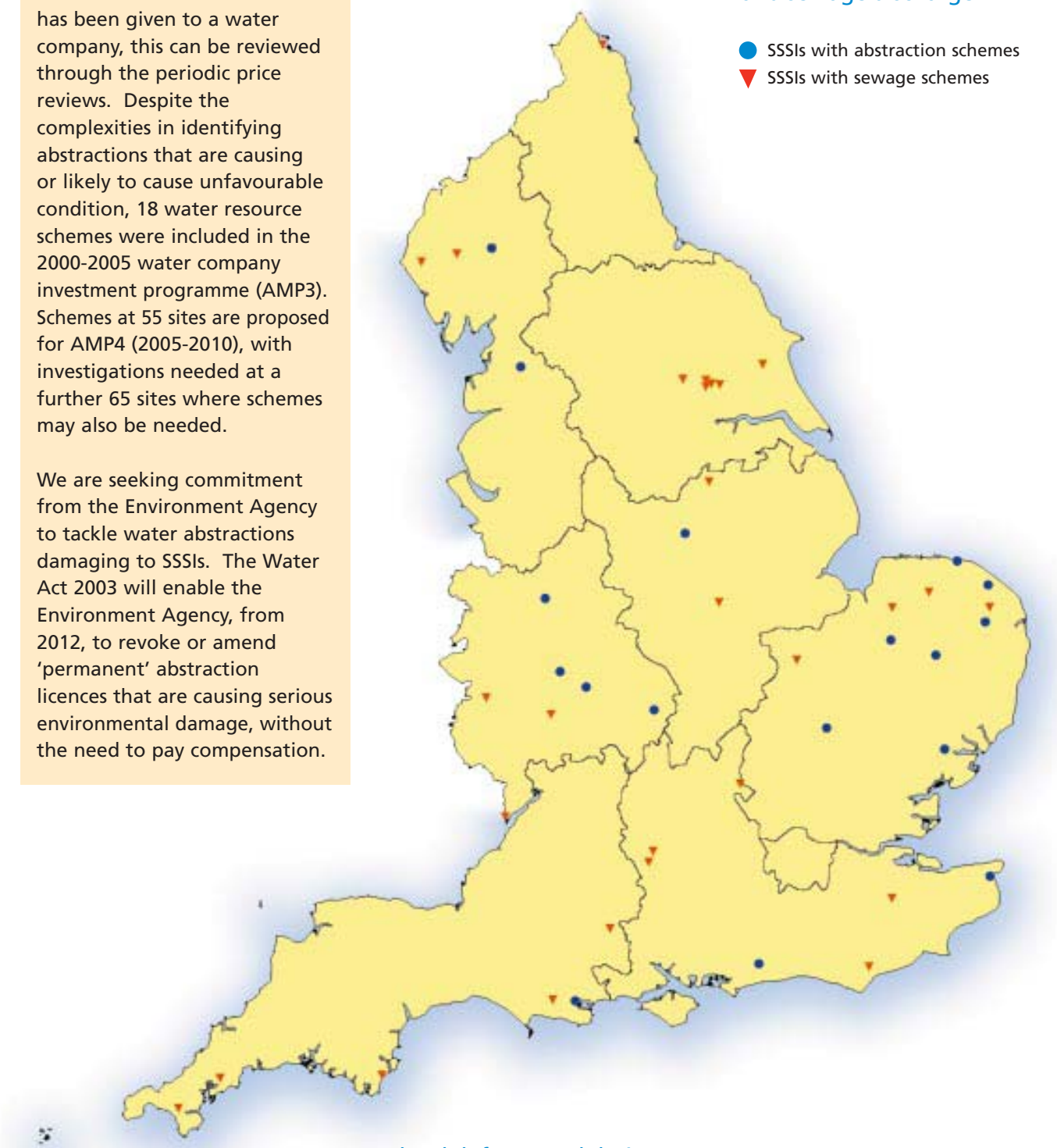
Peter Wakely/English Nature 19,738

An example of eutrophication

Where an abstraction licence has been given to a water company, this can be reviewed through the periodic price reviews. Despite the complexities in identifying abstractions that are causing or likely to cause unfavourable condition, 18 water resource schemes were included in the 2000-2005 water company investment programme (AMP3). Schemes at 55 sites are proposed for AMP4 (2005-2010), with investigations needed at a further 65 sites where schemes may also be needed.

We are seeking commitment from the Environment Agency to tackle water abstractions damaging to SSSIs. The Water Act 2003 will enable the Environment Agency, from 2012, to revoke or amend 'permanent' abstraction licences that are causing serious environmental damage, without the need to pay compensation.

AMP3 schemes in England to tackle damaging abstractions and sewage discharge



Flood defence and drainage

Flood defence and land drainage schemes have greatly affected freshwater SSSIs. Rivers have been deepened and straightened, and floodplains drained for agriculture and other uses. This means that large areas of floodplain fen and valley fen have been lost or modified. The Environment Agency's River Habitat Survey shows that about 85% of lowland rivers have been physically modified and SSSIs are no exception. In low-lying areas, the Environment Agency and Internal Drainage Boards control the water level regime through a series of pumps and sluices. In 1994 the Government introduced Water Level Management Plans, to be prepared by operating authorities in consultation with English Nature, for 500 SSSIs. Unfortunately, only a third of these have been implemented to date.

David Withrington

Signal crayfish

To address water level issues on SSSIs, as a first step all Water Level Management Plans need to be assessed for their effectiveness and then implemented.

We recognise that it is unrealistic to re-engineer all river SSSIs, for instance where they pass through towns. However, English Nature is promoting river 'audits' to identify where restoration works can be most effective. At present, there are no powers or budgets for blocking drains or restoring river channels and floodplains, which would help restore favourable condition on some SSSIs.

Invasive species

Invasive alien species, such as signal crayfish and water fern, are affecting the condition of some freshwater SSSIs. For example, Australian swamp stonecrop can smother ponds and small lakes and the signal crayfish can undermine river banks and oust native crayfish.

Peter Wakely/English Nature

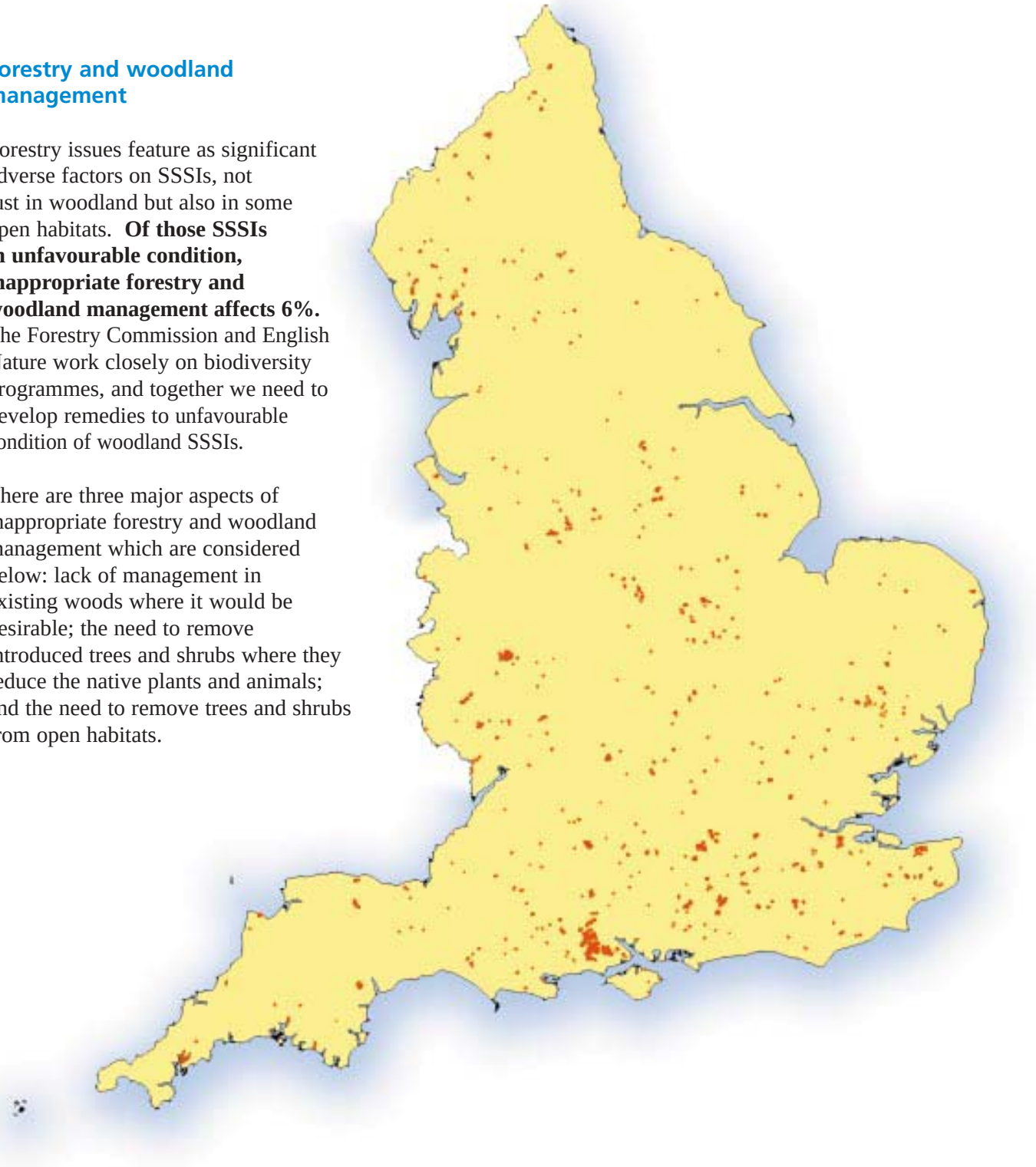
Invasive plant species

English Nature is working on localised programmes of control for Australian swamp stonecrop. However, more work is needed to develop effective control methods for alien species. We are working on public awareness programmes with the Environment Agency and bodies such as the Royal Horticultural Society and the National Angling Alliance. English Nature will produce a manual of measures to control invasive alien species in 2005. Such measures would be usefully supported by stricter controls on the import and release of invasive species.

Forestry and woodland management

Forestry issues feature as significant adverse factors on SSSIs, not just in woodland but also in some open habitats. **Of those SSSIs in unfavourable condition, inappropriate forestry and woodland management affects 6%.** The Forestry Commission and English Nature work closely on biodiversity programmes, and together we need to develop remedies to unfavourable condition of woodland SSSIs.

There are three major aspects of inappropriate forestry and woodland management which are considered below: lack of management in existing woods where it would be desirable; the need to remove introduced trees and shrubs where they reduce the native plants and animals; and the need to remove trees and shrubs from open habitats.



Extent of SSSIs in an unfavourable condition due to inappropriate forestry and woodland management and deer browsing

Unfavourable condition

Keith Kirby/English Nature

Lack of management where it would be desirable

Many former cultural woodland management systems no longer fit well with modern conditions. Traditional markets for coppice products, such as for hurdles or charcoal have largely disappeared or been replaced by other sources – much charcoal is imported. Without the traditional open conditions of a coppice, many shrubs and woodland floor plants become shaded out and lost. Characteristic invertebrates, such as butterflies of open woodland, are also lost. Extensive grazing, such as occurred in wood-pastures, in conjunction with pollarding of trees, have now almost disappeared from the countryside, with the loss of many veteran trees and their associated invertebrates. With the worldwide collapse in timber prices, there is little incentive for owners to manage mature woodland.

Traditional coppice such as this at Swanton Novers (left) was largely abandoned because there are few markets for the products

Keith Kirby/English Nature

In many wood-pastures there is a lack of younger trees to take over from the current veteran trees. At Moccas Park (left) a programme of planting young trees has now been implemented

Removal of introduced trees and shrubs

Many ancient woods have had conifers or other non-native trees planted in them. On some sites, ornamental plants such as rhododendron and laurel have spread through woodland, shading out native species. Removing such introductions in order to allow native wildlife to flourish once again can be both expensive and difficult, and there are currently few incentives or grants available for an owner who wishes to carry out such work. Even where conifers are being removed there may be little return from their sale, particularly if they are removed by thinning a wood over a long period, rather than as a clear-fell. There is a need to improve support and advice to owners and managers seeking to restore their ancient woodland SSSIs in these ways.

The following would help to increase the management of woods and wood-pastures:

Promoting markets for wood products – for example home-grown charcoal and beef from free-ranging cattle on commons; local heating schemes based on woodchips from existing woods (not energy crops); using home-grown timber in house construction; 'green procurement' policies, in conjunction with the UK Woodland Assurance Standard. These could spur a more local, sustainable use of woodland products from SSSIs.

Incentives, particularly for non-market benefits – such as grants, largely from the Forestry Commission. These are being reviewed and targeted more towards the non-market, non-timber benefits from woodland (particularly SSSI woodland). Priorities for grants could be maintaining open space habitats and old trees, removing non-native trees and shrubs (see opposite), and deer management.

Removing trees and shrubs from open habitats

Without suitable cutting, grazing or burning, scrub and trees spread into many lowland heaths, fens, and grassland sites. Also, some SSSIs have conifer plantations on former heaths, where our objective is to restore the open conditions.

Keith Kirby/English Nature

Hawthorn scrub has encroached on this patch of old grassland and threatens its survival

Tomorrow's Heathland Heritage and various other programmes, including work by the Forest Enterprise on its estate, have helped to clear scrub and trees from some sites. But, this has to be followed by appropriate long-term management to prevent the scrub returning.

Management of deer and sheep browsing/grazing

Large herbivores are a natural part of woodland systems and in wood-pastures grazing maintains the mosaic of habitats and the species for which the site is important. However, the intensive browsing and grazing associated with the increased numbers of sheep in the uplands and deer in the lowlands has affected many woodland SSSIs. At some sites this has changed the structure and composition of the woods, by reducing the shrubs and ground plants, often losing key species or preventing regeneration of the woodland trees. This last may deter owners from undertaking woodland management because, for example, coppice re-growth simply gets eaten.

In upland woodland SSSIs, improved fencing of woodlands, and reducing stock numbers can reduce problems of overgrazing. In the lowlands, deer fencing is expensive and best used as a short-term or interim means of reducing overgrazing. Management of the deer population is a necessary long-term solution.

Keith Kirby/English Nature

Coppice re-growth failed in Monks Wood (left) as a result of browsing by muntjac deer, and the ground flora became dominated by sedges and grasses. By contrast, re-growth from stools at Ham Street (below) is vigorous and woodland flowers such as bluebell thrive

Keith Kirby/English Nature

Coastal management

Our coastline supports a rich mosaic of habitats and species and many important geological and geomorphological features, shaped by coastal processes. A large proportion of SSSIs are on the coast. The causes of adverse condition on coastal SSSIs are complex, but the main impacts are inappropriate coastal management, 'coastal squeeze' and sea fisheries.

Inappropriate coastal management

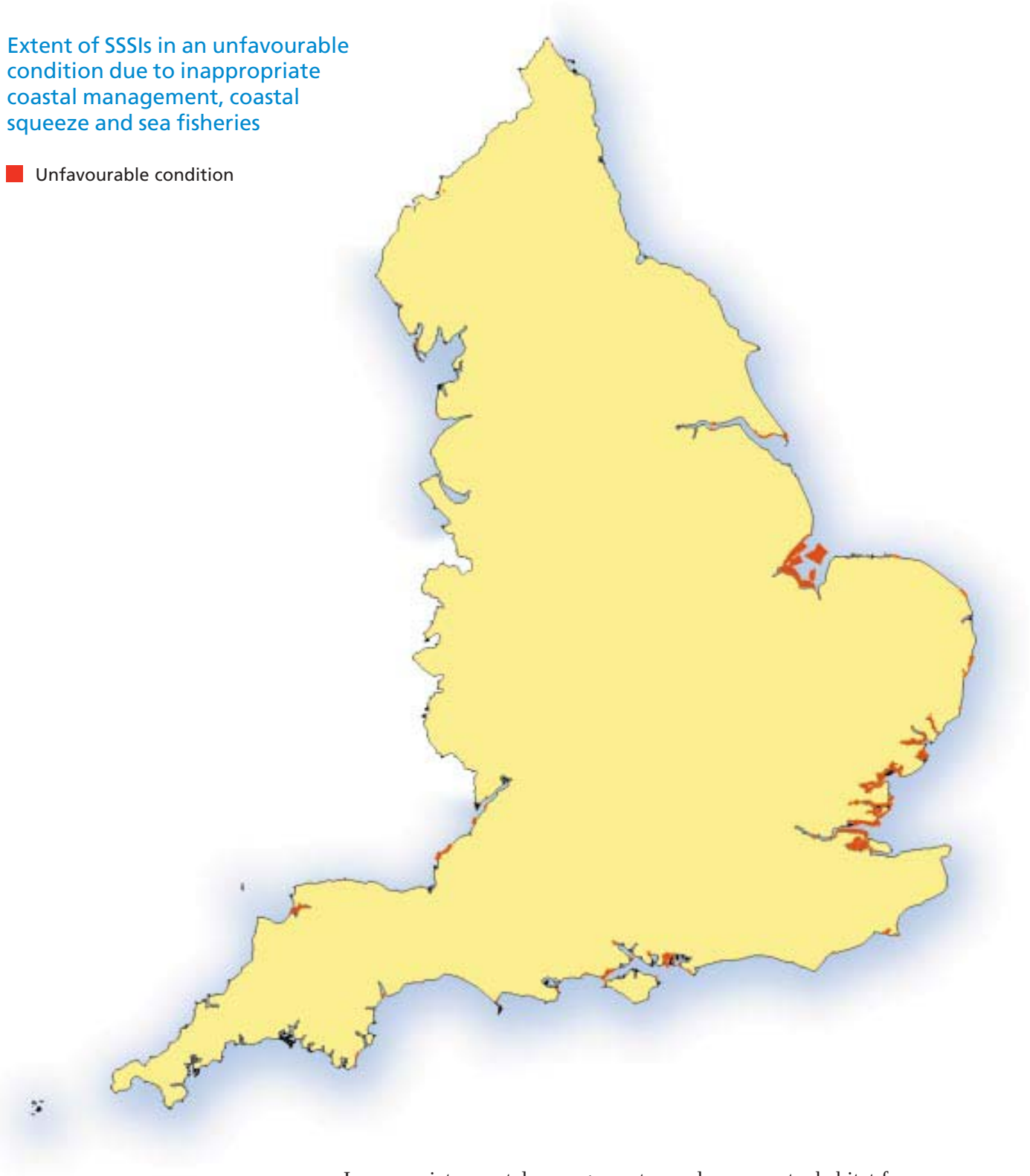
The coastline changes more quickly than other environments and we can expect the mix of habitats and species, and the location of geological features, to change over comparatively short timescales. However, engineering works to slow coastal erosion or reduce the risk of flooding may impact on SSSIs, either through direct damage (such as obscuring geological exposures) or by altering coastal processes. This inappropriate coastal management can cause long-term deterioration to a site (that may even be some distance from the original works), for example by starving a beach of sediment. Coastal defences that prevent erosion of cliffs, cliff drainage, re-profiling shingle structures, shingle recycling, beach recharge operations and other similar engineering-related impacts may have this effect on a site.

An example of inappropriate coastal management - sea defences

Peter Wakely/English Nature 16,230

Extent of SSSIs in an unfavourable condition due to inappropriate coastal management, coastal squeeze and sea fisheries

Unfavourable condition



Inappropriate coastal management can also prevent a habitat from 'migrating' in response to changes in the physical environment. For example, on an eroding dune system, forestry plantations may prevent the vegetation from naturally shifting landwards. Or, intensive arable or improved agricultural land on cliff-tops may not allow the landward migration of plant and invertebrate communities as the cliff erodes.

Peter Wakely/English Nature 20,906

Shingle reprofiling

Coastal squeeze

Another form of inappropriate coastal management is largely confined to estuaries in southern and eastern England. Here, the seawalls or other man-made structures prevent the 'roll-over' or 'migration' of habitats in response to sea level rise and other coastal processes. Without natural migration of vegetation, this results in the loss of intertidal habitats and is known as 'coastal squeeze'. In Essex alone some 25% of the saltmarsh (100 hectares per year) has been lost in this way in the past 25 years. It also occurs on open coast where the landward migration of features such as saline lagoons or gravel barriers is prevented by man-made sea defences across river valleys. In such situations, sea level rise and increased storminess leads to the erosion of the feature, either reducing its area or causing its loss altogether.

An example of coastal squeeze

Sue Rees/English Nature

A change in coastal management is often required to restore the SSSI to favourable condition. English Nature is working closely with Defra, the Environment Agency and coastal local authorities to make sure that coastal management is addressed at a strategic level, through the development of Shoreline Management Plans and coastal defence strategies. Individual coastal flood defence or coast protection schemes, in or adjacent to SSSIs, may well be able to take the necessary actions to achieve favourable condition. Shoreline Management Plans, or estuary strategies, can also be used to resolve the effects of coastal squeeze, by 'managed realignment' of the coastline.

In many cases working in partnership with landowners will best achieve the desired outcome. In the case of cliff-top locations this is likely to require agri-environment schemes to encourage a change from arable to permanent unimproved pasture, which will help the natural change and migration of cliff habitats. Such agri-environment schemes must acknowledge, and allow for, coastal habitats to respond to coastal change.

Sue Rees/English Nature

Sea fisheries

With changing technology and growing pressures on inshore fishing, some sea fisheries or fishery techniques have become a significant factor contributing to unfavourable condition. For example, in May 1998 it was necessary to prevent the suction dredging of razor shells in The Wash. Other bottom-dredging fishing methods have been suggested as potentially damaging, as they remove non-target species and biogenic (living) structures, such as mussel beds and reefs of tube-living worms, and cause changes in sediment characteristics.

Fisheries within European marine sites should be subject to 'Appropriate Assessments' so that the impacts can be adequately assessed and other fishing options investigated. Also, the mechanical disturbance of soft sediments needs to be studied in more detail, to better understand what impacts it may have on mudflat fauna and the birds that feed here.

English Nature is continuing to liase closely with the Sea Fisheries Committees and is aiming to develop best practice guidelines for conducting Appropriate Assessments on fishing activities. We are supporting several research projects to increase the knowledge in this area. We are also working with Defra on their review of marine fisheries and environmental enforcement to ensure that our SSSI and biodiversity concerns are adequately addressed.

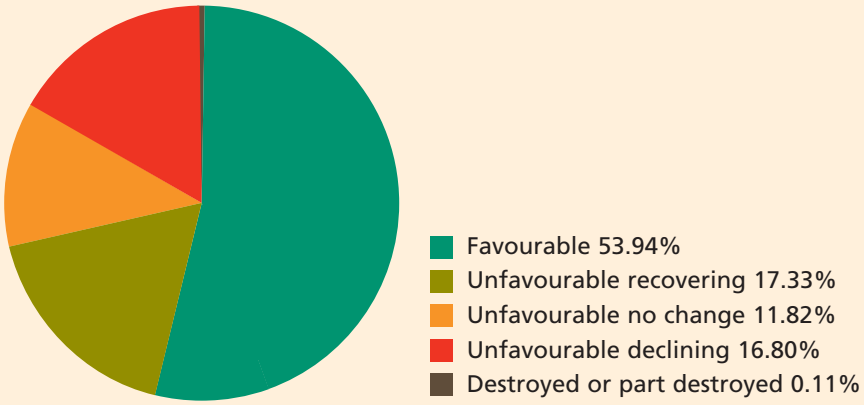
National Nature Reserves in England

English Nature and its predecessor bodies have declared some of the finest wildlife and geological sites as National Nature Reserves (NNRs). These sites are managed for both their wildlife and for people to enjoy. English Nature holds land through ownership, lease or Nature Reserve Agreement, and other bodies, approved by English Nature, hold and manage NNRs. NNR land, because it is also SSSI, must contribute to the Government's PSA target.

Given the historical focus on management for nature conservation and greater resource availability on NNRs, it is not surprising that they are in better condition than the SSSI series as a whole. Currently, 71.3% of NNR land is in favourable or recovering condition.

There is, however, still much to do and English Nature has set itself a series of difficult targets for the coming years. We aim to reach 80% by March 2004, rising by 5% per year until the 95% target is reached by March 2007.

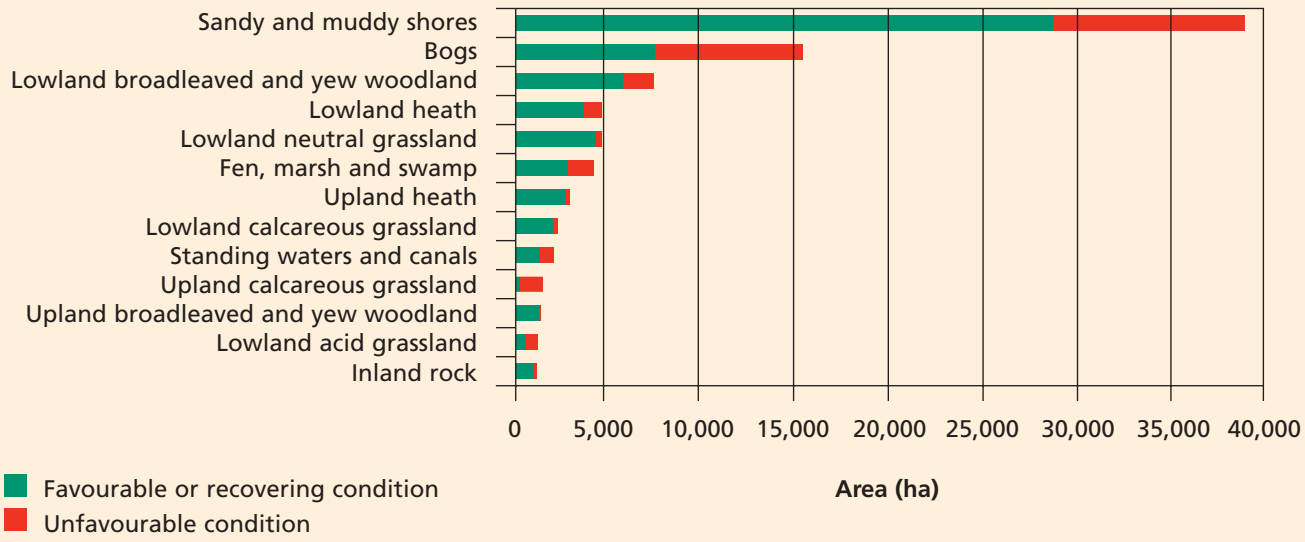
Condition of NNRs by area



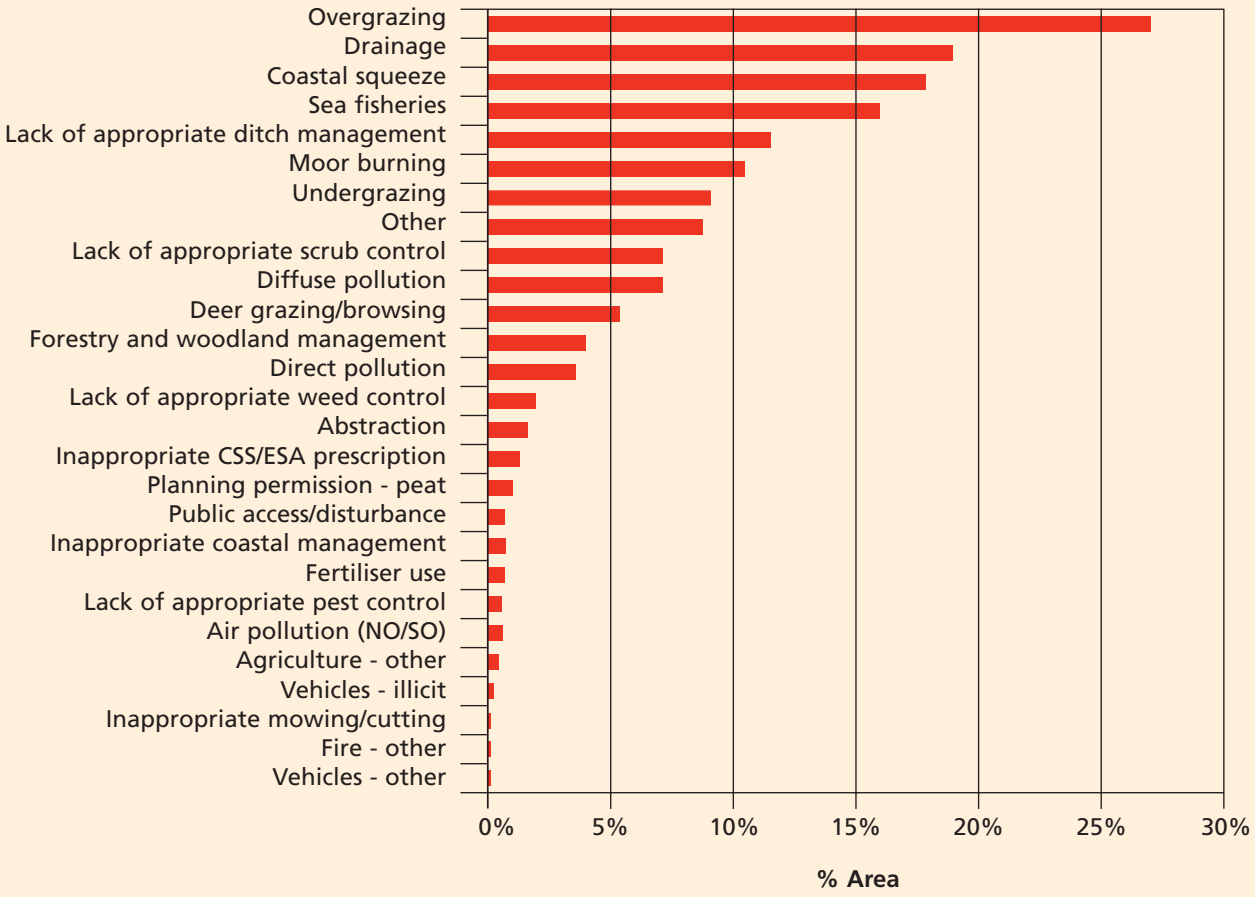
The analysis of the condition of NNRs shows that much of the management that falls within the control of English Nature or Approved Bodies is supporting the special interests of the relevant NNR. However, there are a significant number of leases and Nature Reserve Agreements in place on English Nature's NNRs which do not enable the necessary management. These have therefore prevented improvement of the condition on these reserves. In addition, the range of external factors affecting the condition of all SSSIs inevitably also impact on the NNRs. Issues such as 'coastal squeeze', upland overgrazing and diffuse pollution inputs will all need to be addressed.

In summary, English Nature has analysed the causes of unfavourable condition across the full suite of NNRs and identified the work required to achieve recovery. The proposed programme will take account of the need to refocus existing resources and seek additional resources where necessary. This will involve close liaison with partners to review tenure constraints and resolve any cross-boundary impacts. As the previous section illustrates we will also pursue policy and legislative changes in order to address external impacts on all NNRs. Given that NNRs are places where nature conservation is the primary land use, and that their condition is not yet what we want it to be, this gives a clue to the complexity and challenge of meeting the PSA target across all SSSIs in England.

