

SITE SYNOPSIS

SITE NAME: CLONCROW BOG (NEW FOREST) NHA

SITE CODE: 000677

Cloncrow Bog (New Forest) NHA is situated approximately 1 km west of Tyrellspass, in the townlands of Cloncrow and Tyrellspass in Co. Westmeath. The site comprises a raised bog that includes both areas of high bog and cutover bog.

The site consists of a raised bog which has developed in a basin. The bog has good hummock/hollow microtopography, pools, quaking areas, a swallow hole, a small flush and forestry on high bog. The cutover supports humid grassland, improved grassland, small areas of Downy Birch (*Betula pubescens*) woodland and scrub, and forestry.

Much of the high bog has vegetation typical of a Midlands Raised Bog and supports such species as Ling Heather (*Calluna vulgaris*), Common Cottongrass (*Eriophorum angustifolium*), White Beak-sedge (*Rhynchospora alba*), Bog Asphodel (*Narthecium ossifragum*) and a range of bog mosses including *Sphagnum imbricatum*, *S. pulchrum*, *S. fuscum* and *S. cuspidatum*. Midland Raised Bog indicator species include Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*).

The northern half of the bog is firm but wet and with a hummock/hollow microtopography, while in the southern and eastern sections the bog is wetter and spongy with good hummock/hollow microtopography, pools, inter-connecting pools, quaking areas and a flush. The pools and channels are filled with the aquatic bog moss *Sphagnum cuspidatum*, White Beak-sedge, Common Cottongrass and Bog Asphodel. The hummocks are composed of the bog mosses *Sphagnum fuscum*, *S. imbricatum*, *S. papillosum* and *S. capillifolium*. The tops of the hummocks support Ling Heather, Common Cottongrass, the moss *Hypnum jutlandicum* and lichens (*Cladonia* spp.) The bog moss *Sphagnum pulchrum* has been recorded in the far east of the site.

A small flush dominated by Purple Moor-grass (*Molinia caerulea*) occurs in the middle of the south-eastern section of the bog. It supports a range of mosses including the bog mosses *Sphagnum fimbriatum*, *S. squarrosum* and *S. palustre*. A ridge on the high bog has Scot's Pine (*Pinus sylvestris*). The south-western section of the high bog has been afforested with Lodgepole Pine (*Pinus contorta*).

The cutover has a range of habitats including Downy Birch woodland, birch and Gorse (*Ulex europaeus*) scrub, humid grassland, improved grassland, forestry and abandoned cutover. There are also small patches of mineral soil with grassland and forestry.

Current landuses on the site comprise active peat-cutting to the east of the high bog margin and afforestation on both the high bog and the cutover. Areas of cutover have been reclaimed for agricultural purposes around the site. The grassland is used for grazing. Damaging activities associated with these landuses include drainage and burning of the high bog. These are all activities that have resulted in loss of habitat

and damage to the hydrological status of the site, and pose a continuing threat to its viability.

Cloncrow Bog (New Forest) NHA 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. The site supports a good diversity of raised bog microhabitats, including pools, quaking areas, hummock/hollow complexes, a swallow hole and a small flush, as well as a number of scarce plant species. Ireland has a high proportion of the total E.U. resource of raised bog (over 50%) and so has a special responsibility for its conservation at an international level.

SITE SYNOPSIS

SITE NAME: MILLTOWNPASS BOG NHA

SITE CODE: 002323

Milltownpass Bog NHA is located 1 km north-east of Milltownpass, in the townlands of Pass of Kilbride and Claremount or Cummingstown in Co. Westmeath. The site comprises a raised bog that includes both areas of high bog and cutover bog and can be accessed from the local road off the N6 to the east of the site.

This bog has pools present and is wet and quaking in places. The wet areas are formed by re-wetting of depressions on the high bog surface caused by subsidence. There is very little drainage on the high bog and no forestry. Cutover is found all around the high bog margins with encroaching scrub and a forestry plantation. Broad-leaved woodland occurs to the west of the site.

