



C A R L O W
C O U N T Y C O U N C I L
COMHAIRLE CHONTAE CHEATHARLOCHA



Clonegal Habitat and Biodiversity Report



Dr. Betsy Hickey

betsyhickey@eircom.net

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Fuair an tionscnamh seo fóir-dheontas ó Chomhpháirtíocht Forbartha Chontae Cheatharlach Teo, Clár Forbartha Tuaithe atá maoinithe ag Rialtas na hÉireann faoi Chlár Forbartha Tuaithe Éireann 2007-2013 agus ag Ciste Talamhaíochta na hEorpa d'Fhorbairt Tuaithe: infheistiú na hEorpa i Limistéir Tuaithe.

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Executive summary

Clonegal village has diverse range of flora and species diversity is quite good. Twenty nine habitats were identified in Clonegal, nine of which were semi-natural. A total of 226 plant species were recorded. There were more non-native species identified in the village and its environs compared with native species.

No rare or red data species were found although historical records from the Botanical Society of the British Isles (BSBI) for basil thyme and blue flea bane have records for them close to Clonegal. Both these species are protected.

Hedgerows and earth bank habitats contained the most species (115 and 40 respectively) found in semi-natural habitats, whilst the highly modified habitat flower beds and borders contained at least 94 species.

1 Introduction

1.1 Study brief

Clonegal Village is representing Ireland in the Entente Florale competition 2013. Originally started in 1975, between Great Britain and France, this competition which focuses on improving the quality of life in towns and villages has increased in number and now comprises 11 European countries, Ireland included.

The main objectives of the competition are:

- the greening of towns and villages
- flowers, shrubs, green spaces, parks
- development which is environmentally and ecologically sensitive
- educational and communication initiatives which promote environmental awareness.

Clonegal Tidy Village Association has requested that a habitat survey and assessment of biodiversity in Clonegal be carried out in conjunction with proposals for maintaining and promoting biodiversity in the village.

1.2 Background Information

A habitat can be regarded as an area in which an organism lives and carries out its various functions such as feeding and reproducing. It may support several different species of plants, animal, fungi etc. Some species e.g. dandelion can be found in a wide range of habitats while others e.g. ling heather having more specific requirements is largely confined to bog or heath habitat.

Species diversity depends on there being a wide range of habitats with natural or semi-natural ones supporting greater numbers of species compared to highly modified ones it.

Clonegal is a rural village, situated in the south east of County Carlow on the River Derry, over a mile north of where the River Slaney and the River Derry meet. It is 22 km from Carlow town and 5 km from Bunclody in Co. Wexford (Grid reference 52°41'26"N 6°38'43"W, fig. 1). The parish of Clonegal is the meeting place of counties Carlow, Wexford and Wicklow and it is the last stop on the Wicklow Way.

The Derry River is a tributary of the River Slaney which is a designated SAC (Special Area of Conservation) and protected under European Habitats Directive, for the Annex I priority habitat alluvial wet woodlands. The annex II species of sea lamprey, river lamprey, brook lamprey, freshwater pearl mussel, twaite shad, Atlantic Salmon and otter are also protected.



Fig. 1 Location of Clonegal Village Co. Carlow (map source Wikipedia.org)

1.3 Approach

The approach used for the Habitat Survey was based on the Heritage Council Guidelines (Fossitt, 2000 and Heritage Council 2002), and drew on the experience of previous habitat surveys in counties Carlow, Laois, Westmeath, Kildare and Kilkenny.

2 Methodology

2.1 Introduction

There are four main parts to this report: (i) consultations and desk study; (ii) field survey and mapping, (iii) habitat assessment and evaluation (iv), guidelines for increasing biodiversity.

Consultation, field survey, mapping and report-writing was carried out by Dr. Betsy Hickey.

2.2 Consultations and desk study

Habitats were principally mapped through fieldwork assisted by colour aerial photographs (2000), 6-inch OS raster maps (Ordnance Survey, 1906 edition) and vector maps (1:6,000).

Working maps were then produced to facilitate the desk study. An outline map was prepared using a combination of vector maps, aerial photographs, historic first edition Ordnance Survey maps, and a review of existing information.

Consultations were held with Lorcán Scott, DCO, NPWS (National Parks & Wildlife Service), for the south east, Lisa Dowling BSBI (Botanical Society for the British Isles) recorder for County Carlow who provided historical records of plant species identified in the area (Appendix 1), Mr. John McCabe who lives in Clonegal who provided valuable local knowledge in relation to land ownership and access.

Desk sources consulted included:

- National Parks & Wildlife Service online data (www.npws.ie)
- National Parks & Wildlife Service Notice Nature Wildlife, Habitats & the Extractive Industry(<http://www.noticenature.ie>)

- Site file for the nearest designated site: Slaney Valley cSAC No.2162, NPWS, Ely Place, Dublin
- National Biodiversity Database

2.3 Fieldwork

Surveying was carried in Clonegal over 2 days on the 6th and 10th of May 2013.

The land was surveyed by walking along public roads or through fields. Habitat codes were added to the vector map. Habitats on land which could not be surveyed, were identified using aerial photographs or/and visual inspection from the nearest accessible area.

Lists of plant species was taken for each habitat type. Species list were compiled per habitat type and/or where there were features of interest. If animal species or signs of were observed during the course of the study then a record was taken.

Target notes were taken for the different habitats and the area marked with a unique number on the map. Target notes were also compiled for sites with invasive exotic species. Photographs were taken of features of interest and of habitats.

Species identification and nomenclature was based on Hubbard (1992), Jermy *et al* (1982), Mitchell (1978), Rose (1991), Rose (1989) and Webb *et al* (1996).

Habitat survey guidelines suggest that a habitat should have a minimum area of 0.25 ha or minimum length of 50 m in order to be surveyed. These guidelines were not strictly followed in Clonegal as several habitats in the village did not have these dimensions but were worthy of mapping.

Additional symbols previously developed (M. Tubridy *et al* 2006, 2007 & 2008), for ornamental hedgerows (habitat category WS3A), gardens (habitat categories (BL3 1 large gardens, BL3 2 medium gardens and BL3 3 small gardens). Ornamental hedgerows are linear in character and the existing symbol/pattern for WS3 is area based; subsequently a dark green hatched line (++++) was used to denote ornamental hedgerows. Stonewalls and other stone works include linear and area based habitats so again these were separated and the stone walls given the symbol of a grey hatched line (-+++) while the area based other stone buildings retained the original symbol (▨).

2.4 Habitat Mapping

The methodology followed the latest guidance produced by the Heritage Council (2010). Habitats were mapped to Level 3 according to Fossitt (2000).

The three levels to which habitats are classified vary in the amount of detail provided. Level one classification is general and groups habitats according to whether they are fresh water, grassland and marsh, or woodland and scrub etc. Level 2 sub divides these categories into more defined units for example freshwater habitats at level 2 are subdivided into lakes and ponds, watercourses, springs and swamps. Level 3 expands this in describing the habitat as discrete units, for example watercourses are separated into eroding upland rivers, depositing lowland rivers, canals, drainage ditches. Each habitat has been given a code, with F denoting freshwater (level 1), FW standing for watercourses (level 2), while eroding upland rivers have the code FW1 assigned to them and depositing rivers for example become FW2 (level 3).

2.5 Map digitisation and database compilation

Maps were digitized using MAPINFO and the study area was outlined.

2.6 Reporting and data presentation

Detailed species accounts are to be found in the appendices, while the habitats can be found on the accompanying map (page 101) and in the results.

2.7 Study constraints

Surveying was carried out during May, and while it should be possible to identify most plant species at this time of year, some early growing / flowering species may have been missed. Likewise some later growing species may not have evident. Due to time constraints species lists and habitat accounts were mostly compiled per habitat.

3 Results

3.1 Presentation of results

During fieldwork, species lists, digital photographs, annotated vector maps and target notes on individual sites was gathered. Habitats have been digitized and colour coded according to Heritage Council Guidelines and can be found on the accompanying map (Appendix 11).

Appendices to this report contain species lists for the different habitats, native and non native species identified during the survey and target notes which correspond to those on the habitat map.

3.2 Habitats and species found in Clonegal

Twenty nine habitats were identified in Clonegal (table 1), and at least 226 species identified. These included both native and non-native species.

A description of the different habitats based on Fossitt (2000) is given below in section 3.3. Each description is followed by findings / field notes relating specifically to Clonegal. Species lists for each of the habitats can be found in the Appendices, along with lists of native woody and herbaceous species, ornamental woody and herbaceous species identified during the survey.

Table 1 Habitats found in Clonegal (after Fossitt, 2000)

| Habitat Code | Habitat name |
|---------------------|-----------------------------------|
| BC1 | Arable crops |
| BC2 | Horticultural land |
| BC4 | Flower beds and borders |
| BL1 | Other stonework |
| BL1A | Stonewalls |
| BL2 | Earth banks |
| BL3 | Buildings and artificial surfaces |
| BL31 | Large garden |
| BL32 | Medium garden |
| BL33 | Small garden |
| ED2 | Spoil and bare ground |
| ED3 | Recolonising bare ground |


Table 1 continued.....

| Habitat Code | Habitat name |
|---------------------|---------------------------------|
| FW2 | Depositing lowland rivers |
| FW4 | Drainage ditches |
| GA1 | Improved agricultural grassland |
| GA2 | Amenity grassland |
| GS2 | Dry meadows and grassy verges |
| GS4 | Wet grassland |
| WD1 | Mixed broadleaved woodland |
| WD3 | Mixed conifer woodland |
| WD4 | Conifer woodland |
| WD5 | Scattered trees and parkland |
| WL1 | Hedgerows |
| WL2 | Treeline |
| WN5 | Riparian woodland |
| WS1 | Scrub |
| WS3 | Ornamental non-native shrub |
| WS3A | Ornamental non-native hedgerow |

3.3 Habitat descriptions

3.3.1 Introduction

Summary descriptions and preliminary assessments are provided of the principal habitats of biodiversity interest. These accounts are complimented by species lists for each habitat in Appendix 1 and with reference to target notes referenced on habitat maps and listed in Appendix 3.

FW2 Depositing lowland rivers  (The code for this habitat type is represented by horizontal sky blue line).

Depositing lowland-rivers range in size from small shallow streams to large rivers. Typically, they occur in low-lying areas where water flow is slower compared to eroding rivers. This allows fine sediments of sand and silt drop to the bottom of the riverbed which provides a suitable substrate for plants to establish in. As a rule more species are

associated with depositing lowland rivers than along the faster flowing upland rivers and streams.

In Clonegal the River Derry (fig. 2, TN1) flows south to join the Slaney, passing through the lower parts of the village and along the boundary of Huntington Castle. Few species were growing in the water itself apart from pond water crowfoot which was abundant. A moorhen was busy feeding near the adjacent ash plantation (fig. 3).

Several species were growing adjacent to the river's edge near the "Pig Weighing House" forming a very narrow fringe of vegetation. Some such as hemlock water dropwort, flag iris and the dogwood were in constant contact with the water, others such as meadowsweet were taking advantage of damp conditions while ivy, common polypody fern and lesser celandine were found on drier ground and in the shade provided by the horse chestnut tree.

There was a small shaded clear sandy bottomed stream in the grounds of Huntington Castle that bordered beech woodland (fig. 4, TN 22). Species diversity was low most likely due to the very shaded conditions cast by the adjacent tree line and the broadleaved woodland. No species were evident in the water but lesser celandine, bramble, dock and bluebell were growing along the sides of the stream.



Fig. 2 River Derry at Clonegal with Limestone Bridge in the background. The woodland on the left is recently planted ash (WD1).



Fig. 3 Moorhen wading in River Derry next to ash plantation



Fig. 4 Stream flowing through broad leaved woodland in Huntington Castle

FW4 Drainage ditches (The code for this habitat type is represented by an indigo dotted line).


Drainage ditches are typically found forming field boundaries, or part of or in low-lying wet areas in fields. Drainage ditches are linear channels that have been excavated for the purpose of draining excess water from fields and roadsides (fig. 5). Usually, they join up

with natural rivers and or other water bodies. Drainage ditches can also include natural watercourses that have been altered. Drainage ditches vary in depth and may or may not have stones or some other form of support to prevent the sides from collapsing.

A number of drainage ditches can be found in Clonegal. One of the drainage ditches (TN 10, fig. 5) was associated with GS4 (TN 9), and contained some flowing water but it was not running freely due to lack of maintenance resulting in a buildup of plant debris. Growing on the sides of the drainage ditch were soft shield ferns, teasel, cow parsley, ladies smock and some grey leaved willow. The ditch was very shaded. There was a non-native hedge growing on the inside bank of the drain forming the boundary at the bottom of the gardens. The main species in it were box leaved honeysuckle. A second drainage ditch ran parallel to Derry River within the grounds of Huntington Castle TN19. Woody species such as grey willow, white poplar and alder were associated with it.



Fig. 5 Drainage ditch in the field next to Derry River in Clonegal with the young shoots of reed canary grass emerging


FL8 Other artificial lakes and ponds  (The code for this habitat type is represented by a sky blue brick pattern at an angle).

Other artificial lakes and ponds classification is used to embrace all artificially created bodies of water such as moats, ornamental bodies of water, tailings ponds and water treatment plants.

There was one example of other artificial lakes and ponds habitat found in Clonegal and this was in the grounds of Huntington Castle which contained carp (fig. 6). Water associated species included brooklime (*Veronica beccabunga*), duckweed (*Lemna* sp.), and water starwort (*Callitriche* sp.). Polypody fern (*Polypodium vulgare*) and pendulous sedge (*Carex pendula*) were growing adjacent to the pond. The invasive species Japanese knotweed (*Reynoutria japonica* TN 20) was also present in this area.



Fig. 6 Part of the man-made pond at Huntington Castle

GS2 Dry meadows and grassy verges  (The code for this habitat type is represented by yellow diagonal lines slanting to the right).


Dry meadows and grassy verges can be found in areas that are not intensively managed, and as a rule receive low inputs of fertiliser or none at all. However, they are scarce in Ireland due to agricultural intensification. Nonetheless, close examples of dry meadows and grassy verges can be found on laneways, along the verges of some motorways and roads, along the edges of railway tracks, in old churches and grave yards and on the margins of tilled fields. Species diversity varies from a few species often dominated by coarse grasses such as cock's foot or false oat-grass to species rich swards containing tall

herbaceous such as hog weed, nettle, common knapweed, meadow vetchling and bush vetch.

Dry meadows and grassy verge habitat was found along laneways and at the sides of the road in Clonegal. It was associated with a small laneway in the centre of the village (fig. 7) going into a field of improved agricultural grassland but was overshadowed by treelines and most of the species were indicative of those found in shaded habitats such as included wild garlic or ramsons, cow parsley, creeping buttercup, and dandelion.



Fig. 7 Dry meadows and grassy verges habitat in Clonegal

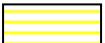
GS4 Wet grassland  (The code for this habitat type is represented by yellow diamonds on a white background).

Wet grassland is usually found on poorly drained mineral or organic soils that tend to more acidic than dry meadows and grassy verges. Fertiliser application is minimal or not at all, frequently leading to a species rich grassland. Plant diversity in wet grassland can vary considerably and may be dominated by rushes and or small sedges. Grass species can include Yorkshire fog, rough meadow-grass and creeping bent. Herbaceous species typical of wet grassland can be made up of creeping cinquefoil, silver weed, meadowsweet, purple loosestrife and water mint.

Wet grassland was found in one or two places in Clonegal, one of these (fig. 8, TN 9), covering a small area was adjacent to a drainage ditch (TN 10), which was overflowing in places contributing to the wet conditions. Soft rush dominated, other species included brooklime, meadowsweet, lesser spearwort, marsh bedstraw and nettle.



Fig. 8 Wet Grassland habitat in corner of field of agricultural grassland

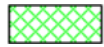
GA1 Improved agricultural grassland  (The code for this habitat type is represented by yellow horizontal diagonal lines).

Improved agricultural grassland is managed so that maximum yields of grass for silage and hay or for grazing by animals are produced. This results in low species diversity usually dominated by perennial rye grass. Other species can include docks, thistles, creeping buttercup and white clover. Improved agricultural grassland is the dominant farmland habitat in the environs of Clonegal (TN 11, fig. 9). Ten species were recorded from one field in the village reaching to the Derry River which was dominated by perennial ryegrass. Part of the field next to a drainage ditch contained wet grassland (see wet grassland, fig. 8) and species associated with it (ladies smock and soft rush) were occasionally present. Broadleaved dock creeping buttercup, white clover and common daisy were among the species identified.



Fig. 9 Improved agricultural grassland dominated by perennial ryegrass

WS1 Scrub



(The code for this habitat type is represented by bright green diamonds on a white background).

Scrub is used to describe habitats where the vegetation is composed of low shrubby stunted trees, shrubs and brambles, which are not greater than 5 m in height or 4 m high in wet areas. If normal sized trees are included they should not dominate but have a scattered and scarce distribution. Scrub species should cover at least 50% of the habitat.

Scrub is an important habitat, not only because it is transitional to woodland, but it also helps hold soil together on steep slopes and hills, acts as a wildlife corridor and or stepping stone for many species. When its structure is fairly dense it provides shelter and safe nesting sites for birds such as stonechats, wrens and song thrushes, returning migrants such as whitethroats, a specialist of this type of habitat, and other animals including foxes, rabbits, and badgers.

Plant species characteristic of scrub include gorse, blackthorn, stunted hazel, hawthorn and bramble.

Scrub habitat (TN 6, fig. 10), is scarce in Clonegal, so the area next to Ballyshonogue House and the ruins of the castle is important for wildlife providing cover and shelter for birds, mammals and species of insects and other small animals. Being close to the river and adjacent to wet grassland increases its significance.

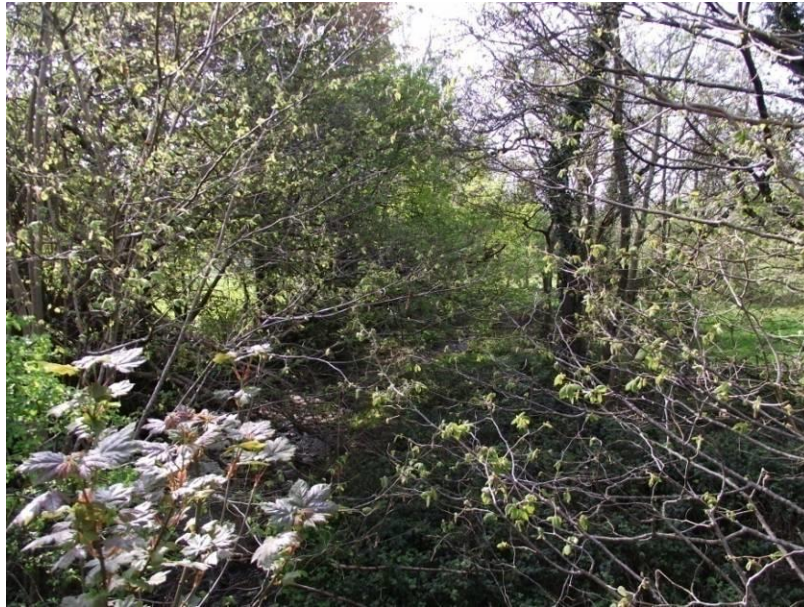


Fig. 10 Scrub habitat off the Bunclody road just before Ballyshonogue House

WL1 Hedgerows — (The code for this habitat type is represented by a green horizontal line).

