Views About Management

Wildlife and Countryside Act 1981 Section 28(4) as inserted by Schedule 9 to the Countryside and Rights of Way Act 2000

A statement of Natural England's views about the management of Poole Harbour Site of Special Scientific Interest (SSSI)

This statement represents Natural England's views about the management of the SSSI for nature conservation. This statement sets out, in principle, our views on how the site's special conservation interest can be conserved and enhanced. Natural England has a duty to notify the owners and occupiers of the SSSI of its views about the management of the land.

Not all of the management principles will be equally appropriate to all parts of the SSSI. Also, there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest.

The management views set out below do not constitute consent for any operation. Natural England's written consent is still required before carrying out any operation likely to damage the features of special interest (see your SSSI notification papers for a list of these operations). Natural England welcomes consultation with owners, occupiers and users of the SSSI to ensure that the management of this site conserves and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

Management principles

Coastal lagoons

Coastal lagoons are saline water bodies separated from the sea by a barrier (e.g. sand, shingle or rock sill). A small number are separated by tidal narrows which restrict the flow of water into and out of the lagoon. This separation from the sea makes them unique among coastal habitats and means that saline lagoons are either tideless, or where inlets occur, the tide has only a restricted effect on the lagoon. They retain part of their water-body at low tide, and this water may be either saline or brackish. They often support unusual assemblages of marine, estuarine and aquatic plants and animals, including lagoonal specialist species.

Any management needs to be carefully tailored to the needs of each individual lagoon and should be based on an understanding of the natural features of importance and the external factors affecting the lagoon. Indeed, where a lagoon is in a good and stable condition, active management is unlikely to be necessary. Maintaining salinity and water depths can be a key management priority, particularly where some lagoons become increasingly separated from the sea as a result of natural coastal processes - the balance between freshwater (e.g. from rainfall, streams or artificial outputs) and saline (i.e. sea water) inputs may change as a result. It may be necessary to actively manage freshwater and seawater input to favour certain species or communities. Whilst freshwater input is not essential to the conservation of lagoons, some connectivity with seawater is.

The water depth is also critical to many of the lagoonal specialist species with a depth between 0.5 and 1m being desirable. Some deeper water refuges are also beneficial. Siltation from surrounding land run-off may need to be addressed.

Water quality, and any direct and/or diffuse inputs from the surrounding land, can have a profound effect upon the productivity of lagoons and well-being of specialist species. Saline lagoons can show extreme reactions to a build-up of some types of nutrients and therefore it may be necessary to actively manage inputs, especially where in close proximity to farmland.

In some cases, it may be desirable to allow vegetation to encroach into the lagoon to increase the diversity of habitats present, particularly for some breeding and migratory bird species. However vegetation should not be allowed to encroach to such an extent that it significantly reduces the areas of open water and shallow water, thus reducing the variety of habitats available to specialist species within the lagoon itself.

Islands in saline lagoons can be important for breeding birds and some management of the vegetation on these islands may be necessary to provide the best conditions for breeding birds. Two typical methods of vegetation control include flooding and hand clearance.

Littoral sediments (mud and sand flats)

Intertidal mud and sand flats include a range of generally muddy or sandy low-gradient shores that are exposed to air during low tide and submerged during the higher tides. High energy shores, such as those on open coasts, are generally sandy in nature whilst more sheltered, low energy flats are muddier. They support a wide variety of marine invertebrates that represent an important food source for many fish and bird species.

Good water quality and sediment quality should be maintained, and the sediment budget within the estuarine or coastal system should not restricted by anthropogenic influences.

The birds that use mud and sandflats for feeding and roosting are vulnerable to disturbance from human activities, for example, bait digging, dog walking and wildfowling. These activities can lead to reduced time spent feeding, or individuals being restricted to areas with a poor food supply. Disturbance should therefore be minimised, especially at times when bird populations may be stressed, such as during severe winter weather.

The location and extent of mud or sandflats is dependent on the extent to which the estuary or coast where they occur is constrained from responding to sea level rise and changing sediment regimes. Management needs to create space to enable landward roll-back to take place in response to sea-level rise, and should also allow the system to be dynamic and retain the flexibility to respond to associated changes such as the movement of physical features within the system, e.g. migrating subtidal sandbanks.