Condition of habitats on National Nature Reserves



Reasons for unfavourable condition on National Nature Reserves



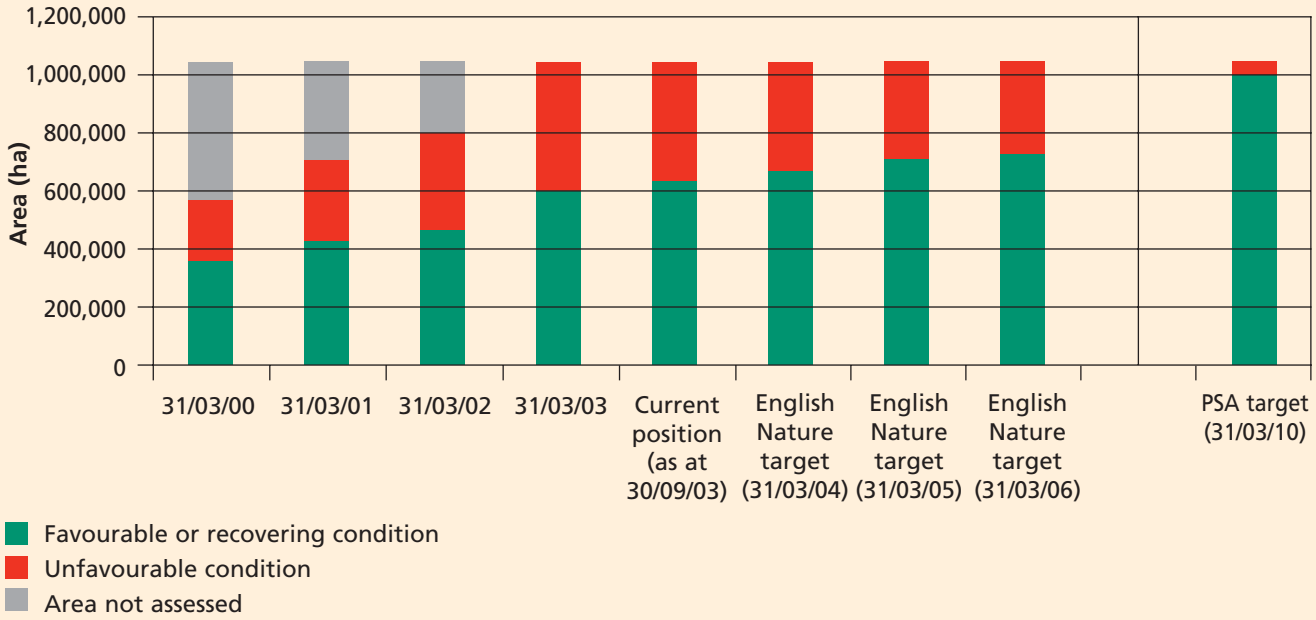
4 Delivering the SSSI PSA target – achieving 95% favourable condition

Background

This report has set out the results of the first complete six-year cycle of the assessment of SSSIs by English Nature. This achievement is only the first step of the task ahead – to meet the Government's Public Service Agreement target to get 95% of the SSSI estate into favourable condition by 2010. We now know that in 2003, 58% of SSSIs are in a favourable or recovering condition. This leaves over 400,000 hectares (1 million acres) of land to bring into favourable or recovering condition over the next six years.

English Nature has set a target of increasing the area of SSSI land in favourable or recovering condition by 5% per year. The aim is to reach 62% by March 2004, 67% by March 2005 and 72% by March 2006. How is this to be achieved?

Delivering the SSSI PSA target



The causes of unfavourable condition may be broadly categorised into two separate strands:

- those resulting from a lack of management (and occasionally damage) by individuals or bodies, and
- those resulting from factors that operate on a much broader scale, usually related to Government policy and regulation.

Defra's strategy for achieving the PSA target has two themes, reflecting the two strands above, within which there are five strategic aims:

1 To make best use of funding to deliver favourable condition;

2 To encourage both private and public sectors to manage SSSIs properly;

3 To ensure the legislation governing SSSIs is understood and implemented;

4 To ensure Government policy takes account of SSSI interests; and

5 To support research and development to benefit SSSIs.

Implementing the strategy

Putting this strategy into practice is not just for English Nature, or indeed any one public body, but is down to a wide range of Departments and Agencies across Government. Partnership with private and voluntary organisations is also essential, either by funding or support to promote positive site management, or by regulation to discourage inappropriate management. Consequently, a wide range of partners are stakeholders in delivering favourable condition on SSSIs.

The following pages present a summary of English Nature's initial views on these five strategic aims and the 'next steps' within each.

1 Funding

The commonly held view that sites are best protected by leaving them alone is only very rarely true. Most of the British countryside is the product of human activity and wildlife sites usually require active and ongoing management to maintain their special interest. In the absence of grazing, grassland will often become scrubland and then woodland. Whilst it is true that much of the countryside used to be wooded, that does not mean that we should now allow the last few remaining orchid-rich grassland sites to scrub over and disappear forever. The management of our wildlife sites is often expensive, especially as the economics of production in the countryside (such as sheep farming) change. This is true whether the land manager is a private individual, a corporate body or a Government agency. In 1983 in the lowlands, for example, managers of grassland sites used to charge shepherds for grazing rights, but in 2003 some landowners now have to pay graziers.

Restoring SSSIs to favourable condition, and maintaining that condition, costs time and money. To date, the funding for these tasks has largely been from Government's public funds to English Nature. Approximately 40% of English Nature's total budget is spent directly on special sites, with about £5 million spent directly on National Nature Reserves and £12 million directly on other SSSIs.

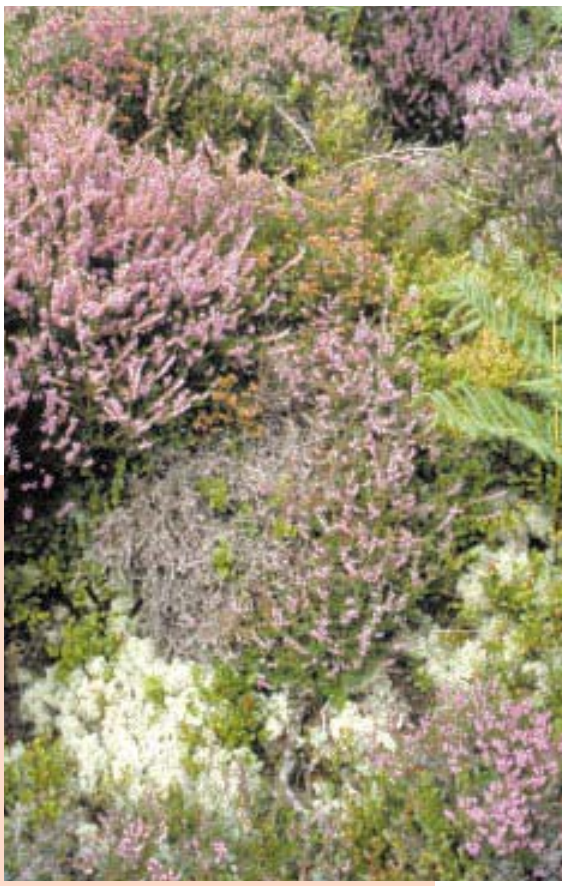
English Nature pays the majority of the SSSI budget to private individual SSSI owners and occupiers, under a 'management agreement' in return for the proper management of the site. Such payments are calculated to compensate the land manager for the cost and effort of actually managing the site for the wildlife, and do not generate a profit. Over 167,000 hectares of SSSI land is currently managed under an English Nature management agreement.

Stable levels of funding will maintain the condition of the SSSI estate but will not be able to move more area into favourable condition. Once land is 'recovered' to favourable condition, resources must keep it there. Over the period 2002-2004 SSSIs benefited directly from a variety of Government and non-Government funding sources, such as the Treasury's 'Capital Modernisation Fund', Defra's 'National Sheep

Envelope' and the Heritage Lottery Fund. These funds enabled a significant improvement in overall site condition. In the period 2004-2006, English Nature has an increased budgetary forecast resulting from the 2002 Spending Review, and these funds also will be channelled into improving SSSI condition. Thus, we estimate that favourable condition will be achieved on 67% of SSSI land by March 2005.

In the future, direct or indirect funding to manage SSSIs will need to increase if the Government's PSA target is to be achieved. It may be that new agri-environment schemes, and the better integration of services delivered by Government to land managers can improve the situation.

Dan Hunt/English Nature



Close-up of healthy upland heath

Offering solutions through partnership – English Nature's Sheep and Wildlife Enhancement Scheme

The Sheep and Wildlife Enhancement Scheme started in 2003, based on the principle that many important and extensive wildlife habitats need sustainable grazing to keep them healthy. Making that happen requires viable farms and the skill of sheep farmers.

The scheme aims to improve the sustainability of sheep farming in areas of high wildlife interest, by providing financial support to sheep producers who are managing this land. Supporting farmers to re-structure their farm business can help them find a better balance between managing their sheep and wildlife at the farm scale.

The funds are part of Defra's 'Sheep National Envelope', and English Nature has joined with them and the Rural Payments Agency to deliver this innovative scheme.

In 2003 the scheme has two strands - helping the farmers of upland SSSIs shift from overgrazing to sustainable grazing; and supporting the re-introduction of sheep grazing on undergrazed lowland grassland. The response from farmers has been very positive.

Dan Hunt/English Nature

Contrast between overgrazing and healthy upland heath

The scheme has delivered better, more sustainable management of some of England's key wildlife areas, and improved the viability of the farms that support that wildlife. In the uplands of Cumbria, Northumberland and Yorkshire sustainable grazing is in place on 15,000 hectares of SSSI. Across the lowlands of England nearly 500 hectares of SSSI is now in suitable grazing management.

2 Partnership with corporate bodies and public authorities

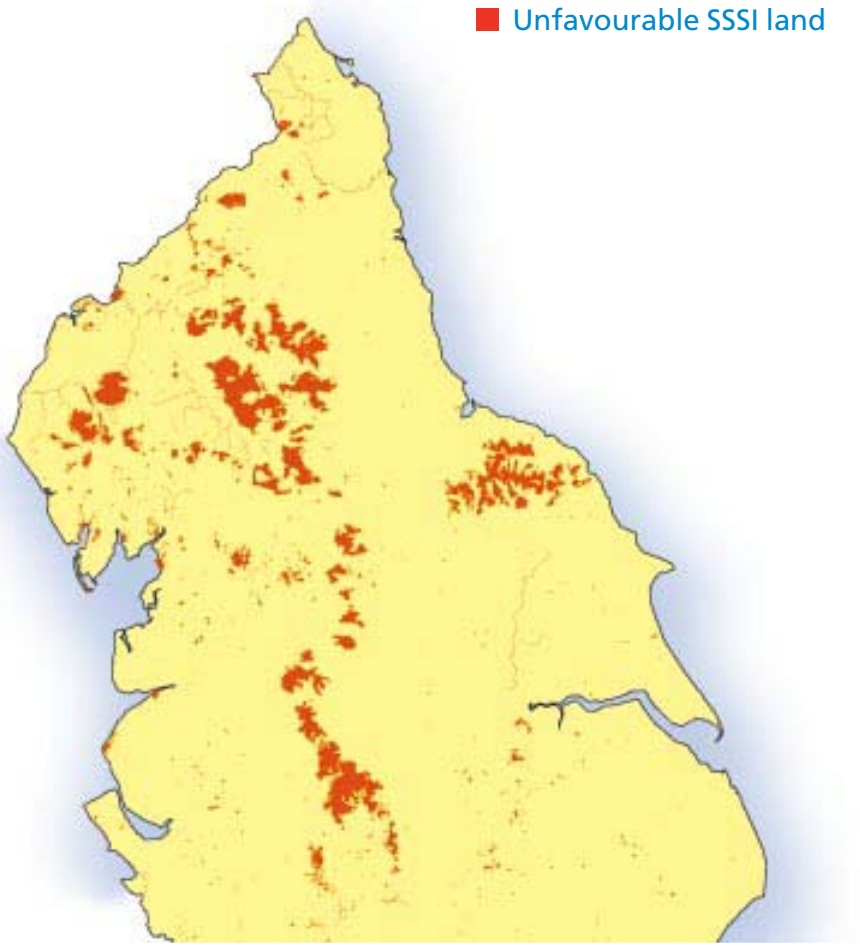
Condition assessment is not an end in itself. The aim of the exercise is to provide information that enables SSSIs to be conserved. It is necessary to know both what is the cause of unfavourable condition and what is the remedy. These remedies are seldom in English Nature's control. They often involve Government departments and other public bodies, in their regulatory or grant-paying capacities. In many instances there may be a range of alternative remedies and many regulatory bodies have a key role in delivery of the PSA target. English Nature is thus working closely with these key organisations seeking their commitment to help deliver favourable condition on SSSIs.

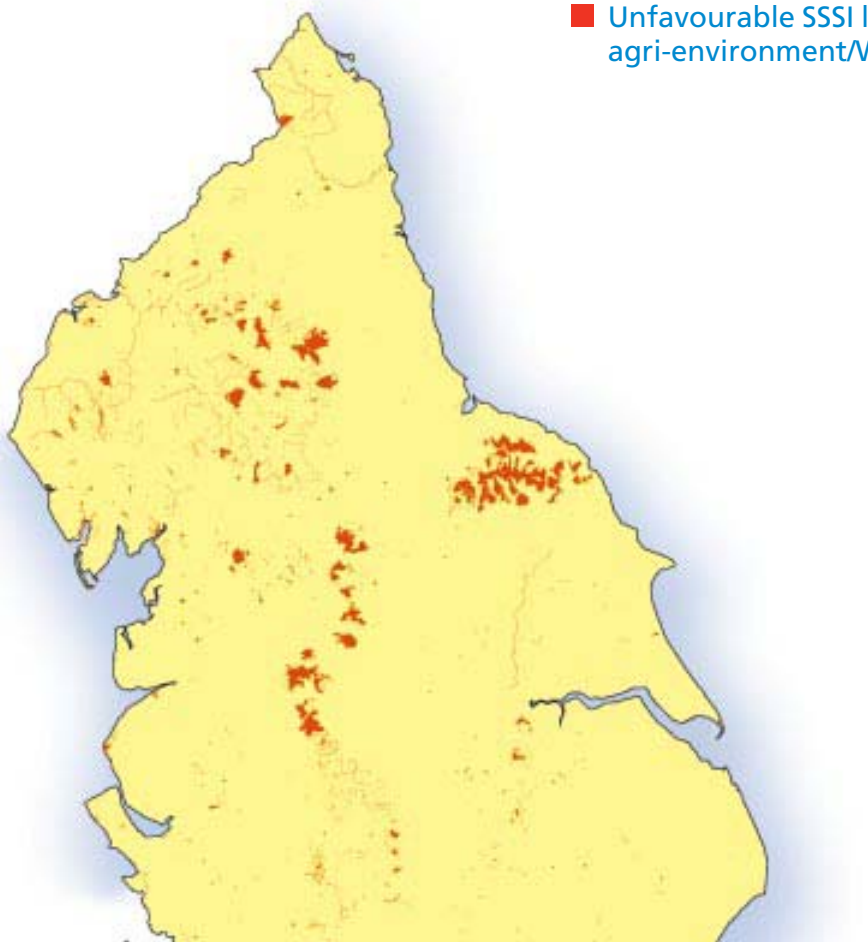
Next steps - remedies

English Nature is working to develop a suite of remedies with partners, for every site that is in unfavourable condition. Implementing these remedies will require a coordinated approach. For example, the remedies for solving inappropriate water management on SSSIs depend upon who manages the water levels. If the landowners of the SSSI set the water levels, the remedy may lie in using an agreement to encourage the necessary special management - such as the use of boards to keep up the water levels in the summer. This could be achieved through a Wildlife Enhancement Scheme (WES) management agreement with English Nature, or an agri-environment scheme agreement with Defra. However, regulatory bodies, such as Internal Drainage Boards, local authorities or the Environment Agency, may set water levels. In such cases, the remedy will lie with those bodies, and their own efforts to meet the Government's PSA target for SSSI condition.

In order to get useful information on remedies for SSSI land in poor condition, it is essential that English Nature can combine its information on condition and reasons for unfavourable condition, with data held by other bodies. Information on remedies will only be useful if it makes sense to those who have to put the remedies into effect. By combining the information that English Nature can provide on SSSI condition with data available from other bodies on their actions and interests, we can see much more clearly what must be done to achieve the PSA target.

English Nature and the Rural Development Service (RDS) of Defra have integrated work to show the effectiveness of agri-environment schemes in conserving SSSI land across England. Together we will identify the extent of Defra agri-environment schemes and English Nature's WES agreements. This will bring to light unfavourable SSSI land that currently has no existing financial support mechanisms for conservation.





Next steps - co-ordinating data

English Nature is not the only source of spatial data. Data are available, sometimes in great detail, for particular habitats or species. For example, this report gives information on the condition of standing waters and canals. This habitat includes not only lakes that are rich in aquatic plants, but also reservoirs and gravel pits that are used by wintering birds. These bird sites tend to have far less stringent water quality requirements. By combining water quality data gathered by the Environment Agency under the Water Framework Directive, and English Nature's condition information, a far clearer picture of the condition of these sites emerges. Whereas the overall condition of standing water SSSIs is relatively good with about 69% of SSSIs in favourable or recovering condition, that of the lakes is markedly worse: only about half of such land is in favourable or recovering condition.

Corporate bodies (in both the private and voluntary sectors) and public authorities own much of the SSSI series. For both private and public bodies, the Countryside and Rights of Way Act 2000 sets out legal obligations for their management of SSSIs. Defra organises and hosts a 'Major Landowners Group' for those bodies with the largest SSSI landholding, which discusses and agrees the issues behind, and solutions to, SSSI management. The first meetings have set out much of the data contained in this report, and this has been instrumental in defining the issues.

Generally, both private and public sectors are willing partners in the positive management of SSSIs. The private sector naturally includes major charities like the RSPB and National Trust who are committed to nature conservation in any case, but large private sector interests, such as Water Companies, also well understand that SSSI condition is a key indicator of sustainable development.

Public bodies such as the Ministry of Defence, Forestry Commission, Crown Estate and Local Planning Authorities equally understand the need for positive and sympathetic management of SSSIs, in line with their duties made explicit by the CRoW Act 2000 (see boxes below).

Achieving favourable condition in England for SSSIs on Ministry of Defence land

The Ministry of Defence (MOD) has made a high-level commitment through its strategy for the defence state, the Defence Estate Corporate Plan and the Ministerial Environment and Conservation Advisory Group to:

"maintain, manage and use …SSSI land … to meet statutory obligations and Government commitments …[to] seek to improve the nature conservation value of this land [and] match, or exceed, national, regional and local levels of performance under Sites of Special Scientific Interest condition surveys."

The MOD is an active member of Defra's Major Landowners Group and High Level Biodiversity Delivery Group and has established a MOD-wide SSSI condition improvement project to meet the PSA target challenge.

The defence estate contains the greatest SSSI area in public ownership in England (144 SSSIs covering around 85,000 hectares). Of this, around 64% is already in favourable or recovering condition. The SSSI estate is varied in both size and range of features. Some are large holdings such as Salisbury Plain and the Brecks. There are also groups of smaller SSSIs, for example heathlands in the Thames Basin, where MOD is one of a number of significant landowners.

An initial review suggests that the reasons for unfavourable condition, and consequently the remedies required, are similar to sites in other ownerships and reflect the key issues identified in this report. These include scrub control and undergrazing primarily in the lowlands, overgrazing and moor burning primarily in the uplands, forestry and woodland management. On some sites improving condition is going to be within MOD control, but in other places the solution will require action by others. It is considered that direct military impacts account for only around 3% of the MOD SSSI area in unfavourable condition. However, defence-related activity is MOD's 'core business' and it is recognised that operational requirements and military training can make it difficult for land managers to institute the improvements needed to move SSSIs to a favourable condition.

MOD's SSSI project is initially undertaking a condition audit in England. This will ensure that managers of individual site units have a common understanding with English Nature of the condition of the individual units and, where sites are in unfavourable condition, the reasons for this and the options for improvement. This audit will be used to prepare a costed pan-MOD action plan to improve SSSI condition. The project will tap into the expertise of their recently established Environmental Support Team (now over 30-strong) as well as the long established Conservation Groups on many sites. The MOD has a number of joint projects with English Nature and others, including the LIFE Project on Salisbury Plain and initiatives through Tomorrow's Heathland Heritage. These will all help to bring in much needed resources for work to improve condition. It is recognised that these links and other existing and new partnerships will be essential to meeting the PSA target. Close working relationships between Heads of Establishments, estate advisors, environmental advisors and Statutory Bodies are being maintained and improved. The project reports progress to Defra through the Major Landowners Group.

Achieving favourable condition in England for SSSIs on Forestry Commission estate land

The Forestry Commission has taken up the challenge of recovering the quality of its suite of SSSIs with enthusiasm, building on previous agreements with English Nature to establish agreed management plans for all its sites.

The Forestry Commission landholding in England covers 260,000 hectares, of which 67,311 hectares is designated as SSSI. Two-thirds of the area is wooded, of which half is extensive pine plantation designated as Special Protection Area for nightjar and woodlark. The remainder consists of a range of habitats, mostly lowland heath and northern bog, with smaller areas of fen, saltmarsh, meadow, gorge, crag and upland fell.

Some 71% of this area is currently assessed as in favourable condition. The reasons for unfavourable condition vary widely. Many sites were damaged by past conifer planting in ancient woodlands or open habitats, while others, particularly bogs, were damaged by past drainage. Others have suffered from causes beyond immediate control, such as declines in water quality or aerial pollution. That 71% is in favourable condition is the result of much active recent SSSI management, helped by funding under several large EU LIFE projects (the New Forest, Kielder Mires, and limestone pavements in the north west) and lottery support for Tomorrow's Heathland Heritage for example in Dorset.

An SSSI Condition Reporting database has been designed, onto which all the information about SSSI condition, the causes of unfavourable condition, and the costed actions planned or undertaken are recorded. The mappable GIS database links these actions to the habitat and unit areas, and can distinguish planned and licensed work from agreed aspiration. This database allows the Forestry Commission to make projections of both the resource need and the associated work needed between now and 2010.

Audit and data collection will be completed by early 2004. Initial estimates of cost average at around £1,000 per hectare, though the range is wide. The exercise has allowed the Forestry Commission to distinguish that which can be achieved within existing resources from that which needs substantial additional funding.

3 Legislation

The 1981 Wildlife and Countryside Act underpins the protection and management of SSSIs and the changes introduced through the Contryside and Rights of Way (CRoW) Act 2000 brought many significant improvements to the legislation, that will help deliver favourable condition.

In particular, there is now a legal mechanism for dealing with 'passive neglect' of sites in the form of Management Schemes and Management Notices, whereby owners can no longer allow sites to deteriorate through lack of management. English Nature's early experience suggests that these powers can be an effective last resort in persuading those very few reluctant owners to undertake management.

Further powers introduced through the CRoW Act also allow prosecution of third parties for damaging sites and greatly increased levels of fine following prosecution. English Nature uses these powers where necessary.

Importantly, CRoW also introduced a duty on all public bodies to conserve and enhance SSSIs, where this is consistent with the exercise of their functions. Early indications show that these duties are not yet well understood by all those concerned, and English Nature is working with Defra to ensure that public bodies use their regulatory functions effectively as a remedy to unfavourable condition. The publication by Defra in 2003 of a *Code of Guidance* helpfully set out the Government's expectations in relation to SSSIs, balancing appropriate use of the SSSI legislation with English Nature's aim to work positively with owners and occupiers of SSSIs.

This report has identified two issues where new legislation may assist in remedying unfavourable condition; on commons, and through the implementation of the Water Framework Directive.

4 Government policy

The link between Government policies and management of individual SSSIs is complex. Very often there are specific management measures that can, with time and money, be put in place on the ground. However, there can also be external factors or policies that hold the site in unfavourable condition. Sometimes these policies appear to be either long-term or intractable.

For example, much of the uplands have been heavily overgrazed for many years – the result of agricultural incentives that directly encouraged upland farmers into stocking very high numbers of livestock. A combination of better data and knowledge (from survey and research), increased direct funding (from imaginative use of new schemes) and removal of perverse incentives (from agricultural policy

change) now, for the first time in decades, can help to reduce the grazing pressure. However if, for example, the effects of long-term air pollution of sulphur from industry are not curtailed, then upland heaths will never fully recover.

As another example, the effects of sea level rise are eroding many areas of coastal saltmarsh. Naturally, the saltmarsh would retreat slowly, reforming inland as the coastline moved to adapt to the change. Today, there is often a concrete wall that prevents this natural movement, and the coastline is artificially constrained. To ensure favourable condition of coastal SSSIs the hard sea-defences should be removed – but work must be targeted in the context of protecting people's homes and livelihoods.

Such examples start to illustrate the complexities of policy work, the need to influence many stakeholders, and the long-term nature of the solutions. We must find a way forward, and these solutions also illustrate why the condition of SSSIs is a good indicator of sustainable development.

5 Research and development

Although many of the reasons for unfavourable condition are known, the remedy may not yet be fully understood. Investment in medium-term research is needed to provide both generic, and site-specific, solutions. These solutions are particularly needed to influence factors such as air pollution, water quality and climate change.

Air pollution

It is often difficult to determine the effects of air pollution on SSSIs, given the complex interactions of pollution with site management and other influences. The impacts of acidification from deposition of sulphur or nutrient enrichment from excessive nitrogen pollutants are a major concern to English Nature. However, the effects may take many years to become apparent, though on some sites, soils and habitats may already have been affected by historical pollution. We are aware that the condition monitoring undertaken on SSSIs currently fails to detect the full effects of air pollution.

However, the 'critical loads' concept has been used in the UK to assess air pollution impacts on semi-natural ecosystems. Critical loads are thresholds, below which there will be no significant harmful effects on an ecosystem (according to current knowledge). It is possible to produce maps of critical loads for acid and nitrogen deposition across the UK. Where deposition is greater than the critical load, this indicates that there is a risk from air pollution. Estimates for 1995-1997 suggest that 72% of terrestrial SSSI land was at risk of exceeding the acidification limits, and about 92% was at risk of exceeding the limits for nitrogen enrichment. These data give only a broad indication of

risk; they do not tell us if or when the impact will occur, nor whether it will affect site condition. English Nature, through the JNCC, is working with Defra, the UK Critical Loads Focal Centre and the Environment Agency to consider developing the critical loads approach for site assessment and to refine methods of site-based assessment of air pollution impacts.

English Nature is also funding research to develop monitoring of the impacts of nutrient nitrogen on SSSIs. We hope that this will provide an early indication of nitrogen impacts on sites and improve our understanding of the impacts on site condition so that necessary action can be taken. We are advising Government on the risk posed to SSSIs by air pollution and have advocated greater reductions in emissions of the major air pollutants. Increasingly, the major source of pollutants is from non-regulated diffuse sources, such as intensive agriculture and road transport, which are more difficult to control. The new Integrated Pollution Prevention and Control mechanism will address some of the air pollution impacts on SSSIs, but it will not address the problems of diffuse air pollution.

Marine water quality

The majority of pollutants enter the marine environment from land-based sources, such as point source discharges of effluent and diffuse run-off. The resulting impacts upon marine water quality may affect species and habitats and in some circumstances they may damage the integrity of the site. Chemical and physico-chemical measurements, used to characterise water quality, have not been used to inform the condition of estuarine and coastal SSSIs in this round of reporting. However, English Nature is working closely with the Environment Agency to gather information and further assess the impact of water quality on sites designated under the Habitats Directive, through the Environment Agency's Review of Consents project. As we increase our understanding of how water quality affects these sites, and appropriate targets and standards are derived, we will incorporate this information into future SSSI condition assessments.

Prominent issues in relation to SSSI condition, and which are currently being investigated through the Review of Consents project, include nutrient levels and increasing occurrence of algal blooms, such as *Enteromorpha*. These blooms can form impenetrable mats on mudflats and sandflats. Such mats can severely reduce infaunal biomass and diversity and affect the available food for many wildfowl and waders. Work is currently under way to improve our understanding of the factors controlling the growth of these mats, in addition to how they are affecting the condition of sites. There are already a few cases where impact has been evident, such as reduced use of Seal Sands SSSI (Teesmouth NNR) by overwintering waterfowl.

Climate change and SSSI condition

As a result of human activities and the associated production of greenhouse gases, a period of unprecedented climate change is likely to continue for many decades to come. Because of the lifespan of these gases once in the atmosphere, attempts by the world's Governments and businesses to reduce emissions and stabilise climate will have little effect until at least the second half of the 21st century. Since climate change cannot be prevented, or indeed moderated in the short- to medium-term, strategies must be put in place to adapt to its impacts.

Those involved in nature conservation need to understand the likely impacts of climate change on wildlife and to develop policies and conservation management to help accommodate this change, both at special sites and in the wider countryside. The results of research projects such as MONARCH (Modelling Natural Resource Responses to Climate Change) show that the composition of species in habitats will change in coming decades. Some species will seek more suitable 'climate space' and will need to move through the landscape to new locations. Nature conservation therefore has to adopt a more dynamic approach in which functioning ecological systems are key to helping to manage change in the landscape.

Conclusions

As is clear from this report, we now have a good understanding of what favourable condition means in terms of the wildlife and geology on SSSIs. More importantly, we also understand what general management is needed to produce such conditions, and the external factors preventing this, which need to be tackled.

The Government's PSA target is ambitious. It would certainly make the condition of England's wildlife sites among the best in the world, and the process by which it was achieved would become a textbook example of site management. It would also be a significant step towards sustainability in the way we interact with the British environment – the condition of our best wildlife sites is a key indicator of sustainable development, and we can demonstrate with SSSI condition the key principles of ecosystem resilience and recovery.

