



Cush Wind Farm  
Phase II

## Environmental Impact Assessment Report

# **Annex 5.5: Site Synopses of Designated Sites**

Cush Wind Limited

## SITE SYNOPSIS

**SITE NAME: SLIEVE BLOOM MOUNTAINS SPA**

**SITE CODE: 004160**

The Slieve Bloom Mountains SPA is situated on the border between Counties Offaly and Laois, and runs along a north-east/south-west aligned ridge for approximately 25 km. Much of the site is over 200 m in altitude, rising to a maximum height of 527 m at Arderin. The mountains are of Old Red Sandstone, flanked by Silurian rocks. Several important rivers rise within the site, including the Barrow, Delour and Silver.

The site has a near continuous ridge of mountain blanket bog, with wet and dry heaths also well represented. Species present in these habitats include Ling Heather (*Calluna vulgaris*), Crowberry (*Empetrum nigrum*), Bilberry (*Vaccinium myrtillus*), Cottongrasses (*Eriophorum* spp.), Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). Much of the slopes are afforested, and overall coniferous plantations account for c. 60% of the site. The forests include first and second rotation plantations, with both pre-thicket and post-thicket stands present. Substantial areas of clear-fell are also present at any one time. The principal tree species present are Sitka Spruce (*Picea sitchensis*) and Lodgepole Pine (*Pinus contorta*). The remainder of the site is mostly rough grassland that is used for hill farming. This varies in composition and includes some wet areas with rushes (*Juncus* spp.) and some areas subject to scrub encroachment. Some stands of deciduous woodland also occur, especially within the river valleys.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Hen Harrier.

This SPA is one of the strongholds for Hen Harrier in the country and, indeed, is the most easterly regular population. A survey in 2005 recorded eight pairs, whereas eleven pairs had been recorded in the 1998-2000 period. The numbers recorded in 2005 represent c. 3.7% of the all-Ireland total. The mix of forestry and open areas provides optimum habitat conditions for this rare bird, which is listed on Annex I of the E.U. Birds Directive. The early stages of new and second-rotation conifer plantations are the most frequently used nesting sites, though some pairs may still nest in tall heather of unplanted bogs and heath. Hen Harriers will forage up to c. 5 km from the nest site, utilising open bog and moorland, young conifer plantations and hill farmland that is not too rank. Birds will often forage in openings and gaps within forests. In Ireland, small birds and small mammals appear to be the most frequently taken prey.

The site is also a traditional site for a breeding pair of Peregrine. Several pairs of Merlin are known to breed within the site but further survey is required to determine the exact status of this small falcon. Red Grouse is found on many of the unplanted areas of bog and heath – this is a species that has declined in Ireland and is now Red-listed.

The Slieve Bloom Mountains SPA is of ornithological importance because it provides excellent nesting and foraging habitat for breeding Hen Harrier and is one of the top sites in the country for the species. The presence of three species, Hen Harrier, Merlin and Peregrine, which are listed on Annex I of the E.U. Birds Directive is of note. The Slieve Bloom Mountains is a Ramsar Convention site and a Biogenetic Reserve. Part of the Slieve Bloom Mountains SPA is a Statutory Nature Reserve.

## **SITE SYNOPSIS**

**SITE NAME: DOVEGROVE CALLOWS SPA**

**SITE CODE: 004137**

Dovegrove Callows is an area of callowland beside the Little Brosna River 2 km downstream from Birr, Co. Offaly and 5 km upstream from the start of the main area of River Little Brosna callows. The main habitat is wet grassland which floods.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Greenland White-fronted Goose.

The site is an important feeding area for the internationally important Little Brosna Greenland White-fronted Goose flock (527 individuals - 5 year mean peak for the period 1994/95 to 1998/99) and is used on an occasional basis when other feeding sites along the middle Shannon and Little Brosna callows are flooded. It is of particular importance as it can support the entire Little Brosna flock. For this reason the site is a key part of this flock's winter range and important for its protection.

Dovegrove Callows SPA is of major conservation significance as a feeding site for an internationally important flock of Greenland White-fronted Goose, a species that is listed on Annex I of the E.U. Birds Directive.

## **SITE SYNOPSIS**

**SITE NAME: ALL SAINTS BOG SPA**

**SITE CODE: 004103**

All Saints Bog is a lowland raised bog located about 5 km north-west of Birr in Co. Offaly. It is separated from the River Little Brosna callows by a fragmented esker ridge. The site is unique in that it contains the largest stand of birch (*Betula* sp.) woodland in the country growing on an active raised bog.

At the time this site was designated as a Special Protection Area (SPA) it was known to be utilised by part of an internationally important population of Greenland White-fronted Goose. Greenland White-fronted Goose is regarded as a special conservation interest for this SPA.

All Saints Bog was formerly used by part of the internationally important Greenland White-fronted Goose population based on the River Little Brosna. In recent years, however, there has been little or no use of All Saints by the geese following a general trend of less usage of raised bogs in favour of grassland sites. The last record of Greenland White-fronted Goose within the site was 75 individuals in 1993/94.

Merlin has been seen on the bog during the breeding season and may breed there. The peat dome and marginal areas provide good foraging habitat for this bird of prey species.

## **SITE SYNOPSIS**

**SITE NAME: RIVER SUCK CALLOWS SPA**

**SITE CODE: 004097**

The River Suck Callows SPA is a linear, sinuous site comprising a section of the River Suck from Castlecoote, Co. Roscommon to its confluence with the River Shannon close to Shannonbridge, a distance of approximately 70 km along the course of the river. The river forms part of the boundary between Counties Galway and Roscommon. The site includes the River Suck itself and the adjacent areas of seasonally-flooded semi-natural lowland wet callow grassland. The River Suck is the largest tributary of the River Shannon.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Greenland White-fronted Goose, Wigeon, Golden Plover and Lapwing. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The River Suck Callows SPA is an important site for wintering waterfowl. Of particular note is the nationally important Greenland White-fronted Goose flock (293 – five year mean peak for the period 1994/95 to 1998/99) which congregates mainly in the middle reaches of the river. Four other species occur in populations of national importance, i.e. Whooper Swan (164), Wigeon (3,232), Golden Plover (2,241) and Lapwing (3,906) – all figures are five year mean peaks from aerial surveys between 2001/02 and 2005/06. Other species present include Mute Swan (122), Teal (402), Mallard (70), Black-tailed Godwit (24), Curlew (22) and Black-headed Gull (86).

The River Suck Callows SPA is of considerable ornithological importance, in particular for the presence of nationally important populations of five species. Of note is that three of the species that occur regularly, i.e. Whooper Swan, Greenland White-fronted Goose and Golden Plover, are listed on Annex I of the E.U. Birds Directive. Part of the River Suck Callows SPA is a Wildfowl Sanctuary.

## **SITE SYNOPSIS**

**SITE NAME: MIDDLE SHANNON CALLOWS SPA**

**SITE CODE: 004096**

The Middle Shannon Callows SPA is a long and diverse site which extends for approximately 50 km from the town of Athlone to the town of Portumna; it lies within Counties Galway, Roscommon, Westmeath, Offaly and Tipperary. The site averages about 0.75 km in width though in places is up to 1.5 km wide. Water levels on the site are greatly influenced by the very small fall between Athlone and Portumna and by the weir at Meelick. The site has extensive areas of callow, or seasonally flooded, semi-natural, lowland wet grassland, along both sides of the river. The callows are mainly too soft for intensive farming but are used for hay or silage or for summer grazing. Other habitats of smaller area which occur alongside the river include lowland dry grassland, freshwater marshes, reedbeds and wet woodland. The diversity of semi-natural habitats present and the sheer size of the site attract an excellent diversity of bird species, including significant populations of several.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Wigeon, Corncrake, Golden Plover, Lapwing, Black-tailed Godwit and Black-Headed Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The Middle Shannon Callows qualifies as a site of international importance as it regularly supports in excess of 20,000 wintering waterbirds (23,656 – four year mean peak for four of the winters between 1995/96 and 1999/2000). The site also supports internationally important populations of Whooper Swan (305 – five year mean peak for the period 1995/96 to 1999/2000) and Black-tailed Godwit (485 – four year mean peak for four of the winters between 1995/96 and 1999/2000). Four further species of wintering waterbird occur in numbers of national importance, i.e. Wigeon (3,059), Golden Plover (4,133), Lapwing (13,240) and Black-headed Gull (1,209) – all figures are four year mean peaks for four of the winters between 1995/96 and 1999/2000.

The Shannon Callows is the largest site monitored as part of I-WeBS and many parts of it are inaccessible on the ground. Annual monitoring of the wintering waterbirds of the Shannon Callows is undertaken by aerial surveys in January/February with some areas also covered by ground counts. The importance of the site for some species may have been underestimated if count coverage missed the brief spring peaks for these species, e.g. peak counts of Lapwing (23,409) and Black-tailed Godwit (1,096) recorded in the baseline period (1995/96 to 1999/2000) have been considerably higher than the four year means. A wide range of other species occurs within the site, including Mute Swan (407), Teal (88), Tufted Duck (41), Dunlin

(335), Curlew (162) and Redshank (39). Small numbers of Greenland White-fronted Goose use the Shannon Callows (peak 55 in 1998/99) and these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows. The callow grasslands provide optimum feeding grounds for these various species of waterfowl, while many of the birds also roost or rest within the site.

The Shannon Callows is also an important site for breeding waders with the total population on the Shannon and Little Brosna Callows being one of three major concentrations in Ireland and Britain in 1987. Numbers of some species have declined since then but a survey of the Shannon Callows in 2002 recorded the following breeding waders - Lapwing (63 pairs), Redshank (116 pairs), Snipe (139 drumming birds) and Curlew (8 pairs). Black-tailed Godwit, a very rare breeding species in Ireland, nests or attempts to nest in small numbers each year within the site. A further scarce breeding species, Shoveler, also nests in small numbers each year (an estimated 12 pairs in 1987).

The Middle Shannon Callows SPA supports a breeding population of Corncrake (19 pairs - five year mean peak between 2003 and 2007, based on records of calling males).

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

Quail, a related, scarce species, is also known to breed within the callow grasslands.

A good variety of other bird species are attracted to the site. Birds of prey, including scarce species such as Merlin and wintering Hen Harrier have been recorded hunting over the callows. A range of passerine species associated with grassland and swamp vegetation breed, including Sedge Warbler, Grasshopper Warbler, Skylark and Reed Bunting. Kingfisher is also known to occur within the site. Whinchat, an uncommon breeding species, occurs in small numbers.

The Middle Shannon Callows SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of two species - Whooper Swan and Black-tailed Godwit. In addition, there are four species that have wintering populations of national importance. The site also supports a nationally important breeding population of Corncrake. Of particular note is that several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Corncrake and Golden Plover.

10.1.2012

## SITE SYNOPSIS

**SITE NAME: LOUGH DERG (SHANNON) SPA**

**SITE CODE: 004058**

Lough Derg lies within counties Tipperary, Galway and Clare and is the largest of the River Shannon Lakes, being some 40 km long. Its maximum breadth across the Scarriff Bay -Youghal Bay transect is 13 km but for most of its length it is less than 5 km wide. The lake is relatively shallow at the northern end being mostly 6 m in depth but in the middle region it has an axial trench and descends to over 25 m in places. The narrow southern end of the lake has the greatest average depth, with a maximum of 34 m. The greater part of the lake lies on Carboniferous limestone but the narrow southern section is underlain by Silurian strata. Most of the lower part of the lake is enclosed by hills on both sides, the Slieve Aughty Mountains to the west and the Arra Mountains to the east. The northern end is bordered by relatively flat, agricultural country. The lake shows the high hardness levels and alkaline pH to be expected from its mainly limestone catchment basin, and it has most recently been classified as a mesotrophic system. The lake has many small islands, especially on its western and northern sides. The shoreline is often fringed with swamp vegetation. Aquatic vegetation includes a range of charophyte species, including the Red Data Book species, *Chara tomentosa*. The shoreline is often fringed by swamp vegetation, comprised of such species as Common Reed (*Phragmites australis*), Great Fen-sedge (*Cladium mariscus*) and Bottle Sedge (*Carex rostrata*).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Tufted Duck, Goldeneye and Common Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Lough Derg is of importance for both breeding and wintering birds. The site supports a nationally important breeding colony of Common Tern (55 pairs recorded in 1995). Management of one of the islands used for nesting has increased the area of suitable habitat available and prevented nests being destroyed by fluctuating water levels. Large numbers of Black-headed Gull have traditionally bred on the many islands (2,176 pairs in 1985) but the recent status of this species is not known. The islands in the lake also support a nationally important Cormorant colony - 167 pairs were recorded in 1995; a partial survey of the lake in 2010 recorded 113 pairs. Lough Derg is also a noted breeding site for Great Crested Grebe (47 pairs in 1995) and Tufted Duck (169 pairs in May 1995).

In winter, the lake is important for a range of waterfowl species, including nationally important populations of Tufted Duck (776) and Goldeneye (157) – all figures are mean peaks for 4 of the 5 seasons between 1995/96 and 1999/2000. Other species which occur in winter include Mute Swan (164), Whooper Swan (18), Wigeon (249), Teal (301), Mallard (376), Little Grebe (14), Cormorant (90), Coot (173), Lapwing

(922), Curlew (66) and Black-headed Gull (732). Areas to north and south west of Lough Derg have been utilised in the past by small numbers of Greenland White-fronted Goose – 19 geese were recorded on callowland near Portumna in 1996/97. A relatively small flock based in the Lough Derg-Lough Graney area and possibly further afield have been recorded in the Scarriff Bay area – 20 geese recorded in 2004. Few sightings, at either location have been made in recent years.

Hen Harrier are also known to roost in the reedbeds on the margins of the site during the winter.

Lough Derg (Shannon) SPA is of high ornithological importance as it supports nationally important breeding populations of Cormorant and Common Tern. In winter, it has nationally important populations of Tufted Duck and Goldeneye, as well as a range of other species including Whooper Swan. The presence of Whooper Swan, Greenland White-fronted Goose, Hen Harrier and Common Tern is of particular note as these are listed on Annex I of the E.U. Birds Directive. Parts of Lough Derg (Shannon) SPA are a Wildfowl Sanctuary.

## SITE SYNOPSIS

**SITE NAME: MONGAN BOG SPA**

**SITE CODE: 004017**

Mongan Bog is a midland raised bog of medium size situated immediately east of the monastic site of Clonmacnoise, Co. Offaly, and 12 km south of Athlone. It is situated in a basin, surrounded on part of its perimeter by high ground on mineral soil.

The bog has a well-developed microtopography of hummocks, pools and lawns. Species such as Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), cottongrasses (*Eriophorum angustifolium*, *E. vaginatum*), Carnation Sedge (*Carex panicea*) and White Beak-sedge (*Rhynchospora alba*) are common. A good variety of bog mosses (*Sphagnum* spp.) and other bryophytes are found. Strips of cut-away bog, part of which is colonised by willows (*Salix* spp.) and birch (*Betula* sp.) scrub, occur along the margins of the peat dome.

At the time this site was identified for Special Protection Area (SPA) designation it was being utilised by Greenland White-fronted Goose from the internationally important River Suck population. Although Greenland White-fronted Goose does not currently utilise the site, this species is regarded as a special conservation interest for this SPA.

Mongan Bog is one of the raised bogs that was traditionally used as a feeding/roosting site by small numbers of the River Suck population of Greenland White-fronted Goose. These birds utilise the callows near the mouth of the Suck to Shannonbridge and as far as Clonmacnoise. The numbers of Greenland White-fronted Goose using this part of the range was always small (peak count of 26 in 1984/85) and geese have not been recorded using the site in recent years - the last record was 11 individuals in 1989/90.

The cutaway area of bog provides habitat for a range of bird species, including birds of prey, thrushes, warblers and finches. A study of the birds of Mongan Bog in 1985 recorded Mallard, Snipe, Skylark and Meadow Pipit breeding on the peat dome.

Mongan Bog is owned by An Taisce (the National Trust) and is a Ramsar Convention site, a Biogenetic Reserve and a Statutory Nature Reserve.

25.3.2014

**Site Name: Redwood Bog SAC**

**Site Code: 002353**

Redwood Bog is located 7 km south west of Banagher, mainly in the townland of Redwood, Co. Tipperary. The site comprises a raised bog that includes both areas of high bog and cutover bog. The site is bounded by the Middle Shannon Callows Special Protection Area (SPA) to the north and the River Little Brosna SPA to the north-east.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                                               |
|-----------------------------------------------------------------------------------------------|
| [7110] Raised Bog (Active)*<br>[7120] Degraded Raised Bog<br>[7150] Rhynchosporion Vegetation |
|-----------------------------------------------------------------------------------------------|

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

Redwood Bog has developed on the margins of the River Shannon and Little Brosna floodplains. The site can be divided into two sections, a cutover and drained western side and the eastern side that contains intact high bog. This eastern part of the site consists of two domes, which are separated to some extent by a stream that runs south to north. Hummocks and pools occur in the northern dome of the bog. The flushes in the site are found along the length of the stream.

Much of the high bog has vegetation typical of the Western Raised Bog type consisting of Heather (*Calluna vulgaris*), the moss *Racomitrium lanuginosum* and the liverwort *Pleurozia purpurea*. There are some hummocks of the bog moss *Sphagnum imbricatum*. A few of the pools in the north-west of the site support Great Sundew (*Drosera anglica*), *Sphagnum cuspidatum* and Bogbean (*Menyanthes trifoliata*). West of this section there is an area of high bog with tear pools. In this area *Sphagnum* cover

is high and there are small amounts of the bog mosses *S. imbricatum* and *S. magellanicum*. Hummocks of the moss *Leucobryum glaucum* are also found here. In the north-west of the site lichen cover is high with *Cladonia portentosa*, *C. uncialis* and *C. subcervicornis*. In the west of the site Deergrass, White Beak-sedge and the moss *Campylopus introflexus* are common in an area that was previously burnt. In the hollows throughout much of the high bog Bog Asphodel dominates. Both the northern and southern areas of flush contain Purple Moor-grass (*Molinia caerulea*), Downy Birch (*Betula pubescens*) and Heather. The southern section of flush is dryer, with Devil's-bit Scabious (*Succisa pratensis*) and Bracken (*Pteridium aquilinum*) found there. The central section of flush is the wettest and there is a *S. cuspidatum*-dominated pool surrounded by Purple Moor-grass and Hare's-tail Cottongrass (*Eriophorum vaginatum*). Patches of Carnation Sedge have been recorded along the western edge of this flush. The cutover to the north and west of the high bog is colonised by mixed deciduous woodland that contains large amounts of Gorse (*Ulex europaeus*).

Greenland White-fronted Goose, a species that is listed on Annex I of the E.U. Birds Directive and that frequents the adjacent SPAs, has been recorded on the site. However, numbers of birds using the site in recent years are not known.

There has been extensive peat-cutting in the western half of the site but active cutting is minimal and has only been recorded in the north and north-west of this area. Damaging activities associated with this land use include drainage throughout the site (both old and recent) and extensive burning of the high bog. There are many indications that this site has been burnt on a regular basis. These are all activities that have resulted in loss of habitat and damage to the hydrological status of the site, and that pose a continuing threat to its viability.

