Lowland Heathland

Habitat Resource Pack

environmental partnership in action

The Greensand Trust

Greensand Country Landscape Partnership

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HERITAGE FUND

Welcome

This is one of a series of Habitat Resource Packs produced by the Greensand Trust on behalf of the Greensand Country Landscape Partnership. Each pack focusses on different habitat types, and provides information on the importance of these habitats, the species associated with them, where they can be found in Greensand Country, their management, survey and monitoring.

It is intended to be an accessible guide for a range of land-owners and managers, and is relevant to all sizes of site.

Contents

Importance of lowland heathland

Lowland heathland is characterised by plants such as heather, bilberry, gorse and bracken, which occur on infertile and well-drained soils. Most heathlands developed during or after the Stone Age (some 3,500 years ago) in areas with poor soils, where trees were removed and grazing or burning prevented their regrowth. Heathland also occurs naturally in some coastal areas, where the harsh environmental conditions prevent tree growth. Open heaths have been used by humans for centuries for grazing livestock, rabbit warrens, cutting gorse for fuel and collecting bracken for livestock bedding.

One fifth of all the lowland heath in Europe is in the UK but we have only about 16% left of the area that existed in 1800. The most significant areas for lowland heathland in the UK include the counties of Cornwall, Devon, Dorset, Hampshire, Norfolk, Staffordshire, Suffolk, Surrey, Pembrokeshire, West Glamorgan and West Gwynedd. There are also small areas in Kent, Lincolnshire, the Vale of York and the Midlands – the latter including the heathlands of Greensand Country. The main reasons for these losses have been afforestation, agricultural improvement, development, a lack of management leading to the development of woodland and visitor pressure.

In Greensand Country only 37.5ha of heathland was left by 2007. Conservation work since this time means that by 2022 this figure had risen to 55ha, with a further 113ha being restored or created.

A heathland is much more than just heathers and gorse. Areas of heathland may also contain grasses, flowers, some trees, bare ground and, in some cases, ponds or running water. In many sites, heathlands form part of bigger landscape units together with other habitats such as grasslands, woodlands, mires or scrub.

Heathland Mosaic
Gwen Hitchcock Wildlife Trust BCN

Heathlands and their associated habitats are home to many plants and animals that rely upon them. The dry, warm soils of heathlands make them very important for reptiles. A mix of open, sunny and sheltered areas for basking, together with cover for shelter, is vital. Many insects have heathlands as their primary habitat, feeding on grasses and flowers typical of the heaths or relying on areas of bare sandy ground for their burrows, for example, solitary bees and wasps. Some are not very mobile, so fragmentation and deterioration of the habitat is a serious threat.

Few birds are restricted to heathlands, however there some specialists such as Dartford warblers and nightjars which are primarily associated with lowland heathland. They use mosaics of scrub and open heath to forage, breed and perch. It is therefore important to keep some scrub as part of the heathland landscape. Many others live in areas where heathland is one of the components of the landscape, such as kestrels, hobbies and stonechats.

Heathland and acid grassland

Heathland often forms a mosaic with lowland acid grassland which occurs on the same nutrient-poor, free-draining soils. Heavier grazing tends to lead to grassland becoming more dominant.

Acid grassland is dominated by fine grasses such as common bent, early hair-grass, heath grass, sheep's fescue, sweet vernal grass and wavy hair-grass. Typical flowers include common centaury, common stork's-bill, heath bedstraw, heath speedwell, mouse-ear hawkweed, rough and lesser hawkbit, sheep's sorrel and tormentil. Mosses and/or lichens are sometimes frequent. Some sites may be naturally species-poor however lowland acid grassland is a scarce resource and any site is likely to be considered of high value. Management is usually by grazing.