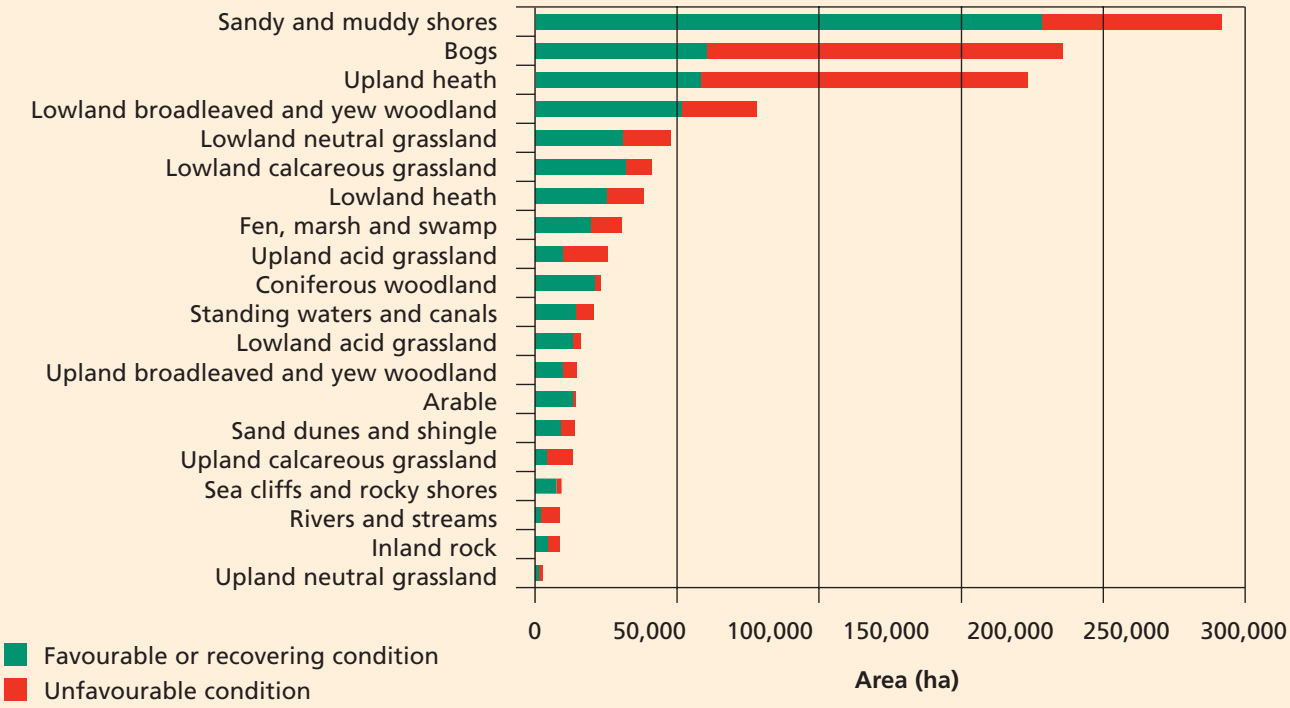
However, as the previous sections illustrate, it is only achievable if a combination of legislation, funding and policy can embed suitable and sustainable site management into the way we manage our countryside. English Nature believes that the PSA target is achievable and we look forward to working with others in meeting this challenge.

5 The condition of SSSIs by broad habitat

It is English Nature's aim that 95% of the area of each individual habitat type will be in a favourable or recovering condition. Some habitats make up only a small proportion of the total SSSI series. It is, nonetheless, important that the reasons for unfavourable condition on these sites are tackled to ensure the conservation of all of England's biodiversity.

The condition of SSSIs is not the same for every habitat. The table below shows the total area of the broad habitats contained within the SSSI series and their condition. In summary, the condition of upland habitats is generally poorer than lowland habitats. Most lowland habitats are in better condition than the national average.

Condition of habitats on SSSIs



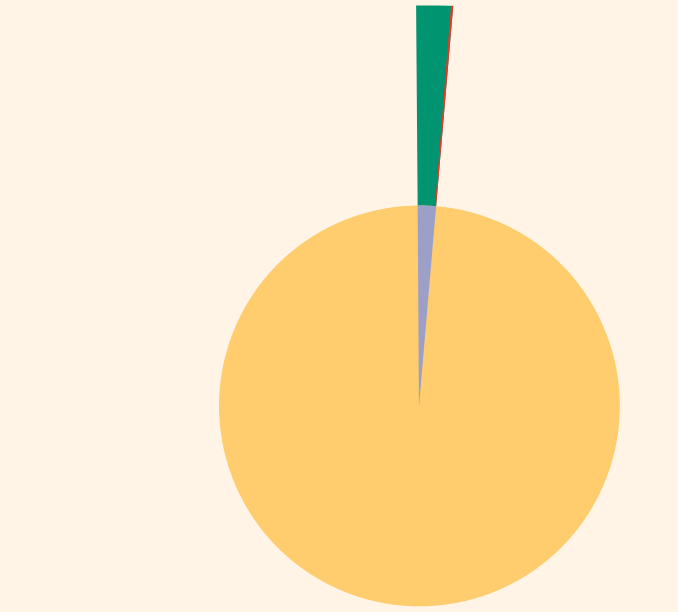
The main habitats are drawn from the Biodiversity Action Plan classification of broad habitats, with some further refinement enabling English Nature to report separately on woods, heaths and grasslands in the uplands and the lowlands. This allows issues specific to the uplands and lowlands to be identified. In future reports we hope to report in more detail on a wider range of habitats, for example lowland raised bogs, as distinct from blanket bogs.

The condition of each of these main habitats in the SSSI series is discussed in the sections which follow, with an explanation of the habitat's character, its typical composition and notable species. Current condition and the issues which need to be addressed are summarised. The habitats are presented alphabetically.

Arable land

Character

There are over 14,100 hectares of arable land within SSSIs. These SSSIs are dominated by the stone-curlew habitat on arable farms in the Brecks. This is a very special habitat, for its dry, stony soils provide a significant proportion of stone-curlew habitat in England. There are also nine SSSIs for arable plants (such as grass-poly, broad-leaved cudweed and night-flowering catchfly), although these sites cover only a small proportion of the total arable SSSI area. Arable plants are the most threatened group of plants in the British flora.



Condition

98% of arable SSSI is in favourable or recovering condition.

This is due to the efforts of the farmers and landowners on these SSSIs, particularly those working with the RSPB's Stone-curlew Recovery Project (part-funded by English Nature).

The 2% of arable SSSI land in unfavourable condition is mainly the result of inappropriate cultivation and lack of appropriate ditch management.

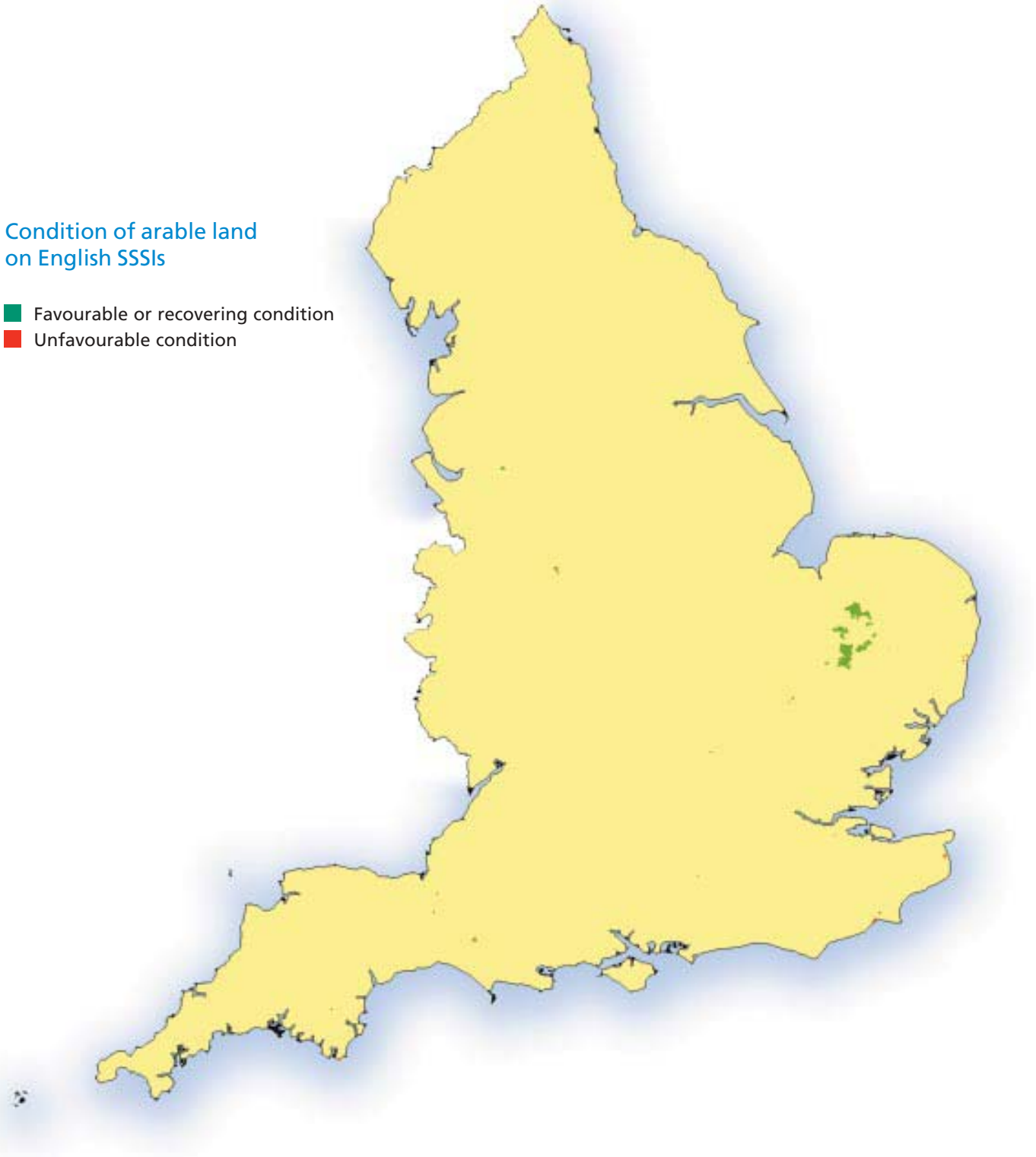
Direct land-take for arable farming was a major cause of damage to SSSIs in the 20th century, a threat largely removed by increased legal protection of SSSIs. Nevertheless, the indirect effects of arable farming outside SSSIs through diffuse pollution, siltation and drainage are still affecting the condition of SSSIs.

Current and proposed action to recover and manage arable land SSSIs

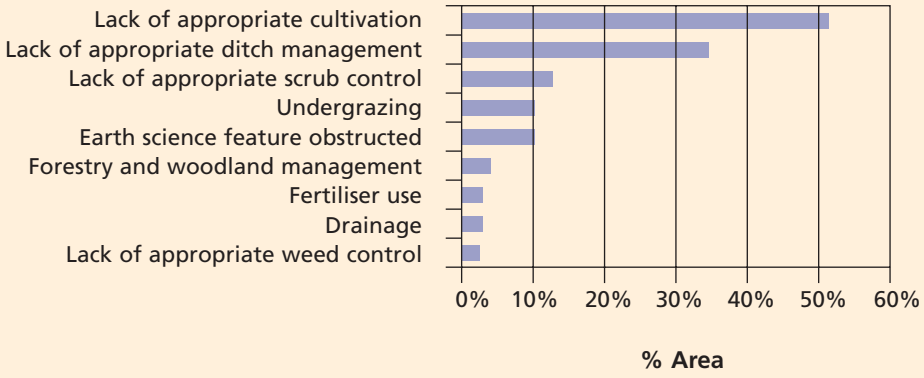
English Nature has an arable Wildlife Enhancement Scheme (WES) to support the management of arable SSSIs in a wildlife friendly way.

Paul Glendell/English Nature

Condition of arable land on English SSSIs



Causes of unfavourable condition on arable land SSSIs



Peter Wakely/English Nature 20,984

Bogs

Character

Bogs are the second most extensive habitat within the SSSI series. They cover some 186,000 hectares, about 17% of the SSSIs in England. This habitat includes both the extensive upland blanket bogs and much more localised lowland raised bogs.

Typical blanket bog species include heather, cross-leaved heath, deergrass, cottongrasses and bog-moss *Sphagnum* species. Blanket bogs and their associated pools can support a specialised fauna, including a number of rare and scarce invertebrates, such as northern dart moth and great yellow bumblebee. Many of these bogs are of European importance for birds such as merlin and a number of waders, including golden plover, curlew and dunlin. Blanket bog is a globally rare habitat. The underlying peat is not only crucial in maintaining wildlife interest but is also an important archaeological archive, carbon store and water source.

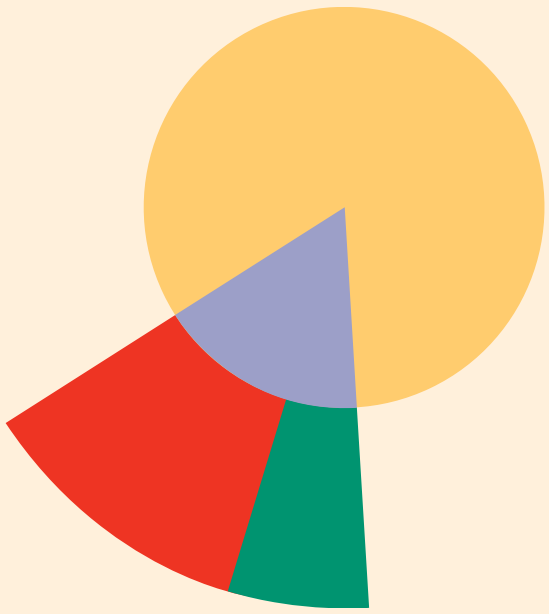
Lowland raised bogs have a similarly specialised range of plants, dominated by the colourful *Sphagnum* bog-mosses, as well as higher plants adapted to waterlogged conditions, such as cottongrasses. This habitat also supports rarer plants such as the bog-moss *Sphagnum pulchrum*, and a number of plants that have become increasingly scarce in the lowlands, such as bog-rosemary, great sundew and cranberry. Lowland raised bogs are also home to a distinctive range of rare and localised invertebrates, such as the large heath butterfly and the bog bush cricket.

Condition

Less than 33% of the area of bog SSSIs is in favourable or recovering condition.

Most of the bog SSSI area in England is blanket bog. This habitat is particularly affected by heavy grazing, burning and drainage. Large areas of blanket bog are affected by overgrazing, where overstocking of sheep results in a vegetation change and physical damage to the bog.

Burning and associated drainage can also cause serious damage to blanket bog and underlying peat soils. This can lead to a loss of characteristic bog and peat-forming species, and the bogs become drier and dominated by species such as purple moor-grass and heathers. Damage to peat by burning and drainage can also cause wider environmental problems, such as pollution of watercourses and peat loss through erosion as a result of exposure to the air.



Relative area of bogs within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

In the past, atmospheric pollution from heavy industry has adversely affected many areas of blanket bog in the northern uplands. The current impact of atmospheric deposition on bogs is not fully known.

Lowland raised bogs are much less extensive but still very important. In the past these SSSIs were severely affected by commercial peat-cutting, land-claim for agriculture and afforestation. English Nature's landmark agreements with peat producers have removed the major threat posed by peat extraction with planning permission. Nevertheless, the drainage problems associated with peat-cutting and agriculture have still not all been solved. Also, the scrub and tree growth that took hold as the bogs started to dry out needs to be dealt with. This conservation work is expensive and takes a long time for the results to show.

Although not apparent from the generic figures for bogs, abstraction of groundwater may affect the recovery of lowland bogs, especially where most of the original peat has been removed.

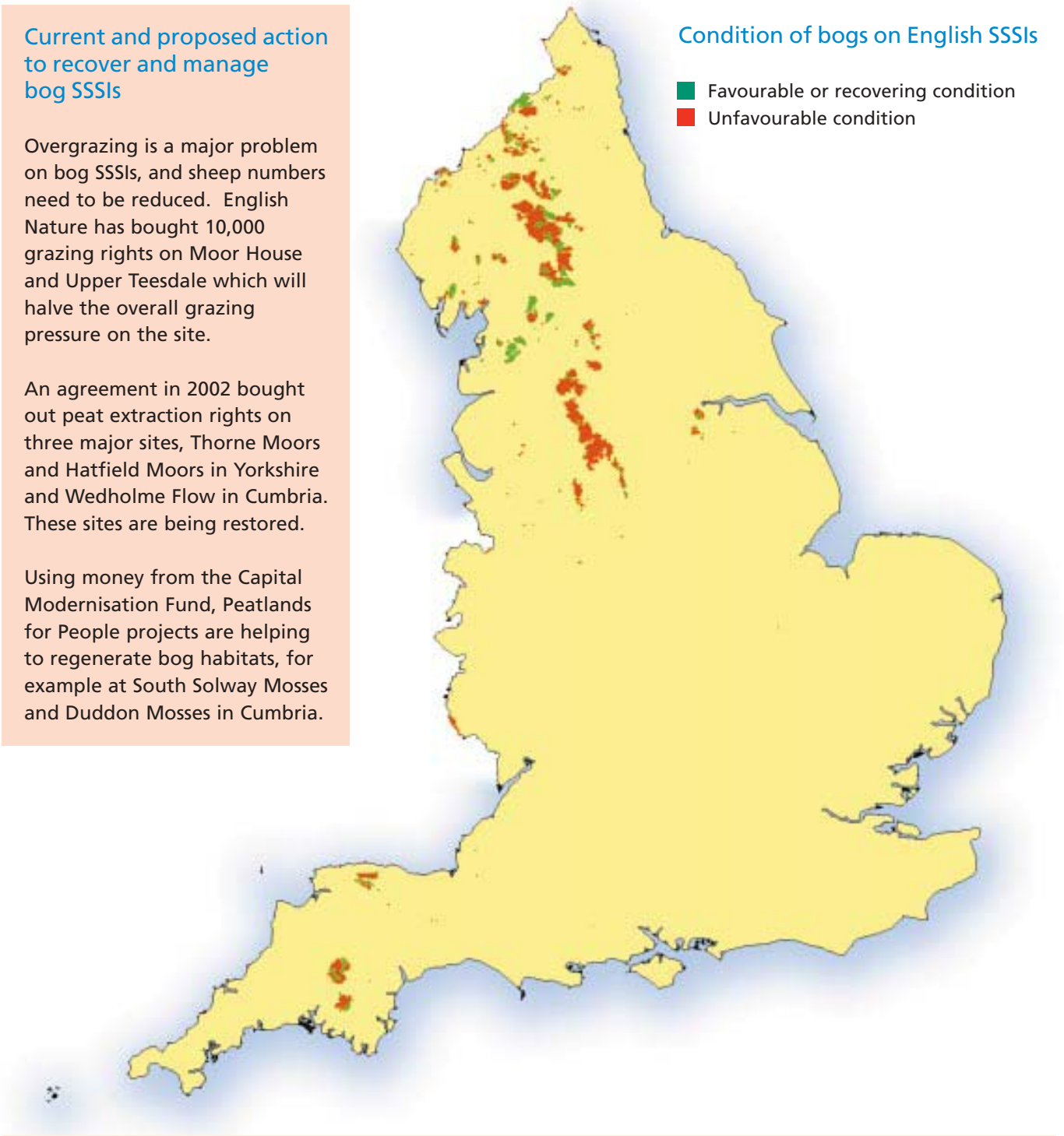
Current and proposed action to recover and manage bog SSSIs

Overgrazing is a major problem on bog SSSIs, and sheep numbers need to be reduced. English Nature has bought 10,000 grazing rights on Moor House and Upper Teesdale which will halve the overall grazing pressure on the site.

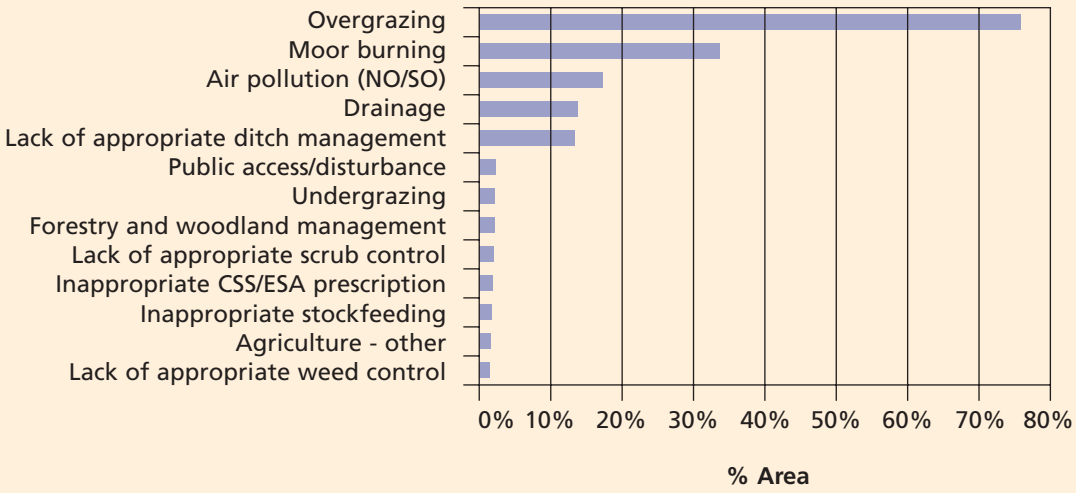
An agreement in 2002 bought out peat extraction rights on three major sites, Thorne Moors and Hatfield Moors in Yorkshire and Wedholme Flow in Cumbria. These sites are being restored.

Using money from the Capital Modernisation Fund, Peatlands for People projects are helping to regenerate bog habitats, for example at South Solway Mosses and Duddon Mosses in Cumbria.

Condition of bogs on English SSSIs



Causes of unfavourable condition on bog SSSIs



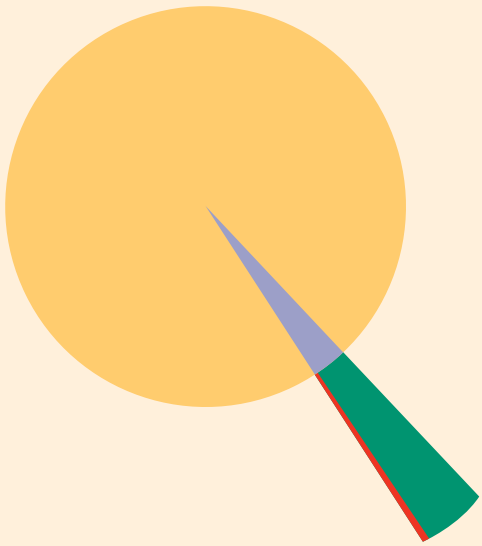
Peter Wakely/English Nature

Coniferous woodland

Character

Coniferous plantations can be of special interest for birds. These SSSIs are mostly on former heathland and provide breeding habitats for nightjar and woodlark.

The birds use the rides, the clear-felled areas and the very young stages of tree growth for nesting. As the young re-planted conifers grow, the land becomes successively less suitable for birds. But, further felling of mature tress opens up new areas for nesting and provides a succession of suitable nesting habitat within the plantation.



Relative area of coniferous woodland within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Condition

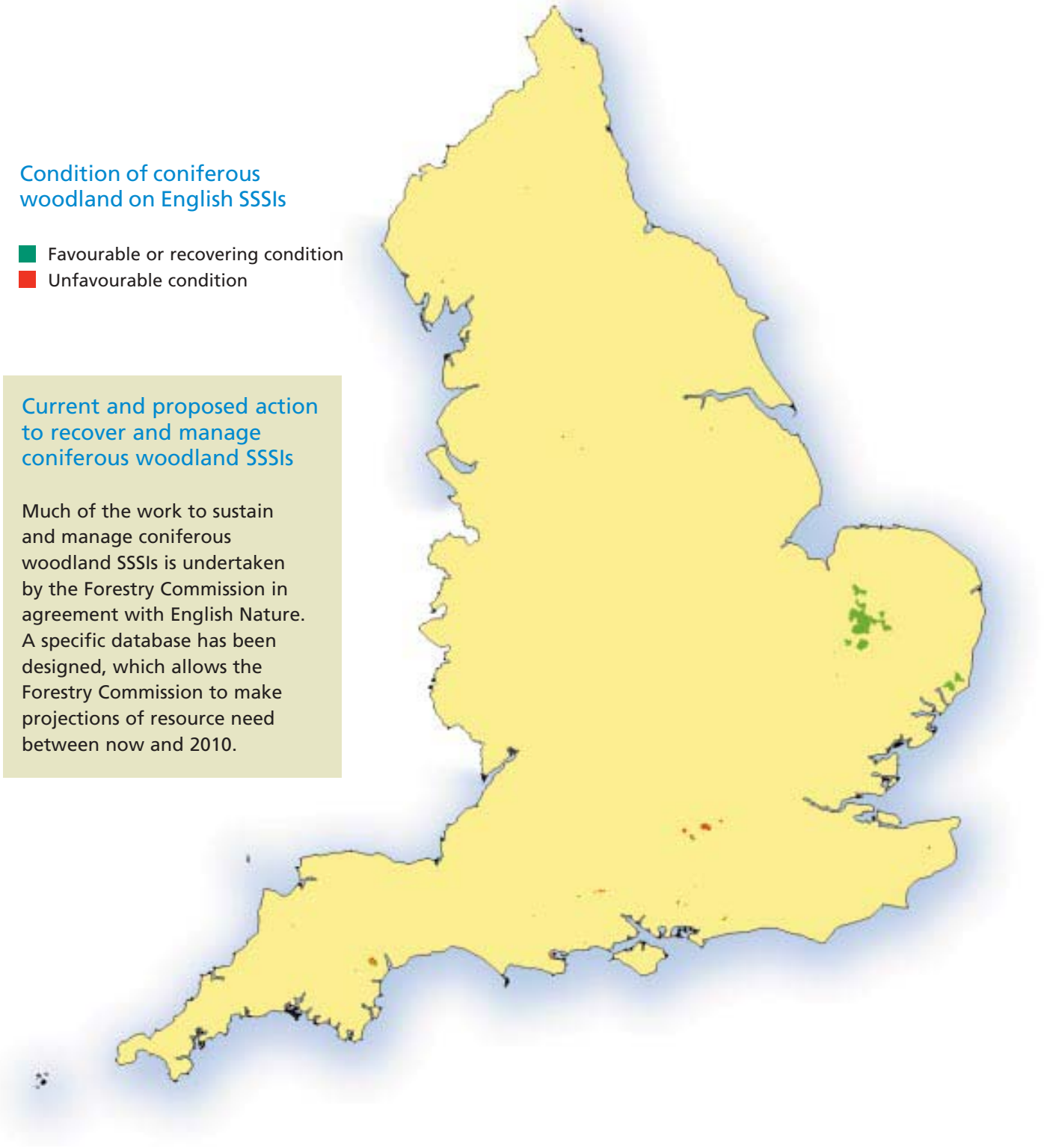
92% of coniferous woodland in SSSIs is in favourable or recovering condition.

8% of coniferous SSSI land is in unfavourable condition. This is mainly due to inappropriate forestry management.

The Forestry Commission manages most of the coniferous SSSI land. The Commission is looking at the scope for enhancing these SSSIs through appropriate planting, felling and habitat re-creation.

Condition of coniferous woodland on English SSSIs

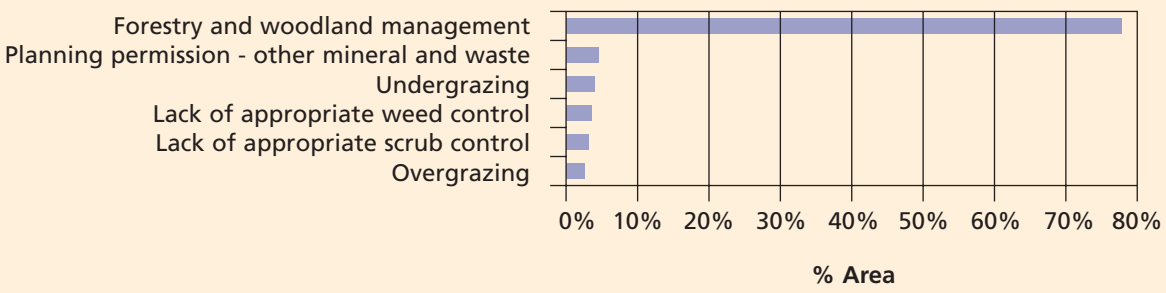
- Favourable or recovering condition
- Unfavourable condition



Current and proposed action to recover and manage coniferous woodland SSSIs

Much of the work to sustain and manage coniferous woodland SSSIs is undertaken by the Forestry Commission in agreement with English Nature. A specific database has been designed, which allows the Forestry Commission to make projections of resource need between now and 2010.

Causes of unfavourable condition on coniferous woodland SSSIs



Fen, marsh and swamp

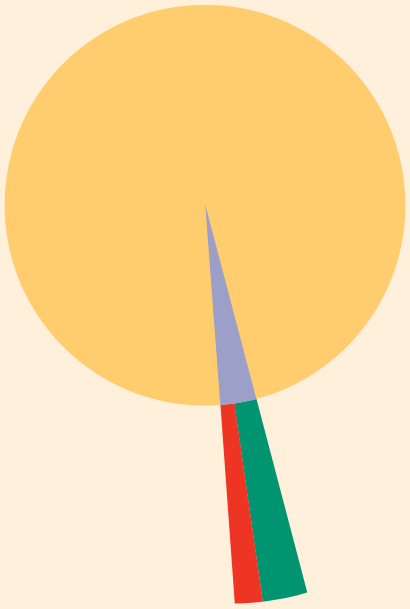
Character

Fen, marsh and swamp cover some 30,000 hectares within SSSIs, about 3% of the SSSI land in England.

This habitat covers a diverse group of wetlands, many of which are small but distinctive. They include basin fens, which are restricted to hollows; seepage fens and springs, restricted to the area around the groundwater that feeds them; and reedbeds.

Fens are very rich in wildlife, and some contain up to 550 different higher plants, a third of our native species. Fen habitats also support more than half the UK's species of dragonfly and they are home to the swallowtail butterfly. A range of aquatic beetles, and several thousand other insects and spiders are also found in fen, marsh and swamp habitats. Some types, such as reedbeds, are particularly important for breeding birds such as bittern.

Condition



Relative area of fen, marsh and swamp within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

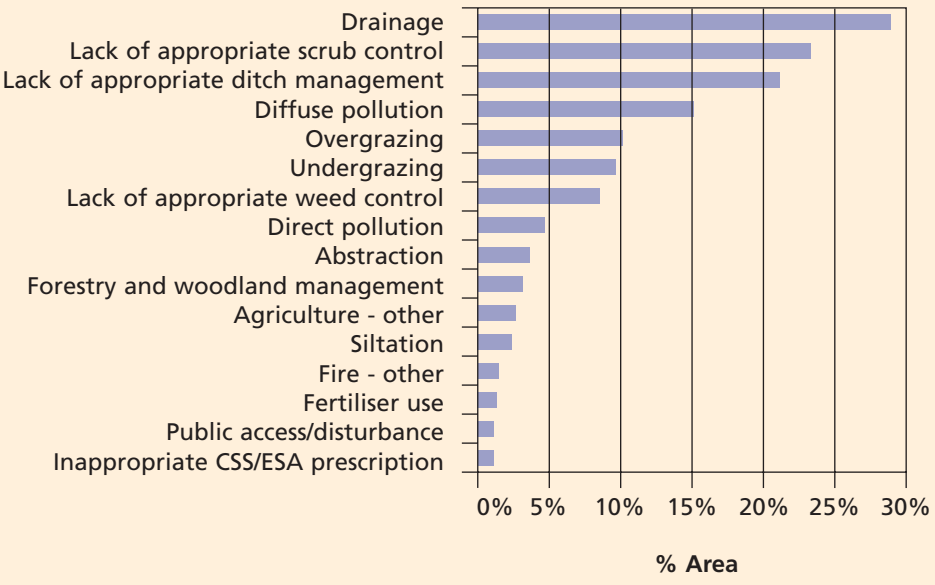
65% of fen, marsh and swamp SSSIs are in favourable or recovering condition.

