DEVON WILDLIFE CONSULTANTS

Meadow in Ottery St Mary, Devon

Habitat Management Plan

Report No: 19/3539.01
Date: September 2019

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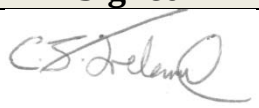
Initial Issue	**Carly Ireland MSc. MCIEEM**		24/09/2019

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Contents

1 Introduction

1.1 Introduction

This report contains the results of a Habitat Management Plan for a small meadow located to the west of Ottery St. Mary, Devon at National Grid Reference SY 093 953. An industrial estate is located to the west of the site, pasture and arable fields to the north, and the river Otter to the east.

1.2 Background

This report contains details of a Habitat Management Plan for approximately 0.5ha of grassland, hedgebank, riverbank and scrub. A site assessment was undertaken on 5th August 2019 by Tom Nitti BSc. (Hons) GradCIEEM, to identify the habitats currently present and provide advice on managing and enhancing these habitats.

2 Site Description

2.1 Habitats

The survey area consists predominantly of a mosaic of tall ruderal species, poor semi-improved grassland and scrub. A defunct hedgebank with outgrown trees forms the northern boundary, a fence line forms the western boundary and the river Otter forms the eastern boundary. The eastern boundary narrows to a southern point and joins the western boundary. A full species list is presented in Appendix 1. An Extended Phase 1 Habitat Survey Map (DWC Drawing Number 19/3539.01-01) is presented in Appendix 2, including Target Notes (TN) highlighting features of interest.

2.1.1 Grassland

The grassland field is approximately 0.5 hectares in size and recently contained overgrown tall ruderal species and scattered scrub before being cut in 2018. At the time of the survey the field had not been recently grazed or cut and contains a mosaic of common nettle *Urtica dioica* and creeping thistle *Cirsium arvense*, grass species and patches of dense and scattered scrub.

The grass sward ranges in species composition and sward height (5-30cm). A rabbit-grazed patch of grassland is present in the southern extent of the survey area and consists predominantly of annual meadow grass *Poa annua,* creeping bent *Agrostis stolonifera* and Yorkshire fog *Holcus lanatus*. A band of wetter grassland is present along the eastern boundary, the sward height is much higher (20-30cm) and includes additional species such as crosswort *Cruciata laevipes*, water mint *Mentha aquatica*, common burdock *Arctium minus*, red campion *Silene dioica* and Himalayan balsam *Impatiens glandulifera*.

An area of dense bramble *Rubus fruticosus* agg. scrub is located in the north-eastern corner of the survey area adjacent the river Otter. Scattered tall ruderal species and river side vegetation is present along the remaining eastern boundary, consisting of creeping comfrey *Symphytum grandiflorum*, bristly oxtongue *Helminthotheca echioides*, teasel *Dipsacus fullonum*, ragwort *Senecio jacobaea* and large swathes of Himalayan balsam.

2.1.2 Hedgebank

The survey area contains a single hedgebank which forms the northern boundary. Due to the lack of previous management, the hedgebank has become defunct under the weight of the outgrown trees, some of which have collapsed adjacent the former bank. Species present include ash *Fraxinus excelsior*, pedunculate oak *Quercus robur*, holly *Ilex aquilfolium*, hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*. The herbaceous species associated with the hedgerow are limited to small stands of red campion and lesser burdock due to the dominance of ivy *Hedera helix* and nettle.

2.1.3 Riverbank

The river Otter which flows on a north to south orientation along the eastern boundary has eroded in patches, leading to areas of loose pebbles and vegetation growing immediately adjacent the river. This vegetation is mostly dominated by Himalayan balsam, waterpepper *Persicaria hydropiper*, ragwort, broad-leaved willowherb *Epilobium montanum* and figwort *Scrophularia nodosa*.

3 Habitat Management Advice

3.1 Introduction

These recommendations are to provide information on how to increase biodiversity within the site, with particular emphasis on improving the floral diversity of the grassland and improving the ecological value of the hedgebank and riverbank.

