

Parish Habitats Survey



Report prepared for Laois Heritage Forum

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- Members of the County Laois Heritage Forum

Summary

The report contains the results of a habitat mapping project in Laois in 2005 which focussed on townlands in the north-east and south-west of the county. The land surveyed was typical of lowland of Laois and included the low rounded hills or hums which are found north of Stradbally. Information for the map was principally gathered through fieldwork assisted by colour aerial photographs (2000), vector maps and the latest edition of the OS at a scale of 1:6,000. Following some preliminary classification work and after permission being obtained from landowners habitats were examined and mapped. Lists were compiled of flowering plants associated with habitats and notes were compiled of noteworthy features. The survey generated coloured habitat maps of these townlands, photographs and checklists. A total of 59 townlands were mapped covering 78 sq km.

Principal findings are:

Within the area surveyed 42 habitats are found. This compares with habitat diversity found in County Carlow.

Most of the land supports habitats which are associated with intensive farming systems. These include improved grassland and arable land. Within intensively farmed areas habitats of greater biodiversity interest are found such as hedgerows and drainage ditches.

Many of the 42 habitats identified are of high value for biodiversity and support a high diversity of native plants.

The survey revealed that the habitats support 331 flowering plants. Species diversity varies greatly between habitats. The most valuable habitats for plants are scrub and wet grassland with >110 species. Those with the lowest number of native species include walls, set aside land, garden shrubberies and some types of woodland. While none of the species found are designated as being rare in Ireland, many are rare in the region and in Laois.

Rare habitats include scrub, old grasslands, woodland, wetlands, bogs and exposed rock. The hums north of Stradbally are particularly associated with oak-ash-hazel woodland.

The habitat is the first large scale habitat map for Laois. It provides a baseline against which change can be benchmarked and it should inform the preparation of the Laois Biodiversity Action Plan. The vast majority of habitats in the countryside have developed as a result of some form of local development. In future local development will take greater regard for biodiversity. Future strategies to maintain habitat diversity in the countryside should be informed by the mapping exercise. This implies that the results of the exercise should be provided to landowners. The report concludes with a number of suggestions to inform greater awareness of habitat management in the county.

1 Introduction

1.1 Brief

The brief requested that the study address the following tasks:

- Carry out a detailed field survey of habitats in selected parishes in County Laois.
- Liaise with the public and landowners in the areas surveyed and to ensure public awareness of the project being undertaken
- Use data collected to make recommendations on conservation priorities and any future work that should be carried out.
- Collate and make this information available for future research, through a detailed survey report and a set of raw data (including maps) as appendices.

1.2 Background

A habitat is a defined area which supports a collection of typical plants and animals. By mapping habitats information can be gathered about the plants and animals which are associated with an area. Habitats can vary in naturalness, depending on the extent to which they have been modified by development. They may be associated with land, freshwaters or marine environments. The Heritage Council has promoted methodologies to map habitats. A guide produced by the Heritage Council (Fossitt, 2000) lists habitats found in Ireland and a methodology has been developed to carry out mapping exercises.

A habitat map is important for several reasons within County Laois. It will provide essential baseline information which can inform spatial planning and the production of the county's Local Biodiversity Action Plan. To date there has never been a comprehensive and detailed survey carried out of the natural environment in County Laois. Survey work has focussed on designated areas, particular habitats and areas for which development is proposed. Little is known about the general distribution of habitats within the country including man-made habitats such as those found in urban areas, along roadsides and even among the ruins of old buildings.

Global awareness of the decline in biodiversity has led to a greater focus on managing biodiversity at the local level. The Convention on Global Biodiversity drawn up in 1992 defined is as "the variability among living organisms including *inter alia* marine, terrestrial and aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems". It can be expressed at different levels; landscape, habitats, ecosystems, species and genes.

Ireland ratified the CBD in 1996. Under Article 6 all signatories are obliged to develop a national strategy for biodiversity and to integrate the conservation

and sustainable use of biological diversity with relevant sectoral or cross-sectoral plans, programmes and policies. The CBD represents a shift away from preservation of rare species and habitats. It is concerned with biodiversity in all its forms and with integrating biodiversity with development. Arising from its ratification of the CBD Ireland drew up a National Biodiversity Plan in 2002. This stated the need for both sectoral biodiversity action plans and plans for local areas such as Local Biodiversity Action Plans.

The wildlife, habitats, flora and fauna found in County Laois are unique to it and thus are a valuable part of its heritage. A local biodiversity action plan will suggest how this heritage will be managed and developed.

The preparation of a habitat map will provide baseline information to support the preparation of the local biodiversity action plan. The map should raise awareness among landowners and the public of the usefulness of biodiversity. The information gathered can be used to inform spatial planning, specific local development initiatives such as agri-environmental measures, forestry development, the location of infrastructure, environmental education and the special interest or eco-tourism.

2 Methodology

2.1 Approach

The approach used for the County Laois Parish Habitats Survey was based on the Heritage Council Guidelines (Fossitt, 2000 and Heritage Council 2002), and drew on the experience of the surveyors in Dublin and Carlow.

While the brief for the survey specified that it would be carried out within parishes, this was reconsidered for the following reasons and townlands were selected as survey units. There are three types of parish – Civil, Church of Ireland and Roman Catholic. The Civil seemed the most appropriate but it proved difficult to find clear information regarding their boundaries. Few people identify with Civil Parishes. It was difficult to find suitable maps for the other two types of Parish and choosing an area based on religious criteria could be seen as favouring one section of the population over another. Consequently, it was decided to abandon the parish as a gross survey unit and to use townland unit instead. The townland is an old mapping unit. Within rural areas townlands are important to locate households and farms and the boundaries of townlands often run along features of biodiversity interest such as old hedgerows or streams.

The selection of townlands was made principally by members of the County Laois Heritage Forum. Selection was based on the requirement to survey a geographic spread of townlands which would contain both typical and unique Laois habitats. Designated areas such as cSAC's (Special Areas of Conservation) were omitted from the survey, as it was considered that they would be surveyed by the National Parks and Wildlife Service. This excluded areas such as the Slieve Blooms. Similarly areas which had undergone very recent development were also excluded as it was considered that mapping would be available for these areas.

Originally two regions in County Laois were targeted for survey, named Section A and B. Section A comprised the town lands around Emo, Portarlinton & Stradbally, bounded by the R425 and R419. These stretched to the county boundary at the western and north-western edge and the junction of R425 and R419 (Cashel) through Stradbally as far as the county boundary at eastern and south-eastern edge. Parts of 10km National Grid Squares S49, S59, N50, N60, N51, and N61 were contained within the above areas. Section B incorporated all the town-lands in Aghaboe Roman Catholic Parish in the south-west of the county.

Following a trial survey during which a survey rate was established it became apparent that it would not be possible to survey all the town-lands within the time available for the study. After further discussion with the Heritage Forum it was agreed to focus on town lands, which had hums (small round topped hills) in Section A. Adjacent town-lands were also included so that the area surveyed would be a complete unit rather than a patchwork. In section B a block of townlands within Aghaboe Parish was selected.

Before the large scale survey commenced a pilot survey was carried out in May 2005 in the townland of Morett. This trial tested the survey methodology, clarified the requirements for mapping and allowed for the resolution in differences in interpretation between surveyors.

2.2 Ancillary data

Ancillary sources of data are listed in Table 1.

Table 1. Ancillary data

Data source	Information	Usefulness/value of information
Coillte	The Selection of Biodiversity Areas in the Mid Tipp/Rossmore Plateau, FMU 403, 2004	The report did not contain any of the forested areas that were surveyed for the Habitat Survey.
Coillte	The Selection of Biodiversity Areas in the Slieve Bloom FMU 705,	There was one forest area (Area no. 21, Rossmore) from the FMU report in the areas surveyed. It provided useful information about biodiversity of River Glasha.
Coillte	Maps of different forest blocks in survey are.	These maps were useful as they provided clear information as to the extent and layout of the forests as well as details about forest tree species and wood history.
NRA report for Laois County Council (ARUP Consulting Engineers)	Environmental Impact Statement M7 Portlaoise – Castletown M8 Portlaoise – Cullahill Road scheme.	Habitat information for the town lands of Coolnacurragh PNHA WN6; Curragh WD1; Ballyhinode WD1; Clogh WN2 AND leap mixed plantation wood, surveyed in the Aghaboe region. Some descriptions of habitats. Some information on aquatic and riparian habitats – Erkina river
National Roads Design Office, Kildare County Council	EIS for M7 Heath-Mayfield Motorway	Habitat descriptions for some of town lands surveyed in along motorway near Portlaoise..

NPWS	Site synopsis of designated areas in study area	Site synopsis of the following areas were examined; Grantstown wood and Lough Site code 000417; Coolacurragh woods site code 000862; Kiltale Hill 000867; Dunamase woods 001494; Rock of Dunamase 001494 – Provided two extra species - <i>Catapodium rigidum</i> , Hedgerow Crane's bill (<i>Geranium pyrenaicum</i>).
NPWS website Higgins, T., Martin, J. and Perrin, P. (2004). National Native Woodland Survey		This report was useful as it included surveys of several woodlands in the survey areas in County Laois. These included Kiltale Hill NHA, Dunamase Woods NHA, Rock of Dunamase NHA and Grantstown Wood Nature Reserve. A full list of species recorded from woodlands are included in the report. The survey also included information on other factors such as woodland type and recorded attributes such as the presence of aquatic habitats, stone walls

2.3 Consultations

Consultations were held with landowners, the Heritage Forum and farming organisations. A leaflet providing information about the project was produced at an early stage of the study and circulated widely (Appendix 1). This was given to landowners, libraries, local authority offices and to members of the public encountered by surveyors.

During brief contacts with landowners to request permission to survey their land, some information was gathered on past and current land management practices, their aspirations for further development and whether they would be interested in obtaining information about the results of the survey. A list was compiled of landowners contacted during the study (Appendix 2)

Regular consultations were held with the Heritage Officer and Heritage Forum on the methodology and results. The project team had an early meeting with the Heritage Forum to discuss areas to be surveyed, local contacts and public dissemination. After the pilot area was mapped a further meeting took place to discuss the results and agree on the form and scale of the field maps that would be used during the survey and for the production of colour coded maps.

On June the 29th a meeting took place with most members of the Heritage forum during which progress on the survey was outlined. There was another meeting

with the Heritage Forum on July 12th where issues regarding the digitisation of the maps were discussed with the IT department in Laois County Council. This meeting provided an opportunity to meet with Neil Foulkes and Anja Murray who were working on the Laois and Offaly Hedgerow survey.

Facilitated by the IFA's representative on the Heritage Forum a presentation was made to County Executive of the IFA in the Heritage Hotel, Portlaoise on May 3rd during which the aims and purpose of the habitat study were outlined and where help and permission to access private land were sought from farmers and landowners in the County. Following on from the presentation with the IFA in May a meeting was held on the second of June with local representatives of the IFA in the proposed survey areas.

During Heritage Week a presentation was made to the public during a day long seminar on Laois Heritage.

2.4 Fieldwork

Habitats were principally mapped through fieldwork assisted by colour aerial photographs (2000), 6-inch OS raster maps (Ordnance Survey, 1906 edition) and 6" vector maps (1:6,000). Fieldwork was carried out principally by Betsy Hickey assisted by Mary Tubridy, Mieke Muyllaert and Mark McCorry.

Before the land in each townland was examined directly certain habitats were mapped from aerial photographs. Homogenous dark green fields was identified as improved grassland, while darker areas were marked as woodland or scrub. This allowed the field survey to target habitats that appeared more semi-natural, while avoiding less interesting areas. Examination of the OS map sometimes indicated the past presence of features of habitat interest. There were marked on the vector map for later checking in the field.

Before starting fieldwork landowners were first located by identifying the nearest farmhouse or other premises on aerial photos or maps. Landowners were first appraised about the purpose of the survey and asked for permission to survey their land. If time allowed they were engaged in a discussion on land management practices. If the landowner could not be located and their land could not be surveyed habitats on their land were assigned using aerial photographs or /and visual inspection from the nearest accessible area.

The land was surveyed by walking along public roads or through fields. Habitat codes were added to the vector map.

Lists of plant species was taken for each habitat type. Due to time constraints species lists and habitat accounts were compiled per habitat type in each of the two survey areas rather than per habitat type in each townland. Where particularly interesting species or habitats were found, a target note was taken and the area marked with a unique number on the map. Target notes were compiled on the sites of invasive exotic species. Photographs were taken of features of interest and habitats.

Species identification and nomenclature was based on Hubbard (1984), Jermy *et al* 1982), Mitchell (1978), Rose (1991), Rose (1989) and Webb *et al* (1996).


The survey mapped habitats in fifty-nine town lands. These included thirty six in section A and twenty three in Section B (Table 2). The area surveyed covered 78 km². Surveying took place over a period of 26 days during June, July and August 2005. The land was surveyed at a rate of 3 km² per day.

