Scrubland Superheroes

Project Summary Report 2023 - 2025

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Data summaries and figures by Sam Joy - Weald to Waves Project Support

Acknowledgments

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Much of the project delivery was made possible through the collaborative efforts of volunteers and staff from the following organisations:
South Downs National Park Authority
Wilder Horsham District Project (Sussex Wildlife Trust)
Wilder Ouse Project (Sussex Wildlife Trust)
Steyning Downland Scheme
St Ethelburga's
Knepp Estate
Knepp Wildland Foundation
Weald to Waves

We would like to thank the following companies for their generosity in donating additional time and advice to the project:
Roots Upwards Ltd
Geodime
Wilder Sensing
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Haslemere Fencing
Wild Flower Lawns and Meadows

We are also grateful to The Conservation Volunteers iDig trees scheme, for supplying the project with free packs of native tree species.

Contents

Blackthorn *Prunus spinosa* with fruit commonly known as 'sloes'

Project summary

Red-backed Shrike *Lanius collurio*
©Laurie Jackson

Scrubland Superheroes is a Knepp Wildland Foundation (KWF) project, awarded funding in 2023 by Natural England Species Recovery Programme Capital Grant Scheme, which ran for an 18 month period. The aim was to restore scrubland habitat and create new mosaics to rejuvenate threatened species through the provision of advisory and monitoring support for creating and managing scrub, along with delivering capital works such as planting and protective fencing. Key sites were selected within the Weald to Waves corridor to focus effort on increasing availability of habitats for scrubland species such as Nightingale, Common Lizard and the Brown Hairstreak Butterfly. KWF continues to work with Natural England to progress plans for the reintroduction of both the Black-veined white butterfly (BVW) and red-backed shrike (RBS) in Sussex, with this project contributing toward organisation, networking and appropriate land management. Both RBS and BVW act as flagship species to target habitat improvement contributing to the conservation of other species living in the same habitat.

Black-veined White *Aporia crataegi*
©Laurie Jackson

Collecting information through baseline ecology surveys and studies is key for informing appropriate habitat enhancements prior to making changes to a site. Wildlife surveys began in March 2024 with setting up survey transects and the recruitment of volunteers. These surveys covered the breeding season for key species groups, and were completed by October 2024. The project officer and volunteers submitted data via the biological recording tool iRecord, to be received and collated by the Sussex Biodiversity Record Centre. Habitat management plans were drawn up at the end of the survey season based on recommendations made by the surveyors. Practical habitat works were then implemented in the final autumn and winter season of the project. This included contracted habitat works, conservation grazing, and practical volunteering days with our project collaborators. Ongoing management plans have been provided which extend beyond 2025.

Project Statistics

14 Project sites monitored

31 Butterfly survey visits

35 Breeding bird survey visits

36 Invertebrate fieldwork visits

127 Herbaceous plant species

32 Woody plant species

7 Notable wildflower species

Project Statistics

36 Repeat volunteers

64 Wildlife survey volunteering days

270 Wildlife survey volunteering hours

4 University 3rd year student projects

6 Wildlife survey training workshops

99 Wildlife workshop attendees

12 Wildlife workshop tutors

Project Statistics

8 Project scrubland sites enhanced

28 Hectares of scrubland created or enhanced

958 Habitat volunteering hours

18 Habitat volunteering days

31 Contractor work days

Project Statistics

7 Ponds and scrapes dug

4 Scrubland Enclosures Built

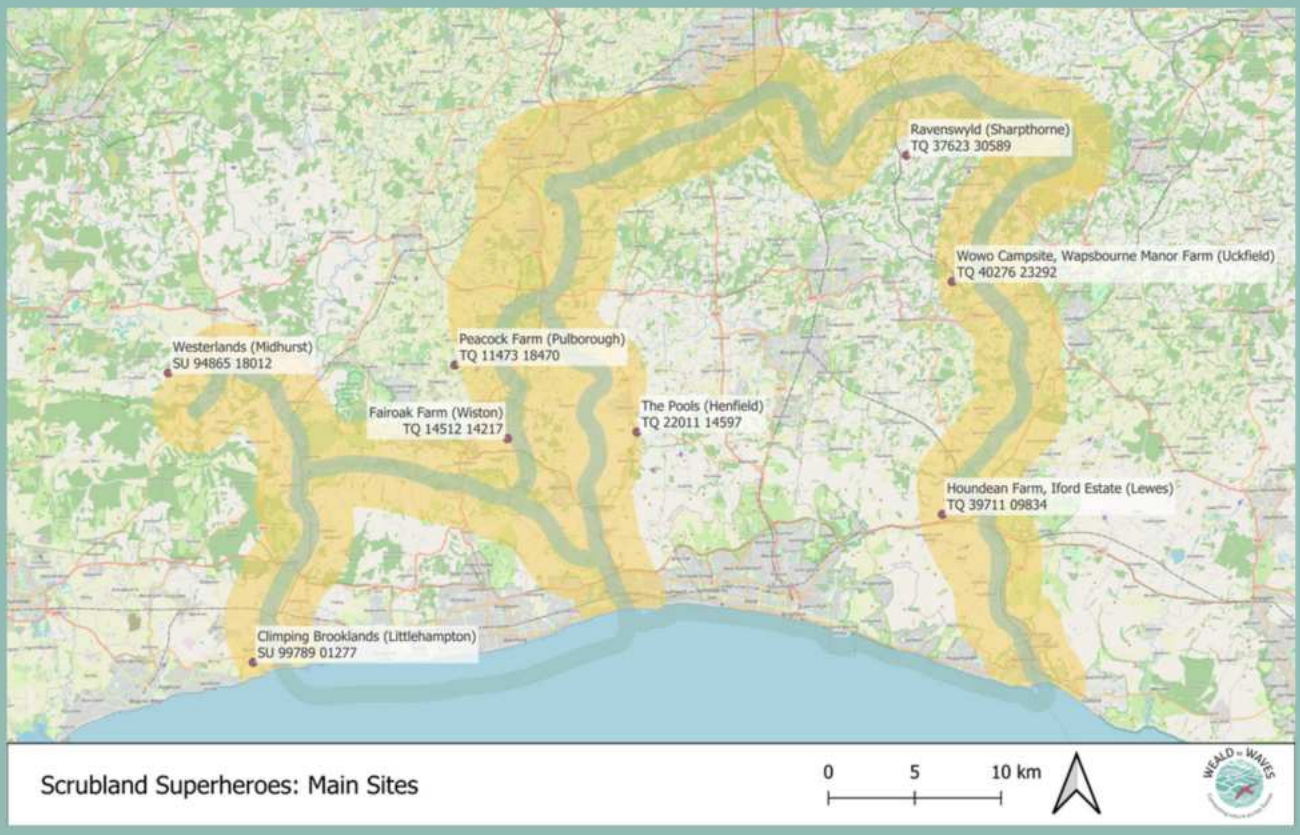
5 Nectar enclosures built

327 Metres of Hedgerow Planted

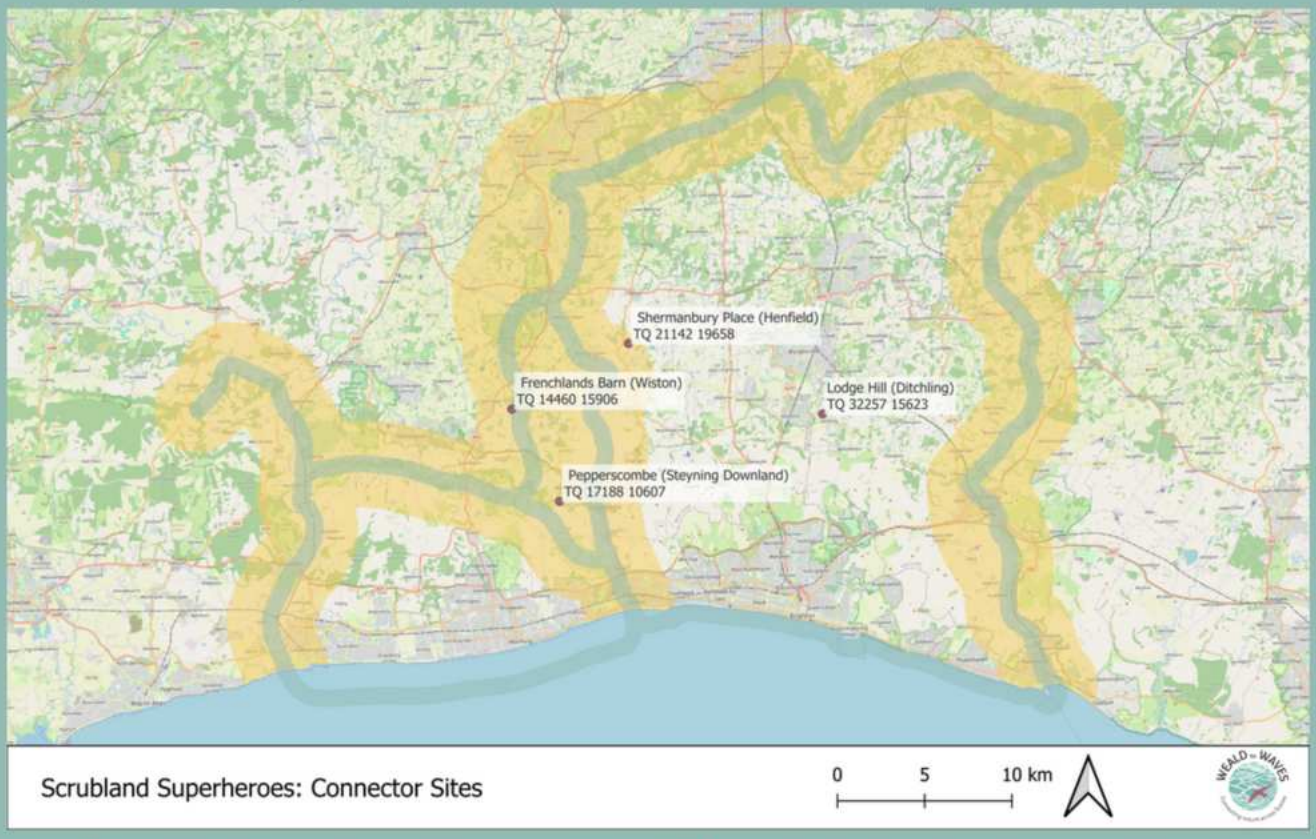
4330 Tree Whips Planted

1225 Wildflower plant plugs planted

Project Site Maps



Map 1. Scrubland Superheroes Main Project Sites 2024; the eight project sites which received ecological monitoring and capital works



