

Biodiversity in parks and greenspace



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1 Introduction

Parks and greenspaces have many functions. They provide amenity, recreation and places to play. They benefit our physical and mental wellbeing. They generate clean air and can store greenhouse gasses. Many of us go to parks to experience nature. Parks can also benefit biodiversity by providing places for plants and animals to live, feed and reproduce.

The purpose of this guide is to help park managers look at the features that make up their parks and make them better for biodiversity. For each park feature there is a 'pick list' of options that may benefit biodiversity. These biodiversity options can easily be added to management plans and carried out on the ground.

The guide aims to put as much knowledge as possible in the hands of the park managers. But not all options are suitable for all parks. For example it may be impossible to create a new pond and wetland in your park, or you may have good reasons not to plant any more trees. This is a guide, not a set of instructions!

The guide has the following sections:

Section 2 lists some general principles for the benefit of biodiversity which can be applied to all parks and greenspaces.

Section 3 looks at typical park features and gives you a pick list of options to improve them for biodiversity.

Section 4 looks at creating new habitats or features for priority habitats and species.

The appendices are lists of useful native and non-native plants that will benefit biodiversity. There is also a list of further reading.

2 General principles

2.1 Create more habitat

The options in this guide are based on a simple principle – that biodiversity benefits by increasing the amount and types of available habitat.

You can increase the amount of habitat by adding more vegetation to your park – add wildflowers, long grass areas, shrubs and trees. You can increase the volume of soil habitat by applying mulch. Create habitat where there was none – such as adding a green roof to a small building, or growing climbers up walls.

New types of habitat can really make a big difference for biodiversity. Something as simple as allowing grass to grow long creates new habitats such as long hollow stems and seed heads. Creating a pond will enable a whole host of new species to use your park. Creating nest sites for birds or invertebrates can be a big help if natural nests are scarce.

2.2 Allow natural processes to happen

Natural processes can create new habitats. Here are some examples:

- Winter dieback – many herbaceous plants die back in winter. The hollow, dead stems are used by invertebrates as places to hibernate and rest until spring. Many other invertebrates will also feed on the dead plant matter over winter. Then the area can be tidied up by mowing in late winter or early spring before the new growing season begins.
- Dead wood – dead wood is valuable habitat for a range of invertebrates, fungi and plants. Think about keeping dead wood within your park if there are no other concerns such as health & safety. You could even move the dead wood to a quiet corner of the park, or chip it to create mulch.
- Succession – this means the slow, natural change of habitats. Grasslands left to their own devices will be seeded with shrubs and trees and eventually develop into woodlands. In your park it may be sensible to allow succession in some areas, for example if you have a waterlogged patch of grass you could let wetland plants take over and eventually willow and alder may grow there.
- Flooding – minor, temporary flooding creates waterlogged patches and allows wetland plants and animals to thrive.

2.3 Plant more trees

The “Biodiversity in Urban Gardens” (BUGS) research project studied urban gardens to work out which aspects of a garden made the biggest impact on biodiversity. It showed that the presence of trees made the biggest positive impact on both the number of species (biodiversity) and the number of individual organisms present (biomass) in a garden.

The positive effect of trees on biodiversity applies to parks as well as gardens, so it is really important to maintain a good range of tree species and ages in parks, and if possible – plant more trees!

2.4 Avoid pesticide and herbicide use

Put simply – insects and other invertebrates are biodiversity, they make up the vast majority of the species you will find in your park, and they are food for other groups of animals such as birds.

Pesticides are indiscriminate which means they will kill organisms other than their targets. For example if you spray pesticide on roses you will kill aphids but you may also kill any pollinators (bees, butterflies, hoverflies) that subsequently visit the plants. Pesticides can also accumulate in animals that eat sprayed insects and can cause illness or death. Similarly, herbicides can affect non-target species through direct accidental spraying or by drifting in the air.

Biodiversity in your park will benefit from the reduction or complete elimination of pesticide and herbicide use.

2.5 Schedule vegetation clearance to avoid nesting birds

Breeding birds and their nests are protected by law. In Scotland the breeding bird season is generally accepted to be the months of March to August.

Vegetation clearance should be timed to take place in the months of September to February to avoid disturbing breeding birds. If this is not possible then the vegetation should be inspected before clearing to ensure there are no nesting birds present.

2.6 Remove invasive non-native plants

Certain species of invasive non-native plants are controlled by law – it is illegal to cause them to grow in the wild. In Edinburgh the most important invasive non-native species are:

- Japanese knotweed *Fallopia japonica*
- Himalayan balsam *Impatiens glandulifera*
- Giant hogweed *Heracleum mantegazzianum*

Other species such as Butterfly bush *Buddleja davidii* and few-flowered leek *Allium paradoxum* are not restricted by law but are just as invasive and should be controlled where possible.

