



T25

HABITATS

AN AROCHA UK PROJECT
PARTNERS  **IN ACTION**

Habitats from left to right: T1 Grassland (Hay meadows) David Chandler, T2 Hedgerows – Annie Spratt, T3 Freshwater (Lakes) Ben Clayton, T4 Woodland (Deciduous woodland) David Chandler, T5 Coastal (Hard cliffs) Dimitry Anikin

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HABITATS

Photos: Lowland grassland – David Chandler, Verges – Regina Ebner

Grassland

Information: Hilary Bond, David Curry

All about grassland

- Grassland makes up almost 40% of land in the UK – the single biggest type of land cover.
- “Improved” grassland is that which is managed for specific uses, including agriculture and has had fertiliser and herbicides added.
- “Unimproved” grassland will also have been managed but without the use of artificial additives.
- Grassland includes amongst others, parks, school playing fields, roadside verges and lawns.
- Grassland is not only populated by grass, but includes many other native species.

Upland grassland



Upland grassland is found at higher altitudes in the UK such as the Yorkshire Dales. It is typically unimproved or semi-improved. The land is often grazed and is more suitable for cutting for hay than moorland and mountain.

Flora includes blue moor-grass, common rock rose, purple moor-grass, quaking grass, marsh bedstraw, Yorkshire fog, self-heal, creeping bent and creeping buttercup.

Fauna includes skylark, curlew, lapwing, redshank, buzzard, black grouse, snipe, mountain ringlet, northern brown argus.

Management Key principles involve the balance of grazing and allowing for heathland/ woodland regeneration where appropriate. The richest upland grasslands for plants, insects and mammals are best maintained by low density cattle grazing and through the reduction in the numbers of sheep grazing on upland pasture. This will help to create a diverse sward (different layers). Burning of grassland upland areas is very rarely beneficial.

However the restoration of some grasslands into scrubby heathland or woodland can also help to create a richer mosaic of upland habitats.

Learn more wildlifetrusts.org/habitats/grassland/upland-calcareous-grassland/
wildlifetrusts.org/habitats/grassland/upland-acid-grassland-and-rush-pasture/

Lowland grassland



Lowland grassland covers a large area of the UK and ranges from intensively managed dairy farms in Cheshire to the largest area of chalk grassland in Europe on Salisbury Plain. The ways in which these two extremes could be managed for conservation will look very different but the principals remain the same; minimising artificial inputs and encouraging biodiversity.

Flora may include wild thyme, small scabious, common bird's-foot-trefoil, orchids, knapweeds, juniper, yellow rattle, cowslip, fritillary.

Fauna may include stone curlew, woodlark, small copper, green hairstreak, wagtail, common frog, grass snake.

Management Even in the smallest grassland areas mowing less often will allow the grasses and other plants to produce flowers and seeds. This will encourage pollinators and other insects as well as providing habitat and food sources for birds and small animals.

Learn more wildlifetrusts.org/habitats/grassland/lowland-meadow-and-pasture
wildlifetrusts.org/habitats/grassland/lowland-calcareous-grassland
wildlifetrusts.org/habitats/grassland/lowland-dry-acid-grassland

Hay meadows



Hay meadows can be either upland or lowland grassland and have a management style based around taking a cut of hay in the summer. This allows time for the grasses and other plants to flower and set seed, while providing opportunities for insects and other animals to breed without disturbance. Traditional hay meadows have declined steeply in recent decades due to moves toward silage.

Flora may include sweet vernal grass, lady's mantle, melancholy thistle, globeflower, common sorrel, pignut, wood cranesbill, early purple orchid, common twayblade.

Fauna may include yellow wagtail, lapwing, redshank, snipe, and a wide variety of nectar-loving invertebrates.

Management One of the biggest threats to unimproved grassland is allowing the fertility to increase so that the more competitive plants take over. Removing mown grass will help to avoid this issue.

Learn more wildlifetrusts.org/habitats/grassland/northern-hay-meadow

Verges



The most important characteristic of verges is that they provide long and often continuous corridors between other habitats. There is significant habitat potential, even in short verges, because they are unimproved. Verges tend to reflect the underlying soils and so can support almost every habitat type. In the UK there are 238,000 ha of road verges, covering a network of over 4,800 km.

Flora Verges are home to 720 species of flowering plants in the UK (that's half of the UK species). Many verges include species like oxeye daisies, red campion, English bluebell, lesser celandine and a wide range of orchid species.

Fauna Well managed verges are home to a wide range of insect, mammal and bird species. Important species relying on road verges include European hedgehog, woodmouse, grass snake, European kestrel and many solitary bee and wasp species

Management The Lawton report (link below) notes the importance of connecting patches of habitat that have become islands and the need for our natural areas to be "bigger, better and more joined up." Verges fulfil a critical role in this.

Learn more nhm.ac.uk/discover/why-road-verges-are-important-wildlife-habitats.html | plantlife.org.uk/uk/our-work/publications/road-verge-management-guide | The Lawton report thomsonec.com/teh/chapter-7-others-guidance-and-reports/making-space-for-nature-the-lawton-report-2010-england/

Churchyards



Churchyards and burial grounds are an important habitat in their own right and can provide some of the richest habitat for a range of plant, insect and bird species anywhere in the UK. Churchyards in England alone cover an area of at least 14,000 ha. They are often the only fragment of unimproved, wildlife-rich grassland in a local area and a wildlife haven, in an otherwise very managed landscape.

Flora Churchyards can be incredible spaces for many specialist meadow plants including meadow saxifrage, pignut, bulbous buttercup, cuckoo flower and the majority of Britain's orchid species.

Fauna can include rapidly declining bird species such as spotted flycatcher and are a great location for house martin, swifts, European kestrel, bullfinch and yellow hammer. Mammals: includes common frog, common toad, newt species and all 3 species of UK snake as well as slowworms, European hedgehog, woodmouse, grass snake, European kestrel and many solitary bee and wasp species.