A hedgerow is a linear habitat usually bounding roads and fields, the majority of them are man-made with most dating back to at least the early 1800's, though occasionally some hedgerows are remnants of woodland. They are dominated by native woody and herbaceous species. Formerly, the main functions of a hedgerow were to keep animals either fenced in or out, provide shelter, firewood, food and medicine. Whether a hedgerow is stock proof or not is not so important today as many hedgerows will also be fenced with wire. Today, it is rare to see hedgerows being worked for fuel or used as a human source of food or for medicine but their wildlife value is recognised as extremely important.


A total of fifty seven species were identified in hedgerows (TN 5, 15 and 16) in Clonegal, nineteen of which were woody. Eleven of the nineteen woody species were native (figs. 11, 25 and 26, Appendix 3) and included elder, hawthorn, hazel, holly, ivy and yew, whilst beech, cherry laurel, bullace, large periwinkle, privet and sycamore were not.



Fig. 11 Species rich hedgerow on the Bunclody road

Hedgerows are sometimes associated with dry stone walls and earth banks (TN 5), and can be found growing on top of them as some of the hedgerows were in Clonegal.


Bush vetch, cleavers, bird's-foot trefoil, broad buckler fern, cow parsley, early dog violet, herb robert, wild strawberry and wood sage, were some of the herbaceous plants found in Clonegal hedgerows.

TN 8 WN5 Riparian Woodland  (The code for this habitat type is represented by diagonal dark green lines slanting to the left).

Riparian woodland is semi-natural wet woodland that is typically found growing adjacent to or in the vicinity of rivers. They are regularly inundated by water either through flooding or due to tides. In Clonegal, riparian woodland was characterised by very narrow strips of willow growing along the edges of the river bank (fig. 12, TN 8). The woodland was fragmented and only twelve species were recorded including grey willow, alder, brooklime, nettle, cow parsley and meadowsweet. Although species poor, it is valuable habitat providing perching sites for birds, shelter and is a food source for a number of species.



Fig. 12 Riparian woodland along the River Derry

WD1 Mixed broadleaved woodland  (The code for this habitat type is represented by horizontal green lines).

To be considered as mixed broadleaved woodland, the woodland must be highly modified and tree cover by broadleaved species must be between 75 -100% and conifers no more than 25%. This category can include some native as well as non-native. If trees are under 5 m in height or 4 m if in wet areas then they should be included in the category Immature Woodland (WD2).

Forty one species were recorded from mixed broadleaved woodland in Clonegal. Most of this type of woodland was growing in Huntington Castle except for an area adjacent to the stone arched bridge over the Derry River between Clonegal and Watch House. This monoculture of ash woodland (TN3, fig. 13), has been planted fairly recently though they are clearly more than 5 m tall. Herbaceous species were dominated by brambles, nettles, sycamores and cow parsley.



Fig. 13 Ash plantation beside the River Derry

Mature beech dominated in other broadleaved woodlands such as those (fig. 14, TN 21), near the farm buildings north of the castle, and next to the river Derry (TN, 23 fig. 15).



Fig. 14 Spring in broadleaved woodland in the grounds of Huntington Castle. Bluebells dominated the ground flora.

The woodland next to the river had a very good covering of herbaceous species dominated by bluebells growing in association with wood anemone and wood sorrel while ramsons

was prolific in damper areas. A smaller section of broadleaved woodland was present in the car park area (TN 25).



Fig. 15 Bluebells carpet the floor in this beech dominated woodland

BL2 Earth bank ——— (The code for this habitat type is represented by a grey horizontal line).

Earth banks are linear boundaries that are typically made from local materials including earth, stone and gravel. Like stonewalls and hedgerows, they can contain a wide range of species (49 species were counted in one stretch of earth bank), including grasses such as cock's-foot, False oat-grass, perennial ryegrass, sheep's fescue and soft brome. Ferns such as black spleenwort, common polypody, and scaly male fern and many broad-leaved herbs including autumn hawk bit and barren strawberry.

Earth banks formed the field boundary along the road above and below the Church of Ireland (fig. 16, TN 13 and TN 14), as well as a small section a few meters long near Watchhouse Cross (fig. 17).




Fig. 16 Close up of the earth bank next to the Church of Ireland

Several grassland and hedgerow species were identified including knapweed, violet, primrose, hawthorn, elder, dog rose, wild strawberry and ox-eye daisy. Thirty nine species were recorded from these species rich earth banks and every effort should be made to maintain them for biodiversity (see recommendations Section 5 page 31). Currently, the earth bank near the Church of Ireland is closely mown (fig. 15), on a regular basis, preventing the plants from flowering and producing seed, thus greatly reducing its wildlife value.



Fig. 17 Earth bank adjacent to dwelling house in Watch House Cross


BL1A Stone walls  (The code for this habitat type is represented by grey hatched line).

The habitat category of stonewalls refer to walls built of natural materials and not concrete blocks or brick. This habitat category can include both dry stonewalls and those with mortar between joints. Stonewalls form field boundaries, either standing alone or used to face earth banks, used for bridges, or sometimes to line canals or moats. The type of and diversity of species found colonising stone wall habitat will depend on the type of stone used and the type of mortar if any. On stone breasted banks, soil will be used to hold the stones in place. In general older structures tend to have greater species diversity, thereby supporting greater numbers of wildlife compared to newly built walls where the mortar will be more intact making it difficult for species to colonise. Small ferns such as wall rue and maidenhair spleenwort, mosses and lichens are typical species of stonewalls as well as ivy, navelwort, ivy-leaved toadflax and red valerian.

The arched bridge that spans the River Derry between Clonegal and Watch House is built from limestone (TN 2, figs. 2 and 18). A number of species including ivy and wall rue were growing in the mortar between the stones. Two non-native species ivy-leaved toadflax and greater celandine were also found in this habitat.



Fig. 18 Limestone Bridge over the River Derry

BC4 Flowerbeds and borders  (The code for this habitat type is represented by grey diagonal lines leaning to the right).

The habitat classification flower beds and borders is used to describe areas where ornamental species such as herbaceous plants, dwarf and / or small shrubs have been planted, provided shrubs do not dominate. The habitat value to wildlife provided by this category can vary enormously depending on the species planted. Quite often ornamental species offer poor value for wildlife. 'Old fashioned' cottage type flowers and shrubs with open flat or single flowers are more beneficial for insects, butterflies and bees as they tend to contain greater levels of nectar and pollen compared to the more modern varieties with double flowers etc. these have bred to please the human eye at the expense of wildlife. The double-flowered cultivars of certain species are regularly planted because of their novel appearance and longer flowering season. However, these double-cultivars have been shown to produce less seed and their unusual structure may also decrease their value to nectar feeding species of insect (British Trust for Ornithology).

Certain ornamental species can provide year round interest for the public and provide valuable nectar, fruits and other food for wildlife e.g. bridal wreath and winter heathers are a source of nectar for butterflies and bees early in the year whilst the ice plant provides nectar in late summer and autumn. Spotted laurel and the laurel 'Otto Luyken' are a source of berries for birds, small mammals etc. during the winter months.

Flower beds and borders were common in Clonegal, near the cross roads at Watch House (TN 4), along the main street and in the garden behind the Weavers Cottages (TN 7, fig. 19).



Fig. 19 Back garden of the Weavers Cottage

The garden at the back of the Weaver's Cottages had a very diverse range of plants including fruit (raspberries and apples), vegetables, herbs (rosemary and French tarragon) and herbaceous species such as crane's bill and day lilies. Some of the herbaceous plants e.g. coral bells may have been grown with weaving in mind as they form part of the raw material for dyeing wool, whilst species such as comfrey and lungwort have medicinal properties. Rosemary and thyme are traditional herbs used for cooking. The majority of the plants found in the Weavers Cottage back garden are also excellent for wildlife. Other areas of flower beds and borders that had species that were good for wildlife included the flower beds in front of new terraced houses in Clonegal (TN 12, fig. 20).



Fig. 20 BC4 Flower beds and borders in front of new terrace of houses in Clonegal

WD5 Scattered trees and parkland



(The code for this habitat type is represented by green diagonal lines slanting to the left).

The habitat category scattered trees and parkland is characteristically found in parks, and parkland, where individual trees or small groups of trees are dotted about often in association with improved agricultural grassland or amenity grassland. Total cover by trees should be less than 30%. Many of the species may be ornamental and will be indicative of having originated from earlier landscaping found in parks and around old estates.

In Huntington Castle (TN 26) there was a diverse range of tree species which were mostly ornamental. Pedunculate oak dominated, but there were at least another fourteen tree species present including blue Atlas cedar, common ash, French lime, Wellingtonia (fig. 21) and golden ash. The majority of the trees in this habitat were mature specimens.




Fig. 21 Trunk of Wellingtonia tree in scattered trees and parkland habitat in Huntington Castle

WL2 Treelines  (The code for this habitat type is represented by green vertical lines).

This category is used to describe single rows of trees that are not wider than 5 m. They tend to be planted along driveways, as shelter belts and or to define property boundaries. In Clonegal there is a fine example of a treeline composed entirely of yew trees (fig. 22) making up the 'Yew Walk' in the grounds of Huntington Castle (TN27). Treelines of mature French lime can also be found in Huntington castle.

Other tree lines can be found such as the poplars on the road leading to Radharc na Doire housing estate, and either side of the laneway leading into the grass field by the river in the village.

BC2 Horticultural land  (The code for this habitat type is represented by grey vertical lines).

The habitat category Horticultural land is land that is cultivated mainly for the production of fruit, vegetables, herbs, flowers and ornamental plants.

A variety of fruit, vegetables and herbs can be found in the gardens at Huntington Castle (TN 28, fig. 23). In greenhouse there were peaches, figs, grapes and pears, while in the orchard there are raspberries, apples and blackberries.



Fig. 22 The yew tree 'walk' in Huntington Castle



Fig. 23 The greenhouse at Huntington Castle

3.4 Invasive species

Japanese knotweed was recorded from 3 locations, two of which were in Huntington Castle one by the River Derry and (fig. 24, grid ref: S 915 604), the second next to the pond (grid ref: S 916 607, TN 20) and the third one was in the back garden area of a premise adjacent to the river (grid ref: S917 609).



Fig. 24 Japanese knotweed growing beside the River Derry in Huntington Castle

4 Biodiversity

4.1 Summary of biodiversity assessment/evaluation

Twenty nine habitats were identified in Clonegal, ten of which were natural or semi-natural (table 1) the remaining nineteen habitats were highly modified (table 2).

Table 1 Natural or semi-natural habitats in Clonegal

| Habitat category | |
|-------------------------------|-------------------|
| Depositing lowland rivers | Riparian woodland |
| Drainage ditches | Scrub |
| Dry meadows and grassy verges | Stonewalls |
| Earth banks | Wet grassland |
| Hedgerows | Other stonework |

Table 2 Highly modified habitats in Clonegal

| Habitat category | |
|-----------------------------------|----------------------------------|
| Amenity grassland | Mixed conifer woodland |
| Arable land | Ornamental non-native hedgerow |
| Broadleaved woodland | Ornamental non-native shrub |
| Buildings and artificial surfaces | Other artificial lakes and ponds |
| Conifer woodland | Recolonising bare ground |
| Flowerbeds and borders | Scattered trees and parkland |
| Horticultural land | Small gardens |
| Improved Agricultural Grassland | Spoil and bare ground |
| Large gardens | Treelines |
| Medium gardens | |

In all 226 different plant species were recorded from all habitats in Clonegal during the survey, at least 112 of these are native species (Appendix 2, table 3). No rare or red data species were identified during the survey.

Historical records from the BSBI (Appendix 4) however indicate that the Red Data Book species blue fleabane (*Erigeron acris*) and basil thyme (*Clinopodium acinos* syn *Acinos arvensis*) were recorded in the Clonegal area in 1979 and 1990 respectively, but details are not specific. Adder's tongue (*Ophioglossum vulgatum*), was also recorded as occurring in the Clonegal area in 1899 by Praeger, but neither it, blue fleabane or basil thyme were found during the survey.

Both basil thyme and blue fleabane are protected species and referenced in the River Slaney Valley SAC, as were short-leaved water-starwort (*Callitriche truncata*), a very rare, small aquatic herb found nowhere else in Ireland and opposite-leaved pondweed (*Groenlandia densa*), a species that is legally protected under the Flora Protection Order, 1999. Neither of these two rare aquatic plant species were observed during the survey.

Ninety six species were recorded from the semi natural habitats (Appendix 2, table 4), 25 of these were woody species and 71 herbaceous (Appendix 2, table 4).

Of the 25 woody species 7 were ornamental (beech, bullace, cherry laurel, privet, large periwinkle, sycamore and white poplar), and four of the herbaceous were non native (columbine, day lily, greater celandine and ivy-leaved toadflax, Appendix 2, table 4).

One hundred and seventy two species were identified from the habitats which were highly modified (Appendix 2, table 5). Woody species accounted for the majority of these (98), with 74 herbaceous species identified. One hundred and eleven of these were non-native species while the remainder (61) was native species.

It is not surprising to find greater numbers of species in the highly modified habitats considering the number of gardens, and flower beds and shrub borders in public spaces in Clonegal along with the diverse range of ornamental species in Huntington Castle.

However, it is highly likely that there are more species in Clonegal than were not recorded during the survey, in particular non-native species, as back gardens were not surveyed nor were all non-native species in every part of the village recorded. Annual bedding plants were also omitted.

Nonetheless, overall, diversity is quite good with Clonegal having a minimum of 226 different plants species. Nor is it surprising that the majority were non-native, though native species did account for 50% of those recorded (112 different native species) between the semi-natural and highly modified habitats).

There was 43 native species recorded from the semi-natural habitats (Appendix 2, table 6), that were different from the native species found in the highly modified habitats. On the other hand there were native 14 species found in the highly modified habitats (Appendix 2, table 7) that were not found in the semi-natural ones.

Some of the native species that were only found in the highly modified habitats for example (chickweed and poppy), are species which tend to need disturbance to germinate, but the majority however were species that like shaded areas such as woodland.

Of the 9 semi-natural habitats identified in Clonegal the only woodland habitat was riparian woodland (Appendix 3, TN8, fig 12), dominated grey willow. Common alder was also present, both it and grey willow can withstand prolonged periods of flooding and waterlogged conditions alternated with spells where the soil will dry out completely.

The majority of the woodland species were found in the mixed broadleaved woodland in Huntington castle which was drier and had more constant conditions.

However, the mature broadleaved woodland in Huntington Castle (classified as highly modified) supports many native species (at least 20) in particular, those found in the ground flora (Appendix 3: TN 21 and 23, figs. 14 and 15). This is because the mixed

broadleaved woodlands have not been overly managed, fertilised, manicured or planted up with ornamental species, and as a result conditions favour native woodland species. In turn this will provide conditions favourable to mammals, birds, invertebrates and fungi.

Hedgerows can be a refuge for many woodland plants but if the land is cultivated right to the base of the hedgerows then the potential for plant species to grow is limited or non-existent. Exceptions in Clonegal include the hedgerows growing on either side of the laneway in TN (target note) 15 (fig. 25) and the hedgerow in TN 5. Thirty four plants were recorded in TN 15, all native including herb robert, primroses, ferns and violets, all species preferring shaded habitats. Thirty six species were recorded from the hedgerow (TN 5) on the Bunclody road (fig. 11), 7 of which were non-native including cherry laurel, columbine, beech and large leaved periwinkle, native species include bluebells and cow parsley.

The habitat classified as BL2 Earth banks contained a diverse range of semi-natural grassland species even though it covered a small area. Species such as bird's-foot-trefoil, bush vetch, meadow vetchling, knapweed and ox-eye daisy were recorded. It also supported a number of woody species including dog rose, hawthorn, gorse and elder. While the earth bank was species rich with at least 40 native plants its habitat value was low. This is because the plants on the bank are not been given an opportunity to complete their life cycles, as it is regularly cut and the plants rarely get the chance to flower and produce seeds – the food for our wildlife.

At least 90 plants were identified from the habitat category of flower beds and borders (BC4, Appendix 1). While these did include some native species the majority were ornamental non- native. The flower beds at Watch House (TN4), at the back of the Weavers Cottages (TN7) and the beds in front of the terrace of new houses on the main street all contained a diverse range of species, several of which are good for wildlife. These include species that produce berries such as cotoneaster and Hypericum, fruit such as apples, pears and currants and the hips of the rugosa rose. Cotoneaster and Hypericums also produce flowers that provide valuable nectar for bees and butterflies. The ice plant is a species loved by late flying butterflies as it has a good source of nectar, whilst early flowering species such as lungwort, grape hyacinth, and winter heathers are useful sources of food for early flying invertebrates that make use of warm spells.

4.2 Wildlife species

No surveying of wildlife species took place as this was not part of the brief however Appendix 5 gives details of species that were previously identified in the Clonegal area.

Freshwater species included minnow, crayfish, brown trout, brook lamprey, newts and frogs. Mammals such as fox, otter, bats and rabbits, birds such as moorhen, mute swan, grey heron and swallows and several species of butterflies, moths and dragon flies were recorded. Bats can be found roosting beneath Clonegal bridge in the habitat (BL1 other stone work).

The status of these species in Clonegal would require further study.

The River Derry is an important habitat in Clonegal as it is part of the River Slaney Valley SAC which is a designated area for the protection of the Annex I habitat alluvial wet woodland, and Annex II species of sea lamprey, river lamprey, brook lamprey, freshwater pearl mussel, twaite shad, Atlantic salmon and otter. The River Slaney Valley site also supports many of Ireland's mammals several of which are listed in the Irish Red Data Book including Pine Marten, Badger, Irish Hare, Daubenton's Bat and Common Frog (*Rana temporaria*). (See Appendix 8 for site synopsis of the Slaney River Valley SAC).

5 Enhancing biodiversity in Clonegal

5.1 Measures to improve and maintain existing biodiversity

Joseph Addison, the English essayist and Whig politician, once remarked that he valued his garden more for being full of Blackbirds than of cherries and '*very frankly gave them [the Blackbirds] fruit for their songs.*

Many gardeners share these feelings and are very happy to share the food and space of their gardens with wildlife. Adopting this attitude, in particular as the majority of people in Ireland have a garden would go a long way to helping our wildlife, as it would if more of our public spaces were planted with wildlife in mind. Planting species that are native is best but species that are close to those found in the wild will also bestow great benefits to wildlife.

