CONSERVATION ADVICE No. 1

Managing Scrub for Nightingales

A BTO Guide for Land Managers and Conservation Practitioners

About Nightingales

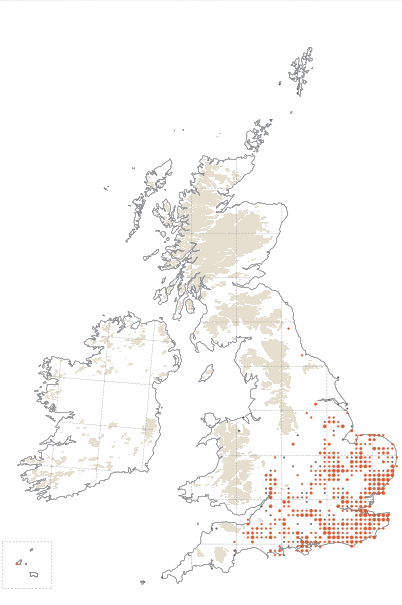
Introducing the Nightingale

The Nightingale is an unassuming bird. A little larger than the closely related Robin, it has plain brown upperparts, paler underparts and a rufous-brown tail. What it lacks in looks, however, is compensated for by the sound it utters. The Nightingale is arguably the foremost songster among British birds; studies have identified over 250 different phrases compiled from a repertoire of some 600 sounds.

Its habit of breeding in dense vegetation makes the Nightingale a difficult bird to observe and it is much more often heard than seen. Throughout history, the rich song has been celebrated by poets, writers and musicians; the powerful notes are considered a defining sign of returning spring.

Paul Sterry/Nature Photographers Ltd

Although Nightingale song may be heard intermittently throughout the day, it is stronger in early mornings and evenings (as well as at night). The song period is brief with song rarely heard after early June.



Where are Nightingales found?

Nightingales are summer visitors to the UK, arriving from mid-April onwards to spend the breeding season in southern English counties – they are seldom found north of a line between the Severn and Humber estuaries and in recent decades have declined in numbers and contracted in distribution. Most birds leave the UK between mid-July and mid-August and spend the winter months in West Africa. This annual cycle totals a return trip of over 6,000 miles – an amazing feat for a bird that weighs around 20g!

Bird Atlas 2007–11 reveals that the breeding range has contracted by 43% over approximately the last 40 years.

Map from *Bird Atlas 2007–11*, which is a joint project between BTO, BirdWatch Ireland and the Scottish Ornithologists' Club.

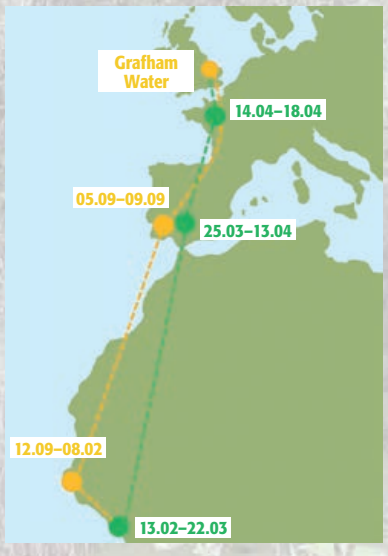
Nightingale with geolocator, by Chas Holt

Tiny tracking devices, known as 'geolocators' have enabled BTO researchers to discover the secrets of Nightingale migration.

Nightingale migration

Prior to 2009, 11,653 Nightingales had been ringed in the UK with just a handful of recoveries in different countries, notably France, Spain and Portugal. A single bird was recovered in northern Morocco in 1975 but virtually nothing was known about migration routes and wintering areas.

In spring 2009, the BTO tagged 20 Nightingales with geolocators as part of a project run by the Swiss Ornithological Institute. The devices, weighing just 1g, contain a clock and a light sensor, which make it possible to determine where in the world the device is at any given time. These devices are accurate to 200 kilometres and the information they capture is downloaded when the bird is caught the following year. Since then the BTO has tagged further birds with geolocators and we now know the migration tracks and wintering locations of more than a dozen of these birds.



Migration route, stop-over sites and wintering area of a BTO-tagged Nightingale

Nightingale populations

The Nightingale is an amber-listed species of conservation concern because of the decline in its breeding population. The BTO/JNCC/RSPB Breeding Bird Survey shows a 46% reduction in Nightingale numbers over the period 1995 to 2011. Other data suggest the decline may have exceeded 90% since the 1960s.

