



Trends in woodland management and the status of woodland birds

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SmallWoods

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Many of our specialist woodland birds have declined in recent decades and changes in habitat may be partly responsible .



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Photography

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Introduction

The core woodland bird community in Britain consists of about 50 species that both breed and feed within closed canopy woodland. A further 35 species either depend on open or young woodland, or nest within woodland but feed mainly outside it¹. Approximately half of these 50 species, 'the woodland specialists', are largely confined to woodland, whereas others also occur in a wider range of **habitats** including hedgerows and gardens. Over recent decades there have been worrying declines in the numbers of birds breeding in many woodlands. This has been especially evident for many of our woodland specialists (see Table 1, opposite).

The reasons for these recent declines are not fully understood. However, there are several possible reasons including species that winter in Africa

may be affected by changing climatic and habitat conditions there. Some species could be affected by changes in the abundance of insect food in our woods, perhaps linked to climate change and the pervasive use of chemical pesticides on farmland in which much woodland is embedded. However, changes in habitat structure, especially in the form of reduced **understorey** and loss of open habitats, are likely to be among the most important factors in many woods in the lowlands where traditional management of broadleaved woodlands for coppice and other small wood products greatly reduced during the 20th century².

Many woodlands are now subject to little management. This has led to changes in vegetation structure of woods in recent decades, with a large proportion of lowland



Dunnock on a tree branch | Ameer Fairbank-Brown / Unsplash

broadleaf woodlands becoming shadier due to canopy closure and many increasingly heavily browsed by deer. These trends

have tended to reduce nesting and feeding opportunities for a variety of woodland birds that depend on complex understorey vegetation.

Table 1. Status of some woodland birds in Britain between 1970 and 2017

Strong increase:	Blackcap (<i>Sylvia atricapilla</i>), great spotted woodpecker (<i>Dendrocopos major</i>).
Weak increase:	Chiffchaff (<i>Phylloscopus collybita</i>), great tit (<i>Parus major</i>), green woodpecker (<i>Picus viridis</i>), long-tailed tit (<i>Aegithalos caudatus</i>), nuthatch (<i>Sitta europaeus</i>), siskin (<i>Spinus spinus</i>).
Little change:	Blackbird (<i>Turdus merula</i>), blue tit (<i>Cyanistes caeruleus</i>), bullfinch (<i>Pyrrhula pyrrhula</i>), chaffinch (<i>Fringilla coelebs</i>), coal tit (<i>Periparus ater</i>), common crossbill (<i>Loxia curvirostra</i>), dunnock (<i>Prunella modularis</i>), garden warbler* (<i>Sylvia borin</i>), goldcrest (<i>Regulus regulus</i>), jay (<i>Garrulus glandarius</i>), lesser whitethroat* (<i>Curruca curruca</i>), redstart* (<i>Phoenicurus phoenicurus</i>), robin (<i>Erithacus rubecula</i>), sparrowhawk (<i>Accipiter nisus</i>), tawny owl (<i>Strix aluco</i>), treecreeper (<i>Certhia familiaris</i>), wren (<i>Troglodytes troglodytes</i>).
Weak decline:	Pied flycatcher* (<i>Ficedula hypoleuca</i>), song thrush (<i>Turdus philomelos</i>), willow warbler* (<i>Phylloscopus trochilus</i>).
Strong decline:	Capercaillie (<i>Tetrao urogallus</i>), lesser redpoll (<i>Carduelis cabaret</i>), lesser spotted woodpecker (<i>Dryobates minor</i>), marsh tit (<i>Poecile palustris</i>), nightingale* (<i>Luscinia megarhynchos</i>), spotted flycatcher* (<i>Muscicapa striata</i>), tree pipit* (<i>Anthus trivialis</i>), willow tit (<i>Poecile montanus</i>), wood warbler* (<i>Phylloscopus sibilatrix</i>).