Management The key here is to leave large areas uncut during the spring and summer months to help pollinating insects, small mammals and bird species. To maintain biodiversity, avoid using pesticides, insecticides and fertilisers. It is also important to avoid cleaning gravestones unnecessarily as this will help maintain a wide range of lichen and fungi.

When cutting grass areas, don't forget to remove cuttings to reduce the fertility and encourage wildflowers in the next season.

Learn more ecochurch.arocha.org.uk/resources/land/ | churchofengland.org/resources/churchcare/advice-and-guidance-church-buildings/biodiversity | caringforgodsacre.org.uk/wp-content/uploads/2021/10/FLOWERING-GRASSLAND.pdf

Gardens



Approximately 87% of households in the UK have access to gardens or private green spaces. That means that there are over 20 million gardens in Britain. Surveys suggest the average size of a garden is 190 sq. m but some rural gardens are much bigger. The total area of gardens in Britain is likely to be over 4300 sq. km. which is nearly 4 times the size of greater Manchester.

Gardens are in trouble. Increasingly they are hard surfaced, manicured and tidy spaces that leave little to no space for wildlife. There is a continued decline in mature gardens as well as the number of ponds. However all is not lost and turning around the fortune of gardens is something that most of us can do together.

Flora There are nearly 30 million trees in British gardens. Many of these trees are remnants of former native forests and can be valuable spaces for many woodland plants. Typical wildflowers include betony, bellflower, viper's bugloss, knapweed, primrose, lily of the valley, dog rose and wood anemone. Gardens can also be great spaces for mosses, lichens and fungi, especially waxcaps.

Fauna Gardens are important places for a range of farmland and woodland bird species including coal tit, great spotted woodpecker, bullfinch, green finch and nuthatch. They are also critical for some of our fast declining summer migrants such as spotted flycatchers. Small mammals and reptiles also abound in wilder gardens and these can be excellent spaces for shrews, voles and mice as well as the species that prey on them, such as grass snake. Gardens are probably the best spaces for iconic species like red fox and European hedgehog.

Management The key here to wildlife friendly management is to keep it messy! Gardens which include areas of unmown grass, compost heaps and log piles provide excellent habitat for many species. The addition of native trees and a pond as well as native wildflowers will provide sources of food for insects, birds and mammals. In addition it is important to minimise the use of fertilisers, insecticides and pesticides, as many of these will attack non-target organisms and reduce biodiversity dramatically. Gardens also are an opportunity to grow food sustainably and to use alternatives to peat. Finally it is worth recognising the importance of gardens for reducing the impact of climate change. Wildlife rich gardens are not only good for helping species through the landscape but the additional presence of trees and wildflowers helps to reduce air temperature and bind soil during drought and storm events.

Learn more nationaltrust.org.uk/features/nine-ways-to-build-a-wildlife-friendly-garden
nhm.ac.uk/discover/seven-ways-to-create-a-wildlife-friendly-garden.html
wildlifetrusts.org/gardening
wlgf.org

Grassland management

In managing grassland for conservation there is a lot to be learnt from traditional methods. Not using pesticides and herbicides will encourage biodiversity, and a mowing regime that allows grasses and other plants to set seed before cutting will attract pollinators and other insects as well as providing habitat and food sources for birds and small animals.

DID YOU KNOW? A seeded UK lawn will only have around 5 of the UK grassland species.

A species-rich chalk downland can have more than 50 different plant varieties including harebells, cowslips and orchids.

Undisturbed soils capture and hold carbon very effectively, so conversion of arable fields to permanent grassland is an easy carbon win.

Old tussocky grassland is particularly favoured by owls as it supports large populations of small animals on which they prey.

How can we help?

- Sow a wildflower lawn mix either in a new area or by adding to an established lawn.
- Avoid use artificial fertilisers and herbicides because it will reduce the diversity of flora and fauna.
- Note: in the UK, totally unmanaged grassland is likely to quickly become scrub woodland.
- Find out what is appropriate and likely to work in your area, especially in light of climate change.
- Even in the smallest grassland areas mowing less often will allow the grasses and other plants to produce flowers and seeds. This will encourage pollinators and other insects as well as providing habitat and food sources for birds and small animals.

Learn more

- buglife.org.uk/resources/publications-hub/habitat-management/
- woodlandtrust.org.uk/trees-woods-and-wildlife/habitats/grassland/
- Book: Britain's Habitats, S. Lake, D. Liley, R. Still, A. Swash, Oxford: Princeton University Press, 2015.
[wob.com/en-gb/books/sophie-lake/britain-s-habitats/9780691203591](https://www.amazon.co.uk/wob.com/en-gb/books/sophie-lake/britain-s-habitats/9780691203591)
- Contact an A Rocha UK naturalist at naturalist@arocha.org



HABITATS

Examples from left to right: Annie Spratt, Annie Spratt

Hedgerows

Information: Richard Thornbury

All about hedgerows

- Hedges are one of the most important habitats in the UK. In many landscapes they are the only semi-natural habitat and a refuge for a host of wildlife. A well-managed hedge will provide thick, dense cover for nesting birds, leaves for many species of moth and other insects, flowers full of nectar and a profusion of fruit for all to feast on.
- The rotational nature of good management provides a succession of different habitats and structural diversity, adding to their value. The plants growing around the base represent a good example of this as they develop, from post disturbance pioneers such as primroses, through tall herb communities of foxglove, hedge woundwort etc, to low scrub, each hosting its own suite of species. This kind of dynamic succession is often missing from current management.
- In addition to their value as homes for a wide variety of species, hedgerows are also important corridors of movement, providing essential connectivity between otherwise fragmented and isolated habitats. This is increasingly imperative in the face of the unknown impacts of worsening climate change, as hedgerows can be a way for species to move from no longer favourable areas to more suitable ones.
- Hedges provide a range of further ecosystem services; they are excellent at intercepting surface water from high rainfall events, helping it get into the ground whilst retaining run-off. This will become increasingly frequent as the climate continues to change. In addition hedges act as windbreaks and they are ideal for carbon capture as the young vigorous growth of the trees, absorb a lot of carbon which if laid, is retained in living stems.