In 2012 and 2013, BTO volunteers undertook a national survey of breeding Nightingales which delivered a population estimate of approximately 6,000 singing males.

Nightingale habitat

What habitats do Nightingales use?

Almost all Nightingale territories in this country are found between sea level and 100 metres, usually in woodland, woodland edge or scrub habitats, and often near freshwater.

Traditionally, Nightingales have been regarded as woodland birds with a popular view that coppiced woodland is especially important. However, in the last 30 years scrub habitats have become increasingly important. Surveys conducted in the 1970s found that approximately a quarter of Nightingale territories were located in scrub but by the late 1990s more than 45% were in scrub and the figure rose to more than 50% during the latest survey.

Nightingale breeding habitat in the Fens of East Anglia. Although surrounded by arable farmland, this scrubby margin has the thick cover that these birds need, coupled with an adjacent belt of rank grass and ruderal vegetation.

Fenland scrub used by Nightingales, by Chas Holt

Scrub as a habitat for Nightingales

A more detailed look at habitat

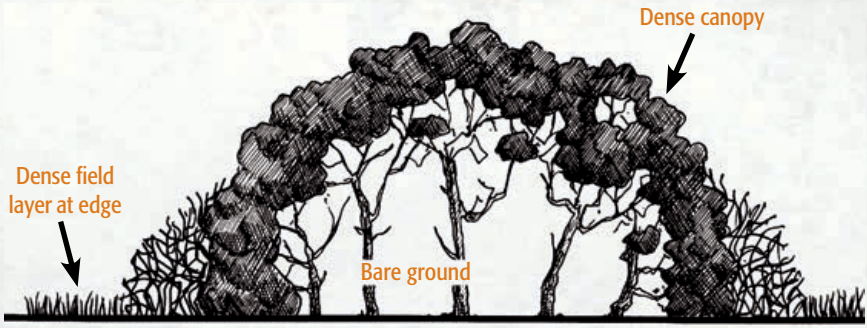
Much research has been undertaken to find out what makes one patch of woodland or scrub a perfect home for Nightingales, whereas a seemingly similar patch nearby remains silent. In England, Nightingale territories almost invariably have one particular feature in common – they contain extremely dense, almost impenetrable, thickets of vegetation within two metres of the ground. This vegetation enables birds to remain well concealed when singing and presumably helps to reduce the risk of predation.

This structure may be provided by regenerating scrub of various species, large bramble patches, or young growth within coppiced or planted woodland where there is plenty of vegetation growing between the young trees. Each of these situations is dynamic and conditions remain suitable for Nightingales for a limited period of time. Because scrub has become so important for the species, the rest of this leaflet focuses on this type of habitat.

Field layer vegetation and Nightingale nest with young, by Chas Holt

The internal structure of favoured sites may include some field layer vegetation (top), although this is often sparse. The nest may be placed under a bit of bramble or honeysuckle cover (bottom).

Cross section through idealised Nightingale breeding habitat to show key features.



Artwork, by Su Gough

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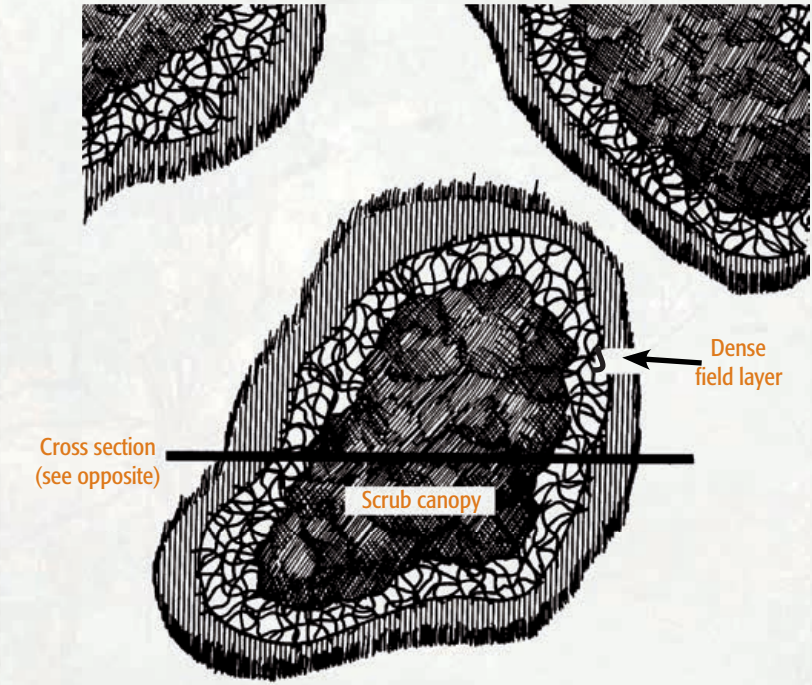