3.2 Habitat Recommendations

3.2.1 Species poor semi-improved grassland & Tall ruderal vegetation

Aim: To increase biological diversity of the poor semi-improved field

Objectives: Introduce a cutting/grazing regime and reseed an area with a wildflower mixture

Management:
Poor semi-improved grassland is characterised by a relatively low diversity of plant species, with grasses such as perennial rye grass, Yorkshire fog, cock's foot and sweet vernal grass becoming dominant. These vigorous growing grasses outcompete herbaceous forbs, which are often flowering species which provide plentiful resources for invertebrates and therefore help increase general biodiversity. The majority of grassland surveyed consists of poor semi-improved grassland with varying sward heights. It would be beneficial to encourage the transition of poor semi improved grassland into patches of semi-improved grassland and wetland vegetation via management. One such way of achieving this is to reduce the vigour of grasses and tall ruderal species and encourage seed setting of herbaceous species.

Cutting/grazing regime
Two key periods are important to consider when controlling the vigour and growth of the grasses: late March and August/September.

In March it is advantageous to achieve a minimal sward height, approximately 5cm, thus creating an open sward allowing the floral herbaceous plants to grow without being swamped by the denser grass species. Attaining this reduction in sward height may be achieved by grazing or cutting, although if cut it is imperative that all cuttings are removed, as the lying vegetation will decompose the vegetation beneath and add nutrients back to the soil, benefiting vigorous growing grass species.

In August/September grazing/cutting should aim to significantly reduce the biomass of the grassland, removing as much of the summer growth as possible. This removes the dead growth and provides spaces for the newly produced seed to set. At this time of year, it is advantageous to apply particularly heavy levels of grazing to break up the former growth and create bare spaces which provide the maximum encouragement for the seed and subsequent growth of the floral species.

During the winter, grazing or cutting may be undertaken as necessary, and if maintained this would help achieve an open sward for the spring period. During the summer months, between March and August/September, any reduction or omission of grazing/cutting will encourage the floral diversity of the grassland sward, particularly allowing the herbaceous species to flower and set seed.

If high densities of tall ruderal species such as common nettle, creeping thistle, broad-leaved dock, cow parsley *Anthriscus sylvestrisor* or hogweed *Heracleum sphondylium* occur within the grassland areas these species may be individually topped, preferably before setting seed. It may be desirable to retain some tall ruderal species providing they occur within a discreet location, such as within the boundary near the hedgerow or in the corner of the field. The presence of these species may encourage invertebrate abundance within the site, for example nettle is the larval host plant for peacock *Inachis io* and comma *Polygonia c-album* butterflies.

Seeding wildflowers
An alternative, though potentially costly, option would be to re-seed the field, or part of the field, with a wildflower meadow mixture in the western, central and northern areas of the site and meadow mixture for wetlands in the south-eastern corner of the site.

The wildflower mixes should be seeded onto scarified ground during the autumn. Seed can also be sown in spring, although certain flora species require over wintering before germination will occur and any grassland present may out compete the new seedlings during the first growing season. Seeding should avoid periods of frost or drought associated with winter and summer, respectively.

Seed should comprise a range of native wild grasses and herbaceous species, being ideally sourced from a specialist supplier of UK native species such as Emorsgate Seeds. Seed should be surface sown at a rate of 4g/m^2 and should not be covered with any earth. Yellow rattle *Rhinanthus minor* should form an important component of the introduced meadow seed, as this species is partially parasitic on grass species, slightly reducing the vigour of the grasses to the advantage of the flowering herbaceous species.

If the mix has been sown in the autumn then in the following year a cut should be undertaken in mid-summer, rather than in the spring, to reduce the vegetation to approximately 5cm. The resulting arisings from the cut should be removed. Once the wildflower meadow is established it should be managed through two cuts per year and the arisings removed, as described above.

3.2.2 Hedgebank

Aim: To increase the ecological value of the hedgebank along the northern boundary

Objectives: Establish a coppicing routine and restore the defunct hedgebank

Due to the lack of previous management, the bank of this hedgerow has become defunct under the weight of the outgrown trees, some of which have collapsed adjacent the former bank. Species present include ash, pedunculate oak, holly, hawthorn and blackthorn.

Management:
The restored hedgebank should be created in line with the Devon Hedge Group specifications (see Reference list). Devon hedges, including their banks, are very variable in size, type and shape, therefore it is recommended that the size and shape of the hedgebank adheres to the characteristics of the existing hedgebank present within the site. This will ensure that the newly created hedgebank complements others in the area and strengthens local landscape character. Therefore, the specifications outlined below with regard to size of bank are for approximate guidance only and should be adapted to fit with the form of the existing hedgebank.

