Lough Neagh Wetlands Local Biodiversity Action Plan

Contents

1. Introduction

The Lough Neagh Wetlands Local Biodiversity Action Plan was prepared following consultation with local people and various organisations and agencies operating within the area.

Biodiversity includes the whole variety of life on Earth. The living world is made up of many thousands of different animals and plants. Local biodiversity is represented by all the plant and animal species that we see in the Lough Neagh Wetlands but it also includes the genetic variation and the complex ecosystems of which they are part. Every living creature has its own genetic 'fingerprint', the greater the variety of plants and animals, the greater the genetic diversity. Even tiny or insignificant plants may have a vital place in a food chain and the whole network of living things. Everything is precious, if you destroy one small part, you may lose much more. Biodiversity is not restricted to rare or threatened species like the barn owl, but also to more common species like the Stoat.

In 2005, the Lough Neagh Wetlands Biodiversity Officer began to assess the condition of local biodiversity, and to develop effective partnerships that would deliver action for those species and habitats most in need of help. An audit of the local biodiversity resource was compiled. This audit included extensive searches for information relating to the area. It also included talking to people locally about the condition of their local biodiversity and to get ideas for action. Local biodiversity workshops were set up at Bellaghy, Ardboe, Dungannon, Craigavon, Glenavy and Antrim where participants presented their views on the issues that they felt should be addressed in a Local Biodiversity Action Plan (LBAP). A list of species and habitats was then produced in 2006 with details of their status within the Wetlands.

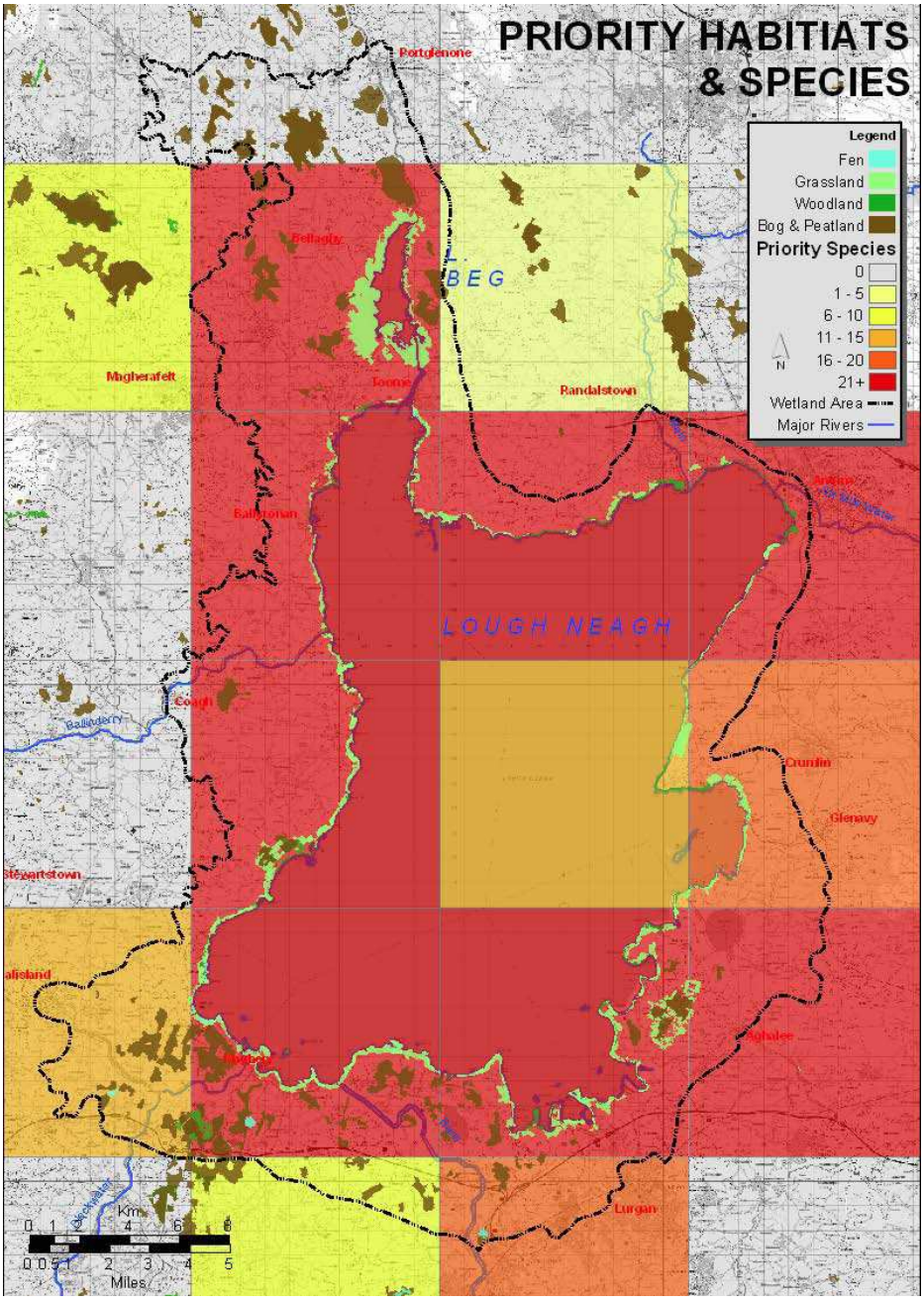
10 habitats and 11 species were selected from the list put forward in 2006 so that Action Plans could be prepared. The introduction and spread of non-native invasive species, such as zebra mussel and giant hogweed, was identified as a major threat to local biodiversity. As a result, a Non-native invasive Species Action Plan has been prepared to help address this threat.

The Lough Neagh Wetlands Local Biodiversity Action Plan contains 10 Habitat Action Plans, 11 Species Action Plans and 1 non-native Species Action Plan. This is the first phase for action to halt the decline of biodiversity locally. Further opportunity exists to continue to add Species and Habitat Action Plans where required.

The following habitats and species plans contain actions that identify **Lead Partners.** Lead Partners are those tasked with leading on specific projects, with the assistance of others, as identified against each action.

2. The Lough Neagh Wetlands

The Lough Neagh Wetlands Local Biodiversity Action Plan takes a landscape approach to halting the decline of biodiversity. The black line on the map below defines the area known as the Lough Neagh Wetlands for which this plan refers, and indicates the presence of Priority Habitat in the area – though the map is by no means complete



The geographical area known as the Lough Neagh Wetlands is defined by the Landscape Character Areas around Lough Neagh/Lough Beg. The following maps and descriptions outline where these Landscape Character Areas are.

West Lough Neagh Shores

This is a relatively flat, low-lying, expansive landscape containing shallow drumlins surrounded by flat, open pastures. There are large fields along the floodplain of the Ballinderry River, which are often surrounded by drainage ditches and a well-connected network of straight hedgerows. Poorly-drained areas exist, especially along the Lough Neagh shore. Stretches of the rivers are enclosed by flood embankments. There are numerous hedgerow trees and the mature hedgerow oaks are considered to be a special, distinctive feature of the area.

Lower Bann Valley

Within the Lough Neagh Wetlands, the Lower Bann Valley landscape extends along the wider floodplain of the Lower Bann, from where the Clady River joins the Lower Bann, to the shores of Lough Neagh. The area includes the lower reaches of the Moyola River and the Clady River. The land is relatively low-lying, with a transition from shallow drumlins on the edges of the floodplains, to extensive flat pastures, bog and wet woodlands on the fringes of Lough Neagh and Lough Beg. Stretches of the rivers are enclosed by embankments. The landscape has a prominent network of hedgerows containing numerous hedgerow trees. An exception is the low-lying floodplain to the north of Lough Beg, where the landscape is relatively open, giving long views to the broader ridges enclosing the floodplain. The fringes of Lough Beg are particularly remote, with extensive wet grassland on the west shore and woodland on the east shore. The spire of the church on Church Island stands out as a landmark above woodland in a deeply tranquil and remote wetland landscape.

North Lough Neagh Shores

This landscape comprises a 2km to 3km wide belt of flat land that fringes the northern shores of Lough Neagh between Toome and Antrim. The lough banks are carved into localised troughs and hummocks with incised streams but remain predominantly flat. The shoreline itself follows a meandering

line of bays, inlets and headlands and to its west in particular, countless tiny islands a few metres off shore. The Lough Neagh shores are fringed by broadleaf woodland which runs almost continuously over 6km from Portlee to Farrs Bay where it links with the extensive Randalstown Forest of The Shanes Castle Estate.

A border of reed beds is quite characteristic along much of the shoreline, giving a soft and distinct edge. In other marshy areas, patchy rushes and low growing alders create pockets of semi-natural habitat. Away from the lough shore, pastoral fields predominate with large fields bound by gappy hedges and drainage ditches.

East Lough Neagh Points and the Portmore Lough Fringe

This area extends all the way down the east shore of the Lough. This is an area containing relatively small fields and hedgerows underlain by Lough Neagh Clays. There are long views across a completely flat landscape, with prominent large farmsteads on small `islands'. Many farms are associated with stands of mature trees. The large arable fields are drained by straight ditches and enclosed by hedgerows.

This Portmore Lough fringe is an area of farm pasture and wet grassland on the low-lying flat landscape around the shores of Portmore Lough. The area is underlain by Lough Neagh Clay and becomes increasingly waterlogged towards the margins of the lough. The larger pastures on higher land towards the edges of Lough Neagh are enclosed by hedgerows. Regenerating scrub and fen carr can be found on the margins of Portmore Lough. A large proportion of scrub has recently been removed from here to enhance the wet grassland and fen feature of the area. There are numerous drainage channels and many of the straight, narrow roads are raised on embankments and bordered by ditches. The landscape retains a rather wild, remote character. The ancient moated

churchyard to the west of the village of Lower Ballinderry has a special, remote character where it is virtually surrounded by fen and scrub.

Lough Neagh Peatlands

The Lough Neagh Peatlands landscape is found on the southern shores of Lough Neagh. This is a low lying marshy landscape with small, protruding drumlins. The old canal, river channels and drainage patterns have a strong visual influence on this area**.** Much of the area has been previously worked for peat and has been extensively modified through peat extraction. There are areas of regenerating birch and willow scrub and farmland, wherever drainage permits. Pastures are mostly of medium size and are edged with hedgerows and hedgerow trees. Larger pastures are found on the farmland adjacent to the River Bann.

3. The Lough Neagh Wetlands Biodiversity Audit 2005/2006

Species

The species below are listed because they appear on the Northern Ireland list of Species of Conservation Concern. Several are also listed on the Northern Ireland and UK List of Priority Species. An audit was carried out to establish how many Priority Species / Species of Conservation Concern were present in the Lough Neagh Wetlands. The audit also attempted to establish the status of each species in the Lough Neagh Wetlands.

Present	Presence of species is of sufficient interest						
Important	The Lough Neagh Wetlands is an important area for the Northern Ireland/ Irish and European population.						
Significant	One of only a few sites / or the only site for this species to occur in Ireland						
Group	**FULL NAME**	**COMMON NAME**	**ORDER**	**NI Priority Species**	**UK Priority Species**	**NI Species of Cons. Concern**	**Status in the Lough Neagh Wetlands**
Vascular Plants	Frangula alnus	Alder Buckthorn	Magnoliidae	**YES**		**YES**	**Significant**
Birds	Tyto alba	Barn Owl	Strigiformes	**YES**		**YES**	**Important**
Birds	Limosa limosa	Black-tailed Godwit	Charadriiformes	**YES**		**YES**	**Important**

Moth	Selidosema brunnearia	Bordered grey	Lepidoptera			**YES**	**Significant**
Fish	Salmo trutta fario	Brown Trout / Lough Neagh Dollaghan	Isospondyli			**YES**	**Significant**
Birds	Pyrrhula pyrrhula	Bullfinch	Passeriformes	**YES**	**YES**	**YES**	**Important**
Birds	Sterna hirundo	Common Tern	Charadriiformes			**YES**	**Important**
Birds	Crex crex	Corncrake	Gruiformes	**YES**	**YES**	**YES**	**Important**
Birds	Numenius arquata	Curlew	Charadriiformes	**YES**		**YES**	**Important**
Moths	Dicallomera fascelina	Dark Tussock	Lepidoptera			**YES**	**Significant**
Birds	Bucephala clangula	Goldeneye	Anseriformes			**YES**	**Important**
Birds	Locustella naevia	Grasshopper Warbler	Passeriformes	**YES**		**YES**	**Important**
Birds	Podiceps cristatus	Great Crested Grebe	Podicipediformes			**YES**	**Important**
Butterflies	Callophrys rubi	Green Hairstreak	Lepidoptera			**YES**	**Present**

Dragonflies	Coenagrion lunulatum	Irish Damselfly	Odonata	**YES**		**YES**	**Significant**
Mammal	Lepus timidus hibernicus	Irish Hare	Lagomorpha	**YES**		**YES**	**Important**
Vascular Plants	Spiranthes romanzoffiana	Irish Lady's-Tresses	Liliidae	**YES**	**YES**	**YES**	**Significant**
Birds	Alcedo atthis	Kingfisher	Coraciiformes			**YES**	**Present**
Birds	Vanellus vanellus	Lapwing	Charadriiformes	**YES**		**YES**	**Significant**
Butterflies	Eurodryas aurinia	Marsh Fritillary	Lepidoptera	**YES**	**YES**	**YES**	**Significant**
Vascular Plants	Calamagrostis stricta	Narrow Small-reed	Liliidae	**YES**		**YES**	**Significant**
Mammal	Lutra lutra	Otter	Carnivora	**YES**	**YES**	**YES**	**Important**
Vascular Plants	Mentha pulegium	Pennyroyal	Magnoliidae	**YES**	**YES**	**YES**	**Significant**
Birds	Anas acuta	Pintail	Anseriformes			**YES**	**Present**

Birds	Aythya ferina	Pochard	Anseriformes			**YES**	**Important**
Fish	Coregonus autumnalis pollan	Pollan	Isospondyli	**YES**	**YES**	**YES**	**Significant**
Birds	Tringa totanus	Redshank	Charadriiformes	**YES**		**YES**	**Significant**
Birds	Emberiza schoeniclus	Reed Bunting	Passeriformes	**YES**	**YES**	**YES**	**Important**
Fish	Lampetra fluviatilis	River Lamprey	Petromyzonidae				**Important**
Vascular Plants	Ranunculus fluitans	River Water-crowfoot	Magnoliidae	**YES**		**YES**	**Significant**
Birds	Aythya marila	Scaup	Anseriformes			**YES**	**Important**
Birds	Tadorna tadorna	Shelduck	Anseriformes			**YES**	**Important**
Birds	Anas clypeata	Shoveler	Anseriformes			**YES**	**Important**
Birds	Alauda arvensis	Skylark	Passeriformes	**YES**	**YES**	**YES**	**Important**

Birds	Gallinago gallinago	Snipe	Charadriiformes			**YES**	**Important**
Birds	Anas crecca	Teal	Anseriformes			**YES**	**Important**
Birds	Passer montanus	Tree Sparrow	Passeriformes	**YES**	**YES**	**YES**	**Significant**
Birds	Aythya fuligula	Tufted Duck	Anseriformes			**YES**	**Important**
Crustaceans	Austropotamobius pallipes	White-clawed Crayfish	Decapoda	**YES**	**YES**	**YES**	**Present**
Birds	Cygnus cygnus	Whooper Swan	Anseriformes			**YES**	**Important**
Birds	Anas penelope	Wigeon	Anseriformes			**YES**	**Important**
Mammal	Plecotus auritus	Brown Long-eared Bat	Chiroptera	**YES**		**YES**	**Present**
Mammal	Myotis daubentoni	Daubenton's Bat	Chiroptera	**YES**		**YES**	**Present**
Mammal	Nyctalus leisleri	Leisler's Bat	Chiroptera	**YES**		**YES**	**Present**

Mammal	Pipistrellus nathusii	Nathusius' Pipistrelle	Chiroptera	**YES**		**YES**	**Present**
Mammal	Myotis nattereri	Natterer's Bat	Chiroptera	**YES**		**YES**	**Present**
Mammal	Pipistrellus pipistrellus pipistrellus & p. pygmaeus	Pipistrelle (2 phonic types - 45 kHz Pipistrelle & 55 kHz Pipistrelle)	Chiroptera	**YES**		**YES**	**Present**
Mammal	Myotis mystacinus	Whiskered Bat	Chiroptera	**YES**		**YES**	**Present**

Habitats

The habitats below are listed because they appear on the Northern Ireland List of Priority Habitats. An audit was carried out to establish how many Priority Habitats were present in the Lough Neagh Wetlands. The audit also attempted to establish the status of each habitat in the Lough Neagh Wetlands.

Present	Occurrence in the wetlands is of sufficient interest
Important	Important proportion of the Northern Ireland resource found in the Wetlands

PRIORITY HABITAT	NI Priority	Present in Lough Neagh Wetlands	Status in Lough Neagh Wetlands
Lowland Dry Acid Grassland	**YES**	**YES**	**Present**
Cereal Field Margins	**YES**	**YES**	**Present**
Lowland Raised Bog	**YES**	**YES**	**Important**
Ancient and/or species-rich hedgerows	**YES**	**YES**	**Important**
Parkland	**YES**	**YES**	**Present**
Wet Woodland	**YES**	**YES**	**Important**
Mixed Ashwood	**YES**	**YES**	**Present**
Oakwood	**YES**	**YES**	**Present**
Lowland heathland	**YES**	**YES**	**Present**

Fens	**YES**	**YES**	**Important**
Purple moor grass and rush pasture	**YES**	**YES**	**Important**
Reedbeds	**YES**	**YES**	**Important**
Floodplain grazing marsh	**YES**	**YES**	**Important**
Lowland meadows	**YES**	**YES**	**Important**
Rivers and Streams	**YES**	**YES**	**Important**
Eutrophic standing water	**YES**	**YES**	**Important**
Mesotrophic lakes	**YES**	**YES**	**Present**

4. Species selected for action (Phase 1)

4.1 Barn Owl

4.2 Bats (All species)

4.3 Breeding Waders (Curlew, Lapwing, Redshank)

4.4 Common Tern

4.5 Dyschirius obscurus (Ground Beetle)

4.6 Irish Damselfly

4.7 Irish Hare

4.8 Tree Sparrow

4.9 Whooper Swan

Lough Neagh Wetlands

Barn Owl

Tyto alba

Species Action Plan

2008 - 2013

Barn Owl in the Lough Neagh Wetlands

Introduction

The barn owl *Tyto alba* is an instantly recognizable white owl and is characteristic of lowland mixed farmland where it feeds on small mammals found in rough grassland along field margins, roadways, riverbanks, woodland edge and around farm buildings.

It is resident in Ireland and generally found on lowland farmland which exists throughout the Lough Neagh Wetlands. It nests inside used and disused buildings, mature hollow trees and rock crevices. It also will use nestboxes. In Northern Ireland, its diet consists mainly of mice, shrews and young rats. They will take frogs when available, as well as small birds and will occasionally supplement their diet in winter with large beetles.

The barn owl is one of the most widely distributed land birds in the world. In Northern Ireland it is on the northern edge of its global range. It was once relatively common in the lowland agricultural habitats of the Lough Neagh Wetlands. However, since the 1930s it has been in serious decline across Britain and Ireland. It is thought that the population has more than halved in Northern Ireland with a decline of 69% experienced between 1932 and 1985. It was estimated that there were less than 50 pairs in Northern Ireland in 1985 from an estimate of 250 pairs in 1932. Today the Northern Ireland population remains very low and is estimated to be between 45 - 65 pairs. The population remains fragile and fragmented.

Background

Across Northern Ireland, estimates include 10 - 15 pairs in county Derry, 10 - 15 pairs in county Down, 10 pairs in county Antrim, 10 - 15 pairs in counties Tyrone/Fermanagh, and 5 - 10 pairs in county Armagh.

In the Lough Neagh Wetlands, records of sightings have been used to identify population ‘hot spots’ where the creation and management of feeding and breeding habitats should be targeted. A significant proportion of the Northern Ireland population may occur within the Lough Neagh Wetland but the number of birds is unknown and the species is generally very difficult to monitor. The population is believed to be thin and fragmented. Single and multiple records exist that highlight potentially important areas within the Lough Neagh Wetlands for the period between 1983 and 2006. In the northern half of the Wetlands these include the Castledawson area, the Bellaghy area, the grasslands around Lough Beg, the Toome area, and the area around Massereene Golf Course and Shanes Castle, Antrim. To the east of the Wetlands are the areas around Aghalee, Portmore Lough, Gawley’s Gate, Glenavy area, and Langford Lodge; and in the south, these include Peatlands Park, the area around Junctions 11 & 12 along the M1 Motorway, the Oxford Island area and Ardmore Point.

Other areas that have had irregular records and may contain birds include the Traad Point area in the North West; the Ardboe area in the west; the Washing Bay area in south west and the Tannaghmore area in the South.

There can be some confusion between barn owls and other owls found in the wild in the Lough Neagh Wetlands. This can result in inaccurate reports of birds. It is therefore important to highlight the differences and provide advice about barn owl identification. There are two other species of owl in the Lough Neagh Wetlands with which barn owl can often be confused.

Long-eared owl is the most numerous and most sightings of owl in the Lough Neagh Wetlands are likely to be this species. Long-eared owls are resident in Ireland and live in wooded areas, although they frequently hunt over open ground in early evening. The long-eared owl is medium-sized owl, smaller in size than a woodpigeon. It is buff-brown with darker brown streaks, and deep orange eyes.

Short-eared owls are much rarer, medium sized owls with mottled brown bodies, pale under-wings and yellow eyes. Their pale appearance due to the pale underwing can be confused with barn owl, which is much paler overall. Short-eared owls are winter visitors from Scandinavia and Iceland and can be seen hunting over marshes and wetlands during the day.