The most extensive problems affecting fen, marsh and swamp SSSIs involve water level management. Drainage and the need to manage the water level of ditches better are major causes of unfavourable condition. Growth of scrub, caused by lowered water levels and a lack of suitable grazing, is also a significant problem. In addition, water abstraction affects fen, marsh and swamp habitats.

Diffuse pollution, mainly from agricultural sources, has a major effect on fen, marsh and swamp habitats in SSSIs. Nutrients from fertiliser and farmyard manure applied to the surrounding fields can flow into the site, affecting the wildlife.

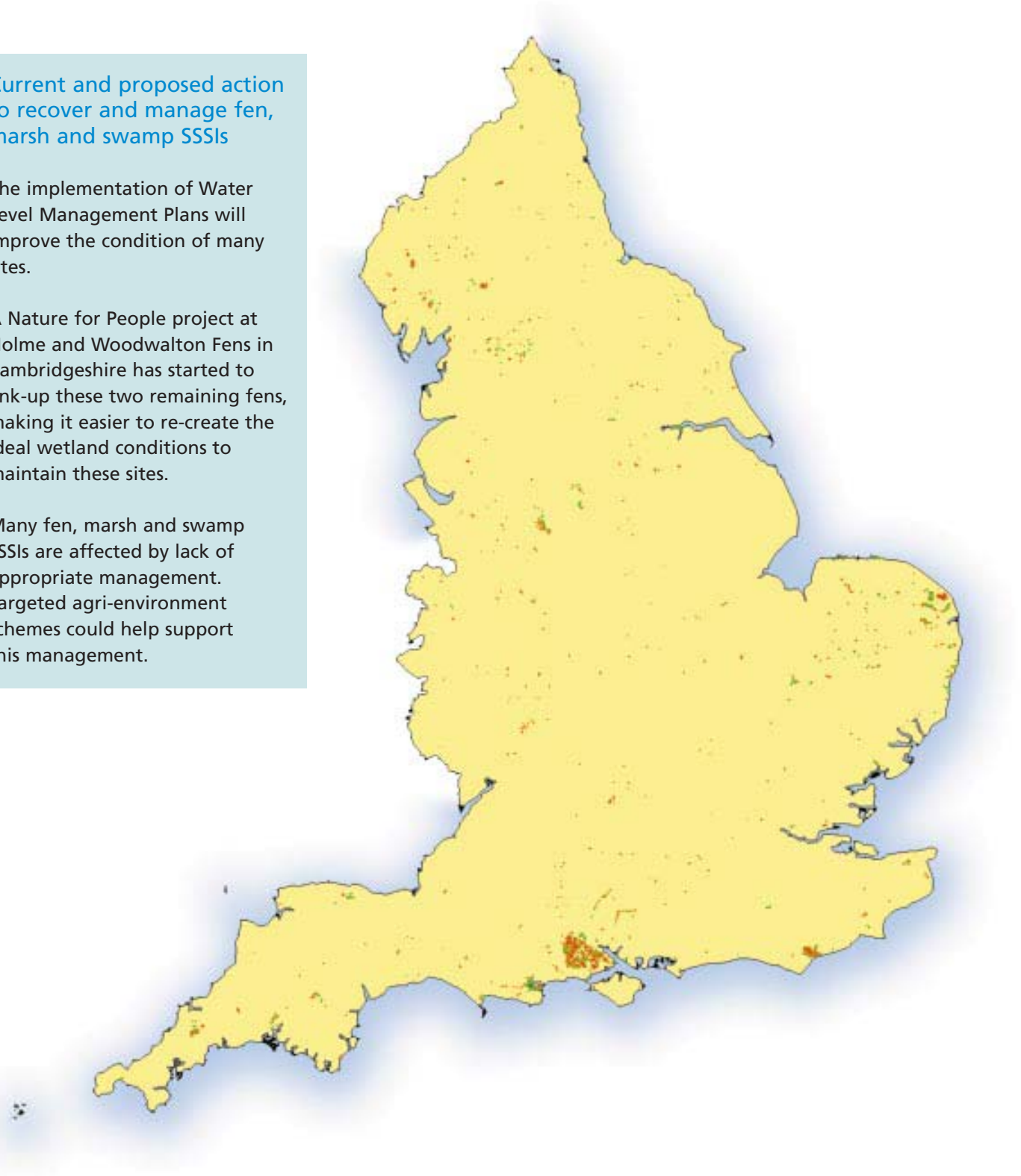
Peter Wakely/English Nature 14,076

Causes of unfavourable condition on fen, marsh and swamp SSSIs



Condition of fen, marsh and swamp on English SSSIs

- Favourable or recovering condition
- Unfavourable condition



Current and proposed action to recover and manage fen, marsh and swamp SSSIs

The implementation of Water Level Management Plans will improve the condition of many sites.

A Nature for People project at Holme and Woodwalton Fens in Cambridgeshire has started to link-up these two remaining fens, making it easier to re-create the ideal wetland conditions to maintain these sites.

Many fen, marsh and swamp SSSIs are affected by lack of appropriate management. Targeted agri-environment schemes could help support this management.

Geological sites

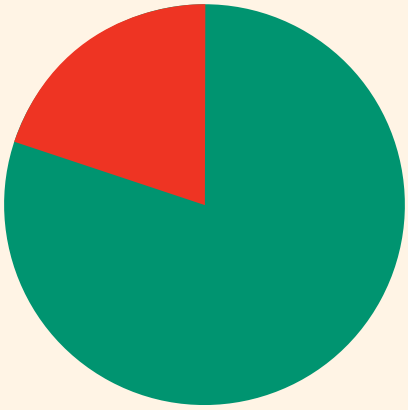
Character

The reporting system we use for geological features differs from that for habitats. Important geological sites occur as part of other habitats, such as cliffs or upland calcareous grassland. Many geological exposures are vertical and effectively have little or no horizontal surface area. Others, such as karst (limestone) sites, with caves and swallow holes, have surfaces both at and below ground level. For these reasons, it is difficult to describe the condition of geological features by area. Instead, we provide information on the number of nationally important geological features, known as Geological Conservation Review (GCR) sites.

The selection of geological (including geomorphological) SSSIs is based on the GCR, which reflects the range and diversity of British geology. There are 1,739 GCR sites in England across 1,240 SSSIs, representing close to a third of the total number of SSSIs in the country.

Mick Murphy/English Nature

England's geology is rich and diverse, with a wide variety of different rock types present. These cover a time span of more than 600 million years, with almost every geological period in that time represented. There is an extensive fossil record, which can help map the development and evolution of life on Earth. The geology of England also records remarkable variations in climate and palaeogeography, from tropical reefs and forests during the Carboniferous, to arid desert in the Triassic and glacial to periglacial during the Quaternary. Other features of English geology within the SSSI coverage include large areas of caves, a wide range of landforms, a rich mineralogical resource, highly deformed rocks associated with major Earth movements and igneous rocks, formed during periods of ancient volcanic activity, as well as a complex variety of active process sites.



Condition

83% of geological SSSIs are currently in favourable condition, but without active management, many of these sites will deteriorate into unfavourable condition.

Concealment of geological features is the main problem affecting the condition of geological SSSIs. Where this is due to vegetation or build-up of rock debris, restoring sites to a favourable condition can be straightforward. However, where inappropriate developments (such as coastal defences or other engineering works) are constructed directly over rock faces, or where landfill in disused quarries buries the features of geological interest, this can partly or wholly destroy the site. Coastal defences can also have indirect effects by affecting natural coastal processes, inhibiting erosion and concealing geological features.

Uncontrolled collecting can be a serious problem on sites where the interest features are limited in extent, such as at some fossil and mineral sites. Managing access to sites in agreement with site owners and promoting responsible collecting policies can be effective in avoiding such damage. However, this can be difficult to achieve in remote areas.

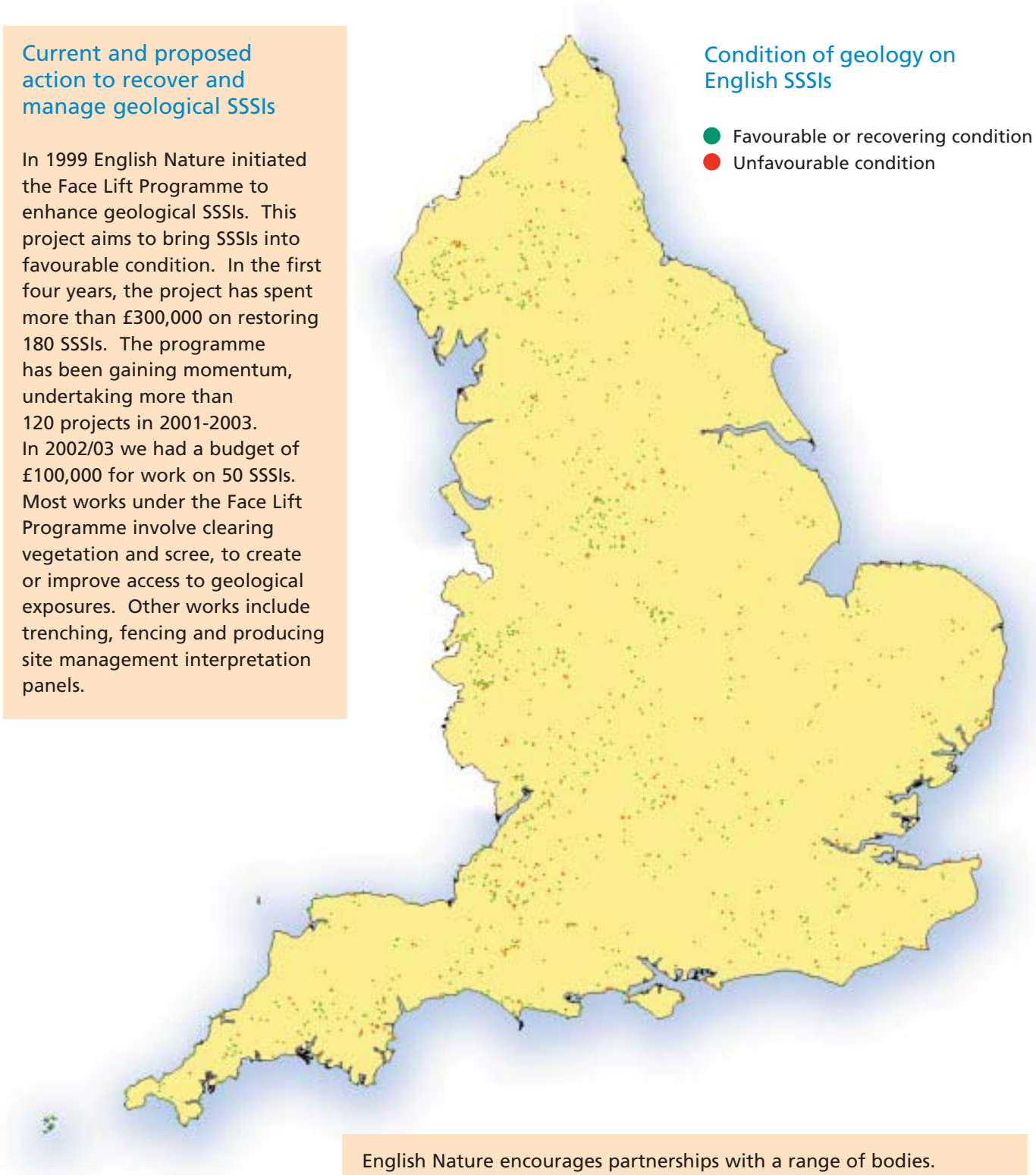
Many geological sites can tolerate or even benefit from quarrying (as long as the interest features are not entirely removed), as this creates fresh exposures of rock. However, some sites are important for their landforms, including caves and other smaller scale features. In these areas the whole feature must remain intact, with minimal human impact. Such sites would be permanently damaged by removing geological material.

Some sites are important for their 'active processes', such as coastal systems, rivers and landslips. Any activity that inhibits natural processes on these sites can be damaging. For example, the construction of coastal or flood defences or the removal of sand or gravel can damage coastal and river sites.

Current and proposed action to recover and manage geological SSSIs

In 1999 English Nature initiated the Face Lift Programme to enhance geological SSSIs. This project aims to bring SSSIs into favourable condition. In the first four years, the project has spent more than £300,000 on restoring 180 SSSIs. The programme has been gaining momentum, undertaking more than 120 projects in 2001-2003. In 2002/03 we had a budget of £100,000 for work on 50 SSSIs. Most works under the Face Lift Programme involve clearing vegetation and scree, to create or improve access to geological exposures. Other works include trenching, fencing and producing site management interpretation panels.

Condition of geology on English SSSIs



English Nature encourages partnerships with a range of bodies. These include landowners, both private and public; other interested parties such as the voluntary geological conservation movement (RIGS groups and other voluntary organisations); academics; amateur geologists; caving groups; and local people. These partnerships help to establish positive management of SSSIs and they are particularly important on vulnerable sites, where uncontrolled removal of geological material can damage or destroy the features.

Inland rock

Character

Inland rock SSSIs notified for their biological interest cover some 8,800 hectares, about 1% of the SSSI land in England.

Inland rock habitats in SSSIs are diverse. They include classic rock habitats such as limestone pavements, which support plants such as bloody crane's-bill and the rare rigid buckler-fern. Limestone pavements are a scarce, irreplaceable habitat and Britain and Ireland have the most important and extensive areas in the world. Inland rock habitats also include calcareous and siliceous scree, rock faces and ledges (of which some sites are of international importance), and areas on former mines or quarries that support scarce plants, such as the rare western rustwort.

Peter Wakely/English Nature 14,956

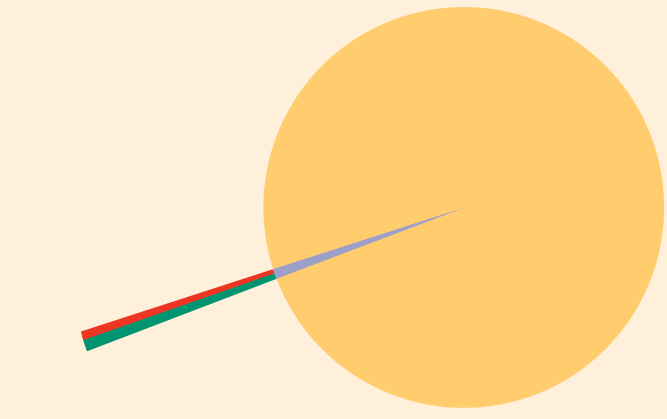
In addition, caves and other similar rocky habitats can be used as roosting areas by bats, including some rare species such as the lesser horseshoe bat.

Condition

54% of inland rock habitats within SSSIs is in favourable or recovering condition.

The most widespread problem currently facing all inland rock habitats is overgrazing. Limestone pavements, in particular, are vulnerable to overgrazing. This is because the sensitive plants 'retreat' into the most inaccessible clefts in the rock (the 'grykes') as grazing pressure increases. Lack of scrub control and inappropriate forestry management also affect the condition of sites.

Also, limestone rock has been removed legally (under existing planning permissions) and illegally, mainly for garden use.



Relative area of inland rock within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

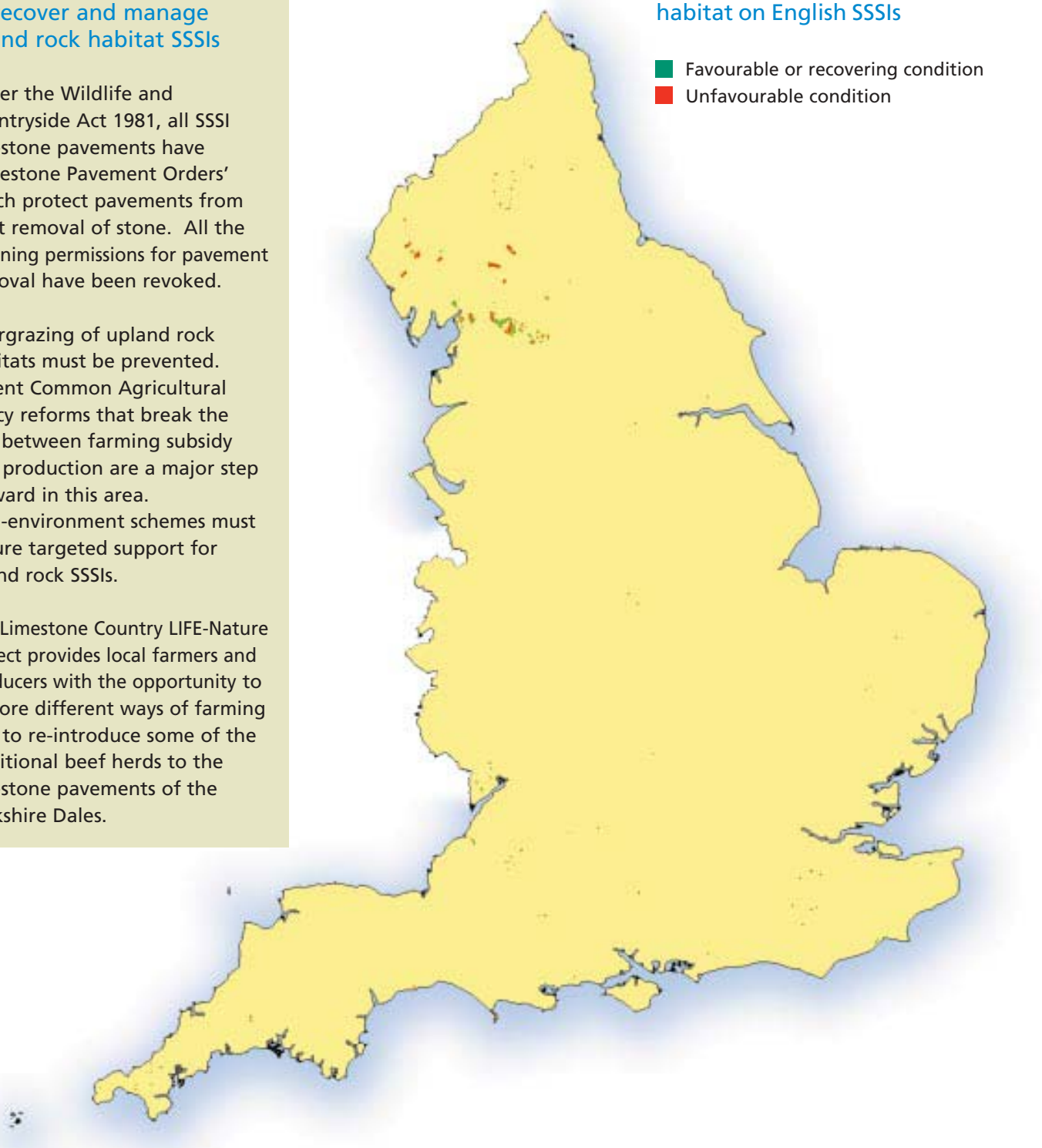
Current and proposed action to recover and manage inland rock habitat SSSIs

Under the Wildlife and Countryside Act 1981, all SSSI limestone pavements have 'Limestone Pavement Orders' which protect pavements from illicit removal of stone. All the planning permissions for pavement removal have been revoked.

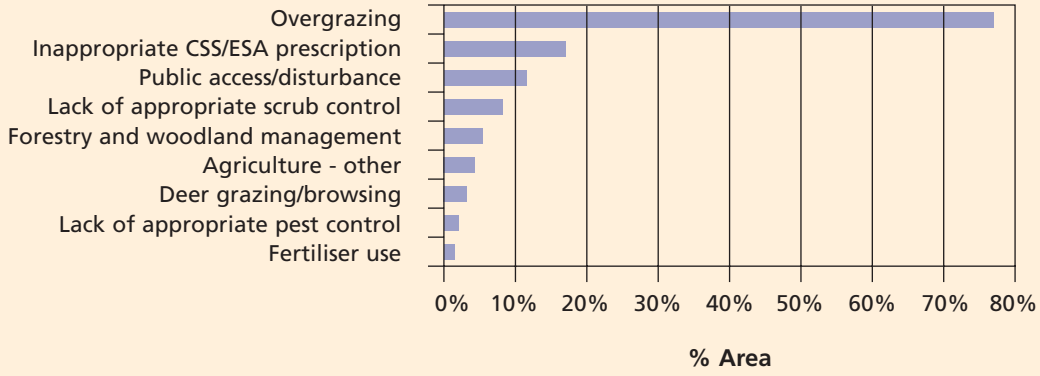
Overgrazing of upland rock habitats must be prevented. Recent Common Agricultural Policy reforms that break the link between farming subsidy and production are a major step forward in this area. Agri-environment schemes must ensure targeted support for inland rock SSSIs.

The Limestone Country LIFE-Nature Project provides local farmers and producers with the opportunity to explore different ways of farming and to re-introduce some of the traditional beef herds to the limestone pavements of the Yorkshire Dales.

Condition of inland rock habitat on English SSSIs



Causes of unfavourable condition on inland rock SSSIs



Lowland acid grassland

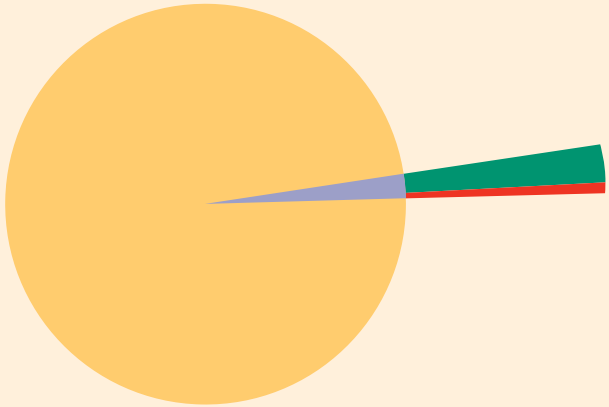
Character

Lowland acid grassland covers some 16,200 hectares within SSSIs, about 2% of the SSSI land in England.

Lowland acid grassland SSSIs are characterised by plant species such as heath bedstraw, sheep's-fescue, wavy hair-grass, and tormentil. Dwarf shrubs such as heather and bilberry can also occur, but in small quantities.

Some lowland acid grasslands are rich in lichens and mosses and some support a rich diversity of fungi, such as wax-caps. The driest acid grasslands have a significant number of rare and scarce higher plant species, many of which are annuals.

Important breeding bird species on acid grassland include woodlark, stone-curlew and nightjar. Many of the invertebrates that occur in acid grasslands are specialist species that do not occur in other types of grassland. These include various solitary bees and wasps and the rare field cricket.



Relative area of lowland acid grassland within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Well-managed lowland acid grasslands have an open, grazed sward of small, tussocky grasses. They also have patches of open ground suitable for colonisation by the lichens, ephemeral plants and invertebrates.

Condition

85% of lowland acid grassland in SSSIs is in favourable or recovering condition.

Lowland acid grassland SSSIs in unfavourable condition are largely affected by a lack of grazing. Many sites also need scrub and weed control.

Maintaining lowland acid grassland depends on active management. If neglected, the sward becomes dominated by tall, vigorous grasses or bracken, which suppress less vigorous species and reduce the botanical richness of the site. Gradually the sward turns to scrub and woodland, which will be of lower nature conservation value than the grassland which preceded it. Traditionally, management is by livestock grazing. Rabbit grazing, though difficult to control, can also provide useful grazing on some lowland acid grasslands.

Condition of lowland acid grassland on English SSSIs

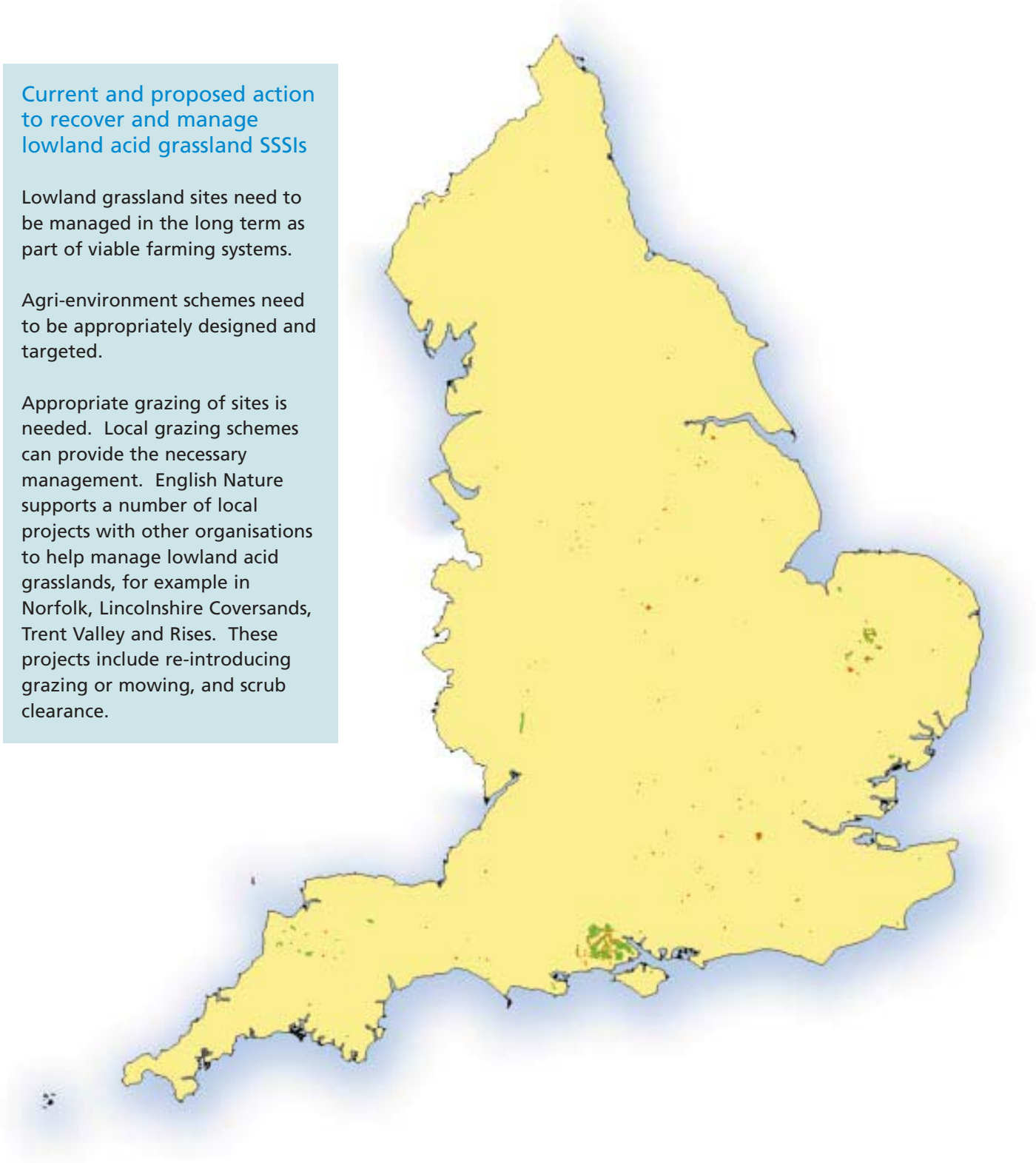
- Favourable or recovering condition
- Unfavourable condition

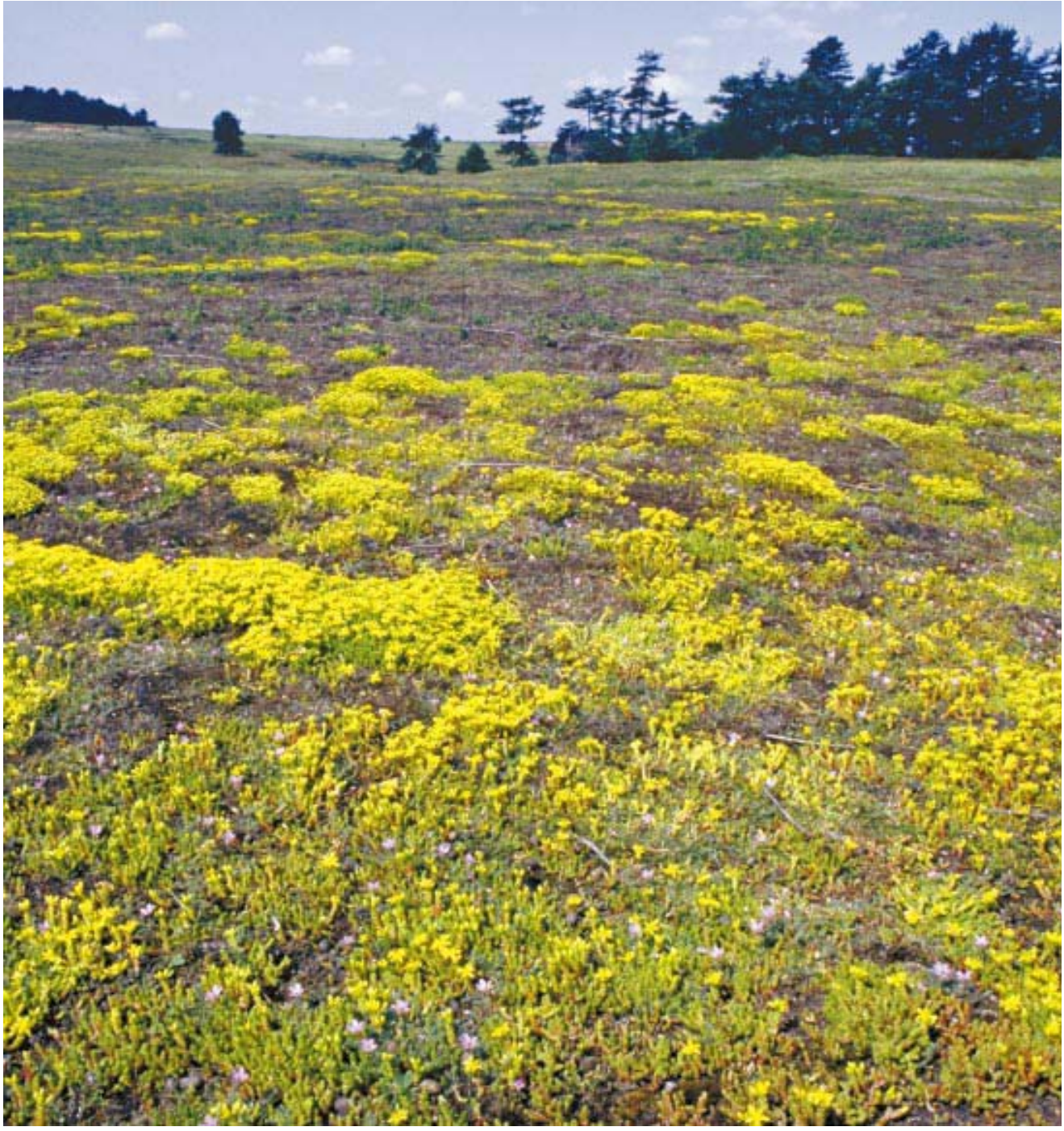
Current and proposed action to recover and manage lowland acid grassland SSSIs

Lowland grassland sites need to be managed in the long term as part of viable farming systems.

