

Nature Strip Biodiversity Report – Habitat Summary and Recommendations

Overview

Situated within the Craigmillar Park Association conservation area, the five Nature Strips between Granby Road and Craigmillar Park, in the south of Edinburgh, are an asset to the area, both in terms of providing valuable habitat for wildlife in an otherwise residential setting, in addition to enhancing the green space of the area with the additional health and wellbeing benefits this provides to residents.

One of the biggest challenges facing wildlife in cities is habitat fragmentation: areas of suitable habitat are broken up, becoming islands that are increasingly disconnected, reducing species ability to disperse leading to population declines as a result of their isolation. Conserving areas of green space within urban areas can therefore play an important role in protecting wildlife found there by providing habitat corridors of connectivity.

The gathering momentum shown by the local community to maintain the Nature Strips is a promising sign for maximising their potential biodiversity value and such pro-active participation should be encouraged. The following report aims to assess the short and long term needs of the Nature Strips, as follows:

Short term aims:

- reduce the dominance of laurel (both cherry and Portuguese species (*Prunus laurocerasus* and *Prunus laurocerasus*))
- improve native species diversity and gradation of vegetation from ground flora through to the shrub layer and tree canopy.

Long term aims:

- plan for the regeneration of tree species through planting of (or maintenance of existing) saplings to replace mature trees when they reach the end of their lifespan.

These aims are defined in greater detail in the following pages, firstly providing general observations applicable to the Nature Strips as a whole, before going on to outline more detailed recommendations for each Nature Strip.

It should be noted that this report was compiled in winter - a time when vegetation is reduced – and it therefore has not been possible to assess the full seasonal plant diversity present at the site and the potential wildlife it supports.

General observations:

One of the first aspects to take into consideration is the general species composition of the site in question, which, in the case of the Nature Strips, is wooded habitat. The ground flora of an area is determined by tree composition as the amount of light reaching through to ground level will be determined by how dense the canopy is above. In this respect, it is difficult to bring about significant changes to the ground flora and it is best to encourage the natural composition of species associated with each respective habitat. Mature trees are incredibly valuable for the diversity of life they support – from providing shelter, nesting sites and food for birds, to providing habitat under their bark and in dead wood for invertebrates, in addition to floral resources for pollinators. Furthermore, the high level linear corridor created by mature trees is an important piece of habitat connectivity in an urban setting, allowing wildlife to exist in a habitat that does not receive as much human disturbance as at ground level. It is important to keep this ‘above ground’ biodiversity in mind, although it is easy to perceive ‘ground level’ biodiversity (that falls more easily into our range of sight) as poorer and in need of management.

Holly (*Ilex spp*), a dominant species in the nature strips, is native to Scotland and is beneficial to wildlife: the dense canopy provides good shelter for birds with the berries providing an important winter food source for species such as thrushes. In addition the leaf litter, when left undisturbed, provides suitable shelter for small mammals such as hedgehogs during hibernation (Woodland Trust). Although it does limit light to the understory, it is a species that should be conserved for its biodiversity value. New suckers and saplings should be removed to prevent complete dominance of the understory while keeping one of two species to ensure long term regeneration.

Cherry laurel (*Prunus laurocerasus*) is an invasive shrub species that does not support a rich fauna (Kirby, 2013), especially when it grows to dominate as it has done here - behind the dense canopy layer is often hollow space where lack of light prevents any ground flora from establishing. This empty space is often devoid of branches or other habitat to provide shelter for birds and other animals. The removal of the laurel would allow a gradual opening of the canopy, in particular where the laurel is along the pavement edge of the strip. This would benefit the ground flora and would help in the creation of a graded vegetation structure that is more beneficial to wildlife (Figure 1).