Redwood Bog is a site of considerable conservation significance as it comprises a raised bog, a rare habitat in the E.U. and one that is becoming increasingly scarce and under threat in Ireland. This site supports a good diversity of raised bog microhabitats, including hummock/hollow complexes, pools and flushes. This bog has developed on the margins of a floodplain and is one of the few remaining floodplain bogs in the country. Active raised bog is listed as a priority habitat on Annex I of the E.U. Habitats Directive. Priority status is given to habitats and species that are threatened throughout the E.U. Ireland has a high proportion of the total E.U. resource of this habitat type (over 60%) and so has a special responsibility for its conservation at an international level. Part of the site is already a State-owned nature reserve and supports Greenland White-fronted Goose, a bird species listed on Annex I of the E.U. Birds Directive.

**Site Name: Lough Derg, North-east Shore SAC**

**Site Code: 002241**

Lough Derg, the lowest order lake on the River Shannon, is one of the largest bodies of freshwater in Ireland. This SAC, however, only includes the northern shore of the lake from the mouth of the Cappagh River in the north-west to just below Black Lough at the north-eastern shore. The greater part of this site lies on Carboniferous limestone, although there is Old Red Sandstone on the southern shores of the eastern section.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                             |
|-----------------------------|
| [5130] Juniper Scrub        |
| [7210] <i>Cladium</i> Fens* |
| [7230] Alkaline Fens        |
| [8240] Limestone Pavement*  |
| [91E0] Alluvial Forests*    |
| [91J0] Yew Woodlands*       |

The geology of the lake shore is principally limestone and in places this protrudes at the surface in the form of boulders and rubble, and can be classified as limestone pavement. These are often bryophyte-rich surfaces or else support a calcareous grassland or heath flora, as well as some woody species, such as Yew (*Taxus baccata*) and Juniper (*Juniperus communis*). Examples occur at Cornalack, Kyleneilly and Portumna. The last two named areas were partly afforested but are proposed for restoration under a Coillte E.U. LIFE Programme. The geographical location of these examples of limestone pavement within the country is notable.

A second priority Annex I habitat, *Cladium* fen, occurs occasionally along the lake margins, mainly in association with alkaline fens, Common Reed (*Phragmites australis*) and other swamp vegetation. Typically, Great Fen-sedge (*Cladium mariscus*), which can be up to 2 m in height, forms dense stands. Associated species include Common Reed, Black Bog-rush (*Schoenus nigricans*), Water Horsetail (*Equisetum fluviatile*), Bottle Sedge (*Carex rostrata*) and occasional Slender Sedge (*Carex lasiocarpa*). This community generally merges with alkaline fen dominated by Black Bog-rush, with Purple Moor-grass (*Molinia caerulea*), Marsh Horsetail (*E. palustre*), Meadowsweet (*Filipendula ulmaria*) and scattered tussocks of Greater Tussock-sedge (*Carex paniculata*).

Yew woods in Ireland are mostly confined to the west of the country. However, a substantial area of Yew is located on limestone at Cornalack, where Yew forms a scrub woodland along the east shore of Lough Derg. Here, Yew is found in association with small amounts of Juniper, which forms protection against grazing for the young Yew. Other notable species present include Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), Small-leaved Cotoneaster (*Cotoneaster microphyllus*), along with occasional Ivy (*Hedera helix*), Wild Strawberry (*Fragaria vesca*), Bramble (*Rubus fruticosus* agg.) and Wood-sorrel (*Oxalis acetosella*). Elsewhere, small stands of Yew up to 5 m high occur with Spindle (*Euonymus europaeus*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*) and Ash (*Fraxinus excelsior*). Due to shading, and in places cattle trampling, the ground flora supports few herbs. However, the bryophyte layer is well developed with many moss covered rocks present.

Juniper occurs throughout this site in a range of habitats, associated with calcareous grasslands, heath and limestone outcrops. Some of the finest examples of Juniper formations in Ireland occur along the lake edge where upright, bushy Juniper shrubs up to 3 m tall are found. Typically, Juniper forms dense hedges with Ash, Hawthorn, Gorse, Hazel and Bramble, and occasional Yew. These tall Juniper shrubs are a unique feature in Ireland, where it is more typically found growing in prostrate form. In places along the lake shore Juniper forms a mosaic with Black Bog-rush and Great Fen-sedge fen. The best examples are seen at the north and north-east of the site. On drier ground above the flood level, Juniper occurs in association with species-rich calcareous grassland with Mouse-ear Hawkweed (*Hieracium pilosella*), Daisy (*Bellis perennis*), Lady's Bedstraw (*Galium verum*), Wild Thyme (*Thymus praecox*) and Blue Moor-grass (*Sesleria albicans*). An extensive area of this vegetation is seen north of Kilgarvan Quay. Many of the islands also support significant Juniper cover. This is particularly evident on Bounla Island. Juniper generally occurs as fringing vegetation around the islands, which typically have wooded centres. At Cornalack, along the eastern shore of Lough Derg, tall Juniper is found in association with loose limestone rubble with a significant cover of Yew.

Deciduous woodlands are also a notable feature of the site, dominated by oak (*Quercus* spp.), as at Bellevue, and Hazel/Ash at many of the examples along the north-eastern shore. Typically the ground layer includes Early-purple Orchid (*Orchis mascula*), violets (*Viola* spp.), Ivy, Lesser Celandine (*Ranunculus ficaria*), Bluebell (*Hyacinthoides non-scripta*), Wood Anemone (*Anemone nemorosa*), Wood-sorrel, Primrose (*Primula vulgaris*), Bramble, Ground Ivy (*Glechoma hederacea*), Pignut (*Conopodium majus*) and Honeysuckle (*Lonicera periclymenum*). Wet woodland is frequent along the lake shore, and in some areas this conforms well with the E.U. Annex I habitat, alluvial woodland. At Kyleneamelly wood, where some planting of commercial forestry has occurred, there are extensive areas of alluvial woodland which are subject to flooding. These woods are dominated by willows (*Salix* spp.) and Alder (*Alnus glutinosa*), with Downy Birch (*Betula pubescens*) and Ash also present. The ground flora of the undisturbed alluvial sites is often dominated by Yellow Iris (*Iris pseudacorus*), with a range of other species commonly present, including Bogbean (*Menyanthes trifoliata*), Marsh-marigold (*Caltha palustris*),

Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), horsetails (*Equisetum* spp.), Wild Angelica (*Angelica sylvestris*), Greater Tussock-sedge and Remote Sedge (*Carex remota*). Further examples of alluvial woodland occur at Portumna. Beech (*Fagus sylvatica*) and Scots Pine (*Pinus sylvestris*) are often present at the lake edge along areas which were once parts of estates. Some areas of coniferous forestry have been included within the site.

The only known site in the country for the Red Data Book plant Irish Fleabane (*Inula salicina*) occurs along the lake shore. This plant is legally protected under the Flora (Protection) Order, 1999. Other Red Data Book species present within this site are Marsh Pea (*Lathyrus palustris*) and Ivy Broomrape (*Orobanche hederæ*). The Red Data Book stonewort *Chara tomentosa* has its stronghold in Lough Derg.

The lake is rated as nationally important for waterfowl. The entire lake, including all of the islands, is a designated SPA (Special Protection Area). Counts from 1995/96 carried out at seven locations on the lake indicate that the lake holds nationally important numbers for Mute Swan, Cormorant, Mallard, Teal, Tufted Duck and Goldeneye. The lake also supports a number of Greenland White-fronted Goose, a bird species listed on Annex I of the E.U. Birds Directive. There is a Wildlife Sanctuary at the north western edge of the lake.

Lough Derg is of conservation interest also for its fish and freshwater invertebrates. Lampreys, listed under Annex II of the E.U. Habitats Directive, are known to occur and the lake contains an apparently self-sustaining landlocked population of Sea Lamprey (*Petromyzon marinus*). A landlocked population, where the fish are feeding and not completing a seaward migration, is unique in an Irish context, though there are several such populations in the U.S. and one is known from Loch Lomond in Scotland. Brook Lamprey (*Lampetra planeri*) is known to be common in the lower Shannon catchment where all three lamprey species breed.

The endangered fish species Pollan (*Coregonus autumnalis pollan*) is recorded from Lough Derg, one of only three sites in Ireland and in western Europe. The Pollan is a landlocked species of Coregonid or 'White Fish', thought to have colonised Irish waters after the last Ice Age. Its nearest relative, the Arctic Cisco, is found as far away as Alaska, Northern Canada and Siberia. Although it is anadromous throughout most of its northern range, the Irish population are all non-migratory and purely freshwater. Lough Derg is also a well known fishing lake with a good Trout (*Salmo trutta*) fishery. Atlantic Salmon (*Salmo salar*) also use the lake as a spawning ground. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the E.U. Habitats Directive.

Otter and Badger have been recorded within the site. Both of these species are listed in the Irish Red Data Book and are legally protected by the Wildlife Act, 1976.

Land use within the site is mainly of a recreational nature with many boat hire companies, holiday home schemes and angling clubs located at the lake edge.

Recreational disturbance may pose a threat to the wintering wildfowl populations, though tourism is scaled down during the winter. The water body is surrounded mainly by improved pastoral farmland to the south and east, with areas of bog to the south-west and west. Coniferous plantations are present along the west and north-west shore and small areas of these are included within the site. If these areas are felled no further planting should take place as afforestation damages the wetland habitats between the plantation and lake edge.

The main threats to the quality of the site are water polluting activities resulting from intensification of agricultural activities around the lake shore, uncontrolled discharge of sewage, which is causing eutrophication of the lake, and housing and boating development which has resulted in the destruction of lakeshore habitats. There is also significant fishing and shooting pressure on and around the lake. Forestry can result in the loss of some areas of wetland habitat. The spread of Zebra Mussel (*Dreissena polymorpha*) in Lough Derg also poses a threat the ecology of the lake.

This is a site of significant ecological interest, with six habitats listed on Annex I of the E.U. Habitats Directive. Four of these are priority habitats - *Cladium* fen, alluvial woodland, limestone pavement and Yew woodland. Other annexed habitats present include alkaline fen and Juniper scrub formations on heath and calcareous grasslands. In addition, the lake itself is an SPA that supports important numbers of wintering wildfowl, Greenland White-fronted Goose, Common Tern and Cormorant, a number of which are listed under Annex I of the E.U. Birds Directive.

**Site Name: Island Fen SAC**

**Site Code: 002236**

Island Fen SAC is located in a small valley in the foothills of the Slieve Bloom Mountains, south west of Clareen village in Co. Offaly. The geology of the area is Lower Carboniferous Limestone and the principle soil is grey brown podzolic with brown earths, gleys, basin peat and limestone gravels and sands. The site overlies an old lake bed lined with shelly marl. Soil cover is generally thin, with some rocks protruding locally. This wetland site is relatively small, but is quite species-diverse.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                              |
|----------------------------------------------|
| [5130] Juniper Scrub<br>[7230] Alkaline Fens |
|----------------------------------------------|

Excellent specimens of upright Juniper (*Juniperus communis*) occur at this site in association with species-rich calcareous grassland, heath and some exposed limestone rocks. The ground flora of the Juniper scrub is a calcareous grassland/heath mosaic, in which is found Heather (*Calluna vulgaris*), Purple Moor-grass (*Molinia caerulea*), Devil's-bit Scabious (*Succisa pratensis*), Carlina Thistle (*Carlina vulgaris*), Tormentil (*Potentilla erecta*), Slender St. John's-wort (*Hypericum pulchrum*), Carnation Sedge (*Carex panicea*), Lady's Bedstraw (*Galium verum*) and many orchid species. Yew (*Taxus baccata*) and Whitebeam (*Sorbus aria*) are also present.

The alkaline fen vegetation occurs on the reed margins to the west and in the north of the site. Typically, Black Bog-rush (*Schoenus nigricans*) dominates, with many moss species (including *Calliergonella cuspidatum* and *Ctenidium molluscum*) and a rich vascular plant flora including Purple Moor-grass, Carnation Sedge, Bottle Sedge (*Carex rostrata*), Glaucous Sedge (*C. flacca*), Devil's-bit Scabious, Tormentil and Meadow Thistle (*Cirsium dissectum*). Species such as Grass-of-parnassus (*Parnassia palustris*) and Common Butterwort (*Pinguicula vulgaris*) occur less frequently.

The fen grades into reedswamp and wet marsh/swamp habitat. A small area of coppiced Hazel (*Corylus avellana*) and Ash (*Fraxinus excelsior*) dominated woodland occurs to the north-east of the site. Also present are occasional Downy Birch (*Betula pubescens*), oaks (*Quercus* spp.) and Yew. The shrub layer here is almost non-existent, and the ground flora appears relatively poor with occasional Sheep's Sorrel (*Oxalis acetosella*), Primrose (*Primula vulgaris*), Wood Avens (*Geum urbanum*) and Herb-Robert (*Geranium robertianum*).

Jays are present within the woodland. Other birds regularly seen at the site include Kestrel, Raven and Herons.

The Irish Hare occurs here. This is a sub-species and is listed under the Bern Convention. It is also legally protected in Ireland under the Wildlife Act, 1976, and is listed as internationally important in the Irish Red Data Book. The Common Frog also occurs in abundance within the site. This is also a Red Data Book species listed as internationally important, and is legally protected under the Wildlife Act, 1976. It is listed in Annex V of the E.U. Habitats Directive.

Cattle grazing is the dominant land use at the site. Recent damage from drainage activities to the north of the site has reduced the overall scientific interest somewhat, but the remainder of the site does not appear to be under threat from similar activities.

This site is important for the occurrence of excellent examples of upright Juniper scrub formations, on a species rich calcareous grassland/heath, and alkaline fen, both habitats listed on Annex 1 of the E.U. Habitats Directive.

**Site Name: Arragh More (Derrybreen) Bog SAC**

**Site Code: 002207**

Arragh More (Derrybreen) Bog SAC occurs within the larger raised bog system that is designated as Arragh More Bog NHA (000640). It is situated 9.5 km north-east of Borrisokane in County Tipperary. It lies within the townlands of Arraghmore and Derrybreen.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                            |
|----------------------------|
| [7120] Degraded Raised Bog |
|----------------------------|

Degraded Raised Bog corresponds to those areas of high bog where the hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration to Active Raised Bog (ARB) within 30 years.

Arragh More (Derrybreen) Bog SAC comprises 90.58 ha of raised bog (57.9 ha of high bog and 32.68 ha cutover) which occupies the north-western section of Arragh More Bog NHA (000640). Arragh More Bog NHA developed originally in at least 3 basins, aligned in a north–south direction, which were initially separated by low ridges of relatively impermeable glacial till overlying limestone bedrock. As these bogs grew they eventually coalesced over these low ridges to form one bog with a very complex shape. The SAC occupies the western parts of the 2 most northerly basins. The surface of the high bog in the central basin is lower than that to the east and south and receives significant amounts of runoff from them resulting in the development of an internal flush system. The SAC is bordered by forest plantations on cutaway to the north, raised bog and cutover to the east and south and agricultural grassland to the east.

The SAC was mostly afforested in the 1970s, with just over 12 ha (13%) of high bog in the north-east and south of the site being left unplanted. The remaining areas of intact high bog have been affected by drying out but still have vegetation typical of a Midland Raised Bog, consisting of Heather (*Calluna vulgaris*), Cottongrasses (*Eriophorum vaginatum* and *E. angustifolium*), Bog Asphodel (*Narthecium ossifragum*) and White Beak-sedge (*Rhynchospora alba*). Typical characteristic species for Midland Raised Bogs such as Bog Rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*) are present. In addition to the more common hummock-forming bog mosses (*Sphagnum capillifolium*, *S. papillosum* and *S. subnitens*) which are widespread, some hummocks of the relatively scarce *S. austinii* and *S. fuscum* have been recorded. In the small remnants of the flush system at the extreme east of the site, Bog-myrtle

(*Myrica gale*), Bilberry (*Vaccinium myrtillus*), Purple Moor-grass (*Molinia caerulea*), Soft Rush (*Juncus effusus*) and the bog moss *Sphagnum recurvum* become more common. The most strongly flushed areas, which partly lie within the site, are dominated by wet woodland with Birch (*Betula pubescens*), Alder (*Alnus glutinosa*), Willow (*Salix* spp.) and Rowan (*Sorbus aucuparia*) with a ground layer of grasses and the bog species listed above. This area grades eastwards into a Common Reed (*Phragmites australis*) swamp which is within the NHA but outside the SAC.

The remainder of the site was covered by conifer plantations, which were mostly felled by 2013. All the intensive drainage systems associated with the plantation were blocked by 2014 as part of an EU-funded Coillte LIFE Project *Demonstrating Best Practice in Raised Bog Restoration in Ireland* so as to raise the water table and restore Active Raised Bog (ARB) on the site. Prior to the felling, there were relatively few bog species present in the plantations except along fire breaks. With the clear-felling of conifers and blocking of drains, the high bog is re-wetting, water-levels in some areas now remain high throughout the year and limited areas of wet flats and hollows are developing. As a consequence, raised bog vegetation has returned, with Heather and Hare's tail Cotton-grass (*Eriophorum vaginatum*) dominating, while Common Cotton-grass (*Eriophorum angustifolium*), Bog Asphodel and White Beak-sedge are locally common and small amounts of Bilberry and Cross-leaved Heath (*Erica tetralix*) are widespread. Bog mosses that are regenerating include *Sphagnum papillosum*, *S. capillifolium*, *S. palustre* and *S. subnitens*, with *S. recurvum* in drains. In the more flushed areas considerable amounts of Purple Moor-grass and Soft Rush are also present.

Two areas in the eastern section of the SAC are showing significant indications of recovery and represent Degraded Raised Bog (DRB) habitat. These areas are on two major water flow paths across the bog and now have standing surface water in the hollows and pools for most of the year and considerable areas of regenerating *Sphagnum* species. The larger and most easterly of these flow paths comes from areas of mineral soil and cutover bog to the east of the SAC. The areas fed by this flow path are likely to support vegetation characteristic of flushes and soaks and develop into areas of both Active Raised Bog (ARB) and possibly Bog Woodland. The other main flow path derives from the high bog and cutover to the south and will supply mainly bog water and therefore support a more standard ARB habitat. It is considered both areas will support some areas of ARB within 10–20 years and that these will continue to develop and spread over the following decades. It is expected that some of the area will develop further into Bog Woodland as the birch woodland develops on the more flushed areas of the site. There is a small area of Bog Woodland to the east but just outside the site. It contains the characteristic species for that habitat. In addition, it is estimated that restoration works carried out on this site may benefit the conservation of 3 ha of ARB in the adjacent area of Arragh More Bog NHA.

Arragh More (Derrybreen) Bog SAC is a site of considerable conservation significance, comprising as it does, a raised bog, a rare habitat in the E.U. and one that is becoming increasingly scarce and under threat in Ireland. Ireland has a high proportion of the total E.U. resource of Atlantic Raised Bog (over 50%) and so has a

special responsibility for its conservation at an international level. The large area of Degraded Raised Bog habitat present is of significant conservation value as it considered to be progressing to Active Raised Bog, which is a priority habitat in the E.U. and one that is scarce and under threat in Ireland and severely endangered in the EU. Some of the DRB in the more flushed parts of the bog may eventually develop into the very rare priority EU-Annexed habitat Bog Woodland (91D0), which would add further to the scientific interest of the site. The site is, and will continue to be, actively managed for conservation as part of the Coillte EU LIFE Project.