Artwork, by Su Gough

Nightingale, by Edmund Fellowes

Nightingales like thickets of vigorous scrub with a very dense canopy of twigs and leaves. This shades out the plants below, leaving the ground free from vegetation, but often with a covering of leaf litter. Nightingales like to forage on the ground, picking through low vegetation, or turning over fallen leaves as they hunt for small insects and other invertebrates. They frequently use the bare areas under the scrub canopy, but will often venture into nearby short vegetation, such as rides or unmown margins around the scrub thickets.

The scrub habitat and grazing pressure

Nightingale territories vary in size, probably according to habitat quality. Small isolated scrub patches are unlikely to be occupied unless the local density of Nightingales is very high. Scrub patches of at least half a hectare (one acre) are needed to allow rotational cutting to be employed. Structurally diverse areas with patches of scrub at different stages of growth are more suitable to Nightingales than large areas of uniform scrub.

Many of the best patches of scrub for Nightingales contain Blackthorn, Hawthorn and, on wetter sites, willow. Dog Rose and brambles are often present. However, the most important feature is the structure of the scrub itself rather than the species composition.

Nightingale, by John Spaull

Around the edges of these scrub patches the dense canopy descends to the ground. The patch is frequently surrounded by a thick field layer, often of brambles, rank grass or nettles providing safe, concealed nesting sites. This ideal structure typically occurs in pioneering scrub where it is colonising open land.

Grazing and browsing pressure

Browsing and grazing by deer is known to reduce the quality of coppice as a habitat for Nightingales. This happens because deer can remove much of the low vegetation, eliminating one of the key features required by the birds. Therefore, reducing the pressure from deer is essential, either by fencing or attempting to reduce the numbers of deer (the latter by an experienced deer manager), or through a combination of both.

There has been no research on the effects of deer on Nightingale habitat in scrub and the effects may be more complex. The structure of scrub habitats, often composed of spiny shrubs, may not be quite so sensitive to deer browsing as woodland.

Extremely intense deer pressure is likely to be a problem in scrub if it results in simplified edges to scrub thickets. On the other hand, moderate grazing pressure may actually be beneficial if it maintains a semi-open patchwork of thickets and grassland. Again, there is much to be discovered about the interactions between deer, vegetation structure and Nightingales in scrub.

It is possible that intense grazing by Rabbits, rather than by deer, could be a larger problem in some areas because this may create a low browse line with a very tightly grazed sward right up to the margin of the scrub patch. Under such conditions Rabbit fencing may be necessary to protect developing scrub.

Managing scrub for Nightingales

Creating new Nightingale habitat

There is one important fact to bear in mind before attempting to encourage Nightingales to a site – male Nightingales appear to be site faithful. It is also thought that first year (and possibly older) birds may be 'guided' to suitable breeding habitat by the nocturnal singing of male Nightingales. This means that the potential for newly created scrub to be colonised could depend heavily on whether or not there are already Nightingales in the general area.

Habitat management

Scrub is a dynamic habitat, constantly changing as it evolves into woodland. Nightingales seem to be particularly sensitive to this gradual change and will only use scrub for the few years when it is most vigorous and dense. Nonetheless, patches of scrub tend to retain suitable habitat structures for longer periods than coppice, probably due to relatively rapid canopy closure and shading in coppice and the fact that it tends to lack the patchiness and complex edge structures of much scrub.

The period of habitat suitability in coppice may be as short as four or five years, whereas in scrub it can be at least twice as long.

Photographs, by Paul Stancliffe

To maintain suitable scrub structure, regular maintenance is needed. The easiest way to achieve this is by rotational cutting of the scrub patches, to prevent the scrub from getting too old and 'leggy' for the Nightingales, and also to ensure a constant supply of vigorous new growth.

Cutting regimes

Scrub should be cut at intervals, typically in the range of 10–15 years, though this will depend on the shrub species and local conditions. The management plan needs to ensure that continuity of suitable thicket structures is maintained through appropriate rotational cutting. It is better to maintain a coarse-grained mosaic containing reasonable-sized blocks of woody growth of similar age rather than many small patches of different growth ages. This is best achieved by cutting adjacent patches of scrub in two or three consecutive years rather than widely dispersed patches.