Table 2. Town-lands surveyed for the County Laois Habitat Survey

Town land name	
Section A	Section B
Aghnahilly	Ballygowdan
Aghnahilly Bog	Ballyhinode
Ballinlough	Bordwell Big
Ballycarroll	Bordwell Little
Ballyduff (Ed Kilmurry)	Brocka
Ballymaddock	Chapelhill
Ballythomas	Coolacurragh
Bellegrove	Coolbally
Cappakeel	Court
Carigeen (ED Murray)	Curragh
Coolnacarrick	Farranville
Dysart	Garryniska
Garryduff	Grantstown
Garrymaddock	Kilbreedy
Garryniska	Leap
Grange Lower	Middlemount
Grange Upper	Middlemount or Ballyvoghlaun
Hophall	Oldglass (Part of)
Killenny	Rhahandrick Lower
Killone	Rhahandrick Upper
Kilmurry	Shanvaghey
Kilteale	Tinnaragh
Kylespiddogge	Tooreagh
Lamberton Denense	
Loughakeo	
Morett	
Park Lower	
Park or Dunamase	
Park Upper	
Raheen	
Raheenahown South	
Raheenahown North	
Raheenanisky	
Rathcrea	
Rossmore	
Tonafarna	

2.5 Modifications to published methodology

Changes principally concerned the classification.

A habitat category was developed for set-aside land. This was named as BC5 set-aside and given the following colour code and pattern ().

An additional symbol was developed for ornamental hedgerows (habitat category WS3). Ornamental hedgerows are linear in character and the existing symbol/pattern for WS3 is area based; subsequently the following colour code () was used instead of the recommended one.

New houses that were not represented on the vector maps were drawn in their approximate location and given the letter NH beside them.

The location of target notes was shown on vector maps instead of GPS readings and given a 4 figure grid reference.

2.6 Constraints

Timing affected the survey results. Plants in woodlands were under recorded as many flower in Spring before fieldwork took place. Access was an issue in a few areas. The size of maps made fieldwork difficult. A0 size was difficult to manage in the field and it is recommended that in future surveys the maximum size of field map should be A2. Despite these minor issues it is considered that the survey provided an adequate account of habitat and plant species diversity in these areas.

2.7 Presentation of results

During fieldwork, a large amount of information was gathered. This included species lists, digital photographs, annotated vector maps and target notes on individual sites. The species lists, as well as a checklist of habitat types and any landowner details, were compiled into an Excel spreadsheet within one or two days of fieldwork. Appendices to this report contains species lists for different habitats and lists of uncommon species. The hand coloured maps of the townlands showing the different habitats accompany the report and are named by individual town land or by groups of town lands. The target notes are also in an Excel spreadsheet.

3 Results

3.1 Summary

The principal results of the survey are summarised in Tables 3, 4 and 5. A total of 42 different habitats were identified and 331 species (Appendix 3).

Among the 331 species, 24 (listed in Appendix 4) are rare regionally and locally. These include marsh helleborine, lesser butterfly-orchid, greater butterfly-orchid and mountain everlasting. Information obtained from the Irish Branch of the Botanical Society of the British Isles (Appendix 5) showed that

their members have recorded a further 66 species from the study area. These are associated with a range of habitats. None are protected plants. An unwelcome non native species Japanese knotweed was seen in three locations in Aghaboe parish. These were Lamberton or Demense S5195 N4 at which a stand about 5 m wide was seen on a road verge beside a layby; Tinnarragh S3281 N3, in hedge and garden of derelict house; and at Grantstown S3379 N1 - 10 -15 m long strip on roadway adjacent to Coolnacurragh wood.

Table 3 Habitats and their associated species . Classification system follows Fossitt, 2000. See Appendix 6 for species lists.

Level 1 Habitat	Level 2 Habitat	Level 3 Habitat	No. of species recorded per habitat
F Freshwater	FL Lakes and ponds	FL3 Limestone/marl lakes	14
		FL5 Eutrophic lakes	31
		FL8 Other artificial lakes and ponds	-
	FW Watercourses	FW2 Depositing lowland rivers	30
		FW4 Drainage ditches	53
	FP Springs	FP2 Non-calcareous springs	17
G Grassland and marsh	GA Improved grassland	GA1 Improved agricultural grassland	31
		GA2 Amenity grassland (improved)	-
	GS Semi-natural grassland	GS1 Dry calcareous and neutral grassland	73
		GS2 Dry meadows and grassy verges	68
		GS3 Dry-humid acid grassland	26
		GS4 Wet grassland	111
		GM1 Marsh	34
H Heath and dense bracken	HH Heath	HH3 Wet heath	18
	HD Dense bracken	HD1 Dense bracken	22
P Peatlands	PB Bogs	PB4 Cutover bog	28

	PF Fens and flushes	PF1 Rich fen and flush	13
W Woodland and scrub	WN Semi-natural woodland	WN1 Oak-birch-holly woodland	4
		WN2 Oak-ash-hazel woodland	99
		WN6 Wet willow-alder-ash woodland	40
		WN7 Bog woodland	10
	WD Highly modified /non-native woodland	WD1 (Mixed) broadleaved woodland	56
		WD2 Mixed broadleaved/conifer woodland	41
		WD3 (Mixed) conifer woodland	-
		WD4 Conifer plantation	8
		WD5 Scattered trees and parkland	4
	WS Scrub/transitional woodland	WS1 Scrub	117
		WS2 Immature woodland	30
		WS3 Ornamental/non native shrub	5
		WS5 Recently-felled woodland	56
	WL Linear woodland/scrub	WL1 Hedgerows	94
		WL2 Tree line	16
E Exposed rock and disturbed ground	ER Exposed ground	ER2 Exposed calcareous rock	33
	ED Disturbed ground	ED1 Exposed sand, gravel or till	9
		ED2 Spoil and bare ground	-
		ED3 Re-colonising bare ground	41
		ED6 Set-aside	6
B Cultivated and built land	BC Cultivated land	BC1 Arable crops	-
		BC2 Horticultural land	-
		BL1A Stone wall	6
		BL1B Other stone-works	-
		BL2 Earth banks	33
		BL3 Building and artificial surfaces	4

Table 4 Status of habitats in survey area

Common	Occasional	Rare or uncommon
Improved agricultural grassland	Limestone/marl lakes	Wet heath
Arable crops	Dry calcareous and neutral grassland	Dense bracken
Conifer plantation	Wet grassland	Dry meadows and grassy verges
Buildings and artificial surfaces	Depositing lowland rivers	Dry-humid acid grassland
Hedgerows	Drainage ditches	Non-calcareous springs
Scrub	Immature woodland	Marsh
Oak-ash-hazel woodland	Oak-birch-holly woodland	Cutover bog
	(Mixed) broadleaved woodland	Rich fen and flush
	Mixed broadleaved/conifer woodland	Scattered trees and parkland
	(Mixed) conifer plantation	Wet-willow-alder-ash woodland
	Ornamental/non native scrub	Bog woodland
	Recently-felled woodland	Exposed calcareous rock
	Exposed sand, gravel or till	Earth banks
	Spoil and bare ground	Other stone-works
	Re-colonising bare ground Set-aside	
	Horticultural land	
	Stonewalls	

Table 5 Habitats and species in surveyed habitats

Level 3 Habitat	Number of species
Scrub	117
Wet grassland	111
Oak-ash-hazel woodland	99
Hedgerows	94
Dry calcareous and neutral grassland	73
Dry meadows and grassy verges	68
Recently-felled woodland	56
(Mixed) broadleaved woodland	56
Drainage ditches	53
Recolonising bare ground	41
Mixed broadleaved / conifer woodland	41
Wet willow-alder-ash woodland	40
Marsh	34
Exposed calcareous rock	33
Earth banks	33
Eutrophic lakes	31
Improved agricultural grassland	31
Depositing lowland rivers	30
Immature woodland	30
Cutover bog	28
Dry-humid acid grassland	26
Dense bracken	22
Wet heath	18
Non-calcareous springs	17
Tree line	16
Limestone / marl lakes	14
Rich fen and flush	13
Amenity grassland (improved)	12
Bog woodland	10
Exposed sand, gravel or till	9
Conifer plantation	8
Stone wall	6
Set aside	6

3.2 Habitat descriptions

3.2.1 Introduction

Summary descriptions and preliminary assessments are provided of the principal habitats of biodiversity interest. These accounts are complemented by species lists for each habitat in Appendix 6 and with reference to target notes referenced on habitat maps and listed in Appendix 7.

3.2.2 Wetlands

FL3 Limestone/marl lakes



Limestone/marl lakes are found mostly in Bellegrave and Ballinlough, in section A. Ballinlough Lake in Ballinlough is the largest of those surveyed and in the best condition (Appendix x and Fig. A). The other examples could not be considered as lakes because they were quite small (< ha), also they are in a degraded condition having either become overgrown through neglect or considerably altered through the planting of exotic species within and around the perimeter or parts had been filled in for safety reasons. Others are eutrophic due to unrestricted access to them by livestock. In general there are few plant species associated with the lakes/ponds apart from Ballinlough Lake, which had 14 plant species including water mint, sweet grass sp. and branched bur-reed. (Appendix x, and Target notes in Excel).

Insert Plate

GM1 Marsh



Marsh habitats are found in 2 adjacent town lands, in Aghnahily bog, and the Rock of Dunamase (Table X). This is a species rich habitat with 34 different plant species. Standing water is characteristic of both sites and the marsh in Aghnahily, which is quaking, appears to be in transition between marsh and cutover bog. In Park or Dunamase reed canary-grass, marsh willowherb and meadowsweet are the dominant species whilst in Aghnahily Bog meadowsweet and wild angelica dominate. Both areas of marsh are bounded by bog woodland and which is encroaching in places.

Insert Plate

FW4 Drainage ditches



Drainage ditches are typically found forming field boundaries, adjacent to field boundaries on in the low-lying wet areas in fields. Drainage ditches are common in both of the 2 survey areas, particularly in townlands off the R422 such as Raheenahown North, Garrymaddock and Rathcrea (Fig. A, B (hand drawn map)). These drainage ditches are not subject to the shading from adjacent hedgerows and appear to be more species rich than those associated with hedgerows or woodland margins (see Target notes in Excel). A total of 53 different species were found in the drainage ditches surveyed in County Laois (Table X, Appendix X) including heath spotted and southern marsh orchid, hemp agrimony, marsh arrowgrass, marsh cinquefoil, marsh marigold, meadowsweet and sharp-flowered and soft rush.

Insert Plate

3.2.4 Grasslands

GS1 Dry calcareous and neutral grassland

Dry calcareous and neutral grassland is found in both section A and B (Table X, Appendix X), however there were more examples of this habitat type in section A (Maps A, B (hand drawn map)). Whilst dry calcareous and neutral grassland occurred on its own it also forms mosaics with wet grassland, particularly, in fields with uneven topography. This habitat type tended to be species rich and a total of 73 different species were recorded (Appendix ?). Typical species found in the majority of sites included oxeye daisy, quaking grass, yellow-wort, false-oat grass, yarrow, common knapweed and red clover. Species such as mountain everlasting, adders tongue and fragrant orchid were uncommon.

Insert Plate

GS2 Dry meadows and grassy verges

Dry meadows and grassy verges were found in 7 town lands, beside roads, along laneways and overlying small outcrops of limestone (Map B c etc hand drawn maps, Appendix codes for Excel). A total of sixty-eight species were recorded from dry meadows and grassy verge habitats (Appendix X sp. lists, Excel). False oat-grass, cock's-foot, crested dog's-tail, common bent-grass, Yorkshire fog, quaking grass and downy oat-grass which is found on the Rock of Dunamase and in Coolnacarrick (Fig. A) in Section A. In both cases it is growing on an outcrop of limestone and habitat is not being actively managed, although in Coolnacarrick there may be some light grazing.

Insert Plate

GS3 Dry-humid acid grassland


A total of 26 species were recorded in dry-humid acid grassland habitats (Appendix sp.list, Excel), which were found in the town lands of Morett, Cappakeel, Garrymaddock and Hophall in section A (Appendix x, Excel). In Morett tussocks of the grass cock'-foot dominated other species which include purple moor-grass, silverweed and yarrow, whilst in Garrymaddock Yorkshire fog, bent grasses, sweet vernal and crested dog'-tail were among the main species present. This habitat in Morett is deteriorating as a bramble and gorse dominated scrub is encroaching into the fields. One of the fields appeared abandoned (Fig. A) whilst the other is being grazing by horses at the time of the survey.

Insert Plate

GS4 Wet grassland 

After improved grassland GA1, Wet grassland (GS4) was the commonest type of grassland. It is found in 15 of the town lands surveyed (Table X, Excel spreadsheet). Most of these were in section A. This is the most species rich habitat with a total of 111 different plant species (Appendix x and Excel). Species composition is not the same in the different wet grassland sites, for example, in Rathcrea (grid square N5901, target note 4) common spike-rush is dominant, in Hophall (grid square S5905, target note 1) sharp-flowered rush is the dominant species while in Garryduff (grid square S3182, target note ?) the grassland was dominated jointly by jointed rush and meadowsweet while purple moor-grass, Yorkshire fog and purple loosestrife were among species that had a frequent occurrence. There were some particularly good examples of wet grassland in Garrymaddock (N5703 N4); Park or Dunamase S5198 N 7; Rathcrea N5901 N4; Garryduff S3182 N14) and Curragh S3481 N2.