Map 2. Scrubland Superheroes Connector Sites 2024; ecological monitoring or scrubland advice provided

Sussex Biodiversity Record Centre Summary

Biodiversity data for Sussex is held by the Sussex Biodiversity Records Centre (SxBRC). They provide a service of species data extractions for anyone who requests it including consultancies, wildlife conservation organisations, academics or members of public with a general interest. These summaries were created with data supplied through the partnership between SxBRC and Weald to Waves.

Date request date: 03/03/25

Table 1. The total number of species currently recorded for each project site. The numbers may be influenced by relative size of the site, the complexity of habitats present and past recording effort. Notable species includes those protected by law or of conservation importance.

Site	Search area (ha)	Total recorded species	Total notable species
Houndean Iford	171	1123	295
Westerlands	99	1033	183
Climping Brookland	88	1090	266
Wowo Campsite	72	730	130
Fair Oak Farm - South	20	493	72
Peacocks Farm	11.5	515	60
Fair Oak Farm - North	10	249	49
Ravenswyld	10	502	74
The Pools	4.5	644	94

Sussex Biodiversity Record Centre

iRecord

Notable Scrubland Species In Sussex

Wildlife records are a vital part of conservation ecology and the more species information we can gather, the better our understanding of the ecology of a site. Records may be collected on a casual basis, as part of an ecology survey, or longer-term monitoring process. Collectively they provide important evidence for informing projects around land use and management.

Below is a representative sample of species dependant on scrubland habitats which have been recorded in Sussex, many of which have a conservation status or are known to have declined nationally.

Table 2. Primary and notable scrubland species in Sussex (species of conservation concern, local importance or in the case of some plants, key to scrubland ecosystems).

Birds	Reptiles & Mammals	Invertebrates	Botany	Invasive / problem species
Nightingale	Slow Worm	Wall Butterfly	Hawthorn	Turkey Oak
Corn Bunting	Common Lizard	Anomoia purmunda (a rare fly)	Blackthorn	Goat's Rue
Whitethroat	Grass Snake	Brown Hairstreak	Dog Rose	Giant Hogweed
Turtle Dove	Adder	Purple Emperor	Crab Apple	Himalayan Balsam
Linnet	Common Shrew	Glow Worm	Sallow	Buddleia
Yellowhammer	Harvest Mouse	Sloe Carpet moth	Dyer's Greenweed	Sycamore
Cuckoo	Hazel Dormouse	Rufous-shouldered Longhorn Beetle	Bramble	Cherry Laurel
House Sparrow	Grey Long-eared Bat	Blackthorn Mining Bee	Golden-eye Lichen	Garden Yellow Archangel
Fieldfare	Roe Deer	Stag Beetle	Juniper	Japanese Knotweed

Sussex Biodiversity Record Centre

iRecord

Scrubland Flagship Species - Birds


Nightingale
Luscinia megarhynchos


Linnet
Linaria cannabina


Corn Bunting
Emberiza calandra


Yellowhammer
Emberiza citrinella


House Sparrow
Passer domesticus


Whitethroat
Curruca communis


Turtle Dove
Streptopelia turtur

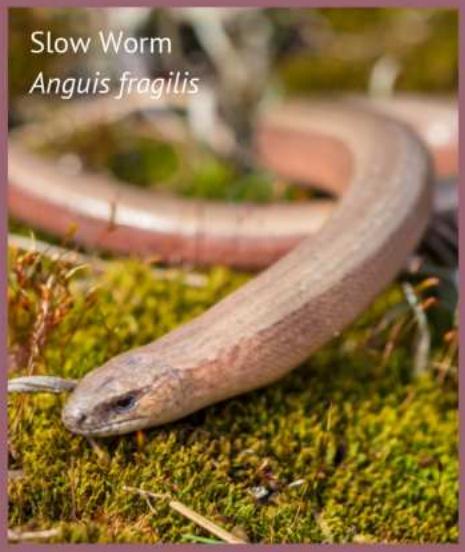

Cuckoo
Cuculus canorus


Fieldfare
Turdus pilaris

Scrubland Flagship Species - Reptiles and Mammals


Grey Long-eared Bat
Plecotus austriacus


Roe Deer
Capreolus capreolus


Slow Worm
Anguis fragilis


Grass Snake
Natrix natrix


Common Lizard
Zootoca vivipara


Adder
Vipera berus


Hazel Dormouse
Muscardinus avellanarius


Harvest Mouse
Micromys minutus


Common Shrew
Sorex araneus

Scrubland Flagship Species - Botany


Hawthorn
Crataegus monogyna


Dyer's Greenweed
Genista tinctoria


Crab Apple
Malus sylvestris


Dog Rose
Rosa canina


Juniper
Juniperus communis


Bramble
Rubus fruticosus


Sallow
Salix sp.


Golden-eye Lichen
Teloschistes chrysophthalmus


Blackthorn
Prunus spinosa

Scrubland Flagship Species - Invertebrates


Purple Emperor
Apatura iris


Glow Worm
Lampyris noctiluca


Rufous-shouldered Longhorn Beetle
Anaglyptus mysticus


Brown Hairstreak
Thecla betulae


Blackthorn
Mining Bee
Andrena varians


Stag Beetle
Lucanus cervus


Wall
Lasiommata megera


Sloe Carpet
Aleucis distinctata


Anomoia purmunda

Scrubland Flagship Species - Invasive/ Problem Species


Turkey Oak
Quercus cerris


Goat's Rue
Galega officinalis


Cherry Laurel
Prunus laurocerasus


Garden Yellow Archangel
Lamium galeobdolon


Japanese Knotweed
Reynoutria japonica


Giant Hogweed
Heracleum mantegazzianum


Himalayan Balsam
Impatiens glandulifera


Buddleia


Sycamore
Acer pseudoplatanus

Breeding Bird Surveys Summary

Birds require a variety of conditions and habitat elements to meet their needs, including reliable food sources (largely insects, seeds and berries), suitable nesting sites, minimal disturbance and shelter from predators and adverse weather. Specialist species can be effective as indicators of habitat condition, such as those adapted to scrubland habitat. Successful breeding in relatively high numbers acts as a positive indicator for the habitat, particularly with species which have been declining more widely. Being highly mobile, birds are also indicative of the wider environmental conditions.

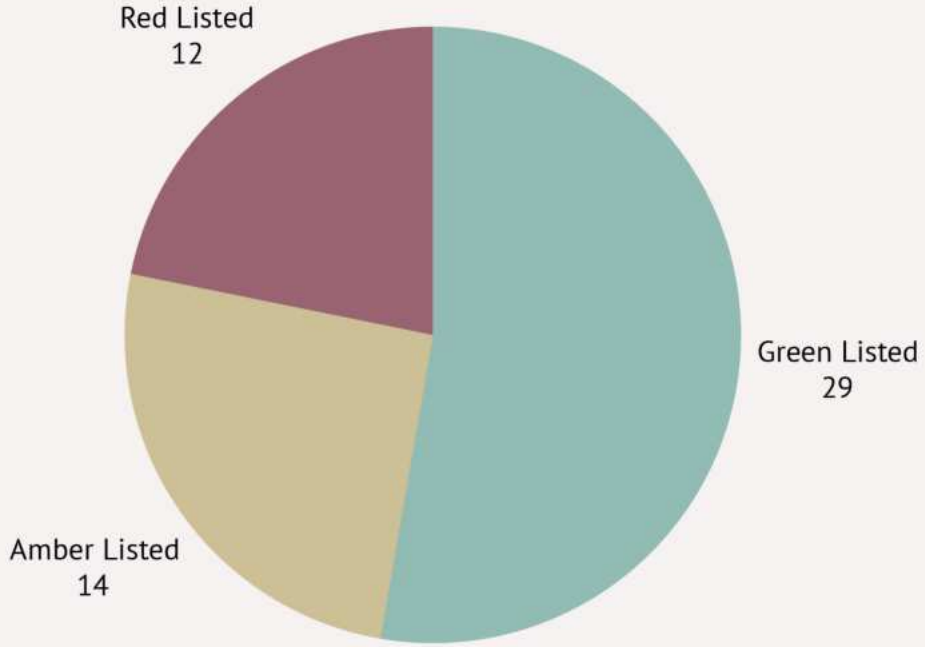


Figure 1. Numbers of breeding bird species with a conservation status during 2024 surveys for all surveyed sites combined

Commonly referred to as the UK Red List for birds, the Birds of Conservation Concern (BoCC) is designed to help identify and prioritize conservation actions for UK bird populations. The latest review was published in December 2021, as Birds of Conservation Concern 5 (BOCC5).