Invasive non-native plant species are bad for biodiversity because they tend to grow in ways that exclude all other plant species, think of a Japanese knotweed stand with nothing visible underneath except stems from previous years.

Where possible these species should be removed from parks – but bear in mind that they can spread very easily and removing from one area may be ineffective if they can spread from another nearby area. For example, Himalayan balsam seeds can drift downstream to colonise any available patches of bare mud – so it makes sense to tackle a whole watercourse rather than an individual park.

2.7 Engage park users

When making changes to a park for the benefit of biodiversity there is a great opportunity to engage park users in the process and raise their awareness of biodiversity issues.

Information can be presented in park notice boards, or by temporary signs next to areas of work. For example – when converting amenity grass to pictorial meadow you may want to put some signs in place around the perimeter of the area being converted.

3 Improving existing habitats for biodiversity

3.1 Ornamental lawns / standard amenity grass / sports pitches

Ornamental lawns, standard amenity grass and sports pitches (heavily-managed grasslands) are of very low value to biodiversity. These habitats support grassland invertebrates in low numbers (in comparison to long grass) and provide limited foraging resource for birds, mammals and other predators that feed on grassland invertebrates.

There are few options to improve these habitats for biodiversity, other than to reduce their area.

Heavily-managed lawn options

1	Reduce the area of heavily-managed grassland by converting areas to biodiversity grassed / meadow area, or pictorial meadow
2	Reduce the area of heavily-managed grassland by planting copse or single standard trees
3	Change the cutting regime, convert to a meadow for periods of the year, for example in the autumn months

3.2 Biodiversity grassland / meadow areas

Biodiversity grassland / meadow areas are of high value to biodiversity due to their relaxed mowing regime which allows flowering plants to compete with grasses and allows all vegetation to grow higher and develop to maturity.

This provides a range of vegetation structures (e.g. rosettes, stems, leaves, flowers, seedheads) which can support high diversity and high overall numbers of invertebrates, in turn supporting greater numbers of predators such as birds and mammals.

Biodiversity grassland /meadow options

1	Increase plant species diversity through planting native wildflower plugs or mature plants
2	Increase plant species diversity and user perceptions by planting vigorous bulbs and wildflowers along edges
3	Cut in rotation so there is always long grass available, leaving an area uncut over the winter months
4	Encourage natural colonisation of wildflowers by removing arisings and exposing small areas of soil ('germination gaps')
5	Allow an area (perhaps out of sight of park users) to develop into scrub (e.g. brambles, shrubs and tree seedlings) to increase habitat diversity

3.3 Wildflower meadow / Pictorial meadow

Wildflower meadows are areas with a high density of native flowering plants and relatively few grasses. Typically the ground will have been prepared and a native species seed mix applied.

Pictorial meadows are a mix of native and non-native flowering plants, designed to produce a colourful display over a long season.

These meadows are of high value to biodiversity, particularly pollinators such as bees, butterflies and hoverflies; and they also provide a wide range of habitat niches for other groups of invertebrates.

Flowering meadow options

1	Increase the area of flowering meadow by expanding into adjacent ornamental lawns or amenity grasslands
2	Convert annual flowering meadows to a perennial mix
3	Reduce or eliminate use of chemicals when preparing the ground for a flowering meadow by using mechanical cultivation methods (e.g. rotovator)
4	Allow a flowering meadow to grow throughout the year and mow in late winter or spring to provide seed heads and hollow stems for birds and invertebrates

3.4 Naturalised bulbs in grass

Naturalised bulbs are typically snowdrop and daffodil cultivars typically aimed at providing a flush of colour and interest in Spring. These habitats are of medium value to biodiversity as they provide a range of vegetation structures, and pollen and nectar early in the season.

Naturalised bulb options

1	Increase plant species diversity by planting native spring-flowering wildflower bulbs (see Appendix 6.1)
2	Increase the area of naturalised bulbs by expanding into adjacent ornamental lawns or amenity grasslands
3	Allow an area (perhaps out of sight of park users, or beside a hedge/woodland) to grow throughout the year, mowing in late winter, to provide seed heads and hollow stems for birds and invertebrates

3.5 Shrub beds / Rose beds

The value of shrub and rose beds to biodiversity depends on the species and cultivar of shrubs used. Most shrubs are valuable to biodiversity due to the range of

structures and habitat niches they provide (e.g. woody stems, foliage at varying height from the ground, flowers, seed heads/hips/berries).

