

APPENDIX I: SITE SYNOPSES

OF THE
ENVIRONMENTAL REPORT
OF THE
**GALWAY COUNTY DEVELOPMENT PLAN
2009-2015**

STRATEGIC ENVIRONMENTAL ASSESSMENT



For: Galway County Council

County Buildings
Prospect Hill
Galway



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Site Synopses

Candidate Special Areas of Conservation¹

Site Name: Inishmaan Island

Site Code: 000212

Inishmaan is the middle of the three Aran Islands, situated approximately 15km off the west coast of County Clare. Geologically, the Island is an extension of the Burren. The shallow soil is a man-made combination of sand and seaweed built up over the centuries. Pockets of rendzina are found throughout the limestone pavement. This site is of major scientific importance owing to the range of outstanding Karstic Carboniferous Limestone and coastal habitats, many of which are listed as priority and Annex I habitats under the European Habitats Directive. The site is dominated by limestone pavement and its associated calcareous grasslands. Other Annex I habitats which occur include dry heath, lowland hay meadows and orchid-rich calcareous grassland. A network of small, stone-walled fields dissect the Island. Each field encloses an area of limestone pavement interspersed with fine examples of species-rich, dry calcareous grasslands. In places, the rocky grasslands support Rare plant species: Hairy Violet (*Viola hirta*) and Wood Small-reed (*Calamagrostis epigejos*). Both species are legally protected under the Flora Protection Order (1987). Common species include Blue Moor-grass (*Sesleria albicans*) and Eyebright (*Euphrasia* spp.), along with Knapweeds (*Centaurea nigra* and *C. scabiosa*), Orchids (Orchidaceae), Bloody Cranesbill (*Geranium sanguineum*) and Spring Gentian (*Gentiana verna*). The southern part of the Island supports the highest proportion of these calcareous meadows. Dry limestone heath has developed in places, with Ling Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Purple Moor-grass and Black Bog Rush (*Schoenus nigricans*) recorded from this habitat. Hoary Rockrose (*Helianthemum canum*), a species listed in the Irish Red Data Book, occurs regularly throughout the dry heath and alpine heath habitats on the Island. Elsewhere on rocky crevices are found two other Red Data Book species: Pyramidal Bugle (*Ajuga pyramidalis*) and Musk Thistle (*Carduus nutans*). The range of Annex I coastal habitats present includes sea cliffs, embryonic dunes, Marram dunes, shingle and stony beaches, and machair. The latter is a priority habitat under the Habitats Directive. This coastal grassland, or machair habitat, is characterised by a species-rich, dry calcareous grassland, with a short turf and a low abundance of sand-binding species such as Marram Grass (*Ammophila arenaria*). Machair is also an important invertebrate and breeding bird habitat. The coastal habitats play host to a number of Rare plant species, including Purple Milk-vetch (*Astragalus danicus*) and Hairy Violet, both of which are legally protected under the Flora Protection Order (1987). Purple Milk-vetch is confined to Inishmaan and Inishmore, where it occurs on machair and sandy places close to the sea. Another rarity found on the coastal sands and shingle is the Red Data Book species Sea Kale (*Crambe maritima*). Traditional farming practices, in the form of rye cultivation for thatching, has maintained suitable habitat for a number of Rare and threatened arable weeds. Darnel (*Lolium temulentum*), Smooth Brome (*Bromus racemosus*), Cornflower (*Centaurea cyanus*) and Bristle Oat (*Avena strigosa*) all occur on Inishmaan. All four species are listed in The Irish Red Data Book and, prior to their discovery on

the Aran Islands, some of these species were thought to have been extinct in Ireland. Six pairs of flocking Chough were sighted off the cliffs to the west of the Island. Two breeding pairs of this species are known to be present on the Island. The Island is also important for breeding terns, with seven pairs of Arctic Tern and three pairs of Little Tern known to occur. All three species mentioned are listed under Annex I of the European Birds Directive. Seabirds which can be regularly seen around the Island include Cormorant, Shag, Fulmar and a range of Gull species. Inland habitats support Sparrowhawk, Kestrel, Raven, Dunnock, Wren, Pied Wagtail, Stonechat and Wheatear. In all, 39 species of bird were recorded during the NHA survey in 1993. Agricultural intensity is lowest on Inishmaan, compared with the other two Islands. The majority of the land is used as winterage for cattle, sheep and, in some places, goats. The fields located close to the houses are used for summer grazing. This low-impact farming, combined with the absence of fertiliser, has maintained the species-richness and high diversity of the Island flora. A move towards agricultural intensification would see the deterioration of this unique environment. The survival of the complement of Rare arable weeds which occur here depends on continuation of the current traditional practice of rye cultivation for thatching. Plans to develop the Island for tourism and amenity require close monitoring, in order to safeguard the wildlife and scientific value of Inishmaan. Inishmaan is of considerable scientific interest primarily for the wide range of good quality habitats which occur, and the floristic richness of many of these habitats. The Island supports an impressive array of critically rare and threatened plant species. The cultural heritage of Inishmaan (and in particular the continuation of traditional, low-intensity farming practices) is intrinsically linked with its scientific interest. The Island is also of high scenic and amenity value.

16.1.1997

Site Name: Inishmore Island

Site Code: 000213

Inishmore Island is the largest of the three Aran Islands, situated approximately 8km off the south coast of County Galway. Geologically an extension of the Burren, Co. Clare, the Island is formed of Upper Carboniferous limestone strata, interleaved with layers of shale and clay. In places along the coast, splendid cliffs rise to 90m. A thin cover of rendzina occurs in pockets between blocks of bare limestone. This soil is combined with a mixture of sand and seaweed to form a unique man-made soil cover, built up over the centuries. The site includes a large area of marine waters surrounding the island. The site is a candidate SAC selected for lagoon, fixed dune, machair, orchid-rich grassland and limestone pavement, all priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for other habitats listed on Annex I of the directive – lowland hay meadows, perennial vegetation of stony banks, reefs, sea cliffs, shifting dunes, Marram dunes, dune slack, dunes with Creeping Willow, marine caves, alpine heath and dry heath. In addition, the site is also selected as a candidate SAC for *Vertigo angustior*, an animal listed on Annex II of the E.U. Habitats Directive. Inishmore has many good examples of submerged reef communities that are extremely exposed to wave action. On the infralittoral reef are two exceptional communities. Ireland's only recorded example of a population of sublittoral purple sea urchins (*Paracentrotus lividus*) is on the west of the island, while at the reef in Blind Sound, is Ireland's best

¹ National Parks and Wildlife (various) *Site Synopses for candidate Special Areas of Conservation* Dublin: Government of Ireland

example of an extremely exposed, shallow, infralittoral community that is dominated by a forest of the brown seaweed, *Alaria esculenta*, with a red seaweed and anemone turf. Rare species are present in the infralittoral reef community, including soft corals, sea fans and anemones. In deeper water, there are many unusual and fragile circalittoral reef communities. Communities that are characterized by the rare sea fan, *Eunicella verrucosa*, are widespread and species rich despite their fragility. A number of other notable circalittoral species are found, including sponges, hydroids, nudibranchs, soft corals and ascidians. Large submerged marine caves on the south east coast are unusually species rich (76 species recorded) and are characterized by a diverse fauna of sponges, hydroids, bryozoans, soft corals, anemones, nudibranchs, echinoderms and ascidians. Some of the caves extend back as far as 20 to 30 metres. They are probably the best known sea caves in Ireland. Limestone pavement and its associated plant communities dominate the upland area to the south of the Island. The limestone pavement includes smooth-blocky and shattered types. The bare pavement is interspersed with fine examples of species-rich, dry calcareous grasslands. Dry heath, alpine heath and lowland hay meadows are additional habitats which occur on Inishmore. A network of small, stone-walled fields dissect the Island. Each field encloses an area of limestone pavement interspersed with fine examples of species-rich, dry calcareous grasslands. Common species here include Blue Moor-grass (*Sesleria albicans*), Eyebright (*Euphrasia* spp.), Wood Sage (*Teucrium scorodonia*), Carline Thistle (*Carlina vulgaris*) and Burnet Rose (*Rosa pimpinellifolia*), along with Knapweeds (*Centaurea nigra* and *C. scabiosa*), Orchids (Orchidaceae), Bloody Cranesbill (*Geranium sanguineum*) and Spring Gentian (*Gentiana verna*). The southern part of the Island supports the highest proportion of these calcareous meadows. Elsewhere, on rocky crevices, are found two Red Data Book plant species: Pyramidal Bugle (*Ajuga pyramidalis*) and Wood Small-reed (*Calamagrostis epigejos*). The latter species is legally protected under the Flora Protection Order (1987). Dry limestone heath has developed in places, with Ling Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Purple Moor-grass and Black Bog Rush (*Schoenus nigricans*) recorded from this habitat. Hoary Rockrose (*Helianthemum canum*), a species listed in the Irish Red Data Book, occurs regularly throughout the dry heath and alpine heath habitats on the Island. A range of coastal habitats, listed on Annex I of the Habitats Directive, occur around the Island, including embryonic dunes, Marram dunes, dunes slack, dunes with Creeping Willow (*Salix repens*), sea cliffs, perennial vegetation of stony banks, reefs and the priority habitats lagoon, fixed dunes and machair. Sea cliffs occur along much of the southern coast of Inishmore and reach in excess of 80 m at the south-west end. The cliffs are mostly sheer and very exposed to the force of the Atlantic. They support a typical cliff flora, including the scarce Roseroot (*Rhodiola rosea*). Inishmore supports a variety of karstic lagoons, a type which is believed to be rare in Europe. All are in a natural state and of good quality. Loch Phort Chorrúch and L. Dearg are good examples of karstic lagoons with cobble barriers. L. an Chara, in particular, is a good example of a karstic saline lake lagoon with underground connections to the sea. It behaves almost like a 'tidal turlough'. The flora is typically lagoonal with three lagoonal specialists. The fauna is not rich but comprises a high number of lagoonal specialists, including the rare corixid species *Sigara selecta*. Machair is a form of coastal grassland which is characterised by a species-rich, dry calcareous grassland, with a short turf and a low abundance of sand-binding species such as Marram Grass (*Ammophila arenaria*). The coastal habitats of Inishmore support a range of Rare plant species. Purple Milk-vetch (*Astragalus danicus*) grows on machair and sandy

places close to the sea. It is confined to Inishmore and Inishmaan and is legally protected under the Flora Protection Act (1999). Sea Kale (*Crambe maritima*) occurs on coastal sands and shingle around the island; Hairy Violet (*Viola hirta*) and Bee Orchid (*Ophrys apifera*) can be found among the coastal grasslands. All three species are listed in the Irish Red Data Book, and Hairy Violet is legally protected under the Flora Protection Order (1999). Traditional farming practices, in the form of rye cultivation for thatching, has maintained suitable habitat for a number of rare and threatened arable weeds. Darnel (*Lolium temulentum*), Smooth Brome (*Bromus racemosus*), Cornflower (*Centaurea cyanus*) and Bristle Oat (*Avena strigosa*) all occur on Inishmore. All four species are listed in The Irish Red Data Book and, prior to their discovery on the Aran Islands, some of these species were thought to have been extinct in Ireland. The birdlife of Inishmore is considered to be of international significance, due to the presence of significant numbers of bird species listed under Annex I of the European Birds Directive. Chough, Little Tern, Arctic Tern and Peregrine Falcon all breed here. Additional bird species on Inishmore include Merlin, Kestrel, Sparrowhawk, Linnet and Goldfinch. Along the western coastline, cliffs provide excellent nesting sites for Guillemot, Fulmar, Razorbill, Shag, Herring Gull, Great Black-backed Gull and Kittiwake. A colony of Common Seals is occasionally seen, resting on the island's shores. This species is listed under Annex II of the European Habitats Directive, as it is threatened in Europe. The mollusc, *Vertigo angustior*, a species that is listed on Annex II of the E.U. Habitats Directive, occurs at three different locations within the site, two on dune and one on maritime grass, the latter an unusual habitat for the species. This is the only known island population of this rare snail. Most of the island is grazed by cattle and sheep and, in places, goats. Agricultural intensity is relatively higher here than on the other two Aran Islands. Parts of the site have been damaged by overgrazing and agricultural improvement. Elsewhere, the abandonment of farming, in favour of tourism and related enterprises, has resulted in the increase in scrub and particularly Bramble (*Rubus fruticosus* agg.) thickets. This is at the expense of species-rich grasslands. An increase in leisure activities, in particular scrambling and walking, on the Marram dunes at the east of the Island, has resulted in damage to this habitat. Maintenance of traditional farming practices, which include winter grazing, absence of fertilisers and the cultivation of rye for thatching, is vital, to preserve the species richness and high diversity of the Island flora. Development plans for tourism and amenity require close monitoring, to safeguard the wildlife and scientific value of this unique environment. Inishmore is of considerable scientific interest primarily for the wide range of good quality habitats which occur, and the floristic richness of many of these habitats. The Island supports an impressive array of critically rare and threatened plant species, and it also provides excellent habitat for several bird species which are becoming increasingly rare in Ireland and Europe. The cultural heritage of Inishmore (and in particular the continuation of traditional, low-intensity farming practices) is intrinsically linked with its scientific interest. The Island is also of high scenic and amenity value. 29.05.2003

Site Name: River Shannon Callows

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 most of its length the site is bordered by raised bogs - many, but not all, in the process of 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 of similar habitats, River Suck Callows and Little Brosna Callows. The River Shannon Callows is mainly composed of lowland wet grassland. Different plant communities occur, depending on elevation, and therefore their flooding patterns. Two habitats listed on Annex I of the EU 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*). Two further 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 of mainly 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 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 caryophylla*, *C. flacca*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Knapweed (*Centaurea nigra*), and Narrow-leaved Plantain (*Plantago lanceolata*). Ferns associated with the cracks in the paving include *Asplenium trichomanes*, *A. ruta-muraria*, *A. adiantum-nigrum*, *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 *Hylacomium brevirostre*. Yew (*Taxus baccata*) occurs at one area. Other habitats of smaller area but equal 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 Fern (*Ophloglossum vulgatum*) and Spring-sedge (*Carex caryophylla*), and both contain an unusually wide variety of grasses, including False Oatgrass (*Arrhenatherum elatius*), Yellow Oatgrass (*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 broad-leaved semi-natural woodland dominated by both Birch (*Betula pubescens*) and Alder (*Alnus glutinosa*) and dry broad-leaved woodland dominated by Hazel (*Corylus avellana*). 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.). Two legally-protected plant species (Flora (Protection) Order 1999) 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 the Meadow Barley in Ireland. The Red Data Book plant Green-winged Orchid (*Orchis morio*) is known from dry calcareous grasslands within the site, while the site also supports a healthy population of Marsh Pea (*Lathyrus palustris*). The site is of International Importance for wintering waterfowl as numbers regularly exceed the 20,000 threshold (mean of 34985 for 5 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 5 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 continues to hold 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. The total population of breeding waders (Lapwing, Redshank, Snipe and Curlew) in 1987 was one of three major concentrations in Ireland and Britain. The breeding Redshank, numbers was estimated at 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 EU 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 can as of yet be said to be serious. 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 EU Habitats Directive occur within the site – *Molinia* meadows and lowland hay meadows with good examples of a further two Annex habitats (both 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.

22.10.2003

Site Name: Coolcam Turlough

Site Code: 000218

Coolcam Turlough lies in a complex area of eskers on the borders of Galway and Roscommon, south of Ballinlough. It is a typical, wet, western turlough, with a semi-permanent lake with marl deposits, as well as several separate, more muddy basins which dry out in summer. The nearby eskers are sinuous, with a general north-south orientation - the turlough basin has this orientation also. The turlough has no permanent inflow but the main basin takes water from a boggy area to the north, and a smaller quantity from the south-west corner. The open water at the site has a central stand of Common Club-rush (*Schoenoplectus lacustris*) and Great Fen-sedge (*Cladium mariscus*), but outside this, the marl community is well-developed, with Shoreweed (*Littorella uniflora*), Lesser Water-plantain (*Baldellia ranunculoides*) and Various-leaved Pondweed (*Potamogeton gramineus*) - the species most often found in lime-rich turloughs. Aquatic Stoneworts (*Chara* spp. including *C. hispida*) also occur. Another plant community which occurs in the wetter parts of the site includes Fine-leaved Water-dropwort (*Oenanthe aquatica*), Unbranched Bur-reed (*Sparganium emersum*) and Amphibious Bistort (*Polygonum amphibium*). Peat deposits occur around the shore and on rises within the basin, which are colonised by Creeping Willow (*Salix repens*), with associated herbs Yellow Loosestrife (*Lysimachia vulgaris*) and Marsh Speedwell (*Veronica scutellata*). These species are widely found on similar sites in the Galway/Roscommon area. Other common species present include Creeping Bent (*Agrostis stolonifera*), Water Horsetail (*Equisetum fluviatile*), Floating Sweet-grass (*Glyceria fluitans*), Common Spike-rush (*Eleocharis palustris*) and Water Forget-me-not (*Myosotis scorpioides*). There is also some Purple Moor-grass (*Molinia caerulea*), Tufted Vetch (*Vicia cracca*) and a range of sedges (*Carex* spp., including abundant *Carex nigra*). The main basin terminates at the northern end in a cutover peaty area. In the south-eastern corner, where the ground rises towards an esker, woodland occurs, with Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and Pedunculate Oak (*Quercus robur*). Sweet-briar (*Rosa rubiginosa*) and Eared Willow (*Salix aurita*) are found along the edges, in the flood debris. Bird counts carried out in summer, 1990, indicate that Mallard, Lapwing, Whimbrel and Dunlin possibly breed at the site. Heron and Curlew have also been recorded.

Gravel pits exist on all sides of the turlough but they have not yet affected any of the eskers in the immediate vicinity. There is a large quarry to the south-east: activities here would influence the hydrology of the site should they extend below the watertable. The turlough is grazed by cattle and sheep. There is little intensive farming in the region. Coolcam is an exceptional site in a fine landscape setting which involves two of the most distinctive habitats in Ireland - turlough and esker. It is one of the very few sites where these two features are juxtaposed. The site is little-damaged: the margins are fully intact, and the vegetation is diverse and natural in appearance. The close approach of other habitats to the turlough, especially bogland and partly wooded eskers adds to the value of the site, as it produces interesting transitional zones in the vegetation. Because of its wetness, Coolcam is an important site for birdlife. A survey of turloughs in Ireland rated Coolcam as the most valuable in the north Midlands, and rated it as being of international importance.

13.1.1997

Site Name: Barroughter Bog

Site Code: 000231

Barroughter Bog is a relatively small raised bog, situated on the shores of Lough Derg, a few kilometres east of Woodford, and bounded in the north by the Cappagh River. The bog has a good dome, which is slightly hollowed towards the eastern side. The north-eastern corner (cut off by an old drain and track), and a narrow area in the south-east, are fairly dry due to drainage and burning. The site is a candidate Special Area of Conservation selected for active raised bog, degraded raised bog and Rhynchosporion habitats that are listed on Annex I of the E.U. Habitats Directive. 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*), Carnation Sedge (*Carex panicea*). Part of the central area of the peat dome contains active raised bog, with such species as Ling Heather (*Calluna vulgaris*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Deergrass, Bog Asphodel and Carnation Sedge. Within wet, quaking areas of the active bog, Rhynchosporion is represented. This habitat tends to be dominated by White Beak-sedge, Common Cottongrass (*Eriophorum angustifolium*), Bogbean (*Menyanthes trifoliata*), sundews (*Drosera* spp.) and a good cover of bog mosses, including *Sphagnum cuspidatum* and the relatively rare *Sphagnum pulchrum*. A small flushed area occurs in the centre and towards the edge of the quaking area. This flush adds diversity to the bog, with a few small Downy Birch (*Betula pubescens*) trees, Bilberry (*Vaccinium myrtillus*), Crowberry (*Empetrum nigrum*) and Cranberry (*Vaccinium oxycoccos*) occurring in abundance, and a range of moss species. Degraded raised bog is the dominant habitat on the uncut high bog surface at this site. It is generally associated with the more marginal areas of the high bog where drainage effects, due to peripheral peat-cutting, are most pronounced. These degraded areas are usually dominated by more robust plant species such as Ling Heather, Common Cottongrass, Cross-leaved Heath (*Erica tetralix*), Bog Asphodel, Carnation Sedge and Deergrass. Bog-rosemary

(*Andromeda polifolia*) and *Sphagnum magellanicum*, both of which are good indicators of midland raised bogs, are frequent. The cover of *Sphagnum* moss is generally low and there are no well-developed hummocks present. It is thought that recent fire damage may be responsible for this very low cover of *Sphagnum*. The site also includes some wet grassland along the Cappagh River and an area of rocky grassland in the north. A threat to the extent and quality of the central and most interesting habitat is present in the form of active "hopper" turf extraction around 90% of the bog's perimeter. This is especially serious along the south-west facing edge, where the quaking area lies quite close to the perimeter. Burning has caused some drying out of the bog surface. The area of outstanding habitat (i.e. the very wet, quaking area) in the centre of the bog could be extended if burning was prevented, especially towards the south-west. Barroughter Bog is a raised bog of considerable conservation value. Given its relatively small size, the area of outstanding quaking habitat is remarkably large. Its proximity to the shores of Lough Derg, with its succession from open water through extensive reed beds and marginal scrub, to raised bog, adds to its importance. It is also the only raised bog on the shores of Lough Derg.

29.1.2008

Site Name: Caherglassaun Turlough

Site Code: 000238

Caherglassaun is a large lake located 6 km north-west of Gort and 5 km southeast of Kinvarra in the low-lying farmland of east County Galway. Situated in a natural depression just to the north-west of Coole Nature Reserve, this site comprises a permanent lake at its core, while the rest of the basin functions as a turlough. At times of high water, the entire site floods up to a height of 15m or more, i.e. to give at least 11m water depth. A series of collapse features act as swallowholes in such floods. Caherglassaun shows some features which are not typical of turloughs. Firstly, it has a permanent lake at its base which is relatively deep and has an aquatic flora of Pondweeds (*Potamogeton* spp.) and Rigid Hornwort (*Ceratophyllum demersum*). Secondly, because of its proximity to sea-level, the lake fluctuates 30cm or so, which is delayed significantly behind tidal height at Kinvarra. As a result of the fluctuation, an unusual plant community exists, dominated by Needle Spike-rush (*Eleocharis acicularis*) and Common Spike-rush (*E. palustris*). This resembles a saltmarsh in appearance although the water is not brackish. Other plant species which occur in the turlough at Caherglassaun include Creeping Yellow-creed (*R. sylvestris*) and Water-purslane (*Lythrum portula*). A mixed deciduous woodland occurs on rocky ground on the western side of the site. The canopy is dominated by Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Buckthorn (*Rhamnus catharticus*). This is a young woodland which may develop further into an Ash (*Fraxinus excelsior*)-dominated stand in the absence of high grazing pressure. Areas of exposed limestone occur within the site and include pavement, low cliffs and caves. This brings unusual plant species, such as Hairy Rock-creed (*Arabis hirsuta*), Biting Stonecrop (*Sedum acre*) and Polypody ferns (*Polypodium* spp.) into the edge of a turlough and adds diversity to the site. The rocky habitats also provide roosting sites for bats. Three Rare plant species, which are listed in the Irish Red Data Book, occur on the site. Mudwort (*Limosella aquatica*) occurs here - it tends to occur in sites which retain water into the summer months. The south Galway area is the species headquarters in Ireland. Both Fen Violet (*Viola persicifolia*) and Northern Yellow-creed (*Rorippa islandica*) occur at Caherglassaun. These are characteristic turlough species which occur to a very limited extent in other habitats. A bat roost exists within the site. Lesser Horseshoe Bat (*Rhinolophus hipposideros*) and Natterer's Bat (*Myotis nattereri*), which is

listed in the Irish Red Data Book, roost here. Lesser Horseshoe Bat is listed on Annex II of the European Habitats Directive, and Ireland has the largest national population in Europe. Loss of suitable summer habitat and disturbance during hibernation are the major threats to this species. Caherglassaun shares in the populations of waterfowl that are based on Coole Lough. Whooper Swans, Wigeon and Lapwing are all regular visitors, though their numbers are low, while Lapwing may also nest here in some summers. Whooper Swan is listed on Annex I of the European Birds Directive. Any development which would involve drainage or alteration of the watertable would threaten this site. Presence of grazers will also influence the site - low grazing levels would facilitate the further development of woodland at the site. Caherglassaun is of considerable conservation value, and was rated as the sixth most important large turlough by a recent national survey, based on vegetation. It has the most pronounced "tidal" fluctuation of any large site, and is remarkable for its complement of rare plants and animals.

03.09.2001

Site Name: Castletaylor Complex

Site Code: 000242

This site is situated approximately 4 km south-east of Kilcolgan and lies in a gently undulating limestone topography. Although relatively small in area, the site contains a diverse range of habitats, including five EU Habitats Directive Annex I habitats - turloughs, limestone pavement, orchid-rich calcareous grassland, alpine heath and juniper scrub. The first three of these are listed as priority habitats under the Directive. Caranavoodaun turlough dominates the north-western half of the site. It occupies a shallow basin set among ridges of limestone outcrop and thin glacial drift and is an excellent example of a calcareous and extremely oligotrophic (nutrient-poor) turlough. It has a limited throughput of water, with a considerable precipitation of marl and some accumulation of peat. Some stands of Black Bog-rush (*Schoenus nigricans*), with sparse Variegated Horsetail (*Equisetum variegatum*), occur at the upper levels, surrounded by patches of Buckthorn (*Rhamnus catharticus*) and Hawthorn (*Crataegus monogyna*) scrub. To the south-east the scrub includes Ash (*Fraxinus excelsior*), Yew (*Taxus baccata*), Whitebeam (*Sorbus aria*) and Irish Whitebeam (*Sorbus hibernica*). Below this there is an extensive area of sedge fen vegetation with species such as Tawny Sedge (*Carex hostiana*), Carnation Sedge (*C. panicea*), Purple Moor-grass (*Molinia caerulea*), Meadow Thistle (*Cirsium dissectum*) and Devil's-bit Scabious (*Succisa pratensis*). Along the western and south-western sides the low-lying ground supports a community of Shoreweed (*Littorella uniflora*), Spike-rushes (*Eleocharis palustris*, *E. multiflora*) and Bulbous Rush (*Juncus bulbosus*) growing in shallow water that persists into June. The deeper pools are colonised by Pondweeds (*Potamogeton gramineus*, *P. polygonifolius*, *P. coloratus*). North of the turlough and to the south of the site there is a mosaic of other habitats. The limestone pavement occurs mainly as scattered boulders with no extensive areas of flat pavement. It has a rich flora with species such as Bloody Crane's-bill (*Geranium sanguinum*), Herb Robert (*G. robertianum*), Burnet Rose (*Rosa pimpinellifolia*), Wood Sage (*Teucrium scordonia*), Quaking-grass (*Briza media*) and the rarer Spring Gentian (*Gentiana verna*) and Mountain Avens (*Dryas octopetala*). Limestone pavement breaks through the turlough floor in places, and supports scrub vegetation with Dewberry (*Rubus caesius*), Dog Rose (*Rosa canina*), stunted Ash (*Fraxinus excelsior*) and Blackthorn (*Prunus spinosa*). The Red Data book species Alder Buckthorn (*Frangula alnus*) occurs amongst this community. Limestone outcrops also occur within the wooded area of the site. The dry calcareous grassland that occurs amongst the limestone

pavement and heath is species-rich, particularly with orchids, including Autumn Lady's tresses (*Spiranthes spiralis*), Early Marsh-orchid (*Dactylorhiza incarnata*), Lesser Butterfly-orchid (*Platanthera bifolia*), Fragrant Orchid (*Gymnadenia conopsea*), Broad-leaved Helleborine (*Epipactis helleborine*) and the scarce Dense-flowered Orchid (*Neotinea maculata*). The heath at this site is characterised by the presence of Juniper (*Juniperus communis*) and Mountain Avens (*Dryas octopetala*). The presence of Bearberry (*Arctostaphylos uva-ursi*) indicates that some of the heath is similar to the Arctostaphylos-Dryas vegetation of the Burren limestone area, a rare lowland alpine type heath. The eastern and much of the southern parts of the site are dominated by dry broad-leaved woodland. Species present include Downy Birch (*Betula pubescens*), Ash (*Fraxinus excelsior*), Yew (*Taxus baccata*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*) and Spindle (*Euonymus europaeus*). Some mature planted conifers are found to the south of the road. The turlough does not hold any significant wintering populations of birds, owing to the extreme oligotrophic conditions. Three pairs of Lapwing bred at the site in 1996. The main landuse within the open areas of the site is light grazing by cattle. Some clearance of scrub within parts of the woodland has caused some damage and is a further threat. This site is conservation interest for its diversity of habitats within a relatively small area. The transition from the wetland to the surrounding habitats is particularly well shown.

30.11.2004

Site Name: Cloonmoylan Bog

Site Code: 000248

Cloonmoylan Bog is a very large expanse of level raised bog, situated close to the western shore of Lough Derg, near Woodford in County Galway. It lies at an altitude of approx. 50m above sea-level. This site contains a large area (90ha) of good quality, intact raised bog habitat. A further 100ha also qualifies as raised bog habitat, *sensu* Annex I of the European Habitats Directive, but has been damaged to some extent due to burning and drainage. The surface of the bog displays a typical, undulating pattern of pools, wet channels and low hummocks. A wide variety of Bog Mosses (*Sphagnum* spp.) occur over the surface of the bog, forming hummocks and wet lawns and colonising the pools. Lawns of *Sphagnum pulchrum* occur - this species is rare in Ireland. Brown Beak-sedge (*Rhynchospora fusca*) is found in the channels - this species is uncommon and on the edge of its range in Ireland. The low hummocks are typically colonised by scattered large bushes of Ling Heather (*Calluna vulgaris*), with abundant Cranberry (*Vaccinium oxycoccus*) and Bog Rosemary (*Andromeda polifolia*). Some larger hummocks support Crowberry (*Empetrum nigrum*) and a range of mosses. The pool system has escaped burning due to its extreme wetness. A number of flushes occur on the bog. These are dominated, for the most part, by Purple Moor-grass (*Molinia caerulea*) and Bog Myrtle (*Myrica gale*), with Downy Birch (*Betula pubescens*) and Rowan (*Sorbus aucuparia*) forming a woodland canopy in places. Raised bogs are vulnerable to turf-cutting and any drain excavation, since these practices affect the hydrology of the bog. Burning is also damaging, causing drying-out of the surface and removal of vegetation. Cloonmoylan Bog is of high conservation value, due to the large area of good quality raised bog habitat present. Raised bogs have largely disappeared from Europe, and in Ireland, are threatened by peat extraction. Habitat diversity on this raised bog is good and the presence of scarce plant species adds to the sites importance.

14.1.1997

Site Name: Coole-Garryland Complex

Site Code: 000252

The Coole-Garryland Complex is situated in a low-lying karstic limestone area west of Gort, County Galway. It contains a series of seasonal lakes (turloughs), which are fed by springs and a partly submerged river, surrounded by woodland, pasture and limestone heath. The more well-known turloughs present in the site include Lydacan, Crannagh North, Raheen, Crannagh South, Coole, Garryland, Newtown and Hawkhill. Turloughs are listed as priority habitat on Annex I of the EU Habitats Directive, and the turloughs at Coole-Garryland are particularly good examples of this habitat type. Vegetation of the turloughs includes Shoreweed (*Littorella uniflora*), Spike-rush (*Eleocharis palustris*), Water-purslane (*Lythrum portula*) and Fen Violet (*Viola persicifolia*). A species of Water-starwort, *Callitriche palustris*, has recently been recorded from the site, its only known station in Ireland. The Coole river itself is of particular interest for the occurrence of a rare riverine habitat characterised by Trifid Bur-marigold (*Bidens tripartita*), Red Goosefoot (*Chenopodium rubrum*) and species of Knotgrass (*Polygonum* spp.). The turloughs are fringed by a range of habitats on limestone pavement, including scrub communities containing Buckthorn (*Rhamnus catharticus*) and Hawthorn (*Crataegus monogyna*). In places, heath communities have developed over the limestone pavement, consisting of Ling Heather (*Calluna vulgaris*), Juniper (*Juniperus communis*), Blue Moor-grass (*Sesleria albicans*) and occasional Yew (*Taxus baccata*). In addition, the site contains good examples of smooth pavement and associated species-rich grasslands. Small areas of orchid-rich grassland occur at Coole-Garryland. The colourful array of orchids which can be found here include Pyramidal Orchid (*Anacamptis pyramidalis*), Spotted Orchids (*Dactylorhiza* spp.), Fragrant Orchid (*Gymnadenia conopsea*), Fly Orchid (*Ophrys insectifera*) and Greater Butterfly Orchid (*Platanthera chlorantha*). A remarkable feature of the turloughs at Coole-Garryland is that they are closely associated with areas of woodland. Although substantial parts of the original deciduous forest have been converted to coniferous woodland composed of non-native species, stands of semi-natural deciduous woodland survive. Pedunculate Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*) are the dominant species on deeper, more fertile soils, where there is also some Hazel (*Corylus avellana*), occasional Yew (*Taxus baccata*) and Elm (*Ulmus* spp.). There are also some unusual areas of dwarf Pedunculate Oak woodland growing on limestone pavement. This species of oak does not typically colonise this type of substrate. Some of the deciduous woodlands have a mixture of native and non-native species. These mixed woodlands have a diverse shrub layer comprised of Spindle (*Euonymus europaeus*), Privet (*Ligustrum vulgare*), Burnet Rose (*Rosa pimpinellifolia*), Guelder Rose (*Viburnum opulus*), Blackthorn (*Prunus spinosa*), Pear (*Pyrus pyraeaster*) and Honeysuckle (*Lonicera periclymenum*). The ground flora is rich and includes Wood Anemone (*Anemone nemorosa*), Dog Violet (*Viola riviniana*), Shining Crane's-bill (*Geranium lucidum*), Maidenhair Spleenwort (*Asplenium trichomanes*), Northern Bedstraw (*Galium boreale*), Biting Stonecrop (*Sedum acre*), Harebell (*Campanula rotundifolia*) and Bitter Vetch (*Lathyrus montanus*). The woodlands are notable for the presence of rare species of Myxomycete fungi, namely, *Licea idris*, *Licea marginata* and *Macbrideola decapillata*, the first-named in one of only three known sites for the species. The nationally rare Mudwort (*Limosella aquatica*) and Dropwort (*Filipendula vulgaris*) also occur at this site. These two plant species are listed in the Irish Red Data Book. The complex of habitats at Coole-Garryland provides habitat for a variety of mammal species, including Otter and Pine Marten. The otter is listed on Annex II of the EU Habitats Directive, while Pine Marten is considered to be threatened in Europe. The Coole-Garryland complex is also home to one of the most

important and unique assemblages of insects in the country, including several notable species of beetles and flies. The area is of importance for wintering waterfowl, especially Whooper Swan (mean peak of 324 in 1995/96 - 98/99), Bewick Swan (79 in winter 96/97), Wigeon (mean peak of 1044 in 1995/96 - 98/99), Mallard (mean peak of 330 in 1995/96 - 98/99), Pochard (mean peak of 176 in winter 1995/96 - 98/99), along with smaller numbers of Teal, Tufted Duck, Lapwing, Curlew and Dunlin. In 1996 seven pairs of Lapwing bred at Newtown Turlough and two pairs of Common Sandpiper bred at Coole Lough. A substantial portion of this site is in the ownership of the National Parks and Wildlife Service. It is a popular amenity area, and uncontrolled visitor access would pose a threat to sensitive animals. Other threats to the site may result from the intensification of agriculture (e.g. fertiliser application or pollution of water courses) outside the Nature Reserve. The turlough system at Coole-Garryland is considered to be the most diverse in the country, for both its physiography and vegetation. It is unique in that it is so closely associated with woodland. The juxtaposition of these two distinct habitats, in addition to the presence of a variety of turloughs, has led to the development of uncommon communities, and rare species of insect and plant occur which are associated with both the turlough and the turlough/woodland transition. Overall, the range of good quality habitats at Coole-Garryland supports a high diversity of plant and animal species, rendering this site of prime importance for conservation.

30.11.2004

Site Name: Croaghill Turlough

Site Code: 000255

Croaghill Turlough is situated just to the east of Coolcam in County Galway, close to the Dunmore/Ballymoe road. It is a wet turlough, parts of which stay flooded into July. The topography is dominated by glacial deposits, in that eskers and drift slopes surround the turlough, and morainic deposits occur within the basin, giving it an undulating floor. This means that the vegetation of the basin floor has a complex pattern. The wetness of the turlough has led to the accumulation of deep peat, and a 3m depth is recorded. The turlough is eutrophic, with much Fine-leaved Water-dropwort (*Oenanthe aquatica*), Amphibious Bistort (*Polygonum amphibium*) and Common Spike-rush (*Eleocharis palustris*). Towards the edges of open water, Lesser Marshwort (*Apium inundatum*) and Broad-leaved Pondweed (*Potamogeton natans*) are common. In places, this grades into a community with Jointed Rush (*Juncus articulatus*) and Marsh Speedwell (*Veronica scutellata*). The central area of raised ground within the basin supports Reed Canary-grass (*Phalaris arundinacea*), Hairy Sedge (*Carex hirta*) and Yellow Iris (*Iris pseudacorus*). The latter species is relatively unusual in turloughs. Elsewhere, raised ground is colonised by Reed Canary-grass, Creeping Willow (*Salix repens*) and Yellow Loosestrife (*Lysimachia vulgaris*). The edges of the basin are mainly grassland. Northern Yellow-cress (*Rorippa islandica*), a species listed in The Irish Red Data Book, has been recorded at Croaghill. Fifteen pairs of breeding Black-headed gulls have been recorded on the site, as well as possible breeding Snipe, Redshank and Lapwing. Flocks of 150 Lapwing and 50 Mallard have been recorded (in July). The main basin is subject to very little grazing because of its wetness and soft terrain. Surrounding land is used for hay, pasture and oats. In general, the site is relatively undisturbed. Threats to the site would include drainage of surrounding lands or the release of polluting substances, e.g. silage effluent, into the system - at present, the site seems naturally eutrophic. Croaghill is of conservation significance as an interesting and varied turlough with good development of vegetation including characteristic but relatively uncommon species. Turloughs

are important habitats that are listed with priority status on Annex I of the EU Habitats Directive.

14.7.1999

Site Name: Derrycrag Wood Nature Reserve

Site Code: 000261

Derrycrag Wood is an old Oak (*Quercus* sp.) woodland, a habitat listed on Annex I of the EU Habitats Directive. It is situated 1.5 km south-east of Woodford, Co. Galway, and is traversed by the Woodford River. The underlying rock is Old Red Sandstone, which is overlain in places by drift. The soils vary from thin, acidic podzols to deeper, gleyed brown earths. The site is dominated by planted conifers, but fragments of old oak woodland still occur. Elements of the original ground flora persist beneath the conifers, especially where mature Scot's Pine (*Pinus sylvestris*) is present. The woodland also contains Rowan (*Sorbus aucuparia*) and Downy Birch (*Betula pubescens*), and Holly (*Ilex aquifolium*) and Yew (*Taxus baccata*) are locally abundant. Hazel (*Corylus avellana*) and Ash (*Fraxinus excelsior*) occur on the slightly richer soil. The ground flora consists mainly of Hard Fern (*Blechnum spicant*), Great Wood-rush (*Luzula sylvatica*), Wood-sedge (*Carex sylvatica*) and Bilberry (*Vaccinium myrtillus*), with an abundance and diversity of mosses in the more open areas. At one small location on the Woodford River bank there is a remarkably rich flora, including the Red Data Book species Alder Buckthorn (*Frangula alnus*) and three plant species which are otherwise scarce in Ireland: Blue-eyed-grass (*Sisyrinchium bermudiana*), Lesser Meadow-rue (*Thalictrum minus*) and Wild Columbine (*Aquilegia vulgaris*). Most of the site is also designated as a Nature Reserve, but an adjacent area of thinned out Scot's Pine with a very diverse ground flora and an area of wet grassland are also included. Pine Marten and Badger, both Red Data Book species, Red Squirrel, Fox and Fallow Deer are all found in the wood. Bat species also forage in the area. Kestrel, Sparrowhawk and Jay are a few of the more notable bird species present in the site. Management of the wood includes the gradual removal of all conifers except for a few areas with mature Scot's Pine. The cleared areas, however, are vulnerable to invasion by non-native species, e.g. Beech (*Fagus sylvaticus*) and to grazing by deer. Derrycrag Wood is of considerable conservation significance as an old Oak woodland, a habitat listed on Annex I of the EU Habitats Directive. Furthermore it supports a diverse flora and fauna including the Red Data Book species Alder Buckthorn, Pine Marten and Badger.

25.2.1998

Site Name: Galway Bay Complex

Site Code: 000268

Situated on the west coast of Ireland, this site comprises the inner, shallow part of a large bay which is partially sheltered by the Aran Islands. The Burren karstic limestone fringes the southern sides and extends into the sublittoral. West of Galway city the bedrock geology is granite. There are numerous shallow and intertidal inlets on the eastern and southern sides, notably Muckinish, Aughinish and Kinvarra Bays. A number of small islands composed of glacial deposits are located along the eastern side. These include Eddy Island, Deer Island and Tawin Island. A diverse range of marine, coastal and terrestrial habitats, including several listed on Annex I of the EU Habitats Directive, occur within the site, making the area of high scientific importance. Galway Bay South holds a very high number of littoral communities (12). They range from rocky terraces, to sandy beaches with rock or sand dunes behind. The intertidal sediments of Galway Bay support good examples of communities that are moderately exposed to wave action. A well-defined talitrid zone in the upper shore gives way to an intertidal, mid-shore zone with sparse epifauna or infauna.

On the lower, flat part of the shore, the tubes of the deposit-feeding terebellid worm, *Lanice conchilega*, are common on the surface. Nereid and cirratulid polychaete worms (*Hediste diversicolor*, *Arenicola marina*), small crustaceans and bivalves (*Angulus tenuis*, *Cerastoderma edule* and *Macoma balthica*) are present. The area has the country's only recorded example of the littoral community characterized by *Fucus serratus* with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata. This community has very high species richness (85 species), as do the sublittoral fringe communities on the Finavarra reef (88 species). The rare sea urchin *Paracentrotus lividus* and the foliose red alga *Phyllophora sicula* are present at Finavarra, whereas the red alga *Rhodymenia delicatula* and the rare brown alga, *Ascophyllum nodosum* var. *mackii*, occur in Kinvara and Muckinish Bays. Sublittorally, the area has a number of distinctive and important communities. Of particular note is that Ireland's only reported piddock bed thrives in the shallows of Aughinish Bay. The rare sponge, *Mycale contarenii*, is also found here. There is further interest in an extensive maerl bed of *Phymatolithon calcareum* which occurs in the strong tidal currents of Muckinish Bay. There is also maerl off Finavarra Point and in Kinvara Bay (*Lithothamnion corallioides*, *Lithophyllum dentatum* and *Lithophyllum fasciculatum*). An oyster bed in Kinvara Bay and seagrass (*Zostera* spp.) beds off Finavarra Point are also important features. Other significant habitats which occur include secondary maerl beds and communities strongly influenced by tidal streams. Salt marshes are frequent within this extensive coastal site, with both Atlantic and Mediterranean marshes well represented. Most of the salt marshes are classified as the bay type, with the substrate being mud or mud/sand. There is one lagoon type and one estuary type. Lagoon salt marshes are the rarest type found in Ireland. The best examples of salt marsh are located in inner Galway bay, east of a line running between Galway city and Kinvara. In this area the coastline is highly indented, thus providing the sheltered conditions necessary for extensive salt marsh development. Common salt marsh species include Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvygrass (*Cochlearia officinalis*), Sea Lavender (*Limonium humile*), Common Saltmarsh-grass (*Puccinellia maritima*), Saltmarsh Rush (*Juncus gerardii*) and Sea Rush (*Juncus maritimus*). On the lower levels of the salt marshes and within pans there occurs Glasswort (*Salicornia europaea* agg.). A noteworthy feature of the salt-marsh habitat within this site is the presence of dwarfed brown seaweeds in the vegetation. These are also known as "turf fucoids" and typical species include *Fucus* spp., *Ascophyllum nodosum* and *Pelvetia canaliculata*. A number of locally rare vascular plant species also grow in salt-marsh areas within the site. These include *Puccinellia distans* and Sea Purslane (*Halimione portulacoides*), which are both relatively rare in the western half of the country. Shingle and stony beaches can be found throughout the site, with the best examples along the more exposed shores to the south and west of Galway city and to the north and east of Finavarra, Co. Clare. In general, these shingle shorelines are sparsely vegetated and frequently occur interspersed with areas of sandy beach and/or bedrock shore. The associated flora is dominated by plant species of frequently disturbed maritime habitats. To the south and west of Galway city, typical plants include Curled Dock (*Rumex crispus*), Common Couch (*Elymus repens*), Sea Sandwort (*Honkenya peploides*), Sea Beet (*Beta vulgaris*), Scentless Mayweed (*Matricaria maritima*), Silverweed (*Potentilla anserina*) and *Atriplex* spp.. Two rare plant species are associated with the habitat: Henbane (*Hyoscyamus niger*), a threatened species listed in the Irish Red Data Book, grows on shingle beach to the south of Lough Atalia; there are also old records for the threatened plant species Sea Kale (*Crambe maritima*). An excellent

range of lagoons of different types, sizes and salinities occurs within the site. This habitat is given priority status on Annex I of the Habitat Directive. One unusual type of lagoon, karstic rock lagoon, is particularly well represented. This type of lagoon is common on the Aran Islands, but on mainland Ireland, all but one are confined to this one site including the best example of all karstic lagoons in the country (Lough Murree). The flora of the habitat is rich and diverse, reflecting the range of salinities in the different lagoons, and typically brackish with two species of Tasselweed (*Ruppia* spp.), two Red Data charophytes *Chara canescens* and *Lamprothamnion papulosum*, and *Chaetomorpha linum* (all lagoonal specialists). The fauna of the lagoon is also rich, diverse and lagoonal. At least 10 lagoonal specialist species were recorded in 1996 and 1998 from the combined habitat of all the lagoons which is one of the highest number for any lagoonal habitat in the country. Many of the species appear to be rare. The lagoons within this site are an excellent representative of the habitat type and of high conservation importance. Other terrestrial habitats within this site which are of conservation importance include Saw Sedge (*Cladium mariscus*)-dominated fen and Black Bog-rush (*Schoenus nigricans*)-dominated alkaline fen at Oranmore, a turlough of moderate size at Ballinacourty, limestone pavement mainly along the southern shore, dry calcareous grassland with orchids (best examples occurring east of Salthill), Juniper scrub formations at Oranmore, wet grassland and an area of deciduous woodland at Barna. Inner Galway Bay provides extensive good quality habitat for Common Seals, a species listed on Annex II of the EU Habitats Directive. In 1984, this seal colony was one of the top three sites in the country, with over 140 animals recorded. The seals use a range of haul-out sites distributed through the bay - these include inner Oranmore Bay, Rabbit Island, St.Brendan's Island, Tawin Island, Kinvarra Bay, Aughinish Bay and Ballyvaughan. The site provides optimum habitat for Otter. Galway Bay is a very important ornithological site. The shallow waters provide excellent habitat for Great Northern Divers (35), Black-throated Divers (28), Scaup (39), Long-tailed Duck (27) and Red-breasted Merganser (232). (Figures given are peak average maxima over the 3 winters 1994/95 to 1996/97). All of these populations are of national importance. The intertidal areas and shoreline provides feeding and roosting habitat for wintering waterfowl, with Brent Goose (517) having a population of international importance and a further 11 species having populations of national importance. Four of the regular wintering species are listed on Annex I of the EU Birds Directive - Golden Plover, Bar-tailed Godwit and the two diver species. Breeding birds are also of importance, with significant populations of Sandwich Terns (81 pairs in 1995) and Common Terns (99 pairs in 1995), both also being listed on Annex I of the EU Directive. A large Cormorant colony (c.300 pairs in 1989) occurs on Deer Island. Fishing and aquaculture are the main commercial activities within the site. A concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities. Reef and sediment communities are vulnerable to disturbance or compaction from tractors accessing oyster trestles. The *Paracentrotus lividus* populations have been shown to be vulnerable to over-fishing. Extraction of maerl in Galway Bay is a threat. Owing to the proximity of Galway city, shoreline and terrestrial habitats are under pressure from urban expansion and recreational activities. Eutrophication is probably affecting some of the lagoons and is a continued threat. Drainage is a general threat to the turlough and fen habitats. Bird populations may be disturbed by aquaculture activities. This large coastal site is of immense conservation importance, with many habitats listed on Annex I of the EU Habitats Directive, four of which have priority status (lagoon,

Cladium fen, turlough and orchid-rich calcareous grassland). The examples of shallow bays, reefs, lagoons and salt marshes are amongst the best in the country. The site supports an important Common Seal colony and a breeding Otter population, both species that are listed on Annex II of the EU Habitats Directive, and six regular Annex I EU Birds Directive species. The site also has four Red Data Book plant species, plus a host of rare or scarce marine and lagoonal animal and plant species.

19.10.2007

Site Name: Inishbofin and Inishshark

Site Code: 000278

This site is situated off the Co. Galway coast about 5.5 km from the mainland. It comprises two main islands, Inishbofin and Inishshark, with several islets and stacks. Part of the surrounding marine waters are also included. The islands are composed almost entirely of Silurian slates and shales and rise to heights of 89 m (Inishbofin) and 69 m (Inishshark). Inishbofin is the only inhabited island, with a population of about 300 people. Two-thirds of the island is commonage where the main habitat type is heath, represented by both dry and wet heath communities. There are many areas of relatively intact dry heath present on Inishbofin, particularly around the middle and eastern quarter of the island. In most places this heath is associated with higher ground and exposed rock outcrops. Some areas of bog and marsh occur, and plantain (*Plantago* spp.) swards exist on the cliff-tops. Several small oligotrophic lakes are present. The largest waterbody, Lough Bofin has a brackish character and is classified as a lagoon. A small area of sand dune occurs at the eastern side of the island. The remainder of the island is under cultivation, with most of the area under grass for pasture and to a lesser degree hay, a small proportion remains where potatoes, and grain-crops are planted. Areas with dry heath support such species as semi-prostrate Ling Heather (*Calluna vulgaris*), Mat-grass (*Nardus stricta*), Bell Heather (*Erica cinerea*), Carnation Sedge (*Carex panicea*) Viviparous Fescue (*Festuca vivipara*), Tormentil (*Potentilla erecta*), Sweet vernal-grass (*Anthoxanthum odoratum*), Common Bent (*Agrostis capillaris*), Heath-grass (*Danthonia decumbens*), Wild Thyme (*Thymus praecox*) and Sheep's-bit (*Jasione montana*). The rare Spotted Rockrose (*Tuberaria guttata*) also occurs. The dry heath habitat generally merges seawards to *Plantago* sward and landwards to patches of bog vegetation, *Nardus* grassland or wet heath with *Erica tetralix*. Inishbofin has some good examples of lowland hay meadows. The habitat supports a typically diverse flora with such species as Yellow-rattle (*Rhinanthus minor*), Red Clover (*Trifolium pratense*), Creeping Buttercup (*Ranunculus repens*), Sheep's Sorrel (*Rumex acetosella*), Ribwort Plantain (*Plantago lanceolata*), Hogweed (*Heracleum sphondylium*), Silverweed (*Potentilla anserina*), Cocks-foot (*Dactylis glomerata*), Curled Dock (*Rumex crispus*), Hedge Woundwort (*Stachys sylvatica*), Selfheal (*Prunella vulgaris*), Meadow Vetchling (*Lathyrus pratensis*), Wild Carrot (*Daucus carota*), Autumn Hawkbit (*Leontodon autumnalis*), Purple Loosestrife (*Lythrum salicaria*) and Bracken (*Pteridium aquilinum*). Sea cliffs are found on the western and north-eastern parts of Inishbofin, as well as on Inishshark. In places these support a species-rich vegetation with such species as Wild Angelica (*Angelica sylvestris*), Thrift (*Armeria maritima*), Stag's-horn Plantain (*Plantago coronopus*), Roseroot (*Rhodiola rosea*), Bell Heather (*Erica cinerea*), Bird's-foot Trefoil (*Lotus corniculatus*), Yorkshire Fog (*Holcus lanatus*), Dandelion (*Taraxacum* spp.), Bracken, Primrose (*Primula vulgaris*), Honeysuckle (*Lonicera periclymenum*), Common Sorrel (*Rumex acetosa*), English Stonecrop (*Sedum anglicum*) and Royal Fern (*Osmunda regalis*). Cliff-top vegetation frequently comprises a short turf usually dominated by Stag's-horn Plantain, Sea Plantain (*Plantago maritima*) and

Thrift, i.e. *Plantago* sward. This often grades inland to *Nardus* grassland, heath or marsh communities where such species as Wild Thyme, Allseed (*Radiola linoides*), Sheep's-bit, Common Centaury (*Centaureum erythraea*), Bog Pimpernel (*Anagallis tenella*), Dandelion, Heath-grass, Kidney Vetch (*Anthyllis vulneraria*), Marsh Pennywort (*Hydrocotyle vulgaris*) and a variety of lichens are found. Lough Gowlanagower is one of a number of small oligotrophic lakes present on Inishbofin. The north-eastern side of the lake supports good communities of Pipewort (*Eriocaulon aquaticum*) and Water Lobelia (*Lobelia dortmanna*). Lough Bofin is an excellent example of an isolated sedimentary lagoon with a cobble barrier. This type of lagoon is relatively rare in Ireland. The lagoon is shallow (c. 2 m) and salinity varies considerably (oligo-euhaline). Seawater enters by percolation and by overtopping the cobble barrier and large volumes of fresh water enter at times of high rainfall. The lagoon is in an almost completely natural condition, of which there are very few examples in Europe. Floristically, the lagoon is very interesting; it supports the rare charophyte Foxtail Stonewort (*Lamprothamnion papulosum*), a lagoonal specialist which is listed in the Red Data Book and protected under the Flora (Protection) Order, 1999, as well as two species of Tasselweed (*Ruppia maritima* and *R. cirrhosa*) and *Chaetomorpha linum*, all of which are lagoonal specialists. The vegetation is an excellent example of a *Ruppial Lamprothamnion* community and the plankton appears to contain unusual brackish species of the genus *Procerentrum*. The fauna of the lagoon is species-poor, with only one lagoonal specialist, *Jaera nordmanni*, recorded. The absence of other lagoonal specialists may be due to the relative isolation of the site. Inishshark is located to the south-west of Inishbofin and was inhabited up until the 1960s. The main habitats here are heath and rough pasture. The island is bleak and without trees. There is a well-developed *Plantago* sward on the western side, where there are also some high cliffs. The other sizeable islands in the group are Inishgort, to the south-east of Inishshark, and Davillaun, to the east of Inishbofin. In addition to Foxtail Stonewort there are records from Inishbofin for several other nationally rare Red Data Book species - Spotted Rockrose, for which there are recent records, Wood Small-reed (*Calamagrostis epigejos*), last seen in 1967, and Marsh Clubmoss (*Lycopodiella inundata*), last recorded in 1911. The last two-named species are also protected under the Flora (Protection) Order, 1999. Darnel (*Lolium temulentum*), also a Red Data Book species, was recorded from Inishshark in 1875. Three lichen species known in Ireland only from west Galway occur on Inishbofin - *Catapyrenium cinerum*, *Opegrapha paraxanthoides* and *Lecidella umboella* var. *alumula*. The site supports a breeding colony of Grey Seal, a species that is listed on Annex II of the E.U. Habitats Directive. In 1980, the colony which breeds on Inishgort was estimated at between 140-180 animals strong. The site is an important ornithological site. It supports breeding Manx Shearwater (200-300 pairs) and wintering Barnacle Goose (up to 640 individuals), the latter a species that is listed on Annex I of the E.U. Birds Directive. Nationally important numbers of Fulmar (824 pairs) and small numbers of the Annex I species Storm Petrel (> 30 pairs) also breed. A pair of Peregrine has nested for many years, while small numbers of Chough breed and forage on the main islands. Corncrake was once abundant on the islands but declined in the 1960s until the early 1990s when none was recorded. More recently, however, the species has been recorded from the site - 1996, 1997 (two singing males) and 2003. In 1995 27 pairs of Arctic Tern, an Annex I species, were recorded. Other breeding birds recorded from the site include Shag and Black Guillemot. In recent times, overgrazing by sheep, and to a lesser extent rabbits, has caused damage to the vegetation

cover of the islands. Cutting of the shallow peat is also considered a problem. The site is of considerable conservation significance for the presence of an excellent example of a lagoon, a habitat listed with priority status on Annex I of the E.U. Habitats Directive, and for the good examples of heath, sea cliff, hay meadow and other vegetation communities typical of exposed western islands that it supports. The presence of a breeding colony of Grey Seal, a species that is listed on Annex II of the E.U. Habitats Directive, as well as populations of rare Red Data Book plant species and of important bird populations adds significantly to the importance of the site.

10.12.2003

Site Name: Kilsallagh Bog

Site Code: 000285

Kilsallagh Bog is a large raised bog with a largely intact dome set in a peat basin almost completely surrounded by mineral soil. It is situated about 7 km north of Glenamaddy. The central 15% of the bog contains raised bog habitat of outstanding quality, with a vigorous hummock and pool system grading into an extensive area of Bog Moss lawns (notably *Sphagnum papillosum* and *S. magellanicum*), which are actively growing. This central part is extremely quaking. This grades down on the north-east slope into an unusual wet community which is flushed, and consists of a mixture of tall Carnation Sedge (*Carex panicea*), Bog Cottons (*Eriophorum* spp.), with frequent large tufts of Deergass (*Scirpus cespitosus*). This vegetation has a 100% understorey of Bog Mosses (*Sphagnum* spp.). A large part of the intact dome is of medium quality, capable of good recovery were it not for damage from intermittent fire. A part in the south-east has escaped fire damage for a long time. Most of the boundary, except in the far north, is on, or close to, the mineral soil, and so the site encloses most of the peat basin of Kilsallagh Bog. Damage has occurred in the form of a 12 ha conifer plantation on the dome, and more recently by 20 ha of regular drains which encroach onto the good quality central parts. Burning threatens the bog, causing drying of the surface. Red Grouse, a scarce and declining species in Ireland, breeds on the bog. Raised Bogs are an extremely threatened type in Ireland and Europe, due to peat extraction. Kilsallagh Bog is a good quality raised bog and therefore is of considerable conservation value.

15.1.1997

Site Name: Kiltartan Cave (Coole)

Site Code: 000286

Kiltartan cave is a natural limestone cave situated north of Coole Park in County Galway, just off the main Galway-Ennis road. It is used as a hibernating site for the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive. This cave, which has been well documented since 1863, is a segment of an abandoned streamcourse of the Gort River. A 3 m descent into the cave divides into two main passages. A muddy slope south from the entrance leads to the Entrance Hall. The Entrance Hall is the only real chamber in the cave, the ceiling height measures approximately 6 m. A number of passages lead from this, most are silty and muddy. To the east of the Entrance Hall there are a series of well decorated passages etched into joints, which contain stalactites and curtains with serrated edges hanging from the roof and walls. The cave contains the following representative cave features: elliptical phreatic tube with local modification by roof collapse, roof tube still preserved in places, gour pools, straw stalactites and botryoidal calcite deposits. Water levels within the cave are known to fluctuate in winter with some passages filling completely with water; during severe flooding in 1994/95, all sections of the cave were filled with water except for small pockets in the roof. The Lesser Horseshoe Bat (*Rhinolophus hipposideros*), an Annex II

species, uses the cave as a hibernation site. Numbers of Lesser Horseshoe Bats counted prior to the serious flooding in 1994-95 varied between 44 and 70. During the floods the cave was filled to the entrance. Following the floods, bat numbers remained in the mid to low teens until January 2001, when 41 individuals were counted. Most hibernating bats are found on the right hand side of the cave entrance, in a passage historically known as the 'Bat Passage', which runs north for 40 m and is floored by boulders. The entrance of the cave is sheltered with hawthorn (*Crataegus monogyna*) trees and the surrounding vegetation is of scrub and hedgerows, which provides suitable foraging habitat and shelter for the bats. Coole Wood is within 500 m of the cave. Although well known and regularly visited by caving groups, disturbance to the cave and the wintering bats is thought to be minimal. This is a particularly fine example of a fossil streamway cave, which contains many features of geological interest. Caves are listed on Annex I of the EU Habitats Directive. The presence of a significant population of Lesser Horseshoe Bat makes the site of International Importance.

4.9.2001

Site Name: Levally Lough

Site Code: 000295

Levally Lough is a fluctuating lake, or turlough, situated 9 km east of Tuam and to the north of the Grange River. It is overlooked by a low rise on the north side with some esker or drift mound to the south. The land is flat at the eastern and western ends. A stream enters the turlough from the north-east corner. The southern shore is peaty, with peaty grassland as well as Black Bog-rush (*Schoenus nigricans*) where calcareous influences are stronger. Creeping Willow (*Salix repens*) and Purple Moor-grass (*Molinia caerulea*) are widespread amongst typical wetland species. An unusual Speedwell (*Veronica* sp.) hybrid is found near to seepage of groundwater, where Fool's Water-cress (*Apium nodiflorum*) also occurs. At each end of the turlough, there is less moisture and the ground is mainly covered by species-poor grassland with some Willows (*Salix* sp.), Amphibious Bistort (*Polygonum amphibium*) and Tufted Vetch (*Vicia cracca*). In the vicinity of swallow-holes, Amphibious Bistort becomes more abundant, occurring either as pure stands or mixed with grasses and Silverweed (*Potentilla anserina*). The northern edge carries small areas of sedges mixed with Creeping Cinquefoil (*Potentilla reptans*) and Trailing Tormentil (*Potentilla anglica*). The main body of the lake appears to overlie a sheet of marl, and here, oligotrophic plants occur, such as Shoreweed (*Littorella uniflora*) and Stoneworts (*Chara* spp. including *Chara curta*). The centre of the lake has been invaded by Common Reed (*Phragmites australis*), Common Club-rush (*Scirpus lacustris*) and Bogbean (*Menyanthes trifoliata*), with Grey Willow (*Salix cinerea*) scattered throughout. The site is well-known for its wildfowl because of the permanence of the water. Wintering wildfowl numbers from 10 counts during the season 1984/85 - 1986/87 were as follows: Wigeon 47, Teal 58, Mallard 28, Pochard 61, Tufted Duck 25, Golden Plover 75, Lapwing 91, Curlew 102 - the summer birds include Mallard, Coot, Moorhen, Lapwing and Black-headed Gull. There is some grazing on the margins of the turlough, most significantly around the north-east corner. Pollution of the system with organic effluent from around the site would threaten the quality of this site. Drainage would also pose a threat to the hydrology of the site. Levally Lough is of considerable ecological interest because it retains water most of the time, and therefore lies at one of the extremes of turlough variation, i.e. wetness. In this class, it is second only to Lough Funshinagh, County Roscommon. It is likely to support much more lake-like fauna than most turloughs, and its birdlife is richer than most. In addition, its structure is in a natural condition, and water quality seems good. The

vegetation at this site is varied and unusual, and the areas of marl and reedbed here are the largest found in any turlough in a recent national survey.