Fauna: Mammals: includes hedgehogs, dormice, bats. Birds: about 30 species nest in hedges and 80% of our woodland birds use hedges in some way. Look out for bullfinch, dunnock, whitethroat, yellowhammer. Amphibians and reptiles: including common toad, grass snake, slow worm.

Invertebrates Hedges support a rich invertebrate **fauna** including 20 butterfly species such as both brown and white-letter hairstreak. Many beetle larvae are in decaying coppice stools, hundreds of moth species feed on the leaves and a host of other insects call hedgerows home, too many to list!

Hedgerow management

- The aim of management is to create a thick hedge that is dense at the base with lots of flowers and fruit. These dynamic processes provide a succession of different habitats and structural diversity which is of great value to wildlife. The best way to achieve this is by not over managing!
- Most hedging plants flower and fruit best on growth that is 2–4 years old. If hedges are trimmed every year they never have a chance to provide this banquet. Hedges should be trimmed no more than necessary to maintain their dense growth, for example, at least on a 2 or 3 year rotation. The longer you can leave between trimmings, the better for fruit and flower production.
- Trimming to the same height every cut will cause a hedge to become increasingly leggy and gappy as it loses its lower branches and eventually whole plants, significantly compromising its wildlife value. To avoid this, the point of trimming should be slightly higher and wider at each cut.
- Eventually the whole hedge will begin to become either too big or too sparse. It will need to be reset by laying. This is where the stems of the plants are cut almost all of the way through, leaving only a thin hinge, and then bent over to re-establish dense growth from ground level from the bent stems which continue to live and grow.
- The hedges on a holding should all be managed on a rotational basis so there are always a range of different hedges at different stages in the management cycle, providing different ecological niches. It is very important that not all hedges are cut at the same time. Only a small proportion should be managed in any given year. If possible try to coordinate with neighbouring land managers to develop a landscape scale approach to rotational hedgerow management.
- Allow trees to grow on as standards (fully grown trees) at regular intervals along the hedge. These should be more than 20 m (to allow for good crown development) but less than 100 m (to provide suitable corridors of movement for bats and birds).
- Hedge margins should be wide herb-rich strips with little intervention beyond the disturbance caused by the hedge management cycle. If scrub starts to take over, it can be cut back on a rotational basis along with hedge trimming. Where livestock graze, fences should be set away from the hedge and where crops (arable or forage) are harvested, a good margin of land should be spared from the machines. This will provide excellent corridors of movement for a range of species including toads and hedgehogs, nesting sites for ground nesting birds, and many species of grass-feeding insects.
- Don't be too tidy- retain dead wood around the base of the hedge where possible and don't tidy fallen leaves; both represent important habitat features.

DID YOU KNOW? Hedges have been part of our landscape since at least the Bronze Age!

Our word for hedge comes from the Anglo-Saxon word "haeg" meaning an enclosure!

Between 1950 and 2007 Britain lost over 50% of its hedgerows, about 500,000 km!

Hedgerows support 30% of UK butterfly species and 50% of our mammals!

Funding is available for planting hedges and hedgerow trees, far less frequent cutting and for hedge laying, under the Government's Countryside Stewardship Scheme!

How can we help?

- The two most important things we can do to help hedgerow habitats is to plant more hedges and to manage those we have effectively.
- Planting new hedges– land managers should try to identify isolated habitats that would benefit from increased connectivity. These could be pockets of woodland, ponds or areas of wildflowers which can easily be identified on a map or aerial photograph. Consideration should be given to sites of former hedgerows and the role the hedge could play in intercepting surface water, soil erosion and runoff (planting along a contour, parallel to a water course, around slurry stores or livestock housing, are all good examples of this).
- A mixture of native hardwood trees that can be managed by laying, should be selected. Be guided by what grows well in the locality; good general choices include hazel, blackthorn, hawthorn, gelder rose, spindle, wayfaring tree. If planting around a field used by livestock, take care to avoid poisonous species such as yew. Include trees to be grown on as standards every 20–100 m to maximise the hedge's value as a corridor, particularly for bats and birds, for example marsh tits.
- Control competitive weeds during the first growing season by mulching. The hedge can be trimmed in the first couple of years to encourage bushy growth, allowing the hedge to become taller and wider at each cut before being left to grow on for laying.

Learn more

- hedgeline.org.uk
- ptes.org/hedgerow/
- gov.uk/countryside-stewardship-grants
- Book: A Natural History of the Hedgerow, J. Wright. London: Profile Books, 2016.
- Book: Ancient Trees, Living Landscapes, R. Muir, Stroud: Tempus Publishing Limited. 2005.
- Book: Hedging: A Practical Conservation Handbook, A. Brooks and E. Agate, Wallingford: British Trust for Conservation Volunteers. 1975.
- Contact an A Rocha UK naturalist at naturalist@arocha.org



HABITATS

Examples from left to right: Ponds – Goulet Isabelle, Wetlands – David Chandler

Freshwater

Information: Abigail Marshall

All about freshwater

The UK has a vast array of freshwater habitats split into running waters (i.e. rivers and streams) and standing waters (i.e. ponds and lakes). Freshwater habitats are a priority for nature conservation as they host thousands of species, including some highly specialised plants and animals.

Streams & rivers



Streams are small (< 8.25 m wide), meandering running waters, whereas rivers are classed as larger (> 8.25 m wide) running waters and there are over 265,000 km of rivers and streams across the UK. However, many of these are polluted (with litter, chemicals and untreated sewage), with only 14% of English rivers being classed as of 'Good Ecological Status'.