Coastal saltmarsh

Saltmarshes form the upper vegetated portions of intertidal mudflats in sheltered coastal locations, such as estuaries, lagoons and beach plains. There is typically a zonation of vegetation, from plants adapted to regular immersion by the tides (halophytes), through to more widespread plant species in the areas less frequently covered by the sea. The halophyte plant species are confined to this type of habitat, and areas of structurally diverse vegetation provide good invertebrate habitat. Saltmarshes are also important nursery sites for several fish species, and important refuge, feeding and breeding grounds for wading birds and wildfowl.

Where saltmarshes require management this has traditionally been achieved by grazing, and previously used regimes should be continued. Grazing provides a variety of different habitats, particularly for wintering bird species, and if grazing were to cease there may be a loss of botanical diversity. The precise timing and intensity will vary according to local conditions and requirements, for example the type or availability of stock, or the need to avoid trampling ground nesting birds. However on many sites, the aim of will be to create a short turf that can be attractive to non-breeding wildfowl, with a reduction in stock density in the early summer for the benefit of ground-nesting birds. Indeed, careful reduction of grazing can increase the number of breeding birds, without significantly altering the plant species composition. Care should be taken not to overgraze the site, as this may reduce the diversity of animal and plant species that the saltmarsh is able to support, as well as potentially impact the sediments supporting the saltmarsh.

Not all saltmarsh habitats require active management to retain their conservation interest. Where there has not been a history of grazing, the saltmarsh will be able to maintain itself and grazing-sensitive species are likely to be present, therefore grazing should not be introduced.

There are a number of factors that are contributing to saltmarsh change that management may need to take into consideration. These include coastal erosion as a result of coastal flood-defence works, rising sea-levels, variations in sediment deposition, and land claim for development.

Swamp

Swamp habitats develop on the fringes of open water, or in shallow depressions with permanent standing water. The plants may be rooted in the submerged soil or form a floating mat of inter-twined roots, rhizomes and stems. Swamps usually consist of a dominant single species of plant (e.g. reeds, tussock sedges, reedmace, reed sweet grass, reed canary grass and bull rushes) with a few other species thinly distributed among them. In common with most other types of wetland, swamps represent a transient stage in the change from open water to dry land.

Management should either seek to retain swamp communities in the same place or should acknowledge the dynamics of succession by ensuring there is always a new niche for the swamp communities to develop in. The succession from swamp into floodplain fen, for example, as the diversity of species present increases, may be slowed by raising the water table and by periodically removing any encroaching scrub. If the vegetation surface of the whole wetland appears to be building up or drying out for some other reason it may be necessary to lower the ground level by creating scrapes or ponds. On reedbed a programme of rotational cutting and occasional controlled burning may be necessary to encourage the vigorous growth of reed whilst preventing excessive build up of litter. Cutting or burning should take place during the winter (November – February) and all cut material should be removed. Deer may need to be managed if the browsing pressure is degrading the reedbed and promoting its replacement with other habitats of lower conservation interest.

Management should ensure that appropriate water quality is maintained according to the requirements of the wetland communities present. Where swamp is wetted from a river or other waterbody, the water quality in the waterbody will affect the swamp. While some communities, such as reed swamp are unlikely to be very sensitive to nutritional enrichment, others, such as tussock sedge and narrow leaved reedmace, will be out-competed by other species (e.g. reed or reed sweet grass) where any increase in the amount of nutrients present occurs.

Swamp habitats have often survived where the vegetation has traditionally been cut for a variety of purposes, including use as building materials or animal bedding. It may be beneficial to consider re-instating these traditional management practices where they are not in conflict with other nature conservation objectives, such as the specific requirements of certain birds or invertebrates.

Floodplain and coastal grazing marsh

Flat grassland around sluggish rivers and inland of salt marshes, particularly where the land has been reclaimed from natural wetland through the construction of flood banks and a network of ditches, is often referred to as grazing marsh. Although poorly drained and very wet in winter, these marshes can be dry in summer except for the water that remains in the ditches. Traditional methods of management have produced a mixture of flower-rich meadows, pasture and ditches that support a rich variety of plants, invertebrates, birds and amphibians.