15.1.1997

Site Name: Lisnageeragh Bog and Ballinastack Turlough

Site Code: 000296

This site comprises a large raised bog and a small turlough, situated about 3 km north-east of Glenamaddy in County Galway. The bog has a largely intact dome, approximately 50% of which is high quality raised-bog habitat. This includes a small but active hummock/pool system in an isolated portion of the bog, in the south-west. Although fire has damaged this area a little, some large hummocks which occur as islands in the bogpools have escaped any damage. Three separate areas of long, winding pools occur, the best being in the centre of the bog. In these pool complexes, Bog Mosses (*Sphagnum* spp.) are colonising the open water and are forming lawns between the pools. Brown Beak-sedge (*Rhynchospora fusca*), a plant which is scarce in Ireland, is abundant in the pool complexes. An unusual plant community, comprising Carnation Sedge (*Carex panicea*) and Bog Mosses, occurs also. The presence of a number of flushes, some of which are dominated by Purple Moor-grass (*Molinia caerulea*), adds habitat diversity. In the north of the site is Ballinastack Turlough, whose floodwaters about the raised bog. Peat deposits are associated with the turlough - an unusual feature for a turlough which is supplied with mineral-rich ground water. Vegetation dominated by Common Sedge (*Carex nigra*) occurs on the peaty substrate. Associated with the bog, and to the north-east, is an area of wet grassland on heavy clay soil which grades into abandoned and regenerating cut-away, which is wet and rich in Bog Mosses. There is also an extensive area of cut-away bog in the south-west, comprising a mixture of dry banks dominated by Ling Heather (*Calluna vulgaris*), and wet pools. The turlough attracts wintering waterfowl, which move between this site and other turloughs in the Glenamaddy area according to water levels and disturbance. Three species which are listed on Annex I of the EU Birds Directive occur - Greenland White-fronted Goose (60-80 average), Whooper Swan (up to 70 in recent winters) and Golden Plover (500-1000+). Wigeon is also regular in winter (up to 500), along with smaller numbers of other waterfowl species (above figures are based on counts carried out in the mid-1990s). Lisnageeragh Bog provides habitat for Red Grouse. Raised Bogs are a rare habitat in Europe, and in Ireland they continue to be threatened by peat harvesting, drainage, afforestation and burning. The occurrence of a high proportion of good quality raised bog, a habitat listed on Annex I of the EU Habitats Directive, with actively-growing Bog Moss communities makes this site of considerable ecological interest. The close association of a turlough, also listed on Annex I of the EU Habitats Directive, which is in itself a valuable natural habitat and is important for waterfowl, enhances the diversity of the site.

17.1.1997

Site Name: Lough Corrib

Site Code: 000297

Lough Corrib is situated to the north of Galway city and is the second largest lake in Ireland with an area of approximately 18,240 ha (the entire site is 20,556 ha). The lake can be divided into two parts: a relatively shallow basin, underlain by Carboniferous limestone, in the south and a larger, deeper basin, underlain by more acidic granite, schists, shales and sandstones, to the north. The surrounding lands are mostly pastoral farmland, to the south and east, and bog and heath, to the west and north. Rivers, mainly to the east of the site are included within the cSAC as they are important for Atlantic Salmon. These rivers include

the Clare, Grange, Abbert, Sinking, Dalgan and Black to the east, as well as the Cong, Bealanabrack, Failmore, Cornamona, Drimneen and Owenriff to the west. In addition to the rivers and lake basin, adjoining areas of conservation interest, including raised bog, woodland, grassland and limestone pavement, have been incorporated into the site. This site is of major conservation importance and includes 14 habitats listed on Annex I of the E.U. Habitats Directive. Six of these are priority habitats - petrifying springs, *Cladium* fen, active raised bog, limestone pavement, bog woodland and orchid-rich calcareous grassland. The other annexed habitats present include hard water lakes, lowland oligotrophic lakes, floating river vegetation, alkaline fens, degraded raised bogs, Rhynchosporion vegetation, *Molinia* meadows and old Oak woodlands. Species present on the site that are listed on Annex II of this directive are Sea Lamprey, Brook Lamprey, Atlantic Salmon, White-clawed Crayfish, Freshwater Pearl Mussel, Otter, Lesser Horseshoe Bat, Slender Naiad and the moss *Drepanocladus vermicosus*. The shallow, lime-rich waters of the southern basin of the lake support one of the most extensive beds of Stoneworts (Charophytes) in Ireland, with species such as *Chara aspera*, *C. hispida*, *C. delicatula*, *C. contraria* and *C. desmacantha* mixed with submerged Pondweeds (*Potamogeton perfoliatus*, *P. gramineus* and *P. lucens*), Shoreweed (*Littorella uniflora*) and Water Lobelia (*Lobelia dortmanna*). These *Chara* beds are an important source of food for waterfowl. In contrast, the northern basin contains more oligotrophic and acidic waters, without *Chara* species, but with Shoreweed, Water Lobelia, Pipewort (*Eriocaulon septangulare*), Quillwort (*Isoetes lacustris*), Alternate Water-milfoil (*Myriophyllum alternifolium*) and Slender Naiad (*Najas flexilis*). The last-named is listed under the Flora (Protection) Order, 1999 and is an Annex II species under the EU Habitats Directive. Large areas of reedswamp vegetation, dominated by varying mixtures of Common Reed (*Phragmites australis*) and Common Club-rush (*Scirpus lacustris*), occur around the margins of the lake. Reedswamp usually grades into species-rich marsh vegetation characterised by Slender Sedge (*Carex lasiocarpa*), Water Mint (*Mentha aquatica*), Water Horsetail (*Equisetum fluviatile*) and Bog Bean (*Menyanthes trifoliata*). Of particular note are the extensive beds of Great Fen-sedge (*Cladium mariscus*) that have developed over the marly peat deposits in sheltered bays, particularly in the south-east corner of the lake. Alkaline fen vegetation is more widespread around the lake margins and includes, amongst the typically diverse range of plants, the Slender Cottongrass (*Eriophorum gracile*), a species protected under the Flora (Protection) Order, 1999. Wet meadows dominated by Purple Moor-grass (*Molinia caerulea*) occur in seasonally flooded areas close to the lake shore. These support species such as Sharp-flowered Rush (*Juncus acutiflorus*), Jointed Rush (*J. articulatus*), Carnation Sedge (*Carex panicea*), Devil's-bit Scabious (*Succisa pratensis*), Creeping Bent (*Agrostis stolonifera*) and Tormentil (*Potentilla erecta*), amongst others. This large site contains four discrete raised bog areas and is selected for active raised bog, degraded raised bog, Rhynchosporion and 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*). At Addergoole, on the eastern shores of Lough Corrib, there is an important area of western raised bog. This bog area is one of the most westerly, relatively intact raised bogs in the country. There are also other substantial areas of raised bog along various tributaries of the Corrib in east Co. Galway, namely Slieve Bog, Lough Tee Bog and Killaclogher bog. The active parts of these bogs mostly correspond to the wettest areas, where there are well developed surface features with hummocks, lawns and pools. It is in such areas that Rhynchosporian vegetation is best represented. The dominant species is the aquatic bog moss *Sphagnum cuspidatum*, which is usually accompanied by Bogbean (*Menyanthes trifoliata*), White Beak-sedge, Bog Asphodel, Bog Cotton (*Eriophorum angustifolium*), Bog Sedge (*Carex limosa*) and Great Sundew (*Drosera anglica*). Brown Beak-sedge, a locally rare plant of wet bog pools, has been recorded from a number of the bog areas within the site. At Addergoole a substantial bog lake or soak occurs and this is infilling with large rafts of Rhynchosporion vegetation at present. This area is associated with an important area of wet bog woodland dominated by Downy Birch (*Betula pubescens*). The largest part of the uncut high bog comprises degraded raised bog. Degraded bog is dominated by a raised bog flora which tends to be rather species-poor because of disturbance and/or drying-out. The most conspicuous vascular plant species are usually Carnation Sedge (*Carex panicea*), Heather (*Calluna vulgaris*), Bog Cotton, Cross-leaved Heath (*Erica tetralix*), Bog Asphodel and Deergrass. Bog Rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*), two species indicative of raised bog habitat, are frequent on both degraded and active areas of raised bog. *Sphagnum* cover is generally low within degraded areas due to a combination of drying-out and frequent burning. Limestone pavement occurs along much of the shoreline in the lower Corrib basin and supports a rich and diverse flora, including Herb-robert (*Geranium robertianum*), Bloody Crane's-bill (*G. sanguineum*), Carline Thistle (*Carlina vulgaris*), Spring Gentian (*Gentiana verna*), Wild Thyme (*Thymus praecox*), Rustyback (*Ceterach officinarum*), Wood Sage (*Teucrium scorodonia*), Slender St. John's-wort (*Hypericum pulchrum*), Quaking-grass (*Briza media*) and Blue Moor-grass (*Sesleria albicans*). Areas of Hazel (*Corylus avellana*) scrub occur in association with exposed limestone pavement and these include species such as Hawthorn (*Crataegus monogyna*), Buckthorn (*Rhamnus catharticus*), Spindle (*Euonymus europaeus*) with occasional Juniper (*Juniperus communis*). Three Red Data Book species are also found in association with limestone scrub - Alder Buckthorn (*Frangula alnus*), Shrubby Cinquefoil (*Potentilla fruticosa*) and Wood Bitter-vetch (*Vicia orobus*), the latter is also protected under the Flora (Protection) Order, 1999. Open areas of orchid-rich calcareous grassland are also found in association with the limestone exposures. These can support a typically rich vegetation, including many orchids such as Pyramidal Orchid (*Anacamptis pyramidalis*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Early-purple Orchid (*Orchis mascula*), Frog Orchid (*Coeloglossum viride*), Fragrant Orchid (*Gymnadenia conopsea*), Marsh Helleborine (*Epipactis palustris*), Greater Butterfly-orchid (*Platanthera chlorantha*) and Irish Lady's-tresses (*Spiranthes romanzoffiana*). The latter is protected under the Flora (Protection) Order, 1999. The Hill of Doon, located in the north-western corner of the lake, is a fine example of a Sessile Oak (*Quercus petraea*) woodland. The understorey is dominated by Sessile Oak, Holly (*Ilex aquifolium*) and occasional Juniper. There are occasional Yew (*Taxus baccata*) and Ash (*Fraxinus excelsior*) and a well developed ground layer dominated by Bilberry (*Vaccinium myrtillus*), Hard Fern (*Blechnum spicant*) and Wood Rush (*Luzula sylvatica*). Woodland also occurs on some of the islands in the lake. The lake is rated as an

internationally important site for waterfowl. Counts from 1984 to 1987 revealed a mean annual peak total of 19,994 birds. In the past a maximum peak of 38,281 birds was recorded. The lake supports internationally important numbers of Pochard (average peak 8,600) and nationally important numbers of the following species: Coot (average peak 6,756), Mute Swan (average peak 176), Tufted Duck (average peak 1,317), Cormorant (average peak 110) and Greenland White-fronted Goose (average peak 83). The latter species is listed on Annex I of Birds Directive. The Coot population is the largest in the country and populations of Tufted Duck and Pochard are second only to Lough Neagh. 30-41 breeding pairs of Common Scoter occur on the lake (1995 data) as well as breeding populations of Arctic Tern and Common Tern. Other bird species of note recorded from or close to the lake recently include Hen Harrier, Whooper Swan, Golden Plover and Kingfisher. All of these species are listed on Annex I of the E.U. Birds Directive. Otter and Irish Hare have been recorded regularly within this site. Both of these species are listed in the Red Data Book and are legally protected by the Wildlife Act 1976. Otter is also listed on Annex II of the E.U. Habitats Directive. Lough Corrib is considered one of the best sites in the country for otter, due to the sheer size of the lake and associated rivers and streams and also the generally high quality of the habitats. Atlantic Salmon (*Salmo salar*) use the lake and rivers as spawning grounds. 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. Lough Corrib is also a well known fishing lake with a very good Trout (*Salmo trutta*) fishery. The lake has a population of Sea Lamprey (*Petromyzon marinus*), a scarce, though probably under-recorded species listed on Annex II of the E.U. Habitats Directive. A population of Freshwater Pearl-mussel (*Margaritifera margaritifera*), a species listed on Annex II of the E.U. Habitats Directive, occurs within the site. White-clawed Crayfish (*Austropotamobius pallipes*), also listed on Annex II, is well distributed throughout Lough Corrib and its in-flowing rivers over limestone. A summer roost of Lesser Horseshoe Bat (*Rhinolophus hipposideros*), another Annex II species, occurs within the site - approximately 100 animals were recorded here in 1999. The main threats to the quality of this site are from water polluting activities resulting from intensification of agricultural activities on the eastern side of the lake, uncontrolled discharge of sewage which is causing localised eutrophication of the lake, and housing and boating development, which is causing the loss of native lakeshore vegetation. The raised bog habitats are susceptible to further degradation and drying out due to drainage and peat cutting and, on occasions, burning. Peat cutting threatens Addergoole Bog and already a substantial area of it has been cut away. Fishing and shooting occur in and around the lake. Introduction of exotic crayfish species or the crayfish fungal plague (*Aphanomyces astaci*) could have a serious impact on the native crayfish population. The bat roost is susceptible to disturbance or development. Despite this ongoing interference however, Lough Corrib is one of the best examples of a large lacustrine catchment system in Ireland, with a range of habitats and species still well represented. The lake itself is internationally important for birds and is designated as a Special Protection Area.

6.10.2006

Site Name: Lough Cutra**Site Code: 000299**

Lough Cutra is a large oligo/mesotrophic freshwater lake lying on limestone but with much sediment washed down from the sandstone hills above. This lake is situated about 4 km south-east of Gort, Co. Galway. This site is a candidate SAC selected for alkaline fen, a habitat listed on Annex I of

the EU Habitats Directive, and for Lesser Horseshoe Bat, a species listed on Annex II of the EU Habitats Directive. A series of connected woodlands on the western side of the lake has been included as foraging habitat for these bats. The vegetation around the lake is diverse, with reedbeds confined to sheltered bays, marshes and fens on sandy and peaty ground and natural and planted woodlands. Shallow water communities include species such as Jointed Rush (*Juncus articulatus*), Bulbous Rush (*J. bulbosus*), Alternate Water-milfoil (*Myriophyllum alternifolium*), Water-plantain (*Alisma plantago-aquatica*), Floating Club-rush (*Scirpus fluitans*), Lesser Water-plantain (*Baldellia ranunculoides*), Water Lobelia (*Lobelia dortmanna*) and Shoreweed (*Littorella uniflora*). Winter flooded areas support marsh vegetation with Common Spike-rush (*Eleocharis palustris*), Common Marsh-bedstraw (*Galium palustre*), Purple-loosestrife (*Lythrum salicaria*), amongst others, and with notable species such as Lesser Meadow-rue (*Thalictrum minus*), Northern Bedstraw (*Galium boreale*) and Blue-eyed-grass (*Sisyrinchium bermudiana*). On wet peaty areas fen vegetation includes Black Bog-rush (*Schoenus nigricans*), Saw Sedge (*Cladium mariscus*) and a range of associated sedges (*Carex* spp.) and fen mosses. Included in the site is a small (c. 3 ha.) turlough, very small areas of alkaline fen and occasional fields with affinities to *Molinia* meadow. A relatively large poor fen is present in the north of the site, adjoining the lake. The mouth of the Owendalulleegh River has formed an unusual delta where a good quality old willow (*Salix cinerea*)-dominated wet woodland has developed behind vegetated sand bars. Woodland occurs around much of the lakeshore, as well as on a number of islands in the lake. Wet woodland on peat is dominated by Willow (*Salix cinerea*) and Alder (*Alnus glutinosa*). An old record of Irish Spurge (*Euphorbia hybernica*) probably comes from drier woodland which occurs in the Lough Cutra Demesne. These woodlands provide feeding grounds for Lesser Horseshoe Bats. Between 1999 and 2001 up to 93 bats have been recorded in hibernation at Lough Cutra Castle and it is thought likely that a summer nursery roost also occurs here. The lake is a regionally/locally important site for waterfowl. Monthly counts between November 1995 and March 1996, as part of an intensive study on flooding in the catchment, gave the following numbers: Whooper Swan (18), Mallard (101), Teal (69), Tufted Duck (83) and Goldeneye (58). The latter also use the nearby Ballynakill Lough. The lake has a long-established breeding colony of cormorants, with 34 nests in 1996. Higher numbers (166 pairs, 1985) have been recorded in the past. Small numbers also winter on the lake. In recent years there have been no records of Greenland White-fronted Geese from the lake, although in the past flocks of 60-80 birds were regular and were considered to be birds from the Rahasane or Creganna population. The lake is used for fishing and tourism. Precautions should be taken to ensure the lake and its surrounding area is protected from damaging operations such as application of artificial fertilisers, development close to the lakeshore, drainage and felling of woodland areas. Lough Cutra is of conservation interest for the range of wetland habitat types it contains, particularly alkaline fen, a habitat listed on Annex I of the E.U. Habitats Directive. The presence of an internationally important colony of Lesser Horseshoe Bats, a species listed on Annex II of the Habitats Directive, and a regionally important population of Cormorants add further interest to the site.

19.2.2004

Site Name: Lough Lurleen Bog/Glenamaddy Turlough

Site Code: 000301

Lough Lurleen Bog/Glenamaddy Turlough covers almost 1,200 ha and is situated east of the town of Glenamaddy. It consists of a very large turlough, over 170 ha in area, and a

vast expanse of over 1,000 ha of typical intact western raised bog. A small lake occurs on top of the bog. The Lake, Bog and Turlough are in close association. Water from the bog feeds the lake which in turn is linked to the turlough. This leads to quite a unique ecosystem which is of high conservation value. On the bog, there are a number of interesting features, pool-hummock systems, a lake, a large fen and a number of flushes, dominated by Purple Moor-grass (*Molinia caerulea*). The lake is a traditional goose site and the turlough is now used by Greenland White-fronted Goose (74). Other birds reported for the site during 2 seasons between 1984 and 1987 (3 counts were made) are Bewick's Swan 14, Whooper Swan 8, Wigeon 472, Teal 73, Mallard 229, Shoveler 15, Pochard 20, Golden Plover 23, Lapwing 62, Snipe 20, Curlew 39, Redshank 15. A very large turlough of high conservation value in such close proximity to a vast expanse of raised bog is quite unique. The whole ecosystem is therefore of high conservation value.

24.5.2005

Site Name: Lough Rea

Site Code: 000304

Lough Rea is a hard water lake, a habitat listed on Annex I of the EU Habitats Directive. It is situated directly south of the town of Loughrea, Co. Galway. The lake is 2.5 km at its longest axis. The underlying geology of the area is of Carboniferous limestone and water transparency is very high. The lake, which is fed by springs and by a stream, reaches a maximum depth of 15 m. Some species of stonewort (a type of alga) characteristic of calcareous waters have been recorded in Lough Rea, including *Chara curta* and *C. contraria*. The Red Data Book species *C. tomentosa* has also been found here. Other aquatic plants present include Slender-leaved Pondweed (*Potamogeton filiformis*), Lesser Pondweed (*P. pusillus*), Fennel Pondweed (*P. pectinatus*), Spiked Water-milfoil (*Myriophyllum spicatum*), Least Bur-reed (*Sparganium minimum*), Amphibious Bistort (*Polygonum amphibium*) and the alga *Chaetomorpha incrassata*. On the sheltered western and south-eastern shores of the lake some areas of reedswamp, wet grassland and wet woodland are included in the site. Lough Rea is of considerable ornithological interest. Internationally important numbers of Shoveler overwinter at the site (max. 467, 1995/96) and nationally important numbers of Tufted Duck (max. 406, 1995/96) and Coot (max. 1256, 1996/97) have also been reported. A further 10 species of waterfowl reach regionally or locally important numbers. Brown Trout (*Salmo trutta*) are present in the lake. The site is largely surrounded by intensively farmed pasture and consequently the main threat to the lake comes from agricultural run-off. The lake is also vulnerable to nutrient input from the town of Loughrea. Boating activities may have some impact on the site and may need to be monitored. An area has been planted with conifers to the east of the lake, but this does not appear to be adversely affecting the ecology of the lake. Lough Rea is a hard water lake, a habitat listed on Annex I of the E.U. Habitats Directive. Lough Rea is also important for birds and holds internationally important numbers of Shoveler and nationally important numbers of Tufted Duck and Coot. Ten further bird species are present at levels of regional/local importance. It supports a population of Brown Trout.

16.2.1999

Site Name: Loughatorick South Bog

Site Code: 000308

About 8 km north-west of Mountshannon, straddling the Clare/Galway border, Loughatorick South Bog, named after one of the main townlands in the site, occupies the summit of Scalp Mountain, and extends down the gentle slopes to the south and to the east. Scalp is one of the southernmost, and lower of the Slieve Aughty Mountains, reaching a height

of 325 m. It is predominantly of Old Red Sandstone with some Silurian beds to the east. At this elevation, the bog is an intermediate between lowland and mountain blanket bog, and can be described as a highland blanket bog. The main vegetation is one dominated by Purple Moor-grass (*Molinia caerulea*), with a limited number of associates, chiefly Cross-leaved Heath (*Erica tetralix*), Carnation Sedge (*Carex panicea*), Deergrass (*Scirpus caespitosus*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Bog Asphodel (*Narthecium ossifragum*), Tormentil (*Potentilla erecta*), Thyme-leaved Milkwort (*Polygala serpyllifolia*), Bog Rosemary (*Andromeda polifolia*) and occasional Ling Heather (*Calluna vulgaris*). The bog mosses, *Sphagnum capillifolium* and *S. subnitens*, occur with occasional *S. tenellum*, *S. cuspidatum*, and another moss *Leucobryum glaucum*. Purple Moor-grass is typical of the gently sloping areas. Flatter areas support a vegetation dominated by Ling Heather, Deergrass and Bog Asphodel. The summit and knolls support a heathy vegetation with more Ling Heather and other species such as Bell Heather (*Erica cinerea*), Bog Myrtle (*Myrica gale*) and Heath Rush (*Juncus squarrosus*). A variety of other communities have been documented elsewhere and develop in different hydrological conditions affecting water and mineral supply. One of the more interesting communities occurs over quaking groundwater seepage areas, and is a mosaic of Black Bog-rush (*Schoenus nigricans*) with Purple Moor-grass or Sharp-flowered Rush (*Juncus acutiflorus*), a variety of sedges (*Carex nigra*, *C. lepidocarpa*, *C. limosa* and *C. echinata*) and two insectivorous species, Sundew (*Drosera anglica*) and Bladderwort (*Utricularia intermedia*). The occurrence of Bog-rosemary (*Andromeda polifolia*) is noteworthy, as its occurrence here is one of its most westerly known locations. This is a species characteristic of raised bogs in the midlands, and its presence here reflects the intermediate character of the bog. The bog supports a population of Red Grouse. Snipe are regular in winter and may breed. Intact, active blanket bogs, which were once characteristic of uplands in Ireland, are now rare and vulnerable, and are recognised as a habitat of international importance. Ireland has a special responsibility to conserve the best of its remaining bogs. Loughatorick South Bog is a good example of the habitat. The scarcity of suitable terrain for the development of this type of intermediate bog in Ireland means that Loughatorick South is a rare habitat. Most of the rest of the Slieve Aughty range is heavily afforested but this bog is remarkably intact.

23.3.1999

Site Name: Peterswell Turlough**Site Code: 000318**

This elongated turlough, running from north to south, lies north-west of Peterswell village and a little below the Loughrea/Gort road. The surrounding land is gently rolling and drift-covered. There is a steep, wooded slope on the south-eastern edge which projects into the turlough from the south. Scattered rocks and boulders occur on the sides of the turlough, with some also on the basin floor. The Owenshee river enters from the north and sinks within the turlough, while a more permanent stream flows west and north. The turlough is basically a dry one, without peat or marl accumulation, and so the vegetation is quite uniform: Grassland with abundant Common Sedge (*Carex nigra*), Creeping Cinquefoil (*Potentilla reptans*) and Perennial Ryegrass (*Lolium perenne*), and a range of herb species. Moisture-loving species are restricted to a pond in the south and to an area where the stream flows out onto the basin floor. Vegetation here includes Water Horsetail (*Equisetum fluviatile*) and Bottle Sedge (*Carex rostrata*). In close association with the turlough, on the south-eastern slope, is a fine Buckthorn (*Rhamnus catharticus*) wood, with Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*)

and Blackthorn (*Prunus spinosa*). On the branches of trees, there is an abundance of *Hypnum cupressiforme*, *Rhynchosstegium murale* and *Leskea polycarpa*, while *Cinclidotus fontinaloides* covers those branches which receive more light. *Thamnobryum alopecurum* is abundant on the ground. Two rare plant species, listed in the Irish Red Data Book, occur at the site. Mudwort (*Limosella aquatica*) colonises muddy areas around the turlough, and Fen Violet (*Viola persicifolia*) is also found. When flooded, Peterswell provides important habitat for birds. Whooper Swan, a species listed under Annex I of the European Birds Directive, visit in autumn/winter, also Wigeon, Teal and Lapwing. The undisturbed nature of the site probably renders it attractive to birds. Threats to sites of this type include overgrazing, pollution and drainage. At present, Peterswell is used for grazing cattle but little damage is evident. The site is naturally fairly eutrophic because of the river input, but would be susceptible to pollution due to extra nutrient input. Peterswell is of considerable ecological interest in that it is an untouched turlough high up in a catchment which has never been effectively drained (i.e. the Coole catchment). Its physical attributes make it unique: it differs from other sites in being fed mainly by a river and also by being exceedingly deep (up to 18m) when flooded. The turlough is important for waterfowl and contains two Red Data Book plant species, while the presence of woodland enhances the habitat diversity of the site.

27.1.1997

Site Name: Pollnacknockaun Wood Nature Reserve**Site Code: 000319**

Pollnacknockaun Wood is situated approximately 2 km north-east of Woodford, Co. Galway. It is a large area of former oakwood with significant remnants of the original stands of Sessile Oak (*Quercus petraea*) and even larger areas of intact ground flora. The area is underlain by Old Red Sandstone, which is covered in places by drift. The soils vary from thin acidic podzols to deeper gleyed brown earths. In the 1930s and 1940s the area was cleared of hardwoods and planted with commercial conifers - Sitka Spruce (*Picea sitchensis*) and Scot's Pine (*Pinus sylvestris*). Most of these conifers have now been removed and woodland regeneration is occurring. Invasion by Beech (*Fagus sylvaticus*) and *Rhododendron* is now a threat. Because of the relatively fertile nature of the soil, the size and quality of the hardwood and the diversity of the ground flora is greater than in other Irish oakwoods. The dominant ground flora consists of Hard Fern (*Blechnum spicant*), Great Wood-rush (*Luzula sylvatica*), Wood-sedge (*Carex sylvatica*) and Bilberry (*Vaccinium myrtillus*). Yew (*Taxus baccata*) and Holly (*Ilex aquifolium*) are present and sometimes locally abundant in the understorey. The canopy consists of tall Sessile Oak with occasional Ash (*Fraxinus excelsior*), Downy Birch (*Betula pubescens*) and Hazel (*Corylus avellana*). Two less common shrubs, Spindle (*Euonymus europeaus*) and Guelder-rose (*Viburnum opulus*), also occur. The site boundary has been taken to include all of the Nature Reserve plus an adjacent, similar sized area owned by Coillte. Here Scot's Pine planting in the past has allowed the ground flora to survive. Management of this section should follow that of the state-owned section. Also included is a tongue of woodland to the east which consists of a good stand of Oak with an understorey of Yew and Holly. A stream which passes through the Nature Reserve, is also included in the site. Rough Horsetail (*Equisetum hyemale*), a species which is rare in the west of Ireland, is found on the stream-bank. The stream feeds an area of wet Alder/Birch woodland, which supports a very diverse ground flora dominated by Remote Sedge (*Carex remota*), Royal Fern (*Osmunda regalis*) and a Buckler Fern (*Dryopteris* sp.). An adjacent area of wet grassland has Sharp-flowered Rush (*Juncus acutiflorus*), Purple Moor-grass (*Molinia caerulea*)

and locally abundant Mosses (*Sphagnum* spp.). A varied bird community, including the Jay, is present in the wood and Fallow Deer (*Dama dama*) graze part of the site. Old Oak Woodlands are listed on Annex I of the E.U. Habitats Directive. Oakwoods are rare in Ireland and oakwoods on rich soils which are not the result of planting are even rarer. The remnants of original oakwood in Pollnacknockaun are part of what was, until 1940, one of the largest areas of natural oakwood in Ireland. Pollnacknockaun Wood represents an opportunity to recreate an oakwood with its associated fauna and a diverse ground flora. The wet woodland, stream and wet grassland add further interest to this site.

7.1.2000

Site Name: Rahasane Turlough

Site Code: 000322

Rahasane Turlough lies in gently undulating land, approximately 2km west of Craughwell, County Galway. It consists of two basins which are connected at times of flood but separated as the waters decline. The larger of these, the northern basin, takes the Dunkellin River westwards. Rahasane was formerly the natural sink of the Dunkellin River, but now an artificial channel takes some of the water further downstream. Water escapes the artificial channel to sweep around the northern basin, and again in the west, where it flows into an active swallowhole system. The main swallowholes here are constantly changing, but reach 5m in diameter and 2-3m deep. Some minor collapses are found elsewhere in the turlough, as well as a small number of more permanent pools. Mostly, the edges of the turlough rise gradually into the surrounding land, but in places, rocks mark a more sudden transition. The southern basin is an impressive feature, with high rocky sides above an undulating base, strewn with boulders. There is a low hill on the south side of the main basin, and another on the north-east, near Shanbally Castle, where smooth limestone pavement is evident. The major part of the turlough is open, flat and grassy, with occasional depressions and dry channels. The substrate consists largely of silty clay with shell fragments, reaching over 3m in thickness. Locally in the main basin, there are signs of marl, but peat is absent everywhere. Like the southern basin, the eastern end of the main (northern) basin is distinguished by the presence of large rocks scattered over the floor. The vegetation of Rahasane is divided between dry and wet communities. Because of its large catchment, the turlough is naturally eutrophic and this, together with a lack of peat, limits the Sedges (*Carex* spp.) which are usually abundant in turlough vegetation. In places with outcropping limestone, the vegetation is predominantly dry grassland with Red Fescue (*Festuca rubra*) and Crested Dog's-tail (*Cynosurus cristatus*) among a generally calcicole community. Large areas in the drier parts of the turlough are covered by a community characterised by an abundance of Creeping Cinquefoil (*Potentilla reptans*), with Common Sedge (*Carex nigra*), Silverweed (*Potentilla anserina*) and Creeping Bent (*Agrostis stolonifera*). Where the soil is less well drained, Creeping Cinquefoil disappears from this community and the rare species, Fen Violet (*Viola persicifolia*), which is listed in The Irish Red Data Book, occurs. In these areas, the presence of Common Spike-rush (*Eleocharis palustris*) suggests that water is close to the surface. The wet communities are all associated with the river channels and pools. Fully aquatic communities include such species as Fan-leaved Water Crowfoot (*Ranunculus circinatus*), Fennel Pondweed (*Potamogeton pectinatus*), Lesser Pondweed (*P. pusillus*), Fat Duckweed (*Lemna gibba*), Whorled Water-milfoil (*Myriophyllum verticillatum*) and Needle Spike-rush (*Eleocharis acicularis*). Semi-aquatic communities fringe the main channel of the river and colonise muddy pools in the basin. Species such as Lesser Water-parsnip (*Berula*

erecta), Fool's Water-cress (*Apium nodiflorum*), River Water-dropwort (*Oenanthe fluviatilis*) and Amphibious Bistort (*Polygonum amphibium*) occur, also the rare species, Northern Yellow-cress (*Rorippa islandica*), which is listed in The Irish Red Data Book. There are also some narrow fields with Yellow Iris (*Iris pseudacorus*). There are small areas of scrub on the southern and north-western sides of the turlough, but the area of flooded woodland is small. The scrub is made up of Buckthorn (*Rhamnus cathartica*), Ash (*Fraxinus excelsior*) and Hazel (*Corylus avellana*). The trees support a range of epiphytic mosses such as *Leskea polycarpa*, *Amblystegium riparium*, *Isopterygium elegans*, *Isotheclium myosuroides* and *Thuidium tamariscinum*. Rahasane Turlough is renowned for its wintering wildfowl populations, but it also supports nesting waders in summer, which include Lapwing, Redshank, Snipe and Dunlin. Figures stated in the following account represent mean (and peak) counts obtained during the three seasons, 1984/85 to 1986/87. Internationally important numbers of Whooper Swan 179, Golden Plover 17680, Wigeon 7760 and Shoveler 498. The first two species, together with Bewick's Swan, below, are listed on Annex I of the European Birds Directive. Species recorded in nationally important numbers are Bewick's Swan 132, Mute Swan 125, Teal 3005, Mallard 777, Pintail 102, Pochard 356, Tufted Duck 381, Coot 1289, Lapwing 3995, Dunlin 3569 (5653), Black-tailed Godwit 170 and Curlew 1205. Small numbers of the internationally important Greenland White-fronted Goose regularly overwinter at Rahasane (average count, as above, 59), but numbers have been declining over the years. There is a small run of Atlantic Salmon (*Salmo salar*) through the Dunkellin River when it is flowing overground. The fish pass through the turlough but do not use it for spawning. This species is listed on Annex II of the European Habitats Directive. The Fairy Shrimp (*Tanytastix stagnalis*, Class Crustacea) was first recorded in Ireland from the southern basin at Rahasane, though it has occurred elsewhere. It requires isolation from predators to grow to reproductive age and so cannot occur in permanent waterbodies. The Turlough is closely grazed by cattle, sheep and horses. Grazing is a critical factor in maintaining a balance between open swards and woodland development at the edges of the turlough. Drainage is a major threat to turloughs, but the Dunkellin River has not been arterially drained. The River was straightened many years ago, where it crosses the turlough, and the artificial channel was dredged again in 1992, but this does not appear to have affected winter flooding. Some degree of artificial enrichment of the basin is occurring from the farming areas upstream, and local enrichment is associated with grazing practices. Eutrophication is among the major threats to turlough systems in general. Rahasane Turlough is of major ecological significance as one of only two large turloughs which still function naturally. It is the most important turlough for birdlife in the country. In a relatively recent national survey, it was also rated very highly for its vegetation, and supports two rare species listed in The Irish Red Data Book. Turloughs are a rare habitat type and are given priority status under Annex I of the European Habitats Directive.

20.2.1997

Site Code: Rosroe Bog

Site Code: 000324

Rosroe Bog is situated in the north-western corner of the largest peninsula in Bertraghboy Bay, Connemara. The site overlies a bedrock of granite. It is bounded on both the northern and western sides by the waters of the bay and on the southern and eastern sides by granitic ridges rising to about 50 m above sea level. The site is characterised by gently undulating areas of blanket bog interrupted by scattered rocky ridges, often with heath, and contains two

small lakes, Rosroe Lough and White Lough. The wettest and least disturbed areas of the bog have well-developed Bog-moss (*Sphagnum*) lawns, though no natural pool systems occur. Plant species typical of blanket bogs occur in these areas, including Purple Moor-grass (*Molinia caerulea*), Black Bog-rush (*Schoenus nigricans*), White-beaked Sedge (*Rhynchospora alba*) and the mosses *Sphagnum magellanicum* and *Campylopus atrovirens*. Hummocks of the Bog-mosses *Sphagnum imbricatum* and *S. fuscum* occur occasionally. There is a fringe of cutaway bog along the seaward margin of the site. The bog vegetation grades into dry heath, which is found mostly in the southern and western parts of the site. Heath species present include Ling Heather (*Calluna vulgaris*), Gorse (*Ulex europaeus*), Bell Heather (*Erica cinerea*) and St. Dabeoc's Heath (*Daboecia cantabrica*). In some areas heath vegetation occurs on old cutaway bog. A dense swamp of Common Reed (*Phragmites australis*) occurs in a wet channel near White Lough. Here is also found an assemblage of poor fen species, including Lesser Spearwort (*Ranunculus flammula*), Marsh Violet (*Viola palustris*), Bog Pimpernel (*Anagallis tenella*) and Bogbean (*Menyanthes trifoliata*). White Lough supports several aquatic plant species, including Bog Pondweed (*Potamogeton polygonifolius*) and Pipewort (*Eriocaulon aquaticum*). Common Reed and Royal Fern (*Osmunda regalis*) occur on a small island in the lake. Rosroe Lough also has Pipewort, as well as some Water Lobelia (*Lobelia dortmanna*). The main threats to the site are turf-cutting and over-grazing - these can cause significant damage to blanket bog and heath. Fire also poses a threat, in that it causes damage to vegetation and dessication of the peat surface. Rosroe Bog is of considerable conservation significance, particularly for the example of lowland western blanket bog that it supports. Blanket bog is listed with priority status on Annex I of the E.U. Habitats Directive. The presence of areas of dry heath with species characteristic of the region adds further to the significance of the site. 19.10.2001

Site Name: Shankill West Bog

Site Code: 000326

Shankill West Bog is a small raised bog with unusual topography and a largely intact dome, situated about 7 km north-west of Mount Bellew Bridge, in County Galway. A large proportion of the central dome of this bog comprises good quality raised bog habitat, i.e. a wet area with a good pool-and-hummock system. About 20 ha, or 25% of the bog surface, spanning the centre and south-of-centre, consists of large, often interconnecting, pools with a rich and healthy community of Bog Mosses (*Sphagnum* spp.), separated by low rises with Ling Heather (*Calluna vulgaris*) and abundant Bog Moss carpets. This very wet area approaches close to the southern boundary of the bog especially in its west and eastern extremities. A small flushed area, with mineral enriched water, occurs within the pool/hummock system, indicated by the presence of the moss *Aulacomnium palustre*, amongst others. An old, largely in-filled drain carries surplus water from this area. The bog surface generally slopes to the south-east, and in the north, the peat lies over a ridge of heavy clay soil. For a bog site, this feature is unusual in terms of its topography and is probably hydrologically linked to the intact peat dome. At one point in the north, the peat overtops the ridge and grades down to a small lake. An interesting plant community, with abundant Heath Rush (*Juncus squarrosus*), Ling Heather (*Calluna vulgaris*) and Bog Moss (*Sphagnum* sp.), occurs in extensive cut-away bog in the north-east. Excavation of drains and turf-cutting pose significant threats to raised bogs. Good quality raised bog habitat with a healthy growing Bog Moss community is a rare habitat in Europe, and Ireland. Shankill West Bog retains high quality habitat, and is of particular

interest because of the presence of unusual topographical features.

27.1.1997

Site Name: Slyne Head Islands

Site Code: 000328

This site comprises a long archipelago of islands, islets, rocks and reefs located off the western shores and south-western tip of the Slyne Head Peninsula in County Galway. The surrounding shallow marine areas are included as part of the site. The islands are mostly low-lying and have a covering of a grassy maritime turf. A few sandy coves occur on the larger islands along with shingle. The island are uninhabited apart from an automated lighthouse on Illaunamid. Slyne Head Islands contain excellent examples of reefs, a habitat listed on Annex I of the EU Habitats Directive. The reefs range from those extremely exposed to wave action to more sheltered ones and the complexity of the islands gives a good range of the different habitats present with typical communities present. The rocky shores moderately exposed to wave action have an excellent example of community zonation down the shore with an extensive zone of grey lichens followed by a zone of black lichens. Below this there is a narrow band of channel wrack *Pelvetia canaliculata* and then an extensive area of limpets and barnacles. The midshore has an extensive zone of *Fucus serratus* and in the lowshore *Fucus serratus* and *Himantalia elongata* are common. The sublittoral fringe has a mixture of *Laminaria saccharina* and *Laminaria digitata*. Subtidally the reefs range from being very rugged to gently sloping. In shallow water kelp forests of *Laminaria hyperborea* are present but at 25 m the kelp is sparse and the brown alga *Dictyota dichotoma* is abundant. Some areas are heavily grazed by the sea urchin *Echinus esculentus*. The red alga *Drachiella spectabilis*, which is a good indicator of clear water, occurs here. Where vertical rock is present it supports a community of bryozoans and sponges, including the rare species *Plakortis simplex*. At depths of 30 m or greater excellent examples of the Axinellid cup sponge community are present, typical of reefs exposed to wave action. In this area, both the cup sponges *Axinella infundibuliformis* and *Phakellia ventriferum* are found along with the red soft coral *Alcyonium glomeratum*, the sea fan *Eunicella verrucosa*, the rose 'coral' *Pentapora foliacea* and the sea squirt *Diazona violacea*. Rare or uncommon species found in this community include two sponges - *Phakellia vermiculata* and *Lissodendoryx* sp. - the rare sea slug *Aldisa zelandica*, the hydroid *Tamarisca tamarisca* and the brachiopod *Terebratulina retusa*. Areas of stony gravel dunes within the site support a community characterised by the burrowing sea cucumber *Neopentadactyla mixta*. The site contains an important breeding colony of Grey Seal, a species listed on Annex II of the EU Habitats Directive. In 1983, the colony on Chapel Island was estimated at between 32 and 41 animals of all ages. This colony is part of a larger population, some of which breed on Wherune Island off the south-eastern side of the Slyne Head Peninsula. The islands also support important colonies of breeding seabirds. In 1995, 329 pairs of Arctic Tern were recorded on Illaunamid - this was one of the largest colonies in Ireland and comprised 11.3% of the national total. Terns have also bred on Chapel Island in the past. Also of national importance is the colony of Black Guillemots, with 60 individuals counted in 1980. Other seabirds which breed include Storm Petrel (50 pairs in 1980), Manx Shearwater (70-90 pairs in 1980), Shag (6-8 pairs in 1980), Herring Gull (50 pairs in 1980) and Great Black-backed Gull (30 pairs in 1980). Of the above seabird species, Arctic Tern and Storm Petrel are listed on Annex I of the EU Birds Directive. This site is an important example of exposed low-lying western

islands with good examples of reefs, a significant grey seal population and important colonies of breeding birds.
02.09.2001

Site Name: Tully Mountain

Site Code: 000330

Tully Mountain is located on the northern side of Ballynakill Harbour, approximately 5 km north-west of Letterfrack, Co. Galway. The mountain is composed of Dalradian schists and gneisses and rises to an altitude of 355 m. The site is important for the presence of heath habitats which are listed on Annex I of the EU Habitats Directive. The principal type is dry heath which occurs mostly in mosaic with bare vegetation, rocks and upland grassland. A form of dry heath dominated by low Ling Heather (*Calluna vulgaris*) is found on steep ground at the south-east of the site. Juniper (*Juniperus communis*) occurs sparsely throughout this area and the heath is supported by a carpet of mosses. At the north and west of the site the heath is found in mosaic with abundant Bracken (*Pteridium aquilinum*) and isolated rocks. Alpine heath, characterised by Juniper and Bearberry (*Arctostaphylos uva-ursi*), is extensive above the 300 m contour. It occurs in mosaic with rocks and, in places, vegetation associated with wetter conditions. Other species present include Bell Heather (*Erica cinerea*), St. Dabeoc's Heath (*Dabeocia cantabrica*), Cross-leaved Heath (*Erica tetralix*) and Ling Heather. Lichens (*Cladonia* spp.) and mosses also occur. At the north of the site and below the mountain is wet grassland dominated by Soft Rush (*Juncus effusus*). Interspersed throughout this are patches of bog, with species such as Bladderwort (*Utricularia* spp.) and bog mosses (*Sphagnum* spp.). Above this is a small area of upland grassland dominated by Mat-grass (*Nardus stricta*). Several wet flushes, with Sedges (*Carex* spp.), bog mosses, Bog Pimpernel (*Anagallis tenella*) and Sundew (*Drosera* spp.), occur on the site. There are also a number of upland lakes, notably Loughaun Lake which is at an altitude of approximately 290 m and supports abundant aquatic vegetation including Floating Bur-reed (*Sparganium angustifolium*). Several streams flow off the mountain side, the banks of which support Soft Rush and liverworts. Low cliffs occur at the south-west of the site. On the slopes below 200 m over-grazing by sheep has resulted in erosion of the heath vegetation; burning of the lower slopes adds further to degradation of the site. Other activities which are impacting on the site include quarrying, peat cutting and water abstraction. The main scientific interest of the site lies in the presence of alpine heath of the *Arctostaphylos-Juniperus* type, a habitat now rare in the west of Ireland. Despite some damage, this habitat is still generally of good quality. Both alpine and dry heath habitats are listed on Annex I of the EU Habitats Directive.

25.3.1998

Site Name: Ballymaglancy Cave, Cong

Site Code: 000474

This is a linear stream cave situated approximately 3 km west of Cong in County Mayo. It is used as a hibernating site by the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive. The cave entrance is approximately 2 m high and 3 m wide, but inside the cave widens and the first 50 m offer several possible routes that eventually converge to form one passage. Near the entrance there is a good example of Carboniferous colonial coral in the floor next to a roof collapse covered in gour pools. The stream then descends in steps and the passageway is well decorated. There are excellent curtains and other forms. This is an excellent and fairly extensive (> 500 m) example of a natural limestone cave. Caves are listed on Annex I of the EU Habitats Directive. Lesser Horseshoe bats have been using the cave for many years - 50 bats were recorded in

winter 1993/94. The numbers, however, vary with external temperature; during periods of sustained low temperatures, numbers in the cave may exceed 50 bats; when air temperature rises, numbers may drop to approximately 35 bats. As 50 bats have been recorded hibernating here, this is a site of international importance. Most of the bats hibernate within 20 m of the cave entrance. Ballymaglancy is the most suitable hibernation site for bats in the Cong district, as it offers a number of low, dry passageways near the cave entrance. The cave is well known and regularly visited, both by locals and caving groups. This may cause some disturbance to the hibernating bats and the site would benefit from grilling. Visitors may also cause degradation of delicate cave formations.

03.09.2001

Site Name: Lough Fingall Complex

Site Code: 000606

This site is situated immediately south-east of Ballindeereen and within 2-3 km of Galway Bay. It is within the stretch of flat low-lying bare limestones known as the Ardahan limestones, which extend from the foot of the Burren hills northwards towards Craughwell. The site comprises a complex of habitats, the dominant being turloughs and limestone pavement, both of which are priority Annex I habitats on the EU Habitats Directive. The turloughs are oligotrophic (nutrient-poor) and calcareous in character. Their catchment areas are relatively small and water tends to remain in them for considerable periods of time. The surface waters usually occupy distinct separate basins in most years but during extreme floods these can be linked together as one large expanse of open water. Taken together these turloughs represent one of the largest expanses of oligotrophic turlough vegetation in the country. Ballinderreen turlough occupies a flat limestone pavement basin and supports extensive areas of Black Bog-rush (*Schoenus nigricans*) and Sedge (*Carex* spp.) fen vegetation. Marl ponds occur in the lower lying parts, with Shoreweed (*Littorella uniflora*), Bulbous Rush (*Juncus bulbosus*), Many-stalked Spike-rush (*Eleocharis multicaulis*), Alternate Water-milfoil (*Myriophyllum alternifolium*) and a little Horned Pondweed (*Zannichellia palustris*) and Stonewort (*Chara hispida* var. *major*). Rare plants found at this turlough include Fen Violet (*Viola persicifolia*), a Red Data Book species, Water Germander (*Teucrium scordium*) and Marsh Fern (*Thelypteris palustris*). A smaller area to the south-east of Ballinderreen, Frenchpark turlough, contains a Black Bog-rush/Purple Moor-grass (*Molinia caerulea*) stand with patches of Saw Sedge (*Cladium mariscus*) within it. Cuidooish turlough is of linear shape with a high central section. It has level limestone pavement forming its eastern side and is aligned and lies parallel with Lough Fingall, which is effectively also a turlough. There is much Buckthorn (*Rhamnus catharticus*) scrub here and at the northern end of the main lake. Carraghadoo turlough has a shallow basin without standing water in summer and with less peat. Creeping Willow (*Salix repens*) and Common Sedge (*Carex nigra*) are the main species here. The shores of Tullaghnafrankagh Lough flood during winter and have a similar if slightly more eutrophic (nutrient-rich) vegetation. Alder Buckthorn (*Frangula alnus*), a Red Data Book species, grows on sloping limestone pavement close to the limit of winter flooding in several places. Limestone pavement occurs throughout the site. It varies from the classic bare open pavement, with little vegetation, to pavement and shattered limestone blocks interspersed with calcareous grassland, heath, turlough and scrub. A rich and diverse flora occurs, with many of the typical Burren species represented - Bloody Crane's-bill (*Geranium sanguineum*), Herb-Robert (*G. robertianum*), Rustyback (*Ceterach officinarum*), Burnet Rose (*Rosa pimpinellifolia*), Wood Sage (*Teucrium scorodonia*) and the rarer species Spring Gentian

(*Gentiana verna*) and Mountain Avens (*Dryas octopetala*). Four further habitats listed on Annex I of the EU Habitats Directive occur on the site - orchid-rich calcareous grassland, *Cladium* fen, two priority habitats, juniper scrub and lowland alpine heath. Orchid species present include Fly Orchid (*Ophrys insectifera*), Lesser Butterfly-orchid (*Platanthera bifolia*), Early-purple Orchid (*Orchis mascula*) and several *Dactylorhiza* species. In the past, the scarce Dense-flowered Orchid (*Neotinea maculata*) has been recorded from the site. Lough Fingall, Cloghballymore Lough and Cahernalinsky Lough are shallow infilling lakes with stands of Saw Sedge (*Cladium mariscus*) and other fen and wetland vegetation such as Common Reed (*Phragmites australis*) and Tufted-sedge (*Carex elata*). Juniper scrub and lowland alpine heath occur in close association with one another. The juniper scrub is dominated by Juniper (*Juniperus communis*) with Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and *Rosa* species. Lowland alpine heath is characterised by Bearberry (*Arctostaphylos uva-ursi*) and Mountain Avens (*Dryas octopetala*), a rare vegetation type known from a few areas in the Burren, the Lough Fingall area and the Moycullen area near Lough Corrib. Cloghballymore House provides a summer breeding site for the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive. The bats use the large roof space, although a smaller number roost in a boiler house, gaining access by means of gaps around the pipes. The surrounding mixed woods provide suitable foraging habitat within a short radius of the day roost site. In 1993 more than 200 bats were counted at this site, which makes it of international importance. The site is of local importance for wintering waterfowl, particularly Lapwing (max. count 381 in 1995/96), and has breeding Lapwing (6 pairs 1996). Some scarce invertebrate species have been recorded from the Lough Fingall area. The main landuse in the site is cattle grazing which is mostly of light to moderate intensity. Clearance of limestone pavement and scrub has taken place in the past and burning is a threat to the heath habitats. A drainage scheme to relieve exceptional flooding has been implemented recently. There are no immediate threats facing the bat population. This site is of great conservation importance for the presence of six EU Habitats Directive habitats, including four priority habitats. The transitions and gradations between habitats, for example between turloughs, lakes and limestone pavement, gives rise to a range of physical conditions that favour many uncommon species. In addition, the site supports an internationally important population of Lesser Horseshoe bats.

31.8.1999

Site Name: Aughrusbeg Machair and Lake**Site Code: 001228**

Aughrusbeg Machair and Lake is located about 2 km west of Cleggan, Co. Galway. It is a large coastal site with a diversity of habitats, including machair and a nutrient-poor lake. Ome granite is the main bedrock in the area. The site is a candidate Special Area of Conservation selected for lowland oligotrophic lake, a habitat listed on Annex I of the E.U. Habitats Directive. Species recorded from the lake margins include Six-stamened Waterwort (*Elatine hexandra*), Quillwort (*Isoetes lacustris*) and Shoreweed (*Littorella uniflora*). Much of the lake has sloping granite shores, only at the western end is there a well developed sand shelf. At the edge of the sand shelf the lake bed falls steeply to 6 m. Here a community of Spiked Water Milfoil (*Myriophyllum spicatum*) and Fennel Pondweed (*Potamogeton pectinatus*) occurs. The lake bottom has a good covering of stoneworts with large stands of *Nitella translucens*, interspersed by *Nitella batrachosperma*, *Chara delicatula* var. *bulbifera*, *C. muscosa* and Small Pondweed (*Potamogeton berchtoldii*). Algal balls (*Cladophora aegagropilia*) are found in the deeper

parts of the lake. The lake contains an introduced population of Roach (*Rutilus rutilus*). An area of machair separates the lake from the sea. This species-rich grassland is dominated by Daisy (*Bellis perennis*), Red Fescue (*Festuca rubra*), Ribwort Plantain (*Plantago lanceolata*), Buck's-horn Plantain (*Plantago coronopus*) and Common Thyme (*Thymus praecox*). There are also some small flushed areas dominated by Jointed Rush (*Juncus articulatus*) with the mosses *Drepanocladus revolvens* and *Campyllum stellatum*. The machair is heavily grazed by cattle and rabbits and this has led to erosion in places. Other habitats present within the site include coastal heath dominated by Ling Heather (*Calluna vulgaris*), exposed rock, rocky shoreline, sandy beach, shingle beach, intertidal sand flats and open marine areas. Aughrusbeg Machair and Lake has a high level of habitat diversity within a relatively small area. The site contains an important example of a lowland oligotrophic lake, a habitat listed on Annex I of the E.U. Habitats Directive.

13.06.2003

Site Name: Carrownagappul Bog**Site Code: 001242**

Carrownagappul Bog is a large raised bog situated about 3 km north of Mount Bellew, in east Co. Galway. Numerous bog roads, tracks and drains extend into the centre of the site. Peat extraction occurs frequently along the margins of the site and along the bog roads. Much of the bog is of high quality and a good cover of Bog Mosses (*Sphagnum* spp.) is found, in hummock, pool and wet flat areas. Bog Asphodel (*Narthecium ossifragum*) is the dominant vascular plant species over much of the site; Carnation Sedge (*Carex panicea*) and Deergrass (*Scirpus cespitosus*) are also important components of the vegetation. Sections of the bog are very wet and quaking. Pools contain *Sphagnum auriculatum* and *S. cuspidatum*, with *S. magellanicum* occurring on their margins. A large area of good quality, high hummocks and deep bog pools is found close to a track. Nearby, a small area of permanent open water with an abundance of Stoneworts is found. The site contains many different kinds of flushes, including an excellent example of a wooded swallowhole flush system. Some of the bog is quite dry or only moderately wet, in particular near to areas of turbary. Red Grouse, a scarce and declining species in Ireland, is found on the site. Hen Harrier, a species listed on Annex I of the EU Birds Directive, visits the site on occasion, mostly in winter. Carrownagappul Bog contains a relatively large area of good quality active raised bog. This habitat is listed on Annex I of the EU Habitats Directive as being rare in Europe and it is one for which Ireland has a special responsibility.

16.1.1997

Site Name: Cregduff Lake**Site Code: 001251**

Cregduff lake is a small coastal lake located 1 km south-west of Roundstone village, Co. Galway. The lake occupies a hollow in rocky, heath-covered, undulating terrain. The bottom of the lake is of unconsolidated muddy material and about 60% of the water surface is covered by a scraw of reedswamp vegetation. Encroachment by vegetation has progressed to such a level that there are virtually no areas of open water remaining in the northern half of the lake. The site contains a variety of vegetation types including transition mire, a habitat listed on Annex I of the EU Habitats Directive. Close to the open water there is reedswamp vegetation dominated by Common Reed (*Phragmites australis*), Common Club-rush (*Scirpus lacustris*) and Branched Bur-reed (*Sparganium erectum*). In the northern part of the lake there is an extensive scraw system with Slender Sedge (*Carex lasiocarpa*), Bottle Sedge (*Carex*

rostrata), Common Reed and Common Club-rush. Areas of open water support a variety of submerged aquatic plants, the most commonly occurring being Alternate Water-milfoil (*Myriophyllum alterniflorum*) and Various-leaved Pondweed (*Potamogeton gramineus*). The site contains two Red Data Book plant species that are legally protected under the Flora (Protection) Order, 1999, namely Slender Naiad (*Najas flexilis*) and Slender Cottongrass (*Eriophorum gracile*). Slender Naiad, a submerged aquatic species, is a rare plant that is listed on Annex II of the EU Habitats Directive. Slender Cottongrass occurs commonly on the site, especially in the northern half of the lake; the site holds one of the largest Irish populations of this species. Surrounding the lake is a large area of species-rich coastal heath that is dominated by Western Gorse (*Ulex gallii*) and with species such as Bell Heather (*Erica cinerea*), Saint Dabeoc's Heath (*Daboecia cantabrica*) and Green-ribbed Sedge (*Carex binervis*) occurring commonly. Cregduff lake is an excellent example of an infilling lake, and one that supports a great diversity of vegetation types ranging from open water communities to quaking transition mire, to species-rich freshwater marsh vegetation. The site is of major conservation significance for the presence of habitats and species listed on Annex I and II, respectively, of the EU Habitats Directive. The population of Slender Cottongrass adds considerably to the value of the site. The surrounding area of coastal heath is a fine example of its type.

7.1.2000

Site Name: Dog's Bay

Site Code: 001257

Dog's Bay is located 3.5 km south-west of Roundstone village. The site includes a granite 'island' which is linked to the mainland by a sandy spit, a feature which is known as a tombolo. Dog's Bay curves along the west side of this tombolo, with Gorteen Bay to the east. The sands are formed of Foraminifera shells, the calcareous remains of tiny, single-celled marine animals. These Foraminifera have been swept up from deeper water into the channel between the island and the mainland, where they have accumulated to form the tombolo, which, as a result, is comprised of 90% calcium carbonate. The site contains several habitats listed on Annex I of the EU Habitats Directive. The main habitats of interest within the site are sand dunes, sandy beaches, and calcareous grassland which show characteristics of both fixed dunes and machair. The calcareous grasslands have a typically herb-rich sward, with species such as Daisy (*Bellis perennis*), White Clover (*Trifolium repens*), Spreading Meadow-grass (*Poa subcaerulea*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Ribwort Plantain (*Plantago lanceolata*), Glaucous Sedge (*Carex flacca*), Lady's Bedstraw (*Galium verum*), Red Fescue (*Festuca rubra*) and the moss, *Brachythecium albicans*. The other sand dune habitat at the site is more typical of embryonic shifting dunes than marram dunes. These dunes occur along both sides of the Dog's Bay promontory. Although the habitat stretches for some considerable length (up to 300m), the width of the habitat rarely exceeds 25m and there are considerable amounts of bare sand present. Common species present include sand couch (*Elymus farctus*), Marram (*Ammophila arenaria*), Sea Holly (*Eryngium maritimum*), Red Fescue, Biting Stonecrop (*Sedum acre*), Common Bird's-foot-trefoil and Sand Sedge (*Carex arenaria*). Associated with the embryonic dunes is annual drift line vegetation. This habitat is best developed on the shore along the south-eastern facing side of the site, although there are also small areas of the habitat along sandy shore on the Gorteen bay side. The vegetation is typically species-poor and common plants present include Prickly Saltwort (*Salsola kali*), Frosted Orache (*Atriplex laciniata*), Sea Sandwort (*Honkenya peploides*) and Scentless Mayweed (*Matricaria maritima*). Substantial areas of dry heath vegetation occur on the rocky headland in the south-

west of the site, where the habitat forms a mosaic with rock outcrops and grassland. Prominent species in the vegetation include Ling (*Calluna vulgaris*), Autumn Gorse (*Ulex gallii*), Carnation Sedge (*Carex panicea*), Heath-grass (*Danthonia decumbens*), Devil's-bit Scabious (*Succisa pratensis*) and Bell Heather (*Erica cinerea*). Unusually the heath vegetation also contains the maritime plant species Sea Plantain (*Plantago maritima*). The diversity of this site is added to by the presence of wetland areas, including brackish pools and a freshwater marsh. The main threats posed to this coastal system are over-grazing by domestic livestock and rabbits and intensive visitor pressure during the summer. These activities are exacerbating the natural dune erosion, which is especially severe on the west side of the tombolo. Careful management is required to maintain the conservation interest and amenity value of the site. Dog's Bay is an important site as it provides a fine example of a tombolo. The Foraminifera sand is also of great interest, this being one of the few beaches worldwide where Foraminifera sand is found onshore. The coastal habitats are also of conservation importance, particularly the fixed dune which is a priority habitat on Annex I of the EU Habitats Directive.

15.10.2001

Site Name: Gortnandarragh Limestone Pavement

Site Code: 001271

Gortnandarragh Limestone Pavement is located on the southern side of Lough Corrib, about 7 km south-east of Oughterard. The site consists of an exposed limestone plateau flanked with scrub. Parts of the pavement exhibit a well-developed system of clints and grykes, while other parts are shattered, with much loose rock. The limestone pavement supports a typical flora, including Blue Moor-grass (*Sesleria albicans*), Burnet Rose (*Rosa pimpinellifolia*), Wood Sage (*Teucrium scorodonia*), Wild Thyme (*Thymus praecox*), Spring Gentian (*Gentiana verna*) and ferns (*Asplenium rutamuraria*, *A. trichomanes* and *Ceterach officinarum*). Hazel (*Corylus avellana*) is the dominant species of the scrub, although Ash (*Fraxinus excelsior*) and Goat Willow (*Salix caprea*) are also common. The well-developed ground flora includes Enchanter's-nightshade (*Circaea lutetiana*), Wood Sorrel (*Oxalis acetosella*), False Brome (*Brachypodium sylvaticum*) and Broad-leaved Helleborine (*Epipactis helleborine*). An area of cutaway bog to the east contrasts with the limestone habitats dominating the rest of the site. This is the only known station for the endemic fungus *Entoloma jennyi*. The main landuse is extensive grazing by cattle and goats. Threats to the site include overgrazing, land reclamation and quarrying, the latter two already occurring to a small extent within the site. Gortnandarragh is valuable as an example of limestone pavement, an internationally important habitat which is listed, with priority status, on Annex I of the EU Habitats Directive, and because the bog on the site is the type locality and only known station for *Entoloma jennyi*.