More information on acid grassland can be found in the Grassland Habitat Resource Pack at: **www.greensandcountry.com/discover/resources**

Heathland and acid grassland in Greensand Country

Heathland and acid grassland are the most distinctive habitats of Greensand Country on its exposed Lower Greensand soils. The following sites are all good examples of where it is possible to see heathland habitats, and often also acid grassland, in Greensand Country. All of the sites have some level of public access, and further details on this are available via the Greensand Country Interactive Map (**www.greensandcountry.com**)

1 = Shire Oak Heath & Lord's Hill, Rushmere Country Park

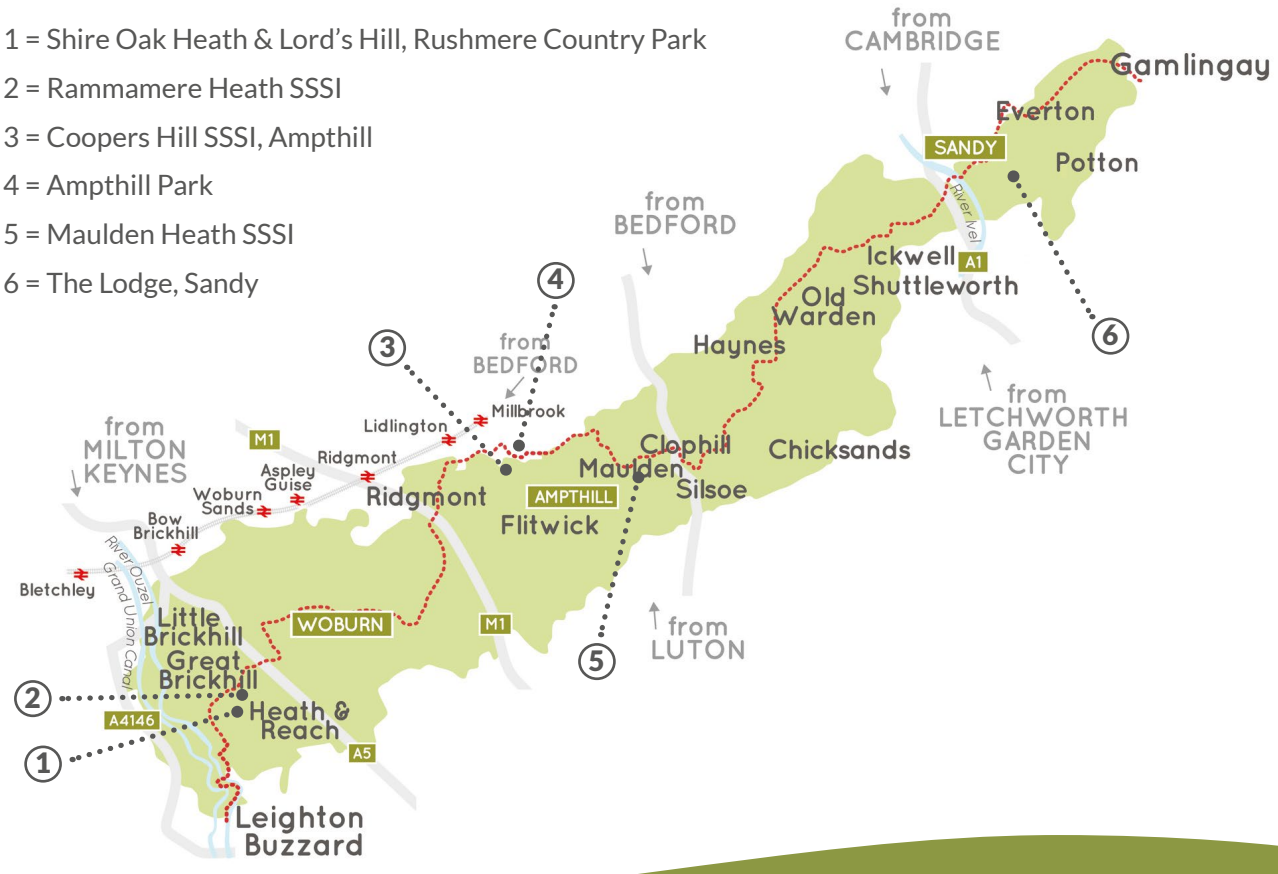
2 = Rammamere Heath SSSI

3 = Coopers Hill SSSI, Ampthill

4 = Ampthill Park

5 = Maulden Heath SSSI

6 = The Lodge, Sandy



Management of heathlands

Appropriate active management must be carried out regularly to maintain the remaining heathland areas. For example:

- **Grazing:** grazing was a fundamental part of traditional management of the lowland heathland areas. The use of the right animals and at the right time of the year is believed to be, in most cases, the best possible management to maintain the openness and diversity of the habitat.
- **Control of invasive species:** some heathland species, such as bracken, gorse and scrub, were cut as fodder for farm animals. Nowadays they do not have any economic value and they have increased in area beyond advisable conservation limits. Exotic species, such as rhododendron and gaultheria (or shallon), have escaped from gardens and spread aggressively on heathlands, shading and excluding the native species.
- **Maintaining low nutrient levels:** the enrichment of the soils, through litter accumulation, fertilisation or atmospheric deposition of nutrients tilts the ecological balance towards less specialised vegetation which can out-compete the heathers.
- **Management of recreational pressure:** heathlands and their wildlife are susceptible to damage by excessive trampling, motorbikes and horse-riding in sensitive areas, as well as by arson fires.