With regard to pollinators - shrubs with many flowers and a long flowering period are good, especially if they flower early or late in the season when pollen and nectar sources are in short supply. On the other hand shrubs which flower briefly, or have highly modified flowers (e.g. double-headed roses) are of little value to pollinators.

Shrub / rose bed options

1	Reduce intensive trimming of shrubs, allowing a variety of shrub heights to develop
2	Replace cultivated or mulched soils around shrub bases with locally native woodland wildflowers and herbaceous groundcover
3	Coppice shrubs periodically to regenerate the shrub and to provide light for herbaceous groundcover
4	Use flowering and fruiting shrubs that provide food sources for birds and animals (see appendix 6.4)
5	Add structure to shrub beds by planting single standard trees in appropriate places
6	Leave woody cuttings in piles within the shrub bed to create deadwood habitat
7	Increase plant diversity by planting autumn-flowering bulbs (see Appendix 6.2)

Rose bed options

8	Use roses with abundant or large fruits (e.g. <i>Rosa rugosa</i>)
9	Use species roses or single-flowered roses
10	Grow disease-resistant cultivars to reduce the need for spraying
11	Use hoeing rather than herbicide to keep weeds in check

3.6 Annual bedding areas / Herbaceous perennials / ornamental grasses

As with shrub beds, the value of bedding areas varies according to the species and cultivars used. Many annual bedding plants (e.g. *Pelargonium*, *Begonia*, Busy Lizzies) have little or no nectar available to pollinators so their value is very low.

On the other hand, traditional cottage-style plants with many flowers and lots of available nectar and pollen are great for pollinators and other groups of invertebrates.

Annual bedding options

1	Increase the range of plants that are used, avoiding double-headed varieties
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2	Replace annual plantings with perennial plantings or perennial/annual combinations
3	Replace bedding scheme with cornfield annuals (poppy, cornflower etc) or pictorial meadow
4	Extend the flowering season with late-flowering plants or by sowing some areas later
5	Retain dead seed heads and skeletons of dead plants, leaving to stand over winter for seed-eating birds and winter invertebrate shelter and strimming in late winter or spring
6	Consider replacing beds with a different habitat such as woodland copse

Herbaceous perennial / ornamental grass options

7	Maximise winter habitat and food value by not strimming until Spring
8	Increase species and structural diversity within the bed
9	Select plants with known wildlife benefits (see appendix 6.8)
10	Avoid species that need protection from slugs to survive, thereby avoiding the need to use slug pellets

3.7 Ponds, watercourses and features (& wetlands)

All healthy water features are of great value to biodiversity, but if a water body is in poor condition then this value can be reduced significantly. The main causes of poor condition include: invasive non-native species, nutrient enrichment, litter and use of hard engineering.

Ponds and open water options

1	Ensure margins grade gradually into the water to provide a range of different edge habitats
2	Where appropriate, reduce areas overshadowed by trees to encourage sunlit water
3	Introduce water-lilies and other native aquatic plants – a mix of submerged, floating and emergent (fringing) plants is best for biodiversity
4	Dredge periodically to improve water quality and maintain sufficient depth of water to prevent dominance by aggressive vegetation
5	Use planting to restrict access to areas of water margin to provide cover and shelter for wildlife
6	Plant some trees and shrubs for nesting cover, but avoid too much shade of leaf

	litter
7	Concentrate areas where people feed ducks to small stretches to reduce build up of bread etc and subsequent nutrient enrichment from duck faeces
8	Where possible, create a network of ponds of different sizes and types (e.g. seasonal)
9	Place stone and log piles near ponds to provide shelter and hibernation sites

Watercourse options

10	Re-profile where engineering has removed the natural course and banks of a stream, preferably with a two-stage channel to encourage the development of floodplain vegetation
11	Develop marginal vegetation, leaving a buffer of at least 2 metres on each side of the watercourse
12	Plant or encourage riparian trees
13	Plant or encourage in-stream aquatic vegetation
14	Excavate or re-profile the channel to create a variety of flow types – slow-flowing deeper pools and fast shallow sections

Wetland (including marshy grassland) options

15	Open up areas of shallow mud or patches that dry out in summer for invertebrate and bird feeding
16	Introduce locally native wetland plants

3.8 Hedges

Hedgerows are a priority habitat in the UK Biodiversity Action Plan (UKBAP), and the Edinburgh LBAP has actions to create and enhance hedgerows. Hedges can be of high value to biodiversity if they are well-managed and species-rich, as they act like long linear woodland edges to provide shade, shelter and a range of habitat niches within a small area.