Threats

Loss of feeding habitat

Loss of rough grassland field margins alongside rivers, woodland and around field edges.

Switch from hay to silage and loss of mixed farming, hedgerows and field headlands.

Low food availability caused by poor habitat or flooding. Flooding can result in the drowning of large communities of small mammals.

Loss of nesting & roosting sites

Loss of nest/roost sites linked to the demolition of old farm buildings and barn conversions, and due to people blocking entrances to church towers, barns and other buildings

Loss of mature farmland trees, leading to a reduced availability of large tree cavities and the loss of long-established nest sites.

Poisons

Widespread use of second-generation anticoagulant rodenticides. Difenacoum, bromadiolone, flocoumafen and brodifacoum are of particular concern. Research has shown that a significant proportion of barn owls contain measurable levels of

these rodenticides in their tissues, having risen from 5% of the population in 1983-4 to 38% in 1995-6. Barn owls either die slowly, or survive and carry a residue in their bodies. Typically, it takes 6-17 days for a barn owl to die after eating three mice containing Brodifacoum.

Population fragmentation
Fragmentation of the local population occurs where there is a distinct lack of continuous habitats corridors to link these populations up.

Low productivity
Low productivity resulting from an already small population size and the fact that birds have an average life span of just 5 years.

Adverse weather conditions
Annual fluctuations in the weather related to incidence of prolonged rain or snow, preventing birds from hunting, forcing birds to hunt around buildings where they are more susceptible to picking up poison prey

Roads
A number of birds are killed annually on the roads. This may represent a significant toll on the breeding population in some areas. Dangerous areas include sites where roads cross river valleys and areas where birds cross to follow linear habitats. Road deaths may be an important factor in limiting the population and may account for the absence of barn owls in localized areas of otherwise favorable habitat.

Farmland water troughs can provide convenient bathing sites for barn owls. However, if the birds fall in, their soft plumage water-logs and this can lead to drowning.

Opportunities

Identify hotspots
Use records of sightings to identify population 'hot spots' within the Lough Neagh Wetlands, so that the creation and management of feeding and breeding habitats can be targeted.

Habitat creation
Link areas of unimproved grassland on a landscape scale, using a series of rough grass field margins alongside rivers, woodlands and hedgerows, and erecting nestboxes on poles, in trees and inside suitable farm buildings in these areas. Where barn owls are dependant on linear grasslands, a breeding pair will require at least 15 km of 5 m wide field margin along riverbank, woodland edge and field edge within a 3 km radius of the nest site. A habitat corridor scheme could be set up that focuses on the re-establishment and better management of

grassland and natural nesting sites found along natural features of the landscape.

Target large open grassland areas within barn owl hotspots and manage for the benefit of small mammals such as wood mice, shrews and rats.

Re-establish un-contaminated feeding areas (free from rodenticide use) by encouraging the establishment of wild bird cover away from dwellings on farms so that an increase of rodents does not lead to an increase in rodenticide use.

Encourage the provision of waste grain dumps inside old straw bales around field margins

Preventing Road Deaths
Provision of high roadside hedgerows in areas where roads cross linear grassland features frequented by barn owl to encourage birds to fly high and avoid collisions with road vehicles.

Raise awareness
Undertake a landscape wide awareness campaign to highlight the threat posed to barn owls from the use of rodenticide (rat poison) around farm buildings. Target areas that are thought to be hotspots, and those areas where barn owl habitat is created as part of this plan, and talk to local farmers about reducing and cutting out the use of second-generation rodenticides.

Produce materials to inform planners and developers of the importance of secluded dwellings for barn owls, so that sites are appropriately checked during the planning process for the presence of barn owls. Information should also encourage the provision of barn owl lofts in new and restored agricultural buildings.

Research
Research should be carried out on habitats, such as rough grass margins and wild bird cover, created and managed by agri-environment schemes, to ascertain the density of small mammals contained in this habitat and the accessibility of these habitats to barn owls. Also, ascertain the levels of rodenticide use associated with the creation of habitats such as these habitats wild bird cover

Barn Owl Appeal
A Lough Neagh Wetlands Barn Owl Appeal should be established, seeking records of sightings so that hotspots can be identified. This should include a detailed study of how best to educate and train stakeholders to adequately identify the species so that they can help provide accurate data – producing identification posters, web page etc.

Legislation

The barn owl is protected under the Schedule 1, Article 4 of the Wildlife (Northern Ireland) Order 1985. It is also included in Red Data Birds in Britain. It is Red listed in Birds of Conservation Concern in Ireland and Amber listed in Birds of Conservation Concern in the UK, Channel Islands and Isle of Man. In addition, the barn owl is also listed in Table 4 in Birds of Conservation Importance (JNCC, 1996).

The barn owl is listed as a Species of European Conservation Concern (Category 3), having an unfavorable conservation status in Europe but not concentrated in Europe. It is listed under Appendix III of the Berne Convention, CITES Appendix 1 and European threat status D

Planning Policy Statement (PPS) 2 - Planning and Nature Conservation (Paragraph 68) refers to protection of species. This states "the presence of a species protected under the Wildlife Order is material to the consideration of a development proposal, which if carried out would be likely to result in harm to the species or its habitat and, in particular, to places used for shelter or protection." Further comments refer to conditions that may be stipulated to secure the protection of the species, and the need for developers to conform to any statutory protection measures affecting the site concerned.

The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 recognises that linear features (of which rough grass field margins should be considered) are essential for the migration, dispersal and genetic exchange of wild species.

Tree Preservation Orders – applied under the Planning (Northern Ireland) Order 1991 – can be used to protect mature trees that are of value to barn owls.

Barn Owl - Action

Objectives & Targets

	OBJECTIVE	TARGET
BO/01	Confirm the breeding population of the Lough Neagh Wetlands	2009
BO/02	Maintain the existing population	2009
BO/03	Provide at least 20 new nest boxes, attracting 2 pairs of breeding barn owl	2013
BO/04	Raise awareness of the habitat requirements of the barn owl in Lough Neagh Wetlands	2013

B0/A6 **Actions**	Provide DARD Environmental Policy Branch with a proposal (including costs) and encourage them to undertake a study to establish the density of small mammals using open grassland-type habitats that are created and managed through agri-environment schemes, so that specific management guidelines that identify optimum habitat requirements for the barn owl in Northern Ireland can be prepared.	**UWT**	EHS / LNAC / LNP / RSPB / CBC	2009	**BO/02 / BO/03 / BO/04**
	ACTION	**LEAD PARTNER**	**PARTNERS**	**TO BE ACHIEVED BY 31st Dec:**	**OBJECTIVES MET**
BO/A1	Using appropriate records received by UWT, RSPB, NIBA and the NIRSG etc, map all barn owl records in the Lough Neagh Wetlands using available data from 2002 - 2007, so that these areas can be targeted through agri-environment schemes and suitable hunting and nesting habitat created to help join up fragmented populations. Then maintain a database of barn owl sightings to determine the location of potential territories and ensure this is stored on the Lough Neagh Wetlands GIS and at CEDaR.	**LNAC**	EHS / LNP / RSPB / UWT / CBC	2008	**BO/01**
BO/A2	Launch a Lough Neagh Wetlands Barn Owl Appeal to seek up to date records of birds using the area. Produce posters and recording cards and organize specific training sessions with stakeholders to equip them for recording and reporting accurate barn owl data from the Lough Neagh Wetlands. These cards should feature the confusion species Long-Eared Owl and short eared owl, alongside barn owl, to be effective	**UWT**	EHS / LNAC / LNP / RSPB / CBC	2008	**BO/01**
BO/A3	Provide training and advice to target groups, including anglers, wildfowlers, game keepers and bird watchers and seek quality records of barn owls in the Lough Neagh Wetlands	**UWT**	EHS / LNAC / LNP / RSPB / CBC	2008	**BO/01 / BO/04**
BO/A4	Select 1 Control Site where the habitat and climate is believed suitable for barn owls in the Lough Neagh Wetlands and erect nestboxes every 2km along rivers/drainage ditches	**UWT**	RSPB / Rivers Agency / EHS / LNAC / LNP / CBC	2009	**BO/03**
BO/A5	Monitor barn owl nestboxes erected on control site for usage and initiate studies into diet of any birds found using the boxes	**UWT**	RSPB / EHS / LNAC / LNP	2009	**BO/03**

BO/A7	Produce guidelines for land managers relating to the provision of feeding habitats, the use of rodenticides, the strategic positioning of nestboxes, the retention of natural nest sites, and the strategic positioning of hunting posts. This should include the production of posters/leaflets that highlight the danger caused by rodenticides to barn owls and distribute to farmers and landowners in known key areas of the Lough Neagh Wetlands	**LNAC**	DARD / EHS / FWAG / LNP/ RSPB / UWT / CBC	2009	**BO/02 / B0/03 / B0/04**

BO/A8	Monitor at least 1 breeding pair of barn owls to assess their breeding success and confirm their diet. This should include establishing a ringing scheme to determine the mortality rates of the species and to monitor dispersal and confirm territory size.	**UWT**	EHS / LNAC / LNP / RSPB / CBC	2009	**BO/02**
BO/A9	Produce guidelines for planners on inspecting buildings for the presence of barn owls during the planning process and to encourage planners/developers to design farm buildings that incorporate nest/roost facilities for barn owls	**LNAC**	EHS / LNP / RSPB / UWT / Planning Service / CBC	2009	**BO/02 / B0/04**
B0/A10	Link up barn owl hotspots by creating hunting habitat. Create 15km x 5m rough grass field margins per pair of barn owls, placing habitat along rivers, woodland edges and hedgerows within 1km of known/suspected nest/roost sites.	**UWT**	DARD / EHS / LNAC/LNP / RSPB / CBC	2010	**BO/O2 BO/O3**
BO/A11	Encourage farmers and other land managers to reduce the use of harmful rodenticides, used to kill rats and mice around farmyards, highlighting that these are toxic to barn owls. Where rats are not resistant, encourage farmers to use warfarin which has a lower toxicity to barn owls.	**UWT**	DARD / EHS / LNAC / LNP / RSPB / CBC	2010	**BO/02 / B0/03**
BO/A12	Establish a local comprehensive research and monitoring programme to identify the location of roosts, nest sites and hunting territories in the Lough Neagh Wetlands.	**UWT**	EHS / LNAC / LNP / RSPB / CBC	2010	**BO/01**

BO/A13	Ensure that organisations and individuals responsible for implementing habitat management programmes in the Lough Neagh Wetlands receive effective training and up-to-date advice on appropriate land management practices which benefit breeding barn owl, by holding 1 workshop/lecture every 3 years lead by barn owl conservation experts	**UWT**	DARD / EHS / LNAC / LNP /Rivers Agency / RSPB / CBC	2010	**BO/02 / B0/03 / B0/04**
BO/A14	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of options that benefit barn owls, based on a study carried out on habitats created and managed through agri-environment schemes to establish density of small mammals relevant to the diet of the species in Northern Ireland; and of the threat to barn owls from rodenticides used around farm buildings.	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / UWT / CBC	2013	**B0/05**

Lough Neagh Wetlands

Bats

Daubenton's bat *Myotis daubentionii*, **Leisler's bat** *Nyctalus leisleri*, **Nathusius', Pipistrelle** *Pipistrellus nathusii*, **Common Pipistrelle** *Pipistrellus pipistrellus*, **Soprano Pipistrelle** *Pipistrellus pygmaeus*, **Brown Long-eared bat** *Plecotus auritus*, **Whiskered bat** *Myotismystacinus*, **Natterer's bat** *Myotis nattereri*

Species Action Plan

2008 - 2013

Bats in the Lough Neagh Wetlands

Introduction

Bats are nocturnal mammals which, in Ireland, only eat insects. This plan covers the needs of all 8 bats found in Northern Ireland, and subsequently recorded or suspected of being present in the Lough Neagh Wetlands. Records available from CEDaR confirm that the following species of bat have been recorded in the Lough Neagh Wetlands.

Background

Daubenton's bat

Thought to be relatively common and fairly widespread, found on most rivers and lakes, including Lough Neagh where it feeds over still water and roosts/hibernates in bridges, stone walls and tree holes. Current records are from the north-east and south-east areas of Lough Neagh. An important maternity roost is at Shanes Castle. There are very few records for the area apart from this; which highlights the need for more active surveying.

Leisler's bat

Ireland is a European stronghold of this species where it is the third most common bat. The Northern Ireland population has been estimated at 18,000. It may be a migratory species in Ireland. The species is very mobile which makes it difficult to gauge their numbers and therefore the population of the Lough Neagh Wetlands is unknown, but experts estimate there to be a few hundred in the area. Exclusion from house roosting sites is probably one of the biggest threats to its population levels.

Nathusius' pipistrelle

The first confirmed Irish breeding colony of this bat was discovered in May 1997. The Irish population may migrate within or from Ireland. Sites containing this species in Ireland, like those in the rest of Europe, are found close to water. They seem to be closely associated with Soprano pipistrelles and old stable blocks of country houses seem popular. This species has bred at a few sites in Antrim including Clotworthy House and Shanes Castle. It is considered rare in the UK.

Common pipistrelle

This is an abundant and widespread species.

Soprano pipistrelle

This is an abundant and widespread species which favours foraging near water.

Brown Long-eared bat
Found throughout Ireland and relatively common. The species tends not to roost in the average house so is probably under-recorded, preferring barn-like roof areas instead.

Other species that have been recorded in Northern Ireland, which may occur in the Lough Neagh Wetlands are:

Whiskered bat
Found throughout Ireland but as yet there are no known records for the Lough Neagh Wetlands. Associated with older houses and found foraging around lakes and in parklands.

Natterer's bat
A widely distributed species, but with low population levels that prefers to roost in bridges, walls etc and does not normally favour the average roof space of houses. It has been recorded from the north-east corner of Lough Neagh around Antrim.

Brandt's bat
Although not yet recorded in Northern Ireland, the Brandt's bat (*Myotis brandtii*) is similar to the Whiskered bat and its requirements are such that it is likely to occur in here.

Threats

Loss of Roost Sites
Examples include repairs and renovations to bridges (especially over water) and to buildings, felling of trees or trimming of branches, and exclusion of bats from their houses.

Poisoning
The use of pesticides to remove wood boring insects from attics can result in direct bat mortality or the reduction of healthy reproductive condition in bats.

Loss of Foraging
Loss of adequate foraging habitat can arise from a change in land use, resulting in a loss of invertebrate habitat. Farmland may be affected by intensification of farming techniques, loss of diversity of crops, changes in types of grazing animals, draining land and filling in ponds. Rivers and streams may be affected by canalization to improve flow, removal of riverside vegetation to aid angling, and water quality due to polluting run-off from towns and farms. Hedgerows may be affected by removal to improve field size, or by road schemes or housing developments, and by being trimmed too low.

Mature trees are important for both roosting and foraging. The main threat to the value of these trees comes from trimming or felling of dead wood, for aesthetic purposes or for safety reasons. Woodland management may not favour mixed woodlands and realize the importance of deciduous trees for native wildlife. Clear felling can cause too much disruption in the woodland. Tall trees can be used as "signposts" to bats navigating through the landscape at night, as well as for roosting and as a foraging station.

Habitat Fragmentation
Habitat fragmentation is a major concern as bats rely on commuting routes through the landscape to link their varied seasonal habitat requirements.

Loss of Roosts
Decline of bats across Northern Ireland may be related to the widespread use of house roosts. Species, such as Leisler's bat, may be noisy and like to move frequently between roosts and this makes them unpopular and therefore householders frequently apply for and are given permission to close the bats out of their roosts.

Opportunities

Creation and maintenance of feeding habitat
Tree-lines and mature well-managed hedgerows function as wildlife corridors, which provide cover and shelter between roost sites and foraging sites. Where possible, this habitat should be maintained or created.

Woodland managers should be approached to ensure dead wood is left on trees wherever possible. Bat conservation should be linked to the woodland management plan for each site.

Reduction of insecticide and herbicide use
The loss of food (invertebrates) is linked to the use of insecticides and indirectly to the use of herbicides. Where possible, aim to reduce or halt the use of these.

Provision of bat boxes
The provision of bat boxes seems to be under-developed in Northern Ireland, compared to the USA. Boxes here are made like those for birds but in the United States they make multi-chambered boxes to fit to farm buildings etc, using coloured materials to help regulate temperatures. Given that there are numerous exclusions taking place in Northern Ireland, this area could be significantly developed, and could perhaps include purpose built towers that house bats and other associated species such as barn owl and tree sparrow.

Water Quality
As water quality for streams, rivers and loughs is improved, links should be made to management plans of other species using waterways, such as otter and fish.

Legislation

All bat species are protected under the EU Habitats Directive (92/43/EEC). They are listed on Annex IV, which requires that a system of strict protection be put in place to ensure their conservation. The Habitats Directive is transposed into Northern Ireland law in the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995. Bats are included in Schedule 2 of the Regulations which defines 'European protected species of animals'.

Bats are also protected in Northern Ireland under the Wildlife (Northern Ireland) Order 1985. This legislation makes it an offence to intentionally harm a bat or disturb its resting place.

The Convention on the Conservation of Migratory Species of Wild Animals 1979 (the Bonn Convention) places bat species in Appendix II, which recognizes that they would benefit from international co-operation regarding their conservation.

The Agreement on the Conservation of Populations of European Bats (EUROBATS) is an agreement under the Bonn Convention which aims to address threats to all 45 species of bat identified in Europe arising from habitat degradation, disturbance of roosting sites and harmful pesticides.

The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (the Bern Convention) lists bats in Appendix II, bar *Pipistrellus pipistrellus* which is listed on Appendix III. The principal aim of the Convention is to conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States.

Bats - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
B/01	Map the location of all KNOWN bat roosts found to date in the Lough Neagh Wetlands	2008
B/02	Maintain bat roosts found in the Lough Neagh Wetlands	2010
B/03	Create new bat roosts in the Lough Neagh Wetlands	2013
B/04	Protect foraging areas within areas of known bat roost sites	2013
B/05	Raise awareness of the habitat requirements of the bats in Northern Ireland	2013

Bats – Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
B/A1	Introduce new bat features to bridges along major rivers within the Lough Neagh Wetlands	**LNP**	EHS / LNAC / Rivers Agency / UWT / NI Nat Group / CBC	2010	**B/03**
B/A2	Design and build 1 bat tower to house bats (and other associated species such as barn owl, tree sparrows) on farmland in the Lough Neagh Wetlands	**LNP**	EHS / LNAC / UWT / NI Nat Group	2010	**N/03**
B/A3	Install 30 multi-chambered bat boxes, made from coloured materials that help regulate temperatures	**LNP**	EHS / LNAC / UWT / NI Nat Group / CBC	2010	**B/03**
B/A4	Initiate a programme in the Lough Neagh Wetlands that involves roost owners in the monitoring of their bat colony	**EHS**	LNAC / LNP / UWT / NI Bat Group / CBC	2010	**B/02 / B/05**
B/A5	Promote the uptake of volunteer bat surveys, including the Daubenton's Bat Survey which takes place along rivers in the Lough Neagh Wetlands each year.	**LNP**	EHS / LNP / UWT / NI Bat Group / CBC	2010	**B/01 / B/05**
B/A6	Produce advisory material to ensure that roofing and timber treatment companies operating in the Lough Neagh Wetlands are well informed about the bat species that use buildings, and offer training where required	**LNAC**	EHS / LNP / UWT / NI Bat Group / CBC	2010	**B/02 / B/05**
B/A7	Produce advisory material that ensures local planners are aware of the requirements of all bat species known to be present in the Lough Neagh Wetlands	**LNAC**	EHS / UWT / Planning Service / LNP / NI Bat Group / CBC	2010	**B/02 /B/05**

B/A8	Produce advisory material for planners and developers that ensures that adequate surveys are undertaken prior to planning permission being granted for developments that might affect roosts and foraging areas, and that there is suitable mitigation/compensation for all planning proposals which affect, or potentially affect, bats in the wetlands and that these are adhered to. Advisory material should ensure that developers are asked prepare a report on their actions.	**LNAC**	EHS / LNP / Planning Service / NI Bat Group / CBC	2013	**B/02 / B/04**
B/A9	Ensure that all bat records are stored on the LNW GIS and at CEDAR	**LNAC**	EHS / LNP / UWT / NI Bat Group / CBC	2013	**B/01**
B/A10	Encourage public participation in the reporting of bat roosts and the conservation of bats through publicity campaigns, workshops and events	**LNAC**	EHS / LNP / UWT / NI Bat Group / CBC	2013	**B/01 / B/05**
B/A11	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit bats	**LNAC**	DARD / EHS / LNP / UWT / NI Bat Group	2013	**B/05**
B/A12	Organise 1 training course per year to recruit and train people to take part in bat surveys in the Lough Neagh Wetlands and maintain current licensing procedures for bat workers. Aim to train up to 5 new bat workers for the Lough Neagh Wetlands.	**LNP**	EHS / LNAC / UWT / NI Nat Group / CBC	2013	**B/05**
B/A13	Write 1 article per year to ensure that a wide range of stakeholders are aware of the habitat requirements of bats using buildings, trees, bridges and other structures in the wetlands. This should include raising awareness of the law and the need to seek expert advice before embarking on any renovation work on buildings that may be used as roost or hibernation sites	**LNAC**	DARD / EHS / LNP / UWT / NI Bat Group / CBC	2013	**B/05**

Lough Neagh Wetlands

Breeding Wader

(Redshank, Curlew and Lapwing)

Tringa totanus, *Numenius arquata* & *Vanellus vanellus.*

Species Action Plan

2008 – 2013

Breeding Waders in the Lough Neagh Wetlands

Introduction

There are three species of breeding wader in the Lough Neagh Wetlands that are the focus of this action plan - Redshank *Tringa totanus*, Curlew *Numenius arquata* and Lapwing *Vanellus vanellus.* The baseline figures available for all three species relate to the year 2000 when the last comprehensive survey of breeding waders was undertaken.