Grazing marsh requires active management if it is to retain its conservation interest. Generally, each year's growth of the grassland must be removed. Otherwise the sward becomes dominated by tall, vigorous grasses and rushes which, together with an associated build up of dead plant matter, suppress less vigorous species and lower the botanical richness of the sward.

In hay meadows grassland management is traditionally achieved by closing the fields to stock by February and cutting the spring growth as hay. The cut is usually done in early July, but the precise timing depends on local factors, including past management and weather conditions. It should always be after ground-nesting birds have fledged their young and any short-lived, characteristic plants have set seed. The aftermath is then grazed in late summer/autumn. Aftermath grazing is important for maintaining a species-rich sward, both through controlling competitive grasses and through hoof-prints providing suitable sites for seedlings to establish. Heavy poaching must be avoided, however.

On pasture the grassland is managed primarily by grazing. Cattle are often the preferred stock, being relatively tolerant of wet conditions and able to control tall grasses and rank vegetation. Cattle also tend to produce a rather uneven, structurally diverse sward. However, ponies, or even sheep, can be used if necessary. Grazing usually takes place at times between spring and winter, but the precise timing and intensity will depend on local conditions and requirements, such as water levels and the needs of wetland birds, including a predominantly short grassland sward during winter and spring and a low trampling pressure during spring to reduce the loss of nests. Heavy poaching should be avoided but light trampling later in the year can be beneficial in breaking down leaf litter and providing areas for seed germination. Management may also be required to control rush tussocks, for example by summer cutting. Agricultural operations in general should be avoided before mid-June to minimise disturbance to breeding birds or the destruction of nests.

Periodic dressings of well-rotted farmyard manure may be acceptable in hay meadows and on pasture if the sward does not receive regular input of nutrients from flooding. Lime should be used with caution. The grassland should not be re-seeded.

Partial winter flooding is important in maintaining suitable roosting and feeding habitat for non-breeding wildfowl and waders. A mosaic of shallow and some deeper flooded grassland and permanently un-flooded grassland is desirable, with both temporary and permanent pools present. Care should be taken on botanically rich grassland as changes in the historic water level regime can affect the composition of the sward. From April onwards, the area of standing surface water should be reduced to increase the area available for nesting waders. Some shallow areas of flooding (splashes) should be maintained until late June to provide patches of bare muddy ground on which the birds and their young can feed as feeding on the drier areas becomes more difficult.

Birds using grazing marsh are directly vulnerable to disturbance, which can cause them to lose time spent feeding or drive them to areas with a poorer supply of food. Management should seek to minimise any harmful disturbance, especially during their breeding period and at times when bird populations are under stress, such as during severely cold conditions. Predators, especially crows and related species, should be controlled and this may be best achieved by limiting the availability of near-by nesting and perching sites provided by scrub or trees.

Regular and careful maintenance or restoration of ditches, gutters and other wetland features may be necessary. They may represent the only remaining freshwater habitat within former wetland areas, and often support a wide range of aquatic plant and animal (in particular invertebrate) species that would have previously been more widespread in ponds and wetlands.

If left unmanaged, silt accumulates in the bottom of the ditches, and emergent plants such as reeds are able to colonise across the width of the ditch, leading to a loss of aquatic plant diversity and a gradual drying out of the ditch. To prevent this, periodic removal of sediment and vegetation may be necessary to return the ditch to an early stage of the management cycle. Ideally, ditch management should be undertaken on a rotation, creating a series of different management stages across a site at any one time.

All stages of the management cycle have wildlife interest; recently cleared ditches are good for plants and animals which favour newly created habitats and cannot tolerate competition with other species; middle-stage ditches support a rich aquatic plant flora; and late-stage ditches may be important for reed dwelling species or for a variety of invertebrates. The removal of both sediment and vegetation is usually better than simply cutting the vegetation, which does not recreate the earliest stages of the ditch management cycle. Where possible, management should aim to create shallow shelving margins rather than steep ditch sides. Where water voles are known to be present, the relevant good practice guidelines for ditch management and conservation should be followed. Usually, ditch spoil should be spread thinly away from ditch margins, taking care to avoid levelling out the field surface and, where possible, avoiding botanically rich grassland. Old spoil banks may need to be spread to restore suitable wetland conditions for the conservation interest. Deepening or increasing the effectiveness of surface drainage should be avoided.