Species are assessed against a set of objective criteria and then assigned to one of the following categories:.
Green: Species of least concern, with populations not experiencing significant declines.
Amber: Species with less severe declines or those that may face increased threats in the future.
Red: Species of high conservation concern, facing severe declines, or at risk of extinction.

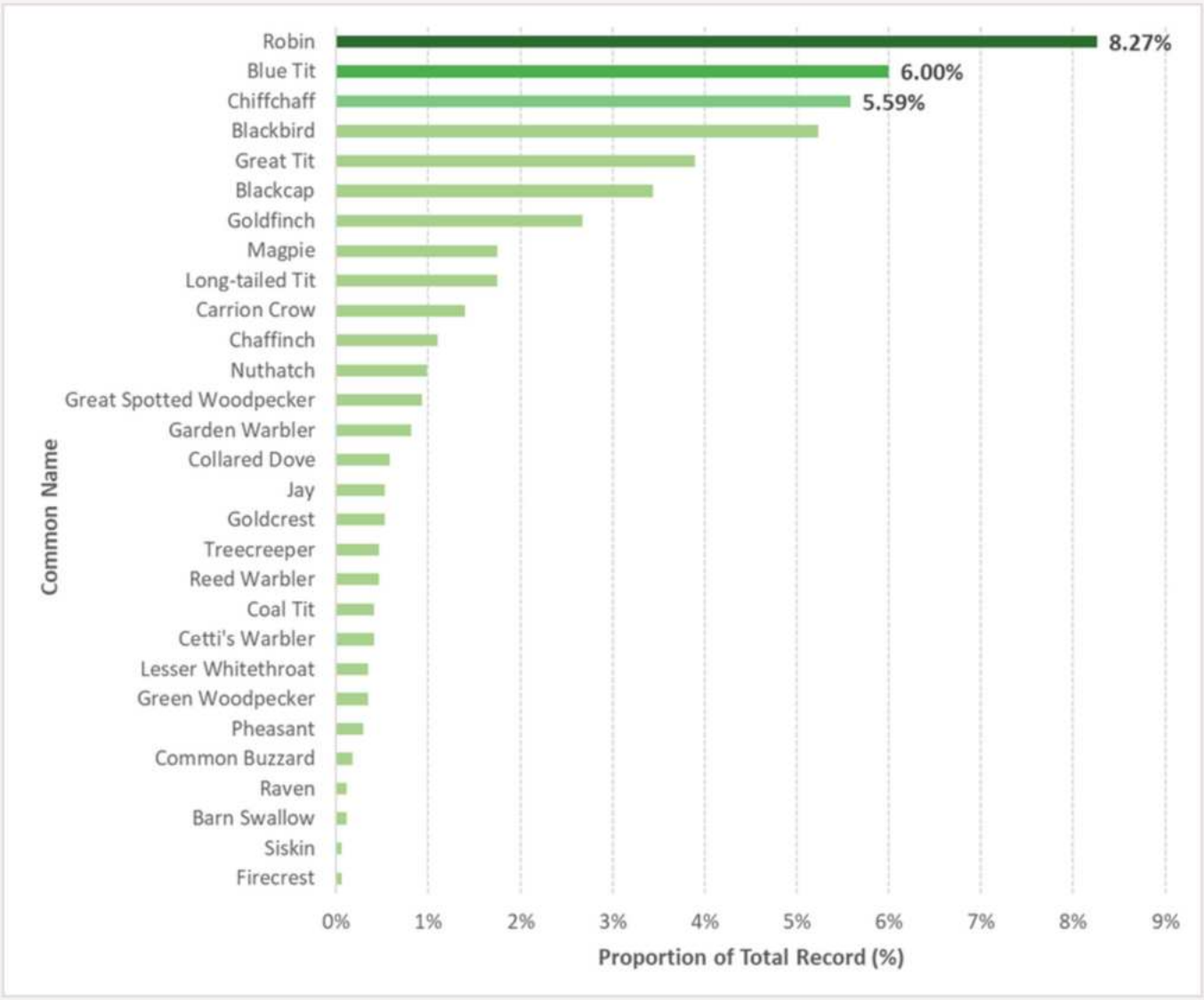


Figure 2. Proportion of breeding bird records by species (Green Listed)

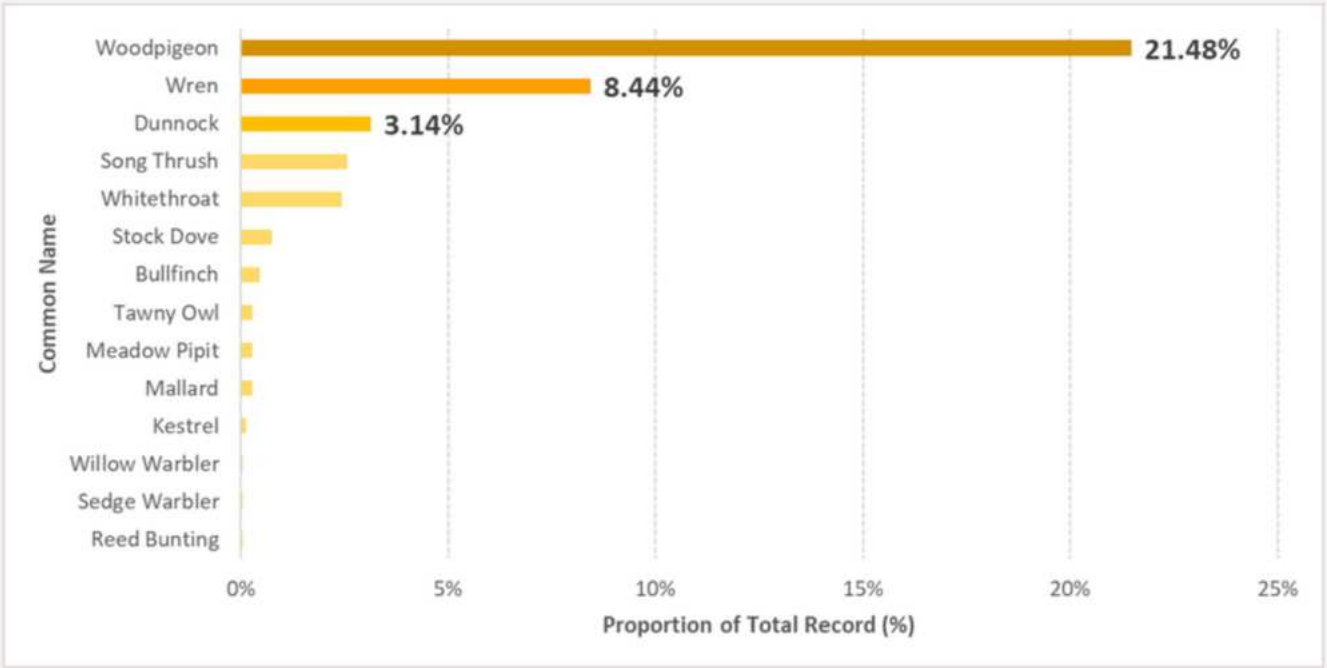


Figure 3. Proportion of breeding bird records by species (Amber Listed)