Redshank is the most threatened of the three species of breeding wader identified for action in the Lough Neagh Wetlands. The population of breeding redshank *Tringa totanus* in the Lough Neagh Wetlands is the smallest of three species being targeted through this action plan. In Northern Ireland, the redshank population saw a decline of 68% between 1987 and 1999. In 1987, the breeding population was around 550 pairs, 80 % of which occurred in the lowland wet grassland complexes of Lough Neagh, Lough Beg as well as Lough Erne in Co Fermanagh. By 1992 a 35% decline had taken place at Lough Neagh and Lough Beg alone and in 2000 just 69 pairs were recorded here compared with 214 in 1985-87. The Northern Ireland population was thought to be under 180 pairs in 2000.

The population of breeding curlew *Numenius arquata* in Northern Ireland declined by 58% between 1987 and 1999. By 2000, the population was around 1,750 pairs. The wet grassland complex of the Lough Neagh Wetlands has been identified as one of the key breeding areas for curlew in Northern Ireland.

The population of breeding lapwing *Vanellus vanellus* saw a similar decline to the others, with a 66% decline detected between 1987 and 1999. In 1987, the breeding population was between 4,000-6,000 pairs. By 2000 the population was around 1,770 pairs. The wet grassland complex of the Lough Neagh Wetlands has been identified as one of the key breeding areas for lapwing in Northern Ireland.

Background

A number of sites within the Lough Neagh Wetlands contained more than 20 pairs of breeding waders during the Northern Ireland Breeding Wader Survey of 1985 - 1987. These sites were considered to be Grade 1 Sites for Breeding Waders in Northern Ireland. Sites such as that found along the west and south of Lough Beg held almost 200 pairs of breeding waders and other sites along the west and south of Lough Neagh held between 21 and 36 pairs of breeding waders. However, numbers at all of these sites have fallen dramatically since then, requiring a coordinated effort to restore breeding wader habitat.

The breeding waders are ground nesting birds, preferring to nest in various types of unimproved wet grasslands near to soft mud and open water in drains, pools

and lakes. Being close to water provides increased abundance and availability of invertebrates, which is important for feeding chicks.

Redshank

The redshank has long red legs and a red bill. It nests on unimproved, damp grasslands, lakeshores and pastoral farmland and is almost exclusively a wet grassland species in Northern Ireland. They are relatively site faithful, nesting semi-colonially. They begin returning to their breeding areas from late February onwards and nesting begins in April. Redshanks have just one brood and the young are generally fledged by the end of June. They require a mosaic of habitats, including areas of tussocks within shorter vegetation for concealing nests, a high water table providing damp or muddy areas where adults feed communally, and wet areas with some taller vegetation which provide a source of invertebrates and cover for chicks. In Northern Ireland, their distribution is very restricted and they breed almost exclusively on extensively grazed, lowland wet grassland areas, like those found around Lough Neagh and Lough Beg. The Northern Ireland Countryside Survey 2000 indicated a decline in the area of habitat potentially used by redshank between 1987 and 1998 including a 20% decline in the area of fen marsh and swamp.

Curlew

The curlew is a characteristic breeding bird of damp, rushy pastures and wet grasslands, pastures and meadows. It occurs in the Lough Neagh area in higher numbers in winter, when birds arrive from the uplands and as migrants from northern Europe to escape the colder conditions. The curlew is one of Europe's largest wading birds. It is predominantly a brown, streaked bird with no outstanding plumage features. However, its long legs and the extremely long, gently decurved bill are very distinctive. In flight, it shows a triangular white patch above the brown barred tail. The curlew returns to its breeding grounds in the early spring when its bubbling display song can be heard during aerial display flights. The curlew conceals its nest on the ground amongst long grassy vegetation and four eggs are laid. The chicks hatch after about 28 days and rapidly become mobile, fledging in about 36 days. The curlew has one brood each year. Not long after fledging, adults and young birds form flocks and move to coastal localities or to the areas around Lough Neagh.

Lapwing

The lapwing frequents a wide variety of farmland or wetland habitats. It is recognizable by its striking dark green and white plumage, obvious crest and distinctive pee-wit calls. These features have given rise to local names for the species such as green plover or peewit. Lapwings require short vegetation or bare ground in the spring for nesting and feeding. The best nesting areas are located on wet grassland near open water in drains, pools and lakes. Just like the other waders, being close to water often provides increased abundance and availability of invertebrates, which is important for feeding chicks. In the Lough Neagh Wetlands, they are likely to be most abundant on lowland wet grasslands, although cut-over bogs and spring sown cereals can also be important in certain

areas. Several birds also nest along drains in the open flat industrial landscapes of peat extraction sites in the wetlands, however, this is opportunistic and short-term in most cases. They begin to breed from mid March onwards, often in loose colonies, enabling them to flock together to drive away predators such as hooded crows. Post-breeding flocks begin to form as early as June and by late summer, most lapwings have dispersed from the breeding sites. They are joined by migrants from eastern and northern Europe, giving rise to large winter flocks around Lough Neagh. Numbers of national (all-Ireland) importance occur outside the breeding season in the Lough Neagh and Lough Beg complex.

Threats

Loss of habitat
Loss and fragmentation of wet grassland

Whilst over-grazing a grassland site can help lapwings by creating a shorter sward, increased livestock numbers and heavy spring stocking can also lead to nest trampling of this and other breeding wader species. Over-grazing sites that are important for redshank or curlew can remove essential cover, for example, intensive grazing creates a more uniform sward with few tussocks which are important for redshank.

Agricultural operations such as rolling and the application of fertilizers can lead to increased nest losses.

A reduced number of farm animals grazing wet grassland, leads to under-grazed sites that quickly become covered in unsuitable, rank grasses and eventually scrub and are no longer suitable as breeding sites.

Cut-over peat bogs, important breeding habitats for waders, have been affected by agricultural improvement and peat extraction.

Predation
Loss and fragmentation of wet grassland, due to drainage and land improvements, concentrates breeding birds into smaller areas, where they are less effective at driving away predators such as crows and foxes and, therefore, causes high rates of nest failure.

Opportunities

Habitat restoration
Restoration, creation and management of wet grasslands to join up fragmented sites and create large contiguous areas of habitat adjacent to existing breeding wader habitat. Lough Beg, the south west shore of Lough Neagh and the area around Portmore Lough are among the sites that continue to retain breeding waders, and/or show the most potential for recovery work.

Recovery programme
A co-ordinated Breeding Wader Recovery Programme for the Lough Neagh Wetlands should aim to extend beyond designated sites. Recovery work should focus on priority sites (at Lough Beg, south-west Lough Neagh, and Portmore Lough) and aim to expand onto adjacent low lying grassland where large scale capital works can take place in partnership with local landowners to restore sites and encourage birds back. Once restored, these sites should then be prioritised by DARD Countryside Management Branch and managed under agri-environment as priority breeding wader sites, to ensure their sustainable long term management.

Predator management
Monitor breeding waders to confirm the level of nest and chick predation at sites where the habitat appears to be in otherwise favorable condition, to confirm the importance of predation as a factor in species decline.

Legislation
Redshank and Lapwing are protected under the European Community (EC) Council Directive on the Conservation of Wild Birds, Appendix 3 of the Berne Convention and Article 4 of the Wildlife (Northern Ireland) Order 1985. The Curlew is protected under Article 4.2 of the EC Birds Directive, Appendix 2 of the Berne Convention and as a quarry species, under Article 4 of the Wildlife (Northern Ireland) Order 1985.

Lough Neagh & Beg has been designated an Area of Special Scientific Interest. This designation is strengthened by *The Environment (Northern Ireland) Order 2002* which recognizes the importance of working in partnership with landowners and occupiers and facilitating the positive management of these sites. The lowland wet grassland complexes of Lough Neagh and Lough Beg have been designated as ASSI's partly because of their importance for breeding waders and the ASSI designation and Environment Order offers opportunity to develop local effective partnerships to manage the sites positively.

Lough Neagh and Lough Beg has been classified a Special Protection Area (SPA) under the European Birds Directive because of the number of winter waterfowl and breeding waders it contains. This is one of only three sites classified as SPA in Northern Ireland.

Provide Legal protection
The habitat for breeding waders should be protected under the Northern Ireland Wildlife Order to ensure that relevant planning policies can be devised and implemented.

Annex 1

EHS fund and/or undertake a regular programme of surveys of the key breeding wader sites in the Lough Neagh Wetlands. Data from these surveys can be collated and used to target areas where breeding wader numbers have been falling.

DARD's agri-environment programme contains habitat prescriptions that benefit breeding waders. To qualify, the land must have at least one breeding pair of waders. These options provide farmers with payments to manage sites appropriately for the benefit of the birds. Funding is available to agri-environment scheme participants to create wader scrapes and raise water levels.

Breeding Waders - Redshank, Curlew & Lapwing - Action

Objectives & Targets					
	OBJECTIVE				TARGET
BW/O1	Map location of all known breeding sites for curlew, lapwing and redshank within the Lough Neagh Wetlands				2008
BW/O2	Maintain the current breeding population of curlew, lapwing & redshank in Lough Neagh Wetlands using the figures available for the year 2000 as a baseline				2009
BW/O3	Increase the breeding populations of curlew, lapwing & redshank in the Lough Neagh Wetlands using the figures available for the year 2000 as a baseline				2013
BW/O4	Raise awareness of breeding waders and their habitat requirements within the Lough Neagh Wetlands				2013
BW/05	Prevent the loss of Breeding Wader Sites e.g. to development or agricultural improvements				2013

Actions

	ACTION	LEAD PARTNER	PARTNERS	TARGET DATE	OBJECTIVES MET

BW/A1	Prepare a map inventory of all fragmented breeding wader sites away from the Lough Neagh/Beg shore and strategically target the expansion of 1 site per year	**RSPB**	DARD / EHS / LNAC / LNP / CBC	2008	**BW/O1, BW/O3, BW/05**
BW/A2	Investigate the extent of predation on wader nests at 1 site where habitat is in prime condition by installing remote cameras to identify the predatory species involved, and use this information to inform future management plans for breeding waders	**RSPB**	EHS / LNP / LNAC	2008	**BW/O2, BW/O3**
BW/A3	Set up a Breeding Wader Education Programme linked to a key site in the Lough Neagh Wetlands	**RSPB**	LNAC / LNP / CBC	2009	**BW/O4**
BW/A4	Establish a method of monitoring the status of breeding waders and establish an annual monitoring programme at all key sites within the Lough Neagh Wetlands, recording the results on the Lough Neagh Wetlands GIS and at CEDAR	**EHS**	DARD / RSPB LNAC / LNP / CBC	2010	**BW/O2**
BW/A5	Establish 2 demonstration sites to transfer knowledge on applied restoration / management work carried out for breeding waders and hold 1 workshop every two years	**RSPB**	DARD / EHS / FWAG / LNAC / LNP / CBC	2010	**BW/O4**

BW/A6	Produce advisory material to ensure planners and developers are aware of the importance of habitats used by breeding waders	**LNAC**	DARD / EHS / FWAG / LNP / Local Authorities / Planning Service / RSPB / CBC	2010	**BW/O4** 42
BW/A7	Produce advisory material on habitat creation, restoration and management for breeding waders, and distribute to landowners within 2 km of known breeding wader sites.	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / CBC	2010	**BW/O4**
BW/A8	Restore 1500ha of wet grassland habitat in the Lough Neagh Wetlands via a Lough Neagh Wetlands Breeding Wader Restoration Programme, targeting large and contiguous areas of land.	**RSPB**	Rivers Agency / EHS / DARD / MDC / ABC / BBC / UWT / QPANI / CBC	2011	**BW/03**
BW/A9	Re-profile and manage 1000m of DESIGNATED drainage ditches (c.200m per year) in areas adjacent to breeding wader sites, to provide feeding opportunities for chicks. This should include ensuring adequate water levels within ditches, tackling water quality within ditches, and ensuring that they do not become clogged with vegetation.	**RSPB**	EHS / LNAC / LNP / Rivers Agency / RSPB / DARD / CBC	2013	**BW/O2, BW/O3, BW05**
BW/A10	Re-profile and manage 500m of UNDESIGNATED drainage ditches (100m per year) in areas adjacent to breeding wader sites, to provide feeding opportunities for chicks. This should include ensuring adequate water levels within ditches, tackling water quality within ditches, and ensuring that they do not become clogged with vegetation.	**RSPB**	EHS / LNAC / LNP / Rivers Agency / RSPB / DARD / CBC	2013	**BW/O2, BW/O3, BW05**
BW/A11	Liaise with DARD CAFRE Greenmount Campus to raise awareness of habitat restoration and management for breeding waders and provide an input into 1 management course per year	**RSPB**	DARD / EHS / FWAG / LNAC/LNP	2012	**BW/O4**

BW/A12	Write 1 article per year to raise awareness of the breeding waders of the Lough Neagh Wetlands and their habitat requirements	**LNAC**	DARD / FWAG / LNP / MDC / CDC / D&STBC / CBC / LBC / ABC / BBC / RSPB	2013	**BW/O4**
BW/A13	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit breeding waders in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / CBC	2013	**BW/O4**

Lough Neagh Wetlands

Common Tern

Sterna hirundo

Species Action Plan

2008 - 2013

Common Tern in the Lough Neagh Wetlands

Introduction

The common tern *Sterna hirundo* is a common and widespread breeding species of both coastal and inland regions. Its range extends from eastern North America to western Siberia. It is a long-distance migrant that breeds in colonies around coasts and beside inland freshwater bodies. Inland sites include islands in lakes, artificial sites, including specially made floating rafts and occasionally gravel-covered flat-roofs. Most feeding takes place within 3 – 10 km of the breeding colony, but birds have been recorded breeding up to 37km from a feeding site.

The British population of 12,300 pairs is spread over 200 colonies ranging in size from under ten pairs to over 1,000. There are more than 50 further colonies in Ireland, totaling 3,100 pairs. Adults are very faithful to their breeding colonies.

Background

Common terns breed on islands where there is little or no vegetation on the ground and where they can lay their eggs on gravel or bare earth. They nest in colonies and like to be in the company of other birds, particularly black-headed gulls. On Lough Neagh, the most important natural island is Pagan Island which is in the south east corner of the Lough. This site currently holds around 45 breeding pairs. The largest colony of breeding common terns in the area is found on an old Torpedo Platform near Antrim. This is a man made structure and currently holds around 50 breeding pairs annually. Several other smaller sites on Lough Neagh hold small numbers of birds

Common terns spend the winter in west and southern Africa, coming to Lough Neagh in April and leaving in August. Lough Neagh attracts these birds because the large expanse of water offers feeding opportunities. Unfortunately, suitable nesting areas on Lough Neagh are rare. This is because the Lough has very few islands, and most of those that do exist are tree covered.

The Environment & Heritage Service currently manage Pagan Island and the Torpedo Platform near Antrim as nature reserves for common tern. EHS also monitor a small population on Phil Roe's Flat.

During the preparation of this plan, a number of immediate actions were initiated for the common tern.

- Work began to restore habitat on Scaddy Island in the south-west of Lough Neagh. This site held 42 pairs in 1987 and by 1989 this was down to three pairs but went up again to 37 in 1990. However in 1991 there were no birds present and there are no records for 1992 and 1993 but by 1994 there were only 8 pairs. This is the last record of breeding birds on this site. However, a recent assessment of the habitat has indicated that

the site is suitable for restoration. The appropriate work could encourage 40 + pairs back to breed. 3 birds were observed using the island in July 2007 but breeding could not be confirmed.

- 3 floating rafts were installed by the RSPB at their Portmore Lough Nature Reserve in 2007, and immediately attracted a breeding pair.
- 1 floating raft was installed at the Craigavon Lakes Local Nature Reserve
- Antrim Borough Council erected signage at the Shore Park in Antrim to highlight the importance of the Torpedo Platform as a nesting site, and to ensure that recreational disturbance is minimised.

Threats

Declining numbers of breeding birds

The Lough Neagh, Lough Beg and Portmore Lough area was collectively designated a Special Protection Area (SPA) in 1998 because breeding common terns numbered 118 pairs (more than 1% of the All-Ireland breeding population). However, since that time, this number has fallen to 96 breeding pairs. Under the terms of the Special Protection Area designation, the site is currently in an unfavorable condition for this species and must be managed to ensure that it supports at least 185 pairs in the future.

Shortage of suitable breeding habitat

Compared with the size of the area of feeding habitat available to the birds on Lough Neagh, Lough Beg and Portmore Lough and other water bodies such as Lough Gullion and Craigavon Lakes, there is a distinct lack of nesting opportunities with very few natural islands that are suitable for the species. Most of the islands that do exist are usually scrubbed over or covered in trees rendering these unsuitable for common terns.

Disturbance

Declines or complete losses in specific colonies can occur as a result of increased disturbance, especially recreational. This threat is real for sites such as the Torpedo Platform near Antrim which is located within an area highlighted for future marina expansion. If birds were to desert the platform, they would have few other areas to go to. Although signage has recently been put in place at the Loughshore Car Park, there is evidence that disturbance continues. Future action should include the creation of a zoned area around the platform that prohibits all water-sports activity in that area.

Nest predation

Predation is a problem in some areas, especially where Mink and/or rats have become well established. Lesser Black-backed Gulls are also known predators of common tern eggs/chicks and these are present at numerous potential common tern breeding sites, as well as at existing breeding sites in the Lough Neagh Wetlands.

Flooding
Common terns are not known to breed on Lough Beg at present. A contributing factor in this may be fluctuating water levels. Lough Beg is managed as a flood retention area for water coming out of Lough Neagh during periods of high rainfall. When the flood gates at Toome are opened to allow water from Lough Neagh to escape, Lough Beg regularly floods during the breeding season and water levels regularly inundate the majority of islands in the lake.

Opportunities
Habitat restoration on Islands
The first priority should be to focus on the existing islands on Lough Neagh and Lough Beg and identify sites for habitat restoration. Islands can be brought into favourable condition for the species through scrub removal and creation of gravel areas or areas of open, bare earth for nesting birds.

Provision of floating rafts
Natural nest sites are rare on Lough Neagh, Lough Beg and Portmore Lough and, therefore, the creation of artificial nesting sites must be considered. In addition to the floating rafts placed at Portmore Lough and Craigavon Lakes, additional sites should be identified where artificial nesting sites can be installed. Floating rafts that rise and fall with the level of the water would overcome this, particularly at Lough Beg where rising water levels can occur in spring and summer during high rainfall and inundate islands on the Lough.

Provision of Platforms
Hard structures should also be considered to help provide artificial nesting areas for the species on the more exposed sites of Lough Neagh and Lough Beg. Evidence of how birds will use these structures can be seen at the old disused Torpedo Platform near Antrim, home to the largest breeding colony on Lough Neagh.

Provision of New Islands
The creation of artificial islands on Lough Neagh should be considered. These islands could be created on one or more of the shallow flats that exist in Lough Neagh some areas are less that 1m deep and may therefore be ideal for the construction islands. Spoil from the dredging work that takes place at the mouth of the rivers flowing into the Lough could be used if a feasible method can be found of retaining the spoil in one area.

Monitoring predation rates and undertaking appropriate predator control
Colonies should be monitored to ascertain the level of predation and to what extent species such as lesser black-backed gulls, rats and mink are to blame. This can be used as sound scientific evidence to back up future decisions to control predators around common tern colonies. Monitoring can take place manually from a distance over periods of time or by erecting remote control cameras at specific locations.

Protect nests from predation
Prevent the loss of eggs and chicks to avian predators on islands and other structures by installing shelters such as ridge tiles or concrete boxes over or next to nests.

Mapping
The location of all active common tern breeding colonies within the Lough Neagh Wetlands should be mapped to use for information purposes.

Raise awareness
Increase awareness of the threat to common tern colonies from recreational disturbance. Sites that are at risk from human disturbance should be identified and targeted with appropriate signage and advisory material.

Legislation
The Lough Neagh, Lough Beg and Portmore Lough area was collectively designated a Special Protection Area (SPA) in 1998. This designation is known as the Lough Neagh and Lough Beg SPA and takes account of the sites importance to breeding common tern.