Generally, ditch margins and other wetland features should be open to livestock grazing since, as on the grassland, this can control the more vigorous plant species. Light poaching of the wet margins also creates a diversity of habitat conditions that favour different wetland plants and invertebrates, and feeding opportunities for wading birds.

Most ditch systems are subject to water level control, which should be managed to ensure that there is a sufficient depth of water (0.3-0.5m) in ditches throughout the year. Management should allow winter flooding to occur and some shallow splash flooding into spring where breeding wetland birds are important. During these times of year ditch water levels should not generally fall more than 0.3m below mean field level and ideally should be close to field level for much of the time. Rapid or extreme changes in water level should be avoided unless they are known to be important to plant or animal communities relying on such fluctuations.

The maintenance of good water quality is essential to maintaining a healthy wetland system. Management should minimise pollution from point and diffuse sources, including discharges of domestic and industrial effluent, and run-off from agriculture and urban land. Increased levels of nutrients, for example, can cause a loss of aquatic plants and increases in algal growth. Other activities that can lead to this include the control or removal of aquatic plants, or the introduction of species such as bottom feeding coarse fish which uproot plants and disturb ditch sediments. Ditches are also susceptible to invasion by non-native aquatic plants such as floating pennywort and water fern, which are able to grow rapidly taking up available habitat and smothering other plants. Some native plants including a number of duckweed species are also able to take over in this way (although such growths are usually exacerbated by increased nutrients in the water) and management may be necessary to control such invasions where they cause a problem.

An important feature of many coastal ditch systems relating to water quality is the transition between freshwater and brackish water conditions, which often results in interesting changes in plant and animal species along ditch lengths or across the site. Management should aim to maintain such freshwater-brackish transitions where they occur. An element of managed scrub, particularly on the borders of grazing marsh, can be of importance to bird and invertebrate species but should be confined to small, scattered groups.

Floodplain fen

Floodplain fens develop on flat areas that have historically been flooded by waters from rivers and streams that meander across the plains. Floodplain vegetation may also be dependent on water seepage from subterranean aquifers or from seepage down or at the base of the constraining slopes.

Floodplain fen is commonly composed of tall grasses and herbs, such as reed, willowherb, milk parsley, meadowsweet, angelica and nettles. If left unmanaged the sward becomes dominated by tall, vigorous grasses and rushes which, together with an associated build up of dead plant matter and the encroachment of scrub and trees, suppress less vigorous species, thus lowering the botanical richness of the sward. The conservation interest is also likely to be reduced where trees have been planted into fen vegetation. Rotational cutting or clearance of scrub, the removal of plantation trees and cutting or intermittent grazing of the vegetation is usually required. Cattle are often the preferred stock, being relatively tolerant of wet conditions and able to control tall grasses and rank vegetation. Cattle also tend to produce a rather uneven, structurally diverse sward. However, ponies, or even hill sheep, can be used if necessary. Grazing usually takes place at times between late spring and early autumn, but the precise timing and intensity will depend on local conditions and requirements, such as the need to avoid trampling ground-nesting birds. Heavy poaching should be avoided but light trampling can be beneficial in breaking down leaf litter and providing areas for seed germination. Cutting may be appropriate during winter or at other times of year depending on local requirements, but all cut material should be removed.

Rivers are dynamic and can cause erosion on some parts of the floodplain and deposit of silt in others. Management should not necessarily aim to maintain each component of the floodplain fen in exactly the same place, but should ensure that the full range of niches remain available for use by plants and animals over the course of time.

Where ditches are present these may need to be managed in the ways described for ditches in grazing marsh. When considering ditch clearing, particular care should be taken to avoid effects on the water level regime required in the fen for the conservation interest.

River water quality is important for floodplain fen and management should ensure it remains within acceptable limits. It is normal for the lower reaches of rivers to contain more plant nutrients than at source, and most floodplain fens depend on an adequate supply of nutrients being maintained.