Much of the high bog has vegetation typical of a Midland Raised Bog, consisting of Ling Heather (*Calluna vulgaris*), Hare's-tail Cottongrass (*Eriophorium vaginatum*), White Beak-sedge (*Rhynchospora alba*), Cross-leaved Heath (*Erica tetralix*), Bog Asphodel (*Narthecium ossifragum*), Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*). There is some encroachment by Birch (*Betula pubescens*) at the northern high bog margin with some scattered Scots Pine (*Pinus sylvestris*). In general the high bog is wet with the bog mosses *Sphagnum capillifolium*, *S. subnitens* and *S. papillosum* present. Other species present include Deergrass (*Scirpus cespitosus*) and the lichens *Cladonia portentosa*, *C. uncialis*, *C. fimbriata*, *C. crispidata* and *C. fleurciana*. The abundance of lichens is indicative of the absence of recent burning. The vegetation is quite hummocky, due to drying out and there are old dry hummocks of Ling Heather with Cranberry and the mosses *Dicranum majus* and *Hypnum jutlandicum*. The liverwort *Odontoschisma sphagni* occurs among *Sphagnum* hummocks.

Towards the centre of the high bog there is a dry ridge dominated by Ling Heather, Bog Asphodel and Deergrass with some Cottongrass. North of this ridge there is a wet depression dominated by Ling Heather, Cottongrasses, Cross-leaved Heath and lichens. There are small pools and wet hollows with the bog moss *Sphagnum cuspidatum* and small hummocks of the bog mosses *S. papillosum*, *S. capillifolium* and *S. magellanicum*. Some hollows are dominated by Bog Asphodel and the hummocks are overgrown by the liverwort *Odontoschisma sphagni*. The small pools are drying out and in-filling with Cottongrass. Round-leaved Sundew (*Drosera rotundifolia*) is present along with the bog moss *Sphagnum tenellum* and large lawns of *S. magellanicum*. These occur in wet quaking areas caused by re-flooding from subsidence.

South of the ridge, the high bog slopes away towards the road and grades into a very wet and quaking area that has numerous pools and extensive lawns of bog moss (*S. magellanicum*). This area is dominated by Cottongrasses and Ling Heather over

abundant *Sphagnum*, with Bog Asphodel and White Beak-sedge dominated hollows. Large pools occur here with the bog moss *S. cuspidatum*. There are also flushed areas with the mosses *Aulacomnium palustre*, *Polytricum commune*, *P. alpestre*, the liverwort *Pleurozium schreberi* and Cranberry locally abundant.

The high bog is surrounded by cutover, much of which has been colonised by Birch (*Betula* spp.) scrub. There is old cutover to the north, with a thin margin of Birch wood. This cutover is dominated by bog species, especially Ling Heather and lichens. There is some active peat-cutting at the north-east margin, backed by Birch scrub on cutover, and to the west some of the cutover has been reclaimed for agricultural grassland. A small forestry plantation is present on cutover to the north-east and broadleaved woodland to the west adds to the habitat diversity of the site.

Current landuses on the site include peat-cutting, agriculture and forestry. To the east, outside the site, there is intensive commercial peat-cutting, but few damaging operations apart from reclamation of cutover to the west and small scale domestic peat-cutting to the east occur within the site. The heavily improved area of cutover at the western margin has been cleared of scrub, levelled and re-seeded. This reclamation directly adjoins the cutface. A new road has been built and further developments are planned. Damaging activities associated with these landuses include scrub clearance and drainage at the margins of the high bog. These activities have resulted in the loss of habitat, damage to the hydrological status of the site, and pose a continuing threat to its viability.

Milltownpass Bog NHA 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. This site supports a good diversity of raised bog microhabitats, including hummocks and pools and due to its easterly location, is of biogeographical importance. Ireland has a high proportion of the total E.U. resource of raised bog (over 50%) and so has a special responsibility for its conservation at an international level.

SITE SYNOPSIS

SITE NAME: BLACK CASTLE BOG NHA

SITE CODE: 000570

Black Castle Bog NHA is situated approximately 8 km north-west of Edenderry, mainly in the townlands of Clonmore, Ballyheashill and Ballymacwilliam in County Meath. The site comprises a raised bog that includes both areas of high bog and cutover bog. The north-western margins of the site are bounded by roads and those on the south-east are bounded mainly by scrub and woodland.

The site consists of one crescent-shaped lobe, which is quite flat. There is an absence of permanent pools on the high bog. The raised bog is of particular interest as it is one of the most easterly remaining raised bogs in the country. The peripheral area of abandoned cutover bog has developed into a range of different habitats.