Note:

- The long-term population trend from 1970 to 2017 is summarised as follows (from Defra 2019): strong increase – population increase of more than 100%; weak increase – 33% to 100% increase; little change – between 25% decrease and 33% increase; weak decline – 25% to 50% decrease; strong decline – more than 50% decrease.
- Woodland specialists are shown in bold, these being species that are especially dependent on woodland habitats.
- Long-distance migrants wintering south of the Sahara are marked with an asterisk.
- Population trends are not available for all bird species using British woodland; Balmer et al. (2013) is an important additional source of information about changes in status of woodland birds

Getting the right balance of trees

Many coniferous forests created in the 20th century have reached commercial maturity or are now approaching felling. At this stage opportunities arise to diversify forests through the scale and pattern of felling, the species chosen for re-planting and the balance of forest and open space. Though native broadleaved trees and woodlands are often preferred by conservation managers, several bird species are especially associated with mature coniferous forests. These species include goshawk, siskin, crossbill, goldcrest and firecrest. Furthermore, the early stages of growth in conifer

plantations can hold large numbers of willow warblers, garden warblers, tree pipits, various finches and, in the north, whinchats. Some of the richest woods for birds consist of mixtures of broadleaves and conifers with stands at different stages of growth. Nonetheless, where ancient woods have been planted with conifers it is highly desirable to remove these and return to 100% native broadleaves.

Recent signs of a possible upturn in timber prices, but especially the growing interest in woodland due to biomass demand, could stimulate increased management of existing woodland and an expansion of



Goldcrest | Vincent van Zaalinge/ Usplash



Goshawk | Andrey Gulivanov/ Usplash

woodland area. Coupled with this, there are now strong incentives to increase the rate of tree planting as a measure to combat climate change through carbon sequestration. Substantial areas of abandoned coppice broadleaf woodland could be brought back into active management either for timber or biomass production.

These potential changes could have large benefits for the bird communities of forests and woodland but much depends on

the detail. The extent of woodland in itself is not an indication of its wildlife value. For birds, the diversity and types of tree species, and the range of physical structures of vegetation, will critically determine whether habitats are available for a large number of species. Of course, in small woods it is impossible to provide reasonable areas of all habitat types, so ideally a complementary balance of growth stages and structure is desirable at an appropriate landscape scale.

Stand structure and woodland bird habitats

Woodland management affects birds in two broad ways. Firstly, the type of management system hugely influences the kinds of habitat available. It determines those structural elements of woodland – for example the foliage density at different heights, canopy openness and tree size – that are crucial components of habitat suitability for many woodland species. Secondly, the dominant tree and shrub species have additional effects on habitat suitability, through the types of food

resources, nest sites and shelter they offer species with different requirements.

A fundamental driver of the composition of the woodland bird community is the structure of the stand as determined by its growth stage (see Figure 1 on next page).

As a stand matures, the types of resources available for birds change enormously, resulting in large turnover of species. The earliest and later stages of woodland development tend to be most interesting for birds,