Hedgerow options

1	Reduce frequency of cutting where appropriate to promote a more varied structure, aim to cut once every two or three years, alternatively cut only one side of a hedge each year
2	Plant or encourage climbers to grow through hedgerows
3	Increase the diversity of single-species hedges by incorporating a range of native hedging species (see appendix 6.6)

4	Incorporate flowering and fruiting species if possible (see appendix 6.4)
5	Introduce locally native wildflowers at the base
6	Create a buffer strip of biodiversity grass or meadow extending 2 metres from the base of the hedge
7	Increase hedge diversity by incorporating occasional trees
8	Rejuvenate leggy sections by cutting close to ground level to stimulate growth of new shoots

3.9 Woodland plantation and copse

Copses and woodlands are of high value to biodiversity mainly due to having a huge range of habitat niches. An area of woodland is capable of supporting many more species than the same area of any other park habitat.

Copse and woodland options

1	Develop glades and pathways through woodland to increase sunlight reaching the ground
2	Leave logs, prunings and other dead wood in place to decompose, including standing dead wood where possible
3	Reduce the extent of bramble cover to encourage wildflowers
4	Introduce woodland wildflowers and ground flora
5	Create a buffer strip of biodiversity or meadow grassland around the edge of a woodland
6	Maintain a shrub understorey and encourage trees to regenerate naturally
7	Promote a mosaic of woodland scrub and grassland by managing large woodlands appropriately
8	Use coppicing to extend the lifespan of appropriate trees and encourage wildflowers
9	Develop a wide range of tree ages and sizes from young regeneration to standing damaged or dead trees

3.10 Single standard trees

Single trees can be of great value to biodiversity if allowed to mature and reach a good size. Tree species which flower and produce fruit are valuable to pollinators in summer and birds in winter.

Single tree options

1	Leave grass uncut underneath single trees, to a radius of 50 cm or more
2	Plant bulbs underneath single trees to provide Spring colour (see Appendix 6.1)
3	Encourage or introduce wildflowers underneath single trees to maintain display after bulb flowering
4	Increase plant diversity by planting autumn-flowering bulbs (see Appendix 6.2)
5	Leave dead wood in place on trees unless it poses a safety risk
6	Consider initiating a pollarding regime on appropriate trees

3.11 Paths / hard standing

Paths and areas of hard standing are of low value to biodiversity but there are two options to improve them

Paths and hard standing options

1	Do not seal joints in new paving and lay paths on a sand bed if they do not take heavy traffic; sow annual seed mixture to fill gaps (note implications for cleaning)
2	Consider lifting unnecessary hard surfaces and replace with more flexible substrates for example self-binding gravels, which can provide temporary habitat for burrowing wasps and bees

3.12 Play areas (& buildings and other structures)

Play areas, buildings and other structures are of low value to biodiversity but can be improved and made more attractive in several ways

Building and structure options

1	Install bird, bat and insect boxes where appropriate
2	Install hanging baskets, planters and boxes with appropriate plants of benefit to invertebrates
3	Plant a range of climbers, mixing deciduous and evergreen species and those with flowers and fruit
4	Install a green roof using locally appropriate substrates and encourage natural colonisation by plants
5	Construct new walls that include gaps for plants and encourage natural colonisation (e.g. by packing with soil)

4 Creating new habitats and features for biodiversity priorities

With a small leap of imagination many parks have the capacity to include new habitats and features for biodiversity – ranging from small piles of deadwood through to new ponds and wetlands.

Similarly there are options for priority species that range from provision of nest sites to planting of particular food plants.

4.1 Habitat connectivity

Connecting habitats allows species to travel from one patch of land to another which is very important for healthy biodiversity. Look at a satellite image of the park (e.g. on Google Maps) and its surroundings and consider making links with neighbouring habitats. For example – consider extending a tree line or hedge that runs through a row of neighbouring gardens, or creating new ponds near to existing ones.

Habitat connectivity options

1	Survey the area surrounding the park and create new features to enhance habitat connectivity
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4.2 Deadwood habitats and compost heaps

Standing and fallen deadwood are important habitats for a huge range of invertebrates and fungi. Deadwood includes fallen branches, felled trees, log piles, dead branches on living trees, and standing dead trees.

Similarly compost heaps provide additional resources of dead plant matter for fungi and invertebrates to feed on and inhabit, and of course the compost can be used in horticultural operations once it has broken down.