There are a number of initiatives that could be carried out in Clonegal that would protect and increase biodiversity.

The first is to look after what already exists, carrying out measures to:

- control and eradicate invasive species such as Japanese knotweed

- reduce the number of times the earth bank habitats are mown, to once or twice a year treating them as if they were wild flower meadows (Appendix 8 for details on managing wildflower meadows)
- leave the grass margins grow long at the base of hedgerows and along roadways
- stop dumping grass clippings and other garden debris in graveyards, hedgerows and ditches (note 1)
- plant more species in flower beds and borders in public spaces and in gardens that support wildlife (see Appendix 8 for wildlife friendly species)
- when planting trees plant native species (see Appendix 10 for details)
- erect bat and bird boxes (see Appendix 6 for details)
- make and install top bar bee hives (note 2. see Appendix 7 for details)
- create new habitats

Note 1: Problems associated with inappropriate disposal of grass clippings

While grass clippings and general garden waste are biodegradable and will rot down it is believed that the decomposing grass etc. does no harm, however this is not true. Grass cuttings are rich in nutrients and as they break down these are released into the surrounding area. This changes the habitat in favour of nutrient loving species such as nettles, docks and hogweed which are aggressive growing quickly at the expense of the others for space, light and water.

Note 2: Looking after our bees

It is common knowledge that our honey bees are seriously threatened and in decline. This has serious implications for food production and for maintaining species diversity. Much of the food eaten globally requires pollination by bees and other insect pollinators. Of the 100 crops that provide 90% of the worlds food supply, 71 are pollinated by bees. In Ireland the production of crops such as apples, strawberries, clover and onions all benefit from pollination. Imagine a world without these foods along with a host of others including sunflowers, coffee and almonds, tomatoes, grapes, pears, oranges, broccoli and cucumbers.

In economic terms this would result in losses to the economy in Ireland of around €85 million per year and 153 billion Euro globally (An Taisce 2013, Guardian 2013).

Because bees visit flowers to collect food for their larvae as well as feeding on floral resources as adults they are one of the most important pollinators. Without flowering plants their lifecycle would break down. In Ireland, there are 101 species of bee, including the familiar honeybee (1 species) and bumblebees (20 species). The remaining species are solitary, meaning they do not form colonies.

Like all of our biodiversity, pollinators are negatively affected by a range of human activities such as pesticide pollution, but habitat loss due to development such as housing and road construction, changes in farming methods (changing from hay production to silage making), growing crops without leaving habitat for wildlife, and growing gardens with flowers that are not friendly to pollinators pose the greatest threats to bees and other pollinators. Attacks on bees by parasites such as the invasive species of varroa mite are also contributing to their decline as is global warming (An Taisce).

5.2 How can we help?

5.2.1 Build a bee hive

Building top bar bee hives, being a bee guardian and hosting the hives by placing them in gardens and other open spaces that are species rich is something that we can easily do that will help offset their decline. However, top-bar beekeeping is for people who love bees and understand and appreciate their role in the pollination of many wild and cultivated plants.

If your goal is to obtain the absolute maximum amount of honey regardless of all other considerations, top-bar beekeeping is not for you. This style of beekeeping can produce adequate amounts of honey, but the emphasis is on sustainability and keeping healthy bees rather than maximizing honey crops (Philip Chandler, 2009, and check out this web site for more details: <http://www.motherearthnews.com/homesteading-and-livestock/top-bar-beekeeping-method.aspx?PageId=3#ixzz2YRNVMPjI>).

Building a top bar bee hive is not expensive (Approx. €60) costing about a quarter of what a traditional bee hive would do (excellent details of how to make a top bar bee hive can be found at : www.aabees.or/ebook/how_to_build_a_top_bar_hive.pdf).

Plant species that support wildlife in garden, parks and public spaces

Native wildflowers for borders

Any native plant with a simple, open-structured flower is likely to attract pollinating insects. Especially attractive are the flowers of the daisy family (Compositae), the cabbage family (Crucifers) and the carrot family (Umbellifers). In addition, members of the huge family of Labiates, which includes mints and deadnettles, are also recommended (see Appendix 8 for suggestions).

Garden plants should never be planted out in the wild and, similarly, wild plants should never be dug up to be planted in the garden. Digging up wild plants is illegal. It is also usually pointless as many will only thrive on poor soils and will not flourish in gardens. Introducing cultivated plants into the wild has caused severe problems for native wildflowers – and their associated wildlife – and is still doing so. Rhododendron now smothers huge areas of woodland.

5.3 Create new habitats.

While Clonegal has few obvious spaces available for the creation of new habitats there are possibilities, measures to support wildlife could and are being developed as part of the newly developed community garden and allotments site. A wildlife pond, small meadow with native species and the planting of native tree and shrub species will provide additional support for wildlife.

When creating pond habitats make sure to include a buffer zone of made up of rough grass, shrubs or woodland close to the pond. This will provide places for amphibians and invertebrates to hide and rest in, as will dry stone walls, piles of stones, timber and other debris, providing additional hibernating sites for amphibians and habitats for other animals. Species such as newts will use the stones to rest on and to raise their body temperatures and should be sited in sunny locations.

Well planned and properly executed rehabilitation or habitat creation measures provide an opportunity to restore existing habitat, enhance those that are damaged and impoverished and/or create new dynamic ones.

Certain criteria must first be satisfied in order to restore or create habitat that will support and sustain a diverse range of plants and animals without long term intervention regardless of the type of habitat being created.

All species of wildlife have the same basic requirements in order to survive and reproduce. Plants and animals all require food, shelter, warmth, water and air to carry out their life functions

Most plants also use soil as a medium for anchorage and support from which their roots forage for water and mineral nutrients. The nutrients along with water and carbon dioxide are transformed into food using the energy of the sun, the plant uses some of the food to grow and reproduce. The excess is eaten by us or other animal species which in turn may eat one another.

As plants are the primary produces it stands to reason that establishing a viable plant community is a prerequisite when creating or restoring a habitat. Get the plant community right and the animals will follow. Thus the provision of water, air, light, nutrients and a substrate to root in are essential. Following on from this the siting of plants to make best use of existing resources on site of light and water must be carefully considered.

5.3.1 Substrates and soils

The majority of plant species in semi-natural or natural habitats do not require soil with high levels of nutrients and many species cannot grow successfully when nutrient levels are high or even moderate. In most instances reasonable quality subsoil is more than adequate. This is particularly so when trying to establish species rich grassland. So when carrying out habitat creation or restoration work, soil with few nutrients is generally best.

5.3.2 Habitat creation guidelines and techniques

The objective in any habitat creation or restoration project is to try and provide habitats that emulate those which occur naturally in the wild. It is virtually impossible to recreate all the elements of a natural or semi-natural habitat that has taken thousands of years to evolve in a short time, however if certain principles are followed the resulting habitat should provide for and lead to a significant increase in biodiversity.

5.3.3 General guidelines to design and layout of habitats

The objective here ensures that the habitats look as natural as possible. Natural systems do not consist of straight lines or flat even spaces, rather what is found in nature are series of

curves, indentations and undulations, and a good habitat should incorporate these elements. In this way the potential for individual living spaces or territories are increased and more species can be accommodated in any one area.

5.3.4 Best practice when sourcing planting material for habitat restoration or creation

Best practice when planting native Irish species of plants or seeds (trees and shrubs, herbaceous species for woodlands, grassland, wetland etc.), is to use only those that are guaranteed to hold Irish provenance and ideally those whose origins are local. Native species sourced and grown in another country should be avoided as they will not be adapted to local conditions and may harbor potential diseases (e.g. ash die- back).

Be careful when buying plants in garden centers and specialist nurseries these days, as many flowers have new colour forms and structurally quite different and such cultivars may be very variable in their wildlife value when compared with ancestral forms. For example, the double-flowered cultivars of certain species have become popular because of their novel appearance and longer flowering season. However, these double-cultivars have been shown to produce less seed and their unusual structure may also decrease their value to nectar feeding species of insects.

Bibliography

Fossitt, J.A. (2000). *A Guide to the Habitats in Ireland*. The Heritage Council.

Mitchell, A. (1978). *Trees of Britain and Northern Europe*. Harper Collins Publishers.

Rose, F. (1981). *The Wild Flower Key*. Frederick Warne.

The Heritage Council (2002) *Draft Habitat Survey Guidelines: A standard methodology for habitat survey and mapping in Ireland*. The Heritage Council, Kilkenny.

Webb, D.A., Parnell, J. and Doogue, D. (1996). *An Irish Flora*. Dundalgen Press LTD.

General references and Field Guides

Curtis, T.G.F. and McGough, H.N. (1988). *The Irish Red Data Book. 1. Vascular Plants*. The Stationary Office, Dublin.

Scannell, M.J.P. and Synnott, D.M. (1987). *Census Catalogue of the Flora of Ireland*. Stationary Office, Dublin.

[http://www.antaisce.org/Portals/5/Nature's Way Pollinators%20Booklet.pdf](http://www.antaisce.org/Portals/5/Nature's_Way_Pollinators%20Booklet.pdf)

NPWS: **River Slaney Valley SAC (site code 781) Conservation objectives ...**

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Appendices

Appendix 1 Species lists for habitats surveyed in Clonegal

FW2 Depositing Lowland Rivers

| Common Name | Scientific name |
|---------------------|----------------------------|
| Pond water crowfoot | <i>Ranunculus peltatus</i> |

FW4 Drainage ditch

| Common Name | Scientific name |
|--------------------|------------------------------|
| Common alder | <i>Alnus glutinosa</i> |
| Common valerian | <i>Valeriana officinalis</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Grey willow | <i>Salix cinerea</i> |
| Ladies smock | <i>Cardamine pratensis</i> |
| Perennial ryegrass | <i>Lolium perenne</i> |
| Reed canary grass | <i>Phalaris aundinaceae</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |
| Teasel | <i>Dipsacum fulonum</i> |
| Water starwort | <i>Callitriche sp.</i> |
| Watercress | <i>Nasturtium officinale</i> |
| White poplar | <i>Populus alba</i> |

FL8 Other artificial lakes and ponds

| Common Name | Scientific name |
|--------------------|----------------------------|
| Brooklime | <i>Veronica beccabunga</i> |
| Duckweed | <i>Lemna sp.</i>), |
| Japanese knotweed | <i>Reynoutria japonica</i> |
| Pendulous sedge | <i>Carex pendula</i> |
| Polypody fern | <i>Polypodium vulgare</i> |
| Water starwort | <i>Callitriche sp.</i>) |

GS2 Dry meadows and grassy verges

| Common Name | Scientific name |
|--------------------|---------------------------|
| Broadleaved dock | <i>Rumex obtusifolius</i> |
| Bush vetch | <i>Vicia sepium</i> |

Cocks' foot
Cow parsley
Creeping bent
Creeping buttercup
Daisy
Dandelion
Herb Robert
Hogweed
Knapweed
Meadow grass
Meadow sweet
Nettle
Perennial ryegrass
Primrose
Ramsons
Red fescue
Self-heal
White clover
Willowherb
Wood avens
Yorkshire fog

Dactylis glomerata
Anthriscus sylvestris
Agrostis stolonifera
Ranunculus repens
Bellis perennis
Taraxacum officinale
Geranium robertianum
Heracleum sphondylium
Centaurea nigra
Poa sp.
Filipendula ulmaria
Urtica dioica
Lolium perenne
Primula vulgaris
Allium ursinum
Festuca rubra
Prunella vulgaris
Trifolium repens
Epilobium sp.
Geum urbanum
Holcus lanatus

GS4 Wet grassland

Common Name

Broadleaved dock
Broadleaved plantain
Brooklime
Common daisy
Common mouse-ear
Common thistle
Creeping buttercup
Curled dock
Floating sweet grass
Ladies smock
Lesser spearwort
Marsh bedstraw
Meadow buttercup
Meadowsweet

Scientific name

Rumex obtusifolius
Plantago major
Veronica beccabunga
Bellis perennis
Cerastium fontanum
Cirsium vulgare
Ranunculus repens
Rumex crispus
Glyceria fluitans
Cardamine pratense
Ranunculus flammula
Gallium palustre
Ranunculus acris
Filipendula ulmaria

Soft rush
Stinging nettle
Water speedwell
Water starwort
Wavy bittercress

Juncus effusus
Urtica dioica
Veronica anagallis-aquatica
Callitriche sp.
Cardamine flexuosa

GA1 Improved Agricultural Grassland

Common Name

Broadleaved dock
Chickweed
Common daisy
Common mouse-ear
Creeping buttercup
Ladies smock
Narrow leaved plantain
Perennial ryegrass
Soft rush
White clover

Scientific name

Rumex obtusifolius
Stellaria media
Bellis perennis
Cerastium fontanum
Ranunculus repens
Cardamine pratensis
Plantago lanceolata
Lolium perenne
Juncus effusus
Trifolium repens

WL1 Hedgerow

Common Name

Ash
Beech
Bird's-foot trefoil
Blackthorn
Bluebell
Bramble
Broad buckler fern
Broad leaved dock
Bullace
Bush vetch
Cat's ear
Cherry laurel
Cleavers
Cocksfoot
Columbine or Bishops' bonnet
Common polypody fern

Scientific name

Fraxinus excelsior
Fagus sylvatica
Lotus corniculatus
Prunus spinosa
Hyacinthoides non-scriptus
Rubus fruticosus agg.
Dryopteris dilatata
Rumex obtusifolius
Prunus domestica
Vicia sepium
Hypochoeris radicata
Prunus laurocerasus
Gallium aparine
Dactylis glomerata
Aquilega sp.
Polypodium vulgare

| | |
|---------------------|--------------------------------|
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Crab apple | <i>Malus sylvestris</i> |
| Creeping buttercup | <i>Ranunculus repens</i> |
| Creeping cinquefoil | <i>Potentilla reptans</i> |
| Dandelion | <i>Taraxacum officinale</i> |
| Day lily | <i>Hemerocallis</i> |
| Dog rose | <i>Rosa canina</i> |
| Early dog violet | <i>Viola rivinana</i> |
| Elder | <i>Sambucus nigra</i> |
| False wood brome | <i>Brachypodium sylvatica</i> |
| Germander speedwell | <i>Veronica chamaedrys</i> |
| Gorse | <i>Ulex europaeus</i> |
| Greater stitchwort | <i>Stellaria holostea</i> |
| Ground ivy | <i>Glechoma hederacea</i> |
| Hart's tongue fern | <i>Phyllitis scolopendrium</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hazel | <i>Corylus avellana</i> |
| Herb robert | <i>Geranium robertianum</i> |
| Hogweed | <i>Heracleum sphondylium</i> |
| Holly | <i>Ilex aquifolium</i> |
| Honeysuckle | <i>Lonicera periclymenum</i> |
| Ivy | <i>Hedera helix</i> |
| Large periwinkle | <i>Vinca major</i> |
| Male fern | <i>Dryopteris filix-mas</i> |
| Mosses | Bryophytes |
| Nipplewort | <i>Lapsana communis</i> |
| Pendulous sedge | <i>Carex pendula</i> |
| Primrose | <i>Primula vulgaris</i> |
| Privet | <i>Ligustrum ovalifolium</i> |
| Ragwort | <i>Senecio jacobaea</i> |
| Red fescue | <i>Festuca rubra</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |
| Stinging nettle | <i>Urtica dioica</i> |
| Sycamore | <i>Acer pseudoplatanus</i> |
| Wavy bittercress | <i>Cardamine flexuosa</i> |
| Wild strawberry | <i>Fragaria vesca</i> |
| Willowherb | <i>Epilobium</i> sp. |
| Wood avens | <i>Geum urbanum</i> |
| Wood sage | <i>Teucrium scorodonia</i> |

Yarrow

Achillea millefolium

Yew

Taxus baccata

BL2 Earth Banks

Common Name

Bird's-foot trefoil
Bramble
Broadleaved dock
Bush vetch
Cleavers
Common thistle
Cow parsley
Creeping buttercup
Creeping cinquefoil
Dandelion
Dog rose
Elder
Field woodrush
Germander speedwell
Gorse
Greater stitchwort
Harts tongue fern
Hawthorn
Herb robert
Ivy
Knapweed
Male fern
Meadow grass
Meadow vetchling
Meadowsweet
Moss
Narrow leaved plantain
Ox-eye daisy
Primrose
Ragwort
Red fescue
Scutch grass
Soft shield fern

Scientific name

Lotus corniculatus
Rubus fruticosus agg.
Rumex obtusifolius
Vicia sepium
Gallium aparine
Cirsium vulgare
Anthriscus sylvestris
Ranunculus repens
Potentilla reptans
Taraxacum officinale
Rosa canina
Sambucus nigra
Luzula campestris
Veronica chamaedrys
Ulex europaeus
Stellaria holostea
Phyllitis scolopendrium
Crataegus monogyna
Geranium robertianum
Hedera helix
Centaurea nigra
Dryopteris filix-mas
Poa sp.
Lathyrus pratensis
Filipendula ulmaria
Bryophytes
Plantago lanceolata
Leucanthemum vulgare
Primula vulgaris
Senecio jacobaea
Festuca rubra
Elytrigia repens
Polystichum setiferum

Soft sow thistle
Stinging nettle
Violet
Wild strawberry
Willowherb
Yarrow

Sonchus olearaceus
Urtica dioica
Viola sp.
Fragaria vesca
Epilobium sp.
Achillea millefolium

WD5 Riparian woodland

Common Name

Alder
Bramble
Brooklime
Common dock
Cow parsley
Germander speedwell
Gorse
Grey willow
Lesser celandine
Meadowsweet
Nettle
Pendulous sedge

Scientific name

Alnus glutinosa
Rubus fruticosus agg.
Veronica beccabunga
Rumex obtusifolius
Anthriscus sylvestris
Veronica chamaedrys
Ulex europaeus
Salix cinerea
Ranunculus ficaria
Filipendula ulmaria
Urtica dioica
Carex pendula

WD1 Broadleaved woodland

Common Name

Beech
Bluebell
Broad buckler fern
Catmint
Cedar
Cherry laurel
Cherry narrow upright
Copper beech
Darwin's barberry
Eucalyptus sp.
Golden king holly
Greater stitchwort
Ground elder – lots