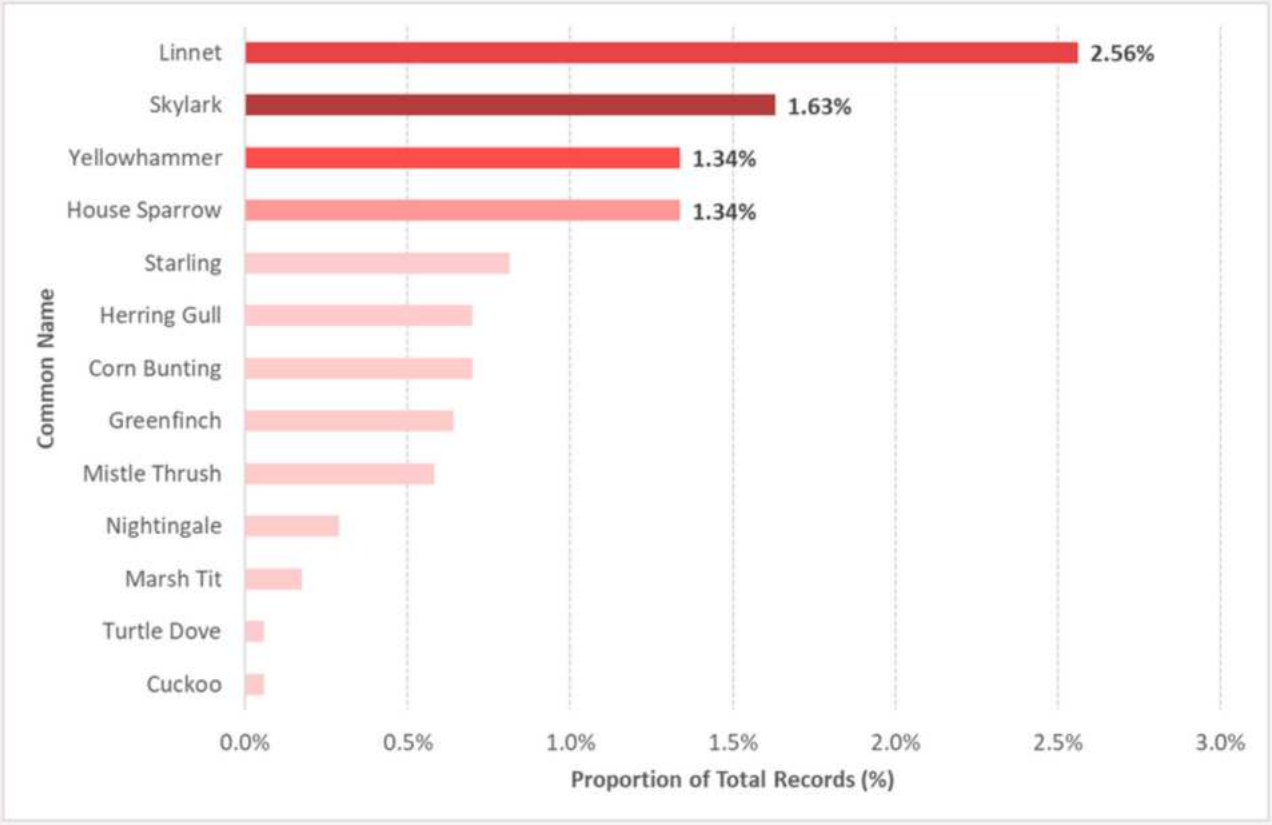


Figure 4. Proportion of breeding bird records by species (Red Listed)

Bird survey transects (fixed mapped routes) of 1.2km in length were set up on six project sites, with the larger sites having two transects. These were walked by the project officer from late March until mid-July on average every three weeks. Most of the sites received six survey visits except for Wowo Campsite which only received five due to time constraints. The results for each site were collated with notable species territory maps drawn up and shared with the site owners.

The recorded species are fairly typical of woodland, scrubland and grassland assemblages in lowland Sussex. Combining records across all transects, the most abundant breeding bird species was **Wood Pigeon** (amber listed) at **21.5%** of the total records, however this large number was skewed by the large flocks during early spring passage migration being accidentally included within survey counts. By way of comparison, **Wren** (amber listed), a largely non-migratory bird and the next most abundant species made **8.4%** of the records. The third most abundant species was **Robin** (green listed) at **8.3%**.

The red listed species are typically found at lower abundance levels, and the majority of these species are dependent on a form of scrub as breeding habitat (the main exceptions being Herring Gull and Skylark). The highest proportion of red-listed species records was **Linnet**, which are not very territorial as a species and may be found in good numbers where habitats are suitable. **Skylark** was the next most common red listed species, generally within the open arable or pasture areas on farms. **Yellowhammer** and **House Sparrow** were the joint third most recorded red-listed species. Additional targeted surveys were conducted for **Nightingale** and **Turtle Dove,** following the British Trust for Ornithology (BTO) methodologies. Nightingale territories confirmed through surveys were two at Houndean Farm, two at Peacocks Farm and one at Fair Oak Farm North. The only site with Turtle Doves confirmed was Peacocks Farm, where a single male was heard singing on two separate visits.

Bird Surveys Summary by transect

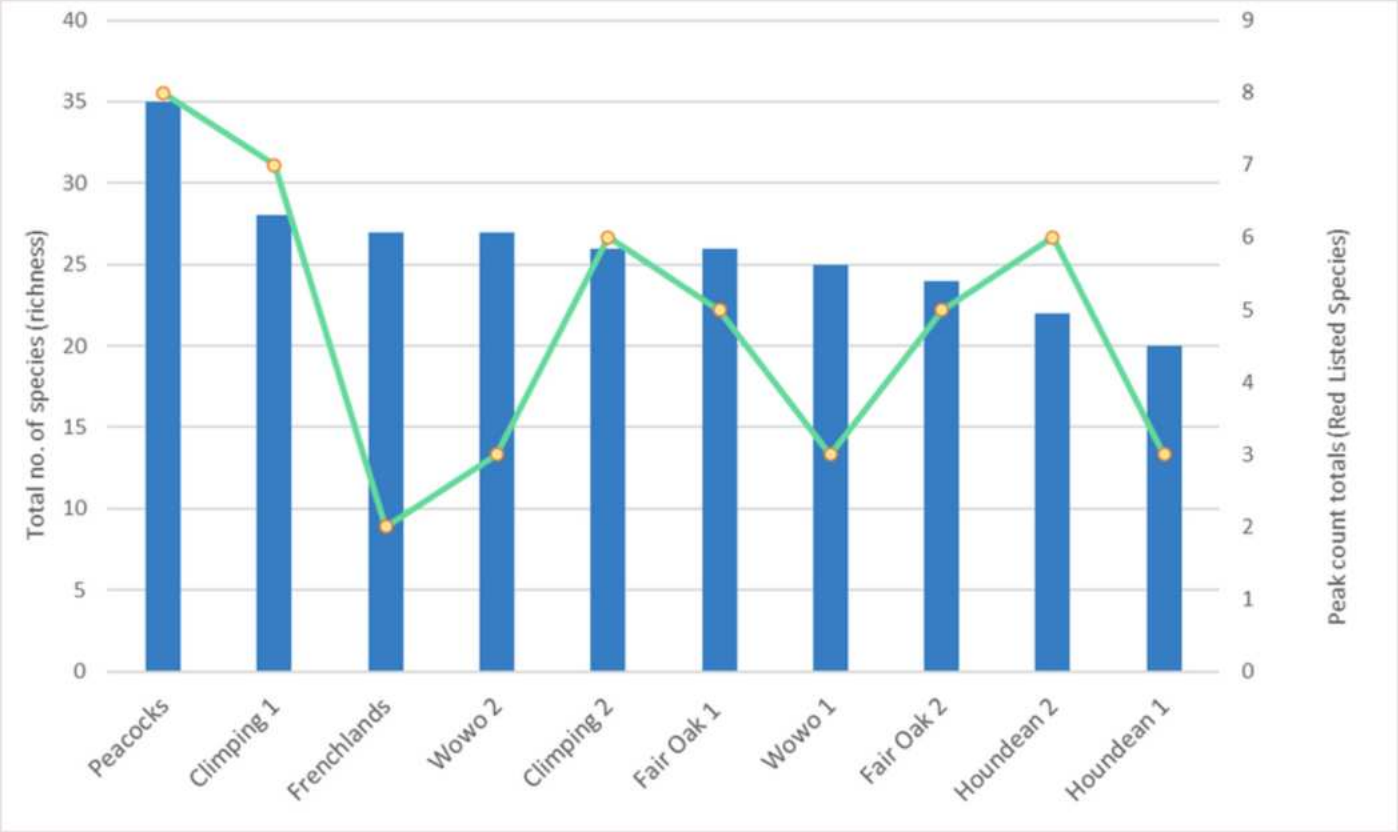


Figure 5. Breeding bird species counts (bars) for each site transect, with totals of peak counts of red listed species (points)

The above graph ranks the different survey transects by their total species counts. Peacocks Farm transect recorded both the highest number of breeding bird species at 35, and the highest number of red listed species at eight. Climping Brooklands Transect 1 was the next best performing, with a total of 28 species recorded, and seven red listed species. Wowo Campsite Transect 2 and Frenchlands Barn came joint third, with 27 breeding bird species recorded at each, and three red listed species at Wowo but only two at Frenchlands. These differing trends are likely indicative of the variety of habitats present on site, as the more variety present then the more diverse the resulting assemblages of species is likely to be. A mixture of mature woodland, grassland, scrubland and nearby adjacent wetland all lends well to breeding bird diversity at Peacocks Farm.

Songmeter Bird Surveys

Song Meter Micro devices were placed out on 6 different sites during spring and summer 2024, with the aim of increasing monitoring effort away from the main project sites, and to test efficacy as a survey tool. This produced a total of 7117 individual sound files of 5 minute recordings (coming to 593 hours), all of which were location, date and time stamped. The files were analysed by Wilder Sensing, providers of a software based bird recording analytic service, which resulted in a species list for each recorder location.

Table 3. Song Meter device recording dates and the total species counts for each site.

Site Name	Date Span	Species Count
Elmer Beach, Climping	28/04/24 - 17/06/24	52
Ravenswyld, Sharpthorne	01/05/24 - 21/07/24	46
Wild Futures, Knepp Estate	16/05/24 - 30/07/24	46
Lodge Hill, Ditchling	23/04/24 - 17/05/24	37
Ryebank, Climping	23/04/25 - 10/06/24	33
Tegleaze, Graffham	17/06/24 - 04/07/24	29

The species lists can be assessed and grouped by species assemblages, providing an insight into the current usage of habitats and their functionality as breeding areas. This method of monitoring is particularly useful where surveyor time is limited, where sites are relatively remote or access is restricted. Another advantage is the ability to operate recorders 24 hours a day, giving a better chance of picking up nocturnally active species such as owls. It may also increase likelihood of detection species which only vocalise infrequently, or may otherwise be missed by a surveyor.