Flora includes water mint, brooklime, water-crowfoot, water-starwort, water-cress, water-milfoil.

Fauna includes trout, salmon, bullhead, lampreys, pearl mussel, native crayfish, golden-ring and club-tailed dragonfly, cool water stoneflies, white-legged damselfly, wandering snail, mayflies, dipper, kingfisher, otter, water vole.

Management River management ideas are provided by a number of organisations. This includes The River Restoration Centre, who provide a manual of different techniques of good practice in river restoration that works within the natural processes. There are dozens of techniques depending on the restoration aim (e.g. bank protection, diversions, restoring meanders).

Learn more Latest water classifications results published – Defra in the media deframedia.blog.gov.uk/2020/09/18/latest-water-classifications-results-published

Manual of River Restoration Techniques therrc.co.uk/manual-river-restoration-techniques

Ponds



A pond is defined as a body of water between 1 and 20,000 sq. m, which exists for at least 4 months of the year. Ponds are ubiquitous across the UK landscape – both in towns, cities, gardens and the countryside, either formed naturally or man-made.

Flora includes pillwort, broad-leaved pondweed, hornwort, water lilies, water soldiers, yellow flag irises, reed, rushes, water mint, water starwort.

Fauna includes damselflies, dragonflies, beetles, caddisflies, water boatman, water scorpions, snails, newts, frogs, toads, feeding for some species (bats, grass snakes, water voles), moorhen, teal, redshank, snipe.

Management Pond creation, in residential settings or natural areas where permission is granted, can be a great way to improve freshwater habitats, particularly if the water being used to fill ponds is clean. Toolkits from the Freshwater Habitats Trust can help with pond building in your garden or as part of a natural area under the Million Pond Project.

Learn more Pond life: facts about pond habitats, plants and animals – Natural History Museum nhm.ac.uk/discover/pond-life-facts-about-habitats-plants-animals.html

Pond Creation Toolkit – Freshwater Habitats Trust freshwaterhabitats.org.uk/projects/million-ponds/pond-creation-toolkit/

How to build a pond | The Wildlife Trusts wildlifetrusts.org/actions/how-build-pond

Lakes



Lakes are standing bodies of water greater than 20,000 sq. m and can be further classified based on productivity: (1) eutrophic = high, (2) mesotrophic = moderate, (3) oligotrophic / dystrophic = low. Reservoirs are classed as artificial lakes. The variation of productivity due to high / moderate / low nutrients result in a different floral and faunal landscape (examples below are across all types – view references for species for different lake types).

Of the 10,000 lakes in the UK, many are considered to be in good ecological condition.

Flora includes planktonic algae, reeds, rushes, long-stalked pondweed, fennel-leaved pondweed, spoked water-milfoil, yellow water lily, common reed, bottle sedge, bullrush, shoreweed, quillwort.

Fauna includes snails, dragonflies, water beetles, native crayfish, roach, tench, pike, great crested newt, vendace, schelly, charr, birds (red-throated and black-throated divers).

Management Various techniques can be considered for maintaining healthy lakes, including minimising nutrient inputs (pollutants), water level management and crafting linked subhabitats (e.g. open water, marginal vegetation, banks).

Learn more Lakes – Freshwater Habitats Trust freshwaterhabitats.org.uk/habitats/lake/
Mesotrophic Lakes buglife.org.uk/resources/habitat-management/mesotrophic-lakes

Other notable freshwater habitats



Wet grasslands are low-lying, often when farmland floods and provide nesting habitats for lapwing, curlew, black-tailed godwit, hornet robberfly, large garden bumblebee. buglife.org.uk/resources/habitat-management/lowland-meadows/

Wet woodlands have decreased due to land-use changes but include alder, birch and willow and support invertebrates such the 10-spotted pot beetle and netted carpet moth. buglife.org.uk/resources/habitat-management/wet-woodland/

Reedbeds are colonised by common reed and have many faunal species, including hundreds of invertebrates, reed leopard moths, rove beetles, bitterns, eels, water rails. wildlifetrusts.org/habitats/wetlands/reedbed/

Ditches are manmade, usually straight, channels for collecting runoff but can support all sorts of life if not overly polluted, most notably the great silver water beetle. freshwaterhabitats.org.uk/habitats/ditch/

Springs are emerging waters from underground and can have a variety of species including mosses, liverworts, cold water flatworms, caddis flies, southern damselfly. freshwaterhabitats.org.uk/habitats/spring/

Fens are nutrient-rich and support thousands of invertebrates; half of the UK dragonfly species can be found at some sites, along with orchids, swallowtail butterfly, water vole, Chinese water-deer. buglife.org.uk/resources/habitat-management/fens/
wildlifetrusts.org/habitats/wetlands/lowland-fen

DID YOU KNOW? Globally, freshwater habitats account for less than 0.01% of the world's surface, yet support more than 100,000 species.

More than half of the world's wetlands have disappeared since 1990!

In the UK, two thirds of all freshwater species are supported by ponds.

A common frog tadpole can sense water level changes and will develop faster if a pond is drying up!

How can we help?

We can look after our freshwater environment in different ways: taking part in river cleans, reducing the amount of water we use, not polluting the natural environment, creating natural ponds in our garden, and volunteering to take part in freshwater habitat surveys. Lobbying government can also help, as seen most recently to the backlash of voting against the Environment Bill, where the public outcry arguably led to a change in policy agreement.

Climate change is also having a big impact on our environment. Freshwater habitats are an integral part of the environment and are being impacted due to climate change through variations in rainfall, increased temperatures and changes to the physical habitat. Therefore climate action is helping towards a cleaner and healthier environment. This can be in the form of personal lifestyle changes to reduce our carbon footprint, or activism and advocacy to encourage governments and companies to make green and ethical decisions.