### Site Name: River Barrow and River Nore SAC

### Site Code: 002162

This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlinton, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dinin, Erkina, Owveg, Munster, Arrigle and King's Rivers on the Nore.

Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones. The Nore, for a large part of its course, traverses limestone plains and then Old Red Sandstone for a short stretch below Thomastown. Before joining the Barrow it runs over intrusive rocks poor in silica. The upper reaches of the Barrow also run through limestone. The middle reaches and many of the eastern tributaries, sourced in the Blackstairs Mountains, run through Leinster Granite. The southern end, like the Nore runs over intrusive rocks poor in silica. Waterford Harbour is a deep valley excavated by glacial floodwaters when the sea level was lower than today. The coast shelves quite rapidly along much of the shore.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [1170] Reefs
- [1310] *Salicornia* Mud
- [1330] Atlantic Salt Meadows
- [1410] Mediterranean Salt Meadows
- [3260] Floating River Vegetation
- [4030] Dry Heath
- [6430] Hydrophilous Tall Herb Communities
- [7220] Petrifying Springs\*

[91A0] Old Oak Woodlands

[91E0] Alluvial Forests\*

[1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)

[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)

[1092] White-clawed Crayfish (*Austropotamobius pallipes*)

[1095] Sea Lamprey (*Petromyzon marinus*)

[1096] Brook Lamprey (*Lampetra planeri*)

[1099] River Lamprey (*Lampetra fluviatilis*)

[1103] Twaite Shad (*Alosa fallax*)

[1106] Atlantic Salmon (*Salmo salar*)

[1355] Otter (*Lutra lutra*)

[1421] Killarney Fern (*Trichomanes speciosum*)

Good examples of alluvial forest (a priority habitat on Annex I of the E.U. Habitats Directive) are seen at Rathsnagadan, Murphy's of the River, in Abbeyleix estate and along other shorter stretches of both the tidal and freshwater elements of the site. Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*).

A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Palustriella commutata* and *Eucladium verticillatum*, have been recorded.

The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeyleix; at Kyleadohir, on the Delour, Forest Wood House, Kylecorragh and Brownstown Woods on the Nore; and at Cloghristic Wood, Drummond Wood and Borris Demesne on the Barrow, though other patches occur throughout the site. Abbeyleix Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the 16<sup>th</sup> century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved

Bellflower and the moss *Leucodon sciuroides*. The rare Myxomycete fungus, *Licea minima* has been recorded from woodland at Abbeyleix.

Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by oak (*Quercus* spp.), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*), with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the trees are regenerating through a cover of Bramble (*Rubus fruticosus* agg.), Foxglove (*Digitalis purpurea*), Great Wood-rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*).

On the steeply sloping banks of the River Nore, about 5 km west of New Ross, in Co. Kilkenny, Kylecorragh Woods form a prominent feature in the landscape. This is an excellent example of relatively undisturbed, relict oak woodland with a very good tree canopy. The wood is quite damp and there is a rich and varied ground flora. At Brownstown, a small, mature oak dominated woodland occurs on a steep slope. There is younger woodland to the north and east of it. Regeneration throughout is evident. The understorey is similar to the woods at Brownsford. The ground flora of this woodland is developed on acidic, brown earth type soil and comprises a thick carpet of Bilberry (*Vaccinium myrtillus*), Heather (*Calluna vulgaris*), Hard Fern (*Blechnum spicant*), Common Cow-wheat (*Melampyrum pratense*) and Bracken (*Pteridium aquilinum*).

Borris Demesne contains a very good example of a semi-natural broadleaved woodland in very good condition. There is quite a high degree of natural regeneration of oak and Ash through the woodland. At the northern end of the estate oak species predominate. Drummond Wood, also on the Barrow, consists of three blocks of deciduous woods situated on steep slopes above the river. The deciduous trees are mostly oak species. The woods have a well-established understorey of Holly, and the herb layer is varied, with Bramble abundant. The whitebeam *Sorbus devoniensis* has also been recorded here.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*). Indian Balsam (*Impatiens glandulifera*), an introduced and invasive species, is abundant in places.

Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include water-starworts (*Callitriche* spp.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum* spp.), the pondweed *Potamogeton x nitens*, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and crowfoots (*Ranunculus* spp.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996).

Dry heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The dry heath vegetation along the slopes of the river bank consists of Bracken and Gorse (*Ulex europaeus*) with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove, Common Sorrel (*Rumex acetosa*) and Creeping Bent (*Agrostis stolonifera*). On the steep slopes above New Ross the Red Data Book species Greater Broomrape (*Orobanche rapum-genistae*) has been recorded. Where rocky outcrops are shown on the maps Bilberry and Great Wood-rush are present. At Ballyhack a small area of dry heath is interspersed with patches of lowland dry grassland. These support a number of clover species, including the legally protected Clustered Clover (*Trifolium glomeratum*) - a species known from only one other site in Ireland. This grassland community is especially well developed on the west side of the mud-capped walls by the road. On the east of the cliffs a group of rock-dwelling species occur, i.e. English Stonecrop (*Sedum anglicum*), Sheep's-bit (*Jasione montana*) and Wild Madger (*Rubia peregrina*). These rocks also support good lichen and moss assemblages with *Ramalina subfarinacea* and *Hedwigia ciliata*.

Dry heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Close to the Blackstairs Mountains, in the foothills associated with the Aughnabriskey, Aughavaud and Mountain Rivers there are small patches of wet heath dominated by Purple Moor-grass (*Molinia caerulea*) with Heather, Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*) and Bell Heather (*Erica cinerea*).

Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites australis*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickloney, Ballinlaw Ferry and Rochestown on the west bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*) are found. The very rare and also legally protected Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*).

Glassworts (*Salicornia* spp.) and other annuals colonising mud and sand are found in the creeks of the saltmarshes and at the seaward edges of them. The habitat also occurs in small amounts on some stretches of the shore free of stones.

The estuary and the other E.U. Habitats Directive Annex I habitats within it form a large component of the site. Extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. Good quality intertidal sand and mudflats have developed on a linear shelf on the western side of Waterford Harbour, extending for over 6 km from north to south between Passage East and Creadaun Head, and in places are over 1 km wide. The sediments are mostly firm sands, though grade into muddy sands towards the upper shore. They have a typical macro-invertebrate fauna, characterised by polychaetes and bivalves. Common species include *Arenicola marina*, *Nephtys hombergii*, *Scoloplos armiger*, *Lanice conchilega* and *Cerastoderma edule*. An extensive area of honey-comb worm biogenic reef occurs adjacent to Duncannon, Co. Wexford on the eastern shore of the estuary. It is formed by the polychaete worm *Sabellaria alveolata*. This intertidal *Sabellaria alveolata* reef is formed as a sheet of interlocking tubes over a considerable area of exposed bedrock. This polychaete species constructs tubes, composed of aggregated sand grains, in tightly packed masses with a distinctive honeycomb-like appearance. These can be up to 25cm proud of the substrate and form hummocks, sheets or more massive formations. A range of species are reported from these reefs including: *Enteromorpha* sp.; *Ulva* sp.; *Fucus vesiculosus*; *Fucus serratus*; *Polysiphonia* sp.; *Chondrus crispus*; *Palmaria palmate*; *Coralinus officinalis*; *Nemertea* sp.; *Actinia equine*; *Patella vulgate*; *Littorina littorea*; *Littorina obtusata* and *Mytilus edulis*.

The western shore of the harbour is generally stony and backed by low cliffs of glacial drift. At Woodstown there is a sandy beach, now much influenced by recreation pressure and erosion. Behind it a lagoonal marsh has been impounded which runs westwards from Gaultiere Lodge along the course of a slow stream. An extensive reedbed occurs here. At the edges is a tall fen dominated by sedges (*Carex* spp.), Meadowsweet, willowherbs (*Epilobium* spp.) and rushes (*Juncus* spp.). Wet woodland also occurs.

The dunes which fringe the strand at Duncannon are dominated by Marram (*Ammophila arenaria*) towards the sea. Other species present include Wild Clary/Sage (*Salvia verbenaca*), a rare Red Data Book species. The rocks around Duncannon ford have a rich flora of seaweeds typical of a moderately exposed shore and the cliffs themselves support a number of coastal species on ledges, including Thrift, Rock Samphire (*Crithmum maritimum*) and Buck's-horn Plantain (*Plantago coronopus*).

Other habitats which occur throughout the site include wet grassland, marsh, reedswamp, improved grassland, arable land, quarries, coniferous plantations, deciduous woodland, scrub and ponds.

Seventeen Red Data Book plant species have been recorded within the site, most in the recent past. These are Killarney Fern (*Trichomanes speciosum*), Divided Sedge, Clustered Clover, Basil Thyme (*Acinos arvensis*), Red Hemp-nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh-grass, Meadow Barley, Opposite-leaved Pondweed (*Groenlandia densa*), Meadow Saffron/Autumn Crocus (*Colchicum autumnale*), Wild Clary/Sage, Nettle-leaved Bellflower, Saw-wort (*Serratula tinctoria*), Bird Cherry

(*Prunus padus*), Blue Fleabane (*Erigeron acer*), Fly Orchid (*Ophrys insectifera*), Ivy Broomrape (*Orobanche hederæ*) and Greater Broomrape. Of these, the first nine are protected under the Flora (Protection) Order, 2015. Divided Sedge was thought to be extinct but has been found in a few locations in the site since 1990. In addition plants which do not have a very wide distribution in the country are found in the site including Thin-spiked Wood-sedge, Field Garlic (*Allium oleraceum*) and Summer Snowflake. Six rare lichens, indicators of ancient woodland, are found including *Lobaria laetevirens* and *L. pulmonaria*. The rare moss *Leucodon sciuroides* also occurs.

The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (*Margaritifera margaritifera*), White-clawed Crayfish, Salmon, Twaite Shad, three lamprey species – Sea Lamprey, Brook Lamprey and River Lamprey, the tiny whorl snail *Vertigo moulinsiana* and Otter. This is one of only a handful of spawning grounds in the country for Twaite Shad. The freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning.

The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Common Frog. The rare Red Data Book fish species Smelt (*Osmerus eperlanus*) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater mussel species, *Anodonta anatina* and *A. cygnea*.

Three rare invertebrates have been recorded in alluvial woodland at Murphy's of the River. These are: *Neoascia obliqua* (Order Diptera: Syrphidae), *Tetanocera freyi* (Order Diptera: Sciomyzidae) and *Dictya umbrarum* (Order Diptera: Sciomyzidae). The rare invertebrate, *Mitostoma chrysomelas* (Order Arachnida), occurs in the old oak woodland at Abbeyleix and only two other sites in the country. Two flies (Order Diptera) *Chrysogaster virescens* and *Hybomitra muhlfeldi* also occur at this woodland.

The site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois, and also along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country. The old oak woodland at Abbeyleix has a typical bird fauna including Jay, Long-eared Owl and Raven. The reedbed at Woodstown supports populations of typical waterbirds including Mallard, Snipe, Sedge Warbler and Water Rail.

Land use at the site consists mainly of agricultural activities – mostly intensive in nature and principally grazing and silage production. Slurry is spread over much of

the area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of the salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within the site. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. There is net fishing in the estuary and a mussel bed also. Other recreational activities such as boating, golfing and walking, particularly along the Barrow towpath, are also popular. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown. There are active and disused sand and gravel pits throughout the site. Several industrial developments, which discharge into the river, border the site. New Ross is an important shipping port. Shipping to and from Waterford and Belview ports also passes through the estuary.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, over-grazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel (*Prunus laurocerasus*) and Rhododendron (*Rhododendron ponticum*). The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red Data Book plant species including three rare plants in the salt meadows add further interest to this site.

**Site Name: Lisduff Fen SAC**

**Site Code: 002147**

Lisduff Fen is situated about 4 km south-east of Birr in Co. Offaly, near Kilcolman crossroads.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                      |
|------------------------------------------------------|
| [7220] Petrifying Springs*                           |
| [7230] Alkaline Fens                                 |
| [1013] Geyer's Whorl Snail ( <i>Vertigo geyeri</i> ) |

The site comprises a wet calcareous fen, with typical fen and marsh species such as Black Bog-rush (*Schoenus nigricans*), Common Reed (*Phragmites australis*), Few-flowered Spike-rush (*Eleocharis quinqueflora*) and Grass-of-parnassus (*Parnassia palustris*). Included as part of the fen system are areas of wet grassland, some birch (*Betula* sp.) and willow (*Salix* sp.) scrub, and some vegetation more akin to that of raised bog, with species such as Heather (*Calluna vulgaris*) and Bog-myrtle (*Myrica gale*). There is a small stand of Scots Pine (*Pinus sylvestris*) at the eastern margin of the site. On the western side, the fen merges into wet grassland which has been improved to varying degrees for pasture.

A fast flowing stream which flows into the fen at the south end is heavily encrusted with calcium carbonate or 'tufa' deposits. Bryophytes recorded include *Fontinalis antipyretica*, *Amblystegium riparium*, *Aneura pinguis* and *Rhynchostegium riparioides*. Higher plants in the stream include Branched Bur-reed (*Sparganium erectum*), Water-cress (*Nasturtium officinale*) and Water Mint (*Mentha aquatica*). While key diagnostic bryophytes of the Cratoneurion community were not recorded, this vegetation is considered to correspond to the E.U. Habitats Directive Annex I habitat 'petrifying springs with tufa formation'.

Of major conservation and scientific significance is the presence on the site of a population of the rare snail *Vertigo geyeri*. This species occurs in northern and central Europe, its distribution extending from Ireland in the west to the European Russian states in the east. It is probably a European endemic and is considered to be a glacial relict. Its distribution is very scattered and fragmented, and most populations are fairly isolated. In particular, the Irish populations are very isolated from the main European range of the species. Throughout its entire range it is classified as being endangered, vulnerable or rare.

*Vertigo geyeri* is a species associated with calcareous fens, where it occurs at the base of small sedges (*Carex* spp.) and Black Bog-rush, where these are growing at the water edge. The sites are often in open, tufa-forming calcareous spring flushes with a stable water table and of mesotrophic type.

A survey in 1995 confirmed the presence of the species at Lisduff. The habitat was considered to be excellent for the species and there were no apparent threats. However, a small site such as Lisduff could easily be damaged or destroyed by drainage activities.

Overall, this is an important site owing to the presence of alkaline fen and petrifying spring, habitats listed on Annex I of the E.U. Habitats Directive. It is also of high conservation importance for the occurrence of *Vertigo geyeri*, a rare mollusc listed on Annex II of this Directive.

**Site Name: Liskeenán Fen SAC**

**Site Code: 001683**

Liskeenán Fen is a small turlough-like fen situated about 10 km north-west of Borrisokane and just 1 km from the village of Aglish, in north Co. Tipperary. The site floods in winter via a swallow hole in the far north-west corner. The eastern part of the site consists of a small, dry, inactive raised bog on which mixed woodland is developing, as well as an extensive and unusual area of flooded cut-away.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                             |
|-----------------------------|
| [7210] <i>Cladium</i> Fens* |
|-----------------------------|

The main habitat at this site consists of calcareous fen. This is dominated by Black Bog-rush (*Schoenus nigricans*) and covers a wide area. Common Butterwort (*Pinguicula vulgaris*) also occurs here. Common Reed (*Phragmites australis*) and Great Fen-sedge (*Cladium mariscus*) are present in addition, and in places become dominant. The *Cladium* fen in the wettest parts of the centre also includes Blunt-flowered Rush (*Juncus subnodulosus*), as well as Long-stalked Yellow-sedge (*Carex lepidocarpa*).

A secondary habitat which is also of interest is the regenerating flooded cut-away bog east of the fen. Wide flat expanses of bog mosses (particularly *Sphagnum cuspidatum*) and numerous large actively growing bog moss hummocks (with species such as *S. capillifolium*, *S. papillosum* and others) grow over an area of about 5 ha, surrounded by old turf banks. This acidic community contrasts sharply to the calcareous fen adjacent to it.

Also included in the site is a small field of species-rich dry grassland, which contains the rare species Green-winged Orchid (*Orchis morio*) and the decreasing species Cowslip (*Primula veris*). There is also a wet grassland area within the site, and a mixed woodland is developing on the bog in the east. All of these habitats add diversity to the site.

In summer the fen is grazed, but few cattle venture into the wettest centre. Any alteration of the swallow-hole could threaten the water levels at the site.

Liskeenán Fen is of conservation importance as it contains a good example of a *Cladium* fen, a habitat listed with priority status on the E.U. Habitats Directive. It is one of the only such fens remaining in the area, most of the rest having been drained

in the past. The presence of a range of other habitat types in the site, along with some rare and scarce vascular plants, adds further to the value of the area.

**Site Name: Ridge Road, SW of Rapemills SAC**

**Site Code: 000919**

This site consists of steep-sided, twin esker ridges formed from glacial gravels. It is situated under 2 km south-west of the village of Rapemills in Co. Offaly. The more northerly ridge supports a road running towards the Little Brosna River. Hollows are present with deeper soils which are more nutrient-enriched, while the banks are slightly leached.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                          |
|------------------------------------------|
| [6210] Orchid-rich Calcareous Grassland* |
|------------------------------------------|

The vegetation is primarily unimproved grassland in the western section and a mixture of dry, unimproved esker grassland and wet grassland in the more easterly section. An important feature of this site is the presence of orchid-rich calcareous grassland. This vegetation supports a rich diversity of plant species and a variety of unusual plant communities. Along with several uncommon or localised plant species, this site supports a large population of Green-winged Orchid (*Orchis morio*), a Red Data Book species.

Noteworthy is the presence of herb communities containing Bloody Crane's-bill (*Geranium sanguineum*), Burnet Rose (*Rosa pimpinellifolia*) and Zigzag Clover (*Trifolium medium*), in association with woody species such as Yew (*Taxus baccata*) and Buckthorn (*Rhamnus catharticus*). Other herb species present are Upright Brome (*Bromus erectus*), Dog's Mercury (*Mercurialis perennis*), Stone Bramble (*Rubus saxatilis*) and Wild Madder (*Rubia peregrina*), while shrubs such as Spindle (*Euonymus europaeus*), Crab Apple (*Malus sylvestris*) and Dwarf Cherry (*Prunus cerasus*) are also present. Some banks have mature Hazel (*Corylus avellana*) woods. The herb species mentioned are unusual in a midland, inland context.

Species-rich calcareous grasslands are sensitive to agricultural improvement, for example fertiliser application and re-seeding. At Ridge Road, the steep esker banks have restricted the agricultural use of this site and the lands are, in general, unfertilized. The site is used for cattle grazing. Overall, grazing is a positive influence on calcareous grasslands. However, it is important that the correct level of grazing is achieved, i.e. enough to halt the spread of shrub species and to maintain the balance between scrub and species-rich grassland. Too much grazing would result in damage to the vegetation cover.