6.2.1997

Site Name: Inisheer Island

Site Code: 001275

Inisheer is the smallest of the three Aran Islands, situated approximately 10km off the west coast of County Clare. The Island is a geological extension of the Karstic Carboniferous region of the Burren. Upper Carboniferous limestone strata, interleaved with layers of shale and clay, form these exposed Islands, which rise to a maximum height of 64m on Inisheer. The land surface is divided up by a network of fissures, varying from fine to deep cliffs. The soil cover is thin with pockets of rendzina between the bare limestone. This naturally-occurring soil is combined with a mixture of sand and seaweed to form a man-made soil unique to these Islands. The land surface is subdivided into a labyrinth of high stone walls, each one enclosing a small area of

limestone pavement and its associated species rich calcareous grassland. A variety of limestone pavement types are present at this site. These include smooth-blocky and shattered types, interspersed with a diverse range of associated plant communities. In places, the rocky grasslands support the Red Data plant species, Hairy Violet (*Viola hirta*). This species is protected under the Flora (Protection) Order, 1999. The more species-rich meadows support a plant community dominated by grasses (Gramineae), but with many flowering herbs. Species common to this habitat include Black and Greater Knapweeds (*Centaurea nigra* and *C. scabiosa*), Ox-eye Daisy (*Leucanthemum vulgare*), Harebell (*Campanula rotundifolia*), Eyebright (*Euphrasia* spp.) and orchids (Orchidaceae). In other areas, Woodsage (*Teucrium scorodonia*) and Blue Moor-grass (*Sesleria albicans*) feature, while Blackthorn (*Prunus spinosa*) and Burnet Rose (*Rosa pimpinellifolia*) are colonising some grasslands. Dry limestone heath has developed in places, with Ling Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Purple Moor-grass (*Molinia caerulea*), Black Bog-rush (*Schoenus nigricans*) and occasional patches of Juniper (*Juniperus communis*) scrub. Lough More, situated in the east of the island, is an excellent example of a deep (up to 23 m), oligohaline, karstic rock lagoon, a type of lagoon which is believed to be rare in Europe. The lagoon is connected to the sea through underground rock fissures with limestone cliffs along much of the shoreline. Seawater enters from a karstic tidal pool to the north-east of the lake from which diluted seawater (up to 20 ppt) runs into the lake through limestone pavement. In 1998 the main body of the lake had a uniform salinity of 5 ppt between 1 and 5 m depth with lower salinity water over parts of the surface (0-3 ppt). The benthic vegetation is extremely uniform consisting of green algae (*Enteromorpha* spp.) and dense beds of Fennel-leaved Pondweed (*Potamogeton pectinatus*). This vegetation ceases below 2-3 m. No lagoonal plant specialists were found in recent surveys. Immediately below the pondweed community a zone of hard calcareous algal nodules occurs. These nodules are 2-3 cm in diameter and have a superficial similarity to marine coralline algae. They appear to be the product of several species. Marginal vegetation includes small stands of Common Reed (*Phragmites australis*), Grey Club-rush (*Scirpus lacustris* subsp. *tabernaemontani*) and Sea Club-rush (*Scirpus maritimus*). The presence of Saltmarsh Rush (*Juncus gerardi*) is indicative of salt marsh vegetation. The fauna of the lagoon is poor despite the apparently stable and uniform conditions in the lagoon. This may be due to the "island effect" and the problems of colonisation and survival on a small offshore island. Only three species which are considered lagoonal specialists have been recorded: *Sigara concinna*, *Conopeum seurati* and *Jaera nordmanni*. A range of coastal habitats occur on the island, including bedrock shores, shingle and sandy beaches and boulder beaches. Traditional farming practices, in the form of Rye cultivation for thatching, has maintained suitable habitat for a number of rare arable weeds. Darnel (*Lolium temulentum*) and Smooth Brome (*Bromus racemosus*), formerly thought to be extinct in Ireland, have recently been recorded on Inisheer. Both species are listed in The Irish Red Data Book. Several breeding pairs of Chough are present on the Island. Arctic Tern, Little Tern and Sandwich Tern also breed here in small numbers. All four species are listed on Annex I of the E.U. Birds Directive. Lough More is of value to birdlife in the area, providing habitat for Grey Heron, Mute Swan and Mallard. Agricultural intensity is low throughout the island. The majority of the land is used as winterage for cattle, sheep and, in some places, goats. The fields located close to the houses are used for summer grazing. This traditional practice, which is coupled with the absence of fertilisers, has maintained the species richness and high diversity of the Island flora.

However, increased tourism on the Island is resulting in a gradual move away from farming, in favour of more tourism-related enterprises - a move which may threaten the survival of some species-rich meadows. Many of the Islands habitats and associated wildlife are sensitive to damage resulting from certain forms of agricultural improvement and overgrazing. Removal of sand from dune areas poses a significant threat to those habitats. Future plans to develop the Island for tourism and amenity purposes require close monitoring in this sensitive environment. The island is of major ecological importance due to the quality and floristic richness of limestone pavement and coastal habitats present. The presence of two Rare plant species enhances the conservation value of this site, while the Island's coastline provides habitat for a number of rare bird species. Traditional farming methods practised on the Island are intrinsically linked with its high conservation value. The botanical, historical, archaeological and cultural interest of the island make this an extremely valuable site for educational and scientific purposes.

12.3.2003

Site Name: Kiltiernan Turlough

Site Code: 001285

Kiltiernan Turlough is a simple, linear depression running south-westwards from the main Galway-Limerick road. It has a flattish basin which lies approximately 2 m below road level and includes about eight further depressions which are joined in times of high water. The site includes a low ridge on the south-eastern side. Towards the west the topography becomes flatter and the basin breaks into separate hollows. The site comprises a relatively dry turlough with a limited, though regular, flood in winter. The vegetation is predominantly of species-poor grassland dominated by White Clover (*Trifolium repens*), Silverweed (*Potentilla anserina*) and Creeping Bent (*Agrostis stolonifera*), with some areas of species-rich grassland found in the western half. Beside the road, the rocky outcrops support limestone grassland with narrow fringes of scrub along each side. The scrub is predominantly of Blackthorn (*Prunus spinosa*), but some Buckthorn (*Rhamnus catharticus*) and Alder Buckthorn (*Frangula alnus*), a rare Red Data Book species, also occur. Grassland modified by trampling and overgrazing occurs in the main depressions. Here the main species found are Northern Bedstraw (*Galium boreale*) and Creeping Cinquefoil (*Potentilla reptans*), which grow in clumps with much Silverweed and Greater Plantain (*Plantago major*). Hollows in this vegetation contain Common Sedge (*Carex nigra*) and Amphibious Bistort (*Polygonum amphibium*). In the less intensified eastern section of the site the Red Data Book species Fen Violet (*Viola persicifolia*) occurs. Lapwing, Pochard, Teal and Wigeon have been recorded at the site; other bird species may visit from the nearby Tullaghnafrankagh Lough. Land use on the site comprises grazing, particularly in the eastern half, with some areas of tillage found in the west. Kiltiernan Turlough is an example of a partly modified, relatively dry turlough, without any accumulation of peat. It includes a variety of typical dry turlough vegetation types and is notable for the presence of the rare plant species, Alder Buckthorn and Fen Violet. Turloughs are important habitats that are listed, with priority status, on Annex I of the E.U. Habitats Directive and, as such, are of considerable conservation significance.

30.11.2004

Site Name: Omey Island Machair

Site Code: 001309

Omey Island lies 9 km north-west of Clifden on the Connemara coast. An area of sandflats some 300m wide separates it from the mainland. Most of the northern and western sides of the island support unfenced machair and

dry sandy grassland, while the remainder of the island is dominated by small agricultural holdings. The island is of archaeological interest due to the presence of a Fulacht Fia and an early Christian church and burial grounds. The main bedrock in the area is granite. The main area of machair has an undulating surface which is severely eroded in places. The machair supports a typical flora dominated by Daisy (*Bellis perennis*) and Red Fescue (*Festuca rubra*), with White Clover (*Trifolium repens*), Buck's-horn Plantain (*Plantago coronopus*), Ribwort Plantain (*P. lanceolata*), Common Ragwort (*Senecio jacobaea*), Common Bird's-foot-trefoil (*Lotus corniculatus*) and the moss *Brachythecium albicans* occurring commonly. There are also areas dominated by Yarrow (*Achillea millefolium*), a feature rarely seen in Irish machairs. Machair is an important habitat that is listed, with priority status, on Annex I of the EU Habitats Directive. Omey Island holds one of the largest remaining areas of machair in the county. Between 15 and 20 Choughs are regularly seen feeding on the machair and dry grassland. Fahy Lough, in the central area of the island and adjacent to the machair plain, is a shallow freshwater lake. This is a good example of a hard water lake and supports a very diverse Charophyte flora (including *Chara aspera*, a dwarf form of *C. contraria*, *C. globularis*, *C. rudis* and *C. desmacantha*). In the deeper water a community of Perfoliate Pondweed (*Potamogeton perfoliatus*) and Spiked Water-milfoil (*Myriophyllum spicatum*) is found. An area of granite gravel supports Shoreweed (*Littorella uniflora*) and Alternate Water-milfoil (*Myriophyllum alterniflorum*). The lake has little fringing vegetation apart from Sand Sedge (*Carex arenaria*). Fahy Lough has a high chloride content (c. 90 mg/l) reflecting its proximity to the sea. Other habitats on the site include sandy beaches, boulder beaches and sand dunes. The site includes some areas of Marram (*Ammophila arenaria*) dune and embryonic dune. Small areas of species-rich freshwater marsh vegetation are found at Lough Namackan, a small lake lying north of Fahy Lough. Species found here include Mare's-tail (*Hippurus vulgaris*), Jointed Rush (*Juncus articulatus*), Common Reed (*Phragmites australis*), Lesser Spearwort (*Ranunculus flammula*), Creeping Buttercup (*R. repens*), Bogbean (*Menyanthes trifoliata*), Water Mint (*Mentha aquatica*), Yellow Iris (*Iris pseudacorus*) and the moss *Calliergon cuspidatum*, amongst others. Recently, a population of *Petalophyllum ralfsii* has been discovered on Omey Island. This maritime species of liverwort is of high conservation importance as it is listed on Annex II of the EU Habitats Directive. The intertidal sand flats between the island and the mainland provide good habitat for waterfowl in autumn and winter. Ringed Plover (198 individuals in 1994/95-96/97) and Sanderling (30-50 individuals) occur in nationally important numbers, while Brent Geese, Grey Plover, Dunlin and Turnstone are some of the species to be found in small numbers. Up to 400 Golden Plover may occur on the island during autumn and winter; this species is listed on Annex I of the EU Birds Directive. The problem of widespread erosion on the machair is exacerbated by the large numbers of rabbits on the island. Overgrazing, burrowing by rabbits and increasing pressure from visitors make the machair more susceptible to erosion by wind and sea. In common with most of the machair in the county this site would benefit greatly from a reduction in grazing pressure. The site is of considerable conservation significance, and particularly for the presence of habitats that are listed on Annex I of the EU Habitats Directive, one of which, machair, is accorded priority status, as well as for the population of *Petalophyllum ralfsii* and for the regular presence of two Annex I Birds Directive species.

7.8.2003

Site Name: Rusheenduff Lough

Site Code: 001311

Rusheenduff Lough is a small coastal lake located 3 km north-west of Tully Cross, Co. Galway. The lake is oligotrophic and corresponds to the lowland oligotrophic type listed on Annex I of the EU Habitats Directive. It is separated from the sea by a narrow shingle bar which forms part of the site. It is a shallow lake, not exceeding 3 m in depth and its bed is stony around the edges. The geology of the area is dominated by resistant gneisses. The lake supports a range of aquatic plant species that includes several rarities. Along the shallow stony lake edge the dominant species are Pipewort (*Eriocaulon aquaticum*) and Shoreweed (*Littorella uniflora*), with some Quillwort (*Isoetes lacustris*) also found. On the north-western shore there are small areas of freshwater marsh with Purple-loosestrife (*Lythrum salicaria*), Jointed Rush (*Juncus articulatus*) and Common Marsh-bedstraw (*Galium palustre*). In the deeper waters towards the centre of the lake there are large beds of stoneworts (*Nitella* spp.) and Small Pondweed (*Potamogeton berchtoldii*). Slender Naiad (*Najas flexilis*), a species listed on Annex II of the EU Habitats Directive, is also found here. The lake is the only site in Ireland for Hydrilla (*Hydrilla verticillata*), a species with a disjunct distribution in Europe, its nearest extant sites being in north-east Germany and Poland. The shingle beach to the north-west of the lough is included within the site both for its intrinsic habitat interest and for its importance in the maintenance of the existing hydrological conditions within the lough. Breaches of the shingle bar by the sea would lead to an alteration in the salinity of the waters of the lough and would threaten the survival of the rare and unusual vegetation communities there. Eutrophication of the lough waters through run-off from surrounding farmland or through the discharge of domestic sewage would also pose a threat. Rusheenduff Lough is an important site as it comprises a good example of a lowland oligotrophic lake and supports populations of the rare plant species, Slender Naiad and Hydrilla. Both of these species are listed in the Red Data Book and are legally protected under the Flora Protection Order (1999). The presence of Pipewort in the lake is also of note; lakes in the Connemara region hold the largest European populations of this predominantly North American species.

31.5.2001

Site Name: Ross Lake and Woods

Site Code: 001312

Ross Lake and Woods is located approximately 4 km north-west of Moycullen on the west side of Lough Corrib in Co. Galway. The area is underlain by limestone. The main habitat on the site is a medium-sized lake, Ross Lake, which has a limestone bed covered by deposits of precipitated marl and a shoreline of marl-encrusted limestone boulders. It is a good example of a hard water lake, a habitat listed on Annex I of the EU Habitats Directive, and supports beds of stoneworts, including *Chara globularis* var. *virgata*, *C. pedunculata* and *C. curta*. The last two species in particular are characteristic of marl lakes. The open water also supports Yellow Water-lily (*Nuphar lutea*) and Broad-leaved Pondweed (*Potamogeton natans*). Most of the shoreline is fringed by wetland vegetation of reedswamp, freshwater marsh, fen, wet woodland and wet grassland. Reedswamp vegetation is dominated by Common Reed (*Phragmites australis*) and Common Club-rush (*Scirpus lacustris*), with Great Fen-sedge (*Cladium mariscus*) also occurring. The rocky limestone shore mostly supports fen-type vegetation characterised by Black Bog-rush (*Schoenus nigricans*). This grades into areas of wet grassland dominated by Purple Moor-grass (*Molinia caerulea*) and species-rich marsh, characterised by species such as Slender Sedge (*Carex lasiocarpa*), Marsh Pennywort (*Hydrocotyle vulgaris*) and Water Mint (*Mentha aquatica*). Also found around the lake

edge is well-developed wet woodland, with Alder (*Alnus glutinosa*) and Willows (*Salix* spp.) occurring commonly, accompanied by Spindle (*Euonymus europaeus*), Buckthorn (*Rhamnus catharticus*), Guelder-rose (*Viburnum opulus*) and Bog-myrtle (*Myrica gale*). A small lake, Lough Parkyflaherty, is separated from the main lake by an overgrown railway embankment. The site contains a large block of coniferous plantation, consisting largely of Spruce (*Picea*) and Larch (*Larix*) species, on the site of a former mixed-deciduous woodland, Annagh Wood. There are also areas of broadleaved woodland and scrub, dominated variously by Beech (*Fagus sylvatica*), Ash (*Fraxinus excelsior*) or Hazel (*Corylus avellana*). A breeding colony (not less than 155 individuals counted in 1994) of Lesser Horseshoe Bat (*Rhinolophus hipposideros*) occurs in an outbuilding beside Ross House. This species is threatened within the EU and consequently listed on Annex II of the EU Habitats Directive; the population at the site is rated as of international importance. The woodlands and lakeside vegetation on the site provide foraging habitat within a small radius of the roost site; the woodlands are very important to this species, which does not fly across open areas, by providing shelter to reach foraging habitats and seasonal roosts. The presence on the site of Otter, a species also listed on Annex II of the EU Habitats Directive, and of a small colony of Common Gull (10 individuals breeding in 1992) is notable. The main landuses within the site are angling, commercial forestry, and grazing of the woodlands and wetland areas. The site is of importance because it contains a good example of a hard water lake, a habitat listed on Annex I of the EU Habitats Directive, and for an internationally important population of Lesser Horseshoe Bat, a species listed on Annex II of this directive. The occurrence of Otter and breeding Common Gull is also of note.

5.2.1999

Site Name: Rosturra Wood

Site Code: 001313

The site comprises part of what was formerly a large stand of Sessile Oak (*Quercus petraea*) woodland. It is situated about 3 km east of Woodford, Co. Galway and consists of two separate areas. In the 1930s and 1940s much of the wood was cleared and planted with coniferous species. However, the wood retains significant remnants of the original stands of Oak and its associated ground flora. The wood is situated on rich loamy soils and consequently the size and quality of the hardwood and the diversity of the ground flora is greater than in most Irish Oak woods. The rare and legally protected (Flora Protection Order, 1987), Narrow-leaved Helleborine (*Cephalanthera longifolia*) occurs in both sections of the wood. The dominant ground flora consists of Hard Fern (*Blechnum spicant*), Great Wood-rush (*Luzula sylvatica*), Wood Sedge (*Carex sylvatica*) and Bilberry (*Vaccinium myrtillus*). Yew (*Taxus baccata*) and Holly (*Ilex aquifolium*) are present and sometimes locally abundant in the understorey. The canopy consists of large trees of Sessile Oak, with occasional Ash (*Fraxinus excelsior*), Downy Birch (*Betula pubescens*) and Hazel (*Corylus avellana*). Almost half of the site has been designated as a Statutory Nature Reserve. Oakwoods are rare in Ireland and those found on rich soils which are not the result of planting are even rarer. The remnants of original Oak wood at Rosturra Wood (and at the neighbouring Derrycrag Wood and Pollnacknockaun Wood) are part of what was, until 1940, the largest area of natural Oak wood in the country. Oak and Yew woodland such as that found at Rosturra Wood are rare habitats of considerable conservation significance and are listed on Annex I of the EU Habitats Directive.

16.1.1997

Site Name: Termon Lough

Site Code: 001321

Termon Lough is situated approximately 6 km south-west of Gort. It is a flat turlough, with low, drift-covered slopes on all sides except in the north-east, where a small area of limestone pavement is found. A higher spur adjoins the basin in the north-east. The main area of the site is now a reedswamp underlain by marl deposits. Termon Lough is a particularly wet turlough that seldom dries out. The central part of the turlough supports Great Fen-sedge (*Cladium mariscus*), Common Club-rush (*Scirpus lacustris*), Common Reed (*Phragmites australis*) and Tufted-sedge (*Carex elata*) growing in a dense bed. Around the edges, this swamp vegetation gives way to vegetation where Amphibious Bistort (*Polygonum amphibium*) becomes common. This marginal vegetation contains abundant Various-leaved Pondweed (*Potamogeton gramineus*), with Bulbous Rush (*Juncus bulbosus*) and Many-stalked Spike-rush (*Eleocharis multicaulis*), and grades landwards into tufts of Small-fruited Yellow-sedge (*Carex serotina*) and Purple Moor-grass (*Molinia caerulea*). At the western end there are slightly richer conditions and Lesser Marshwort (*Apium inundatum*), Common Spike-rush (*Eleocharis palustris*) and Unbranched Bur-reed (*Sparganium emersum*) occur. The edges of the basin elsewhere support a narrow band of relatively dry fen. The birdlife at the site is little known at present, but does include Lapwing, Snipe, Coot and Mallard. Termon Lough is an unusual turlough by virtue of its extreme wetness. It contains one of the largest stands of reedswamp to be found in a turlough. Although rare plant species have not been recorded, the relatively rare oligotrophic vegetation on marl does occur. The vegetation is in excellent condition and almost completely ungrazed. The transition to limestone pavement in the north-eastern corner of the site is also of interest.

16.1.1997

Site Name: Lough Carra/Mask Complex

Site Code: 001774

This site is dominated by two large lakes, Lough Mask and Lough Carra, and includes the smaller Cloon Lough. On the western side, the site is overlooked by the Partry Mountains, while to the east the landscape is largely low-lying agricultural land. The nearest large town is Ballinrobe which is about 4 km east of Lough Mask. The general geological character of the area is Carboniferous limestones, with some shales and sandstones on the western side of Lough Mask. The underlying geology results in a great diversity of habitats, which support many scarce and rare plants and animals. The site is selected for seven habitats which are listed on Annex I of the EU Habitats Directive, including four which are priority habitats - limestone pavement, orchid-rich calcareous grassland, alluvial woodland and *Cladium* fen. It is also selected for three species that are listed on Annex II of the EU Habitats Directive, i.e. Lesser Horseshoe Bat, Otter and Shining Sickle-moss. Lough Mask, at over 8,000 ha, is the sixth largest lake in the country and with a maximum depth of 58 m it is one of the deepest. It is an excellent example of a lowland oligotrophic lake. Aquatic and wetland plant species present which are characteristic of this habitat include several Pondweed (*Potamogeton*) species, Water Lobelia (*Lobelia dortmanna*) and Shoreweed (*Littorella uniflora*). The eastern part of the lake is shallow and is edged by a lowlying shoreline which is subject to winter flooding. An intricate mixture of plant communities has developed on the limestone, with bare pavement, scrub-dominated pavement, dry grassland and heath. A variety of wetland habitats are also present, along with significant amounts of deciduous woodland along the eastern and southern shores. The western shoreline is less diverse and lacks the limestone communities. However, the fast-flowing Owenbrin River has

created at its mouth an interesting delta of coarse sandy sediment. Lough Carra, which is hydrologically linked to Mask, is one of the best examples in Ireland of a hard water marl lake. It is a shallow (mostly less than 2 m) predominantly spring fed lake with only a few streams flowing into it. Its well known pellucid green colour is due to calcareous encrustations. It has well developed stonewort communities in the submerged zones, with *Chara curta*, *C. desmacantha*, *C. rudis* and *C. contraria* recorded. Lough Carra, like the eastern and southern shores of Mask, is fringed by a diverse complex of limestone and wetland habitats. The limestone pavement within this site represents the northern limit of the limestones of Clare and Galway. The limestone is variable in character, from open bare pavement to areas covered with dense scrub. Associated with the pavement are areas of dry calcareous grassland and dry heath. Characteristic species present include Bloody Crane's-bill (*Geranium sanguineum*), Yellow-wort (*Blackstonia perfoliata*), Carline Thistle (*Carlina vulgaris*), Blue Fleabane (*Erigeron acer*), Wild Madder (*Rubia perigrina*), Rustyback (*Ceterach officinarum*) and Quaking-grass (*Briza media*). Several plant species, notably Spring Gentian (*Gentiana verna*) and Dense-flowered Orchid (*Neotinea maculata*), occur at the northern limit of their distribution. The area is also noted for its diversity of orchid species. Scrub vegetation is variable in character, with extensive areas dominated by Hazel (*Corylus avellana*) and Hawthorn (*Crataegus monogyna*), with Buckthorn (*Rhamnus catharticus*), Alder Buckthorn (*Frangula alnus*), Spindle (*Euonymus europaeus*) and Ash (*Fraxinus excelsior*). The dry heath is well developed in places and is characterised by Gorse (*Ulex europaeus*), Bell Heather (*Erica cinerea*), Heather (*Calluna vulgaris*) and St. Dabeoc's Heath (*Dabeocia cantabrica*). The diminutive orchid Lesser Twayblade (*Listera cordata*) occurs within the heath communities. A wide range of wetland habitats occur around Lough Carra and along parts of the eastern and southern shores of Lough Mask, including *Cladium* fen and alkaline fen, both listed as Annex I habitats on the EU Habitats Directive. The *Cladium* occurs as pure stands in places but also intermixed with Black Bog-rush (*Schoenus nigricans*), Common Club-rush (*Scirpus lacustris*), Common Reed (*Phragmites australis*) and a number of sedge species (*Carex* spp.). The alkaline fens are more extensive than the *Cladium* fens and here Black Bog-rush is a dominant species. A rich diversity of flowering plant occurs in the fen communities. In addition to the fen habitats, there are sparse but widespread reed swamps, wet grassland and some freshwater marsh communities around the lake shores. Broad-leaved deciduous woodland occurs fairly frequently around much of the shores of the lakes and on some of the islands. This is often scrub-type woodland, which may be either dry and dominated by Hazel, Hawthorn and Ash, or wet and dominated by Birch (*Betula* spp.), Willow (*Salix* spp.) and Alder (*Alnus glutinosa*). The wet areas of woodland flood seasonally and represent alluvial woodland, a habitat that is listed with priority status on Annex I of the EU Habitats Directive. These are particularly well developed in the Ballykine and Clonbur areas of Lough Mask. In places the woodland is more developed and includes Sessile Oak (*Quercus petraea*), Holly (*Ilex aquifolium*) and Rowan (*Sorbus aucuparia*). A high concentration of rare plants are found at this site. Five species protected under the Flora Protection Order (1987) occur: Irish St. John's-wort (*Hypericum canadense*), Chives (*Allium schoenoprasum*), Pillwort (*Pilularia globulifera*), Irish Lady's-tresses (*Spiranthes romanzoffiana*), and Small Cudweed (*Logfia minima*). Two other Red Data Book plants, Alder Buckthorn (*Frangula alnus*) and Bird's-nest Orchid (*Neottia nidus-avis*), also occur, along with two Red Data Book Stonewort species - *Chara curta* and *Chara rudis*. A large loft in the stable block of Curramore House provides a summer breeding site of the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of

the EU Habitats Directive. The bats gain access to the loft through windows that extend from the ground floor to the loft area. The building is surrounded by mixed woods and is close to the shores of Lough Mask; both of these habitats provide ideal foraging habitat for the bats. In 1993 more than 100 bats were counted at this site, which makes it of international importance. A second internationally important summer roost of Lesser Horseshoe Bats occurs within the site at Ballykine, near Clonbur. Over 150 bats have been counted at this site in recent years. The site provide excellent habitat for Otter (*Lutra lutra*), also an Annex II species on the Habitats Directive, and the area has Pine Marten (*Martes martes*), a species listed in the Irish Red Data Book. The site has important bird interests, both in winter and summer. It provides feeding areas for part of the Erriff/Derrycraff population of Greenland White-fronted Geese. This flock has declined somewhat in recent years but is still of national importance, with an average spring peak from 1989-94 of 124 birds. The following count figures are the averages from surveys in January 1995 and January 1996: Wigeon 167; Mallard 397; Shoveler 57; Pochard 91; Tufted Duck 757; Goldeneye 158; Lapwing 233; Curlew 118. Also, 68 Whooper Swan and 25 Gadwall were recorded in January 1996. The Shoveler, Tufted Duck and Goldeneye populations are of national importance. Both lakes are traditional sites for breeding gulls and terns. In 1995, 44 pairs of Common Tern nested at Lough Mask, while in 1992 a census of gulls at both lakes resulted in the following: Black-headed Gull 1,451 pairs, Common Gull 407 pairs and Lesser Black-backed Gull 361 pairs. The Common Gull colony represents 11.3% of the national total, and the Lesser Black-backed Gull colony is 6.9% of the total. The deep waters of Lough Mask are home to a population of the glacial relict Arctic Char (*Salvelinus alpinus*), and a rare shrimp (*Niphargus* spp.) is also found in these waters. Lough Mask is a very important Brown Trout fishery. White-clawed Crayfish (*Austropotamobius pallipes*), a species listed on Annex II of the Habitats Directive, has been recorded from Lough Carra. This site is of considerable conservation importance as it has good examples of seven habitats listed on Annex I of the EU Habitats Directive: lowland oligotrophic lakes, hard water lakes, limestone pavement, orchid-rich calcareous grassland, alluvial woodland, dry heath and *Cladium* fen. Some of these habitats are amongst the best examples of their kind in the country. It is also selected for two Annex II mammal species and an Annex II moss. The site is of ornithological importance for both wintering and breeding birds, with three Annex I Bird Directive species occurring regularly. A relatively large number of other nationally rare or localised plant and animal species occur, including the glacial relict Arctic Char.

25.1.2008

Site Name: Sonnagh Bog

Site Code: 001913

Sonnagh Bog is located at the northern end of the Slieve Aughty Mountains, approximately 8 km south-west of Lough Rea. The site ranges in altitude from 198 m to 317 m. The topography of the site is of a narrow plateau and valleys, one of which is occupied by Lough Belsrah. The slopes of Sonnagh Bog are dominated by tracts of Purple Moor-grass (*Molinia caerulea*) which cover a carpet of bog mosses (*Sphagnum* spp.). Distinct flat areas occur on the lower slopes, which are devoid of Purple Moor-grass and dominated by Bog Asphodel (*Narthecium ossifragum*). A further area devoid of Purple Moor-grass occurs on a wet plateau above 300 m. This area is slightly quaking and supports bog mosses and is similarly dominated by Bog Asphodel, with Deergrass (*Scirpus cespitosus*) and Heather (*Calluna vulgaris*) also occurring. Mats of algae and hummocks composed of *Sphagnum capillifolium* and *S. fuscum* are also found in this area. The southern end of

Lough Belsrah supports poor fen vegetation, dominated by mosses such as *Sphagnum recurvum*, *S. palustre*, *Aulacomnium palustre*, and vascular plants, including Cranberry (*Vaccinium oxycoccos*), Mud Sedge (*Carex limosa*) and Common Cottongrass (*Eriophorum angustifolium*). At other flushes within the site, Marsh Violet (*Viola palustris*), Black Bog-rush (*Schoenus nigricans*), Lesser Clubmoss (*Selaginella selaginoides*) and Sedges (*Carex lepidocarpa*, *C. echinata*, *C. panicea*) occur. The aquatic and emergent vegetation of Lough Belsrah includes Alternate Water-milfoil (*Myriophyllum alterniflorum*), White Water-lily (*Nymphaea alba*), Common Club-rush (*Scirpus lacustris*) and Water Horsetail (*Equisetum fluviatile*). Red Grouse have been reported from the site. Snipe are regular winter visitors and may also breed. Sonnagh Bog is important as a good example of an intact, lightly grazed, highland blanket bog. Blanket Bog is a rare, increasingly threatened habitat that is listed on Annex I of the EU Habitats Directive.

17.1.1997

Site Name: East Burren Complex

Site Code: 001926

This large site incorporates all of the high ground in the east Burren, and extends south-eastwards to include a complex of calcareous wetlands. The area encompasses a complete range of limestone habitats that include limestone pavement and associated calcareous grasslands and heath, scrub and woodland together with a network of calcareous lakes and turloughs. The site exhibits some of the best and most extensive areas of oligotrophic limestone wetlands to be found in the Burren and in Europe. The limestone pavement includes smooth blocky and shattered types. The bare pavement is interspersed with species-rich calcareous vegetation communities. Typical grassland species found include Blue Moor-Grass (*Sesleria albicans*), Mountain Everlasting (*Antennaria dioica*), Bloody Cranesbill (*Geranium sanguineum*) and Wild Thyme (*Thymus praecox*). Limestone Heath is well developed in part of the uplands where Heather (*Calluna vulgaris*) and Bell Heather (*Erica cinerea*) are common along with St. John's-wort (*Hypericum* spp.) and Tormentil (*Potentilla erecta*). Two rare plant species which are common to this habitat include the Hoary Rock-rose (*Helianthemum canum*) and Pyramidal Bugle (*Ajuga pyramidalis*); both species are listed in the Red Data Book. To the south-east around the western shores of Lough Bunny an interesting heath community with Bearberry (*Arctostaphylos uva-ursi*) occurs at one of its few inland lowland locations in the Burren. Caves are a feature of this site, with four known natural limestone caves showing a variety of formations and passage types. Vigo Cave has one of the best undisturbed cave entrance facies in Ireland and is considered a valuable karst heritage landform. Glencurrane Cave shows some fine phreatic solution features and one passageway, known as "Crinoid Tower" shows an abundance of crinoids which have been etched out by splashing water. Gortlecka Cave and a series of small caves above Lough Inchiquin are other fine examples of this habitat. Ballyeigher Loughs complex to the east is a large network of calcareous lakes and turloughs with associated fen, cut-away bog and calcareous marsh habitats. The complex contains many species of plant and animal that are found in areas of fluctuating water levels. The fen flora is well developed and large areas of Great Fen-sedge (*Cladium mariscus*) and Black Bog-rush (*Schoenus nigricans*), with a diverse complement of associated species occur. Some of the best and most extensive calcareous swamp fen communities in the country occur within this complex and further north-east around the shores of Lough Bunny. Between this lake and the Coole-Garryland turlough complex to the north east of the site, another area of oligotrophic limestone wetlands occurs. This type of ecosystem is now

very rare in Europe and many of the habitats found are listed on Annex I of the EU Habitats Directive. Many fine examples of turloughs occur within the site; Carran Turlough is an oligotrophic turlough *par excellence* with many interesting features in its flora and vegetation. It is rated as of international importance. Lough Atedaun is a good example of Burren wetland habitat. The aquatic plant communities are well developed and the rare, Red Data Book species, Mudwort (*Limosella aquatica*), occurs here. Scrub cover is relatively good in this area of the Burren with large expanses of Hazel (*Corylus avellana*) intermixed with Spindle (*Euonymus europaeus*), Guelder Rose (*Viburnum opulus*) and Blackthorn (*Prunus spinosa*). An interesting scrub community of Alder Buckthorn (*Frangula alnus*), a Red Data Book species, Buckthorn (*Rhamnus catharticus*) and Shrubby Cinquefoil (*Potentilla fruticosa*), also a Red Data Book species, fringes the shores of some of the lakes and turloughs to the east. Ballyeigher Wood to the east is an unusual scrub community on limestone with regenerating Oak (*Quercus* sp.) amongst Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*), Holly (*Ilex aquifolium*) and Hawthorn (*Crataegus monogyna*) and is an example of a woodland type that is rare in the Burren region. The eastern edge of Slieve Carran is dominated by steep cliffs and scree slopes over which Ash and Hazel wood is developed. This represents one of the few remaining woodland habitats in the Burren. The East Burren Complex includes sites for many rare vascular plants and bryophytes (mosses and liverworts) and for several rare lichens and stoneworts. In the east Burren wetlands Mute Swan and Whooper Swan occur in internationally important concentrations, while Wigeon, Lapwing, Dunlin, Black-tailed Godwit and Goldeneye are also very numerous. Also found in wetlands on the site (e.g. Lough Atedaun, Carran Turlough, Lough Aleenaun, Lough Inchiquin, Lough Bunny, Lough Cullaun, Muckanagh Lough) are Bewick's Swan, Teal, Mallard, Gadwall, Shoveler, Tufted Duck, Curlew, Golden Plover, Coot and Little Grebe. The site also supports a flock of Greenland White-fronted Geese. Several of these species are listed in the Red Data Book and on Annex I of the EU Birds Directive. A nesting pair of Peregrine Falcon, a species listed on Annex I of the EU Birds Directive, occur on Glasgeivnagh Hill. The east Burren wetlands are frequented by Sparrowhawk, Kestrel and Hen Harrier, a rare species which is also listed on Annex I of the EU Birds Directive. Pine Marten and Otter have been recorded regularly within the site - both are listed in the Red Data Book as they are considered threatened in Europe, the latter also on Annex II of the EU Habitats Directive. The site supports an internationally important population of Lesser Horseshoe Bats, with an estimated 400 individuals. There are two known nursery roosts, a transition roost and four known winter sites, the latter all in natural limestone caves. Pipistrelle and Long-eared Bats also occur. All of these species are listed in the Red Data Book, the former also on Annex II of the EU Habitats Directive. The Lesser Horseshoe Bat is a small, delicate bat which is confined to six western counties, Mayo, Galway, Clare, Limerick, Kerry and Cork. It forages close to woodland and at the edges of water. The Irish population of this species is estimated to be about 12,000 individuals and may be the largest national population in Europe. The Pipistrelle Bat is the smallest bat to occur in Ireland and is the commonest and most widespread species. Pipistrelle Bats forage where small insects gather, in gardens, along hedgerows and trees, over ponds and along rivers. The Long-eared Bat is the second commonest bat in Ireland and is easily identified by its long ears which are nearly as long as its body. The Long-eared Bat forages in and along woodland where they glean insects off foliage. Since the bats moved into their present location, the roof has been replaced and timbers treated, but this does not seem to have disturbed the nursery colony. The surrounding habitat is ideal for the Lesser Horseshoe Bat's

foraging habitat, being a mixture of lake, river, woodland and hedgerows. A number of small caves in the surrounding countryside raises the possibility of a nearby hibernation site. The bat colony is of international importance because of the numbers of Lesser Horseshoe Bats roosting there during the summer months and because of the close proximity of suitable foraging areas and potential hibernation sites. The site includes a large population of Marsh Fritillary, a species of butterfly listed on Annex II of the EU Habitats Directive. The site also supports the only known populations of Slow Worm (*Anguis fragilis*) in Ireland - this lizard is believed to have been introduced in about 1970. Arctic Char (*Salvelinus alpinus*), a Red Data Book fish species has been recorded from Lough Inchiquin. Most of the site is grazed by cattle and sheep, and in some areas, particularly the uplands, by goats. Slieve Carran is a Statutory Nature Reserve, while some 750 square km within the region of Mullaghmore makes up the Burren National Park. Clearance and intensification of agriculture has caused damage to some parts of the site. This threatens the heath and scrub communities and may cause eutrophication (nutrient enrichment) of the lakelands to the east. Drainage and land reclamation have occurred in places around the edges of wetlands, while some marginal fen areas have been afforested. Areas of agriculturally-improved land have been included within the site in order to protect the hydrology and nutrient status of the wetland system. The East Burren Complex is of international scientific interest owing to the presence of fine examples of typical Burren habitats together with an oligotrophic wetland complex of lakes, turloughs, fen, cut-over bog and calcareous marsh. The Ballyeigher complex represents an excellent example of a nutrient-poor calcareous lake and fen system, of European significance. The only remaining woodland habitats to be found in the Burren occur within the site. The site contains twelve habitats that are listed on Annex I of the EU Habitats Directive and three species of plant and animal listed on Annex II of this Directive and, as such, is of major conservation significance. The occurrence of many rare plants and several rare mammals within the site adds considerably to its scientific and conservation value. The site is of high ornithological interest for the internationally and nationally important numbers of waterfowl that use it. 03.09.2001

Site Name: Maumturk Mountains

Site Code: 002008

The Maumturk Mountains are situated east of The Twelve Bens and west of the Maumtrasnas, between the Inagh Valley and the Leenaun/Maam road. The site is bounded to the north by Killary Harbour and to the south by the Galway/Clifden road. Most of the mountains exceed 600 m in height and about half of the land within the site lies above an altitude of 250 m. In addition many rivers criss-cross the site. The main bedrock is quartzite in the south, which forms impressive cliffs but little mineral soil, and shales and slates in the northern area, which weather more easily. Bands of metamorphosed limestone (Lakes Marble Formation) occur at Lissoughter, Maumeen Gap at Knocknagur and Maamturkmore. The site is a candidate SAC selected for blanket bog, a priority habitat on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for lowland oligotrophic lakes, alpine heath, siliceous rocky vegetation and Rhynchosporion, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Slender Naiad and Atlantic Salmon. Wet heath is widespread within the site on the margins of areas of blanket bog and on the lower slopes of mountains where peat depth is less than about 1 metre. The vegetation is typically dominated by Purple Moor-grass (*Molinia caerulea*), with Cross-leaved Heath (*Erica tetralix*) and Heather (*Calluna*

vulgaris) locally subdominant. Other frequent species include Tormentil (*Potentilla erecta*), Heath Milkwort (*Polygala serpyllifolia*), Many-stalked Spike-rush (*Eleocharis multicaulis*), Bog Asphodel (*Narthecium ossifragum*) and the sedges *Carex echinata* and *C. panicea*. On drier, more steep slopes, dry heath is present with Bell Heather (*Erica cinerea*) a typical species. Overgrazing by sheep has greatly modified the structure and composition of the heath communities, with a reduction in Heather cover and in places the initiation of soil erosion. Blanket bog also occurs within this site, some of which is intact and of good quality, with a particularly good example at Caher. Typical bog species are found, including Heather, Purple Moor-grass, Black Bog-rush (*Schoenus nigricans*), Bog Asphodel, Cross-leaved Heath, Bog Cotton (*Eriophorum angustifolium*), Carnation Sedge (*Carex panicea*), the moss *Racomitrium lanuginosum* and locally frequent hummocks of the bog mosses *Sphagnum fuscum* and *S. imbricatum*. In addition, the lichen flora is locally luxuriant and includes the rare *Cladonia rangiferina*. Flushes occur in some areas of the bog, such as on the south slope of Knocknagur. Here, species such as Pondweed (*Potamogeton polygonifolius*), Bulbous Rush (*Juncus bulbosus*), Jointed Rush (*Juncus articulatus*), Spike Rush (*Eleocharis multicaulis*) and various sedges (*Carex panicea*, *C. demissa*, *C. hostiana*) are found. At this location, the scarce Brown Beak-sedge (*Rhynchospora fusca*) is common in the surrounding bog. Rhynchosporion vegetation is associated with the blanket bog in a few areas of the site. It is characterised by well developed inter-connecting pool systems with quaking carpets of *Sphagnum*. The pool areas are typically dominated by *Sphagnum cuspidatum* and *S. auriculatum*, with Bog Cotton, Bogbean (*Menyanthes trifoliata*), and Sundews (*Drosera anglica* and *D. intermedia*). The quaking flat areas are dominated by White-beaked Sedge (*Rhynchospora alba*), Bog Asphodel and Bog Cotton. Oligotrophic lakes are well represented in this site, occurring mainly to the south-eastern sector of site near Maam Cross. The principal lakes are Lough Shindilla, Loughnamillaun, Lough Nambrackboy, Lough Shannagrena, Maumwee Lough and Lehanagh Lough. Most of these are small to medium sized systems and are of good quality. Typical oligotrophic aquatic species occur, including Quillwort (*Isoetes lacustris*), Pipewort (*Eriocaulon aquaticum*), Water Lobelia (*Lobelia dortmanna*), Shoreweed (*Littorella uniflora*) and Water Milfoil (*Myriophyllum alterniflorum*). Spawning salmon and trout occur in at least Maumwee Lough. Other habitats present include lowland blanket bog, siliceous quartzite scree, exposed rock, upland grassland on peaty and mineral substrates, river valleys and streams, lakes, and woodland on lake islands. In areas where base-rich rocks occur at altitude, e.g. Maumeen Gap and Lissoughter, scarce plant species such as Mountain Avens (*Dryas octopetala*) and Alpine Meadow-rue (*Thalictrum alpinum*) and the Red Data Book species, Purple Saxifrage (*Saxifraga oppositifolia*), are found. The site supports a range of other scarce arctic-alpine/mountain plants, including Green Spleenwort (*Asplenium viride*), Brittle Bladder-fern (*Cystopteris fragilis*), Holly Fern (*Polystichum lonchitis*), Beech Fern (*Phegopteris connectilis*), Starry Saxifrage (*Saxifraga stellaris*), Roseroot (*Rhodiola rosea*), Cowberry (*Vaccinium vitis-idaea*), Mountain Sorrel (*Oxyria digyna*), Dwarf Willow (*Salix herbacea*), Lesser Twayblade (*Listera cordata*), Stiff Sedge (*Carex bigelowii*) and Juniper (*Juniperus communis*). Several other Red Data Book plant species are also found on the site: Slender Cottongrass (*Eriophorum gracile*) and Slender Naiad (*Najas flexilis*) occur in single locations. There is an old record from near Maam Cross for Wood Bitter-vetch (*Vicia orobus*), but this has not been seen on the site in recent years. All of these species are legally protected (Flora Protection Order, 1999) and Slender Naiad is also listed on Annex II of the EU Habitats Directive. The threatened, Marsh Clubmoss (*Lycopodiella*

inundata) also occurs within the site. The site is very important for salmon, a species listed on Annex II of the EU Habitats Directive. The rivers and lakes, and especially the Bealnabrack system, provide high quality spawning and nursery rivers. Arctic Charr has been recorded in Derryneen Lough and Lough Shindilla. However, only in Lough Shindilla are there recent records for this species. This fish species is listed in the Irish Red Data Book as being threatened in Ireland. The Irish Hare has been recorded from the site and is probably widespread; this endemic subspecies is also listed in the Red Data Book as being threatened. Common Frog, also a Red Data Book species, breeds on the site. Birdlife on the site includes Dipper, Heron, Kestrel, Meadow Pipit, Raven, Snipe, Stonechat, Wheatear and Woodcock. Peregrine, a species listed on Annex I of the E.U. Birds Directive, occurs within the site. The main damaging activities and threats to the Maumturk Mountains are overgrazing, peat-cutting and afforestation. Grazing, in particular by sheep, is widespread and quite severe within the site. This has resulted in the erosion of both lowland and mountain blanket bog and in the modification and destruction of heath communities, particularly in the southern half of the site. Peat-cutting, both by hand and by machine, has become more of a problem in recent years but is largely confined to areas of deep, lowland blanket bog. The above activities are the most extensive but other threats and potentially damaging activities include land drainage and reclamation, fertilization, quarrying and dumping.

This site is of interest as it is a good example of an extensive mountain landscape, containing blanket bog, large areas of heath, siliceous rocky vegetation, oligotrophic lakes and upland grassland. The areas of blanket bog at Teernakill and Caher are largely unaffected by overgrazing and are in very good condition. The presence of rare and protected plant species and of the scarce Arctic Charr adds to the interest of the site.
6.10.2006

Site Name: The Twelve Bens/Garraun Complex
Site Code: 002031

This is an extensive site situated in the north-west of Connemara, dominated by mountainous terrain. The site is bounded to the south by the Connemara Bog Complex, to the east by the Maumturk Mountains and to the north by Killary Harbour. Included within the site are the Twelve Bens mountain range, the mountains to the north of Kylemore (Doughruagh, Garraun and Benchoona), rivers including the Ballynahinch and Owenglin systems and an area of coastal heath and machair near Glassilaun. The site also includes some extensive tracts of lowland blanket bog which are continuous with the mountains. Most of the mountain summits reach a height in excess of 500 m, the highest being Ben Baun in the Twelve Bens which reaches 730 m. The site includes a large portion of the Connemara National Park and a Statutory Nature Reserve at Derryclare Wood. Geologically, the site can be divided into two distinct parts. The Twelve Bens are composed of resistant quartzite with schists in the valleys while the mountains north of Kylemore are composed of gneiss and various types of sandstones and mudstones. There are also areas of gabbro (Doughruagh and Currywongaun), mica schist (Muckanaght) and marble outcrops (south of Kylemore Lough). The main soil type within the site is peat. The site is a candidate SAC selected for active blanket bog a priority habitat on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for, alpine heath, calcareous rocky, siliceous rocky and siliceous scree vegetation, lowland oligotrophic lakes, Rhynchosporion and old Oak woodlands all habitats listed on Annex I of the E.U. Habitats Directive. The site is

also selected for the following species listed on Annex II of the same directive - Freshwater Pearl Mussel, Atlantic Salmon, Otter and the plant Slender Naiad. The predominant vegetation type on the site is upland blanket bog/heath dominated by Heather (*Calluna vulgaris*), Deergrass (*Scirpus cespitosus*), Cross-leaved Heath (*Erica cinerea*) and the mosses *Racomitrium lanuginosum* and *Sphagnum capillifolium*. In places this vegetation can be rich in liverwort species such as *Adelanthus lindenbergianus* and *Bazzania pearsonii*. This unusual type of species-rich dwarf shrub heath is almost confined to the mountains of the west of Ireland and Scotland and is particularly well developed in the Twelve Bens. Close to the mountain summits this blanket bog/heath is often very thin with a high proportion of outcropping bedrock. Another important and widespread habitat is lowland blanket bog dominated by Purple Moor-grass (*Molinia caerulea*), Black Bog-rush (*Schoenus nigricans*), Cross-leaved Heath and the liverwort *Pleurozia purpurea*. These areas of lowland blanket bog usually occur in the valleys between the mountains, e.g. the Gleninagh Valley. Rhynchosporion vegetation is well represented around pools, in wet hollows and in quaking and flush areas associated with the lowland blanket bog. White Beak-sedge (*Rhynchospora alba*) occurs in association with such species as Bog Cotton (*Eriophorum angustifolium*), Bogbean (*Menyanthes trifoliata*), Black Bog-rush (*Schoenus nigricans*), and a range of bog mosses, including *Sphagnum auriculatum* and *S. cuspidatum*. The site contains a large range of other habitats, including upland grassland dominated by Sheep's Fescue (*Festuca ovina*) and Mat-grass (*Nardus stricta*), Sessile Oak (*Quercus petraea*) woodland, scree, oligotrophic (nutrient-poor) lakes, rivers, reedbeds, freshwater marshes, coastal heath, machair, sand dune and salt marsh. A number of rare, Red Data Book plant species are found within the site: Alpine Saw-wort (*Saussurea alpina*), Holly Fern (*Polystichum lonchitis*), Purple Saxifrage (*Saxifraga oppositifolia*), and the legally protected (Flora Protection Order, 1999) Parsley Fern (*Cryptogramma crispa*). These are generally confined to mountain cliffs above 400 m, where a number of other scarce plant species, for example, Alpine Meadow-rue (*Thalictrum alpinum*), are also found. Other Red Data Book species have also been recorded from the site: Marsh Clubmoss (*Lycopodiella inundata*), Corncockle (*Agrostemma githago*) and the legally protected Heath Cudweed (*Omalotheca sylvatica*). The latter two species have not been recorded from the site in recent years. St. Dabeoc's Heath (*Daboecia cantabrica*), a species which in Ireland is restricted to Connemara and south Mayo, occurs commonly within the site. The suite of lowland lakes that encircle the mountains represent some of the finest oligotrophic lakes in the country and two rare, Red Data Book plant species, Slender Naiad (*Najas flexilis*) and Pillwort (*Pilularia globulifera*) occur. Slender Naiad is rare in Europe and is listed on Annex II of the EU Habitats Directive. The site contains several small areas of Sessile Oak woodland, a habitat which is particularly rare in Connemara. The best examples on the site of this habitat are found at Kylemore and on the north shore of Derryclare Lough. Derryclare Wood, a Statutory Nature Reserve, has been particularly well studied. It is composed mostly of Sessile Oak, with some Rowan (*Sorbus aucuparia*), Downy Birch (*Betula pubescens*) and occasional Ash (*Fraxinus excelsior*) forming the canopy layer. There is a well-developed lichen and fungus flora present. The fungal parasite, *Hemigrapha astericus*, a native of Australia and South America, was first recorded in the northern hemisphere from this wood. The Kylemore woods, though heavily infested by Rhododendron (*Rhododendron ponticum*), still retain a diverse flora and support interesting communities of mosses and liverworts, including such species as *Radula voluta*, *Lejeunea holtii*, *L. hibernica*, *L. flava* subsp. *moorei*, *Cephalozia hibernica*, *Teleranea*

nematodes, *Campylopus setifolius*, *Oxystegus hibernicus*, *Grimmia hartmanii* and *G. funalis*. Irish Hare, Otter, Freshwater Pearl-mussel and Common Frog have been recorded from the site. These species are protected under the 1976 Wildlife Act. The Owenglin River and Ballynahinch system supports an important population of Salmon and salmon nursery grounds. Arctic Charr, a species listed in the Irish Red Data Book as threatened in Ireland, has been recorded from Lough Inagh, Kylemore Lough, Lough Muck and Lough Fee. Birdlife reported from the site includes Raven, Wheatear, Stonechat, Meadow Pipit, Red Grouse, a declining species of Heather moorland, Snipe, Curlew, Woodcock, Hooded Crow, Twite, Ring Ouzel (the latter two both Irish Red Data Book species) and the EU Birds Directive Annex I species, Peregrine, Merlin, Golden Plover and Chough. The site provides excellent habitat for Peregrine and this species has traditionally bred at several locations within it. The upland vegetation of the site is most threatened by overstocking with sheep and by afforestation with coniferous species. The Twelve Bens/Garraun Complex includes a wide variety of habitat types, eight of which are listed on Annex I of the EU Habitats Directive, and populations of many rare or scarce plant and animal species. It is one of the largest and most varied sites of conservation interest in Ireland.

6.10.2006

Site Name: Connemara Bog Complex

Site Code: 002034

The Connemara Bog Complex is a large site encompassing the majority of the south Connemara lowlands, Co. Galway. The site is bounded to the north by the Galway-Clifden road and stretches as far east as the Moycullen-Spiddal road. Because of its large size the site contains a wide range of habitats. Extensive tracts of western blanket bog form the core interest, but there are also areas of heath, woodland, lakes, rivers and streams. The Connemara Bog Complex is underlain predominantly by various Galway granites, with small areas along the northern boundary of Lakes Marble, schist and gneiss. The Roundstone bog area has a diverse bedrock geology composed mainly of the basic intrusive rock, gabbro. An area of rock, possibly Cambrian in age, called the Delaney Dome Formation occurs in the north-west of this area. Gabbro also occurs in the Kilkieran peninsula and near Cashel. The whole area was glaciated in the last Ice Age which scoured the lowlands of Connemara. The site is a candidate SAC selected for active blanket bog and lagoons, both priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, wet and dry heath, alkaline fen, transition mires, lowland oligotrophic lakes, dystrophic lakes, Rhynchosporion, old Oak woodlands, *Molinia* meadows and reefs, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Atlantic Salmon, Otter, the plant Slender Naiad and the Marsh Fritillary butterfly. The main habitat within this site is lowland Atlantic blanket bog. Most of the area is covered by blanket peat greater than one metre in depth. The Connemara Bog Complex is characterized by areas of deeper peat surrounded by rocky granite outcrops, covered by heath vegetation. The deeper peat areas are often covered by lakes and river systems. A mosaic of different communities therefore exists. These include, hummock/hollow systems, inter-connecting pools, Atlantic blanket bog pools, flushes, transition and quaking mires, freshwater marshes, lakeshore, lake and river systems. The key plant species of lowland blanket bog are Black Bog-rush (*Schoenus nigricans*), Purple Moor-grass (*Molinia caerulea*), Cross-leaved Heath (*Erica tetralix*), Deerglass (*Scirpus cespitosus*), Common Cottongrass (*Eriophorum angustifolium*), Bog Asphodel (*Narthecium ossifragum*),

White Beak-sedge (*Rhynchospora alba*) and Bog Moss (*Sphagnum*) species. Small patches of deciduous woodland and a large number of oligotrophic lakes add to the habitat diversity of the site. Also occurring within the site are several lagoons (a type of brackish lake) which display considerable variations in size, depth and salinity, resulting in a diverse assemblage of floral and faunal communities. Nine legally protected plant species occur within this site (Flora (Protection) Order, 1999): Forked Spleenwort (*Asplenium septentrionale*), Parsley Fern (*Cryptogramma crispa*), Bog Hair-grass (*Deschampsia setacea*), Slender Cottongrass (*Eriophorum gracile*), Bog Orchid (*Hammarbya paludosa*), Slender Naiad (*Najas flexilis*), Heath Cudweed (*Omalotheca sylvatica*), Pillwort (*Pilularia globulifera*) and Pale Dog-violet (*Viola lactea*). The rare and threatened species, Dorset Heath (*Erica ciliaris*), Mackay's Heath (*Erica mackaiana*) and Green-winged Orchid (*Orchis morio*) also occur within this site. All the above species are listed in the Irish Red Data Book and Slender Naiad is listed on Annex II of the EU Habitats Directive. The site is of national importance for wintering populations of Greenland White-fronted Geese. Small flocks (up to 30) are nowadays found on Roundstone Bog and also use the bogs between Recess and Maam Cross. In April 1989 a synchronised ground and air census of the Connemara bogs located 7 flocks of White-fronts, totalling 134-137 birds. In 1991/93 wintering numbers were considered to be not much more than 60 birds. There is an internationally important breeding area for Cormorants at Lough Scannive with 218 pairs present in 1985 in a colony which is known to have existed pre-1968. Golden Plover, a species listed on Annex I of the EU Birds Directive, nests at up to four locations in the site, with a maximum of two pairs noted at any one location. Another Annex I species known to be present in the site is Merlin. Lough Naskanniva is an important inland breeding site for Common Terns (up to 60 pairs in 1977 and 1992) and Choughs, both of which are also Annex I species under the EU Birds Directive. Atlantic Salmon, listed under Annex II of the E.U. Habitats Directive occurs in many of the rivers within the site. The Cashla and Ballynahinch systems are good examples of western acidic spate rivers which support the species. Good spawning and nursery grounds for the species occur in these systems. Arctic Charr occurs in a number of lakes within the site: Ballynahinch Lake, Glenicmurrin Lough and Lough Shindilla. The species has also been reported from Lough Oorid and Lough Glendollagh in the past, but has not been recorded from these lakes in recent years. Arctic Charr is listed in the Irish Red Data Book as being threatened. Otter has been recorded as occurring in the Connemara Bog Complex. Irish Hare, another mammal listed in the Red Data Book, occurs on the site. Common Frog breeds on the site. It is listed in the Irish Red Data Book as internationally important and on Annex V of the EU Habitats Directive. The main damaging operations and threats in the Connemara Bog Complex are peat-cutting, overgrazing and afforestation. Extensive peat extraction using 'Difco' machines has become common in the region in recent years and cutting by excavator and hopper is also increasing. The handcutting of peat is less threatening as it is usually on a much smaller scale but it still needs to be controlled within the site. Afforestation also threatens the site. Forestry affects habitat uniformity, lake and river catchments, nesting and feeding habitats for animals, and landscape integrity. Overgrazing and poaching by sheep and cattle is a widespread problem within the site, with erosion of peat ensuing. The above operations are the most extensive but other threats and potentially damaging operations include land drainage and reclamation, fertilization, quarrying and dumping. In summary, the Connemara Bog Complex encompasses a large area of relatively undamaged lowland Atlantic blanket bog of high conservation significance to Ireland as well as Europe. The

site has nine protected and threatened Irish Red Data Book plant species. The site is internationally important for Cormorants and nationally important for Greenland White-fronted Geese and contains nesting sites for Golden Plover. The site supports several bird species listed on Annex I of the EU Birds Directive and a range of plant and animal species listed on Annex II of the EU Habitats Directive.

6.10.2006

Site Name: Slyne Head Peninsula

Site Code: 002074

This site comprises the peninsula west of Ballyconneely, Co. Galway. It extends northwards to Errislanann Point to include the shallow waters of Mannin Bay. The peninsula is low-lying and undulating, reaching a maximum height of only 64 m (Doon Hill). The underlying rock is predominantly gneiss, except for schist along the northern shores of Mannin Bay, a granite ridge along the western edge of the peninsula and a conspicuous basalt exposure which forms Doon Hill. The peninsula is fringed with rocky shores and sandy beaches, with some extensive areas of machair and several brackish lakes and lagoons. Inland, the site is a maze of small fields, supporting a mosaic of habitats dominated by grassland and heath, interspersed with numerous lakes and associated swamp, marsh and fen. An important feature of the site is the influence of windblown calcareous sand on these habitats. The site is a candidate SAC selected for lagoon, machair and orchid-rich grassland, all priority habitats on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for other habitats listed on Annex I of the directive – lowland hay meadows, alkaline fen, *Molinia* meadows, large shallow inlets and bays, perennial vegetation of stony banks, drift line vegetation, reefs, shifting dunes, Marram dunes, Atlantic saltmarsh, Mediterranean saltmarsh, lowland oligotrophic lakes, hard-water lakes, Juniper scrub and dry heaths. In addition, the site is also selected as a candidate SAC for the liverwort, Petalwort and Slender naiad, both plants listed on Annex II of the E.U. Habitats Directive. Mannin Bay is an excellent example of a large shallow bay, with a wide range of sediment types. The islets and rocks at the mouth of the bay give some shelter from Atlantic swells. Conditions become more sheltered towards the head of the bay and are extremely sheltered in Mannin Creek. Tidal streams are weak. There are a very high number of sediment communities for such a small area. Mannin Bay is almost unique as a very large proportion of the bay is dominated by a combination of maerl debris and living maerl. Maerl is free living red calcareous algae generally called 'coral'. The two species that are most abundant in Mannin Bay are *Lithothamnion corallioides* and *Phymatolithon calcareum*. In addition *Lithophyllum fasclatum* and *Lithophyllum dentatum* have also been recorded. In shallow water, the eelgrass *Zostera marina* and maerl are found together, an uncommon combination known only from two other locations in Ireland. Mannin Bay has excellent examples of communities characterised by burrowing brittlestars *Amphiura brachiata* and *Amphiura filliformis*. The brittle star *Ophiopsila annulosa* is present and is an uncommon species. In addition there is an unusual community characterised by the tubeworm *Sabella pavorina* in Mannin Creek. The shores on the south side of Mannin Creek are known to have bivalve communities with unusually high species diversity. The beaches of Mannin Bay are unusual as they are composed of maerl debris. Mannin Bay has good examples of littoral reef communities that are sheltered from wave action and subject to moderate tidal streams. Shoreline communities follow a zonation of lichen zones followed by *Pelvetia canaliculata* and then barnacles and limpets with *Fucus spiralis*. The zones are narrow (1-1.5m), which is typical of sheltered shores. Most of the shore is composed of flat bedrock and boulders characterised by dense *Ascophyllum*

nodosum and *Fucus vesiculosus*. The dogwhelk (*Nucella lapillus*) is common. On the lower shore is a band of *Fucus serratus* on boulders and bedrock, with sponges, anemones and red algae. In the sublittoral fringe is a mixed flora of kelps (*Laminaria saccharina*, *Laminaria digitata*, *Saccorhiza polyschides* and *Himantalia elongata*) and red algae, with areas of sand and gravel with maerl. Sponges, anemones, tunicates and bryozoan crusts are common on the vertical sides and under the boulders. In the shelter of Mannin Creek the uncommon community characterised by *Ascophyllum nodosum* var. *mackii* is found on the north side of the creek. Machair is particularly well developed and forms extensive plains at Mannin Beg and Aillebrack. The machair has a typically herb-rich sward dominated by species such as Red Fescue (*Festuca rubra*), Wild Thyme (*Thymus praecox*), Lady's bedstraw (*Galium verum*), Daisy (*Bellis perennis*), Clovers (*Trifolium* spp.) and Plantains (*Plantago lanceolata* and *P. coronopus*), with damp areas of Creeping Bent (*Agrostis stolonifera*), Silverweed (*Potentilla anserina*) and small sedges (*Carex* spp.). The rare liverwort *Petalophyllum ralfsii*, a species listed under Annex II of the E.U. Habitats Directive, occurs within damp hollows in the machairs. The population at this site is the largest known in both Ireland and the world. The machair gives way to bare sand in places with embryonic shifting dunes. These areas are characterised by the presence of Sand Couch (*Elymus farctus*) and Sand Sedge (*Carex arenaria*). Some Marram (*Ammophila arenaria*) dunes occur west of Mannin and towards the tip of the Slyne Head headland. Sandy beaches occur at the seaward side of the machair systems, some of which are 'coral' strands composed of the chalky skeletons of red seaweeds (*Lithothamnion* sp. and *Phymatolithon* sp.). Above the beaches typical driftline vegetation and shingle is found with species such as Prickly Saltwort (*Salsola kali*), Frosted Orache (*Atriplex lacinata*) and Sea Rocket (*Cakile maritima*). Parts of the shoreline, particularly east of Mannin machair, are fringed with saltmarsh vegetation developed on peat. Typical species found here include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Sea Milkwort (*Glaux maritima*) and Thrift (*Armeria maritima*). Saltmarsh dominated by dense stands of Sea Rush (*Juncus maritimus*) occur at the entrance to Salt Lough. Brackish lakes and lagoons are a feature of this site. These include Ballyconneely Lake, Lough Silverhill, Lough Aillebrack South and Lough Athola. These lakes are shallow, with sandy bottoms and shores and may be directly connected to the sea. They all receive sea spray and during storms may be flooded by the sea. Characteristic species are Pondweeds (*Potamogeton* spp.), Stoneworts (*Chara* spp.) and Tasselweed (*Ruppia maritima*). The largest freshwater lake is Lough Anaserd, a typical oligotrophic (nutrient-poor) lake surrounded by heathland. It has a stony shore and numerous rocky islands, some covered with heath vegetation. Aquatic species noted from here include Quillwort (*Isoetes lacustris*), Bulbous Rush (*Juncus bulbosus*), Pipewort (*Eriocaulon aquaticum*), Alternate Water-milfoil (*Myriophyllum alterniflorum*) and Awlwort (*Subularia aquatica*). The rare Slender Naiad (*Najas flexilis*), a species protected under the Flora (Protection) Order, 1999, and listed on Annex II of the E.U. Habitats Directive, is also found here. Truska Lough is another oligotrophic lake and Manninmore Lake is also probably of this type. Other lakes within the site are more nutrient-rich in character, possibly due to a brackish influence (e.g. Dereen Lough), and are fringed with Common Reed (*Phragmites australis*) and Many-stalked Spike-rush (*Eleocharis multicaulis*). Also of importance are the associated areas of species-rich marsh (e.g. Ballyconneely and Bunowen marshes) and fen (e.g. Triska), the latter dominated by Black Bog-rush (*Schoenus nigricans*), Blunt-flowered Rush (*Juncus subnodulosus*) and sedges (*Carex elata*, *C. lasiocarpa*). A scarce orchid, *Dactylorhiza traunsteineri*, typically found in

calcareous marshes and fens, is recorded from this site. Much of the inland peninsula consists of small fields which contain a complex mosaic of habitats ranging from dry grassland, hay meadow and heath through to wet grassland and marsh. The heath occurs mainly in areas of outcropping rock and is dominated by Western Gorse (*Ulex gallii*), Bell Heather (*Erica cinerea*), Cross-leaved Heath (*Erica tetralix*) and St. Dabeoc's Heath (*Daboecia cantabrica*). Juniper (*Juniperus communis*) is also a frequent component of the heath communities here. The dry grassland supports vegetation rich in orchid species, including Early Purple Orchid (*Orchis mascula*), the two Butterfly orchids (*Platanthera bifolia* and *P. chlorantha*) and the Red Data Book species Green-winged Orchid (*Orchis morio*). Two further Red Data Book species, Pyramidal Bugle (*Ajuga pyramidalis*) and Pale Dog-violet (*Viola lactea*), occur amongst the heath/grassland mosaic. Three Annex I Bird Directive species are known to breed - Chough (8 pairs in 1992), Sandwich Tern (31 pairs in 1995) and Common Tern (5 pairs in 1995). The main landuse within the site is grazing by cattle, along with some sheep and horses. This is mostly of low to moderate intensity though parts of the machair may be over-grazed. Part of the machair and dune system at Aillebrack has been damaged by the construction of a golf course and this area is excluded from the site. Leisure and tourist related activities may also be damaging parts of the machair system. This site is of ecological importance for the range and diversity of its semi-natural habitats, many of which are listed on Annex I of the Habitats Directive. The interface between calcareous sand dunes, machair, heath and grassland communities is of particular note. The site is also important for a number of rare and scarce species, especially the liverwort *Petalophyllum ralfsii*.
16.1.2003

Site Name: Corliskea/Trien/Cloonfelliv Bog
Site Code: 002110

This site, located approximately 5km south of Castlerea and straddling the Roscommon/Galway county border, comprises a complex of three raised bogs. The site contains large, wet raised bog with well-developed pool systems, large diverse flush systems, subterranean streams with swallowholes and a lake. A remarkable feature of these bogs is the presence of well-developed, wooded flushes. Here, the canopy is of Downy Birch (*Betula pubescens*), and some areas have a shrub layer composed of Ling Heather (*Calluna vulgaris*), Bog-myrtle (*Myrica gale*) and Bilberry (*Vaccinium myrtillus*). The ground layer includes such species as Purple Moor-grass (*Molinia caerulea*) and Buckler-ferns (*Dryopteris carthusiana* and *D. dilatata*), and a characteristic feature is the abundant presence of Bog Mosses (including *Sphagnum recurvum* var. *mucronatum*, *S. squarrosum*, *S. fimbriatum* and *S. palustre*) which form thick carpets among the ground flora. The scarce species, Cranberry (*Vaccinium oxycoccos*), is abundant here, creeping over the carpet of Bog Mosses. In this habitat on Trien Bog, the rare liverwort species, *Cephaloziella elachista*, has been recorded. The rare shrub, Alder Buckthorn (*Frangula alnus*), which is listed in The Irish Red Data Book, occurs at a swallowhole flush on Corliskea Bog. Non-wooded flushes also occur in the site. Some of these feature stands of Bog-myrtle with Common Reed (*Phragmites australis*) and Purple Moor-grass. Elsewhere, there are pool-and-hummock systems, in which hummocks are formed by Bog Mosses (*Sphagnum capillifolium*, *S. subnitens*) and are colonised by Ling Heather, Deergass (*Scirpus cespitosus*), Carnation Sedge (*Carex panicea*) and lichens (including *Cladonia portentosa* and *C. uncialis*). The pools are colonised by Bog Mosses (*Sphagnum cuspidatum*, *S. auriculatum*), Bogbean (*Menyanthes trifoliata*) and the insectivorous plant, Great Sundew (*Drosera anglica*). Frequently associated with pool systems are wet, quaking areas consisting of mats of Bog Mosses with White Beak-

sedge (*Rhynchospora alba*), Common Cottongrass (*Eriophorum angustifolium*), Bog Asphodel (*Narthecium ossifragum*) and the scarce species, Brown Beak-sedge (*Rhynchospora fusca*). In some places, steep-sided tear pools occur. A small lake occurs on the southern side of Corliskea Bog, which is colonised by Bogbean. At several locations, series of swallowholes occur along the courses of subterranean streams. A major threat to raised bogs is drainage, associated with turf-cutting or afforestation, which upsets the delicate hydrology of these ecosystems. Fires cause damage due to removal of the vegetation and desiccation of the bog surface. Parts of this site have been burned in the past, and although regeneration of the vegetation is occurring, recovery is a slow process. This site is of international ecological significance as a largely intact complex of raised bogs. Intact raised bogs are a rare habitat, now much restricted in their European and Irish distribution due mainly to commercial peat extraction. Corliskea, Trien and Cloonfelliv Bogs are excellent examples of this habitat, and show a good diversity of microhabitats which are typical of raised bogs. The wooded flushes are of special significance, as bog woodland is extremely rare and the examples here are of high quality and support a number of scarce and rare species. Both raised bog and bog woodland receive priority status on Annex I of the European Habitats Directive.