Much of the high bog vegetation is typical of the Midland Raised Bog type, consisting of Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*) and White Beak-sedge (*Rhynchospora alba*). The bog moss (*Sphagnum* spp.) cover is quite high, especially in the central areas of the bog. Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*) are also found on the bog, although not in abundance. A number of species of lichen (*Cladonia* spp.) are recorded from this site. There are a number of habitat types found on the cutover areas of the bog. These include areas of wet grassland dominated by Soft Rush (*Juncus effusus*), Purple Moor-grass (*Molinia caerulea*) and Yorkshire Fog (*Holcus lanatus*), areas with dense Bracken (*Pteridium aquilinum*) cover, Gorse (*Ulex europaeus*) scrub, Downy Birch (*Betula pubescens*) woodland and Ash (*Fraxinus excelsior*) dominated semi-natural woodland.

Irish Hare, a Red Data Book species, has been recorded at the site.

Current landuse on the site consists of peat-cutting around the edge of the high bog, and the drainage associated with this. Large portions of the bog have been burnt at regular intervals. These activities have resulted in loss of habitat and damage to the hydrological status of the site, and pose a continuing threat to its viability.

Black Castle Bog NHA 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. It is especially important because of its eastern location. This site also supports a wide range of habitats, especially associated with the cutover areas. Ireland has a high proportion of the total E.U. resource of raised bog (over 50%) and so has a special responsibility for its conservation at an international level.

14.11.2002

SITE SYNOPSIS

SITE NAME: DAINGEAN BOG NHA

SITE CODE: 002033

Daingean Bog NHA is located approximately 3 km south-west of Daingean in the townlands of Knockballyboy, Townparks and Clonad in eastern Co. Offaly. The site comprises a raised bog that includes both areas of high bog and cutover bog. The northern and southern margins of the site are bounded by roads, and agricultural fields form most of the boundaries at the east and west of the site.

The site consists of two main lobes. The northern lobe is much larger than the southern one and forms the majority of the high bog in the site. The lobes are separated by a drain running through a narrow, low-lying section between them. The cutover areas surrounding the site have, for the most part, been reclaimed for agriculture. The bog is of particular interest as it is one of the most easterly remaining raised bogs in the country.

Much of the high bog vegetation is typical of the Midland Raised Bog type, consisting of Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), White Beak-sedge (*Rhynchospora alba*) and bog mosses (*Sphagnum* spp.). Other plants include Bog-myrtle (*Myrica gale*), Bog Asphodel (*Narthecium ossifragum*), Bog-rosemary (*Andromeda polifolia*) and Deergrass (*Scirpus cespitosus*). The bog moss cover is low and consists mainly of species such as *Sphagnum capillifolium* and *S. papillosum*. On the cutover, some areas have been colonised by Gorse (*Ulex* spp.) and Birch (*Betula pubescens*). The Common Spotted-orchid (*Dactylorhiza fuchsii*) can be found beside some pools on the cutover. These pools are vegetated by Bogbean (*Menyanthes trifoliata*), Bottle Sedge (*Carex rostrata*) and the bog moss *Sphagnum papillosum*. The drained low-lying section of the southern lobe is dominated by Gorse and Willow (*Salix* spp.), with a ground flora including Purple Moor-grass (*Molinia caerulea*), Bramble (*Rubus fruticosus* agg.), Bog-myrtle (*Myrica gale*), Silverweed (*Potentilla anserina*), Meadowsweet (*Filipendula ulmaria*) and Yorkshire-fog (*Holcus lanatus*).

The site is host to a population of Irish Hare, a species listed in the Irish Red Data Book.

Current landuse on the site consists of a small coniferous plantation on cutover at the south-easterly margin of the high bog. Most of the cutover areas around the bog have been reclaimed for agriculture. Drainage associated with these activities and with old areas of peat-cutting, are severely drying out the bog, and have resulted in loss of habitat and damage to the hydrological status of the site, and pose a continuing threat to its viability.

Daingean Bog NHA 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. It is especially important because of its eastern location, at the extreme of the range of raised bogs in Ireland. Ireland has a high proportion of the total E.U. resource of raised bog (over 50%) and so has a special responsibility for its conservation at an international level.

14.11.2002

SITE SYNOPSIS

SITE NAME: NURE BOG NHA

SITE CODE: 001725

Nure Bog NHA is located 11 km south-west of Mullingar, mainly in the townlands of Lilliput (Nure) and Monaghanstown in Co. Westmeath. The site comprises a raised bog that includes both areas of high bog and cutover bog and adjoins Lough Ennell to the east.