Insert Plate

3.2 5 Heath and Bog**HH3 Wet heath** 

Wet heath habitats are found in Morett and Garrymaddock where a total of 18 different plant species were recorded. There are 3 areas of wet heath in Morett. On one of the sites (Grid square N5404, target note 6), the heath appeared to have developed on cutover bog that had been reclaimed for grass and was dominated by purple moor-grass with frequent black bog rush.

Insert Plate

PB4 Cutover bog 

Aghnahily bog, an example of a cutover bog is found between this townland and the adjacent town land of Dysart. It is adjacent to small sections of uncut bog. This site has been modified through drainage and burning which has occurred in the last 5 years. Consequently the bog is very dry. Although there are wet hollows in places, sphagnum cover is poor and parts of the surface are covered in bare peat. Around the perimeter there are very small areas of naturally regenerating birch woodland within areas of scrub. While there is a fence line running through the bog there were no signs of grazing, nor were there any signs of cutting. Twenty-eight species are found in this habitat including typical raised bog species such as bog rosemary, ling, cross leaved heath, cotton-grasses, purple moor-grass, royal fern and bog asphodel, while in the pools there the bog forming mosses, *Sphagnum imbricatum* and *S. cuspidatum*.

Insert Plate

PF1 Rich fen and flush 

One example of this habitat is found in the town land of Morett (Grid square N5404, target note 6, Fig. A). The habitat is bisected by a lane. On the southern side a larger area is covered in common reed and purple moor grass. To the north black bog rush was common. The site is bordered by woodland and a drainage ditch. A total of 13 species were recorded and in addition to those mentioned above are found carnation sedge, water mint and devil's-bit scabious.

Insert Plate

3.2 6 Woodland and scrub**WN2 Oak-ash-hazel woodland** 

Oak-ash-hazel woodland is found throughout the survey area in both Section A and section B (Table a, Appendix A, maps). It is typically found on base-rich sites where drainage is good or on limestone outcrops. It is particularly associated with the hums north of Stradbally. The majority of the woodlands are small.

This habitat is species rich (99 species). Hazel is the dominant tree and /or shrub species in the woodland. Pedunculate oak is rare. It was only found in 3 woodlands in the town land of Park or Dunamase, but not in great numbers. Beech and sycamore were also found in oak-ash-hazel woodlands. Ash and hawthorn are found in most sites, and spindle was fairly common. At least 8 different ferns were seen including lady fern, hart's-tongue fern, soft and hard shield ferns, black spleenwort and common polypody. Other ground flora species included herb robert, herb bennet, bluebell, wood sanicle, arum lily, enchanters nightshade, wood sedge and false brome.

Insert Plate

WS1 Scrub 

Scrub was found in diverse situations throughout the survey area, such as limestone outcrops, wet land, in corners of improved agricultural grassland, abandoned gardens and ruined houses. The main woody species found in scrub habitats include gorse, hawthorn, blackthorn, willows, bramble, hazel and birch. In some sites single species dominated while in others various combinations of species existed. Species diversity in scrub habitats was considerable with at least 92 species recorded including species found in shaded woodland such as arum lily, broad buckler fern, great wood rush and herb robert to those found in wetter open sites such as cotton grass, horsetails, meadowsweet, purple moor-grass and wild angelica..

WL1 Hedgerows 

Between the 2 survey areas 94 plant species were recorded in hedgerows. 68. At least 22 different woody species were recorded including ash, wych elm, english elm, hazel, hawthorn, blackthorn, holly, spindle, honeysuckle, guelder rose, gorse and several willows (appendix A and Excel).

In general the hedgerows appeared to be wide and bushy with few gaps or weak areas. This was particularly evident in the town lands in section A, where a

common feature of the hedgerows was the strong presence of hazel. Not only did Hazel occur in the majority of the hedgerows surveyed it was often the dominant species. Although hazel was found in many of the hedgerows in section B it did not dominate or occur in abundance.

3.2 7 Exposed rock

ER2 Exposed calcareous rock

This habitat type is found in a number of town lands including Killone, Kilmurry and Ballycarroll where the underlying bedrock is close to the surface. The most interesting site with exposed calcareous rock was a limestone quarry in Kilmurry where quarrying had ceased in the 1950's. It is now being used as feeding or holding area for cattle. Sixty-nine different species were recorded, the majority growing on the cliff face itself. They include wild strawberry, salad burnet, pale flax, biting stoncrop, cut-leaved crane's-bill, quaking grass, cock's-foot and oxeye daisy. The outer edges of the quarry are now overgrown with blackthorn dominated scrub.

Insert plate

4 Management guidelines

4.1 Management issues

4.2.1 Management priorities

Information from the survey is principally of value in revealing the nature of the biodiversity interest in particular areas of the county. It compares well with biodiversity in nearby County Carlow where 45 habitats and 374 species were found. The survey area in Carlow covered 74 km sq and included uplands.

The information in the baseline survey could be used to inform an evaluation of habitat diversity which can be carried out for information, research or policy making purposes. A considerable amount of information is required to make an informed assessment of the relative biodiversity value of different habitats. Typical criteria used to assess the relative importance of habitats include rarity (within townlands or within the country), size, relationship to other aspects of biodiversity (e.g fauna), threat, potential for management, relationship to the Habitats Directive, amenity value, landscape value or value as part of a network.

Table 4 provides a preliminary assessment of the rarity of the habitats found (digital mapping of the habitat maps would allow for a more precise measurement of rarity). Target notes provide details of the locations where rare habitats found.

4.2.2 Information service for landowners

Among the farming community the recent introduction of REPS has raised the profile of biodiversity. However only a minority of farmers are in REPS. The management of many of the sites with rarer habitats needs attention as landowners are not aware of their biodiversity value and need for management.

Most of the ponds that were surveyed were eutrophic (due to fertilizer run off or cattle) with the exception of Ballinlough Lake (FL3, Grid square S5399, note 1) and a smallish pond in Bellegrave (FL3, Grid square N5905, note 4). In most cases the water is extremely dirty and churned up. Very little emergent or transitional zone is present due to unlimited access by cattle and other livestock throughout the year. The habitat quality of rivers and streams is better. Problems arise due to the damming of streams by vegetation and shading by encroaching vegetation. Drainage ditches fare similarly to rivers and streams, excess vegetation and shading is greater in particular where the ditches were adjacent to hedgerows. There is a particularly good example of a drainage ditch in Raheenahown North (Grid square N5802, note 2), in the middle of a field which has some interesting species such as Lesser butterfly orchid, Bog bean and Marsh arrowgrass.

Although species diversity is good in the majority of the semi natural grasslands (species rich grasslands, wet grasslands and marshes), few examples are managed appropriately. Many sites were damaged or disturbed and some were neglected. Good quality habitats were more of the exception than the rule. Good quality semi-natural grassland is found in a few areas; in Curragh (GS4, Grid square S3481, note ?), Rathcrea (GS4, Grid square N5901, note 4), Park or Dunamase (GS1, Grid square S5398, note 2) and in Coonacarrick (GS1, Grid square S5296, note ?). However some of these sites are threatened by scrub invasion i.e. Coolnacarrick.

While hedgerows were healthy and dense many of the examples of woodland or scrub were very degraded, mainly through poaching by cattle and or sheep. In contrast to the general condition of woodlands the oak-ash-hazel woodland on Killone hill is of particularly good quality.

The distribution of land of biodiversity value suggests that a targeted information service is needed. The mapping project has identified the location of good examples of rarer habitats. As a follow up to this project pilot actions should be initiated to protect and manage appropriately good examples of these habitat types.

4.2 Guidelines

4.3.1 The role of the Heritage Forum

The role of the Heritage Forum is to provide a local network to support interested individuals and relevant agencies with a direct or indirect role in heritage management. The network needs information as a basis for discussion and policy making. The habitat map provides useful background on

biodiversity which will inform discussions on the current status of biodiversity and its management.

In the short term the immediate priority is to highlight the results of the mapping project and initiate an information advisory service for the owners of land of high biodiversity interest.

The suggested initiatives should be used as a basis for discussion. While some could be initiated directly by the Heritage Forum, the active promotion by other organizations would be equally valuable.

4.3.2 Provide information and raise awareness of habitat biodiversity

Target audience: the public/landowners

Produce leaflet listing townlands surveyed and providing directions to the maps. Publicise through local area listings in local newspapers.
 Display maps in relevant local libraries in a temporary exhibition.
 Make copies of survey and habitat maps available in Portlaoise Library.
 Put maps and report on council web site.
 Produce a web based guide to habitats guide to the county based on the results of various biodiversity surveys and other survey work .ie. countryside bird survey.
 Publicise the result to Tidy Towns groups adjacent to survey areas.

Target audience: schoolchildren

Brief locally based specialists who go into schools as part of the INTO Heritage in Schools Scheme to encourage them to incorporate the results in their educational programmes in local schools.

Target audience: advanced students/specialists/advisors

Expand habitat mapping exercise to other parts of the county.
 Carry out additional survey work (for fauna, breeding birds) in townlands examined for this survey.
 Digitise the results of the habitat map.
 Obtain data on total number of flowering plant species in the County from the BSBI.

4.3.3 Managing change

Suggested initiatives include:

Development of an advisory service targeting owners of good examples of semi-natural habitats. This service would benefit landowners and ensure that their management is compatible with biodiversity. Incentives could be provided through REPS, the Native Woodland Scheme or through some form of voluntary agreement.

Training/information for REPS planners on habitat mapping and management which is relevant to habitats in Laois,

4.3.4 Partnership with the statutory authorities

Suggested initiatives involving NPWS include:

Active co-operation on management issues with owners of land in pNHA's.

Suggested initiatives involving Laois County Council include:

Including policy statements on biodiversity and habitat biodiversity in the County Development Plan. An objective should be to maintain habitat diversity, manage habitats that it owns sustainably, provide information and that development has regard for biodiversity values.

Preparation of a County Biodiversity Plan in association with the Heritage Forum.

Provide landscaping guidelines for developers and householders which will support habitat biodiversity.

Carry out a survey of council owned land to develop management guidelines for habitats under its direct control. Manage such land for biodiversity.

Cease the practise of spraying grass verges and banks. Consider trimming which is equally effective and less harmful to biodiversity.

4.4 Conclusions

The study provides a snapshot of the natural heritage in representative area of lowland Laois. An impressive diversity of habitats and flowering plants are present in the selected townlands. A larger survey would have added to that number.

Some of these habitats are rare and are particularly important for plant biodiversity. While most of the land is covered in habitats of low biodiversity value, the survey work has revealed the location of many examples of good

quality habitats. Most townlands have some habitats of some biodiversity value. Some have habitats which are rare.

The survey results are a resource which will assist the preparation of the County Biodiversity Action Plan. Before this is developed the community and landowners must be informed about the nature of that biodiversity and its implications for management.

By publicising the townland maps interest in biodiversity and habitats will be promoted. By initiating a pilot project in habitat management on land of high biodiversity value the Heritage Forum will demonstrate practical and acceptable approach to biodiversity management.

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Appendix 3 Checklist of all species

Scientific name	Common name
<i>Abies</i> sp.	Fir
<i>Acer pseudoplatanus</i>	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Aesculus hippocastanum</i>	Velvet bent grass
<i>Agrostis canina</i>	Common bent
<i>Agrostis capillaris</i>	Common bent grass
<i>Agrostis stolonifera</i>	Creeping bent grass
<i>Ajuga reptans</i>	Bugle
<i>Alliaria petiolata</i>	Garlic mustard
<i>Alnus glutinosa</i>	Alder
<i>Alopecurus geniculatus</i>	Marsh foxtail
<i>Alopecurus pratensis</i>	Meadow foxtail
<i>Anagallis arvensis</i>	Scarlet pimpernel
<i>Andromeda polifolia</i>	Bog rosemary
<i>Angelica sylvestris</i>	Wild angelica
<i>Antennaria dioica</i>	Mountain everlasting
<i>Anthoxanthum odoratum</i>	Sweet vernal grass
<i>Anthriscus sylvestris</i>	Cow parsley
<i>Arctium minor</i>	Lesser burdock
<i>Arrhenatherum elatius</i>	False oat grass
<i>Arum maculatum</i>	Arum lily
<i>Asplenium adiantum nigrum</i>	Black spleenwort
<i>Athyrium filix-femina</i>	Lady fern
<i>Baldellia ranunculoides</i>	Lesser water plantain
<i>Bellis perennis</i>	Daisy
<i>Betula pubescens</i>	Downy birch
<i>Blackstonia perfoliata</i>	Yellow-wort
<i>Brachypodium sylvaticum</i>	False brome
<i>Briza media</i>	Quaking grass
<i>Callitriche stagnalis</i>	Common water starwort
<i>Calluna vulgaris</i>	Ling heather
<i>Caltha palustris</i>	Marsh marigold
<i>Calystegia sepium</i>	Hedge bindweed
<i>Cardamine flexuosa</i>	Wavy bittercress
<i>Cardamine pratensis</i>	Lady's smock
<i>Carex acutiformis</i>	Lesser pond sedge
<i>Carex divulsa</i>	Grey sedge
<i>Carex echinata</i>	Star sedge
<i>Carex flacca</i>	Glaucous sedge
<i>Carex hirta</i>	Hairy sedge
<i>Carex hostiana</i>	Tawny sedge
<i>Carex nigra</i>	Common sedge
<i>Carex panicea</i>	Carnation sedge
<i>Carex pulicaris</i>	Flea sedge
<i>Carex remota</i>	Remote sedge
<i>Carex rostrata</i>	Bottle sedge