Although small, this site is of ecological value as a good example of species-rich calcareous grassland, rich in orchids. This habitat type is increasingly rare as a result of agricultural intensification, and is given priority status on Annex I of the E.U. Habitats Directive. The vegetation at Ridge Road is diverse and features a variety of unusual plant communities, as well as a large population of Green-winged Orchid. Eskers are becoming increasingly rare in Ireland - many have been destroyed as a result of gravel extraction.



### Site Name: Clonaslee Eskers and Derry Bog SAC

### Site Code: 000859

Located approximately 5 km west of the town of Clonaslee, and largely in Co. Laois, this site consists of a series of morainic hills and esker ridges which are the legacy of the last period of glaciation. To the north-west, the Derry Hills are two isolated hills situated in a bog, which forms part of the site. The main esker ridge runs along the southern part of the site.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                      |
|------------------------------------------------------|
| [7220] Petrifying Springs*                           |
| [7230] Alkaline Fens                                 |
| [1013] Geyer's Whorl Snail ( <i>Vertigo geyeri</i> ) |

An unusual assemblage of plants is found on the western part of the esker and on the Derry Hills. Calcicole species such as Mountain Everlasting (*Antennaria dioica*), Yellow-wort (*Blackstonia perfoliata*), Autumn Gentian (*Gentianella amarella*) and Carlina Thistle (*Carlina vulgaris*) grow with species more typical of acid heaths. These include Tormentil (*Potentilla erecta*), Fragrant Orchid (*Gymnadenia conopsea*), Goldenrod (*Solidago virgaurea*) and Heather (*Calluna vulgaris*). Wood Vetch (*Vicia sylvatica*) and Bitter-vetch (*Lathyrus montanus*) occur in limestone heath on the Derry Hills. These species are very restricted in their distribution in Ireland. Blue Moor-grass (*Sesleria albicans*) has also been recorded, a rare occurrence of this species in a location east of the River Shannon.

Small disused gravel pits occur within the site, which are vegetated by species such as Field Madder (*Sherardia arvensis*), Common Whitlowgrass (*Erophila verna*) and Thyme-leaved Sandwort (*Arenaria serpyllifolia*).

Both the southern esker and the Derry Hills support patches of woodland. In some areas, an open canopy of Sessile Oak (*Quercus petraea*) and Silver Birch (*Betula pendula*) occurs. Beneath this, the ground flora includes Wood Anemone (*Anemone nemorosa*), Wood Sage (*Teucrium scorodonia*) and Bilberry (*Vaccinium myrtillus*). In the south-western part of the site, woodland dominated by Hazel (*Corylus avellana*) is more common. Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*) and Sycamore (*Acer pseudoplatanus*) also occur, with Sessile Oak and Downy Birch.

To the east of the road water percolates down through the glacial material of the esker ridge and emerges in a series of small, calcium-rich springs which flow into cut-away bog to the north. This has resulted in the creation of a species-rich alkaline fen. Black Bog-rush (*Schoenus nigricans*) dominates the vegetation here. Also present are Pale Butterwort (*Pinguicula lusitanica*), Meadow Thistle (*Cirsium dissectum*), Round-leaved Sundew (*Drosera rotundifolia*) and the distinctive Fly Orchid (*Ophrys insectifera*). The latter species is confined to parts of the west and midlands of Ireland, where it occurs only occasionally.

At several points along the base of the esker ridge the calcium-rich springs emerge and then splay outwards and downslope creating zones of petrifying spring habitat. They include positive indicator species as well as weak paludal tufa formation. Among the tussocky vegetation (dominated by Black Bog-rush) species include Long-stalked Yellow-sedge (*Carex lepidocarpa*), Common Butterwort (*Pinguicula vulgaris*) and mosses such as *Palustriella commutata*, *Palustriella falcata*, *Scorpidium cossonii*, *Campylium stellatum* and *Bryum pseudotriquetrum*. The tufa zones occupy lower ground within the overall fen area.

Derry Bog, which is a cut-away raised bog, lies to the north-west of the site. This supports a typical range of bog mosses (*Sphagnum* spp.) and flowering plants, such as Heather and Bog Asphodel (*Narthecium ossifragum*).

The rare whorl snail *Vertigo geyeri* was recorded from the fen area at this site in 1998. This species is a glacial relic with a disjunct European population, which is considered vulnerable due to loss of habitat, particularly through drainage.

Two plant species protected under the Flora (Protection) Order, 2015, occur within the site. Wood Bitter-vetch (*Vicia orobus*) occurs in quantity among oak/birch scrub on the Derry Hills. This species has declined due to land reclamation and has only been seen at one other location since 1970. Basil Thyme (*Acinos arvensis*) occurs in a disused gravel pit and has been seen at only three other sites since 1970. This species favours open gravel and has declined due to the agricultural use of herbicides. Blue Fleabane (*Erigeron acer*) had been recorded with Basil Thyme at this site. This species is rare and threatened in Ireland, and is listed in the Red Data Book as a species confined mostly to open gravel habitats in central and south-eastern Ireland.

A significant land use practice within the site is the extraction of gravel. One quarry west of the road is currently being worked. This activity leads directly to destruction of the esker and irreparable damage to the site. Some of the esker grasslands (mostly at the western end) have been improved either for pasture or for arable farming.

This site is of conservation importance for the presence of alkaline fen vegetation, with petrifying springs, and is considered one of the best sites in the south-east region for this habitat. Also of interest is the extremely unusual assemblage of plants associated with the esker ridges, which includes three rare plants, two of which are legally protected in Ireland. Of further conservation importance is the presence of the rare snail *Vertigo geyeri*.



**Site Name: Kilcarren-Firville Bog SAC**

**Site Code: 000647**

Kilcarren-Firville Bog is situated approximately 2 km east of the village of Carrigahorig in north Co. Tipperary. It is a lowland raised bog complex which extends about 4.5 km from east to west and is bisected by a road. It contains a large area of uncut high bog.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                                               |
|-----------------------------------------------------------------------------------------------|
| [7110] Raised Bog (Active)*<br>[7120] Degraded Raised Bog<br>[7150] Rhynchosporion Vegetation |
|-----------------------------------------------------------------------------------------------|

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

The site contains substantial areas of active raised bog, which are largely confined to the wetter, more central areas of high bog. The vegetation here is typical of midland raised bogs, with Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Common Cottongrass (*Eriophorum angustifolium*), Deergrass, Carnation Sedge, Bog Asphodel and bog mosses all being common. The active bog, and to a lesser extent the degraded areas, support occasional pool areas and quaking lawns dominated by Rhynchosporion vegetation. Typical species of the habitat are the bog moss *S. cuspidatum*, Bogbean (*Menyanthes trifoliata*), White Beak-sedge, Common Cottongrass, and Great Sundew (*Drosera anglica*). The cover of *Sphagnum cuspidatum* typically exceeds 50% in these areas.

The degraded raised bog tends to occur along the high bog margins where the peat has been subject to drying out. Degraded surfaces are usually dominated by a rather species-poor flora in which Heather, Bog Asphodel, Cottongrasses (*E. vaginatum* and

*E. angustifolium*), Deergrass and Cross-leaved Heath are typically frequent. *Sphagnum* cover is low and permanent pool areas are rare. Localised flushes support Downy Birch (*Betula pubescens*) and Scots Pine (*Pinus sylvestris*).

The uncut high bog is surrounded by a large cutover area which is still subject to varying degrees of peat-cutting. The cutover bog is frequently dominated by Purple Moor-grass (*Molinia caerulea*), and Bog-myrtle (*Myrica gale*) is locally abundant. Birch woodland with some Holly (*Ilex aquifolium*) and willow (*Salix* spp.) is widespread in most cutover areas, and Scots Pine is common in a few locations. These scrub areas provide habitat for a population of the nationally rare shrub Alder Buckthorn (*Frangula alnus*). Some of the cutover has been reclaimed for grassland.

Peripheral areas at Kilcarren-Firville Bog have been extensively damaged by peat cutting, drainage and land reclamation. The structure of the high bog has been detrimentally affected by drainage effects over a long period of time through a lowering of the water table. This can lead to the decline in abundance of plant species of wet bog conditions. Without restoration works, further drying out of the bog surface is likely to occur and further peat cutting remains a threat.

Kilcarren-Firville Bog is of high conservation importance as it contains good examples of the priority Annex I habitat active raised bog and the non-priority habitats degraded raised bog and depressions on peat substrates (Rhynchosporion). The quality of these habitats is good, although the overall system has been detrimentally affected by drainage effects over a long period of time.

**Site Name: Ballyduff/Clonfinane Bog SAC**

**Site Code: 000641**

Clonfinane and Ballyduff bogs are found in Co. Tipperary, and lie some 6 km to the south-west of Birr (Co. Offaly). The two bogs are separated by a small area of cutover bog, with Clonfinane on the west and Ballyduff on the east.

Clonfinane is a large, flat lowland raised bog largely bordered by drains and, except in the immediate vicinity of the drains, is wet and quaking. The bog consists of a southern and a northern lobe, with the southern being wetter and containing a well developed pool and hummock complex. The drier northern lobe has recently been drained and exploited for moss peat and is not included within the SAC. At the western end of Clonfinane Bog there is a small Scots Pine (*Pinus sylvestris*) woodland.

Ballyduff is a smaller, domed bog, with a ridge at the north-eastern end. The south-east margin is wettest, with quaking areas and flushes. Towards the centre of the bog there is a well developed pool and hummock system. A moss peat development has recently affected an area in the south part of Ballyduff.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------|
| [7110] Raised Bog (Active)*<br>[7120] Degraded Raised Bog<br>[7150] Rhynchosporion Vegetation<br>[91D0] Bog Woodland* |
|-----------------------------------------------------------------------------------------------------------------------|

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

Active raised bog is found in the wet central areas of both Ballyduff and Clonfinane bogs. Here there are well developed pool and hummock systems, with excellent bog

moss growth patterns. A range of vascular plants typical of midland raised bogs is found, including Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Bog-rosemary (*Andromeda polifolia*), Common Cottongrass (*Eriophorum angustifolium*) and White Beak-sedge. It is in the wet, active areas that Rhynchosporion vegetation is best represented. The extensive pool complexes (mostly linear in shape) contain the bog mosses *S. cuspidatum*, *S. auriculatum* and *S. papillosum*, along with White Beak-sedge, Great Sundew (*D. anglica*), Bogbean (*Menyanthes trifoliata*) and cottongrasses. *Sphagnum*-rich lawns also occur in these wet central areas and some of this corresponds to Rhynchosporion vegetation. The rare Brown Beak-sedge has been recorded at this site.

Both Ballyduff and Clonfinane bogs contain substantial areas of degraded raised bog and these areas are typically located along the edges of the high bog. In these areas the peat is driest and the vegetation tends to be dominated by Heather, Hare's-tail Cottongrass (*E. vaginatum*), Deergrass, the mosses *Sphagnum capillifolium* and *Hypnum cupressiforme* and the lichen *Cladonia portentosa*. Along the northern margins of Clonfinane bog this dry edge vegetation is characterised by an abundance of Common Reed (*Phragmites australis*) which suggests that the peat is locally shallow and subject to groundwater infiltration. In the wetter areas of degraded raised bog higher up on the high bog surface Bog Asphodel is particularly prominent, forming extensive flats in places. The south-east margin of Ballyduff is wet, with quaking areas and flushes marked by Purple Moor-grass (*Molinia caerulea*), Soft Rush (*Juncus effusus*) and Bulbous Rush (*J. bulbosus*).

An area of bog woodland occurs on the high bog at Clonfinane where it is associated with an area of rather shallow peat which overlies a mineral ridge. This woodland is dominated by Scots Pine (up to 10 m tall), with an understorey of Downy Birch (*Betula pubescens*). The ground layer is dominated by Heather and Scots Pine seedlings and saplings, along with species such as Crowberry (*Empetrum nigrum*), Cranberry (*Vaccinium oxycoccos*) and Ivy (*Hedera helix*). This area of woodland is at the drier end of the bog woodland spectrum, pool areas are absent and *Sphagnum* species other than *S. capillifolium* are rare.

The nationally rare shrub Alder Buckthorn (*Frangula alnus*) grows in tall birch woodland along the northern margins of Clonfinane.

There are a number of areas on the high bog surface of both bogs which have been drained in the past decade and this drainage has led to the degradation of the habitat locally. At Clonfinane these drains have been subsequently dammed with peat dams, an action which should arrest the decline in habitat quality. On both bog areas there are relatively high levels of pine regeneration on the surface, which suggests that the surface is drying out. Burning poses a significant threat to the bog surface and especially to the area of bog woodland due to its rather dry nature.

Ballyduff/Clonfinane bog is of high conservation value as it contains good examples of the Annex I habitats active raised bog, degraded raised bog, depressions on peat substrates (Rhynchosporion) and bog woodland. Both active raised bog and bog

woodland are listed on the Annex with priority status. Although parts of the site have been drained in the past there has been significant restoration of the high bog areas in the Clonfinane portion of the site.

**Site Name: Sharavogue Bog SAC**

**Site Code: 000585**

Sharavogue Bog (SAC) comprises 2 raised bog sites. The main area, Sharavogue Bog, which covers 223.43 ha is located about 8 km south of Birr, Co. Offaly, in the Little Brosna Valley. Cangort (Kilfrancis) Bog is a small outlier 4 km further south, and covers 13.12 ha. The Sharavogue section is situated between the River Little Brosna and an elevated ridge of Carboniferous limestone. It includes 137 ha of uncut raised bog and 86.43 ha of surrounding areas which include cutover bog, wet grassland, semi-natural woodland, and an area of wet lagg vegetation in the cutover along the eastern margin of the bog. The eastern edge is bounded by a disused railway embankment, and the western edge by the river. The bog is underlain by low permeability limestone and limestone till. Cangort (Kilfrancis) Bog comprises a subsection of Cangort Bog NHA (site code 000890), which has been restored as part of an EU LIFE project. The site consists of 2.53 ha of high bog and 10.59 ha of cutover, most of which was afforested in the 1970s. It is bounded by open high bog to the west, cutover with scrub to the north and south-west and by agricultural fields to the east and south. In addition to the conifer plantations on the high bog and cutover, deciduous woodland is present on cutover bog at the southern and eastern margins of the site. A tributary of the Little Brosna River to the east and south drains the site. The underlying geology is carboniferous limestone.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                                               |
|-----------------------------------------------------------------------------------------------|
| [7110] Raised Bog (Active)*<br>[7120] Degraded Raised Bog<br>[7150] Rhynchosporion Vegetation |
|-----------------------------------------------------------------------------------------------|

Active Raised Bog (ARB) comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded Raised Bog (DRB) corresponds to those areas of high bog where the hydrology has been adversely affected by peat-cutting, drainage and other land use activities, but which are capable of regeneration to ARB within 30 years. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species: Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

Sharavogue Bog is one of the few remaining raised bogs in Ireland situated on a floodplain. It has a well-developed dome of uncut peat which is long and relatively narrow. ARB covers 25.8 ha and mainly occurs in central and southern part of the dome, but lacks any extensive areas of quaking hummock/hollow/pools as a result of long-term drying out caused by peat cutting and marginal and river drainage. In addition, drains were inserted across about 60% of the high bog dome in the early 1990s. The bog surface was also been damaged by burning in the past and there are invasive native and non-native tree and shrub species present on the bog dome. Fertilisation of the agricultural fields to the east may be impacting on small parts of the lagg zone. All the drains on the high bog and many of the drains on the south eastern area of the cutover were dammed in the late 1990s as part of an E.U. Cohesion project to restore peat forming conditions on the high bog and cutover. That project was successful in halting and reversing, to some extent, the decline of ARB on the site. All the typical vascular plant species for the ARB habitat such as Heather (*Calluna vulgaris*), Cottongrasses (*Eriophorum angustifolium* and *E. vaginatum*), Deergrass, Bog Asphodel and White Beak-sedge are common and the Midland raised bog indicator species Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*) are present. The dominant micro-topography consists of *Sphagnum* hummocks and hollows. Pools are scarce and *Sphagnum cuspidatum* filled lawn-like depressions are very occasional. The overall *Sphagnum* cover ranges from 51 to 75%. The wettest areas are characterised by the abundance of Cottongrasses (*Eriophorum vaginatum* and *E. angustifolium*). Hummocks consist of *Sphagnum capillifolium*, *S. papillosum*, *S. magellanicum*, *S. tenellum*, *S. subnitens* and very occasionally *S. fuscum* and *S. austinii*. Hollows may contain *S. cuspidatum* and/or *S. tenellum*.

Whilst the surface is generally quite dry, there are some small pools and lawns where Rhynchosporion vegetation is well represented. Here the dominant species are *Sphagnum cuspidatum*, White Beak-sedge, Common Cottongrass (*Eriophorum angustifolium*) and Great Sundew (*Drosera anglica*). The rare Brown Beak-sedge also occurs. Rhynchosporion vegetation is also well-developed in extensive wet cut-away areas which occur along the eastern margins of the high bog. Other plant species of the raised bog which are less common are Bog-rosemary, Cranberry and Round-leaved Sundew (*Drosera rotundifolia*).

Within the cutover zone along the eastern margins of the site there is upwelling of base-rich water and these areas now support carr woodland and calcareous fen vegetation. Areas of wet lagg vegetation such as this are very rare in the country and the lagg system at Sharavogue is one of the best-developed in the country. The rare semi-aquatic plant species Slender Cottongrass (*Eriophorum gracile*) has been recently discovered growing in fen vegetation at this site. This species is legally protected under the Flora (Protection) Order, 2015. The nationally rare shrub Alder Buckthorn (*Frangula alnus*), a Red Data Book species, occurs in dry bog woodland on cut-away. On the western side the site, the vegetation grades from high bog, through fringing woodland, to alluvial wet grassland by the Little Brosna River.

Cangort Bog NHA is a remnant of a larger area of bog much of which has now been cutover and reclaimed for forestry and agriculture, with only 58 ha of high bog remaining. No Active Raised Bog habitat is present but, based on hydrological modelling an area of 6.28 ha is considered to be Degraded Raised Bog habitat. In the SAC section of Cangort Bog NHA — Cangort (Kilfrancis) — the high bog supported an open canopy of small Sitka Spruce (*Picea sitchensis*), which was spreading further onto the open high bog. The afforested areas on the high bog and cutover were clear-felled and the associated drains blocked in 2014. With the clear-felling of all the conifers some vegetation is regenerating with, in the drier areas, Heather, Bramble (*Rubus* spp.), Willow-herb (*Epilobium* spp.), Common Gorse (*Ulex europaeus*), Bracken (*Pteridium aquilinum*), Birch seedlings (*Betula pubescens*) and the moss *Hypnum jutlandicum*. On some of the wettest areas of the cutover, Heather dominates the ground flora with Purple Moor-grass (*Molinia caerulea*), Bracken, Bramble, the lichen *Cladonia portentosa* along with the mosses *Hypnum jutlandicum*, *Sphagnum subnitens* and *Sphagnum palustre*. Saplings of Birch and Willow (*Salix* spp.) are regenerating in these areas and are developing into wet native birch woodland. Adjacent to the southern stream a more mesotrophic wet woodland is developing with Birch dominating accompanied by Ash (*Fraxinus excelsior*), Alder (*Alnus glutinosa*) and Oak (*Quercus* sp.).