Learn more

- Freshwater habitat descriptions: UK Terrestrial & Freshwater Habitat Types data.jncc.gov.uk/data/b0b5e833-7300-4234-8ae5-bdbf326e854c/habitat-types-freshwater.pdf
- Home page – Freshwater Habitats Trust freshwaterhabitats.org.uk/
- Parliamentary Briefing: Environment Bill – The Rivers Trust theriverstrust.org/about-us/news/parliamentary-briefing-environment-bill-lords-amendment-45b-on-sewage-pollution
- assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/291081/scho0507bmoj-e-e.pdf
- Contact an A Rocha UK naturalist at naturalist@arocha.org



HABITATS

Examples from left to right: Secondary woodland – David Chandler, Orchard – Skitterphoto

Woodland

Information: Mark Prina

All about woodland

- Woodlands are groups of trees growing close enough for their canopies to meet and where the soil is too poor for growing food or grazing animals. Trees have always been crucial for human existence; notwithstanding the production of oxygen, their wood has limitless uses as tools, utensils, shelter, enclosures, fuel, and much more besides.
- Trees have the ability to regrow perpetually, multi-stemmed, from a stump and from the earliest times this has been used to supply wood of different dimensions for different uses. Cutting the tree at the base is referred to as coppicing and if it is cut several feet up, out of the reach of browsing animals, this is termed pollarding. Trees left to supply timber for larger uses, such as buildings, are known as standards.
- The original wildwood which dominated much of Britain was a varied landscape of old and young trees, dying trees and deadwood, regrowth and regeneration. Fallen trees would result in open areas and scrub; grazing animals would have maintained grassy glades; while poorly drained bogs would have been too wet for many tree species to grow.

Wood pasture & parklands



Wood-pasture is essentially grassland with scattered trees and the conflict of shade from trees spoiling the pasture, therefore grazing animals eating tree growth has to be reconciled. Many common lands were managed as wood-pasture supplying, perhaps, both summer grazing and winter fodder.

Park is a term of many meanings; with emparkment occurring from ancient times to facilitate deer farming, later as an expression of landscape design.

Here we will regard the term park in the sense of enclosed open land with standard trees, arising naturally or planted, native or exotic. A park may well preserve evidence of previous land-use, even ridge and furrow cultivation or the earthwork remains of buildings.

Flora includes oak, beech, lime, sycamore, Norway maple and various exotic tree species according to the fashion at the time of planting. For the grassland, unless it has suffered 'improvement' to rye-grass monoculture, a diversity of grasses and flowering plants, characteristic of the soil types in the area, should be preserved. Hawthorn/bramble scrub or gorse/broom heathland may develop, if grazing is low enough or excluded from certain areas.

Fauna for grassland areas includes deer, rabbit, hare, badger, mole, butterfly species, other invertebrates and fungi. For trees includes hole-nesting birds, specialist wood-boring insects.

Management for grassland: summer grazing by sheep/cattle. For trees: pollarding to protect regrowth (although a 'browse line' will probably develop at 4–8 feet), leave dead trees standing, leave fallen or cut branches on the ground and protect young trees with a wooden 'cage' not plastic guards. In addition, maintaining adjoining zones of woodland, wood-pasture, scrub and open grassland in a large mosaic provides transition from one habitat structure to another. Many of our familiar 'woodland' bird species, are actually species of open savannah or woodland edge.

Learn more woodlandtrust.org.uk/trees-woods-and-wildlife/habitats/wood-pasture-and-parkland/

Deciduous woodland



Deciduous woodland is generally characterised by trees that reach a height of more than 5 m when they are mature. They often form a distinct and sometimes open canopy where the canopy cover is more than 20%. Deciduous woodland can contain both native and non-native species, can be of ancient or recent origin and can also be semi-natural, naturally regenerated or entirely planted.

Deciduous woodland is widespread habitat across England, especially in lowland areas, but is most noticeably absent from larger wetland areas such as the Fens or Somerset levels. There are an estimated 961,000 ha of these woodlands in England. Deciduous woodlands were formerly far more widespread but with the expansion of mechanical farming many areas were cleared.

Today many conservation, community and business groups are aware that restoring this forest type will help species adapt to climate change as well as providing an opportunity to store carbon. The challenge for deciduous woodlands is to ensure that it is planted in the right place to maximise the benefit for biodiversity.

Flora includes (depending on soils, pH and moisture levels) bluebell, dog's mercury, wood avens, common dog violet, primrose.

Fauna includes bank vole, wood-mouse, tawny owl, speckled wood butterfly.

Deciduous Woodland Management Existing woodland on your land should be carefully researched then assessed before undertaking any management. Old maps or some time spent in the local county records office are invaluable in revealing the age and origins of a piece of woodland. The very name 'wood' often indicates antiquity if not ancient status.

Next it is important to survey what is there – tree species, evidence of coppicing, any earthworks within or woodbanks on the perimeter are important details. The understorey and ground flora could be significant. Beware of misreading the presence of certain species touted as 'ancient woodland indicators' (AWIs). These depend on the part of the country they are growing in. Bluebell, for instance, grows freely in hedges as well as woodland in Staffordshire, but is a strong AWI in the south of England. Dog's Mercury is a good indicator in the midlands but in East Anglia it grows freely in hedges and young woodland with high nutrient inputs.

Whatever the outcome of any surveys, existing woodland cover needs management. If coppicing has been part of the wood's management then it should be reinstated but for small areas, in say 3–7 year cycles, to restore a patchwork of varying structure. The resulting increased light levels to the woodland floor will stimulate different plant species to emerge. If phosphate levels are high this could mean resurgent nettle growth outcompeting other plants. The cutting and removal of vegetation to reduce nutrient levels may prove ineffective in areas of high agricultural chemical use. Even among the coppice blocks leave some standing trees, especially any existing standards that have been promoted (allowed to grow on) previously. Keep in mind the need for deadwood both standing and lying on the woodland floor.