Hedge coppicing
As a result of a lack of management to the outgrown hedgebank, it is likely that the vegetation will be too thick and infrequent to lay. Coppicing should be carried out between November – March, which is outside the nesting bird season and in line with when the hedge is dormant. If possible, some mature trees should be left to allow installation of bird and bat boxes.

Stems should be cut at an angle to allow water to run off, and at distance of between 7.5 – 5cm from the top of the bank to encourage vast re-growth from the base of the tree. Due to the present of holly within the hedgebank, this species should be coppiced higher (20cm) as it does not favour severe coppicing.

As coppicing will be undertaken alongside bank restoration, the coppiced stools should not be covered with earth by coppicing the stems at the proposed height of the finished bank, allowing the hedge sufficient light to grow. However, if this is not feasible, as so much new earth is required to build up a severely eroded bank, then a new hedge will have to be planted.

Ditch Creation & Turfing
The entire line of the hedgebank inside the field should be cleared of all vegetation and a shallow trench should be dug. The resulting turfs should be retained for the face of the bank. The width at the base of the bank should be one and a half times the height. The base of the hedgerow will be a maximum wide of 1.2m, with the bank constructed to a maximum height of 800mm.

As detailed in the Devon Hedge Group advice sheet ‘Devon hedge creation: new turf faced banks and planting’, turves should ideally be cut using a shovel. The angle at which the base of each turf is cut will determine the way it sits on the hedge, so sloping rather than straight bases are preferable. Turves should preferably be 300mm in length to ensure adequate course overlap. Turves should be placed with the grass facing outwards in level courses following a bricklaying stretcher bond pattern, ensuring that the joints are staggered. Each layer of turves should be set back marginally compared to the previous layer (by approximately 10 mm), and at the same time a slightly concave batter created. This should encourage stability of the bank structure and will also allow rainwater to run into the root area of each layer of turf.

Upon completion of each course of turves, the core of the hedge should be backfilled with subsoil. Ideally the subsoil should contain few stones to minimise the risk of hedge faces slumping inwards overtime as fill soil migrates downwards in between stone crevices. The fill should be thoroughly compacted, ideally being tamped manually. Essentially, the soil on the back of the turves must adhere with the fill to create a strong bond. When tamping, pressure

should be applied in both an inwards and a downwards direction. This will help to ensure that turves are consolidated and prevented from being pushed outwards by the pressure of the fill.

Gapping up and planting
It is likely that gaps will be present when the bank has been restored and coppiced. These gaps should be replanted to maintain habitat connectivity within the hedgebank. However, once the bank has been restored it is recommended that you wait for at least a year to allow the earth to settle before planting up any remaining gaps. It is important to monitor the vegetation growth within the gaps, as additional plant matter will likely grow due to the increased light levels. This vegetation should be removed making it easier to plant up.

Where new planting is required, the top of the bank should be flattened to a width of 300mm and finished with loose soil, which will allow space for the planting of 4/6 shrubs per metre in a double row. It is preferable not to turf or grass-seed the top of the bank as grass growth will impede the growth of the shrubs. Grass is far more effective at taking moisture out of the bank and this can become critical to shrubs at dry times during the year.

The planting composition will reflect the current assemblage present within the existing hedgerows, with additional species included in order to increase diversity. It is recommended that planting comprises hawthorn, hazel, elder, pedunculate oak, beech *Fagus Sylvatica* and holly. Honeysuckle *Lonicera periclymenum* should also be included within the planting schedule as this species is utilised by dormice for nest building. Although present within the existing hedgebank, it is not recommended that blackthorn is included within the planting schedule as this is a suckering species which will readily colonise the new hedgebank from the existing vegetation. Any additional planting could result in dominance of this species within the new hedgebank.

Hedgerow Management
Management should be undertaken on a three-year rotation with different areas of hedgerows limited to light trimming of the vegetation once every three years. Trimming should be undertaken outside of the bird nesting season, and ideally during late winter (January to February) to allow any fruits and berries to be foraged by over-wintering birds and small mammals.