Deadwood options

1	Leave dead trees and shrubs standing (bearing health & safety in mind)
2	Ring-bark unwanted trees and shrubs and leave standing to decay in place
3	Ring-bark individual shrub stems or suckers to create dead wood without killing the whole plant
4	Leave old tree and shrub stumps to decay naturally
5	Create a woodpile from cuttings of various thicknesses, leave in contact with the ground, in light shade, and in a compact pile
6	Include logs of 10 cm diameter, with bark still attached, in the wood pile
7	Create a log pile by laying a stack of larger logs on their side, drive a stake into the ground to prevent rolling

8	Create standing dead wood by partially burying vertical logs to a depth of around 50 cm
9	Plant or encourage climbers to ramble over the wood or log pile to help retain moisture

Compost heap options

10	Create a compost heap in an out of the way area of the park, feed with grass cuttings, strimmings from herbaceous perennials, old bedding plants, and cuttings from shrubs and trees (chipped if possible)
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4.3 Ponds and marshy areas

Ponds are a UKBAP priority habitat and the Edinburgh LBAP has actions to promote the creation and enhancement of ponds. A well-designed pond with fringing wetland is excellent for biodiversity in a park and its surrounding area. Existing ponds such as those in Inverleith and Figgate parks show that these features have high amenity value for park users as well as wildlife.

You may wish to seek specialist help when planning and creating a pond.

See section 3.7 for biodiversity options for established ponds and wetlands.

Pond options

1	Create a new clean water pond fed by rainwater, surface run-off, or groundwater
2	Allow new ponds to be colonised naturally by local vegetation and fauna, this may be most appropriate for smaller ponds or those in less busy areas of the park.

4.4 Wet woodlands

Wet woodlands are a UKBAP priority habitat, they can occur on poorly-drained or seasonally wet soils, often on flood plains, and tend to be dominated by alders, birches and willows.

Wet woodlands are excellent for biodiversity as they can support a range of species which depend on wet or seasonally wet conditions.

Wet woodland options

1	Plant or encourage a wet woodland in marshy or waterlogged parts of the park, using alder, birches and willows
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4.5 Species-rich hedgerows

Hedgerows are a UKBAP priority habitat, and the Edinburgh LBAP has actions to enhance hedges on Council-owned land as well as to create new hedges.

Hedges are defined as a boundary line of trees or shrubs over 20 m long and less than 5 m wide. Hedges must be predominantly (80% or more) native species to be considered 'priority habitat'.

See section 3.8 for biodiversity options for established hedges

Hedgerow options

1	Create new hedgerows by planting a boundary line with native hedge species, incorporating a 2 m strip of ground on either side of the hedge
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4.6 Traditional orchards

Traditional orchards are a UKBAP priority habitat and are defined by their management – which must be in a low intensity manner, avoiding chemical inputs from pesticides and inorganic fertilizers. It is generally accepted that a group of 6 or more trees constitutes an orchard.

Traditional orchard options

1	Plant a new traditional orchard consisting of 6 or more fruit trees (usually apple or pear) and manage without chemicals. Manage like a regular park copse where ground vegetation is allowed to grow between and around trees
2	Underplant traditional orchards with low-growing flowering species such as thyme, clovers, or birds-foot trefoil to provide flowers for pollinators outside the tree flowering season
3	Encourage park users or Friends group to adopt, manage and enjoy the orchard

4.7 Food production

Food production in public spaces and foraging for 'wild food' is enjoyed by children and adults alike. Fruit and nut trees and bushes provide food resources for wildlife in spring when they flower and later in the year when they fruit.

Food production options

1	Include fruit and nut producing tree species in new woodlands or standard tree plantings (see Appendix 6.3)
2	Include fruit and nut producing species in new hedges (see Appendix 6.3)
3	Plant shrubby kitchen herbs in shrub beds (e.g. lavender, rosemary, bay laurel)

4.8 Nest and hibernation sites

Many species can benefit from providing artificial nest sites. This ranges from bat boxes on the side of buildings and trees, to patches of bare soil for burrowing solitary bees.

Nest and hibernation site options

1	If a park is known to be important for a particular species of bird then install boxes appropriate for that species on suitable trees or buildings
2	If a park is known to be used by bats then install bat boxes on suitable trees or buildings
3	Provide natural nest sites for bumblebees by allowing areas of tussocky grass to grow in biodiversity grasslands
4	Provide artificial nest sites for bumblebees, buried in the ground in a quiet area of the park.
5	Provide natural nest sites for solitary bees by clearing small areas of bare soil on south or east facing slopes
6	Provide artificial nest sites for solitary bees, such as bundles of hollow stems
7	Create a wildlife stack that incorporates a range of nesting materials and structures
8	Create hibernacula sites for amphibians by making log or stone piles near water features and covering with soil

4.9 LBAP priority species – bats

Bats are found throughout the city and make use of many of our parks and greenspaces, but our knowledge is patchy and incomplete.