A draft restoration plan has been developed for Sharavogue Bog to help meet the national conservation objectives for raised bogs. One of the key objectives of that plan is to restore the area of ARB at Sharavogue to 40.9 ha. The area of ARB was reported as 25.8 ha during the latest monitoring survey (2011) and it has been concluded that there is 14.7 ha of Degraded Raised Bog (DRB) on the high bog which can be restored to ARB with the appropriate restoration measures. There is also long-term potential for 0.4 ha of bog peat-forming habitats (BPFH) to develop if restoration measures are undertaken on cutover areas. Detailed objectives have yet to be developed for the Cangort (Kilfrancis) subsite of the SAC but will be produced as part of the restoration plan for the Cangort Bog NHA. Current information suggests that up to 1.4 ha of cutaway will rewet sufficiently to support peat forming habitats. The drain blocking on the high bog and cutover will support the eventual restoration of some of the Degraded Raised Bog habitat in the NHA to Active Raised Bog. Cangort (Kilfrancis) Bog is being actively managed for conservation by the landowner, Coillte, as part of an EU LIFE Project and most of the required restoration measures have already been carried out. An After LIFE management plan is being developed by Coillte for the future conservation management of that part of the SAC and its conservation management should support the redevelopment of Active Raised Bog habitat within Cangort Bog NHA.

Sharavogue Bog SAC is a site of considerable conservation significance comprising two subsites, Sharavogue Bog and Cangort (Kilfrancis) Bog, which contain raised bog, a rare habitat in the E.U. and one that is becoming increasingly scarce and under threat in Ireland. It contains good examples, covering significant areas, of the E.U. Habitats Directive Annex I habitats Active Raised Bog, Degraded Raised Bog (which is being restored to the priority Annex 1 habitat Active Raised Bog) and Depressions

on peat substrates (Rhynchosporion). The site already supports a good diversity of raised bog microhabitats, including some hummock/hollow complexes, and rewetted cutover bog. Ireland has a high proportion of the total E.U. resource of Atlantic raised bog (over 50%) and so has a special responsibility for its conservation at an international level. Along the eastern margins of Sharavogue there is upwelling base-rich ground water in the lagg zone which supports carr woodland and calcareous fen vegetation. Areas of wet lagg vegetation such as this are very rare in Western Europe and the lagg system at Sharavogue is one of the best developed in the country. The protected semi-aquatic plant species Slender Cottongrass (*Eriophorum gracile*) is growing in fen vegetation in the lagg zone, while the nationally rare shrub Alder Buckthorn occurs in dry bog woodland on cutaway. Although the Cangort (Kilfrancis) Bog subsite of the SAC is small (13 ha) and currently lacks annex habitats, it has been restored and has the potential to support the retention of DRB in Cangort Bog NHA.

**Site Name: Moyclare Bog SAC**

**Site Code: 000581**

Moyclare Bog is a small raised bog situated 4 km west of Ferbane in Co. Offaly. Its mean height above sea level is 54 m. On the western edge of the bog, a low peat face with no perimeter drain lies adjacent to wet peaty pasture, which has a spring-line at its junction with mineral soil. The water from this spring disappears under the peat dome of the bog. The site occurs in close proximity to a number of important raised bogs close to the floodplain of the River Shannon.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                                               |
|-----------------------------------------------------------------------------------------------|
| [7110] Raised Bog (Active)*<br>[7120] Degraded Raised Bog<br>[7150] Rhynchosporion Vegetation |
|-----------------------------------------------------------------------------------------------|

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

Much of the bog surface is active and very wet, though not quaking, with an almost 100% cover of bog mosses beneath a sparse cover of Heather (*Calluna vulgaris*) and abundant Deergrass. Cranberry (*Vaccinium oxycoccos*) is especially abundant on lawns of the moss *Sphagnum magellanicum*. Rhynchosporion vegetation is best developed in the wettest central area of the high bog where numerous small pools occur. Typical plant species within these pool areas include the bog mosses *S. cuspidatum* and *S. auriculatum*, Great Sundew (*Drosera anglica*), Common Cottongrass (*Eriophorum angustifolium*) and Bogbean (*Menyanthes trifoliata*). There are also a number of small lawn areas on the wet bog surfaces dominated by White Beak-sedge and, locally, the rare Brown Beak-sedge. Active bog moss growth approaches unusually close to the western margin of the bog.

Degraded raised bog is largely confined to the margins of the high bog area where drainage effects are most pronounced. In common with many areas of degraded raised bog the vegetation at this site is dominated by mixtures of Heather, Hare's-tail Cottongrass (*E. vaginatum*), Deergrass, Bog Asphodel and Carnation Sedge. *Sphagnum* cover is poor, typically <20%, and there are other indicators of degradation such as the presence of Purple Moor-grass (*Molinia caerulea*) and Bog-myrtle (*Myrica gale*).

A small flushed hollow on the dome of the bog contains Soft Rush (*Juncus effusus*) and the bog moss *S. cuspidatum*. The bog becomes drier towards the northern boundary, especially north of an old track which traverses the dome. In many of the driest areas of the high bog there is invasion of Scots Pine (*Pinus sylvestris*) onto the bog surface.

As well as the rare Brown Beak-sedge, other scarce plants known from the site include Fir Clubmoss (*Hyperzia selago*) and the liverwort *Pleurozia purpurea*.

Whilst relatively small, Moyclare bog is a site of high conservation value as it is relatively intact and contains examples of the Annex I habitats active raised bog, degraded raised bog and depressions on peat substrates (Rhynchosporion). The uncut peat dome has an unusually high proportion of active raised bog.

**Site Name: Mongan Bog SAC**

**Site Code: 000580**

Mongan Bog is a midland raised bog of medium size situated immediately east of the monastic site of Clonmacnoise, Co. Offaly, and 12 km south of Athlone. It is situated in a basin, surrounded on 95% of its perimeter by high ground on mineral soil. At two points in the north it shares a common boundary with Pilgrim's Road Esker SAC. Most of the bog is a Statutory Nature Reserve, established in 1987. The bog has been the subject of ongoing intensive research since 1972.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                  |
|----------------------------------|
| [7110] Raised Bog (Active)*      |
| [7120] Degraded Raised Bog       |
| [7150] Rhynchosporion Vegetation |

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species, Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

The high bog has a very well-developed micro-topography of hummocks, pools and lawns, with the active core area being particularly wet. A variety of vascular plants, bog mosses and other bryophytes are found. An unusually large number of hummocks, sometimes 1 m high, largely composed of the moss *Leucobryum glaucum*, are widespread on the bog.

Rhynchosporion vegetation is best represented in the central core area, where there are numerous wet pools. Species which have been recorded from these pools include the bog mosses *S. cuspidatum* and *S. auriculatum*, the liverwort *Cladopodiella fluitans*, Bogbean (*Menyanthes trifoliata*), Great Sundew (*Drosera anglica*), White Beak-sedge, Lesser Bladderwort (*Utricularia minor*) and Common Cottongrass (*Eriophorum*

*angustifolium*). The relatively rare sedge Brown Beak-sedge has also been noted from wet pools within the site.

The high bog is dominated by degraded raised bog. Although degraded through drainage, the vegetation is still typical of a raised bog flora with species such as Heather (*Calluna vulgaris*), Bog Asphodel and Carnation Sedge often being dominant in species-poor areas. Other frequent vascular plant species include Hare's-tail Cottongrass (*Eriophorum vaginatum*), Deersedge, Cross-leaved Heath (*Erica tetralix*) and White Beak-sedge. Characteristic species of midland raised bogs such as Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*) also occur, however their cover is low. The *Sphagnum* cover in degraded raised bog areas is generally low, typically covering less than 30% ground cover.

The presence of the moss *Pleurozium scheberi* and Carnation Sedge indicate an oceanic influence. The bog supports a rich lichen flora, including *Cladonia portentosa*, *C. arbuscula*, *C. tenuis*, *C. floerkeana* and *C. glauca*, due in part to the absence of burning over much of the site. Many of the lichens occur on old Heather.

The uncut high bog core is surrounded by old cutover surface which is regenerating into a mosaic of heath and low scrub. The scrub is mostly willow (*Salix* spp.) and birch (*Betula* spp.). These marginal habitats add diversity to the site.

Several rare invertebrate species are known to occur on the bog, including *Chrysops sepulchralis* (Order Diptera), *Dixella serotina* (Order Diptera), *Coenonympha tullia* (Order Lepidoptera), *Tachina grossa* (Order Diptera) and *Saturnia pavonia* (Order Lepidoptera). One species of spider, *Gongylidiellum latebricola*, and two species of moth, *Biselachista serricornis* and *Aristotelia ericinella*, were first recorded from Ireland from the bog.

A study of the birds of Mongan Bog has shown that Mallard, Snipe, Curlew, Skylark and Meadow Pipit breed on the peat dome. In winter, the bog was occasionally used as a refuge by Greenland White-fronted Goose, but they appear to have abandoned the site in recent years.. The cut-away area of bog provides habitat for a range of bird species, including birds of prey, thrushes, warblers and finches.

Although there have been only low levels of disturbance in the recent past, the hydrology of the bog has been adversely affected by drainage, due mainly to the effects of domestic peat-cutting. The presence of algal mats in many of the pools indicates a serious lowering of water levels due to drainage. Burning is a further threat though there have been no serious fires in recent years. As most of the high bog lies within a Nature Reserve the future prospects for the site are good.

Mongan Bog is of high conservation importance as it is a good example of a raised bog site which contains examples of the Annex 1 habitats active raised bog, degraded raised bog and depressions on peat substrates (Rhynchosporion). It is mostly intact and has classic hummock and pool formations over a large proportion of the surface. It has several features of special zoological interest. Scenically it is part of an area rich

in intact natural features (callows, eskers, limestone pavement) which enhances its importance further. The ongoing intensive research on aspects of bog ecology at the site reinforces its international importance.

**Site Name: Fin Lough (Offaly) SAC**

**Site Code: 000576**

Fin Lough is a shallow limestone lake surrounded by a complex of wetland habitats, 7 km north-east of Shannonbridge in Co. Offaly. The name Fionn Loch, "White Lake", probably derives from the white colour of the lake bottom caused by marl deposits. It is a shallow lake, about 16 ha in extent (in winter) and bounded to the north and east by the Clonfinlough esker ridge, and to the south and west by Blackwater Bog, which is now largely cut-over. The lake and its surrounding wetland communities are arranged in distinct zones reflecting wetness and substrate. They include open water, reedswamp, tall sedge, alkaline fen, fen-bog transition, swamp woodland and bog. The transition from calcium-rich lake to reedbed, to fen, to bog is relatively intact in some areas, which is exceptional for this part of the country.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                              |
|------------------------------------------------------------------------------|
| [7230] Alkaline Fens<br>[1013] Geyer's Whorl Snail ( <i>Vertigo geyeri</i> ) |
|------------------------------------------------------------------------------|

The alkaline fen is species-rich, with characteristic plants including Black Bog-rush (*Schoenus nigricans*) and the sedge species, *Carex flacca*, *C. lepidocarpa* and *C. panicea*. The total flora of the Fin Lough wetland is remarkably rich: 210 species of vascular plants and 29 species of bryophytes have been identified to date.

In addition, the site supports an extensive invertebrate fauna and is nationally important for two rare Hover-fly species (Order Diptera), *Chrysogaster macquarti* and *Platycheirus perpallidus*. The presence of the rare snail, *Vertigo geyeri*, a species listed on Annex II of the E.U. Habitats Directive, is of considerable conservation significance. As one of the few areas of standing water in Co. Offaly, the lake is also an important roosting area for winter bird visitors such as Mallard, Teal and Tufted Duck.

Drainage works to facilitate peat milling activities adjoining the site have reduced the extent of open water in the site, and large areas of the former lake basin are now overgrown by reedswamp and scrub woodland. Fin Lough remains an important site, however, because of the diversity of wetland habitats and species that it supports.

**Site Name: Ferbane Bog SAC**

**Site Code: 000575**

Ferbane Bog is a relatively large, domed, raised bog located about 10 km east of Shannonbridge in Co. Offaly. It is underlain by low permeability Waulsortian limestone and clay-rich tills.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                                               |
|-----------------------------------------------------------------------------------------------|
| [7110] Raised Bog (Active)*<br>[7120] Degraded Raised Bog<br>[7150] Rhynchosporion Vegetation |
|-----------------------------------------------------------------------------------------------|

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog where hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species: Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

Much of the surface of the bog is very wet and spongy and the cover of bog mosses and lichens is generally high. A wet, quaking area to the east occurs in a depression and is characterised by a dominant growth of Hare's-tail Cottongrass (*Eriophorum vaginatum*), while another very wet quaking area on the western side of the site has well-developed inter-connecting pools. It is in these wettest portions of the high bog that Rhynchosporion vegetation is best developed. Here there are extensive lawns of *Sphagnum magellanicum* and *S. cuspidatum*, accompanied by vascular plant species such as White Beak-sedge, Common Cottongrass (*Eriophorum angustifolium*), Great Sundew (*Drosera anglica*) and Bogbean (*Menyanthes trifoliata*). Lawns of *S. magellanicum* and hummocks of *S. papillosum*, *S. capillifolium* and *S. imbricatum* occur in slightly drier areas surrounding these wettest zones. Carnation Sedge is present in abundance throughout the site, but particularly so on sloping areas. Purple Moor-grass (*Molinia caerulea*) and Bog-myrtle (*Myrica gale*) occur in scattered patches throughout the bog. Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*) are also found. A flushed area occurs on the northern part of the site.

Degraded raised bog occurs on the drier margins of the high bog dome. The vegetation is typical of degraded raised bog habitat in Ireland, with more robust species such as Heather (*Calluna vulgaris*), Deergrass, Carnation Sedge, Bog Asphodel and Cross-leaved Heath (*Erica tetralix*) tending to predominate. Along the driest margins of the high bog there is invasion by shrub species such as Scots Pine (*Pinus sylvestris*), Rhododendron (*Rhododendron ponticum*), Downy Birch (*Betula pubescens*) and Gorse (*Ulex europaeus*). *Sphagnum* cover is low in degraded areas of raised bog, typically covering less than 30% of the ground, and conversely the cover of lichens (*Cladonia* spp.) tends to be locally high.

The vegetation of the older cut-away areas to the west, north and east of the site is dominated by Downy Birch and Gorse, with areas of Bracken (*Pteridium aquilinum*), willow (*Salix* sp.), Bilberry (*Vaccinium myrtillus*), Scots Pine and Rhododendron also found.

Drainage is extensive at this site and has caused significant drying out. Past peat-cutting and some active peat-cutting have also speeded up water loss. However, although the high bog has suffered some water loss, it is still in restorable condition.

Ferbane Bog is a good example of a raised bog and is of considerable conservation significance. Active raised bogs are becoming increasingly rare in Ireland, and Europe, and are listed as a priority habitat on Annex I of the E.U. Habitats Directive.

**Site Name: All Saints Bog and Esker SAC**

**Site Code: 000566**

All Saints Bog is a lowland raised bog lying about 5 km north-west of Birr in Co. Offaly, and separated from the Little Brosna Callows by a fragmented esker ridge.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                          |
|------------------------------------------|
| [6210] Orchid-rich Calcareous Grassland* |
| [7110] Raised Bog (Active)*              |
| [7120] Degraded Raised Bog               |
| [7150] Rhynchosporion Vegetation         |
| [91D0] Bog Woodland*                     |

Active raised bog comprises areas of high bog that are wet and actively peat-forming, where the percentage cover of bog mosses (*Sphagnum* spp.) is high, and where some or all of the following features occur: hummocks, pools, wet flats, *Sphagnum* lawns, flushes and soaks. Degraded raised bog corresponds to those areas of high bog whose hydrology has been adversely affected by peat cutting, drainage and other land use activities, but which are capable of regeneration. The Rhynchosporion habitat occurs in wet depressions, pool edges and erosion channels where the vegetation includes White Beak-sedge (*Rhynchospora alba*) and/or Brown Beak-sedge (*R. fusca*), and at least some of the following associated species: Bog Asphodel (*Narthecium ossifragum*), sundews (*Drosera* spp.), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*).

The active raised bog is dominated by bog mosses, e.g. *S. cuspidatum* in pools, *S. magellanicum* forming carpets and *S. imbricatum* forming hummocks. Heather (*Calluna vulgaris*) occurs on the hummocks. Characteristic species of midland raised bogs, such as Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*), also occur. In the wettest areas, Rhynchosporion vegetation is relatively well-developed and widespread. Frequent species include Bogbean (*Menyanthes trifoliata*), Great Sundew (*Drosera anglica*), Bog Asphodel, White Beak-sedge and Common Cottongrass (*Eriophorum angustifolium*). The relatively rare Brown Beak-sedge has been noted from wet pools within the site. The presence of the liverwort *Pleurozia purpurea*, a western species, is notable.

Degraded raised bog dominates the drier areas of high bog surface within this site. The most frequent vascular plant species in the vegetation are Heather, Hare's-tail

Cottongrass (*Eriophorum vaginatum*), Deergrass, Bog Asphodel and Carnation Sedge. The *Sphagnum* cover in degraded raised bog areas is generally low, typically lying within the range of 5 to 20% ground cover. The presence, and local abundance, of moss species indicative of disturbance or drying-out, such as *Campylopus paradoxus*, *C. introflexus* and *Leucobryum glaucum*, is noteworthy. Locally, the cover of the lichen *Cladonia portentosa* can be high. However, the lichen cover is generally low due to frequent burning episodes which have affected the site in the recent past.

The site contains the largest stand of birch (*Betula* spp.) woodland growing on an active raised bog in the country. In the centre of the bog there is a elongated flushed area which is wooded, and this is surrounded by an outer non-wooded area. The non-wooded area is dominated by *Sphagnum recurvum* and *S. fimbriatum*, with hummocks of *S. palustre* and *S. capillifolium*. Hare's-tail Cottongrass is common and Heather, Crowberry (*Empetrum nigrum*) and Cranberry are abundant. The wooded area, which covers approximately 20 ha, is dominated by birch (mostly Downy Birch, *Betula pubescens*, but with a little Silver Birch, *B. pendula*), which grows to about 5-8 m high. There are scattered pines (*Pinus* spp.) and a shrub layer of willows (*Salix aurita* and *S. atrocinerea*), a dwarf shrub layer of Heather and Crowberry, and a thick mat of mosses and lichens with species such as *Sphagnum fimbriatum*, *S. palustre*, *Aulacomnium palustre*, *Polytrichum commune*, *Peltigera* cf. *canina* and *Cladonia portentosa*. In drier and more open areas, Bracken (*Pteridium aquilinum*) is locally dominant with grasses, e.g. Sweet Vernal-grass (*Anthoxanthum odoratum*), and the Field Wood-rush (*Luzula campestris*). Bottle Sedge (*Carex rostrata*) occurs in wetter areas. The rare Myxomycete fungus, *Badhamia lilacina*, has been recorded from the site.