3.2.4 Invasive Species

Aim: Himalayan balsam was identified along the eastern boundary and throughout the survey area

Objectives: Cut or pull the Himalayan balsam

Management:
Due to the spreading nature of Himalayan balsam it occurs in a number of habitats adjacent to water and occasionally within stands of scrub and/or other vegetation, therefore, it is considered that chemical control is not appropriate. Himalayan balsam should either be cut by hand or hand pulled. Any cutting should take place below the lowest node and all management should be undertaken in June, to prevent the plant from flowering.

The arisings should be removed from the areas adjacent to the water and left to dry on concrete if possible. If no concrete is available, vegetation should be stacked so that the roots are off the ground.

The removal process will likely be required to be repeated on a yearly basis due to the local population of Himalayan balsam. However, it is important to remove Himalayan balsam, as it outcompetes other native plants for natural resources such as sunlight and minerals. This creates a problem alongside watercourses that are left exposed to erosion.

Provided no seed heads are present, once dry, the arisings can be disposed of in a compost heap.

3.3 Species Recommendations

3.3.1 Birds

Aim: Increase nesting opportunities for a variety of birds

Objectives: Install a variety of general-purpose nesting boxes across the site

Management:
Alongside restoration of the hedgebank, installation of general-purpose bird boxes such as woodcrete Schwegler models 1B (with a range of hole sizes) and 2H (open fronted) may be installed on some of the retained mature trees along the northern hedgebank at approximately 3m high and facing north. Holed boxes may be used by tits *Aves* sp., pied flycatchers *Ficedula hypoleuca* and nuthatches *Sitta europaea*, and open fronted boxes by robins *Erithacus rubecula* and spotted flycatchers *Muscicapa striata*.

Kingfisher and sand martin nest boxes may also be installed along the riverbank. Kingfisher and sand martin have lost many of their natural nesting sites on streams and rivers. Nest tunnels provide and encourage a vital nesting opportunity where no suitable sites are available. The nest box entrance must be at least 1 metre above the maximum water level.

Example of bird nesting provisions are presented in Appendix 3.

3.3.2 Bats

Aim: Encourage use of the site by bat species for roosting bats

Objectives: Erect bat boxes on mature trees around the site

Management:
Currently, the site supports limited potential for roosting bats. Bat boxes can be installed on some of the retained trees in the northern hedgebank. There are large numbers of different types of bat boxes available which may benefit certain species or life stages. For example, pipistrelle species or brown long-eared bats *Plecotus auritus* may use small bat boxes for maternity roosts, whereas other species may only use small boxes for occasional day roosting. Larger bat boxes

are designed to accommodate larger species of bats such as noctule *Nyctalus noctula* and even larger boxes are designed as hibernation roosts. Examples of bat boxes are presented in Appendix 3.

It is recommended that woodcrete bat boxes are selected as opposed to wooden boxes, as woodcrete boxes have an extended life period compared to wooden boxes. This longevity can be especially important as bats have relatively long lives for small mammals, loyally returning to the same roosts for a number of years.

Bat boxes should be installed on suitable, mature trees around the site at height of at least 3m, ideally 4-5m, on a southeast or southwest orientation. The direction that the box faces encompasses a range of thermal variations which can be an important factor particularly if boxes are used as maternity roosts.

All bat boxes should be checked occasionally with repairs or replacements made when necessary. If bat boxes are utilised by bats, care must be taken to avoid disturbance of the boxes and any intervention should be undertaken by a suitable licensed ecologist. Natural England currently maintains a network of licensed bat ecologists who may be contacted for such works.

3.3.3 Invertebrates

Aim: Improve the habitat for invertebrates

Objectives: Introduce vegeation piles and an increase in floral diversity

Some of the resulting arisings for coppicing the hedgebank could be placed on/near piles of dead wood close to the scrub edge near the bank, increasing the suitability of these habitat areas for invertebrates and reptiles.

In addition to this, the increased floral diversity will have a positive impact on pollinating insects which may improve the yield of the orchard itself. It may also be beneficial to install ‘insect hotels’ or bee bricks around the edges of the riverbank or scrub to provide nesting locations for solitary bee species and other invertebrates.

3.3.4 Otter

Aim: Encourage use of the site by otter *Lutra lutra* for couches, holts and hovers

Objectives: Removing Himalayan balsam and planting native species along the riverside bank

Management:
During the site visit, a single otter was identified among riverbank vegetation adjacent the eastern boundary.