This raised bog was originally part of a larger area that has now been mostly cutover and reclaimed for agriculture. Although this bog has no pools there are hummocks throughout the high bog. Cutover is found all around the high bog and there is an area of coniferous forestry on the cutover in the south of the site.

Much of the high bog has vegetation typical of a Midland Raised bog, consisting of Ling Heather (*Calluna vulgaris*), Cottongrass (*Eriophorum* sp.), Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*). The north of the site is wetter than the south, with the bog mosses *Sphagnum capillifolium* and *S. papillosum* forming the majority of the hummocks, but there are also occasional *S. imbricatum* and *S. fuscum* hummocks. The bog moss *S. subnitens* is also a species of note in the north of the site. Other bog moss species recorded for the site include *S. magellanicum* and the aquatic bog moss *S. cuspidatum*. The hummocks in the north of the site are colonised by Ling Heather, Cross-leaved Heath (*Erica tetralix*), Common Cottongrass (*E. angustifolium*), Cranberry, Bog-rosemary, Deergrass (*Scirpus cespitosus*) and Purple Moor-grass (*Molinia caerulea*), with Bog Asphodel (*Narthecium ossifragum*) found in the channels. In the southern half of the site the high bog is dryer and firmer with Ling Heather dominating. Bilberry (*Vaccinium myrtillus*) is also recorded on the hummocks in the south of the site with the moss *Campylopus introflexus* colonising bare peat. On the cutover in the south-west of the site there is an area of Downy Birch (*Betula pubescens*) woodland with Hawthorn (*Crataegus monogyna*) and Willow (*Salix* sp.) occasionally recorded amongst the Downy Birch. In the north-west of the site there has been some regeneration of old cutover with most of the species present on the high bog and good *Sphagnum* regeneration recorded in this region. In the north-east of the site old cutover is dominated by Ling Heather and Purple Moor-grass, with Bracken (*Pteridium aquilinum*), Bilberry, Gorse (*Ulex europaeus*) and small areas of Downy Birch also present. On cutover in the south-east of the site there is a dense stand of Cherry Laurel (*Prunus laurocerasus*) and there is some coniferous forestry on cutover in the very south of the site.

Current landuses on the site include peat-cutting, forestry, agriculture and shooting. Currently very little active peat-cutting is taking place in the east and south of the site but there are reports of more cutting being planned for the site. There is coniferous forestry on the cutover in the south of the site.

The main area of agricultural land within the site is in the south-east. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog. There is evidence of clay pigeon shooting on the site and dumping has been reported for this site. All these activities have resulted in the loss of habitat, damage to the hydrological status of the site and pose a continuing threat to its viability.

Nure Bog NHA 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. This site supports a good diversity of raised bog microhabitats, including hummocks and directly adjoins Lough Ennell cSAC (685). Ireland has a high proportion of the total E.U. resource of this habitat type (over 50%) and so has a special responsibility for its conservation at an international level.

14.11.2002



Site Name: Raheenmore Bog SAC

Site Code: 000582

This raised bog developed in a small basin in the catchment of two major river systems i.e. the Brosna and the Boyne. It is situated about 5 km from Daingean in Co. Offaly. The peat is very deep, up to 15 m in places. The bog has a well-developed hummock and hollow system.

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*).

Raheenmore Bog contains a relatively large wet central core of active raised bog. The hummocks are often colonised by the bog mosses *S. imbricatum* and *S. fuscum*. Pools are well-represented, and it is the pool edges and wet lawns that the Rhynchosporion habitat is best developed. These areas are typically dominated by the bog moss *S. cuspidatum*. The associated vascular plant flora is species-poor, with Bogbean (*Menyanthes trifoliata*), White Beak-sedge, Bog Asphodel, Common Cottongrass (*Eriophorum angustifolium*) and Great Sundew (*Drosera anglica*) being the main species. In places, lawns of *Sphagnum magellanicum* have infilled the pools. Overall, the cover of *Sphagnum* moss on the bog is very good.

Degraded raised bog dominates the marginal areas of the uncut high bog where drainage effects are most pronounced. The vegetation of these degraded areas is still dominated by plant species typical of intact raised bog, though the vegetation tends to be less species-rich than in intact areas and the cover of *Sphagnum* is usually below

25%. The typical dominant species in degraded areas include Heather (*Calluna vulgaris*), Bog Asphodel, Cottongrasses (*Eriophorum* spp.), Deergrass, Cross-leaved Heath (*Erica tetralix*) and Carnation Sedge.