Grazing

Heathland and acid grassland is generally managed by low intensity grazing. It is grazed by sheep, ponies and cattle, although the poor vegetation growth can make the habitat unsuitable for rearing commercial cattle breeds and traditional slower growing cattle breeds fare better. Where the vegetation is very sparse the habitat may be naturally limiting and little or no grazing may be required to maintain it. Grazing by local rabbit populations can in some cases be sufficient to maintain it. Due to the nature of this habitat, it can easily be damaged by overgrazing but, under-grazing may allow the growth of dense scrub, including gorse and birch.

Burning, or swaling, can be used as a management tool to clear away brash and woody vegetation. Quick burns of the litter layer encourage the herb layer to grow. However, this is only applicable to sites with a history of being burnt, and it can cause significant damage if the fire is able to penetrate peat soil destroying seeds present in the soil seed bank. Historical management often broke larger sites into compartments separated by droves. The heavy trampling caused by cattle movement opened the vegetation creating bare ground. Many rare plants and wildlife require these open areas. Mixed grazing is essential to maintain patches of bare ground.

Pantaloon bee, Sandy Smith Nature Reserve

Recently there has been a decline in cattle grazing and droving, leading to old trackways succeeding into scrub woodland. Restoration management, removing scrub woodland and reinstating droves, has enabled sudden increases in plants along these disused trackways, reinvigorating acid grassland communities.

Agricultural improvement is another cause of loss of acid grassland. Lime has been applied to grasslands to neutralise acidity and agriculturally improve the pasture. Fertiliser has been used to boost competitive grass growth, out-competing the slower growing herbs and heather. Woodland plantations, often large blocks of conifers, have also been planted on acid grassland and heathland, shading out the herb layer and smothering any plants with a layer of pine-needles. Acid grassland can be restored and recreated where the soil chemistry is suitable. Usually, natural regeneration is used to restore dry acid grassland. Successful restoration of acid grassland and heathland following timber extraction has also been undertaken, however further work may be required to remove the needle litter layer and, in some cases, the nutrient-rich topsoil.

An efficient grazing regime is based on a combination of several factors - time of year and frequency of grazing, intensity of grazing and the type of animal used.

There are three main types of livestock used to graze heathland and acid grassland - cattle, horses and sheep. Livestock do two things in heath and acid grassland; they eat and remove the vegetation which allows the less competitive plants, such as many wildflowers, to grow alongside the more competitive plants. Many grasses are good competitors and without grazing they often become tufted and can grow tall, shading wildflowers and preventing them from being able to harness the sun for photosynthesis. This effectively starves the plant and they are unable to survive.


Harebells, Maulden Heath

The second thing that livestock does is remove the thatch (dead grass and leaves) that gets trapped between the grasses and flowers covering the soil. Some thatch may be eaten by livestock when they munch through living vegetation, but they also help by trampling the ground and creating patches of bare soil between the grass tufts moving the thatch aside. All wildflower and grass seeds need to be in contact with bare ground to germinate and establish a root system. Thatch prevents this from occurring but livestock encourage germination by removing this build-up of dead material. Livestock eat in different manners, which can have different effects on wildflowers and grasses. Some of these may be positive and help to maintain the species-richness of the grassland, whilst others may be negative. Occasionally, it may be recommended to graze a grassland harder to reduce scrub encroachment, create small areas of bare ground to help seeds germinate and take the grassland back to an earlier stage of ecological succession. In an ideal world, a combination of mixed stocking will produce the best management outcome.

All grazing animals need:

- water – naturally occurring, via a trough or a man-made channel.
- shelter – against the worst weather or shade in summer. Even if there are not housing facilities on each site, there should be trees, bushes or rock outcrops that livestock can retreat to in severe conditions.
- fencing – appropriate fencing that is well maintained.
- attention – the livestock should be checked at suitable intervals, which may be daily.
- care – on site and off-site visits by a vet may be required.