Site Name: Kilkieran Bay and Islands

Site Code: 002111

Kilkieran Bay and Islands is located just north of Galway Bay and extends from Keeraun Point, south of Carraroe, westwards to Mace Head, west of Carna. The site contains a large area of open marine water, many islands and rocky islets, and the coastline is much indented with a series of bays (notably the inter-connected Kilkieran Bay and Greatman's Bay), channels and inlets. The entrances of the bays face the prevailing south-westerly winds and they are subject to strong tidal streams as the sea funnels between islands and through channels. A number of streams, lakes and lagoons drain into the bays. The bedrock of the site is igneous, composed of granite, felsite and other intrusive rocks rich in silica. Generally, the site has a rocky shoreline which in most places gives way to mud in shallow water. The surrounding land is dominated by lowland blanket bog, with rock outcrops and small hills to the north.

The marine habitats found within Kilkieran Bay and Greatman's Bay are of very high conservation value. Both bays have a very wide variety of habitats and Kilkieran Bay a very high species diversity (only Kenmare River is more diverse than Kilkieran Bay). A very high number of species that are rare or considered to be worthy of conservation in Ireland occur in the area. Communities of particular importance are the extensive and varied beds of free-living red calcareous algae or maerl (which may be known locally as 'coral'). Kilkieran Bay is one of three known localities in Ireland where the maerl species *Lithothamnion corallioides*, *Lithophyllum dentatum* and *Lithothamnion fasciculatum* co-occur. The range of maerl deposits in Kilkieran Bay, including banks of maerl debris, live maerl and mixtures of maerl, gravel and mud gives rise to a variety of communities. Within these communities are a number of rare anemones, i.e. *Scolanthis callimorphus*, *Mesacmaea mitchellii* and *Aureliania heterocera*. The last-named species is rare in Ireland, being known only from Donegal Bay and Kilkieran Bay, as well as a number of areas on the north-east coast; the population in the site is the largest on the west coast. Kilkieran Bay is the only known Irish locality for

Mesacmaea mitchellii. *Scolanthus callimorphus* is known only from Kilkieran Bay, Valencia Harbour, Co. Kerry and the Dorset coast in the U.K. The best recorded example of the community characterised by the sea cucumber *Neopentadactyla mixta* occurs in the banks of dead maerl of Kilkieran Bay. The very rare anemone *Halcampoides elongatus*, known only from Kilkieran Bay and Ards Bay in Ireland, occurs in a narrow bed of clean dead maerl at the edges of some of the live maerl beds. Greatman's Bay, like Kilkieran Bay, has extensive maerl beds. A population of the large burrowing anemone *Pachycerianthus multiplicatus* occurs at two muddy sites within Kilkieran Bay and is known from only three other localities in Ireland. The seagrass *Zostera marina* occurs in a number of areas in Kilkieran Bay and in some areas co-occurs with maerl. This association is known from a number of areas in Ireland but has not been recorded in the U.K. Beds of the native oyster *Ostrea edulis* occur in Inner Kilkieran Bay. The outer part of the site has sandy bays, e.g. Mweenish Bay, which supports populations of polychaetes, burrowing anemones and bivalves. Sheltered shores have a variety of communities down the shore - the low shore is very species-rich and supports a variety of polychaetes and bivalves.

The rocky shores of the site are comprised of bedrock or a mixture of bedrock, boulders and gravel; they support a very wide variety of shore communities, with the zonation being typical of shores that range from being exposed to wave action through to extremely sheltered shores and some tide-swept shores. Shores exposed to wave action have a zonation of channel wrack *Pelvetia canaliculata* and barnacles in the upper shore, bladder wrack *Fucus vesiculosus* and barnacles in the mid shore, serrated wrack *Fucus serratus* in the low shore and the kelp *Laminaria hyperborea* on the very low shore. Sheltered shores have the mid shore dominated by knotted wrack *Ascophyllum nodosum*. In the inner part of both bays the brown alga *Ascophyllum nodosum* var. *mackii*, which has very specific habitat requirements, is found. The rapids at Carrickagleaun Bridge, Lettermore Island, are extremely species-rich (119 species recorded) and includes the rarely-recorded star fish *Asterina phylactica*. This was the highest number of species recorded on any shore in a recent Irish survey. The inner parts of Kilkieran Bay have channels to several extensive lagoons.

Mixed kelp forests of *Laminaria hyperborea* and *Laminaria saccharina* frequently form a canopy in the very sheltered areas. In contrast, in exposed situations there are extensive areas of *Laminaria hyperborea*, in particular to the south of Golam Head. The rare alga *Dermocorymus montagnei* is known only from the very sheltered narrow inlet Coill Saile on the northern shore of Kilkieran Bay and a handful of sites in Brittany. Also in this creek are large plants of the maerl species *Phymatolithon polymorphum* on which the rare, creeping red alga *Gelidiella calcicola* and the recently described *Gelidium maggsiae* occur. The creek is also unusual for its large population of the red alga *Meredithia microphylla*, which is more characteristic of exposed areas, and for the large form of the sea slug *Akera bullata* var. *farrani* (which may be a separate species).

In Kilkieran Bay, on subtidal reefs dominated by animals, the sponge/sea squirt community of *Raspailia ramosa* and *Corella parallelogramma* is widespread; the best examples in Ireland of this community occur in Gurraig Sound within the site, where a high diversity of encrusting and branching sponges and ascidians are found. The rare sponges *Plakortis simplex* and *Tricheurypon viride* are found in this community. In more exposed situations such as the Namackan Rocks there are good examples of the Axinellid sponge community with the sea fan *Eunicella verrucosa*.

The sponge *Axinella damicornis* occurs here and although it is found at ten locations on the west coast it is never abundant. *Phakellia vermiculata*, a deep-water species, has been recorded in shallow water at only a limited number of locations on the south-west and west coasts of Ireland.

The site is extremely important for the number of lagoons that it includes - it is considered to be the best site in the country for this habitat and is an excellent example of a particularly unusual type of saling lake lagoon situated on peat, which appear to be rare on Europe but characteristic of south Connemara. Examples of lagoons in the site include Lettermullen Pool, Lough Tanai, Mill Lough, Carafinla Lough, the Lough Fhada complex and Loch an Aibhnin. Lettermullen lagoon is a particularly good example of a rock lagoon lying on granite. This habitat is one that is listed on Annex I of the E.U. Habitats Directive with priority status.

Areas of salt marsh occur frequently throughout the site - a thin fringe salt marsh is found along most stretches of coastline. The habitat occurs most frequently in the many sheltered bays in the eastern half of the site and has developed in the lee of causeways built to connect islands, e.g. Gorumna Island, to the mainland. The area of salt marsh between Costelloe and Kinvara is particularly well-developed and extensive. The salt marshes in the site are of the fringe type and most occur on peat - the large number of discrete areas of the habitat within the site suggests that it contains the largest area of salt marsh on peat in the country. The salt marshes on the site include both the Atlantic and Mediterranean types, habitats that are listed on Annex I of the E.U. Habitats Directive.

Machair occurs most extensively on Mweenish Island, Finish Island and Mason Island, which lie in the west of the site. These machair areas appear to be the remains of formerly more extensive systems; they are some of the most southerly machair systems in the country and are of conservation value from both vegetational and geomorphological perspectives. The habitat is listed on Annex I of the E.U. Habitats Directive with priority status.

Lowland hay meadows are relatively rare within the site, but some good examples are known. The habitat is most commonly found in small, unimproved fields located behind beaches, which are influenced by blown sand. Perhaps the most extensive area of the habitat is to be found at Ardmore Point. The vegetation here is dominated by a species-rich mixture of grasses and low- to medium-sized forbs. A number of relatively rare orchids and other vascular plants have been recorded from this site. This is a threatened habitat that is listed on Annex I of the E.U. Habitats Directive.

Otter, a species listed on Annex II of the E.U. Habitats Directive, occurs commonly throughout the site. The site is used by a small breeding population of Common Seal. Grey Seal is a regular visitor and may breed.

The islands and islets of Kilkieran Bay, mainly those on its western side are important for their colonies of seabirds, particularly breeding terns - Arctic Tern (99 pairs recorded in 1995; 308 pairs, 1984), Common Tern (47 pairs, 1995; 371 pairs, 1984), Little Tern (7-9 pairs, 1995; 11 pairs 1984). All of these tern species are listed on Annex I of the E.U. Birds Directive. Inishmuskery, and probably other islands, are used by a population of Barnacle Geese in winter (370 in spring 1994) a species that is also listed on Annex I of the Birds Directive. Eagle Rock is of interest for its population of Black Guillemot (30 individuals, 1984). The site also supports colonies of gulls - Herring Gull (310 individuals,

1994), Great Black-backed Gull (6 individuals, 1984) and Black-headed Gull.

Kilkieran Bay and Islands is an extensive coastal complex site that is of high conservation value, particularly for the fine examples of marine and terrestrial E.U. Habitats Directive Annex I habitats that it supports and for its important Otter and seabird populations.

7.9.2006

Site Name: Lough Coy

Site Code: 002117

Lough Coy is situated approximately 6.5 km north-east of Gort and lies close to the Slieve Aughty hills. The site consists of a small permanent lake in the middle of an almost circular turlough basin. There are drift deposits as well as outcropping rocks and boulders on the relatively steep side walls and small areas of scrub towards the top of the basin. Areas of improved grassland above the normal flood line are included in the site for hydrological reasons. The underlying soils consist of alluvial gleys and a gleyed rendzina-like soil.

A large swallowhole occurs at one side of the basin slightly above summer water level and water enters and leaves the turlough mostly through this. During the winter the fluctuation in levels is extreme and there are no emergent plants such as Common Club-rush (*Scirpus lacustris*) or Common Reed (*Phragmites australis*) in the lake. The turlough experiences a large throughput of water and is dependant on the flows in the tributaries of the Coole River. Lough Coy is an excellent example of a 'riverine' type of turlough, and is in essence the floodplain of an underground river.

Practically the entire site consists of turlough habitat, an EU Habitats Directive Annex I priority habitat. In summer the water area contracts to a degree depending on the prevailing weather and flat mud is exposed which splits into polygonal plates. This is the habitat for a variety of specialised plants such as Mudwort (*Limosella aquatica*), Needle Spike-rush (*Eleocharis acicularis*), Northern Yellow-cress (*Rorippa islandica*) and the liverwort *Riccia cavernosa*. The lakeshore itself has some of these species along with Knotgrass (*Polygonum aviculare*) and Redshank (*Polygonum persicaria*). Above this is a more continuous cover of the sedges *Carex nigra* and *C. hirta*, Reed Canary-grass (*Phalaris arundinacea*), Creeping Cinquefoil (*Potentilla reptans*), Corn Mint (*Mentha arvensis*) and Creeping Buttercup (*Ranunculus repens*). A vegetation characterised by Meadowsweet (*Filipendula ulmaria*), Northern Bedstraw (*Galium boreale*), Common Bird's-foot-trefoil (*Lotus corniculatus*) and Adder's-tongue (*Ophioglossum vulgare*) grows amongst the rocks and includes both Dog Violet (*Viola canina*) and Fen Violet (*V. persicifolia*). The limestone boulders on the upper slopes have a covering of the moss *Cinclidotus fontinaloides*. The fringe of scrub at the edge of the basin is mostly of Blackthorn (*Prunus spinosa*), Buckthorn (*Rhamnus catharticus*) and Ash (*Fraxinus excelsior*), with some Hazel (*Corylus avellana*).

Lough Coy is part of a complex of small sites (along with nearby Blackrock, Ballylee and Bullaunagh turloughs) which supports a nationally important population of Whooper Swans and regionally/locally important numbers of several duck and wader species. Maximum counts at Lough Coy in winter 1995/96 were as follows: Whooper Swan 78, Wigeon 285, Teal 283, Pochard 45, Lapwing 300, Dunlin 120 and

Curlew 80. Birds move frequently between the various sites in response to water levels and disturbance. Lough Coy is often one of the few sites in the district which holds water in late summer and autumn and consequently is of importance for post-breeding birds and early autumn arrivals - 132 Mallard were counted in August 1996 and 149 Wigeon in September 1996.

Of particular note is the occurrence of three Red Data Book plant species at this site - these are Mudwort (*Limosella aquatica*), Fen Violet (*Viola persicifolia*) and Northern Yellow-cress (*Rorippa islandica*).

The main landuse within the site is cattle grazing which is quite heavy at the lake margins and on parts of the slopes. There is some removal of gravel from the drift deposits on the north western edge.

Lough Coy is an excellent example of a eutrophic (nutrient-rich) turlough. The extreme water fluctuation supports a distinctive zonation of vegetation and provides many niches for specialist plants. It is an important site for wintering waterfowl.

24.10.2006

Site Name: Barnahallia Lough

Site Code: 002118

This small site is situated about 7 km north-west of Clifden and within 2 km of the Atlantic coast. It comprises a small lake, Barnahallia Lough, situated in a depression at the bottom of the steep slope of Barnahallia Hill (rises to 106 m) immediately to the east, and surrounded by blanket bog, heath, acid grassland vegetation and exposed rock. The lake is fed by a small stream in the south-west corner. A second stream exits to the west. The bed of the lake is gravelly in places.

The lake is a good example of an oligotrophic system, a habitat listed on Annex I of the EU Habitats Directive. The aquatic plant flora is well developed, with such characteristic species as Shoreweed (*Littorella uniflora*), Water Lobelia (*Lobelia dortmanna*), Water-milfoil (*Myriophyllum alterniflorum*), Bulbous Rush (*Juncus bulbosus*), Pipewort (*Eriocaulon aquaticum*), White Water-lily (*Nymphaea alba*) and the pondweeds *Potamogeton natans* and *P. graminus* occurring.

On the western side, the lake merges gradually into reedswamp, fen and then blanket bog. The main swamp species are Common Reed (*Phragmites australis*) and Saw-sedge (*Cladium mariscus*). Black Bog-rush (*Schoenus nigricans*) and Purple Moor-grass (*Molinia caerulea*) occur, as well as a little Jointed Rush (*Juncus articulatus*). The bog area has a good diversity of bog mosses (*Sphagnum* spp.). There are some well-developed hummocks with Heather (*Calluna vulgaris*). Other bog species present include Bog Cotton (*Eriophorum angustifolium*), Carnation-sedge (*Carex panicea*) and Deergrass (*Scirpus cespitosus*).

Of particular note is the presence of Slender Naiad (*Najas flexilis*) in the lough. This rare aquatic plant is legally protected under the Flora (Protection) Order, 1999 and is also listed on Annex II of the EU Habitats Directive.

A recent survey of the lake indicated that the water quality is good. However, owing to its small size, the lake would be sensitive to nutrient enrichment derived from agricultural activities.

This lake, although small, is a good example of an oligotrophic system in a coastal location. The presence of Slender Naiad, at one of its most westerly Irish stations, greatly adds to the interest of the site.

6.1.2000

Site Name: Lough Nageeron

Site Code: 002119

This small lake is situated about 9 km west of Kilkieran in Connemara. It overlooks Ard Bay and is actually connected to the sea by a small channel. It is, however, raised above sea level and it does not receive any saline water.

The lake is an oligotrophic system with apparently good quality water. It is surrounded by rocky undulating land. Aquatic plants include Shoreweed (*Littorella uniflora*), Water Lobelia (*Lobelia dortmanna*), White Water-lily (*Nymphaea alba*), the pondweeds *Potamogeton berchtoldii* and *P. crispus*, and Alternate Water-milfoil (*Myriophyllum alterniflorum*). The aquatic species of most interest is the rare Slender Naiad (*Najas flexilis*), a species which is found mainly in western oligotrophic lakes.

A number of small islands are scattered around the lough. These islands support a dense vegetation, mainly of Willows (*Salix* spp.) and Bracken (*Pteridium aquilinum*). Reedbeds, mainly of Common Reed (*Phragmites australis*), are present around the lake shores though none are extensive. Several areas of freshwater marsh occur, with typical species such as Yellow Flag (*Iris pseudacorus*), Water Mint (*Mentha aquatica*) and Marsh Cinquefoil (*Potentilla palustris*). In places the marshes have a more acidic and boggy character and here species such as Purple Moor Grass (*Molinia caerulea*), Bog Asphodel (*Narthecium ossifragum*) and Bog Bean (*Menyanthes trifoliata*) occur, along with bog mosses (*Sphagnum* spp.).

Wet grassland is the main habitat which borders the lake. It is closely grazed and supports grasses such as *Poa* spp., *Agrostis* spp., *Festuca* spp. and *Holcus lanatus*. In the wetter areas Soft Rush (*Juncus effusus*) is common. The wet grass merges into wet heath in places and species such as Devil's-bit Scabious (*Succisa pratensis*) and Lousewort (*Pedicularis sylvatica*) appear. Remnants of the heath vegetation which would have surrounded most of the lake at one time still occur in places but mainly at the north and north-west. Typical species include Cross-leaved Heath (*Erica cinerea*), St. Dabeoc's Heath (*Daboecia cantabrica*), Ling Heather (*Calluna vulgaris*), Autumn Gorse (*Ulex gallii*) and Crested Dog-tail (*Cynosurus cristatus*).

The main landuse of the area is grazing by cattle. Agricultural improvement schemes have included scrub and heath clearance and drainage of wet fields.

The main conservation interest of the site lies in the presence of Slender Naiad which is legally protected under the Flora (Protection) Order, 1999 and is listed on Annex II of the EU Habitats Directive. The lake itself is also a good example of an oligotrophic lake, a habitat which is listed on Annex I of the EU Habitats Directive.

25.9.2000

Site Name: Pollagoona Bog

Site Code: 002126

Pollagoona Bog is located 300 m east-south-east of Lough Atorick, close to the Clare-Galway county boundary, and some 10 km west-south-west of Woodford. The bog is situated on a shallow saddle, on flat to gently sloping land surrounded by conifers at an altitude of 150 m above sea level. The site is a small blanket bog that shows some features of a raised bog.

For such a small blanket bog site, Pollagoona Bog supports a wide diversity of plant species. Bog Mosses (*Sphagnum* spp.) are abundant within the site, and there is an extensive cover of Heather (*Calluna vulgaris*). Other species typical of bogs occur commonly: Deergrass (*Scirpus cespitosus*), Bog Asphodel (*Narthecium ossifragum*), Common Cottongrass (*Eriophorum angustifolium*), the Beak-sedges (*Rhynchospora alba* and *R. fusca*). Of note is the presence on the site of Bog-rosemary (*Andromeda polifolia*), a species more usually found on raised bogs. At its western end the bog supports a small patch of Bog-myrtle (*Myrica gale*). Pollagoona Bog is bordered by a wide margin of Purple Moor-grass (*Molinia caerulea*) intermixed with scattered Bog-myrtle along its southern side. Lichens (*Cladonia* spp.) occur abundantly.

Pollagoona Bog contains extensive, slightly quaking flats of Bog Asphodel and Beak-sedges with hummocks of Heather and mosses (*Sphagnum* spp. and *Hypnum* spp.). At the north-western side of the site, a poorly-developed pool system is found. The pools mostly contain algae, but some also have the Bog Mosses *Sphagnum cuspidatum* and *S. auriculatum*. On the southern and south-eastern side the bog is wetter and more quaking and the pool system found there is colonised by Bogbean (*Menyanthes trifoliata*), Common Cottongrass and Bog Mosses. Brown Beak-sedge (*Rhynchospora fusca*) and Bog-sedge (*Carex limosa*) have also been recorded.

Due to its topographical location Pollagoona Bog does not appear to be adversely affected by the surrounding afforestation. Within the site there are two small pockets of forestry, though the trees are sparse, scattered and largely moribund.

Intact blanket bogs are becoming increasingly rare in Ireland through turbary, afforestation and drainage. The scarcity of this habitat in Europe has also been recognised and active blanket bog is listed as a priority habitat on Annex I of the EU Habitats Directive. Pollagoona Bog is a small, but important example of an intact, active saddle blanket bog.

24.1.1997

Site Name: Murvey Machair

Site Code: 002129

Murvey Machair is located on the coast approximately 6.5 km west of Roundstone. The site comprises a 30 m high granite hill, covered in windblown sand supplied from the adjacent beach, and a series of wetlands occurring in the low-lying area to the north of the hill.

The main habitat is hill machair, with a typically herb-rich sward characterised by species such as Red Fescue (*Festuca rubra*), Daisy (*Bellis perennis*), Plantains (*Plantago coronopus* and *P. lanceolata*), White Clover (*Trifolium repens*) and mosses (e.g. *Tortula ruraliformis* and *Brachythecium albicans*). Seepage zones and damp hollows also occur and support abundant sedges, mosses, Fool's Water-cress (*Apium nodiflorum*), Brookweed (*Samolus*

valerandi) and Creeping Bent (*Agrostis stolonifera*). Because of its hilliness, Murvey Machair is geomorphologically somewhat atypical of other Irish machairs; it is thought to represent the relict stages of a once more extensive system.

A population of Petalwort (*Petalophyllum ralfsii*) has recently been discovered associated with the machair habitat. This small thallose liverwort is rare in Europe and is listed on Annex II of the EU Habitats Directive.

The northern part of the site contains two loughs which provide an excellent example of hydrosere succession. The open waters contain abundant Pondweed (*Potamogeton* spp.) and are fringed with swamp, dominated by Common Reed (*Phragmites australis*), Common Club-rush (*Scirpus lacustris*) and Great Fen-sedge (*Cladium mariscus*). The swamp gives way to freshwater marsh and wet grassland. The eastern lake, Lough Namanawaun, is largely in-filled.

These lakes contain two rare plant species - Slender Cottongrass (*Eriophorum gracile*) and Slender Naiad (*Najas flexilis*). Both are legally protected (Flora Protection Order, 1987) and listed in the Irish Red Data Book. The latter species is also listed on Annex II of the EU Habitats Directive.

Most of the site is heavily grazed by sheep, cattle and rabbits. This is exacerbating the natural erosion along the back of the beach.

This site is of value primarily for its machair, a priority habitat listed on Annex I of the EU Habitats Directive. The lakes are also of importance in that they provide a good example of vegetational succession and are the site of two rare and protected plant species, one of which is listed on Annex II of the EU Habitats Directive.
24.1.1997

Site Name: Tully Lough

Site Code: 002130

Tully Lough is situated in Connemara, Co. Galway, approximately 4 km north-west of Letterfrack and just over 1 km from the coast. Tully Mountain (peak 357 m) towers above the site to the south-west.

Tully Lough is a small to medium-sized oligotrophic lake, a habitat listed on Annex I of the EU Habitats Directive, set in a landscape of bog and pasture. A stream enters at the west end of the lake and another exits at the east end and flows to the sea. The shoreline is stony in parts but otherwise fringed by swamp or marsh vegetation. The aquatic vegetation is typically oligotrophic. Species present include Quillwort (*Isoetes lacustris*), Water Lobelia (*Lobelia dortmanna*), Shoreweed (*Littorella uniflora*), Pipewort (*Eriocaulon aquaticum*), Bulbous Rush (*Juncus bulbosus*), Perfoliate Pondweed (*Potamogeton perfoliatus*), Alternate Water-milfoil (*Myriophyllum alterniflorum*) and Canadian Waterweed (*Elodea canadensis*). The moss *Fontinalis antipyretica* occurs on rocks. The EU Habitats Directive Annex II plant species Slender Naiad (*Najas flexilis*) has been recorded from the lake. The presence of Canadian Waterweed may indicate that the lake is not extremely oligotrophic. The fringing swamp and marsh vegetation includes Common Reed (*Phragmites australis*), Common Clubrush (*Scirpus lacustris*), Common Spike-rush (*Eleocharis palustris*), Water Horsetail (*Equisetum fluviatile*) and Yellow Flag (*Iris pseudacorus*).

The lake is surrounded by blanket bog and wet grassland, improved to varying extents, to the south, east and north-east. Some of the blanket bog is fairly intact and has typical species such as Ling (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Cross-leaved Heath (*Erica tetralix*), Purple Moor-grass (*Molinia caerulea*), Bog Asphodel (*Narthecium ossifragum*) and bog mosses (*Sphagnum* spp.). The localised St. Dabeoc's Heath (*Daboecia cantabrica*) occurs. The wet grassland includes such species as Sweet Vernal-grass (*Anthoxanthum odoratum*), Creeping Bent (*Agrostis stolonifera*), Sedges (*Carex nigra*, *C. echinata*), Soft Rush (*Juncus effusus*), Lesser Spearwort (*Ranunculus flammula*) and Marsh Cinquefoil (*Potentilla palustris*). To the north and north-west the main habitat is improved grassland.

The lake has one large island, Heath Island, and several smaller ones. Mixed scrubby woodland occurs on these island, mainly Sycamore (*Acer pseudoplatanus*), Willows (*Salix* spp.), Rhododendron (*Rhododendron ponticum*) and several exotic conifers. The Royal Fern (*Osmunda regalis*) also occurs.

The house which occurs on Heath Island is a roost site for a nationally important breeding colony of Natterer's Bat - 140 bats were counted in 1992. The bats forage amongst the woodland on the island but also visit the mainland. Natterer's Bat is one of the scarcest species of bat in Ireland and is listed as a Red Data Book species.

The main threat to this site is further agricultural intensification, leading to loss of bog and wet grassland habitats surrounding the lake and ultimately to eutrophication of the lake. The oligotrophic vegetation, including Slender Naiad, could be adversely affected. Afforestation in the catchment would also be a serious threat. Modifications to the house where the bats roost could affect their use of the site.

This site is of conservation value as it provides a good example of an oligotrophic lake, a habitat listed on Annex I of the EU Habitats Directive. Of particular importance is the occurrence of the Annex II plant species Slender Naiad. The presence of a nationally important roost of Natterer's Bat is also of note.
7.1.2000

Site Name: Gortacarnaun Wood

Site Code: 002180

This site is situated in the foothills of the Slieve Aughty Mountains, approximately 2 km east of Lough Cutra. The northern boundary is marked by the Owendalulleagh River. It is a substantial area of woodland on sloped ground between approximately 60 and 90 metres. Soils are a sandy clay and there are many rock outcrops.

The woodland is classified as the Blechno-Quercetum petraeae var. coryletosum type. Sessile Oak (*Quercus petraea*) is the dominant species of the canopy, with Birch (*Betula pubescens*) being frequent. There is a well developed understorey of Holly (*Ilex aquifolium*) and Hazel (*Corylus avellana*). Other tree and shrub species include Ash (*Fraxinus excelsior*), Willow (*Salix atrocinerea*), Blackthorn (*Prunosa spinosa*), Hawthorn (*Crataegus monogyna*), Rowan (*Sorbus aucuparia*) and Aspen (*Populus tremula*). The ground flora appears somewhat restricted, probably due to heavy shading by such species as Holly but also due to grazing pressures. Common Bent (*Agrostis capillaris*) is a frequent component of the ground flora. Other species

include Bracken (*Pteridium aquilinum*), Wood Sorrel (*Oxalis acetosella*), Hard fern (*Blechnum spicant*), Great Wood-rush (*Luzula sylvatica*), Irish Spurge (*Euphorbia hiberna*) and Violets (*Viola* spp.). Bilberry (*Vaccinium myrtillus*) forms a low shrub layer in places. The occurrence of Crab-apple (*Malus sylvestris*) is considered a good sign of old woodland. The bryophyte flora is well developed in places but no studies have been carried out. A notable feature of the wood is the frequency of established oak saplings.

There are indications that the wood has been subjected to exploitation in the past and may have been clear-felled in the early part of present century. It seems that the wood continues to be managed for timber extraction. Owing to timber extraction, there are few very old trees. Rhododendron (*Rhododendron ponticum*) occurs in places.

Other habitats which occur within site are heath, wetland vegetation and streams. The heath occurs to the south-east of the woodland and is used as rough pasture. There is outcropping rock and the area is being colonised by young Birch trees. The wetland vegetation occurs mainly to the east of the wood. Of most interest is a fen or flushed area with iron stained water. The vegetation is dominated by Sharp-flowered Rush (*Juncus acutiflorus*), Marsh Horsetail (*Equisetum palustre*) and Bottle Sedge (*Carex rostrata*). Other species include Ragged Robin (*Lychis flos-cuculi*), Lesser Spearwort (*Ranunculus flammula*), Meadowsweet (*Filipendula ulmaria*), Cuckoo Plant (*Cardamine pratensis*), Water Mint (*Mentha aquatica*), Marsh Cinquefoil (*Potentilla palustris*), Common Marsh Bedstraw (*Galium palustre*) and Spotted Orchid (*Dactylorhiza maculata*). Saplings of a range of tree species are established in the flush area. In this same area, there is also some wet grassland and a stand of reeds (*Phragmites australis*).

Old oak woodlands are scarce in Ireland and the habitat is of particular conservation importance as it is listed on Annex I of the EU Habitats Directive.
16.9.1999

Site Name: Drummin Wood

Site Code: 002181

Drummin Wood is situated on sloping ground in the foothills of the Slieve Aughty Mountains at an altitude of approximately 50-70m, some 3 km east of Lough Cutra. The area is drained by the Owendalulleagh River, which occurs to the south. The soils found on the site are sandy clays, with sticky dark clays in wetter areas, and there are many rock outcrops.

Woodland occupies about 60% of the area of the site. Most of the woodland is referable to a type known as the Blechno-Quercetum petraeae association, subassociation coryletosum. Sessile Oak (*Quercus petraea*) is the dominant species of the canopy, along with Ash (*Fraxinus excelsior*). The lower canopy and understorey is comprised of Birch (*Betula pubescens*), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Willows (*Salix* spp.). Crab-apple (*Malus sylvestris*) and Wild Cherry (*Prunus avium*) occur sparsely. The ground flora is mostly well-developed, with such species as Wood-sorrel (*Oxalis acetosella*), Great Wood-rush (*Luzula sylvatica*), Bluebell (*Hyacinthoides non-scripta*) and Wood Anemone (*Anemone nemorosa*) occurring. Of particular note is the occurrence of the Narrow-leaved Helleborine (*Cephalanthera longifolia*), a rare species of woodlands and one that is listed in the Red Data Book.

The wood has been managed in the past, but in recent times little woodland management has been carried out. Dead or fallen timber is a feature of the wood, as are, notably, the frequency of established Oak saplings. Grazing does occur but is not excessive. There are no signs of Rhododendron (*Rhododendron ponticum*).

The other main habitats on the site are heath and areas dominated by Bracken (*Pteridium aquilinum*). The heath is of good quality and includes such species as Ling (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Purple Moor-grass (*Molinia caerulea*) and Tormentil (*Potentilla erecta*). In places the heath has been invaded by Birch and Oak. A stream and small lake (Lodgehill Lough) occur within the site, along with some marsh and wet grassland vegetation.

Pine Marten and Badger have been recorded from the site; both species are listed in the Red Data Book.

Drummin Wood is of considerable conservation significance as it conforms to a woodland habitat type that is scarce in Ireland and one that is listed on Annex I of the EU Habitats Directive. The occurrence of Red Data Book plant and animal species adds to the importance of the site.
2.2.2000

Site Name: Glenloughaun Esker

Site Code: 002213

Situated approximately 5 km south-west of Ballinasloe, this small site comprises a fine example of dry, mostly unimproved, orchid-rich calcareous grassland on an esker ridge. This type of grassland is listed on Annex I of the EU Habitats Directive. A feature of the site is the somewhat unusual mixture of calcicole and calcifuge species. Leaching of the base-rich substrate of the esker is likely to have given rise to soil conditions suitable for colonisation by calcifuge plants.

Species typical of dry calcareous grassland which are present include Quaking Grass (*Briza media*), Bird's-foot Trefoil (*Lotus corniculatus*), Yellow-wort (*Blackstonia perfoliata*), Eyebright (*Euphrasia* sp.), Wild Thyme (*Thymus praecox*), Cowslip (*Primula veris*), Common Centaury (*Centaureum erythraea*), Knapweed (*Centaurea nigra*), Kidney Vetch (*Anthyllus vulneria*), Fairy Flax (*Linum catharticum*) and Spring Sedge (*Carex caryophylla*). The calcifuge component is represented by such species as Ling (*Calluna vulgaris*), Tormentil (*Potentilla erecta*), Devil's-bit Scabious (*Succisa vulgaris*), Heath Milkwort (*Polygala serpyllifolia*), Heath Grass (*Danthonia decumbens*) and Lousewort (*Pedicularis sylvatica*).

Of particular interest is the occurrence of a large population of Green-winged Orchid (*Orchis morio*), a scarce orchid of calcareous grassland which is listed in the Red Data Book. Early Purple Orchid (*Orchis mascula*) also occurs.

The site is grazed at moderate levels by cattle and some areas have been partly improved through fertilization resulting in a lower plant diversity.

Scrub is present in places within and around the site, with Gorse (*Ulex europaeus*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*) and Hazel (*Corylus avellana*). Bracken (*Pteridium aquilinum*) is also present. Any further spread of these species into the grassland areas would be detrimental.

Quarrying of the esker for gravel or sand would be very detrimental to the site..

Overall, this grassland site has an excellent species diversity and a very significant population of the scarce *Orchis morio* (Red Data species). It is very typical of the habitat and probably one of the best remaining examples in the country. 16.9.1999

Site Name: Lough Derg, North-East Shore

Site Code: 002241

Lough Derg, the lowest order lake on the River Shannon, is one of the largest bodies of freshwater in Ireland. The site, 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 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 (Special Protection Area) that supports important numbers of wintering wildfowl, Greenland White-fronted Goose, Common Tern and Cormorant. Both the Greenland White-fronted Geese and Common Tern are listed under Annex I of the EU Birds Directive. A Wildlife Sanctuary is located in the lake close to Portumna Forest Park.

The 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 Saw Sedge (*Cladium mariscus*) forms dense stands up to 2 m in height. 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 (*Equisetum palustre*), Meadowsweet (*Filipendula ulmaria*) and scattered tussocks of Greater Tussock-sedge (*Carex paniculata*).

Yew (*Taxus baccata*) 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 (*Juniperus communis*), which forms protection against grazing for the young Yew. Other notable species present include Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*) Cotoneaster (*Cotoneaster microphyllus*) along with occasional Ivy (*Hedera helix*), 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 good 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 6 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 Saw 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*), Thyme (*Thymus praecox*) and Burren Blue 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. The woodlands along the lake edge at Portumna are Birch (*Betula* spp.) dominated with some Willow (*Salix* spp.), Ash and Hazel. Typically the ground layer includes Early-purple Orchid (*Orchis mascula*), Violets (*Viola* spp.), Ivy (*Hedera helix*), 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*). 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. When these areas are felled no further planting should take place as afforestation damages the wetland habitats between the plantation and lake edge.

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 islands, is a designated SPA. Counts from I-WeBS Report 1995/96 carried out at 7 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 Geese, a bird species listed on Annex I of the EU Birds Directive. There is a Wildlife Sanctuary at the north western edge of the lake.

Lough Derg is of conservation interest for its fish and freshwater invertebrates. Lampreys, listed under Annex II of the EU 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 (*L. 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 EU Habitats Directive.

The 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.

Landuse 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 southwest and west. Coniferous plantations are present along the west and north west shore and small areas of these are included within the site.

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.

20.03.2003

Site Name: Ardrahan Grassland

Site Code: 002244

This site lies immediately west and north of Ardrahan in south Co. Galway. It is dominated by a large flat limestone area with a mosaic of calcareous habitats including limestone pavement, alpine heath, Juniper scrub and species rich dry grasslands. In contrast, the south west of the site consists of a small marl lake and adjoining fens and marshes with Juniper heath frequent on the higher ground. Soils associated with limestone pavement are generally thin rendzina, deeper pockets are more mineral rich and support limestone grassland and scrub in places.

The site contains a good example of limestone pavement, a priority habitat listed on Annex I of the EU Habitats Directive, a small though excellent example of the Annex I habitat alpine heath, along with one other Annex I habitat, Juniper scrub. Of particular note is the abundance of Bearberry (*Arctostaphylos uva-ursi*) and Juniper (*Juniperus communis*) in association with a typical Burren flora

including such species as Mountain Aven (*Dryas octopetala*), Spring Gentian (*Gentiana verna*) and various orchid species including Fly Orchid (*Ophrys insectifera*). The southern and western part of the area is of significant interest due to the low intensity of management in the area.

In the north of the site Juniper scrub forms a dense mat over limestone pavement along with Bearberry and Mountain Aven. Further south it occurs on higher undulating ground over a species rich calcareous heath with Wild Thyme (*Thymus praecox*), Carlina Thistle (*Carlina vulgaris*), Tormentil (*Potentilla erecta*), Bloody Cranesbill (*Geranium sanguineum*), Black Bog-rush (*Schoenus nigricans*), Ling (*Calluna vulgaris*) and occasional Bearberry.

Brackloon Lough, occurs in the south of the site and is a fine example of a small shallow marl lake, one of very few in this locality. This open lake has a pronounced whitish appearance and a flora of lime-encrusted Thread-leaved Water-crowfoot (*Ranunculus trichophyllus*) and a little Curled Pondweed (*Potamogeton crispus*). Shoreweed (*Littorella uniflora*) is locally abundant on the shoreline, where it grows with Many-stalked Spike-rush (*Eleocharis multicaulis*), Pink Water-speedwell (*Veronica catenata*), Lesser Water-plantain (*Baldellia ranunculoides*) and some Amphibious Bistort (*Polygonum amphibium*). Although small the lake seems in a relatively natural state.

There are two small turloughs present within the site. Both are well grazed and consist of a short-turf peaty vegetation with Common Sedge (*Carex nigra*), Lesser Spearwort (*Ranunculus flammula*), Creeping Buttercup (*Ranunculus repens*) (turlough form), Lesser Marshwort (*Apium inundatum*), Cuckooflower (*Cardamine pratensis*), Marsh Pennywort (*Hydrocotyle vulgaris*) and Water Mint (*Mentha aquatica*), along with Common Marsh-bedstraw (*Galium palustre*), Creeping Bent (*Agrostis stolonifera*), Jointed Rush (*Juncus articulatus*) and Common Spike-rush (*Eleocharis palustris*).

Bird species recorded from the site include Snipe, Mute Swan and Curlew.

Landuse at this site consists mainly of the traditional practise of winter grazing by cattle. This is a low intensity farming practise generally confined to the Burren in Ireland and one that is vital to the maintenance of the high scientific interest of this site. However, recent agricultural improvement has damaged the scientific interest of part of the site through loss of habitat in the turlough and limestone pavement areas. Intensification of the land usage around Brackloon Lough could lead to a deterioration in the water quality of the lake.

Ardrahan Grassland contains a mosaic of calcareous habitats including good examples of three habitats listed on Annex I of the EU Habitats Directive - limestone pavement, alpine heath and Juniper scrub. The presence of a relatively unpolluted marl lake adds further diversity and interest to the site.

3.2.2000

Site Name: Kingstown Bay

Site Code: 2265

Kingstown Bay is a small, narrow bay situated approximately 7 km north-west of Clifden and south of Streamstown Bay, Co. Galway. It is an unusually shallow bay that is about 3 km long and 500 m wide at the mouth. The north-westerly

aspect of the bay and the offshore islands of Omev, Inishturk and Turbot at the mouth afford shelter from Atlantic swells. Conditions become even more sheltered towards the head of the bay where the sediment is muddy. Currents within the bay can be moderately strong.

The bay is of conservation importance because there are excellent populations of the free-living, red coralline algae (maerl-forming species) *Lithophyllum dentatum*, *Lithophyllum fasciculatum* and *Lithothamnion corallioides* (which may be locally known as 'coral'). These occur midway along the bay at 0-2 m in depth. The bed is very dense and is formed by unusually large individuals. It has a very heterogeneous composition in which patches dominated by *Lithophyllum dentatum* and *Lithophyllum fasciculatum* alternate with patches dominated by *Lithothamnion corallioides*. Kingstown Bay has the second largest known population of *Lithophyllum dentatum* in Ireland and the largest population of *Lithophyllum fasciculatum*, but species being rare nationally. There are only three known sites where these three species co-occur (the others being Kilkieran slip and Kinvarra Bay, both also in Galway), and this is by far the best example of this association, in terms of plant density and plant size.

Seagrass (*Zostera marina*) occurs in a number of places in the bay and is dense in areas within the maerl bed. The algal community is characterized by several species of filamentous and foliose red algae (e.g. *Antithamnion* spp., *Ceramium* spp., *Polysiphonia* spp. and *Cryptopleura ramosa*), brown algae (e.g. *Mesogloia vermiculata* and *Dictyota dichotoma*) and green algae (e.g. *Derbesia marina* and *Ulva lactuca*). Several epiphytic algae also occur in the area. Of particular interest are *Gelidiella calcicola*, thought to be endemic to maerl, and the common coralline alga, *Corallina officinalis*, which grows in unattached balls at Kingstown Bay. Sheltered rocky shores are dominated by the brown alga *Ascophyllum nodosum*. The faunal community of the bay includes sponges, anemones, crustaceans, bivalve and gastropod molluscs, and fish. The oyster (*Ostrea edulis*) occurs.

Broken coralline algae accumulates between rocky outcrops on the shore, forming shallow beaches that are approximately 20 – 30 m wide. A small grassy island, Hog Island, occurs at the mouth of the bay.

Kingstown Bay is of high conservation importance owing to the presence of an excellent example of a sheltered bay, a habitat that is listed on Annex I of the EU Habitats Directive. 17.9.2001

Site Name: Carrowbaun, Newhall and Ballylee Turloughs

Site Code: 002293

This complex is a group of three turloughs hydrologically linked in times of high flood. It is situated in the vicinity of the Thoor Ballylee Interpretive Center, 3 km west of Peterswell and 6 km north-east of Gort, in the limestone lowlands of south Co. Galway. The site is at the southern end of a complex of turloughs which includes the SACs Lough Coy (2117) and Peterswell (318). It is the last of these to flood.

The site is a candidate SAC selected for turlough, a priority habitat listed on Annex I of the E.U. Habitats Directive.

The lowest part of Carrowbaun is at its northern end and an artificial channel links the marsh with the Ballylee River. At the north end of Ballylee there is a swallow-hole (Pollaleen) which introduces water from Lough Coy. The Ballylee River is joined from the south (via the castle) by the Streamstown River and water sinks into the channel floor, or disappears in a tangle of scrub at Pollanoween further south. Newhall lies in a broad peaty depression with gravel deposits at the southern end. At high water-levels Newhall floods into Carrowbaun West.

The northern end of Carrowbaun is covered by a wet Common Sedge (*Carex nigra*) community which remains wet all year. Plants indicating this wetness are Bottle Sedge (*Carex rostrata*), Bogbean (*Menyanthes trifoliata*), Marsh Cinquefoil (*Potentilla palustris*), Water Horsetail (*Equisetum fluviatile*) and Marsh Marigold (*Caltha palustris*). On the drier edges Brown Sedge (*Carex disticha*), Meadowsweet (*Filipendula ulmaria*) and Marsh Ragwort (*Senecio aquaticus*) occur. Turlough scrub at the northern end contains Blackthorn (*Prunus spinosa*), Buckthorn (*Rhamnus catharticus*) and some Ash (*Fraxinus excelsior*). This grades up into dry rocky Hazel (*Corylus avellana*) scrub with a good ground flora.

The southern end of Carrowbaun floods less often and is largely modified by fertilisation and heavy grazing. Hairy Sedge (*Carex hirta*), Sorrel (*Rumex acetosa*) and Autumn Hawkbit (*Leontodon autumnalis*) characterise this vegetation with frequent Rye Grass (*Lolium perenne*), White Clover (*Trifolium repens*) and Timothy Grass (*Phleum pratense*) indicating semi-improvement.

Newhall is rather similar to Carrowbaun though there is less intensification and more poaching. Animal treading has exposed the peaty soil and tussocks of a drier Carnation Sedge-Glaucous Sedge (*Carex panicea* - *Carex flacca*) community occur amongst a wetter Floating Sweetgrass/Starwort (*Glyceria fluitans*-*Callitriche* spp.) community.

Ballylee contains more turlough scrub than the other two sites, especially around the Pollanoween sink which is overgrown by a tangle of shrubs. Tall herbs such as Meadowsweet, Nettle (*Urtica dioica*) and Wild angelica (*Angelica sylvestris*) grow beneath Buckthorn, Blackthorn, Hazel, Guelder Rose (*Viburnum opulus*) and Spindle (*Euonymus europaeus*). Ash occurs in turlough scrub along the central ridge. There is some dry limestone pavement along this ridge.

Much of the rest of Ballylee is uniform wet grassland with, for instance, Creeping Bent (*Agrostis stolonifera*) and Crested Dog's-tail (*Cynosurus cristatus*). In places, semi-improvement has increased the percentage of Rye grass.

Carrowbaun and Newhall are part of a complex of neighbouring turloughs and, because they are the last to flood completely, there is a concentration of waterbirds at certain times. During monthly surveys in the winters of 1995/6 and 1996/7 Carrowbaun and Newhall was noted for its diversity and numbers of waterbirds when in flood. The maximum counted was 1,740 (involving 13 species). Maximum counts during this period were as follows (a count made on 18th December 2000 is given in parenthesis):

Mute Swan 4 (6); Bewick's swan 40 (0); Whooper swan 141 (118); Wigeon 356 (270); Mallard 22 (15); Teal 55 (25); Pochard 35 (9); Tufted duck 38 (16); Golden plover 400 (0); Lapwing 1000 (0); Dunlin 140 (30); Curlew 87 (35).

Whooper Swan and Bewick's Swan are listed on Annex I of the E.U. Birds Directive and these numbers are of National

Importance. This site has been of importance for wintering swans since at least the 1970s. Dunlin are very scarce on inland waters and their presence here is of note.

Ballylee Castle, a Visitors' Center, is included in the site. A breeding population of the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), an Annex II species under the E.U. Habitats Directive, has been recorded regularly since 1996. Counts for 1996 were 20+ and for 2000 were 27. 20 roosting Long-eared Bats (*Plecotus auritus*) were also recorded. In addition, according to the literature, the castle is a known Pipistrelle Bat (*Pipistrellus pipistrellus*) site. These three bat species are listed as Internationally Important in the Irish Vertebrate Red Data Book. A pair of Kestrels (*Falco tinnunculus*) nest and have successfully bred at the top of the castle for the past three years.

The vegetation of Carrowbaun, Newhall and Ballylee has been largely modified by drainage works, fertilization and over-grazing, which reduce their botanical value. However, the wet plant communities in north Carrowbaun and the turlough scrub are important botanically. The presence of a high diversity of waterbirds and the roost of Lesser Horseshoe Bats, an Annex II species under the E.U. Habitats Directive adds to the ecological interest of the site. 20.3.2003

Site Name: Cahermore Turlough

Site Code: 002294

Cahermore Turlough is situated in the limestone lowlands of south Co. Galway about 5 km north-west of Gort and 5.5 km south-east of Kinvara. It is part of a series of lakes and turloughs in the region, most of which are Special Areas of Conservation (SAC) or Natural Heritage Areas (NHA). The nearest is Caherglassaun Turlough, the water levels of which are slightly higher than Cahermore. The site is mostly covered by drift which is mounded into hillocks in the south-eastern parts.

The site is a candidate SAC selected for turlough, a priority habitat listed on Annex I of the E.U. Habitats Directive.

The turlough is a dry one and there is no standing water in summer except for a few small ponds dug for cattle. A few collapse features occur in the drift on the southern side with a regular swallow-hole at the edge of the flooded area. Another hole occurs just behind the bungalow at the road junction in the south-east corner. The turlough appears to flood largely from the southern side.

The site has quite a uniform grassland cover. Creeping Bent (*Agrostis stolonifera*), Rough meadow-grass (*Poa trivialis*), Smooth Meadow-grass (*Poa pratensis*), Red Fescue (*Festuca rubra*) and Couch Grass (*Elytrigia repens*) are the main constituents. Hairy Sedge (*Carex hirta*) and Common Sedge (*Carex nigra*) are widespread sedges over the site. Marsh Foxtail (*Alopecurus geniculatus*) grows in the southern half. Pools dug into the drift have a varied flora, some have Pond water-crowfoot (*Ranunculus peltatus*) and Common Duckweed (*Lemna minor*) while others have Amphibious Bistort (*Persicaria amphibia*), Floating Sweetgrass (*Glyceria fluitans*), Water Forget-me-not (*Myosotis scorpioides*) and Common Spike-rush (*Eleocharis palustris*).

Two areas of limestone pavement which are largely scrub-covered occur. The one in the east is grazed by sheep and has grassland plant species such as Thyme (*Thymus praecox*) and Downy Oat-grass (*Avenula pubescens*). The

shrubs on this pavement include Blackthorn (*Prunus spinosa*), Burnet Rose (*Rosa pimpinellifolia*), Juniper (*Juniperus communis*) and the exotic species Small-leaved Cotoneaster (*Cotoneaster microphyllus*). A larger area of turlough scrub in the northern part is impenetrable and consists of Hawthorn (*Crataegus monogyna*), Buckthorn (*Rhamnus catharticus*), Blackthorn (*Prunus spinosa*) and Spindle (*Euonymus europaeus*). There is some Crested Dog's-tail (*Cynosurus cristatus*) grassland on the fringes of this scrub.

The site holds a diverse population of wintering waterbirds at times of flood. Dunlin are not common inland but occurred throughout the 1998/99 winter season. The following counts were made on 15th December 1998 and, in parentheses, 30th November 2000:

Whooper Swan 49 (35); Mute Swan 9 (5); Wigeon 180 (160); Teal 10 (-); Mallard 6 (22); Pochard 86 (12); Tufted Duck - (8); Lapwing 250 (150); Curlew 25 (-); Dunlin 120 (70); Redshank - (4). Bewick's Swan (7i in winter 1995/96) and Golden Plover (60i in winter 1998/99) have been recorded.

Cahermore Turlough supports a wide range of turlough habitats with well-developed plant communities. The amount and quality of the developing woodland is a special feature of this turlough. Whooper Swan, Bewick's Swan and Golden Plover are listed on Annex I of the E.U. Birds Directive. 21.10.2002

Site Name: Ballinduff Turlough

Site Code: 002295

Ballinduff Turlough is situated in a narrow basin in the limestone lowlands of south Co. Galway, 5 km north-east of Gort. It is part of the Coole Lough complex of lakes and turloughs, most of which are Natural Heritage Areas (NHAs) or Special Areas of Conservation (SACs). Rock outcrops around the northern half but there is glacial drift in the south. There is a low hill to the south outside the site. The boundary in the south-west is the Galway-Limerick railway line.

The site is a candidate SAC selected for turlough, a priority habitat listed on Annex I of the E.U. Habitats Directive.

The turlough is late-draining and a pool persists into June or July and re-floods easily. There is a marshy hollow in the middle of the southern section which receives an inflow of water from the south. The hydrology of the site is probably controlled by a complex of swallow holes and subsidence below the houses at Coolfin. During floods the turlough drains overland towards Coole Lough.

The main habitats on the site are various types of turlough grassland and turlough scrub which are related to the flooding regime. The turlough grassland types vary. In the wettest parts plant species such as Marsh Horsetail (*Equisetum fluviatile*), Amphibious Bistort (*Persicaria amphibia*) and Common Spike-rush (*Eleocharis palustris*) occur with some Lake Club-rush (*Schoenoplectus lacustris*). Higher up Yellow Sedge (*Carex lepidocarpa*), Marsh Pennywort (*Hydrocotyle vulgaris*) and Jointed Rush (*Juncus articulatus*) occur on marly rises, while the common community includes Common Sedge (*Carex nigra*), Creeping Bent Grass (*Agrostis stolonifera*), Creeping Cinquefoil (*Potentilla reptans*) and Silverweed (*Potentilla anserina*). There is also a wide band of nutrient-poor grassland with

Purple Moor-grass (*Molinia careulea*), Common Sedge, Yellow Sedge and Tawny Sedge (*Carex hostiana*).

An unusual feature is that Shoreweed (*Littorella uniflora*) is very widespread and prominent throughout the turlough and is present in all the above plant communities.

Low dense woodland, liable to flood, is the other main habitat on the site, mostly along the north-western edge of the basin. Ash (*Fraxinus excelsior*), Buckthorn (*Rhamnus catharticus*) and Hawthorn (*Crataegus monogyna*) are the main constituents with other shrubs such as Guelder Rose (*Viburnum opulus*) and Spindle (*Euonymus europaeus*). The vicinity of the swallow holes has a good woodland edge with tall herbs such as Yellow Loosestrife (*Lysimachia vulgaris*), Dewberry (*Rubus caesius*) and a large colony of Meadow-rue (*Thalictrum flavum*).

Other habitats include scrub not subject to flooding and the inflowing drain from the south-east which contains abundant Watercress (*Nasturtium* sp.), around which wet grassland with Sharp-flowered Rush (*Juncus acutiflorus*) occurs. The rest of the site is mainly improved grassland, which is included for water quality reasons.

In winter, Whooper Swans and Bewick's Swans have been recorded at the site. These swans feed mainly on improved pasture on Corker Hill to the south but roost on the open water of the turlough. They are considered to be part of the large swan population that is centred at Coole Lough. In winters 1996/97 and 1997/98, between 200 and 300 Whoopers were recorded and between 10 and 50 Bewick's. Lower numbers of Whoopers occurred in subsequent winters and Bewick's are now rarely recorded in south Galway (a trend reflected throughout Ireland). Both of these swan species are listed on Annex I of the EU Birds Directive, and the numbers of Whoopers recorded in the above years were of International Importance. Numbers of other waterbirds using the site in winter are low.

The rare invertebrate *Eurycercus glacialis*, which was first found in Ireland in 1985, occurs at Ballinduff Turlough. In Ireland, the species is seen to be a turlough specialist of the east Galway region, rare elsewhere in Atlantic Europe. Its presence at the site adds to the ecological interest.

Grazing intensity on the turlough grassland is very low. Some clearance of dry scrub has taken place recently.

Ballinduff Turlough offers a wide range of turlough habitats with plant communities well-developed and with little grazing. The widespread presence of Shoreweed within different plant communities is an unusual turlough feature. The development of Buckthorn woodland and the swallow-hole vegetation are other unusual features. The presence of a rare turlough invertebrate adds to the ecological interest. 13.03.2003

Site Name: Williamstown Turloughs

Site Code: 002296

Williamstown Turloughs are a suite of turloughs - Curragh, Polleagh (and Polleagh West) and Gortduff, the first two of which are situated alongside the R380 about 7 km west of Williamstown, Co. Galway. They lie within a complex of esker ridges and raised and valley peats, very close to the Shannon - Corrib watershed. Drainage is westwards. To the north-west is the Old Red Sandstone ridge of Slieve Dart and

sandstone is probably present at, or close, to the north-west side of Curragh.

The site is a candidate SAC selected for turlough, a priority habitat listed on Annex I of the E.U. Habitats Directive.

Polleagh Lough is an oligotrophic turlough. It has a permanent very shallow lake which is probably dependent for its existence in summer on a perched water-table fed only by water from its surrounding small catchment area. This catchment area includes a significant area to the east of the main road. Polleagh Lough is joined to Polleagh West at times of high flood, completely surrounding a low hill of glacial drift. In summer, Polleagh West almost dries out. Curragh is similar in many ways and is in hydraulic continuity with Polleagh. Gortduff is a small well-grazed, elongated and undulating steep-sided turlough with a number of sink-holes. It has a permanent pond (at its south-eastern end) which is also dependent on a perched water-table.

Polleagh has a particularly diverse vegetation with eleven true turlough plant communities. Reedbeds with Common Reed (*Phragmites communis*) and Common Club-rush (*Schoenoplectus lacustris*) cover a significant part of the southern end. Marl pond vegetation with Shoreweed (*Littorella uniflora*), Lesser Water-plantain (*Baldellia ranunculoides*) and Bulbous Rush (*Juncus bulbosus*) occur where a layer of marl deposition covers a bare peat substrate, especially in the northern and eastern shore-lines. Wet annual vegetation occurs along the narrow parts of Polleagh West which contains a small number of specialised annual plants such as Redshank (*Polygonum persicaria*), Red Goosefoot (*Chenopodium rubrum*), Marsh Cudweed (*Filaginella uliginosa*) and Northern Yellow-cress (*Rorippa islandica*). Amphibious Bistort (*Polygonum amphibium*) is quite widespread in the turlough and occurs as almost pure stands with Creeping Bent grass (*Agrostis stolonifera*), Common Spike-rush (*Eleocharis palustris*) and the moss *Fontinalis antipyretica*. Much of the remainder of the turlough comprises a low growing sward of mixed sedges.

Curragh has less diverse vegetation with five true turlough plant communities. Pure stands of Amphibious Bistort with *Fontinalis* occupy much of the small hollows and larger bays close to the lake margins. Elsewhere sedge grassland is widespread.

The steep sides of Gortduff show a good zonation from Amphibious Bistort at the base to a dry Common Sedge (*Carex nigra*) community which merges into semi-improved and improved grassland around the upper margins.

For a small site this suite of turloughs is considered to have a good diversity of wintering waterbirds. Peak numbers at Polleagh during twice monthly counts from December 1995 to April 1996 were as follows: Whooper swan 8; Mute swan 3; Mallard 34; Wigeon 230; Teal 20; Shoveler 4; Tufted duck 17; Pochard 5; Goldeneye 2; Lapwing 1,190; Golden plover 1,550; Curlew 155; Dunlin 31; Redshank 2; Moorhen 6; Black-headed gull 110. Curragh had lesser numbers of all species but there is bound to be frequent interchange between the two turloughs.