There is still much to be learned about the best rotational management strategies so keeping records of which patches were cut when, and exactly where Nightingale territories were located in each year, is valuable. Furthermore, where scrub is managed by many years of cutting, the vegetation structure, especially at the edges, may become rather different to that exhibited by pioneer scrub. Maintaining detailed records will help to understand the long-term effects of scrub cutting on Nightingales.

Photograph, by Paul Standiffe

Scrub managed for Nightingales can also benefit other 'early successional' species, including many invertebrates and a number of bird species.

In Blackthorn scrub, a novel management technique is to partially cut through over-mature stems and to layer the whole patch, just like a hedge, forming a protective shield for the new, young growth which emerges the following spring.

Old 'leggy' scrub that has been cut to allow regeneration as a dense thicket.

Artwork, by Su Gough

Anglian Water and Nightingales – case study

Grafham Water

In September 2001, Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust planned to coppice an area of woodland at Grafham Water that held Nightingales. In the short-term this would have meant losing a large part of the habitat in which the birds were found.

As a compromise it was thought that a combination of coppicing and layering (similar to laying a hedge but done instead on whole shrubs), additionally leaving a some trees as song perches, would provide the cover needed by the Nightingales. This approach would allow the regrowth of the coppice stools and deliver a dense structure with regrowth from the layered pieces.

The first area to be managed in this way covered 1,446m^2, fenced with plastic deer fencing to protect the regrowth. Unfortunately, the local Rabbits chewed through the fence and the regrowth was damaged.

In 2002, a similar approach was tried in a different area, this time covering 1,107m^2 and incorporating one metre high rabbit fencing dug into the ground and two metre high deer fencing. During the spring of 2002, 18 singing Nightingales were counted in the coppiced woodland around Grafham Water. By 2012 the Nightingale population had fallen to nine singing males and suitable coppice was at a premium.

In 2013, Nightingales moved into a previously unoccupied area of scrub that had been layered in 2008 and 18 singing males were counted that spring. In 2014 a pair of Nightingales moved into some scrub that had been layered in 2009.

The combination of layering and coppicing as management tools offers the opportunity to manage areas of scrub on a rotational basis, ultimately delivering a series of patches of differing age and structure. These may not support as many Nightingales as might be achieved when all of the habitat is at its optimal structure for the birds, but it does deliver a sustainable structure over the longer-term.

The areas in which the layered/coppiced management regime has been deployed at Grafham Water range from 550m^2 to 1000m^2.

Monitoring of Nightingale territories has proved important when looking to manage scrub for the species at Grafham Water, by informing decisions on what to cut and when. Between 2012 and 2014, 70 Anglian Water and Wildlife Trust staff volunteers took part in 68 surveys resulting in 204 hours of data collection. Ringing also takes place on the site to provide additional information on the Nightingales using the site and its scrub.