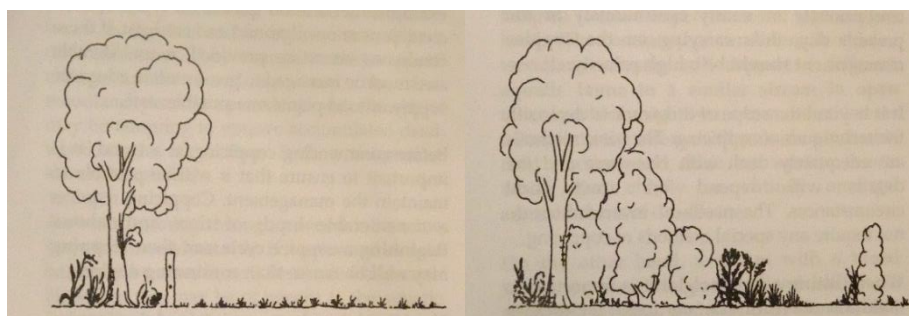


Figure 1. A transformed woodland margin. Left: badly structured with an abrupt margin. Right: well-structured with graded vegetation to provide cover from ground through to tree level. (Kirby, 2013)

Species such as *Rhododendron* and *Lonicera nitida* should also be avoided as they support few invertebrate species (birds feed on insects as well as berries and seeds so a plant that supports high invertebrate biodiversity is preferred (Kirby, 2013)) and rapidly spread if not well maintained.

A potential problem in the long term is likely to arise as the mature trees reach the end of their life span and are removed by the council, creating a sudden loss of habitat unless sapling regeneration is encouraged now to create a stand of trees diverse in age and structure. In a woodland, regeneration would naturally occur out of the canopy reach of mature trees where light is greater. However the challenge in urban areas is to facilitate regeneration despite the space limitations. Therefore, as the canopy is opened up through the removal of laurel (and the inevitable loss of veteran trees), a mix of native broadleaved species such as oak (*Quercus spp*), ash (*Fraxinus excelsior*) and rowan (*Sorbus aucuparia*) could gradually be established. In the short term, planting of birch saplings (*Betula spp*) would help create diversity of height as they are quick growing, with their seeds providing good food for birds. If collaboration with the council is possible, the trunks of mature trees should be left standing, as they can still provide good above ground nesting and roosting sites for birds until the next generation of trees has matured, in addition to providing valuable standing deadwood for invertebrates and fungi.

Hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) make good hedgerow plants, providing a variety of flowers throughout the season as well as autumn and winter food for birds. Hazel (*Corylus avellana*) is also a useful species, both in a hedge and as a tree with the advantage of being well suited to coppicing should it grow larger than residents' desired height. Coppicing should however be done in rotation in order to maintain height and age variation within the stand (Kirby, 2013). These species should be planted where light availability is greatest. Elder (*Sambucus nigra*) and buddleia (*Buddleja davidii*) are also good scrub species.

Ivy (*Hedera spp*) creates a valuable ground cover habitat that provides shelter for invertebrates and small mammals, in addition to providing a floral resource late in the season for pollinators and fruit for birds. Other species present throughout the Nature Strips such as *Cotoneaster spp* and box (*Buxus sempervivens*) provide an alternative floral resource for pollinators and berries for birds where native species are not available, in addition to dense branches which are good for shelter and for birds to move along. Shrub height should be carefully maintained through yearly pruning - regular cutting back encourages growth at the base, providing continuous shelter from ground level upwards which is lost as the shrub becomes more tree like. In terms of general maintenance, species that are growing through the fence should be cut back in order to keep the fence line defined.

In all the Nature Strips, creation of deadwood piles would be beneficial to invertebrate species. Log piles should range in size (but not greater than 2x3m – 1x1m is ideal), differing in shape, size and position within the strips (not limited to the back wall) to create a range of light and moisture conditions suitable for a variety of invertebrates (Kirby, 2013, see Figure 2.). Brash does not create a very effective deadwood habitat and should be cleared from the site as it is created as it can suppress ground flora.