<i>Carex sylvatica</i>	Wood sedge
<i>Carex vesicaria</i>	Bladder sedge
<i>Carex viridula</i>	Yellow sedge
<i>Carex viridula</i> ssp. <i>demissa</i>	Common yellow sedge
<i>Castanea sativa</i>	Spanish chestnut
<i>Centaurea nigra</i>	Black knapweed
<i>Centaureum erythraea</i>	Common centaury
<i>Cerastium fontanum</i>	Mouse ear chickweed
<i>Chamaecyparis</i> sp.	Lawson cypress
<i>Chenopodium album</i>	Fat hen
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved golden saxifrage
<i>Circaea lutetiana</i>	Enchanter's nightshade
<i>Cirsium arvense</i>	Creeping thistle
<i>Cirsium dissectum</i>	Meadow thistle
<i>Cirsium palustre</i>	Marsh thistle
<i>Cirsium</i> sp.	Thistle
<i>Cirsium vulgare</i>	Spear thistle
<i>Cladophera</i> sp.	Green algae
<i>Conopodium majus</i>	Pignut
<i>Corylus avellana</i>	Hazel
<i>Cotoneaster</i> sp.	Cotoneaster
<i>Crataegus monogyna</i>	Hawthorn
<i>Crepis capillaris</i>	Smooth hawk's-beard
<i>Crococsmia x crocosmia</i>	Montbretia
<i>Cynosurus cristatus</i>	Crested dog's-tail
<i>Dactylis glomerata</i>	Cock's-foot
<i>Dactylorhiza incarnata</i>	Early marsh orchid
<i>Dactylorhiza maculata</i>	Heath spotted orchid
<i>Dactylorhiza maculata fuchsii</i>	Common spotted orchid
<i>Dactylorhiza majalis</i>	Southern marsh orchid
<i>Daucus carota</i>	Wild carrot
<i>Deschampsia cespitosa</i>	Tufted hair-grass
<i>Digitalis purpurea</i>	Foxglove
<i>Drosera rotundifolia</i>	Round-leaved sundew
<i>Dryopteris affinis</i>	Scaly male fern
<i>Dryopteris dilatata</i>	Broad buckler fern
<i>Dryopteris filix-mas</i>	Male fern
<i>Eleocharis</i> sp.	Spike-rush
<i>Elocharis palustris</i>	Common spike-rush
<i>Elymus repens</i>	Couch grass
<i>Epilobium angustifolium</i>	Rosebay willow herb
<i>Epilobium hirsutum</i>	Great willowherb
<i>Epilobium montanum</i>	Broad-leaved willowherb
<i>Epilobium palustre</i>	Marsh willowherb
<i>Epilobium parviflorum</i>	Hoary willowherb
<i>Epilobium</i> sp.	Willowherb
<i>Epipactis palustris</i>	Marsh helleborine
<i>Equisetum arvense</i>	Field horsetail
<i>Equisetum fluviatile</i>	Water horsetail

<i>Equisetum</i> sp.	Horsetail
<i>Equisetum sylvaticum</i>	Wood horsetail
<i>Erica tetralix</i>	Cross-leaved heath
<i>Eriophorum angustifolium</i>	Common cotton-sedge
<i>Eriophorum vaginatum</i>	Hare's-tail cotton-sedge
<i>Euonymus europaeus</i>	Spindle
<i>Eupatorium cannabinum</i>	Hemp agrimony
<i>Euphrasia rostkoviana</i>	Eyebright
<i>Euphrasia</i> sp.	Eyebright
<i>Fagus sylvatica</i>	Beech
<i>Festuca arundinacea</i>	Tall fescue
<i>Festuca gigantea</i>	Giant fescue
<i>Festuca ovina</i>	Sheep's fescue
<i>Festuca rubra</i>	Red fescue
<i>Festuca</i> sp.	Fescue
<i>Filipendula ulmaria</i>	Meadowsweet
<i>Fragaria vesca</i>	Wild strawberry
<i>Fraxinus excelsior</i>	Ash
<i>Fraxinus excelsior pendula</i>	Weeping ash
<i>Galium aparine</i>	Cleavers
<i>Galium odoratum</i>	Woodruff
<i>Galium palustre</i>	Marsh bedstraw
<i>Galium verum</i>	Lady's bedstraw
<i>Geranium dissectum</i>	Cut-leaved crane's-bill
<i>Geranium molle</i>	Dove's-foot crane's-bill
<i>Geranium robertianum</i>	Herb robert
<i>Geum urbanum</i>	Herb bennet
<i>Glechoma hederacea</i>	Ground ivy
<i>Glyceria fluitans</i>	Floating sweet-grass
<i>Glyceria maxima</i>	Reed sweet-grass
<i>Glyceria notata</i>	Plicate sweet-grass
<i>Glyceria</i> sp.	Sweet-grass
<i>Grisilina littoralis</i>	Grisilina
<i>Gymnadenia conopsea</i>	Fragrant orchid
<i>Hedera helix</i>	Ivy
<i>Helictotrichon pubescens</i>	Downy oat-grass
<i>Heracleum sphondylium</i>	Hogweed
<i>Hieracium</i> sp.	Hawkweed
<i>Holcus lanatus</i>	Yorkshire fog
<i>Hyacinthoides non-scriptus</i>	Bluebell
<i>Hydrocotyle vulgaris</i>	Navelwort
<i>Hypericum androsaemum</i>	Tutsan
<i>Hypericum humifusum</i>	Trailing St. John's-wort
<i>Hypericum maculatum</i>	Imperforate St. John's-wort
<i>Hypericum perforatum</i>	Perforate St. John's-wort
<i>Hypericum pulchrum</i>	Slender St. John's-wort
<i>Hypericum</i> sp.	St. John's-wort
<i>Hypericum tetrapterum</i>	Square-stalked St. John's-wort
<i>Hypochoeris radicata</i>	Car's-ear

<i>Ilex aquifolium</i>	Holly
<i>Iris pseudacorus</i>	Flag iris
<i>Juncus acutiflorus</i>	Sharp-flowered rush
<i>Juncus articulatus</i>	Jointed rush
<i>Juncus bufonius</i>	Toad rush
<i>Juncus conglomeratus</i>	Compact rush
<i>Juncus effusus</i>	Soft rush
<i>Juncus inflexus</i>	Hard rush
<i>Juncus sp.</i>	Rush
<i>Knautia arvensis</i>	Field scabious
<i>Lapsana communis</i>	Nipplewort
<i>Larix decidua</i>	European larch
<i>Lathyrus pratensis</i>	Meadow vetchling
<i>Lathyrus montanus</i>	Bitter-vetch
<i>Lemma minor</i>	Common duckweed
<i>Leontodon autumnalis</i>	Autumn hawkbit
<i>Leucanthemum vulgare</i>	Ox-eye daisy
<i>Ligustrum ovalifolium</i>	Privet
<i>Ligustrum vulgare</i>	Common privet
<i>Linum bienne</i>	Pale flax
<i>Linum catharticum</i>	Fairy flax
<i>Listeria ovata</i>	Common twayblade
<i>Lolium perenne</i>	Perennial ryegrass
<i>Lonicera nitida</i>	Wilson's honeysuckle
<i>Lonicera periclymenum</i>	Honeysuckle
<i>Lotus corniculatus</i>	Bird's-foot-trefoil
<i>Luzula campestris</i>	Field woodrush
<i>Luzula multiflorum</i>	Heath woodrush
<i>Luzula sylvatica</i>	Wood rush
<i>Lychnis flos-cuculi</i>	Ragged robin
<i>Lysimachia nemorum</i>	Yellow pimpernel
<i>Lythrum salicaria</i>	Purple loosestrife
<i>Malus sp.</i>	Crab
<i>Matricaria discoidea</i>	Pineapple weed
<i>Medicago lupulina</i>	Black medick
<i>Melica uniflora</i>	Wood melick
<i>Mentha aquatica</i>	Water mint
<i>Mentha sp.</i>	Mint
<i>Mentha spicata</i>	Spear mint
<i>Menyanthes trifoliata</i>	Bogbean
<i>Myosotis discolor</i>	Changing forget-me-not
<i>Myosotis scorpiodes</i>	Water forget-me-not
<i>Narthecium ossifragum</i>	Bog asphodel
<i>Nasturtium officinale</i>	Water-cress
<i>Nasturtium sp.</i>	Water-cress
<i>Odondites vernus</i>	Red bartsia
<i>Ophioglossum vulgatum</i>	Adder's tongue
<i>Osmunda regalis</i>	Royal fern
<i>Oxalis acetosella</i>	Wood sorrel

<i>Pedicularis</i> sp.	Lousewort
<i>Pedicularis sylvatica</i>	Lousewort
<i>Phalaris arundinacea</i>	Reed canary-grass
<i>Phleum pratensis</i>	Timothy
<i>Phragmites australis</i>	Common reed
<i>Phyllitis scolopendrium</i>	Hart's-tongue fern
<i>Picea abies</i>	Norway spruce
<i>Picea sitchensis</i>	Sitka spruce
<i>Pinus contorta</i>	Lodgepole pine
<i>Pinus sylvestris</i>	Scot's pine
<i>Plantago lanceolata</i>	Narrow leaved plantain
<i>Plantago major</i>	Broad leaved plantain
<i>Platanthera bifolia</i>	Lesser butterfly orchid
<i>Platanthera clorantha</i>	Greater butterfly orchid
<i>Poa annua</i>	Annual meadow grass
<i>Poa</i> sp.	Meadow grass
<i>Poa trivialis</i>	Rough meadow-grass
<i>Polygala vulgaris</i>	Common milkwort
<i>Polygonum persicaria</i>	Redshank
<i>Polypodium vulgare</i>	Common polypody fern
<i>Polystichum aculeatum</i>	Hard shield fern
<i>Polystichum setiferum</i>	Soft shield fern
<i>Populus</i> sp.	Poplar
<i>Populus tremula</i>	Aspen
<i>Potamogeton</i> sp.	Pondweed
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla erecta</i>	Tormentil
<i>Potentilla palustre</i>	Marsh cinquefoil
<i>Potentilla reptans</i>	Creeping cinquefoil
<i>Potentilla sterilis</i>	Barren strawberry
<i>Primula veris</i>	Cowslip
<i>Primula vulgaris</i>	Primrose
<i>Prunus avium</i>	Wild cherry
<i>Prunus domestica</i>	Wild plum
<i>Prunus kanzan</i>	Flowering cherry
<i>Prunus</i> sp.	Cherry
<i>Prunus spinosa</i>	Blackthorn
<i>Pseudotsuga menzeii</i>	Douglas fir
<i>Pteridium aquilinum</i>	Bracken
<i>Pulicaria dysenterica</i>	Common fleabane
<i>Quercus robur</i>	Pedunculate oak
<i>Ranunculus acris</i>	Meadow buttercup
<i>Ranunculus auricomus</i>	Goldilocks buttercup
<i>Ranunculus ficaria</i>	Lesser celandine
<i>Ranunculus flammula</i>	Lesser spearwort
<i>Ranunculus lingua</i>	Greater spearwort
<i>Ranunculus peltatus</i>	Pond water-crowfoot
<i>Ranunculus repens</i>	Creeping buttercup
<i>Reynoutria japonica</i>	Japanese knotweed

<i>Rhinanthus minor</i>	Yellow rattle
<i>Rhynchospora alba</i>	White-beaked sedge
<i>Ribes rubrum</i>	White or red currant
<i>Ribes</i> sp.	Currant
<i>Rosa arvensis</i>	Field rose
<i>Rosa canina</i>	Dog rose
<i>Rosa</i> sp.	Wild rose
<i>Rubus caesius</i>	Dewberry
<i>Rubus fruticosus</i> agg.	Bramble
<i>Rumex acetosella</i>	Sheep's sorrel
<i>Rumex conglomeratus</i>	Clustered dock
<i>Rumex crispus</i>	Curled dock
<i>Rumex obtusifolius</i>	Broad leaved dock
<i>Rumex sanguineus</i>	Wood dock
<i>Rumex</i> sp.	Dock
<i>Sagina procumbens</i>	Procumbent pearlwort
<i>Salix alba</i>	White willow
<i>Salix aurita</i>	Eared willow
<i>Salix caprea</i>	Goat willow
<i>Salix cinerea</i>	Grey willow
<i>Salix fragilis</i>	Crack willow
<i>Salix</i> sp.	Willow
<i>Salix viminalis</i>	Osier
<i>Salix x multinervis</i>	Willow hybrid
<i>Sambucus nigra</i>	Elder
<i>Sanguisorba minor</i>	Salad burnet
<i>Sanicula europaea</i>	Wood sanicle
<i>Saponaria officinalis</i>	Soapwort
<i>Schoenoplectus lacustris</i>	Club-rush
<i>Schoenus nigricans</i>	Black bog-rush
<i>Scrophularia nodosa</i>	Common figwort
<i>Sedum acre</i>	Biting stonecrop
<i>Senecio aquaticus</i>	Marsh ragwort
<i>Senecio jacobaea</i>	Common ragwort
<i>Senecio vulgaris</i>	Groundsel
<i>Silene dioica</i>	Red campion
<i>Silene latifolia</i>	White campion
<i>Sisymbrium officinale</i>	Hedge mustard
<i>Solanum dulcamara</i>	Bittersweet
<i>Sonchus arvensis</i>	Perennial sow-thistle
<i>Sonchus asper</i>	Prickly sow-thistle
<i>Sonchus oleraceus</i>	Smooth sow-thistle
<i>Sorbus aria</i>	Whitebeam
<i>Sorbus aucuparia</i>	Mountain ash
<i>Sparganium erectum</i>	Branched bur-reed
<i>Sphagnum capillifolium</i>	Sphagnum moss
<i>Sphagnum cuspidatum</i>	Sphagnum moss
<i>Sphagnum imbricatum</i>	Sphagnum moss
<i>Sphagnum papillosum</i>	Sphagnum moss