Agri-environment schemes need to be appropriately designed and targeted.

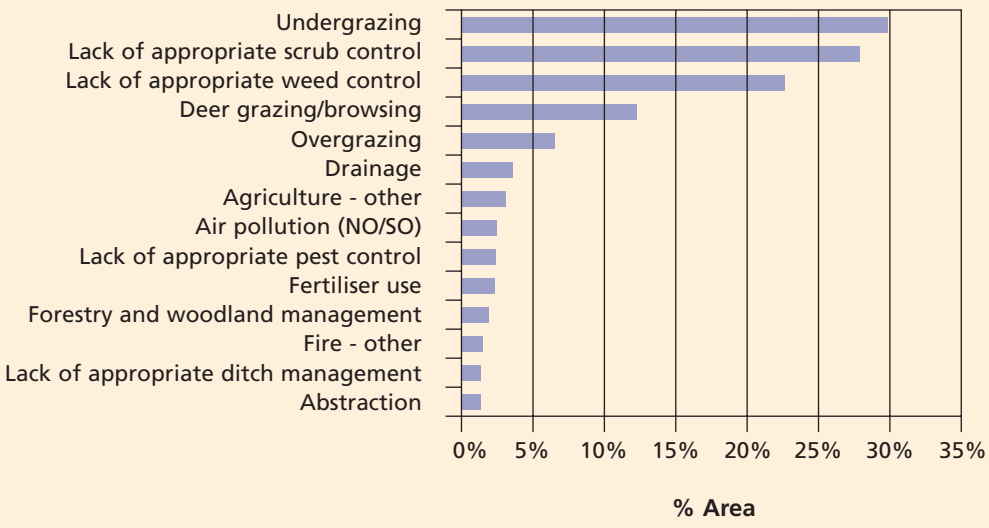
Appropriate grazing of sites is needed. Local grazing schemes can provide the necessary management. English Nature supports a number of local projects with other organisations to help manage lowland acid grasslands, for example in Norfolk, Lincolnshire Coversands, Trent Valley and Rises. These projects include re-introducing grazing or mowing, and scrub clearance.





Peter Wakely/English Nature 14,044

Causes of unfavourable condition on lowland acid grassland SSSIs



Lowland broadleaved and yew woodland

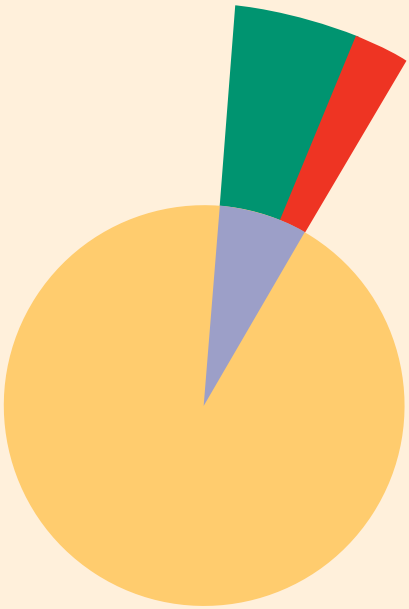
Character

Lowland broadleaved and yew woodland covers some 78,300 hectares, about 7% of the SSSI land in England.

Woods in favourable condition show a mixture of structures with some open space, old trees and dead wood, and a variety of different vegetation layers. They will also have signs of regeneration and the trees and shrubs present will be mostly species appropriate to the site. Locally distinctive elements will also occur, such as a rich ground flora or butterfly communities.

Lowland broadleaved woods are widespread and varied. They include the ash-maple-hazel woods of the Midland clays, oak-birch woods on acid soils, beech woods and wet alder woodland in valley bottoms. Many were former coppices with a dense understorey of hazel and other shrubs but others are wood-pastures with an abundance of veteran trees. In some years, numerous seedlings and saplings of oak, ash or

Peter Wakely/English Nature 11,781



Relative area of lowland broadleaved and yew woodland within the whole SSSI series

Favourable or recovering condition

Unfavourable condition

beech may be present, but regeneration also comes from regrowth of coppice and pollards. The ground flora often includes well-loved woodland plants such as bluebell and primrose, or mammals such as the dormouse, but these woods are equally important for their less obvious fungi and invertebrate populations.

Condition

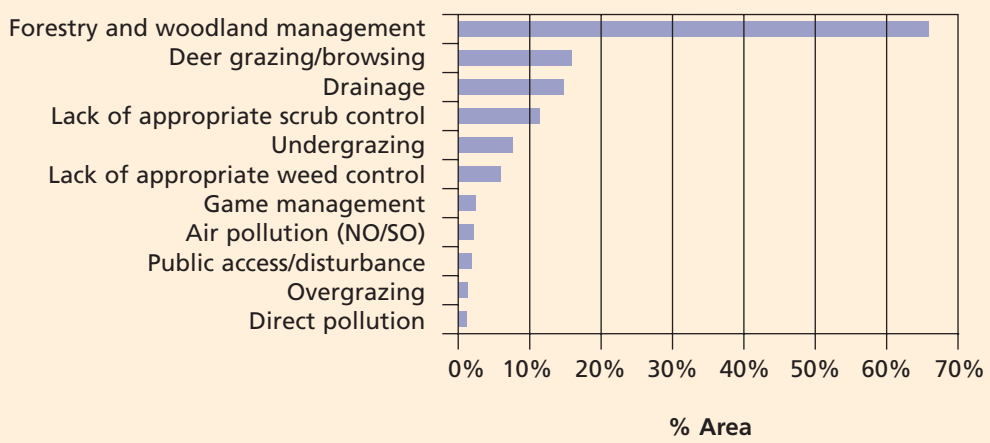
67% of lowland broadleaved woodland is in favourable or recovering condition.

However, maintaining and improving on this position will require bringing more woodland into appropriate management. This may be by re-instating past coppice or wood-pasture systems, but often means adapting these to modern conditions. Achieving this is difficult because the markets for such woodland products have shrunk, making woodland management uneconomic. There is also a legacy of past introductions of non-native trees and shrubs that may be spreading, or suppressing the native plant and animal communities.

The increasing deer population is having a serious effect upon woodland conservation. Grazing by excessive numbers of deer suppresses the regeneration of trees and shrubs and simplifies the woodland structure. It also changes the ground flora, with the loss of palatable species and spread of woodland grasses.

Deer populations will need to be managed in the surrounding countryside as well as in SSSIs if woodland management is again to become sustainable.

Causes of unfavourable condition on lowland broadleaved and yew woodland SSSIs



Condition of lowland broadleaved and yew woodland on English SSSIs

- Favourable or recovering condition
- Unfavourable condition

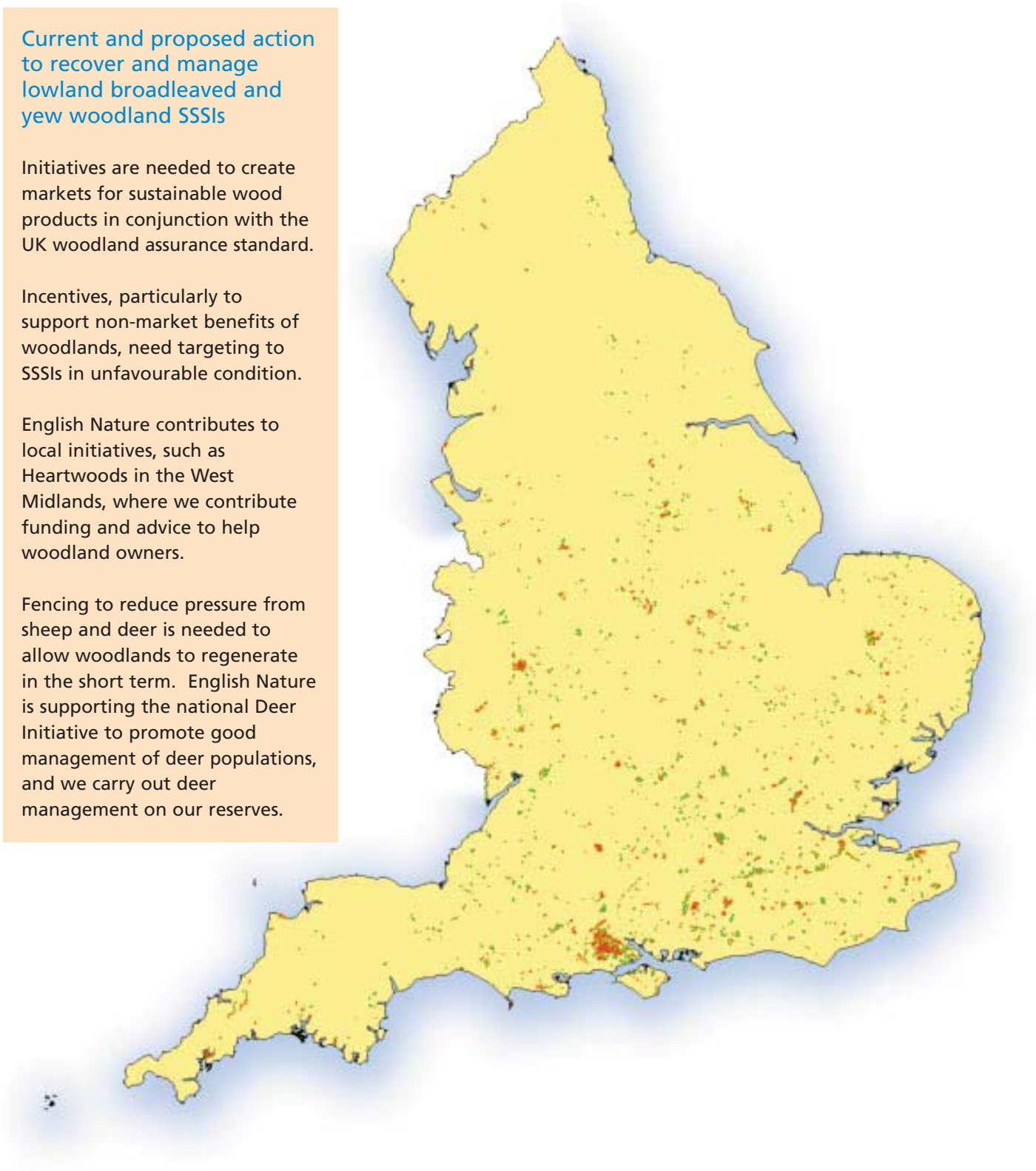
Current and proposed action to recover and manage lowland broadleaved and yew woodland SSSIs

Initiatives are needed to create markets for sustainable wood products in conjunction with the UK woodland assurance standard.

Incentives, particularly to support non-market benefits of woodlands, need targeting to SSSIs in unfavourable condition.

English Nature contributes to local initiatives, such as Heartwoods in the West Midlands, where we contribute funding and advice to help woodland owners.

Fencing to reduce pressure from sheep and deer is needed to allow woodlands to regenerate in the short term. English Nature is supporting the national Deer Initiative to promote good management of deer populations, and we carry out deer management on our reserves.



Lowland calcareous grassland

Character

Lowland calcareous grassland covers some 41,000 hectares, about 4% of SSSI land in England.

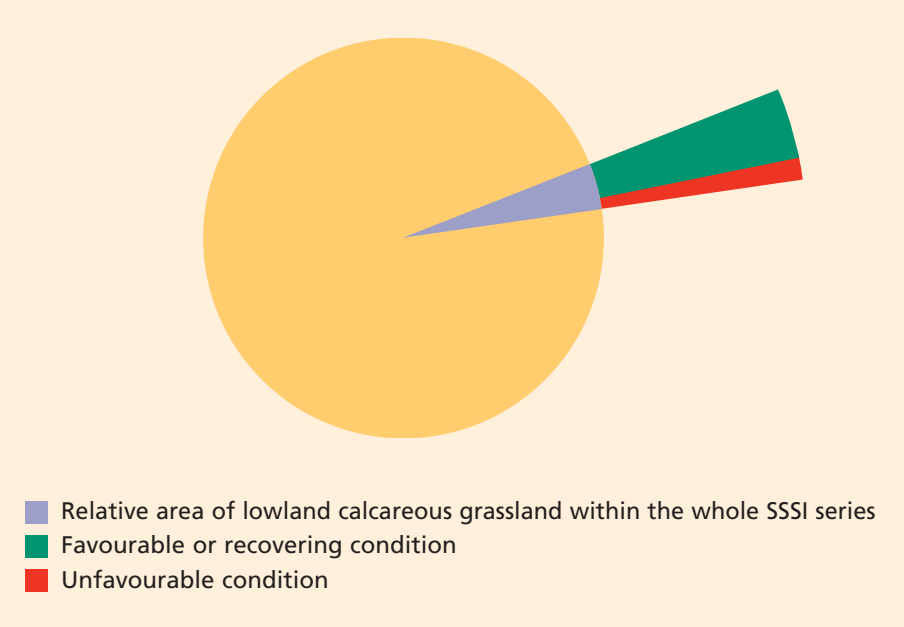
Lowland calcareous grasslands have a very rich flora, including many nationally rare and scarce species. Over 70 scarce or rare plants are associated with this habitat, such as monkey orchid and pasqueflower. These grasslands also have many different invertebrates including scarce butterflies like the adonis blue, the silver-spotted skipper, the Duke of Burgundy, and the wart-biter cricket. Lowland calcareous grasslands also provide feeding or breeding areas for a number of scarce or declining birds including stone-curlew.

Well-managed calcareous grassland has an open, grazed sward, without significant amounts of coarse grasses or scrub.

Condition

78% of lowland calcareous grassland within SSSIs is in favourable or recovering condition.

Lowland calcareous grassland needs active management in order to maintain a species-rich sward and its invertebrates. Traditionally, this is achieved by grazing. Without management, calcareous grassland rapidly becomes dominated by stands of rank grasses, such as tor-grass, at the expense of the less vigorous species that are of conservation interest. Eventually, ungrazed grassland will become covered in scrub. Once scrub has taken hold, then expensive clearance work is necessary, followed by the restoration of suitable grazing.



Half of the lowland calcareous grassland that is in unfavourable condition needs these two actions. There is a shortage of suitable grazing stock for lowland calcareous grassland.

Condition of lowland calcareous grassland on English SSSIs

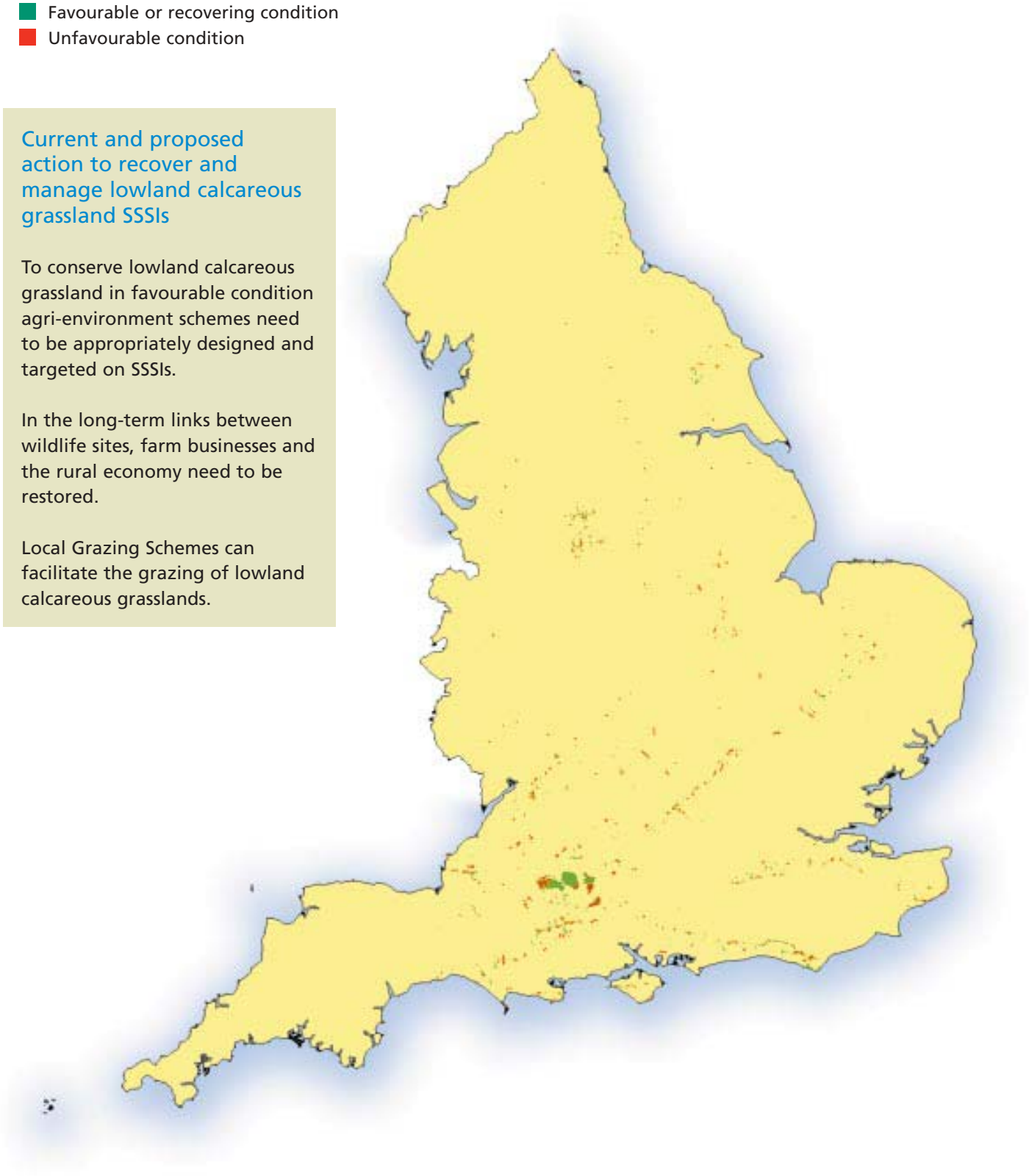
- Favourable or recovering condition
- Unfavourable condition

Current and proposed action to recover and manage lowland calcareous grassland SSSIs

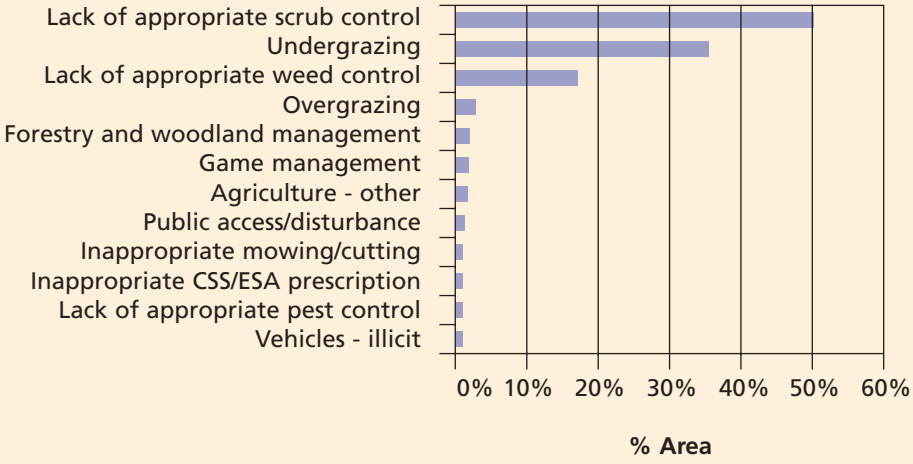
To conserve lowland calcareous grassland in favourable condition agri-environment schemes need to be appropriately designed and targeted on SSSIs.

In the long-term links between wildlife sites, farm businesses and the rural economy need to be restored.

Local Grazing Schemes can facilitate the grazing of lowland calcareous grasslands.



Causes of unfavourable condition on lowland calcareous grassland SSSIs



Peter Wakely/English Nature 18,228

Lowland heath

Character

Lowland heath covers some 38,400 hectares, about 4% of the SSSI land in England.

Lowland heathland occurs on poor, acidic soils generally below 300 metres above sea level, and is characterised by plants such as heather, cross-leaved heath, bell heather and gorse. Lowland heathlands provide habitat for birds of European importance, including Dartford warbler, nightjar and woodlark, and are the prime sites for England's rare reptiles, especially sand lizard and smooth snake. Uncommon invertebrates such as the silver-studded blue butterfly, or plants such as the marsh gentian are also found on heaths.

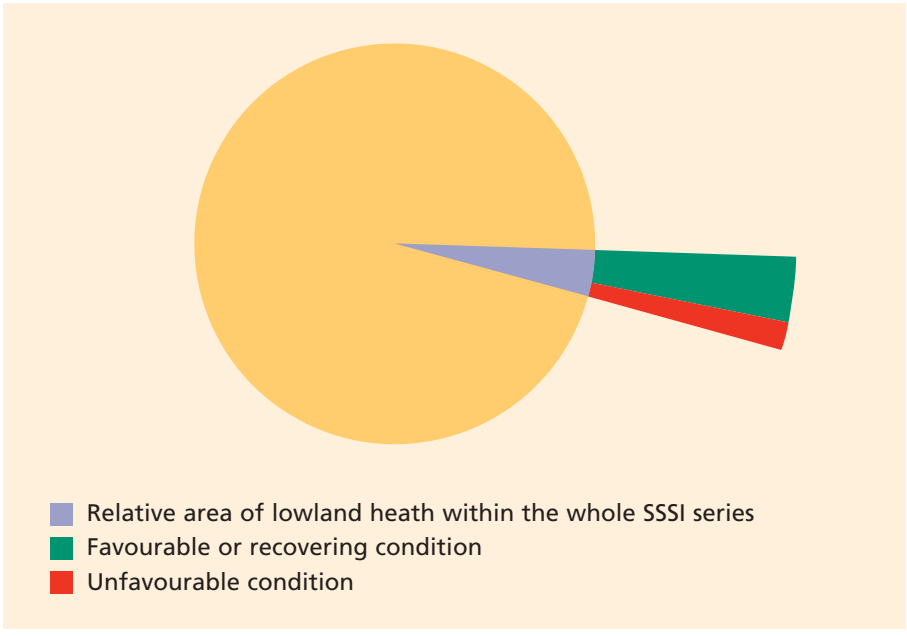
Areas of good quality heathland consist of a heath layer of varying heights and structures, some areas of gorse, scattered trees and scrub, with areas of grassland and bare ground. On many sites, heaths merge into other habitats, such as woodlands, grasslands or mires, creating very interesting and important transitions.

Condition

68% of lowland heathland SSSIs are in favourable or recovering condition.

Heathlands appeared as a result of human activities, but nowadays the changes in agricultural practices and the subsequent lack of appropriate management (such as grazing) have led to a decline in heathland quality. When heaths are left unmanaged, scrub increases and the wildlife interest declines. Reptiles, for which heathland is a particularly important habitat in England, require a mosaic of both open and dense habitats. Birds and invertebrates similarly need a diverse habitat structure. Some distinctive plants of heathland can only grow in bare ground, and so become less abundant on heathlands that are not managed properly.

After a considerable investment of resources during the last few years, the condition of many heathland sites is improving. Hundreds of hectares of lowland heath have been cleared of dense scrub or bracken, and grazing is being reintroduced to many sites.



Condition of lowland heath on English SSSIs

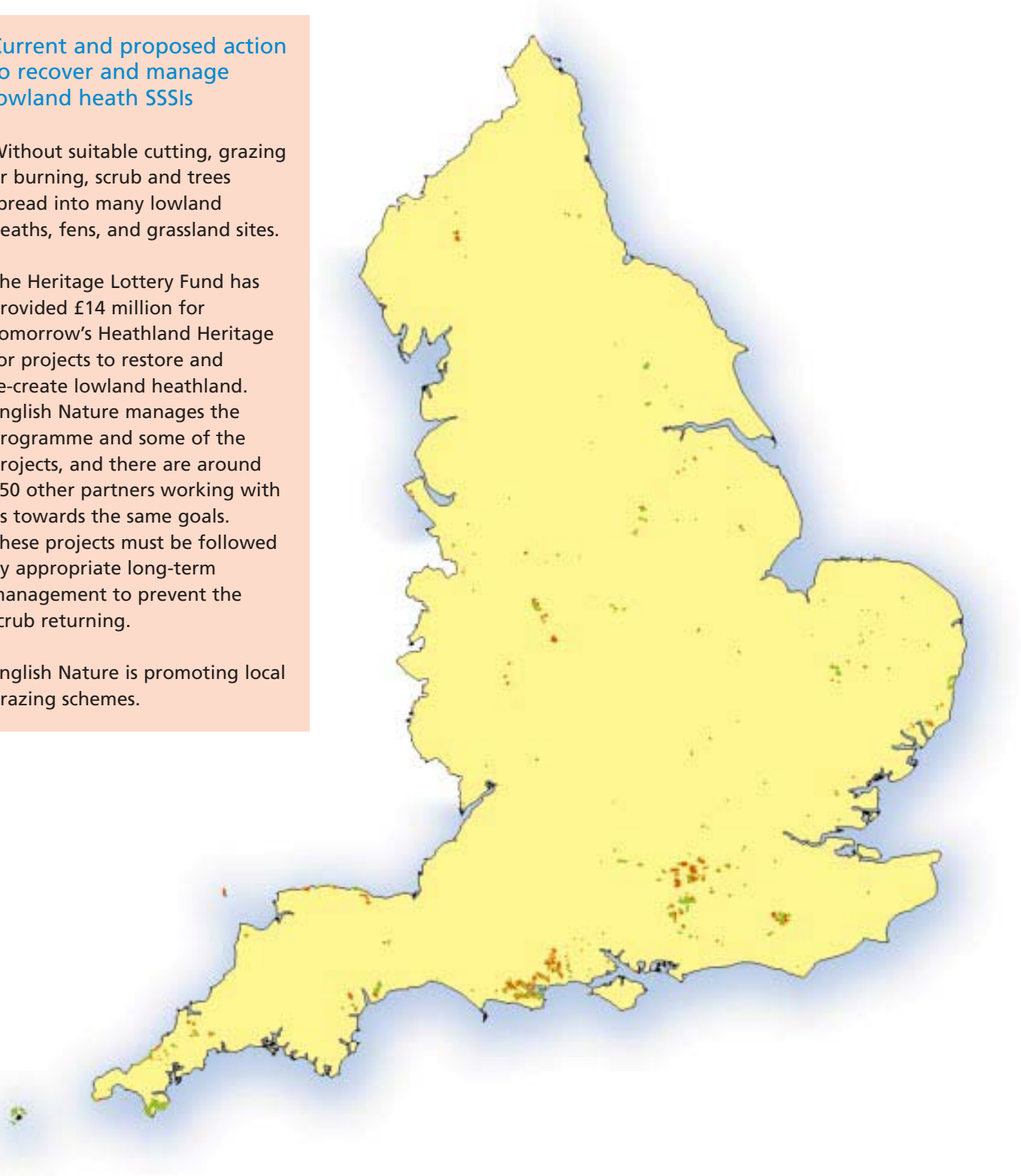
- Favourable or recovering condition
- Unfavourable condition

Current and proposed action to recover and manage lowland heath SSSIs

Without suitable cutting, grazing or burning, scrub and trees spread into many lowland heaths, fens, and grassland sites.

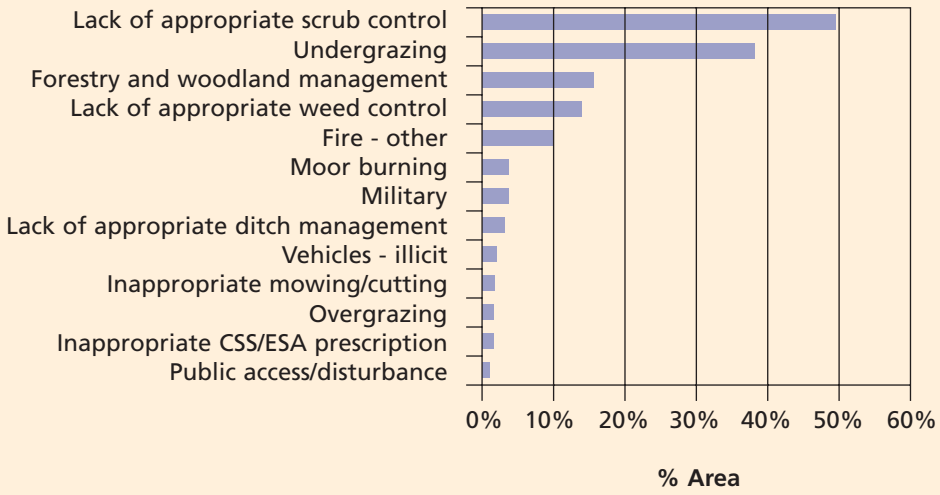
The Heritage Lottery Fund has provided £14 million for Tomorrow's Heathland Heritage for projects to restore and re-create lowland heathland. English Nature manages the programme and some of the projects, and there are around 150 other partners working with us towards the same goals. These projects must be followed by appropriate long-term management to prevent the scrub returning.

English Nature is promoting local grazing schemes.



Peter Wakely/English Nature 16,758

Causes of unfavourable condition on lowland heath SSSIs



Lowland neutral grassland

Character

Lowland neutral grassland covers some 47,900 hectares, about 5% of the SSSI land in England.

This habitat includes three particularly important grassland types. There are small, species-rich meadows, once characteristic of lowland England but now with very few remaining. There are also the colourful riverside flood meadows. Thirdly, and most extensive of all, are the coastal and floodplain grazing marshes.

The small, agriculturally unimproved meadows are cut for hay and then grazed. They have species such as green-winged orchid, adder's-tongue fern and pepper saxifrage.

The flood meadows are also cut and grazed, but are subject to winter flooding. They have plant species such as greater burnet and, in a few sites, the fritillary. A few of the larger flood meadows are also particularly important for breeding and wintering waterfowl.

The grazing marshes are particularly important for breeding waterfowl, including snipe and curlew, and for wintering waterfowl such as swans. These marshes also have ditches that are rich in aquatic plants and invertebrates. In some cases, coastal sites can support scarce plants typical of brackish conditions.