Scientific name

Fagus sylvatica
Hyacinthoides non-scriptus
Dryopteris dilatata
Nepeta sp.
Cedrus
Prunus laurocerasus
Prunus amagowyna
Fagus sylvatica 'Purpurea'
Berberis darwinii
Eucalyptus sp.
Ilex 'Golden King'
Stellaria holostea
Aegopodium podagraria

| | |
|----------------------|--------------------------------------|
| Hard fern | <i>Blechnum spicant</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hazel | <i>Corylus avellana</i> |
| Herb robert | <i>Geranium robertianum</i> |
| Holly | <i>Ilex aquifolium</i> |
| Honeysuckle | <i>Lonicera periclymenum</i> |
| Horse chestnut | <i>Aesculus hippocastanum</i> |
| Ivy | <i>Hedera helix</i> |
| Kanzan cherry | <i>Prunus kanzan</i> |
| Lawson cypress | <i>Chamaecyparis lawsoniana</i> var. |
| Lesser celandine | <i>Ranunculus ficaria</i> |
| Lime | <i>Tilia</i> |
| Lupins | <i>Lupinus</i> sp. |
| Male fern | <i>Dryopteris filix-mas</i> |
| Marguerites | <i>Chrysanthemum</i> sp. |
| Montbretia | <i>Crocsmia x crocosmiflora</i> |
| Norway maple | <i>Acer platanoides</i> |
| Oak | <i>Quercus</i> sp. |
| Ramsons | <i>Allium ursinum</i> |
| Rowan | <i>Sorbus aucuparia</i> |
| Self heal | <i>Prunella vulgaris</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |
| Sycamore | <i>Acer pseudoplatanus</i> |
| Violet | <i>Viola</i> sp. |
| Western red cedar | <i>Thuja plicata</i> |
| Wood anemone | <i>Anemone nemorosa</i> |
| Wood sorrel | <i>Oxalis acetosella</i> |
| Yellow berried holly | <i>Ilex</i> sp. |

WD5 Scattered trees and parkland

| Common Name | Scientific name |
|--------------------|---------------------------------------|
| Ash | <i>Fraxinus excelsior</i> |
| Blue Atlas cedar | <i>Cedrus atlantica</i> <i>Glauca</i> |
| Broad leaved dock | <i>Rumex obtusifolius</i> |
| Cedar | <i>Cedrus</i> sp. |
| Clover | <i>Trifolium</i> sp. |
| Common chickweed | <i>Stellaria media</i> |
| Common thistle | <i>Cirsium vulgare</i> |

Cow parsley
Creeping buttercup
Crimson King Norway maple
Daisy
Dandelion
English or pedunculate oak
European larch
French lime
Germander speedwell
Golden ash
Hairy bitter cress
Lesser celandine
Norway maple
Pine
Purple crab
Silver birch
Small leaved lime
Stinging nettle
Sweet vernal grass
Sycamore
Wellingtonia
White clover
Wood dock

Anthriscus sylvestris
Ranunculus repens
Acer platanoides 'Crimson King'
Bellis perennis
Taraxacum officinale agg.
Quercus robur
Larix decidua
Tilia platyphyllos
Veronica chamaedrys
Fraxinus excelsior 'Jaspidea'
Cardamine hirsuta
Ranunculus ficaria
Acer platanoides
Pinus sp.
Malus sp.
Betula pendula
Tilia cordata
Urtica dioica
Anthoxanthum odoratum
Acer pseudoplatanus
Sequoiadendron giganteum
Trifolium repens
Rumex sanguineus

WL2 Treelines

Common Name

French lime
Lawson cypress
Poplar
Yew

Scientific name

Tilia platyphyllos
Chamaecyparis lawsoniana sp.
Populus sp.
Taxus baccata

BL1A Stone walls

Common Name

Dandelion
Greater celandine
Herb robert
Ivy

Scientific name

Taraxacum officinale agg.
Chelidonium majus
Geranium robertianum
Hedera helix

Ivy leaved toadflax
Rusty-back
Wall rue

Cymbalaria muralis
Asplenium ceterach
Asplenium ruta-muraria

BC4 Flowerbeds and borders

Common Name

Apple
Azalea
Basket of gold
Bay laurel
Bluebell
Blueberry
Box
Box leaf honeysuckle
Bridal wreath
Broom
Butterfly bush
Cabbage
Catmint
Christmas berry
Climbing hydrangea
Comfrey
Common loosestrife
Common valerian
Coral bells
Cornflower
Cotoneaster
Crab
Cranesbill
Cranesbill 'Johnson's Blue'
Cranesbill 'Wargraves Pink'
Creeping raspberry
Crimson king maple
Currant
David viburnum
Day lilies
Dogwood
Elder

Scientific name

Malus domestica
Azalea
Alyssum saxatile
Laurus nobilis
Hyacinthoides non-scriptus
Vaccinium myrtillus
Buxus sempervirens
Lonicera nitida
Spiraea arguta
Cistus
Buddleia davidii
Brassica oleracea
Nepeta sp.
Photinia x fraseri 'Red Robin'
Hydrangea petiolaris
Symphytum officinale
Lysimachia vulgaris
Valeriana officinalis
Heuchera micrantha 'Palace Purple'
Centaurea cyanus
Cotoneaster sp.
Malus sp.
Geranium sp.
Geranium 'Johnson's Blue'
Geranium x oxonianum 'Wargrave's Pink'
Rubus pentalobus
Acer *Crimson King*
Ribes nigrum
Viburnum davidii
Hemerocallis
Cornus alba
Sambucus nigra

| | |
|-------------------------|---|
| English lavender | <i>Lavendula hidcote</i> |
| False spiraea | <i>Astilbe</i> sp. |
| Fennel | <i>Foeniculum vulgare</i> |
| Forget-me-not | <i>Myosotis</i> sp. |
| Fortunes spindle | <i>Euonymus fortunei</i> 'Emerald and Gold' |
| Foxglove | <i>Digitalis purpurea</i> |
| French tarragon | <i>Artemisia dracunculus</i> |
| Golden spiraea | <i>Spiraea x bumalda</i> 'Gold Flame' |
| Gooseberry | <i>Ribes uva-crispa</i> |
| Grape hyacinth | <i>Muscari</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hebe | <i>Hebe</i> sp. |
| Hydrangea | <i>Hydrangea</i> sp. |
| Hypericum | <i>Hypericum</i> sp. |
| Ice plant | <i>Sedum spectabile</i> |
| Iris | <i>Iris</i> sp. |
| Ivy | <i>Hedera helix</i> |
| Kerria | <i>Kerria japonica</i> |
| Ladies smock | <i>Alchemilla mollis</i> |
| Large leaved periwinkle | <i>Vinca major</i> |
| Laurustinus | <i>Viburnum tinus</i> |
| Lilac | <i>Syringe vulgaris</i> |
| Lily of the valley bush | <i>Pieris floribunda</i> 'Forest Flame' |
| Lungwort | <i>Pulmonaria</i> sp. |
| Male fern | <i>Dryopteris filix-mas</i> |
| Maple | <i>Acer</i> sp. |
| Mock orange | <i>Philadelphus aurea</i> |
| Montbretia | <i>Crocsmia x crocosmiflora</i> |
| Mop head hydrangea | <i>Hydrangea macrophylla</i> |
| Oregano | <i>Origanum vulgare</i> |
| Otto Luyken | <i>Prunus laurocerasus</i> 'Otto Luyken' |
| Pink | <i>Dianthus</i> |
| Pink / carnation | <i>Dianthus</i> sp. |
| Plantain lily | <i>Hosta</i> sp. |
| Poppy | <i>Papaver</i> sp. |
| Portuguese laurel | <i>Prunus lusitanica</i> |
| Privet | <i>Ligustrum ovalifolium</i> |
| Purple barberry | <i>Berberis thunbergii</i> 'Atropurpurea' |
| Purple plum | <i>Prunus pissardia</i> Nigra |

| | |
|--------------------|---------------------------------------|
| Purple sage | <i>Salvia officinalis Purpurea</i> |
| Rhododendron | <i>Rhododendron inersham</i> |
| Rhubarb | <i>Rheum rhabarbarum</i> |
| Rock cress | <i>Aubrietia</i> |
| Rose | <i>Rosa sp.</i> |
| Rosemary | <i>Rosmarinus officinalis</i> |
| Rowan | <i>Sorbus sp.</i> |
| Rugosa rose | <i>Rosa rugosa</i> |
| Shrubby cinquefoil | <i>Potentilla fruticosa</i> |
| Silver queen holly | <i>Ilex aquifolium 'Silver Queen'</i> |
| Spindle | <i>Euonymus 'Emerald and Gold'</i> |
| Spotted laurel | <i>Aucuba japonica</i> |
| Tansy | <i>Tanacetum vulgare</i> |
| Thyme | <i>Thymus sp.</i> |
| Tulips | <i>Tulipa sp.</i> |
| Variegated weigela | <i>Weigela variegata</i> |
| Weeping hornbeam | <i>Carpinus betulus 'Pendula'</i> |
| Weigela | <i>Weigela sp.</i> |
| Wild cherry | <i>Prunus avium</i> |
| Wild strawberry | <i>Fragaria vesca</i> |
| Winter heather | <i>Erica carnea sp.</i> |
| Yarrow | <i>Achillea millefolium</i> |

BC2 Horticultural land

Common Name

Apple
Blackberry
Fig
Grape
Peach
Pear
Raspberry

Scientific name

Malus sp.
Rubrus fruticosus
Ficus carica
Vitis vinifera
Prunus persica
Pyrus sp.
Rubus idaeus

Appendix 2 *All plant species found in Clonegal during the survey*

Table 3 **All species identified in Clonegal during the survey**

| All species found in Clonegal | |
|-------------------------------|-------------------------|
| Alder | Ice plant |
| Apple | Iris |
| Ash | Ivy |
| Ash | Ivy leaved toadflax |
| Basket of gold | Japanese knotweed |
| Bay laurel | Kanzan cherry |
| Beech | Kerria |
| Bird's-foot trefoil | Knapweed |
| Blackberry | Ladies smock |
| Blackthorn | Large leaved periwinkle |
| Blue Atlas cedar | Laurustinus |
| Bluebell | Lawson cypress |
| Blueberry | Lesser celandine |
| Box | Lesser spearwort |
| Box leaf honeysuckle | Lilac |
| Bramble | Lily of the valley bush |
| Bridal wreath | Lime |
| Broad buckler fern | Lungwort |
| Broad leaved dock | Lupins |
| Broadleaved plantain | Male fern |
| Brooklime | Maple |
| Broom | Marguerites |
| Bullace | Marsh bedstraw |
| Bush vetch | Meadow buttercup |
| Butterfly bush | Meadow grass |
| Cabbage | Meadow vetchling |
| Cat's ear | Meadowsweet |
| Catmint | Mock orange |
| Cedar | Montbretia |
| Cherry laurel | Mop head hydrangea |
| Cherry narrow upright | Mosses |
| Chickweed | Narrow leaved plantain |
| Christmas berry | Nettle |
| Cleavers | Nipplewort |
| Climbing hydrangea | Norway maple |

Clover
Cocksfoot
Columbine or Bishops' bonnet
Comfrey
Common chickweed
Common daisy
Common dock
Common loosestrife
Common mouse-ear
Common polypody fern
Common thistle
Common valerian
Copper beech
Coral bells
Cornflower
Cotoneaster
Cow parsley
Crab
Crab apple
Cranesbill
Cranesbill 'Johnson's Blue'
Cranesbill 'Wargraves Pink'
Creeping buttercup
Creeping cinquefoil
Creeping raspberry
Crimson king maple
Crimson King Norway maple
Curled dock
Currant
Dandelion
Darwin's barberry
David viburnum
Day lily
Dog rose
Dogwood
Duckweed
Early dog violet
Elder
English lavender

Oregano
Otto Luyken
Ox-eye daisy
Peach
Pear
Pedunculate oak
Pendulous sedge
Perennial ryegrass
Pine
Pink / carnation
Plantain lily
Pond water crowfoot
Poplar
Poppy
Portuguese laurel
Primrose
Privet
Purple barberry
Purple crab
Purple plum
Purple sage
Ragwort
Ramsons
Raspberry
Red fescue
Reed canary grass
Rhododendron
Rhubarb
Rock cress
Rose
Rosemary
Rowan
Rugosa rose
Rusty-back
Scutch grass
Self heal
Shrubby cinquefoil
Silver birch
Silver queen holly

English or pedunculate oak
Eucalyptus sp.
European larch
False spiraea
False wood brome
Fennel
Field woodrush
Fig
Floating sweet grass
Forget-me-not
Fortunes spindle
Foxglove
French lime
French tarragon
Germander speedwell
Golden ash
Golden king holly
Golden spiraea
Gooseberry
Gorse
Grape
Grape hyacinth
Greater celandine
Greater stitchwort
Grey willow
Ground elder
Ground ivy
Hairy bitter cress
Hard fern
Hart's tongue fern
Hawthorn
Hazel
Hebe
Herb robert
Hogweed
Holly
Honeysuckle
Horse chestnut
Hydrangea

Small leaved lime
Soft rush
Soft shield fern
Soft sow thistle
Spindle
Spotted laurel
Stinging nettle
Sweet vernal grass
Sycamore
Tansy
Teasel
Thyme
Tulips
Variegated weigela
Violet
Violet
Wall rue
Water speedwell
Water starwort
Watercress
Wavy bittercress
Weeping hornbeam
Weigela
Wellingtonia
Western red cedar
White clover
White poplar
Wild cherry
Wild strawberry
Willowherb
Winter heather
Wood anemone
Wood avens
Wood dock
Wood sage
Wood sorrel
Yarrow
Yellow berried holly
Yew

Hypericum
 Bird's-foot trefoil
 Blackberry
 Blackthorn

Yorkshire fog
 Knapweed
 Ladies smock
 Large leaved periwinkle

Table 4 All native species found in Clonegal, woody species are followed by *

| Common Name | Scientific name |
|-----------------------|-----------------------------------|
| Alder * | <i>Alnus glutinosa</i> |
| Ash* | <i>Fraxinus excelsior</i> |
| Bird's-foot trefoil | <i>Lotus corniculatus</i> |
| Blackthorn* | <i>Prunus spinosa</i> |
| Bluebell | <i>Hyacinthoides non-scriptus</i> |
| Bramble* | <i>Rubus fruticosus</i> agg. |
| Broad buckler fern | <i>Dryopteris dilatata</i> |
| Broad leaved dock | <i>Rumex obtusifolius</i> |
| Broad leaved plantain | <i>Plantago major</i> |
| Brooklime | <i>Veronica beccabunga</i> |
| Bush vetch | <i>Vicia sepium</i> |
| Cat's ear | <i>Hypochoeris radicata</i> |
| Chickweed | <i>Stellaria media</i> |
| Cleavers | <i>Gallium aparine</i> |
| Cocksfoot | <i>Dactylis glomerata</i> |
| Comfrey | <i>Symphytum officinale</i> |
| Common chickweed | <i>Stellaria media</i> |
| Common daisy | <i>Bellis perennis</i> |
| Common holly* | <i>Ilex aquifolium</i> |
| Common mouse-ear | <i>Cerastium fontanum</i> |
| Common polypody fern | <i>Polypodium vulgare</i> |
| Common thistle | <i>Cirsium vulgare</i> |
| Common valerian | <i>Valeriana officinalis</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Crab apple | <i>Malus sylvestris</i> |
| Crab apple* | <i>Malus sylvestris</i> |
| Cranesbill | <i>Geranium</i> sp. |
| Creeping buttercup | <i>Ranunculus repens</i> |
| Creeping cinquefoil | <i>Potentilla reptans</i> |
| Curled dock | <i>Rumex crispus</i> |
| Dandelion | <i>Taraxacum officinale</i> |

| | |
|------------------------|--------------------------------|
| Dog rose* | <i>Rosa canina</i> |
| Downy birch* | <i>Betula pubescens</i> |
| Early dog violet | <i>Viola rivinana</i> |
| Elder* | <i>Sambucus nigra</i> |
| False wood brome | <i>Brachypodium sylvaticum</i> |
| Field woodrush | <i>Luzula campestris</i> |
| Flag iris | <i>Iris pseudacorus</i> |
| Floating sweet grass | <i>Glyceria fluitans</i> |
| Forget-me-not | <i>Myosotis</i> sp. |
| Foxglove | <i>Digitalis purpurea</i> |
| Germander speedwell | <i>Veronica chamaedrys</i> |
| Gorse* | <i>Ulex europaeus</i> |
| Greater stitchwort | <i>Stellaria holostea</i> |
| Grey willow* | <i>Salix cinerea</i> |
| Ground ivy | <i>Glechoma hederacea</i> |
| Hard rush | <i>Juncus inflexus</i> |
| Hart's tongue fern | <i>Phyllitis scolopendrium</i> |
| Hawthorn* | <i>Crataegus monogyna</i> |
| Hazel* | <i>Corylus avellana</i> |
| Hedge woundwort | <i>Stachys sylvestris</i> |
| Hemlock water dropwort | <i>Oenanthe crocata</i> |
| Herb robert | <i>Geranium robertianum</i> |
| Hoary plantain | <i>Plantago media</i> |
| Hogweed | <i>Heracleum sphondylium</i> |
| Honeysuckle* | <i>Lonicera periclymenum</i> |
| Ivy* | <i>Hedera helix</i> |
| Knapweed | <i>Centaurea nigra</i> |
| Ladies smock | <i>Cardamine pratensis</i> |
| Lesser celandine | <i>Ranunculus ficaria</i> |
| Lesser spearwort | <i>Ranunculus flammula</i> |
| Lords and ladies | <i>Arum maculatum</i> |
| Male fern | <i>Dryopteris filix-mas</i> |
| Marsh bedstraw | <i>Gallium palustre</i> |
| Meadow buttercup | <i>Ranunculus acris</i> |
| Meadow grass | <i>Poa</i> sp. |
| Meadow vetchling | <i>Lathyrus pratensis</i> |
| Meadowsweet | <i>Filipendula ulmaria</i> |
| Moss | <i>Bryophytes</i> |
| Narrow leaved plantain | <i>Plantago lanceolata</i> |

| | |
|------------------------|-------------------------------------|
| Nettle | <i>Urtica dioica</i> |
| Nipplewort | <i>Lapsana communis</i> |
| Ox-eye daisy | <i>Leucanthemum vulgare</i> |
| Pedunculate oak* | <i>Quercus robur</i> |
| Pond water crowfoot | <i>Ranunculus peltatus</i> |
| Primrose | <i>Primula vulgaris</i> |
| Ragwort | <i>Senecio jacobaea</i> |
| Ramsons | <i>Allium ursinum</i> |
| Red fescue | <i>Festuca rubra</i> |
| Reed canary grass | <i>Phalaris aundinaceae</i> |
| Rowan* | <i>Sorbus aucuparia</i> |
| Rusty-back | <i>Asplenium ceterach</i> |
| Scots pine* | <i>Pinus sylvestris</i> |
| Scutch grass | <i>Elytrigia repens</i> |
| Self heal | <i>Prunella vulgaris</i> |
| Silver birch* | <i>Betula pendula</i> |
| Soft rush | <i>Juncus effuses</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |
| Soft sow thistle | <i>Sonchus olearaceus</i> |
| Stinging nettle | <i>Urtica dioica</i> |
| Sweet vernal grass | <i>Anthoxanthum odoratum</i> |
| Teasel | <i>Dipsacum fulonum</i> |
| Thyme leaved speedwell | <i>Veronica serpyllifolia</i> |
| Violet | <i>Viola sp.</i> |
| Wall rue | <i>Asplenium ruta-muraria</i> |
| Water speedwell | <i>Veronica anagallis- aquatica</i> |
| Water starwort | <i>Callitriche sp.</i> |
| Watercress | <i>Nasturtium officinale</i> |
| Wavy bittercress | <i>Cardamine flexuosa</i> |
| White clover | <i>Trifolium repens</i> |
| Wild cherry* | <i>Prunus avium</i> |
| Wild strawberry | <i>Fragaria vesca</i> |
| Willowherb | <i>Epilobium sp.</i> |
| Wood anemone | <i>Anemone nemorosa</i> |
| Wood avens | <i>Geum urbanum</i> |
| Wood dock | <i>Rumex sanguineus</i> |
| Wood sage | <i>Teucrium scorodonia</i> |
| Wood sorrel | <i>Oxalis acetosella</i> |
| Yarrow | <i>Achillea millefolium</i> |