Of note at this site is the fact that, on the western side, mineral springs feeding the lagg zone still survive. A lagg zone is the transitional area at the edge of a bog, between the raised bog peat and the surrounding mineral soils. Conditions are often different here due to the fact that the water in the lagg zone is a mix of water coming from the bog as well as mineral-rich waters from outside. Lagg zones are uncommon features now, due to peat cutting and other land use activities which have removed or altered them significantly in most cases.

The high bog is surrounded by cutover bog. Some sections of old cutover have narrow strips of Downy Birch (*Betula pubescens*) woodland developing. Much of the rest of the cutover is now wet grassland, rich in rushes (*Juncus* spp.) and Purple Moor-grass (*Molinia caerulea*). Common Valerian (*Valeriana officinalis*), Meadowsweet (*Filipendula ulmaria*) and Brown Sedge (*Carex disticha*) can also be found in fields at the bog margins.

In 1959, the very rare Rannock-rush (*Scheuchzeria palustris*), found in its only Irish station in a nearby bog, was transplanted to Raheenmore Bog. However, it has not been recorded recently and may be now extinct.

Raheenmore Bog is within the breeding territory of a pair of Merlin, a scarce species in Ireland and one that is listed on Annex I of the E.U. Birds Directive. Other typical bogland birds which breed here include Red Grouse and Snipe. Red Grouse has declined in Ireland in recent years and is now a Red-listed species.

The structure of the bog habitat has been affected by drainage. This has resulted from peat-cutting along the margins of the bog which has led to the lowering of the water table within the adjoining, intact high bog areas. However, the prospects for the future functioning of the habitat are generally good, as the National Parks and Wildlife Service (NPWS) own much of the site and an extensive programme of drain blocking has taken place. Although the north-eastern section of the bog suffered from burning in the past, the majority of the site is relatively unaffected by this practice at present. Also, peat extraction has largely discontinued.

Raheenmore Bog is a classic example of a midland raised bog and the deepest remaining in Ireland. It 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). Most of the site is owned by the NPWS and there has been considerable research and restoration work carried out on the site over the past 15 years. Of particular notes is that this is one of the few raised bogs where restoration of the lagg zone remains feasible.

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.

Offaly County Council, Planning Dept. - Inspection Purposes Only

9.12.2009

SITE SYNOPSIS

SITE NAME: RAHUGH RIDGE (KILTOBER ESKER)

SITE CODE: 000918

Known to some as Rahugh Ridge and to others as Kiltober Ridge, this proposed Natural Heritage Area starts about 9km north-east of Tullamore and runs for about 2.5km in a north-easterly direction. It is a particularly fine esker ridge covered for almost its entire length in woodland. There has been some quarrying of gravel in the past.

The dominant species are Ash (*Fraxinus excelsior*) and Hazel (*Corylus avellana*), with the community almost certainly falling into the Corylo-Fraxinetum association. The wood is exceptionally rich in species with several uncommon or rare species present. These include Dogwood (*Cornus sanguinea*), Columbine (*Aquilegia vulgaris*), Buckthorn (*Rhamnus catharticus*), Stone Bramble (*Rubus saxatilis*), Whitebeam (*Sorbus hibernica*) and Wood Melic (*Melica uniflora*). It is particularly unusual to find these species growing together.

Pedunculate Oak (*Quercus robur*) occurs in small amounts throughout the wood but evidence from old stumps indicates that it was probably at one time more common. A certain amount of felling has clearly occurred throughout the wood and some areas have been clear-felled to create small fields, although some of these have subsequently been abandoned. In these old fields and around the quarries rabbit grazing maintains patches of scrubby grassland.

At the south-western end there are a number of small fields between the foot of the slope and the Silver River. These are subject to flooding and make an interesting contrast with the dry esker slopes.

Gravel extraction is by no means advocated as a suitable management for the site, but of the small existing pits that have been allowed to become recolonised, the southernmost now has a colony of the nationally rare and protected Red Hemp-nettle (*Galeopsis angustifolia*).

Site Name: Split Hills and Long Hill Esker SAC

Site Code: 001831

Split Hills and Long Hill Esker is a 5 km long site which crosses the main Galway-Dublin road mid-way between Kilbeggan and Tyrrellspass in Co. Westmeath. It is a prominent feature on the local landscape.