Bat options

1	Carry out a programme of bat surveys to discover if the park is used by bats and to ascertain which species
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4.10 LBAP priority species – seed-eating birds

Seed-eating birds are mainly associated with farmlands, particularly stubble fields and other open areas. The main species of concern are:

- Skylark
- Linnet
- Yellowhammer
- Reed bunting
- Tree sparrow
- Grey partridge

Actions for the benefit of seed-eating birds should be concentrated in parks on and around farmlands, i.e. in the west, south-west and south Neighbourhoods.

Seed-eating bird options

1	Carry out a programme of bird surveys to discover if the parks near to farmland are used by seed-eating birds
2	Create habitats that will provide food for seed-eating birds by converting areas of suitable parks to biodiversity grassland / meadow
3	Provide food for seed-eating birds through the winter months

4.11 LBAP priority species – swift

Swifts are uniquely linked to the built environment as they nest in tall buildings and other structures.

Actions for swifts should be concentrated in areas that are already important for swifts – contact the Biodiversity Officer for further information.

Swift options

1	Provide swift nest boxes on suitable surfaces of any building over 5 m in height
2	Erect a swift tower – a collection of nest sites situated on the top of a telegraph pole

4.12 LBAP priority species – small pearl-bordered fritillary

The small pearl-bordered fritillary butterfly is a UKBAP priority species which is found in damp grassy habitats. The food plants of their caterpillars are native violet species – common dog-violet and marsh violet.

In Edinburgh there is one colony in Balerno Common so actions for this species should be focussed around this area.

Small pearl-bordered fritillary options

1	Plant native violets in damp, semi-shaded areas of the parks in the vicinity of Balerno Common
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4.13 LBAP priority species – bees

Many options laid out in the previous sections will be beneficial to bees, particularly those which provide more flowers for foraging, and nest sites for colonisation.

Bee options

1	Carry out a bee survey to see which species of bees use the park, seek advice
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from the Biodiversity Officer

4.14 LBAP priority species – priority plants

There are four priority plant species in the Edinburgh LBAP:

- Juniper *Juniperus communis*
- Maiden pink *Dianthus deltoides*
- Sticky catchfly *Lychnis viscaria*
- Rock whitebeam *Sorbus rupicola*

Adding any of these species to appropriate parks will help deliver the objectives of the Edinburgh LBAP and be of benefit to biodiversity.

LBAP priority plant options

1	Plant locally-sourced juniper shrubs in parks close to their natural range, in the Pentland Hills
2	Plant locally-sourced maiden pink, a herbaceous perennial, in dry areas of parks close to Holyrood Park
3	Plant locally-sourced sticky catchfly, a herbaceous perennial, in dry, stony areas of parks close to Holyrood Park, Blackford Hill, or Castle Rock
4	Plant locally-sourced rock whitebeam trees in well-drained or stony areas of parks
5	Use interpretation in parks where LBAP priority plants are growing to tell park users about plant conservation

5 Allotments

Allotments are wonderful places for biodiversity. The sheer number and density of different plants and habitats brings a huge diversity of invertebrates, birds and other life.

Most of the advice found throughout the rest of this booklet applies to allotments just as well as it applies to parks and greenspaces. For example, the general advice (Section 2) to avoid pesticides and herbicides, have dead wood on site, and delay the tidy up till spring, all apply to allotments. Many of the options for shrub beds and annual or perennial beds (Sections 3.5 and 3.6) can be adapted to allotment plots

5.1 Plots

There are a few extra steps you can take to really make your allotment a wildlife haven as well as productive plot.

Allotment plot options

1	Companion planting. A greater variety of plants on your plot means more biodiversity. Many traditional companion plants like marigold will flower and provide food for pollinating insects.
2	Delay the winter tidy up. Leave dry plant stems and seed heads where they are. They provide winter food for birds and places to rest and hibernate for invertebrates. They can also look attractive when covered in frost or snow. If possible leave the tidy up as late as March before clearing and getting started on your next crops.
3	Plant a native tree or shrub. This can be productive as well as wildlife-friendly. For example a dwarf apple tree, raspberry patch or some berry bushes will provide a crop for you and habitat for biodiversity.
4	Provide water. Even something as simple as an upturned lid or shallow dish will provide water for birds to drink. Add some pebbles to the dish to create a range of water depths.
5	Avoid peat. Peat mining destroys wild habitats and is unsustainable. There are a wide range of peat-free compost mixes now which are getting better all the time.
6	Leave some plants to bolt. Let some of your crop bolt and resist the urge to pull it up. The extra flowers will benefit pollinators. Once the plants have gone over you can collect the seed for next year and clear the patch.
7	Create a wildlife area. This can be a grassy path, a log pile, a wildflower patch, or a border made of native shrubs. A few of these areas found throughout an allotment site will add up to a large resource for biodiversity.