The birch wood supports an interesting invertebrate fauna, with two rare species being recorded; a fly (*Dictenida bimaculata*, Order Diptera) and a ladybird (*Hippodamia tredecimpunctata*, Order Coleoptera). There is a concentration of saproxylic invertebrates in the birch woodland, which suggests that the woodland is ancient. The bog has traditionally been used as an occasional refuge for part of the Little Brosna flock of Greenland White-fronted Goose, an Annex I species of the E.U. Birds Directive, although in recent years they have not been observed on the bog.

An extensive area in the north-east corner of the bog, representing about 20% of the bog surface, is being cut for turf, with drains running into the eastern edge of the birch woodland. This appears to be leading to the bog drying out, as the surface is reported to be much drier than when first surveyed in the mid-1980s.

To the south of the bog are the fragmented remains of an esker ridge, which may have an influence on the hydrology of the flush. It is included in the site partly for this reason, but also for its own intrinsic value. The area south-east of Coneycarn pit is steeply sloping and unfertilised, and supports a good example (though small in area) of species-rich calcareous esker grassland. Pyramidal Orchid (*Anacamptis pyramidalis*) and Common Spotted-orchid (*Dactylorhiza fuchsii*) have both been recorded. In addition, a large population of Green-winged Orchid (*Orchis morio*), a species listed in the Irish Red Data Book of vascular plants, occurs here. Coneycarn

pit itself supports populations of the legally protected (Flora (Protection) Order, 1999) Red Hemp-nettle (*Galeopsis angustifolia*) and the threatened Blue Fleabane (*Erigeron acer*). Both of these are annual species of ruderal habitats and are listed in the Irish Red Data Book of vascular plants.

All Saints' Bog is a unique bog, important for its vegetation types, plants, invertebrates and birds. To conserve the site peat cutting needs to stop, drains need to be blocked and marginal dams built to raise the water table. The esker supports species-rich grassland, including rare species, and this area should continue to be grazed but left unfertilized. Further gravel extraction should be prevented, although some disturbance may be required to conserve the Red Hemp-nettle and Blue Fleabane.

**Site Name: Slieve Bloom Mountains SAC**

**Site Code: 000412**

The Slieve Bloom Mountains lie on the Offaly-Laois border, starting about 8 km north-east of Roscrea and running about 24 km north-east, towards Clonaslee. The mountains are of Old Red Sandstone, flanked by Silurian rocks. The site extends from approximately 180 m to 529 m O.D.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                                                               |
|-------------------------------------------------------------------------------|
| [4010] Wet Heath<br>[7130] Blanket Bogs (Active)*<br>[91E0] Alluvial Forests* |
|-------------------------------------------------------------------------------|

This site is remarkable for its mountain blanket bog habitat. Generally uniform in character, the vegetation consists of a deep, spongy mat of the bog moss *Sphagnum capillifolium*, with other mosses and lichens. Growing on this are Heather (*Calluna vulgaris*) and Crowberry (*Empetrum nigrum*), with smaller amounts of Cottongrasses (*Eriophorum* spp.), Bilberry (*Vaccinium myrtillus*), Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). An unusual feature is the abundance of Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*), species usually associated with raised bogs. The uncommon Lesser Twayblade (*Listera cordata*) occurs under Heather at this site.

This extensive site is dominated by blanket bog on a high plateau. However, on more steeply-sloping flanks wet heath vegetation occurs on shallower peat (typically 0.5-1.5 m deep). The dominant species in the wet heath are Heather and Purple Moor-grass (*Molinia caerulea*), with species such as Cross-leaved Heath (*Erica tetralix*), Tormentil (*Potentilla erecta*), Lousewort (*Pedicularis sylvatica*) and the bog moss *S. capillifolium* also being frequent components. Often wet heath vegetation is associated with flushed areas along the margins of narrow streams.

Alluvial forest occurs along the Camcor River in the northern part of the site, on the floodplain of the river and on adjacent slopes along the valley. The canopy consists of scattered tall Ash (*Fraxinus excelsior*), Pedunculate Oak (*Quercus robur*) and Alder (*Alnus glutinosa*). Rusty Willow (*Salix cinerea* subsp. *oleifolia*), Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*) form a lower canopy. The ground flora is species-rich, with Bluebell (*Hyacinthoides non-scripta*), Enchanter's-nightshade (*Circaea lutetiana*), Wood-sorrel (*Oxalis acetosella*) and Bugle (*Ajuga reptans*). Marsh-marigold (*Caltha palustris*) and Meadowsweet (*Filipendula*

*ulmaria*) typify the wetter areas. The natural flood regime at the site has been altered by drainage activities for forestry (embankments, etc.), though the least disturbed areas in the floodplain still retain a substantial wetness. Seepage areas on the slopes also contribute to the wetness of the woods.

The uplands at this site provide excellent habitat for Peregrine, a species listed on Annex I of the E.U. Birds Directive. Breeding pairs occur here.

For the main part, the site is fringed by forestry plantations, although in a few places there remains a relatively undisturbed transition downslope to poorly-drained acidic grassland. The primary threats to Irish blanket bogs in general are afforestation, drainage and over-grazing, and current habitat quality is often dependent on past land use. On the Slieve Blooms, the Heather forms tall, dense stands, with individual stems up to 20 years old, suggesting that burning has not been extensive in recent years. There is little evidence of grazing or erosion. Overall, vegetation structure is exceptionally well-conserved due to lack of disturbance. A large portion of the site lies within a Statutory Nature Reserve.

Blanket bogs are an increasingly rare habitat in Europe, and in Ireland are continually under threat. The Slieve Bloom Mountains are an important link in the east-to-west gradient of bogs in Ireland, and are floristically linked to the midland raised bogs north of the site. The intactness of the blanket bog here is remarkable and is echoed in few other areas in Ireland, making this site of unique conservation value. Also of conservation importance is the presence of wet heath and an example of alluvial forest.



### Site Name: River Shannon Callows SAC

### Site Code: 000216

The River Shannon Callows is a long and diverse site which consists of seasonally flooded, semi-natural, lowland wet grassland, along and beside the river between the towns of Athlone and Portumna. It is approximately 50 km long and averages about 0.75 km wide (reaching 1.5 km wide in places). Along much of its length the site is bordered by raised bogs (many, but not all, of which are subject to large-scale harvesting), esker ridges and limestone-bedrock hills. The soils grade from silty-alluvial to peat. This site has a common boundary, and is closely associated, with two other sites with similar habitats, River Suck Callows and Little Brosna Callows.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

|                                     |
|-------------------------------------|
| [6410] <i>Molinia</i> Meadows       |
| [6510] Lowland Hay Meadows          |
| [7230] Alkaline Fens                |
| [8240] Limestone Pavement*          |
| [91E0] Alluvial Forests*            |
| [1355] Otter ( <i>Lutra lutra</i> ) |

The River Shannon Callows is mainly composed of lowland wet grassland. Different plant communities occur, depending on elevation, and therefore flooding patterns. Two habitats listed on Annex I of the E.U. Habitats Directive are well-represented within the site – *Molinia* meadows and lowland hay meadows. The former is characterised by the presence of the Meadow Thistle (*Cirsium dissectum*) and Purple Moor-grass (*Molinia caerulea*), while typical species in the latter include Meadow Fescue (*Festuca pratensis*), Rough Meadow-grass (*Poa trivialis*), Downy Oat-grass (*Avenula pubescens*), Common Knapweed (*Centaurea nigra*), Ribwort Plantain (*Plantago lanceolata*) and Common Sorrel (*Rumex acetosa*). In places these two habitats grade into one another.

Low-lying areas of the callows with more prolonged flooding are characterised by Floating Sweet-grass (*Glyceria fluitans*), Marsh Foxtail (*Alopecurus geniculatus*) and wetland herbs such as Yellow-cress (*Rorippa* spp.), Water Forget-me-not (*Myosotis scorpioides*) and Common Spike-rush (*Eleocharis palustris*). Most of the callows consist of a plant community characterised by Creeping Bent (*Agrostis stolonifera*), Brown Sedge (*Carex disticha*), Common Sedge (*Carex nigra*), and herbs such as Marsh-marigold (*Caltha palustris*) and Marsh Bedstraw (*Galium palustre*), while the more

elevated and peaty areas are characterised by low-growing sedges, particularly Yellow Sedge (*Carex flava* agg.) and Star Sedge (*Carex echinata*). All these communities are very diverse in their total number of plant species, and include the scarce species Meadow-rue (*Thalictrum flavum*), Summer Snowflake (*Leucojum aestivum*) and Marsh Stitchwort (*Stellaria palustris*).

A further two Annex I habitats, both listed with priority status, have a minor though important presence within the site. Alluvial forest occurs on a series of alluvial islands just below the ESB weir near Meelick. Several of the islands are dominated by well-grown woodland consisting mainly of Ash (*Fraxinus excelsior*) and Willows (*Salix* spp.). The islands are prone to regular flooding from the river.

At Clorhane, an area of limestone pavement represents the only known example in Co. Offaly. It is predominantly colonised by mature Hazel (*Corylus avellana*) woodland, with areas of open limestone and calcareous grassland interspersed. The open limestone pavement comprises bare or moss-covered rock, or rock with a very thin calcareous soil cover supporting a short grassy turf. The most notable plant in the grassy area is a substantial population of Green-winged Orchid (*Orchis morio*), which occurs with such species as Sweet Vernal-grass (*Anthoxanthum odoratum*), Quaking-grass (*Briza media*), sedges (*Carex caryophyllea*, *C. flacca*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Knapweed (*Centaurea nigra*), and Ribwort Plantain (*Plantago lanceolata*). Ferns associated with the cracks in the pavement include *Asplenium trichomanes*, *A. ruta-muraria*, *A. adiantum-nigrum* and *Polypodium australe*. Bryophytes include *Grimmia apocarpa* and *Orthotrichum* cf. *anomalum*. Anthills are common within the open grassland. The Hazel wood is well-developed and has herbaceous species such as Primrose (*Primula vulgaris*), Common Dog-violet (*Viola riviniana*), Wood-sorrel (*Oxalis acetosella*) and Herb-Robert (*Geranium robertianum*). The wood is noted for its luxuriant growth of epiphytic mosses and liverworts, with such species as *Neckera crispa* and *Hylocomium brevirostre*. Yew (*Taxus baccata*) occurs in one area.

Other habitats of smaller area but also of importance within the site are lowland dry grassland, drainage ditches, freshwater marshes and reedbeds. The dry grassland areas, especially where they exist within hay meadows, are species-rich, and of two main types: calcareous grassland on glacial material, and dry grassland on levees of river alluvium. The former can contain many orchid species, Cowslip (*Primula veris*), abundant Adder's-tongue (*Ophioglossum vulgatum*) and Spring-sedge (*Carex caryophyllea*), and both contain an unusually wide variety of grasses, including False Oat-grass (*Arrhenatherum elatius*), Yellow Oat-grass (*Trisetum flavescens*), Meadow Foxtail (*Alopecurus pratense*), and Meadow Brome (*Bromus commutatus*). In places Summer Snowflake also occurs.

Good quality habitats on the edge of the callows included in the site are wet broadleaved semi-natural woodland dominated by both Downy Birch (*Betula pubescens*) and Alder (*Alnus glutinosa*), and dry broadleaved woodland dominated by Hazel. There are also areas of raised bog, fen on old cut-away bog with Black Bog-rush (*Schoenus nigricans*), and a 'petrifying stream' with associated species-rich

calcareous flush which supports Yellow Sedge (*Carex lepidocarpa*), Blunt-flowered Rush (*Juncus subnodulosus*) and Stoneworts (*Chara* spp.).

Immediately south of Portumna Bridge and south east of the town of Portumna the area of low-lying terrestrial land west of the river comprises a large area of the Annex I habitat alkaline fen. The fen comprises a complex of rich-fen plant communities. Sedges (*Carex lasiocarpa*, *Carex acutiformis*) and Bogbean (*Menyanthes trifoliata*) dominate parts of the fens while other small sedges are common throughout. The orchids Early Marsh Orchid (*Dactylorhiza incarnata*), Western Marsh Orchid (*D. majalis*) and Marsh Helleborine (*Epipactis palustris*) and the red-listed plant species Marsh Pea (*Lathyrus palustris*) have been recorded within the fen.

Two species which are legally protected under the Flora (Protection) Order, 2015, occur in the site - Opposite-leaved Pondweed (*Groenlandia densa*) in drainage ditches, and Meadow Barley (*Hordeum secalinum*) on dry alluvial grassland. This is one of only two known inland sites for Meadow Barley in Ireland. The Red Data Book plant Green-winged Orchid is known from dry calcareous grasslands within the site.

The site is of international importance for wintering waterfowl as numbers regularly exceed the 20,000 threshold (mean of 34,985 for five winters 1994/94-1998/99). Of particular note is an internationally important population of Whooper Swans (287). A further five species have populations of national importance (all figures are means for five winters 1995/96-1999/00): Mute Swan (349), Wigeon (2972), Golden Plover (4254), Lapwing (11578) and Black-tailed Godwit (388). Species which occur in numbers of regional or local importance include Bewick's Swan, Tufted Duck, Dunlin, Curlew and Redshank. The population of Dunlin is notable as it is one of the few regular inland flocks in Ireland. Small flocks of Greenland White-fronted Goose use the Shannon Callows; these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows.

Shoveler (an estimated 12 pairs in 1987) and Black-tailed Godwit (Icelandic race) (one or two pairs in 1987) breed within this site. These species are listed in the Red Data Book as being threatened in Ireland. The scarce bird Quail is also known to breed within the area. The callows has at times held over 40% of the Irish population of the globally endangered Corncrake, although numbers have declined in recent years. A total of 66 calling birds were recorded in 1999, but numbers have dropped significantly since then. The total population of breeding waders (Lapwing, Redshank, Snipe and Curlew) in 1987 was one of three major concentrations in Ireland and Britain. The population of breeding Redshank in the site was estimated to be 10% of the Irish population, making it nationally significant. Also, the Annex I species Merlin and Hen Harrier are regularly reported hunting over the callows during the breeding season and in autumn and winter.

This site holds a population of Otter, a species listed on Annex II of the E.U. Habitats Directive, while the Irish Hare, which is listed in the Irish Red Data Book, is a common sight on the callows.

The Shannon Callows are used for summer dry-stock grazing (mostly cattle, with some sheep and a few horses), and permanent hay meadow. About 30 ha is a nature reserve owned by voluntary conservation bodies. The River Shannon is used increasingly for recreational purposes with coarse angling and boating accounting for much of the visitor numbers. Intermittent and scattered damage to the habitats has occurred due to over-deepening of drains and peat silt deposition, water-skiing, ploughing and neglect of hay meadow (or reversion to pasture). However, none of these damaging activities can yet be said to be having a serious impact. Threats to the quality of the site may come from the siting of boating marinas in areas away from centres of population, fertilising of botanically-rich fields, the use of herbicides, reversion of hay meadow to pasture, neglect of pasture and hay meadow, disturbance of birds by boaters, anglers, birdwatchers and the general tourist. The maintenance of generally high water levels in winter and spring benefits all aspects of the flora and fauna, but in this regard, summer flooding is a threat to breeding birds, and may cause neglect of farming.

The Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland, and one in which there is least disturbance of natural wetland processes. Botanically, it is extremely diverse with two legally protected species of plants and many scarce species. Excellent examples of two habitats listed on Annex I of the E.U. Habitats Directive occur within the site – *Molinia* meadows and lowland hay meadows with good examples of a further three Annex habitats (two with priority status). In winter the site is internationally important for numbers and species of waterfowl. In spring it feeds large numbers of birds on migration, and in summer it holds very large numbers of breeding waders, rare breeding birds and the endangered Corncrake, as well as a very wide variety of more common grassland and wetland birds. The presence of Otter, an Annex II species, adds further importance to the site.

## **SITE SYNOPSIS**

**SITE NAME: ST. JOSEPH'S MOUNTHEATON**

**SITE CODE: 002063**

This bat site is located in buildings and a bridge belonging to St. Joseph's Abbey, west of Roscrea, just inside the border of Co. Offaly. These sites contain Brown Long-eared Bat (*Plecotus auritus*). It is possible that the bats are present all year round. Large numbers of bats are reported to have been disturbed or destroyed over twenty years ago so this is a very old roost. The bridge colony is estimated to number approximately 14 bats but the colony in the church buildings is probably larger and a nursery colony.

As most long-eared colonies are small, any site containing 50 or more bats is of national importance, particularly sites which have been used for many years. The present curate is well disposed towards the bats.

Brown Long-eared Bats are dependent on woodland so any changes to existing woodland around the site could adversely affect the colony by reducing the availability of suitable foraging grounds.

## **SITE SYNOPSIS**

**SITE NAME: DRUMAKEENAN NATIONAL SCHOOL**

**SITE CODE: 002064**

This bat site is located in the roof of a classroom at Drumakeenan National School, north-west of Roscrea, just inside the border of Co. Offaly. This site contains a large colony of Brown Long-eared Bat (*Plecotus auritus*) and is probably a nursery colony. It is possible that the bats are present all year round.

As most long-eared colonies are small, any site containing 50 or more bats is of national importance. The teaching staff is well disposed towards the bats.

Brown Long-eared Bats are dependent on woodland so any changes to the existing deciduous woodland around the site could adversely affect the colony by reducing the availability of suitable foraging grounds.

8.12.2009

## **SITE SYNOPSIS**

**SITE NAME: MILTOWN, SHINRONE**

**SITE CODE: 002065**

This bat site is located in an old stone farm building at Miltown Park, Shinrone, Co. Offaly. Although it has been recorded as a winter site for Natterer's Bat (*Myotis nattereri*), the only record of bats at the site was made in the month of May in 1989, which would suggest that the site is more likely to be a summer roost. The colony is estimated to number approximately 30 bats but is probably larger which would make it a nursery roost.

As the national population of Natterer's Bat is estimated to be only several thousand, this nursery roost is of national importance. The present owner is well disposed towards the bats.

Natterer's Bats are dependent on woodland so any changes to existing woodland around the town could adversely affect the colony by reducing the availability of suitable foraging grounds.

8.12.2009

## SITE SYNOPSIS

**SITE NAME: GRAND CANAL**

**SITE CODE: 002104**

The Grand Canal is a man-made waterway linking the River Liffey at Dublin with the Shannon at Shannon Harbour and the Barrow at Athy. The Grand Canal proposed Natural Heritage Area (pNHA) comprises the canal channel and the banks on either side of it. The canal system is made up of a number of branches - the Main Line from Dublin to the Shannon, the Barrow Line from Lowtown to Athy, the Edenderry Branch, the Naas and Corbally Branch and the Milltown Feeder. The Kilbeggan Branch is dry at present, but it is hoped to restore it in the near future. Water is fed into the summit level of the canal at Lowtown from Pollardstown Fen, itself a pNHA.

A number of different habitats are found within the canal boundaries - hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland.

The hedgerow, although diverse, is dominated by Hawthorn (*Crataegus monogyna*). On the limestone soils of the midlands Spindle (*Euonymus europaeus*) and Guelder-rose (*Viburnum opulus*) are present.

The vegetation of the towpath is usually dominated by grass species. Where the canal was built through a bog, soil (usually calcareous) was brought in to make the banks. The contrast between the calcicolous species of the towpath and the calcifuge species of the bog is very striking.