It can be difficult to move livestock between farm holdings, particularly in areas with high TB. Movement licenses are required for some types of stock and standstill periods may apply. This can cause difficulties if there are 'flying' herds of animals used to graze heaths and grasslands. All grasslands are a managed environment and if grazing cannot be undertaken, some other form of management may need to be done to replicate grazing, such as mowing and harrowing.

Cattle


Sue Raven The Greensand Trust

Cattle prefer to eat longer grasses and use their tongue to pull and tear the vegetation; grazing to a minimum height of 5-6cm. They are generally better than sheep at creating and maintaining structurally diverse grassland:

- their large size and heavy weight breaks up the ground;
- they avoid grazing around dung pats which creates patches of longer vegetation important for insect communities. These in turn are eaten by birds and bats;
- cattle are particularly good at knocking down and creating gaps in tall, coarse vegetation such as bracken and scrub.

Different cattle breeds have differing effects on rough grassland. Traditional breeds are more adept at eating rough grassland, putting on weight and maintaining condition for production, compared with commercial breeds. Cattle need more water than sheep, and access to troughs is required at all times. The location of water troughs and mineral licks can be used to influence where cattle graze. Poaching or pock marks (the excessive trampling of grassland by cattle when wet) adversely affects pasture and meadows and can lead to a hard impenetrable surface when dry, where plants are unable to germinate. It is a particular problem that can occur around water troughs and feeders and when cattle are over wintered outside.

Horses and ponies


Ponies grazing at the RSPB Lodge
© RSPB The Lodge

Horses and ponies have forward facing teeth and can graze extremely close to the ground – as close as rabbits. The benefits of grazing with horses and ponies are:

- they preferentially select sweet grasses, but will also eat a variety of sedges and rushes particularly later in the summer;
- they tend not to select flowers, as sheep do, and avoid buttercup, common knapweed and ragwort;
- they regularly graze tufted grasses;
- these 'fussy' diets are ideal for maintaining the mosaic habitat needed by many insects.

As with other livestock, there are behavioural and grazing differences between horse breeds. Native breeds such as Exmoor, Dartmoor and New Forest ponies are regarded as more suitable for heathland and rough grasslands and are hardy, being able to cope in adverse weather as they are often reared outside without ever being brought into a stable. In the autumn, some breeds such as New Forest ponies, will graze large quantities of bracken once the toxicity has reduced, making them ideal for restoration grazing.

Problems can arise in specific locations as horses may create latrine areas, which lead to a tightly grazed vegetation and can cause localised high nutrient levels and encourage the spread of thistles, nettles and docks. Regular collection of dung will alleviate this problem and usually the more species-rich areas of a site are not used as a latrine as they become preferred grazing locations.

Sheep

Sheep have thin, mobile lips and move slowly over the sward nibbling the grass. They eat selectively when circumstances allow, biting off single leaves or shoots down to a height of 3cm. It is notable that sheep only develop a full set of adult teeth after 3-4 years and then steadily lose them as they age, therefore young and old sheep may not graze as effectively as middle-aged sheep. As well as grasses and herbs, sheep will also selectively eat some low scrub, especially the hardy breeds such as Soay and Hebridean.

The benefits of grazing with sheep are:

- they are light and more agile than cattle and are more suited to steeply sloping land;
- although on heavy, wet soils sheep can cause trampling and poaching they do not have such an impact as heavier grazers;
- their dung is deposited randomly and they will graze next to it, therefore grazing swards to a uniformly low height.

Sheep are less susceptible to the toxins in ragwort and so can be used to spring graze it in its rosette stage to prevent flowering and setting seed. However, they are not immune to its toxins so require plenty of other vegetation to eat along with it. Extensive bramble can cause difficulties for sheep as their fleece may get caught. As sheep are prone to foot rot they are not best suited to predominantly wet sites. They also require more secure fencing than cattle.

Goats

Feral goats may be managed as a livestock herd. They are browsers, consuming woody vegetation 50-75% of their feeding time where this is available, and do best on land that has scrub and tufted grasses making them particularly suited to restoration grazing. Usually they graze grasses down to a height of around 6 cm and can target grass seed heads eating them before starting to eat the leaves. Like sheep, they do not develop their full set of teeth until they are five years old and can lose teeth in older age, meaning that middle-aged goats are most effective.