5.2 Common areas

Some features need a bit more space than a single plot can accommodate, or should be put in a quiet corner of the allotment site.

Allotment common area options

1	Dig a pond. A pond will attract frogs and toads, which will make short work of nearby slugs and snails. Perhaps two or four neighbouring plots could build a pond in their adjoining corners, or maybe a common space could be dug out. Either way a pond will add a huge boost to biodiversity on your site.
2	Bird and bat boxes. If you have mature trees then you could affix bird and bat boxes. Ideally they should be high up, out of reach of cats and vandals. If you have access to a big mature tree you could consider putting up an owl box. If they take up residence a family of owls will be a great help with rodent control.
3	Bug hotels. Bug hotels are easy to make and can be affixed to a shed, or even fenceposts. Many of the invertebrates that will take up residence in your hotels are predatory and will help keep aphids and other pests in check.
4	Create habitat piles. Find a space on your allotment site where a habitat pile of stones and dead wood can be created. This will be used by many different invertebrates and maybe frogs or hedgehogs.

5.3 Edges

The edge of an allotment site is often a good place to incorporate features for biodiversity.

Allotment edge options

1	Plant a mixed hedge. Natives like hawthorn, blackthorn, holly and brambles can be mixed with non-native pyracantha or Japanese rose to create a hedge rich in flowers and berries for wildlife. These species are all thorny so double-up as a security measure.
2	Liven up a fence. Native climbers such as ivy, honeysuckle, clematis will transform a boring fence into a colourful, wildlife-friendly feature. Again you can choose species with thorns if you want to improve security.
3	Hedge and fence bases. Leave the bases to form a good thick layer of mulch, you could supplement this with woody prunings or leaf litter. This will form a great habitat for invertebrates, which in turn will be a great food source for birds, small mammals and amphibians.

6 Appendices

6.1 Native spring-flowering bulbs

- English bluebell *Hyacinthoides non-scripta* (prefers light shade, ensure native species, not Spanish or hybrid)
- Lesser celandine *Ficaria verna*
- Lily of the valley *Convallaria majalis* (prefers shade)
- Snakeshead fritillary *Fritillaria meleagris* (prefers damp soil)
- Wild garlic *Allium ursinum* (prefers shade)
- Wild daffodil *Narcissus pseudonarcissus* (prefers damp soil)
- Wood anemone *Anemone nemorosa* (prefers shade)

6.2 Autumn-flowering bulbs

- Autumn crocus *Crocus sativus* (prefers sun)
- Meadow saffron *Colchium autumnale* (or other *Colchium* species)
- Cyclamen *Cyclamen* species
- Sternbergia *Sternbergia* species

6.3 Fruit and nut trees and shrubs

- | | | | |
|------------|------|----------------|-------|
| • Apple | Tree | | |
| • Cherry | Tree | • Blackcurrant | Shrub |
| • Medlar | Tree | • Redcurrant | Shrub |
| • Mulberry | Tree | • Whitecurrant | Shrub |
| • Pear | Tree | • Blueberry | Shrub |
| • Plum | Tree | • Chokeberry | Shrub |
| • Almond | Tree | • Gojiberry | Shrub |
| • Hazel | Tree | • Gooseberry | Shrub |
| • Walnut | Tree | | |

6.4 Flowering and fruiting shrubs

These plants are beneficial for biodiversity by, for example, providing a nectar source early or late in the season, or winter berries for birds.

- Orange-ball-tree *Buddleja globosa*

- Californian lilac *Ceanothus thrysiflorus*
- Wintersweet *Chimonanthus praecox*
- Witch-hazel *Hamamelis species*
- Hyssop *Hyssopus officinalis*
- Holly *Ilex* varieties (particularly *Ilex aquifolium* 'J. C. van Tol')
- Mahonia *Mahonia x media*
- Crab apple *Malus* (particularly 'Golden Hornet' cultivar)
- Guelder rose *Viburnum opulus*
- Bodnant Viburnum *Viburnum x bodnantense*

This list is adapted from the Plantlife publication: "Landscaping without harmful invasive plants."

http://www.plantlife.org.uk/campaigns/invasive_plants/alternatives/

6.5 Native tree species

The following species are native to the Edinburgh area.