<i>Stachys palustris</i>	Marsh woundwort
<i>Stachys sylvatica</i>	Hedge woundwort
<i>Stellaria graminea</i>	Lesser stitchwort
<i>Stellaria holostea</i>	Greater stitchwort
<i>Stellaria media</i>	Common chickweed
<i>Stellaria uliginosa</i>	Bog stitchwort
<i>Succisa pratensis</i>	Devil's-bit scabious
<i>Symphytum</i> sp.	Comfrey
<i>Taraxacum officinale</i>	Dandelion
<i>Teucrium scorodonia</i>	Woodsage
<i>Tilia cordata</i>	Small leaved lime
<i>Torilis japonica</i>	Upright hedge parsley
<i>Tragopogon pratensis</i>	Goat's-beard
<i>Trichophorum caespitosum</i>	Deer-sedge
<i>Trifolium campestre</i>	Hop trefoil
<i>Trifolium dubium</i>	Lesser trefoil
<i>Trifolium pratense</i>	Red clover
<i>Trifolium repens</i>	White clover
<i>Triglochin palustris</i>	Marsh arrowgrass
<i>Tussilago farfara</i>	Colt's-foot
<i>Typha latifolia</i>	Common reedmace
<i>Ulex europaeus</i>	Gorse
<i>Ulmus glabra</i>	Wych elm
<i>Ulmus procera</i>	English elm
<i>Urtica dioica</i>	Stinging nettle
<i>Valeriana officinalis</i>	Common valerian
<i>Veronica beccabunga</i>	Brooklime
<i>Veronica chamaedrys</i>	Germander speedwell
<i>Veronica montana</i>	Wood speedwell
<i>Veronica officinalis</i>	Heath speedwell
<i>Veronica</i> sp.	Speedwell
<i>Viburnum opulus</i>	Guelder rose
<i>Vicia cracca</i>	Tufted vetch
<i>Vicia sativa</i>	Common vetch
<i>Vicia sepium</i>	Bush vetch
<i>Vicia</i> sp.	Vetch
<i>Viola riviniana</i>	Common dog violet
<i>Viola</i> sp.	Violet
x <i>Cupressocyparis leylandii</i>	Leyland cypress

Appendix 4. Rare or occasional plant species

Scientific name	Common name
<i>Andromeda polifolia</i>	Bog rosemary
<i>Antennaria dioica</i>	Mountain everlasting
<i>Artemisia vulgaris</i>	Mugwort
<i>Blackstonia perfoliata</i>	Yellow-wort
<i>Bromus racemosus</i>	Smooth brome
<i>Centaureum erythraea</i>	Common centaury
<i>Clinopodium vulgare</i>	Wild basil
<i>Epipactis palustris</i>	Marsh helleborine
<i>Gymnadenia conopsea</i>	Fragrant orchid
<i>Helictotrichon pubescens</i>	Downy oat-grass
<i>Lathyrus montanus</i> [^]	Bitter vetch
<i>Linum bienne</i>	Pale flax
<i>Ophioglossum vulgatum</i>	Adder's tongue
<i>Origanum vulgare</i>	Marjoram
<i>Platanthera bifolia</i>	Lesser butterfly-orchid
<i>Platanthera clorantha</i>	Greater butterfly-orchid
<i>Polystichum aculeatum</i>	Hard shield fern
<i>Pulicaria dysenterica</i>	Fleabane
<i>Rhynchospora alba</i>	White beaked sedge
<i>Rubus caesius</i>	Dewberry
<i>Sanguisorba minor</i>	Salad burnet
<i>Smyrniolum olusatrum</i>	Alexanders
<i>Tragopogon pratensis</i>	Goatsbeard
<i>Trisetum flavescens</i>	Yellow oat grass

Appendix 5 Additional species recorded in study area by BSB1

Scientific name	Common name
<i>Achillea ptarmica</i>	Sneezewort
<i>Agrimonia eupatoria</i>	Agrimony
<i>Agrimonia procera</i>	Fragrant Agrimony
<i>Aphanes arvensis</i>	Parsley-piert
<i>Artemisia vulgaris</i>	Mugwort
<i>Asplenium ruta-muraria</i>	Wall-rue
<i>Bromopsis ramosa</i>	Hairy-brome
<i>Carex pseudocyperus</i>	Cyperus Sedge
<i>Ceterach officinarum</i>	Rusty-back
<i>Cladium mariscus</i>	Great Fen-sedge
<i>Clinopodium vulgare</i>	Wild Basil
<i>Conium maculatum</i>	Hemlock
<i>Cymbalaria muralis</i>	Ivy-leaved Toadflax
<i>Dipsacus fullonum</i>	Wild Teasel
<i>Euphorbia helioscopia</i>	Sun Spurge
<i>Euphorbia peplus</i>	Petty Spurge
<i>Euphrasia officinalis</i> agg.	Eyebright
<i>Fallopia convolvulus</i>	Black-bindweed
<i>Fumaria muralis</i>	Common Ramping-fumitory
<i>Fumaria officinalis</i>	Common Fumitory
<i>Geum rivale</i>	Water Avens
<i>Hieracium murorum</i> agg.	Hawkweed
<i>Hippuris vulgaris</i>	Mare's-tail
<i>Juncus bulbosus</i>	Bulbous Rush
<i>Lamium purpureum</i>	Red Dead-nettle
<i>Lathyrus montanus</i>	Bitter-vetch
<i>Leontodon saxatilis</i>	Lesser Hawkbit
<i>Lolium multiflorum</i>	Italian Rye-grass
<i>Lycopus europaeus</i>	Gypsywort
<i>Mentha arvensis</i>	Corn Mint
<i>Mentha suaveolens x longifolia</i> = <i>M. x rotundifolia</i>	False Apple-mint
<i>Nymphaea alba</i>	White Water-lily
<i>Origanum vulgare</i>	Wild Marjoram
<i>Papaver dubium</i> ssp. <i>dubium</i>	Long-headed Poppy
<i>Papaver rhoeas</i>	Common Poppy
<i>Persicaria hydropiper</i>	Water-pepper
<i>Persicaria lapathifolia</i>	Pale Persicaria
<i>Persicaria maculosa</i>	Redshank
<i>Petasites fragrans</i>	Winter Heliotrope
<i>Petasites hybridus</i>	Butterbur
<i>Pimpinella saxifraga</i>	Burnet-saxifrage
<i>Poa pratensis</i>	Smooth Meadow-grass
<i>Polygonum aviculare</i>	Knotgrass

<i>Polygonum cognatum</i>	Indian Knotgrass
<i>Polygonum persicaria</i>	Redshank
<i>Polypodium vulgare</i>	Common polypody fern
<i>Potamogeton natans</i>	Broad-leaved Pondweed
<i>Quercus petraea</i>	Sessile Oak
<i>Ranunculus trichophyllus</i>	Thread-leaved Water-crowfoot
<i>Reseda luteola</i>	Weld
<i>Rhododendron ponticum</i>	Rhododendron
<i>Rosa sherardii</i>	Sherard's Downy-rose
<i>Rubus caesius</i>	Dewberry
<i>Rubus idaeus</i>	Raspberry
<i>Salix repens</i>	Creeping Willow
<i>Saponaria officinalis</i>	Soapwort
<i>Sedum album</i>	White Stonecrop
<i>Sherardia arvensis</i>	Field Madder
<i>Sinapis arvensis</i>	Charlock
<i>Smyrniium olusatrum</i>	Alexanders
<i>Spergula arvensis</i>	Corn Spurrey
<i>Thymus vulgaris</i>	Garden Thyme
<i>Trisetum flavescens</i>	Yellow Oat-grass
<i>Veronica anagallis-aquatica</i>	Blue Water-Speedwell
<i>Vinca major</i>	Greater Periwinkle
<i>Viola odorata</i>	Sweet Violet

Appendix 6 List of species recorded from the different habitats

FL3 Limestone/marl lakes

Epilobium palustre

Eupatorium cannabinum

Galium palustris

Glyceria sp.

Hydrocotyle vulgaris

Iris pseudacorus

Juncus acutiflorus

Juncus effusus

Mentha aquatica

Potentilla anserina

Ranunculus flammula

Ranunculus sp.

Rumex sp.

Sparganium erectum.

FL5 Eutrophic lakes

Salix cinerea

Acer pseudoplatanus

Aesculus hippocastanum

Cardamine pratensis

Cladophera algae

Corylus avellana

Crataegus monogyna

Crocoshmia x crocoshmia

Eleocharis sp.

Equisetum fluviatile

Equisetum sp.

Fagus sylvatica

Fraxinus excelsior

Glyceria fluitans

Iris pseudacorus
Juncus effusus
Juncus inflexus
Juncus sp.
Molinia caerulea
Nasturtium sp.
Populus tremula
Prunus sp.
Prunus spinosa
Ranunculus sp.
Rubus fruticosus agg.
Salix cinerea
Salix caprea
Sambucus nigra
Typha latifolia
Urtica dioica
Veronica beccabunga

FL8 Other artificial lakes and ponds

No species record

FW2 Depositing/lowland rivers

Algae
Callitriche sp.
Callitriche stagnalis
Calystegia sepium
Epilobium hirsutum
Epilobium palustre
Glyceria fluitans
Glyceria maxima
Glyceria notata
Iris pseudacorus
Lemma minor
Mentha aquatica
Myosotis scorpiodes
Nasturtium officinale

Phalaris arundinacea
Phragmites australis
Polygonum persicaria
Potamogeton sp.
Potentilla anserina
Prunella vulgaris
Ranunculus peltatus
Salix alba
Salix caprea
Salix fragilis
Schoenplectus
lacustris
Scrophularia nodosa
Senecio aquaticus
Ulex europaeus
Ulmus glabra
Urtica dioica
Prunella vulgaris
Ranunculus peltatus
Salix alba
Salix caprea
Salix fragilis
Schoenplectus
lacustris
Scrophularia nodosa
Senecio aquaticus
Ulex europaeus
Ulmus glabra
Urtica dioica

FW4 Drainage ditches

Agrostis stolonifera
Angelica sylvestris
Anthoxanthum
odoratum
Briza media
Caltha palustre
Cardamine pratensis

Carex acutiformis
Carex nigra
Carex panicea
Carex rostrata
Carex sp.
Cirsium palustre
Crataegus monogyna
Dactylorhiza maculata
Dactylorhiza majalis
Epilobium hirsutum
Epilobium palustre
Epilobium sp.
Equisetum arvense
Equisetum sp.
Eriophorum
angustifolium
Eupatorium cannabinum
Festuca rubra
Filipendula ulmaria
Galium palustre
Glyceria fluitans
Holcus lanatus
Hypericum pulchrum
Juncus acutiflorus
Juncus articulatus
Juncus effusus
Lolium perenne
Lotus corniculatus
Lythrum salicaria
Mentha aquatica
Mentha sp.
Menyanthes trifoliata
Nasturtium officinale
Phalaris arundinacea
Phragmites australis
Platanthera bifolia
Polygala vulgaris
Potentilla erecta

Potentilla palustre
Ranunculus flammula
Salix cinerea
Succisa pratensis
Trifolium pratense
Trifolium repens
Triglochin palustris
Typha latifolia
Urtica dioica
Vicia cracca

FP2 Non-calcareous springs

No species record

GA1 Improved agricultural grassland

Agrostis canina
Alopecurus geniculatus
Alopecurus pratensis
Anthoxanthum odoratum
Arrhenatherum elatius
Bellis perennis
Carex sp.
Cerastium fontanum
Cirsium arvense
Dactylis glomerata
Elymus repens
Galium odoratum
Heracleum sphondylium
Holcus lanatus
Lolium perenne
Plantago lanceolata
Plantago major
Poa annua
Poa sp.
Poa trivialis
Ranunculus acris

Ranunculus repens
Rubus fruticosus agg.
Rumex acetosa
Rumex conglomeratus
Rumex obtusifolius
Senecio jacobaea
Stellaria graminea
Taraxacum officinale
Trifolium repens
Urtica dioica

GA2 Amenity grassland (improved)

No species record

GS1 Dry calcareous and neutral grassland

Achillea millefolium
Agrostis capillaris
Agrostis stolonifera
Antennaria dioica
Anthoxanthum odoratum
Anthriscus sylvestris
Arrhenatherum elatius
Blackstonia perfoliata
Briza media
Carex flacca
Carex panicea
Carex viridula
Centaurea nigra
Cerastium fontanum
Cirsium arvense
Cirsium vulgare
Crataegus monogyna
Crepis capillaris
Cynosurus cristatus
Dactylis glomerata
Dactylorhiza maculata

Daucus carota
Eupatorium cannabinum
Euphrasia rostkoviana
Euphrasia sp.
Festuca ovina
Festuca rubra
Filipendula ulmaria
Galium aparine
Galium verum
Geranium robertianum
Hedera helix
Helictotrichon pubescens
Heracleum sphondylium
Holcus lanatus
Hyacinthoides non-scriptus
Hypericum pulchrum
Juncus acutiflorus
Juncus acutiflorus
Knautia arvensis
Lathyrus pratensis
Leontodon autumnalis
Leucanthemum vulgare
Linum catharticum
Listeria ovata
Lolium perenne
Lotus corniculatus
Lythrum salicaria
Mentha sp.
Molinia caerulea
Odontites vernus
Ophioglossum vulgatum
Plantago lanceolata
Plantago lanceolata
Poa annua
Poa sp.
Poa trivialis
Polygala vulgaris
Potentilla erecta

Primula veris
Prunella vulgaris
Prunus sp.
Pteridium aquilinum
Ranunculus acris
Ranunculus repens
Rhinanthus minor
Rubus fruticosus agg.
Rumex acetosa
Rumex crispus
Salix caprea
Salix cinerea
Senecio jacobaea
Sonchus oleraceus
Stellaria graminea
Stellaria uliginosa
Taraxacum officinale
Trifolium campestre
Trifolium pratense
Trifolium repens
Ulex europaeus
Urtica dioica
Veronica chamaedrys
Vicia cracca
Vicia sepium
Vicia sp.