Common Tern - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
CT/01	Map location of all Common Tern breeding colonies within the Lough Neagh Wetlands	2008
CT/02	Maintain current breeding population within Lough Neagh Wetlands at 96 pairs	2009
CT/03	Increase the common tern population on Lough Neagh to 200 pairs	2013
CT/04	Raise awareness of the species and its conservation requirements within the Lough Neagh Wetlands	2013

Common Tern - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
CT/A1	Identify islands on Lough Neagh and Lough Beg that are in unfavourable condition for Common Terns and initiate agreement with owners to bring at least 1 new site into favourable condition for 25 breeding pairs	**EHS**	LNAC / LNP / RSPB	2008	**CT/03**
CT/A2	Map the location of all active common tern breeding colonies within the Lough Neagh Wetlands and store on the Lough Neagh Wetlands GIS	**EHS**	LNAC / LNP / CBC	2008	**CT/01**
CT/A3	Set up 1 web cam at an established colony and link to local school(s), to increase awareness of the importance of the wetlands to the species	**EHS**	LNAC / LNP / RSPB	2009	**CT/04**
CT/A4	Investigate the extent of predation on nests at 2 colonies by installing remote cameras, and use the information to inform management plans for the species.	**EHS**	LNAC / LNP / RSPB	2009	**CT02, CT03**
CT/A5	Identify current sites at risk from human disturbance and liaise with local marinas to promote the importance of these sites through the production of signage and advisory material	**EHS**	EHS / LNP / LNAC / RSPB / CBC	2009	**CT/02**
CT/A6	Restore habitat on Scaddy Island and manage the site to attract at least 25 breeding pairs back to re-establish a colony on the island.	**BASC**	EHS / LNAC / LNP / QPANI / DSTBC	2010	**CT/03**
CT/A7	Identify potential locations for the installation of floating rafts on lakes within the Lough Neagh Wetlands and install at least 5 new floating rafts that can accommodate at least 25 pairs. Also, Identify a number of best suited locations on which to provide raised platforms on Lough Neagh and build at least 1 new common tern breeding platform to hold at least 25 breeding pairs.	**LNAC**	EHS / LNP / RSPB / CBC	2013	**CT/03**

CT/A8	Identify a number of best suited locations on which to create a new island on Lough Neagh and create 1 new island to accommodate at least 100 breeding pair, using spoil from river dredging.	**LNAC**	EHS / LNP / RSPB / Waterways Ireland / CBC	2013	**CT/03**
CT/A9	Provide 200 tern shelters (100 at existing nest sites, and a further 100 shelters on islands brought into favourable condition and on those sites created as new breeding sites such as floating rafts, raised platforms etc; to protect chicks from gull predation and from adverse weather conditions.	**EHS**	LNAC / LNP / RSPB / QPANI / CBC	2013	**CT/02, CT/03**
CT/A10	Hold 1 public event every two years at Portmore Lough to raise awareness of the species and its habitat requirements	**RSPB**	EHS / LNAC / LNP / CBC/ LCC	2013	**CT/04**
CT/A11	Hold 1 public event every two years at the Shore Park Antrim, to raise awareness of the species and its sensitivities to disturbances	**ABC**	EHS / LNAC / LNP / QPANI / RSPB	2013	**CT/04**
CT/A12	Ensure that relevant plans and policies identify the threat posed by human disturbance around existing breeding colonies	**EHS**	LNAC / LNP / CBC	2013	**CT/02**

Lough Neagh Wetlands

Ground Beetle

Dyschirius obscurus

Species Action Plan

2008 - 2013

Dyschirius obscurus in the Lough Neagh Wetlands

Introduction
This is a small 3.5-4.5mm dull bronze-black ground beetle which digs into sand around Lough Neagh. It is usually associated with other rare ground beetles that occupy similar habitat. In Ireland *Dyschirius obscurus* is confined to the shores of Lough Neagh where it was first found in 1854.

Background
Dyschirius obscurus prefers to live in or on fine sand habitats where the capillarity of the sand draws in water which is heated by the sun and provides an unusually warm living environment. On Lough Neagh it has been recorded with prey beetles of the family *Staphylinidae* (Bledius rove beetles) which feed on sand alga in suitable beaches. These include *Bledius subterraneus* which is fairly common on sandy beaches on Lough Neagh and the rarer *Bledius annae.* A survey of Lough Neagh habitats in 1996 seemed to indicate that the association of *D. obscurus* with *Bledius* might be obligatory. Colonies of *Bledius* spp. were found on only six beaches out of a total of sixteen on which large populations of *D. obscurus* were present. A smaller repeat survey in 2007 however found *Bledius* on 12 beaches and *D. obscurus* on 11. Some flexibility with regard to food preferences would seem to be necessary for survival but in the main some dependence upon *Bledius* is suggested.

Nationally important numbers of this species occur around Lough Neagh. Records for the last 10 years confirm its existence on the sandy beaches at the following key site; Rea's Wood; Shanes Castle; Antrim Bay; Ardmore Point; Moyola Waterfoot and north bank; Toome Spit; Toome Weir; Traad Point; and Ballinderry Waterfoot. Earlier records also refer to its presence on sandy beaches at Newport Trench, Ardboe.

Threats

Lack of awareness
Lack of awareness and understanding of the importance of a number of the sandy beaches for rare beetles, along the shores of Lough Neagh

Lack of awareness of the activities that can damage these habitats for the species and what can be done locally to protect these habitats

Opportunities

Raise awareness
Raise awareness locally and promote the importance of the sandy beaches along the northwest shore, the west shore, the south shore and the northeast shore for the species.

Promote the Conservation Priority of the Lough Neagh shore for ground beetles generally

Raise awareness of the impact of inshore sand dredging on beach sand locally to ensure that beaches receive an adequate supply of beach sand

Raise awareness of the impact of trampling by animals or humans during the summer periods to ensure that local people realize the importance of keeping such impact to a minimum

Protect and manage habitat
Protect and manage sites where the back beach is under threat from colonization by willow and alder scrub

Monitor the species
Monitor all known sites for the species around Lough Neagh, and treat as a flagship species that can help identify the condition of moving sands habitats for the ground beetles of Lough Neagh

Dyschirius obscurus (ground beetle) -
Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
D/01	Raise awareness of the importance of sandy beach shoreline around Lough Neagh for ground beetles in Ireland	2013
D/02	Maintain current areas of open fine sand beaches with moderate area of back-beach loose sand around Lough Neagh	2013
D/03	Survey known sites for occurrence of Dyschirius obscurus along Lough Neagh	2013

Dyschirius obscurus (ground beetle) -
Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TARGET DATE	OBJECTIVES MET
D/A1	Establish 1 local community project at the Moyola Waterfoot, Ballymaguigan (stronghold for the species) and manage the site appropriately in partnership with the local community. Design a project that will allow the local community of the Ballymaguigan area to control the impact of trampling by animals or by humans during the summer periods, and control the impact of scrub encroachment of back beaches.	**LNP**	EHS / MDC / LNAC / UWT / Northern Ireland Water	2008	**D/02**
D/A2	Survey Moyola Waterfoot, Toome Spit, Toome Weir and Traad Point and report trends	**EHS**	LNAC / LNP / MDC / QPANI	2010	**D/03**
D/A3	Survey Ballinderry Waterfoot and Newport Trench, Ardboe and report trends	**EHS**	LNAC / LNP / CDC / QPANI	2010	**D/03**

D/A4	Survey Ardmore Point and the Sand Plant at Ardmore and report trends	**EHS**	LNAC / LNP / CBC / QPANI / CBC	2010	**D/03**
D/A5	Survey Rea's Wood, Antrim Bay and Shanes Castle and report trends	**EHS**	LNAC / LNP / ABC / QPANI	2010	**D/03**
D/A6	Identify sites where back-beach is under threat from colonization by willow and alder scrub and produce one management plan to address this issue.	**EHS**	LNAC / LNP / CBC	2010	**D/02**
D/A7	Produce advisory material to ensure that relevant stakeholders are aware of the threat posed by the trampling by humans and by animals over sandy shores in summer, of inshore sand dredging on beach sand locally, and the colonization of back beaches by willow and alder scrub.	**EHS**	LNAC / LNP / QPANI / CBC	2010	**D/02**

Lough Neagh Wetlands

Irish Damselfly

Coenagrion lunulatum

Species Action Plan

2008 - 2013

Irish Damselfly in the Lough Neagh Wetlands

Introduction

The only known colony of Irish Damselfly *Coenagrion lunulatum* in the Lough Neagh Wetlands occurs at the Montiagh's Moss where there were at least 6 pairs recorded recently. Records for this species are currently stored at the Centre for Environmental Data and Recording (CEDaR). In Northern Ireland, there are approximately 35 known colonies of the species. These colonies occur on small mesotrophic lakes with beds of floating aquatic vegetation and sparse fringing beds of emergent plants. A few colonies can be found on cutover bog where they breed in shallow pools created by peat extraction. The Irish damselfly has an annual life cycle. In Northern Ireland, the flight period of the species extends from May until August.

Background

The Irish Damselfly is classified within a diverse group of small, brightly coloured species that are generally referred to as narrow-winged damselflies. It is one of the 'blue' damselflies. Males have a predominantly blue abdomen on the upperside with a significant proportion of black on abdominal segments 3 to 7 and bright green colouration on the underside of the thorax. The female is bright green on all surfaces of the thorax and abdomen with similar proportions of black colouration on the abdomen's upperside except for the apex that retains a blue tinge. In general appearance, the Irish Damselfly may be confused with the Azure Damselfly and the variable Damselfly.

The Irish Damselfly is principally a northern European species. It occurs in scattered populations in northern and eastern Europe and is considered to be rare or severely threatened throughout its range. There are two populations that are disconnected from this northern European population; one in the eastern Alps in France, and the other in the northern half of Ireland. The Swiss population is now considered extinct.

It inhabits mesotrophic ponds, fens and marshes, generally acidic in nature and usually within peatland. Submergent vegetation is generally present with pondweeds *Potamogeton* spp, of significance for egg-laying. Marginal vegetation is generally sparse and dominated by sedges *Carex* spp. and horsetails *Equisetum* spp.

Within Britain & Ireland, the Irish Damselfly is currently restricted to Ireland and has never been recorded in Great Britain. The conservation of the species in a UK context is therefore dependant on the maintenance of the colonies in Northern Ireland. The island of Ireland is considered to have one of the largest populations of Irish Damselfly in Western Europe and is therefore of international importance. Sites where the species is present are concentrated in the five adjoining counties of Leitrim, Fermanagh, Tyrone, Armagh and Monaghan. The species has been lost from sites in the Republic of Ireland and in Northern

Ireland but these losses have been outweighed by the discovery of new colonies. The reason for the extinction of the species at individual sites is not known, but it is thought that eutrophication, habitat change and lowering of lake levels are the most likely causes of decline.

At the time of writing, there have been no detailed studies of the species in Ireland, leading to a poor understanding of the life history and ecological requirements of the Irish Damselfly. There is a need for more data with regards to the species ability to disperse to new areas, its association with plants for oviposition (egg laying), the habitat requirements for its larval, and the marginal habitats required to allow adults to emerge from water and for foraging. Observations that have been made suggest that females require pondweed in which they lay their eggs and that adults require emergent vegetation to be at least 0.5m above water upon which to emerge. In Northern Ireland, small lakes are an important resource for the Irish Damselfly but many have never been surveyed for the presence of this species and so the potential remains for more new colonies to be discovered.

Threats

Water Quality
The Irish Damselfly is an excellent indicator of water quality. Eutrophication is a major threat to the quality of water contained in freshwater habitats in Northern Ireland, and this is largely caused by agriculture. The Irish Damselfly requires wetland habitat free from eutrophication with good water quality for growth and development.

Drainage
Drainage can cause wetland habitats to dry out and become unsuitable for the Irish Damselfly. Hydrology is of prime importance for the wetland habitats they depend upon and must remain intact if these habitats are to retain characteristic features and species.

Water Levels
The presence of trees and scrub can disrupt hydrology and lead to the drying out of wetland habitats, and the lowering of the water table. The gradual process of scrub encroachment on fens, marshes and peatlands can lead to the loss of Irish damselfly habitat. Spray drift from the aerial application of fertilizers over forestry can also cause contamination of water resources.

Scrub Encroachment
Vegetation encroachment can occur as a process of natural succession around the margins of lakes. This reduces the amount of open water and suitable habitat for the aquatic plants required by the Irish Damselfly. This loss of open water can result in a serious reduction of Irish Damselfly populations.

Non Native Species
The spread of non-native invasive freshwater species including fish, plants and invertebrates is of growing concern in Ireland. The potential effects of such species include competition for resources and food, direct predation and a reduction in habitat quality.

Predation
Irish Damselfly larvae are vulnerable to predation by fish. The only colony to be found in the Lough Neagh Wetlands exists in pools at the Montiagh's Moss near where fish are not present. Pools and lakes with unnaturally large populations of fish contain few damselflies & dragonflies because the fish eat the larvae. It is therefore important that fishing lakes with artificial feeding and high stocking rates are not developed on lakes with populations of Irish Damselflies, or on open water habitats created for biodiversity such as dragonflies and damselflies in future.

No Legal Protection
The Irish Damselfly is not currently protected under Northern Ireland legislation.

Opportunities

Habitat Creation & Management
Creation and management of pools on mesotrophic acidic fens, marshes and peatlands located near to the only Lough Neagh Wetlands colony at the Montiagh's Moss in the south east Lough Neagh area is recommended. This should include reducing trees and shrubs to minimise the disruption to hydrology, avoiding drainage/controlling water levels and avoiding eutrophication and keeping open water habitats free from encroachment that comes as a result of natural succession around lakes, and ensuring that new pools created for biodiversity are not stocked with fish, as Irish Damselfly larvae are vulnerable to fish predation.

Target the area between Montiagh’s Moss and Portmore Lough, along the corridor of the Navvis Drain for an Irish Damselfly recovery programme.

Surveys
Initiate data collection on the species ability to disperse along corridors of newly created habitat to new areas.

Lobby for Legal Protection
Irish Damselfly should be protected under the Northern Ireland Wildlife Order to ensure that relevant planning policies can be devised and implemented to protect the species and the habitat in which it occurs.

Legislation

The only ASSI within the Lough Neagh Wetlands known to contain the species is Montiagh's Moss in the south Lough Neagh area.

The species is not currently (2007) protected by law in Northern Ireland.

Irish Damselfly - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
ID/O1	Map all existing Irish Damselfly sites and the location of suitable sites for habitat creation and enhancement work within the Lough Neagh Wetlands	2008
ID/O2	Maintain the current population of Irish Damselfly within Lough Neagh Wetlands	2008
ID/O3	Increase the population of Irish Damselfly within the Lough Neagh Wetlands	2013
ID/O4	Raise awareness of the Irish Damselfly, and other damselfly/dragonfly species, and their conservation requirements within the Lough Neagh Wetlands	2013

Irish Damselfly - Action

Actions

	ACTION	LEAD PARTNER	PARTNER	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
ID/A1	Undertake 1 survey of all mesotrophic sites within the Lough Neagh Wetlands and assess the potential for habitat restoration for Irish Damselfly / breeding damselfly/dragonfly species	**LNAC**	EHS / FWAG / LNAC / CBC	2009	**ID/O1**
ID/A2	Work with Peat Producers to create 10ha of new habitat for breeding dragonflies and damselflies on 2 former peat extraction sites around Lough Neagh	**LNAC**	LNP / RSPB	2010	**ID/O3**
ID/A3	Set up 1 co-ordinated recovery programme for the creation and management of habitat along the Navvies Drain corridor which links the Montiaghs Moss Nature Reserve to Portmore Lough Nature Reserve and create habitats to encourage the Irish Damselfly to expand along this corridor.	**SLNRA**	DARD / LNAC / LNP / CBC / Rivers Agency RSPB	2010	**ID/O3**
ID/A4	Establish 1 demonstration site to provide advise on applied restoration / management work that benefits breeding Irish Damselfly, and deliver 1 workshop every two years to enhance opportunities elsewhere in the wetlands	**LNAC**	DARD / FWAG / LNAC/LNP / CBC / RSPB	2010	**ID/O4**
ID/A5	Write 5 articles (1 article per year) to increase awareness of the threat from Eutrophication of water	**LNAC**	DARD / EHS / LNP / RSPB / CBC	2013	**ID/O4**
ID/A6	Raise awareness among agri-environment scheme advisors on an annual basis of the need to promote the take-up of agri-environment options that benefit breeding dragonflies and damselflies in the Lough Neagh Wetlands	**LNAC**	DARD / EHS / FWAG / LNP / RSPB	2013	**ID/O4**

Lough Neagh Wetlands

Irish Hare

Lepus timidus hibernicus

Species Action Plan

2008 - 2013

Irish Hare in the Lough Neagh Wetlands

Introduction

The Irish hare *Lepus timidus hibernicus* is a sub-species of the European mountain hare and is endemic to Ireland. It is found in many different habitats including unimproved, semi improved and improved grassland, arable cereal fields and in lowland-raised bogs, although generally at low densities in this habitat (about 1 per square kilometre). They also tend to occur on modified grassland habitats such as golf courses and airfields.

Background

Historically, the Irish hare was widespread and common throughout Ireland, though populations are thought to have undergone a substantial decline in the last 15-25 years. Estimates indicate that the present Northern Ireland population may be as low as 8250.

There are small populations of the brown hare *Lepus europaeus* (L.) in the northern half of Ireland, including the Lough Neagh Wetlands. This species was widely introduced throughout Ireland in the nineteenth century and studies have shown that inter-specific competition with the native Irish hare is likely.

Threats

Loss and fragmentation of habitat

Habitat change and changes in farming practice, such as loss of species-rich grassland, increased field size and linked loss of field boundaries, and the switch from spring to winter cereals (winter sown crops are harvested in late spring/early summer when leverets are still young). Habitat fragmentation can occur in these situations, causing small populations to be isolated and prone to predator activity and local extinction.

Loss of refuge areas

Loss of refuge areas for daytime lie-up sites, particularly rushes and good quality hedgerows

Disturbance

Increased levels of disturbance due mainly to high livestock stocking densities on farms, increased use of farm machinery, peat cutting machines and disturbance by cats and dogs

Increased levels of mortality and predation

Highly efficient mechanized harvesting of agricultural crops and silage is likely to impact on hare mortality, with leverets being particularly vulnerable. Studies on the level of threat not yet carried out. Increased levels of predation on leverets by

foxes, crows and magpies is also a threat, especially where the hare population is small and/or fragmented.

Illegal hunting
Illegal taking of hares (in contravention of the Games Preservation Act), and clubs not following best practice guidelines.

Hare Coursing
Where hare coursing activities result in the unsustainable taking of hares for sporting purposes.

Brown Hares
Where their ranges overlap, competition occurs between brown and Irish hares for resources.

Opportunities

Habitat creation and management
Identify the hotspots for Irish hare in the Lough Neagh Wetlands and target the areas nearby for the creation of suitable habitat that allows the species to expand its range

Establish hare reserve
Establish a hare reserve in the Lough Neagh Wetlands, to help maintain numbers at present levels. Accessible to public?

Maintain database of hare sightings
Encourage public participation in appropriate survey work and encourage the reporting of incidental sightings of Irish hares, and brown hares, to relevant bodies, ensuring that there is a system set up to deal with the verification of reports.

Produce identification leaflets so that the public can tell the difference between Irish hares, brown hares and rabbits, when reporting incidental sightings of Irish hare

Maintain a database of Irish hare and brown hare records and ensure this is stored on the Lough Neagh Wetlands GIS and at CEDaR.

Report Wildlife Crime
Undertake close monitoring of hare coursing activities and report Wildlife Crime to the Wildlife Liaison Officer of the PSNI

Agri-environment Schemes
Encourage DARD to adopt a specific Irish hare option under the CMS / ESA and carry out local research into the effectiveness of this option for the maintenance and enhancement of the Irish hare population.

Target farmers and landowners in Irish hare hotspots with advice and information on managing land, once these hotspots have been identified

Undertake research and survey work
Ensure that the public and surveyors are aware of the difference in the Irish hare and the Brown hare, especially in areas such as Magherafelt and Dungannon where the brown hare population is high. Encourage the public to report brown hares so that a local knowledge can be built up of their distribution.

Set up a programme for having ear punch tissue samples of dead hares sent to Quercus for genetic analysis – especially in areas where Irish and brown hares co-exist?

Undertake research into hare mortality as a result of silage cutting.

Hybridisation with brown hares is not yet considered a threat but the species' interaction needs to be monitored.

Lobby for Legal Protection
The Irish hare is a quarry species and only enjoys limited protection under domestic legislation. In January 2004, following public consultation, the Northern Ireland Environment Minister introduced a 12 month ban on the taking, selling or killing of Irish hares under the Game Preservation Act (Northern Ireland) 1928.

The Irish hare is listed under Annex V (a) of the EU Directive 92/43/EEC (Habitats Directive). This Annex lists animal and plant species of Community interest who's taking in the wild and exploitation may be subject to management measures.

Review the Irish hare population regularly and amend protection status under the Northern Ireland Wildlife Order as appropriate, based on scientific evidence.