Yew*
Yorkshire fog

Taxus baccata
Holcus lanatus

Table 5 All non-native or ornamental species found in Clonegal, woody species are followed by *

| Common name | Scientific name |
|-----------------------|---|
| American sweet gum* | <i>Liquidamber styraciflua</i> |
| Apple* | <i>Malus domestica</i> |
| Azalea* | <i>Azalea</i> |
| Barberry* | <i>Berberis stenophylla</i> |
| Basket of gold | <i>Alyssum saxatile</i> |
| Bay laurel* | <i>Laurus nobilis</i> |
| Beech* | <i>Fagus sylvatica</i> |
| Blue Atlas cedar* | <i>Cedrus atlantica</i> 'Glauca' |
| Blueberry* | <i>Vaccinium myrtillus</i> |
| Box* | <i>Buxus sempervirens</i> |
| Box leaf honeysuckle* | <i>Lonicera nitida</i> |
| Bridal wreath* | <i>Spiraea arguta</i> |
| Broom* | <i>Cytisus</i> sp. |
| Bullace * | <i>Prunus domestica</i> |
| Butchers broom* | <i>Ruscus aculeatus</i> |
| Butterfly bush* | <i>Buddleia</i> sp. |
| Cabbage | <i>Brassica oleracea</i> |
| Cabbage palm* | <i>Cordyline australis</i> |
| Camellia* | <i>Camellia</i> sp. |
| Catmint* | <i>Nepeta</i> sp. |
| Cedar* | <i>Cedrus</i> sp. |
| Cedar sp.* | <i>Thuja</i> sp. |
| Cherry laurel | <i>Prunus laurocerasus</i> |
| Christmas berry* | <i>Photinia x fraseri</i> 'Red Robin' |
| Chusan palm* | <i>Trachycarpus fortunei</i> |
| Climbing hydrangea* | <i>Hydrangea petiolaris</i> |
| Columbine* | <i>Aquilegia</i> sp. |
| Copper beech * | <i>Fagus sylvatica</i> 'Purpurea' |
| Coral bells | <i>Heuchera micrantha</i> 'Palace Purple' |
| Cornflower | <i>Centaurea cyanus</i> |
| Cotoneaster* | <i>Cotoneaster</i> sp. |
| Crab* | <i>Malus</i> sp. |

| | |
|------------------------------|---|
| Cranesbill | <i>Geranium sp.</i> |
| Cranesbill 'Johnson's Blue'* | <i>Geranium 'Johnson's Blue'</i> |
| Cranesbill 'Wargraves Pink' | <i>Geranium x oxonianum 'Wargrave's Pink'</i> |
| Creeping cinquefoil | <i>Potentilla reptans</i> |
| Crimson King Norway maple* | <i>Acer platanoides 'Crimson King'</i> |
| Currant* | <i>Ribes nigrum</i> |
| Cut leaved beech* | <i>Fagus sylvatica 'Asplenifolia'</i> |
| Darwin's barberry* | <i>Berberis darwinii</i> |
| David viburnum* | <i>Viburnum davidii</i> |
| Day lilies | <i>Hemerocallis</i> |
| Deodar cedar* | <i>Cedrus deodara</i> |
| Dogwood* | <i>Cornus alba</i> |
| English lavender* | <i>Lavendula hidcote</i> |
| Ephedra * | <i>Ephedra</i> |
| Eucalyptus sp.* | <i>Eucalyptus sp.</i> |
| European larch* | <i>Larix decidua</i> |
| Fennel | <i>Foeniculum vulgare</i> |
| Fig* | <i>Ficus carica</i> |
| Flowering cherry* | <i>Prunus amanogawa</i> |
| Forget-me-not | <i>Myosotis sp.</i> |
| Fortunes spindle* | <i>Euonymus fortunei 'Emerald and Gold'</i> |
| French lime* | <i>Tilia platyphyllos</i> |
| French tarragon | <i>Artemisia dracuncululus</i> |
| Ginkgo or maidenhair tree* | <i>Ginkgo biloba</i> |
| Golden ash* | <i>Fraxinus excelsior 'Jaspidea'</i> |
| Golden king holly* | <i>Ilex 'Golden King'</i> |
| Golden spiraea* | <i>Spiraea x bumalda 'Gold Flame'</i> |
| Gooseberry* | <i>Ribes uva-crispa</i> |
| Grape hyacinth | <i>Muscari</i> |
| Greater celandine | <i>Chelidonium majus</i> |
| Ground elder | <i>Aegopodium podagraria</i> |
| Hebe* | <i>Hebe pinguifolia pageii</i> |
| Hebe* | <i>Hebe sp.</i> |
| Himalayan birch* | <i>Betula utilis 'Jacquemontii'</i> |
| Horse chestnut* | <i>Aesculus hippocastanum</i> |
| Hypericum* | <i>Hypericum sp.</i> |
| Ice plant | <i>Sedum spectabile</i> |
| Ivy leaved toadflax | <i>Cymbalaria muralis</i> |
| Japanese knotweed | <i>Reynoutria japonica</i> |

| | |
|-----------------------------|---|
| Japanese skimmia* | <i>Skimmia japonica</i> |
| Japanese snowball* | <i>Viburnum plicata</i> |
| Kanzan cherry* | <i>Prunus 'Kanzan'</i> |
| Kerria * | <i>Kerria japonica</i> |
| Larch* | <i>Larix europaeus</i> |
| Large periwinkle* | <i>Vinca major</i> |
| Laurustinus * | <i>Viburnus tinus</i> |
| Lawson cypress* | <i>Chamaecyparis lawsoniana</i> |
| Leyland cypress* | <i>Chamaecyparis notkatensis x Cupressus macrocarpa 'Leylandii'</i> |
| Lilac* | <i>Syringa vulgaris</i> |
| Lily of the valley bush* | <i>Pieris floribunda 'Forest Flame'</i> |
| Lime* | <i>Tilia sp.</i> |
| Lungwort | <i>Pulmonaria sp.</i> |
| Lupins | <i>Lupinus sp.</i> |
| Maple* | <i>Acer sp.</i> |
| Marguerite | <i>Chrysanthemum sp.</i> |
| Mexican orange blossom* | <i>Choisya ternata</i> |
| Mock orange* | <i>Philadelphus sp.</i> |
| Mock orange golden foliage* | <i>Philadelphus aurea</i> |
| Montbretia* | <i>Crococsmia x crocosmiflora</i> |
| Mop head hydrangea* | <i>Hydrangea macrophylla</i> |
| Norway maple* | <i>Acer platanoides</i> |
| Oregano* | <i>Origanum vulgare</i> |
| Otto Luyken* | <i>Prunus laurocerasus 'Otto Luyken'</i> |
| Peach* | <i>Prunus persica</i> |
| Pear * | <i>Pyrus communis</i> |
| Pendulous sedge | <i>Carex pendula</i> |
| Perennial ryegrass | <i>Lolium perenne</i> |
| Pine* | <i>Pinus sp.</i> |
| Pink | <i>Dianthus</i> |
| Pink / carnation | <i>Dianthus sp.</i> |
| Plantain lily | <i>Hosta sp.</i> |
| Poppy | <i>Papaver sp.</i> |
| Portuguese laurel* | <i>Prunus lusitanica</i> |
| Privet* | <i>Ligustrum ovalifolium</i> |
| Purple barberry* | <i>Berberis thunbergii 'Atropurpurea'</i> |
| Purple crab* | <i>Malus sp.</i> |
| Purple elder* | <i>Sambucus nigra Purpurea</i> |

| | |
|------------------------|--------------------------------------|
| Purple plum* | <i>Prunus pissardia</i> 'Nigra' |
| Purple sage* | <i>Salvia officinalis</i> 'Purpurea' |
| Raspberry* | <i>Rubus idaeus</i> |
| Rhododendron* | <i>Rhododendron inversham</i> |
| Rhododendron* | <i>Rhododendron</i> |
| Rhubarb | <i>Rheum rhabarbarum</i> |
| Rock cress | <i>Aubrietia</i> |
| Rose* | <i>Rosa</i> sp. |
| Rosemary * | <i>Rosmarinus officinalis</i> |
| Rugosa rose* | <i>Rosa rugosa</i> |
| Shrubby cinquefoil* | <i>Potentilla fruticosa</i> |
| Silver queen holly* | <i>Ilex aquifolium</i> Silver Queen |
| Small leaved lime* | <i>Tilia cordata</i> |
| Spindle* | <i>Euonymus</i> 'Emerald Gaiety' |
| Spindle* | <i>Euonymus</i> Emerald and Gold |
| Spotted laurel* | <i>Aucuba japonica</i> 'Variegata' |
| Sycamore* | <i>Acer pseudoplatanus</i> |
| Tansy | <i>Tanacetum vulgare</i> |
| Thyme* | <i>Thymus</i> sp. |
| Thyme leaved speedwell | <i>Veronica serpyllifolia</i> |
| Tree paeonia* | <i>Paeonia</i> |
| Tulip | <i>Tulipa</i> sp. |
| Variegated weigela* | <i>Weigela variegata</i> |
| Weeping ash* | <i>Fraxinus excelsior</i> 'Pendula' |
| Weeping hornbeam* | <i>Carpinus betulus</i> 'Pendula' |
| Weigela* | <i>Weigela</i> sp. |
| Wellingtonia* | <i>Sequoiadendron gigantium</i> |
| Western red cedar* | <i>Thuja plicata</i> |
| White poplar* | <i>Populus alba</i> |
| Winter heather* | <i>Erica carnea</i> |
| Yellow berried holly* | <i>Ilex</i> |
| Youngs weeping birch* | <i>Betula pendula</i> 'Youngii' |

Table 6 Native Species found in highly modified habitats and not in semi natural ones. Plant names followed by an * indicates a woody species.

| Plant name | |
|------------------|---------|
| Comfrey | Ramsons |
| Common chickweed | Rowan* |

| | |
|--------------------|--------------------|
| Duckweed | Self heal |
| Forget-me-not | Spindle* |
| Foxglove | Sweet vernal grass |
| Hairy bitter cress | Wild cherry* |
| Hard fern | Wood anemone |
| Pedunculate oak* | Wood dock |
| Poppy | Wood sorrel |

Table 7 Native species in semi-natural habitats and not found in highly modified ones.
Plant names followed by an * indicates a woody species.

Plant name

| | |
|----------------------|---------------------|
| Alder* | Lesser spearwort |
| Bird's-foot trefoil | Marsh bedstraw |
| Blackthorn* | Meadow buttercup |
| Broad leaved dock | Meadow grass |
| Broadleaved plantain | Meadow vetchling |
| Bush vetch | Meadowsweet |
| Cat's ear | Nipplewort |
| Cleavers | Ox-eye daisy |
| Cocksfoot | Pond water crowfoot |
| Crab apple* | Primrose |
| Creeping cinquefoil | Red fescue |
| Curled dock | Reed canary grass |
| Dog rose* | Rusty-back |
| False wood brome | Soft sow thistle |
| Field woodrush | Teasel |
| Floating sweet grass | Wall rue |
| Gorse* | Water speedwell |
| Grey willow* | Watercress |
| Ground ivy | Wavy bittercress |
| Hart's tongue fern | Wood avens |
| Hogweed | Wood sage |
| Knapweed | |

Appendix 3 Target notes

TN 1 FW4 Depositing Lowland Rivers

River Derry (fig. 2) in the village next to the 'Pig House'

Species growing in the water - pond water crowfoot which is abundant.

| Common Name | Scientific name |
|---------------------|----------------------------|
| Pond water crowfoot | <i>Ranunculus peltatus</i> |

The species below were growing adjacent to the river edge forming a very narrow fringe of vegetation. Some such as hemlock water dropwort, flag iris and the dogwood are in constant contact with the water, others such as meadowsweet take advantage of damp conditions while ivy, common polypody fern and lesser celandine can be found on drier ground and in the shade provided by the horse chestnut tree.

| Common Name | Scientific name |
|------------------------|---------------------------------|
| Bramble | <i>Rubus fruticosus</i> agg. |
| Cleavers | <i>Gallium aparine</i> |
| Common polypody fern | <i>Polypodium vulgare</i> |
| Common valerian | <i>Valeriana officinalis</i> |
| Dandelion | <i>Taraxacum officinale</i> |
| Dogwood | <i>Cornus alba</i> |
| Flag iris | <i>Iris pseudacorus</i> |
| Hemlock water dropwort | <i>Oenanthe crocata</i> |
| Horse chestnut | <i>Aesculus hippocastanum</i> |
| Ivy | <i>Hedera helix</i> |
| Lesser celandine | <i>Ranunculus ficaria</i> |
| Meadowsweet | <i>Filipendula ulmaria</i> |
| Montbretia | <i>Crocsmia x crocosmiflora</i> |
| Pendulous sedge | <i>Carex pendula</i> |
| Stinging nettle | <i>Urtica dioica</i> |

TN 2 BL1A Stone walls

Bridge over the River Derry

A limestone arched bridge spanning the River Derry (fig. 2), a tributary of the River Slaney an important SAC (Special area of conservation see appendix X of the main report for more details). A number of species including ivy and wall rue can be found growing in the mortar between the

stones. Two non-native species ivy leaved toadflax and greater celandine can also be found in this habitat.

Species found growing on the bridge over the river Derry, * denotes non-native species.

| Common Name | Scientific name |
|----------------------|----------------------------------|
| *Greater celandine | <i>Chelidonium majus</i> |
| *Ivy leaved toadflax | <i>Cymbalaria muralis</i> |
| Dandelion | <i>Taraxacum officinale</i> agg. |
| Herb robert | <i>Geranium robertianum</i> |
| Ivy | <i>Hedera helix</i> |
| Rusty-back | <i>Asplenium ceterach</i> |
| Wall rue | <i>Asplenium ruta-muraria</i> |

TN 3 WD1 Mixed broadleaved woodland

This small monoculture of ash trees can be found growing on wet ground adjacent to the River Derry and its stone bridge (figs. 2 and 13). Brambles and cow parsley dominated the woodland beneath the trees along with creeping buttercup, young beech, sycamores and nettles. This was observed from the bridge as the woodland is privately owned and the owner was not contactable on the day of the survey.

TN 4 BC4 Flowerbeds and borders

Some of the ornamental non- native flowers and shrubs found growing in beds near the cross roads at Watch House Ho. A good selection of plants giving year round interest for the public while also providing valuable nectar and fruits for wildlife. Flowering in spring bridal wreath and the winter heathers are a source of nectar for butterflies and bees early in the year whilst the ice plant provides nectar in late summer and autumn. Spotted laurel and Otto Luyken can be a source of berries for birds, small mammals and other small creatures during the winter months.

Ornamental species found growing at Watch House Ho

| Common Name | Scientific name |
|--------------------|---|
| Box | <i>Buxus sempervirens</i> |
| Bridal wreath | <i>Spiraea arguta</i> |
| Common loosestrife | <i>Lysimachia vulgaris</i> |
| Coral bells | <i>Heuchera micrantha</i> 'Palace Purple' |
| Crimson king maple | <i>Acer Crimson King</i> |
| English lavender | <i>Lavendula hidcote</i> |

| | |
|--------------------|--|
| Forget-me-not | <i>Myosotis</i> sp. |
| Hydrangea | <i>Hydrangea</i> sp. |
| Ice plant | <i>Sedum spectabile</i> |
| Mock orange | <i>Philadelphus aurea</i> |
| Otto Luyken | <i>Prunus laurocerasus</i> 'Otto Luyken' |
| Portuguese laurel | <i>Prunus lusitanica</i> |
| Rose | <i>Rosa</i> sp. |
| Silver queen holly | <i>Ilex aquifolium</i> 'Silver Queen' |
| Spindle | <i>Euonymus</i> 'Emerald and Gold' |
| Spotted laurel | <i>Aucuba japonica</i> |
| Weeping hornbeam | <i>Carpinus betulus</i> 'Pendula' |
| Winter heather | <i>Erica carnea</i> |

TN 5 WL1 Hedgerows

Thirty six species were identified from this hedgerow on the Bunclody Road (fig. 11), eleven of which were woody species. Six of the eleven woody species are native (elder, hawthorn, hazel, holly, ivy and yew), whilst beech, cherry laurel, large periwinkle, privet and sycamore are not.

Hedgerow growing on a low dry stone wall on the river side of the road on the Bunclody Road.

* denotes non-native

| Common Name | Scientific name |
|-------------------------------|-----------------------------------|
| *Beech | <i>Fagus sylvatica</i> |
| Bluebell | <i>Hyacinthoides non scriptus</i> |
| Bramble | <i>Rubus fruticosus</i> agg. |
| Bush vetch | <i>Vicia sepium</i> |
| Cat's ear | <i>Hypochoeris radicata</i> |
| *Cherry laurel | <i>Prunus laurocerasus</i> |
| Cleavers | <i>Gallium aparine</i> |
| Cocksfoot | <i>Dactylis glomerata</i> |
| *Columbine or Bishops' bonnet | <i>Aquilega</i> sp. |
| Common polypody fern | <i>Polypodium vulgare</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Creeping buttercup | <i>Ranunculus repens</i> |
| Creeping cinquefoil | <i>Potentilla reptans</i> |
| Dandelion | <i>Taraxacum officinale</i> |
| *Day lily | <i>Hemerocallis</i> |
| Elder | <i>Sambucus nigra</i> |
| False wood brome | <i>Brachypodium sylvatica</i> |

| | |
|-------------------|------------------------------|
| Ground ivy | <i>Glechoma hederacea</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hazel | <i>Corylus avellana</i> |
| Herb robert | <i>Geranium robertianum</i> |
| Hogweed | <i>Heracleum sphondylium</i> |
| Holly | <i>Ilex aquifolium</i> |
| Ivy | <i>Hedera helix</i> |
| *Large periwinkle | <i>Vinca major</i> |
| Mosses | Bryophytes |
| Pendulous sedge | <i>Carex pendula</i> |
| *Privet | <i>Ligustrum ovalifolium</i> |
| Red fescue | <i>Festuca rubra</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |
| Stinging nettle | <i>Urtica dioica</i> |
| *Sycamore | <i>Acer pseudoplatanus</i> |
| Wild strawberry | <i>Fragaria vesca</i> |
| Wood avens | <i>Geum urbanum</i> |
| Yarrow | <i>Achillea millefolium</i> |
| Yew | <i>Taxus baccata</i> |

TN 6 WS1 Scrub

Scrub habitat (fig. 10), is scarce in the area of Clonegal so this area next to Ballyshonogue House and the ruins of the castle is important for wildlife providing cover and shelter for birds, mammals and species of insects and other small animals. Being close to the river and adjacent to wet grassland increases its importance.