GS2 Dry meadows and grassy verges

Achillea millefolium
Agrostis capillaris
Anthoxanthum
odoratum
Arrhenatherum elatius
Bellis perennis
Carex flacca
Centaurea nigra
Cerastium fontanum
Cirsium arvense

Cirsium vulgare
Crepis capillaris
Cynosurus cristatus
Dactylis glomerata
Daucus carota
Equisetum arvense
Festuca ovina
Galium verum
Geranium molle
Geranium robertianum
Hedera helix
Heracleum sphondylium
Hieracium sp.
Holcus lanatus
Hypericum maculatum
Lapsana communis
Lathyrus pratensis
Leontodon autumnalis
Leucanthemum vulgare
Linum catharticum
Lolium perenne
Lotus corniculatus
Luzula campestris
Medicago lupulina
Plantago lanceolata
Potentilla anserina
Potentilla sterilis
Primula veris
Prunella vulgaris
Ranunculus repens
Rhinanthus minor
Rosa sp.
Rubus fruticosus agg.
Rumex crispus
Salix cinerea
Senecio jacobaea
Silene alba

Taraxacum officinale

Trifolium pratense

Trifolium repens

Urtica dioica

Veronica chamaedrys

Vicia cracca

Vicia sepium

GS3 Dry-humid acid grassland

Achillea millefolium

Agrostis stolonifera

Angelica sylvestris

Anthoxanthum odoratum

Balldellia ranunculoides

Briza media

Carex flacca

Carex hostiana

Carex panicea

Carex viridula ssp demissa

Centaurea nigra

Centaureum erythraea

Cerastium fontanum

Cirsium arvense

Cirsium dissectum

Cirsium sp.

Cirsium vulgare

Cynosurus cristatus

Dactylis glomerata

Dactylorhiza maculata

Dactylorhiza maculata
fuchsii

Dactylorhiza majalis

Daucus carota

Epilobium palustre

Epipactis palustris

Euphrasia sp.

Filipendula ulmaria

Galium aparine

Galium palustris
Galium verum
Glyceria fluitans
Gymnadenia conopsea
Holcus lanatus
Hydrocotyle vulgaris
Hypericum pulchrum
Juncus acutiflorus
Juncus effusus
Lathyrus pratensis
Leontodon autumnalis
Leucanthemum vulgare
Linum catharticum
Listeria ovata
Lotus corniculatus
Luzula campestris
Lythrum salicaria
Mentha aquatica
Molina caerulea
Ophioglossum vulgare
Orchid
Plantago lanceolata
Platanthera clorantha
Poa sp.
Poa trivialis
Polygala vulgaris
Potentilla anserina
Potentilla erecta
Potentilla palustre
Potentilla reptans
Prunella vulgaris
Pulicaria dysenterica
Ranunculus acris
Ranunculus flammula
Ranunculus repens
Rubus fruticosus agg.
Rumex obtusifolius
Rumex sp.

Senecio aquaticus
Senecio jacobaea
Succisa pratensis
Taraxacum officinale
Trifolium pratense
Trifolium repens
Triglochin palustris
Vicia sepium

GS4 Wet grassland

Agrostis canina
Agrostis capillaris
Agrostis stolonifera
Alopecurus geniculatus
Angelica sylvestris
Anthoxanthum
odoratum
Arrhenatherum elatius
Briza media
Calluna vulgaris
Caltha palustris
Cardamine pratensis
Carex flacca
Carex hirta
Carex nigra
Carex panicea
Carex pulicaris
Carex rostrata
Carex viridula
Centaurea nigra
Cerastium fontanum
Cirsium arvense
Cirsium dissectum
Cirsium palustre
Cirsium vulgare
Corylus avellana
seedlings
Crataegus monogyna
Cynosurus cristatus

Dactylis glomerata
Dactylorhiza fuchsii
Dactylorhiza incarnata
Dactylorhiza maculata
Deschampsia caespitosa
Deschampsia flexuosa
Elocharis palustris
Epilobium hirsutum
Epilobium parviflorum
Epilobium sp.
Equisetum arvense
Equisetum sp.
Erica tetralix
Eriophorum vaginatum
Eupatorium cannabinum
Festuca gigantea
Festuca rubra
Filipendula ulmaria
Galium palustre
Glyceria fluitans
Gymnadenia conopsea
Holcus lanatus
Hydrocotyle vulgaris
Hypericum pulchrum
Hypericum tetrapterum
Hypochoeris radicata
Iris pseudacorus
Juncus acutiflorus
Juncus articulatus
Juncus conglomeratus
Juncus effusus
Juncus inflexus
Juncus inflexus
Lathyrus pratensis
Leontodon autumnalis
Linum catharticum
Lolium perenne
Lotus corniculatus

Lotus corniculatus
Luzula campestris
Lychnis flos-cuculi
Lythrum salicaria
Mentha aquatica
Mentha sp.
Menyanthes trifoliata
Molinia caerulea
Pedicularis sylvatica
Phalaris arundinacea
Phleum pratense
Phragmites australis
Plantago lanceolata
Poa sp.
Poa trivialis
Polygala vulgaris
Potamogeton sp.
Potentilla anserina
Potentilla erecta
Potentilla reptans
Prunella vulgaris
Ranunculus acris
Ranunculus flammula
Ranunculus lingua
Ranunculus repens
Rubus fruticosus agg.
Rumex acetosa
Rumex crispus
Sagina procumbens
Salix cinerea
Senecio aquatica
Senecio jacobaea
Sonchus asper
Stachys palustris
Stellaria aparine
Stellaria graminea
Succisa pratensis
Taraxacum officinale

Trifolium pratense
Trifolium pratense
Trifolium repens
Triglochin palustre
Ulex europaeus
Valeriana officinalis
Veronica beccabunga
Veronica chamaedrys
Vicia cracca
Vicia sepium
Vicia sp.

GM1 Marsh

Agrostis capillaris
Angelica sylvestris
Anthoxanthum odoratum
Caltha palustre
Carex nigra
Carex vesicaria
Cirsium palustre
Epilobium palustre
Equisetum sp.
Filipendula ulmaria
Gallium palustre
Holcus lanatus
Iris pseudacorus
Juncus acutiflorus
Juncus effusus
Lathyrus pratensis
Lolium perenne
Lythrum salicaria
Mentha aquatica
Molina caerulea
Myosotis palustris
Phalaris arundinacea
Phleum pratensis
Potentilla anserina

Potentilla erecta
Potentilla palustre
Ranunculus acris
Ranunculus repens
Rubus fruticosus agg.
Rumex sp.
Salix aurita
Salix cinerea
Silene dioica
Vicia cracca

HH3 Wet heath

Angelica sylvestris
Anthoxanthum odoratum
Carex panicea
Cirsium palustre
Dactylis glomerata
Festuca ovina
Festuca rubra
Filipendula ulmaria
Holcus lanatus
Luzula campestris
Molinia caerulea
Moss
Populus sp.
Potentilla erecta
Ribes sp.
Rubus fruticosus agg.
Schoenus nigricans
Succisa pratensis

HD1 Dense bracken

Agrostis canina
Anthoxanthum odoratum
Carex echinata
Carex flacca
Cirsium vulgare

Dactylorhiza fuchsii
Deschampsia cespitosa
Festuca arundinacea
Holcus lanatus
Hypericum sp.
Juncus acutiflorus
Juncus effusus
Luzula multiflorum
Pedicularis sp.
Plantago lanceolata
Potentilla erecta
Prunella vulgaris
Pteridium aquilinum
Ranunculus acris
Rubus fruticosus agg.
Succisa pratensis
Trifolium pratense

PB1 Raised bog

Andromeda polifolia
Angelica sylvestris
Anthoxanthum odoratum
Betula pubescens
Calluna vulgaris
Dactylorhiza fuchsii
Drosera rotundifolia
Dryopteris dilatata
Epilobium angustifolium
Equisetum sp.
Erica tetralix
Eriophorum angustifolium
Eriophorum vaginatum
Luzula multiflora
Molina caerulea
Narthecium ossifragum
Osmunda regalis
Potentilla erecta

Pteridium aquilinum
Rhynchospora alba
Salix aurita
Sphagnum capillifolium
Sphagnum cuspidatum
Sphagnum imbricatum
Sphagnum papillosum
Succisa pratensis
Trichophorum caespitosum
Ulex europaeus

PB4 Cutover bog

Andromeda polifolia
Angelica sylvestris
Anthoxanthum odoratum
Betula pubescens
Calluna vulgaris
Dactylorhiza fuchsii
Drosera rotundifolia
Dryopteris dilatata
Epilobium angustifolium
Equisetum sp.
Erica tetralix
Eriophorum angustifolium
Eriophorum vaginatum
Luzula multiflora
Molina caerulea
Narthecium ossifragum
Osmunda regalis
Potentilla erecta
Pteridium aquilinum
Rhynchospora alba
Salix aurita
Sphagnum capillifolium
Sphagnum cuspidatum
Sphagnum imbricatum
Sphagnum papillosum

Succisa pratensis
Trichophorum caespitosum
Ulex europaeus

PF1 Rich fen and flush

Alnus glutinosa
Carex panicea
Equisetum sp.
Filipendula ulmaria
Holcus lanatus
Mentha aquatica
Molina caerulea
Phragmites
australis
Pinus sp.
Potentilla erecta
Schoenus nigricans
Succisa pratensis
Ulex europaeus

WN1 Oak-birch-holly woodland

Fraxinus excelsior
Betula pubescens
Salix sp.
Hedera helix

WN2 Oak-ash-hazel woodland

Acer pseudoplatanus
Agrostis stolonifera
Ajuga reptans
Alliaria petiolata
Angelica sylvestris
Arrhenatherum elatius
Arum maculatum
Asplenium adiantum
nigrum
Atrium filix femina

Bellis perennis
Brachypodium sylvaticum
Caltha palustris
Carex sp.
Carex sylvatica
Castanea sativa
Cerastium fontanum
Circaea lutetiana
Cirsium dissectum
Cirsium vulgare
Corylus avellana
Crataegus monogyna
Dactylis glomerata
Deschampsia cespitosa
Dryopteris affinis
Dryopteris dilatata
Dryopteris filix-mas
Epilobium sp.
Equisetum arvense
Equisetum sp.
Euonymus europaeus
Fagus sylvatica
Filipendula ulmaria
Fraxinus excelsior
Galium aparine
Galium odoratum
Geranium robertianum
Geum urbanum
Glechoma hederacea
Hedera helix
Heracleum sphondylium
Holcus lanatus
Hyacinthoides non-scriptus
Ilex aquifolium
Juncus inflexus
Juncus sp.
Lapsana communis
Listeria ovata

Lonicera periclymenum
Lysimachia nemorum
Melica uniflora
Mentha aquatica
Mentha sp.
Oxalis acetosa
Phragmites australis
Phyllitis scolopendrium
Picea sitchensis
Pinus sp.
Poa annua
Polypodium vulgare
Polystichum setiferum
Populus tremula
Pot erecta
Potentilla setiferum
Potentilla sterilis
Primula vulgaris
Prunus sp.
Prunus spinosa
Quercus robur
Ranunculus ficaria
Ranunculus repens
Ribes rubrum
Rosa canina
Rosa sp.
Rubus fruticosus agg.
Rumex crispus
Rumex sanguineus
Rumex sp.
Salix caprea
Salix cinerea
Salix sp.
Sambucus nigra
Sanicula europaeus
Sonchus asper
Sorbus aucuparia seedlings
Stachys sylvatica

Stellaria holostea
Taraxacum officinalis
Teucrium scorodonia
Ulex europaeus
Ulmus glabra
Urtica dioica
Veronica beccabunga
Veronica chamaedrys
Veronica montana
Veronica sp.
Viburnum opulus
Vicia sepium
Viola riviniana
Viola sp..