It may be necessary to install deer exclusion fencing to some areas to allow regeneration of tree and herb species. Experiments have shown remarkable change when grazing and browsing pressure is removed.

As previously mentioned, many woodland species require 'edge' habitats, not dense woodland, so the creation of rides is beneficial to biodiversity. Make these curved with a 'kink' as they reach the wood boundary to avoid a wind tunnel effect and manage the margins of the ride, to develop a band of scrub then tall to shorter vegetation. Apply the same treatment to the perimeter of the wood as described in the wood–pasture section. Remember the wildwood had many habitats grading into one another and we can mimic these transitions on small scales with careful management. Avoid abrupt changes from one structure to the next. Finally, do not cut mature ivy on trees at the base to kill it. This is inexcusable as you are destroying vital habitat for many species.

Learn more suffolkwildlifetrust.org/conservationadvice/woodlands-and-hedgerows/woodland-management

Secondary woodland



This term refers to all woods (including ancient) that show signs of once being open land, for example, parts of Darenth Wood in Kent feature ancient woodland indicator plants yet had clearly grown up over ridge and furrow farmland. Many of the woods in the deciduous woodland section will be secondary, having grown up relatively recently on sites affected by quarrying or isolated by railway or road building.

However, for our purposes here we will also consider deciduous plantation woodland as this is very pertinent to current practice with grants and the political will to undertake large-scale tree planting schemes.

Flora is dependent on the original vegetation on the planting site: if on arable land reverting to woodland it may initially include arable/disturbed ground 'weeds'; if on grassland will retain the grassland species for a very long time. Eventually, as the canopy closes, shade tolerant plants will succeed these but the process is extremely slow and unlikely to include plants of long established woodland unless the plantation is adjacent to such woodland or ancient hedges.

Fauna includes many small mammal species such as voles, mice and shrews, a variety of birds, see food forests, and a some pollinating insects.

Management If there is little or no existing woodland on your site then a plantation is a valid option. Grazing should cease on the plantation site and, if possible, exclude deer to avoid damage to saplings before they are established. This also allows seed germination from nearby parent trees. It is advisable to look at what is growing naturally in the area before ordering a standard selection from the nursery. Often a selection of species is planted but unless they are suitable to the conditions they will fail. In addition these may include imported stock or even non-native species.

Ongoing watering of the planted trees will be needed in times of drought. Also remove competition around the saplings as they establish. However, do not routinely remove native species like bramble as these are the beginnings of the all-important structure needed if the new wood is to be of maximum benefit to a wide range of species. Most colonists will be generalist species early on but the aim is to build complexity over time. Creating a wood is a long game! For example, coppicing cannot be introduced before the trees are at least five years old.

Learn more woodlandtrust.org.uk/trees-woods-and-wildlife/habitats/plantations/

Orchards



Orchards are areas of shrubs and trees grown specifically for food (normally fruit). These are often ancient sites with many of the fruit tree species dating back to the Roman times. Some species may have even been cultivated in the Neolithic. Orchards not only provide an important function for food growing but are potentially one of the best habitats for wildlife.

They are particularly good for pollinating insects and birds as many fruit trees age fast which in turn create amazing deadwood habitats. Some orchards also contain nut trees such as walnut and hazelnut which are great to eat and brilliant for small mammals and birds.

Flora includes apples, plums, pears, damsons, cherries and quince as well as hazel and many other shrub species including blackthorn, elder and hawthorn; a wide range of flowering plants like orchids, mistletoe; specialist lichen such as golden eye lichen and orchard tooth fungus.

Fauna declining birds including lesser spotted woodpecker, spotted flycatcher, bullfinch and willow warbler. Great for insects including the threatened noble chafer (one of the rarest UK beetles).

Management The key here is maintaining genetic variety. If your orchard already has local or rare varieties, think about perpetuating it by grafting onto suitable rootstock. There are many courses to teach these specialist techniques as well as when to prune and how to encourage budding. Leaving deadwood lying around is essential for birds and insect species. Try to maintain long and wildlife-rich grass over as much as the area as possible.

Learn more ptes.org/campaigns/traditional-orchard-project/orchard-network/
theorchardproject.org.uk
orchardlink.org.uk

Food forests



Food Forests, or edible forest gardens, are self-regulating, low maintenance food growing systems based on woodland ecosystems. They commonly include 7 layers of plants: Canopy layer (nut & fruit trees), dwarf layer (fruit trees), shrub layer (currants and berries), vertical layer (vines, fruits and vegetables), herbaceous layer (herbs), soil surface (ground cover crop) and rhizosphere (root crop).

They are a new farming concept in the UK, although have been designed and developed for thousands of years in other parts of the world. Food forests incorporate fruit and nut trees, shrubs, herbs, vines and perennial vegetables which have yields directly useful to humans, whilst working in harmony with nature to provide a whole range of habitats for wildlife. Food forests are forest-like systems where fertility comes from various sources, greatly aided by fungi, wildlife is the primary pest control, soil holds water like a sponge, and the aim is to encourage a high diversity of plants, insects and birds.

Flora includes endemic woodland and meadow plants alongside deliberate planting of the different layers of fruiting plants.

Fauna includes many small mammal species such as voles, mice and shrews. Food forests provide potential habitat for a variety of birds; 8 species of warblers including garden warbler, white throat, black cap and lesser white throat as well as overwintering finch, pipits, skylark and buntings. In addition, there may be a wide range of pollinating insects, due to the great variety of plants.

Management The key here is to create as bio-diverse space as possible, making sure that every layer is planted with a big variety of species. Grassland areas are managed as wildflower meadows with paths mown into them. All prunings or cuttings are left on the ground providing important habitats for birds and insect species, as well as acting as valuable ground cover and natural fertiliser.