The benefits of grazing with goats are:

- they have a small muzzle and a flexible upper lip allowing them to be highly selective about what they eat. Goats prefer to eat the newer growth and leaves of scrub, bramble and tufted grasses rather than finer grasses;
- they are less prone to foot rot than sheep making them suitable for wetter sites but they do need some dry sheltered ground within their home range;
- they are agile and can tackle steep hills and rock edges, particularly suited to cliff edges that other livestock would have trouble accessing.

Goats will barkstrip taking, in order of preference, holly, ash, rowan and willow, oak, hazel, alder and birch in upland situations. In lowland situations they tend to eat elder first, followed by ash, blackthorn, sycamore and rose. They generally do not eat field maple or hawthorn. Bark-stripping takes place during mid-late winter when there are few leaves and the preceding year's growth has been consumed.

They may also browse heather to a greater extent than sheep. They have also been used to reduce rush on wet grassland, with restoration achieved after 3-4 years by spring mob grazing with goats at a stocking density of more than 10 animals per hectare. Goats can be difficult to manage, and are often considered to be escape artists breaking out of enclosures. However, they can be very effective and different breeds can be used to address separate situations and issues.

Livestock may remain on heathlands for much of the year depending on the site, conditions and the stock but the following advice will help to do this for the benefit of wild flowers and their associated wildlife:

- Livestock may be removed from the pasture for the early months of the year, if the ground gets very wet, to avoid poaching damaging the grassland.
- Grazing may either continue at this low level throughout the spring and early summer, or livestock should be removed to allow the flowers to bloom. On sites with sensitive or delicate species that take time to establish, such as orchids, it is better to remove livestock in late spring and throughout the flowering period.
- In the late summer, grazing may increase in order to remove the vegetation and create a varied sward height. Coarser pasture will benefit from more intensive grazing and different levels of grazing will likely be required each year depending on the weather.
- Extensive and/or mob grazing can be undertaken, especially if the grassland is broken into different fields or includes different types of grassland. This can be very beneficial for plants and wildlife as it creates structural diversity among and within fields that suits a wide range of species.

The aim is to reduce the height of the vegetation to 2-10cm before the end of the winter but without causing poaching (where cattle, ponies or sheep leave pock-marks with their hooves in grassland, particularly after wet weather). A little poaching can be helpful as it creates bare ground, but large areas denude vegetation and can cause damage, particularly compaction, which can increase the spread of problem plants, such as docks (*Rumex* sp.). Livestock should be removed from the field if there is very wet weather or if poaching in gateways or along fence lines starts to become apparent.

If grazing is not possible, a mat of vegetation can build up (thatch) and mechanical removal using chain and tine harrows will be necessary. The thatch should be removed so that it does not decompose adding nutrients back into the soil and affecting the growth of wild flowers and grasses. Harrowing can either be undertaken in the autumn in damper fields, or in late winter or early spring in drier fields.

Cutting

To maintain a range of ages, heather on heathland is best managed by rotational cutting, especially where grazing is not possible.

Machinery suitable for managing heathland

Strimmer/brushcutters are great for the annual cut of small meadows in gardens or green spaces. If a cord attachment is used they can be effective at creating bare ground before sowing seed in smaller spaces.

Hand tools can be used for creating bare ground and managing small meadows.

Allen scythes are great for cutting larger meadows that are too small for farm machinery and where access is limited. They are readily available through most plant and machinery hire shops.

Bigger machinery for field-scale heathland creation and management

The machinery listed below is designed to fit on the back of a tractor. It is best suited to field-scale heathland creation and management of over one hectare. Most of the machinery listed below is commonly used by farmers and is widely available. It may be possible to contract a local farmer to help with preparing the ground, sowing wildflower seed, and annual meadow management.

Tine harrows are ideal for creating bare ground before sowing wild flowers in a field with existing grass. They are good for pulling out the thatch of dead grass and moss that can build up in meadows to expose bare ground. They also work well in sites where problem plants have been present in the past, as they only scratch the soil surface and are less likely to 'awaken' problem plant seeds from the existing seed bank.