The main limitations of this method is it does not provide information on absolute abundances of species, or confirm breeding success (apart from certain vocal signals which otherwise might). The small size of the recorders and their fixed position means there will be a limited coverage of recording area, whereas conventional bird surveyors typically cover more ground. Machine learning models have limitations in their ability to separate certain species, and at times false positive records are generated. An example here is the European Starling which generates a large variety of calls and incorporates mimicry of other bird species sounds, which the software analysis cannot distinguish. The individual species lists were verified by the Project Officer who manually checked recordings of any unusual or rare species detections, which could then be confirmed or discounted.

Songmeter Bird Surveys

Table 4. Overall species list produced by analysis of Song Meter recordings across the six connector sites by Wilder Sensing, then verified by the Project Officer

Common name	Taxon name	Status
Blackbird	Turdus merula	Green listed
Blackcap	Sylvia atricapilla	Green listed
Blue Tit	Cyanistes caeruleus	Green listed
Bullfinch	Pyrrhula pyrrhula	Amber Listed
Buzzard	Buteo buteo	Green listed
Canada Goose	Branta canadensis	Green listed
Carrion Crow	Corvus corone	Green listed
Cetti's Warbler	Cettia cetti	Green listed
Chaffinch	Fringilla coelebs	Green listed
Chiffchaff	Phylloscopus collybita	Green listed
Coal Tit	Periparus ater	Green listed
Collared-Dove	Streptopelia decaocto	Green listed
Common Sandpiper	Actitis hypoleucos	Green listed
Coot	Fulica atra	Green listed
Cuckoo	Cuculus canorus	Red Listed
Dunnock	Prunella modularis	Amber Listed
Firecrest	Regulus ignicapilla	Green listed
Garden Warbler	Sylvia borin	Green listed
Goldcrest	Regulus regulus	Green listed
Goldfinch	Carduelis carduelis	Green listed
Graylag Goose	Anser anser	Green listed
Great Spotted Woodpecker	Dendrocopos major	Green listed
Great Tit	Parus major	Green listed
Green Woodpecker	Picus viridis	Green listed
Greenfinch	Chloris chloris	Red Listed
Grey Heron	Ardea cinerea	Green listed
Grey Wagtail	Motacilla cinerea	Green listed
Herring Gull	Larus argentatus	Red Listed
House Martin	Delichon urbicum	Red Listed
House Sparrow	Passer domesticus	Red Listed
Jackdaw	Corvus monedula	Green listed
Jay	Garrulus glandarius	Green listed
Kestrel	Falco tinnunculus	Amber Listed
Kingfisher	Alcedo atthis	Green listed
Lapwing	Vanellus vanellus	Green listed
Lesser Whitethroat	Curruca curruca	Green listed

Songmeter Bird Surveys

Common name	Taxon name	Status
Linnet	Linaria cannabina	Red Listed
Little Grebe	Tachybaptus ruficollis	Green listed
Long-tailed Tit	Aegithalos caudatus	Green listed
Magpie	Pica pica	Green listed
Mallard	Anas platyrhynchos	Amber Listed
Marsh Tit	Poecile palustris	Red Listed
Mediterranean Gull	Ichthyaetus melanocephalus	Green listed
Mistle Thrush	Turdus viscivorus	Red Listed
Moorhen	Gallinula chloropus	Green listed
Nightingale	Luscinia megarhynchos	Red Listed
Nuthatch	Sitta europaea	Green listed
Oystercatcher	Haematopus ostralegus	Green listed
Pheasant	Phasianus colchicus	Green listed
Pied Wagtail	Motacilla alba	Green listed
Raven	Corvus corax	Green listed
Redstart	Phoenicurus phoenicurus	Amber Listed
Robin	Erithacus rubecula	Green listed
Rook	Corvus frugilegus	Amber Listed
Siskin	Spinus spinus	Green listed
Skylark	Alauda arvensis	Red Listed
Song Thrush	Turdus philomelos	Amber Listed
Starling	Sturnus vulgaris	Red Listed
Stock Dove	Columba oenas	Amber Listed
Swallow	Hirundo rustica	Green listed
Swift	Apus apus	Red Listed
Tawny Owl	Strix aluco	Amber Listed
Teal	Anas crecca	Green listed
Tree Pipit	Anthus trivialis	Red Listed
Treecreeper	Certhia familiaris	Green listed
Turtle-Dove	Streptopelia turtur	Red Listed
Water Rail	Rallus aquaticus	Green listed
Whitethroat	Curruca communis	Amber Listed
Woodlark	Lullula arborea	Green listed
Woodpigeon	Columba palumbus	Amber Listed
Wren	Troglodytes troglodytes	Amber Listed
Yellowhammer	Emberiza citrinella	Red Listed

Butterfly Surveys Summary

Butterflies have short life cycles and thus react quickly to environmental changes. Their limited dispersal ability, larval foodplant specialisation (the particular plant species upon which the caterpillars feed) and sensitivity to fine-scale changes within habitats make them useful ecosystem indicators. They are relatively easy to survey and long-term consistent monitoring of butterfly populations can reveal trends in habitat health and the impacts of environmental changes over time.

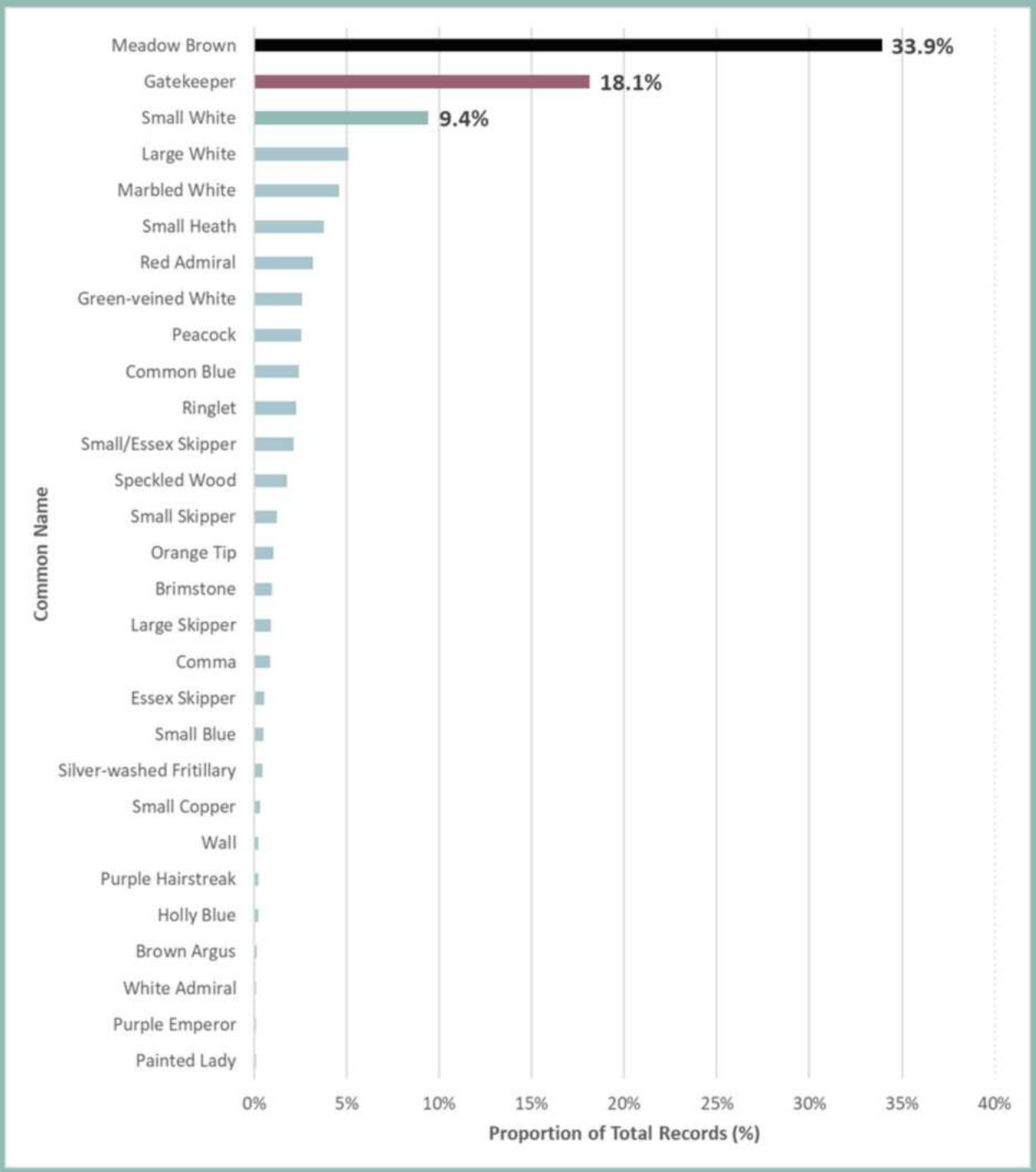


Figure 6. Butterfly species and proportions of records from the six butterfly survey transects combined