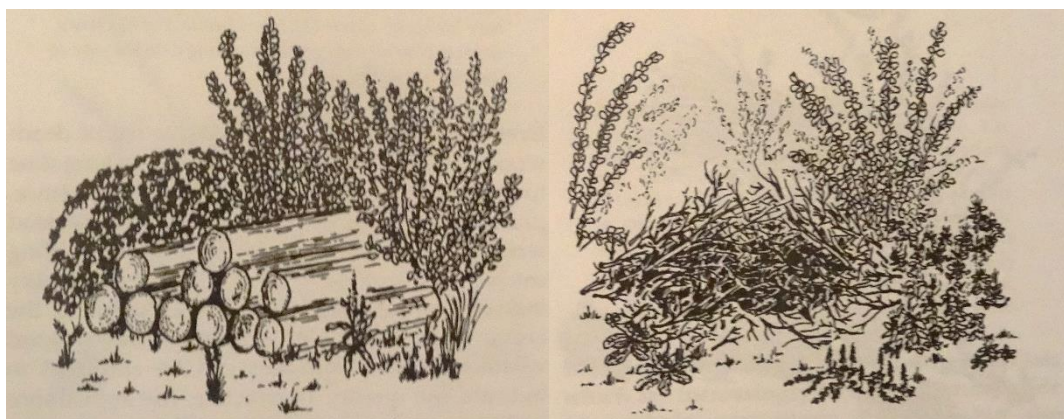


Figure 2. Log piles created in a variety of light and moisture conditions (left), are a convenient way of dealing with large amounts of material from management, although heaps of fine twigs and branches mounded into 'habitat piles' (right) are of limited value. (Kirby, 2013)

As the canopy is opened up, a more diverse ground flora should be encouraged with species such as common dog violet (*Viola riviniana*), dog rose (*Rosa canina*), red campion (*Silene dioica*), yellow archangel (*Lamium galeobdolon*), knapweed (*Centaurea spp*), green hellebores (*Helleborus viridis*), wood crane's bill (*Geranium sylvaticum*), primrose (*Primula vulgaris*), foxglove (*Digitalis purpurea*), columbine (*Aquilegia vulgaris*) and lungwort (*Pulmonaria officinalis*) suited to shady or semi-shady conditions (Stevens, 1990) as found in the Nature Strips. Snowdrop (*Galanthus spp*) and *Crocus spp* are also good floral resources early in the season.

Many legumes are good for pollinators (rich in nectar and the pollen is rich in protein) – the installation of raised planters with edible herbs at ends of the nature strips which are open and receive more light would create important islands of connectivity within the area, in addition to providing some amenity value through edible herbs available to the community. Common herbs such as marjoram (*Origanum marjorana*), chive (*Allium schoenoprasum*), thyme (*Thymus vulgaris*) and rosemary (*Rosmarinus officinalis*) are all suitable species. Raised planters would keep the area well defined if the well-maintained appearance of the strips is a concern for residents.

Care should be taken that any plants, bulbs or wild flower seeds are free from neonicotinoid, a pesticide that is particularly harmful to pollinators such as bees. Even when sold as bee friendly, the seeds can be coated with neonicotinoid so it is important to check with the supplier.

An important part of conservation is to encourage the recording of wildlife sightings in the Nature Strips. Over time, the presence (or absence) of particular species can serve as a useful indication as to the effectiveness of habitat management strategies that have been implemented and guide future projects at the site. Members of the local community are encouraged to upload any photos or sightings to websites such as iSpot (for help with identification, www.ispotnature.org/communities/uk-and-ireland) and iRecord (www.brc.ac.uk/iRecord/) where sightings are shared with the Local Environmental Record Centre (TWIC for the Edinburgh area, www.wildlifeinformation.co.uk) to contribute to the monitoring of biodiversity in the wider area.

Nature Strip 1: Granby Road (between Suffolk Road and West Saville Road)

Nature Strip 1 (NS1) is comprised of a mix of holly (*Ilex spp*), elm (*Ulnus spp*), yew (*Taxus baccata*) and beech (*Fagus sylvatica*) trees with an understory dominated by laurel (both cherry and Portuguese species (*Prunus laurocerasus* and *Prunus laurocerasus*)) with *Cotoneaster spp*, box (*Buxus semperivens*), privet (*Ligustrum spp*), hawthorn (*Crataegus monogyna*) and elder (*Sambucus nigra*) species also present. The dominance of evergreen species such as holly and laurel in addition to the presence of a mature beech tree mean that, by nature, the ground flora is relatively species poor due to lack of light reaching the understory allowing only shade tolerant species such as box to thrive. A handful of yew specimens are present in NS1, a slow growing native evergreen whose dense branches and berries provide good habitat for birds. Although beech casts a deep shade, the seeds are a rich source of oils for birds such as finches (Scottish Government, 2002) and the deadwood supports a rich fauna (Kirkby, 2013).