Irish Hare - Objectives & Targets

Objectives & Targets

	OBJECTIVE		TARGET
IH/01	Maintain the existing range of Irish hare		2008
IH/02	Increase uptake of hare-friendly prescriptions under agri-environment schemes		2013
IH/03	Maintain and increase the area and quality of suitable hare habitat.		2013
IH/04	Raise awareness of the habitat requirements of the Irish hare in the Wetlands		2013
IH/05	Confirm the population of Irish hares in the Lough Neagh Wetlands		2013

Irish Hare - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
IH/A1	Conduct a base-line survey to determine the current population of the Irish hare in the Lough Neagh Wetlands	**UWT**	EHS / FWAG / LNAC / LNP / / CBC	2008	**IH/05**
IH/A2	Maintain a database of Irish hare records and ensure this is stored on the Lough Neagh Wetlands GIS and at CEDaR.	**LNAC**	DARD / EHS / FWAG / LNP / UWT / CBC	2008	**IH/05**
IH/A3	Identify the hotspots for Irish hare in the Lough Neagh Wetlands and target the areas nearby for the creation / maintenance of suitable habitat that allows the species to expand its range, ensuring that local farmers have access to information on hare friendly land management such as delayed grass cutting and grazing.	**UWT**	EHS / DARD / FWAG / LNAC / LNP / CBC	2009	**IH/O3**
IH/A4	Encourage public participation in appropriate survey work and encourage the reporting of incidental sightings to relevant bodies.	**UWT**	DARD / EHS / FWAG / LNAC / LNP / CBC	2009	**IH/04 / IH/05**
IH/A5	Establish the status of the brown hare in the Lough Neagh Wetlands to help investigate its impact on the local Irish hare populations.	**UWT**	EHS / DARD / LNAC / LNP / / CBC	2010	**IH/05**
IH/A6	Inform local authorities and statutory agencies of the known presence of Irish hares on their land and ensure that they are aware of the potential risks to the species through inappropriate land management or development.	**UWT**	DARD / EHS / FWAG / LNAC / LNP / CBC	2010	**IH/04**
IH/A7	Prepare habitat management advisory material and distribute to land managers in known Irish hare localities to promote the uptake of agri-environment options that encourage delayed grass cutting and grazing to benefit Irish hares	**UWT**	DARD / EHS / FWAG / LNAC / LNP / CBC	2010	**IH/04**

IH/A8	Produce identification leaflets so that the public can tell the difference between Irish hares, brown hares and rabbits, when reporting incidental sightings of Irish hare	**UWT**	DARD / EHS / FWAG / LNAC / LNP / CBC	2010	**IH/04**
IH/A9	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit Irish hares	**UWT**	DARD / EHS / FWAG / LNAC / LNP / CBC	2013	**IH/04**
IH/A10	Produce 5 written articles (1 per year) that raises awareness among the general public of the presence of Irish hares and their conservation requirements	**LNAC**	DARD / EHS / FWAG / LNP / UWT / CBC	2013	**IH/04**

Lough Neagh Wetlands

Tree Sparrow

Passer montanus

Species Action Plan

2008 - 2013

Tree Sparrow in the Lough Neagh Wetlands

Introduction
The tree sparrow is a small brown bird with a rich chestnut brown head, clean white cheeks with a black spot and a white collar. It closely resembles a male house sparrow but the tree sparrow is slightly smaller, neater, lacks the grey crown, and has a smaller black bib which does not extend onto the breast. It has a stout seed-eating bill.

They are found on farmland next to water-bodies and along waterways. In Northern Ireland, the stronghold for the population appears to be the Lough Neagh Wetlands where they occur around Lough Neagh, Lough Beg and Portmore Lough. Outside the wetlands, they occur on arable and mixed farmland in Co. Down and in other localised areas such as around Lough Foyle

Background
In the Lough Neagh Wetlands, tree sparrows nest in holes and will use old trees, the walls of old ruins and occupied buildings or even old sand martin burrows. They use a wide range of surrounding habitat for feeding. They will readily use nest boxes. The nest is an untidy mass of grasses and vegetation formed into a flattened dome. The breeding season extends from April to August when two or three broods are fledged. Each clutch consists of between 2 and 7 eggs and the chicks will be fed a wide range of invertebrates while they are in the nest.

In summer, the adults also feed on a wide variety of invertebrates, while in winter, they feed on grain and weed seeds in cereal stubble fields, wild-bird cover and other seed-rich crops and grasses. They also take grain from feeding troughs intended for livestock. During winter, tree sparrows flock together and form mixed flocks with house sparrows and other seed-eating birds such as yellowhammers, and chaffinches.

The tree sparrow has undergone a dramatic decline in population in the UK in recent decades, declining by 95% between 1970 and 1999. Its British range also decreased by 19.6% between the two Atlas periods 1968-72 and 1988-91. Current Breeding Bird Survey trends are unknown in Northern Ireland as not enough tree sparrows are detected to produce a reliable trend. The history of the species in Ireland has been one of decline and recovery. It was even extinct for a short time in the 1950s before recovering. The species is often known for its irruptive movements, which can lead to new colonies being formed on a local or wider scale. This irruptive behaviour is thought to have led to the re-colonization of Ireland in the 1950s.

Threats

Loss of feeding habitat

- **Decline in winter stubble -** The switch from mixed farming in Northern Ireland to specialisation in grass has meant fewer cereal stubble fields are left over the winter to provide seed food. The switch from spring – sown to autumn-sown cereal has also reduced the area of stubble available over the winter.

- **Fewer weeds -** Efficient harvesting methods and intensification of arable farming has meant that there is less spilt grain and fewer weeds to provide seeds and associated invertebrates. Increased herbicide and insecticide used directly has reduced the number of weed plants and invertebrates. Herbicides have also indirectly reduced invertebrates by removing the host plants on which they feed. As a result, tree sparrows have been left with reduced summer invertebrate food and reduced winter seed food.

- **Loss of species-rich grassland -** The intensification of grassland has caused the loss of species-rich grasslands, with intensive pasture and silage providing little in the way of seeds and invertebrates. Traditional, extensively managed meadows, rich in grasses and broadleaved herb species, are being reseeded with rye grass. Increased fertiliser inputs promote dense, rapid growth of uniform swards, low in structural and species diversity. Such swards are consequently heavily grazed or harvested for silage throughout the year. This creates a low diversity, highly disturbed environment containing few invertebrates. The grasses are rarely allowed to set-seed and so the seed resource never becomes available to the sparrows.

- **Loss of invertebrate-rich habitats -** Invertebrate-rich wet areas, ponds and open ditches have been filled in and drained. Cropped wet areas and seasonally used wet grazing areas have been drained, improved and put into crop or livestock production. These areas previously provided habitat for large bodied invertebrates, a favourite food supply of the tree sparrow. Non-cropped areas, rich in invertebrate life such as rough grass banks, uncultivated corners and un-cropped field margins have all been removed along with their valuable food source in order to increase the farmed area within the wetlands.

- **Loss of nesting sites** - Thick, well-managed hedges provide excellent roosting and nesting habitat. The loss of hedges through removal or lack of management reduces feeding opportunities for tree sparrows as they prefer to forage close to hedges that offer security from predators.

Loss of nesting sites
A lack of traditional nesting sites such as holes in mature trees and buildings, and the loss of ruins and inappropriate management of old buildings could be limiting nesting opportunities for tree sparrows. The species readily utilizes new nesting boxes situated in suitable habitat. Such circumstances would suggest few other nesting sites are available in the vicinity.

Opportunities

Habitat creation

- Create feeding habitat such as stubble, wild bird cover, rough grass margins, near to water-bodies and along waterways
- Create/manage Invertebrate-rich wet areas, ponds and open ditches to provide accessibility to large bodied invertebrates
- Provide nesting boxes near suitable feeding habitat
- Provision of waste grain dumps inside old straw bales around field margins (linked to barn owl action plan)

Habitat management

- Avoid re-seeding in areas containing high numbers of birds and where species-rich wet grassland exists

Reduce use of herbicides / insecticides

- Target areas containing high numbers of birds, and areas targeted for expanding the population and aim to reduce the impact of herbicide and insecticide used to reduce the number of weed plants and invertebrates, to ensure tree sparrows can access summer invertebrate food and winter seed food.

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Tree Sparrow - Action

Objectives & Targets

	OBJECTIVE				TARGET
TS/01	Confirm a baseline for the Lough Neagh Wetlands tree sparrow population				2008
TS/02	Maintain the existing Lough Neagh Wetlands population				2010
TS/03	Increase the Lough Neagh Wetlands population				2013
TS/04	Raise awareness of the habitat requirements of the tree sparrow				2013

Tree Sparrow - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
TS/A1	Identify 14 sites containing tree sparrow colonies. Create and manage at least 42ha of suitable habitat (3 ha at each area). Target appropriate locations, near water bodies and waterways etc, and promote habitat creation and management.	**RSPB**	DARD / EHS / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**TS/02 / TS/03**
TS/A2	Strategically locate and operate 14 long-term winter supplementary feeding stations that are within range of existing breeding colonies in the Lough Neagh Wetlands	**RSPB**	DARD / EHS / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**TS/02 / TS/03**
TS/A3	Identify 7 sites that are suitable for the long-term monitoring of breeding and wintering tree sparrows and undertake monitoring of these selected areas once every three years to identify long-term population trends	**RSPB**	EHS / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**TS/02 / TS/03**
TS/A4	Develop suitable methodology for volunteers to monitor population levels of tree sparrows in the Lough Neagh Wetlands	**RSPB**	DARD / EHS / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**TS/01**
TS/A5	Set up a colour-ringng study of the tree sparrow in the Lough Neagh Wetlands to confirm the extent of local movement within the area in winter	**LNAC**	EHS / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC / RSPB	2008	**TS/02 / TS/03 / TS/04**
TS/A6	Produce interpretation material that promotes the importance of the Lough Neagh Wetlands as a stronghold for tree sparrows in Northern Ireland	**RSPB**	LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**TS/04**

TS/A7	Promote the uptake of a Lough Neagh Wetlands Tree Sparrow Survey and encourage the general public to report sightings	**RSPB**	DARD / EHS / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**TS/04**
TS/A8	Provide advisory materials to land managers, farmers and local authorities to encourage habitat creation and management for tree sparrows in the Lough Neagh Wetlands.	**RSPB**	DARD / EHS / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**TS/04**
TS/A9	Undertake a study to confirm the habitat requirements of the tree sparrow in the Lough Neagh Wetlands, and use the results to target the future expansion of the population through appropriate agri-environment options and other funding programmes	**RSPB**	DARD / EHS / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2009	**TS/03**
TS/A10	Collate information gathered during surveys and monitoring programmes and supply to the Lough Neagh Wetlands GIS and to CEDAR	**RSPB**	DARD / EHS / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2009	**TS/01**
TS/11	Undertake 2 surveys (1 every 3 years) to gauge the size and range of the breeding population of tree sparrow in the Lough Neagh Wetlands	**RSPB**	LNAC/ EHS / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2013	**TS/O2**
TS/A12	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of appropriate agri-environment options that benefit tree sparrows	**LNAC**	DARD / EHS / LNP / RSPB / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2013	**TS/04**

Lough Neagh Wetlands

Whooper Swan

Cygnus cygnus

Species Action Plan

2008 - 2013
Whooper Swan in the Lough Neagh Wetlands

Introduction
Lough Neagh and Lough Beg wetland complex is ranked among the top five most important sites for whooper swans *Cygnus cygnus* in Britain and Ireland. The area has held considerable numbers since at least the early 1960's. Little information is available on the overall numbers and distribution of the species before that time, although [450] were present at Lough Beg in December 1962. Counts made between 1964/65 and 1968/69 varied between 400 and 800 birds. In the early 1970's, 600 birds were recorded in the area. Since the mid 1980's, numbers have remained relatively stable, and Lough Neagh/Beg combined currently hold around 1,000 birds in mid winter, peaking in January and again in March.

The birds congregate at freshwater roost sites on Lough Neagh and Lough Beg at night and then disperse to forage for food during the day. Although whooper swans also use the shallow waters around the edges of the two loughs, the principal feeding sites for the species are predominantly improved grassland habitats found nearby with at least 2350 hectares of farmland around Lough Neagh and Lough Beg thought to be used regularly each winter by whooper swans.

The whooper swans found in Ireland are thought to exclusively originate from breeding grounds in Iceland, as only one ringed continental bird has ever been recorded here. Numbers visiting Ireland are thought to have increased since 1900 and have remained relatively stable since the mid 1950's. As well as the Lough Neagh Wetlands, high numbers also occur in Northern Ireland at the Lough Foyle/River Foyle/Lough Swilly complex and at the Lough Erne wetlands. A small number of birds now breed in the Lough Neagh Wetlands and other areas of Ireland.

Background
There are 15 sites around Lough Neagh and Lough Beg that contribute to the overall totals found in the area and which collectively classify the entire wetland complex to be of International importance i.e. holding > 1% of the total flyway population.

Around Lough Beg, the Newferry area lies to the north and is frequented from December onwards with around 120 birds. On the west shore of Lough Beg, up to 200 birds often gather in the marshy shoreline near Church Island each winter and, later, on agriculturally improved grassland near Annagh and Ballyscullion House. The Creagh lies to the south of Lough Beg and forms one of the most extensive areas of flat low-lying grasslands in the area and is by far the most important site in the entire Lough Neagh / Lough Beg area, with between 300 –

400 birds regularly feeding there in winter. The Creagh holds large concentrations of birds from late October onwards.
Around Lough Neagh, the waters edge at Ballyronan, Traad & Moyola Waterfoot in the North West is used annually by up to 170 birds, but only by the first arrivals which use the area to rest and to feed on aquatic vegetation before migrating onwards. Salterstown along the west side of Lough Neagh is used infrequently by less than 20 birds each winter. Kinrush, a disused airfield site near Ardboe together with adjacent fields, holds flocks of between 50 – 70 birds each winter, and a small number of birds also use Kells Point to the south of Kinrush.

In south Lough Neagh, the Closet Meadows & Derrymacash areas hold between 100 – 150 birds each winter, with a further 60 being regularly found at Ardmore. At Derrycrow, between Shallow Flat and the mouth of the Upper Bann river, around 45 birds regularly feed and on Derrywarragh Island, a flock of 20 birds feed on grassland at the headland of this small island which lies at the mouth of the River Blackwater. Bann Meadows & Muckery/Greenisland comprises an extensive area of wet grassland surrounding the lower reaches of the Upper Bann River. This site is amongst the most important in the Lough Neagh Wetlands supporting over 160 birds on average.

To the south-east of Lough Neagh lies Cranagh & Annaghdroghal, where 75 - 90 birds feed regularly each winter. Nearby, a flock has regularly been recorded at Derrycloane in recent years. Further along the south-east shore is the area around, and including, Portmore Lough. Portmore Lough is a key roost site with a number of locations surrounding it where whooper swans feed. These include Deer Park / Derryola Bridge, Tunny Cut, Diamond Lane and Ballymacilrany. The lowland wet grassland in this area is used from mid winter by around 200 birds.

Along the east shore of Lough Neagh is Gartree Point, an abandoned airfield site. Arable fields nearby may contribute to the importance of the site for the species, particularly in autumn and early winter. Around 150 birds regularly use the site, but up to 380 birds have on occasion been recorded there. Along the north shore the main site is at Carlane, where flocks of up to 150 birds feed in winter.

In Ireland, whooper swans traditionally winter on freshwater habitats and agricultural land. In the past, they would have fed mainly on aquatic vegetation in coastal areas, freshwater lakes and marshes. The use of agricultural land, first recorded in the 1940's, has become frequent since the 1960's, partly as a result of agricultural intensification in the wintering areas. The habitat switch onto agricultural land, together with an increase in numbers of birds visiting Ireland, has resulted in some conflict with agricultural interests, particularly in relation to re-seeded grassland, winter cereals, root crops and oilseed rape. Arable habitats are relatively limited in extent in the Lough Neagh Wetlands, with the majority of birds feeding on wet grassland.

There are no migratory staging posts between the breeding and wintering ranges in Iceland and Ireland that the birds can use during migration. Birds gather at staging grounds in Iceland in autumn and depart directly to Ireland (and vice-versa in spring). Although sites in the north, such as Lough Swilly and Lough Foyle act as major landfalls in autumn, satellite tracking studies and timing of first arrivals throughout the country have shown that birds do not always make landfalls at the nearest landmass, choosing instead to fly direct to their chosen wintering areas in the Lough Neagh Wetlands and elsewhere.

Around 60% of the Icelandic population occurs in Ireland in winter. The Irish Whooper Swan Study Group (IWSSG) have been researching movement patterns throughout Ireland for nearly 20 years, through monitoring the re-sightings of individually marked whooper swans. Swans that arrive in Scotland in autumn have been shown to move to Ireland in mid-winter. Birds in Ireland also move southwards through the winter, travelling from the landfall sites of Lough Foyle and Lough Swilly to Lough Neagh Wetlands and further south. Frequent interchange of birds between Britain & Ireland, and vice versa, continues to take place in winter.

Departure to breeding grounds commences in March and April. The 800 – 1200 km flight journey between Ireland / Britain – Iceland is probably the longest sea crossing undertaken by any swan species. Satellite telemetry studies of autumn and spring migration have shown that the flight can take between 13 and 101 hours. This work has also shown that the birds fly at low altitudes over sea, sometimes alighting on the water's surface during extreme weather conditions. Birds have also been visually recorded from an aeroplane flying as high as 8,200m

Before the 1960's, the counting of whooper swans in Ireland was sporadic and localised. The first comprehensive waterbirds -monitoring project in Ireland took place in the winters between 1971 and 1974, and a follow-up survey was undertaken during the period 1984/85 to 1986/87. They are now monitored each winter as part of the Wetlands Birds Survey (WeBS) which has been co-ordinated by the Environment & Heritage Service in Northern Ireland since 1986.

Legislation

The area has also been designated an Area of Special Scientific Interest (ASSI) for which whooper swan is a selection feature and a Ramsar under the Ramsar Convention on Wetlands of International Importance.

The species is protected throughout Europe through the EC Birds Directive and the Bern Convention. The Africa-Eurasian Waterbirds Agreement requires signatories to prepare and implement national single-species action plan for populations listed in Category A.

The whooper swan is classified as a non-SPEC species in Birdlife International's Species of Conservation Concern, which means it has a favourable conservation status for those populations wintering in Europe. It is also listed under Category A (2) of the Africa – Eurasian Waterbirds Agreement (AEWA) because it is a population of between 10,000 and 25,000 individuals.

Threats

There are 15 main feeding sites around the Lough Neagh Wetlands with the majority on agricultural land etc that lies outside the designated ASSI and Special Protection Area of Lough Neagh/Beg. These sites could be damaged if land use were to be altered. For example, changes in land use from grazing to tree planting could be detrimental to the species.

It is becoming increasingly important that changes in the distribution of feeding areas at key sites in the Lough Neagh Wetlands be monitored. Continued changes to agricultural land use and the fact that most agricultural feeding areas used by whooper swans are not protected means that these sites are safeguarded only through voluntary subscription to the wider measures available through the Countryside Management Scheme.

Some sites are under threat from development. The ongoing assessment of the patterns of use by swans at the Creagh relates to a proposed realignment of the main A6 road between Belfast and Derry. Ongoing industrial development at Kinrush airfield is encroaching into available fields.

Opportunities

Carry out research and produce an International Flyway Management Plan that identifies the importance of feeding sites and the roosting sites in the Lough Neagh Wetlands to the Icelandic population of whooper swans visiting Ireland each winter.

Develop individually-based population models, which can predict the impacts of changing circumstances related to land use in the Lough Neagh Wetlands.

Set up a regular Whooper Swan Count and Re-sightings Programme covering sites used in the Lough Neagh Wetlands. The method of estimating turnover based on counts and re-sightings of individually-marked birds could markedly improve the understanding of the true importance of staging sites within the Lough Neagh Wetlands. This would also enhance the identification of sites that may be suitable for statutory protection because of their importance to staging whooper swans.

Establish effective partnerships for the management and monitoring of the most important feeding sites.

Establish a programme linking Lough Neagh Wetlands to Lough Foyle, Lough Swilly, Lough Erne and Iceland, to highlight the importance of the wetlands to this species.

Lough Neagh and Lough Beg have been designated as a Special Protection Area (SPA) under the EC Birds Directive, and whooper swan has been listed as a qualifying species. However, most of the important feeding sites around Lough Neagh and Lough Beg are outside the current designated area. .Opportunities should include extending the boundaries of the Lough Neagh/Beg Special Protection Area to include some of the most important feeding sites.

Whooper Swan - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
WS/O1	Map the location of all known winter feeding sites within the Lough Neagh Wetlands	2008
WS/O2	Protect winter feeding sites used by whooper swans within the Lough Neagh Wetlands	2010
WS/O3	Encourage the enhancement of feeding sites for whooper swans in the winter the Lough Neagh Wetlands	2013
WS/04	Raise awareness of the species and its conservation requirements within the Lough Neagh Wetlands	2013

Whooper Swan - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
WS/A1	Develop a satellite-tracking programme to monitor the movements of whooper swans during migration to Ireland and while in Ireland, and confirm the importance of the Lough Neagh Wetlands in the context of an International Flyway for the species.	**IWSSG**	EHS / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / WWT / RSPB	2008	**WS/O1, WS/O2, WS/O4**
WS/A2	Map the location of all winter feeding sites that regularly hold 25 or more whooper swans	**LNAC**	EHS / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / WWT / IWSSG / RSPB	2008	**WS/O1**
WS/A3	Establish a co-ordinated management programme for the Creagh, south of Lough Beg that includes targeting parts of the site for the enhancement of feeding habitats to increase the carrying capacity of this area for wintering whooper swans, the protection of roost sites on Lough Beg and the provision of 1 new viewing facility to interpret the importance of the Lough Beg/Lough Neagh Wetlands biodiversity	**LNP/LNAC**	DARD / EHS / FWAG / MDC / RSPB / WWT / IWSSG / Planning Service / NIE	2008	**WS/O3**
WS/A4	Set up a Whooper Swan Count and Re-sightings Programme covering sites used by whooper swans in the Lough Neagh Wetlands. Use this to estimate the turnover of birds based on counts and re-sightings of individually-marked birds wearing darvic rings and/or neck collars that have been fitted to the birds.	**IWSSG**	EHS / LNAC/LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / RSPB / WWT / RSPB	2008	**WS/O1, WS/O4**
WS/A5	Develop 1 new communication and education programme with associated materials to raise awareness of the species and its dependence upon feeding and roosting habitats within Lough Neagh	**WWT**	DARD / EHS / FWAG / LNAC / LNP / MDC /	2008	**WS/O4**

	Wetlands. This should include the establishment of links between schools and communities in the Lough Neagh Wetlands and schools/communities near Lough Foyle and Lough Erne in Northern Ireland, Lough Swilly in the Republic of Ireland and their breeding grounds in Iceland		CDC / D&STBC / CBC / LCC / ABC / BBC / RSPB / IWSSG		
WS/A6	Continue to promote land management prescriptions for whooper swans, and carry out further field research and deliver advice to agri-environment advisors and farmers on optimum management for the species	**WWT**	DARD / EHS / FWAG / LNAC/LNP / RSPB / IWSSG / CBC	2008	**WS/O2, WS/O3**
WS/A7	Contribute to the development and a draft International Flyway Management Plan	**IWWSG**	EHS / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / WWT	2008	**WS/O2, WS/O3**
WS/A8	Identify the threat posed to important swan feeding areas by unfavorable land use such as biomass production	**IWSSG**	LNP / LNAC / RSPB / WWT / FWAG / DARD / CBC	2009	**WS/03**
WS/A9	Ensure that winter feeding sites that regularly hold 25 or more whooper swans per year are managed under agri-environment schemes as Winter Feeding Sites for Swans & Geese	**DARD**	EHS / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / RSPB / WWT / IWSSG	2010	**WS/O2**
WS/A10	Ensure that all known feeding areas that lie close to overhead powerlines within the Lough Neagh Wetlands are monitored for swan collisions. Install appropriate markers at all sites where power lines pose a risk to swans	**IWSSG**	NIE / RSPB / WWT / RSPB / CBC	2010	**WS/03**
WS/A11	Establish 1 demonstration site to transfer knowledge on applied habitat management and hold 1 habitat creation and management workshop every two years with landowners/land managers in important roosting/feeding areas of the Lough Neagh Wetlands	**WWT**	EHS / RSPB / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / IWSSG	2010	**WS/O4**
WS/A12	Raise awareness among agri-environment scheme advisors on an annual basis of the need to promote the take-up of agri-environment options that benefit whooper swans and associated species in the Lough Neagh Wetlands	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / WWT / IWSSG	2013	**WS/O4**

5. Habitats selected for action (Phase 1)

5.0 Eutrophic Standing Water

5.1 Fen

5.2 Floodplain Grazing Marsh

5.3 Hedgerow

5.4 Lowland Meadow

5.5 Lowland Raised Bog

5.6 Purple Moor-grass and Rush Pasture

5.7 Reedbed

5.8 Rivers and Streams

5.9 Wet Woodland

Lough Neagh Wetlands

Eutrophic Standing Water Habitat Action Plan

2008 - 2013

Eutrophic Standing Water in the Lough Neagh Wetlands

Introduction

The total Lough Neagh Wetlands covers an area of 82,691ha of which at least 38,818ha (approx. 47%) consists of the open standing waters of Lough Neagh (38,000ha), Lough Beg (476.6 ha), Portmore Lough (184.4ha), Lough Gullion (95.4 ha) and the Craigavon Lakes (61.6 ha). These habitats are considered eutrophic standing waters and, along with their associated aquatic flora and fauna communities, are included in this plan.