Scrub habitat on the Bunclody road just before Ballyshonogue House

| Common Name | Scientific name |
|-----------------|------------------------------|
| Alder | <i>Alnus glutinosa</i> |
| Ash | <i>Fraxinus excelsior</i> |
| Blackthorn | <i>Prunus spinosa</i> |
| Bramble | <i>Rubus fruticosus</i> agg. |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Grey willow | <i>Salix cinerea</i> |
| Hard rush | <i>Juncus inflexus</i> |
| Hazel | <i>Corylus avellana</i> |
| Male fern | <i>Dryopteris filix-mas</i> |
| Stinging nettle | <i>Urtica dioica</i> |

TN 7 BC 4 Flower beds and Borders

Back garden at the Weavers Cottage (fig. 19), this garden contains an interesting mix of plant species including fruit and vegetables, shrubs both native and ornamental and herbaceous plants. Some of the herbaceous plants e.g. coral bells, have been grown with weaving in mind forming the raw material for dyeing wool, whilst species such as comfrey and lungwort have medicinal properties. Rosemary and thyme are traditional herbs used for cooking. The majority of the plants found in the Weavers Cottage back garden are also excellent for wildlife.

Species found growing at the Weavers Cottage

| Common Name | Scientific name |
|-----------------------------|---|
| Apple | <i>Malus domestica</i> |
| Bay laurel | <i>Laurus nobilis</i> |
| Bluebell | <i>Hyacinthoides non-scriptus</i> |
| Blueberry | <i>Vaccinium myrtillus</i> |
| Box leaf honeysuckle | <i>Lonicera nitida</i> |
| Butterfly bush | <i>Buddleia davidii</i> |
| Cabbage | <i>Brassica oleracea</i> |
| Catmint | <i>Nepeta</i> sp. |
| Comfrey | <i>Symphytum officinale</i> |
| Common valerian | <i>Valeriana officinalis</i> |
| Coral bells | <i>Heuchera</i> 'Palace Purple' |
| Cornflower | <i>Centaurea cyanus</i> |
| Cranesbill 'Johnson's Blue' | <i>Geranium</i> 'Johnson's Blue' |
| Cranesbill 'Wargraves Pink' | <i>Geranium x oxonianum</i> 'Wargrave's Pink' |
| Currant | <i>Ribes nigrum</i> |
| Day lilies | <i>Hemerocallis</i> |
| Elder | <i>Sambucus nigra</i> |
| False spiraea | <i>Astilbe</i> sp. |
| Fennel | <i>Foeniculum vulgare</i> |
| Foxglove | <i>Digitalis purpurea</i> |
| French tarragon | <i>Artemisia dracunculoides</i> |
| Gooseberry | <i>Ribes uva-crispa</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hydrangea | <i>Hydrangea</i> sp. |
| Iris | <i>Iris</i> sp. |
| Ivy | <i>Hedera helix</i> |
| Ladies smock | <i>Alchemilla mollis</i> |
| Lilac | <i>Syringe vulgaris</i> |

| | |
|------------------|------------------------------------|
| Lungwort | <i>Pulmonaria</i> sp. |
| Male fern | <i>Dryopteris filix-mas</i> |
| Oregano | <i>Origanum vulgare</i> |
| Pink / carnation | <i>Dianthus</i> sp. |
| Plantain lily | <i>Hosta</i> sp. |
| Privet | <i>Ligustrum ovalifolium</i> |
| Purple sage | <i>Salvia officinalis Purpurea</i> |
| Rhubarb | <i>Rheum rhabarbarum</i> |
| Rock cress | <i>Aubrietia</i> sp. |
| Rose | <i>Rosa</i> sp. |
| Rosemary | <i>Rosmarinus officinalis</i> |
| Rugosa rose | <i>Rosa rugosa</i> |
| Tansy | <i>Tanacetum vulgare</i> |
| Thyme | <i>Thymus</i> sp. |
| Wild cherry | <i>Prunus avium</i> |
| Wild strawberry | <i>Fragaria vesca</i> |
| Yarrow | <i>Achillea millefolium</i> |

TN 8 WN5 Riparian Woodland

Very narrow strips of woodland growing along the edges of the river bank that are dominated by willow (fig. 12). The woodland is fragmented and does not support many species. It is valuable habitat nonetheless as it provides perching sites for birds and shelter and is a food source for a number of species.

Species associated with Riparian woodland

| Common Name | Scientific name |
|---------------------|------------------------------|
| Alder | <i>Alnus glutinosa</i> |
| Bramble | <i>Rubus fruticosus</i> agg. |
| Brooklime | <i>Veronica beccabunga</i> |
| Common dock | <i>Rumex obtusifolius</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Germander speedwell | <i>Veronica chamaedrys</i> |
| Gorse | <i>Ulex europaeus</i> |
| Grey willow | <i>Salix cinerea</i> |
| Lesser celandine | <i>Ranunculus ficaria</i> |
| Meadowsweet | <i>Filipendula ulmaria</i> |
| Nettle | <i>Urtica dioica</i> |

Pendulous sedge

Carex pendula

TN 9 GS4 Wet Grassland

Wet grassland dominated by rushes, in the corner of field adjacent to the river in the village. There is a drainage ditch next to it which was overflowing in places (fig. 8). Rainfall had been considerable in the previous few days.

Species associated with wet grassland

| Common Name | Scientific name |
|----------------------|-------------------------------------|
| Broadleaved dock | <i>Rumex obtusifolius</i> |
| Broadleaved plantain | <i>Plantago major</i> |
| Brooklime | <i>Veronica beccabunga</i> |
| Common daisy | <i>Bellis perennis</i> |
| Common mouse-ear | <i>Cerastium fontanum</i> |
| Common thistle | <i>Cirsium vulgare</i> |
| Creeping buttercup | <i>Ranunculus repens</i> |
| Curled dock | <i>Rumex crispus</i> |
| Floating sweet grass | <i>Glyceria fluitans</i> |
| Ladies smock | <i>Cardamine pratense</i> |
| Lesser spearwort | <i>Ranunculus flammula</i> |
| Marsh bedstraw | <i>Gallium palustre</i> |
| Meadow buttercup | <i>Ranunculus acris</i> |
| Meadowsweet | <i>Filipendula ulmaria</i> |
| Soft rush | <i>Juncus effusus</i> |
| Stinging nettle | <i>Urtica dioica</i> |
| Water speedwell | <i>Veronica anagallis- aquatica</i> |
| Water starwort | <i>Callitriche sp.</i> |
| Wavy bittercress | <i>Cardamine flexuosa</i> |

TN 10 FW4 Drainage ditch

Drainage ditch (fig. 5), associated with GS4 (TN 9), contains some flowing water but ditch is not running freely due to lack of maintenance and contains dead plant material and silt etc.

There is a non-native hedge growing on the inside bank of the drain forming the boundary at the bottom of the gardens. The main species in it were box leaved honeysuckle. Growing on the bank of the drainage ditch were soft shield ferns, teasel, cow parsley, ladies smock and some grey leaved willow. The ditch was very shaded.

| Common Name | Scientific name |
|--------------------|------------------------------|
| Soft shield fern | <i>Polystichum setiferum</i> |
| Teasel | <i>Dipsacum fulonum</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Ladies smock | <i>Cardamine pratensis</i> |
| Grey willow | <i>Salix cinerea</i> |
| Water starwort | <i>Callitriche sp.</i> |
| Watercress | <i>Nasturtium officinale</i> |
| Common valerian | <i>Valeriana officinalis</i> |
| Reed canary grass | <i>Phalaris aundinaceae</i> |
| Perennial ryegrass | <i>Lolium perenne</i> |

TN 11 GA1 Improved Agricultural Grassland

Field (fig. 9), reaching down to the river Derry with Wet grassland (GS4) next to drainage ditch (FW4). Species poor grassland providing marginal support for wildlife species.

| Common Name | Scientific name |
|------------------------|----------------------------|
| Broadleaved dock | <i>Rumex obtusifolius</i> |
| Chickweed | <i>Stellaria media</i> |
| Common daisy | <i>Bellis perennis</i> |
| Common mouse-ear | <i>Cerastium fontanum</i> |
| Creeping buttercup | <i>Ranunculus repens</i> |
| Ladies smock | <i>Cardamine pratensis</i> |
| Narrow leaved plantain | <i>Plantago lanceolata</i> |
| Perennial ryegrass | <i>Lolium perenne</i> |
| Soft rush | <i>Juncus effuses</i> |
| White clover | <i>Trifolium repens</i> |

TN 12 BC4 Flower beds and borders

Recently planted flower beds in front of new terraced houses in Clonegal (fig. 20) containing a diverse range of species, several of which support biodiversity. 'Old fashioned' cottage type flowers and shrubs with open flat or single flowers are more beneficial for insects, butterflies and bees as they tend to contain greater levels of nectar and pollen compared to the more modern varieties with double flowers etc. these have bred to please the human eye at the expense of wildlife. Good species from the list below include bridal wreath, cranesbill, cotoneaster, hawthorn, grape hyacinth, hypericum, rowan and winter heather.

Common Name

Azalea
Basket of gold
Bridal wreath
Broom
Broom
Butterfly bush
Christmas berry
Climbing hydrangea
Cotoneaster
Crab
Cranesbill
Creeping raspberry
David viburnum
Dogwood
Fortunes spindle
Golden spiraea
Grape hyacinth
Hawthorn
Hebe
Hypericum
Kerria
Large leaved periwinkle
Laurustinus
Lily of the valley bush
Maple
Montbretia
Mop head hydrangea
Pink
Poppy
Purple barberry
Purple plum
Rhododendron
Rock cress
Roses
Rowan
Shrubby cinquefoil
Tulips
Variegated weigela

Scientific name

Azalea
Alyssum saxatile
Spiraea arguta
Cytisus sp.
Cistus
Buddleia sp.
Photinia x fraseri 'Red Robin'
Hydrangea petiolaris
Cotoneaster sp.
Malus sp.
Geranium sp.
Rubus pentalobus
Viburnum davidii
Cornus alba
Euonymus fortunei 'Emerald and Gold'
Spiraea x bumalda 'Gold Flame'
Muscari
Crataegus monogyna
Hebe sp.
Hypericum sp.
Kerria japonica
Vinca major
Viburnum tinus
Pieris floribunda 'Forest Flame'
Acer sp.
Crocosmia x crocosmiflora
Hydrangea macrophylla
Dianthus
Papaver sp.
Berberis thunbergii 'Atropurpurea'
Prunus pissardia Nigra
Rhododendron inversham
Aubrietia
Rosa sp.
Sorbus sp.
Potentilla fruticosa
Tulipa sp.
Weigela variegata

Weigela
Winter heather

Weigela sp.
Erica carnea sp.

TN 13 BL2 Earth bank

Earth banks at either side of the Church of Ireland (figs. 16), containing both grassland and hedgerow species including knapweed, violet, primrose, hawthorn, elder, dog rose, wild strawberry and ox-eye daisy. This earth bank is relatively species rich and every effort should be made to maintain it for biodiversity (see recommendations). Currently, the earth bank is closely mown on a regular basis, preventing the plants from flowering and producing seed, thus greatly reducing its wildlife value.

Common Name

Bird's-foot trefoil
Bramble
Broadleaved dock
Bush vetch
Cleavers
Common thistle
Cow parsley
Creeping buttercup
Creeping cinquefoil
Dandelion
Dog rose
Elder
Field woodrush
Germander speedwell
Greater stitchwort
Harts tongue fern
Hawthorn
Herb robert
Ivy
Knapweed
Meadow grass
Meadowsweet
moss
Narrow leaved plantain
Ox-eye daisy
Primrose

Scientific name

Lotus corniculatus
Rubus fruticosus agg.
Rumex obtusifolius
Vicia sepium
Gallium aparine
Cirsium vulgare
Anthriscus sylvestris
Ranunculus repens
Potentilla reptans
Taraxacum officinale
Rosa canina
Sambucus nigra
Luzula campestris
Veronica chamaedrys
Stellaria holostea
Phyllitis scolopendrium
Crataegus monogyna
Geranium robertianum
Hedera helix
Centaurea nigra
Poa sp.
Filipendula ulmaria
Bryophytes
Plantago lanceolata
Leucanthemum vulgare
Primula vulgaris

| | |
|------------------|-----------------------------|
| Ragwort | <i>Senecio jacobaea</i> |
| Red fescue | <i>Festuca rubra</i> |
| Soft sow thistle | <i>Sonchus olearaceus</i> |
| Stinging nettle | <i>Urtica dioica</i> |
| Violet | <i>Viola sp.</i> |
| Wild strawberry | <i>Fragaria vesca</i> |
| Yarrow | <i>Achillea millefolium</i> |

TN 14 BL2 Earth bank

Although there is only a small section of earth bank adjacent to this side road in Watchhouse (fig. 17), it contains at least twenty one different species. Plant composition while containing fewer species to those found in TN 13 is similar to it, and includes gorse, male fern and meadow vetchling which were not found in the earth bank next to the Church of Ireland. Meadow vetchling is one of the food plants for the small white butterfly, while gorse supports the green hairstreak butterfly. The majority of these plants are visited by several bee species in addition to many other small animal and insect species.

| Common Name | Scientific name |
|------------------------|------------------------------|
| Bird's-foot trefoil | <i>Lotus corniculatus</i> |
| Bramble | <i>Rubus fruticosus</i> agg. |
| Bush vetch | <i>Vicia sepium</i> |
| Cleavers | <i>Gallium aparine</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Creeping cinquefoil | <i>Potentilla reptans</i> |
| Dandelion | <i>Taraxacum officinale</i> |
| Field woodrush | <i>Luzula campestris</i> |
| Gorse | <i>Ulex europaeus</i> |
| Herb robert | <i>Geranium robertianum</i> |
| Male fern | <i>Dryopteris filix-mas</i> |
| Meadow vetchling | <i>Lathyrus pratensis</i> |
| Narrow leaved plantain | <i>Plantago lanceolata</i> |
| Primrose | <i>Primula vulgaris</i> |
| Ragwort | <i>Senecio jacobaea</i> |
| Red fescue | <i>Festuca rubra</i> |
| Scutch grass | <i>Elytrigia repens</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |
| Violet | <i>Viola sp.</i> |
| Wild strawberry | <i>Fragaria vesca</i> |

TN 15 WL1 Hedgerows

This species rich hedgerow can be found either side of a laneway situated off the Askaheige road (fig. 25). A total of thirty four species were identified during the survey, including nine woody species of which two (privet and bullace) are non-native. Although non-native, bullace is only occasionally found in hedgerows and its occurrence adds to its diversity. Herbaceous species include wood sage, broad buckler fern and early dog violet.

| Common Name | Scientific name |
|---------------------|--------------------------------|
| Bird's-foot trefoil | <i>Lotus corniculatus</i> |
| Blackthorn | <i>Prunus spinosa</i> |
| Bramble | <i>Rubus fruticosus</i> agg. |
| Broad buckler fern | <i>Dryopteris dilatation</i> |
| Broad leaved dock | <i>Rumex obtusifolius</i> |
| Bullace | <i>Prunus domestica</i> |
| Bush vetch | <i>Vicia sepium</i> |
| Cleavers | <i>Gallium aparine</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Creeping cinquefoil | <i>Potentilla anserine</i> |
| Creeping cinquefoil | <i>Potentilla reptans</i> |
| Dandelion | <i>Taraxacum officinale</i> |
| Dog rose | <i>Rosa canina</i> |
| Early dog violet | <i>Viola rivinana</i> |
| Germander speedwell | <i>Veronica chamaedrys</i> |
| Gorse | <i>Ulex europaeus</i> |
| Hart's tongue fern | <i>Phyllitis scolopendrium</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hogweed | <i>Heracleum sphondylium</i> |
| Honeysuckle | <i>Lonicera periclymenum</i> |
| Ivy | <i>Hedera helix</i> |
| Male fern | <i>Dryopteris filix-mas</i> |
| Nipplewort | <i>Lapsana communis</i> |
| Primrose | <i>Primula vulgaris</i> |
| Privet | <i>Ligustrum ovalifolium</i> |
| Ragwort | <i>Senecio jacobaea</i> |
| Red fescue | <i>Festuca rubra</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |

Stinging nettle
 Wavy bittercress
 Wild strawberry
 Willowherb
 Wood avens
 Wood sage

Urtica dioica
Cardamine flexuosa
Fragaria vesca
Epilobium sp.
Geum urbanum
Teucrium scorodonia



Fig. 25 Species rich hedgerow growing along lane on the Askaheige road outside of Clonegal

TN 16 WL1 Hedgerows

Hedgerow opposite Radharc na Doire housing estate (fig. 26).

This native hedgerow although subjected to regular trimming contains at least eight woody species including holly and crab (Fig. 26). Only eight herbaceous species were recorded however, the grass verges in addition to the hedgerow itself is also cut on a regular basis making it difficult for species to thrive.

Common Name

Ash
 Blackthorn
 Bramble
 Bush vetch
 Cleavers

Scientific name

Fraxinus excelsior
Prunus spinosa
Rubus fruticosus agg.
Vicia sepium
Gallium aparine

Cow parsley
 Crab apple
 Dog rose
 Greater stitchwort
 Hart's tongue fern
 Hawthorn
 Hogweed
 Holly
 Ivy
 Male fern
 Stinging nettle

Anthriscus sylvestris
Malus sylvestris
Rosa canina
Stellaria holostea
Phyllitis scolopendrium
Crataegus monogyna
Heracleum sphondylium
Ilex aquifolium
Hedera helix
Dryopteris filix-mas
Urtica dioica



Fig. 26 Hedgerow containing native crab apple (*Malus sylvestris*), opposite Radharc na Doire housing estate

TN 17 Trees present in the in Church of Ireland grounds

There are some fine old trees in the church grounds.

Common Name

Copper beech
 Lawson cypress
 Leyland cypress

Lime

Pedunculate or English oak

Scientific name

Fagus sylvatica purpurea
Chamaecyparis lawsoniana
Chamaecyparis notkatensis x Cupressus macrocarpa 'Leylandii'
Tilia sp.
Quercus robur

TN 18 FW2 Depositing lowland rivers

River Derry as it flows through Huntington Castle (fig. 24). The highly invasive species Japanese knotweed (*Reynoutria japonica*) is present on disturbed ground next to the river.