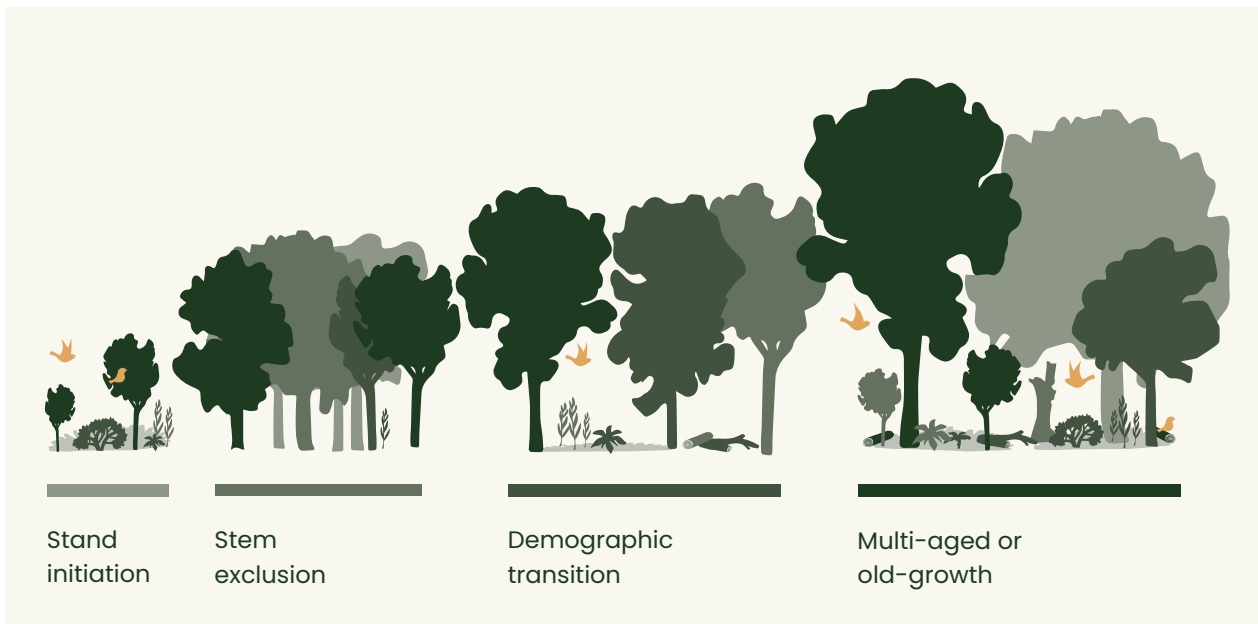


Figure 1. Forest growth and development | Small Woods Association

Forest growth and development

Woodlands, both those managed and those following a natural dynamic, go through a series of stages from planting or regeneration, to closed canopy (Figures 1 and 2). This involves a huge transformation not just in the size of the trees, but also in the canopy cover and the density of the understorey (Figure 2). The way that these changes occur and the structure of the habitat is strongly affected by woodland management including whether the wood is coppiced or the extent to which the trees are thinned. Unmanaged woodland will eventually, but only after several centuries, come to contain massive

ancient trees with an abundance of dead wood and cavities providing habitats for a wealth of wildlife. However, this situation hardly occurs in Britain where virtually all woodland is managed, or has been recently, and stands of more than 150 years are rather rare. Nonetheless, managed woodland can be rich in birds and other wildlife. This is especially true where both young and old stands are present, though this can be difficult to achieve within small woods. Maintaining patches of young-growth within managed woods is one of the simplest ways of enhancing wildlife habitat. This can be achieved by coppicing, managing the edges of tracks to create belts of shrubby regrowth, or creating semi-permanent glades.

each of these stages hosting distinct sets of species adapted to those particular habitats

Once the canopy closes and the wood enters a period of heavy shade, which can persist for many years in the absence of management, the bird community is far less interesting. This stage often has very little understorey vegetation due to lack of light so shrub-nesting species are typically scarce or absent. It also tends to offer few nest sites for hole-nesting birds because

the trees are insufficiently mature. There are few, if any, specialists of these intermediate **middle age – stem exclusion stages** of woodland growth in Britain, though willow tit is a candidate as it often nests in rotting birch trees that are gradually being excluded from the stand.

Management approaches resulting in an increase in both open young and old growth habitats are therefore likely to be beneficial to bird species experiencing population declines as well as to wider woodland biodiversity.