WN6 Wet willow-alder-ash woodland

Acer pseudoplatanus
Alnus glutinosa
Arum maculatum
Betula pubescens
Brachypodium sylvaticum
Carex flacca
Carex remota
Chrysosplenium oppositifolium
Circaea lutetiana
Corylus avellana
Crataegus monogyna
Deschampsia caespitosa
Dryopteris dilatata
Epilobium hirsutum
Epilobium montanum
Equisetum sylvaticum
Fagus sylvatica
Filipendula ulmaria
Fraxinus excelsior
Galium aparine

Geranium robertianum
Geum urbanum
Glechoma hederacea
Glyceria fluitans
Heracleum sphondylium
Iris pseudacorus
Lonicera periclymenum
Mentha aquatica
Quercus robur
Ranunculus flammula
Rubus fruticosus agg.
Salix cinerea
Sambucus nigra
Sanicula europaea
Solanum dulcamara
Stachys sylvatica
Ulex europaeus
Ulmus glabra
Urtica dioica
Viola sp.

WN7 Bog woodland

Betula pubescens
Alnus glutinosa
Crataegus monogyna
Fraxinus excelsior
Prunus avium
Prunus spinosa
Rubus fruticosus agg.
Salix aurita
Salix cinerea
Sambucus nigra

WD1 (Mixed) broadleaved woodland

Acer pseudoplatanus
Aesculus hippocastanum

Anthriscus sylvestris
Arctium minor
Arum maculatum
Brachypodium sylvaticum
Cardamine flexuosa
Carex sylvatica
Cerastium fontanum
Circaea lutetiana
Cirsium vulgare
Conopodium majus
Corylus avellana
Corylus avellana
Crataegus monogyna
Dactylis glomerata
Epilobium sp.
Fagus sylvatica
Fraxinus excelsior
Galium aparine
Geranium robertianum
Geum urbanum
Hedera helix
Heracleum sphondylium
Heracleum sphondylium
Hyacinthoides non-
scriptus
Ilex aquifolium
Ligustrum sp.
Lonicera periclymenum
Lysimachia nemorum
Poa sp.
Polystichum setiferum
Potentilla sterilis
Primula vulgaris
Prunus spinosa
Quercus robur
Ranunculus auricomus
Ranunculus ficaria
Rubus fruticosus agg.

Rumex obtusifolius
Rumex sanguineus
Rumex sanguineus
Rumex sp.
Salix sp.
Sambucus nigra
Stachys sylvatica
Stellaria media
Taraxacum officinale
Tilia cordata
Ulmus glabra
Ulmus procera
Urtica dioica
Veronica montana
Veronica officinalis
Vicia sp.
Viola sp.

WD2 Mixed broadleaved/conifer woodland

Abies sp
Acer pseudoplatanus
Alnus glutinosa
Arum maculatum
Betula pubescens
Brachypodium sylvaticum
Circaea lutetiana
Corylus avellana
Crataegus monogyna
Dryopteris affinis
Dryopteris dilatata
Dryopteris filix-mas
Euonymus europaeus
Fagus sylvatica
Fraxinus excelsior
Geranium robertianum
Geum urbanum
Hedera helix

Hypericum humifusum

Ilex aquifolium

Lonicera periclymenum

Phragmites australis

Picea sitchensis

Pinus sylvestris

Prunus domestica

Prunus kanzan

Prunus spinosa

Pseudosuga menzeii

Quercus robur

Rosa sp.

Rubus fruticosus agg.

Salix caprea

Salix cinerea

Salix cinerea

Sambucus nigra

Sanicula europaea

Ulex europaeus

Urtica dioica

Veronica chamaedrys

Viburnum opulus

Viola sp.

WD3 (Mixed) conifer woodland

Picea sitchensis

WD4 Conifer plantation

Abies sp.

Larix sp.

Norway spruce

Picea abies

Picea sitchensis

Pinus contorta

Pinus sylvestris

Pseudosuga menziesii

WD5 Scattered trees and parkland

Aesculus hippocastanum

Fagus sylvatica

Fraxinus excelsior

Fraxinus excelsior pendula

WS1 Scrub

Acer pseudoplatanus

Achillea millefolium

Agrostis stolonifera

Alnus glutinosa

Andromeda polifolia

Angelica sylvestris

Anthoxanthum odoratum

Arum maculatum

Bellis perennis

Betula pubescens

Brachypodium sylvaticum

Briza media

Calluna vulgaris

Cardamine pratensis

Cares panicea

Carex pulicaris

Centaurea nigra

Cerastium fontanum

Cirsium dissectum

Cirsium vulgare

Corylus avellana

Crataegus monogyna

Cynosurus cristatus

Dactylis glomerata

Dactylorhiza fuchsii

Dactylorhiza maculata

Dactylorhiza majalis
Deschampsia cespitosa
Drosera rotundifolia
Dryopteris dilatata
Dryopteris filix-mas
Epilobium angustifolium
Epilobium palustre
Equisetum sp.
Erica cinerea
Erica tetralix
Eriophorum angustifolium
Eriophorum vaginatum
Euphrasia sp.
Fagus sylvatica
Filipendula ulmaria
Fraxinus excelsior
Galium aparine
Galium verum
Geranium molle
Geranium robertianum
Glechoma hederacea
Hedera helix
Heracleum sphondylium
Holcus lanatus
Hyacinthoides non-scriptus
Hypericum humifusum
Ilex aquifolium
Juncus acutiflorus
Larix
Leontodon autumnalis
Ligustrum sp.
Ligustrum vulgare
Listeria ovata
Lolium perenne
Lonicera periclymenum
Lotus corniculatus
Luzula multiflora
Luzula sylvatica

Malus sp.
Mentha arvensis
Molina caerulea
Narthecium ossifragum
Osmunda regalis
Pedicularis sylvatica
Phragmites australis
Plantago lanceolata
Poa sp.
Polygala vulgaris
Polystichum aculeatum
Populus sp.
Potentilla anserina
Potentilla erecta
Potentilla reptans
Primula vulgaris
Prunus avium
Prunus spinosa
Pteridium aquilinum
Quercus robur
Ranunculus ficaria
Ranunculus flammula
Ranunculus repens
Rhynchospora alba
Rosa sp
Rubus fruticosus agg.
Salix aurita
Salix caprea
Salix cinerea
Salix sp.
Sambucus nigra
Schoenus nigricans
Silene dioica
Sorbus aucuparia
Sphagnum capillifolium
Sphagnum cuspidatum
Sphagnum imbricatum
Sphagnum papillosum

Succisa pratensis
Taraxacum officinalis
Trichophorum caespitosum
Trifolium dubium
Trifolium pratense
Trifolium repens
Ulex europaeus
Ulmus glabra
Ulmus procera
Urtica dioica
Veronica chamaedrys
Viburnum opulus
Vicia cracca
Viola riviniana

WS2 Immature woodland

Acer pseudoplatanus
Agrostis stolonifera
Alnus glutinosa
Arrhenatherum elatius
Betula pubescens
Cirsium arvense
Cirsium palustre
Digitalis purpurea
Epilobium angustifolium
Epilobium sp.
Fagus sylvatica
Fraxinus excelsior
Holcus lanatus
Hypericum pulchrum
Juncus acutiflorus
Juncus effusus
Lathyrus pratensis
Luzula multiflora
Potamogeton sp.
Potentilla reptans

Quercus robur
Ranunculus flammula
Rubus fruticosus agg.
Rumex acetosella
Salix sp.
Senecio jacobaea
Silene dioica
Taraxacum officinalis
Trifolium pratense
Ulex europaeus

WS3 Ornamental/non-native shrub

Leylandii
Grisilina littoralis
Lonicera nitida
Ligustrum ovalifolium
Fagus sylvatica

WS5 Recently felled woodland

Anthoxanthum
odoratum
Arrhenatherum elatius
Athyrium filix-femina
Betula pubescens
Calluna vulgaris
Calystegia sepium
Carex flacca
Cirsium arvensis
Cirsium vulgare
Dactylis glomerata
Dryopteris dilatata
Epilobium angustifolium
Epilobium parviflorum
Festuca gigantea
Filipendula ulmaria
Fraxinus excelsior

Galium palustris
Geranium robertianum
Holcus lanatus
Hypericum repens
Hypericum tetrapterum
Juncus acutiflorus
Juncus effusus
Juncus inflexus
Lonicera periclymenum
Luzula multiflora
Lythrum salicaria
Medicago lupulina
Mentha sp.
Molinia caerulea
Nasturtium officinale
Odontites vernus
Oxalis acetosella
Phleum pratensis
Polygonum persicaria
Potentilla anserina
Potentilla erecta
Potentilla reptans
Prunella vulgaris
Ranunculus flammula
Ranunculus repens
Rubus fruticosus agg.
Salix cinerea
Senecio jacobaea
Sisymbrium officinale
Solanum dulcamara
Sonchus arvensis
Stachys sylvatica
Taraxacum officinale
Torilis japonica
Trifolium repens
Ulex europaeus
Urtica dioica
Veronica beccabunga

Vicia cracca

Vicia sepium

WL1 Hedgerows

Achillea millefolium

Agrostis capillaris

Agrostis stolonifera

Anthoxanthum odoratum

Arrhenatherum elatius

Asplenium adiantum-nigrum

Brachypodium sylvaticum

Carex divulsa

Centaurea nigra

Centaureum erythraea

Cerastium fontanum

Cirsium arvensis

Cirsium vulgare

Corylus avellana

Crataegus monogyna

Dactylis glomerata

Daucus carota

Epilobium hirsutum

Epilobium parviflorum

Equisetum arvense

Euonymus europaeus

Festuca rubra

Filipendula ulmaria

Fraxinus excelsior

Galium palustre

Galium verum

Geranium robertianum

Glechoma hederacea

Glyceria fluitans

Hedera helix

Helictotrichon pubescens

Heracleum sphondylium

Holcus lanatus
Hypericum androsaemum
Hypericum maculatum
Hypericum perforatum
Ilex aquifolium
Iris pseudacorus
Knautia arvensis
Lathyrus pratensis
Leontodon autumnalis
Ligustrum sp.
Lolium perenne
Lonicera periclymenum
Lotus corniculatus
Lythrum salicaria
Medicago lupulina
Mentha spicata
Myosotis discolor
Myosotis palustris
Phleum pratensis
Phyllitis scolopendrium
Plantago lanceolata
Plantago major
Polystichum setiferum
Potentilla anserina
Potentilla reptans
Primula vulgaris
Prunus domestica
Prunus spinosa
Pteridium aquilinum
Reynoutria japonica
Rosa arvensis
Rosa canina
Rosa sp.
Rubus fruticosus agg.
Rumex obtusifolius
Rumex sp.
Salix aurita
Salix caprea

Salix cinerea
Salix sp.
Salix viminalis
Salix x multinervis
Sambucus nigra
Schoenoplectus lacustris
Senecio jacobaea
Silene latifolia
Sonchus oleraceus
Sorbus aria
Sorbus aucuparia
Stellaria holostea
Symphytum sp.
Taraxacum officinale
Torilis japonica
Ulex europaeus
Ulmus glabra
Ulmus procera
Urtica dioica
Veronica chamaedrys
Veronica officinalis
Viburnum opulus
Vicia sepium
Viola sp.

WL2 Treelines

Acer pseudoplatanus
Aesculus
hippocastanum
Chamaecyparis sp.
Corylus avellana
Crataegus monogyna
Fagus sylvatica
Fraxinus excelsior
Hedera helix
Larix decidua
Lonicera periclymenum

Pinus sylvestris
Populus sp.
Rosa canina
Salix cinerea
Sorbus aucuparia
Ulmus sp.

ER2 Exposed calcareous rock

Briza media
Centaurea nigra
Cerastium fontanum
Cirsium vulgare
Crataegus monogyna
Dactylis glomerata
Festuca sp.
Fragaria vesca
Geranium dissectum
Geranium robertianum
Geum urbanum
Hedera helix
Hypericum sp.
Leucanthemum vulgare
Linum bienne
Lotus corniculatus
Medicago lupulina
Orchid
Orchid withered
Plantago lanceolata
Potentilla reptans
Potentilla sterilis
Prunus spinosa
Rosa canina
Rubus fruticosus agg.
Sanguisorba minor
Sedum acre
Senecio jacobaea
Stachys sylvatica

Trifolium dubium

Trifolium repens

Ulex europaeus

Vicia sativa

ED1 Exposed sand, gravel or till

Callitriche stagnalis

Epilobium palustre

Glyceria maxima

Glyceria notata

Nasturtium officinale

Phragmites australis

Ranunculus peltatus

Salix fragilis

Scrophularia nodosa

ED2 Spoil and bare ground

ED3 Recolonising bare ground

Agrostis stolonifera

Anagallis arvensis

Anthoxanthum odoratum

Arrhenatherum elatius

Calysteiga sepium

Centaurea nigra

Chenopodium alba

Cirsium arvense

Cirsium vulgare

Cotoneaster sp.