TN19 FW4 Drainage ditch

Drainage ditch parallel to Derry within Huntington Castle. Woody species include grey willow, white poplar and alder.

TN 20 FL8 Other artificial lakes and ponds

Man-made pond in gardens of Huntington Castle with carp in it (fig. 6). Water associated of species brooklime (*Veronica beccabunga*) duckweed (*Lemna* sp.), and water starwort (*Callitriche* sp.) were present and polypody fern (*Polypodium vulgare*) and pendulous sedge (*Carex pendula*) were growing adjacent to the pond. The invasive species Japanese knotweed (*Reynoutria japonica*) was also present in this area.

TN 21 WD1 Mixed broadleaved woodland

A small area of broadleaved woodland dominated by beech next to farm buildings to the north of the castle (fig. 14).

| Common Name | Scientific name |
|--------------------|-----------------------------------|
| Beech | <i>Fagus sylvatica</i> |
| Bluebell | <i>Hyacinthoides non-scriptus</i> |
| Broad buckler fern | <i>Dryopteris dilatata</i> |
| Greater stitchwort | <i>Stellaria holostea</i> |
| Hard fern | <i>Blechnum spicant</i> |
| Herb robert | <i>Geranium robertianum</i> |
| Holly | <i>Ilex aquifolium</i> |
| Honeysuckle | <i>Lonicera periclymenum</i> |
| Ivy | <i>Hedera helix</i> |
| Lesser celandine | <i>Ranunculus ficaria</i> |
| Lime | <i>Tilia</i> |

| | |
|------------------|------------------------------|
| Male fern | <i>Dryopteris filix-mas</i> |
| Oak | <i>Quercus</i> |
| Self heal | <i>Prunella vulgaris</i> |
| Soft shield fern | <i>Polystichum setiferum</i> |
| Violet | <i>Viola</i> sp. |

TN 22 FW2 Depositing lowland river

A small stream bordering the beech dominated broadleaved woodland (fig. 4, TN 22). The stream bottom is sandy and clear. Species diversity is low as it is very shaded due to being bordered by a tree line and the broadleaved woodland. The main species include lesser celandine, bramble, dock and bluebell that are growing along the sides of the stream.

TN 23 WD1 Mixed broadleaved woodland

Beech dominated woodland next to the River Derry in Huntington Castle grounds (fig. 15). This woodland is in good condition with a very good intact ground flora with large numbers of wood anemone, bluebell and wood sorrel. It is damp in places and in these ramsons flourish.

| Common Name | Scientific name |
|--------------------|-----------------------------------|
| Beech | <i>Fagus sylvatica</i> |
| Bluebell | <i>Hyacinthoides non-scriptus</i> |
| Hard fern | <i>Blechnum spicant</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hazel | <i>Corylus avellana</i> |
| Honeysuckle | <i>Lonicera periclymenum</i> |
| Male fern | <i>Dryopteris filix-mas</i> |
| Ramsons | <i>Allium ursinum</i> |
| Rowan | <i>Sorbus aucuparia</i> |
| Western red cedar | <i>Thuja plicata</i> |
| Wood anemone | <i>Anemone nemorosa</i> |
| Wood sorrel | <i>Oxalis acetosella</i> |

TN 25 WD1 Mixed broadleaved woodland

Small area of woodland shading the car park and picnic area, part of the larger habitat WD5 scattered trees and parkland (fig. 27).

Common Name

Catmint
Cedar
Cherry laurel
Cherry narrow upright
Copper beech
Darwin's barberry
Eucalyptus sp.
Golden king holly
Ground elder – lots
Horse chestnut
Kanzan cherry
Lawson cypress
Lupins
Marguerites
Montbretia
Norway maple
Oak
Rowan
Sycamore
Yellow berried holly

Scientific name

Nepeta sp.
Cedrus
Prunus laurocerasus
Prunus amagowyna
Fagus sylvatica 'Purpurea'
Berberis darwinii
Eucalyptus sp.
Ilex 'Golden King'
Aegopodium podagraria
Aesculus hippocastanum
Prunus kanzan
Chamaecyparis lawsoniana var.
Lupinus sp.
Chrysanthemum sp.
Crococsmia x crocosmiflora
Acer platanoides
Quercus robur
Sorbus aucuparia
Acer pseudoplatanus
Ilex sp.



Fig. 27 View woodland at the car park and picnic area in Huntington Castle

TN 26 WD5 Scattered trees and parkland

A diverse and interesting range of mature trees in this habitat with oak dominant. Other tree species include blue Atlas cedar, golden ash, Wellingtonia (fig. 25) and French limes.

| Common Name | Scientific name |
|----------------------------|--|
| Ash | <i>Fraxinus excelsior</i> |
| Blue Atlas cedar | <i>Cedrus atlantica Glauca</i> |
| Broad leaved dock | <i>Rumex obtusifolius</i> |
| Cedar | <i>Cedrus</i> sp. |
| Clover | <i>Trifolium</i> sp. |
| Common chickweed | <i>Stellaria media</i> |
| Common thistle | <i>Cirsium vulgare</i> |
| Cow parsley | <i>Anthriscus sylvestris</i> |
| Creeping buttercup | <i>Ranunculus repens</i> |
| Crimson King Norway maple | <i>Acer platanoides</i> 'Crimson King' |
| Daisy | <i>Bellis perennis</i> |
| Dandelion | <i>Taraxacum officinale</i> agg. |
| English or pedunculate oak | <i>Quercus robur</i> |
| European larch | <i>Larix decidua</i> |
| French lime | <i>Tilia platyphyllos</i> |
| Germander speedwell | <i>Veronica chamaedrys</i> |
| Golden ash | <i>Fraxinus excelsior</i> 'Jaspidea' |
| Hairy bitter cress | <i>Cardamine hirsuta</i> |
| Lesser celandine | <i>Ranunculus ficaria</i> |
| Norway maple | <i>Acer platanoides</i> |
| Pine | <i>Pinus</i> sp. |
| Purple crab | <i>Malus</i> sp. |
| Silver birch | <i>Betula pendula</i> |
| Small leaved lime | <i>Tilia cordata</i> |
| Stinging nettle | <i>Urtica dioica</i> |
| Sweet vernal grass | <i>Anthoxanthum odoratum</i> |
| Sycamore | <i>Acer pseudoplatanus</i> |
| Wellingtonia | <i>Sequoiadendron giganteum</i> |
| White clover | <i>Trifolium repens</i> |
| Wood dock | <i>Rumex sanguineus</i> |

TN 27 WL2 in Castle grounds

Fine line of old yew trees in the garden (fig. 22)

TN 28 BC2 Horticultural land

A variety of fruit, vegetables and herbs can be found in the gardens at Huntington Castle. In greenhouse there are peaches, figs, grapes and pears, while in the orchard there are raspberries, apples and blackberries (fig. 23).

Appendix 4 BSBI Historical Records

| taxon | recorder | vc | locality | grid ref | date |
|--|-----------|------------------|--|-------------|------------|
| <i>Erigeron acris</i> | | VCH13 | Clonegal | S96 | 1979 |
| | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | | 1/1/1970- |
| <i>Callitriche stagnalis s.l.</i> | | 2 | Wexford | S96 | 31/12/1986 |
| | | | | S92061 | |
| <i>Calystegia sepium s.l.</i> | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| | | | | S92061 | |
| <i>Callitriche obtusangula</i> | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| <i>Erigeron acris</i> | | VCH13 | VCH13 Co. Carlow | S96 | 1970-1986 |
| | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | | |
| <i>Vaccinium myrtillus</i> | | 2 | Wexford | S96 | -1962 |
| <i>Ranunculus penicillatus subsp. penicillatus</i> | | | | S92061 | |
| | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| | Praeger, | | | | |
| <i>Ophioglossum vulgatum</i> | R.L. | VCH13 | VCH13 Co. Carlow | S96 | 1899 |
| | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | | |
| <i>Papaver rhoeas</i> | | 2 | Wexford | S96 | -1962 |
| | | | | S92061 | |
| <i>Glyceria fluitans</i> | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| | | | | S90065 | |
| <i>Asplenium scolopendrium</i> | | VCH13 | VCH13 Co. Carlow | 1 | 1930-1962 |
| | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | | 1/1/1987- |
| <i>Juncus bufonius s.l.</i> | | 2 | Wexford | S96 | 31/12/1999 |
| | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | | 1/1/1987- |
| <i>Nasturtium officinale agg.</i> | | 2 | Wexford | S96 | 31/12/1999 |
| | | | | S92061 | |
| <i>Mentha aquatica</i> | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | | |
| <i>Rhododendron ponticum</i> | | 2 | Wexford | S96 | -1962 |
| | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | | 1/1/1987- |
| <i>Mimulus agg.</i> | | 2 | Wexford | S96 | 31/12/1999 |
| <i>Polygonum aviculare agg.</i> | | VCH20,VCH13,VCH1 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | S96 | 1/1/1987- |

| | | | | | |
|---|-----------|---------------------------|--|---------------|-------------------------|
| | | 2 | Wexford | | 31/12/1999 |
| <i>Oenanthe crocata</i> | Heuff, H. | VCH13 * | Derry River | S92061 0 | 21/06/1984 |
| <i>Lythrum salicaria</i> | Heuff, H. | VCH13 * | Derry River | S92061 0 | 21/06/1984 |
| <i>Nasturtium officinale</i> | Heuff, H. | VCH13 * | Derry River | S92061 0 | 21/06/1984 |
| <i>Urtica dioica</i> | | VCH20,VCH13,VCH1 2 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. Wexford | S96 S92061 | 1930-1962 |
| <i>Callitriche</i> | Heuff, H. | VCH13 * | Derry River | 0 S92061 | 21/06/1984 |
| <i>Elodea canadensis</i> | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| <i>Clinopodium acinos</i> | | VCH13 VCH20,VCH13,VCH1 | Clonegal VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | S96 | 1990 |
| <i>Arenaria serpyllifolia</i> | | 2 | Wexford | S96 S92061 | 1/1/1987- 31/12/1999 |
| <i>Phalaris arundinacea</i> | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| <i>Ranunculus subg. Batrachium</i> | | VCH20,VCH13,VCH1 2 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. Wexford | S96 | 1/1/1970- 31/12/1986 |
| <i>Clinopodium acinos</i> | | VCH13 VCH20,VCH13,VCH1 | VCH13 Co. Carlow VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. | S96 | 1987-1999 |
| <i>Agrostis canina s.l.</i> | | 2 | Wexford | S96 | 1/1/1987- 31/12/1999 |
| <i>Torilis nodosa</i> | | VCH13 | Clonegal | S96 S92061 | 1979 |
| <i>Callitriche brutia subsp. hamulata</i> | Heuff, H. | VCH13 * | Derry River | 0 | 21/06/1984 |
| <i>Impatiens glandulifera</i> | | VCH20,VCH13,VCH1 2 | VCH20 Co. Wicklow VCH13 Co. Carlow VCH12 Co. Wexford | S96 | -1962 |

Appendix 5 *Species identified in Clonegal from previous study date unknown source (Carlow County Council)*

Native woody species found in Clonegal from a previous study date unknown

| Common name | Scientific name |
|--------------------|------------------------------|
| Alder | <i>Alnus glutinosa</i> |
| Ash | <i>Fraxinus excelsior</i> |
| Blackthorn | <i>Prunus spinosa</i> |
| Dog rose | <i>Rosa canina</i> |
| Elder | <i>Sambucus nigra</i> |
| Grey willow | <i>Salix cinerea</i> |
| Hawthorn | <i>Crataegus monogyna</i> |
| Hazel | <i>Corylus avium</i> |
| Holly | <i>Ilex aquifolium</i> |
| Honeysuckle | <i>Lonicera periclymenum</i> |
| Oak | <i>Quercus robur</i> |
| Rowan | <i>Sorbus aucuparia</i> |
| Wild cherry | <i>Prunus avium</i> |
| Yew | <i>Taxus baccata</i> |

Native herbaceous species found in Clonegal from a previous study date unknown

| Common name | Scientific name |
|---------------------|--------------------------------|
| Bird's-foot trefoil | <i>Lotus corniculatus</i> |
| Field-wood rush | <i>Luzula campestris</i> |
| Foxglove | <i>Digitalis purpurea</i> |
| Greater stitchwort | <i>Stellaria holostea</i> |
| Hart's tongue fern | <i>Phyllitis scolopendrium</i> |
| Herb Robert | <i>Geranium robertianum</i> |
| Knapweed | <i>Centaurea nigra</i> |
| Ladies smock | <i>Cardamine pratensis</i> |
| Meadowsweet | <i>Filipendula ulmaria</i> |
| Ox-eye daisy | <i>Leucanthemum vulgare</i> |
| Primrose | <i>Primula vulgaris</i> |
| Wild carrot | <i>Daucus carota</i> |
| Wild strawberry | <i>Fragaria vesca</i> |
| Yarrow | <i>Achillea millefolium</i> |

Non-native trees and woody species found in Clonegal from a previous study date unknown

| Common name | Scientific name |
|-----------------------------------|---|
| Atlantic blue cedar | <i>Cedrus atlantica</i> <i>Glauca</i> |
| Beech | <i>Fagus sylvatica</i> |
| Blueberries | <i>Vaccinium myrtillus</i> |
| Chusan palms | <i>Trachycarpus fortunei</i> |
| Fern leaf beech | <i>Fagus sylvatica</i> 'Aspleniflorium' |
| Figs | <i>Ficus carica</i> |
| French limes | <i>Tilia platyphyllos</i> |
| Giant fir (Carlow's tallest tree) | <i>Abies grandis</i> |
| Ginko tree | <i>Ginkgo biloba</i> |
| Grapes | <i>Vitis vinifera</i> |
| Hickories | <i>Carya</i> sp. |
| Horse chestnut | <i>Aesculus hippocastanum</i> |
| Hydrangea | <i>Hydrangea</i> |
| Lavender | <i>Lavendula</i> sp. |
| Lilac | <i>Syringe vulgaris</i> |
| Mock orange | <i>Philadelphus</i> sp. |
| Monkey puzzle | <i>Araucaria araucana</i> |
| Peaches | <i>Prunus persica</i> |
| Pieris Forest Flame | <i>Pieris Forest Flame</i> |
| Rhododendron moerheim | <i>Rhododendron moerheim</i> |
| Sycamore | <i>Acer pseudoplatanus</i> |
| Wellingtonia | <i>Sequoiadendron giganteum</i> |
| Western red cedar | <i>Thuja plicata</i> |

Non-native herbaceous species found in Clonegal from a previous study date unknown

| Common name | Scientific name |
|--------------------|---------------------------------|
| Basket of gold | <i>Alyssum saxatile</i> |
| Astilbe | <i>Astilbe</i> |
| Day lilies | <i>Hemerocallis</i> sp. |
| Geraniums | <i>Geranium</i> sp. |
| Grape hyacinths | <i>Muscari</i> sp. |
| Lupins | <i>Lupinus</i> sp. |
| Marguerites | <i>Chrysanthemum</i> sp. |
| Montbretia | <i>Crocsmia x crocosmiflora</i> |
| Pinks | <i>Dianthus</i> sp. |

| | |
|----------------|----------------------|
| Poppies | <i>Papaver</i> sp. |
| Red-hot pokers | <i>Kniphofia</i> sp. |
| Rock cress | <i>Aubrietia</i> |
| Solomen's seal | <i>Polygonatum</i> |

Fauna identified from previous studies

Fish and other fresh water species found in Clonegal from a previous study date unknown

| Common name | Scientific name |
|--------------------------|------------------------------------|
| Brook lamprey | <i>Lampetra planeri</i> |
| Brown eel | <i>Anguilla anguilla</i> |
| Brown trout | <i>Salmo trutta</i> |
| Crayfish | <i>Pacifastacus leniusculus</i> |
| Fresh water pearl mussel | <i>Margaritifera margaritifera</i> |
| Frogs | <i>Rana temporaria</i> |
| Gudgeon | <i>Gobio gobio</i> |
| Minnnow | <i>Phoxinus phoxinus</i> |
| Newts | <i>Triturus</i> sp. |
| River lamprey | <i>Lampetra fluviatus</i> |
| Atlantic salmon | <i>Salmo salar</i> |

Mammals found in Clonegal from a previous study date unknown

| Common name | Scientific name |
|--------------------|------------------------------|
| Bats | - |
| Fox | <i>Vulpes vulpes</i> |
| Grey squirrel | <i>Sciurus carolinensis</i> |
| Mink | <i>Mustela vison</i> |
| Otter | <i>Lutra lutra</i> |
| Rabbit | <i>Oryctolagus cuniculus</i> |
| Red squirrel | <i>Sciurus vulgaris</i> |
| Pygmy shrew | <i>Sorex minutus</i> |

Bird species found in Clonegal from a previous study date unknown

| Common name | Scientific name |
|--------------------|----------------------------|
| Chaffinch | <i>Fringilla coelebs</i> |
| Goldfinch | <i>Carduelis carduelis</i> |

Grey Heron

Ardea cinerea

Moorhen

Gallinule chloropus

Owls

Sparrow hawk

Accipiter nisus

Swallows

Hirundo rustica

Mute swans

Cygnus olor

Insects and other small creatures found in Clonegal from a previous study date unknown

Common name

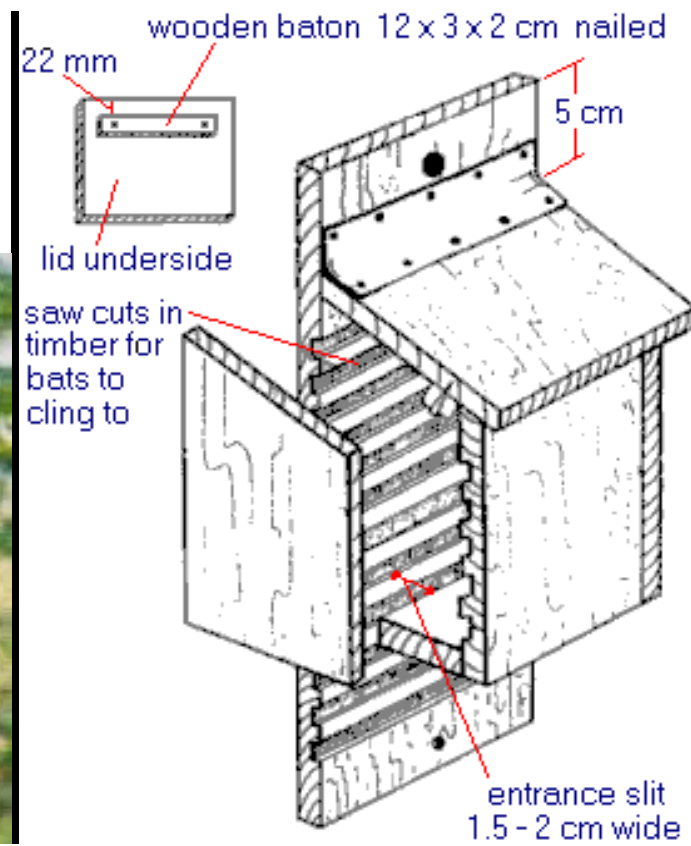
Butterflies

Dragonflies

Moths

Water beetles

Appendix 6 *Pictures and diagrams of Bat boxes*



Appendix 7

Diagram of Top bar bee hives

[www.aabees.or/ebook/how to build a top bar hive.pdf](http://www.aabees.or/ebook/how%20to%20build%20a%20top%20bar%20hive.pdf)



Appendix 8 Sources of native Irish plants

<http://www.wildflowers.ie/> (Mr. Sandro Caffola) for wildflower meadow seeds and advice

www.futureforests.net/ Future forests for native tree and shrub species

Appendix 8 Lists of plants good for insects butterflies moths etc

The 30 or so butterfly species found in Ireland feed on a limited range of plants.