The diversity of the water channel is particularly high in the eastern section of the Main Line - between the Summit level at Lowtown and Inchicore. Arrowhead (*Sagittaria sagittifolia*) and Water-cress (*Rorippa nasturtium-aquaticum*) are more common in this stretch than on the rest of the system. All sites for Hemlock Water-dropwort (*Oenanthe crocata*) on the Grand Canal system are within this stretch.

The aquatic flora of the Corbally Extension of the Naas Branch of the canal is also very diverse, with a similar range of species to the eastern Main Line.

Otter spraints are found along the towpath, particularly where the canal passes over a river or stream.

The Smooth Newt (*Lissotriton vulgaris*) breeds in the ponds on the bank at Gollierstown in Co. Dublin.

The rare and legally protected Opposite-leaved Pondweed (*Groenlandia densa*) (Flora Protection Order 1987) is present at a number of sites in the eastern section of the Main Line, between Lowtown and Ringsend Basin in Dublin.

The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural

land and therefore provides a refuge for species threatened by modern farming methods.

9.12.2009

## **SITE SYNOPSIS**

**SITE NAME: CLONFERT CATHEDRAL**

**SITE CODE: 000244**

Clonfert Cathedral (also known as St. Brendan's Cathedral) is a small church in Co. Galway belonging to the Church of Ireland which contains a large colony of Brown Long-eared Bats (*Plecotus auritus*). There may be over 100 bats roosting in the church roof, and they may be present all year round. The church is used for a variety of services, including Diocesan and Ecumenical services, as well as parish services which are held whenever there is a fifth Sunday in the month. It is also an historical monument as sections of the building may be 400-500 years old. The well documented Romanesque entrance and wattle-roofed variety vestry date back to 1162.

Due to the size of the colony, large quantities of droppings are scattered around the church when the bats fly around inside the building at dusk. This is a source of annoyance to the clergy and cleaning committee but it is unlikely that anything will be done to completely exclude the bats. Due to the size of the colony, this site is of national importance and possibly also international importance.

Brown Long-eared Bats are dependent on woodland for foraging and do not travel far from the roost site to feed. Any changes to existing woodland around the cathedral could adversely affect a colony of this size by reducing the availability of suitable foraging grounds.

## SITE SYNOPSIS

**SITE NAME: ANNAGHMORE LOUGH FEN (OFFALY)**

**SITE CODE: 000413**

Situated about 10km south of Tullamore, on the border of Laois and Offaly below the Slieve Blooms, Annaghmore Lough Fen is a Natural Heritage Area (NHA).

All that remains of Annaghmore Lough itself is a small remnant pool, barely 2ha and only a couple of centimetres deep. It is not clear whether the lake shrinkage has been purely the result of the natural process of sediment accumulation, or whether this has been accelerated by drainage. However, the area once occupied by the lake, is now a peat accumulating, calcareous fen. In general sedges (*Carex* spp.) dominate, although other species such as Common Cottongrass (*Eriophorum angustifolium*), Water Horsetail (*Equisetum fluviatile*) and Common Reed (*Phragmites australis*) are locally prominent. The presence of sedges such as Glaucous Sedge (*Carex flacca*) and Long-stalked Yellow-sedge (*C. lepidocarpa*) and other species such as Black Bog-rush (*Schoenus nigricans*), Grass-of-parnassus (*Parnassia palustris*) and Marsh Helleborine (*Epipactis palustris*) are indicative of high levels of calcium in the soil.

To the south of the old lake site, willows (*Salix* spp.) and Downy Birch (*Betula pubescens*) are colonising the fen area which becomes increasingly acidic with species such as Purple Moor-grass (*Molinia caerulea*) and Bog-myrtle (*Myrica gale*), before rising into the dome of a small raised bog dominated by Heather (*Calluna vulgaris*) and Hare's-tail Cottongrass (*Eriophorum vaginatum*), with bog mosses (*Sphagnum* spp.). To the west of the bog the NHA area continues, to include much of a belt of land reclaimed across the periphery of what was once a more extensive bog. Management of this area is important as it will affect the remaining bog itself. In addition, there are sections of pasture here that have not been heavily fertilised, but allowed to develop a more natural, and species-rich cover.

A scrub cover of Downy Birch has developed to the north of the old lake site.

The system is vulnerable to drainage and reclamation, and indeed in some areas this has already occurred causing sizeable intrusions into the site. Nutrient runoff from fertilisers applied to this area would damage the vegetation of the low-lying and wet fen areas through the process called eutrophication, which would allow plant species adapted to high nutrient conditions to outcompete the current fen species. Further reclamation or drainage work of any kind should not be undertaken.

Peat is being machine cut from the southwest of the bog area. Although this is a low volume operation, on such a small area of raised bog it has a very seriously adverse effect. The loss of Monettia Bog 3km to the east of this site underlines the vulnerability of peatlands in Ireland, and although the area of raised bog dome is small (about 35ha) the transition through to the fen area occupying the site of Annaghmore Lough is remarkable and may represent one of the only intact raised bog lags in the country.

6.11.2009

## **SITE SYNOPSIS**

**SITE NAME: BANAGHER (DOMESTIC DWELLING, OCCUPIED)**

**SITE CODE: 000567**

This site is a summer and possibly winter roost of the Brown Long-eared Bat (*Plecotus auritus*) in a privately owned, old dwelling house. Approximately 60 bats were recorded in the attic, roosting along the main ridge beam, in 1987. As most long-eared colonies only contain between 20 to 30 bats, this site is of national importance. No changes have taken place at the building since 1987 and the owners are well disposed towards the bats so this is considered to be a safe roost.

Although the Brown Long-eared Bat is considered to be the second most common bat species in Ireland, the numbers of large, safe roosts are small and this species is continually under threat of exclusion from buildings.

This species is dependent on woodland close to its roosting sites so any major changes in existing woodland in the vicinity of the roost would adversely affect this colony.

11.11.2009

## **SITE SYNOPSIS**

**SITE NAME: BIRR (DOMESTIC DWELLING NO. 2, OCCUPIED)**

**SITE CODE: 000568**

This site consists of a two-storey modern domestic dwelling which is used as a nursery site by over 200 Leisler's Bats (*Nyctalus leisleri*). The bats roost at the western gable end of the attic. A new trap door was fitted in the bathroom ceiling in 1993 to allow access to the roof for the removal of droppings.

This site is one of the biggest Leisler's Bat nursery colonies in Ireland and possibly in Europe. It was first discovered in 1989 and has increased in size every year since then.

At first the owners were not happy about having bats in the attic but are now more tolerant, particularly since the attic is cleaned at the end of each summer. This tolerance is an important consideration when trying to protect roosts of this species, the largest and possibly the noisiest of the seven Irish bat species. Although the Leisler's Bat is considered common in Ireland, the number of safe nursery roosts is small.

It is possible that the bats at this site move between this and another house, known as Birr Domestic Dwelling 1, over the course of a summer. Therefore, it is important to protect both houses.

11.11.2009

## **SITE SYNOPSIS**

**SITE NAME: BIRR (DOMESTIC DWELLING NO. 1, OCCUPIED)**

**SITE CODE: 000569**

This is a nursery roost for the Leisler's Bat (*Nyctalus leisleri*) which roost along the gable end of the attic in a privately owned old dwelling house. Almost 100 bats were recorded at the house in 1987, and although the number of bats has declined since then, it is still a roost of international importance.

The present owners are well disposed towards the bats, which is an important consideration when trying to protect roosts of this species, the largest and possibly the noisiest of the seven Irish bat species. Although the Leisler's Bat is considered common in Ireland, the number of safe nursery roosts is small.

It is possible that the bats at this site move between this and another house, known as Birr Domestic Dwelling 2, over the course of a summer. Therefore, it is important to protect both houses.

11.11.2009

## **SITE SYNOPSIS**

**SITE NAME: KINNITTY (DOMESTIC DWELLING, OCCUPIED)**

**SITE CODE: 000579**

This is a summer roost for Leisler's Bat (*Nyctalus leisleri*) which roost in the fascia boards of an old domestic dwelling. The bats have been recorded at the house since 1987 and although the number of bats has never exceeded 100 animals, it is of national importance. The present owners are well disposed towards the bats which is an important consideration when trying to protect roosts of this species, the largest and possibly the noisiest of the seven Irish bat species. Although the Leisler's Bat is considered common in Ireland, the number of safe nursery roosts is small.

11.11.2009

## SITE SYNOPSIS

**SITE NAME: ROSCREA BOG**

**SITE CODE: 000583**

Roscrea Bog lies in Co. Offaly, close to the border with Tipperary and Laois, north of the Limerick railway and about 3km west of Roscrea itself. It is not a true bog, but a fen, developed on poorly drained glacial drift over limestone and shales.

The northern section of the original site has been drained, thus affecting the northern and eastern margins of the site – Gorse (*Ulex europaeus*) has now become established there.

Towards the centre of the site there exists more typical fen vegetation. Bog-myrtle (*Myrica gale*), Purple Moor-grass (*Molinia caerulea*), Cock's-foot (*Dactylis glomerata*) and herbs such as Devil's-bit Scabious (*Succisa pratensis*) and Tormantil (*Potentilla erecta*) are found.

Closer to the centre it is wetter, with Black Bog-rush (*Schoenus nigricans*) sharing dominance with Purple Moor-grass. This indicates a high calcium status.

The wettest part of the site is at the centre of the fen, where although open water is not common, the area is still dominated by Common Reed (*Phragmites australis*) and sedges (e.g. *Carex rostrata* and *C. paniculata*). Small clumps of birch (*Betula* spp.) and willow (*Salix* spp.) also occur here.

South of the railway, and bounded further south by a stream, a narrow strip of wet woodland, with Alder (*Alnus glutinosa*), willows, Ash (*Fraxinus excelsior*), and Holly (*Ilex aquifolium*) has developed over hydrologically disturbed fen. This represents a more natural successional community than the Gorse area.

Two rare species of snail *Vertigo genesii* and *Agriolimax laevis* have been recorded on the site. Also, wetland birds such as Reed Bunting, Snipe and Curlew have been seen.

Although now drier than it used to be, as a result of adjacent drainage, this site is still in a reasonably natural state and shows a good species richness and habitat diversity. Such habitats have come under increasing pressure in central Ireland, mainly from drainage. Further attempts at reclamation on this site would therefore be inappropriate.

## SITE SYNOPSIS

**SITE NAME: CAMCOR WOOD**

**SITE CODE: 000889**

Camcor Wood occupies level ground both sides of the Camcor River valley which cuts through Upper Silurian rocks about 15km east of Birr, Co. Offaly. Glinsk Grove is included in the proposed Natural Heritage Area.

Along the Camcor valley bottom, the woodland has developed over level ground. Here the stream braids to form several 'islands', and there are a number of rather wet marshy areas. The main tree species are the wet woodland species: Alder (*Alnus glutinosa*), willow (*Salix* spp.) and birch (*Betula* spp.) with oak (*Quercus* spp.), Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*) and Hawthorn (*Crateagus monogyna*) colonising drier areas. The ground flora is diverse with areas of Bluebell (*Hyacinthoides non-scripta*), and species such as Enchanter's-nightshade (*Circea lutetiana*), Wood-sorrel (*Oxalis acetosella*) and Bugle (*Ajuga reptans*). Marsh-marigold (*Caltha palustris*) and Meadowsweet (*Filipendula ulmaria*) typify the wetter areas.

This is a particularly fine example of woodland in a fairly natural condition, although unfortunately the Glinsk gully has suffered to a serious degree from conifer plantation. The native woodland has an impressive age structure with much regeneration, and an equally impressive ground layer, notably species-rich, with 42 mosses, 12 ferns, 15 grasses, and 90 other higher plant species recorded.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: CLONFINLOUGH ESKER**

**SITE CODE: 000892**

Clonfinlough Esker is a long ridge of glacial till which runs from Esker Hill, about 7km east of Clonmacnoise, for about 3km in a westerly direction towards Clonmacnoise. As a geomorphological feature this relict of the retreating ice is of great importance. However, the well drained, calcium rich soils of eskers often support interesting and species-rich vegetation, and three such areas of ecological importance have been selected as a Natural Heritage Area: Esker Hill, Tullaghmore Hill and a section between them.

Although recent agricultural practices have now diminished the ecological value of these areas, they still support vestiges of the former species-rich grassland, especially on the steeper slopes, where the rich mixture of lime loving plants such as Quaking-grass (*Briza media*), Parsley-piert (*Aphanes arvensis*), Pignut (*Conopodium majus*) and Cowslip (*Primula veris*) are most apparent. The notable Common Broomrape (*Orobanche minor*) also occurs. Apart from the grassland there are also areas of scrub. This is mainly composed of Gorse (*Ulex europaeus*) but there are also some small but interesting areas of Hawthorn (*Crateagus monogyna*) and Hazel (*Corylus avellana*). This mosaic of scrub and grassland is attractive to common birds and mammals.

While the biological interest of the esker has been reduced by human impacts, old grassland on eskers is still of interest and this is one of the few such areas remaining in the district. The integrity of the geomorphological feature is being threatened by an active gravel pit to the west of Tullamore Hill.

## **SITE SYNOPSIS**

**SITE NAME: CLONLYON GLEBE BOG**

**SITE CODE: 000893**

Clonlyon Bog is a small, domed bog situated four km north-west of Ferbane, Co. Offaly. The main feature of the dome at present is the presence of numerous and efficient drains over 80% of the surface. Two areas of good hummock and hollow growth pattern occur, one in the north and one in the south-east. Both show severe signs of drying out and no water occurs in the hollows. Much of the bog surface shows bare peat, a result of burning and drying out.

Unless the drains are completely blocked immediately there is no hope for this bog. It is probably too late already.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: DERRYKEEL MEADOWS**

**SITE CODE: 000897**

Several very wet meadows are located at Derrykeel beside the Clareen to Kinnitty road in Co. Offaly. The stream running through the area reveals the gravel base with a crust of calcium carbonate (lime) on the top. Tufts of Black Bog-rush (*Schoenus nigricans*) dominate the meadow and individual plants of Common Reed (*Phragmites australis*) are scattered throughout. Along with Purple Moor-grass (*Molinia caerulea*) other species include Purple-loosestrife (*Lythrum salicaria*), Soft Rush (*Juncus effusus*), Hard Rush (*Juncus inflexus*) and Selfheal (*Prunella vulgaris*).

In the hollows between the tufts the Common Butterwort (*Pinguicula vulgaris*) is abundant. The Wandering Snail (*Lymnaea peregra*) flourishes in this habitat. Blunt-flowered Rush (*Juncus subnodulosus*) is also common in certain areas.

The calcium-rich substratum of the meadows gives rise to an interesting ecological habitat. Very few areas of this nature exist in the county and although this is only a small area, it is of particular botanical note.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: DRUMAKEENAN, EAGLE HILL AND PERRY'S MILL**

**SITE CODE: 000900**

This site comprises three separate blocks about 4km north-west of Roscrea, and on the northern bank of the Little Brosna River adjoining the main Roscrea to Birr road. Here the landscape is dominated by the low esker ridges which are depositional relicts of the retreating Pleistocene ice.

The main block is a calcareous esker ridge (cut through by the recently improved main road). Its vegetation is mainly calcareous grassland with spring-flushed slopes running down into herb-rich wet meadows on the Little Brosna banks.

The site is in a remarkably natural condition having been the subject of a history of environmentally sensitive management. An extremely rich calcareous flora is recorded from the grassland including abundant Bee Orchid (*Ophrys apifera*), Early-purple Orchid (*Orchis mascula*) and Adder's-tongue (*Ophioglossum vulgatum*). It is also very likely that the legally protected Green-winged Orchid (*Orchis morio*) is present.

The extent of this important habitat, often restricted to small hilltop areas, is of note. The wet meadows also include species of note which again reflect calcium enrichment, such as Grass-of-parnassus (*Parnassia palustris*), Long-stalked Yellow-sedge (*Carex lepidocarpa*) and Fen Bedstraw (*Galium uliginosum*).

Eagle Hill to the north of the main block, is also formed of calcareous glacial till. Unfortunately, the soil surface was bulldozed prior to 1991. On the positive side, this has caused a proliferation of some of the rarest species present here, but it has also instigated an invasion of Gorse (*Ulex europaeus*). The bulldozed areas still support a rich limestone flora alongside the newly established ruderal species, including the legally protected Nettle-leaved Bellflower (*Campanula trachelium*).

More natural, species-rich grassland exists on the summit; here the occurrence of Blue Moor-grass (*Sesleria caerulea*), which is rare this side of the Shannon, is notable. More Nettle-leaved Bellflower is to be found on the north slopes from where woodland has been cleared.

The third area, running north-west away from the Brosna Maltings, is an extremely wet calcareous fen. It has species in common with the wet meadows and flushes between the main Drumakeenan block and the Brosna, but a feature of special interest is the presence of lenses of bog moss (*Sphagnum* spp.), indicating a state of transition from fen to peat bog.

Overall, this is an outstanding site in terms of the extent and quality of its well drained calcareous grasslands (important in European terms) and wet calcareous meadows, the

presence of rare plant species on site (including legally protected species) and in the diversity of habitats on site.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: GOLDEN GROVE WOODS**

**SITE CODE: 000903**

Golden Grove Woods are situated north-west of Roscrea, just inside the Co. Offaly border from Co. Tipperary.

The wood comprises a planted Beech (*Fagus sylvatica*) wood with belts of fir (*Abies* spp.) and is edged by natural woodland consisting of older Beech, oak (*Quercus* spp.) and Ash (*Fraxinus excelsior*). The ground flora is impoverished under the planted Beech owing to the dense leaf litter. In the more open areas Wood-sorrel (*Oxalis acetosella*), Bluebell (*Hyacinthoides non-scripta*), Bramble (*Rubus fruticosus* agg.) and Ivy (*Hedera helix*) are occasional. *Rhytidiadelphus loreus* and *Eurhynchium* spp. colonise the fallen trees and sloping banks.

This is an interesting example of Beech woodland with several large old specimens of oak and Ash.

## SITE SYNOPSIS

**SITE NAME: KILCORMAC ESKER**

**SITE CODE: 000906**

Eskers are long ridges of glacial till which were deposited at the end of the last ice age. As geomorphological features, these relicts of the retreating ice are of great importance. However, the well drained, calcium-rich soils of eskers often support interesting and species-rich vegetation. An esker chain runs from the Shannon, past Birr to Screggan, about 10km southwest of Tullamore. Parts of the stretch from Idle corner to Screggan, constitutes the Kilcormac Esker proposed Natural Heritage Area (NHA).

Pockets of Hazel (*Corylus avellana*), with oak (*Quercus* spp.), Ash (*Fraxinus excelsior*), Whitebeam (*Sorbus aria* agg.), Hawthorn (*Crateagus monogyna*), Beech (*Fagus sylvatica*), birch (*Betula* spp.) and Holly (*Ilex aquifolium*) are scattered along this area and give some insight into the pre-existing woodland communities developed here. Often they are unfenced and trampling by cattle resulting in an impoverished ground flora. But where a ground flora has been allowed to develop, for example in the eastern blocks, it features abundant Bluebell (*Hyacinthoides non-scripta*) with Primrose (*Primula vulgaris*) and Early-purple Orchid (*Orchis mascula*). The latter species also remain in better quality open grassland.