As previously mentioned, holly (*Ilex spp*) is a native species to Scotland, providing shelter and food for birds and is therefore of value. Laurel (*Prunus spp*), however, is an invasive shrub species that supports few invertebrate species (which in turn reduces its potential value to birds who feed on insects). It has grown to dominate the southern part of NS1 where the dense outer leaves have created a hollow shell devoid of dense branches other species such as hawthorn (*Crataegus monogyna*) would provide, and which are useful shelter for birds and other animals. Gradual removal of both species of laurel, at a rate of one tree per year would allow a gradual opening of the canopy, in particular where the laurel is along the pavement edge of the strip, increasing light availability for the ground flora to be established.

A further contributing factor to the lack of ground cover stems from the height of the box shrubs which have grown to form a 'wall', outgrowing their original purpose as small shrub plants. As laurel is thinned out, accompanying box should be cut back accordingly to create a more gradual gradient from ground level upwards (see Figure 1).

As the council remove the mature elm and younger saplings, thought should be given to the long term regeneration of mature trees, especially given the lengthy time period it takes for such trees to establish. The dominance of established holly trees pose a challenge in this respect due to the lack of light in the understory necessary to allow saplings (of other species) to establish themselves. When sufficient canopy opening has occurred, oak (*Quercus spp*) is a potential species to introduce as it can coexist with holly (Scottish Government, 2002). Alternatively elm (*Ulnus spp*) could be replanted, although if the death of the current elm was a result of fungi it is better to choose a different, more resistant species, as replanting of the same species may be susceptible to the same fate. The removal of the dead elm also provides the opportunity to create deadwood habitat for invertebrates if the council are able to leave a small amount of the timber once the tree has been felled - smaller upper branches are ideal (but not thin twigs or brash, see Figure 2.). Leaving the stump to rot would also provide fantastic habitat for invertebrate and fungi to develop (Kirby, 2013).

A natural opening would occur towards the centre of the strip where habitat is already quite open (to the north of the telegraph pole) - the inner edge along the wall benefits from a more open aspect because of the neighbouring gardens. In the long term, native deciduous trees such as rowan (*Sorbus aucuparia*), hazel (*Corylus avellana*) and birch (*Betula spp*) with a hawthorn (*Crataegus monogyna*) or blackthorn (*Prunus spinosa*) shrub understory could be introduced – species that provide floral resources for pollinators in addition to berries and seeds for birds and small mammals.

The northern tip of the Nature Strip is much more open in nature. The rowan is an excellent autumn food source for birds. Snowdrop (*Galanthus spp*), *Crocus spp* and bluebell (*Hayacinthoides non-scripta*) bulbs could be planted here to provide early nectar sources as pollinators emerge in the spring. A native wildflower mix could also be sown to provide nectar source throughout the season, or an edible herb bed could be established, as mentioned in *General Observations*.

Nature Strip 2: Gilmour Road (between West Saville Road and Suffolk Road)

The second Nature Strip (NS2) is comprised of a greater mix of deciduous broad leaved trees than in NS1 allowing for better gradation and diversity of understory vegetation both in terms of species composition and height which is beneficial to biodiversity. NS2 benefits from several mature Sycamore (*Acer pseudoplatanus*) trees, a species which supports a high biomass (although not necessarily high diversity) of invertebrates per tree. However the large quantities of leaf litter produced are slow to break down which can suppress ground flora. Although originally a non-native species, sycamore has become such a well-established species that many environmentalists now consider it as native, (Kirby 2013).