Learn more permacultureapprentice.com/creating-a-food-forest-step-by-step-guide/
What is a food forest projectfoodforest.org/what-is-a-food-forest/

How to Use Native Fungi to Improve Soil Quality and Bulletproof Your Food Forest Against Disease
permacultureapprentice.com/food-forest-fungi/

Gardening and 'The Permaculture Way' Graham Bell youtube.com/watch?v=ickryyOZ-7k g

DID YOU KNOW? That trees are amazing wildlife in themselves and not simply habitats!

That there is so much we don't know about trees, e.g. why they grow where they do, why some trees grow as individuals, like oak, and some are social, like hornbeam

Trees release chemicals called phytoncides that can boost our mood and may have other health benefits too!

That the Bible is full of references to trees; when God speaks there's a tree nearby!

How can we help?

- Get hooked on reading about trees and woodland – there are many inspirational authors, none more so than Oliver Rackham.
- Take your new-found knowledge and join others to learn and apply practical woodland management skills.
- Ask questions about the ecology of trees, then devise research to gather data to try and answer those questions.
- Inspire the next generation to love trees.

Learn more

- Book: Woodlands, Oliver Rackham. London: William Collins, 2015.
- Book: Habitat Management for Invertebrates, Dr Peter Kirby. Exeter: Pelagic Publishing, 2013.
- Book: Trees and Woodland in the British Landscape, Oliver Rackham. London: Weidenfield & Nicholson, 2020.
- chewvalleytrees.co.uk/guides/coppicing-and-pollarding
- conservationhandbooks.com/woodlands/
- Contact an A Rocha UK naturalist at naturalist@arocha.org



HABITATS

Examples from left to right: Machair – Jill Dimond, Rocky Shores – K. Mitch Hodge

Coastal

Information: Abigail Marshall

All about coastal habitats

The UK has one of the longest coastlines in Europe, hosting a variety of highly diverse ecosystems and habitats. These regions are important for the life they host, and for society because of the services they provide such as carbon sequestration, flood protection and improved health and wellbeing.

Sand dunes



Sand dunes, common in the UK, are ridges of sand that have been formed parallel to the beach over many years and exist beyond the tidal range. Vegetation varies depending on the proximity of the dune to the shoreline. As dunes shift closer to the sea, their vegetation changes through time.

Flora includes clovers, lady's bedstraw, pyramidal orchid, kidney vetch, carline thistle, prickly saltwort, sea rocket, oraches, sea sandwort, marram grass, juniper, sea buckthorn.

Fauna includes bumblebees, burrowing bees, digger wasps, silver-studded blue butterfly, sand lizards, great crested newt, natterjack toad, nightjar, kestrel, chough, Dartford warbler, grey seal.

Management involves restoring eroded areas and stabilising others using vegetation and fencing to conserve dune formation and ecosystems. It is also important to have boardwalks to steer people from sensitive sites.

Learn more wildlifetrusts.org/habitats/coastal/sand-dunes
dynamicdunes.co.uk/about-sand-dunes/dune-wildlife
conservationhandbooks.com/manage-sand-dunes/

Machair



This habitat is unique and rare; globally it is found only on the west and north coast of Scotland and the west coast of Ireland. While similar to sand dunes, it has a flatter landscape and a high shell content. It is often used for different grazing regimes, such as oats, rye or hay meadows.

Flora is typical of calcareous to neutral sand grassland including common flowers like red clover, poppies, pansies and yarrow, the rarer lesser-butterfly orchid and Irish lady's-tresses, and iris beds.

Fauna includes breeding waders such as lapwing, redshank, snipe, dunlin, oystercatcher, ringed plover; and corncrake, twite. Many invertebrates exist, including some rare bees e.g. great yellow bumblebee, red-shanked carder bee.

Management Sustainable management methods include timing in crop harvest, cultivation techniques, and engagement with local communities on best practice and education. From 2010 – 14, a large scale project in Scotland for the conservation and management of Machair took place, and a recently announced project will seek to improve Machair in western Ireland.

Learn more wildlifetrusts.org/habitats/coastal/machair/
machairlife.org.uk/
gov.ie/en/press-release/e74a9-74m-life-on-machair-project-announced/

Beaches (sand and/or shingle)



A third of the UK coastline is sand or shingle beach, but most beaches are too mobile (the impact of tides and waves) to support vegetation. Shingle beaches that are vegetated are of global significance. Sand dunes can form from sandy beaches (see above). Vegetation can form on drift lines (short-lived, but common in the UK) or above the high tide line (perennials).

Flora includes sea kale, oysterplant, sea-pea, yellow-horned poppy, sea campion, sea mayweed, oraches, prickly saltwort, sea rocket, sea sandwort, lichen-rich grassland. Driftwood and seaweed.

Fauna includes oystercatchers, terns, turnstones, ringed plover, gulls, scaly cricket, springtails, beetles, mites, sand hoppers, cockles, lugworms. Washed up: ambergris, mermaid's purse (elasmobranch eggs).

Management Shingle beaches are typically managed through the local authority or relevant government agency (environment Agency/Natural England) due to the extensive labour required. These organisations will be responsible for maintaining structures to control sediment movement (e.g. groyne, breakwaters, revetments) or methods to manage flooding / erosion (e.g. beach re-profiling and replenishment). Vegetation can only be supported in areas of low movement. Where there is growth above the drift line, it should be protected to avoid damage from pedestrians and vehicles.

Learn more wildlifetrusts.org/habitats/coastal/beaches-and-strandlines
cdn.naturalresources.wales/media/689060/nrw-evidence-report-no-273-advice-on-sustainable-management-of-coastal-shingle-resources.pdf [section 8]

Cliffs (hard and soft)



Cliffs vary due to different rock types and exposure to wind and waves.

Flora is highly variable across sea cliffs; a comprehensive review of cliff vegetation has been provided by the JNCC.