During a further site visit (31/01/01) a similar range and number were recorded (numbers refer to Polleagh, Curragh and Gortduff combined): Whooper swan 9; Mute swan 2; Mallard 55; Wigeon 200; Teal 30; Tufted duck 8; Lapwing 800; Golden plover 150; Curlew 55; Dunlin 25; Redshank 1. A good number of waterbirds were present in grassy pools in the north of Polleagh where the two turloughs join at high water-levels.

In 1996 Polleagh and Curragh held significant numbers of breeding waders: Snipe 10 (drummers); Lapwing 12 pairs; Redshank 7 pairs; Ringed plover 2 pairs. In addition small numbers of Tufted duck, Mallard, Little grebes and Moorhen also bred.

The Annex II animal, the Otter (*Lutra lutra*) was recorded at the site in 1996. Fish have been reported in both Polleagh and Curragh Loughs.

Drainage works which have damaged the site were carried out privately in 1996 and are still effective to date. Drainage at the eastern end of Polleagh has been reversed and water to the turlough is being lost at times of high flood. Water input from the small catchment is also being lost during the summer. The long term effect on this suite of turloughs has not yet been assessed.

An assessment of the ecological value of these turloughs, using a recognised evaluation system, ranks Polleagh and Curragh combined as being the 11th most valuable turlough in Ireland. On this basis the Williamstown Turloughs are evaluated as being of International Importance meriting strict conservation measures. The Northern Yellow-cress (*Rorippa islandica*) is a Red Data book species and a characteristic turlough species. Golden Plover have reached Nationally Important numbers. Lapwing has been in decline in Ireland as a breeding bird since the early 1990s though a substantial population occurred here in 1996. Ringed plovers are scarce as an inland breeding species.
25.03.2003

Site Name: Cregg House Stables, Crusheen

Site Code: 002317

Cregg House is situated approximately 10 km south of Gort, Co. Galway. The site consists of an old, stone stable block. It is a candidate Special Area of Conservation because it contains an important maternity roost of the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive.

The stables are still used for horses and the building is in good repair with a well maintained slate roof. The bats roost in the loft and 100 bats were counted using this breeding site in 1997, making it a site of international importance.

The surrounding landscape consists of improved grassland with hedgerow boundaries. There are several small lakes with fringing woodland in the vicinity of the roost, providing some foraging habitat for the bats.

While there are no apparent threats to the conservation status of the bats at this summer roost, the foraging areas and the winter roost of this population remain unknown.
21.03.03

Site Name: Camderry Bog

Site Code: 002347

Camderry Bog is part of a cluster of bogs in Co. Galway, situated approximately 12 km north-east of Mountbellew and 9 km south-east of Glenamaddy. It is almost entirely within the townlands of Camderry, Boggans and Corracullin. The site comprises a relatively large raised bog that includes

both areas of high bog and cutover bog. The northern and western margins of the site are bounded by the Shiven River, the eastern margin is bounded by a mineral ridge and those to the south by roads.

The site is a candidate Special Area of Conservation selected for active raised bog, degraded raised bog and Rhynchosporion, habitats that are listed on Annex I of the E.U. Habitats Directive. 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.), Deergass (*Scirpus cespitosus*), Carnation Sedge (*Carex panicea*).

The site consists of two domes separated by a broad ridge of mineral soil. Overall the northern dome appears to be quite dry with limited areas of wet hummock/hollows. The lower southern dome contains an area of quaking bog with hummocks and tear pools. A small flushed area showing small-scale hummock-hollow development is found on the northern dome to the north and north-west of a forestry plantation on the high bog. To the east there is an extensive flush with areas of open water. Cutover bog occurs all around the margins of the high bog apart from a semi-natural margin to the north by the Shiven River.

Much of the high bog has vegetation typical of the Western Raised Bog type, consisting of Ling Heather (*Calluna vulgaris*), Cottongrass (*Eriophorum* spp.) and Carnation Sedge. Bog Mosses (*Sphagnum* spp.) form a spongy mat in places but due to damage from drying out and burning are rarely present as carpets. Over large areas, especially in the south, lichens (*Cladonia* spp.) occur in abundance. Hummocks of the moss *Racomitrium lanuginosum* occur in the centre of the site and the liverwort *Pleurozia purpurea* is also present. The area of quaking bog has hummocks and hollows and is characterised by hummocks formed of bog mosses *S. papillosum* and *S. capillifolium*, extensive lawns of bog mosses *S. cuspidatum* with Bogbean (*Menyanthes trifoliata*) and tear pools. There are Bog Asphodel-dominated hollows and the moss *Campylopus atrovirens* occurs at the margins of the tear pools. This area of the site supports several rare species of bog moss i.e. *S. fuscum* and *S. imbricatum*. In the flushed areas low hummocks of *S. capillifolium* and *S. imbricatum* occur with Bog Asphodel lawns and abundant Cranberry (*Vaccinium oxycoccos*). The large eastern flush consists of a depression with open water and bog moss *S. cuspidatum* around the margin. Other species present include Soft Rush (*Juncus effusus*), Bogbean, and the cottongrasses (*Eriophorum angustifolium* and *E. vaginatum*).

The old cutover is mainly dominated by Ling Heather, Purple Moor-grass (*Molinia caerulea*), Soft Rush and cottongrass. Gorse (*Ulex europaeus*), Birch (*Betula* sp.) and willows (*Salix* spp.) also occur along the drains. Along the north of the site on the banks of the Shiven River, Hawthorn (*Crataegus monogyna*), willow and Ling Heather grow with typical river bank species such as Meadow-sweet (*Filipendula ulmaria*), Nettle (*Urtica dioica*) and docks (*Rumex* spp.). An area of cutover to the east of the site is waterlogged by water

discharged from the high bog. Drains in this cutover contain species indicative of some enrichment, such as *Potamogeton polygonifolius* and *Carex rostrata*. To the south old cutover is very wet and regenerating well, with a good cover of bog mosses, including such species as *S. papillosum*, *S. capillifolium* and *S. auriculatum*. Here, Purple Moor-grass and cottongrass over a carpet of bog mosses is the dominant vegetation.

Red Grouse, a Red listed species and one that is becoming increasingly rare in Ireland, has been recorded on the site.

Current landuse on the site consists of peat-cutting around the edge of the high bog and forestry. Active peat-cutting is carried out to the south, east and north-west using mechanised methods for peat extraction. Damaging activities associated with these landuses include drainage and extensive and frequent 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. The whole site may have subsided due to water loss from drainage in the past.

Camderry Bog is a site of considerable conservation significance comprising as it does a large 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, tear pools, flushes and regenerating cutover, as well as a number of scarce plant species. 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 (over 60%) and so has a special responsibility for its conservation at an international level. 31.10.2002

Site Name: Curraghleanagh Bog

Site Code: 002350

Curraghleanagh Bog is part of a bog cluster situated approximately 6 km north of Mountbellew Co. Galway, mainly in the townlands of Curraghleanagh, Rushestown and Milltown. The site comprises a raised bog with areas of high bog and cutover, and lies on a relatively low-lying plateau entirely within the upper reaches of the Shiven River. Mature coniferous forestry occurs on the high bog to the north of the site.

The site is a candidate Special Area of Conservation selected for active raised bog, degraded raised bog and Rhynchosporion, habitats that are listed on Annex I of the E.U. Habitats Directive. 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*), Carnation Sedge (*Carex panicea*).

The site has a typical raised bog topography with a central dome which slopes gently towards the margins. The high bog supports an extensive quaking area with many pools. Hummocks and pools are confined to the top of the dome and the rest consists of pools separated by lawns of bog mosses. Two bog bursts and associated tear pools occur on the eastern side of the site. A number of flushes occur at the western edge of the high bog. Habitat diversity is increased with the presence of a narrow strip of old mixed woodland on the north-eastern margin of the bog. A number of bare erosion channels occur in association with the bog burst to the east of the site.

This is a typical example of Western Raised Bog and the vegetation consists of Carnation Sedge with Bog Asphodel hollows, and tussocks of Ling Heather (*Calluna vulgaris*), Hare's-tail Cottongrass (*Eriophorum vaginatum*) and Deergrass. Other species present include the mosses *Campylopus atrovirens*, *Racomitrium lanuginosum* and the liverwort *Pleurozia purpurea*. Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*) are locally abundant. The high bog supports an extensive quaking area with linear pools and lawns with bog moss (*Sphagnum cuspidatum*) and Bogbean (*Menyanthes trifoliata*). Lawns of bog mosses, including *Sphagnum magellanicum* and *S. auriculatum*, occur between the pools. In general, hummock cover is low, with occasional large *Racomitrium lanuginosum* tussocks. Purple Moor-grass (*Molinia purpurea*) and Common Reed (*Phragmites australis*) are found in association with flush areas to the west of the site along with scattered Downy Birch (*Betula pubescens*). Flora associated with the main channel in the bog burst to the east includes Ling Heather, Royal Fern (*Osmunda regalis*), Bog-myrtle (*Myrica gale*), Narrow Buckler-fern *Dryopteris carthusiana* and some orchid species. The epiphytic lichen flora is diverse, with *Coelocaulon aculeatum*, and *Usnea* spp. occurring on Ling Heather, and *Cladonia cervicornis* subsp. *verticillata* on the bark of Birch trees. The small area of mixed woodland to the north-east supports Downy Birch, Rowan (*Sorbus aucuparia*), Oak (*Quercus* sp.) and Scots Pine (*Pinus sylvestris*). In areas of abandoned cutover, Gorse (*Ulex europaeus*), Purple Moor-grass and Downy Birch are common, with bog moss regeneration being notably good in the south and north-eastern cutover.

Red Grouse, a species that is becoming increasingly rare in Ireland, has been recorded on the site.

Current landuse on the site consists of peat-cutting along the north and east margins. Afforestation has occurred on the high bog to the north-west of the site. Damaging activities associated with this landuse include drainage and burning. Fire damage has been recorded in the 1980s but the present abundance of bog mosses indicates significant recovery of the bog surface in these areas. 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.

Curraghleanagh Bog 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 hummock/hollow complexes, pools and flushes, and regenerating cutover which add to the diversity and scientific value of the site. 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.
31.10.2002

Site Name: Monivea Bog

Site Code: 002352

Monivea Bog is situated approximately 5 km north-east of Athenry, Co. Galway. It is located in the townlands of Corrantarrmud, Newcastler, Glenaslat and Lenamor. To the east lies the Killaclogher River and to the north a large coniferous plantation. It is located in an area of Karstic limestone.

The site is a candidate Special Area of Conservation selected for active raised bog, degraded raised bog and Rhynchosporion, habitats that are listed on Annex I of the E.U. Habitats Directive. 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*), Carnation Sedge (*Carex panicea*).

The site consists of two higher areas to the north and south with a central depression associated with an extensive flush system. The dome of the bog features a pool/hummock complex including wet, quaking areas. There is also a lake and swallow holes located in the north-west flush and soak system. Cutover is found all around the margins of the high bog and is extensive on the north and eastern margins. Tracks are found on the high bog to allow access for peat-cutting.

The high bog has vegetation typical of the Western Raised Bog type consisting of Carnation Sedge, Ling Heather (*Calluna vulgaris*), Bog Asphodel, Deergrass, the lichen *Cladonia portentosa* and the moss *Racomitrium lanuginosum*. Overall, Deergrass dominates the drier part of the high bog. In the pool/hummock complex on quaking bog, the cover of bog mosses (*Sphagnum* spp.) reaches 75%, consisting mainly of lawns of *Sphagnum cuspidatum*. Elsewhere, *Sphagnum* cover is typically low, ranging from 5-20%. Some pools are algae-dominated, but healthier pools have Hare's-tail Cottongrass (*Eriophorum vaginatum*) and bog mosses (*S. cuspidatum* and *S. auriculatum*). Hummocks consist of the bog mosses *S. fuscum*, *S. capillifolium* and *S. imbricatum*, with the mosses *Campylopus introflexus* and *Leucobryum glaucum*. Ling Heather and lichens are also found on the hummocks. The bog features a large soak-system in the north-west which originates at the lake. The open water is colonised by Bottle Sedge (*Carex rostrata*), Bogbean (*Menyanthes trifoliata*), Soft Rush (*Juncus effusus*) and Marsh Cinquefoil (*Potentilla palustris*), associated with quaking bog moss lawns. To the south-east of the lake there is a pool surrounded by scraw vegetation, this consists of a quaking mat of mosses (i.e. *Sphagnum cuspidatum*, *S. recurvum*, *S. palustre* and *Aulacomnium palustre*), Cranberry

(*Vaccinium oxycoccos*), Purple Moor-grass (*Molinia caerulea*) and Bog-sedge (*Carex limosa*). Swallow holes are vegetated by willows (*Salix* spp.), Downy Birch (*Betula pubescens*), Broad Buckler-fern (*Dryopteris dilatata*), Tormentil (*Potentilla erecta*), Honeysuckle (*Lonicera periclymenum*) and Devil's-bit Scabious (*Succisa pratensis*). A number of small flushes with Purple Moor-grass, Bog-myrtle (*Myrica gale*) and bog mosses (*S. imbricatum*, *S. palustre* and *S. fuscum*) occur around the site. The cutover areas are sparsely vegetated in the north, east and south, and where vegetation occurs it is dominated by Common Cottongrass (*Eriophorum angustifolium*). The tracks in and around the bog are lined mainly with Gorse (*Ulex europeus*) and willows with some Birch (*Betula* sp.) and Bracken (*Pteridium aquilinum*). Gorse encroaches onto the high bog at the mid-west of the site.

There is extensive mechanical peat cutting to the north, east and south of the site, and some hand-cutting in the south-west. In places the facebank reaches 3 m in height with associated cracking and slumping. Some of the present high bog drains are new and others have been deepened. Burning events have occurred on the bog in the past and in places the peat remains unvegetated. 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.

Monivea Bog 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 diversity of raised bog microhabitats including hummock/hollow complexes, pools, flushes, soak system and open water. 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 E.U. resource of this habitat type (over 60%) and so has a special responsibility for its conservation at an international level.
31.10.2002

Site Name: Ardgraique Bog

Site Code: 002356

Ardgraique Bog is situated approximately 3 km north-east of Killimor, in the townlands of Ardgraique, Kilquain, Woodfield, and Lissaniska North and South, Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. It is surrounded by agricultural fields and is located within a cluster of raised bogs. The bog is just north of the Killimor-Eyrecourt Road with a number of local access roads leading to the bog and one leading onto the high bog.

The site is a candidate Special Area of Conservation selected for active raised bog, degraded raised bog and Rhynchosporion, habitats that are listed on Annex I of the E.U. Habitats Directive. 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*), Carnation Sedge (*Carex panicea*).

The site consists of a small raised bog that developed in a basin. It is actively cut on all margins. It is described as being of excellent quality with a very wet quaking surface and soft margins. The vegetation is described as uniform throughout the bog. There are few pools on this site but it has very good hummock and hollow complexes. There is a small flush to the north of the high bog area. The bog does not appear to have been burnt in over 20 years according to the survey and had good lichen flora as a result.

Much of the high bog has vegetation typical of a Midlands Raised Bog including Bog-rosemary (*Andromeda polifolia*), Cranberry (*Vaccinium oxycoccos*) and the bog moss *Sphagnum magellanicum*. Other plants species found on the bog include Bogbean (*Menyanthes trifoliata*), Sundews (*Drosera anglica* and *D. rotundifolia*), Cottongrass (*Eriophorum angustifolium*), Ling Heather (*Calluna vulgaris*), Deergrass, White Beak-sedge and Carnation sedge. The bog has a luxuriant cover of bog mosses including *Sphagnum fuscum*, *S. papillosum*, *S. imbricatum*, *S. capillifolium*, *S. subnitens* and *S. tenellum*. This is a highly diverse range of species and these are found in hummocks and lawns. The site has very good hummock/hollow complexes with the bog mosses *Sphagnum pulchrum*, *S. cuspidatum* and *S. auriculatum* present. The bog supports a number of other moss species, including *Campylopus atrovirens*, *Hypnum jutlandicum*, *Aulacomnium palustre*, *Leucobryum glaucum* and *Pleurozium schreberi*, and the liverworts *Pleurozia purpurea*, *Calypogeia sphagnicola*, *Cladopodiella fluitans*, and *Odontoschisma sphagni*. Lichen growth on the bog is excellent with some large colonies, include such species as *Cladonia ciliata*, *C. arbuscula* and *C. uncialis*. A flush dominated by Bog Myrtle and Ling Heather and surrounded by Crowberry (*Empetrum nigrum*) is found to the north of the site. Other species occurring in this flush include Bog-rosemary, Cranberry, Bilberry (*Vaccinium myrtillus*), Cow Wheat (*Melampyrum pratense*) and the bog moss *Sphagnum recurvum*.

Current landuse on the site consists of peat-cutting around most of the margins of the high bog. Areas of cutover have been reclaimed for agricultural purposes to the north of the site. Peat-cutting on the site appears to be domestic mechanised peat extraction. Damaging activities associated with these landuses include drainage around the high bog 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.

Ardgraigue Bog 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 has a high diversity of raised bog plant species and supports a good diversity of raised bog microhabitats, including hummock/hollow complexes, pools, and flushes, as well as a number of scarce plant species. 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.

31.10.2002

Special Protection Areas²

Site Name: Inner Galway Bay

Site Code: 004031

Galway Bay SPA is a very large, marine-dominated, site situated on the west coast of Ireland. The inner bay is protected from exposure to Atlantic swells by the Aran Islands and Black Head. Subsidiary bays and inlets (e.g. Poul-na-clough, Aghinish and Kinvarra Bays) add texture to the patterns of water movement and sediment deposition, which lends variety to the marine habitats and communities. The terraced Carboniferous (Viséan) limestone platform of the Burren sweeps down to the shore and into the sublittoral. The long shoreline is noted for its diversity, with complex mixtures of bedrock shore, shingle beach, sandy beach and fringing salt marshes. Intertidal sand and mud flats occur around much of the shoreline, with the largest areas being found on the sheltered eastern coast between Oranmore Bay and Kinvarra Bay. A number of small islands composed of glacial deposits are included, such as Deer Island, along with some rocky islets.

The southern part of Galway Bay holds a very high number of littoral communities. They range from rocky terraces to sandy beaches with rock or sand dunes behind. The intertidal sediments of Galway Bay support good examples of communities that are moderately exposed to wave action. A well-defined talitrid zone in the upper shore gives way to an intertidal, mid-shore zone with sparse epifauna or infauna. On the lower, flat part of the shore, the tubes of the deposit-feeding terebellid worm, *Lanice conchilega*, are common on the surface. Nereid and cirratulid polychaete worms (*Hediste diversicolor*, *Arenicola marina*), small crustaceans and bivalves (*Angulus tenuis*, *Cerastoderma edule* and *Macoma balthica*) are present. Sublittorally, the area has a number of distinctive and important communities. Of particular note is that Ireland's only reported piddock bed thrives in the shallows of Aghinish Bay. The rare sponge, *Mycale contarenii*, is also found here. Of additional interest is the presence of an extensive maerl bed of *Phymatolithon calcareum* which occurs in the strong tidal currents of Muckinish Bay. There is also maerl off Finavarra Point and in Kinvarra Bay (*Lithothamnion corallioides*, *Lithophyllum dentatum* and *Lithophyllum fasciculatum*). An oyster bed in Kinvarra Bay and seagrass (*Zostera* spp.) beds off Finavarra Point are also important features.

Salt marshes are frequent within this extensive coastal site, with the best examples located east of a line running between Galway City and Kinvarra. In this area the coastline is highly indented, thus providing the sheltered conditions necessary for extensive salt marsh development. Common salt marsh species present include Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvygrass (*Cochlearia officinalis*), Lax-flowered Sea-lavender (*Limonium humile*), Common Saltmarsh-grass (*Puccinellia maritima*), Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*Juncus maritimus*). On the lower levels of the salt marshes and within pans is found Glasswort (*Salicornia europaea* agg.). Shingle and stony beaches occur throughout the site, with the best examples found along the

² National Parks and Wildlife (various) *Site Synopses for Special Protection Areas* Dublin: Government of Ireland

more exposed shores to the south and west of Galway City and to the north and east of Finnavara. In general, these shingle shorelines are sparsely vegetated, with such species as Curled Dock (*Rumex crispus*), Common Couch (*Elymus repens*), Sea Sandwort (*Honkenya peploides*) and Sea Beet (*Beta vulgaris*).

Galway Bay is one of the most important ornithological sites in the western region. It supports an excellent diversity of wintering wetland birds, with divers, grebes, cormorants, dabbling duck, sea duck and waders all well represented. There are internationally important wintering populations of Great Northern Diver (83) and Brent Goose (676), and nationally important populations of an additional sixteen species, i.e. Black-throated Diver (25), Cormorant (266), Mute Swan (150), Wigeon (1,157), Teal (690), Shoveler (88), Red-breasted Merganser (249), Ringed Plover (335), Golden Plover (2,030), Lapwing (3,969), Dunlin (2,149), Bar-tailed Godwit (447), Curlew (697), Redshank (505), Greenshank (20) and Turnstone (182) – all figures are average peaks for the 5 seasons 1995/96-1999/00. Of note is that the populations of Red-breasted Merganser and Ringed Plover represent 6.7% and 3.3% of the respective national totals. Black-throated Diver is a scarce species in Ireland and the Galway Bay population is the most regular in the country. Other species which occur in notable numbers include Little Grebe (35), Grey Heron (102), Long-tailed Duck (19) and Scaup (40). The bay is an important wintering site for gulls, especially Black-headed Gull (1,815), Common Gull (1,011) and Herring Gull (216). In addition, the following species also use the site: Red-throated Diver (13), Great Crested Grebe (16), Mallard (200), Shelduck (139), Common Scoter (79), Oystercatcher (575), Grey Plover (60), Black-tailed Godwit (45) and Great Black-backed Gull (124). The site provides both feeding and roost sites for most of the species, though some birds also commute to areas outside of the site. The wintering birds of Galway Bay have been monitored annually since 1980/81.

The site has several important populations of breeding birds, most notably colonies of Sandwich Tern (81 pairs in 1995) and Common Tern (99 pairs in 1995). A large Cormorant colony occurs on Deer Island – this had 205 pairs in 1985 and 300 pairs in 1989.

Inner Galway Bay provides good quality habitat for Common Seal, a species that is listed on Annex II of the E.U. Habitats Directive. In 1984, this seal colony was one of the top three sites in the country, with over 140 animals recorded. The seals use a range of haul-out sites distributed through the bay. The site provides optimum habitat for Otter.

While there are no imminent threats to the birds, a concern is that sewage effluent and detritus of the aquaculture industry could be deleterious to benthic communities and could affect food stocks of divers, seaduck and other birds. Bird populations may also be disturbed by aquaculture activities. Owing to the proximity of Galway City, shoreline habitats are under pressure from urban expansion and recreational activities.

This large coastal site is of immense ornithological importance, with two wintering species having populations of international importance and a further sixteen species having populations of national importance. The breeding colonies of Sandwich Tern, Common Tern and Cormorant are also of national importance. Also of note is that seven of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Red-throated Diver, Black-throated Diver, Great Northern Diver, Golden Plover, Bar-tailed Godwit, Sandwich Tern and Common Tern.

22.2.2005

Site Name: Lough Corrib

Site Code: 004042

Lough Corrib is situated to the north of Galway City and is the largest lake in the country. The lake can be divided into two parts: a relatively shallow basin, underlain by Carboniferous limestone, in the south and a larger, deeper basin, underlain by more acidic granite, schists, shales and sandstones, to the north. The main inflowing rivers are the Black, Clare, Dooghta, Cregg, Owenriff and the channel from Lough Mask. The main outflowing river is the Corrib, which reaches the sea at Galway City. Over the 1994-97 period Lough Corrib was classified as a mesotrophic system, a change from its oligo/mesotrophic status in the 1991-94 period. It retained its mesotrophic status for the 1998-2000 period, with a reduction in phosphorus and planktonic algal growth noted. Overall, the water quality of the Corrib is considered to be satisfactory.

The shallow, lime-rich waters of the southern basin of the lake support one of the most extensive beds of Stoneworts (Charophytes) in Ireland, with species such as *Chara aspera*, *C. hispida*, *C. delicatula*, *C. contraria* and *C. desmacantha* mixed with submerged Pondweeds (*Potamogeton perfoliatus*, *P. gramineus* and *P. lucens*), Shoreweed (*Littorella uniflora*) and Water Lobelia (*Lobelia dortmanna*). These *Chara* beds are a very important source of food for waterfowl. In contrast, the northern basin contains more oligotrophic and acidic waters, largely lacking Charophyte species, but with such species as Shoreweed, Water Lobelia, Pipewort (*Eriocaulon aquaticum*) and Quillwort (*Isoetes lacustris*). Large areas of reedswamp vegetation, dominated by varying mixtures of Common Reed (*Phragmites australis*) and Common Club-rush (*Scirpus lacustris*), occur around the margins of the lake. Reedswamp usually grades into species-rich marsh vegetation. Of particular note are the extensive beds of Great Fen-sedge (*Cladium mariscus*) that have developed over the marly peat deposits in sheltered bays. Limestone pavement occurs along much of the shoreline in the lower Corrib basin and supports a rich and diverse flora. The lake has numerous islands, from rocky islets to larger islands with grassland or woodland. The surrounding lands are mostly pastoral farmland, to the south and east, and bog and heath, to the west and north.

Lough Corrib is of international importance for wintering Pochard (10,182) - all figures are average peaks for the 5 seasons 1995/96-1999/00. It is one of the top five sites in the country for wintering waterfowl and also qualifies for international importance because it regularly supports well in excess of 20,000 waterfowl. It is the most important site in the country for Pochard, Tufted Duck (5,521) and Coot (14,473), supporting 21%, 46% and 13% of the respective national totals. It also has nationally important populations of wintering Mute Swan (182), Gadwall (48), Shoveler (90), Golden Plover (1,727) and Lapwing (2,424). The lake is a traditional site for Greenland White-fronted Goose (62). Relatively small numbers of Whooper Swan (35) occur, along with Wigeon (528), Teal (77), Mallard (155), Goldeneye (74), Curlew (114) and Cormorant (36).

Lough Corrib is a traditional breeding site for gulls and terns, with various islands being used for nesting each year. There are important colonies of Common Tern (37 pairs in 1995) and Arctic Terns (60 pairs in 1995), both populations being of national importance. The site supports substantial colonies of Black-headed Gull (856 individuals in 1999) and Common Gull (181 pairs in 1999), these representing 11%

and 17% of the respective national totals. Lesser Black-backed Gull (51 individuals in 1999) and Great Black-backed Gull (16 individuals in 1999) also breed, with a few pairs of Herring Gull. Considerably higher numbers of breeding gulls occurred in the recent past, as shown by surveys in 1977 and 1993; the reasons for the continued declines are, however, not fully known.

Whilst only colonised in the 1970/80s by nesting Common Scoter, Lough Corrib now supports approximately half of the national population of this rare duck, a Red Data Book species. The population has been stable since the mid-1990s, with 36 pairs recorded in the most recent survey in 1999.

Lough Corrib supports a range of species listed on Annex II of the E.U. Habitats Directive, including Otter, Salmon and Slender Naiad (*Najas flexilis*). The lake is an internationally renowned salmonid fishery.

Any deterioration in water quality of the lake would be of concern for the wintering birds and perhaps the breeding Common Scoter, though the condition of the lake has been satisfactory in recent years. The reasons for the long-term declines in the breeding gull populations since the 1970s are not known and require investigation. Fishing and shooting occur in and around the lake though it is not considered that these are significant threats to the birds.

Lough Corrib is one of the top ornithological sites in the country, and easily qualifies for international importance on the basis of numbers of wintering birds using it. It is also of international importance for its population of Pochard. There are a further seven species of wintering waterfowl that have populations of national importance. Its populations of breeding gulls and terns are also notable, with nationally important numbers of Common Tern, Arctic Tern, Common Gull and Black-headed Gull. The site is now the most important in the country for nesting Common Scoter. It is of note that several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Greenland White-fronted Goose, Golden Plover, Common Tern and Arctic Tern. The site has been relatively well monitored for birds in recent years. Research is required into the reasons for the decline of the breeding gull populations.
13.8.2004

Site Name: Lough Cutra

Site Code: 004056

Lough Cutra is a large oligo/mesotrophic freshwater lake lying on limestone but with much sediment washed down from the sandstone hills above. This lake is situated about 4 km south-east of Gort, Co. Galway. The Owendalulleagh River is the main in-flowing river. The shoreline is often stony or sandy, though in places it is peat-fringed. Marginal wetland vegetation includes well-developed beds of Common Reed (*Phragmites australis*) in sheltered bays, as well as localised patches of swamp and fen vegetation with species such as Black Bog-rush (*Schoenus nigricans*), Great Fen-sedge (*Cladium mariscus*) and a range of associated sedges (*Carex* spp.) and fen mosses. Woodland occurs around much of the lakeshore. While much of this is planted, wet woodland with willows (*Salix* spp.) and Alder (*Alnus glutinosa*) is also represented. The lake has a number of islands, some of which are wooded. The surrounding land is mostly agricultural, mainly pasture

grassland. Lough Cutra Castle, which supports hibernating Lesser Horseshoe Bats, is adjacent to the site.

Lough Cutra is a long-established breeding site for Cormorants. The colony is of regional importance (34 pairs in 1996) though has been of national importance in the past (166 nests in 1985). The birds breed on one of the islands and appear to commute to the coast for feeding.

The lake supports wintering waterfowl, though numbers are only of regional importance. Average maximum counts for the three winters 1995/96, 1996/97 and 1998/99 are as follows: Cormorant (20), Whooper Swan (9), Mallard (95), Tufted Duck (53) and Goldeneye (31). Some of the birds, and especially the Goldeneye, also use nearby Ballynakill Lough. Greenland White-fronted Geese used the lake in the past but there are no records in recent years. Several pairs of Mute Swan breed, as well as Common Sandpiper.

Lough Cutra is used for fishing and tourism but these activities do not appear to threaten the breeding or wintering birds that use the site.

Lough Cutra SPA is of particular importance for its long-established breeding colony of Cormorant. It is of regional importance for wintering waterfowl. The regular occurrence of Whooper Swan, albeit in low numbers, is of note as this species is listed on Annex I of the E.U. Birds Directive.
11.2.2004

Site Name: Lough Derg (Shannon)

Site Code: 004058

Lough Derg is the largest of the 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*).

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. A large Cormorant colony occurs in trees on the islands near Portumna - 167

nests were counted in 1995 and 122 in 1999. Lough Derg is also a noted breeding site for Great Crested Grebe (47 pairs in 1995) and Tufted Duck (326 individuals in late May 1995).

In winter, the lake is important for a range of waterfowl species, especially diving ducks, with nationally important populations of Tufted Duck (1,029), Goldeneye (215) and Mute Swan (235) - figures are average peaks for 4 of the 5 seasons 1995/96-1999/00. Other species which occur include Cormorant (120), Whooper Swan (18), Wigeon (272), Teal (342), Mallard (417), Pochard (61), Black-headed Gull (814), Coot (229), Lapwing (1,346) and Little Grebe (14). Lough Derg has traditionally been used by a relatively small flock of Greenland White-fronted Goose based in the Lough Derg-Lough Graney area and possibly further afield. The mean flock size for the 5 winters 1989/90-1993/94 was only 22, but few sightings have been made in recent years. In March 2004, however, c. 20 birds were observed in the Scarriff Bay area indicating that a flock may still be present in the area.

Lough Derg is of conservation interest for its fish and freshwater invertebrates. Lampreys, listed on Annex II of the E.U. Habitats Directive, are known to occur and the lake contains a landlocked population of Sea Lamprey (*Petromyzon marinus*). Brook Lamprey (*Lampetra planeri*) is known to be common in the lower River Shannon catchment where all three Irish Lamprey species breed. The endangered fish species Pollan (*Coregonus autumnalis pollan*) is recorded from Lough Derg, one of only four sites (L. Neagh, L. Erne, L. Ree and L. Derg) in which it occurs. 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.

Lough Derg was classified as being strongly eutrophic in the early 1990s. Since 1997, a monitoring programme on the Shannon lakes has shown that the symptoms of eutrophication previously documented (i.e. high chlorophyll level and reduced water visibility) have been ameliorated significantly. These reductions have coincided with the invasion of the Shannon system by the Zebra Mussel (*Dreissena polymorpha*), a species which feeds on plankton, and also with measures to reduce phosphorus in sewage plants in the catchment. Enrichment of the lake, both by agricultural run-off and sewage, remains a threat and could affect the bird populations, especially the diving duck. Whilst the presence of Zebra Mussel in Lough Derg appears to have improved water quality in the lake, in the long-term this invasive bivalve may threaten the ecology of the lake. Recreational activities presently cause some disturbance to the birds and an increase in such activities would be of concern.

Lough Derg SPA is of high ornithological importance as it supports nationally important breeding populations of Common Tern, Cormorant, Great Crested Grebe, and probably Tufted Duck and Black-headed Gull. In winter, it has nationally important populations of Tufted Duck and Goldeneye, as well as a range of other species including Whooper Swan. The site is still used on occasions by Greenland White-fronted Goose. The presence of Common Tern, Whooper Swan and Greenland White-fronted Goose is of particular note as these are listed on Annex I of the E.U. Birds Directive.
18.8.2004

Site Name: Lough Mask

Site Code: 004062

Lough Mask, at over 8,000 ha, is the sixth largest lake in the country. It extends for over 14 km along its long axis and is on average about 5 km in width. The underlying geology is of Carboniferous limestones, with some shales and sandstones. The main inflowing rivers are the Cloon and Robe, and the stream from Lough Carra to the north-east. The main outflow is to Lough Corrib to the south. The lake is shallow off the eastern shore but considerably deeper off the western where there is a long narrow trench with a maximum depth of 58 m. The water of the lake is moderately hard. During the 1990s, the trophic status of Lough Mask has changed from oligotrophic to mesotrophic due to a steady increase in phytoplankton growth. Aquatic and wetland plant species present are characteristic of oligotrophic systems - Water Lobelia (*Lobelia dortmanna*), Shoreweed (*Littorella uniflora*) and various Pondweed (*Potamogeton*) species. The eastern part of the lake is edged by a low-lying shoreline which is subject to winter flooding. An intricate mixture of plant communities has developed on the limestone, with bare pavement, scrub-dominated pavement, dry grassland and heath. The western shoreline is less diverse and lacks the limestone communities. Islands are a feature of the lake, especially in the south-east sector.

Lough Mask is one of the most important sites in the country for nesting Black-headed Gull (329 pairs in 1999), Common Gull (124 pairs in 1999) and Lesser Black-backed Gull (286 pairs in 1999). Whilst higher numbers of nesting gulls have been recorded in the recent past, the 1999 populations of the three species still accounted for 8.4%, 1.7% and 10% of the respective national totals. The lake is also a traditional breeding site for Common Tern, with 44 pairs in 1995 and 39 pairs in 1999.

In winter the site has a range of waterfowl, especially diving duck, with the Tufted Duck population (453) being of national importance - all figures are average peaks for 4 of the 5 winters in the period 1995/96-1999/00. It also supports Whooper Swan (54) and is visited at times by part of the Erriff/Derrycraff population of Greenland White-fronted Goose (16). Other species using the site include Wigeon (84), Teal (99), Mallard (101), Pochard (65), Goldeneye (89), Coot (112), Red-breasted Merganser (12), Little Grebe (17), Mute Swan (49) and Cormorant (36).

The lake has a population of Arctic Char, a Red Data book species, and is an important site for Otter, a species that is listed on Annex II of the E.U. Habitats Directive. Lough Mask is an important salmonid fishery.

The lake continues to be vulnerable to enrichment from surrounding agricultural and other commercial/domestic activities. The reasons for the decline in the breeding gull colonies in recent years are unknown, but it is considered that predation by feral American Mink is a problem.

Lough Mask is one of the most important inland gull breeding sites in the country, with nationally important populations of three gull species. It also has a nationally important colony of Common Tern, a species that is listed on Annex I of the E.U. Birds Directive. The site supports a good diversity of wintering waterfowl, including a nationally important population of Tufted Duck. The occurrence of Whooper Swan and Greenland White-fronted Goose, albeit in small numbers, is of note as these species are also listed on Annex I of the E.U. Birds Directive.
19.8.2004

Site Name: High Island (Galway)

Site Code: 004067

High Island is a small, uninhabited island lying some 3 km west of Aughrus Point on the Galway coast. It is very exposed to the force of the Atlantic Ocean. The island rises to over 60 m and is mostly surrounded by fairly sheer cliffs. Maritime grassland is the main vegetation type, though there is also some dry heath and some freshwater marsh vegetation. Two small lakes occur which have a brackish character from salt spray. A number of very small islands or islets occur off the main island, notably Carrickarone and Carrickawhilla. An area of marine waters to a distance of 200 m from the island and associated islets is included within the site for the benefit of the breeding seabirds. High Island is the site of an important ancient ecclesiastical settlement.

High Island is of ornithological importance principally for its breeding seabirds. There is a long-established colony of Storm Petrel which may be up to 1,000 pairs strong (not recently censused) and one of the largest in the region. Storm Petrels nest in crevices in old stone buildings and in natural scree slopes and rock crevices. The site also supports regionally important populations of Fulmar (210 pairs in 1999) and Manx Shearwater (<100 pairs). Great Black-backed Gull (16 pairs in 1999), Herring Gull (c. 10 pairs) and Black Guillemot (c. 10 pairs) also breed.

The island is used on occasions by wintering Barnacle Geese, though numbers are relatively small (40 in spring 1993). The birds are likely to be part of the large flock that frequents Inishshark and other islands in the area. Both Chough and Peregrine have bred in the past but their recent status is unknown.

High Island is fairly inaccessible and is seldom visited. There are no known significant threats to the breeding seabird populations.

This site is of national importance for its breeding seabirds. Of particular note is the large population of Storm Petrel, a species that is listed on Annex I of the E.U. Birds Directive. Barnacle Goose, Peregrine and Chough are also listed on Annex I of this directive.

7.2.2004

Site Name: Lough Scannive**Site Code: 004088**

Lough Scannive is one of a maze of small- to medium-sized lakes within a large complex of lowland blanket bog in Connemara, Co. Galway. It is located about 3 km from the coast at Bertraghboy Bay. The lake is typically oligotrophic and surrounded by bog. It has many small islands, some of which are wooded. The underlying rock is migmatite.

The site has a nationally important breeding colony of Cormorant, which is one of the largest in the country and one of the few inland breeding sites. The colony has been well monitored since 1970 when 150 pairs were present. By 1985 this had increased to 218 pairs. The most recent census in 2001 gave a total of 160 pairs (c. 3.5% of the national total).

In 2001 the site had three pairs of Common Gull and one pair of Great Black-backed Gull. Merlin is known to breed

locally and could at times use the islands in the lake for nesting.

The site is fairly inaccessible and there are no known threats to the birds.

8.2.2004

Site Name: Rahasane Turlough**Site Code: 004089**

Rahasane Turlough lies in gently undulating land, approximately 2 km west of Craughwell, Co. Galway. It consists of two basins which are connected at times of flood but separated as the waters recede. The larger of these, the northern basin, takes the Dunkellin River westwards. Rahasane was formerly the natural sink of the Dunkellin River, but now an artificial channel takes some of the water further downstream. Water escapes the artificial channel to sweep around the northern basin, and again in the west, where it flows into an active swallowhole system. Some minor collapses are found elsewhere in the turlough, as well as a small number of more permanent pools. Mostly, the edges of the turlough rise gradually into the surrounding land, but in places rocks mark a more sudden transition. The southern basin has high rocky sides above an undulating base that is strewn with boulders. There is a low hill on the south side of the main basin, and another on the north-east, near Shanbally Castle. The major part of the turlough is open, flat and grassy, with occasional depressions and dry channels. The substrate consists largely of silty clay. Locally in the main basin there are signs of marl, but peat is absent everywhere.

The vegetation of Rahasane is divided between dry and wet communities. Because of its large catchment, the turlough is naturally eutrophic and this, together with a lack of peat, limits the sedges (*Carex* spp.) which are usually abundant in turlough vegetation. In places with outcropping limestone, the vegetation is predominantly dry grassland among a generally calcicole community. Large areas in the drier parts of the turlough are covered by a community characterised by an abundance of Creeping Cinquefoil (*Potentilla reptans*), with Common Sedge (*Carex nigra*), Silverweed (*Potentilla anserina*) and Creeping Bent (*Agrostis stolonifera*). Where the soil is less well-drained, Creeping Cinquefoil disappears from this community and the rare, Red Data Book species, Fen Violet (*Viola persicifolia*), occurs. The wet communities are all associated with the river channels and pools. Fully aquatic communities include such species as Fan-leaved Water-crowfoot (*Ranunculus circinatus*) and pondweeds (*Potamogeton* spp.). Semi-aquatic communities fringe the main channel of the river and colonise muddy pools in the basin. Species such as Lesser Water-parsnip (*Berula erecta*), Fool's Water-cress (*Apium nodiflorum*) and Amphibious Bistort (*Polygonum amphibium*) occur, as well as the rare, Red Data Book species, Northern Yellow-cress (*Rorippa islandica*). There are also some narrow fields with Yellow Iris (*Iris pseudacorus*). There are small areas of scrub on the southern and north-western sides of the turlough, but the area of flooded woodland is small.

Rahasane is considered to be the most important turlough in the country for wintering waterfowl. It is a traditional site for Greenland White-fronted Goose, and supports a population of national importance (218 individuals) - all figures are average peaks for the period 1995/96-1999/00. It also has nationally important populations of Whooper Swan (141), Wigeon (3,630), Pintail (21), Golden Plover (6,626), Lapwing (2,220) and Black-tailed Godwit (435).

The Shoveler population (29) is very close to the threshold for national importance. The site has the largest inland population of Dunlin (864) in the country, and also supports Mute Swan (76), Teal (367), Tufted Duck (32), Curlew (197), Redshank (149), Mallard (124), Black-headed Gull (280) and Grey Heron (31). As at all turlough sites, numbers of birds present can vary considerably owing to fluctuations in water levels. The site has long been known as an important waterfowl site and has been monitored annually in recent years.

The Crustacean, Fairy Shrimp (*Tanyastix stagnalis*) was first recorded in Ireland from the southern basin at Rahasane, though it has since been noted elsewhere. It requires isolation from predators to grow to reproductive age and so does not occur in permanent waterbodies.

Arterial drainage, whilst probably now unlikely to occur, would cause serious damage to the flooding pattern of this turlough and would be expected to affect the bird populations. The Greenland White-fronted Goose population is particularly vulnerable to habitat degradation as the flock has only one alternative feeding site (at Cregganna). Some degree of artificial enrichment of the basin is occurring from the farming areas upstream, and local enrichment is associated with grazing practices at the site; however, the bird populations are unlikely to be affected by such activities. The turlough is closely grazed by cattle, sheep and horses, and grazing is a critical factor in maintaining a balance between open swards and woodland development at the edges of the turlough.

Rahasane Turlough SPA is of high ornithological importance and supports seven species of national importance. The Wigeon and Golden Plover populations are of particular note as they each represent approximately 4% of the national totals of these species. The occurrence of Greenland White-fronted Goose, Whooper Swan and Golden Plover is of importance as these species are listed on Annex I of the E.U. Birds Directive.
1.12.2004

Site Name: Middle Shannon Callows

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 (at southern point of Lough Ree) to the town of Portumna (northern point of Lough Derg). 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 Shannon Callows has a common boundary with two other sites of similar habitats, the River Suck Callows and the Little Brosna Callows, both of which are also Special Protection Areas.

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. Along most of its length the site is bordered by raised bogs, now mostly exploited for peat, esker ridges and limestone-bedrock hills. The diversity of semi-natural habitats and the sheer size of the site attracts an excellent diversity of bird species and significant populations of several species.

The composition of the lowland wet grassland varies, depending on elevation and flooding patterns. Two habitats listed on Annex I of the EU 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*) 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, however, 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*). Scarce plant species associated with the grassland include Meadow-rue (*Thalictrum flavum*), Summer Snowflake (*Leucocjum aestivum*) and Marsh Stitchwort (*Stellaria palustris*).

The dry grassland areas, especially where they exist within hay meadows, are species-rich, and can contain many orchid species and such species as Cowslip (*Primula veris*), Adder's-tongue Fern (*Ophioglossum vulgatum*) and Spring-sedge (*Carex caryophyllea*), as well as an unusually wide variety of grasses. In places along the edge of the callows there occurs wet broad-leaved woodland dominated by both Birch (*Betula pubescens*) and Alder (*Alnus glutinosa*) and dry broad-leaved woodland dominated by Hazel (*Corylus avellana*). There are also areas of raised bog and fen on old cut-away bog with species such as Black Bog-rush (*Schoenus nigricans*).

Two legally-protected plant species (Flora (Protection) Order 1999) occur in the site: Opposite-leaved Pondweed (*Groenlandia densa*) in drainage ditches, and Meadow Barley (*Hordeum secalinum*) on dry alluvial grassland. The Red Data Book plant Green-winged Orchid (*Orchis morio*) is known from dry calcareous grasslands within the site, while the site also supports a healthy population of Marsh Pea (*Lathyrus palustris*).

The Middle Shannon Callows qualifies as a site of International Importance for wintering waterfowl both on the total numbers regularly exceeding 20,000 birds (for example 27,581 in winter 1998/99) and for the Whooper Swan population (287 – average peak count 1995/96-1999/00). Whooper Swan is listed on Annex I of the EU Birds Directive. Five further species occur in numbers of national importance (all figures are average peaks for winters 1995/96-1999/00) - Mute Swan 349, Wigeon 2,972, Golden Plover (listed on Annex I of the EU Birds Directive) 4,254, Lapwing 11,578 and Black-tailed Godwit 388. For some of these species, peak counts in the period have been considerably higher than the averages, such as 1,096 Black-tailed Godwits and 23,839 Lapwings. The importance of the site for species like Black-tailed Godwit and Whimbrel may have been underestimated if count coverage missed the brief spring peaks for these species. A wide range of other species occur in numbers of regional or local importance, including Bewick's Swan (listed on Annex I of the EU Birds Directive) 7, Teal 77, Tufted Duck 33, Dunlin 369, Curlew 129, Redshank 31 and Black-headed Gull 1,061. Small numbers of Greenland White-fronted Goose (listed on Annex I of the EU Birds Directive) use the Shannon Callows

(average 21, peak 55) 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 site is also of national importance for breeding waterfowl. The total population of breeding waders (Lapwing, Redshank, Snipe and Curlew) on the Shannon and Little Brosna Callows in 1987 was one of three major concentrations in Ireland and Britain. Since then, however, numbers of at least Lapwing and Redshank have shown serious declines (a full survey of the callows is being carried out in 2002). For example, at a monitoring site at the callows at Shannon Harbour, numbers of Lapwing fell from 29 to 10 pairs and Redshank from 26 to 10 pairs between 1987 and 1994. 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 Shannon Callows continues to hold approximately 40% of the Irish population of Corncrake, a species of global conservation concern that is also listed on Annex I of the EU Birds Directive. Between 1997 and 2001, the average number of calling birds was 60, with a peak of 69. BirdWatch Ireland, in association with Dúchas and the RSPB, operate a grant scheme to encourage farming practices that favour the Corncrake and this has probably been responsible for the stabilisation of numbers in recent years. A related scarce species, the Quail, is also known to breed within the callow grasslands.

A good variety of other bird species are attracted to this site. Birds of prey, including scarce species such as Merlin (listed on Annex I of the EU Birds Directive) and wintering Hen Harrier (listed on Annex I of the EU Birds Directive), are regularly reported 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 (listed on Annex I of the EU Birds Directive) is also regularly seen within the site. Whinchat, an uncommon breeding species, occur in small numbers.

The wintering waterfowl within the Shannon Callows are difficult to monitor due to the size and inaccessibility of large parts of the site. In each winter there is usually one complete aerial census, as well as partial land-based counts. The population of Corncrake within the site is monitored each year and research is carried out on various aspects of the species' ecology. The breeding waders are also surveyed at intervals. About 30 ha of the callows is a nature reserve owned by voluntary conservation bodies.

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. In winter the site is internationally important for the total numbers of birds (regularly exceed 20,000) and for Whooper Swan in particular. It also holds nationally important populations of a further five species. Some of the wintering species are listed on Annex I of the EU Birds Directive, including Whooper Swan, Greenland White-fronted Goose and Golden Plover. In summer the site supports important populations of breeding waders. Perhaps the most important species which occurs in the site is Corncrake (the site holds 40% of the national total), as this is listed on

Annex I of the EU Birds Directive and is Ireland's only globally endangered species.
20.6.2002

Site Name: River Suck Callows

Site Code: 004097

The River Suck Callows comprise a long, sinuous area of semi-natural lowland wet grassland, which floods extensively each winter along the River Suck between Castlecoote in the north and Shannonbridge in the south, and passing through Ballinasloe.

The River Suck is the largest tributary of the River Shannon. The site follows the river from Castlecoote, near Fuerty to its confluence with the River Shannon, a distance of approximately 70 km of river course. The main habitat is grassland, improved to varying extents, that is seasonally-flooded. The less-improved areas are species-rich. Here the vegetation consists of Common Sedge (*Carex nigra*), Creeping Bent (*Agrostis stolonifera*), Brown Sedge (*Carex disticha*), Marsh Foxtail (*Alopecurus geniculatus*), Reed Canary-grass (*Phalaris arundinacea*), Creeping Buttercup (*Ranunculus repens*), Jointed Rush (*Juncus articulatus*), Common Spike-rush (*Eleocharis palustris*) and Floating Sweet-grass (*Glyceria fluitans*). Many of these species are important food plants for the wintering wildfowl which also forage on the improved grasslands within the site. A large area of flooded fen with Black Bog-rush (*Schoenus nigricans*) and Common Reed (*Phragmites australis*) occurs to the north of Derrycahill Bridge. Small patches of Common Club-rush (*Scirpus lacustris*) occur in shallows along the river margin. The grassland is used mainly for pasture but some is also used for silage or occasionally hay-making. The site adjoins several raised bogs and cutover bogs, and there are turloughs in the vicinity.

The Suck River Callows is an important site for wintering waterfowl. Of particular note is the internationally important Greenland White-fronted Goose flock that is based along the Suck. The birds congregate mainly in the middle reaches of the river. A separate sub-flock is centred at Glenamaddy turlough. The average maximum winter count for the period 1988/89 to 1993/94 was 386 birds. In recent years, the only complete count of waterfowl for the site was in January 2002. Three species had populations of national importance, i.e. Whooper Swan (124), Wigeon (1,203) and Lapwing (3,640). Other species present included Mute Swan (90), Teal (325), Pintail (5), Curlew (67) and Black-headed Gull (240). Golden Plover, a species that is listed on Annex I of the E.U. Birds Directive, occurs at times. The good quality riverine and grassland habitats are also home to populations of Otter and Irish Hare, and Brown Trout occur in the river.

Arterial drainage in the past has already reduced the area of naturally flooded grasslands, and drainage and land improvement remain the principal threat to this site. The intensification of agriculture in recent years, with earlier mowing and the replacement of hay with silage, is likely to have caused the decline and eventual absence of breeding Corncrake. Wildfowling causes some disturbance, though there is a Wildfowl Sanctuary at Muckanagh, north of Ballyforan.

This site is of considerable ornithological importance on account of the Greenland White-fronted Goose population which is of international significance and which is one of the largest in the country outside of the Wexford Slob. Despite

poor survey data for recent years, it is known to support nationally important populations of at least three species, i.e. Whooper Swan, Wigeon and Lapwing. Detailed survey is likely to show that other species also occur in substantial numbers. Of note is that two of the species which occur regularly, Greenland White-fronted Goose and Whooper Swan, are listed on Annex I of the E.U. Birds Directive. 1.4.2005

Site Name: Coole-Garryland Wood

Site Code: 004107

The Coole-Garryland SPA is situated in a low-lying karstic limestone area west of Gort, Co. Galway. It comprises a series of turloughs, which are fed by springs and a partly submerged river, surrounded by woodland, pasture and limestone heath. Coole Lough is the largest and most permanent of the turloughs, and retains some water throughout the year. Water levels vary greatly depending on rainfall and this has consequences on the numbers of birds present. During prolonged dry spells, higher numbers of some species are present as birds from other sites in the catchment are attracted to the permanent waters of Coole Lough. Excessive flood conditions reduce the potential feeding areas though birds still roost on the lakes.

Vegetation of the turloughs includes Shoreweed (*Littorella uniflora*), Common Spike-rush (*Eleocharis palustris*), Water-purslane (*Lythrum portula*) and Fen Violet (*Viola persicifolia*). A species of Water-starwort, *Callitriche palustris*, has recently been recorded from the site, its only known station in Ireland. The Coole River itself is of particular interest for the occurrence of a rare riverine habitat characterised by Trifid Bur-marigold (*Bidens tripartita*), Red Goosefoot (*Chenopodium rubrum*) and species of Knotgrass (*Polygonum* spp.). The turloughs are fringed by a range of habitats on limestone pavement, including scrub communities containing Buckthorn (*Rhamnus catharticus*) and Hawthorn (*Crataegus monogyna*). Small areas of orchid-rich grassland occur at Coole-Garryland, and include such species as Pyramidal Orchid (*Anacamptis pyramidalis*), Fragrant Orchid (*Gymnadenia conopsea*) and Fly Orchid (*Ophrys insectifera*). A feature of the turloughs at Coole-Garryland is that they are closely associated with areas of woodland, including semi-natural deciduous woodland of Pedunculate Oak (*Quercus robur*) and Ash (*Fraxinus excelsior*).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Whooper Swan. 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 site is of international importance for Whooper Swan (214), which use it for both feeding and roosting purposes, though the flock also visits other feeding areas outside of the site. It was formerly of importance for Bewick's Swan but birds have not been present in recent winters, reflecting a decline that has occurred throughout the country. A good diversity of other wintering birds occurs, notably Wigeon (845) which is close to the threshold for national importance. Also present are Teal (200), Shoveler (23), Pochard (142), Tufted Duck (56), Mallard (330), Pintail (7), Goldeneye (10), Mute Swan (14), Lapwing (297) and Curlew (111) – all figures are average peaks for three of the five seasons 1995/96-1999/00. Dunlin, a scarce species inland,

is a visitor to the site at times. In 1996 two pairs of Common Sandpiper bred at Coole Lough.

The complex of habitats at Coole-Garryland provides habitat for a variety of mammal species, including Otter and Pine Marten. Otter is listed on Annex II of the E.U. Habitats Directive, while Pine Marten is considered to be threatened in Europe. The Coole-Garryland complex is also home to one of the most important and unique assemblages of insects in the country, including several notable species of beetles and flies. The nationally rare Mudwort (*Limosella aquatica*) and Dropwort (*Filipendula vulgaris*) also occur at the site. These two plant species are listed in the Irish Red Data Book. Narrow-fruited Water-starwort (*Callitriche palustris*) was recently discovered new to Ireland at the site.

Much of the site is a Nature Reserve and is managed by the National Parks and Wildlife Service. It is a popular amenity area, and uncontrolled visitor access would pose a threat to sensitive animals. Other threats to the site may result from agricultural intensification (e.g. fertiliser application or pollution of watercourses) outside of the site.

The turlough system at Coole-Garryland is considered to be the most diverse in the country, for both its physiography and vegetation. The site is of international importance for its population of Whooper Swan, a species that is listed on Annex I of the E.U. Birds Directive. Coole Lough has particular significance for wintering waterfowl as during prolonged dry spells it is one of the few sites in the catchment which retains open water. The ecology of the site has been studied in detail. 29.5.2007

Site Name: Slyne Head Islands

Site Code: 004123

This site comprises a long archipelago of islands, islets, rocks and reefs located off the western shore and south-western tip of the Slyne Head Peninsula in County Galway. The site, which extends for approximately 7 km along a NE-SW axis, includes the adjacent mainland shoreline and a substantial part of the surrounding shallow marine areas. Most of the islands are of granite, but the southern ones are of migmatites. There are about 15 islands which have a permanent area above the high tide line. Chief among these are Inishdugga, Inishkeragh, Illaunaleama, Chapel Island and Illaunamid. The islands are mostly low-lying, Illaunaleama reaching 22 m above sea level, and have a covering of a grassy maritime turf.

The rocky shores and surrounding shallow seas contain excellent examples of reefs, a habitat listed on Annex I of the EU Habitats Directive. The reefs range from those that are extremely exposed to wave action to more sheltered ones and a good range of different marine habitats and communities are found. On the larger islands a few sandy coves and shingle beaches occur. The islands are uninhabited apart from an automated lighthouse on Illaunamid, the most westerly island of the group.

The islands are a traditional breeding area for terns. In 1995, 329 pairs of Arctic Terns were recorded on Illaunamid Island, a colony of national importance and one of the largest in the country. Terns have also bred on Chapel Island in the past. Also of national importance is the colony of Black Guillemots, with 60 individuals counted in 1980. Other seabirds which have been recorded breeding include Storm Petrel (50 pairs on Illaunamid in 1980), Manx

Shearwater (70-90 pairs on Illaunamid in 1980), Shag (6-8 pairs in 1980), Herring Gull (50 pairs in 1980) and Great Black-backed Gull (30 pairs in 1980).

The site contains an important breeding colony of Grey Seal, a species listed on Annex II of the EU Habitats Directive. In 1983, the colony on Chapel Island was estimated at between 32 and 41 animals of all ages. This colony is part of a larger population, some of which breed on Wherune Island off the south-eastern side of the Slyne Head Peninsula.

This site is of high ornithological importance owing to the presence of a nationally important population of Arctic Tern, a species listed on Annex I of the EU Birds Directive. Storm Petrel, also listed on Annex I of the Directive, has been recorded in the past but its current status as a breeding species is unknown. It is thought that small numbers of Barnacle Geese may occur occasionally in winter. This is also an Annex I species. The Black Guillemot population is also of national importance
27.2.2002

Site Name: Lough Rea

Site Code: 004134

Lough Rea, a hard water lake, is situated directly south of the town of Loughrea, Co. Galway. The lake is 2.5 km at its longest axis. The underlying geology of the area is of Carboniferous limestone and water transparency is very high. The lake, which is fed by springs and by a stream, reaches a maximum depth of 15 m.

Some species of stonewort (a type of alga) characteristic of calcareous waters have been recorded in Lough Rea, including *Chara curta* and *C. contraria*. The Red Data Book species *C. tomentosa* has also been found here. Other aquatic plants present include Slender-leaved Pondweed (*Potamogeton filiformis*), Lesser Pondweed (*P. pusillus*), Fennel Pondweed (*P. pectinatus*), Spiked Water-milfoil (*Myriophyllum spicatum*), Least Bur-reed (*Sparganium minimum*), Amphibious Bistort (*Polygonum amphibium*) and the alga *Chaetomorpha incrassata*. On the sheltered western and south-eastern shores of the lake some areas of reedswamp, wet grassland and wet woodland are included in the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Shoveler and Coot. 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 Rea is of considerable ornithological interest. Nationally important numbers of Shoveler overwinter at the site (264); numbers of this species at the site have exceeded the international threshold level on two occasions in recent years (1995/96 and 2002/03). Nationally important numbers of Coot (1,172) also occur. A further 10 species of waterfowl reach regionally or locally important numbers - all population sizes are the mean of peak counts for the 5 years, 1995/96-99/2000.

The site is largely surrounded by intensively farmed pasture and consequently the main threat to the lake comes from agricultural run-off. The lake is also vulnerable to nutrient input from the town of Loughrea. Boating activities may

have some impact on the site and may need to be monitored.

Lough Rea is an important ornithological site for the nationally important populations of Shoveler and Coot, and regionally/locally important populations of a further ten species that it holds. It is also of significance as an excellent example of a hard water lake, a habitat that is listed on Annex I of the E.U. Habitats Directive.
30.10.2007

Site Name: Cregganna Marsh

Site Code: 004142

Cregganna Marsh is situated about 3 km south of Oranmore, to the west of the Galway - Ennis road. The predominant habitats on the site are lowland wet grassland and improved grassland, but areas of limestone pavement and other exposed rock, Hazel (*Corylus avellana*) scrub, freshwater marsh, drainage ditches and dry grassland are also represented.

The site is of major conservation importance as a feeding site for a nationally important flock of Greenland White-fronted Geese. The birds using this site form part of the Rahasane flock (5 year mean of winter maximum, 1995/96 to 1999/00 of 166 individuals). Greenland White-fronted Goose is a species that is listed on Annex I of the EU Birds Directive.
27.02.2002

Site Name: Slieve Aughty Mountains

Site Code: 004168

The Slieve Aughty Mountains SPA is a very large site that extends southwards from just south of Lough Rea, County Galway to Scariff in County Clare. The peaks are not notably high or indeed pronounced; the site rises to a maximum of 378 m near Cappaghbaun Mountain. It site includes many small- and medium-sized lakes, notably Lough Graney and Lough Atorick; several important rivers rise in the site, including the Owendalulleagh and Graney. Lough Derg occurs immediately to the south-east. The Slieve Aughty hills are predominantly comprised of Old Red Sandstone, but outliers of Lower Palaeozoic rocks provide occasional outcrops capping the hills.

The site consists of a variety of upland habitats, though approximately half is afforested. The coniferous 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*). Almost one-third of the site is unplanted blanket bog and heath, with both wet and dry heath present. Well-developed blanket bog occurs at several locations, notably Sonnagh, Loughatorick South and Glendree.

The vegetation is characterised by such species as Ling Heather (*Calluna vulgaris*), Bilberry (*Vaccinium myrtillus*), Common Cottongrass (*Eriophorum angustifolium*), Hre's-tail Cottongrass (*Eriophorum vaginatum*), Deergrass (*Scirpus cespitosus*) and especially Purple Moor-grass (*Molinia caerulea*). Bog mosses (*Sphagnum* spp.) are well-represented. 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.

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

The SPA is a stronghold for Hen Harriers and supports the second largest concentration in the country. A survey in 2005 resulted in 24 confirmed and 3 possible breeding pairs, which represents over 17% of the national total. A somewhat lower count of between 15 and 23 pairs in the 1998-2000 period is considered to reflect poorer coverage then. The mix of forestry and open areas provides optimum habitat conditions for this rare bird, which is listed on Annex I of the 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 also supports a breeding population of Merlin, a species that is also listed on Annex I of the E.U. Birds Directive. The population size is not well known but is likely to exceed five pairs. 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 main threat to the long-term survival of Hen Harriers within the site is further afforestation, which would reduce and fragment the area of foraging habitat, resulting in possible reductions in breeding density and productivity. The Slieve Aughty Mountains have a number of large wind farm developments but it is not yet known if these have any adverse impacts on the Hen Harriers.

Overall, the site provides excellent nesting and foraging habitat for breeding Hen Harrier and is one of the top two sites in the country for the species.
16.7.2007

Site Name: Cruagh Island

Site Code: 004170

Cruagh Island is located approximately 2 km west of Omey Island, off the Connemara coast. It is a small- to medium sized, low-lying island (maximum height 62 m) and is uninhabited. The island is dominated by a maritime grassy sward with some exposed rock. The sea area to a distance of 500 m is included in the site to accommodate 'rafting' shearwaters.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Manx Shearwater and Barnacle Goose.