Dactylis glomerata

Daucus carota

Epilobium angustifolium

Epilobium hirsutum

Epilobium parviflorum

Equisetum arvense

Fraxinus excelsior
Heracleum sphondylium
Holcus lanatus
Hypericum sp.
Juncus acutiflorus
Juncus bufonius
Lathyrus pratensis
Matricaria matricaria
Medicago lupulina
Odonites vernus
Plantago lanceolata
Plantago major
Potentilla anserina
Ranunculus repens
Ribes rubrum
Rumex conglomeratus
Salix cinerea
Senecio jacobaea
Senecio vulgaris
Sonchus oleraceus
Taraxacum officinale
Trifolium pratensis
Trifolium repens
Tussilago farfara
Urtica dioica
Vicia sepium

ED6 Set-aside

Agrostis stolonifera
Cirsium sp.
Galium aparine
Lolium perenne
Rumex conglomeratus
Taraxacum officinale

BC1 Arable crops

Barley

Sweet corn

Sugar beet

Wheat

BC2 Horticultural land

Apples

Cabbage

Carrots

Onions

Potatoes

BL1A Stone walls

Bryophytes

Calystegia sepium

Cardamine flexuosa

Epilobium sp.

Hedera helix

Poa annua

BL1B Other stonework

No species recorded

BL2 Earth banks

Achillea millefolium

Anthriscus sylvestris

Arrhenatherum elatius

Brachypodium sylvaticum

Calystegia sepium

Centaurea nigra

Cirsium arvensis

Corylus avellana

Crataegus monogyna

Dactylis glomerata

Elymus repens

Equisetum arvense
Filipendula ulmaria
Fraxinus excelsior
Galium aparine
Glechoma hederacea
Hedera helix
Heracleum sphondylium
Lathyrus pratensis
Lonicera periclymenum
Phyllitis scolopendrium
Poa trivialis
Potentilla anserina
Potentilla reptans
Prunus spinosa
Pteridium aquilinum
Rosa canina
Rubus fruticosus agg.
Taraxacum officinalis
Urtica dioica
Vicia cracca
Vicia sepium

B13 Buildings and artificial surfaces

Asplenium
scolopendrium
Fraxinus excelsior
Rubus fruticosus agg.
Sambucus nigra

Appendix 7 Target Notes

Town land, grid-square and target note numbers of the habitat category Limestone/ marl lakes (**FL3**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Bellegrove	N5905	N3
Bellegrove	N5905	N4
Bellegrove	N5905	
Ballinlough	S5399	N1

Town land, grid-square and target note numbers of the habitat category Drainage ditches (**FW4**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Morett	N5404	N7
Cappakeel	N5604	N5
Garrymaddock	N5703	N5
Rahenahown North	N5802	N2
X	S3282	N?
Coolnacurragh	S3378	N4

Town-land, grid-square and target note numbers of the habitat category Dry calcareous and neutral grassland (**GS1**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Garrymaddock (A)	N5702	N13
Park or Dunamase (A)	N5298	N12
Park or Dunamase (A)	N5398	N2
Carrigeen (A)	N5500	N11
Carrigeen (A)	N5500	N12
Carrigeen (A)	N5500	N16
Coolacarrick (B)	S5296	
Grange Upper (A)	S5396	N2
Garryduff (B)	S5282	N3
Middlemount or Ballyvoghlaun (B)	S3278	N2

Town-land, grid-square and target note numbers of the habitat category Dry meadows and grassy verges (**GS2**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Killone		
Raheenahown North	N5902	N2
Bellegrove	N5806	
Rathcrea	N5801	N9

Raheen	N5300	N7
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Town-land, grid-square and target note numbers of the habitat category Dry-humid acid grassland (**GS3**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Morett	N5404	N9
Morett	N5404	
Cappakeel	N5604	N2
Garrymaddock	N5702	N7
Hophall	S5095	N10

Town-land, grid-square and target note numbers of the habitat category Wet grassland (**GS4**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Morett (A)	N5403	N3
Morett (A)	N5403	N3
Garrymaddock (A)	N5702	N9
Garrymaddock (A)	N5702	N14
Garrymaddock (A)	N5703	N4
Tonafarna (A)	N5802	N3
Raheenahown North (A)	N5902	N3
Rathcrea (A)	N5901	N4
Bellegrove (A)	N5905	N7
Bellegrove (A)	N5905	N6
Ballycarroll (A)	S5199	N2
Ballycarroll (A)	S5199	N7
Ballycarroll (A)	S5198	N5
Ballycarroll (A)	S5198	N6
Park or Dunamase (A)	S5198	N2
Park or Dunamase (A)	S5198	N7
Hophall (A)	S5095	N1
Hophall (A)	S5095	N2
Hophall (A)	S5095	N6
Garryduff (A)	S3182	NA
Curragh (B)	S3481	
Coolacurragh (B)	S3378	N2
Coolacurragh (B)	S3378	N3
Middlemount or Ballyvoghlaun (B)		N3
Rhandrick Upper (B)	S3181	N1
Shanvaghy (B)	S3380	N3

Town-land, grid-square and target note numbers of the habitat category Marsh (**GM1**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Park or Dunamase	S5198	N1
Aghnahily Bog	S5198	N3

Town-land, grid-square and target note numbers of the habitat category Wet heath (**HH3**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Ballyduff		
Morett	N5403	N6
Morett	N5404	N3
Morett	N5404	N6
Garrymaddock	N5702	N11

Town-land, grid-square and target note numbers of the habitat category cutover bog (**PB4**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Aghnahily Bog	S5198	N1
Aghnahily Bog	S5198	N3
Aghnahily Bog	S5198	N4
Aghnahily Bog	S5198	N5
Dysart	S5197	N1

Town-land, grid-square and target note numbers of the habitat category Rich fen and flush (**PF1**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Morett	N5406	N6

Town-land, grid-square and target note numbers of the habitat category Oak-ash-hazel woodland (**WN2**) that were surveyed for the County Laois Parish Habitat Survey during 2005

Town land	Grid square	Target note number
Morett	N5402	N2
Morett	N5403	N4
Morett	N5404	N3
Morett	N5403	N4
Killone	N5500	N2
Killmurray	N5501	N2
Killmurray	N5501	N4
Killmurray	N5501	N7
Killmurray	N5500	N2
Garrymaddock	N5702	N4

Garrymaddock	N5702	N6
Raheen		
Raheen		
Raheen		
Kilteale	S5498	N3
Park or Dunamase	S5198	N6
Park or Dunamase	S5298	N6
Park or Dunamase	S5298	N15
Park or Dunamase	S5298	N16
Park or Dunamase	S5297	N2
Carrageen	N5500	N15
Carrageen	N5400	N2
Ballythomas	N5500	N1
Ballymaddock	S5498	N2
Dysart	S5197	N7
Hophall	S5195	N5
Lamberton Demense	S4193	N1
Park Upper	S5498	N3
Grange Upper	S5396	N1
Chapelhill	S3381	N1

Town-land, grid-square and target note numbers of the habitat category Scrub (**WS1**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Morett	N5202	N4
Morett	N5205	N3
Morett	N5402	N1
Morett	N5403	N5
Morett	N5404	N5
Morett	N5404	N6
Morett	N5404	N5
Morett	N5404	N8
Cappakeel	N5604	N3
Cappakeel	N5604	N4
Killone	N5502	N2
Killone	N5502	N6
Killone	N5400	N1
Killone	N5402	N2
Kilmurray	N5501	N1
Kilmurray	N5501	N10
Kilmurray	N5601	N3
Kilmurray	N5602	N2
Garrymaddock	N5702	N3
Garrymaddock	N5702	N5
Garrymaddock	N5703	N1
Tonafarna	N5801	N1
Tonafarna	N5902	N6
Tonafarna	N5802	N4
Rathcrea	N5901	N2
Rathcrea	N5901	N3

Raheen	N5300	N7
Raheen	N5399	N5
Raheen	N5400	N1
Raheen	N5400	N3
Raheen	N5400	N11
Raheen	N5400	N2
Ballinlough	S5499	N1
Ballinlough	S5499	N2
Kilteale	S5498	N4
Kilteale	S5498	N5
Ballycarroll	S5398	N6
Ballycarroll	S5099	N1
Ballycarroll	S5299	N2
Ballycarroll	S5299	N8
Ballycarroll	S5298	N2
Ballycarroll	S5398	N5
Ballycarroll	S5397	N1
Ballycarroll	S5397	N2
Ballycarroll	S5397	N3
Park or Dunamase	S5198	N1
Park or Dunamase	S5298	N5
Park or Dunamase	S5298	N9
Park or Dunamase	S5298	N10
Park or Dunamase	S5298	N11
Park or Dunamase	S5298	N13
Aghnahily Bog	S5198	N1
Aghnahily Bog	S5198	N2
Aghnahily Bog	S5198	N6
Aghnahily Bog	S5198	N8
Carrigeen	N5500	N11
Carrigeen	N5600	N6
Ballythomas	N5600	N3
Ballythomas	N5400	N4
Ballymaddock	N5400	N2
Ballymaddock	N5400	N3
Ballymaddock	S5499	N1
Ballymaddock	S5499	N2
Ballymaddock	S5499	N4
Ballymaddock	S5499	N7
Ballymaddock	S5499	N5
Ballymaddock	S5598	N1
Ballymaddock	S5598	N5
Aghnahily	S5597	N5
Aghnahily	S5397	N8
Loughakeo	S5296	N5
Dysart	S5197	N5
Dysart	S5297	N1
Dysart	S5098	N1
Dysart	S5196	N1
Dysart	S5296	N3
Dysart	S5098	N1

Dysart	S5196	N2
Dysart	S5196	N6
Dysart	S5196	N7
Dysart	S5296	N1
Dysart	S5296	N3
Coolacarrick	S5296	N1
Coolacarrick	S5296	N2
Coolacarrick	S5296	N3
Coolacarrick	S5296	N4
Coolacarrick	S5295	N1
Coolacarrick	S5295	N2
Coolacarrick	S5295	N3
Hophall	S5195	N1
Hophall	S5195	N2
Hophall	S5095	N3
Hophall	S5095	N4
Powelstown	S5294	N3
Raheenanisky	S5395	N4
Lamberton Demense	S5194	N1
Lamberton Demense	S5094	N2
Lamberton Demense	S5093	N1
Lamberton Demense	S5093	N2
Park Upper	S5498	N1
Park Upper	S5598	N1
Park Lower	S5597	N1
Park Lower	S5597	N4
Grange Upper	S5397	N2
Garryduff	S3182	N4
Garryduff	S3182	N5
Garryduff	S3182	N10
Tinneragh		N2
Kilbreedy	S3080	N1
Kilbreedy	S3080	N2
Middlemount or Ballyvoghlaun	S3278	N1
Middlemount or Ballyvoghlaun		N3
Middlemount	S3079	N1
Oldglass	S3279	N1
Rhandrick Upper	S3181	N2
Shanvaghy	S3181	N1

Town-land, grid-square and target note numbers of the habitat category Hedgerows (**WL1**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Morett	N5403	N7
Morett	N5404	N5
Killone	N5602	N1
Killone	N5501	N4
Ballyduff (ed. Kilmurry)	N5601	N4

Raheenahown South	N5801	N1
Rathcrea	N5902	N1
Rathcrea	N5801	N3
Raheen	N5300	N1
Ballinlough	N5401	N1
Ballinlough	N5400	N1
Ballycarroll	S5398	N8
Ballycarroll	S5299	N1
Ballycarroll	S5398	N2
Ballycarroll	S5398	N8
Park or Dunamase	S5297	N3
Carrageen	N5500	N1
Ballythomas	N5500	N4
Ballythomas	N5500	N5
Ballythomas	N5600	N2
Kilteale	S5498	N6
Kylespiddoge		
Ballymaddock	S5499	N3
Ballymaddock	S5499	N6
Ballymaddock	S5599	N2
Ballymaddock	S5599	N4
Ballymaddock	S5599	N8
Ballymaddock	S5498	N3
Raheenanisky	S5395	N2
Raheenanisky	S5395	N3
Park Upper	S5597	N1
Park Upper	S5497	N3
Park Lower	S5597	N5
Grange Upper	S5496	N1
Grange Upper	S5496	N5
Coolbarry	S3183	N1
Coolbarry	S3183	N4
Coolbarry	S3183	N5
Coolbarry	S3283	N2
Coolbarry	S3283	N4
Garryduff	S3183	N2
Garryduff	S3182	N1
Garryduff	S3182	N2
Garryduff	S3182	N6
Garryduff	S3282	N6
Farranville	S3082	
Tinneragh	S	N3
Tinneragh	S3282	

Town-land, grid-square and target note numbers of the habitat category Exposed calcareous rock (**ER2**) that were surveyed for the County Laois Parish Habitat Survey during 2005.

Town land	Grid square	Target note number
Killone	N5502	N5
Kilmurry	N5501	
Ballycarroll	S5399	N1