Peter Wakely/English Nature 13,642

Condition

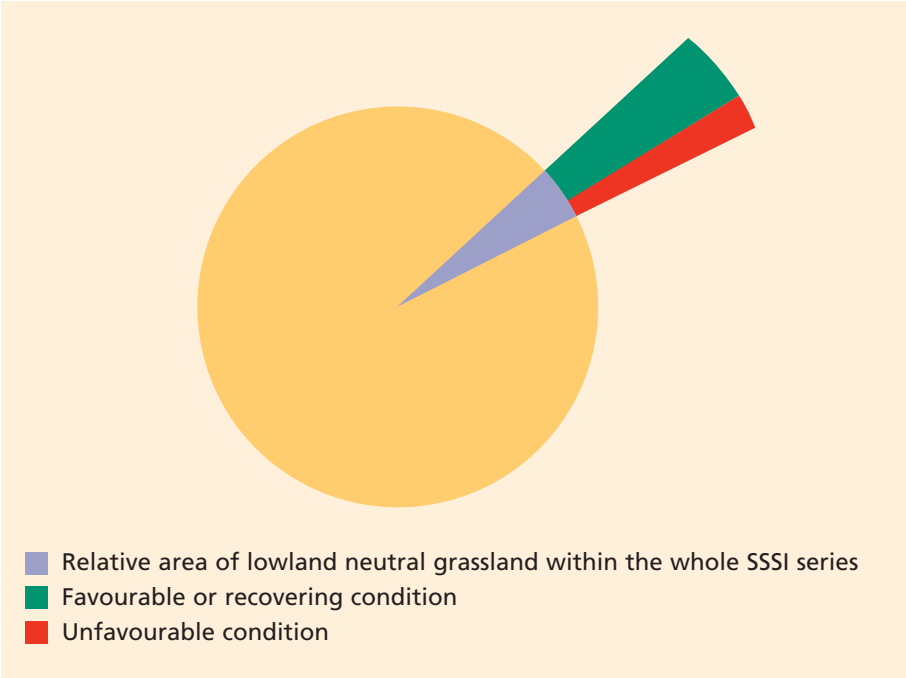
65% of lowland neutral grassland in SSSIs is in favourable or recovering condition.

The small meadows are affected by a lack of sustainable grazing. They are particularly vulnerable compared with other grasslands, since they are often small, isolated and in areas where there is a lack of demand for hay and grazing land. Without grazing, the sward becomes dominated by tall grasses which suppress smaller plants and reduce the botanical richness.

The flood meadows and grazing marshes depend on grazing, or grazing and hay-cutting. They can also be affected by drainage, water abstraction, inappropriate management of river water levels, and by nutrient enrichment, especially if fertilisers are used upstream.

Grazing marshes are particularly affected by lowered water levels. Their ditches are also vulnerable to water quality problems from fertilisers.

To conserve flood meadow and grazing marsh SSSIs, co-ordinated action is essential. English Nature can secure appropriate grazing, but the control of water levels and water quality largely rests with other organisations.



Condition of lowland neutral grassland on English SSSIs

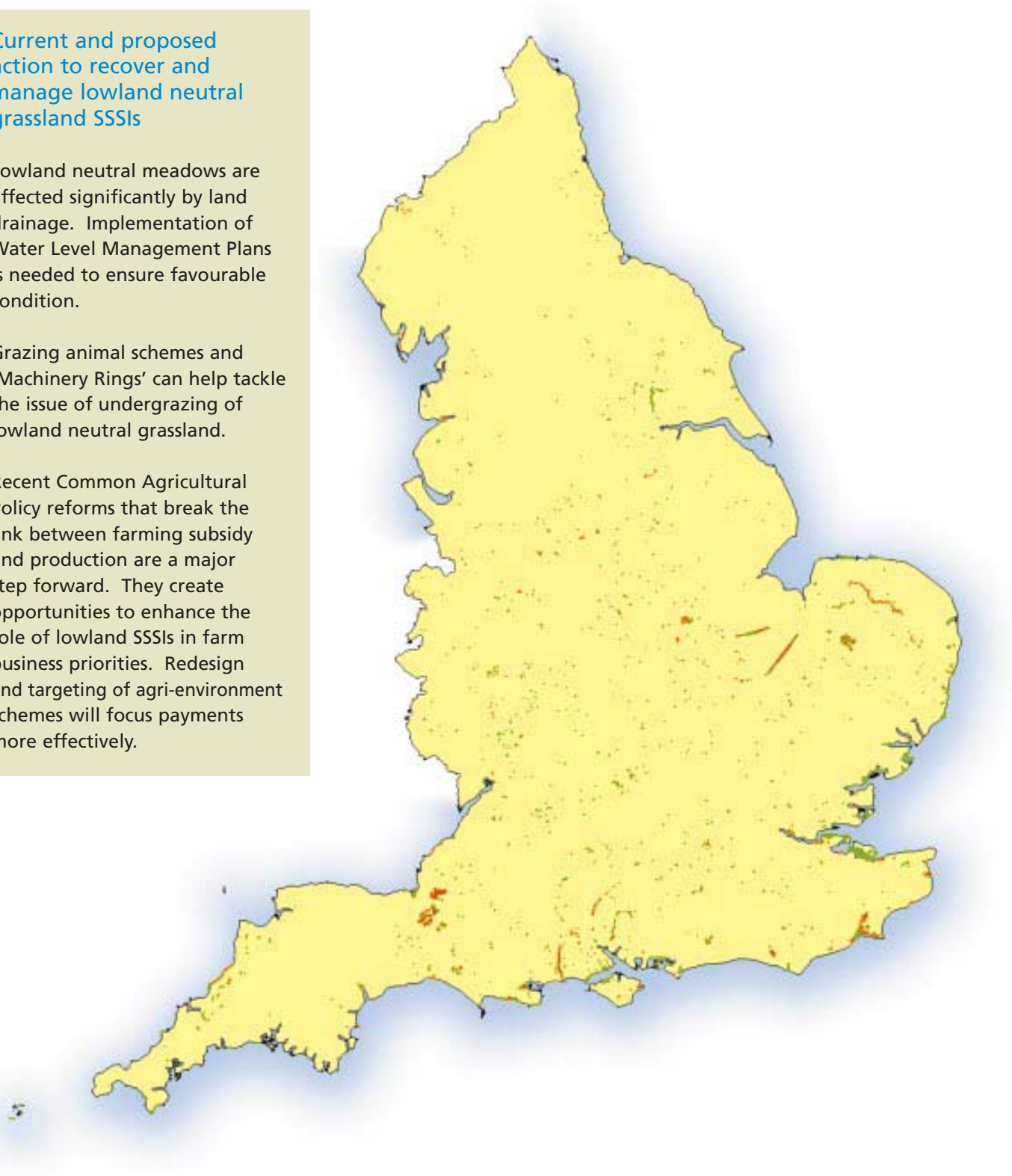
- Favourable or recovering condition
- Unfavourable condition

Current and proposed action to recover and manage lowland neutral grassland SSSIs

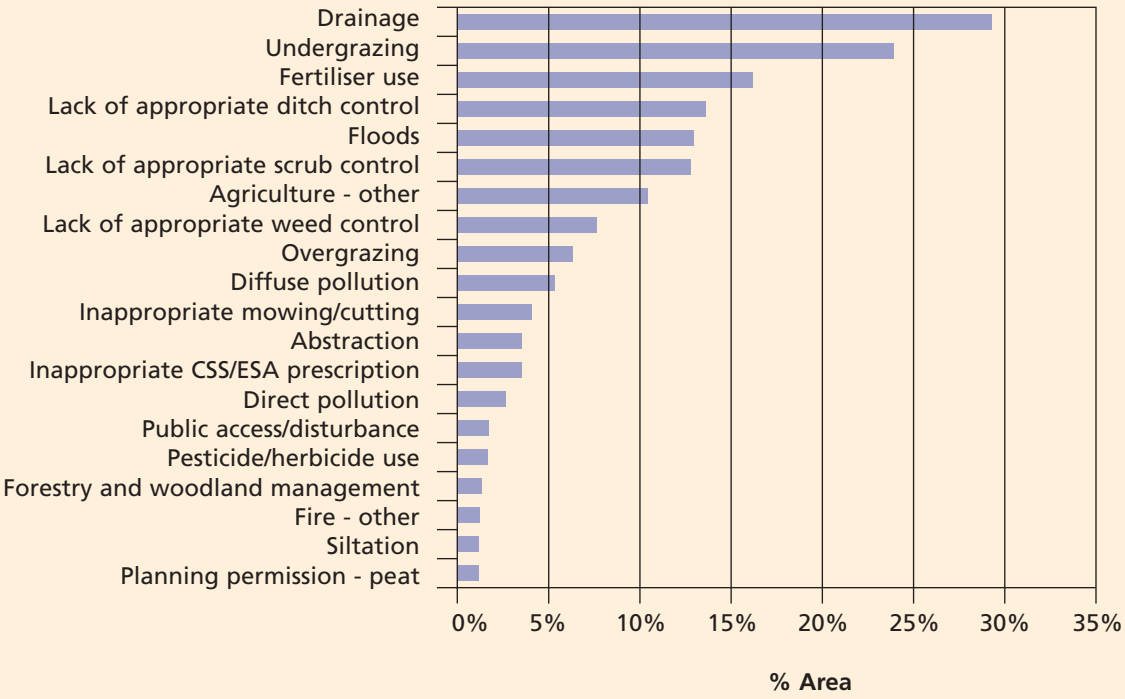
Lowland neutral meadows are affected significantly by land drainage. Implementation of Water Level Management Plans is needed to ensure favourable condition.

Grazing animal schemes and 'Machinery Rings' can help tackle the issue of undergrazing of lowland neutral grassland.

Recent Common Agricultural Policy reforms that break the link between farming subsidy and production are a major step forward. They create opportunities to enhance the role of lowland SSSIs in farm business priorities. Redesign and targeting of agri-environment schemes will focus payments more effectively.



Causes of unfavourable condition on lowland neutral grassland SSSIs



Rivers and streams

Character

Rivers and streams cover 9,000 hectares, about 1% of the SSSI land in England. As they form long, narrow features, their relatively small surface area does not reflect their significance as living arteries in the landscape.

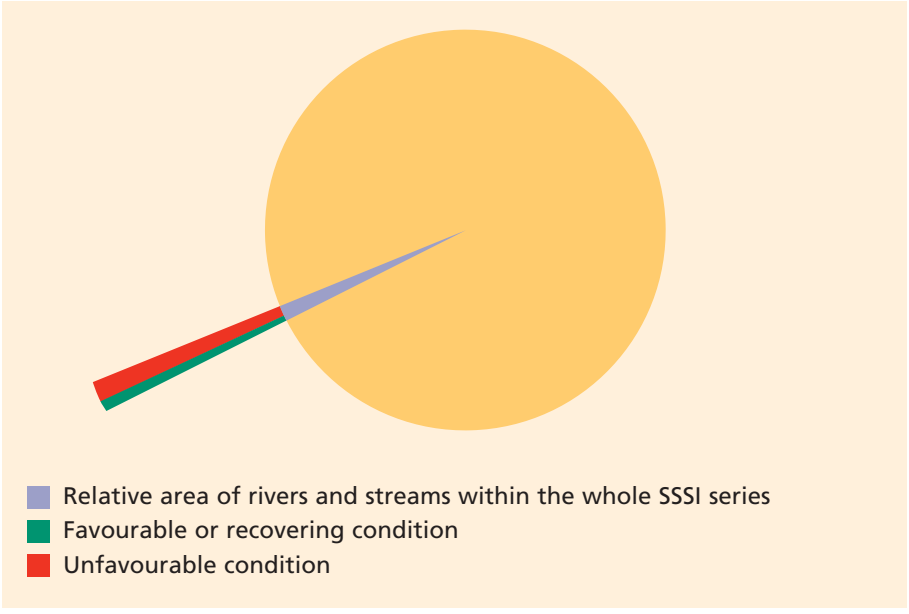
33 SSSIs have been selected as the best examples of England's rivers. They range from fast-flowing waters on hard rocks in the north and west, through the more tranquil, spring-fed chalk streams in the south and east, to the broad river floodplains in the east of the country.

Characteristic wildlife in SSSI rivers includes a wide range of plants, such as water-crowfoots and starworts. Invertebrates, such as pearl mussels, caddisflies and dragonflies are well represented. Fish within the rivers themselves, such as salmon, trout, lampreys and roach, are important, as are birds and mammals associated with flowing waters, for example, dipper and water vole.

Condition

31% of river and stream SSSIs is in favourable or recovering condition.

Methods for assessing pollution, abstraction and siltationn continued to be developed and improved during the first six-year monitoring period, as further information became available. For freshwater sites, the attributes for water quality and quantity were not fully taken into account in the older condition assessments. This problem is being solved as sites are re-assessed.



Diffuse pollution and siltation are the major recorded causes of adverse condition on river SSSIs. Intensive agriculture, both in arable and livestock areas, can cause soil erosion, leading to siltation of river beds and increased levels of nutrients.

Better treatment or diversion of direct polluting discharges is also needed. In particular, sewage and some industrial effluents contain high levels of phosphorus which can cause nutrient enrichment. This can affect not only the rivers and streams into which they flow, but can also have effects further downstream in lakes and coastal waters.

Other factors affecting river SSSIs are abstractions leading to low flows, the legacy of flood defences (straightening and embanking river channels) and the impact of invasive alien species, such as signal crayfish.

David Withrington

Current and proposed action to recover and manage river and stream SSSIs

The Asset Management Programme (AMP) process must address issues of nutrient enrichment and abstraction. The forthcoming Water Act will enable damaging non-water company abstraction licences to be amended or revoked. Implementation of the Water Framework Directive will provide a vehicle for protecting and enhancing river SSSIs.

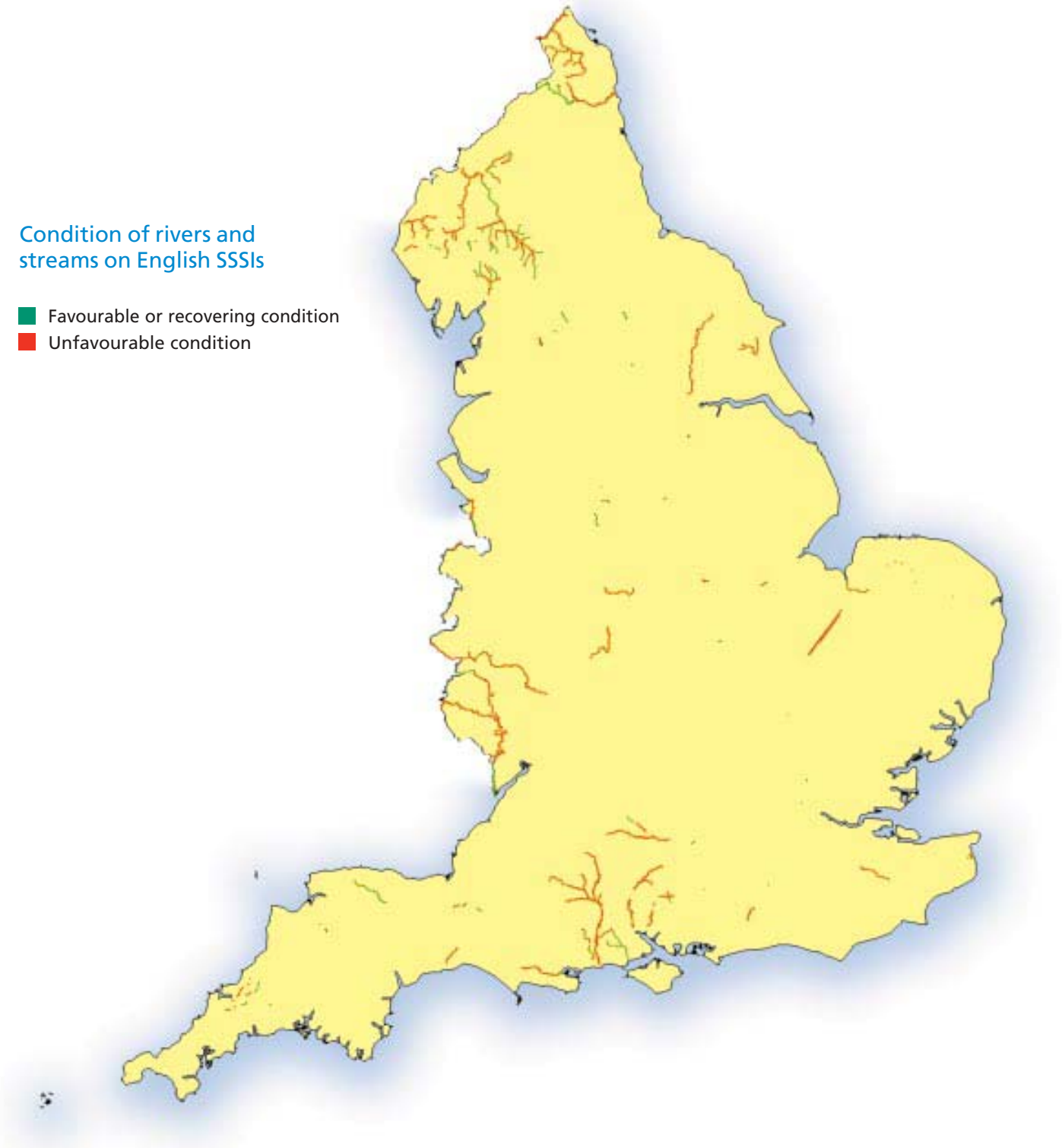
The LIFE in UK Rivers project is a partnership to develop conservation strategies for seven rivers, to identify the ecological requirements of 12 aquatic species and to develop a range of techniques (including fluvial audit) to help target river restoration.

There is a Defra initiative to integrate conservation into a catchment-based approach to flood management, of which English Nature is a partner.

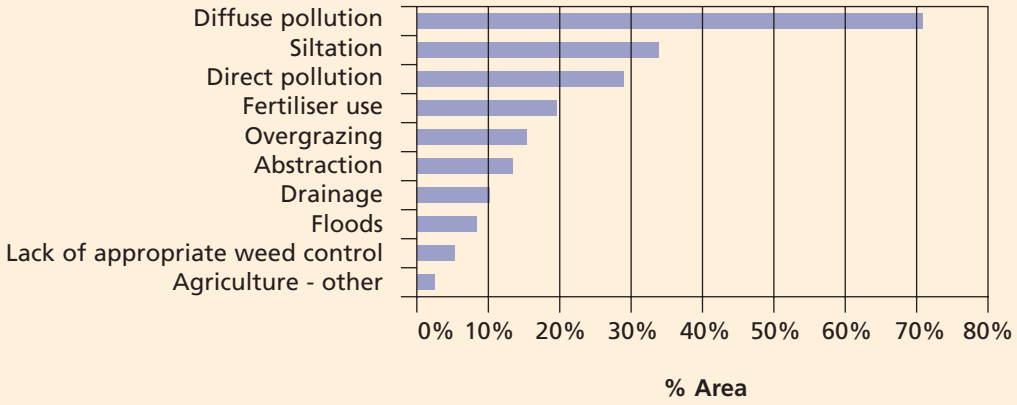
Defra will consult shortly on its strategy to address diffuse water pollution from agriculture.

Targets for levels of phosphorus, organic pollution and water flows for 16 rivers SSSIs have been agreed.

Condition of rivers and streams on English SSSIs



Causes of unfavourable condition on river and stream SSSIs



Peter Wakely/English Nature 18,321

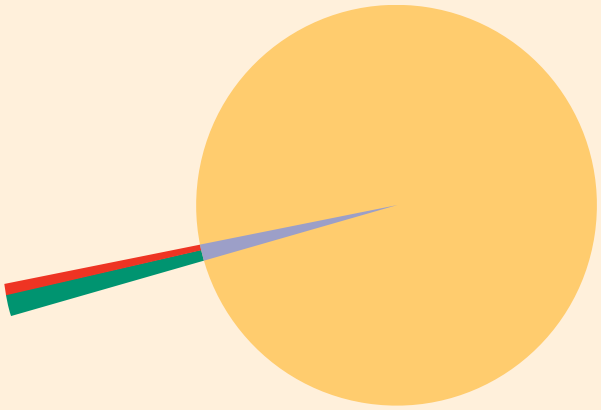
Sand dunes and shingle

Character

There are 50 sand dune SSSIs in England covering 10,000 hectares. Sand dunes are generally dynamic systems that depend upon a supply of sand and physical processes, including wind, to sustain their interest. Dune systems in favourable condition typically have zones with mobile young dunes nearest the sea, dunes with marram grass, and dune grassland where the system is more mature. Low areas between dune ridges may support wetlands, known as dune slacks. Sand dunes are an important habitat for a variety of rare species such as the dune gentian, mosses, insects, sand lizard and natterjack toad.

There are 26 shingle SSSIs covering just over 3,000 hectares, and England has the largest area of this habitat in Europe. Major shingle structures are rare features, important for both their structure and their vegetation. Dungeness in Kent supports 30% of all UK coastal shingle, and there are other large sites at Chesil Beach (Dorset) and Orfordness (Suffolk).

Close to the sea, the habitat supports strandline plants such as sea kale, sea pea and Babington's orache. Further from the sea, on more stable shingle, a wide range of habitats can develop, including scrub, grassland and heathland. Shingle habitat in favourable condition supports a wide range of specialist plants and invertebrates, and the geomorphological structures will be undamaged. Shingle is also important for nesting birds such as Sandwich and little terns.



Relative area of sand dunes and shingle within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Condition

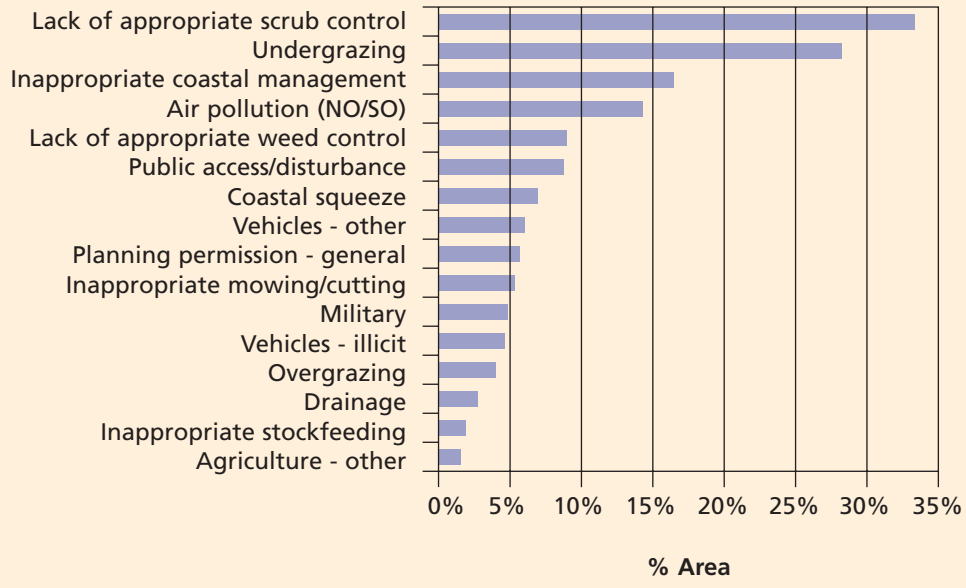
70% of sand dune and shingle SSSI land is in favourable or recovering condition.

Lack of appropriate scrub control and undergrazing are two of the main causes of unfavourable condition on sand dunes. This leads to invasion by coarser grasses and scrub and a decline in quality of the habitat.
In both sand dunes and shingle, inappropriate coastal management is a major cause of unfavourable condition. This can include disrupting shingle movements or sand supply, or moving or re-profiling shingle ridges for flood management, which can damage shingle structures and their vegetation. It also reduces their ability to withstand breaching during storms.

Air pollution is also leading to a decline in sand dune habitat quality in some places.

Whilst moderate pressure by walkers can be beneficial to dunes, excessive recreational pressure (such as use of vehicles) can cause unacceptable erosion. On shingle, public access or disturbance from recreation can damage vegetation and disturb breeding bird colonies.

Causes of unfavourable condition on sand dune and shingle SSSIs



Condition of sand dunes and shingle on English SSSIs

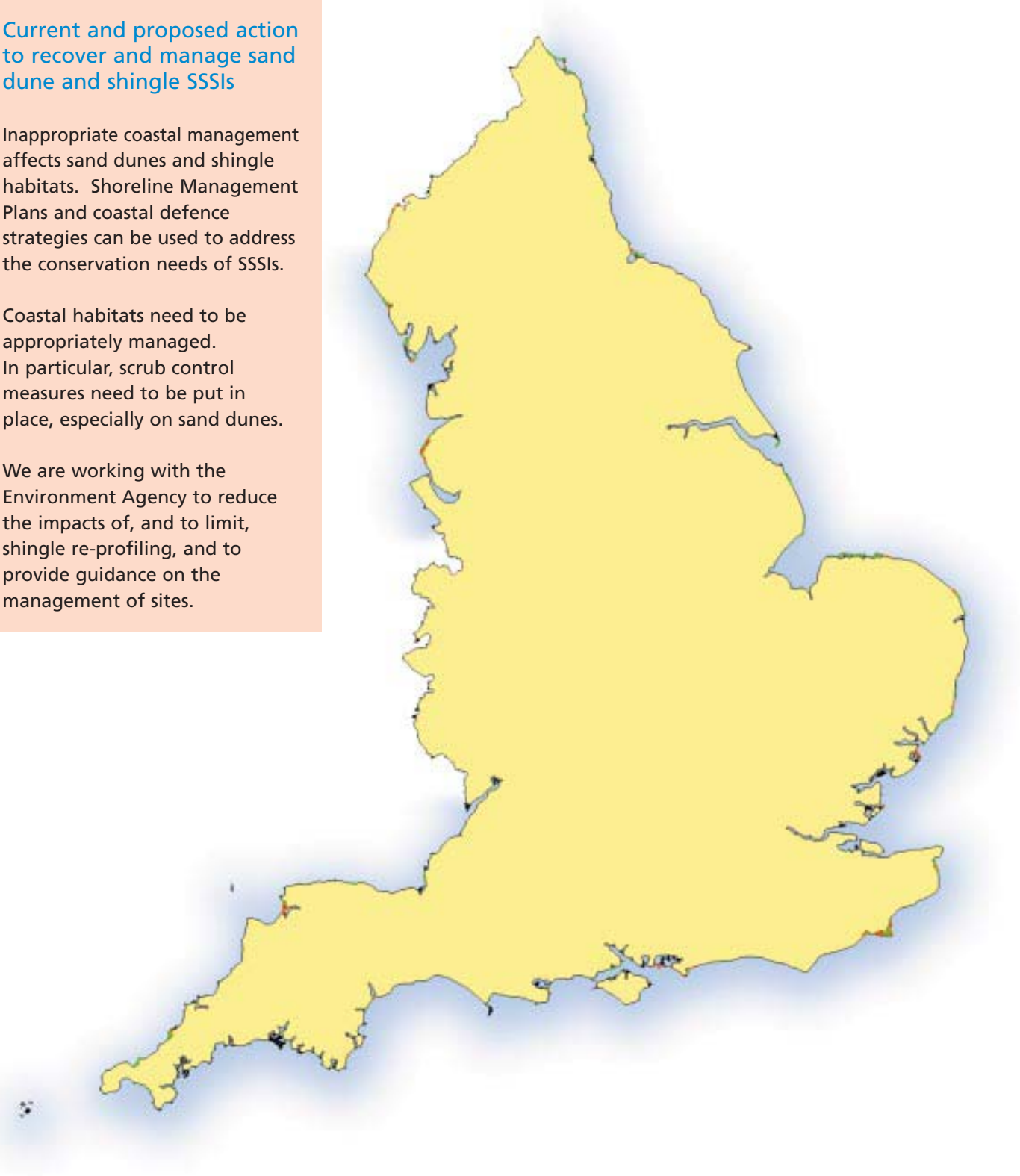
- Favourable or recovering condition
- Unfavourable condition

Current and proposed action to recover and manage sand dune and shingle SSSIs

Inappropriate coastal management affects sand dunes and shingle habitats. Shoreline Management Plans and coastal defence strategies can be used to address the conservation needs of SSSIs.

Coastal habitats need to be appropriately managed. In particular, scrub control measures need to be put in place, especially on sand dunes.

We are working with the Environment Agency to reduce the impacts of, and to limit, shingle re-profiling, and to provide guidance on the management of sites.



Peter Wakely/English Nature 17,052

Sandy and muddy shores

Character

Sandy and muddy shores cover 241,400 hectares, 23% of the SSSI land in England. They are the most extensive of the main habitats in the SSSI series.

Sandflats occur in more exposed areas and are colonised by a range of invertebrates that can survive in mobile sediments. Extensive sandflats, such as those along the North Norfolk coast, are characterised by sandhoppers and polychaete worms, with burrowing razor shells and heart urchins on the lower shore. In more sheltered areas with finer sands, such as Morecambe Bay, large worms, such as the lugworm, and bivalves, such as common cockles, dominate the muddy sand.

Mudflats rich in invertebrates are also important feeding areas for waders and wintering waterfowl. As a result, many mudflat SSSIs are also nationally or internationally important for birds.

Saltmarshes on the upper mudflats have plants that tolerate occasional flooding by seawater, such as sea-lavender and glasswort. A saltmarsh in favourable condition often has zones of vegetation, including pioneer plants (nearest the sea) with glasswort or cord-grass, through low-mid marsh with saltmarsh grass, to upper saltmarsh (closest to the land) often with sea-lavenders and red fescue.

The Wash is the largest SSSI in England. On the sea bed in some parts of the Wash there is fragile reef habitat, formed by the ross worm. This reef provides habitat for a species-rich community that includes the pink shrimp.

Condition

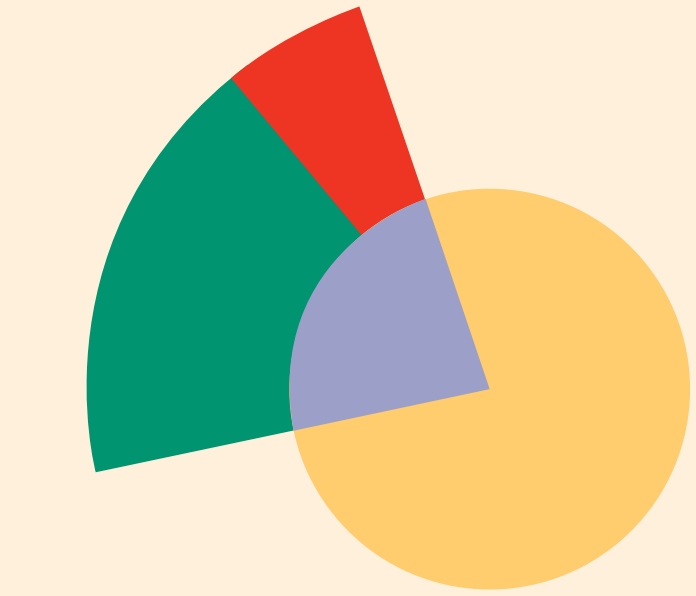
74% of sandy and muddy shore SSSIs is in favourable or recovering condition.