The two largest open standing waters in Northern Ireland are Lough Neagh and Lower Lough Erne. Lough Neagh is by far the largest area of freshwater in Ireland. It has a drainage basin of 4450 km2, which is shared between Northern Ireland (91%) and the Republic of Ireland (9%). The rivers flowing into Lough Neagh drain about 38% of Northern Ireland, in addition to part of County Monaghan in the Republic of Ireland. Lough Neagh provides water for approximately one third of the population of Northern Ireland.

The total surface area of all lakes represents about 4.5% of the total surface area of Northern Ireland. Many lowland water bodies in Northern Ireland are now highly enriched, mainly due to the input of nutrients from point and diffuse sources, with nutrient concentrations far in excess of their natural levels. Open standing waters classed as eutrophic have nutrient levels of more than 0.035 mg l^{-1} total phosphorus (which includes phosphorus bound up in plankton) and more then 0.5 mg l^{-1} total inorganic nitrogen (mainly in the form of dissolved nitrates).

Lough Neagh is hypertropthic which means that, although it is a naturally eutrophic standing water, levels of nutrients are much higher than they should be, reflecting the impact of human activities in the catchment. As well as elevated levels of nutrient concentrations within the water column of the Lough and its inflowing and out-flowing rivers there has also been a considerable build up of nutrients in the sediments. Hence, even if nutrient inputs to the Lough are controlled, the recovery of the system to eutrophic status will be slow, due to the release of nutrients from abundant sediments. Another feature of these waters is that they have dense, long-term populations of algae in mid-summer, often making the water green. The bed and soil of hypertrophic standing water bodies are covered by dark anaerobic mud, rich in organic matter.

The trophic status of a water body dictates which species of plants are able to survive, the species-richness of a lake and its overall biological productivity. In their natural state eutrophic standing waters have high levels of biodiversity. Planktonic algae and zooplankton are abundant in the water column, submerged vegetation is diverse and numerous species of invertebrate and fish are present.

Background

Birds

The three largest areas of open water, Lough Neagh, Lough Beg and Portmore Lough make up the Lough Neagh Area of Special Scientific Interest (ASSI) and the Lough Neagh Special Protection Area (SPA). These eutrophic standing waters, and their adjacent habitats, are important for breeding common tern and great crested grebe, and for passage and wintering great crested grebe, whooper swan, golden plover, pochard, tufted duck, scaup, goldeneye, little grebe, cormorant, graylag geese, shelduck, wigeon, gadwall, teal, mallard, shoveler, coot and lapwing. Marginal habitats of these lakes are highly dependent on the adjacent open water body in terms of lake water levels and the nutrient status of the water. These marginal habitats hold important breeding wader and wildfowl populations including snipe redshank, lapwing, curlew and shoveler.

Fish

Atlantic salmon migrate from the Atlantic Ocean, up the Lower River Bann and into Lough Neagh. This migration can take place during any month of the year but is particularly pronounced in late summer and early autumn. Eggs are laid in the gravel beds or 'redds' and hatch there in late March or early April. The newly hatched fish, known as alevins, spend the next four or five weeks in the gravel before finally emerging as fry. Juveniles then utilise the streams as nurseries for the next one, two or occasionally three years as parr before turning into smolts and migrating to sea during the spring to complete the life cycle.

Lough Neagh supports the largest population of the glacial relict pollan in Ireland. It is reported that around 25% of the Lough Neagh biomass consists of this species. The pollan is distinct from all other European species of whitefish (Coregonus) and is elsewhere known only from eastern Siberia and north-western North America (Alaska Cisco). It is a Northern Ireland priority species and a species of conservation concern. Pollan have been fished for food in Lough Neagh for centuries and are still fished commercially, forming an important component of the Lough eel and perch fishery, although the catch is small in comparison with former times. The species also occurs in Lough Erne and the Shannon lakes but is much rarer there. They spawn in the stony substrates of the Lough from early November to late December. The Lough Neagh Wetlands Local Biodiversity Action Plan had originally selected pollan as a species for which a Species Action Plan would be produced. After further consultation with relevant stakeholders it was decided not to produce a separate plan, because an All Ireland Plan already existed and was being delivered at local level within the Lough Neagh Wetlands. Instead, it was decided to include action for the species through this habitat action plan.

The dollaghan, a migratory form of brown trout, is found in Lough Neagh. This species migrates from Lough Neagh into its inflowing and outflowing rivers to spawn, and is considered to be unique to the Lough. Lough Neagh trout are split

into two forms – Dollaghan and Salmon trout. Salmon Trout are silver coloured with large heads and few black spots and no red spots. Dollaghan Trout are small headed with many black spots and a brown body. In the past they were divided into three distinctive forms: the river trout *Salmo trutta L*, the common trout *Salmo fario L* (of which the gillaroo trout – with large spots was considered a distinct variety) and the great lake trout *Salmo ferox L.*

The eel is native to Ireland and is subject to great phenotypic variation. After crossing the Atlantic Ocean as young eels (known as leptocephali) they change into elvers and ascend into freshwater during the spring months. They then live in freshwater for at least seven or eight years during which time they are called yellow eels and grow to over 40cm in length, during which time they are subject to harvesting in Lough Neagh. After this time the eels turn silvery in appearance and stop feeding prior to their seaward migration during autumn and early winter to complete their life cycle somewhere in the Sargasso Sea. During migration silver eels are also captured along the Lower Bann as part of the Lough Neagh Eel Fishery. The silver eel fishery, along with the yellow eel harvest on the Lough itself, combine to make the Lough Neagh Eel Fishery one of the largest and most commercially important in Europe. Eel numbers have declined in recent times across Europe, and this has been evident in Lough Neagh.

Fish communities in eutrophic standing waters are a mix of coarse and salmonid species, but today there are few lakes with truly natural assemblages due to mixing with introduced coarse fish such as roach, rudd, gudgeon, perch, bream, pike and tench (tench being rare in Lough Neagh). Several introduced fish species have been established and have become an accepted part of the biodiversity associated with standing open water and many Loughs are now dominated by introduced roach.

Invertebrates
Dragonflies, water beetles, stoneflies and mayflies are well represented in eutrophic lake habitats. Bottom-dwelling invertebrates such as snails and the larval stages of non-biting midges, dragonflies, stoneflies, mayflies, water beetles and shrimps such as Mysis relicta are abundant.

Plants
Characteristic aquatic plants of eutrophic lakes and ponds vary with geographical area, nutrient concentrations and exposure and include duckweeds, white water-lily, yellow water-lily and spiked water-milfoil. Submerged aquatic plants are usually rare or are restricted to shallow waters owing to poor light penetration. Plants with a restricted distribution in Northern Ireland occur in the open standing waters of Lough Neagh, such as slender-leaved pondweed.

Threats

Water Quality

Eutrophication is the biggest threat to water quality in the Lough Neagh Wetlands, mainly due to the release of nutrients from point and diffuse sources of pollution.

- Point-source pollution is pollution that can be traced back to a single origin or source such as a sewage treatment plant discharge.
- Diffuse Pollution comprises true non point source contamination and pollution arising from a multiplicity of dispersed, often individually minor, point sources. Examples of true non point sources are run-off from fields or seepage of nutrients from soil into ground water. Examples of minor point sources are field drains or surface water drains in urban areas. Diffuse sources are often individually minor, but collectively significant.

Phosphorus enrichment stimulates growth of phytoplankton and hence makes the water cloudier. This reduces light penetration in the water column and restricts many of the submerged plants that grow underwater. The increased biomass of phytoplankton also depletes the water of dissolved oxygen through respiratory demand when algal cells are deprived of light (e.g. at night, or when they are found in low-light regions of the turbid water column) or when they die and undergo decomposition.

Agricultural activities can cause pollution of water bodies through poor waste storage facilities and inadequate separation of contaminated yard water and clean water. Inappropriate application of slurry and inorganic fertilizers during adverse weather conditions, on steeply sloping land, or the over-application of these can result in loss of phosphorus to waterways. This is commonly referred to as diffuse pollution.

Inappropriately treated discharges from waste water treatment works (WWTW), industrial sites and septic tanks can be point source of nutrient enrichment of open standing waters.

Contaminated groundwater sources that feed surface waters can also contribute to the nutrient loadings of open standing water.

Ploughing up grassland and other habitats surrounding open standing water, drainage and overgrazing can all increase the possibility of soil erosion with a consequent increase in water-borne sediments.

Settled sediments may continue to introduce nutrients into the water column.

Sediments in suspension cause turbidity and the resulting light attenuation may inhibit the growth of rooted aquatic plants in the spring, increasing the changes of algal dominance.

Water Levels

If water levels in open standing water are low during the spring salmon run, fish cannot get into rivers to spawn. All fish movements and migrations depend on adequate flows. Low water levels can also cause important wetland habitats, such as marshes and wet woodlands, to dry out.

Arterial drainage schemes have had an effect on the hydrological balance of the open standing water of Lough Neagh and its associated satellite lakes. The maintenance of drainage schemes continues to have the potential to directly affect lake water levels and indirectly affect peripheral wetland habitats such as fens, reedbeds and floodplain grazing marsh and their associated rare wetland flora and fauna. Although Rivers Agency only maintain the current land drainage function of designated watercourses, riparian drainage works are not controlled through the Agency and could have a detrimental effect on this habitat type. That is because these are drainage works on non-designated channels carried out by the landowner. The only controls would be if the drain was in a designated site by which he would need to apply to EHS for consent, he was a farmer within a CMS, LFA or single farm payment by which there would be DARD guidelines regarding the management of drains or sheughs, or he wanted to culvert the drain in which case he would require planning permission. Rivers Agency would only become involved if the landowner is not maintaining the flow of water and is causing problems upstream to a different landowner.

Dredging and the clearance of bankside vegetation as a result of flood control works can also affect downstream water quality by increasing suspended sediment loads and nutrient concentrations, and water quality by allowing water to flow more quickly.

Non-native Species

Deliberate or accidental introduction of non-native invasive species such as Zebra mussel can have a damaging effect on the native flora and fauna of open standing water due to the direct effects of competition or indirectly by altering the natural habitat of native species. Zebra mussels were first recorded in Lough Neagh in 2005. This species is able to attach to and form large colonies on any submerged hard surface. Fouling growths can swamp the spawning grounds of lake spawning salmonids. They are very effective filter feeders and can virtually strip the water column of zooplankton and phytoplankton leading to increased water clarity, although this does not result in a net loss of nutrients from the system. Zebra mussel grazing of photoplankton can influence the structure and abundance of the zooplankton community thus modifying food from zooplantivorous species and life stages (e.g. larval and juvenile) of fish. They also shift the bulk of biological systems from pelagic to benthic systems associated with mussel beds. Fish introductions can significantly alter the food web in lakes which can impact on the overall ecological status of lakes. For instance, roach were first introduced to the Lough Neagh catchment in the mid 1970's and are now one of the dominant species in the lough. In addition, fish

stocking can have specific impacts on genetic integrity of established fish populations such as native populations of brown trout.

Climate Change
The predictions for climate change include increased summer temperatures and milder, wetter winters. These changes may result in drier summer conditions, with extended growth periods during the winter. It is unclear how eutrophic standing waters will respond to such changes but it is known that pollan are cold-adapted Arctic species and that increases in summer water temperatures above a certain limit are likely to be detrimental to that species.

Man-Made Litter
Large quantities of litter are deposited each year all around the shores of Lough Neagh and the other open standing water sites, as well as along the watercourses that discharge into them.

A further threat to the biodiversity of eutrophic standing water comes from the build up of lead shot, caused by the hunting such as wildfowling. Species such as dabbling duck and swans can digest this substance and die from lead poisoning.

Public Amenity
The open standing waters of the Lough Neagh Wetlands are an important visual and aesthetic resource and can have considerable amenity value including bathing, fishing, shooting, boating and other water sports. These activities if not managed sustainably can have a negative impact on biodiversity, for example live baiting and uncontrolled introductions of fish for angling and uncontrolled jet sking near nesting sites.

Opportunities

Water quality projects
Develop Sustainable Drainage Systems to protect, enhance and conserve wetland species and habitats via River Basin Management Plans and Nutrient Management Plans for areas influencing Eutrophic Standing Water. Several reed bed filtration projects are underway at the Washing Bay , Oxford Island and at Greenmount College to treat water from septic tanks and from farmyards. This biological treatment of water reduces nutrient levels and contributes to the local action to restore eutrophic standing water habitat. The Lough Neagh Wetlands is part of the Neagh-Bann International River Basin District. The EU Water Framework Directive is being delivered in throughout this district with the first phase being implemented up to 2015. The Water Framework Directive aims to achieve good status and preserve our best waters. To achieve this, a River Basin Management plan will be prepared and implemented. A draft plan will be issued in 2008 with the final version due to be published by the end of 2009.

Captive breeding for pollan
The Department for Arts, Culture & Leisure (DCAL) has developed the capabilities to breed pollan in captivity. The technology is therefore available to take pollan from Lough Neagh, breed them in captivity and create a back-up genetic stock of the species in another suitable lake. Having a back-up stock would allow for future re-stocking of the species in Lough Neagh if this was required.

Reduce impact from lead shot
Raise awareness about the threat posed by the use of lead shot over wetlands, and lobby for the introduction of a ban on the use of lead shot over wetlands.

Habitat creation and restoration
Develop a programme focused on the creation and management of ponds on private and public land in the Lough Neagh Wetlands

Wildfowl Refuges
Working in partnership with the wildfowlers of the Lough Neagh Wetlands, establish more wildfowl refuges

Clean-up campaign
Working with various groups around Lough Neagh shores, co-ordinate the clean up of the shore on an annual basis.

Access and Interpretation at Local Nature Reserves
Provide access and interpretation to promote the Local, National and International importance of the open water habitats of the Lough Neagh/Beg area. Five Local Nature Reserves are being established in the Lough Neagh Wetlands to raise awareness of the importance of eutrophic standing water for biodiversity. These are located at Portmore Lough, Traad Point, Ballyronan Wood, The Washing Bay and Craigavon Lakes. Local Nature Reserves are managed by Local Authorities in partnership with the local communities of these areas.

Advice
Produce simplified user-friendly best practice guides for local farmers and developers in the surrounding catchment area, using information similar to that contained within the Ministry of Food & Agriculture's Best Practice Guides – Code of Good Agricultural Practice for the protection of Water, Code of Good Agricultural Practice for the protection of Soil, and Good Practice Guide for Handling Soils (see Annex A)

(Eutrophic) Open Standing Water - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
ESW/01	Identify & Map open standing water within the Lough Neagh Wetlands	2008
ESW/02	Maintain and restore the biological diversity of Eutrophic Standing Water in the Lough Neagh Wetlands	2013
ESW/03	Create Open Standing Water habitat in Lough Neagh Wetlands	2013
EWS/04	Raise awareness of the value of this habitat for biodiversity	2013

(Eutrophic) Standing Water - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
ESW/A1	Produce a management plan for breeding duck on Rams Island	**RBLNA**	EHS / LNP / LNAC	2008	**ESW/02**
ESW/A2	Promote the EHS Pollution Hotline at a local level via 5 article/media events (1 per year)	**EHS**	LNAC / LNP	2008	**ESW/02 / ESW/04**
ESW/A3	Promote the DARD Code of Good Agricultural Practice for the Prevention of Pollution of Water, Soil and Air.	**DARD**	LNAC / LNP / CBC	2008	**ESW/02 / ESW/04**
ESW/A4	Write 1 article to highlight the threat of lead shot to biodiversity and encourage a phase out over eutrophic standing water	**LNAC**	BASC / EHS / LNP / CBC	2008	**ESW/04**
ESW/A5	Establish a habitat creation programme to create and restore ponds in the Lough Neagh Wetlands	**LNP**	DARD / EHS / FWAG / LNAC / Rivers Agency / CVNI / CBC	2009	**ESW/02 / ESW/03**
ESW/A6	Create 3 new initiatives which employ sustainable water management techniques such as constructed Wetlands, rainwater harvesting and green roof to address water quality issues associated with surface run off, monitor water quality in affected watercourses and report results	**LNP**	EHS LNAC	2009	**ESW/02**
ESW/A7	Carry out a co-ordinated clean-up along the Lough Neagh/Beg Shore every two years	**LNP**	BASC / LNAC / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC	2009	**ESW/02**

			/ CVNI / QPANI		
ESW/A8	Confirm the trophic status of all standing waters of more than 0.2 Ha in the Lough Neagh Wetlands and map all sites on GIS	**LNAC**	EHS / LNP / CBC	2009	**ESW/01**
ESW/A9	Map the location of all standing water bodies up to 2 ha (drumlin lakes, ponds & pools) and use this database to protect habitats from development pressures	**LNAC**	EHS / LNP /	2009	**ESW/01**
ESW/A10	Provide a birdwatching facility with interpretation at Randalstown Forest next to Farrs Bay NNR, Lough Neagh	**EHS**	ABC / LNP / LNAC / RSPB / Arches Community Group	2009	**ESW/04**
ESW/A11	Create access, interpretation and viewing facilities at Longpont, Lough Beg NNR	**EHS**	MDC / LNP / LNAC / RSPB	2009	**ESW/04**
ESW/A12	Develop a partnership with Lough Neagh Wetlands wildfowlers / hunts people and address the threat posed by the use of lead shot over eutrophic lakes	**EHS**	BASC / LNAC / LNP / CBC	2010	**ESW/02**
ESW/A13	Establish 1 new refuge at a biodiversity hotspot in Lough Neagh/Beg, or extend the size of 1 existing refuge / zone at a biodiversity hotspot in the Lough Neagh Wetlands, to reduce disturbance to biodiversity	**EHS**	LNAC / LNP / / CBC	2010	**ESW/02**
ESW/A14	Establish 1 Demonstration Site to transfer knowledge about the creation and management of open water habitats, and hold 1 on-site event every two years	**LNP**	DARD / EHS / FWAG / LNAC / Rivers Agency / RSPB / CVNI / CBC	2010	**ESW/04**
ESW/A15	Establish 1 Demonstration Site to transfer knowledge about methods used to address water quality issues associated with surface run off, and hold one on-site event every two years	**LNP**	EHS / LNAC / CBC	2010	**ESW/04**
ESW/A16	Provide co-ordinated interpretation at all access points around the Lough Neagh/Beg Special Protection Area to promote the National and International importance of the wetland for biodiversity	**LNAC**	EHS / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC	2010	**ESW/04**

ESW/A17	Hold 5 educational events (1 every 2 years) at an open standing water site to promote the importance of the habitat for Biodiversity	**RSPB**	EHS / LNAC / Local Authorities / LNP / CBC	2013	**ESW/04**
ESW/A18	Press for regular checks to be carried out on all septic tanks in use in the Lough Neagh Wetands, and action to be taken to prevent pollution found to be emanating from this source	**LNAC**	EHS / Local Authorities / LNP	2013	**ESW/02**
ESW/A19	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit eutrophic standing water and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / CBC	2013	**ESW/04**

Lough Neagh Wetlands

Fen

Habitat Action Plan

2008 - 2013

Fen in the Lough Neagh Wetlands

Introduction
Fens is a type of wetland which receives the majority of its water and nutrients from soil, rock and ground water and is characterized by a distinctive vegetation. Fens occur in river valleys, poorly drained basins or inter-drumlin hollows, along lake margins or on river flood-plains and are confined to lowlands such as those found in the Lough Neagh Wetlands.