However, excessive nutrient enrichment may result in the replacement of the characteristic floodplain fen communities with very species-poor vegetation, composed of little but a tall dominant grass such as reed or reed sweet grass with nettles.

Winter flooding is an important factor in the management of some floodplain habitats and management should ensure the frequency and extent of flooding is appropriate for maintaining the nature conservation interest of the site where this is the case. For example, river engineering has in many cases reduced the frequency and extent of flooding. Changes in agriculture and the use of floodplains for built development have also often resulted in smaller floodplains and the requirements of floodplain habitats should be considered in the design of such schemes in the future. The balance between groundwater and floodwater influence on the floodplain should be identified and maintained when designing the extent and frequency of controlled flood events.

Lowland wet woodland and scrub

Wet woodland includes a range of different woodland types but usually is dominated by ash, alder and willow species. Scrub is generally a transitional stage that will develop from swamp and floodplain fen into woodland if unmanaged. The main woody components are bushes or small trees, especially willows. Both woodland and scrub often support important invertebrate species and assemblages and the edge zone with rivers and streams and open wetland habitat can be especially important.

Maintaining structural diversity and a mosaic of age classes within areas of scrub is important for maintaining the diversity of species the scrub is able to support. This can be achieved using rotational cutting, which should aim to maintain a mosaic of scrub at different stages of growth. Scrub can also be cut in small patches to create an intimate mixture of scrub and grass and/or heath.

Grazing is another method for managing scrub and in some situations, for example where scrub occurs in conjunction with fen or heathland, may be a more suitable management tool than cutting. By its nature, grazing can help to create a patchy mosaic of scrub and other habitats. As with cutting, it can also help to maintain a range of age classes. However, stock levels do need to be carefully controlled. If grazing pressure is too high the structure of the scrub vegetation may become impoverished. Also, the scrub may not be able to regenerate naturally, leading to a loss of cover over time. Fencing to control grazing may be required where the objective is to increase the area of scrub or allow a transition to wet woodland.

In contrast wet woodland usually benefits from minimum intervention and is often best left undisturbed to limit damage to the fragile soils. This allows the development of old stands where individual trees reach maturity and die naturally to create gaps in the canopy, leading to a diverse woodland structure. However, works to remove dangerous trees in areas of public access may be necessary.

Where particularly important light-demanding or glade species interests are present, including where the woodland is spreading on to valuable open wetland habitat, it may be necessary to periodically clear areas of vegetation. In some woods a more active programme of management by coppice may be appropriate, where this has been the historical management and the conditions are such that it will not lead to heavy ground disturbance.

Dorset heathlands

The Dorset heathlands were maintained through a long history of subsistence farming. Traditionally the heathland was lightly grazed by livestock and exploited to provide fuel and materials from cutting gorse, turves and other vegetation and from local, small-scale mineral winning. These uses depleted the thin acid soils of nutrients, caused some localised disturbance and kept the land mostly free of scrub and trees. In this way the varied uses, along with natural variation in soil conditions and drainage, created conditions favouring a diversity of acid grassland, heath and mire habitats at various stages of vegetation development.

Without such management heathland becomes progressively dominated by bracken, gorse and, on wet ground, purple moor-grass tussocks. Eventually the heath will scrub over with pine and other trees that are usually of lower nature conservation value. Management that re-creates the historic

conditions is required today to maintain the conservation interest. The precise management requirements and their intensity and timing will vary both between and within sites according to the needs of different heathland interests and site conditions.

Low intensity grazing using a mix of hardy livestock is the best form of management. By feeding selectively in different areas and on different plants, free roaming livestock help to maintain variation in the vegetation composition and structure. They can also suppress scrub encroachment and provide some light poaching, creating pockets of bare peat and sandy ground that is needed by a variety of specialised plants, reptiles and invertebrates. Although some grazing all year is beneficial, the heathland should be stocked mainly between late spring and early autumn. Hardy breeds of cattle and ponies are the preferred stock because of their diet and grazing behaviour. They are also relatively tolerant of wet conditions and able to exploit poor forage with no need for supplementary feed. Exceptionally, local measures may be needed to guard against excessive trampling damage to some areas of mature heather of especial importance for rare reptiles.