Some areas have recently been invaded by Gorse (*Ulex europaeus*).

The gravel from which the esker is composed, is calcium-rich, and when left grazed but not intensively fertilised, results in a short species-rich fescue (*Festuca* spp.) turf. Some rather degraded grassland has been included, as it retains some elements of the esker grassland flora.

The grazing of stock is an important part of managing the grassland areas, but remaining pockets of woodland would benefit from the exclusion of stock.

## SITE SYNOPSIS

**SITE NAME: LOUGH COURA**

**SITE CODE: 000909**

Lough Coura is a small in-filled lake situated about 10km west of Kilcormac and 10km east of Banagher, Co. Offaly. The site has a long history of botanical recording and its character has been described as progressing from "an extensive swamp" in 1899, "an extensive limy marsh" in 1934, "a dry fen" in 1969 to "very few damp areas were found" in 1972.

The present condition is much the same as described in 1972. Purple Moor-grass (*Molinia caerulea*) predominates as deep tufts and Common Reed (*Phragmites australis*) is sparse throughout. Black Bog-rush (*Schoenus nigricans*) becomes more common towards the centre and dry areas of Great Fen-sedge (*Cladium mariscus*) are present. Two converging drains occur on the site and Broad-leaved Pondweed (*Potamogeton natans*) and Mare's-tail (*Hippuris vulgaris*) are common in their deep water. Scarce plants which were reported in 1972 include Lesser Tussock-sedge (*Carex diandra*), Bog-sedge (*Carex limosa*), Dioecious Sedge (*Carex dioica*), Broad-leaved Cottongrass (*Eriophorum latifolium*), Fly Orchid (*Ophrys insectifera*), and Narrow-leaved Marsh-orchid (*Dactylorhiza traunsteineri*).

The Narrow-leaved Marsh-orchid is a Red Data Book species.

There is a small wood consisting of Downy Birch (*Betula pubescens*), Ash (*Fraxinus excelsior*), Holly (*Ilex aquifolium*) and common mature Rowan trees (*Sorbus aucuparia*).

About 30% of the original lake area has been planted by Coillte with conifers which are quite mature at present. The largest area has been excluded from the NHA but several smaller peripheral areas have been included and post-felling management should take account of the ecology of the whole site.

The evolution from lake to dry fen at this site is unusually well-documented and it is important that no further damage occurs to the site so that the succession can be further studied.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: LOUGH NANAG ESKER**

**SITE CODE: 000910**

Situated about 2km south-west of Clonmacnoise and between the River Shannon callows and a raised bog undergoing commercial peat extraction, the site comprises, for the most part, an esker ridge composed of glacial gravels. A small lake occurs in the south-eastern section of the site. The underlying rock is of Carboniferous limestone.

The site is much modified by grassland improvement and comprises a mosaic of improved grassland, dry calcareous grassland, wet grassland, scrub, woodland, dense Bracken (*Pteridium aquilinum*), swamp and lake communities. Much of the site is on a calcareous substrate - Lough Nanag itself shows influence from the adjacent acidic raised bog.

Much of what would formerly have been good quality dry calcareous grassland has been lost through grassland improvement and only small areas of this habitat remain. Two such areas support small populations of the rare and legally protected (Flora Protection Order, 1987), Green-winged Orchid (*Orchis morio*). The diversity of the esker area is increased by scrub and Hazel (*Corylus avellana*) woodland, which has occasional Sessile Oak (*Quercus petraea*) and a mossy ground layer with much Ivy (*Hedera helix*). A small disused gravel pit has been allowed to become recolonised and now supports several species of open grassland which have declined elsewhere on the site.

In contrast to the lime-loving species of the esker, Lough Nanag is surrounded by typical peatland communities. Bottle Sedge (*Carex rostrata*) swamps fringe the water and divides the lake up into pools; Bogbean (*Menyanthes trifoliata*) has colonised several of these. Around the shore in the wetter areas Bog-sedge (*Carex limosa*), a rare species in the county, can be found. A small number of wildfowl species use the wetland for roosting. There is an interesting transition from the relatively acid surroundings of the lake, typified by Purple Moor-grass (*Molinia caerulea*) and Bog-myrtle (*Myrica gale*), to the esker grassland.

The site is vulnerable to further grassland improvement, both overgrazing and undergrazing, encroachment of scrub, and gravel extraction. Lough Nanag is vulnerable to drainage and eutrophication.

Although the floristic diversity of the esker grassland has declined, it still retains some interest. The juxtaposition of the esker and the acidic peatland lake and wetland, makes the site all the more interesting and unusual.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: MOUNT ST. JOSEPH WOODS**

**SITE CODE: 000913**

About 4km west of Roscrea in Co. Offaly, two low esker ridges flank the Little Brosna River. The Mount St. Joseph Woods proposed Natural Heritage Area (NHA) constitutes four esker woodland blocks of which three are on the northern, and one on the southern of these eskers.

Sharps, or Coolock Wood, the most southern of the blocks, has recently been damaged, with the natural Hazel (*Corylus avellana*) and Pedunculate Oak (*Quercus robur*) woodland already having suffered spruce (*Picea* spp.) planting. With the removal of Hazel and replanting with spruce, Ash (*Fraxinus excelsior*), oak (*Quercus* spp.) and Wild Cherry (*Prunus avium*), much of the natural character of the wood has been lost. Areas of mature spruce remain. The block north of Mount St. Joseph Abbey consists of a high ridge to the west with planted woodland of Beech (*Fagus sylvatica*), elm (*Ulmus* spp.), Hawthorn (*Crateagus monogyna*), Whitebeam (*Sorbus aria* agg.) and Holly (*Ilex aquifolium*) and a well developed ground flora. To the east of this block the canopy is more natural in character, being almost entirely oak. The ground flora is however damaged by cattle. There is another stand of oak at the western extremity of the western block, the east of this block is a fine stand of Hazel scrub. East is another intact section of oakwood.

Where the ground flora is well developed, it is species-rich, with species such as Early-purple Orchid (*Orchis mascula*), Primrose (*Primula vulgaris*), Wood-sedge (*Carex sylvatica*) and Ivy (*Hedera helix*).

Much of the pre-existing esker woodland has been felled or modified at this site, so the least altered remnant sections described above are of importance, especially the oak sections because such woodlands are particularly uncommon. The maltreated Sharps Wood has been retained in the NHA because the replanted tree species composition includes native broadleaved species, and mature oak have been retained.

## SITE SYNOPSIS

**SITE NAME: PALLAS LOUGH**

**SITE CODE: 000916**

Pallas Lough lies about 7km south-west of Tullamore, in limestone-rich gravel drift over Lower limestone. As a result the lake water is rich in calcium, a chief component of limestone. Marl precipitates out of the water to coat stone, and especially vegetation surfaces, thus the lake could be said to be a 'marl lake'. The eastern shore runs into peaty soils.

The aquatic component of the lake vegetation is reputed to be rich, with Charophytes (*Chara* spp. and *Nitella* spp.) and pondweeds (*Potamogeton* spp.).

Lowering of the water level has resulted in the exposure of sediments which have been colonised by communities of swamp, marsh and wet grassland plant associations, particularly along the southern and eastern shores. Reed swamp, mainly dominated by Common Reed (*Phragmites australis*), colonising shallow water, has divided the open water surface into two. In places the reed swamp is dry enough to become colonised by Downy Birch (*Betula pubescens*).

The area to the north of Clonterlough Wood contains Great Fen-sedge (*Cladium mariscus*) a species very much indicative of wet, calcium-rich, peaty substrates. It grows with Bogbean (*Menyanthes trifoliata*) and peatland species such as Bog-myrtle (*Myrica gale*).

Marshland and wet grassland on the southern side of the lake, grazed by cattle and sheep, has large areas of Creeping Bent (*Agrostis stolonifera*), Soft Rush (*Juncus effusus*) and Yellow Iris (*Iris pseudacorus*) along with a variety of wetland herbs, and Common Reed which spreads back from the swamps. These are botanically rich areas - one small area was inhabited by 79 plant species, 12 of which were sedges (*Carex* spp.).

Within the boundary of the proposed Natural Heritage Area there are also two small wet woods dominated by Downy Birch, one of which is recovering from partial clearance about twenty years ago. There is also an area of limestone grassland which yields such species as Field Gentian (*Gentianella campestris*) and Common Centaury (*Centaureum erythraea*).

Significant numbers of wildfowl and waders use the lake. The reed swamp fringes and centre provide cover and make ideal nesting areas for ducks such as Mallard, Teal and Widgeon. The peripheral wet grassland is grazed in the winter by geese. The rare Marsh Harrier has recently been seen hunting in the area.

This area is of botanical interest due to the diversity of plant habitats and the species richness of those habitats. To a large degree these features are promoted by the calcium richness of the site.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: ROSS AND GLENNES ESKERS**

**SITE CODE: 000920**

This site is situated about 5km north-north-west of Birr in Co. Offaly. It consists of a gravel esker ridge grading into a cutaway bog of good peat depth.

The esker has been colonised by Hazel (*Corylus avellana*) scrub interspersed with Yew (*Taxus baccata*) and White Willow (*Salix alba*). The ground flora comprises Ivy (*Hedera helix*), Bloody Crane's-bill (*Geranium sanguineum*), Wild Madder (*Rubia perigrina*), Goat's-beard (*Tragopogon pratensis*) and Black Spleenwort (*Asplenium adiantum-nigrum*). Of note on the esker ridge is the presence of uncommon plant species such as Buckthorn (*Rhamnus catharticus*) and Bee Orchid (*Ophrys apifera*). The former is mostly confined to the west and central parts of the country.

South of the ridge is old cutaway bog colonised by Heather (*Calluna vulgaris*), Purple Moor-grass (*Molinia caerulea*), gorse (*Ulex* spp.) and Downy Birch (*Betula pubescens*). In pool areas and wetter sections Great Sundew (*Drosera anglica*) and Marsh Helleborine (*Epipactis palustris*) occur. The latter, although frequent in central Ireland, is rare elsewhere in the country. Further south again is a fine example of a birch (*Betula* spp.) wood with a profuse growth of Holly (*Ilex aquifolium*) underneath.

Within the area of cutaway bog the Raft Spider (*Dolomedes fimbriatus*) has been recorded.

Human landuse of the esker is low, the majority of which is substantially ungrazed. Beyond the site boundary, this esker chain has been subject to agricultural and amenity land reclamation and quarrying. These are potential threats to the esker within the site. The cutaway bog is enclosed by eskers and has, therefore, poor drainage. This should limit any further development of the peatland.

The esker ridge supports a good example of a substantially undisturbed Hazel scrub and forms an important ecological example of landscape formation. The adjoining cutaway bog and fine birch woodland add habitat diversity to this site.

## SITE SYNOPSIS

**SITE NAME: WOODVILLE WOODS**

**SITE CODE: 000927**

Woodville Woods proposed Natural Heritage Area (NHA) comprises a substantial estate woodland and peripheral lake/wetland in Co. Offaly, about 3km north of Birr, between the N52 and the L115 roads.

The main portion of the centre of the wood is oak (*Quercus* spp.), mainly mature, up to 20m tall, and is Ivy (*Hedera helix*) covered. There are large stands of Hazel (*Corylus avellana*) to the north and east. There are local patches of conifers throughout, and Beech (*Fagus sylvatica*) is also present. Ground cover consists largely of Ivy, Bramble (*Rubus fruticosus* agg.) and Bluebell (*Hyacinthoides non-scripta*) with abundant Primrose (*Primula vulgaris*). In places Dog's Mercury (*Mercurialis perennis*) has become well established.

To the east of the woodland a small accreted lake has been included, this is now colonised mainly by Common Reed (*Phragmites australis*), Common Club-rush (*Schoenoplectus lacustris*), Water Horsetail (*Equisetum fluviatile*), Bulrush (*Typha latifolia*) and a variety of other wetland species, and can harbour considerable numbers of Snipe.

A herd of Fallow deer inhabit the wood. Notable native mammals recently recorded include; Pine Marten, Red Squirrel and Badger.

Large stands of native deciduous trees are rare in Ireland – in its location this site is outstanding.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: FIAGH BOG**

**SITE CODE: 000932**

Fiagh Bog lies about 4km north-east of Borrisokane in Co. Tipperary. It is not a bog in the true sense but a calcium-rich fen formed over Lower Limestone. Derrinvohil Bog, just to the west, is a lowland raised bog. Together these sites have been proposed for designation as a Natural Heritage Area.

The remaining area of fen supports dried out areas of coarse grassland and Gorse (*Ulex europaeus*) scrub, around the wet fen area. The vegetation here is characterised by Black Bog-rush (*Schoenus nigricans*) and the moss *Campylium stellatum*. Both of these species indicate calcium enrichment of wetlands. There is also some Common Reed (*Phragmites australis*) present. Derrinvohil Bog is dominated by Heather (*Calluna vulgaris*).

The rare Round-mouthed Whorl Snail (*Vertigo geyeri*) has been recorded from Fiagh Bog. This is of particular significance because it is one of the few Irish invertebrate species awarded special status by the European Union as being of international importance, and demanding special conservation measures (it is listed in Annex II of the Habitats Directive).

Active raised bogs once characteristic of central Ireland, are now rare and vulnerable, and have been recognised by the European Union as a habitat of international importance. The value of Derrinvohil Bog is also promoted by its proximity to the fen.

## SITE SYNOPSIS

**SITE NAME: FRIARS LOUGH**

**SITE CODE: 000933**

Friars Lough is a small lake with adjacent woodland, situated near the village of Lorrha in north Tipperary. The lough itself is fringed with dense reed-beds of Common Reed (*Phragmites australis*) along much of its shore, but the most extensive habitat is broadleaved woodland. A narrow band of dry woodland, mostly of native oak (*Quercus* spp.) occurs east of the lough, but a much more species-rich wet woodland lies to the west of the lough. The most dominant trees here are Downy Birch (*Betula pubescens*), Alder (*Alnus glutinosa*), various willows (*Salix* spp.), Hazel (*Corylus avellana*) and Ash (*Fraxinus excelsior*), but many other species also occur, including exotics such as Beech (*Fagus sylvatica*) and Scots Pine (*Pinus sylvestris*). Scrubby and boggy species such as Bracken (*Pteridium aquilinum*) and Bilberry (*Vaccinium myrtillus*) occur under the canopy.

Of special importance in this site, however, is the presence of a healthy population of the uncommon shrub Alder Buckthorn (*Frangula alnus*). This plant was first recorded here in 1899. This site is a refuge for local wildlife in a highly farmed area.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: LOUGH NAHINCH (TIPPERARY)**

**SITE CODE: 000936**

Lough Nahinch lies on the border between Tipperary and Offaly some 9km east of Borrisokane. It is a peaty basin set in mainly cutaway bog.

The lake itself is fringed by sparse Common Club-rush (*Schoenoplectus lacustris*) swamp.

The lower wet areas of adjacent peat support interesting plant communities, including the peatland species Round-leaved Sundew (*Drosera rotundifolia*), Bog Asphodel (*Narthecium ossifragum*), and other species such as butterfly-orchid (*Platanthera* spp.), Early-purple Orchid (*Orchis mascula*), Common Twayblade (*Listera ovata*) and Slender Sedge (*Carex lasiocarpa*).

Gorse (*Ulex europaeus*) and Downy Birch (*Betula pubescens*) are colonising some areas, and Buckthorn (*Rhamnus catharticus*), a shrub of much more restricted occurrence, is also recorded as profuse.

An area of mature planted woodland extends to the north and adds diversity to the site.

The site is important for a range of breeding water birds such as Redshank, Snipe and Water Rail, and the bird interest is increased in the winter when migratory species use the site.

Water Germander (*Teucrium scordium*) which is restricted to the Shannon, and loughs in East Clare and Tipperary, is another notable occurrence around Lough Nahinch.

Although this area has been much modified, particularly by drainage and peat extraction, the lake itself remains, and the adjacent land supports, a remarkably diverse flora, despite it being used as an area for dumping rubbish. The site includes several species of note.

13.11.2009

## SITE SYNOPSIS

**SITE NAME: LOUGH BOORA**

**SITE CODE: 001365**

This drained lake, surrounded by cutaway bog, lies 5km north-west of Kilcormac in Co. Offaly. Previously a post-glacial lake, it was impounded and much reduced, in size by raised bog development. The drained lake-bed consists of shallow fen peat overlying calcareous shell-marsh.

The surface of the western portion has been left undisturbed allowing plant colonisation and regeneration. This includes Downy Birch (*Betula pubescens*) and willow (*Salix* spp.) with a ground flora of Bog-myrtle (*Myrica gale*), Common Cottongrass (*Eriophorum angustifolium*) and Heather (*Calluna vulgaris*). Along with these acid-loving plants are other base-loving fen species such as Great Fen-sedge (*Cladium mariscus*), Marsh Cinquefoil (*Potentilla palustris*) and Ragged-Robin (*Lychnis flos-cuculi*). The site also contains various orchids including Fragrant Orchid (*Gymnadenia conopsea*) and Lesser Butterfly-orchid (*Platanthera bifolia*). The above is taken from part of a 1972 An Foras Forbartha description of the site. A recent (April 1994) aerial view of the site appears to confirm this ecological status.

The peatland and former lake has been drained by Bord na Mona but otherwise the site is now mostly undisturbed. Archaeological excavations have revealed evidence of past human activities. The site has supplied the earliest evidence of an Early Mesolithic hunter gatherer settlement in the Irish Midlands at about 7000 B.C.

Lough Boora is of interest botanically due to the mixture of fen and bog species on the former peatland lake-bed. Its importance archaeologically gives added dimension to the site quality.

## **SITE SYNOPSIS**

**SITE NAME: BRACKEN'S DWELLING, NEAR WHITEFORD**

**SITE CODE: 002058**

This is a nursery roost for a Leisler's Bat (*Nyctalus leisleri*) colony which roost in the cavity walls of a privately owned modern dwelling house near Whiteford in Co. Offaly. Approximately 80 bats were recorded at the house in 1992, and although fewer bats were recorded there in 1993, it is still a roost of international importance.

The present owners are well disposed towards the bats, which is an important consideration when trying to protect roosts of this species, the largest and possibly the noisiest of the seven bat species. Although the Leisler's Bat is considered common in Ireland, the numbers of safe nursery roosts are small. This species is rarely recorded outside Ireland which is the European stronghold for this species.

8.12.2009

## **SITE SYNOPSIS**

**SITE NAME: CLOGHANBEG**

**SITE CODE: 002059**

This is a nursery roost for a colony of Leisler's Bat (*Nyctalus leisleri*) which roost in the fascia boards of a privately owned modern dwelling house situated approximately 4km south-west of Banagher. Approximately 50 bats were recorded at the house in 1992 which makes it a site of national importance.

The present owners are well disposed towards the bats, which is an important consideration when trying to protect roosts of this species, the largest and possibly the noisiest of the seven bat species. Although the Leisler's Bat is considered common in Ireland, the numbers of safe nursery roosts are small. This species is rarely recorded outside Ireland which is the European stronghold for this species.

8.12.2009