Although the Himalayan balsam is currently providing cover for otter, this is an invasive species and should be removed as detailed in Section 4.2.3. In addition, Himalayan balsam will

naturally die back over winter and can leave riverbanks bare and exposed to erosion, as well as reducing the habitat cover for otter. Therefore, removal of this non-native species and planting of native species will benefit otter and assist in stabilising the bank.

Large areas of scrub, or rank grassland with scrub, are likely to provide good breeding sites and human access is difficult. Therefore, thick patches of scrub, particularly blackthorn and bramble should be encouraged in place of Himalayan balsam. Woody brash can also be placed to provide habitat piles. However, scrub levels should be monitored over time to prevent encroachment. Coppice management can be used to regenerate dense cover at ground level.

In addition, native trees such as willow *Salix* sp. and alder *Alnus glutinosa* are the two species most commonly found growing alongside water and can be planted alongside the riverbank on the eastern boundary. The roots help stabilise the bank and provide additional habitat and cover for otter.

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Appendices

Appendix 1: Raw Survey Data

Appendix 2: Extended Phase 1 Map

Appendix 3: Example of bird and bat boxes

Appendix 1 – Raw Survey Data

A3.1 Extended Phase 1 Habitat Survey data

Parameter	Condition
Temperature (ºC)	16
Cloud cover (%)	40
Wind	F1
Precipitation	None

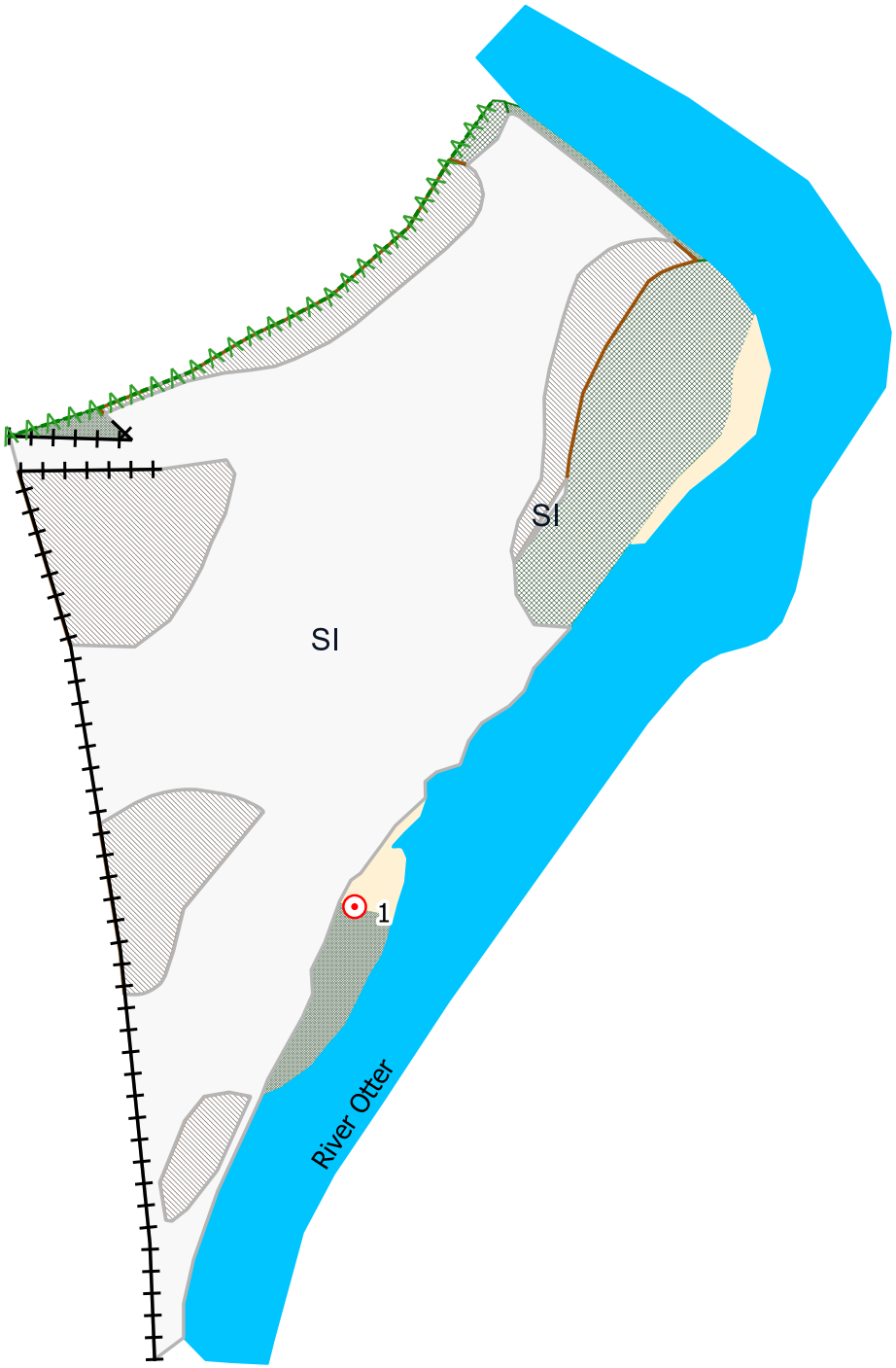
Weather Conditions Recorded During the Survey