Additional management is likely to be required to control any dense bracken invasion and to remove scrub and tree encroachment. This may be achieved either by mechanical control or manual cutting, and the careful application of a suitable herbicide where necessary. At most sites the heathland should appear a predominantly open landscape, but with possibly some retained individual trees and small clumps of mainly Scots pine, birch and willow. An element of native, self-established deciduous woodland fringing the heathland may add to the conservation interest by providing habitat edge environments favoured by some heathland birds and invertebrates. Mature oak is particularly valuable for these interests. A diverse woodland structure with some open space, some areas of dense understorey, and an overstorey of more mature trees is important. This may be achieved by grazing wooded areas with the heathland, creating local mosaics of woodland and heath, with some scrub and young trees.

Gorse requires active management to retain its heathland conservation value. Scattered stands with a bushy structure within the heath are more beneficial than large continuous blocks. Winter cutting of ‘leggy’ stands and removal of the cut material maintains gorse at different stages of re-growth for heathland species and avoids nutrient accumulation in the soil. Where gorse has become invasive, large blocks can be fragmented to encourage a mosaic with heathers either by mechanical control or manual cutting, and the careful application of a suitable herbicide where necessary. Controlled winter burning of old gorse stands can achieve similar results to cutting.

Controlled winter burning of selected, relatively small areas of heath vegetation may be a further suitable way of maintaining a diversity of vegetation structure and re-establishing areas of pioneer heath required by some species. Special care is required when some sensitive species are present, with consideration being given to timing and to providing the necessary manpower to control the burn.

Where extensive grazing or patch burning is not practical, often for example on small and isolated heathland fragments, a varied regime of patch mowing with some ground disturbance can help to encourage a more diverse heathland sward structure. The cut material needs to be removed to avoid nutrient accumulation and to allow the cut plants to re-sprout successfully and to enable new plants to grow from the seed bank in the soil. However, mowing is unlikely to be suitable on mire vegetation and on mature stands of dry heath of importance for rare reptiles.

Patches of bare sandy ground, especially within heather vegetation and associated with banks or other topographic features, are important for reptiles and many specialised heathland invertebrates. On some sites more extensive areas of bare ground, acid grassland and heath at early stages of development provide suitable conditions for a different range of heathland interests. Livestock and burrowing animals such as rabbits can create new bare ground, but there may be advantages for the conservation interests in creating further areas through periodic mechanical disturbance. The timing and scale of such disturbance will depend on local factors such as, for example, the needs of individual species of conservation concern and historical management practices on the site.

Fen often develops within valleys and the origins and movement of the water within the fen give rise to a number of different vegetation zones. The variety of plant and animal life in the valley mire is closely linked to the number and type of zones it contains.

Management should aim to maintain the groundwater quality and quantity, though the quantity is not likely to be naturally constant throughout the seasons or between wet and dry years. The groundwater is often susceptible to contamination by agricultural fertilisers or by pollution, such as from landfill sites.

Grazing is important in the management of the valley mire as part of the wider grazing regime on the heathland area. Animals help to break up the tussocks of rank grasses opening the sward up to a greater variety of plants. Some (but not excessive) trampling is necessary to create open soil, for invertebrates, mosses and seedling establishment. Grazing also limits the spread of willow, alder and birch carr, which naturally tends to develop around the central watercourse and it should be restricted to this area, other than for a few isolated clumps elsewhere for the benefit of birds and invertebrates. Swamps are also important for invertebrates and birds and, where naturally present, some swamp vegetation, such as reedbed, within the mosaic of habitats will add to the conservation value of the site. However, excessive spread of reed, reed canary grass, or reed sweet grass is likely to be an indication of worsening water quality, the cause of which should be investigated and addressed to maintain the characteristic fen communities.

Drainage schemes should not intercept the sources of ground and surface water to the valley mire. It is important for the watercourses of the valley mire not to receive run-off from fertilised land or flows contaminated by other point and diffuse sources, including discharges of domestic and industrial effluent and drainage from urban land. The bed of the watercourse should not be lowered, nor should its water level be artificially raised, other than as part of a well thought-out conservation scheme to restore natural drainage conditions. This will ensure the various vegetation components of the valley mire are maintained in their ideal proportions, and that 'head-ward' erosion is not triggered, in which increased flow gradually erodes the peat and silt on which the valley mire has developed.