Taking long term regeneration of trees into account, and in order to try and establish a greater mix of species, ash (*Fraxinus excelsior*) and oak (*Quercus spp*) (already present on the site) would represent good species to try and establish due the rich fauna they support (Scottish Government). The beech (*Fagus sylvatica*) trees to the south of the large beech should be removed if the desired long term plan is to improve ground cover by creating a canopy that lets in more light (beech creates a very closed canopy).

The mix of box (*Buxus sempervivens*), and *Cotoneaster spp* plants should be maintained as they are useful species for creating a linear corridor along which birds can move sheltered and unseen, although their height could be reduced in some areas.

Care should be taken when transplanting garden plants into the Nature Strip as species such as *Rhododendron* do not support many invertebrate species and can become invasive unless carefully maintained (Kirby, 2013). The open nature of the northern corner of the strip, similar to NS1, represents an opportunity to create good habitat for pollinators through the planting of spring bulbs such as *Crocus spp*, snowdrop (*Galanthus spp*) and bluebell (*Hayacinthoides non-scripta*) in addition to wildflower seed such as knapweed (*Centaurea spp*), green hellebores (*Helleborus viridis*), wood crane's bill (*Geranium sylvaticum*), primrose (*Primula vulgaris*), foxglove (*Digitalis purpurea*), and columbine (*Aquilegia vulgaris*), as mentioned in *General Observations*, to create a continuous nectar source from early spring to late summer. This is also an area where an edible herb bed could be established (see the *General Observations* section).

Nature Strip 3: Suffolk Road north (between Gilmour Road and Craigmillar Park)

Nature Strip 3 (NS3) is dominated by laurel (both *Prunus lusitanica* and *Prunus laurocerasus*) and holly (*Ilex spp*) species – increasing the diversity of the strip would provide more niches for wildlife. Removal of laurel, in particular from the mid-section where few other species are present would open up an area suitable for introducing a mix of native deciduous species. A young beech (*Fagus sylvatica*) and hawthorn (*Crataegus monogyna*) hedge has been started along the pavement edge, and should be extended with additional hawthorn and other good hedgerow species such as blackthorn (*Prunus spinosa*) and hazel (*Corylus avellana*). Birch saplings (*Betula spp*) would quickly provide good height if cover is wanted for privacy along the wall edge where the planting of *Leylandii* should be limited (with existing *Leylandii* hedge well maintained to prevent excessive growth). Elder (*Sambucus nigra*) is also a good species for creating gradation of vegetation height between shrub and tree layers in addition to being a good floral resource with autumnal berries. Foxgloves (*Digitalis purpurea*) and buddleia (*Buddleja davidii*) would also provide greater diversity of floral resources along the edge of the strip.

Diversity increases in the western half of the strip towards Craigmillar Park with a mix of box (*Buxus sempervirens*), privet (*Ligustrum spp*), Laburnum, holly (*Ilex spp*), sycamore (*Acer pseudoplatanus*) and Mahonia species. Reducing the height of the shrubs would allow more light in at ground level, except at the corner with Craigmillar Park where the thick box hedge acts as a good barrier. Lesser periwinkle (*Vinca minor*) and honeysuckle (*Lonicera periclymenum*) vine in this section also provides good ground cover, and therefore shelter, in the winter for small mammals and birds. *Lonicera nitida* should be avoided, however as it has a tendency to be invasive.

Two ash (*Fraxinus excelsior*) trees are present in NS3, a species that is very beneficial to wildlife: the leaves provide food source for a variety of moths such as the privet hawk moth (*Sphinx lugustris*), while the winged seeds are popular with bullfinches and the bark often supports a range of lichens and mosses (Woodland Trust). One of the ash trees at NS3 is covered in ivy (*Hedera spp*) which, contrary to popular belief, is not damaging to the tree but instead enriches the biodiversity it supports through the additional food, shelter and nesting sites it provides (Kirby, 2013). Taking the long term regeneration of trees into consideration, ash therefore represents a suitable species to be planted as a sapling where habitat is opened through the removal of laurel (*Prunus spp*) or loss of mature trees - its existing presence in the strip indicates soil conditions are suitable for it. Oak (*Quercus spp*) and rowan (*Sorbus aucuparia*) should also be considered in order to create a mix of species along with hazel (*Corylus avellana*), a good understory species for ash (Woodland Trust).