The Seabird 2000 survey discovered a new colony of Manx Shearwater on Cruagh Island in 2001. Using the tape playback method, colony size was estimated at 3,286 pairs, which is one of the most important colonies in the country and of international importance. The absence of previous records at this site is not too surprising because nesting

Manx Shearwater can easily go undetected as the birds nest underground in burrows and visit land only in darkness.

Cruagh Island is a regular feeding site for Barnacle Goose during the winter. The geese that frequent this island are most probably part of the nationally important Inishshark flock.

Cruagh Island also has a nationally important colony of nesting Great Black-backed Gull (30 pairs in 2001) and small numbers of Fulmar.

The shearwaters are heavily predated by the Great Black-backed Gulls though it is not known how significant an effect this is having on the colony. It is presumed that there are no rats on the island; the presence of rats would be very damaging to the nesting shearwaters. Grazing by domestic stock and/or rabbits could lead to soil erosion

Cruagh Island SPA is of international importance on account of its large population of nesting Manx Shearwater. The presence of a nationally important Great Black-backed Gull colony is also of note.
10.10.2007

Natural Heritage Areas³

Site Name: Lough Namucka Bog

Site Code: 000220

Lough Namucka Bog NHA is situated about 6 km south-east of Ballinlough, mainly in the townlands of Foxborough and Kilbeg, in Counties Galway and Roscommon. The site comprises a raised bog that includes both areas of high bog and cutover bog, and a small lake. It is bordered along most of its western side by the Island River.

Lough Namucka Bog consists of three lobes, the western-most of which is completely separated from the others by areas of cutover peat. There are wet areas with well-developed hummock/hollow systems and pools. A lake, Lough Namucka, adjoins the southern-most lobe of the bog, forming a semi-natural margin and possible lagg zone. A number of interesting features occur on the bog, including several flushes, a dry ridge and swallow holes. The cutover areas surrounding the bog have either been abandoned or have been reclaimed for agriculture, and there is one small area of coniferous forestry at the south of the site.

The high bog at Lough Namucka supports many of the species typical of a Western Raised Bog, such as Ling Heather (*Calluna vulgaris*), Bog Asphodel (*Narthecium ossifragum*), Carnation Sedge (*Carex panicea*), many bog mosses (*Sphagnum* spp.) and the liverwort *Pleurozia purpurea*. In the centre of the bog there is a very wet and quaking region which consists of inter-connecting pools and island hummocks. The pools are filled with the bog moss *Sphagnum cuspidatum*, Bogbean (*Menyanthes trifoliata*) and Common Cottongrass (*Eriophorum angustifolium*), with the bog moss *S. magellanicum* and White Beak-sedge (*Rhynchospora alba*) at the margins. Between the pools there are quaking lawns of Bog Asphodel, White Beak-sedge

³ National Parks and Wildlife (various) *Site Synopses for Natural Heritage Areas* Dublin: Government of Ireland

and the moss *Campylopus atrovirens*. In the southern-most lobe another pool system occurs. The pools are again filled with the bog moss *S. cuspidatum* and Bogbean. The large dry hummocks are topped by Ling Heather, lichens (*Cladonia* spp.) and the moss *Pleurozium schreberi*. Bog Asphodel occurs in the wet hollows.

A number of flushes are found on the high bog, some of which occur in association with the lake. The lake supports Common Reed (*Phragmites australis*), Common Club-rush (*Scirpus lacustris*), White Water-lily (*Nymphaea alba*) and Bottle Sedge (*Carex rostrata*). Just north of the lake an extensive flush occurs which is dominated by Bog-myrtle (*Myrica gale*), Common Reed, Common Cottongrass and Purple Moor-grass (*Molinia caerulea*). Another flush occurs to the east of this, with open water and lawns of the bog moss *S. cuspidatum* and Bog Asphodel, along with tufts of Soft Rush (*Juncus effusus*). There are also a number of swallow holes with Ling Heather and Cranberry (*Vaccinium oxycoccos*). A small dry ridge occurs at the eastern side of the high bog and is covered in Bracken (*Pteridium aquilinum*), Gorse (*Ulex europaeus*), Ling Heather and Hawthorn (*Crataegus monogyna*).

Current landuse on the site consists of peat-cutting around most of the margins of the high bog, and drainage associated with this. Large portions of the bog have been burnt in the past. Significant areas of cutover bog have been drained, cleared and reclaimed for agricultural purposes, and one small area at the south of the site has been planted with coniferous forestry. 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.

Lough Namucka 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. The diversity added by the presence of the lake, ridge, flushes, swallow holes and possible lagg zone increase its conservation 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.

13.11.2002

Site Name: Moorfiels Bog/Farm Cottage

Site Code: 000221

Moorfield Bog/Farm Cottage NHA is situated approximately 5 km north-east of Ballymee, Co. Roscommon in the townlands of Moorfield in Co. Galway and Creggameen in Co. Roscommon. The site comprises a raised bog that includes both areas of high bog and cutover bog.

The site consists of a Western Raised Bog, which has developed between a ridge and a small river. The bog has good hummock/hollow microtopography, pools, quaking areas, swallow holes a small flush. The cutover supports humid grassland, a small area of Downy Birch (*Betula pubescens*) scrub, and forestry.

Much of the high bog has vegetation typical of a Western Raised Bog. 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. fuscum* and *S. cuspidatum*. Western Raised Bog indicator species present include the liverwort *Pleurozia purpurea*, the mosses *Campylopus atrovirens* and

Racomitrium lanuginosum and Carnation Sedge (*Carex panicea*). Some Midland Raised Bog indicator species are also found on the bog, including Bog-rosemary (*Andromeda polifolia*), Cranberry (*Vaccinium oxycoccos*) and the bog moss *Sphagnum magellanicum*.

The northern half of the bog is wet and spongy with many pools and quaking areas. The pools are filled with the aquatic bog moss *Sphagnum cuspidatum*, and Bogbean (*Menyanthes trifoliata*). There are swallow holes just north of the county boundary and tear pools are situated alongside the cutover which extends into the middle of the bog. The bog has good hummock/hollow complexes with well-developed hummocks which support *Sphagnum imbricatum* and *Sphagnum fuscum*. The tops of the hummocks support Ling Heather and lichens. The hollows are filled with bog mosses including *Sphagnum magellanicum* and *S. papillosum*, Bog Asphodel and White Beak-sedge. A small flush dominated by Soft Rush (*Juncus effusus*) is found in the middle of the bog near the strip of cutover.

The vegetation of the cutover is dominated by Purple Moor-grass (*Molinia caerulea*), with Soft Rush, Devil's-bit Scabious (*Succisa pratensis*), Bilberry (*Vaccinium myrtillus*), Tormentil (*Potentilla erecta*), Bent Grass (*Agrostis canina*) and Hard Fern (*Blechnum spicant*) also present. The cutover also supports small patches of Downy Birch scrub and forestry. Small patches of mineral soil with wet grassland occur to the west and south of the site.

Active peat-cutting occurs on sections of the north, east, west and south of the high bog margin, and the bog has been almost bisected by peat-cutting activities. Afforestation on the cutover is located to the west of the site and in a small area of the central cutover. Areas of cutover have been reclaimed for agricultural purposes around the site; the grassland here is used for grazing livestock. 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.

Moorfield Bog/Farm Cottage 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, swallow holes 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.

13.11.2002

Site Name: Suck River Callows

Site Code: 000222

The Suck River Callows is a long sinuous area of semi-natural lowland wet grassland, which floods extensively each winter along the River Suck between Castlecoote in the north and Shannonbridge in the south, passing through Ballinasloe. The Suck River forms the Roscommon - Galway county boundary and joins the River Shannon at Shannonbridge. Along most of its borders, former raised bogs (now in the process of large-scale harvesting by Bord na Móna) are present. Just south of Ballyforan, there is a small intact raised bog on the eastern bank of the river,

which contains both high bog and cutover. This is situated in the townlands of Ballina, Ballyforan, Cooltober and Cloonagh, Co. Roscommon and can be accessed from a road to the east.

The main habitat of the Suck River Callows is flood meadows of wet grassland and the associated aquatic and semi-aquatic habitats of drainage ditches. Secondary habitats of importance, which directly border the callows within the site are species-rich dry and wet calcareous grassland, flooded fen, wet woodland and a small raised bog with a tear pool system. There is a semi-natural margin between this raised bog and the river. Improved grasslands are also included within the site at the upper margin of wet grasslands.

The wet grassland vegetation consists of Common Sedge (*Carex nigra*), Creeping Bent (*Agrostis stolonifera*), Brown Sedge (*Carex disticha*), Marsh Foxtail (*Alopecurus geniculatus*), Reed Canary-grass (*Phalaris arundinacea*), Creeping Buttercup (*Ranunculus repens*), Jointed Rush (*Juncus articulatus*), Common Spike-rush (*Eleocharis palustris*) and Floating Sweet-grass (*Glyceria fluitans*). Many of these species are important food plants for the wintering wildfowl which also forage on the improved grasslands within the site. A large area of flooded fen with Black Bog-rush (*Schoenus nigricans*) and Common Reed (*Phragmites australis*) occurs to the north of Derrycahill Bridge. Small patches of Common Club-rush (*Scirpus lacustris*) occur in shallows along the river margin.

At Ballyforan the small intact raised bog has been classified as a True Midland Raised Bog. The vegetation of the high bog has been affected by burning and is dominated by Carnation Sedge (*Carex panicea*), Bog Asphodel (*Narthecium ossifragum*), Deergrass (*Scirpus cespitosus*) and Ling Heather (*Calluna vulgaris*), however, there is active Bog Moss (*Sphagnum* spp.) regeneration occurring. Species occurring on the site include *Sphagnum fuscum*, *S. imbricatum* and *S. capillifolium*, *S. cuspidatum* (in elongated tear pools), Great Sundew (*Drosera anglica*), Brown Beak-sedge (*Rhynchospora fusca*) and Lesser Bladderwort (*Utricularia minor*). Cross-leaved Heath (*Erica tetralix*), Bog-rosemary (*Andromeda polifolia*), cottongrasses (*Eriophorum* spp.) and lichens (*Cladonia* spp.) occur in the unburnt areas. The bog appears to be drying out and the western margin has been invaded by Downy Birch (*Betula pubescens*).

At Ballyforan Bog, the cutover to the south of the high bog is primarily reclaimed grassland. There is an uninterrupted transition from this high bog to low-lying callow grassland to the west. Active peat-cutting occurs to the north-west and east with some scrub encroachment on old cutover.

There are also small areas of cutover at the margins of the developed (cut-away) raised bogs on the banks of the River Suck. Some of this cutover is very wet, bordering on to floodmeadows and contains permanent pools with Lesser Bladderwort. Royal Fern (*Osmunda regalis*), cottongrasses and orchids (*Dactylorhiza* spp.) have been recorded on these cutover areas. Regenerating birch and Alder (*Alnus glutinosa*) woods occurs on old cutover margins throughout the site. These wet woodlands have an understory of Ling Heather and Bog-myrtle (*Myrica gale*).

The Suck River Callows is an important site for wintering waterfowl. Of particular note is the internationally important flock of Greenland White-fronted Geese based along the Suck. The birds congregate mainly in the middle reaches of the river. A separate sub-flock is centred at Glenamaddy turlough. The average maximum winter count for the period 1988/89 to 1993/94 was 386. In recent years, the only complete count of waterfowl for the site was

in January 2002. Three species had populations of national importance: Whooper Swan 124, Wigeon 1,203 and Lapwing 3,640. Other species which were present included Mute Swan 90, Teal 325, Pintail 5 and Curlew 67. Of the species which occur regularly at this site, Greenland White-fronted Geese and Whooper Swan are listed on Annex I of the E.U. Birds Directive. A further Annex I species, Golden Plover, occurs at times. The good quality riverine and grassland habitats are also home to populations of Otter and Irish Hare, and Brown Trout occur in the river.

Current landuses on the site include, agriculture, active peat-cutting, forestry and conservation. The wet grasslands of the callows are used for agriculture. At Ballyforan Bog, active peat-cutting is most prevalent to the north-west and along the eastern margin of the high bog. The cutover to the south has been reclaimed for agriculture. There are extensive areas of peat-cutting by Bord na Móna along the boundaries of the site and a large area of callow and esker has been recently planted with forestry. Damaging activities associated with these landuses include habitat loss and drainage throughout the site and burning of the high bog. These activities have all resulted in the loss of habitat and damage to the hydrological status of the raised bog, and pose a continuing threat to its viability. There is a no-shooting area at Muckanagh, north of Ballyforan.

The Suck River Callows NHA, along with the River Shannon Callows cSAC (216) and River Little Brosna Callows NHA (564), form by far the largest area of lowland wet grassland in Ireland and Britain. These callows are each designated as a Special Protection Area under the E.U. Birds Directive for the presence of Internationally and Nationally Important numbers of wintering waterfowl.

The presence of raised bog is of considerable conservation significance as it is 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 hummocks and pools. 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. The site is of major ornithological importance.

14.11.2002

Site Name: Ballygar Bog

Site Code: 000229

Ballygar Bog NHA is situated approximately 1 km north-west of Ballygar village, in the townlands of Hermitage and Ballygar, Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The northern and western margins of the site are bounded by commercial conifer plantation.

The site consists of a small relatively intact bog. Hummocks/hollows and pools are found on the site with algal filled tear pools. Three small flushes are also found on the site. There is forestry on the north-eastern high bog and mixed woodland occurs on the cutover along the northern margin. Cutover bog occurs on the southern margins of the high bog.

Much of the high bog has vegetation typical of a raised bog, consisting of Ling Heather (*Calluna vulgaris*), Carnation Sedge (*Carex panicea*), White beaked-sedge (*Rhynchospora alba*), Cottongrass (*Eriophorum vaginatum*), Bog-rosemary (*Andromeda polifolia*), the liverwort *Pleurozia purpurea* and

Bog Asphodel (*Narthecium ossifragum*). Bog mosses are frequent on the site and include (*Sphagnum capillifolium*, *S. magellanicum* and *S. papillosum*). Hummocks/hollows and pools are found on the bog. The hummocks are colonised by bog mosses including *S. fuscum*, *S. imbricatum*; the pools and hollows are colonised by the bogs mosses *Sphagnum papillosum* and *S. capillifolium* with *S. cuspidatum* the aquatic bog moss in the wettest areas. Great Sundew (*Drosera anglica*) is also found in the hollows.

There are three flushes on the bog which support Bog Myrtle (*Myrica gale*), Bog-rosemary, Cranberry (*Vaccinium oxycoccus*), Ling Heather, Carnation Sedge and Purple Moor-grass (*Molinia caerulea*). Mosses present in the flushes include *Sphagnum imbricatum*, *S. subnitens*, *S. auriculatum*, *Pleurozium schreberi*, *Pseudoscleropodium purum* and *Leucobryum glaucum*. Stunted Downy Birch (*Betula pubescens*), Scots Pine (*Pinus sylvestris*) and Sitka Spruce (*Picea sitchensis*) are found in two of the flushes.

Much of the cutover on this bog is afforested; along the northern and eastern margins there is a thin band of mixed woodland dominated by Downy Birch and Soft Rush (*Juncus effusus*). There is a good diversity of lichens present because the site has not been burnt in the recent past, in some locations the lichens are suppressing the bog mosses.

Current landuse on the site consists of peat-cutting on the south-eastern corner. Forestry is found on the north-east corner of the high bog and along the northern margin of the site. Unlike many other bogs, Ballygar does not appear to have been burnt in over ten years. Areas of cutover have been reclaimed for agricultural purposes. Forestry and agricultural reclamation result in drainage of the site, which leads to habitat loss and damage to the bog's hydrological status, and pose a continuing threat to its viability.

Ballygar 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 hummock/hollow complexes, pools, flushes and woodlands, 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.

14.11.2002

Site Name: Bracklash Bog

Site Code: 000235

Bracklagh Bog NHA is located approximately 5 km west of Ballymoe, in the townlands of Ballaghaugeag East and Bracklagh in County Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog.

The site consists of one main lobe, flanked on the north and north-western side by a small river, and on the south and south-western side by a mineral ridge. Reclaimed agricultural fields make up the boundary at the eastern side. This bog is of particular interest because it contains a number of different types of flushed areas. There is a quaking area with pools in the south. A large area of coniferous forestry has recently been planted on the western half of the bog.

The high bog vegetation is a mixture of Western and Midland Raised Bog type, with species such as Ling Heather

(*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Bog Asphodel (*Narthecium ossifragum*), Carnation Sedge (*Carex panicea*) and the liverwort *Pleurozia purpurea*. Cranberry (*Vaccinium oxycoccus*) and Bog-rosemary (*Andromeda polifolia*) are found, although not in abundance. There is good cover of bog mosses, with *Sphagnum papillosum* and *S. subnitens* being very common. A number of flushed areas have been recorded on the high bog. These consisted of areas dominated by Purple Moor-grass (*Molinia caerulea*), Common Reed (*Phragmites australis*) and Downy Birch (*Betula pubescens*). At the southern side, there is a large Bog-myrtle (*Myrica gale*) dominated area. This was associated with a hummock/hollow and pool system. The pools contain species such as the bog moss *S. magellanicum* and the Great Sundew (*Drosera anglica*). The hummocks consist mainly of *S. imbricatum* and *S. subnitens*.

Current landuse on the site consists of a large coniferous forestry plantation on the western half of the bog, areas of active peat-cutting at the east and north-east of the high bog and some areas of cutover bog which have been reclaimed for agriculture. Drainage associated with these activities is drying out the bog, and has resulted in loss of habitat and damage to the hydrological status of the site, and poses a continuing threat to its viability. The high bog surface was completely burned in the spring of 1985, but no evidence of other burning episodes is apparent.

Bracklagh 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. 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 Name: Clooncullaun Bog

Site Code: 000245

Clooncullaun Bog NHA is situated approximately 6 km east of Glenamaddy in the townlands of Clooncullaun, Timacat and Shanbally, Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The site is bounded by streams to the west and the south-east.

The site consists of a small basin bog with a flat, wet surface which is quaking in places. Towards the north-east there is a complex of pools, hummocks and hollows and to the south-west and south-east there are two areas with small hummocks and algal pools. Three flushes with swallow holes occur on the bog. Cutover is found all around the site apart from the middle of the southern margin.

Much of the high bog has vegetation typical of a Western Raised Bog, with species including cottongrasses (*Eriophorum angustifolium* and *E. vaginatum*), Ling Heather (*Calluna vulgaris*), Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). Western Raised Bog indicator species found on the bog include Carnation Sedge (*Carex panicea*), the liverwort *Pleurozia purpurea* and the mosses *Campylopus atrovirens* and *Racomitrium lanuginosum*. Midland Raised Bog indicator species also found on the bog include Bog-rosemary (*Andromeda polifolia*) and the bog moss *Sphagnum magellanicum*. Pools and hummocks occur in the wettest part of the bog to the north-east. The bog moss *Sphagnum cuspidatum* fills the pools while the hummocks are comprised of bog mosses, including the scarce *Sphagnum fuscum* and *S. imbricatum*.

Algal, tear pools and low hummocks occur in the south-western and south-eastern lobes. While most of the pools and tear pools contain algae, some support the bog moss *Sphagnum cuspidatum* and Bogbean (*Menyanthes trifoliata*). *Sphagnum fuscum* has also been found here.

The flushes and associated swallow holes support Purple Moor-grass (*Molinia caerulea*), Ling Heather, Field Wood-rush (*Luzula campestris*) and Bracken (*Pteridium aquilinum*). The flush nearest the central track has a subterranean stream.

The cutover supports a range of habitats including regenerating cutover, Gorse (*Ulex europaeus*) scrub, humid grassland and areas of both old peat cutting and active peat cutting. The regenerating cutover supports the bog mosses *Sphagnum cuspidatum*, *S. papillosum* and *S. capillifolium*, rushes (*Juncus* spp.) and cottongrasses. Some regenerating cutover also supports Bulrush (*Typha latifolia*). There are extensive areas of humid grassland to the east and west, with Purple Moor-grass, Soft Rush and the moss *Polytrichum commune*. Gorse scrub occurs on old cutover to the west, while the eastern cutover region is grazed and has a high cover of bryophytes and a variety of sedge (*Carex* spp.) species.

Red Grouse, a species that is becoming increasingly rare in Ireland has been recorded on the site.

Current landuse on the site comprises active peat-cutting around the north, east and south-eastern margins of the site; areas of old peat-cutting occur to the west, south-east and east of the site. Areas of cutover have been reclaimed for agricultural purposes to the south, east and west of the site. 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.

Clooncullaun 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 hummock/hollow complexes and pools, 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.

13.11.2002

Site Name: Slieve Bog

Site Code: 000247

Slieve Bog NHA is situated about 5 km east of Dunmore, in the townlands of Slieve, Woodfield, Cluid and Carrowkeelanahglass Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The south and east margins of the site are bounded by the Yellow River, the northern and western sections by roads.

of one dome of sloping bog associated with subsidence caused by drainage. Intact dome peat is restricted to the south-east. Tear pools are found to the west of the site. There are two extensive flush systems within the extensive drainage system found on the bog. Cutover bog occurs all around the margins of the high bog except where the bog slopes down to the river where the edge is semi-natural.

Much of the high bog has vegetation typical of the Western Raised Bog type, consisting of Ling Heather (*Calluna vulgaris*), Cottongrass (*Eriophorum* spp.), Carnation Sedge (*Carex panicea*), Common Lousewort (*Pedicularis sylvatica*) and the bryophytes *Campylopus atrovirens*, *Racomitrium lanuginosum* and *Pleurozia purpurea*. The intact dome in the south-east is uniformly wet and contains the relic of a good hummock/hollow system. Small hummocks of bog mosses *Sphagnum capillifolium*, *S. subnitens* and the rare *S. pulchrum* are found here. Hollows are poorly vegetated with a lot of bare peat. *Sphagnum papillosum*, *S. cuspidatum*, *S. pulchrum* and the liverwort *Odontoschisma sphagni* occur in small depressions but not in pools. A long sinuous flush dominated by Purple Moor-grass (*Molinia caerulea*), Ling Heather and Deergrass (*Scirpus cespitosus*) flows out towards the north-east margin. The other flush consists of a series of swallow holes which support a vegetation of tall Ling Heather, Hawthorn (*Crataegus monogyna*) and Bracken (*Pteridium aquilinum*). Active cutover is mainly bare peat with Common Cottongrass (*Eriophorum angustifolium*) and Soft Rush (*Juncus effusus*); old cutover is dominated by Purple Moor-grass and Ling Heather. Some drains filled with the bog moss *Sphagnum cuspidatum* also occur.

Red Grouse, a species that is becoming increasingly rare in Ireland, has been recorded on this bog.

of active peat-cutting, with mechanised peat extraction occurring on 60% of the site's perimeter. This has resulted in extensive drainage, with 60% of the bog (north-west section) becoming severely damaged by deep drainage on the dome. In addition, there has been fire damage to undrained areas in the recent past and bog mosses have been slow to recover on the site. Erosion of the peat occurs along the north-west perimeter. The south-east intact area shows signs of a lowering water table.

Slieve 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 diversity of raised bog microhabitats including hummock/hollow complexes, pools and flushes as well as *Sphagnum pulchrum* a nationally rare plant. Areas of cutover bog and a semi-natural margin between the bog and the Yellow River also occur on the site. 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.

18.11.2002

Site Name: Cloonoolish Bog

Site Code: 000249

Cloonoolish Bog NHA is situated about 4 km north-east of Killimor, mainly in the townlands of Cloonoolish and Lissaniska North in south-east Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog.

Cloonoolish Bog is a small example of a raised bog, but it has a high dome and good bog moss (*Sphagnum* spp.) cover. It is bordered closely on its north-western side by a mineral ridge, and by low-lying agricultural ground on the other sides. The side of the bog bounding the mineral ridge does not appear to have been cut in the past and so may form a semi-natural margin. Overall, the bog surface is quite dry due to drainage and peat-cutting at the margins.

There are, however, wet areas with some poorly developed hummock/hollow systems, occasional small pools and one small quaking area. There are three small ridges with unusual vegetation found at the north-east of the site. The cutover areas have mostly been abandoned, but some have been reclaimed for agriculture.

The high bog at Cloonoolish possesses many of the species typical of raised bogs in Ireland. Most of the bog surface is uniformly medium wet with a high cover of Ling Heather (*Calluna vulgaris*) and bog mosses, with species such as *Sphagnum imbricatum*, *S. magellanicum*, *S. papillosum* and *S. cuspidatum*. The eastern half has not been burnt for many years and bushy Ling Heather and lichen (*Cladonia* spp.) growth predominate. The western half has been recently burnt, and Ling Heather and Deergrass (*Scirpus cespitosus*) are vigorously regrowing. The bog moss cover appears to be equally actively regenerating. The small wettest area, north of the centre, appears to be drying out, with deep hollows and no standing water between the hummocks. Three interesting ridges occur, supporting Common Reed (*Phragmites australis*), large tufts of Hare's-tail Cottongrass (*Eriophorum vaginatum*), bog mosses and many young Scot's Pine (*Pinus sylvestris*) trees. An interesting, but very small, feature is a flush consisting of a hollow filled with Soft Rush (*Juncus effusus*) and the bog moss *Sphagnum cuspidatum*, adjacent to a very large relic hummock with Crowberry (*Empetrum nigrum*). This is surrounded by an unusual occurrence of a number of orchid species (*Dactylorhiza* spp.) over a few square metres.

Current landuse on the site consists of peat-cutting around much of the eastern and southern edges of the high bog, and the drainage associated with this. Large portions of the bog have been severely burnt in the past. Significant areas of cutover bog have been drained, cleared and reclaimed for agricultural purposes. 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.

Cloonoolish 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. 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.
13.11.2002

Site Name: Cregganna Marsh

Site Code: 000253

Cregganna Marsh is situated about 3 km south of Oranmore, to the west of the Galway - Ennis road. The predominant habitats on the site are lowland wet grassland and improved grassland, but areas of limestone pavement and other exposed rock, Hazel (*Corylus avellana*) scrub, freshwater marsh, drainage ditches and dry grassland are also represented.

The site is of major conservation importance as a feeding site for a nationally important Greenland White-fronted Goose flock. The birds using this site form part of the Rahasane flock (5 year mean of winter maximum, 1995/96 to 1999/00 of 166 individuals). Greenland White-fronted Goose is a species that is listed on Annex I of the E.U. Birds Directive. The site is also designated a Special Protection Area under this Directive.
18.9.2006

Site Name: Crit Island Bog

Site Code: 000254

Crit Island Bog NHA is situated approximately 4 km south-west of Ahascragh, mainly in the townlands of Doon Upper, Fairfield, Cloonigny and Killure in County Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The northern margin of the site is bounded by a road, while the other margins are bounded by areas of cutover and grassland.

The high bog consists of two main sections. The larger section, at the north, is elongated and very complex in shape. There are large areas of cutover and forestry associated with it. The southern section is smaller and rectangular in shape, with a large area of coniferous forestry on the high bog. On the northern section there is an area with permanent pools and hummocks/hollows at the western side of the high bog. At the extreme north-west of the site there is a block of rectangular wet semi-natural fields which are situated on the high bog. They are in existence at least since the beginning of the 19th century. There is a flush (Crit Lough) at the centre of the site.

The high bog vegetation at this site is typical of a raised bog, with species such as Ling Heather (*Calluna vulgaris*), Cottongrasses (*Eriophorum* spp.) and bog mosses (*Sphagnum* spp.). For ease of description the bog has been divided into 3 areas: the wettest and mostly western section, the central and north-eastern section and the separated southern section. An area of about 20 ha of active bog has been recorded at the western section of the site with hummocks/hollows and pools. In this area, the hummocks are principally composed of bog mosses such as *Sphagnum fuscum*, *S. papillosum* and *S. imbricatum*, and the pools are largely *S. cuspidatum*-filled, with *S. magellanicum* lawns in between. Further east, the hollows become smaller and the pools drier, indicating a lowering of the water level. Much of the rest of this western area is wet, but with Bog Asphodel (*Narthecium ossifragum*) becoming dominant. In areas which have not been burned, there is abundant lichen (*Cladonia* spp.) cover which suppresses the bog moss growth. There is also an area of semi-natural wet grassland on the high bog at the extreme north-west of the high bog.

The north-eastern section of this bog is of poor quality, having little in the way of bog moss cover. Instead, it is dominated by Carnation Sedge (*Carex panicea*), Bog Asphodel and Deergrass (*Scirpus cespitosus*). A number of long, narrow tear-pools which are bog moss-filled and aligned east-west are present east of Crit Lough. Crit Lough is found at the centre of the site and consists of a flush which has been severely damaged by an old drain which flows south and also by the new drains. Abundant Cranberry (*Vaccinium oxycoccos*) occurs on the drying surface of a bog moss carpet. Nearby is a large mound with Downy Birch (*Betula pubescens*) and Crowberry (*Empetrum nigrum*).

The southern section of this site is quite dry and has been planted with a large block of coniferous forestry.

Current landuse on the site consists of a large amount of peat-cutting around much of the edge of the high bog, and the drainage associated with this. Large portions of the bog have been burnt in the past. There are also large amounts of coniferous forestry on both the high bog and on the cutover. 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.

Crit Island 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. The area of old reclaimed grassland on the high bog may be of considerable historical and agricultural interest as such areas are very rare. 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 Name: Funshin Bog

Site Code: 000267

Funshin Bog NHA is located 9 km east of Glenamaddy mainly in the townlands Clooncullaun, Leaha, Funshin and Gortnadeeve West in County Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The site is bounded in the south-west by a local road.

There are areas of well developed hummocks that are most prominent on the eastern side of the bog. There is one area of flush in the south-west of the site. Cutover is found all around the site.

This bog has been classified as a Western Raised Bog with Ling Heather (*Calluna vulgaris*), Carnation Sedge (*Carex panicea*), cottongrasses (*Eriophorum* sp.), Deergrass (*Scirpus cespitosus*), Cross-leaved Heath (*Erica tetralix*) and the moss *Racomitrium lanuginosum*. Bog mosses recorded on the site include the hummock forming *Sphagnum fuscum* and *S. imbricatum*. The bog moss *S. magellanicum* has also been recorded. Although the bog has well formed hummocks there are no pools and the only hollows are algal and of poor quality. Where the site has not been burnt for a long time, such as the northern region, the lichens *Cladonia portentosa* and *C. uncialis* are common. The moss *Racomitrium lanuginosum* is also common on top of hummocks in areas of the bog that have not been burnt. On the western side of the bog, where the effects of burning have been most severe Deergrass, Cross-leaved Heath and Bog Asphodel (*Narthecium ossifragum*) were recorded with patchy carpets of regenerating bog mosses. There is a Purple Moor-grass (*Molinia caerulea*) dominated flush in the south-west of the site with Heath Milkwort (*Polygala serpyllifolia*), Cranberry (*Vaccinium oxycoccos*), Bog-myrtle (*Myrica gale*) and some willows (*Salix* sp.). A small area of wet Downy Birch (*Betula pubescens*) woodland is present on the cutover in the north-east of the site.

The rare bird species Red Grouse has been recorded at the site.

Except at the western edges of the site there is active peat-cutting carried out all around the high bog. Mechanical peat-cutting is most noticeable in the north, south-west and west of the site. Damaging activities associated with this landuse include drainage throughout the site and extensive burning of the high bog. The western side of the bog has also been recently damaged by burning. These activities have all resulted in the loss of habitat, damage to the hydrological status of the site, and pose a continuing threat to its viability.

Funshin 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 flushes. 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.

14.11.02

Site Name: Castle Ffrench West Bog

Site Code: 000280

Castle ffrench West Bog is a small raised bog situated about 7 km south-west of Ballyforan. It is located mainly in the townlands of Castle ffrench West, Gowla and Loonaghtan, in east County Galway. It is accessible from local roads and forestry tracks to the east and west.

The site is a raised bog consisting of areas of both high bog and cutover. The high bog is divided into two parts - an eastern, low quality part with tear pools and the western two-thirds, which is of good quality with a high dome. The two are connected by a very narrow strip of high bog and a ridge of mineral soil with cutover on both sides. About 10 ha. (or 25%) of the western section is extremely wet and quaking. Part of this consists of large, inter-connecting pools with low flat 'lawns' between. The rest of this wet area is a wooded flush. The narrow strip of high bog has been planted with conifers and there is also forestry on cutaway to the north and west. There is some wet regenerating cutover to the south-west.

The high bog has vegetation typical of a Western Raised Bog, dominated by Common Common Cottongrass (*Eriophorum angustifolium*) and Carnation Sedge (*Carex panicea*), with the moss *Campylopus atrovirens*, liverwort *Pleurozia purpurea* and Fir Clubmoss (*Huperzia selago*) occurring quite commonly. Ling Heather (*Calluna vulgaris*) is present but not dominant on the high bog and Deergrass (*Scirpus cespitosus*) is common in places. The eastern section has poor bog moss (*Sphagnum* spp.) cover and only relic pools. The western section has a wet and quaking area with large, inter-connecting pools containing the bog moss *Sphagnum cuspidatum*, and low flat lawns in between. Cranberry (*Vaccinium oxycoccos*) grows very vigorously here. However, due to burning bog moss cover on these lawns is poor and they are dominated by Bog Asphodel (*Narthecium ossifragum*). To the north these pools grade into a wooded flush, which is quaking and which supports Scot's Pine (*Pinus sylvestris*) trees, some of which are quite mature, over a thick mat of vegetation. This vegetation includes an abundance of Crowberry (*Empetrum nigrum*) and Cranberry as well as Bilberry (*Vaccinium myrtillus*) and other species including bog mosses and orchids (*Dactylorhiza* spp.).

The cutover to the south-west is very wet and regenerating, with good bog moss growth, Soft Rush (*Juncus effusus*), Purple Moor-grass (*Molinia caerulea*) and abundant Cranberry. The mosses, *Calliergon cuspidatum* and *Aulacomnium palustre* are also present. The short mineral ridge in the centre of the site is dominated by Gorse (*Ulex europaeus*) scrub and Bracken (*Pteridium aquilinum*). This ridge extends under the thin section of the high bog.

Current landuse on the site consists of forestry, agricultural reclamation of old cutover and mechanical peat-cutting to the east and south. Damaging activities associated with these include drainage and burning with large portions of

the bog being 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.

Castle French West 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. The site supports a range of raised bog habitats including a pool system and a wooded flush. This bog although small and damaged by extensive cutover and burning, is unusual in having such a relatively large area of wet quaking habitat. The presence of the wooded flush adds to the conservation value of the site. 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.

13.11.2002

Site Name: Keeloges Bog

Site Code: 000281

Keeloges Bog NHA is located 5.5 km east of Glenamaddy mainly in the townlands Keeloges West, Keeloges East, Sonnagh East, Knockmascahill and Gortnadeeve West in County Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog.

This site is made up of two areas of high bog that are bisected by a road. The eastern section of the site is dry due to a large number of major drains, the western section has an extensive area of hummocks and pools and is wet and quaking in areas. There is one flush in the west of the site. Coniferous forestry is found on three small sections of the high bog and associated cutover in the north, west and south-west of the site. Cutover is found all around the site.

This bog has been classified as a Western Raised Bog with Ling Heather (*Calluna vulgaris*), abundant Common Cottongrass (*Eriophorum angustifolium*), Carnation Sedge (*Carex panicea*) and the moss *Campylopus atrovirens*. In the middle of the western section of high bog stretching east towards the road there is a well developed system of hummocks and pools. The bog mosses *Sphagnum cuspidatum* and *S. auriculatum* are found in the pools as is Round-leaved Sundew (*Drosera rotundifolia*). The area between the pools are wet and quaking and Bog Asphodel (*Narthecium ossifragum*), White Beak-sedge (*Rhynchospora alba*) and Cottongrasses are common. The hummock forming bog mosses *Sphagnum capillifolium*, *S. papillosum* and *S. imbricatum* and the moss *Campylopus atrovirens* were also recorded between the pools. The south-west of the bog has a shallow peat layer and is dryer with Ling Heather dominant. The Purple Moor-grass (*Molinia caerulea*) dominated flush in the west of the site is drained by a channel. Soft Rush (*Juncus effusus*), Bottle Sedge (*Carex rostrata*), Bogbean (*Menyanthes trifoliata*), Marsh Violet (*Viola palustris*), Cranberry (*Vaccinium oxycoccos*) and the bog moss *Sphagnum recurvum* were recorded in the area of the channel. Coniferous forestry is found on three small sections of the high bog and associated cutover in the north, west and south-west of the site. Also in the south-west of the site there is a small area of Gorse (*Ulex* sp.) scrub on the high bog. In the north-east of the site there is an area of scrub on the cutover.

Current landuses on the site consist of peat-cutting, forestry and agriculture. Peat-cutting has occurred all around the site but active peat-cutting is now mostly in the north-east

and south of the site. Since the 1970s conifers have been planted on three small sections of the high bog and cutover in the north, west and south-west of the site. The reclaiming of cutover for agriculture has occurred around the site. Damaging activities associated with these landuses include drainage throughout the site and extensive burning of the high bog. Old burning has been recorded in the north-west of the site. The majority of the eastern portion of the high bog has had major drainage ditches dug through it in preparation for forestry that was never carried out. This was also the case in the west of the site where an area of high bog was damaged due to drainage operations in preparation for forestry. These activities listed have all resulted in the loss of habitat, damage to the hydrological status of the site, and pose a continuing threat to its viability.

Keeloges 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 flushes. 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.

14.11.02

Site Name: Kilmore Bog

Site Code: 000283

Kilmore Bog NHA is located 5 km north-west of Ballygar, mainly in the townlands St. Brendans (Cregganagroy), Slievemurry, Boggauns and Kilmore in Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The site is bounded in the south by a local road.

This is a medium sized bog with hummocks and pools and a central area that is wet and quaking. There is one large wooded flush in the east of the site. There is a small forestry plantation on cutover in the north of the site. Cutover is found all around the site.

Much of the high bog has vegetation typical of a Western Raised Bog, consisting of Ling Heather (*Calluna vulgaris*), Cottongrass (*Eriophorum* sp.), Deergass (*Scirpus cespitosus*), Carnation Sedge (*Carex panicea*), the moss *Campylopus atrovirens* and the liverwort *Pleurozia purpurea*. There is an area of hummocks and pools in the south and south-west of the site. The bog mosses *Sphagnum capillifolium*, *S. magellanicum*, *S. imbricatum* and *S. fuscum* have all been recorded in this area of the site. The frequent pools seen in this area of the bog are narrow and contain the bog moss *S. cuspidatum* with Bogbean (*Menyanthes trifoliata*). Common Cottongrass (*Eriophorum angustifolium*) and Great Sundew (*Drosera anglica*). White Beak-sedge (*Rhynchospora alba*) and the liverwort *Pleurozia purpurea* are found along the margins of the pools. North of the pools there is some evidence of burning with Bog Asphodel (*Narthecium ossifragum*), Deergass, Ling Heather, Common Cottongrass, and Cross-leaved Heath (*Erica tetralix*) recorded. There are tear pools in this area and the bog mosses *S. cuspidatum* and *S. auriculatum* have been recorded with Brown Beak-sedge (*Rhynchospora fusca*) and Great Sundew. As the ground slopes down to the flush the pools increase in size and Oblong-leaved Sundew (*Drosera intermedia*) is found.

The east of the site is dominated by a wooded flush with Downy Birch (*Betula pubescens*), Eared Willow (*Salix aurita*) and occasional Ash (*Fraxinus excelsior*) with Bilberry (*Vaccinium myrtillus*) and Blackberry (*Rubus fruticosus* agg.) in the under-storey. The diversity of the epiphytic lichen flora on the birch trees in the flush is high with the genera *Parmelia*, *Pertusaria*, *Evernia* and *Usnea* all recorded. The hummocks are dominated by the bog mosses *S. capillifolium*, *S. squarrosus* and *S. papillosum*. The depression which leads into the flush has fen type vegetation and is composed of several small streams which run between floating mats of the bog mosses *S. papillosum* and *S. subnitens*. Bog Pondweed (*Potamogeton polygonifolius*), Water Horehound (*Equisetum fluviatile*), Bulrush (*Typha latifolia*) and Lesser Bladderwort (*Utricularia minor*) are in the channels.

Cutover in the north of the site contains a failed conifer plantation with willow (*Salix* sp.) and Braken (*Pteridium aquilinum*) in between the mature conifers. This plantation is set in a flooded grassland with Floating Sweet-grass (*Glyceria fluitans*) dominant. In the north-east of the site there are some semi-improved fields on the cutover. In the east of the site there is a large area of cutover with scrub growing on it.

The rare bird species Red Grouse has been recorded at the site.

Current landuses on the site include forestry, peat-cutting and agriculture. The forestry is found on cutover in the north of the site. Active peat-cutting is taking place in the north and south of the site. Two fields on the cutover in the north-east of the site are semi-improved. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog. There is also evidence of old burning in the north-west and south-east of the site. All these activities have resulted in the loss of habitat and damage to the hydrological status of the site, and pose a continuing threat to its viability.

Kilmore 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, pools and a flush. 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 Name: Kilnaborris Bog

Site Code: 000284

Kilnaborris Bog is situated 6 km west of Eyrecourt, Co. Galway. It is located mainly in the townlands of Killnaborris, Killeragh and Cankilly. The site comprises a raised bog that includes both areas of high bog and cutover bog.

The site consists of one raised bog dome. The central area has a number of degraded pools, which have become infilled. There are more pools north of the bog centre and a flush in the centre of the bog, both of these features appear to be associated with a bog burst. Aligned tear pools and steep slopes associated with the bog burst are located to the south of the site.

Much of the high bog has vegetation typical of for both western and midlands raised bog types, consisting of Ling Heather (*Calluna vulgaris*), Hare's-tails Cottongrass (*Eriophorum vaginatum*), Bog Asphodel (*Narthecium ossifragum*) and bog moss *Sphagnum magellanicum*. Most of the other species are found in localised patches. The bog moss *Sphagnum auriculatum* is found in several large hollows. Other pools are filled with bog moss (*Sphagnum cuspidatum*) along with Bogbean (*Menyanthes trifoliata*) and Long-leaved Sundew (*Drosera anglica*). The bryophytes *Sphagnum fuscum*, *Dicrananum scoparium* and *Pleurozia schreberi* as well as Ling Heather, Downy Birch (*Betula pubescens*), Soft Rush (*Juncus effusus*), Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*) are found in the centre flush. There are extensive lawns of bog moss (*Sphagnum capillifolium*, *S. papillosum* and *S. magellanicum*) in the central area of the high bog. Scots Pine (*Pinus sylvestris*) can be found growing on dryer areas of the bog in areas where the drainage has been affected by the old bog burst. Ling Heather is found on steep slopes and on the cutaway. The club moss *Huperzia selago* is scattered throughout the bog vegetation.

Current landuse on the site consists of peat cutting, which is now mainly confined to the western margin. Peat cutting and burning have led to the drying out of the bog surface. Peat cutting was the probable cause of a major bog burst pre-1973. There is some evidence that the bog burst has caused considerable drying out of the bog surface. Bog bursts are relatively infrequent occurrences on a raised bog. Scots Pine is becoming established on dryer areas of the bog and on steep banks.

Kilnaborris 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 diversity of raised bog microhabitats including hummock/hollow complexes, pools, a flush and scrub on the old peat cuttings. Ireland has a high proportion of the E.U. resource of raised bog (over 50%) and so has a special responsibility for its conservation at an international level.
18.11.2002

Site Name: Leaha Bog

Site Code: 000292

Leaha Bog NHA is located 9.5 km east-south-east of Glenamaddy mainly in the townlands Clooncullaun and Leaha in County Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The site is bounded in the south and south-west by a tributary of the Shiven River and in the north of the site by a road.

The site is part of a large bog complex that is now separated by roads and cutover that has been reclaimed for agriculture. Leaha Bog is separated from Funshin Bog NHA (267) by a road, and a tributary of the Shiven River separates Leaha Bog from Camderry Bog NHA (240) and Clooncullaun Bog NHA (245). Leaha Bog has a shallow dome with low hummocks throughout the bog; the site does have pools but they are colonised by algae. In the south-west of the site there is coniferous forestry on the high bog. Cutover is found all around the site.

This bog has been classified as a Western Raised Bog, and supports such species as Ling Heather (*Calluna vulgaris*), Carnation Sedge (*Carex panicea*), cottongrasses (*Eriophorum* spp.), Cross-leaved Heath (*Erica tetralix*),

Deergrass (*Scirpus cespitosus*) and the liverwort *Pleurozia purpurea*. Carnation Sedge and Bog Asphodel (*Narthecium ossifragum*) are particularly dominant. Low hummocks of the bog mosses *Sphagnum capillifolium* and *S. imbricatum* occur on the site as well as, but less frequently, *S. fuscum*, *S. subnitens*, *S. tenellum* and *S. magellanicum*. There are occasional large hummocks of the moss *Leucobryum glaucum* and these are colonised, among other species, by the moss *Campylopus introflexus* and the lichens *Cladonia crispata*, *C. portentosa* and *C. floerkeana*. The only pools are of a poor quality and are colonised by algae; they are mainly found in the north-west of the site and the south-west near the forestry. Although the aquatic bog moss *S. cuspidatum* does not dominate in the pools it has been recorded on the bog. The short stature of the Ling Heather and the presence of only algal pools provide some evidence of burning on the bog in the past. Bog-myrtle (*Myrica gale*) formerly grew in a wet area in the south-west of the bog but this section of the high bog has now been planted with coniferous forestry. The cutover in the west of the site is dominated by coniferous forestry and in the east of the site it is primarily reclaimed grassland. Species recorded on the peaty wet grassland include Purple Moor-grass (*Molinia caerulea*), Devil's-bit Scabious (*Succisa pratensis*) and Green-ribbed Sedge (*Carex binervis*).

Current landuses on the site include forestry, active peat cutting and agriculture. There is forestry on the high bog in the south-west of the site and on the cutover along the western edge of the site. Active peat-cutting is most prevalent along the track in the south-west of the site and all around the northern section of the high bog. Along the eastern edge of the site the cutover has been reclaimed for agricultural grassland. Damaging activities associated with these landuses include drainage throughout the site and extensive burning of the high bog. These activities have all resulted in the loss of habitat, damage to the hydrological status of the site, and pose a continuing threat to its viability.

Leaha 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. The site supports a good diversity of raised bog microhabitats, including hummocks. 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 Name: Lough Tee Bog

Site Code: 000307

Lough Tee Bog NHA is located 6 km east of Monivea mainly in the townlands Cuddoo East, Derrough, Cormacuagh East, Shanballymore, Ballyglass and Cloonkeenkerrill. The site comprises a raised bog that includes both areas of high bog and cutover bog.

This is a large site that is partially divided by tracks and associated drains that run across the eastern section of high bog. In this area of the bog there is also a small ring fort. There are five small lakes included in the site, Lough Corneal in the north, and in the south, Lough Tee, Lough Doo, Shanballymore Lough and an unnamed small lake. There is an area of hummocks and pools in the north-east of the high bog and a section at the centre of this area is wet and quaking. There are four flushes in this site, three in the south and one at the centre of the site. Coniferous forestry

is located on two small areas of the high bog in the east and north-east of the site. Forestry is also on the cutover adjoining these areas and a separate section of cutover in the north-east of the site. Cutover is found around most of the high bog and across the centre of the eastern half of the site.

Much of the high bog has vegetation typical of a Western Raised Bog, consisting of Ling Heather (*Calluna vulgaris*), Cottongrass (*Eriophorum* sp.), Carnation Sedge (*Carex panicea*), the liverwort *Pleurozia purpurea* and the moss *Campylopus atrovirens*. The hummock-forming bog mosses *Sphagnum fuscum* and *S. imbricatum* have been recorded on the high bog. The centre of the eastern lobe of the bog has a large area of hummocks and pools. The bog mosses *Sphagnum cuspidatum* and *S. auriculatum* are found in the pools. Brown Beak-sedge (*Rhynchospora fusca*) grows in some of the pools and the liverwort *Pleurozia purpurea* is abundant at the edges of the pools. Around this wet centre there are large areas of Deergrass (*Scirpus cespitosus*) and Bog Asphodel (*Narthecium ossifragum*). Further west towards the centre of the bog there is a second wetter area of hummocks and pools which is dominated by Cottongrass, Carnation Sedge and Bog Asphodel. The bog moss *S. cuspidatum* is found in the pools and there are lawns of *S. magellanicum*. There are four flushes in the site. One is found around Lough Doo and birch (*Betula* sp.), Purple Moor-grass (*Molinia caerulea*) and Bog-myrtle (*Myrica gale*) occur in the flush area. Of the other two flushes in the south the south-eastern flush is atypical of a bog flush. Species recorded here include the mosses *Campyllum stellatum* and *Fissidens* sp. and Heath Wood-rush (*Luzula multiflora*). The fourth flush in the north-west of the site has Purple Moor-grass, Common Reed (*Phragmites australis*), and Soft Reed (*Juncus effusus*). There are five lakes in the site. The largest is Lough Corneal in the north of the site, which is notable due to its steep edges dominated by Ling Heather. Lough Tee, with Bogbean (*Menyanthes trifoliata*), Broad-leaved Pondweed (*Potamogeton natans*) and Yellow Water-lily (*Nuphar lutea*) is the next largest lake. To the north-east of Lough Tee there is an associated small area of woodland with birch, Hazel (*Corylus avellana*), willow (*Salix* sp.) and oak (*Quercus* sp.). Of the other three lakes in the south of the site Lough Doo is almost completely infilled and dominated by Ling Heather and Purple Moor-grass, and Shanballymore Lough has Bulrush (*Typha latifolia*) and Common Reed growing around it. The third lake in the south-west is surrounded by Hawthorn (*Crataegus monogyna*), birch, Purple Moor-grass and Soft Rush. There is coniferous forestry on two small areas of the high bog in the east and north-east of the site. Forestry is also on the cutover adjoining these two areas and on a separate section of cutover in the north-east of the site. Regenerating cutover occurs in the south-east of the site and it supports vegetation of Ling Heather, Purple Moor-grass and bog mosses; *Sphagnum cuspidatum* lawns occur in the wetter areas. Birch scrub occurs on old cutover in the south-east and the cutover in the far east of the site consists of lowland wet grassland with many sedge (*Carex* sp.) species noted.

Golden Plover, a species that is listed on Annex I of the E.U. Birds Directive, and Otter, a Red Data Book species have been recorded at the site.

Current landuses on the site include forestry, peat-cutting and agriculture. Forestry is found on the high bog and cutover in the north-east and east of the site. Peat-cutting has occurred around most of the site and also across the middle of some of the site. Mechanised active peat-cutting is most extensive in the south-east of the site. The most improved reclaimed agricultural fields are south of the

eastern lobe of high bog. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog. There are old drains along the tracks in the centre of the site that will have a damaging effect. There has also been a new drain dug in the centre of the site and two new drain complexes in the south of the site. There has also been some recent burning in the south of the site. All these activities have resulted in the loss of habitat and damage to the hydrological status of the site, and pose a continuing threat to its viability.

Lough Tee 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. The site supports a good diversity of raised bog microhabitats, including hummocks, pools and flushes. The presence of five lakes at the site adds to its diversity. 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 Name: Meeneen Bog

Site Code: 000310

Meeneen Bog NHA is situated mainly in the townlands of Meeneen, Tiranascragh and Tullinlicky, 6 km south-west of Eyrecourt, Co Galway. The site comprises a medium-sized raised bog that includes both areas of high bog and cutover bog. The River Shannon runs to the south-east of the site.

This raised bog consists of a distinct dome of high bog divided into three sections by trackways. The fragmented nature of the high bog has led to the overall desiccation of this habitat, and a lowering of the water table. There is a large flush in the central lobe. To the north-west and south-east of the site several small areas of mixed deciduous woodland occur. The bog is surrounded by cutover on all its margins.

Much of the high bog has vegetation typical of the Midland Raised Bog type, consisting of Ling Heather (*Calluna vulgaris*), cottongrass (*Eriophorum* spp.), and Carnation Sedge (*Carex panicea*). Other common species on the high bog include Bog Asphodel (*Narthecium ossifragum*) and Deergrass (*Scirpus caespitosus*). Bog moss (*Sphagnum* spp.) growth is good. The overall topography is dominated by hummocks. Many pools contain algae and are showing signs of drying out. In the western lobe, good *Sphagnum papillosum* hummocks occur and some pools contain *S. cuspidatum* and Bogbean (*Menyanthes trifoliata*). The sundews *Drosera rotundifolia* and *D. intermedia* also occur. Bilberry (*Vaccinium myrtillus*) has been recorded from a cutface along the north-eastern margins. An extensive flush dominated by Purple Moor-grass (*Molinia caerulea*) occurs to the east of the site. Other species associated with the flush include Bog-myrtle (*Myrica gale*), Downy Birch (*Betula pubescens*), Cranberry (*Vaccinium oxycoccos*) and the Heath Spotted-orchid (*Dactylorhiza maculata*).

There is extensive cutover to the north-west, south-west and south-east of the site. Downy Birch and Gorse (*Ulex europaeus*) have encroached onto the cutover in many areas. In the north-west two small areas of birch wood occur and a larger area is found on cutover in the south-west.

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

Current landuse on the site consists of peat-cutting along the south-east, south-west and north-west margins of the site. A small area of afforestation is found on cutover to the east. Damaging activities associated with this landuse include drainage and burning. Fire damage has been recorded in the 1980s but there is little evidence of recent burning on 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.

Meeneen 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 hummock/hollow complexes, some pools and a significant flush which add to the diversity and conservation value of the site. 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 Name: Raford River Bog

Site Code: 000321

Raford River Bog NHA is located approximately 3 km north-west of Bellafa (Ballyfa), mainly in the townlands of Cloonbenes, Crossmacrin and Derrynamagh in Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The site is bounded in the north and east by the local road running from Bellafa to Attymon.

This site is the remnant of a much larger bog that is now cutover and reclaimed for agriculture. The site is split by a mineral ridge, with the majority of the remaining high bog found north of the ridge and a small elongated section to the south. The larger section of high bog has areas of hummocks and pools towards the centre and the mid-western area is wet and quaking. The high bog also has a series of mounds present. There is one flush in the centre of the high bog. Cutover is found around most of the site.

Much of the high bog has vegetation typical of a Western Raised Bog, consisting of Ling Heather (*Calluna vulgaris*), Common Cottongrass (*Eriophorum angustifolium*), Hare's-tail Cottongrass (*E. vaginatum*) and Carnation Sedge (*Carex panicea*). The bog mosses *Sphagnum papillosum* and *S. capillifolium* are common on the high bog with some *S. magellanicum* and *S. imbricatum* also recorded. Lichen cover (*Cladonia* sp.) is reasonably high throughout the site. The scarce bog moss *S. fuscum* has also been recorded at the centre of the site. In the mid-western section of the high bog Cranberry (*Vaccinium oxycoccos*) has been recorded growing through carpets of bog moss with the liverwort *Pleurozia purpurea*. In the pools complex in the mid-western area of the bog the pools are colonised by the bog mosses *S. cuspidatum* and *S. auriculatum*. These inter-connecting pools also contain Great Sundew (*Drasera anglica*), Bogbean (*Menyanthes trifoliata*); hummocks of the moss *Racomitrium lanuginosum* occur as islands between the pools. Tear pools are found throughout the high bog. Some of these pools are algal while others contain the bog mosses *S. cuspidatum* and *S. auriculatum*. In the eastern margins of the high bog the moss *Campylopus atrovirens* has been recorded. There are noticeable mounds on the

high bog and tall Ling Heather (up to 1 m) has been noted to be growing on the top of four of these. There is one large flush at the centre of the site which flows north. Bog-myrtle (*Myrica gale*) is found on the slopes associated with the flush. The flush itself consists of a series of swallow holes in an area dominated by Purple Moor-grass (*Molinia caerulea*). There is a small mineral ridge in the north of the high bog area that is dominated by Hazel (*Corylus avellana*) and Ash (*Fraxinus excelsior*). The cutover to the east of this ridge is dominated by Purple Moor-grass with Gorse (*Ulex europaeus*) scrub seen to the north of this area. Common reed (*Phragmites australis*) has been recorded on the cutover south of the high bog.

Greenland White-fronted Goose, a species that is listed on Annex I of the E.U. Birds Directive, and Irish Hare, a Red Data Book species, have been recorded on the site.

Current landuses on the site include forestry, peat-cutting and agriculture. The forestry is found on cutover and high bog in the south-west of the site and on cutover in the north of the site. There is mechanised active peat-cutting taking place around most of the site except in the north and west. The largest area of mechanised peat cutting is in the south of the site on an area of high bog. Marginal drains in the east and west of the site are associated with field development. There are also areas of improved grassland associated with the mineral ridge. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog. There is also evidence of old burning in the western part of the high bog. All of these activities have resulted in the loss of habitat and damage to the hydrological status of the site, and pose a continuing threat to its viability.

Raford River 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. 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 Name: Aughrim Bog

Site Code: 001227

Aughrim Bog NHA is located 4 km north-west of Ballygar mainly in the townlands Monasternallea (Abbeygrey), Knockaunrainy and Aghrane (Castlekelly) in Co. Galway. The site is 2 km west of the River Suck. The site comprises a raised bog that includes both areas of high bog and cutover bog. The site is bounded in parts by coniferous forestry to the south and north of the site.

The site is partially divided by old tracks and associated drains that run across the high bog. There is an area of hummocks and pools in the middle and west of the high bog and a section at the centre of this area is wet and quaking with a flush present. In the north-west of the site there is a small area of coniferous forestry on high bog. Cutover is found on the north of the site and around the south-west lobe; in the south of the site the cutover has been utilised for forestry.

Much of the high bog has vegetation typical of a Western Raised Bog, consisting of Ling Heather (*Calluna vulgaris*),

Hare's-tail Cottongrass (*Eriophorum vaginatum*), Carnation Sedge (*Carex panicea*), Cross-leaved Heath (*Erica tetralix*), the mosses *Racomitrium lanuginosum* and *Campylopus atrovirens* and the liverwort *Pleurozia purpurea*. The lichen *Cladonia portentosa* is often found in hummocks with Ling Heather. The bog mosses *Sphagnum papillosum* and *S. capillifolium* are common between pools with some *S. imbricatum* also recorded. To the west of the centre of the site there are many tear pools containing the bog moss *S. cuspidatum* and with Common Cottongrass (*E. angustifolium*) and White Beak-sedge (*Rhynchospora alba*) found around the edges. Some pools contain the bog moss *S. auriculatum* and Brown Beak-sedge (*Rhynchospora fusca*). There are also some small hummocks of the moss *Racomitrium lanuginosum* and the liverwort *Pleurozia purpurea* found amongst the pools and the moss *Campylopus atrovirens* is growing on an island in one of the larger pools. On the margins of the central pools complex carpets of the bog mosses *S. magellanicum* and *S. tenellum* and occasional patches of *S. fuscum* have been noted. The flush in the centre of the site is dominated by Purple Moor-grass (*Molinia caerulea*) and occasional Bog-myrtle (*Myrica gale*). There is a thin cutover margin in the west with Downy Birch (*Betula pubescens*) woodland. In the north the cutover is dominated by Purple Moor-grass, Ling Heather and Gorse (*Ulex europaeus*).

Current landuses on the site include forestry that is found on the high bog in the north-east of the site and on cutover in the south and east of the site. There is active peat-cutting in the north and north-west of the site. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog, although there has been no recent burning here. There are old drains along the tracks in the centre of the site that will have a damaging effect. 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. There is also some dumping occurring at the start of the bog track.

Aughrim 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 hummock/hollow complexes, pools and flushes. 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 Name: Slieve Aughty Bog

Site Code: 001229

Slieve Aughty Bog NHA consists primarily of upland blanket bog and heath habitat and is located immediately west of the village of Woodford and about 8 km west of Lough Derg, Co. Galway. The site comprises six discrete areas of blanket bog, both intact and cutover, at altitudes between 100 m and 230 m and lies in the townlands of Knockauncarragh, Commons East, Moyglass, Derreenamucka, Boleyveena, Drummin, Cullenagh, Derrybrien East and Derrybrien South. Forestry plantations adjoin all six areas and form the majority of the site boundaries, with the remaining areas bounded by rivers, roads and tracks. Bedrock geology is quartzite.

The dominant habitat is blanket bog, with the largest tract occurring in the eastern sector. Here the vegetation is

generally dominated by Purple Moor-grass (*Molinia caerulea*), with Deergass (*Scirpus cespitosus*), and includes species such as Common Cotton-grass (*Eriophorum angustifolium*), Carnation Sedge (*Carex panicea*), Bog-myrtle (*Myrica gale*), Soft Rush (*Juncus effusus*), Heath Milkwort (*Polygala serpyllifolia*), Lousewort (*Pedicularis sylvatica*), Hare's-tail Cotton-grass (*Eriophorum vaginatum*), Crossed-leaved Heath (*Erica tetralix*), Bog Asphodel (*Narthecium ossifragum*), Tormentil (*Potentilla erecta*), Star Sedge (*Carex echinata*), Heath Rush (*Juncus squarrosus*) and Round-leaved Sundew (*Drosera rotundifolia*). There are some well developed wet areas with excellent growths of bryophytes (mosses and liverworts), including a good diversity of bog mosses including *Sphagnum capillifolium*, *S. papillosum* and *S. subnitens*. Moss cover is consistently high at 80% in both hummock and carpet forms. On deep peat areas the vegetation is more characteristic of raised bog and includes Bog Rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*). Ling Heather bushes (30 cm high) occur here and the substrate is soft and wet underfoot. Extensive lawn areas, with some pools, support White-beaked Sedge (*Rhynchospora alba*) Bog-myrtle. Grazing pressure is low with some slight poaching.

Areas of regenerating cutover are dominated by Deergass, Purple Moor-grass, cottongrasses and Crossed-leaved Heath. Bog moss cover is lower here (30-40%) and there are cushions of lichen *Cladonia portentosa*. The adjacent bog surface has scattered Willow (*Salix* spp.) bushes.

Habitat diversity is increased further by the presence of flushes and small, in-filling lakes. These species poor flushes are dominated by Purple Moor-grass with occasional Bog-myrtle, Ling Heather, Crossed-leaved Heath and Bog Asphodel. Bog mosses *Sphagnum capillifolium* and *S. papillosum* are present (30%), together with the moss *Racomitrium lanuginosum*, the liverwort *Pleurozia purpurea* and the lichen *Cladonia portentosa*. Other species found in the flushes include Carnation Sedge, Deergass and Hare's-tail Cotton-grass.

The peat becomes shallow on higher slopes and bog vegetation grades into heath and acid grassland dominated by Ling Heather and a low sward of sedges (*Carex* spp.), Sheep's Fescue (*Festuca ovina*) and a variety of mosses.

The site supports Red Data Book species Red Grouse, Hen Harrier and small numbers of Whooper Swan that use Loughaunewa lake.

Landuse on the site includes peat-cutting and agriculture. Activities associated with agriculture include grazing by sheep and burning of vegetation. The site is threatened by afforestation which is the dominant landuse in the vicinity and more recently by wind energy installations. All these activities have resulted in loss of habitat and damage to the hydrological condition of the site. However, the blanket bog is largely intact and relatively lightly grazed and is a good example of a habitat that was formerly more widespread in the Slieve Aughty Mountain range.