Background
Topogenous fens include those mires where water movements in the peat or soil are generally vertical. They include basin fens and floodplain fens. Soligenous fens are those mires where water movements are dominantly lateral, including valley mires, springs and flushes in the lowlands. Fen vegetation can be classified into three basic types, `poor-fens, `rich-fen` and 'transition mire and quaking bog'.

The definition of fens includes tall fen and associated marshy grassland vegetation on deep peat dominated by meadowsweet, tall grasses and rushes.
The definition also covers swamp vegetation which is species-poor and dominated by a mixture of species including bulrush, reed-mace, reed canary grass, branched bur-reed, flowering-rush and tall sedges such as great fen sedge, great pond sedge, bottle sedge or bladder sedge.

A number of locally rare plant species are associated with Lough Neagh fen, such as fen bedstraw, greater water-parsnip, Irish lady's-tresses orchid, marsh helleborine and marsh pea.

Fens are a diverse habitat which support a very wide range of plant and animal species including frog, smooth newt, reed bunting and breeding waders. Birds of open water include shoveler.

Northern Ireland fens are particularly important for invertebrates, several of which are absent or threatened in Great Britain. These include dragonflies such as the Irish damselfly, beetles such as the whirligig beetle *Gyrinus natator,* the water beetle *Haliplus variegates,* the pond skater *Limnoporus rufoscutellatus* and the carabid beetle *Pterostichus aterrimus* and butterflies and moths such as the marsh fritillary butterfly

Threats

Water Levels
Drainage and any subsequent changes in the water-table, particularly the lowering and stabilization of water-tables, can affect the extent and quality of fens. This can be the result of either localised direct drainage or indirect marginal

drainage, through changes in water-levels of lakes. Fens have declined as a result of drainage and control of water levels. Many extensive areas of fen associated with large lakes such as Lough Neagh have disappeared. Prior to successive lowering of the Lough Neagh water levels, fen communities extended in a strip up to several hundred metres wide along the southern shore of Lough Neagh, from Washing Bay in the south-west to Hog Park Point in the south-east.

Inappropriate Grazing
Fens are sensitive to changes in grazing levels. Over-grazing can result in excessive poaching, nutrient enrichment and eventual changes to fens and agricultural grassland. Conversely, many fens in the Lough Neagh Wetlands suffer from under-grazing, resulting in a loss of low growing plant communities and loss of fen to reedbed or woodland and an eventual drying out of the site.

Water Quality
Eutrophication as a result of nutrient enrichment from intensively managed farmland results in the replacement of important fen plant communities and associated invertebrate species with less demanding species of lower conservation value. However it is hoped that all waters will achieve good ecological status by 2015 with the implementation of the E U Water Framework Directive.

Infilling
Infilling for agricultural land reclamation, waste disposal or development affects fens. This directly results in the loss of extent and quality of fen vegetation, and can affect water-levels and water quality over a wide area. Infilling occurs over wetland in the South Lough Neagh area, a proportion of which could be classified as fen. This has caused the loss and fragmentation of the habitats there and elsewhere.

Peat Cutting
Peat-cutting has affected the character of many important fen sites. Although this has largely ceased, without appropriate management, the biodiversity associated with many sites will continue to deteriorate due to vegetation succession resulting in the loss of open water and more open fen habitats.

Natural Succession
One of the main natural losses of fen is to reedbed or wet woodland. Fen often lies in between these two habitats and as they naturally expand, the fen can deteriorate and become consumed by one or other habitat.

Opportunities

Habitat Creation on former peat extraction sites
As noted above, fen habitat has been affected by peat extraction in the past. Opportunities now exist to create fen on suitable land adjacent to existing habitat in the Lough Neagh Wetlands, by targeting appropriate former peat extraction sites.. Many fens in Northern Ireland have been created on former raised bog where peat-cutting has taken place. However, without adequate management following the cessation of peat cutting, natural succession to scrub has probably resulted in a general reduction in quality of this habitat.

Raise awareness of Nutrient Management
Promote need for Nutrient Management Plans in fen catchment areas to promote water quality.

Restore and/or manage habitat
Identify areas of good quality habitat, and areas containing degraded fen or fen that is under threat from drying out, and prioritize for restoration and management. Produce and implement management and or restoration plans, and include plans to link up fragmented fens. Monitor key sites which are at risk from illegal dumping and/or infilling.

Raise awareness of the habitat
Raise awareness of the importance of the habitat through designating Local Nature Reserve(s).

Map and register the location of all sites in the area
Map the location of fen in the Lough Neagh Wetlands. Compile a register of all fens in the Lough Neagh Wetlands.

Fen - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
F/01	Identify & Map all existing Fen within the Lough Neagh Wetlands	2009
F/02	Maintain extent and condition of Fen in the LNW	2013
F/03	Restore Fen in Lough Neagh Wetlands	2013
F/04	Create new Fen habitat	2013
F/05	Raise awareness of the value of this habitat for biodiversity	2013

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
F/A1	Designate Traad Point as a Local Nature Reserve and produce and implement a management plan to manage Fen	**MDC**	EHS / LNAC / LNP	2008	**F/02 / F/05**
F/A2	Designate Washing Bay as a Local Nature Reserve and produce and implement a management plan to manage Fen	**DSTBC**	EHS / LNAC / LNP / Muintir na Mointeach	2008	**F/02 / F/05**
F/A3	Map the location of all sites in the Lough Neagh Wetlands and store information on the Lough Neagh Wetlands GIS	**LNAC**	EHS / LNP / CBC	2008	**F/01**
F/A4	Develop a Watchdog Programme to engage the local community in monitoring key sites at risk from illegal dumping/ and/or infilling	**LNP**	LNAC / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC	2008	**F/02 / F/05**
F/A5	Identify important fen habitat, including those sites that have been degraded, fragmented, or that exist as current peat extraction sites where habitat creation and restoration is possible, and prioritize for restoration and management. Then produce and implement habitat creation, management and/or restoration plans for contiguous blocks of land, next to good quality Fen and link up fragmented sites	**LNAC**	DARD / EHS / FWAG / LNAC / LNP / RSPB / CBC	2010	**F/02 / F/03 / F/04**
F/A6	Hold one event at Traad the Washing Bay Local Nature Reserve to promote the biodiversity value of Fen	**MDC**	EHS / LNAC / LNP	2010	**F/05**
F/A7	Hold one event at the Washing Bay Local Nature Reserve to promote the biodiversity value of Fen	**DSTBC**	EHS / LNAC / LNP / Muintir na Mointeach	2010	**F/05**
F/A8	Establish 1 demonstration site to transfer knowledge of applied restoration and management of Fen habitat and hold 1 training programme on the conservation, management and restoration of Fen habitat	**EHS**	CVNI / DARD / FWAG / LNAC / LNP / Rivers Agency / RSPB / CBC	2010	**F/02 / F/03 / F/05**
F/A9	Write 5 articles (1 per year) to promote the biodiversity value of Fen, and highlight the threats that exists to the habitat from practices both on site and taking place adjacent to fens	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / CBC	2013	**F/05**

F/A10	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit Fen and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNP / RSPB	2013	**F/05**

Lough Neagh Wetlands

Floodplain Grazing Marsh Habitat Action Plan

2008 - 2013

Floodplain Grazing Marsh in the Lough Neagh Wetlands

Introduction
Floodplain grazing marsh in the Lough Neagh Wetlands is defined as periodically inundated pasture or meadow with ditches that maintain the water levels and contain standing fresh water. The habitat is associated with slow-flowing rivers and lakes that are drained by a network of ditches. It occurs on flat low-lying areas where it frequently exists as a mosaic with other wetland habitats such as purple moor-grass and rush pastures, raised bogs, fens, reedbeds and wet woodlands. The vegetation is mostly a mixture of rush-dominated pasture and semi-improved and improved grassland often over peaty ground. The habitat can comprise of a wide range of vegetation communities determined by a range of local factors including water regime, soil condition and past and current management practices which have modified more natural wetland vegetation.

In areas with higher water-tables and less intensive grazing, rushes and sedges predominate together with grasses such as creeping bent and marsh foxtail. The proportion of broadleaved herbs is often high, including marsh thistle, silverweed, meadowsweet, water mint, marsh bedstraw, lesser spearwort, and cuckooflower. Yellow flag, floating sweet-grass, and clumps of tall reeds may also be present. Floristically this vegetation can be very similar to the purple moor grass and rush pasture habitat which is found on sloping ground not subject to regular flooding.

In areas with lower water-tables and intensive grazing, semi-improved and improved grasslands predominate. The most improved examples are used for silage or intensive grazing and have a high cover of perennial rye-grass with few other grasses or herbs. Semi-improved wetter grassland on more peaty ground contains soft rush and grasses such as Yorkshire fog, creeping bent, rough meadow-grass, and tufted hair-grass, and a few herbs such as creeping buttercup. On semi-improved drier alluvial soils a range of neutral grassland species, characterised by crested dog's-tail, occur.

Background
Priority species associated with floodplain grazing marsh habitat include pennyroyal, greater water-parsnip, Irish lady's-tresses orchid, curlew, redshank, lapwing, black-tailed godwit, narrow small-reed, Irish hare, and marsh fritillary butterfly. The requirements of these species should be taken into account during the implementation of this plan

Areas of wet grassland may be important for breeding and wintering waterfowl and the pools and ditches may be rich in freshwater invertebrates and plants.
Almost all areas are grazed and some may be cut for hay or silage. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities, but not extensive areas of fen and reed swamp communities. Fen and reedbed habitats are classified separately and have their own action plans.

Areas of species-rich grassland on alluvial soils are limited. Alluvial soils contain sediment, formed from material that has been carried by a river and dropped as the floodwaters retreat. River plains can be made entirely of alluvial deposits. Important examples are associated with Lough Neagh and Lough Beg. The habitat has been the subject of surveys over the past few decades because of the number of breeding waders is supports. These species have exhibited historic population declines as a result of a loss of wet and regularly flooded grassland due to drainage schemes and related agricultural improvement.

Drainage ditches, rivers, pools and lake edges are an integral part of grazing marsh. These can have a diverse range of wetland vegetation and be very rich in wildlife. There are differences in the species composition based on water level management, the type of maintenance applied (including timing and the intensity of that management) and trophic status. Many drainage ditches in Northern Ireland have little conservation interest due to eutrophication, fluctuating water levels or too frequent or inappropriate timing of maintenance operations.

Under agri-environment schemes there are 248ha of wet grasslands under management in the Lough Neagh Wetlands, as well as a further 56.5ha of grassland managed for breeding waders, where this resource may exist.

Northern Ireland is thought to contain an important proportion of the UK resource of floodplain grazing marsh. This supposition is based on the number of lowland grassland sites containing breeding wader populations , and is particularly relevant within the Lough Neagh Wetlands.

The 1985-87 Northern Ireland Breeding Wader Survey surveyed lowland damp grasslands for breeding waders. The results roughly equate with floodplain grazing marsh habitat. The survey identified 3284 ha of lowland damp grassland sites around Lough Neagh. However, follow-up surveys commissioned by the Environment & Heritage Service around Lough Neagh as recent as 2007 have confirmed that there have been significant losses of this habitat since then.

Lough Neagh and Lough Beg with their extensive areas of floodplain grazing marsh have been designated as one Special Protection Area (SPA) under the European Birds Directive. The Strand on the west shore of Lough Beg is a large expanse of wet grassland that is flooded each winter and which has never been agriculturally improved.

Threats

Drainage
Drainage has reduced the area of floodplain wetlands, including grazing marsh, throughout Northern Ireland. Drainage schemes have confined rivers within fixed channels, damaging the natural river environment and preventing rivers from migrating naturally across their floodplain and depositing silt and nutrients in times of flood. This has adversely affected the extent and quality of wetlands, including floodplain grazing marsh, due to changes in vegetation composition and decline in scarce species. There have been knock on impacts on associated breeding wader populations.

Agriculture
Agricultural improvement such as drainage, cultivation, fertiliser and pesticide application, ploughing and re-seeding have all been major causes of habitat loss and may be the most significant threat to the habitat. Intensive management of grassland often follows drainage when a drier surface facilitates the access of machinery for ploughing and reseeding.

Inappropriate grazing can fail to preserve a relatively low nutrient status and fail to keep competitive species in check.

Lack of management, such as no cutting, grazing or burning, causes floodplain grazing marsh to undergo vegetation change leading to rankness and the development of scrub, and eventually woodland.

Fragmentation of unimproved grassland parcels results in reduced opportunities for desirable species to colonize relatively impoverished meadows or areas where changes in management, such as reduction in fertilizer application, would otherwise permit re-establishment of desirable grassland communities.

This habitat can be the focus of residential or commercial development where unimproved grassland is perceived as being of little value because of its low agricultural productivity.

Due to the importance of this habitat for breeding waders in the Lough Neagh Wetlands, many of the points made in the Breeding Wader Action Plan also relate to this plan.

Water Level Management
Drainage and any subsequent changes in the water-table, particularly the lowering and stabilization of water-tables, can affect the extent and quality of this habitat. This can be the result of both direct drainage and indirectly by marginal drainage, through changes in water-levels of lakes.

Opportunities

Habitat Management
The conservation of this habitat can be addressed by the maintenance of water levels, the control and management of nutrients and pesticides, avoiding ploughing and re-seeding unimproved grassland, ensuring adequate grazing regimes, prevention of scrub encroachment and linking fragmented sites.

Habitat restoration/creation
A significant resource of this habitat exists along the west shore of Lough Beg and in linear, fragmented areas on low lying grassland around Lough Neagh and along large rivers such as the Upper Bann. The habitat is often associated with breeding waders and with purple moor-grass and rush pasture. The potential exists for a large scale habitat recovery plan for the Lough Neagh Wetlands that requires a combined approach for floodplain grazing marsh, breeding waders and purple moor-grass and rush pasture. As part of this recovery plan it would therefore be appropriate to target habitats that conform to National Vegetation Classifications B2, M25, M27, MG6, MG7, MG9, MG10, MG11 & MG13 to ensure existing floodplain grazing marsh is included.

Floodplain Grazing Marsh - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
FGM/O1	Identify & Map all existing Floodplain Grazing Marsh (including degraded habitat with restoration potential) within the Lough Neagh Wetlands	2009
FGM/O2	Maintain extent and condition of Floodplain Grazing Marsh in the Lough Neagh Wetlands (which includes recording the presence of key priority indicator species)	2013
FGM/O3	Restore degraded Floodplain Grazing Marsh in the Lough Neagh Wetlands	2013
FGM/O4	Create new Floodplain Grazing Marsh in the Lough Neagh Wetlands	2013
FGM/O5	Raise awareness of the value of this habitat for biodiversity	2013

Floodplain Grazing Marsh - Action

Actions

FGM/A1	Compile an inventory of all sites with potential for restoration and management in the Lough Neagh Wetlands, including small fragmented sites	**LNAC**	DARD / EHS / LNP / RSPB	2008	**FGM O3**
FGM/A2	Prepare a map inventory indicating the extent and location of all known floodplain grazing marsh in the Lough Neagh Wetlands, by surveying and assessing sites as required	**LNAC**	EHS / DARD / LNP / Rivers Agency / RSPB	2008	**FGM O1**
FGM/A3	Establish a project fund to consider the acquisition of land or the payment of management agreements for wet grassland restoration / creation / management	**LNP**	RSPB / DARD / LNAC / EHS	2008	**FGM/O2 / FGMO3 / FGMO4**
FGM/A4	Develop and implement and education programme that promote the importance of floodplain grazing marsh for Wetland Biodiversity	**LNAC**	EHS / FWAG / LNP / RSPB	2009	**FGM/O5**

FGM/A5	In combination with the Lough Neagh Wetlands Breeding Wader Recovery Programme, and the purple moor-grass and rush pasture Recovery Programme, target the enhancement, restoration and management of contiguous areas of habitat that conform to NVC B2, M25, M27, MG6, MG7, MG9, MG10, MG11 & MG13 around Lough Beg, along the west and south shores of Lough Neagh, and around Portmore Lough.	**RSPB**	DARD / LNAC / LNP / EHS / Rivers Agency	2010	**FG**
FGM/A6	Establish 1 demonstration site to transfer knowledge of applied restoration and management of floodplain grazing marsh, and hold 1 training programme every two years, and include a focus on promoting seeds of local genetic origin in restoration work	**EHS**	DARD / FWAG / LNAC/LNP / Local Authorities / RSPB	2010	**FG**
FGM/A7	Produce advisory guidelines for local restoration work that identify circumstances where degraded habitat should be restored and managed	**LNAC**	DARD / EHS / FWAG / LNAC/LNP / RSPB	2010	**FGM/O3, FG**
FGM/A8	Monitor 5 sites per year for the presence of Irish Lady's-tresses Orchid, targeting sites with historical records of this species	**EHS**	DARD / LNAC / LNP /RSPB	2013	**FG**
FGM/A9	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit floodplain grazing marsh and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNAC / LNP / RSPB	2013	**FG**
FGM/A10	Liaise with Greenmount Agricultural College to raise awareness of restoration and management of floodplain grazing marsh and provide input into 1 land management course per year	**LNAC**	DARD / EHS / FWAG / LNP / RSPB	2013	**FG**

Lough Neagh Wetlands

Hedgerows

Habitat Action Plan

2008 - 2013

Hedgerows in the Lough Neagh Wetlands

Introduction

This plan considers all hedges within the Lough Neagh Wetlands to be worthy of attention, regardless of the number of plant species contained within the structure of the hedge. The only parameter is that the hedge must contain native plant species such as hawthorn, ash or hazel.

Species-rich hedgerows are those that contain five or more native woody species on average in a 30 metre length. Hedges which contain fewer woody species but have a rich basal flora of herbaceous plants, such as Primrose, Wood Anemone, Lords-and-Ladies, Bluebell, Herb-Robert and Common Dog-violet are also considered species-rich.

Within the Lough Neagh Wetlands, Townland hedges are probably the oldest hedge type. They generally have a greater tree and shrub species diversity and are associated more with woodland herbs. They also have a greater structural diversity and are often associated with a ditch.

As well as species-rich hedgerows, this plan deals with all hedges that are made up of 100% native species.

Background

Northern Ireland has the highest density of field boundaries in the UK with an average of 17 km per square km. Between 1986 and 1991 the Northern Ireland Countryside Survey estimated there were about 125,000 km of hedgerows in Northern Ireland. In 1998, 119,000 km of hedgerows were estimated in Northern Ireland by NICS 2000 which represented a 4% loss between the two surveys.

Hedges are important not just for biodiversity, but also for farming and landscape reasons, acting as property boundaries, providing shelter for stock, helping to protect against soil erosion and offering protection against disease. Reducing nose to nose contact between herds of cattle by having taller wider hedges may help reduce the spread of TB. Hedges that form the boundaries of townlands are also an important cultural asset.

Birds

Hedgerows provide valuable nesting habitat and song posts for breeding birds. In Northern Ireland 36 bird species regularly rely on hedgerows for breeding, shelter and feeding purposes. Approximately another ten bird species occasionally use hedges. Many of these are listed as UK Birds of Conservation Concern or Irish Birds of Conservation Concern. Hedge structure is an important determinant of associated breeding bird assemblages. It has been shown that some birds such as dunnock and willow warbler prefer tall overgrown structurally diverse hedgerows, with neglected hedgerows supporting larger populations of breeding

birds than well-trimmed hedges, but some species such as Whitethroat, Linnet and Yellowhammer prefer short hedges with few trees. Barn owls are also thought to hunt linear features such as hedgerows, particularly those with wide grass margins containing wood mice and shrews.

Small Mammals
In Northern Ireland hedgerows are important habitats for woodmice, providing cover and facilitating long distance movements of animals. Other mammals found in, or which utilize hedges include fox, badger, stoat, hedgehog, Irish hare and pipistrelle bats. Brown long-eared bats utilize hedgerows and tree-lines for commuting. Although most bat species in Northern Ireland have strong associations with broadleaf or mixed woodland and freshwater bodies with bank-side vegetation, hedgerows over 1 metre in height are also important habitat, especially where they create a double linear feature with hedgerow, tree-line or woodland.

Insects
Butterfly diversity tends to be greatest along high, wide hedgerows which are rich in plant species. In Northern Ireland, there are no priority species of butterfly or moth associated with hedgerows. However, species such as real's wood white butterfly utilize hedgerows where its food plant, meadow vetchling occurs, but are also associated with glades and woodland edges. Northern Ireland holds the only known colonies in the UK for this species. Species such as holly blue butterfly may occur in hedgerows with holly. Nettle which is very common in hedgerows, is host to the larvae of the peacock butterfly and the small tortoiseshell butterfly. speckled wood butterfly is also associated with hedgerows.

Threats

Hedgerow Removal
Complete removal for agricultural and development purposes, as well as for power lines, road re-alignment and the construction of sight lines. The Northern Ireland Countryside Survey 2000 report indicates there was a 4% loss of hedgerows between 1991-1998. Up until 1999 hedgerow removal was widespread across Northern Ireland.

Neglect
No cutting can lead to hedgerows changing into lines of trees and the development of gaps.

Inappropriate Cutting
The use of inappropriate machinery as well as too frequent and badly timed cutting can lead to poor hedgerow structure and the development of gaps. This can arise from the requirement for landowners to cut roadside trees at regular intervals. Inappropriate cutting can also lead to the loss of standard trees in hedges.

Replacement of native hedgerows with non-native species
Hedgerows that are removed due to development purposes such as road re-alignment, the construction of sight lines or housing etc, can often be replaced with a monoculture of non-native species, which is of much less value to biodiversity than native hedgerow species.