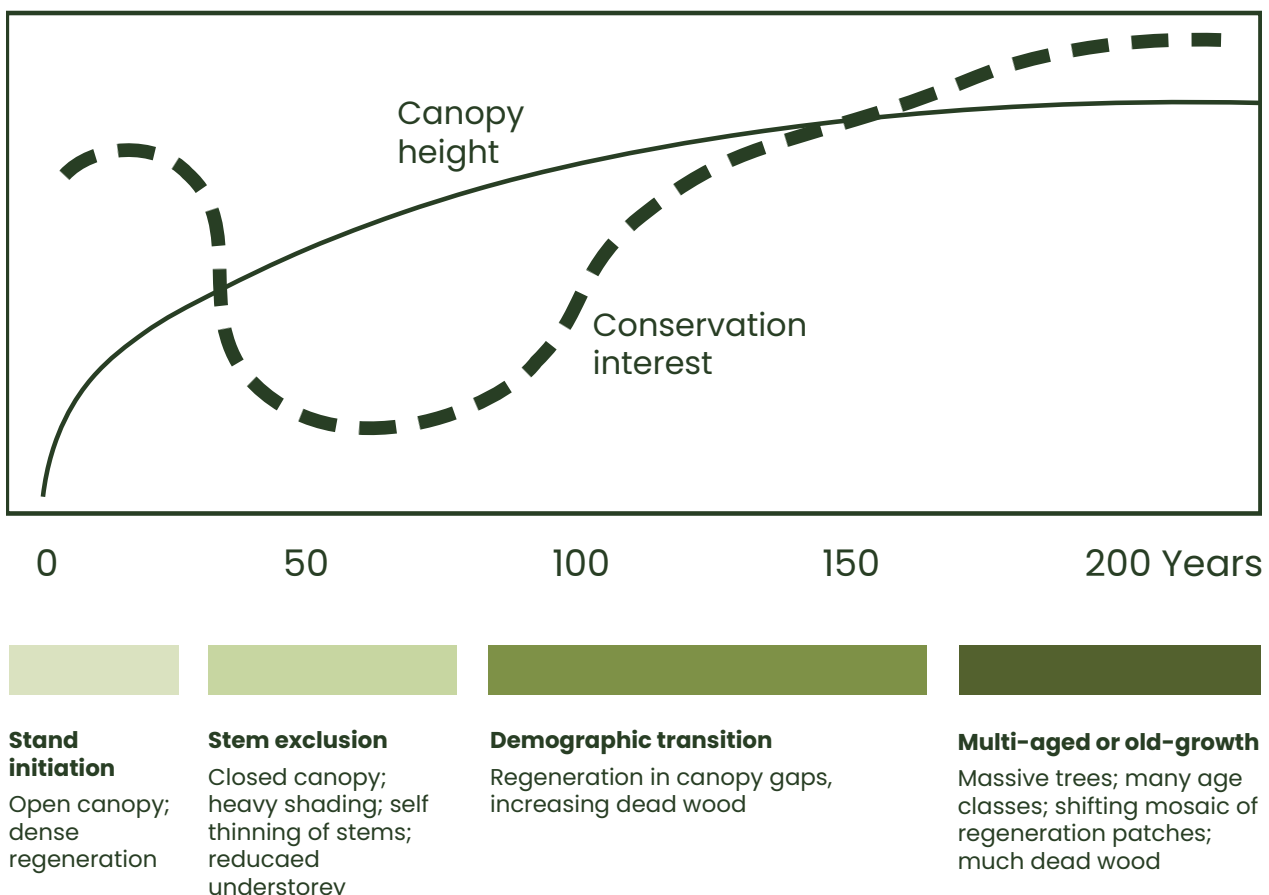


Figure 2. Diagrammatic representation of the bird conservation interest of woodland
 Reproduced with permission from *Woodland Management and Birds Article 1 (Fuller, 2021a)*

Resource needs of different woodland birds

As indicated above, the physical structure of a woodland, rather than its plant species composition, is widely regarded as the primary driver of bird communities. However, this is a somewhat simplistic view as tree and shrub species differ in the types and quantities of seed, fruits and invertebrates they offer birds. Trees also vary in the **microhabitats** they provide: the density of the foliage, bark texture, cavity formation, **epiphytes** etc.

The resources that are sought by

woodland birds fall into the following categories:

- food and associated foraging substrates,
- nesting sites,
- roosting and perching sites,
- space/cover within which to display, forage and escape from predators.

Particular resource requirements vary by species and with season, though



Tawny owl | James Armes/Usplash

Table 2. Relationships between resource requirement and structural elements of a woodland, with example British woodland birds

General resource requirement	Particular requirement	Associated structure or component	Example British woodland bird
Food	Invertebrates	Field and shrub layer foliage providing caterpillars, a key food of many chicks	Blackcap and marsh tit in the breeding season
	Invertebrates	Nectar sources and inter-foliage space for flying insects	Spotted flycatcher
	Invertebrates	Dead wood for saproxylic invertebrates	Lesser spotted woodpecker
	Seeds	Mature (flowering) trees for tree seed	Crossbill (conifer cones)
	Seeds and fruit	Flowering plants	Bullfinch, Lesser redpoll, siskin and tits especially outside the breeding season
	Other plant material	Leaves and buds	Woodpigeon
	Vertebrates	Ground vegetation cover for small mammals (e.g. voles and mice)	Tawny owl
	Vertebrates	Large seeds for squirrels	Goshawk
Nesting site	Hole-nesting	Mature trees/dead trees/particular species or dimension	Woodpeckers, tits, pied flycatcher, nuthatch
	Shrub-nesting	Dense foliage	Several warblers
	Ground nesting	Ground layer cover	Woodcock, tree pipit
	Canopy/tree-top	Tree size; surrounding openness	Goshawk, osprey, hawfinch
Roosting site	Sheltered site	Dense thicket	Starling, finches, thrushes
	Canopy location	Tree size	Capercaillie

Reproduced with permission from *Stand management: a threat or opportunity for birds in British woodland?* (Quine, 2007) ³

they are generally best understood around the time of the breeding season.

Creating a more diverse structure through woodland management can lead to increased resource provision for many species of birds and other animals. Much biodiversity conservation effort is directed towards the maintenance of early **successional habitats** which, in the case of woodland, are provided mainly by coppice, other recently felled stands, glades, rides and external edges.

Early successional stages provide habitat for a huge number of plants and invertebrate species, as well as providing resources for many birds. In addition, maintaining some areas either as unmanaged stands or as ones managed on extremely long rotations, well beyond commercial harvesting age, would foster the diverse habitats that are associated with old trees, and with decaying wood in different forms utilised by a complex array of organisms.