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*
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The main habitat at this site is semi-natural woodland dominated by Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*) and Hawthorn (*Crataegus monogyna*). Pedunculate Oak (*Quercus robur*), Wych Elm (*Ulmus glabra*) and Irish Whitebeam (*Sorbus hibernica*) are other important constituents. There are very fine examples of these trees throughout the site, with some of the Hazel trees, in particular, being impressive. The ground flora is species-rich and includes Primrose (*Primula vulgaris*), Enchanter's-nightshade (*Circaea lutetiana*), Golden-saxifrage (*Chrysosplenium oppositifolium*), Bluebell (*Hyacinthoides non-scripta*), Ground-ivy (*Glechoma hederacea*), Sanicle (*Sanicula europaea*) and other typical woodland plants. The scarce woodland grass, Wood Fescue (*Festuca altissima*), is present, and the scarce Bird's-nest Orchid (*Neottia nidus-avis*) has also been recorded here. The presence of Wych Elm is interesting in view of its decline due to Dutch elm disease.

Several areas of species-rich calcareous grassland occur, with typical calcicole species such as Yellow-wort (*Blackstonia perfoliata*), Carlina Thistle (*Carlina vulgaris*), Mountain Everlasting (*Antennaria dioica*) and Early-purple Orchid (*Orchis mascula*). These occur on unstable old and active quarry faces, and on cleared woodland areas.

Areas of scrub with Blackthorn (*Prunus spinosa*) and Gorse (*Ulex europaeus*) occur, and regenerating Hazel scrub exists in some areas where woodland has been cleared. Other habitats in the site include a small lake and freshwater marsh with Slender Sedge (*Carex lasiocarpa*).

Narrow-leaved Bitter-cress (*Cardamine impatiens*) occurs among the woodland flora at this site. It is an annual or biennial, whose populations are known to 'disappear' in some years only to 'reappear' again. The species is protected under the Flora (Protection) Order, 1999, and this is its only known location in Ireland. Another legally protected species, Red Hemp-nettle (*Galeopsis angustifolia*), occurs on more open ground on the esker.

The main threat to the esker is quarrying for sand and gravel. This activity already occurs on the site at several locations. Grazing is a critical factor affecting esker habitats, and getting a balance right is important. The presence of too many grazers causes damage to the ground vegetation in both woodlands and grasslands and prevents regeneration of woody species. However, if the grazing level is too low, grasslands are vulnerable to the encroachment of scrub at the expense of species which require open conditions. Fertiliser application, associated with agricultural improvement, also leads to a reduction in species-richness of grasslands.

Split Hill and Long Hill Esker is one of the finest and longest wooded eskers in the country. It is also one of the few woodlands in the area and a fine geomorphological feature of great scenic value. The trees are particularly well-grown and impressive, and much of the woodland has developed naturally on its steep slopes. The presence of a species-rich ground flora, which includes a rare and legally protected plant species at its only known Irish location, makes this site of great botanical and ecological importance. The site also supports some excellent examples of calcareous grassland which is rich in orchids. The increasing rarity of this habitat (due to agricultural intensification) is recognised in that it is awarded priority status on Annex I of the E.U. Habitats Directive.

Site Name: Lough Ennell SAC

Site Code: 000685

Lough Ennell is a large, open, steep-sided lake, located 3 km south of Mullingar in Co. Westmeath. The lake bottom is of limestone with a marl deposit. The water is markedly alkaline and mesotrophic, possibly owing to effluents received from Mullingar town and to fertilizer inputs from farmland surrounding the lake. The River Brosna flows into the lake from the north at Butler's Bridge, and out from the south.

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

Lough Ennell supports a diverse aquatic flora. Seven stonewort species have been identified, including two Red Data Book species, *Chara denudata* and *C. tomentosa*.

Much of the lakeshore consists of dry, stony ground colonised by calcareous grassland. These areas were formerly part of the lake bed but are now exposed as a consequence of drainage. Species such as Mountain Everlasting (*Antennaria dioica*), Hairy Lady's-mantle (*Alchemilla filicaulis* subsp. *vestita*), Frog Orchid (*Coeloglossum viride*), Fairy Flax (*Linum catharticum*) and Yellow-wort (*Blackstonia perfoliata*) occur here.