'Coastal squeeze' is a major cause of unfavourable condition. Coastal squeeze occurs when fixed, hard sea defences prevent vegetation migrating naturally landwards in response to sea level rise. The result is a loss of shoreline habitats.

Fisheries for cockles and mussels can also cause unfavourable condition on SSSIs if they are carried out at unsustainable levels. Some fishing activities, such as suction dredging, can also damage or disturb the habitats and non-target species. This is a major issue causing unfavourable condition of a large area of The Wash SSSI.

Inappropriate coastal management interrupts the coastal processes that shape the coast. Using rock armour to prevent erosion, or breakwaters or groynes that interrupt sediment transport along the coast, can change patterns of sediment deposition along long stretches of coastline.

Dredging also causes unfavourable condition within some SSSIs. Maintenance dredging for navigation occurs in many estuaries and can reduce the sediment available to maintain saltmarsh and mudflats.



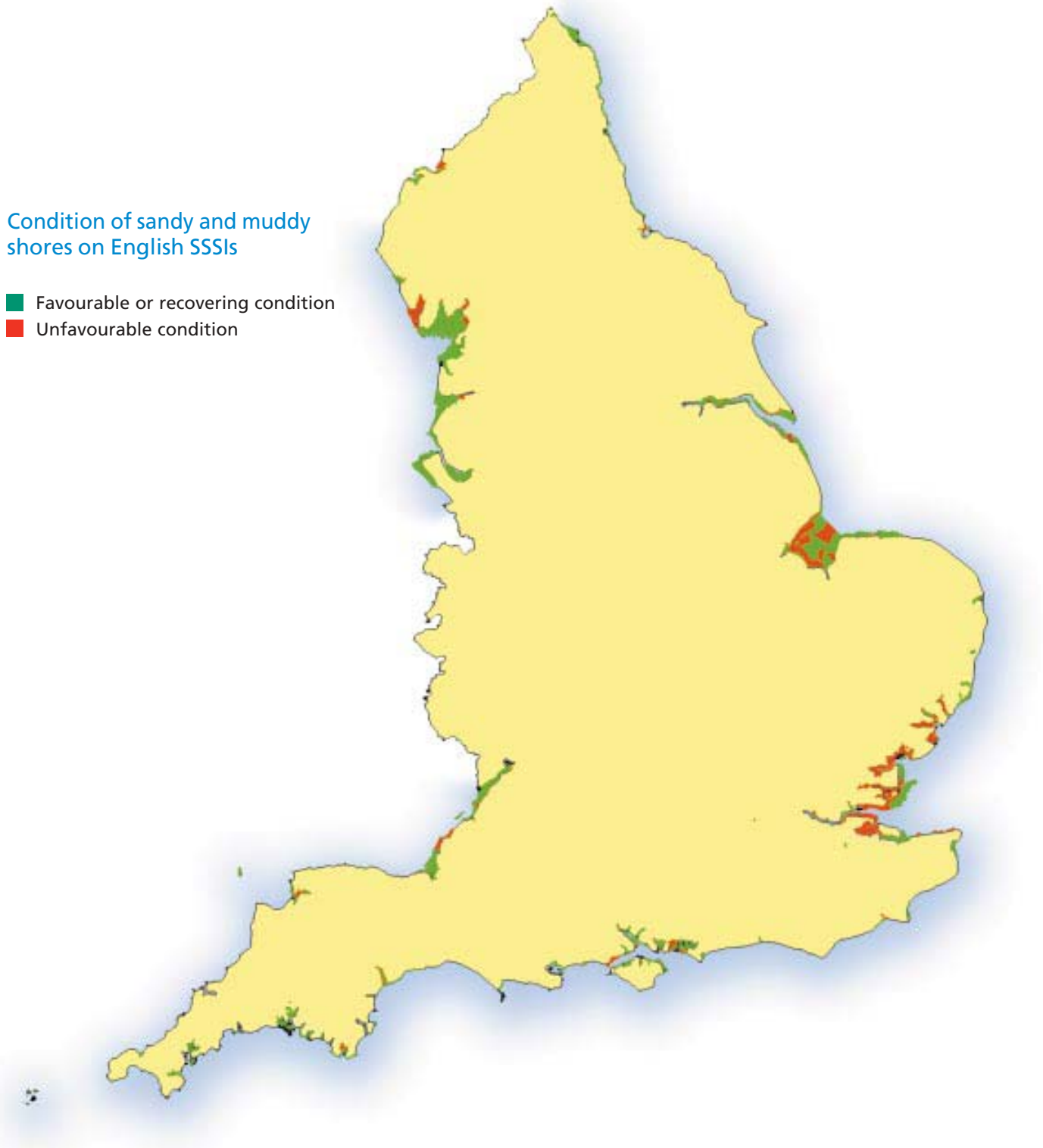
Relative area of sandy and muddy shores within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Current and proposed action to recover and manage sandy and muddy shore SSSIs

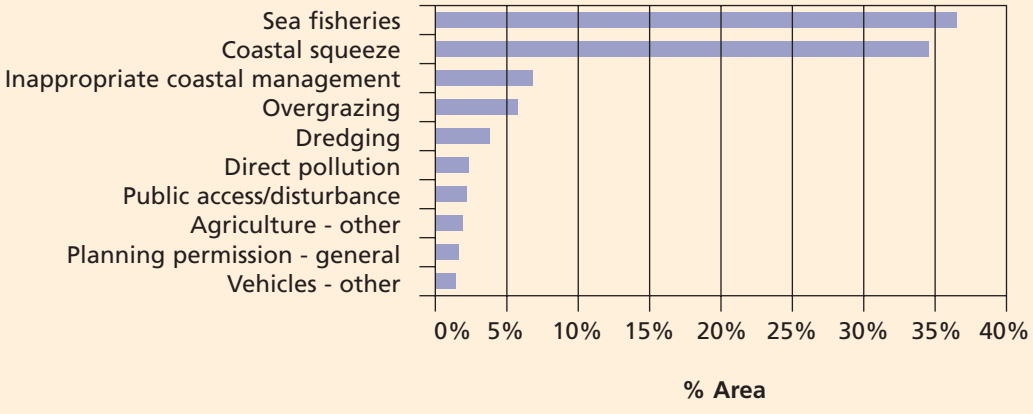
The Living with the Sea partnership project is developing mechanisms for sustainable flood and coastal defence schemes, such as Coastal Habitat Management Plans, and demonstrating practical ways of habitat creation. Furthermore, to respond to coastal squeeze, a major flood defence realignment scheme is planned at Alkborough on the Humber (with the Environment Agency, North Lincolnshire Council and Countryside Agency, and Yorkshire Forward). This will create 440 hectares of new habitat.

Sea fisheries can affect subtidal habitats. Fisheries within European marine sites should be subject to 'appropriate assessment' so any impact can be assessed and other fishing options investigated. Liaising closely with the Sea Fisheries Committee, we aim to develop best practice guidelines for conducting these assessments.

Condition of sandy and muddy shores on English SSSIs



Causes of unfavourable condition on sandy and muddy shore SSSIs



Peter Wakely/English Nature 13,066

Sea cliffs and rocky shores

Character

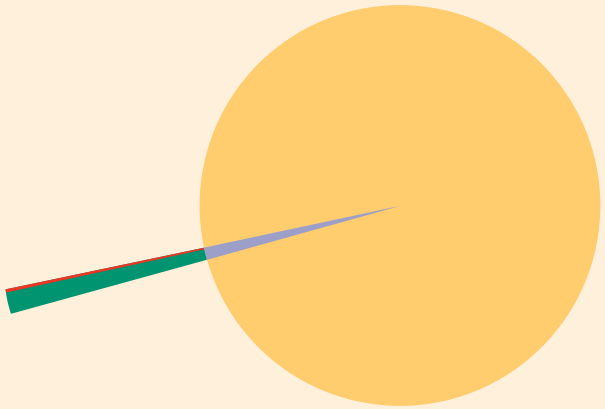
Sea cliffs and rocky shores cover around 9,200 hectares within SSSIs, about 1% of SSSI land in England. Over 60 SSSIs have sea cliffs, important for their geology or wildlife. Some steep, hard rock cliffs of the open coast and offshore islands are important for colonies of nesting seabirds such as kittiwakes and guillemots. Zones of distinctive plant and lichen communities occur up the cliff face, influenced by salt spray. Soft cliffs on rock such as boulder clay and shale form more gentle slopes. These support a range of vegetation types, from pioneer communities on recent landslips, to grassland, scrub or even woodland on more mature slopes. Continued erosion is essential for maintaining the wildlife and the rock exposures. The variety of habitats here can be rich in invertebrates and a number of rare species are found only in these habitats, such as the fiery clearwing moth on the clay cliffs of Kent.

There are 3,000 hectares of rocky shore in SSSIs. Zones of seaweeds and animals occur at different heights on the shore, with many of the richer communities in areas that are submerged the longest. England has a large extent of chalk shores and cliffs that support specialised plants and animals, the latter typified by species that can burrow into the soft rock.

Condition

87% of sea cliffs and rocky shores on SSSIs are in favourable or recovering condition.

The main reason for unfavourable condition is lack of grazing management on cliff-tops and slopes, coupled with a lack of appropriate scrub and weed control. Undergrazing leads to scrub growing over the land at the expense of flower- and invertebrate-rich open grasslands. On naturally dynamic cliffs, this is made worse by inappropriate coastal management, which can stabilise the cliff, causing changes to the mosaic of cliff habitats with bare ground and pioneer vegetation being progressively overgrown.

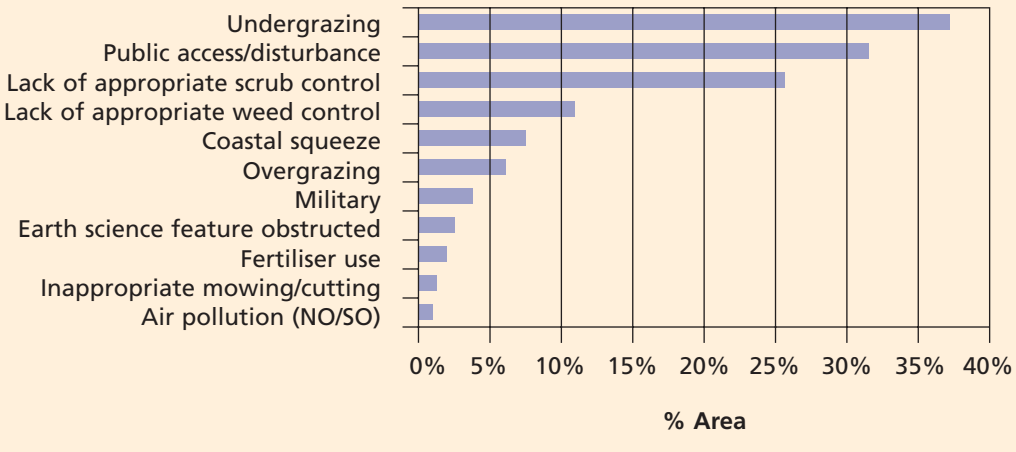


Relative area of sea cliffs and rocky shores within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Farming at the cliff top can influence the plants on the cliff slope. Low-intensity grazing maintains the diverse vegetation that is the starting point for the development of cliff-slope communities. Ploughing of the cliff-top grasslands results in fewer plants and invertebrates, and can affect the ability of vegetation communities to 'migrate' as the cliff erodes.

On some sites, such as Thanet, bird numbers on rocky shores are in decline because of public disturbance.

Causes of unfavourable condition on sea cliff and rocky shore SSSIs



Condition of sea cliffs and rocky shores on English SSSIs

- Favourable or recovering condition
- Unfavourable condition

Current and proposed action to recover and manage sea cliff and rocky shore SSSIs

Agri-environment schemes need to be designed and targeted to ensure appropriate management of soft cliff-tops.

Coastal management must allow habitats to migrate in response to changes in the physical environment.

Shoreline Management Plans and coastal defence strategies can address coastal management at a strategic level.

Peter Wakely/English Nature

Standing waters and canals

Character

Standing waters and canals cover some 21,000 hectares, about 2% of the SSSI land in England.

This habitat includes natural lakes and ponds, both in the lowlands and the uplands, which have special plant, fish and invertebrate interests. Examples include Bassenthwaite and Derwent Water in Cumbria - the only two lakes with populations of vendace, England's most threatened fish. Nutrient-poor lakes such as Wast Water in Cumbria can support plants that are rare in England, such as awlwort. The Norfolk Broads are shallower and naturally more nutrient-rich; they have populations of stoneworts and rarities such as holly-leaved naiad.

This habitat also includes man-made pits and reservoirs, which are important for birds and can also support interesting plant communities.

With their shallow water and slow flows, most canals have wildlife similar to that in lakes and ponds. These include the rare floating water-plantain, which occurs in a number of canal SSSIs.

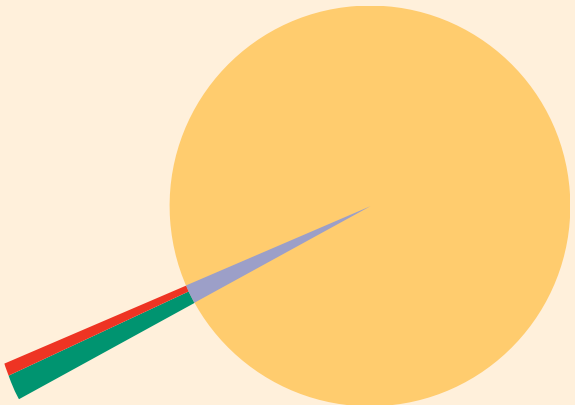
Condition

69% of standing waters within SSSIs is in favourable or recovering condition. However, this figure is heavily influenced by gravel pit and reservoir SSSIs, which are important for birds. These water bodies account for 60% of the area of this habitat type and are less sensitive to many impacts. Many of those in unfavourable condition are lakes and canals, which are important for their aquatic plants, fish and invertebrate species.

Methods for assessing pollution, abstraction and siltation continued to be developed and improved during the first six-year monitoring period, as further information became available. For freshwater sites, the attributes for water quality and quantity were not fully taken into account in the older condition assessments. This problem is being solved as sites are re-assessed.

Pollution is a major problem for standing waters and canals. It arises from point sources, such as sewage treatment outfalls, or diffuse sources such as agricultural run-off. The figures given are likely to underestimate the extent of the problem due to difficulties in identifying the impacts and causes of pollution. Drainage and water levels are also significant problems for standing water and canal SSSIs.

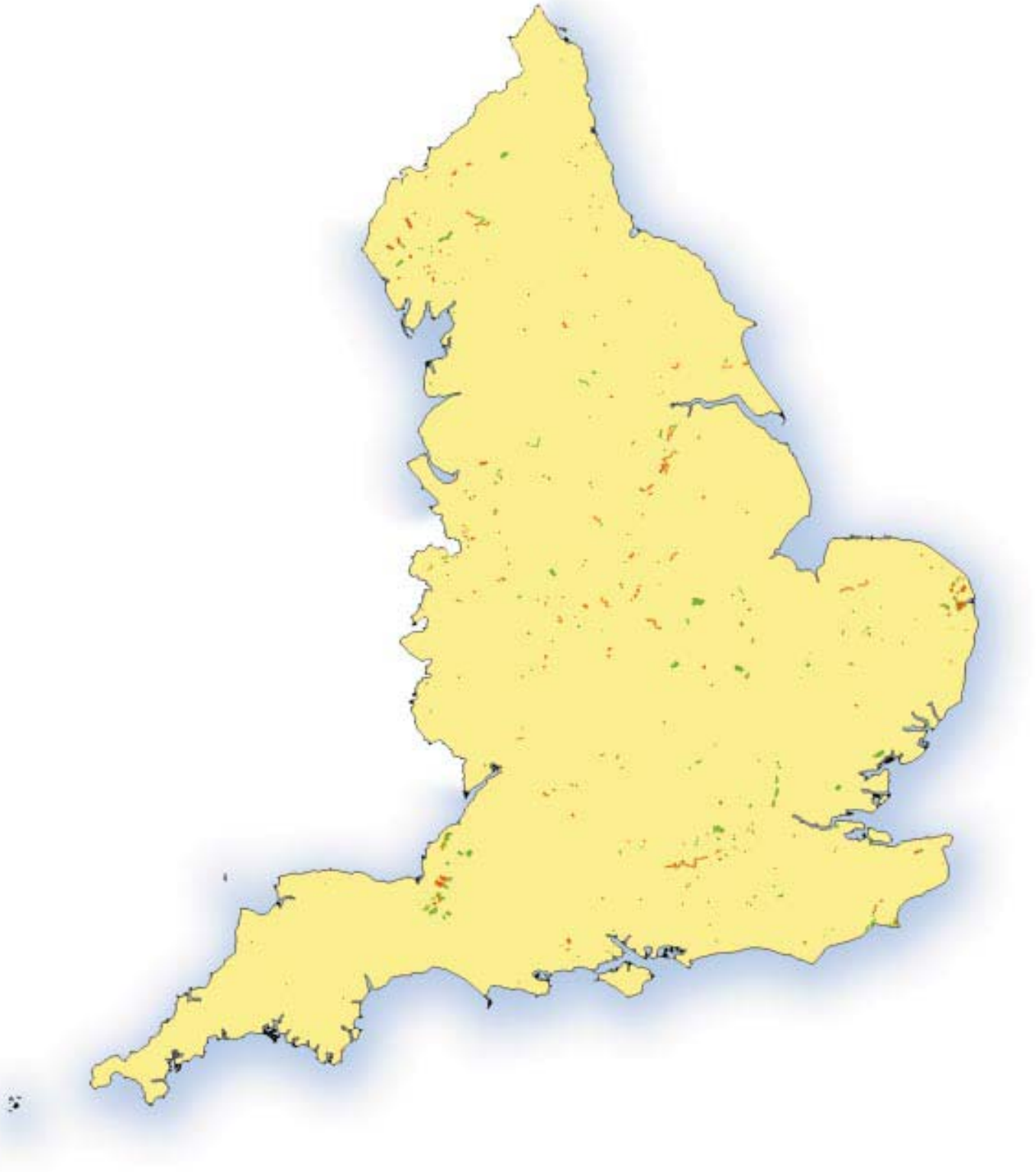
The wildlife interest on some well-used sections of canals can be damaged by boat traffic. Conversely, in un-navigated areas the lack of maintenance may allow overgrowth of reeds and scrub, leading to a loss of open water habitat.



Relative area of standing waters and canals within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Condition of standing waters and canals on English SSSIs

Favourable or recovering condition
Unfavourable condition

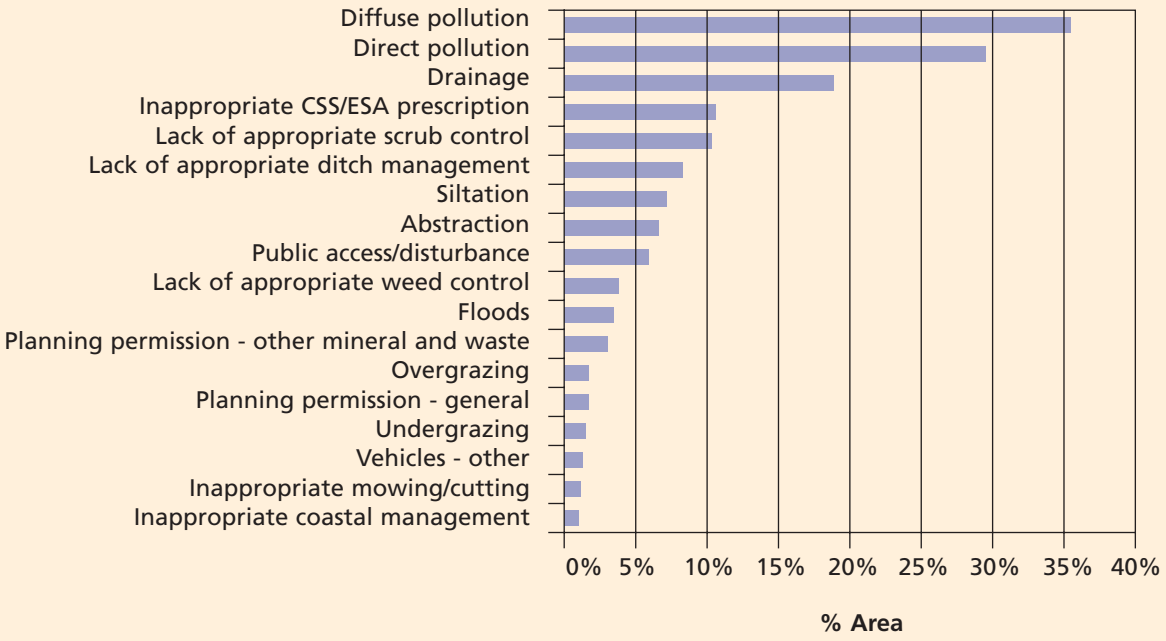


Current and proposed action to recover and manage standing water and canal SSSIs

Restoration works are needed to address the legacy of past pollution. With funding from the Government's Capital Modernisation Fund, English Nature is undertaking restoration projects on a number of lake SSSIs. These include removing overhanging trees and invasive plant species, exclusion of fish from some sites, and re-establishing submerged and marginal plants.

Working with the Environment Agency, we have secured water quality improvements for a number of lakes adversely affected by sewage inputs. In the current water company investment programme (AMP3) these include phosphorus stripping at sewage treatment works affecting Slapton Ley and Loe Pool in the south west.

Causes of unfavourable condition on standing water and canal SSSIs



Upland acid grassland

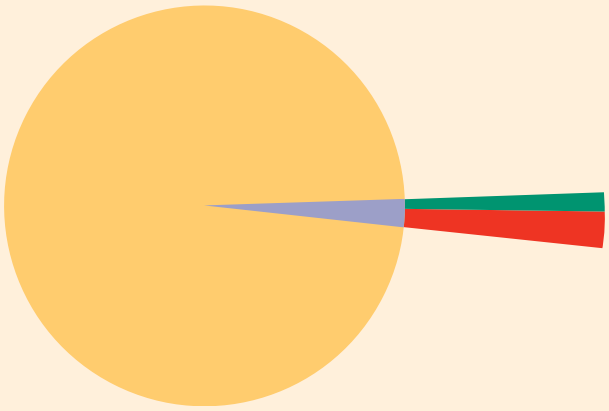
Character

Upland acid grassland covers some 25,700 hectares, about 2% of the SSSI land in England.

Upland acid grassland is one of the most extensive semi-natural habitats in the uplands. These grasslands are an important element in the overall mix of habitats in the uplands, where they can occur as part of an intimate mosaic. Upland acid grasslands are typically species-poor swards.

Acid grassland of the moorland fringe is important for nesting waders such as curlew, snipe, redshank and lapwing. Research has shown that these areas are also important feeding and hunting grounds for moorland nesting birds such as golden plover and merlin.

Many of the invertebrates associated with acid grassland are specific to the conditions found in this environment and do not occur in other habitats.



Relative area of upland acid grassland within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Condition

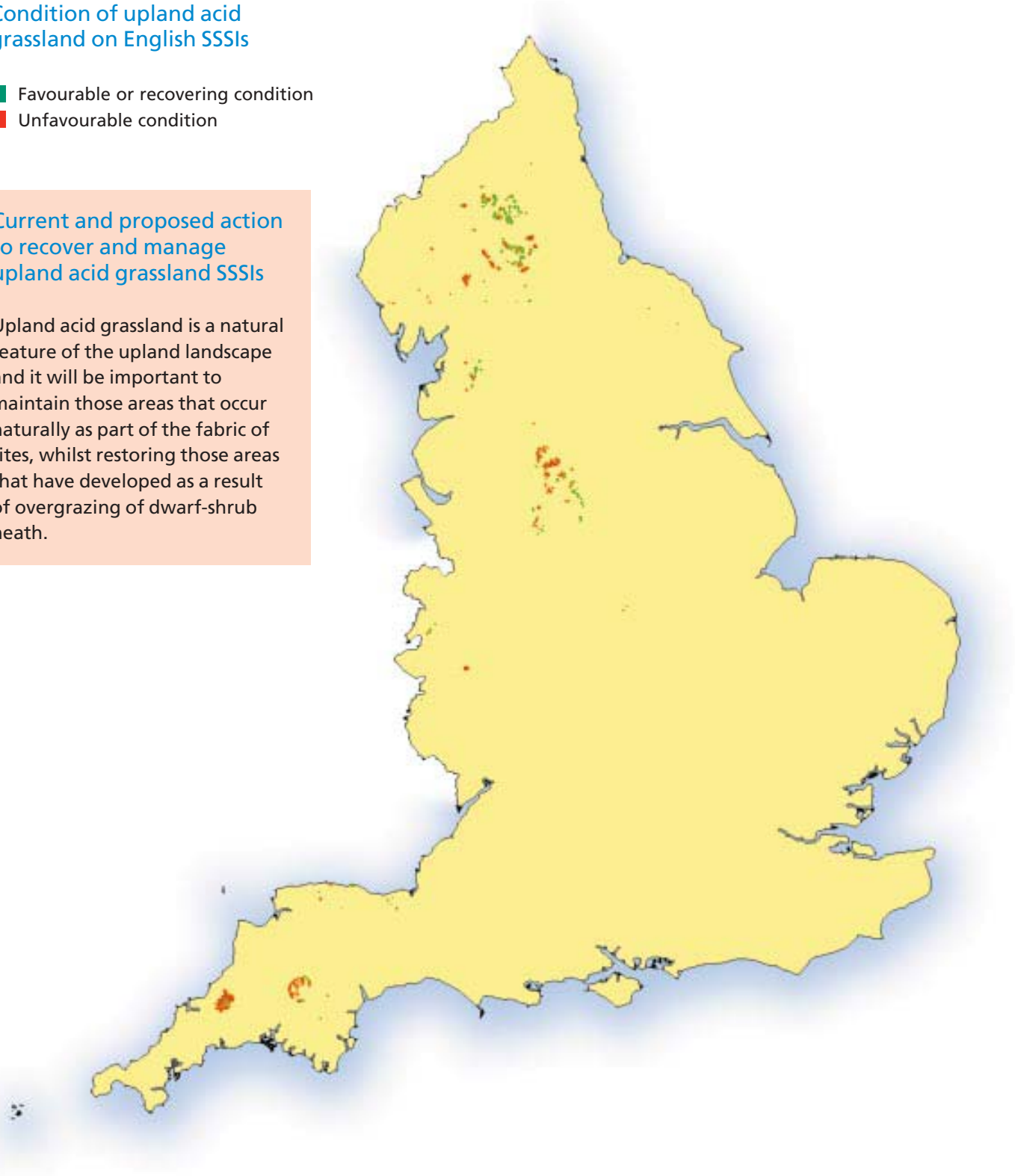
40% of upland acid grassland within SSSIs is in a favourable or recovering condition.

Many extensive areas of upland acid grassland derive from other habitats of greater conservation interest, including heathland and blanket bog communities.

By far the greatest cause of unfavourable condition of upland acid grassland SSSIs is agricultural overgrazing. Restoration of upland acid grasslands is underway in many parts of England, by reducing stock numbers, notably of sheep. Where acid grassland forms an intricate mosaic with other habitats, environmentally sustainable grazing is needed. Fire and moor burning, and inappropriate stock feeding also affect the condition of acid grassland but to a lesser extent.

Condition of upland acid grassland on English SSSIs

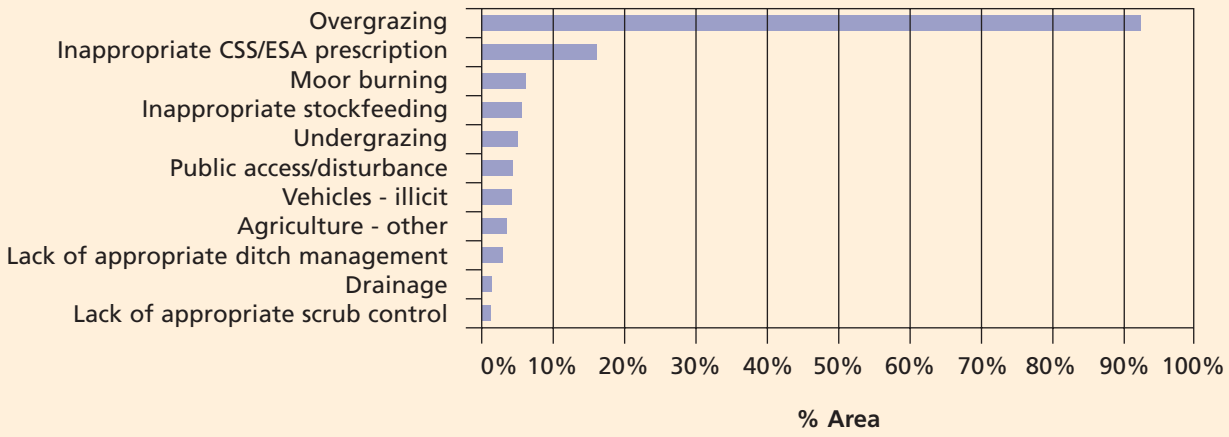
- Favourable or recovering condition
- Unfavourable condition



Current and proposed action to recover and manage upland acid grassland SSSIs

Upland acid grassland is a natural feature of the upland landscape and it will be important to maintain those areas that occur naturally as part of the fabric of sites, whilst restoring those areas that have developed as a result of overgrazing of dwarf-shrub heath.

Causes of unfavourable condition on upland acid grassland SSSIs



Peter Wakely/English Nature 21,050

Upland broadleaved and yew woodland

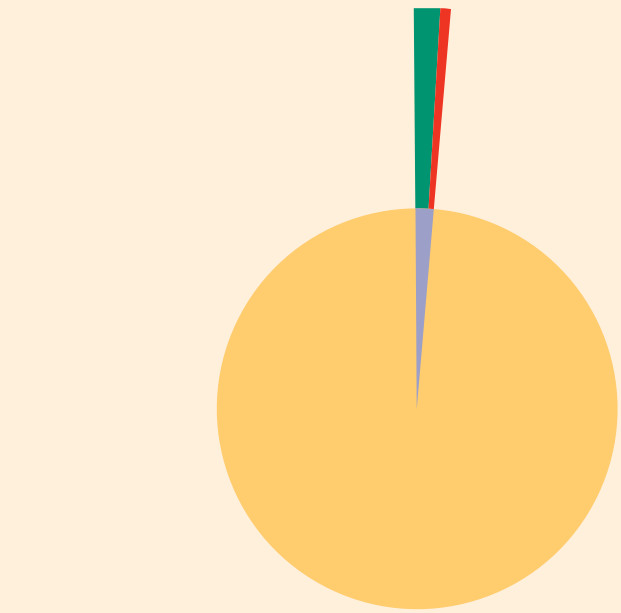
Character

Upland broadleaved and yew woodland covers 15,200 hectares, about 1% of the SSSI land in England.