Slieve Aughty Bog NHA is a site of considerable conservation significance supporting a significant area of upland blanket bog and associated habitats. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are

currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.
23.2.2004

Site Name: Capira/Derrew Bog

Site Code: 001240

Capira/Derrew Bog NHA is located 5 km north of Portumna, in the townlands of Capira, Derrew, Gortrea (Fairfield), Kilmalinoge, Corr and Oldstreet in Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog.

This site is the remnant of a larger bog that has now been cutover and reclaimed for agriculture. The site is in close proximity to Ardraigue Bog NHA (1224) and Meeneen Bog NHA (310). Although this bog only has algal pools it is wet and quaking in places with hummocks throughout the high bog. There are vegetated mounds found in the centre and north of the high bog. Cutover is found all around the high bog and the south of the site is dominated by deciduous forestry with dry woodland on an esker ridge in the extreme south.

Much of the high bog has vegetation typical of a Midland Raised Bog, consisting of Ling Heather (*Calluna vulgaris*), Cottongrass (*Eriophorum* sp.), Deergass (*Scirpus cespitosus*), Bog-rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*). The vegetation on the bog is uniform and dominated by Ling Heather and Carnation Sedge (*Carex panicea*) with Cross-leaved Heath (*Erica tetralix*), Deergass and White Beak-sedge (*Rhynchospora alba*). There are large mounds on the high bog, which are visible on the aerial photographs that are dominated by Ling Heather and Common Reed (*Phragmites australis*). Some smaller mounds also occur with Bog-myrtle (*Myrica gale*), Ling Heather and lichens (*Cladonia* sp.). The bog surface is wet and quaking in the centre and has good bog moss cover throughout. Hummocks of the bog mosses *Sphagnum capillifolium* and *S. papillosum* are common and *S. magellanicum* is also frequent, the hummock forming bog moss *S. imbricatum* was less common as was *S. subnitens*. Many hollows contain the aquatic bog moss *S. cuspidatum* and Great Sundew (*Drosera anglica*) and Round-leaved Sundew (*Drosera rotundifolia*) have been recorded on the bog. *Sphagnum* hummocks that are drying out and are often dominated by Ling Heather are common in the south of the site and the one *S. fuscum* hummock was recorded in this area. In this region of the bog there are algal hollows and lawns of Bog Asphodel (*Narthecium ossifragum*), also indicating that the bog is drying out. An old drain on the north-west margin of the high bog is in-filled with the bog mosses *Sphagnum cuspidatum* and *S. magellanicum* with Cottongrasses and Sundew species. In the south of the site Birch (*Betula* sp.) is encroaching onto the high bog and wet woodland occurs on cutover between the high bog and an esker ridge. Dry woodland with Ash (*Fraxinus excelsior*) and Oak (*Quercus* sp.) occurs on the esker ridge in the extreme south of the site.

Current landuses on the site include peat-cutting and agriculture. Active peat-cutting is taking place all along the eastern and western margins of the high bog. Areas of cutover all around the site have been reclaimed for

agriculture, but there are only a few fields of improved grassland within the site. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog. 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.

Capira/Derrew 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. 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 Name: Carna Heath and Bog

Site Code: 001241

Carna Heath and Bog NHA is a mosaic of lowland blanket bog and heath habitat situated approximately 1.5 km east of Carna village along the Carna - Kilkieran road in Connemara, Co. Galway. It lies near sea level (altitude 8 m) and is located entirely within the townland of Rusheenamanagh. The northern, western and eastern margins of the site are bounded by a track and a minor road while the southern boundary is marked by the edge of enclosed agricultural land. The bedrock geology in this area is Galway granite.

The site comprises an intricate mosaic of small linear depressions, occupied by blanket bog. Granite outcrops are very frequent and bog development is confined to depressions between these outcrops. The site also contains a lake (Lough Duff), pools, rivers and streams, cutover bog and old walls.

Much of the lowland blanket bog is dominated by Common Cottongrass (*Eriophorum angustifolium*), with Bog Asphodel (*Narthecium ossifragum*), Purple Moor-Grass (*Molinia caerulea*), Cross-leaved Heath (*Erica tetralix*), White-beak Sedge (*Rhynchospora alba*), Round-leaved Sundew (*Drosera rotundifolia*) and bog mosses (*Sphagnum* spp.). Bog mosses reach almost complete cover in the wetter areas. The Royal Fern (*Osmunda regalis*) is found growing in the drains. On the drier rocky outcrops, the vegetation is more dominated by Ling Heather (*Calluna vulgaris*), with Western Gorse (*Ulex gallii*), St. Dabeoc's Heath (*Daboecia cantabrica*), Bell Heather (*Erica cinerea*), Carnation Sedge (*Carex panicea*), Green-ribbed Sedge (*Carex binervis*), Royal Fern, Hard Fern (*Blechnum spicant*), Heath Milkwort (*Polygala serpyllifolia*), Tormentil (*Potentilla erecta*) and Deergrass (*Scirpus cespitosus*). In the lee of large boulders Holly (*Ilex aquifolium*), Bilberry (*Vaccinium myrtillus*), Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosus*) also occur.

Lough Duff is surrounded by a quaking raft of vegetation dominated by bog mosses (*Sphagnum* spp.), with Bogbean (*Menyanthes trifoliata*), Marsh St. John's-wort (*Hypericum elodes*) and Royal Fern in the by the lake edge. The lake itself has emergent Pipewort (*Eriocaulon aquaticum*). The heath on the site is noted for the presence of Mackay's Heath (*Erica mackaiana*), an Irish Red Data Book species, which occurs in an area approximately 200 x 100 metres in size. In Ireland, Mackay's Heath is restricted to less than five, 10 km squares.

Former land use is evident from the old peat banks and drains on the site. The stream running from Lough Duff to Lough Sheedagh has recently been mechanically cleared and deepened and there are also some recent excavations within the site, north-east of Lough Duff. Current land use includes grazing by sheep and cattle. There is a small quarrying operation along the eastern margin of the site and dumping of excavated material, as well as of domestic appliances, occurs along the track to the north-east. There is also burning to clear Western Gorse from the low hills. These activities have resulted in habitat loss and damage to the hydrology of the site, and are a potential threat to its conservation.

Carna Heath and Bog NHA is a site of considerable conservation significance. It comprises a mosaic of heath, lake, pools and streams and supports a good diversity of blanket bog microhabitats, including hummock/hollow complexes, flushes and regenerating cutover. Blanket bog habitat is a globally scarce resource and is largely confined to coastal regions with cool, wet, oceanic climates at temperate latitudes. North-west Europe contains some of the best-developed areas of blanket bog in the world. Lowland blanket bog comprises less than 3% of the world's peatlands. In Europe this type of blanket bog is restricted to Ireland, Britain, Norway and Iceland. The lowland blanket bog that occurs in Ireland is considered to be an extreme hyperoceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of north-west Scotland.

9.12.2003

Site Name: Castle Ffrench East Bog

Site Code: 001244

Castle Ffrench East Bog is located 5km west of Ballyforan, mainly in the townlands of Castle Ffrench East and Gowla, Co. Galway. The site consists of a small, intact raised bog, situated in a region of intensive peat development. It can be accessed from local roads to the north and west. There are extensive areas of cutover peat to the south and east and along with Castle Ffrench West Bog to the south-west, this site represents the only intact raised bog habitat remaining in this region.

The site is a raised bog consisting of areas of both high bog and cutover. The high bog has active bog moss (*Sphagnum* spp.) growth and small pool systems to the north, west and east, some of which have dried out, indicating a lowering water-table. Two series of swallow-holes and two flushed areas are also present. There are also a number of overgrown drains to the north of the high bog. Flooded cutover, wet grassland and dry grassland occur around the margins of the high bog. There is also a small wet woodland and a small dry semi-natural woodland present on the site.

The high bog has vegetation typical of a Midland Raised Bog, dominated by Common Cottongrasses (*Eriophorum angustifolium*) and Deergrass (*Scirpus cespitosus*) with Ling Heather (*Calluna vulgaris*) and lichens (*Cladonia* spp.). The drier areas of the high bog to the west and south are dominated by Ling Heather and Bog-rosemary (*Andromeda polifolia*) is quite abundant especially in wetter areas towards the centre of the high bog along with the moss (*Campylopus atrovirens*). There is good regeneration of bog mosses here with *Sphagnum papillosum* and *S. capillifolium* (but no *S. imbricatum*) and the surface is quaking. The

northern pool system is the remnant of a much larger system with most of the pools drying out and containing algae. The small pool system to the west has pools filled with the bog moss *S. cuspidatum* and between the pools Carnation Sedge (*Carex panicea*) dominates with Deergass and Cottongrasses. There is little bog moss, but some unburnt Ling Heather hummocks are present.

In the east a tear pool system with a north-south alignment occurs close to the high bog margin. It is wet and quaking with the bog mosses (*S. cuspidatum* and *S. auriculatum*) and Sundew (*Drosera* spp.). A flush with Purple moor-grass (*Molinia caerulea*) and Bog Myrtle (*Myrica gale*) occurs to the north-east of the site with some small Birch (*Betula* spp.) also present. The flushed area to the south-west has a carpet of bog mosses (*Sphagnum* spp.) with Purple moor-grass, Bog Myrtle and abundant Cranberry (*Vaccinium oxycoccos*). This flush appears to be drying out due to drainage. A small natural drainage channel with swallow-holes occurs to the north of the site. Bilberry (*Vaccinium myrtillus*), Bog moss (*Sphagnum auriculatum*), Carnation Sedge and Hare's-tail Cottongrass (*Eriophorum vaginatum*) are present. Stunted Birch line this channel and Ling Heather with Lichen dominate the surrounding vegetation. A larger swallow-hole system occurs to the south-east of the high bog with tall Birch, Scots Pine (*Pinus sylvestris*), Holly (*Ilex aquifolium*) and Bilberry.

A dry semi-natural woodland with Oak (*Quercus* spp.), Hazel (*Corylus avellana*) and Holly occurs on a small mineral ridge to the south of the site and a small flooded Birch wood is present on cutover to the north-west. Dry grassland also occurs along the southern ridge and flooded cutover and wet grassland occur around the margins of the site. Some of the old cutover is wet with Purple moor-grass, Bog Myrtle and regenerating bog mosses.

Current landuse on the site consists of agriculture and mechanical peat-cutting to the north and north-west. Damaging activities associated with these landuses include drainage and burning. There is very little new drainage on the high bog, but large portions of the bog are being burnt at regular intervals with dead hummocks and burnt Ling Heather evident. 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. However the site is quite wet and some bog moss (*Sphagnum* spp.) regeneration is occurring and this will probably improve if burning stops. Some dumping also occurs by the roadside.

Castle Ffrench East Bog NHA is a site of considerable conservation significance comprising as it does a relatively intact 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 range of raised bog habitats including pool systems, flushes, swallow holes and is showing signs of active regeneration. The presence of woodland and dry grassland adds to the diversity of the site. 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.

14.11.02

Site Name: Derrinlough Bog

Site Code: 001254

Derrinlough Bog is situated 5km north-west of Moylough in the townlands of Derrinlough, Ballinphuill, Cloonkeen Oughter, Cuilmore, Cloonkeenleananode, Annaghbeg and

Annaghmore West, Co. Galway. It can be accessed from the Mount Bellew-Dunmore road (R328). The site consists of two main habitats raised bog and fen. The raised bog includes both areas of high bog and cutover. The fen occurs on the in-filled lake called Derrin Lough to the north of the site. There is wet woodland encroaching into the fen and scrub occurs on the old cutover. The site is bounded by agricultural grassland and an esker ridge borders the site to the north.

There are two lobes of high bog present separated by an esker ridge. The high bog has been damaged by drainage and afforestation with forestry planted on both lobes and adjacent cutover to the north of the site.

Much of the high bog has vegetation typical of a Western Raised Bog mainly dominated by Bog Cottons (*Eriophorum* spp.) and Deer grass (*Scirpus caespitosus*). The surface is quite wet and hummocks of bog moss (*Sphagnum capifolium*) are present but not abundant and Ling Heather (*Calluna vulgaris*) is quite sparse. There is no sign of burning with lichens (*Cladonia* spp.) quite abundant. Old relic hummocks are present with the moss *Racomitrium lanuginosum*. There are a few algal pools present with some bog moss *Sphagnum cuspidatum*. A number of small flushes with Common reed (*Phragmites australis*) and Purple Moor-grass (*Molinia caerulea*) occur on the bog surface. In the south-west there is a flush on the slope from the high bog dominated by Rushes (*Juncus* spp.), Common Reed, Purple Moor-grass and Bog Myrtle with Cranberry (*Vaccinium oxycoccos*) also present.

The conifer plantations on the high bog and cutover consist of Lodgepole Pine (*Pinus contorta*) and Sitka Spruce (*Picea sitchensis*). There is extensive cutover to the south where active peat-cutting occurs. In the western region of the site there is old cutover dominated by Purple Moor-grass and Soft Rush (*Juncus effusus*). Ling heather and regenerating bog mosses also occur here. Along the margin between the high bog and the stream there is a flush of Common Reed and Purple Moor-grass.

The fen occurs on the infilled lake called Derrin Lough and is dominated by Purple Moor-grass, Common Reed, Meadowsweet (*Filipendula ulmaria*) and Bog Myrtle (*Myrica gale*). The surface is very wet and quaking with some Saw Sedge (*Cladium mariscus*) dominating towards the centre. Hummocks of the bog moss *Sphagnum papillosum* are present, with the mosses *Calliergon cuspidatum* and *Polytrichum commune*. There is a nice transition between the high bog and fen with seepage from the high bog down a steep slope dominated by large Hare's-tail Cottongrass (*E. vaginatum*) and Ling Heather over bog mosses. There is Birch (*Betula* spp.) woodland encroaching into the fen.

Other habitats present include old cutover, Birch and Gorse (*Ulex europaeus*) scrub, wet Birch woodland and streams. Red Grouse, a bird that is declining in numbers, occur on this site.

Current landuse on the site comprise active peat-cutting and forestry. Damaging activities associated with these landuses include drainage and burning of the high bog. There are also conifer seedlings encroaching onto 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.

Derrinlough 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

diversity of raised bog microhabitats, including hummock/hollow complexes, as well as a number of scarce plant species. The close association between raised bog habitat and fen provides added ecological interest. 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.

14.11.02

Site Name: Derrynagran Bog and Esker

Site Code: 001255

Derrynagran Bog and Esker NHA is a small site situated 5km north of Moylough, mainly in the townlands of Cloonkeen Eighter, Derrynagran and Cloonagh, in east Co. Galway. This is a raised bog habitat with areas of high bog and cutover.

The high bog consists of one small very wet dome closely associated with two esker ridges to the south-west, one of which protrudes into the dome of the bog. The esker ridge supports species rich calcareous grassland and there is some scrub and deciduous woodland development in places.

Much of the high bog has vegetation typical of Western Midland Raised Bog with Carnation Sedge (*Carex panicea*), Deergrass (*Scirpus cespitosus*) and Cottongrass (*Eriophorum angustifolium*) with very little, scattered Ling heather (*Calluna vulgaris*). The high bog supports a notable variety of bog mosses (*Sphagnum* spp.) with *S. magellanicum* and *S. papillosum* present. The central area is very flat and somewhat quaking and supports a distinctive system of hummocks and pools with carpets of bog moss (especially *S. magellanicum*) extending from the edges. Some of these pools have large, actively-growing hummocks of the scarce bog moss, *S. imbricatum* particularly on islands which have escaped any fire damage. Cranberry (*Vaccinium oxycoccos*) occurs amongst the bog moss cover in places, indicating flush conditions. The scarce and localised plant Brown Beak-sedge (*Rhynchospora fusca*) is abundant in some of the pools.

The main area of cutover occurs to the east, this is a complex of banks and abandoned very wet cutover with regenerating bog mosses and Cottongrass. The lowland dry grassland on the steep-sided esker ridges is species-rich with abundant lime-loving plants such as Mountain Everlasting (*Antennaria dioica*) and Spring-sedge (*Carex caryophylla*), Carlina Thistle (*Carlina vulgaris*), Wild Thyme (*Thymus* sp.), Glaucous Sedge (*Carex flacca*) and many others. Several spikes of the Early Purple Orchid (*Orchis mascula*) are also present. The sward is very closely grazed with 100% cover. In many places Ling Heather occurs indicating less calcareous soil.

Dry, semi-natural woodland occurs on some of the slopes of the eskers, consisting mainly of Hazel (*Corylus avellana*), with some Ash (*Fraxinus excelsior*) and the occasional large Oak tree (*Quercus* sp.). The ground flora is diverse where not trampled by stock. In the south-west corner a small turlough-like pond with a stony shore occurs in a steep-sided amphitheatre of eskers. Part of the esker ridge is heavily improved grassland, but it is included to preserve the hydrology of the site. In a zone between the bog and the eskers there is a species-rich flooded fen grassland with low-growing sedge species such as Yellow Sedge (*Carex flava* agg). This is a possible remnant of a lagg zone which naturally surround raised bogs and are now very rare due to drainage and turf cutting.

Red Grouse, a species that is becoming increasingly rare in Ireland has been recorded on the site.

Current landuse on the site consists of mechanical peat-cutting along the north-west margins. Grazing activities along the margins between esker and bog has lead to poaching damage in this area. Damaging activities associated with this landuse include drainage and burning. Fire damage has been recorded in the 1980s and more recently in a small section along the bog margins. 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.

Derrynagran Bog and Esker NHA is a site of considerable conservation significance comprising of raised bog, a rare habitat in the E.U. and one that is becoming increasingly scarce and under threat in Ireland. This high bog supports a good diversity of raised bog microhabitats including some hummock/hollow complexes and pools. The site shows a transition from bog to esker (both of good quality) including a possible lagg zone, which considerably increases its overall scientific value. 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.

14.11.02

Site Name: Eskerboy Bog

Site Code: 001264

Eskerboy Bog NHA is situated approximately 4 km north-west of Killimor, Co. Galway, mainly in the townlands of Eskerboy, Gortknappagh and Lurgan More. The site comprises a long, narrow raised bog with areas of high bog and cutover, which lies between two esker ridges.

The site has a typical raised bog topography with a small, low domed area in the bog centre, with infilling pools. Three flushes occur, one along the southern margin of the high bog the other two towards the central area. Habitat diversity is increased with the presence of Downy Birch (*Betula pubescens*) scrub, in association with the central flush. Narrow bands of abandoned cutover occur along the southern and northern bog margins.

This is a typical example of the Western/Midland Raised Bog Type, with vegetation consisting of Bog Asphodel (*Narthecium ossifragum*), Ling Heather (*Calluna vulgaris*), Hare's-Tail Cottongrass (*Eriophorum vaginatum*), Deergrass (*Scirpus cespitosus*) and Carnation Sedge (*Carex panicea*). Cranberry (*Vaccinium oxycoccos*) has been recorded from the site. The central area of the high bog has pools infilling with Hare's-Tail Cottongrass and there is a good cover of bog mosses (*Sphagnum magellanicum*, *S. capillifolium*, *S. auriculatum* and *S. fuscum*). Purple Moor-grass (*Molinia caerulea*), Bog-myrtle (*Myrica gale*) and Gorse (*Ulex europaeus*) are found in association with the two small flush areas to the south and centre of the site. The larger flush to the centre of the high bog supports a small grove of scattered Downy Birch. Abandoned cutover areas are dominated by Gorse to the north, with abundant Purple Moor-grass in the southern cutover margins.

Current landuse on the site comprises peat-cutting on the eastern and western sides. There has been very limited peat-cutting to the north and south, where a narrow band of cutover separates the high bog from adjoining esker ridges. To the south-east and north-east the cutaway has been

reclaimed for agriculture. Damaging activities associated with this landuse include drainage and burning. Drainage has led to drying out of the bog surface; however, no recent drains are evident on the site. Fire damage was recorded in the 1980s and 1990s – this has led to an abundance of Bog Asphodel. However, the presence of bog mosses and regenerating Ling Heather indicates recovery of the bog surface in some areas. 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.

Eskerboy 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. The site supports a diversity of raised bog microhabitats including pools and flushes; the presence of Birch scrub adds to the diversity and scientific value of the site. 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.

18.11.2002

Site Name: Killaclogher Bog

Site Code: 001280

Killaclogher Bog NHA is situated about 5 km north-east of Monivea, mainly in the townlands of Abbert Demesne and Carrowmore, in Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog, and an in-filled lake. It is bordered along its eastern side by the Killaclogher River, and on the western side by a small stream.

Killaclogher Bog consists of four main lobes, separated from each other by a network of tracks and areas of cutover peat. There are wet areas with some pools in the most southern lobe of the site, but for the most part the bog is uniform with only shallow hollows, which are often filled with algae. A small stream rises at the pool area and flows north-westwards a short distance before it flows into the cutover. Another larger stream exists between the most southern lobe and the one above it, which drains from the bog into the Killaclogher River. A number of interesting flushes occur on the cutover areas at the west of the site. These appear to be linked to the in-filled lake to the north. Some of the cutover areas around the bog are still actively cut, but most have been abandoned or reclaimed for agriculture. There are a number of areas of coniferous forestry at the south and north of the site.

The high bog at Killaclogher possesses many of the species typical of Western Raised Bogs in Ireland, with species such as Ling Heather (*Calluna vulgaris*), Bog Asphodel (*Narthecium ossifragum*), Carnation Sedge (*Carex panicea*), many bog mosses (*Sphagnum* spp.) and the liverwort *Pleurozia purpurea*. The wettest area occurs in the most southern lobe of the site, where pools and hummock/hollow systems are found in association with wet, spongy bog moss mats. Species found in the pools include the bog moss *Sphagnum cuspidatum*, Bogbean (*Menyanthes trifoliata*) and Common Cottongrass (*Eriophorum angustifolium*). Species such as Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*) are frequently found on the hummocks. The remainder of the bog is quite uniform, having been damaged by fire on a number of occasions. The vegetation consists mainly of Ling Heather, Cross-leaved Heath (*Erica tetralix*), Bog Asphodel, Carnation Sedge, Deergrass (*Scirpus cespitosus*) and Common Cottongrass.

Algal hollows are common and regenerating hummocks of the bog mosses *S. capillifolium* and *S. imbricatum* can be found. A number of flushed areas occur on the cutover at the west of the site, which may be linked to the in-filled lake to the north.

The site supports an important colony of the Marsh Fritillary butterfly, a species listed on Annex II of the E.U. Habitats Directive.

Current landuse on the site consists of peat-cutting around many of the margins of the high bog and along the numerous tracks which cross the site, and the drainage associated with this. Large portions of the bog have been severely burnt in the past. Areas of cutover bog have been reclaimed for agricultural purposes, and a number of areas at the south and north of the site have been planted with coniferous forestry. 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.

Killaclogher 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. 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.

16.03.2006

Site Name: Killure Bog

Site Code: 001283

Killure Bog NHA is situated approximately 2 km north-west of Ballinasloe, in the townlands of Killure Castle and Killcloony, County Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog. The bog is bisected by a road. The eastern margin of the site is bounded by the Bunowen River, while the west, north and south of the bog are bounded mainly by local access roads.

The site consists of two sections of high bog. The western section comprises an area of quaking bog with hummocks and pools occurring in the centre. There is a flush on the eastern margin of the western section. Two other flushes appear on the aerial photographs. The eastern section has been afforested. Cutover and drainage channels occur all around the margins of the high bog.

Much of the high bog has vegetation typical of a Midlands Raised Bog. The vegetation consists of Ling Heather (*Calluna vulgaris*) frequent to abundant Bog Asphodel (*Narthecium ossifragum*), Deergrass (*Scirpus cespitosus*) and Cottongrass (*Eriophorum vaginatum*). The western indicator Carnation Sedge (*Carex panicea*) occurs to the east of the western subsection. Midland indicators present at the site include Cranberry (*Vaccinium oxycoccos*) and the bog moss (*Sphagnum magellanicum*). Other bog mosses present include *Sphagnum papillosum*, hummock-forming *S. fuscum* and *S. imbricatum*.

The central area of the western high bog is quaking, with large and small pools with open water and large areas of bog mosses *Sphagnum cuspidatum* and *S. auriculatum* and between the pools a wide variety of other bog mosses are present. Great Sundew (*Drosera anglica*) and Oblong-leaved Sundew (*D. intermedia*) are also present in pools. The pools become larger and interlocking in the south-east of this area and become more like a quaking flush with large

carpets of Sphagnum between pools including *Sphagnum magellanicum* and vigorous *S. papillosum*. There is an extensive flush area in the mid-east of the high bog. It consists of scattered and sometimes dense Downy Birch (*Betula pubescens*).

Current landuse on the site consists of peat-cutting around the southern edge of the high bog and forestry. Areas of cutover have been reclaimed for agricultural purposes. Peat-cutting on the site has also increased in area and intensity within the last decade through the use of mechanised methods for peat extraction. Damaging activities associated with these landuses include drainage throughout the site (both old and recent) and extensive burning of the high bog. Forestry on the high bog is reaching maturity and should be harvested soon. 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.

Killure 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 hummock/hollow complexes, pools and flushes, 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.

15.11.2002

Site Name: Moorfield Bog

Site Code: 001303

Moorfield Bog NHA is located 4 km west of Eyrecourt on the Ballinasloe-Portumna road (R355). It is situated in the townlands of Craughwell, Feaghbeg, Moorfield (Gortnamona), Cloonnamaskry and Raheen in east County Galway. It can be accessed by a bog track, from the R355, to the north-east of the site.

The site consists of a raised bog with a single dome of high bog and associated cutover. The main features of interest are the pools, flushes and wetter areas of the high bog. Towards the centre of the high bog, there is a good though somewhat limited pool system and a large flush is present in the north of the high bog. Two smaller flushes occur further south.

The high bog has vegetation typical of a Western Raised Bog, dominated by Ling Heather (*Calluna vulgaris*) and Hare's-tail cottongrass (*Eriophorum vaginatum*), with the moss *Campylopus atrovirens* and liverwort *Pleurozia purpurea*. The high bog is quite wet with a good cover of bog mosses (*Sphagnum* spp.). Bog Asphodel (*Narthecium ossifragum*) is present and Bog Myrtle (*Myrica gale*) forms large clumps in places. The dried out marginal areas have little moss cover and are dominated by Ling Heather. Towards the centre of the high bog, there is a pool system with some pools containing algae. However, there are also wet and quaking areas with long tear pools filled with bog mosses (*Sphagnum cuspidatum* and *S. auriculatum*). Species associated with these pools include White Beak-sedge (*Rhynchospora alba*), Brown-Beak-sedge (*R. fusca*), Bogbean (*Menyanthes trifoliata*) and Great Sundew (*Drosera anglica*). The hummock forming bog mosses *Sphagnum tenellum*, *S. capillifolium* and *S. papillosum* are also present. The rare bog moss *S. pulcrum* has been recorded on this

raised bog and may still be present in the wetter areas at the centre of the site.

Additional habitat diversity is represented by the flushes, where the following species were recorded: Bog Myrtle, Black Bog-rush (*Schoenus nigricans*), Cranberry (*Vaccinium oxycoccos*), Crowberry (*Empetrum nigrum*), Purple Moor-grass (*Molinia caerulea*), Common Reed (*Phragmites australis*) and Saw Sedge (*Cladium mariscus*). The large flush to the north of the high bog is dominated by Purple Moor-grass and some Saw Sedge. Bog-rosemary (*Andromeda polifolia*) is common here. A smaller flush occurs to the south of the track with Purple Moor-grass and Downy Birch (*Betula pubescens*). Another small flush dominated by Common Reed occurs to the south-east with tall Ling Heather, Common Cottongrass (*Eriophorum angustifolium*) and Carnation Sedge (*Carex panicea*) also present.

There is cutover around most of this site with extensive peat-cutting in the west. Along the eastern margin there has also been some peat-cutting, but this is not as extensive. To the south there is old cutover dominated by Ling Heather with some Gorse (*Ulex europaeus*) and Birch scrub. To the north and north-west, there are a number of reclaimed fields of wet grassland on cutover. An area of dry grassland associated with a mineral ridge to the east is also included in the site. Gorse scrub grows on either side of the bog trackway and Birch scrub occurs on old cutaway to the south. Some of the ditches on the cutover contain Bulrush (*Typha latifolia*), Pondweeds (*Potamogeton* spp.) and other aquatic plants, which reveal the groundwater influence in these locations. Gravel deposits occur in the north-west where they can be seen at the base of the drains, indicating that the peat is shallow in this vicinity.

Current landuse on the site consists of agricultural reclamation of old cutover and peat-cutting around the edge of the high bog. Damaging activities associated with this include drainage and burning, with large portions of the bog being 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. There is a small hill to the north, which is being partially quarried for gravel. Dumping of household appliances and agricultural waste has also been noted on this site.

Moorfield 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 wide range of raised bog habitats including a pool system and flushes, which along with the possible presence of the rare bog moss (*Sphagnum pulcrum*), add to the scientific interest of this site.

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.

15.11.02

Site Name: Annaghbeg Bog

Site Code: 002344

Annaghbeg Bog NHA is located 5 km south-east of Ahascragh, mostly in the townlands of Addergoole West, Addergoole North, Gortbrackmoor and Annaghbeg in Co. Galway. The site comprises a raised bog that includes both areas of high bog and cutover bog.

This raised bog was originally part of an extensive system of bogs that, with the exception for Annaghbeg, have now been cutover. Annaghbeg Bog is in close proximity to Crit Island NHA (254) and Killure Bog NHA (1283). Although this bog has no pools it is wet and quaking in places with hummocks throughout the high bog. Cutover is found all around the high bog.

Much of the high bog has vegetation typical of a Midland Raised Bog, consisting of Ling Heather (*Calluna vulgaris*), Deergrass (*Scirpus cespitosus*), Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*). The vegetation on the bog is uniform and dominated by Carnation Sedge (*Carex panicea*), Deergrass, Bog Asphodel (*Narthecium ossifragum*) and White Beak-sedge (*Rhynchospora alba*). Close to the centre of the bog the surface is wet and quaking, bog moss cover is at its highest and Bogbean (*Menyanthes trifoliata*) is present. Hummocks of the bog mosses *Sphagnum capillifolium* and *S. papillosum* are common and *S. magellanicum* is also frequent, the hummock forming bog moss *S. imbricatum* was less common. Away from the centre of the bog *Sphagnum* cover is low. Bog Asphodel dominates to the south of the site, in areas that have been recently burnt, and towards the south-east Ling Heather becomes more dominant on dryer hummocks. In the east of the site there is an old townland boundary drain that is in-filled with the aquatic bog moss *S. cuspidatum*, Bog Asphodel and White Beak-sedge. In the adjacent drain Sundew (*Drosera* sp.) was also recorded. The high bog is surrounded by cutover, much of which has been reclaimed as agricultural grassland, however small areas in the east and north-west have patches of Gorse (*Ulex* sp.) scrub.

Common frog, a species listed in the Red Data Book, has been recorded on the site.

Current landuses on the site include peat-cutting and agriculture. Active peat-cutting is taking place in the west and south of the site. The cutting in the south seems to be more intensive and commercial. Areas of cutover all around the bog have been reclaimed for agriculture and much of the grassland seems to have been improved. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog. 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.

Annaghbeg 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. 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.
20.11.2002

Site Name: Moycullen Bogs

Site Code: 002364

Moycullen Bogs NHA is an extensive lowland blanket bog located 5 km west of Galway City in Co. Galway. To the west it is largely bounded by the Spiddle - Moycullen Road (some areas west and north-west of this road are, however, included), to the north and east by the Galway - Moycullen road and to the south by the Galway - Spiddle road. It has

an altitude range of between 40 m and 143 m and is primarily underlain by granite bedrock. Several lakes and streams are contained in the site as well as large areas of wet and dry heath, fens and flushes and revegetating cutaway.

The main habitat on the site is blanket bog, usually dominated by Purple Moor-grass (*Molinia caerulea*), Cross-leaved Heath (*Erica tetralix*) and Ling Heather (*Calluna vulgaris*). Other species present include Common Cotton-grass (*Eriophorum angustifolium*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Bog Asphodel (*Narthecium ossifragum*), Black-bog Rush (*Schoenus nigricans*), Tormentil (*Potentilla erecta*), Heath Milkwort (*Polygala serpyllifolia*), Deergrass (*Scirpus cespitosus*), Carnation Sedge (*Carex panicea*) and Bog-myrtle (*Myrica gale*). Bog mosses present include *Sphagnum papillosum*, *S. imbricatum* and *S. capillifolium* with mosses *Hypnum cupressiforme*, *Racomitrium lanuginosum* and *Leucobryum glaucum* and the liverwort *Odontoschisma sphagnii*. The lichen *Cladonia portentosa* also occurs.

Extensive pool systems are found at Laughill. These are interspersed with lawns of White Beak-sedge (*Rhynchospora alba*), Bog Asphodel, mosses (*Campylopus atrovirens* and *C. introflexus*), Lousewort (*Pedicularis sylvatica*) and hummocks of the moss *Racomitrium lanuginosum*. Pool vegetation includes Bogbean (*Menyanthes trifoliata*), Bladderwort (*Utricularia* spp.), Oblong-leaved Sundew (*Drosera intermedia*), Great Sundew (*Drosera anglica*), Round-leaved Sundew, Common Cotton-grass, and the bog moss *Sphagnum auriculatum*. A number of the pools have islands supporting Ling Heather, Purple Moor-grass, Deergrass, Cross-leaved Heath and bog mosses. Other species in pools elsewhere throughout the site include Bog Pondweed (*Potamogeton polygonifolius*) and the bog mosses *Sphagnum cuspidatum* and *S. recurvum*.

Flushed areas of bog are indicated by the dominance of Bog-myrtle, Purple Moor-grass, Tormentil, Devil's-bit Scabious (*Succisa pratensis*) and Black Bog-rush. Other species in the flushes include cottongrasses, Lousewort, Bogbean, Marsh St. John's-wort (*Hypericum eloides*), Sharp-flowered Rush (*Juncus acutiflorus*), Star Sedge (*Carex echinata*), Bottle Sedge (*Carex rostrata*), Water Horsetail (*Equisetum fluviatile*), Marsh Horsetail (*Equisetum palustre*) and Royal Fern (*Osmunda regalis*). The rare and protected Slender Cottongrass (*Eriophorum gracile*) is found within the site at Tonabrocky. A notable feature of this site is the extensive areas of flushed blanket bog near Knock River dominated by Common Reed (*Phragmites australis*).

There are two large lakes, Lough Inch and Lough Kip, within the site. Their shoreline vegetation is dominated by Purple Moor-grass and Bog-myrtle with varying amounts of Devil's-bit Scabious, Lesser Spearwort (*Ranunculus flammula*), Creeping Bent (*Agrostis stolonifera*), Marsh Ragwort (*Senecio aquaticus*), Marsh Pennywort (*Hydrocotyle vulgaris*), Selfheal (*Prunella vulgaris*), Autumn Hawkbit (*Leontodon autumnalis*) and Royal Fern also present. Many smaller lakes are scattered throughout the site, often with quaking margins and extensive rafts of bog mosses and Oblong-leaved Sundew. Typical vegetation includes Common Reed, Bogbean, Bog-myrtle, Marsh St. John's-wort, Bottle Sedge, White Water-lily (*Nymphaea alba*), Tormentil, Heath Milkwort (*Polygala serpyllifolia*) and Marsh Violet (*Viola palustris*). Great Fen-sedge (*Cladium mariscus*) is also frequent and forms large stands at Loch an Amadain.

Other habitats present within the site include areas of wet heath, along the summits of low knolls, dominated by Deergrass, Ling, Cross-leaved Heath, Purple Moor-grass, Bog Asphodel, cottongrasses and Lousewort. Areas of dry heath

area found on rocky hillocks that outcrop from the surrounding blanket bog in and around the access road to Lough Kip. These are vegetated with Autumn Gorse (*Ulex gallii*) with frequent Ling, Cross-leaved Heath and occasional Bell Heather (*Erica cinerea*), Tormentil, Purple Moor-grass and St. Dabeoc's Heath (*Daboecia cantabrica*). Additional species noted include Bog-myrtle, Bracken (*Pteridium aquilinum*), Honeysuckle (*Lonicera periclymenum*), hummocks with lichen *Cladonia portentosa*, Purple Moor-grass, Common Cotton-grass, Bilberry (*Vaccinium myrtillus*) and Bearberry (*Arctostaphylos uva-ursi*). Areas of dry heath often merge with Willow (*Salix* spp.) and Gorse (*Ulex europaeus*) scrub. Drainage ditches are vegetated with bog mosses (*Sphagnum* spp.), Bogbean, Bog Pondweed, Water Horsetail, Devil's-bit Scabious, Sharp-flowered Rush, Round-leaved Sundew and Meadowsweet.

The site supports Irish Red Data Book species Red Grouse and several additional notable species of fauna including Irish Hare, Common Frog, Snipe, Curlew, Fox, Kestrel and Lapwing.

Peat cutting (both mechanical and hand) is the dominant land use at present, while grazing pressure by donkey, cattle and ponies is low but locally damaging. Sheep appear to be absent. There are a number of quarries within the site – notably at Derrycrigh. A golf course has been constructed on the north side of Lough Inch and a small pitch and putt course has been established on the southern shores of the lake. There has been some burning of the bog surface in the recent past and conifer plantations have been planted in the centre and eastern area of the site. Due to the proximity of the site to Galway City there is increasing pressure from housing development (typically single dwellings). Development of wind energy installations is also a potential threat.

Moycullen Bogs NHA is an extensive area of lowland blanket bog in an area of high landscape beauty. The site supports a diversity of habitats including large areas of intact blanket bog, wet heath, dry heath, alkaline fen and revegetating cutaway. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions with cool, wet, oceanic climates at temperate latitudes. North-west Europe contains some of the best-developed areas of blanket bog in the world. Lowland blanket bog comprises less than 3% of the world's peatlands. In Europe this type of blanket bog is restricted to Ireland, Britain, Norway and Iceland. The lowland blanket bog that occurs in Ireland is considered to be an extreme hyperoceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of north-west Scotland.

29.6.2005

Site Name: Cloon and Laghtanabba Bog

Site Code: 002374

Cloon and Laghtanabba Bog NHA is a lowland blanket bog situated approximately 8 km north-west of Clifden and 3 km south-east of Cleggan in Connemara, Co. Galway. Most of the site is located within the townlands of Laghtanabba and Maw but a part lies within Cushatrough and Caen townlands. The north-eastern margin of the site is bounded by the Clifden-Cleggan road, the western margins by a stream and fence-line, the eastern margin by a stream while the southern boundary follows a section of a townland boundary. The site covers a narrow altitude range of between 57 m and 61 m. Bedrock geology in this area consists of schist and gneiss.

The site consists of an extensive plain of intact lowland blanket bog on deep peat with pool systems, quaking scraw, lawns of White Beaked-sedge (*Rhynchospora alba*) and hummock-hollow complexes. The blanket bog area is bounded on the south-west by low hills covered with heath and acid grassland vegetation. Other habitats occurring are streams and lakes, flushes, cutover bog and rock outcrops. There is a system of concentric pools in the western part of the site that is bounded by the foothills of Barnahallia Hill to the north-west.

Much of the bog has a well-developed hummock-hollow system. The vegetation is characterised by tussocks of Black Bog-rush (*Schoenus nigricans*) and lawns of White Beak-sedge. Small hummocks of the moss *Racomitrium lanuginosum* occur throughout the site. The bog surface is quaking in parts and species found in such areas include Bog Asphodel (*Narthecium ossifragum*), Cross-leaved Heath (*Erica tetralix*), Ling Heather (*Calluna vulgaris*), Tormentil (*Potentilla erecta*), Round-leaved Sundew (*Drosera rotundifolia*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), White Beak-sedge, Bog-myrtle (*Myrica gale*), Bogbean (*Menyanthes trifoliata*), Great Sundew (*Drosera anglica*), the liverwort *Pleurozia purpurea* and the mosses *Campylopus atrovirens*, *C. introflexus* and *C. paradoxus*. Pale Butterwort (*Pinguicula lusitanica*), a locally occurring species is also found on the site. In the very wet quaking scraw areas, there is almost complete cover of bog mosses (*Sphagnum* spp.) with some Common Cottongrass (*Eriophorum angustifolium*) and Purple Moor-grass (*Molinia caerulea*).

There are areas of regenerating bog vegetation on cutover blanket peat towards the north of the site where pools and wet hollows are colonised by bog mosses. Other species on the regenerating cutover include Ling Heather, Common Cottongrass, Hare's-tail Cottongrass, White Beak-sedge, Black Bog-rush, Purple Moor-grass, Cross-leaved Heath, Carnation Sedge (*Carex panicea*), Round-leaved Sundew and mosses *Hypnum jutlandicum* and *Dicranum scoparium*. On very wet parts of the regenerating cutover the vegetation is dominated by Black Bog-rush, with Cross-leaved Heath, Bog-myrtle and Royal Fern (*Osmunda regalis*). Lichens (*Cladonia* spp.) occur over the entire site.

Pool systems are found in the south-eastern and north-western parts of the site. The pools support a rich cover of bog mosses. The bog surface here is a quaking scraw or floating mat of vegetation. Species noted include Black Bog-rush, Bogbean, Oblong-leaved Sundew (*Drosera intermedia*), White Beak-sedge, Bog Asphodel, Lousewort (*Pedicularis sylvatica*) and the lichen *Cladonia portentosa*. A mat of algae (*Zygogonium* agg.) occurs in the pools.

The headwater of a stream rises within the site. The vegetation reflects an up welling of water and species noted here include Common Reed (*Phragmites australis*), Black Bog-rush, Bog-myrtle, Purple Moor-grass, Bog Pimpernel (*Anagallis tenella*) and Cross-leaved Heath. The wetter and open water areas support Bog Pondweed (*Potamogeton polygonifolius*), bog moss *Sphagnum auriculatum* and Bladderwort (*Utricularia* spp.). A lake situated along the eastern boundary of the site is colonised by White Water-lily (*Nymphaea alba*) and Bogbean, with Royal Fern growing on its margins. An extensive flush is found in the centre-west of the site. This flush has open surface water and a quaking scraw of vegetation. The peat is very deep and species noted include Common Reed, Bogbean, Bog-myrtle, Black Bog-Rush, Cross-leaved Heath, Purple Moor-grass, Bog Asphodel and Bog Pondweed.

On the low hills and rock outcrops, vegetation consists of heath and is characterised by Western Gorse (*Ulex gallii*), Ling Heather and Purple Moor-Grass. Although these low hills support a more heath-type vegetation, Black Bog-rush and Bog Asphodel still occur.

Red Grouse and Irish Hare, both Red Data Book species, are recorded on the site.

Current landuse on the site consists of peat cutting and grazing by sheep, cattle and ponies.

Cloon and Laghtanabba Bog NHA is a site of considerable conservation significance consisting of lowland blanket and supporting a good diversity of blanket bog microhabitats, including hummock-hollow complexes, aligned pools systems, flushes, stream headwaters and regenerating cutover. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions with cool, wet, oceanic climates at temperate latitudes. North-west Europe contains some of the best-developed areas of blanket bog in the world. Lowland blanket bog comprises less than 3% of the world's peatlands. In Europe this type of blanket bog is restricted to Ireland, Britain, Norway and Iceland. The lowland blanket bog that occurs in Ireland is considered to be an extreme hyperoceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of north-west Scotland.

24.2.2004

Site Name: Lough Atorick District Bogs

Site Code: 002377

Lough Atorick District Bogs NHA is a cluster of seven, primarily upland, blanket bogs situated in the area around Lough Atorick in the Slieve Aughty Mountains, Co. Clare. The bogs are located in the townlands of Slievanore, Derrycnaw and Drummin and are bounded by forestry plantations, agricultural lands and roads. These bogs have developed in deep basins, within a blanket bog landscape, and have vegetation characteristics intermediate between raised bog and blanket bog. Altitude range within the site is between 90 m and 213 m. Bedrock geology is Old Red Sandstone.

The sites consist of a series of raised domes of peat surrounded by fringes of regenerating cutover peat and regenerating peat banks. The site also contains reedbeds as well as quaking areas, hummock/hollow complexes and heath habitat. The blanket bog vegetation is dominated by Deergass (*Scirpus cespitosus*), Cross-leaved Heath (*Erica tetralix*) and Bog Asphodel (*Narthecium ossifragum*), with abundant Hare's-tail Cottongrass (*Eriophorum vaginatum*) and occasional Ling Heather (*Calluna vulgaris*). The hollows are dominated by White Beak-sedge (*Rhynchospora alba*), with Bog Asphodel and Cross-leaved Heath. Characteristic raised bog species, such as Bog Rosemary (*Andromeda polifolia*) and Cranberry (*Vaccinium oxycoccos*), are frequent. Additional species found include Common Cottongrass (*Eriophorum angustifolium*) and the characteristic blanket bog liverwort *Pleurozia purpurea*. Lichens *Cladonia portentosa* and *C. uncialis* are also present as hummocks. There are wefts of moss *Hypnum jutlandicum* growing prostrate over hummocks of bog mosses (*Sphagnum* spp.). Common Reed (*Phragmites australis*) occurs in stands throughout the site.

Irish Red Data Book species Red Grouse, a species that is becoming increasingly rare in Ireland, has been recorded on

the site and Hen Harrier are known to use the site and hunt in the area.

Current landuse on the site consists of peat cutting, around the edge of the high bog, and forestry. Threats to the site include potential hydrological impacts from surrounding coniferous forestry. Lodgepole Pine (*Pinus contorta*) is colonising the bog surface. Clay pigeon shooting occurs. Damaging activities associated with these land uses include drainage and disturbance of local populations of important species. These are activities that have resulted in habitat loss and damage to the hydrological condition of the site and pose a potential threat to its conservation.

Lough Atorick District Bogs NHA is a site of considerable conservation importance containing upland blanket bog with intermediary characteristics between blanket and raised bog types. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.

24.2.2004

Site Name: Derryoobar Bog

Site Code: 002379

Derryoobar Bog NHA is a lowland blanket bog situated approximately 2 km east of Lough Derg and 5 km south of Woodford in east Co. Galway. It lies within the townlands of Derrygoolin South, Derrygoolin North, Derryoobar West and Coos North. The site contains an extensive area of lowland blanket bog that has formed in depressions between low-lying hills and lies between an altitude range of 50 m to 100 m. It is bounded to the north by forestry and a minor track, to the east by minor roads and enclosed agricultural land, to the south by the Coos River and commercial forestry and to the west by enclosed agricultural land and a minor track. The bedrock geology consists of Old Red Sandstone.

A number of streams run through the site and drain into Lough Derg. A former lake, Black Lough, is now overgrown by a reed bed. The hill of Coos North provides a watershed and the bog at Derrygoolin South is a headwater bog.

Blanket bog vegetation is dominated by Cross-leaved Heath (*Erica tetralix*), Purple Moor-grass (*Molinia caerulea*), Ling Heather (*Calluna vulgaris*) and Bog-myrtle (*Myrica gale*). There are frequent hummocks of bog mosses (*Sphagnum* spp.) with Round-leaved Sundew (*Drosera rotundifolia*). There are also hummocks of the moss *Leucobryum glaucum* with Hare's-tail Cottongrass (*Eriophorum vaginatum*). Between the hummocks are lawns of White Beak-sedge (*Rhynchospora alba*), Bog Asphodel (*Narthecium ossifragum*), Carnation Sedge (*Carex panicea*), Deergass (*Scirpus cespitosus*) and Many-stalked Spike-rush (*Eleocharis multicaulis*). Other species include Common Cottongrass (*Eriophorum angustifolium*).

On the low hills with shallower peat, the vegetation is dominated by Ling Heather with Deergrass, Purple Moor-grass, Cross-leaved Heath, Tormentil (*Potentilla erecta*), Common Cottongrass, lichen *Cladonia portentosa* and scattered bushes of Bog-myrtle and Western Gorse (*Ulex gallii*).

There are pools towards the south east of the site, close to the Coos River. These pools support Brown Beak-sedge (*Rhynchospora fusca*), Oblong-leaved Sundew (*Drosera intermedia*), Common Cottongrass and the bog moss *Sphagnum auriculatum*. Lawns of White Beak-sedge, Cross-leaved Heath and Sharp-flowered Rush (*Juncus acutiflorus*) surround the pools.

Red Grouse, an Irish Red Data Book species, has been recorded on the site.

Current landuse on the site consists of grazing and burning. In the south-east, just north of the Coos River, there are excavation scars and evidence of cattle poaching close to the track. The land to the north and south of this is afforested with conifer plantations. This could have an adverse effect on the hydrology of the site and on the water quality of Lough Derg as the bog provides a catchment through which several streams flow into the lake.

Derryoover Bog NHA is a site of high conservation value supporting excellent blanket bog habitat. Blanket bog is a globally scarce resource. It is largely confined to coastal regions with cool, wet, oceanic climates at temperate latitudes. North-west Europe contains some of the best-developed areas of blanket bog in the world. Lowland blanket bog comprises less than 3% of the world's peatlands. In Europe this type of blanket bog is restricted to Ireland, Britain, Norway and Iceland. The lowland blanket bog that occurs in Ireland is considered to be an extreme hyperoceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of north-west Scotland.

24.2.2004

Site Name: Oughterard District Bog

Site Code: 002431

Oughterard District Bog NHA contains a relatively large area of lowland and upland blanket bog extending from Corkernarusheeny in the north to Uggool in the south. It is located to the south-west of Oughterard, Co. Galway. The altitude range is between 80 m and 291 m. Bedrock geology is granite and sandstone, overlain in places by shallow glacial till.

The site consists of a number of hills, Clooshgreen, Knocknalee and Luggakeeraunin. In between the hills are stream corridors, flushed areas, lakes and pool systems. Heath is present on the slopes of some of the hills.

Much of the site has typical blanket bog vegetation, consisting of Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), cottongrasses (*Eriophorum* spp.), Carnation Sedge (*Carex panicea*) and occasional Black Bog-rush (*Schoenus nigricans*). Hummocks of moss species *Racomitrium lanuginosum* and *Camplypopus atrovirens* occur. Bog mosses (*Sphagnum* spp.) form a spongy mat in places and lichens (*Cladonia* spp.) occur in abundance. There are wetter areas where the bog mosses increase cover up to fifty percent and Bog-myrtle (*Myrica gale*) becomes more dominant.

The areas of quaking bog have a characteristic hummock and hollow topography. The hummocks are formed of bog mosses including *S. papillosum* and *S. capillifolium*. Extensive lawns of bog mosses, *Pleurozium schreberi*, White Beak-sedge (*Rhynchospora alba*), Bog Asphodel (*Narthecium ossifragum*) and cottongrasses dominate the hollows. A flush area at the northern part of the site consists of a depression with open water, the margins of which are infilling with Common Reed (*Phragmites australis*). Other species present in the margins include Great Fen-sedge (*Cladium mariscus*), Black Bog-rush, Purple Moor-grass (*Molinia caerulea*) and Bogbean (*Menyanthes trifoliata*).

A pool system occurs at the southern part of the site. Bog Asphodel and White Beak-sedge occur on the flats where the water level has dropped. Bogbean and algae dominate the pools. The cover of bog mosses is good on the margins of the pools and hummocks are dominated by the moss *Racomitrium lanuginosum* along with Ling Heather and Cross-leaved Heath.

Red Grouse, a Red Data Book species, has been recorded on the site.

Current landuse on the site consists of mechanical peat cutting and grazing. Forestry occurs adjacent to the site. Damaging activities associated with these land uses include drainage and periodic burning of the bog. Some areas are heavily grazed by sheep and cattle and are poached and bare. These developments have resulted in loss of habitat and have impacted on the bog's hydrology. They may continue to pose a threat to the site's conservation prospects.

Oughterard District Bog NHA is a site of considerable conservation significance. It contains upland and lowland blanket bog features including pools, flushes and areas of heath. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management. Lowland blanket bog comprises less than 3% of the world's peatlands. In Europe this type of blanket bog is restricted to Ireland, Britain, Norway and Iceland. The lowland blanket bog that occurs in Ireland is considered to be an extreme hyperoceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of north-west Scotland.

21.1.2004

Site Name: Tooreen Bog

Site Code: 002436

Tooreen Bog NHA is a lowland blanket bog situated approximately 2 km south-east of Cleggan and 6.5 km to the west of Letterfrack, Co. Galway. It is situated within the townlands of Sheeans and Tooreen. Ballynakill Lough borders the site on the north, conifer plantations occur on the south and grazed acid grasslands occur on the lower

slopes to the west and east. The altitude range of this site is between 15 m and 165 m. Bedrock geology of the area is granite and sandstone overlain by shallow glacial till.

The site occurs on the slopes above Ballynakill Lough. This is a large area of ungrazed blanket bog with large, flat expanses of peat on two main plateaux. The western part of the site is mainly flat and close to sea – level, but the site rises gently towards the south-eastern corner to an altitude of 165 m. Other habitats present include flushes, headwaters and quaking areas.

Blanket bog vegetation is characterised by the presence of lawns of Black Bog-rush (*Schoenus nigricans*), Bog Asphodel (*Narthecium ossifragum*) White Beaked-sedge (*Rhynchospora alba*) on wet quaking areas with Bogbean (*Menyanthes trifoliata*) and bog mosses (*Sphagnum auriculatum* and *S. cuspidatum*) in pools. Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Lousewort (*Pedicularis sylvatica*) and Deergrass (*Scirpus cespitosus*) occur on drier peat. Other species present include Common Cottongrass (*Eriophorum angustifolium*) and Tormentil (*Potentilla erecta*). Purple Moor-grass (*Molinia caerulea*) is occasional in more sheltered areas. There are large intact hummocks of *Racomitrium lanuginosum* and *Leucobryum glaucum* on the western slopes together with bog mosses (*Sphagnum capillifolium* and *S. magellanicum*), lichens *Cladonia portentosa* and *C. uncialis* and liverwort *Pleurozia purpurea*. The Round-leaved Sundew (*Drosera rotundifolia*) and Great Sundew (*Drosera anglica*) are found in pools. Occasional Common Reed (*Phragmites australis*) occurs in flushes.

There is some evidence that deer graze the site, however there is no sign of damage. Current landuse outside the site consists of peat cutting, grazing and forestry. Damaging activities associated with these land uses include drainage of the margins of the bog. These activities may impact on the hydrological integrity of the site and could pose a threat to its conservation.

Tooreen Bog NHA is a lowland blanket bog of considerable conservation value. It is largely intact and supports plant communities that occur only on areas of wet lowland, blanket bog. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions with cool, wet, oceanic climates at temperate latitudes. North-west Europe contains some of the best-developed areas of blanket bog in the world. Lowland blanket bog comprises less than 3% of the world's peatlands. In Europe this type of blanket bog is restricted to Ireland, Britain, Norway and Iceland. The lowland blanket bog that occurs in Ireland is considered to be an extreme hyperoceanic variant of the habitat type, found nowhere else in the world except on the coastal fringes of north-west Scotland.
20.1.2004

Site Name: Lough Derg

Site Code: 000011

Lough Derg is one of the major freshwater lakes of Ireland and the largest of the River Shannon lakes. The lake covers 13,000 ha of non-tidal waters, measuring 33 km from Killaloe, Co. Clare to Portumna, Co. Galway. Its maximum breadth across the Scarriff Bay - Youghal Bay transect is about 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 east-

west section (from Scarriff Bay to Youghal Bay) has a narrow trench along the southern margins with depths up to 36 m while 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 and there is Old Red Sandstone on the southern shores of the east-west section. 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, however, bordered by relatively flat country.

The site is of significant ecological interest, and includes examples of six habitats that are listed on Annex I of the E.U. Habitats Directive. Four of these are priority habitats, i.e. *Cladium* fen, alluvial woodland, Yew woodland and limestone pavement; other annexed habitats present include alkaline fen and Juniper scrub formations on heath and calcareous grasslands. The priority habitats are found mainly at the north and north-east of the lake. In addition, Lough Derg is a Special Protection Area under the E.U. Birds Directive, of importance for both breeding and wintering birds.

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*) forms dense stands up to 2 m in height. 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 to alkaline fen dominated by Black Bog-rush with Purple Moor-grass (*Molinia caerulea*), Marsh Horsetail (*Equisetum palustre*), Meadowsweet (*Filipendula ulmaria*) and scattered tussocks of Greater Tussock-sedge (*Carex paniculata*).

Yew (*Taxus baccata*) woods in Ireland are largely confined to the west of the country. However, a substantial area of Yew is located on limestone at Cornalack, where it forms scrub woodland along the east shore of Lough Derg. Here, Yew is found in association with small amounts of Juniper (*Juniperus communis*), which forms protection against grazing of the young Yew. Other species present include, Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), the introduced Small-leaved Cotoneaster (*Cotoneaster microphyllus*) along with Ivy (*Hedera helix*), 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 trampling by cattle, the ground flora supports few herbs. However, the bryophyte layer is good 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 6m tall are found. Typically, Juniper forms dense hedges with Ash, Hawthorn, Gorse, Hazel, and Bramble and occasional Yew. In places along the lake shore Juniper forms a mosaic with Black Bog-rush and Great fen-sedge fen. On drier ground above the flood level as north of Kilgarvan Quay, Juniper occurs in association with species-rich calcareous grassland with Mouse-ear Hawkweed (*Hieracium pilosella*), Daisy (*Bellis perennis*), Lady's

Bedstraw (*Galium verum*), Thyme (*Thymus praecox*) and Blue Moor-grass (*Sesleria albicans*). 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. Many of the islands 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.

Other habitats present within the site include wooded islands, semi-natural deciduous woodland, callow grasslands and improved grassland, the latter being of particular importance for feeding by waterfowl.

The woodlands are a notable feature of the site and are dominated by Oak (*Quercus* spp) as at Bellevue, or Hazel and Ash as in many areas along the north-eastern shore. The woodlands along the lake edge at Portumna are dominated by Birch (*Betula* spp.) with some Willow (*Salix* spp.), Ash and Hazel also occurring. 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*). 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 are also included within the site.

The only known site in the country for the Red Data Book species, Irish Fleabane (*Inula salicina*) occurs along the lake shore. This plant is protected under the Flora (Protection) Order, 1999. Marsh Pea (*Lathyrus palustris*), also a Red Data Book species, occurs within the site. In addition, a number of plants of restricted distribution in Ireland occur, e.g. Ivy Broomrape (*Orobancha hederaceae*), Buckthorn (*Rhamnus catharticus*) and Irish Whitebeam (*Sorbus hibernica*). The Red Data Book stonewort, *Chara tomentosa*, a species that is very sensitive to pollution, has its stronghold in Lough Derg.

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. A large Cormorant colony occurs in trees on the islands near Portumna - 167 nests were counted in 1995 and 122 in 1999. Lough Derg is also a noted breeding site for Great Crested Grebe (47 pairs in 1995) and Tufted Duck (326 individuals in late May 1995).

In winter, the lake is important for a range of waterfowl species, especially diving ducks, with nationally important populations of Tufted Duck (1,029), Goldeneye (215) and Mute Swan (235) - figures are average peaks for 4 of the 5 seasons 1995/96-1999/00. Other species which occur include Cormorant (120), Whooper Swan (18), Wigeon (272), Teal (342), Mallard (417), Pochard (61), Black-headed Gull (814), Coot (229), Lapwing (1,346) and Little Grebe (14). Lough Derg has traditionally been used by a relatively small flock of Greenland White-fronted Goose based in the Lough Derg-Lough Graney area and possibly further afield. The mean flock size for the 5 winters 1989/90-1993/94 was only 22, but few sightings have been made in recent years. In March 2004, however, c. 20 birds were observed in the Scarriff Bay area indicating that a flock may still be present

in the area. An area of the lake close to Portumna Forest Park is a Wildfowl Sanctuary.

Otter and Badger have been recorded within the site; both are protected, Red Data Book species.

Lampreys, listed on Annex II of the E.U. Habitats Directive, are known to occur and the lake contains a landlocked population of Sea Lamprey (*Petromyzon marinus*). Brook Lamprey (*Lampetra planeri*) is known to be common in the lower River Shannon catchment where all three Irish Lamprey species breed. The endangered fish, Pollan (*Coregonus autumnalis pollan*) is recorded from Lough Derg, one of only four sites (L. Neagh, L. Erne, L. Ree and L. Derg) in which it occurs. Pollan is a landlocked 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 and, 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.

White-clawed Crayfish (*Austropotamobius pallipes*), also an Annex II species, is found in many of the rivers which feed into the eastern edge of the lake. These rivers flow over Carboniferous limestones and include the Lorrha River, the Carrigahoric River, the Borriskane River, the Ballinderry River, the Nenagh River and the Ballycolliton River. Freshwater Pearl-mussel (*Margaritifera margaritifera*), an Annex II species, occurs in some of the rivers which flow into the lake.

Landuse 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.

The main threats to 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 pressure from fishing and shooting on and around the lake. Recreational activities presently cause some disturbance to the birds and an increase in such activities would be of concern. Lough Derg was classified as being strongly eutrophic in the early 1990s. Since 1997, a monitoring programme on the Shannon lakes has shown that the symptoms of eutrophication previously documented (i.e. high chlorophyll level and reduced water visibility) have been ameliorated significantly. These reductions have coincided with the invasion of the Shannon system by the Zebra Mussel (*Dreissena polymorpha*), a species which feeds on plankton, and also with measures to reduce phosphorus in sewage plants in the catchment. However, enrichment of the lake, both by agricultural run-off and sewage, remains a threat. Whilst the presence of Zebra Mussel in Lough Derg appears to have improved water quality in the lake, in the long-term this invasive bivalve may threaten the ecology of the lake.

Lough Derg is of considerable conservation significance for the variety of rare or threatened habitats and plant and animal species that it supports. It is of particular importance for birds in that it has nationally important breeding populations of Common Tern, Cormorant, Great Crested Grebe, and probably Tufted Duck and Black-headed Gull. In winter, it has nationally important populations of Tufted Duck and Goldeneye, as well as a range of other species including Whooper Swan. The site is still used on occasions by Greenland White-fronted Goose. The presence of Common Tern, Whooper Swan and Greenland White-fronted Goose is of particular note as these are listed on Annex I of the E.U. Birds Directive.
18.8.2004

Site Name: Rathbaun Turlough

Site Code: 000215

Rathbaun turlough occupies a well defined, rectangularly-shaped basin in low-lying countryside halfway between Tuam, Co. Galway and Ballinrobe, Co. Mayo.

A river flows into the turlough from the north and the turlough is drained by a swallow hole to the west, near a temporary lake. The drainage into the bedrock has been altered by human interference, which results in abandoned channels and piles of debris.

The turlough seems drier than it would naturally be, and as a result there is little likelihood of peat formation at the present time.

Rathbaun turlough has a simple topography and the associated vegetation follows its contours in a fairly regular way. The uppermost zone is predominantly sedge/ heath grassland with dry grassland associated with the limestone rock outcrops at the northern end. As the slope lessens, wet grassland predominates, and rushes are common in the hollows that retain dampness the longest.

Grazing and trampling by cattle and sheep is common, and leads to a breakdown of the vegetation structure. Despite this, and although the hydrology of the basin has been altered from its natural state, the size and character of the turlough is noteworthy.