Alkaline fen is also found on the lake shore, with species such as Grass-of-parnassus (*Parnassia palustris*), Marsh Pennywort (*Hydrocotyle vulgaris*) and Bottle Sedge (*Carex rostrata*). In wet marshy patches along the shore Marsh-marigold (*Caltha palustris*), Brookweed (*Samolus valerandi*) and Lesser Water-plantain (*Baldellia ranunculoides*) are common.

Reedbeds and species-poor swamp vegetation fringe the lake in places, particularly around the points of inflow and outflow, and on the eastern shore around Tudenham Park. Common Reed (*Phragmites australis*) is abundant here. Water-plantain (*Alisma plantago-aquatica*), Cowbane (*Cicuta virosa*), Frogbit (*Hydrocharis morsus-ranae*) and Tufted-sedge (*Carex elata*) also occur. The latter two species are of note in that they have restricted distributions in Ireland. The rare Fibrous Tussock-sedge (*Carex appropinquata*) has also been recorded from this site.

Mixed woodland of Beech (*Fagus sylvatica*), Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*) fringes the lakeshore to the north-west. Bluebell (*Hyacinthoides non-*

scripta) and Lords-and-ladies (*Arum maculatum*) are among the woodland ground flora.

Yellow Archangel (*Lamiastrum galeobdolon*), a rare plant listed in the Red Data Book, has been recorded in the woods along the eastern shores of Lough Ennell. This is the only record for this species outside the south-east of Ireland.

The rare Myxomycete fungus, *Licea castanea*, has been recorded from woodland in the site. A species of blue-green alga (*Schizothrix fasciculata*), which forms little pebbles of lime that are cast up on the lakeshore, occurs in Lough Ennell and has not been recorded elsewhere in Ireland.

Scharff's Char (*Salvelinus scharffi*), a distinct race of char which was once found only in Lough Owel and Lough Ennell, is now thought to be extinct. Notable aquatic invertebrates recorded from the lake include *Tinodes maculicornis* (Order Trichoptera), *Metalyte fragilis* (Order Trichoptera), *Limnephilus nigriceps* (Order Trichoptera), *Picromerus bidens* (Order Heteroptera), *Monarthia humili* (Order Hemiptera) and *Donacia obscura* (Order Coleoptera).

This site shares an internationally important Greenland White-fronted Goose flock with Loughs Iron, Glen and Owel. The numbers of geese which visit Lough Ennell are lower than for the other lakes: 91 birds (3 year average peak). Nationally important bird populations which have been recorded on Lough Ennell are: Cormorant (average peak 149; absolute maximum 448); Mute Swan (average peak 424); Pochard (average peak 889; maximum 2,600 on 8/11/85); Tufted Duck (average peak 720) and Coot (average peak 639). All of these data were compiled from counts made over 3 seasons, 1984/85 - 1986/87. A single count of 522 Golden Plover was obtained in that period, constituting a regionally important population.

Lough Ennell is an important amenity area, much used for fishing, boating and camping. Sections of the shoreline are managed for visitor access and amenity. The chemical composition of effluent from the Mullingar sewage treatment plant has a significant impact on the water quality of Lough Ennell. The mid-1970s saw the introduction of treatment of the sewage to reduce phosphates, with a resulting improvement in water quality (according to data compiled during 1987-90). However, levels of planktonic algal growth in the lake water continue to fluctuate, in response to the variable efficiency of the phosphate removal facility at the sewage treatment plant and the re-mobilization of phosphate from the lake sediments.

Lough Ennell is of significance as a highly productive lake which supports a rich variety of lower plant and invertebrate species. Its lakeshore habitats, which include alkaline fen, a habitat listed on Annex I of the E.U. Habitats Directive, support a diverse flora. These habitats also provide important refuges for wildfowl.

SITE SYNOPSIS

SITE NAME: ARDAN WOOD

SITE CODE: 001711

Ardan Wood is a crescent shaped woodland on a steep slope, about 5km west of Kilbeggan, forming the edge to a broader deposit of glacial drift than the normal eskers. It is wooded mostly by large Pedunculate Oak (*Quercus robur*) with a mixed and varied ground flora. Shrubs include Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*), Spindle (*Euonymus europaeus*), Bramble (*Rubus fruticosus* agg.) and roses (*Rosa canina* and *R. arvensis*).

Epiphytic mosses and lichens occur frequently and there is also a good fungal flora.

Though these trees were probably planted, the community appears little different from a natural wood.

It is a valuable demonstration of the natural climax forest type that the other esker vegetation is approaching, and forms an important part of the series of woodlands in the east of the country.