- Alder *Alnus glutinosa*
- Aspen *Populus tremula*
- Ash *Fraxinus excelsior*
- Downy / silver birch *Betula pubescens* / *B. pedula*
- Bird / wild cherry *Prunus avium* / *P. padus*
- Crab apple *Malus sylvestris*
- Sessile / pedunculate oak *Quercus petraea* / *Q. robur*
- Rowan *Sorbus aucuparia*
- Yew *Taxus baccata*
- Holly *Ilex aquilifolium*
- Elder *Sambucus nigra*
- Blackthorn *Prunus spinosa*
- Various willows *Salix* species

6.6 Native and non-native hedging species

The following species are native to the Edinburgh area and are ideal for species-rich hedges. Species-rich hedges are typically composed of 60% Hawthorn or Blackthorn, alongside smaller numbers of at least 4 other species from the list below. This provides a mix of food sources and flowering periods.

- Hawthorn *Crataegus monogyna*

- Blackthorn *Prunus spinosa*
- Hazel *Corylus avellana*
- Dog rose *Rosa canina*
- Guelder rose *Viburnum opulus*
- Holly *Ilex aquifolium*
- Elder *Sambucus nigra*
- Crab Apple *Malus sylvestris*

The following are common non-native hedgerow species of value to biodiversity:

- Japanese rose *Rosa rugosa*
- Beech *Fagus sylvatica*

6.7 Native and ornamental climbers

The following native species can add value to both existing low-value hedgerows and newly planted species-rich hedges:

- Honeysuckle *Lonicera periclymenum*
- Clematis 'Traveller's Joy' *Clematis vitalba*
- Ivy *Hedera helix*

There are many non-native climbers which fulfil the same functions, for example:

- Everlasting sweet pea *Lathyrus latifolius*,
- Clematis cultivars *Clematis*

6.8 Herbaceous perennials

There are many thousands of herbaceous perennial species and cultivars that are valuable to biodiversity, here are some suggested native species:

- Bloody Cranesbill *Geranium sanguineum*
- Bluebell *Hyacinthoides non-scripta*
- Clustered Bellflower *Campanula glomerata*
- Common Mallow *Malva sylvestris*
- Cowslip *Primula veris*
- Field Scabious *Knautia arvensis*
- Giant Bellflower *Campanula latifolia*
- Greater Knapweed *Centaurea scabiosa*

- Harebell *Campanula rotundifolia*
- Kidney Vetch *Anthyllis vulneraria*
- Maiden Pink *Dianthus deltoides*
- Meadow Cranesbill *Geranium pratense*
- Meadowsweet *Filipendula ulmaria*
- Melancholy Thistle *Cirsium heterophyllum*
- Ox-eye Daisy *Leucanthemum vulgare*
- Primrose *Primula vulgaris*
- Ragged Robin *Lychnis flos-cuculi*
- Red Campion *Silene dioica*
- Selfheal *Prunella vulgaris*
- Sneezewort *Achillea ptarmica*
- St John's Wort *Hypericum perforatum*
- Tansy *Tanacetum vulgare*
- Toadflax *Linaria vulgaris*
- Water Avens *Geum rivale*
- White Campion *Silene alba*
- Yarrow *Achillea millefolium*
- Yellow Flag Iris *Iris pseudacorus*

6.9 Sources and further reading

- “Making contracts work for wildlife – how to encourage biodiversity in urban parks”, published by CABI Space and available online:

<http://www.cabi.org/uk/publications/making-contracts-work-for-wildlife>

- Biodiversity in Urban Gardens – research project with results available online:

<http://www.bugs.group.shef.ac.uk/index.html>

Or for a non-academic version of this project see the excellent book by Ken Thompson, “No Nettles Required”.

- “Habitat Management for Conservation” by Malcolm Ausden, published by Oxford University Press
- “Pollinator-Friendly Parks” by the Xerxes Society for Invertebrate Conservation, available online:

<http://www.xerxes.org/guidelines-pollinator-friendly-parks/>

- “Landscaping without harmful invasive plants”, by Plantlife and the Royal Horticultural Society, available online:

http://www.plantlife.org.uk/campaigns/invasive_plants/alternatives/

“Wildlife on allotments” by Natural England

<http://publications.naturalengland.org.uk/publication/31035>

6.10 Contact details

This guide was written by Malcolm Fraser, Biodiversity Officer for City of Edinburgh Council. Contact: biodiversity@edinburgh.gov.uk