Hard cliffs are rocky vertical slopes, reaching heights of over 300 m.

Fauna is dominated by seabirds, including guillemot, razorbill, puffin, cormorant, shag, fulmar, gannets, kittiwake. Other species include choughs, house martins, snails, beetles.



Soft cliffs are smaller and are less inclined making it easier for vegetation to establish.

Fauna is thought to include invertebrate species that are restricted to soft cliffs including Cliff tiger beetles, weevils, shore bugs, and the Glanville fritillary butterfly. Sand martins often make their nest holes in soft cliffs.

Management Reduced interventions are typically best for cliff conservation as natural processes shape the habitat e.g. soft cliffs reset the growth of plant life allowing a rich range of flora and fauna. Intensive land use can disrupt natural erosion. Certain recreational activities may need to be restricted, for example during seabird-breeding season.

Learn more sac.jncc.gov.uk/habitat/H1230
wildlifetrusts.org/habitats/coastal/maritime-cliff
buglife.org.uk/resources/habitat-management/maritime-cliffs-and-slopes/

Rocky Shores



Rocky shores are relatively stable habitats compared to sandy shores or vegetated shingle. Life that establishes on rocky shores will depend on the type of rock, weather conditions and water characteristics. Different animals and plants vary in their tolerance to the tides going in and out, resulting in a very defined pattern of species across the shore.

Flora includes lichens, brown seaweeds (e.g. channeled wrack, toothed wrack and bladder wrack), kelps, red seaweeds, oarweed.

Fauna includes periwinkles, barnacles, limpets, mussels, shore crabs, beadlet and snakelocks anemones, cushion starfish, oystercatchers, purple sandpipers.

Management Like with other sub-habitats in coastal regions, monitoring rocky shores is an important aspect of effective management. Shores that have suffered anthropogenic disturbances are often best left to recover without intervention. To prevent damage, education and protection of certain areas are important.

Learn more mba.ac.uk/what-we-do/our-science/coastal-ecology/
| beachstuff.uk/seaweeds.html
| ukmpa.marinebiodiversity.org/uk_sacs/communities/intertidal-reef/ir7_4.htm

Salt marshes and mudflats



Salt marshes and mudflats are found in many sheltered estuaries around the UK. Low-lying fine and nutrient-rich mud is covered during high tide, and revealed at low tide. Further inland as the mud becomes drier, mudflats become salt marshes.

Salt marsh: **Flora** includes samphire, cord-grasses, sea purslane, sea aster, sea lavender, marsh mallow.

Fauna includes snails, mud shrimps, fanworm, ragworm, wintering wildfowl and waders, breeding waders (e.g. redshank).



Mudflat: **Flora** includes eelgrass.

Fauna includes bristle worms, bivalves, snails, wildfowl and waders (e.g. brent goose, shelduck).

Management The best way to allow salt marshes to thrive is to avoid any disturbances and interventions and to let tides to be unimpeded.

Management The best way to allow salt marshes to thrive is to avoid any disturbances and interventions and to let tides to be unimpeded. Vegetation transitions across the salt marshes (lower to upper marshes) should all be retained, and biodegradable debris kept (e.g. seaweed, wood) as this supports invertebrates.

Learn more wildlifetrusts.org/habitats/coastal/saltmarsh-and-mudflats
coastalwiki.org/wiki/Salt_marshes#Fauna
buglife.org.uk/resources/habitat-management/coastal-saltmarsh/

DID YOU KNOW? In the UK, no-one is more than 80 miles away from the coast.

Seagrass meadows absorb twice as much carbon as forests, per unit area.

The UK coastlines hosts over 1200 different animal and plant species.

Snails and limpets can help form rockpools, by grinding rock with their tough teeth!

How can we help?

We can look after our marine environment in different ways. Taking part in beach or river cleans, dive cleans, being careful not to stand on animals or vegetation, not purchasing marine ornaments, only consuming sustainable seafood, reducing single-use plastics, and a richer understanding of the ocean, all help secure a better environment.

Climate change is having a big impact on the coast and our seas. Therefore climate action will also help towards a cleaner and healthier marine environment. This can be in the form of personal lifestyle changes to reduce our carbon footprint, or activism and advocacy to encourage governments and companies to make green and ethical decisions. The ocean is at the heart of the climate system; UNESCO has a core theme 'One Planet, One Ocean'.

Learn more

- Plantlife Guide for common coastal floral species plantlife.org.uk/uk/our-work/publications/habitat-wildflower-guides-coastal
- Ecological Monographs – The value of estuarine and coastal ecosystem services esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/10-1510.1
- UK Terrestrial & Freshwater Habitat Types: Coastal Habitat descriptions data.jncc.gov.uk/data/b0b5e833-7300-4234-8ae5-bdbf326e854c/habitat-types-coastal.pdf
- oceanconservationtrust.org/world-ocean-day-largest-ever-ocean-awareness-survey-results
- Habitat Wildflower Guide Coastal habitats plantlife.org.uk/application/files/9614/9797/5998/WAP_coastal.pdf
- Contact an A Rocha UK naturalist at naturalist@arocha.org



T25



HABITATS – credits

Photos: Machair – Jill Dimond, Streams & Rivers – David Chandler

Information

T1 Grassland

**Hilary Bond,
David Curry**

T2 Hedgerows

Richard Thornbury

T3 Freshwater

Abigail Marshall

T4 Woodland

Mark Prina

T5 Coastal

Abigail Marshall

Photographs

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Annie Spratt (1, 2)

David Chandler (1, 4), Goulet Isabelle, Ben Clayton

Mark Prina, David Chandler (2, 3), Skitterphoto, reach-art

Hannah Pearson, Jill Dimond, David Chandler (3, 5), Dimitry Anikin, K. Mitch Hodge, alanhancock, Nick Fewings