Oak trees are renowned for the abundance of the invertebrate and lower plant communities associated with them. They are instructive examples of the complexity and interrelations in the ecosystem and are particularly valuable in this case, of their size.

This wood is likely to house nesting Sparrowhawks, and Long-eared Owls.

SITE SYNOPSIS

SITE NAME: MURPHY'S BRIDGE ESKER

SITE CODE: 001775

This elongated gravel ridge is a feature of glaciation. It was formed under the ice mass which covered the Irish Midlands during the last Ice Age. The ridge runs in a north-east/south-west direction, and is bisected by the Grand Canal approximately 7km north-east of Tullamore. The site is contiguous with Rahugh Esker.

The land cuts through the esker, just north of Murphy's Bridge. In this area, exposed gravel slopes support patches of dry calcareous grassland vegetation which is remarkably species-rich. Yellow-wort (*Blackstonia perfoliata*), Carline Thistle (*Carlina vulgaris*), Burnet-saxifrage (*Pimpinella saxifraga*), Weld (*Reseda luteola*), Goldenrod (*Solidago virgaurea*), Field Scabious (*Knautia arvensis*) and Crested Hair-grass (*Koeleria macrantha*) are among the plants which occur here. Two aromatic herbs also occur, namely Marjoram (*Origanum vulgare*) and Wild Garden (*Thymus polytrichus*). Irish Whitebeam (*Sorbus hibernica*) bushes are scattered on the open slopes. This species occurs only occasionally throughout the country but mostly in the Midlands.

Elsewhere, the esker supports broadleaved woodland, while in some places this has been cleared for pasture. These habitats require further examination/survey.

The rare and legally protected Red Hemp-nettle (*Galeopsis angustifolia*) (Flora Protection Order, 1999) has recently been recorded in this site. This species grows on eskers in arable fields and in waste places. It has been recorded at only seven sites in four counties in the Republic since 1970. Another rare plant, Blue Fleabane (*Erigeron acer*) grows on this site with Red Hemp-nettle. This plant favours calcium-rich substrates and is found on eskers, dry grassland, sandy pastures and walls. It is listed in the Red Data Book and is considered threatened in Ireland.

The majority of Irish eskers are exploited for their sand and gravel deposits. Quarrying results in the removal or destruction of esker habitats and threatens the survival of the plants which grow there. Application of fertiliser and/or herbicide to improve esker grasslands for agricultural use is a common practice. This activity leads to removal of the semi-natural vegetation and has been deemed a major factor in the decline of a range of plant species now rare in Ireland. Removal of timber leads to the depletion of esker woodlands, while over-grazing by sheep/cattle can prevent tree regeneration and cause damage to grassland vegetation.

Just east of the canal at this stage, the gravel slopes are used for motorbike scrambling. This maintains the open, loose-gravel slopes which seem to be attractive to many plants, although over-use of the slopes could cause damage. This particular area is owned by the Office of Public Works (OPW) and there is the potential for developing a management strategy which is compatible with the conservation of the habitat.

Intact eskers are increasingly rare in Ireland. This site remains a good example of its type and has a range of habitats present. Of particular interest is its rich calcicole flora on exposed gravel slopes, which includes two rare species, one of which is protected by law.

26.11.2009

Offaly County Council, Planning Dept. - Inspection Purposes Only

SITE SYNOPSIS

SITE NAME: ROYAL CANAL

SITE CODE: 002103

The Royal Canal is a man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. There is a branch line from Kiltashee to Longford Town. The canal NHA comprises the central channel and the banks on either side of it. The main water supply is from Lough Owel (also an NHA) via a feeder channel into the canal at Mullingar. The Royal Canal was closed to navigation in 1961. The section of canal west of Mullingar was allowed to dry out, and the eastern section silted up and became overgrown. Restoration began in 1988, and is still in progress.

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. Crested Dog's-tail (*Cynosurus cristatus*), Quaking-grass (*Briza media*) and Sweet Vernal-grass (*Anthoxanthum odoratum*) are typical species of the calcareous grasslands of the midlands. 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.

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

The rare and legally protected Opposite-leaved Pondweed (*Groenlandia densa*) (Flora Protection Order 1987) is present at one site in Dublin, between Locks 4 and 5. *Tolypella intricata* (a stonewort listed in the Red Data Book as being vulnerable) is also in the Royal Canal in Dublin, the only site in Ireland where it is now found.

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