Nature Strip 4: Suffolk Road south (between Gilmour Road and Craigmillar Park)

Split into two sections, Nature Strip 4 (NS4) is comprised of mature holly (*Ilex spp*) and sycamore (*Acer pseudoplatanus*) trees with a box (*Buxus sempervivens*) and laurel (*Prunus spp*) understory interspersed with *Mahonia* and a ground covering of ivy (*Hedera spp*) and lesser periwinkle (*Vinca minor*). Ivy (*Hedera spp*) as ground cover brings benefits through shelter and as a food resource (in particular as a late flowering floral resource for pollinators), however it should be cut back where it is intertwined with the fence. It should not be removed completely though, as it is good for creating continuous habitat cover between smaller shrubs, particularly where the light limitations from the overstory prevent a more diverse ground flora from being established.

Where box has formed a tall hedge on the pavement side, reducing the height would help create gradation of vegetation structure and help increase light to the understory. Areas against the wall, however, tend to have a more open aspect and so understory scrub species such as elder (*Sambucus nigra*) and hawthorn (*Crataegus monogyna*) could be established. Yew (*Taxus baccata*) is a valuable species and should be maintained, while unwanted sycamore (*Acer pseudoplatanus*) and holly (*Ilex spp*) saplings should be removed.

Portugal laurel (*Prunus lusitanica*) is present in the western half of NS4 and has grown to dominate. As in other Nature Strips, its removal would greatly open up the area for a more diverse mix of native species to be established, benefiting from increased light availability along the wall edge. Elder (*Sambucus nigra*) is present along the strip and is a good shrub of intermediate height, so could be planted along with hawthorn (*Crataegus monogyna*) and rowan (*Sorbus aucuparia*), bordered by species such as buddleia (*Buddleja davidii*) and foxgloves (*Digitalis purpurea*) along the wall edge.

The western corner of NS4 has an open aspect where a mix of wild flowers and spring bulbs could be sown, as with NS1 and NS2.

Nature Strip 5: Gilmour Road (between Wilton Road and Lygon Road)

Nature Strip 5 (NS5) is comprised of a mix of mature sycamore (*Acer pseudoplatanus*), plum (*Prunus spp*) and holly (*Ilex spp*) trees, with several *Laburnum* and a dominance of *Rhododendron* and cherry laurel (*Prunus laurocerasus*). Box (*Buxus semperivens*) is also present. The northern end is characterised by garden species such as *Camelia*, *Begonia*, and *Euonymus*, benefited by the presence of a small apple (*Malus spp*) tree whose flowers and fruits support a good range of species.

As in the other Nature Strips, NS5 would greatly benefit from the removal of laurel throughout the strip, in addition to the removal of *Rhododendron* which has become invasive. Where clearance of these species results in sufficient opening, hazel (*Corylus avellana*) could be introduced, particularly if residents are concerned about the height of vegetation blocking light to their property, as hazel can be easily coppiced. In the long term, as the *Laburnum* trees reach the end of their life span, rowan (*Sorbus aucuparia*) would be a suitable replacement.

Reducing the height of the box (*Buxus semperivens*) hedge, and in some cases replacing it with native hedgerow species such as hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) along the edge of the strip would increase species diversity. At ground level, small shrubs such as *Ceanothus spp* and *Cotoneaster spp* would provide cover while wild flower species such as foxgloves (*Digitalis purpurea*) would be suitable where light allows.

Bibliography

Kirby, P (2013) *Habitat Management for Invertebrates: A Practical Handbook*, Sandy, UK, RSPB

Scottish Government, (2002) *Scotland's Native Trees and Shrubs – a designer's guide to their selection, procurement and use in road landscape*,
www.gov.scot/Publications/2002/06/14891/5585

Stevens, John (1990) *The National Trust book of Wild Flower Gardening*, London, UK, Dorling Kindersley

Woodland Trust, *The Guide to British Trees* www.woodlandtrust.org.uk/visiting-woods/trees-woods-and-wildlife/british-trees/