Power harrows will create a lot of bare ground quickly. Care must be taken to avoid harrowing too deep. Power harrows should only be used in meadows with very short grass and when you can be sure there have been few problem plants in the past.

Chain harrows can be used to create bare ground before sowing wild flowers. They work best if the ground is slightly soft and the grass is very short. They are less effective than tine or power harrows so it may be necessary to harrow the meadow several times.

Disc or drum mowers are used for cutting meadows as part of the haymaking process.

Hay turners (Hay bob) are used for spreading the grass around the meadow to aid in drying during haymaking. They can also be used for spreading green hay out if this is used as a source of seed for a meadow creation.

Balers (round/square) are used to bale the dried grass in traditional hay meadow management. Large round balers are now more common than small square balers. Round balers require the bales to be moved out of the meadow using a tractor and front loader, as they are too heavy to move by hand. Small square bales can easily be loaded and moved by hand. Round balers are also effective for baling green hay for use in a meadow restoration.

Flail collectors are great for cutting and removing the annual grass growth in a meadow where it's not possible to make hay. Flail collectors cut and collect at the same time. They are a more specialist piece of equipment but are being increasingly used to manage roadside verges and smaller meadows where it's not practical to make hay or graze livestock.

Survey and monitoring of heathland

There are many methods of surveying heathland depending on what you wish to survey and monitor. The list below contains only a few different methods for surveying heathland.

National Vegetation Classification (NVC)

National Vegetation Classification (NVC) is a descriptive system of categorising habitats in Britain. The original surveys were commissioned in 1975, and the resulting botanical data was analysed and separated into different vegetation communities. The resulting NVC categories are used to identify priority habitats, for example most of the heathland found on the Greensand Ridge is identified as H9-heather-wavy hair grass heath, with most acid grassland either U1-sheep's fescue-common bent-sheep's sorrel or U2-wavy hair grass grassland.

NVC is a great tool for being able to identify types of heathland and grassland which can then be related to whether the grassland is considered to be a priority and is species-rich. A full botanical survey of five 2 x 2m quadrats is required and experience of analysing the data to identify the closest NVC community description.

Identifying the NVC community can help to target management that could diversify the heathland and acid grassland either maintaining the species richness, or increasing the number of species present. However, because the rate of change on grasslands is usually quite slow, NVC is not a good monitoring or surveillance tool for feedback into management. It also requires very good botanical identification skills and experience of being able to analyse species composition data to find the nearest vegetation community description.

Phase 1 habitat classification

Phase 1 habitat classification is a landscape surveillance method, identifying types of semi-natural habitat on a broad scale. It is designed to cover large areas of the countryside relatively quickly and provide some basic information about the type of habitat present and possible importance for nature conservation.

It is a useful method for mapping habitats across large areas at a coarse scale, and is also used as a baseline for preparing Environmental Impact Assessments. Phase 1 Habitat Survey relies on being able to identify some indicator species to provide a broad assessment of the habitat, particularly grasslands. However, it does not require a full species list like more intensive survey techniques.

Phase 1 Habitat Survey is suitable for use when surveying large areas of habitat, and grasslands can be separated into their different types, or can be lumped together under improved or semi-improved grassland. The method does not enable detailed botanical information to be collected, and as a consequence, can limit priority habitat identification and cannot be used to monitor changes in species composition.

Common standards monitoring

Common standards monitoring is a specific monitoring method for Sites of Special Scientific Interest. It uses indicators of success to determine whether the habitat and species for which the site is designated for are in favourable, unfavourable improving, unfavourable – maintaining or unfavourable declining condition.

Fixed point photography

Fixed point photography can be a useful way of monitoring the effect of management and how grassland habitats change over time. For example, taking photos over several seasons and years can show changes in the cover of scrub and bracken.

Further Information

Buglife: **www.buglife.org.uk/resources/habitat-management/lowland-heathland/**

Natural England Lowland Heath Management Handbook:
http://publications.naturalengland.org.uk/publication/2267376

Chartered Institute of Ecology and Environmental Management:
https://cieem.net/resource/a-practical-guide-to-the-restoration-and-management-of-lowland-heathland/

www.greensandcountry.com for interactive map

www.greensandtrust.org

www.wildlifebcn.org

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To download further copies of this and other Habitat Resource Packs please use the QR code or go to:
www.greensandcountry.com/discover/resources