English Name	Scientific Name
Alder	*Alnus glutinosa*
Annual meadow-grass	*Poa annua*
Ash	*Fraxinus excelsior*
Blackthorn	*Prunus spinosa*
Bramble	*Rubus fruticosus agg.*
Bristly oxtongue	*Picris echioides*
Broad-leaved willowherb	*Epilobium montanum*
Buddleia	*Buddleja davidii*
Cock's-foot	*Dactylis glomerata*
Common field-speedwell	*Veronica persica*
Common figwort	*Scrophularia nodosa*
Common ivy	*Hedera helix subsp. helix*
Common mallow	*Malva sylvestris*
Common mouse-ear	*Cerastium fontanum*
Common nettle	*Urtica dioica*
Common ragwort	*Senecio jacobaea*
Creeping buttercup	*Ranunculus repens*
Creeping comfrey	*Symphytum grandiflorum*
Creeping thistle	*Cirsium arvense*
Crosswort	*Cruciata laevipes*
Dandelion	*Taraxacum officinale agg.*
False oat-grass	*Arrhenatherum elatius*
Gorse	*Ulex europaeus*
Grey willow	*Salix cinerea subsp. cinerea*
Hawthorn	*Crataegus monogyna*
Hemlock	*Conium maculatum*
Holly	*Ilex aquifolium*
Indian balsam	*Impatiens glandulifera*
Lesser burdock	*Arctium minus*

Nipplewort	*Lapsana communis*
Pedunculate oak	*Quercus robur*
Perennial rye-grass	*Lolium perenne*
Red campion	*Silene dioica*
Redshank	*Persicaria maculosa*
Reed canary-grass	*Phalaris arundinacea*
Rough meadow-grass	*Poa trivialis*
Smooth sow-thistle	*Sonchus oleraceus*
Spear thistle	*Cirsium vulgare*
Water forget-me-not	*Myosotis scorpioides*
Water mint	*Mentha aquatica*
Water-pepper	*Persicaria hydropiper*
Wild teasel	*Dipsacus fullonum*
Wood avens	*Geum urbanum*
Yorkshire fog	*Holcus lanatus*

Botanical Species Recorded During the Extended Phase 1 Habitat Survey

Appendix 2 – Extended Phase 1 Survey Map



Legend

- Target note
- Defunct hedgebank
- Fence
- Dense scrub
- Scattered scrub
- Tall ruderal
- River Otter
- Riverbank vegetation
- SI Poor semi-improved grassland

Target Notes

1. Location of Himalayan balsam and location of otter sighting

Title: Habitat Survey Map

Client: John Waddingham

Site: Meadow in Ottery St Mary, Devon

Drawing No.: 19/3539.01-01
Date: September 2019 Scale: NTS
Drawn By: TN Checked by: TN

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Appendix 3 – Examples of bird, bat and dormouse boxes

General Purpose Wooden & Woodcrete Bird Boxes

General purpose nest boxes such as the 1B Schwegler nest box or a traditional wooden nest box come with a variety of entrance holes diameters to suit a range of species. It is recommended to install boxes with different sized entrances.
A range of entrance hole sizes will cater for different species for example:

26mm: Blue Tit, Coal Tit, possibly Wren.
32mm: Great Tit, Nuthatch, Pied Flycatcher.
45mm: Starling

These boxes should be installed between 2 and 4 metres high on mature trees on a north eastern aspect and so that the entrances are not exposed to direct sunlight or strong winds. Shown are the 1B Schwegler nest box and a traditional wooden nest box.