At present, the turlough is too dry and heavily grazed for a full development of its potential vegetation, or for the breeding of birds. But the nature of its drainage would make it possible for its water levels to be managed. However, because of its physical uniformity, the site contains large areas of three plant communities: the largest stand of the Dry Carex nigra community, the third largest of species poor Potentilla repens community and a stand of Wet Annuals which contains both Red Goosefoot (Chenopodium rubrum) and Northern Yellow-cress (Rorippa islandica), two rare plant species.
The site is therefore worthy of NH status.
13.2.1995

Site Name: Altore Lake

Site Code: 000224

Altore lake is situated approximately 11 km north-west of Tuam and 4 km south-west of Milltown, between the L7 and the N17, in a lowland Karst area. The site is underlain by

limestone with a thin covering of free-draining sandy boulder clay.

The site was formerly a lake that was drained around 1969. Therefore, the main habitats within the site are lowland wet grassland, freshwater marsh and reedbeds.

Species associated with the permanently wet areas of the site are Branched Bur-reed (Sparganium erectum), Bulrush (Typha latifolia) and Common Reed (Phragmites australis). The plants found in the marsh areas include Marsh Marigold (Caltha palustris), Bottle Sedge (Carex rostrata), Marsh Bedstraw (Galium palustre), Mare's-tail (Hippuris vulgaris) and Amphibious Bistort (Polygonum amphibium). The area surrounding the former lake is lowland wet grassland with Soft Rush (Juncus effusus), Marsh Ragwort (Senecio aquaticus), Creeping Bent (Agrostis stolonifera), Daisy (Bellis perennis) and Common Mouse-ear (Cerastium fontanum).

The site is an important winter feeding site for Greenland White-fronted Geese (mean peak is 62, 1985/86-1989/90). Other winter waterfowl species recorded are Teal 80, Mallard 57, Lapwing 170, Curlew 60 (all figures are from 1 count during 1984/85 - 86/87). Teal, Mallard and Snipe also breed at this site.

Otters (an Annex II species listed in the E.U. Habitats Directive) occur on the site. This site is of importance because of the occurrence of Greenland White-fronted Geese and the presence of Otters. The site also provides habitat diversity with a small area otherwise surrounded by improved grassland.

Site Name: Ballycurke Lough

Site Code: 000228

The Ballycurke Lough site includes Lough Kip, the Loughkip River and Ballycurke Lough itself and is situated 2-5 km south of Moycullen. Lough Kip and Loughkip River lie on acidic granite rocks and receive water from surrounding blanket bog peat. The eastern shore of Ballycurke Lough is on limestone. The freshwater algae and invertebrates along the river and in Ballycurke Lough are reported to be of interest (An Foras Forbartha 1971). Herring Gulls and Common Gulls (20 pairs) are reported to nest on rocky islets in Ballycurke Lough (Lloyd, 1982).
12.7.1995

Site Name: Belclare Turlough

Site Code: 000234

This triangular turlough lies below the hill of Knockacarrigeen on which Belclare village is situated. On the other sides of the turlough there are large flat, drift-covered fields, with an area of bog to the north-east. The basin floor is also flat but at two different levels; a lower central area and a flat upper-terrace 30-50 cm above. The turlough is completely dry during summer months except for a stream which enters from the north-east and runs to a swallow hole on the eastern side.

Since this turlough is a dry one without any standing water in the summer, there is very little vegetation diversity; the main area of the turlough is grassland with Perennial Rye-grass (Lolium perenne). However the influence of peat

in the north-eastern corner, adjacent to exposed limestone rock, and the presence of scrub on the western side, adds habitat interest.

The peat area is cutaway and now covered with such species as Purple Moor-grass (*Molinia caerulea*), Black Bog-rush (*Schoenus nigricans*), Horsetail (*Equisetum* spp.) and Bedstraw (*Galium* spp.). This vegetation grades into Heather (*Calluna vulgaris*) and Gorse (*Ulex europaeus*). There are also some sedges (*Carex* spp.) and even Amphibious Bistort (*Polygonum amphibium*).

On the western edges, grassy areas are colonised by Bramble (*Rubus fruticosus* agg.), Guelder-rose (*Viburnum opulus*), Buckthorn (*Rhamnus catharticus*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*), which grow out from a taller woodland of Hawthorn, Ash (*Fraxinus elcelsior*), Sycamore (*Acer pseudoplatanus*) and Spindle Tree (*Euonymus europaeus*). Apple Trees (*Malus domestica*) have invaded this area.

The drainage ditch has introduced an aquatic community containing Whorled Water-milfoil (*Myriophyllum verticillatum*) amongst others.

Belclare Turlough is a noted bird site attracting wintering wildfowl and waders as well as birds on migration through Connaught. Based on 3 counts over the 1984/85 - 1986/87 season the following were recorded: Wigeon 475, Teal 165, Mallard 52, Lapwing 250, Golden Plover 58, Lapwing 250, Dunlin 20 and Curlew 208.

The site is visited by the Galway lowland population of Greenland White-fronted Geese (100-150).

The main central area is still commonage but the margins have been enclosed by walls. There are cattle and sheep on the common land but mainly cattle elsewhere. Some tillage farming has also occurred along with silage cutting. There is also abandoned peat-cuttings visible.

Belclare turlough shows considerable diversity, with a range of plant communities from the oligotrophic north-eastern corner to the eutrophic south-east. Further habitat diversity is introduced with the presence of scrub. The birdlife, including Greenland White-fronted Geese, adds to the scientific and conservation value of the site.

Site Name: Camderry Bog

Site Code: 000240

Camderry Bog NHA is part of a cluster of bogs in Co. Galway, situated approximately 12 km north-east of Mountbellew and 9 km south-east of Glenamaddy. It is almost entirely within the townlands of Camderry, Boggauns and Corracullin. The site comprises a relatively large raised bog that includes both areas of high bog and cutover bog. The northern and western margins of the site are bounded by the Shiven River, the eastern margin is bounded by a mineral ridge and those to the south by roads.

The site consists of two domes separated by a broad ridge of mineral soil. Overall the northern dome appears to be quite dry with limited areas of wet hummock/hollows. The lower southern dome contains an area of quaking bog with hummocks and tear pools. A small flushed area showing small-scale hummock-hollow development is found on the northern dome to the north and north-west of a forestry plantation on the high bog. To the east there is an

extensive flush with areas of open water. Cutover bog occurs all around the margins of the high bog apart from a semi-natural margin to the north by the Shiven River.

Much of the high bog has vegetation typical of the Western Raised Bog type, consisting of Ling Heather (*Calluna vulgaris*), Cottongrass (*Eriophorum* spp.) and Carnation Sedge (*Carex panicea*). Bog Mosses (*Sphagnum* spp.) form a spongy mat in places but due to damage from drying out and burning are rarely present as carpets. Over large areas, especially in the south, lichens (*Cladonia* spp.) occur in abundance. Hummocks of the moss *Racomitrium lanuginosum* occur in the centre of the site and the liverwort *Pleurozia purpurea* is also present. The area of quaking bog has hummocks and hollows and is characterised by hummocks formed of bog mosses *S. papillosum* and *S. capillifolium*, extensive lawns of bog mosses *S. cuspidatum* with Bogbean (*Menyanthes trifoliata*) and tear pools. There are Bog Asphodel (*Narthecium ossifragum*) dominated hollows and the moss *Campylopus atrovirens* occurs at the margins of the tear pools. This area of the site supports several rare species of bog moss i.e. *S. fuscum* and *S. imbricatum*. In the flushed areas low hummocks of *S. capillifolium* and *S. imbricatum* occur with Bog Asphodel lawns and abundant Cranberry (*Vaccinium oxycoccos*). The large eastern flush consists of a depression with open water and bog moss *S. cuspidatum* around the margin. Other species present include Soft Rush (*Juncus effusus*), Bogbean, and the cottongrasses (*Eriophorum angustifolium* and *E. vaginatum*).

The old cutover is mainly dominated by Ling Heather, Purple Moor-grass (*Molinia caerulea*), Soft Rush and cottongrass. Gorse (*Ulex europaeus*), Birch (*Betula* sp.) and willows (*Salix* spp.) also occur along the drains. Along the north of the site on the banks of the Shiven River, Hawthorn (*Crataegus monogyna*), willow and Ling Heather grow with typical river bank species such as Meadow-sweet (*Filipendula ulmaria*), Nettle (*Urtica dioica*) and docks (*Rumex* spp.). An area of cutover to the east of the site is waterlogged by water discharged from the high bog. Drains in this cutover contain species indicative of some enrichment, such as *Potamogeton polygonifolius* and *Carex rostrata*. To the south old cutover is very wet and regenerating well, with a good cover of bog mosses, including such species as *S. papillosum*, *S. capillifolium* and *S. auriculatum*. Here, Purple Moor-grass and cottongrass over a carpet of bog mosses is the dominant vegetation.

Red Grouse, a species that is becoming increasingly rare in Ireland, has been recorded on the site.

Current landuse on the site consists of peat-cutting around the edge of the high bog and forestry. Active peat-cutting is carried out to the south, east and north-west using mechanised methods for peat extraction. Damaging activities associated with these landuses include drainage and extensive and frequent 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. The whole site may have subsided due to water loss from drainage in the past.

Camderry Bog NHA is a site of considerable conservation significance comprising as it does a large 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, tear pools, flushes and regenerating cutover, as well as a number of scarce plant species. 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 (over 60%) and so has a special responsibility for its conservation at an international level.
30.5.2002

Site Name: Clonfert Cathedral

Site Code: 000244

Clonfert Cathedral (also known as St. Brendan's Cathedral) is a small church belonging to the Church of Ireland which contains a large colony of 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, sections of the building may be 400-500 years old while 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.

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.
12.7.1995

Site Name: Curraglehanagh Bog

Site Code: 000256

Curraglehanagh Bog NHA is part of a bog cluster situated approximately 6 km north of Mountbellew Co. Galway, mainly in the townlands of Curraglehanagh, Rushestown and Milltown. The site comprises a raised bog with areas of high bog and cutover, and lies on a relatively low-lying plateau entirely within the upper reaches of the Shiven River. Mature coniferous forestry occurs on the high bog to the north of the site.

The site has a typical raised bog topography with a central dome which slopes gently towards the margins. The high bog supports an extensive quaking area with many pools. Hummocks and pools are confined to the top of the dome and the rest consists of pools separated by lawns of bog mosses. Two bog bursts and associated tear pools occur on the eastern side of the site. A number of flushes occur at the western edge of the high bog. Habitat diversity is increased with the presence of a narrow strip of old mixed woodland on the north-eastern margin of the bog. A number of bare erosion channels occur in association with the bog burst to the east of the site.

This is a typical example of Western Raised Bog and the vegetation consists of Carnation Sedge (*Carex panicea*), with Bog Asphodel (*Narthecium ossifragum*) hollows, and tussocks of Ling Heather (*Calluna vulgaris*), Hare's-tail Cottongrass (*Eriophorum vaginatum*) and Deergrass (*Scirpus*

cespitosus). Other species present include the mosses *Campylopus atrovirens*, *Racomitrium lanuginosum* and the liverwort *Pleurozia purpurea*. Cranberry (*Vaccinium oxycoccos*) and Bog-rosemary (*Andromeda polifolia*) are locally abundant. The high bog supports an extensive quaking area with linear pools and lawns with bog moss (*Sphagnum cuspidatum*) and Bogbean (*Menyanthes trifoliata*). Lawns of bog mosses, including *Sphagnum magellanicum* and *S. auriculatum*, occur between the pools. In general, hummock cover is low, with occasional large *Racomitrium lanuginosum* tussocks. Purple Moor-grass (*Molinia purpurea*) and Common Reed (*Phragmites australis*) are found in association with flush areas to the west of the site along with scattered Downy Birch (*Betula pubescens*). Flora associated with the main channel in the bog burst to the east includes Ling Heather, Royal Fern (*Osmunda regalis*), Bog-myrtle (*Myrica gale*), the fern *Dryopteris spinulosa* and some orchids. The epiphytic lichen flora is diverse, with *Coelocaulon aculeatum*, and *Usnea* spp. occurring on Ling Heather, and *Cladonia cervicornis* subsp. *verticillata* on the bark of Birch trees. The small area of mixed woodland to the north-east supports Downy Birch, Rowan (*Sorbus aucuparia*), Oak (*Quercus* sp.) and Scots Pine (*Pinus sylvestris*). In areas of abandoned cutover, Gorse (*Ulex europaeus*), Purple Moor-grass and Downy Birch are common, with bog moss regeneration being notably good in the south and north-eastern cutover.

Red Grouse, a species that is becoming increasingly rare in Ireland, has been recorded on the site.

Current landuse on the site consists of peat-cutting along the north and east margins. Afforestation has occurred on the high bog to the north-west of the site. Damaging activities associated with this landuse include drainage and burning. Fire damage has been recorded in the 1980s but the present abundance of bog mosses indicates significant recovery of the bog surface in these areas. 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.

Curraglehanagh 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 hummock/hollow complexes, pools and flushes, and regenerating cutover which add to the diversity and scientific value of the site. 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.
30.5.2002

Site Name: Drumbulcaun Bog

Site Code: 000263

Drumbulcaun Bog is a small complex of raised bog, fen, open water and flooded grassland, situated about 7 km south of Dunmore. The site is surrounded by low limestone hills, and has one stream flowing from the west. The raised bog is unusual, showing evidence of mineral enrichment, probably due to flooding from mineral-rich groundwater during periods of high water-table each winter. Also, most of its surface has been damaged by fire.

A small unburnt patch in the east of the site is intact and quaking. It has bushy clumps of Ling Heather (*Calluna vulgaris*) on large loose hummocks of Bog Moss (*Sphagnum* spp.), with a variety of other mosses occurring, including *Aulacomnium palustre*. Cranberry (*Vaccinium oxycoccos*) is very abundant on the site and interestingly, Purple Moor-grass (*Molinia caerulea*) is widespread - in the fire-damaged part of the site this species is particularly abundant. The bog grades to a quaking fen in the north.

Four scarce plant species are found in the fen area on the northern side of the site - Marsh Fern (*Thelypteris palustris*), Mud Sedge (*Carex limosa*), Slender Sedge (*Carex lasiocarpa*) and Great Fen-sedge (*Cladium mariscus*). Large hummocks of the moss *Calliergon cuspidatum* and an almost complete cover of Bog Moss (*Sphagnum* spp.) characterise much of this fen. Vegetation with Crowberry (*Empetrum nigrum*) and Ling Heather also occur in this fen area.

A small area of open water is fringed by Common Reed (*Phragmites australis*) and sedges (*Carex* spp.). Further west, fen grassland with Black Bog-rush (*Schoenus nigricans*) grades into wet flooded grassland and another area of permanent water. Both breeding and wintering birds use this area (60 Teal and many Moorhen were recorded on one visit in 1993).

Drumbulcaun Bog is of conservation significance for a variety of reasons - it is the only intact raised bog in the catchment of the Nanny River. It supports a variety of habitat types and a diversity of vegetation communities and species. The fen on the site is of particular interest, being at a late stage in the transition from fen to bog and including, as it does, an unusual vegetation community - Crowberry - Ling Heather quaking swamp.
27.6.2001

Site Name: Eeshal Island

Site Code: 000265

Eeshal Island is a small marine island situated about 2 km south of Omev Island (c. 5ha) and west of Inishturk.

The island is of interest for Arctic Tern (100 pairs in 1984), Common Tern (12 pairs in 1984) and breeding gulls (250 pairs of five species in 1984).
12.7.1995

Site Name: High Island

Site Code: 000275

High Island is a small (c. 35ha, 60m high) uninhabited marine island about 3 km west of Aughrus Point, of interest for its colonies of seabirds.

It holds nationally important colonies of Fulmar (350 pairs pre-1988) and Great Black-backed Gull (200 pairs pre-1988). Important numbers of Shag (estimate 10-99 pairs in 1980) also breed on the island. The island holds one of the five most important colonies of Storm Petrel in the region (c. 1000 birds visited the island in 1976, breeding numbers unknown) and Leach's Petrel have been heard and may also breed.

Other birds recorded include Manx Shearwater (estimate 10-99 pairs in 1969, c. 100 pairs in 1987), Black Guillemot (11 pairs pre-1988) and Herring Gull (estimate 10-99 pairs in 1980). Choughs (1-3 pairs pre-1988) and Barnacle Geese (c. 80 individuals pre-1988, 40 in 1993) have also been reported.

The vegetation and lagoons on the island are of ecological interest.

Site Name: Ballyconneely Bay

Site Code: 001231

The Ballyconneely Bay NHA comprises a group of islands in Ballyconneely Bay, important for its colonies of terns.

Fox Island, the most westerly of the island group, supports populations of Little Tern (30 individuals in 1969, 6 pairs in 1984), Sandwich Tern (35 individuals in 1969) and Arctic Tern (11 pairs in 1984).

Wherune Island supports populations of Arctic Tern (23 pairs in 1984) and Little Tern (2 pairs in 1984).

Inishdawros and the neighbouring islands of Illaunnameenoga and Illaunee support populations of Sandwich Tern (34 pairs in 1984).
12.7.1995

Site Name: Bertraghboy Bay

Site Code: 001234

Bertraghboy Bay is a south-west facing bay on the Connemara coast. It is a complex bay with a relatively narrow opening (c. 3 km). Depths of over 30 m occur near the entrance. Offshore reefs close to the entrance give it some protection from the prevailing southwesterly winds. The complex nature of the bay ensures that much of the bay is very sheltered from wave action. Many areas in the inner part of the bay are at a higher elevation than the mid area of the bay and these areas drain through a complex set of channels. The bay receives the flows of the Owengowla and Owenmore rivers, along with a number of smaller rivers.

The site is a candidate Special Area of Conservation selected for large shallow inlets and bays, and reefs, habitats that are listed on Annex I of the E.U. Habitats Directive.

The shores of Bertraghboy Bay generally vary from gently sloping platforms of rocks to shores of mixed boulders, cobbles, pebbles, gravel and sand. In some areas the shores may be steep. All the shores within the bay are sheltered to very sheltered from wave action. On gently sloping shores, the upper shore is characterised by a lichen zone of grey and yellow lichens with the black lichen *Verrucaria maura*. This is followed by a zone of Channel Wrack (*Pelvetia canaliculata*) and then a zone of Spiral Wrack (*Fucus spiralis*). In some areas these zones are quite extensive i.e. 10 m in width, but in other areas they are narrow, i.e. 1-3 m in width. The snails *Osilinus* (= *Monodonta*) *lineata* and *Littorina saxatilis* may be common and barnacles are occasional. Boulders in the upper mid shore may be colonised by dense barnacles with the limpets *Patella vulgata* and the dogwhelk *Nucella lapillus*. The low mid shore has a canopy of Bladder Wrack (*Fucus vesiculosus*) followed by Knotted Wrack (*Ascophyllum*

nodosum). In some parts of the bay the *Ascophyllum nodosum* band is very wide i.e. 100 m or greater with 100% cover of *Ascophyllum*. The *Ascophyllum* is colonised by the hydroid *Dynamena pumila* and bryozoan *Flustrellidra hispida* indicating the presence of a current. A tideswept *Ascophyllum* community is considered to be scarce in Ireland and Britain. Where boulders are present there is generally a species rich under-boulder fauna. Under the algal canopy in the low shore the sediment binding red algae *Audouinella* spp. occurs. In areas where there is strong tidal flow the sublittoral fringe is characterised by the brown alga *Laminaria saccharina*, occasional *Halidrys siliquosa*, with some *Fucus vesiculosus* and *Fucus serratus*. The understory in areas with sand scour is characterised by the red algae *Furcillaria lumbricalis*, *Polyides rotundus* and *Plocamium cartilagineum*, but these species are generally absent when there is no sand scour. Boulders in the sublittoral fringe may have an extremely species-rich under-boulder fauna of ascidians and sponges indicating that the area is tideswept (124 species have been recorded at one site in the bay). Such tideswept communities are considered to be scarce in Ireland and Britain.

Where the shore is composed of boulders and has strong tidal currents the mid to low shores are species-rich (75–90 spp.) and again the tideswept communities present are considered to be scarce. The under-boulder fauna is characterised by sponges, hydroids, encrusting bryozoans and occasional ascidians.

The *Ascophyllum nodosum* of Bertraghboy Bay is harvested on 3-5 year cycle and this harvesting has been carried out for at least the last 40 years and probably for the past century. Finfish farming take place in the outer part of the bay.

In very sheltered areas where there is some tidal current the uncommon brown alga *Ascophyllum nodosum* var. *mackii* is found.

In the shallow subtidal on the north-west side of the bay maerl beds mixed with Eelgrass (*Zostera marina*) occur. The maerl is a mixture of *Phymatolithon calcareum* and *Lithothamnion coralloides* with scattered plants of the rare *Lithophyllum dentatum*.

Elsewhere in the bay the sediments are sands, with muds in the more sheltered areas. Lobsters (*Homarus gammarus*) occur in most areas of the bay, along with other crustaceans such as Crawfish (*Palinurus elephas*) and Edible Crab (*Cancer pagurus*). Spider Crab (*Maia squinado*) also occurs. The molluscan fauna is well-represented and includes Escallop (*Pecten maximus*), Otter Clam (*Lutraria* spp.), Razorfish (*Ensis* sp) as well as Smooth Cockle (*Laevicardium crassum*), Whelk (*Buccinum undatum*), Venerid Clam (*Venus verrucosa*) and European Oyster (*Ostrea edulis*). Intertidal areas are limited in extent, occurring mainly in the sheltered areas of the bay.

Other habitats present within the site include a salt marsh on Inishnee Island, which is dominated by Sea Rush (*Juncus maritima*). A short stretch of low sea cliff composed of boulder clay also occurs on Inishnee Island, and supports typical species such as Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*) and Scurvy Grass (*Cochlearia officinalis*).

Terns breed on some of the islands in the site. In 1984, Greens Island had a sizable colony of Sandwich Terns (30 pairs) and Common Terns (45 pairs). In 1995, however, none were recorded on Greens Island but Inishlacken had 4 pairs of Little Terns and 1 pair of Arctic Terns. A few pairs

of Common Terns have bred on Greens Island in the last few years. Sandwich Tern, Common Tern, Little Tern and Arctic Tern are all listed on Annex I of the E.U. Birds Directive.

Bertraghboy Bay is of high conservation importance due to the presence of very good examples of shallow bay and reef habitats, both of which are listed on Annex I of the EU Habitats Directive.

31.10.2002

Site Name: Boyounagh Turlough

Site Code: 001237

The Boyounagh turlough fills a rectangular hollow below and south of the Dunmore - Glenamaddy road. The surrounding landscape is composed of low glacial hills, but the floor of the turlough is relatively flat except for a rise in the eastern half. The basin is confined by slopes on the north and part of the south but is more open to the west. Water enters the basin from the eastern end via an excavated drain from Lough Nahask. This continues through to a central marshy pond where drainage has resulted in some drying.

The turlough has a uniform vegetation cover with much Common Sedge (*Carex nigra*), from low parts of the site to areas where there is a greater depth of wet peat. At the eastern end there are higher banks of cutover peat, which are occasionally flooded. A rise, east of centre, carries a heath composed of the moss *Climacium*, along with Common Dog-violet (*Viola canina*), Adder's-topngue (*Ophioglossum*

vulgatum) and some Tufted Hair-grass (*Deschampsia cespitosa*). This is mirrored at the western end by former cultivation ridges now colonised by Mat-grass (*Nardus stricta*), Carnation Sedge (*Carex panicea*) and Lady's Bed-straw (*Galium verum*). The northern shore is more steeply sloping with a good zonation from wet to drier grassland, while wetland herbs predominate in wetter areas.

The central marshy area contains Amphibious Bistort (*Polygonum amphibium*), with a temporary pond housing Water Horsetail (*Equisetum fluviatile*), Floating Sweet-grass (*Glyceria fluitans*) and Lesser Marshwort (*Apium inundatum*).

Boyounagh Turlough has a varied vegetational cover for its size, with patches of ten separate communities around the floor of the basin. The occurrence of abandoned cultivation ridges adds to habitat diversity and overall scientific interest.

Site Name: Callow Lough

Site Code: 001239

Callow Lough is a medium sized shallow lake located 4km northeast of Kilconnell in East Galway. This site has been designated as a Natural Heritage Area because of its importance to wintering wildfowl. It provides a winter feeding ground for several bird species and is a breeding area for waders.

The lake is quite natural in character and is relatively undisturbed. It is surrounded by lowland wet grassland, hedges and scrub woodland and there is a large wooded

island in the centre of the lake which is probably a crannog. The water level in the lake fluctuates and it resembles a turlough in some ways. It is managed by the Kilconnell Gun Club as a bird sanctuary and is also used by the local fishing club. This site valuable both as a wildlife habitat and as a general amenity area.

Site Name: Cloonascragh Fen and Black Wood

Site Code: 001247

Cloonascragh Fen and Black Wood consists of two small areas of different habitats situated 8 km north of Laurencetown in east Co. Galway. Both are associated with a section of a long esker ridge running east-west which crosses the River Suck and Shannon. Both are at the edge of Cloonascragh Bog which is thoroughly drained. Much of the esker in this vicinity is being worked (or has been worked out).

The fen is an area between the esker and the bog and is partly quite dry. It consists of a fairly species-rich vegetation in which four Orchids are widespread and common - Twaebblade (*Listera ovata*), Lesser Butterfly Orchid (*Platanthera bifolia*), Common Spotted Orchid (*Dactylorhiza fuchsii*), and Heath Spotted Orchid (*D. Maculata*). The heathers Ling Heather and Cross-Leaved Heath (*Calluna vulgaris* and *Erica tetralix*) and Milkwort (*Polygala vylgaris*) are common. A number of short old 'causeways' across the fen are made of esker material and consequently support a calcareous flora with Mountain Everlasing (*Antennaria dioica*), Mouse-ear Hawkweed (*Hieracium pilosella*) and Carline Thistle (*Carlina vulgaris*). The central section of this long narrow site is the wettest and is probably the location of the rare snail. The only open water is in the form of small 'bog holes' full of Bog Bean (*Menyanthes trifoliata*) and Lesser Tussock Sedge (*Carex diandra*), but the ground is semi-quaking. Sparse reeds occur here suggesting the former presence of a small lake. Great Sundew (*Drosera anglica*) is abundant at the edge of the old hand-cut face of the bog.

The very scarce and declining semi-aquatic snail species *Vertigo geyeri* has one of its main Irish sites here (last report 1981). This snail is listed in Annex II of the EU Habitats Directive as it is declining throughout Europe. It requires wet calcareous fen grassland with some open water and little shading. There is a possibility that some habitat rehabilitation is required at this site to preserve the species for the future.

At Black Wood dense woodland of old coppiced hazel occurs on two very steep-sided esker ridges separated by a hollow of species-rich dry meadow developed from the woodland soils. The ground flora of this wood is extremely species-rich and unaffected by grazing with a luxuriant growth and high ground cover of all species, which include Early Purple Orchid (*Orchis mascula*),

Twaebblade (*Listera ovata*), Primrose (*Primula vulgaris*), Wild garlic (*Allium ursinum*), Sanicle (*Sanicula europaea*). There are many other typical woodland species, including grasses and sedges. The site includes a woodland transition from esker soils to peat. Rose Campion (*Silene dioica*) is common on the peat with Foxglove (*Digitalis purpurea*). Golden saxifrage (*Chrysosplenium oppositifolium*) is particularly abundant at the junction between esker and peat. A variety of common woodland birds are breeding here, as well as the Whitethroat.

Obviously, further encroachment of the sand quarry into the northern section of this wood would destroy most of the woodland site.

The fen is one of the main sites for the very scarce and declining snail. Woodland on eskers are a rare and fragmented habitat in Ireland. There has probably always been woodland at Black Wood. Although coppicing has occurred, the ground flora is extremely diverse and intact. In this situation it gives rare clues as to the character of the original post-glacial woodland development. The transition to peat gives the wood extra interest.

Site Name: Dernasliggaun Wood

Site Code: 001253

Dernasliggaun Wood is situated in the valley between Lough Fee and Killary Harbour, Co. Galway. The site divided by the Bunowen River. Oak (*Quercus petraea*) is dominant with a rich moss and lichen flora with characteristic western species, such as the filmy fern (*Hymenophyllum tunbrigense*) and St. Patrick's cabbage (*Saxifraga spathularis*). The site is of importance because of the general lack of native deciduous woodlands in Ireland on the whole. Despite the small size of this woodland it does represent a rare and declining habitat and should therefore be managed and protected.

Site Name: Drimcong Wood

Site Code: 001260

Drimcong Wood is situated approximately 1.5km. north-east of Moycullen, Co. Galway, in a limestone region. It is a mixture of deciduous and coniferous woodland.

The main habitat is deciduous woodland, with Ash (*Fraxinus excelsior*) and Birch (*Betula pubescens*) common, at least on the fringes. Coniferous woodland, with sitka spruce (*Picea sitchensis*) is also frequent. Two lakes are included in part in the site, Lough Aroraun and Lough Pollalehy, leading to the inclusion of an area of reedswamp (*Phragmites australis* - dominated) in the site.

The 1971 AFF County Report notes that part of the site is used as a deer forest.

The main damaging operations and threats within the site are afforestation and mineral extraction. A new road has been built to access a recently purchased area in the south-east of the site. The intention is to resume quarrying. An application has also been made to the Local Planning Authority to develop the area as an amenity park and motor sport facilities complex.

The scarcity of woodland in the west of Ireland in particular, as well as the good range of habitats, justifies the designation of this site as a N.H.A.

Site Name: Furbogh Wood

Site Code: 001267

Furbogh Wood is situated directly north of the Galway-Spidle coast road, equidistant (3.5 km) from Spidle and

Barna at Furbogh. The site consists of Oak (*Quercus* spp.) woodland bordering the Furbogh River.

The woodland is dominated by Oak with a Hazel (*Corylus avellana*) and Birch (*Betula pubescens*) understory. The flora of the woodland is diverse. The foliose lichen *Lobaria scrobicularia* has been recorded from the woodland.

The Furbogh River which flows southwards through the centre of the site to Furbogh Strand increases the habitat diversity of the site.

Tree felling remains a threat to the woodland.

The site is considered a Natural Heritage Area because it is one of only a few Atlantic woodlands which occur directly adjacent to the coast. The occurrence of oakwood on mineral soil is not a common feature of West Galway.

Site Name: Kilkerrin Turlough

Site Code: 001279

Kilkerrin Turlough lies in a basin amongst rolling countryside approximately 6 km south of Glenamaddy. It is crossed by a road from the northern side which divides it roughly in two halves. Both parts extend southwards in a crescentic shape, the western one leading to a deep trench which cuts through bedrock - there is a little outcrop on the eastern arm. There is a small inflow from the north-eastern corner, with ditches and swallow holes throughout.

This is a dry turlough with aquatic vegetation limited to the small stream. Most of the vegetation is fen, comprising os sedges (*Carex* spp.) and Knot-grass (*Polygonum* spp.). In the wettest areas, Amphibious Bistort (*Polygonum amphibium*) occurs. The sedge community merges into Purple Moor-grass (*Molinia caerulea*) and Fescues (*Festuca* spp.). From this develops a rough grassland comprising of Rye-grass (*Lolium* spp.).

The vegetation of this site is rather uniform but the area is, nevertheless, of local scientific interest.

Site Name: Kiltullagh Lough

Site Code: 001282

Kiltullagh Lough is located 3km south-west of Glenamaddy. It is neighbouring the Lough Lurgeen Bog/Glenamaddy turlough complex, an NHA, and is (possibly?) itself a turlough.

The three lakes together provide a good habitat for waterfowl. At Kiltullagh counts for waterfowl are : Mute Swan (20), Whooper Swan (12), Wigeon (346), Teal (59), Mallard (196), Tufted Duck (152), Ringed Plover (6), Golden Plover (303), Lapwing (86) and Curlew (59). (Counts from 1984/85 - 86/87). Golden Plover and Whooper Swan are species listed in Annex I of EU Birds Directive.

With its close association with the Lough Lurgeen Bog/Glenamaddy Turlough NHA and its importance for waterfowl this site is of scientific importance and should be preserved. Threats are from drainage and eutrophication from farming practices.

I have heard that there is very species - (and Orchid) - rich grassland on eskers running down into the turlough. 12.7.1995

Site Name: Knockmaa Hill

Site Code: 001288

Knockmaa hill is a prominent limestone Knoll located 10 km west of Tuam. The surrounding countryside consists of good quality, pastoral farmland on limestone. The hill itself is 180m high and is covered with deciduous woodland. Towards the summit of the hill there is an area of limestone pavement and heath.

The main tree species in the woodland are Ash (*Fraxinus excelsior*) and Oak (*Quercus* sp.) and the associated ground flora is species-rich. There is some Alder (*Alnus glutinosa*) in wetter seepage areas and close to the summit, there is an area of dwarf Oak (*Quercus* sp.) woodland on thin soils. The wood contains numerous exotic tree species including Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Cherry Laurel (*Prunus laurocerasus*), Larch (*Larix* spp.) and Pine (*Pinus* spp.). Of these, only Beech and Sycamore are regenerating.

At the top of the hill there is an area of limestone pavement which supports a species-rich, Burren-type, flora with some small areas of heath.

Despite the incidence of tree felling in the past, the site is still of interest because it is a good example of deciduous woodland on thin limestone soil. Similar sites are rare in this part of the country. The occurrence of species-rich limestone pavement vegetation at the top of the hill adds significantly to the interest of the site.

Site Name: Leagaun Machair

Site Code: 001289

Leagaun Machair is situated at the mouth of Streamstown Bay, opposite Omey Island. The site was surveyed by aerial photography. Machair habitat is rare in Europe and is confined to the western seaboard of Ireland and Scotland. It is listed as a priority habitat in Ireland under the EU Habitats Directive.

Site Name: Lough Hacket

Site Code: 001294

Lough Hacket is located 4.5km. east north-east of Headford. This small lake is situated in an area where the underlying geology is carboniferous limestone.

The main habitat of this site is the lake itself, which is surrounded to the west by reedswamp, areas of fresh water marsh as well as lowland wet grassland. The eastern side of the lake has improved grassland. A small island occurs in the lake.

The site was noted in 1971 (AFF County Report) as an area of ornithological importance for wintering wildfowl. Sheppard (1993) lists the site as being of regional/local importance. Wigeon (40), Pochard (110), Tufted Duck (10),

Golden Plover (20), Lapwing (150) and Curlew (150) (1 Count, Sheppard 1993) occur. The lake island has a few pairs of breeding grey herons and cormorants (Ranger report).

This site holds a wintering population of Golden Plover, a species listed in Annex 1 of the E.U. Birds Directive and in the Red Data Book as being threatened in Ireland.

This site is of interest as an important site for wintering wildfowl.

Site Name: Mace Head Islands

Site Code: 001300

Mace Head Islands are a group of marine islands west of Mace Head, including Freaghillaun, Ilaunnacroagh More, Ilaunnacroagh Beg and Croaghnakeela Island.

The islands are important for wintering Barnacle Geese, particularly Croaghnakeela and Freaghillaun. The Ilaunnacroagh group holds nationally important numbers of Great Black-backed Gulls (30-36 pairs in 1970). Freaghillaun has a population of Arctic Terns (25 pairs in 1970).
12.7.1995

Site Name: Killower Turlough

Site Code: 000282

Killower Turlough is located approximately 5km west of Tuam, Co. Galway. It is part of the River Clare group of turloughs, which also includes Belclare Turlough just to the south of the site. It is situated in an area of carboniferous limestone, with large amounts of Marl underlying thin soils. The main habitats are the turlough itself, as well as lowland grassland, wet, dry and improved, heath and reedswamp.

Due to the Corrib Drainage schemes of the 1960's, the total flooding area has decreased, and a large part of the original site is now improved grassland.

The main interest of this site is ornithological. It is part of the North East Galway identified by Sheppard (1993) and is of local or regional importance for 14 species of waterfowl, including Whooper Swan and Greenland White-fronted Goose. These two species are listed in Annex 1 of the Habitats Directive.

The damage of this site to date has been caused by drainage and the subsequent improvement of land. This continues to be the only apparent threat to the site, since the soil is of such poor quality that a forestry application was turned down. The designation of this site as an NHA rests purely on its regional importance for waterfowl.

Site Name: Kiltullagh Turlough

Site Code: 000287

Kiltullagh lies close to Galway airport, north-east of the city. It is a flat linear basin running northeast-southwest, deepening at its southern end. A few boulders occur along the edges, but it has the general appearance of a grassy field.

The majority of the turlough is covered by pasture with Tormentil (*Potentilla erecta*) and Sea Plantain (*Plantago maritima*) at the edges. On deeper soil Common Sedge (*Carex nigra*) is present. The lower ground contains Creeping Cinquefoil (*Potentilla reptans*), while the spring at the south end is partly grown over by Small Sweet-grass (*Glyceria declinata*).

The entire area is grazed closely by cattle and sheep.

Kiltullagh is at the dry extreme of turloughs, and has a large proportion of dry grassland. The turlough is in the catchment of the Clare River and may therefore be affected by the drainage scheme. This would explain the preponderance of a dry vegetation type and if true, reduces the level of ecological interest at the site. However it is possible that it is a natural phenomenon, in which case the site is quite unusual.

Site Name: Knockavanny Turlough

Site Code: 000289

Knockavanny Turlough is a small turlough in the Nanny sub-catchment of the larger Corrib catchment. It is situated about 5 km north-east of Tuam.

The site has a range of grazed plant communities typical of turloughs in the region. In addition, a small patch of Saw-sedge (*Cladium mariscus*) with the carnivorous plant Bladderwort (*Utricularia* spp.) is the only such example in this sub-catchment. A small area of species-rich grassland on calcareous soil on a steep south-facing slope is also included.

Cowslip (*Primula veris*) is extremely abundant on this slope, and a summer visit to the site would record many more interesting species.

The turlough, under flood, is shallow and hosts a large number of Wigeon (140 were present on 7 February 1994).

Turloughs are a uniquely Irish habitat and are therefore very rare on a European scale. This contributes very considerably to their conservation and scientific value.

Site Name: Monivea Bog

Site Code: 000311

Monivea Bog NHA is situated approximately 5 km north-east of Athenry, Co. Galway. It is located in the townlands of Corrantarrmud, Newcastle, Glenaslat and Lenamor. To the east lies the Killaclogher River and to the north a large coniferous plantation. It is located in an area of Karstic limestone.

The site consists of two higher areas to the north and south with a central depression associated with an extensive flush system. The dome of the bog features a pool/hummock complex including wet, quaking areas. There is also a lake and swallow holes located in the north-west flush and soak system. Cutover is found all around the margins of the high bog and is extensive on the north and eastern margins. Tracks are found on the high bog to allow access for peat-cutting.

The high bog has vegetation typical of the Western Raised Bog type consisting of Carnation Sedge (*Carex panicea*), Ling Heather (*Calluna vulgaris*), Bog Asphodel (*Narthecium ossifragum*), Deergrass (*Scirpus cespitosus*), the lichen *Cladonia portentosa* and the moss *Racomitrium lanuginosum*. Overall, Deergrass dominates the drier part of the high bog. In the pool/hummock complex on quaking bog, the cover of bog mosses (*Sphagnum* spp.) reaches 75%, consisting mainly of lawns of *Sphagnum cuspidatum*. Elsewhere, *Sphagnum* cover is typically low, ranging from 5-20%. Some pools are algae-dominated, but healthier pools have Hare's-tail Cottongrass (*Eriophorum vaginatum*) and bog mosses (*S. cuspidatum* and *S. auriculatum*). Hummocks consist of the bog mosses *S. fuscum*, *S. capillifolium* and *S. imbricatum*, with the mosses *Campylopus introflexus* and *Leucobryum glaucum*. Ling Heather and lichens are also found on the hummocks. The bog features a large soak-system in the north-west which originates at the lake. The open water is colonised by Bottle Sedge (*Carex rostrata*), Bogbean (*Menyanthes trifoliata*), Soft Rush (*Juncus effusus*) and Marsh Cinquefoil (*Potentilla palustris*), associated with quaking bog moss lawns. To the south-east of the lake there is a pool surrounded by scraw vegetation, this consists of a quaking mat of mosses (i.e. *Sphagnum cuspidatum*, *S. recurvum*, *S. palustre* and *Aulacomnium palustre*), Cranberry (*Vaccinium oxycoccos*), Purple Moor-grass (*Molinia caerulea*) and Bog-sedge (*Carex limosa*). Swallow holes are vegetated by willows (*Salix* spp.), Downy Birch (*Betula pubescens*), Broad Buckler-fern (*Dryopteris dilatata*), Tormentil (*Potentilla erecta*), Honeysuckle (*Lonicera periclymenum*) and Devil's-bit Scabious (*Succisa pratensis*). A number of small flushes with Purple Moor-grass, Bog-myrtle (*Myrica gale*) and bog mosses (*S. imbricatum*, *S. palustre* and *S. fuscum*) occur around the site. The cutover areas are sparsely vegetated in the north, east and south, and where vegetation occurs it is dominated by Common Cottongrass (*Eriophorum angustifolium*). The tracks in and around the bog are lined mainly with Gorse (*Ulex europeus*) and willows with some Birch (*Betula* sp.) and Bracken (*Pteridium aquilinum*). Gorse encroaches onto the high bog at the mid-west of the site.

There is extensive mechanical peat cutting to the north, east and south of the site, and some hand-cutting in the south-west. In places the facebank reaches 3 m in height with associated cracking and slumping. Some of the present high bog drains are new and others have been deepened. Burning events have occurred on the bog in the past and in places the peat remains unvegetated. 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.

Monivea 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. The site supports a diversity of raised bog microhabitats including hummock/hollow complexes, pools, flushes, soak system and open water. 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 E.U. resource of this habitat type (over 60%) and so has a special responsibility for its conservation at an international level.

31.5.2002

Site Name: Pollduagh Cave, Gort

Site Code: 000320

This site is the rising of the Cannahowna River. It is on the outskirts of Gort, Co. Galway. This site is a limestone cave with only the entrance accessible by wading. Quite soon into the cave the water becomes quite deep, a sump begins 30 metres into the cave. A nursery colony of Daubenton's bats hang in a cluster from the roof of the cave, a small inflatable boat is needed to reach the bats. As approximately 100 bats were counted in the cave, this is a site of national importance, being one of the largest nursery roosts, and also probably international importance.

This species is dependent on aquatic insects so it is important that the river system remains pollution free and nearby vegetation is not removed.

12.7.1995

Site Name: Richmond Esker Nature Reserve

Site Code: 000323

Richmond Esker Wood is a small wooded esker ridge situated about 6 km north-west of Moylough.

The most abundant tree species is Beech (*Fagus sylvatica*), up to 1 m in diameter and tall, but some Ash (*Fraxinus excelsior*), Holly (*Ilex aquifolium*) are present, sometimes in locally abundant thickets. Scattered Yew (*Taxus baccata*) are also present. Spruce and Larch trees are frequent, and the occasional exotic conifer, for instance Hemlock (*Tsuga* sp.), is also present. The ground flora is quite diverse, especially on the summit and on the steep western slope which overlooks pasture, and is not shaded by commercial forest. A field layer with a very high cover of lime-loving mosses occurs, and Bluebell (*Hyacinthoides non-scriptus*), Cowslip (*Primula veris*), Wood Rush (*Luzula sylvatica*), Wood Sedge (*Carex sylvatica*) and False Brome (*Brachypodium sylvaticum*) are much in evidence, along with occasional Dogwood (*Cornus sanguinea*), a reasonably scarce woodland plant. A visit in spring or summer will certainly show that many more interesting plants exist there.

Although this wood cannot be said to be natural, having a predominance of Beech (which is not native to Ireland) and conifers, nevertheless wooded eskers are rare in the region (being mostly reclaimed or quarried). The variety of tree species allows a very good population of woodland birds to exist, including Jays (which feed on Beech masts amongst other things). Also, the ground flora has retained much of its original diversity.

The boundary of Richmond Esker Wood follows the extent of the State-owned National Nature Reserve over much of its length, but also includes a section of commercial forest outside the Reserve in the north-eastern corner. Management of this and other blocks of commercial forest should take account of and enhance the conservation interest of the site.

The presence of an old track along the crest of the esker adds historical interest to the site.

Site Name: Turlough O'Gall

Site Code: 000331

Turlough O'Gall lies between Shrule and Tuam, approximately 3 km west of Belclare. The surrounding

countryside is very flat, but the turlough can be viewed from the Knockmaa ridge to the south. The floor of the basin, particularly in the east, is uneven because of bedrock. To the west there is a large expanse of level ground on limestone, which occasionally outcrops. The turlough is a dry one, and the arterial drainage of the Clare river is believed to curtail flooding.

Apart from the vicinity of the ponds, the southern half of the turlough has a simple vegetation structure made up mainly of limestone grassland, with prominent Mat-grass (*Nardus stricta*). There is a little scrub invasion with Hawthorn (*Crataegus monogyna*) bushes present.

Towards the north of the site the vegetation is more complex as this area is prone to fluctuations in water level. Creeping Cinquefoil (*Potentilla reptans*) is widely spread, but there are also sedges and grasses. Above this is an area of unmanaged grassland with Tufted Hair-grass (*Deschampsia cespitosa*), Purple Moor-grass (*Molinia caerulea*) and Sea Plantain (*Plantago maritima*) amongst Willow (*Salix repens*) and Buckthorn (*Rhamnus catharticus*).

The three depressions on the floor of the turlough are ringed by Common Sedge (*Carex nigra*). The pools themselves contain Pondweeds (*Potamogeton* spp.) and Bogbean (*Menthanthes trifoliata*). Typical fen vegetation surrounds these pools.

The area is used for grazing by some cattle, but predominantly sheep.

Turlough O'Gall is distinct in vegetational terms in having large areas of both sedge heath and limestone grassland - the rock outcrops and pools add habitat diversity. Its unmodified drainage adds to its conservation value.

Site Name: Rostaff Turlough

Site Code: 000385

Rostaff Turlough is located approximately 2km. north-west of Headford, beside Ross Abbey. The Black River flows through the site, which is situated in a limestone area. The main habitats within the site are improved grassland and turlough.

The interest of the site is zoological, mainly wintering waterfowl. Two species with nationally important numbers occur: Greenland White-fronted Geese (average peak 83, absolute maximum 88, 1982/83 - 1991/92) and Shoveler (average peak 70, 1984/85 - 1986/87). Species with regionally/locally important numbers are Wigeon (300), Teal (20), Mallard (89), Golden Plover (350), Lapwing (453), Dunlin (37) and Curlew (173) (numbers are average peaks over 3 seasons 1984/85 - 1986/87). Whooper Swans occasionally use the site, with up to 37 in November 1984. Species breeding at the site are Ringed Plover, Snipe, Tufted Duck, Pochard, Grey Heron and Redshank. One Peregrine Falcon has used the site as a winter residence over a number of years.

The importance of Rostaff Turlough is primarily ornithological with nationally important numbers of Greenland White-fronted Geese and Shoveler. The site also has a number of notable populations of breeding birds. The site is a bird sanctuary.
12.7.1995

Site Name: Maumtrasna Mountain Complex

Site Code: 000735

The Maumtrasna Mountain Complex is situated to the north-east of the Maumturk Mountains and to the west of Lough Mask and Lough Corrib. The site is bounded to the north-west by the Erriff River, to the north-east by the Owenbrin River and to the south-west by the Bealanabrack River and Joyce's River. Most of the mountains exceed 500m in height and more than half of the land within the site lies above an altitude of 300m. The main bedrock in the north and west of the site is Mweelrea Grits, with occasional bands of slate. The remainder of the site is composed of mudstones and sandstones, with occasional outcrops of mica-schist and basic igneous rocks.

The major habitat within the Maumtrasna Mountain Complex is upland grassland on peaty soil. The dominant plant species in this habitat include Deergrass (*Scirpus cespitosus*), Mat-grass (*Nardus stricta*), Purple Moor-grass (*Molinia caerulea*) and occasional Ling Heather (*Calluna vulgaris*) and Bell Heather (*Erica cinerea*). Overgrazing by sheep has greatly reduced the amount of heather cover in these communities and consequently resulted in a large scale change from upland heath to grassland.

The secondary habitat in this site is upland grassland on mineral soil. This is largely confined to a distinct band running parallel to the southern boundary e.g. at Lugnabrick and Knocknagussy. This vegetation type is generally found in association with sedimentary rocks of Silurian and Ordovician age, other than Mweelrea grits. Species of note here include Bent Grass (*Agrostis* spp.), Fescue Grass (*Festuca* spp.), Mat-grass (*Nardus stricta*) and Heath Bedstraw (*Gallium saxatile*). Minor habitats present, include upland heath, lowland blanket bog, scree, exposed rock, lakes, flushes, river valleys and streams.

The very Rare and legally protected Irish St. John's wort (*Hypericum canadense*) (Flora Protection Order, 1987) is found at one location in the site, in a patch of moorland approximately 1.5km east of Lough Nadirkmore.

In areas where cliffs occur at altitude e.g. the Dirkmore and Dirkbeg corries, the cliffs at Lugnabrick and at Benbeg ridge, nationally scarce plant species such as Alpine Hair-grass (*Deschampsia cespitosa* subsp. *alpina*), Alpine Meadow Rue (*Thalictrum alpinum*) and Mountain Sorrel (*Oxyria digyna*) are present.

Arctic Char (*Salvelinus alpinus*) has been recorded in Lough Nafooney. This species is listed in the Irish Red Data Book as threatened in Ireland.

The Irish Hare (*Lepus timidus hibernicus*) has been recorded from the site and is probably widespread. This endemic sub-species is also listed as being threatened in the Irish Red Data Book.

The main damaging operations in the Maumtrasna Mountain Complex are overgrazing and peat-cutting. Sheep grazing is widespread and quite severe within the site. Peat cutting, both by hand and by machine, has become more of a problem in recent years but is largely confined to areas of deep, lowland blanket bog, which is a rare habitat within the site. Other potentially damaging operations here include afforestation, land drainage and reclamation, fertilization, quarrying and dumping.

This site is of interest as it is a good example of an extensive mountain landscape, containing tracts of upland grassland on both peaty and mineral soils. The summits of the mountains within the site, particularly where there are high altitude cliffs and/or base-rich substrates, provide a locus for a good variety of arctic/alpine species. The presence of the Rare and legally protected St. John's Wort (*Hypericum canadense*) and other scarce species adds to the interest of the site.

15.2.1995

Site Name: Ardgraique Bog

Site Code: 001224

Ardgraique Bog is located 3km northeast of Killimor just north of the Killimor/Eyrecourt Road (L2). It is located in a cluster of bogs with two NHA sites, Moorfield bog and Meneen bog, nearby. This site has not been visited since 1984.

The main habitat is raised bog and is described in the 1984 FWS report as an excellent example of a raised bog. The surface is very wet and surprisingly intact. Very few open pools exist but a good hummock/hollow system present with a complete cover of the bog mass (Sphagnum). *S. pulcrum* predominates in the hollows. There is good lichen cover with epiphytic growth on the stems of Ling Heather (*Calluna vulgaris*).

There is old cutaway with scrub encroachment around most of the site.

Sphagnum pulcrum and the liverwort, *Pleurozia purpurea* are interesting plant species recorded and grouse is also reported on this site.

Most of the bog surface is remarkably clear of drains but old tracks and cutaway occur in the south. Extensive hopper turf cutting occurs to the south and east of the site. This will seriously affect scientific value of the bog if not controlled. This bog is reported as being unburnt for over 20 years.

This bog has good active Sphagnum growth and has an intact wet centre. Raised bog is an Annex I habitat of the Corine biotypes list (51.1) as it is a rare habitat in Europe. This is a very good example of raised bog and is of high scientific interest.

Site Name: St. Macdara's Island

Site Code: 001318

St. Macdara's Island is a small, uninhabited, marine island situated about 3 km south-west of Mace Head.

The island is of interest for its colonies of seabirds, which include Great Black-backed Gull (40 pairs in 1970), Lesser Black-backed Gull (50 pairs in 1970), Herring Gull (200 pairs in 1970) and Common Gull (2 pairs in 1970). Unspecified numbers of Arctic Tern and Little Tern have also been reported from the island.

8.12.2005

Site Name: Summerville Lough

Site Code: 001319

Summerville Lough is a relatively small permanent lake, with an associated raised bog and wet, species-rich grassland, situated about kilometres west of Moylough, in east Co. Galway.

The lake is quite shallow, with patches of Common Club-rush (*Schoenoplectus lacustris*) near the centre and on the margins. This makes it attractive to a large number (relative to its size) and variety of winter wildfowl. Whooper Swans, an Internationally Important bird in Ireland, are regularly visitors in small numbers (c.20), and the Otter (a legally-protected mammal in Ireland and Europe) is resident here. A large expanse of wet, species-rich grassland on peat (some of it developed over old 'lazy beds') grades down through marsh to the lake. The raised bog is not typical or of good quality but the transition to lake and marsh makes it necessary to include it.

Summerville Lough is an important wintering site for wildfowl and the unusually large expanse of semi-natural wet grassland on peat adds considerable interest to the area. The undisturbed north and eastern areas are an advantage to the wildfowl population.

12.7.1995

Site Name: Turlough Monaghan

Site Code: 001322

Turlough Monaghan is situated just to the north of Fearagha.

It has a flat floor in most places apart from a rocky rise that projects from the south-west side. The north-east edge is marked by level beds of outcropping limestone which rise about 8 km above the basin. The turlough seems to flood regularly but is relatively shallow.

The two ponds in the lower parts of the floor resemble each other in having a central area of Broad-leaved Pondweed (*Potamogeton natans*) and Small Pondweed (*Potamogeton bertholdii*) surrounded by weedy species. Creeping Cinquefoil (*Potentilla reptans*) is widespread but the vegetation structure is modified by grazing pressure.

A depression at the northern end carries Common Sedge (*Carex nigra*), which changes to marginal communities as the land rises. A similar rise in the south is colonised by a heathy vegetation with a considerable amount of Purple Moor-grass (*Molinia caerulea*). The soils are thin there and rock breaks through in places.

More definite outcrop on the eastern side bears some Blackthorn (*Prunus spinosa*) scrub centrally, while at the edge the pavement is sometimes flooded - Yellow-rattle (*Rhinanthus minor*), Buckthorn (*Rhamnus catharticus*), Quaking-grass (*Briza media*) and Tawny Sedge (*Carex hostiana*) are frequent, with both Rough Hawbit (*Leontodon hispidus*) and Lesser Hawbit (*Leontodon taraxacoides*).

Flocks of Lapwing have been recorded at the turlough.

The turlough is basically a dry one with little physical variation except for the outcrops of bedrock. The vegetation, however, is quite diverse, with ten community types in a relatively small area. The site is of local scientific and conservation value.

Site Name: Tiaquin Bog.

Site Code: 001709.

Tiaquin Bog is situated approximately 10km. north-east of Athenry. The site is located east of Monivea village, with the Killaclogher river flowing just west of the site boundary. The sites underlying geology consists of carboniferous limestone.

In 1971 An Foras Forbartha, Galway County Report, provided the following description for the site: "Another excellent example of a raised bog, included in a Game Reserve. Bordered by some birch (*Betula pubescens*) wood, which adds to its value because of the change in plant communities from bog through to woodland".

NO information on the present condition of the habitats occurring in this site is available. However, turf cutting by "sausage machine" is presently damaging the site as well as the planting of coniferous trees.

Site Name: Ballinasloe Esker

Site Code: 001779

Ballinasloe esker is about 6km long and stretches due west from Ballinasloe roughly along the line of the Galway- Dublin rail-line.

The main habitats are a mixed wood and a dry broadleaved semi-natural woodland. The mixed wood consists of Beech (*Fagus sylvatica*) and Sycamore (*Acer pseudoplatanus*) with some Oak (*Quercus robur*) and a grove of Yew (*Taxus baccata*).

The dry wood has Ash (*Fraxinus excelsior*), coppiced Hazel (*Corylus avellanus*) and some solitary Oaks (*Quercus robur*). There is a good ground flora present with Early Purple Orchid (*Orchis mascula*) and Primrose (*Primula vulgaris*) common. Wood Anemone (*Anemone nemorosa*) and Lesser Celandine (*Ranunculus ficaria*) are also abundant in places.

A freshwater marsh and wet woodland and a small fen also occur on this site with Yellow Flag (*Iris pseudacorus*), Marsh Marigold (*Caltha palustris*) and Horsetail (*Equisetum fluviatile*) present in the marsh and woodland and the fen being dominated by Sedges (*Carex flacca*, *C. panicea*, *C. flava*). The Twayblade (*Listera ovata*) is also present.

Parts of the esker are grazed by cattle which are causing damage due to trampling in places. Also the size of the esker is being reduced due to quarrying and improvement of grassland by fertilizing and reseeding.

Continued quarrying is a threat to this site as is the clearing of mature trees. A good ground flora only occurs in undisturbed regions of the woodland and so will be destroyed if woods cleared.

Esker woodlands are scarce in Ireland (" <150 ha in total", Cross 1992) and undisturbed stands with a good ground flora such as occurs on this site (?) are important links with the original woodland. For these reasons it is important to preserve esker woods and so this should be designated as an N.H.A.

Site Name: Turloughcor

Site Code: 001788

Turloughcor is located approximately 5km south-east of Headford, Co. Galway in a lowland karstic limestone area. A small lake, Doolough is the centre of the site, surrounded by a large area which was liable to flooding in the past. Due to extensive drainage, most of the area no longer floods. There are still some small areas to the north-east of the lake which flood, along natural springs. The dominant habitat in the area is improved grassland, with no plant species of importance being noted.

The main secondary habitats at this site are water bodies, rivers, streams and drainage channels. Some inland wet and dry grassland occur, along with small amounts of scrub and limestone pavement.

The main interest of this site is ornithological. In excess of 500 Wigeon graze the grassland around the turlough, with lesser numbers of Teal and Mallard. Greenland White-Fronted Geese do not use the site anymore. Mute Swans (2), Mallard and Lapwing breed at the site.

Drainage is the main damaging operation affecting this site. It has already considerably lowered the scientific value of the turlough. Fertilization of the surrounding grassland is also a problem. Black River and District Gun Club manage the shooting on the turlough and have had a Mallard-release programme over the last few years.

Turloughcor is a locally important site, which would be of more importance if drainage and fertilization were controlled.

Site Name: Crump Island Complex

Site Code: 001917

The Crump Island Complex includes the islands of Freaghillaun North, Shanvallybeg, Carrigeen North and Crump Island itself. These are located about 1 km north-east of Rinivyle Point.

The islands support internationally important numbers of Barnacle Geese (150 birds recorded from Crump Island in 1994).

12.7.1995

Site Name: Friar Island

Site Code: 001972

Friar Island comprises a group of marine islets (totalling c. 20ha and rising to 30m) about 1 km west of Aughrus Point, of interest for their colonies of seabirds. The following have been reported, Herring Gull (63 pairs in 1969), Great Black-backed Gull (6 pairs in 1969), Lesser Black-backed Gull (2 pairs in 1969) and Common Tern (10 pairs between Friar and Aughrus in 1969). Terns were not found at this site in 1984.

Barnacle Geese are thought to graze here in winter.

12.7.1995

Site Name: Cruagh Island

Site Code: 001973

Cruagh Island is a small (c. 35ha) uninhabited island (c. 60m high) situated about 2 km west of Omey Island. Herring Gull (100 pairs in 1969), Great Black-backed Gull and Fulmar are recorded from the island. Storm Petrel are reported by Whilde to breed on the island.

Barnacle Geese are thought to graze on the island in winter.
12.7.1995

Site Name: Castle Hackett Souterrain

Site Code: 002038

This site consists of a man-made, stone, underground passageway which dates from between 500 and 1200 A.D. It is situated in a field close to Castle Hackett Estate, Caherlistrane, County Galway. It is a winter hibernation site for the Lesser Horseshoe Bat (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive.

In the past, souterrains were used for food storage or as places of refuge. Today they offer ideal hibernation conditions for the Lesser Horseshoe Bat as they are humid and remain at a constant temperature.

There is no vegetation cover surrounding the entrance to this souterrain, which is in a field grazed by sheep. There are, however, trees and hedgerows within 100 m of the site.

Bats have been seen at this site each winter since 1985. The highest number recorded was 35. Public access has been a problem in the past and in 1995 a grille was fitted in the passageway running from the entrance - this should lead to an increase in the numbers of bats using the site.

As well as being a regular hibernation area, this site is notable as it is one of the few Lesser Horseshoe Bat sites in County Galway.
19.10.1997

Site Name: Old Domestic Building, Heath Island, Tully-Lough.

Site Code: 002062

This site is a nursery roost of the Natterer's bat (*Myotis nattereri*). Approximately 140 bats roost in the attic of the only dwelling on Heath Island, the largest island in Tully Lough, north of Letterfrack, Co. Galway. Although the site was only discovered to contain a Natterer's roost in 1992, the owners report that there has been bats in the house for many years and are extremely happy to have bats in the attic. The replacement, in 1993, of a broken window through which the bats entered and left the attic with a section of piping did not adversely affect the bats. As the national population of this species is estimated to be only several thousand, this site is of national importance. It is considered "vulnerable" throughout Europe so this site may also be of international importance.

Although it is unlikely that the existing woodland and shrubs on the island could sustain a colony of this size, bats do feed on the island. This foraging habitat is safe as the owners

plan to plant more trees on the island. Any changes to more extensive woodland in the vicinity of the island could adversely affect a colony of this size.

It might be more accurate to refer to this site as "Heath Island" rather than Tully Lough as the site concerns the building on Heath Island rather than the Lough itself.
12.7.1995

Site Name: Letterfrack Hostel

Site Code: 002080

This site is a mixed nursery roost of the Natterer's bat (*Myotis nattereri*) and long-eared bat (*Plecotus auritus*). Approximately 50 of each species hand from the roof of the Hostel in Letterfrack.

As the national population of the Natterer's bat is estimated to be only several thousand, this site is of national importance. As most long-eared colonies are small, this colony is of national importance also. This site is also important because it contains reasonable numbers of two bat species.

As both these species are dependent on woodland for foraging habitat, any changes in woodland in the vicinity of the building could adversely affect these colonies.

The owners of the church, the Benedictine Nuns, are aware of the bats in the church and are willing to allow them to use the loft area. The nuns plan to use the restored church as a venue for music recitals but it is unlikely that this will interfere with the nursery colony.
12.7.1995

Site Name: Oughterard National School

Site Code: 002082

This site consists of a two-storey primary school which is used as a nursery site by approximately 300 Leisler's bats (*Nyctalus leisleri*). The bats roost in two sites in the roof.

This site is probably the largest Leisler's nursery colony in Ireland and possibly in Europe. It was first discovered in 1992 and has increased in size every year since then.

The children and teachers are happy having the bats in the school and the school management have been persuaded to allow the bats to stay, providing droppings are removed regularly.

This tolerance 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 number of safe nursery roosts are small.
12.7.1995

Site Name: Killarainy Lodge, Moycullen

Site Code: 002083

This site is a nursery roost of the Natterer's bat (*Myotis nattereri*). Approximately 70 bats use the roof at the gable

end of a stone building in the grounds and Kilrainey Lodge, Moycullen. The house is privately owned.

As the national population of this species is estimated to be only several thousand, this site is of national importance. It is considered "vulnerable" throughout Europe so this site may also be of international importance.

This species is dependent on woodland for foraging habitat so any changes to existing woodland surrounding the roost would have adverse effects on this colony.
12.7.1995