Management techniques for increasing woodland structure

Woodland management for birds is thus ideally focused on delivering a mixture of different stand structures at the landscape scale. By using silvicultural management to reduce the area of closed canopy, towards a diversity of other stand types, there is potential scope to increase the range of resources for a wide range of woodland birds and other wildlife⁴. Despite woodland management interventions, colonisation of particular woodland birds to managed habitats will to a large extent depend on there being surplus individuals beyond the immediate woodland boundary to establish a new local population.

It is to be noted however, that management of a woodland purely for birds, or indeed a particular species of bird, is not to be desired. Please, however, for interest and reference consult Symes and



Currie (2005) for particular habitat preferences of individual bird species. A diverse woodland that embraces the needs of a wide range of wildlife groups is preferable for the sustainability of biodiversity of that woodland. The management

interventions to achieve a diverse woodland with a variety of growth stages and tree architecture are presented in more detail in the accompanying advisory note: *Managing woodland to enhance habitat for birds.*

Table 3. Bird species that are associated for nesting with the early and late growth stages of lowland British woodland.

Early-growth: canopy very open (<50% cover) with sparse undergrowth	Dunnock, grasshopper warbler, linnet, (nightjar*), tree pipit, whitethroat, (woodlark*), yellowhammer.
Early-growth: canopy closing (>50% cover) with dense undergrowth	Dunnock, blackcap, bullfinch, chiffchaff, garden warbler, (lesser redpoll), lesser whitethroat, nightingale, (willow tit), willow warbler.
Late-growth: tall closed canopy, large trees >50 cm dbh with limited undergrowth	Coal tit*, common crossbill*, firecrest*, goldcrest*, goshawk*, great spotted woodpecker, (hawfinch), (honey buzzard), lesser spotted woodpecker, nuthatch, (redstart), siskin*, (spotted flycatcher), tawny owl, (wood warbler), treecreeper.
Late-growth: tall canopy with gaps, large trees >50 cm dbh with moderate undergrowth	Blackcap, chiffchaff, coal tit*, common crossbill*, firecrest*, goldcrest*, goshawk*, great spotted woodpecker, (hawfinch), (honey buzzard), lesser spotted woodpecker, marsh tit, nuthatch, (redstart), siskin*, (spotted flycatcher), tawny owl, treecreeper.

Note:

- This list is merely a guide as there is considerable regional variation in the species pool and the presence of particular microhabitats or soil types may be important for some species. The species lists for mainland Europe would be considerably different.
- Common species that are widely distributed across growth stages such as blackbird, blue tit, chaffinch, great tit, jay, robin, song thrush and wren are excluded. Also excluded are species that nest in woodland but often feed outside it e.g. buzzard (*Buteo buteo*).
- Asterisks indicate species mainly associated with coniferous woodland.
- Species that are locally distributed or that have strongly declined in recent decades are in parentheses.
- Early-growth is equivalent to the 'stand initiation' stage whereas late-growth is equivalent to the 'demographic transition' and 'multi-aged' stages of Frehlich (2002).
- Scientific names of most species are given in Table 1 with the exception of firecrest (*Regulus ignicapilla*), goshawk (*Accipiter gentilis*), grasshopper warbler (*Locustella naevia*), honey buzzard (*Pernis apivorus*), lesser whitethroat (*Curruca curruca*), linnet (*Linaria cannabina*), nightjar (*Caprimulgus europaeus*), whitethroat (*Curruca communis*), woodlark (*Lullula arborea*), yellowhammer (*Emberiza citrinella*).

Glossary

Introduction

Habitats

The natural home or environment of an animal, plant or other organism

Understory

A layer of vegetation beneath the main canopy of a forest

Stand structure and woodland bird habitats

Stem exclusion stage

Closed canopy, heavy shading, reduce understorey. This stage occurs when all growing space is occupied and new plants are excluded from.

Resource needs of different woodland birds

Microhabitats

A habitat which is of small or limited extent and which differs in character from some surrounding more extensive habitat.

Epiphytes

A plant that grows on another plant for physical support without being parasitic. An epiphyte derives its nutrients from air, rainwater and debris accumulating around it. Examples are ferns, mosses, lichens and orchids.

Successional habitats

Areas dominated by pioneer species – those species and plants that first colonise a newly exposed piece of land.

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Further reading

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