Butterfly Surveys Summary

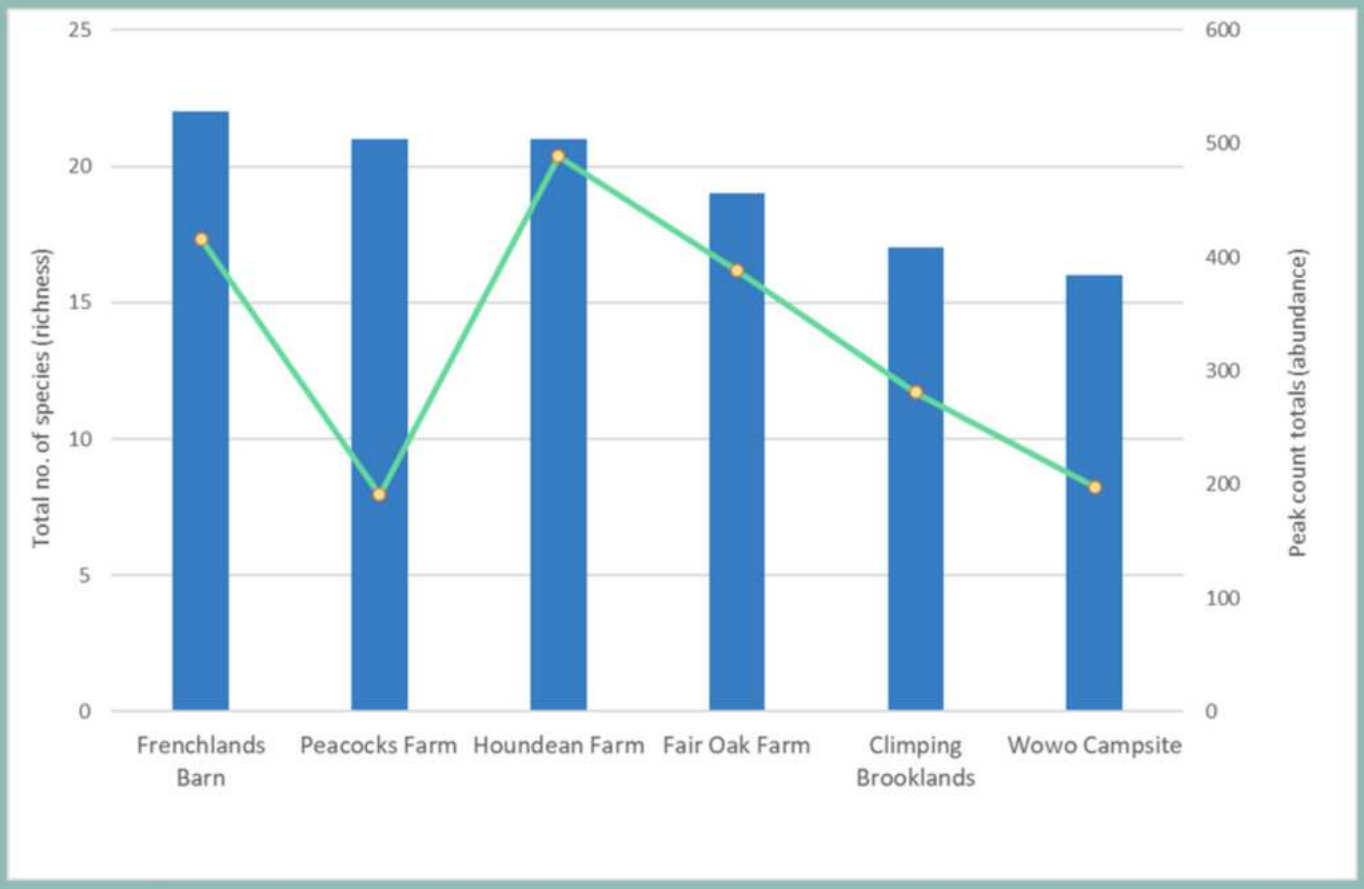


Figure 7. The 2024 transects ranked by cumulative butterfly species richness (bars), with totals of peak counts (points)

Weather conditions during 2024 made surveys challenging, with cool, wet, dull and unsettled conditions being the overall theme, and widespread reports of lower butterfly numbers than average particularly in the first half of the season. The aim was to carry out the fixed walking route (transect) surveys on a monthly basis, however the adverse weather resulted in several visits being missed during key periods in the season. This likely skews the overall picture of species diversity and abundances, which might change year on year. Datasets over several years (ideally a minimum of 5) would provide a clearer picture of butterfly populations for each site.

The Frenchlands Barn transect performed the best in terms of species richness, with a total of 22 recorded. The transect at Houndean Farm produced the overall greatest abundance, with over 500 individual butterflies recorded (this figure is the combined peak counts for all surveys). The most ubiquitous and abundant species was **Meadow Brown** (33.9% of the records), followed by **Gatekeeper** (18.1%) and **Small White** (9.4%). Notable species with a UK conservation status included **White Admiral** (red list Vulnerable, seen on 1 site), **Wall** (Endangered, seen on 2 sites), **Small Heath** (Vulnerable but widespread in Sussex, seen on all 6 sites), and **Small Blue** (Near Threatened, seen on 1 site). All of these species have greatly declined across the nation in recent decades. Missing expected species from the survey but likely to be occurring included Holly Blue, Small Tortoiseshell and Brown Hairstreak, likely due to short survey time windows and the adverse weather.

Reptile Surveys

Reptiles require specific habitat niches, including basking areas, shelters, and access to food sources. Their sensitivity to disturbance, environmental change and their limited dispersal ability make them good indicators of habitat quality. They are also relatively easy to survey for.

Autumn reptile surveys were conducted by placing twelve roofing felt (onduline) mats on each project site targeting areas within suitable habitat of high potential, namely south-east facing grassy areas against scrub edges. The aim was to conduct a minimum of two checks for each site in suitable weather conditions during September and October.

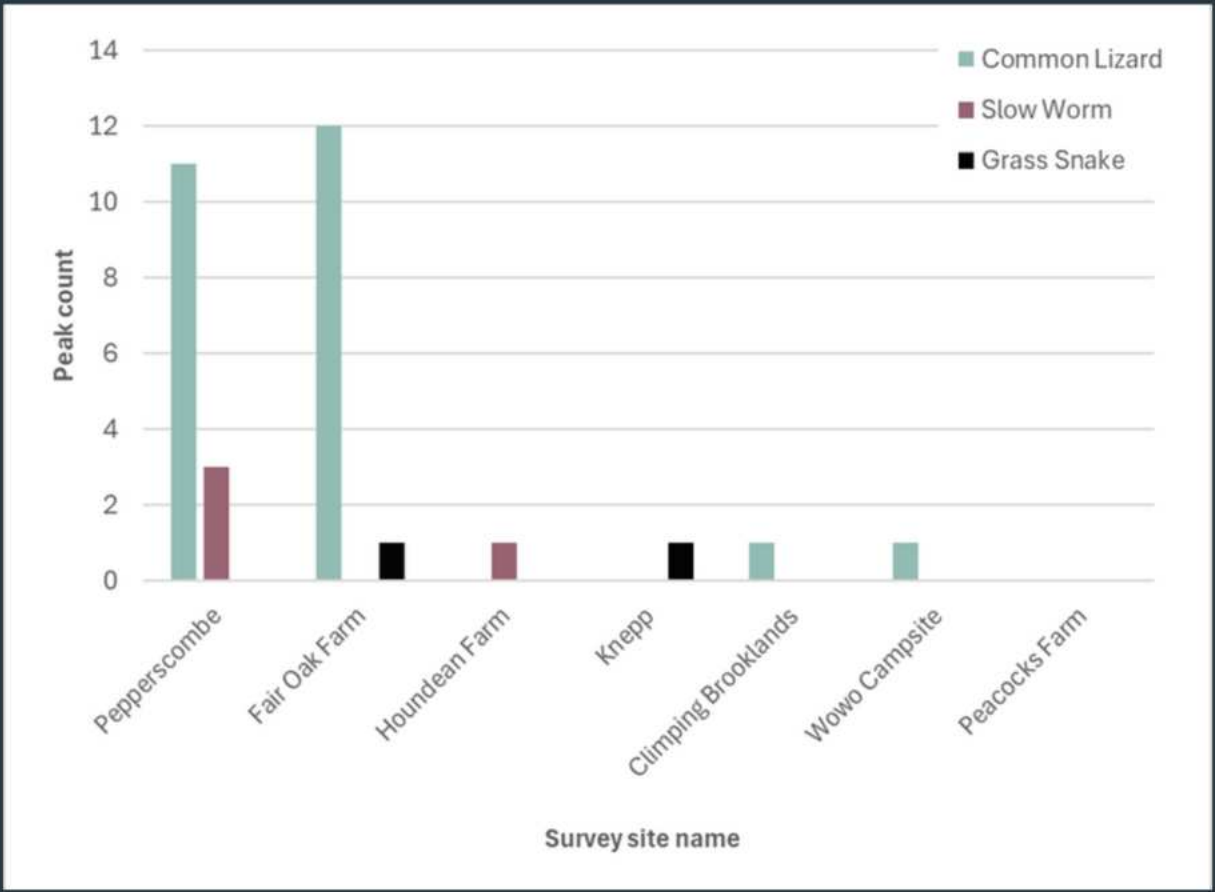


Figure 8. Peak count of reptile species across main project sites during 2024

Due to adverse weather conditions for surveys and limited volunteer availability, some sites only received one check. Peacocks Farm was surveyed during rainy conditions, and an absence of reptiles is not likely to be the case here as the habitat is highly suitable. For a better success rate, a higher survey effort inclusive of the spring season is recommended.