Summary information and further advice

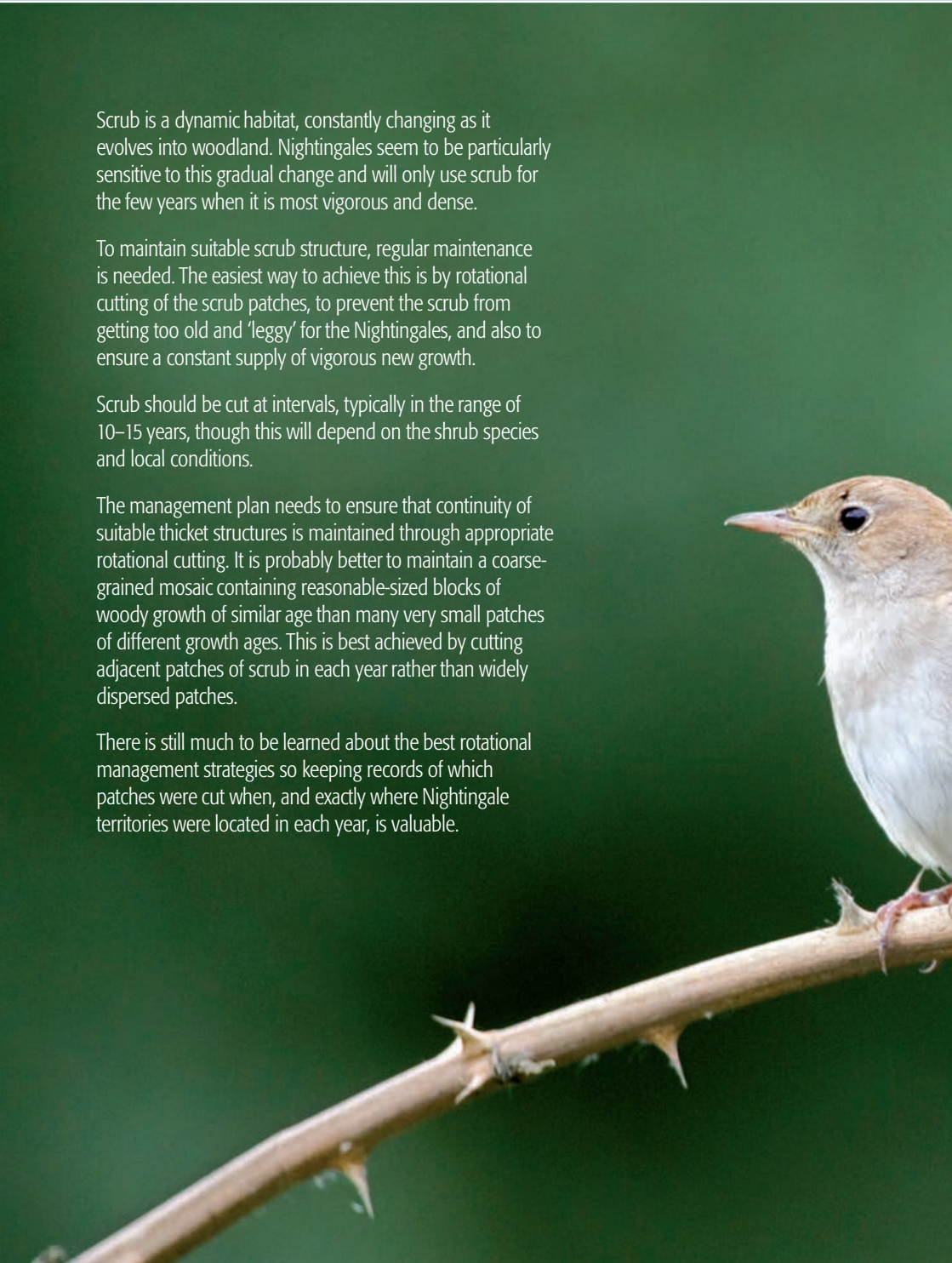
Scrub is a dynamic habitat, constantly changing as it evolves into woodland. Nightingales seem to be particularly sensitive to this gradual change and will only use scrub for the few years when it is most vigorous and dense.

To maintain suitable scrub structure, regular maintenance is needed. The easiest way to achieve this is by rotational cutting of the scrub patches, to prevent the scrub from getting too old and 'leggy' for the Nightingales, and also to ensure a constant supply of vigorous new growth.

Scrub should be cut at intervals, typically in the range of 10–15 years, though this will depend on the shrub species and local conditions.

The management plan needs to ensure that continuity of suitable thicket structures is maintained through appropriate rotational cutting. It is probably better to maintain a coarse-grained mosaic containing reasonable-sized blocks of woody growth of similar age than many very small patches of different growth ages. This is best achieved by cutting adjacent patches of scrub in each year rather than widely dispersed patches.

There is still much to be learned about the best rotational management strategies so keeping records of which patches were cut when, and exactly where Nightingale territories were located in each year, is valuable.



More information:

www.bto.org/birdtrends

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www.bto.org

Photograph, by Edmund Fellowes



Managing Scrub for Nightingales

The Nightingale is a very well known, yet rarely seen, bird that is found across parts of southern England. It favours scrub and woodland habitats for breeding and its populations are known to be particularly sensitive to changes in the structure of woodland vegetation. This guide draws on BTO research to highlight the requirements of this scarce bird for nesting habitat and provides advice on how to manage scrub habitats for the benefit of Nightingales.

Anglian Water has been working with the BTO to research why Nightingales have declined by a staggering 90% in the UK since the 1960s and to share the effective habitat management practices developed on Anglian Water sites.

BTO Advice Notes bring together the latest research findings on topics of conservation and policy interest, providing practitioners, policymakers and others with the information that they need.

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