Woods in favourable condition show a mixture of structures, with some open space, some old trees and dead wood, and a variety of different vegetation layers. They will also have signs of regeneration, and the trees and shrubs present will be mostly species appropriate to the site. Locally distinctive elements may also be present, such as a rich ground flora or bryophyte (moss and liverwort) communities.

Upland woods are often of oak and birch and have an open structure, a consequence of their past history. This favours breeding birds such as redstart and pied flycatcher. Where an understorey is present it is usually of holly, rowan and hazel. Regeneration may be patchy in time and space, depending on a combination of large gaps in the canopy (or on the edge of the wood) and reduced levels of sheep grazing. However, some grazing is desirable because it suppresses vigorous shrub and herb growth, which allows bryophytes and lichen communities on the ground or lower tree-trunks to flourish. Upland ash and alder woods occur on richer or wetter soils, which tend to have richer ground floras and are less dependent on grazing to maintain their interest.

Peter Wakely/English Nature 5,921



Condition

69% of upland broadleaved and yew woodland SSSIs is in favourable or recovering condition.

Upland broadleaved woodland SSSIs that are not in favourable condition are generally subject to overgrazing by livestock, inappropriate past or present forestry practices and excessive browsing from increasing deer populations.

Maintaining and improving on this position will require continued control of stock grazing levels and management of deer populations where these are expanding. Introduced trees and shrubs need to be removed where they may spread or are currently suppressing the native plant and animal communities. On some sites appropriate management may be needed to improve the structural diversity, sometimes by re-introducing former management practices such as coppicing, but more often by more limited tree felling. More old trees and dead wood must be left, to accumulate to levels closer to those expected in natural woodland.

Current and proposed action to recover and manage upland broadleaved and yew woodland SSSIs

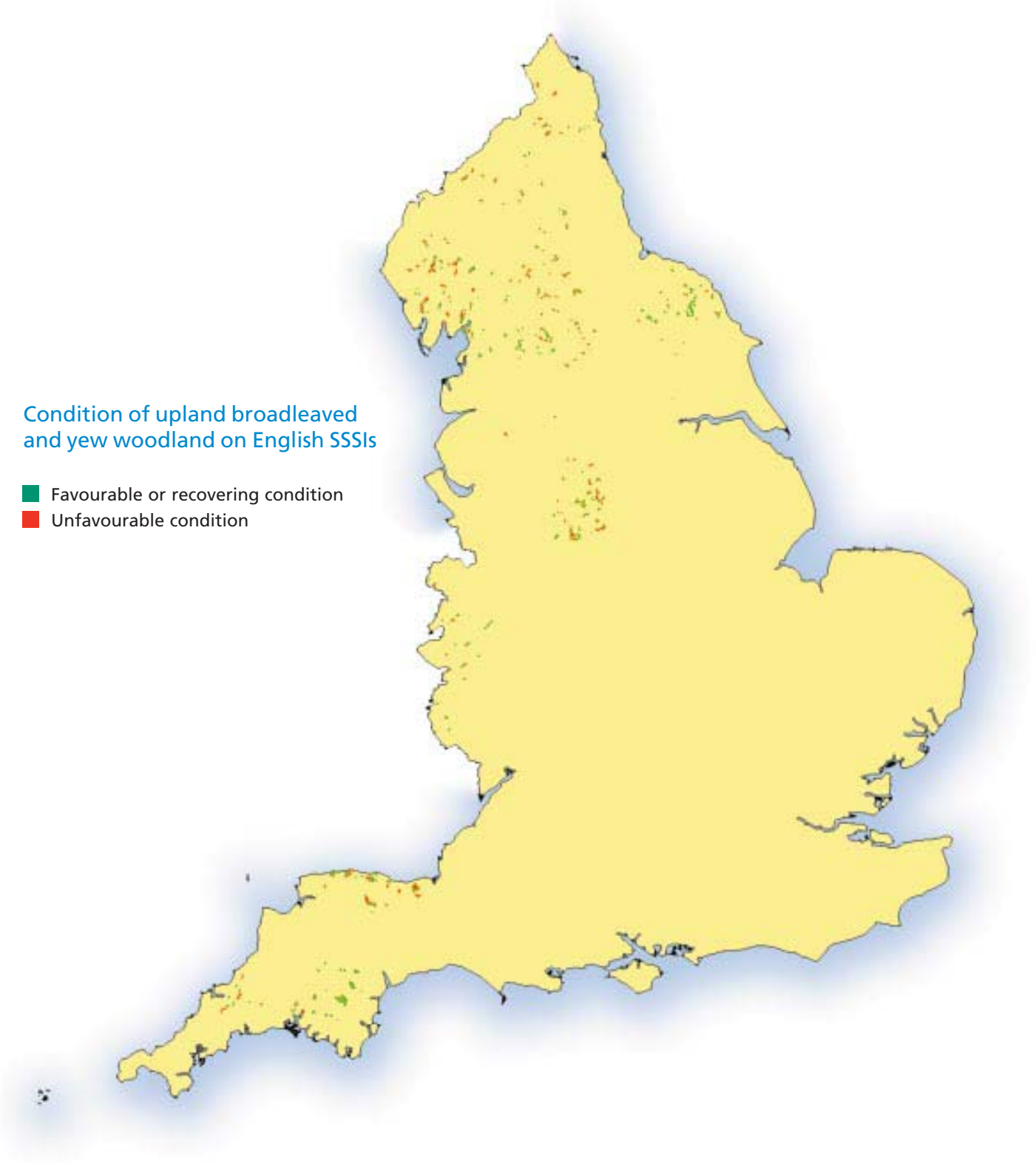
Initiatives are needed to create markets for sustainable wood products in conjunction with the UK woodland assurance standard.

Incentives, particularly to support non-market benefits of woodlands, need targeting to SSSIs in unfavourable condition.

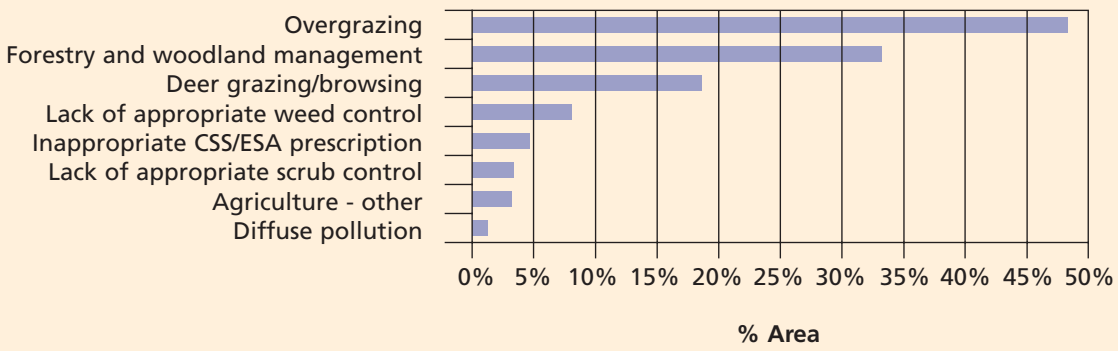
Fencing to reduce pressure from sheep and deer is needed to allow woodlands to regenerate in the short term. In the long term, deer populations need management.

We are working with the Forestry Commission and the Rural Development Service to improve our assessments of what levels of stock grazing are acceptable in upland woods.

Condition of upland broadleaved and yew woodland on English SSSIs



Causes of unfavourable condition on upland broadleaved and yew woodland SSSIs



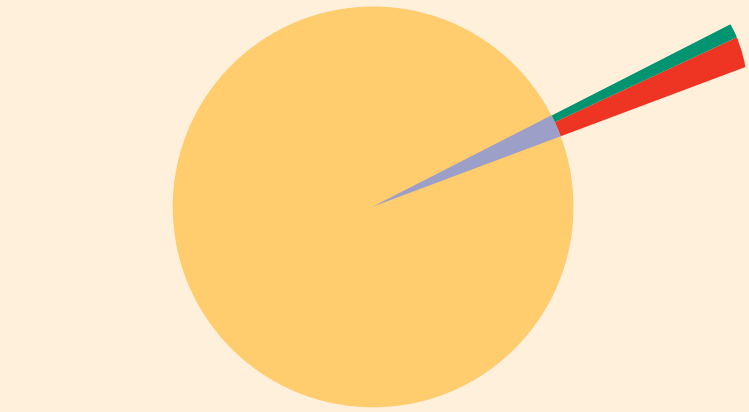
Upland calcareous grassland

Character

Upland calcareous grassland covers 13,900 hectares, about 1% of the SSSI land in England. This grassland generally occurs above the upper limit of agricultural enclosure, mainly above 250-300 metres, and is restricted to shallow soils over lime-rich bedrock.

These grasslands can be very rich in plants, containing a mixture of grasses and herbs such as sheep's-fescue, common bent, wild thyme, blue moor-grass and limestone bedstraw. Many lime-loving plants such as common rock-rose, bird's-eye primrose and bloody crane's-bill can also be found in these species-rich pastures.

Upland calcareous grasslands are of particular importance for a number of nationally rare, scarce and uncommon butterfly species, including the northern brown argus, which feeds on common rock-rose, and the small blue which feeds on kidney vetch.



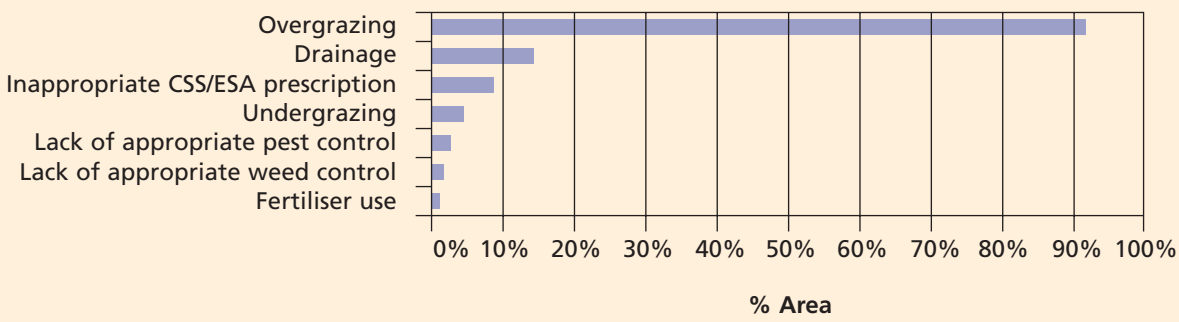
Condition

32% of upland calcareous grassland in SSSIs is in favourable or recovering condition.

Much of the unfavourable area is a result of overgrazing. These limestone grasslands can occur as part an upland mosaic of habitats and, given the choice, stock will graze them in preference to heaths or more acid grasslands. This can cause intense grazing pressure. Reducing stock numbers when combined with shepherding, and introducing mixed grazing with cattle (where appropriate) can help bring these areas back into favourable condition.

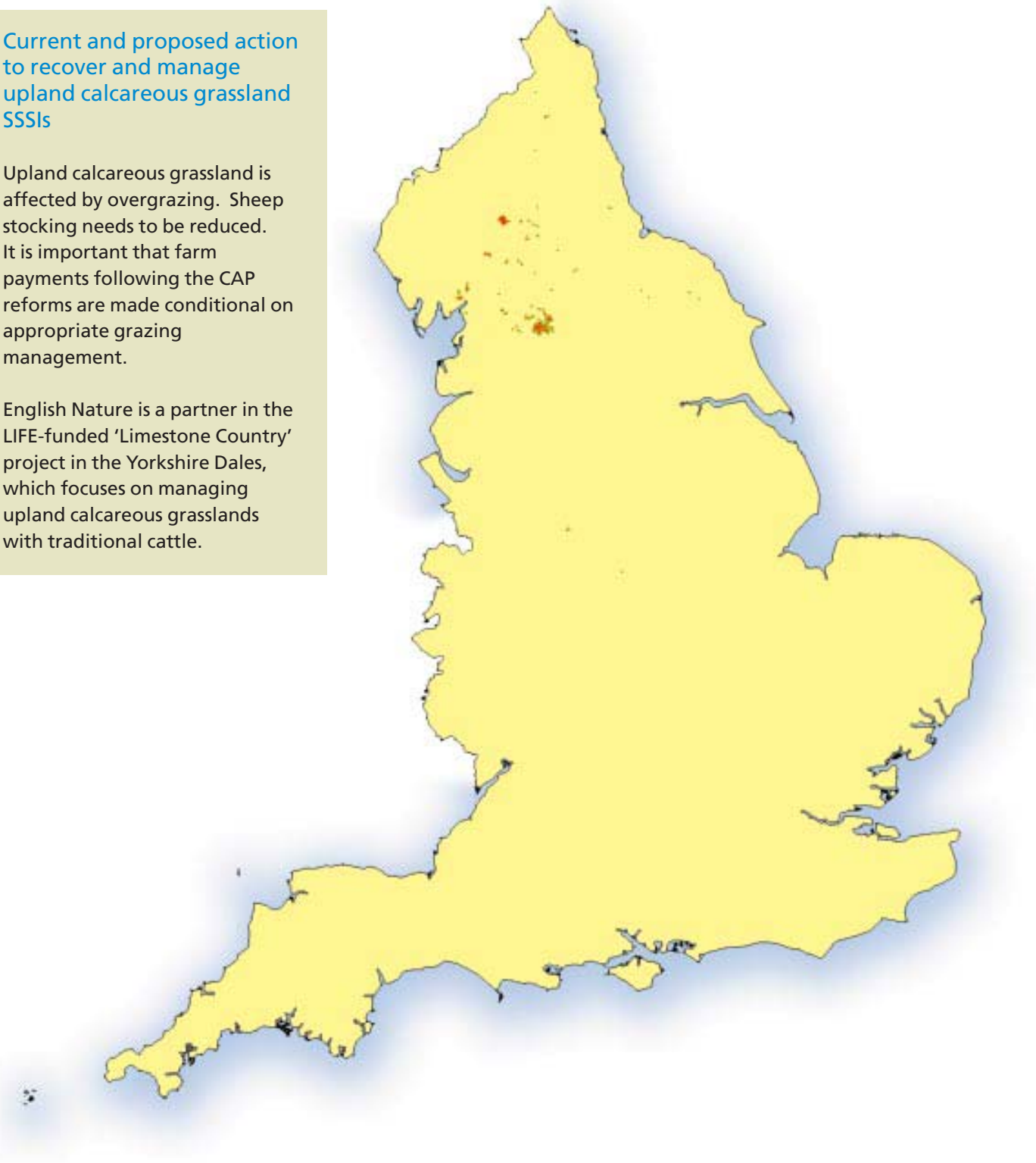
Chris McCarty/English Nature

Causes of unfavourable condition on upland calcareous grassland SSSIs



Condition of upland calcareous grassland on English SSSIs

- Favourable or recovering condition
- Unfavourable condition



Current and proposed action to recover and manage upland calcareous grassland SSSIs

Upland calcareous grassland is affected by overgrazing. Sheep stocking needs to be reduced. It is important that farm payments following the CAP reforms are made conditional on appropriate grazing management.

English Nature is a partner in the LIFE-funded 'Limestone Country' project in the Yorkshire Dales, which focuses on managing upland calcareous grasslands with traditional cattle.

Upland heath

Character

Upland heath covers some 173,500 hectares, about 16% of the SSSI land in England.

Upland heath in favourable condition typically has a range of dwarf shrubs such as heather, bilberry, crowberry, bell heather and, in the south and west, western gorse. Wet upland heath is most commonly found in the wetter north and west. When in favourable condition, wet upland heath is dominated by mixtures of cross-leaved heath, deergrass, heather and purple moor-grass, over an understorey of mosses often including carpets of *Sphagnum* species.

High-quality heaths are generally diverse in structure, containing vegetation with heather at different stages of growth, from juvenile to mature.

An important group of birds is associated with upland heath, including merlin, hen harrier and short-eared owl. There are also scattered remnant populations of black grouse. Some types of upland heath are also significant for their lower plants, including rare and local mosses and liverworts that are particularly associated with the wetter western heaths.

Many upland heaths are moors managed for red grouse.

Peter Wakely/English Nature 22,708

Relative area of upland heath within the whole SSSI series
Favourable or recovering condition
Unfavourable condition

Current and proposed action to recover and manage upland heath SSSIs

Agri-environment schemes need targeting to SSSIs in unfavourable condition. Sheep stocking in the uplands needs to be reduced, whilst maintaining viable farm businesses. English Nature's 'Sheep and Wildlife Enhancement Scheme' will replace overgrazing with sustainable grazing on over 15,000 hectares of upland SSSI in 2003. This support for farmers will significantly improve the condition of England's upland heath.

A major upland heath project will restore over 5,100 hectares of Caldbeck and Uldale Commons (Cumbria), by working with 50 graziers and partner organisations. With money from Government's Capital Modernisation Fund and Defra, English Nature have bought over 10,000 grazing rights on Moor House and Upper Teesdale, which will halve the grazing pressure on the commons.

English Nature and Defra/RDS have been working to establish sustainable grazing levels, and have been developing indicators of performance for moorland birds and habitats as part of the Higher Tier Agri-environment Scheme for the uplands.

Condition

34% of upland heath within SSSIs is in favourable or recovering condition.

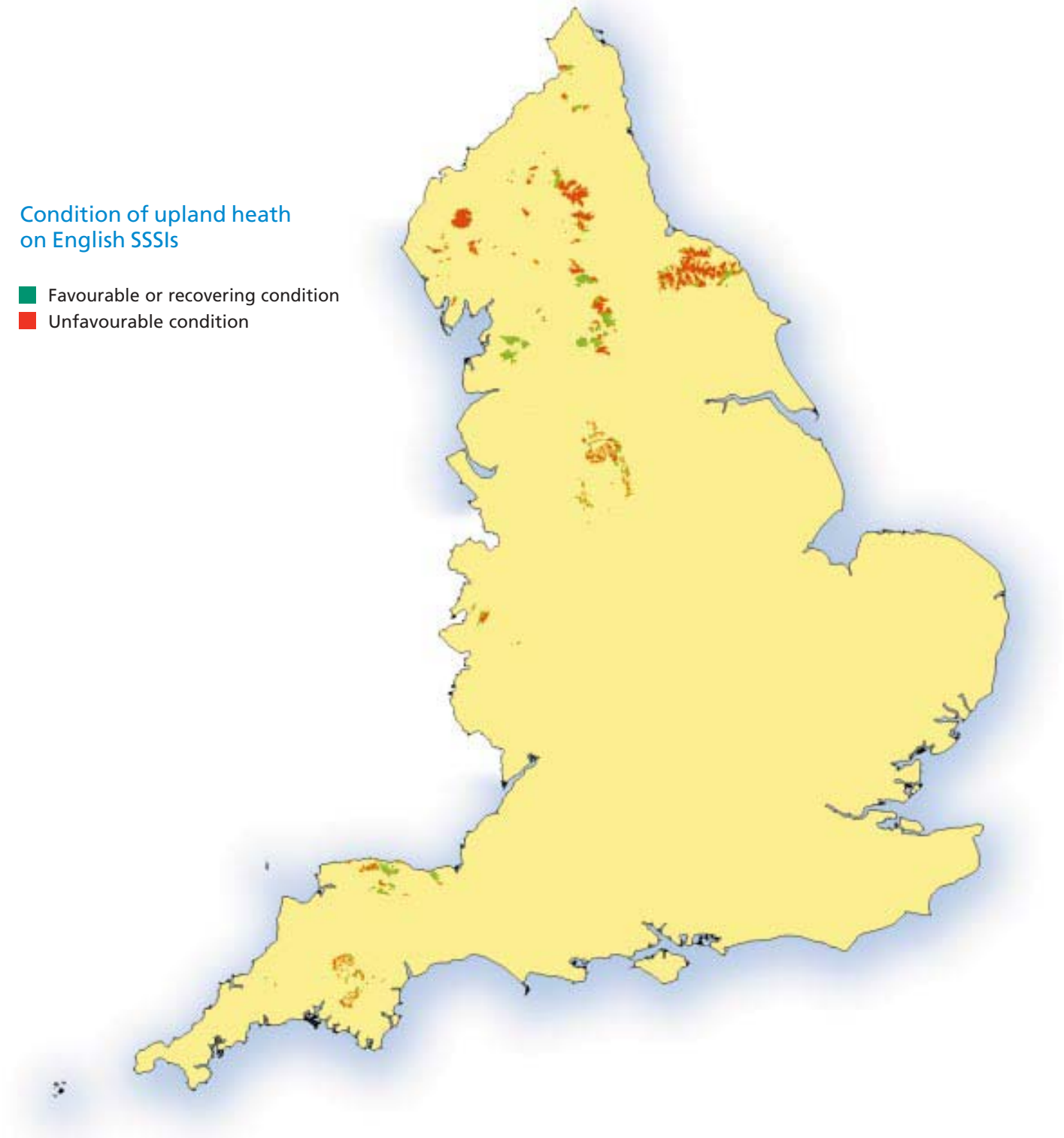
The causes are simple to state, but complicated to resolve. Many upland heaths are grazed heavily and are burnt too frequently. Overgrazing can reduce the amount of heather, while intensive burning can reduce the diversity of the heath, both in terms of heathland species and heathland structure.

Agri-environment schemes, and Wildlife Enhancement Scheme money, have been instrumental in reducing the numbers of stock in many upland areas. However, further significant reductions in livestock numbers are needed to begin the process of restoring this habitat at anything other than a local level. This must be continued with a more sensitive approach to burning of heathland for sheep or grouse management.

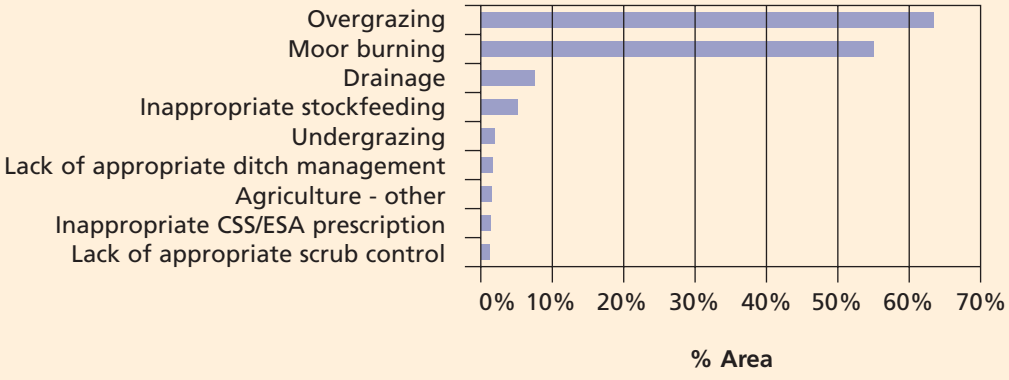
There have been long-standing tensions between the needs of grouse-moor managers and birds of prey. As a consequence, some game managers use a variety of ways to deter these species from using grouse moors, including illegal persecution. The hen harrier is the bird of prey that is worst affected by illegal persecution in England.

Condition of upland heath on English SSSIs

- Favourable or recovering condition
- Unfavourable condition



Causes of unfavourable condition on upland heath SSSIs



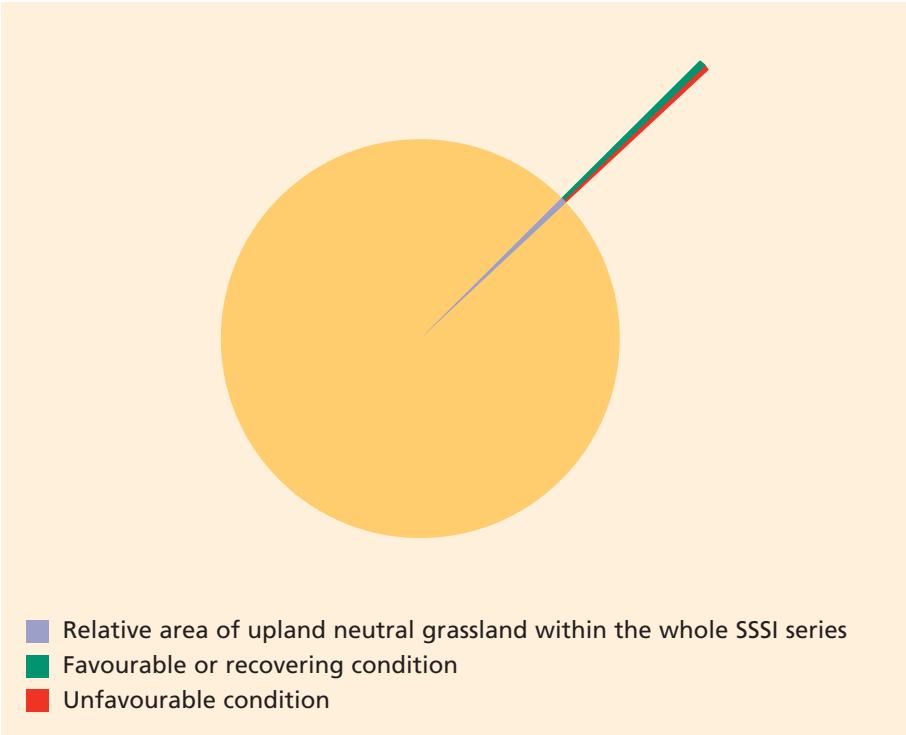
Upland neutral grassland

Character

Upland neutral grassland covers 2,700 hectares, less than1% of the SSSI land in England. It includes both enclosed meadows and pastures in upland valleys and neutral grassland on open moorland.

Unimproved upland neutral grassland is characterised by a rich mixture of grasses and herbaceous plants. No single species consistently dominates the vegetation. The most striking feature of the vegetation is generally the variety and abundance of herbs, including wood crane's-bill, pignut, great burnet, tormentil and lady's-mantles.

Upland pastures are of considerable importance for a number of small songbirds, including the skylark. The black grouse, which is becoming increasingly rare, uses upland neutral grassland for feeding and for breeding displays.



Condition

69% of upland neutral grassland SSSI land is in favourable or recovering condition.

Overgrazing is the principle issue for upland neutral grasslands. Too many grazing stock eating the vegetation can cause changes in the growth of plants, the species present and in the structure of the sward. Many of the upland neutral grassland SSSIs that are in unfavourable condition show the effects of overgrazing. However, the situation is complex. Some sites may even be suffering from the consequences of undergrazing or other agricultural practices, such as too heavy or too frequent applications of manure.

Maintaining upland meadows in favourable condition depends on a continuation of hay cutting and grazing, coupled with occasional dressings of farmyard manure and lime. Pastures need low-intensity grazing and no additions of nutrients.

Current and proposed action to recover and manage upland neutral grassland

Conservation of upland habitats relies on achieving appropriate stocking levels.

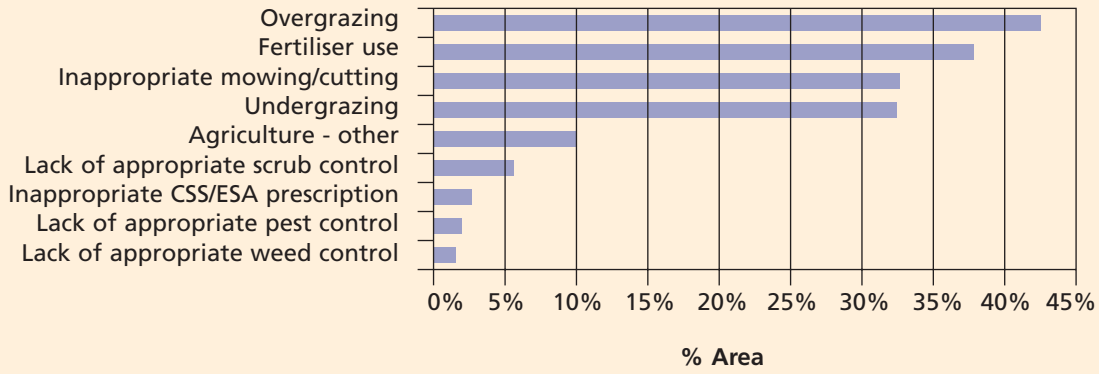
Agri-environment schemes need to be appropriately designed and targeted to upland neutral grassland that is in a poor condition.

Condition of upland neutral grassland on English SSSIs

- Favourable or recovering condition
- Unfavourable condition

Peter Wakely/English Nature 7,937

Causes of unfavourable condition on upland neutral grassland SSSIs



6 Assessing the condition of SSSIs

English Nature has assessed the condition of SSSIs in England, using categories that have been agreed for the UK through the Joint Nature Conservation Committee (JNCC). We have completed our first full assessment of the SSSI network in England. This is ahead of common assessments for all SSSIs in the UK, which are to be reported by the JNCC in 2005.

English Nature measures condition by area. In order to do this, we divide SSSIs into 'management units' – there are about 22,000 units on 4,112 SSSIs. At this unit level, condition is assessed against a set of ecological objectives identified to maintain the special habitat and species features in a healthy state. This level of assessment is underpinned by monitoring special features to a common UK standard co-ordinated by the JNCC. English Nature validates the condition assessments by more detailed monitoring of particular special features on a sample of SSSIs. This process ensures that our judgements about appropriate management to recover or maintain condition bring about and keep the special features in a healthy state over time.

SSSI condition is usually assessed by English Nature conservation staff visiting the sites and observing and recording information about the special features and their management. The minimum standard is that all units on an SSSI are assessed at least once every six years. In practice most SSSIs are seen more frequently. For example, where English Nature is paying for nature conservation management through an agreement, these SSSI units are visited annually.

The results of the condition assessment visit are recorded on English Nature's information system, which provides the basis for the information provided in this report. Our 'Nature On-line' project will provide (in 2004) access to the condition assessment data and information. This will be available through English Nature's website www.english-nature.org.uk.

Improving our reporting

Condition of individual features

When English Nature assesses the condition of SSSI land, it takes account of all the features of special interest. However, we are presently limited to reporting on the overall condition of the site, as our system does not yet record the condition of the individual features. This will change in 2004/05, when English Nature will bring into use an improved data system, which will allow us to report on specific features in much greater detail. We will be able to report separately on the condition of, say, the breeding birds, the wintering birds and the ditches on a single site. This will be particularly valuable when reporting on the international features of interest on SSSIs.

However, farmers, foresters and landowners need clear advice on the management of their land as a whole, taking account of all the conservation interests, not merely individual aspects of their land's special interest. English Nature's advice on causes of unfavourable condition and remedies will continue to focus on what needs to be done overall for an area of land, taking account of all its special conservation features.

Limitations on spatial data

For some conservation features, an assessment based upon reporting by surface area can be misleading. The best example of this is geological conservation features. Many exposures are vertical and effectively have little or no horizontal surface area. Others, such as karst (limestone) features with caves and swallow holes, have surfaces both at and below ground level. To improve our assessment of such sites, we are developing ways to improve reporting on this. For example, we will report by other measures, such as the number of sites on which a feature is found.

ENGLISH NATURE

England's best wildlife and geological sites

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