Pepperscombe recorded the highest combined total number of reptiles present (14), with both **Common Lizard** and **Slow Worm** present. Fair Oak Farm had the highest total of any one species, with 12 Common Lizard recorded in a single day from Limekiln Field. Single records of **Grass Snake** were made at both Fair Oak Farm and Knepp Wildlands. No records of **Adder** were made during the surveys, however the site at Pepperscombe had potential suitability.

Project Photo Highlights

Photo 1. Wide shot of herbaceous grassland, outgrown hedgerow and developing scrubland against a backdrop of mature woodlands at Fair Oak Farm. June 2024

Photo 2. Volunteers from Steyning Downland Scheme installing invertebrate traps at Pepperscoombe for the Red-backed Shrike Invertebrate Prey Availability Study

Project Photo Highlights

Photo 3. Pitfall trap targeting ground-dwelling invertebrates. The mesh grid is to reduce bycatch and the roofing felt to deflect rainwater

Photo 4. Song Meter Micro acoustic recording device placed in scrub habitat with microphone facing outward

Project Photo Highlights

Photo 5. Volunteer butterfly transect walker Dave Broxham

Photo 6. University of Sussex students building and installing traps at Houndean Farm for the Prey Availability Study

Project Photo Highlights

Photo 7. Butterfly survey training workshop at Woods Mill Nature Reserve, with Sussex Butterfly Conservation and Wilder Horsham District

Photo 8. Volunteer reptile survey training session at Pepperscoombe, Steyning with reptile surveyors Tim and Reuben Martin

Project Photo Highlights

Photo 9. Volunteer Turtle Dove survey training day with Operation Turtle Dove at Knepp Wildlands

Photo 10. Reptile survey refugia on scrubland edge

Project Photo Highlights

Photo 11. University of Sussex Lecturer Dr Deborah Glass with third-year project students

Photo 12. Zwartble sheep grazing at Peacocks Farm

Project Photo Highlights

Photo 13. Tractor with rear-mounted mulcher, resetting a small portion of scrubland back to the bare ground stage at Fair Oak Farm

Photo 14. Tracked excavator machine with tree shear attachment, creating glades through coppicing patches of mature dense scrub to the ground. Materials stacked for habitat piles. Houndean Farm, Iford Estate

Project Photo Highlights

Photo 15. Ground preperation for wildflower plug planting at Fair Oak Farm

Photo 16. Native wildflower plant plugs, selected for their nectar-richness and preference by adult Black-veined White butterflies

Project Photo Highlights

Photo 17. Installing wire mesh around newly planted wild flower plugs as a rabbit-proof enclosure with Wilder Horsham District Project staff and volunteers

Photo 18. Deer and livestock-proof fencing around new scrubland compartment at Wowo Campsite

Project Photo Highlights

Photo 19. Drone aerial shot of fencing installation for an irregularly-shaped tree and scrub enclosure at Ravenswyld Campsite

Photo 20. Installation of stock proof fencing at Ravenswyld Campsite with the Wilder Ouse Project staff and volunteers

Project Photo Highlights

Photo 21. Tractor with front-mounted mower as part of hay cut and collect action at Fair Oak Farm scrubland mosaic

Photo 22. Drone aerial shot of The Pools lower meadow scrubland mosaic after hay cut and collect

Project Photo Highlights

Photo 23. Volunteers preparing to plant shrub and tree species from the iDig Trees pack at Climping Brooklands

Photo 24. Final project task day planting 1,500 native shrub whips at Wowo Campsite with Wilder Ouse Project volunteers and landscape contractor Roots Upwards Ltd

Shrike Shrubland

1. Widely spaced thickets of native thorny shrubs: Dog Rose, Bramble, Hawthorn, Blackthorn, Crab Apple, Gorse

2. A wide and tall thicket with margin of bramble and wildflowers - ideal nesting island for Nightingale

3. Tall flower rich vegetation and tussock grassland

4. Large standing deadwood

5. Dense bramble hummock with emerging oak sapling

6. Log piles or fallen deadwood

7. Fresh large herbivore dung

8. Recently coppiced shrub

9. Short herb-rich grassland with patches of bare ground

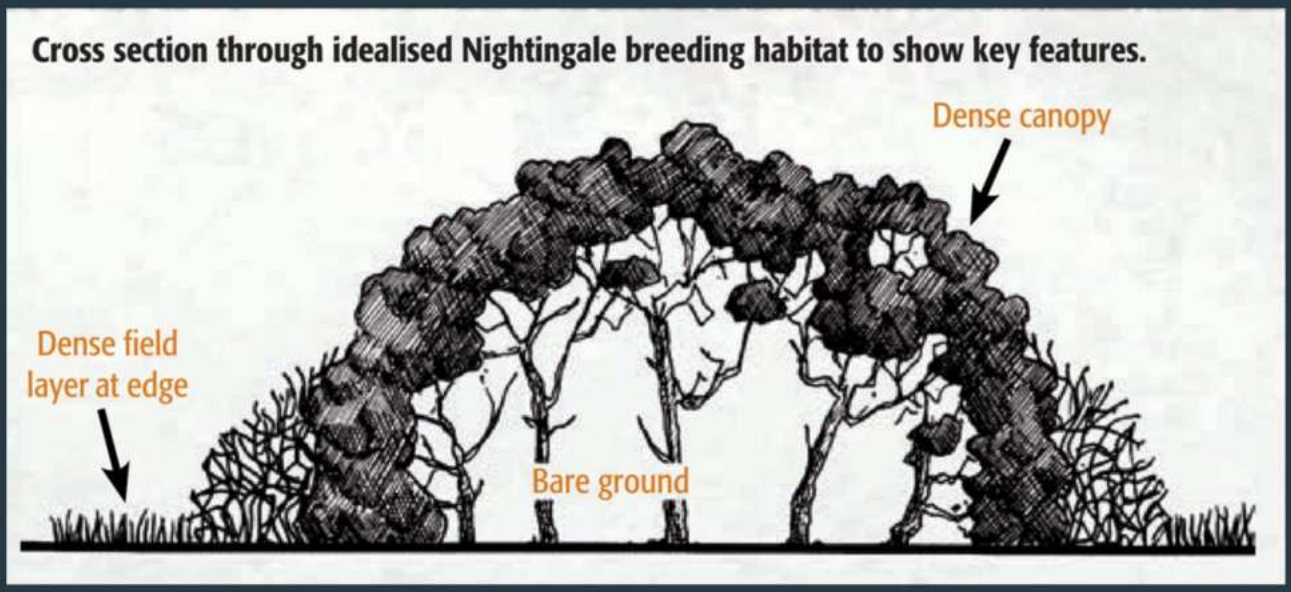
10. Freshwater pond or scrape with shallow draw down zone

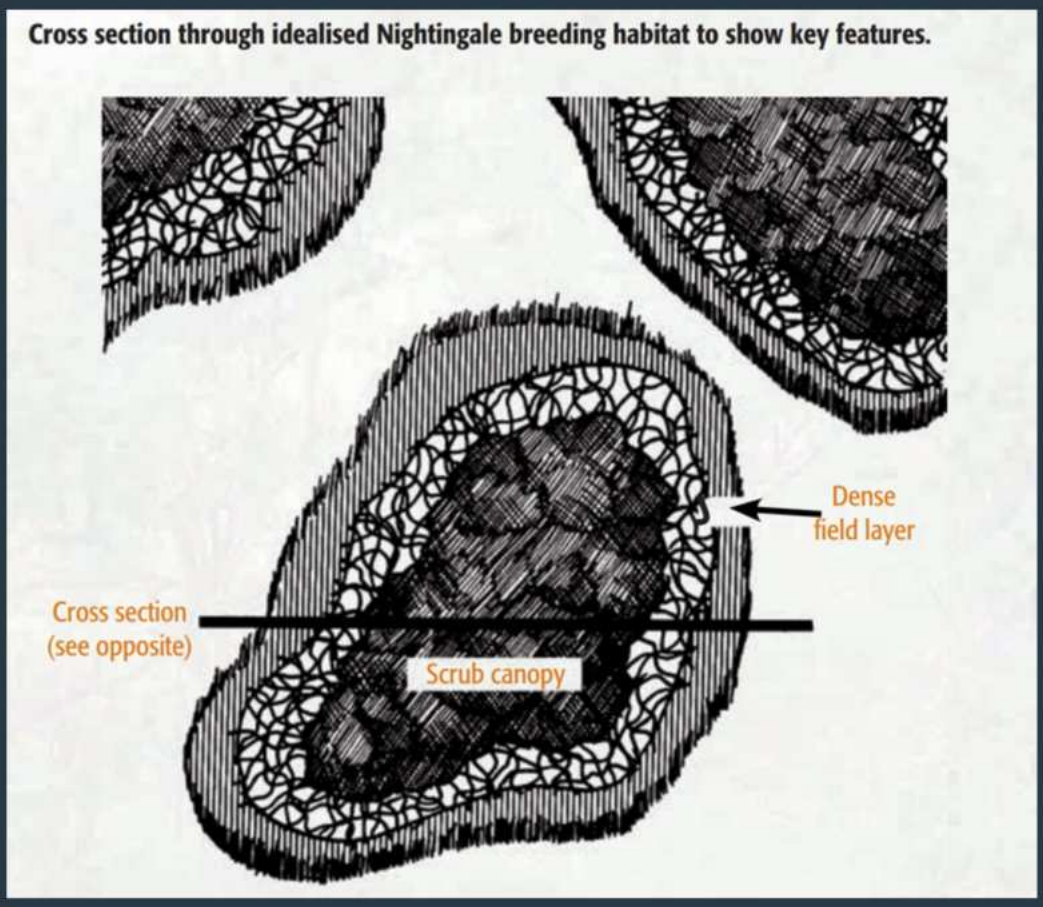
11. Spoil pile from the newly excavated pond

Figure 9. A conceptual image of an ideal 'Shrike Shrubland', based on the book of the same name authored by Steve Jones, 2023.