Streams and ponds considerably add to the heathland interest in providing habitat for specialised plants, amphibians and invertebrates such as dragonflies. Careful maintenance of existing ponds to establish a mixture of open water and vegetated areas is usually acceptable practice. Particular care should be taken to avoid habitat of conservation value when disposing of dredgings, and new ponds may only be acceptable in certain locations of low conservation value.

Red squirrel

There are two main objectives when managing a forest that is suitable for the red squirrel. The first is to make the forest as unsuitable for the grey squirrel as possible. These have largely been responsible for the decline of the red squirrel, as they utilise large tree seeds more efficiently. To do this, the forest should consist primarily of species that directly benefit the red squirrel, i.e. trees that produce small seeds such as Scots pine, larch, Norway spruce, lodgepole, firs, yew and hawthorn. Whilst small seeded broadleaved species (such as birch, rowan, ash, willow, aspen and alder) do not directly benefit the red squirrel, they do not encourage greys, and so can remain in the forest. Large seeded trees such as oak, beech, chestnut and hazel should generally be removed if grey squirrel are liable to colonise the forest. If the above does not deter grey squirrel colonisation, the animals must be removed, and cage trapping is the best method for this.

The second objective is to maintain a constant supply of food. Conifer seed is their favoured food source, and management should therefore ensure a continuous proportion of the forest is composed of conifer species of seed-bearing age and with a high seed yield.

Both of the above objectives will inevitably involve felling. This should only take place between November and February, when young red squirrels are not nesting in their dreys. Felling can also be used advantageously, as selective felling can target trees with small crowns that produce little seed and favour trees with larger crowns which in a more open canopy are likely to produce more seed.

In addition to managing the forest itself, it is important to maintain a buffer zone, between 1 to 5km wide, consisting of a habitat unsuitable for the grey squirrel. This can include coniferous woodland and broad leaved trees with small seeds, but moorland or even arable land can be equally effective. Island populations of red squirrel provide some of the best opportunities for long term survival of the species in Britain and should be protected against any colonisation by grey squirrel.

Heronry

Grey Herons nest in groups, known as heronries, high in the crowns of mature trees. Where nesting Grey Herons are present, management should aim to maintain areas of woodland with a high proportion of tall mature trees (typically between 15-30m high) to provide suitable roosting and nesting sites for the species. Grey Herons require quiet and undisturbed places in which to nest, usually preferring a commanding position over the surrounding open landscape. Nesting Grey Herons are vulnerable to human disturbance and the disturbance of woodland in the immediate vicinity of nesting birds should be kept to a minimum during the breeding season mid-March to July. Recreational use of the woodland should be discouraged, whilst shooting for game should be avoided completely in areas where Grey Herons are nesting. Grey Herons forage over extensive areas including shallow water, marshes, lagoons, estuaries, reservoirs, ditches, rivers, ponds, lakes and canals. Any open water or wetland habitats present on site should be retained to maintain local foraging habitat.

All habitats

The habitats within this site are highly sensitive to inorganic fertilisers and pesticides, applications of which should be avoided both within the site itself and in adjacent surrounding areas. The use of persistent veterinary products on livestock, or other fertilisers, including manures and liming, can also be detrimental on many of the habitats and should be avoided where possible.

The habitats are also susceptible to invasive introduced species, including animals such as mink and plants such as *Rhododendron*, *Gaultheria* and, in wet situations, parrot's feather, Australian swamp stonecrop and Himalayan balsam. Such species should be controlled and, where practical, eliminated from the site. Herbicides may be useful in targeting certain invasive plants, but should be used with extreme care.

Measures are likely to be necessary to control recreational and other activities which can be damaging, particularly for heathland and wetland habitats and species. Suitable measures on heathland may include a system to allow for the effective control of fires, such as access for fire-fighting vehicles, firebreaks and emergency water, and the management of access. Controlled burning or mowing can, if carefully located, also help to reduce the risk from uncontrolled fires.

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