In particular, brassicas/crucifers, legumes and grasses are the most common plant groups used by butterflies here, as well as nettles, violets, docks and devil's-bit scabious.

Native species of the cabbage family such as the water-cress along rivers, ladies smock, charlock and ornamental plants such as aubrietia and night scented stock.

Legumes such as bird's-foot trefoil (*Lotus corniculatus*), meadow vetchling (*Lathyrus pratensis*), vetches (*Vicia* spp.), broom (*Cytisus scoparius*) and kidney vetch (*Anthyllis vulneraria*).

Shrubs

Rosa pimpinellifolia

Gorse

Hebes

Lavenders

Hypericums – *H. perforatum*, *H. pulchrum* are native.

Potentilla fruticosa

Legumes/peaflowers – e.g. Genista, Cytistus

Lilac

Low-growing junipers – *Juniperus communis* is the native species

Artemesia

Near/against wall

Chaenomeles or other flowering quince

Pyracantha

Ivy

Honeysuckle

Other flowering plants

Stock (*Matthiola*).

Ornamental Rumex

Polygonum

Filipendula

Sanguisorba

Alchemilla

Bugle (*Ajuga reptans*)

Any herbs are good for scent and will attract other insects – rosemary, creeping thymes for ground cover, marjoram, mints, yarrow (*Achillea* sp.), feverfew (*Tanacetum*)

Some good plants for butterflies:

Hebes are also good generally for Butterflies.

Ice plant (*Sedum spectabile*) both attract Small Tortishell, Peacock, Painted Lady and Red Admiral.

Michaelmas Daisy (autumn flowering) good for Browns, Small Tortishell, Peacock, Painted Lady and Red Admiral, and late Small Coppers.

Common dock, sorrel and fleabane good for Small Copper – it grows in damp wettish areas.

Brambles flowers are very important and are the staple source of nectar for most species, but in particular for the Silver Washed Fritillary.

Wood sage and Marjoram visited by Gate keepers.

Garden nasturtium is good for Large and Small White butterfly.

Stinging nettle is the sole food for the larvae of the Small Tortishell, Peacock and Red Admiral. If possible cut back nettles in July to encourage new growth for the second brood of Small Tortishell and Red Admiral.

Bird's-foot trefoil and Common vetch are frequented by the Wood white.

Blackthorn/Sloe is the food plant for Ireland's rarest butterfly – the Brown Hairstreak whose larvae feed on the leaves and flower buds.

Honesty and Sweet Rocket provide food for the Orange Tip butterfly as does the native plant Lady's smock a plant of damp places.

Pansies are good plants for larvae of the scarce immigrant Queen of Spain Fritillary.

Bird's-foot trefoil attracts the Common Blue butterfly while the larvae of the Dingy Skipper eat it.

Bird's-foot trefoil and Common vetch are frequented by the Wood white.

Cocks' foot grass is eaten by the larvae of different Browns

Knapweeds

Clover flowers, catmint and lavender are loved by bees

Scented night-time flowers such as evening primrose and the tobacco plant attract moths on which bats may feed.

Lawns or parts of lawns that are kept at a height of at least 50 mm (2") will encourage plants such as Bird's-foot trefoil, which attracts the Common Blue butterfly while the larvae of the Dingy Skipper eat it.

Many of the larvae of Browns eat grasses particular the rougher grasses such as Cocks' foot, the seed of which can be collected and sown along a hedgerow or ditch, however this species does not respond well to trimming.

Knapweeds, Buddleia, and thistles are all valued for the nectar in particular by the Small Tortishell. It needs the shelter of a shed, or some other dry spot or nook to hibernate in over the winter. In a shed the undersides of old planks are good places to hide or closely packed logs in the case of the Peacock. In the wild the Peacock hibernates in hollow tree trunks. The Brimstone usually shelters in ivy and occasionally among Holly leaves

Bees love clover flowers, catmint and lavender. Nettles are great for butterflies, hoverflies and moths – they need to be in a sunny place or they will not lay their eggs.

Begonia Non Stop All Colours; Marigolds; Salvia.

Hanging Baskets: Trailing Begonia, Trailing Petunia, Geranium, Salvia & Marigolds, Few light mixture of flowers

Annuals good for butterflies and bees

Ageratum houstonianum vars – June to October

Antirrhinum majus (Coronette Mixed, Scarlet and Gold, Black Prince (deep crimson) – July to October

Arctotis grandis or A.hybrids (African daisy) – July to October

Begonia semperflorens = good for shade – June to September

Borago officinalis straggly – June to September

Calendula officinalis (Pot marigold) – June to October

Callistephus chinensis (Chinese aster) – late flowering August to October

Centaurea cyanus – June to September

Chrysanthemums - July to September – prone to greenfly

Clarkia elegans – July to October

Coreopsis e.g. 'Dwarf Dazzler' (Tickweed) – July to September

Cosmos bipinnatus – quite tall but 'Sunny Gold' is 1 ft and orange – July to October

Dahlia - July to November

Delphinium 'Dwarf Rocket' – June to August)

Dianthus barbaratus (Sweet William) - June to July

Dianthus chinensis (Indian or annual pink) – July to Oct

Echium (annual borage) – June to October

Eschscholzia californica – lots of sun needed – June to September

Gazania – June to October

Helichrysum bracteantha (Straw daisy) – July to September

Heliotropium good with showy yellow flowers – June to September

Iberis (Candytuft) - May to August

Iberis amara

Lobelia – June to September

Lobularia maritime (Allysum) – June to September

Lunaria annua April – June

Matricaria (Feverfew) – June to August

Matthiola incana (stocks) 10 week stock – June to August

Myosotis – April to May

Nemesia – June to September

Nemophila menziesii low growing to 6" mostly blue - June to September

Nicotiana Eau de Cologne (Tobacco plant) June to October

Nigella damascene (Love-in-a-mist) – July to September

Phacelia - June to September - excellent

Reseda (Mignonette) not showy, evening fragrance – July to September

Rudbeckia – August to October

Salvia seascape

Scabiosa (Sweet scabious) – July to October

Hesperis matronalis (Sweet rocket) – May to July

Tagetes Buttercream, T. Melody Patchwork – June to October

Verbena rigida - July to September

Viola sp. – January to December

Zinnia abundance full sun - July to October

Zinnia elegans

Invasive plants to be avoided

Fallopia/Reynoutria

Hippophae rhamnoides

Prunus laurocerasus

Rhododendron

Leycesteria formosa

Symphoricarpos

Mahonia

Buddleia

Appendix 9 *Native tree and shrub species to encourage wildlife*

| | |
|--------------|----------------------|
| Ash | Hazel |
| Bird cherry | Holly |
| Blackthorn | Honeysuckle |
| Crab | Mountain ash - Rowan |
| Crack willow | Pedunculate oak |
| Goat willow | Spindle |
| Grey willow | Wild cherry |
| Guelder rose | Wild rose |
| Hawthorn | |

Appendix 10 SITE SYNOPSIS

SITE NAME: SLANEY RIVER VALLEY

SITE CODE: 000781

This site comprises the freshwater stretches of the Slaney as far as the Wicklow Mountains; a number of tributaries the larger of which include the Bann, Boro, Glasha, Clody, Derry, Derreen, Douglas and Carrigower Rivers; the estuary at Ferrycarrig and Wexford Harbour. The site flows through the counties of Wicklow, Wexford and Carlow. Towns along the site but not in it are Baltinglass, Hacketstown, Tinahely, Tullow, Bunclody, Camolin, Enniscorthy and Wexford. The river is up to 100 m wide in places and is tidal at the southern end from Edermine Bridge below Enniscorthy. In the upper and central regions almost as far as the confluence with the Derry River the geology consists of granite. Above Kilcarr Bridge, the Slaney has cut a gorge into the granite plain. The Derry and Bann Rivers are bounded by a narrow line of uplands which corresponds to schist outcrops. Where these tributaries cut through this belt of hard rocks they have carved deep gorges, more than two miles long at Tinahely and Shillelagh. South of Kildavin the Slaney flows through an area of Ordovician slates and grits.

The site is a candidate SAC selected for alluvial wet woodlands, a priority habitat on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, estuaries, tidal mudflats and old oak woodlands, all habitats listed on Annex I of the E.U. Habitats Directive. The site is further selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Twaite Shad, Atlantic Salmon and Otter.

Floating river vegetation is found along much of the freshwater stretches within the site. Species present here include Pond Water-crowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* spp.), Canadian Pondweed (*Elodea canadensis*), Broadleaved Pondweed (*Potamogeton natans*), Water Milfoil (*Myriophyllum* spp.), Common Club-rush (*Scirpus lacustris*), Water-starwort (*Callitriche* spp.), Hemlock Water-dropwort, Fine-leaved Water-dropwort (*Oenanthe aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica*. Two rare aquatic plant species have been recorded in this site: Short-leaved Water-starwort (*Callitriche truncata*), a very rare, small aquatic herb found nowhere else in Ireland; and Opposite-leaved Pondweed (*Groenlandia densa*), a species that is legally protected under the Flora Protection Order, 1999.

Good examples of wet woodland are found associated with Macmine marshes, along banks of the Slaney and its tributaries and within reed swamps. Grey Willow (*Salix cinerea*) scrub and pockets of wet woodland dominated by Alder (*Alnus glutinosa*) have become established in places. Ash (*Fraxinus excelsior*) and Birch (*Betula pubescens*) are common in the latter and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Angelica (*Angelica sylvestris*), Yellow Iris, Horsetail (*Equisetum* spp.) and occasional tussocks of Greater Tussock-sedge (*Carex paniculata*). These woodlands have been described as two types: one is quite eutrophic, is dominated by Willow and is subject to a tidal

influence. The other is flushed or spring-fed subject to waterlogging but not to flooding and is dominated by Alder and Ash.

Old oak woodlands are best represented at Tomnafinnoge though patches are present throughout the site. At Tomnafinnoge the wood is dominated by mature, widely spaced Sessile Oak (*Quercus petraea*), which were planted around 1700, with some further planting in 1810. There is now a varied age structure with overmature, mature and young trees; the open canopy permits light to reach the forest floor and encourages natural regeneration of Oak. As well as Oak, the wood includes the occasional Beech (*Fagus sylvatica*), Birch (*Betula* sp.), Rowan (*Sorbus aucuparia*) and Scots Pine (*Pinus sylvestris*).

The shrub layer is well-developed with Hazel (*Corylus avellana*) and Holly (*Ilex aquifolium*) occurring. The ground layer consists of Great Wood-rush (*Luzula sylvatica*) and Bilberry (*Vaccinium myrtillus*), with some Bracken (*Pteridium aquilinum*) and Brambles (*Rubus fruticosus* agg.). Herbaceous species in the ground layer include Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Common Cow-wheat (*Melampyrum pratense*) and Bluebell (*Hyacinthoides non-scripta*). Many of the trees carry an epiphytic flora of mosses, Polypody Fern (*Polypodium vulgare*), and lichens such as *Usnea comosa*, *Evernia prunastri*, *Ramalina* spp. and *Parmelia* spp.

Tomnafinnoge Wood is a remnant of the ancient Shillelagh Oak woods, and it appears that woodland has always been present on the site. In the past, the wood was managed as a Hazel coppice with Oak standards, a common form of woodland management in England but not widely practised in Ireland. The importance of the woodland lies in the size of the trees, their capacity to regenerate, their genetic continuity with ancient woodland and their historic interest. The nearest comparable stands are at Abbeyleix, Co. Laois and Portlaw, Co. Waterford.

Below Enniscorthy there are several areas of woodland with a mixed canopy of Oak, Beech, Sycamore (*Acer pseudoplatanus*), Ash and generally a good diverse ground flora. Near the mouth of the river at Ferrycarrig is a steep south facing slope covered with Oak woodland. Holly and Hazel are the main species in the shrub layer and a species-rich ground flora typical of this type of Oak woodland has abundant ferns - *Dryopteris filix-mas*, *Polystichum setiferum*, *Phyllitis scolopendrium* - and mosses - *Thuidium tamariscinum*, *Mnium hornum*, *Eurynchium praelongum*. North of Bunclody, the river valley still has a number of dry woodlands though these have mostly been managed by the estates with the introduction of Beech and occasional conifers. The steeper sides are covered in a thick scrub from which taller trees protrude. At the southern end of the site, the Red Data Book species Yellow Archangel (*Lamiastrum galeobdolon*) occurs. Three more Red Data Book species have also been recorded from the site: Basil Thyme (*Acinos arvensis*), Blue Fleabane (*Erigeron acer*) and Small Cudweed (*Filago minima*). A nationally rare species Summer Snowflake (*Leucojum aestivum*) is also found within the site.

Mixed woodlands occur at Carrickduff and Coolaphuca in Bunclody. Oak trees, which make up the greater part of the canopy, were originally planted and at the present time are not regenerating actively. In time, if permitted, the woodland will probably go to Beech. A fair number of Yew (*Taxus baccata*) trees have also reached a large size and these, together with Holly give to the site the aspect of a southwestern Oak wood.

The site is considered to contain a very good example of the extreme upper reaches of an estuary. Tidal reedbeds with wet woodland are present in places. The fringing reed communities support Sea Club-rush (*Scirpus maritimus*), Grey Club-rush (*S.tabernaemontani*) and abundant Common Reed (*Phragmites australis*). Other species occurring are Bulrush (*Typha latifolia*), Reed Canary-grass (*Phalaris arundinacea*) and Branched Bur-reed (*Sparganium erectum*). The reed-swamp is extensive around Macmine, where the river widens and there are islands with swamp and marsh vegetation.

Further south of Macmine are expanses of intertidal mudflats and sandflats and shingly shore often fringed with a narrow band of salt marsh and brackish vegetation. Narrow shingle beaches up to 10 m wide occur in places along the river banks and are exposed at low tide. Upslope the shingle is sometimes colonised by Saltmarsh Rush (*Juncus gerardi*), Townsend's Cord-grass (*Spartina townsendii*), Common Saltmarshgrass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Hemlock Water-dropwort (*Oenanthe crocata*) and Himalayan Balsam (*Impatiens glandulifera*).

Wexford Harbour is an extensive, shallow estuary which dries out considerably at low tide exposing large expanses of mudflats and sandflats. The harbour is largely sheltered by the Raven Point to the north and Rosslare Point in the south. Other habitats present within the site include species-rich marsh in which sedges such as *Carex disticha*, *Carex riparia* and *Carex vesicaria* are common. Among the other species found in this habitat are Yellow Iris (*Iris pseudacorus*), Water Mint (*Mentha aquatica*), Purple Loosestrife (*Lythrum salicaria*) and Soft Rush (*Juncus effusus*). Extensive marshes occur to the west of Casltebridge associated with the tidal areas of the River Sow.

The site supports populations of several species listed on Annex II of the EU Habitats Directive including the three Lampreys - Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluviatilis*) and Brook Lamprey (*Lampetra planeri*), Otter (*Lutra lutra*), Salmon (*Salmo salar*), small numbers of Freshwater Pearl Mussel (*Margaritifera margaritifera*) and in the tidal stretches, Twaite Shad (*Alosa fallax fallax*). A survey of the Derreen River in 1995 estimated the population of Freshwater Pearl Mussel at about 3,000 individuals. This is a significant population, especially in the context of eastern Ireland. The Slaney is primarily a spring salmon fishery and is regarded as one of the top rivers in Ireland for early spring fishing. The upper Slaney and tributary headwaters are very important for spawning.

The site supports important numbers of birds in winter. Little Egret are found annually along the river. This bird is only now beginning to gain a foothold in Ireland and the south-east appears to be its

stronghold. Nationally important numbers of Black-tailed Godwit, Teal, Tufted Duck, Mute Swan, Little Grebe and Black-headed Gull are found along the estuarine stretch of the river. The mean of the maximum counts over four winters (1994/98) along the stretch between Enniscorthy and Ferrycarrig is: Little Egret (6), Golden Plover (6), Wigeon (139), Teal (429), Mallard (265), Tufted Duck (171), Lapwing (603), Shelduck (16), Black-tailed Godwit (93), Curlew (81), Red-breasted Merganser (11), Black-headed Gull (3030), Goldeneye (45), Oystercatcher (19), Redshank (65), Lesser Black-backed Gull (727), Herring Gull (179), Common Gull (67), Grey Heron (39), Mute Swan (259) and Little Grebe (17). Wexford Harbour provides extensive feeding grounds for wading birds and Little Terns, which are listed on Annex I of the E.U. Birds Directive have bred here in the past. The Reed Warbler, which is a scarce breeding species in Ireland, is regularly found in Macmine Marshes but it is not known whether or not it breeds in the site. The Dipper also occurs on the river.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger, Irish Hare and Daubenton's Bat. Common Frog (*Rana temporaria*), another Red Data Book species, also occurs within the site. Agriculture is the main landuse. Arable crops are important. Improved grassland and silage account for much of the remainder. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of Annex II animal species within it. Run-off is undoubtedly occurring, as some of the fields slope steeply directly to the river bank. In addition, cattle have access to the site in places.

Fishing is a main tourist attraction along stretches of the Slaney and its tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place. There are some gravel pits along the river below Bunclody and many of these are active. There is a large landfill site adjacent to the river close to Hacketstown and at Killurin. Boating, bait-digging and fishing occur in parts of Wexford Harbour.

Waste water outflows, runoff from intensive agricultural enterprises, a meat factory at Clohamon and a landfill site adjacent to the river and further industrial development upstream in Enniscorthy and in other towns could all have potential adverse impacts on the water quality unless they are carefully managed. The spread of exotic species is reducing the quality of the woodlands. The site supports populations of several species listed on Annex II of the EU Habitats Directive, and habitats listed on Annex I of this directive, as well as important numbers of wintering wildfowl including some species listed on Annex I of the EU Birds Directive. The presence of wet and broad-leaved woodlands increases the overall habitat diversity and the occurrence of a number of Red Data Book plant and animal species adds further importance to the Slaney River site.

Appendix 11- Clonegal Habitat Survey Map