Suggested Habitat Features

The images below are taken from the BTO Guide - Managing Scrub For Nightingales. The aim is to create a scrubland containing a variety of stages of successional growth, then re-setting by flailing once the integrity has passed beyond the denser 'Nightingale stage'. Occasional trimming or browsing by herbivores will help to prolong this denser stage.

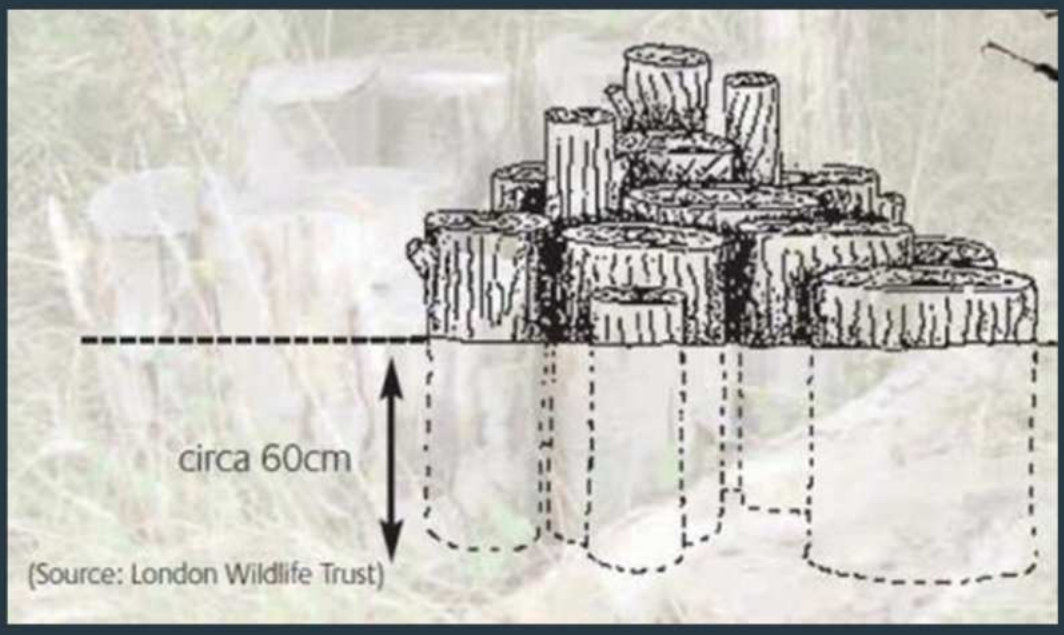




Suggested Habitat Features

The designs below aim to maximise available habitat niches and microclimates for amphibians, reptiles, invertebrates and cover for small mammals.

A reptile hibernaculum provides a hibernation space for a variety of small animals. By mounding inert materials and capping off with topsoil and short turf, this creates early spring basking opportunities for newly emerging reptiles. Aim for minimum dimensions of 2m x 1m x 1m, situate well out of flood zones, ideally on free draining substrate, or mounding up on poorly-draining soils.



A beetle loggery of partially buries stands of logs of varying thickness helps to create microhabitats as the wood decays over time at varying rates. It also provides a hunting perch for predatory birds. Best situated in an area of partial or dappled shade, avoiding full sun or deep shade.

Suggested Habitat Features

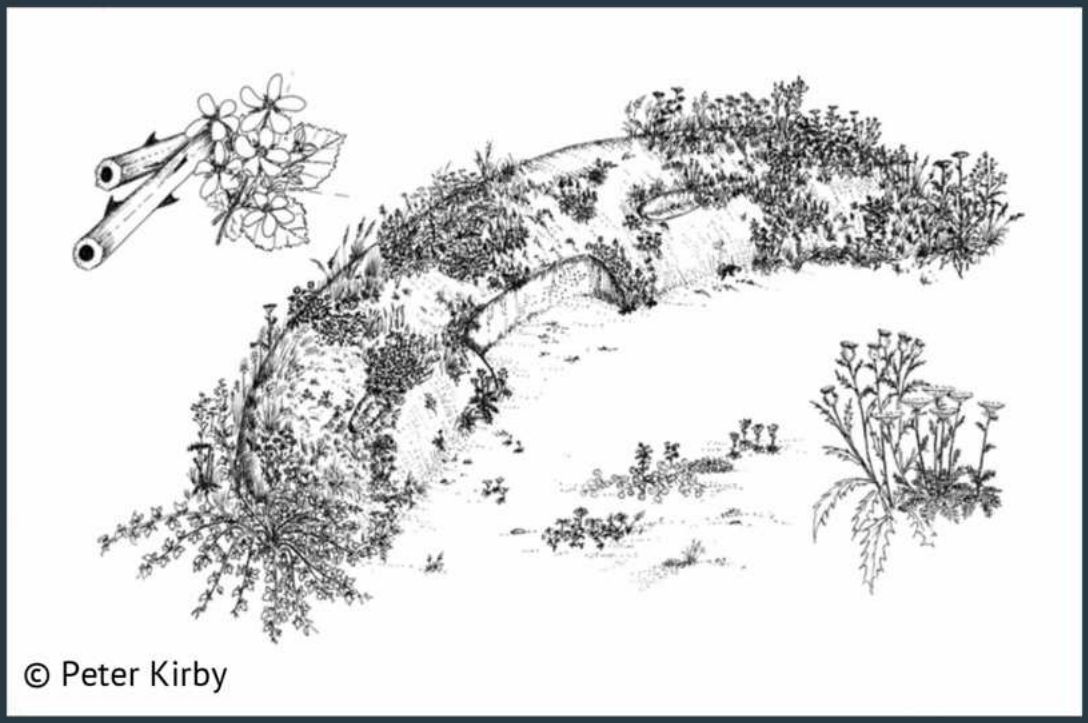
Open areas of fresh water act as wildlife attractants within the landscape, and a newly created body of water will be rapidly colonised and utilised by a wide variety of species. They can be any shape or size, and a variety within one site is the best.

Shallow wetland scrapes (with irregular edges to maximise microhabitats) are water bodies which dry out seasonally, largely benefitting bird, amphibian and invertebrate species during the spring. Very shallow gradients are important for ease of access and reducing dominant vegetation growth. On average a scrape should be only a few centimetres in depth to a maximum of around 50cm.

This newly dug wildlife pond contains zones of deeper, permanently wet areas, providing an important water source through summer months. Note there are still extensive 'drawdown' zones of damp muddy shoreline, which will slowly colonise with marginal plant species. Aim for minimum dimensions of 4m x 4m in size.

Suggested Habitat Features

Butterfly or bee banks are open sunny areas of sloping bare ground, which tend to be well draining and encourage growth of the early successional wild flowers. Creating south-facing mounds ideally a minimum of 2 meters wide by 1 meter high, of soil through scraping back of sloping ground, or piling spoil from digging out wetland scrapes. This will provide important bare ground habitats for invertebrates, which can last several years before closing over with vegetation.



A bee bank with purposely cut small steep vertical faces to benefit a variety of mining bees, solitary wasps and cuckoo bees.

Suggested Planting Lists

A list of recommended species was drawn up by surveyors Laurie Jackson and Neil Hulme, targeting the nectar and larval foodplant preferences by Black-veined White butterfly.

Wildflowers:

Betony - *Stachys officinalis*
Bugle - *Ajuga reptans*
Common Centaury - *Centaurium erythraea*
Common Knapweed - *Centaurea nigra*
Common Restharrow - *Ononis repens*
Common Vetch - *Vicia sativa*
Ground Ivy - *Glechoma hederacea*
Hedge Woundwort - *Stachys sylvatica*
Musk Mallow - *Malva moschata*
Marsh Woundwort - *Stachys palustris*
Purple Loosestrife - *Lythrum salicaria*
Red Bartsia - *Odontites vernus*
Red Campion - *Silene dioica*
Red Clover - *Trifolium pratense*
Red Dead-nettle - *Lamium purpureum*
Saw-wort - *Serratula tinctoria*
Thistles - *Cirsium* sp.
Tufted Vetch - *Vicia cracca*
Wild Marjoram - *Origanum vulgare*

Shrubs:

Bird Cherry - *Prunus padus*
Blackthorn - *Prunus spinosa*
Bramble - *Rubus fruticosus agg.*
Crab Apple - *Malus sylvestris*
Dog Rose - *Rosa canina*
Hawthorn - *Crataegus monogyna*
Wild Cherry - *Prunus avium*
Wild Plum - *Prunus domestica*