	**Open faced bird boxes** Open faced bird boxes provide nest opportunities for species such as robin and spotted flycatcher. These boxes are available in woodcrete and timber and should be placed low down within a shrub or scrub, it is important that these boxes are not installed in open habitat as the open face means they can easily suffer predation. The examples shown are the 2H Schwegler robin box and a traditional open fronted wooden nest box.
	**Sparrows** e.g. NHBS FSC sparrow terrace (pictured) Position: At a height of at least 2m upon external wall, facing east. Several boxes can be installed approximately 1.5m apart
	**Swifts** e.g. Schwegler Swift No. 16 Swift Box (pictured), No. 18 Schwegler Swift Box (for eaves), Ibstock swift bricks Position: On agricultural buildings in centre of farm. At a height of 5m or above. Within external walls with a northerly aspect or beneath eaves and out of direct sunlight. Away from windows, obstructions and creepers. Provide several boxes.

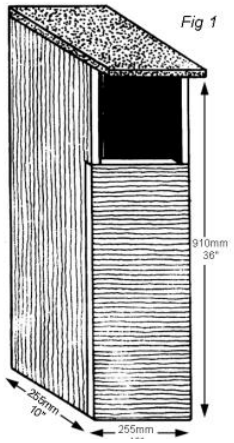

Fig 1

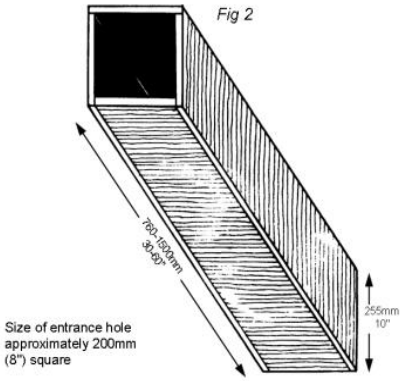

Fig 2

Tawny owl

Tawny owl boxes should be installed securely at least 3m high on mature trees within woodland rather than on the fringes and on an aspect that shelters the boxes from prevailing winds. The example details a vertical design for the trunk of a tree or a sloping box designed to be installed on a major limb. Both examples are readily used by tawny owls.

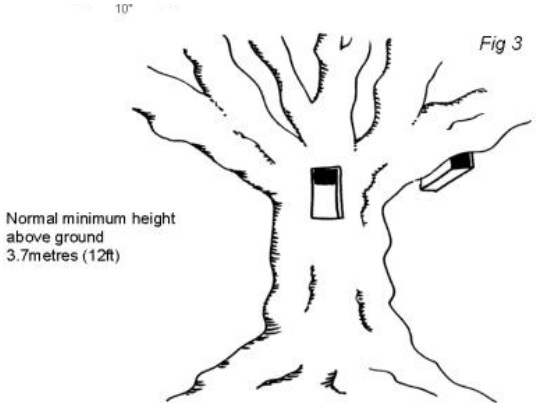

Fig 3

Swallows

e.g. Schwegler No 10 Swallow Nest (pictured)

Positioning: Inside of buildings or larger covered areas (e.g. stables), ensuring clear flight path in and out of the structure. Nests should not be placed close together.

	**King Fisher** This Kingfisher tunnel should be positioned in a vertical bank beside a river or lake. The kingfisher nest box entrance must be at least 1 metre above the maximum water level
	**Roosting bats** General purpose bat boxes such as the 2F Schwegler bat box or a wooden slimline or double chamber bat box are suitable for a range of common bat species. These boxes should be installed on mature trees with a tree friendly aluminium nail (often provided) between 3m and 6m high in partial sun. Wooden boxes should not be treated with any kind of timber preservative as this can be harmful to the bats.

Dormouse boxes

Wooden dormouse boxes can such as the example provided can be obtained from a variety of wildlife equipment providers (such as the NHBS).

These boxes should be positioned approximately 1.5m above ground, on a hazel tree trunk or other suitable support, with the hole facing inwards to reduce occupation by birds. The two bars on the front of the box are to ensure a gap between the box and the tree. Depending on the design of the box they can be secured by a nail, or by wire wrapped around the box.