Fertilizers and Pesticides
Use of fertilizers, herbicides and pesticides right up to the bases of hedgerows can lead to nutrient enrichment and a decline in species diversity.

No Legal Protection in Northern Ireland
At the time of writing (Autumn 2007) hedgerows are not protected by law in Northern Ireland. This can lead to the destruction of this habitat. The only real protection that hedgerows get in Northern Ireland is through the Single Farm Payment / Cross Compliance measures where farmers can not remove them with permission from the Department of Agriculture & Rural Development.

Opportunities

Create and manage hedgerows as Wildlife Corridors
Create and manage hedges to act as wildlife corridors, linking fragmented areas of existing woodland.

Hedgerow Surveys
Hedgerows can be identified from aerial photographs. A comprehensive study of aerial photographs should be undertaken to confirm the current length of hedgerows that exist in the Lough Neagh Wetlands.

Hedgerows can have local historical importance and mark the boundaries of Townlands. Local Communities within the Lough Neagh Wetlands could be encouraged to undertake surveys of their local hedgerows and help identify those containing ancient trees.

Provide Legal Protection under the Northern Ireland Wildlife Order
Hedgerows should be protected under the Northern Ireland Wildlife Order to ensure that relevant planning policies can be devised and implemented to protect the habitat.

Hedgerows - Objectives & Targets

Objectives & Targets

	OBJECTIVE				TARGET
H/01	Maintain hedgerows in the Lough Neagh Wetlands				**2013**
H/02	Create new hedgerows in the Lough Neagh Wetlands				**2013**
H/03	Raise awareness of the biodiversity value of native hedgerows				**2013**
H/04	Map and confirm the extent of the resource in the Lough Neagh Wetlands				**2009**

Hedgerows - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
H/A1	Carry out a baseline survey, using aerial photographs to determine the hedgerow resource in the Lough Neagh Wetlands and establish a reasonably accurate estimate of the total length of hedgerow remaining	**LNAC**	DARD / EHS / FWAG / LNP / UWT / Woodland Trust / CBC	2008	**H/04**
H/A2	Initiate a project that is co-ordinated across other parts of Northern Ireland, encouraging communities to undertake historical mapping of hedgerows in townlands to help identify ancient and species rich hedgerows, and to help carry out condition surveys of hedgerows.	**UWT**	CVNI / EHS / FWAG / LNAC / LNP / Woodland Trust / CBC	2008	**H/03 / H/04**
H/A3	Lobby for hedgerows to be protected in legislation in Northern Ireland through the Wildlife Order	**LNAC**	FWAG / LNP / UWT / Woodland Trust	2008	**H/01**
H/A4	Initiate a project to create 10km of new hedgerow in the LNW, using species of local origin.	**LNP**	CVNI / DARD / EHS / FWAG / LNAC Woodland Trust / UWT / CBC	2009	**H/02**
H/A5	Establish a database for native hedgerows on the Lough Neagh Wetlands GIS	**LNAC**	EHS / LNP / CBC	2009	**H/03 / H/04**
H/A7	Establish 1 demonstration site where hedgerows were retained / created as good practice as part of a building development and hold 1 workshop every two years to highlight the need to include hedgerow retention/creation in developments.	**LNP**	DARD / EHS / FWAG / LNAC / Woodland Trust / UWT / CBC	2010	**H/03**
H/A8	Establish 1 demonstration site where hedgerow has been managed on non-agricultural land and hold 1 hedgerow management workshop every two years.	**UWT**	EHS / LNAC / LNP / Woodland Trust / CBC	2010	**H/01 / H/02 / H/03**

H/A9	Produce advisory material to raise awareness of how hedgerows can be retained and created using trees of local origin during road construction/improvement schemes, new building developments and in the wider Lough Neagh Wetlands, and raise the profile of a biodiversity duty to protect these habitats.	**LNAC**	CVNI / EHS / LNP / Planning Service / QPANI / UWT / Woodland Trust / CBC	2010	**H/01 H/02 H/03**
H/A10	Produce and implement a Code of Best Practice for Developers to ensure that hedgerows are given full consideration during development and ensure that, where appropriate, tenancy agreements / purchase agreements address the favourable management of existing hedgerows	**LNAC**	EHS / LNP / Planning Service / QPANI / UWT / Woodland Trust / CBC	2010	**H/01 H/02 H/03**
H/A11	Write 5 articles (1 article per year) that raises awareness of the biodiversity importance of hedgerows and of the legal protection afforded to hedgerows in Northern Ireland.	**LNAC**	CVNI / DARD / EHS / FWAG / LNP / CBC	2013	**H/01 / H/03**
H/A12	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit hedgerows and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNP / UWT / Woodland Trust	2013	**H/01 / H/02 / H/03**

Lough Neagh Wetlands

Lowland Meadow

Habitat Action Plan

2008 - 2013

Lowland Meadow in the Lough Neagh Wetlands

Introduction

Lowland meadow is defined as unimproved neutral grassland found on enclosed land. The substrate is generally a well-drained mineral soil and the habitat is characteristically herb-rich. The habitat has typically survived as hay meadow and is a result of the traditional land uses and agricultural practices that are necessary for hay production. The historical continuity of the habitat as grassland, managed for hay production, is therefore important.

Lowland meadow habitat is not restricted to hay meadows, but increasingly it is also characterized by unimproved neutral pastures where livestock grazing is the main land use. In non-agricultural settings, lowland meadow-type communities may be found in recreational sites, churchyards, roadside verges and a variety of other localities.

Background

There are no large areas of lowland meadow in the Lough Neagh Wetlands. The habitat is fragmented, even in areas where it is relatively frequent, and is often restricted to small parts of fields where agricultural operations are difficult. The habitat is often found on relatively steep slopes and is often only a part of a field that is otherwise largely devoted to intensive grass production.

Field boundaries that incorporate an earth bank may act as refuges for lowland meadow communities and may display a gradual transition to wetter grassland types in the Lough Neagh Wetlands.

Lowland meadow characteristically has high but variable species richness. Variability in species richness (and content) may reflect the variability inherent within the habitat. The most characteristic herb species, such as meadow vetchling, common knapweed, common bird's-foot-trefoil, yellow-rattle and bulbous buttercup, may occur at low frequency. A number of scarce and declining plant species occur in lowland meadow habitats, including greater butterfly-orchid

Fine-leaved grasses, in particular common bent and red fescue are major constituents of the sward and crested dog's-tail is frequent and may be abundant. A slightly more acid type contains species such as heath bedstraw and tormentil, as well as the mosses *Thuidium tamariscinum* and *Pseudoscleropodium purum.* *W*etter types contain various sedges and rushes while dryer types generally contain abundant white clover and ribwort plantain. In under-grazed pastures, scrub or dwarf shrub species may be invasive. Perennial rye-grass is generally sparse and of low vitality.

The area of lowland meadow in Northern Ireland represents a large proportion of the UK resource. However, traditional species-rich hay meadows may have declined by as much as 97% over the last 50 years. The area of species-rich dry grassland in Northern Ireland was estimated at approximately 5900ha in 1998, of which an estimated 4655ha was in the lowland land classes.

It has been estimated that only 13% of full-field parcels of this habitat type are of high quality in Northern Ireland, defined as those fields in which 4m2 quadrates contained >20 species. This amounts to an estimated 937ha of high quality habitat. Overall, it is estimated that there has been a reduction of 20% in the total species-rich dry grassland resource since 1991

Lowland meadow supports a range of terrestrial vertebrates and invertebrates. Some of these are widespread and common, some are much more local in their distribution and some are of national importance for their rarity. An example of this last category is the corncrake, which historically has used hay meadows as a breeding habitat but has not bred in the Lough Neagh Wetlands since the 1980's. However, corncrakes have occurred in several areas during migration in recent years, leading to the possibility that, with the correct management, these birds can return to breed. The reduction in meadow management for hay production has been paralleled by the virtual disappearance of this species from the area. Skylark and Irish hare are also characteristic species of the habitat.

This plan applies to all areas of lowland meadow, whether of good quality or as relatively impoverished habitat. It's conservation interest may be addressed by maintenance of existing good quality habitat, improving the quality of poor examples of the habitat or by recreating the habitat under suitable conditions where none currently exists and where another priority habitat does not exist.

Threats

Changes in management practices

Changing the management practices of a grassland, such as reseeding and converting to improved grasslands with more agriculturally preferred grasses and reducing the area of hay production as many more cattle are now over wintered indoors, all have an impact. Silage production, with multiple cuts of nutrient-demanding grasses has become prevalent and presents a threat.

Repeated cutting and rolling of silage fields prevent many species from setting seed, with the result that plants that can spread vegetatively, such as many grasses, are favoured.

Areas peripheral to good quality habitat are likely to have been affected by fertilizer drift or setting of seed from adjacent improved grassland, resulting in their increasing impoverishment. Threats to agricultural examples also include inappropriate mowing, ploughing, grazing and poaching.

Under-grazing and abandonment fails to keep competitive species in check leading to rank growth, the loss of many herbs of low stature, invasion by tall herbs and bracken and/or encroachment by scrub species and eventually woodland.

Threats to non-agricultural examples of the habitat such as that found at recreational sites, churchyards, roadside verges and a variety of other localities. include inappropriate mowing regimes and nutrient input. These sites can be cut un-necessarily as amenity grasslands.

Industrial and urban development
Land that contains important, or potentially important, areas of this habitat can be lost due to industrial development and urban sprawl.

Habitat fragmentation
Where areas of habitat are lost due to inappropriate management, development etc, fragmentation of small pockets of habitat can often result.

Opportunities

Habitat Management
In non-agricultural settings, lowland meadow-type communities may be found in recreational sites, churchyards, roadside verges and a variety of other localities. With a change in management regime, this habitat could be brought back from amenity grasslands etc, to good quality lowland meadow habitat.

Habitat creation
Where the habitat is fragmented, even in areas where it is relatively frequent, it is often restricted to small parts of fields where agricultural operations are difficult. The habitat is often found on relatively steep slopes and is often only a part of a field that is otherwise largely devoted to intensive grass production. Where remnants exist, opportunities include the creation of habitats on adjacent land.

Field boundaries that incorporate an earth bank may act as refuges for lowland meadow communities and may display a gradual transition to wetter grassland types in the Lough Neagh Wetlands. These earth banks can be protected through integrating with a programme for hedgerows.

As well as targeting the maintenance of existing good quality habitat, consider the potential to improve the quality of poor examples of the habitat, and re-create the habitat under suitable conditions where none currently exists.

Hedgerows - Objectives & Targets

Objectives & Targets

	OBJECTIVE				TARGET
H/01	Maintain hedgerows in the Lough Neagh Wetlands				**2013**
H/02	Create new hedgerows in the Lough Neagh Wetlands				**2013**
H/03	Raise awareness of the biodiversity value of native hedgerows				**2013**
H/04	Map and confirm the extent of the resource in the Lough Neagh Wetlands				**2009**

Hedgerows - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
H/A1	Carry out a baseline survey, using aerial photographs to determine the hedgerow resource in the Lough Neagh Wetlands and establish a reasonably accurate estimate of the total length of hedgerow remaining	**LNAC**	DARD / EHS / FWAG / LNP / UWT / Woodland Trust / CBC	2008	**H/04**
H/A2	Initiate a project that is co-ordinated across other parts of Northern Ireland, encouraging communities to undertake historical mapping of hedgerows in townlands to help identify ancient and species rich hedgerows, and to help carry out condition surveys of hedgerows.	**UWT**	CVNI / EHS / FWAG / LNAC / LNP / Woodland Trust / CBC	2008	**H/03 / H/04**
H/A3	Lobby for hedgerows to be protected in legislation in Northern Ireland through the Wildlife Order	**LNAC**	FWAG / LNP / UWT / Woodland Trust	2008	**H/01**
H/A4	Initiate a project to create 10km of new hedgerow in the LNW, using species of local origin.	**LNP**	CVNI / DARD / EHS / FWAG / LNAC Woodland Trust / UWT / CBC	2009	**H/02**
H/A5	Establish a database for native hedgerows on the Lough Neagh Wetlands GIS	**LNAC**	EHS / LNP / CBC	2009	**H/03 / H/04**
H/A7	Establish 1 demonstration site where hedgerows were retained / created as good practice as part of a building development and hold 1 workshop every two years to highlight the need to include hedgerow retention/creation in developments.	**LNP**	DARD / EHS / FWAG / LNAC / Woodland Trust / UWT / CBC	2010	**H/03**
H/A8	Establish 1 demonstration site where hedgerow has been managed on non-agricultural land and hold 1 hedgerow management workshop every two years.	**UWT**	EHS / LNAC / LNP / Woodland Trust / CBC	2010	**H/01 / H/02 / H/03**

H/A9	Produce advisory material to raise awareness of how hedgerows can be retained and created using trees of local origin during road construction/improvement schemes, new building developments and in the wider Lough Neagh Wetlands, and raise the profile of a biodiversity duty to protect these habitats.	**LNAC**	CVNI / EHS / LNP / Planning Service / QPANI / UWT / Woodland Trust / CBC	2010	**H/01 H/02 H/03**
H/A10	Produce and implement a Code of Best Practice for Developers to ensure that hedgerows are given full consideration during development and ensure that, where appropriate, tenancy agreements / purchase agreements address the favourable management of existing hedgerows	**LNAC**	EHS / LNP / Planning Service / QPANI / UWT / Woodland Trust / CBC	2010	**H/01 H/02 H/03**
H/A11	Write 5 articles (1 article per year) that raises awareness of the biodiversity importance of hedgerows and of the legal protection afforded to hedgerows in Northern Ireland.	**LNAC**	CVNI / DARD / EHS / FWAG / LNP / CBC	2013	**H/01 / H/03**
H/A12	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit hedgerows and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNP / UWT / Woodland Trust	2013	**H/01 / H/02 / H/03**

Lough Neagh Wetlands

Lowland Raised Bog

Habitat Action Plan

2008 - 2013

Lowland-raised Bog in the Lough Neagh Wetlands

Introduction

The majority of the lowland raised bog resource in the Lough Neagh Wetlands has been damaged to some extent, with much of it drained, cutover or improved for agriculture. Cutover bog describes any site where some of the peat has been removed by hand or more recently by mechanical means, mainly for fuel and for horticultural purposes, leaving some depth of peat behind. In the Lough Neagh Wetlands mechanized peat extraction is frequent. Areas of bog cut by hand are usually restricted to the periphery of the site where it is drier and easily accessible. These cuttings, especially those that have been gradually abandoned over the years, have a varied topography and generally support a range of habitats.

Although many cutover lowland raised bogs have been reclaimed for agriculture or afforested, many areas retain semi-natural habitats of nature conservation importance. Whilst many former lowland raised bogs have regenerated with typical bog vegetation, others are now best considered as examples of fen, heath, swamp or wet woodland. There are around 120ha of lowland raised bog under management through the Countryside Management Scheme in the Lough Neagh Wetlands but it is unclear how much is of a quality recognised as the Northern Ireland priority habitat.

Background

Remnants of lowland raised bog, albeit cutover bog, in the Lough Neagh Wetlands are restricted to the south Lough Neagh area and the Lower Bann Valley. In the south Lough Neagh area, large tracts of cutover lowland raised bog are found at Derrytrasna, Derryvane South, Derryvane North, Derrykeeran, Derryinver, Derryadd, Derryloughan, Derrylileagh Lough, Montiaghs Moss, Lough Gullion, Derrylee, Annaghnaboe, Foymore and at Peatlands Park at Annagarrif Bog. In the Lower Bann Valley large tracts of lowland raised cut over bog are found at Moneystaghan, Ballynease, Annaghaboggy, McKenna's Town, Annaghfad and Dreenan.

Lowland raised bogs are peatlands which develop primarily in lowland areas below 150 m and are generally surrounded by mineral soils. The climate in Ireland is particularly well suited to peat formation with high rainfall, cool summers and high atmospheric humidity. These climatic factors, in conjunction with the geology, soil and physiography ensure that high groundwater levels are maintained throughout the growing season which is an essential factor for lowland raised bog development.

Peatlands have been forming in Ireland for at least 10,000 years. Much of the lowland landscape in the Lough Neagh Wetlands is dominated by poorly drained

soils. The consequent water-logging provides the anaerobic conditions that contribute to the formation and accumulation of peat.

Lowland raised bogs may develop from fen or, if the climate is sufficiently wet, by peat formation directly onto a bare substrate. As peat continues to accumulate, the surface of the bog rises above groundwater levels to form a gently curving dome, from which the term 'raised' bog is derived. Peat depths are variable, and can exceed 12 metres. The dome of the raised bog may be totally or partly surrounded by an area of shallow peat or mineral soil subject to ground water influence or periodic flooding, most commonly referred to as the 'lagg'. The whole complex may then be termed as domed raised bog with marginal lagg.

The dome of the lowland raised bog is exclusively rain-fed. Consequently, the surface of a 'near natural' intact lowland raised bog is waterlogged, acidic and deficient in plant nutrients. This gives rise to a distinctive suite of vegetation types dominated by specialized plants including *Sphagnum* bog mosses and vascular plants adapted to waterlogged conditions, such as the cotton grasses. The intact bog surface may support a patterned mosaic of pools, hummocks and lawns, forming a micro-topography of different species assemblages. Sphagnum mosses are the principal peat forming species on lowland raised bogs, and their dominance in the living vegetation layer gives a bog its characteristically 'spongy' surface. The ability of this layer to store water is important in keeping the bog surface wet during the summer.

Lowland raised bogs support rare plants such as the bog mosses *Sphagnum pulchrum*, *S. austinii* and *S. fuscum* as well as a number of higher plants which have become increasingly scarce, including great sundew, cranberry and bog rosemary. The marginal lagg, where it still remains, is typically dominated by purple moor-grass with scattered scrub dominated by willow.

Historically, the greatest decline of lowland raised bog in Northern Ireland has occurred through peat cutting, with 77.5% lost to hand-cutting for fuel. During the second half of the twentieth century however, there was an accelerated rate of peat loss due to drainage to improve the productivity for agriculture and forestry. More recently, mechanized peat extraction both for horticultural purposes and as a fuel has further increased the rate of peat loss. In the 1980s and 1990s, planning permission for the extraction of horticultural peat was granted for approximately 650 ha of lowland raised bog in Northern Ireland. In addition, the early 1980s saw the introduction of tractor-drawn auger machines that changed patterns of fuel peat extraction on lowland raised bogs with cutting taking place for both domestic and commercial purposes. The majority of peatland sites in the Lough Neagh Wetlands have been damaged as a result of this mechanization.

Although lowland raised bogs are generally surrounded by mineral soils intensively managed for agriculture, many areas of cutover bog now support

other habitats of nature-conservation importance. These habitats include localized fen communities and more extensive areas of wet woodland which form an integral part of many lowland raised bog systems. These habitats are hydrologically linked to the lowland raised bog and often act as a valuable buffer between the active raised bog and the agricultural land beyond. Both fen and wet woodland are Northern Ireland Priority Habitats and the requirements of these habitats should be taken into account during the implementation of this plan.

Lowland raised bog habitats, including both intact surfaces and regenerating cutover bog, are important for a number of Northern Ireland priority species. These include skylark which breeds on lowland raised bog in addition to a number of other open habitats. In addition, marsh clubmoss which in Northern Ireland is restricted to the Lough Neagh Wetlands at the old shore and bed of Annagarriff Lough (drained in 1913) is closely associated with the lowland raised bog habitats at Peatlands Park. Re-wetting of cutover bog at the Peatlands Park may threaten the continued existence of marsh clubmoss in Northern Ireland! Other Northern Ireland priority species primarily associated with peatlands including lowland raised bog are breeding curlew, the bordered grey moth, and Irish hare which is associated with a number of other open habitats in addition to lowland raised bog. The requirements of these species should be taken into account during the implementation of this plan.

Climate change threatens many habitats but the increased rainfall predicted in Northern Ireland suggests that conditions for bog growth will be improved.

Under the Northern Ireland Peatland Policy, there is a government commitment to phase out the use of peat in open ground situations in the management of its estate and to exclude the use of peat in all contracts.

Threats

Peat Extraction
Large areas of lowland raised bog in the south Lough Neagh area around the lowlands of Clonoe, Derryloughan and Derryvarenbeg area near Washing Bay, Lough Neagh are subject to peat extraction. However, although several sites in this locality have been cutover, they continue to contain conservation interest but remain unprotected and at risk of further degradation.

Undesignated sites
Although several good quality lowaland raised bog are found in the Lough Neagh Wetlands, mainly in the Lower Bann Valley area, they are not designated for protection. In 2007, the only lowland raised bog in the Lough Neagh Wetlands to be given legal protection as an Area of Special Scientific Interest (ASSIs) is Peatlands Park.

Drainage
Peat extraction, by hand and by machine on sites or adjacent to sites, as well as direct and indirect drainage associated with agricultural practices next to these sites can cause an increase in water loss that affects the hydrology of many sites and destabilizes the system. The living layer of vegetation on the lowland raised bog acts as a natural regulator for water loss. Destruction or alteration of the vegetation has significant implications for the long-term stability of the ecosystem as a whole.

Nutrient enrichment
The lowland-raised bog surface is rain-fed and therefore the nature of the peat is acid and nutrient-poor, supporting a number of specialized plants. Significant increases in the nutrient-status of the system will alter the vegetation cover in favour of non-bog species. Nutrient enrichment can be caused by agricultural activity nearby or by atmospheric deposition.

In-Filling/Illegal dumping
In-filling that occurs to convert land to pasture or as part of land reclamation for planning developments, and the illegal dumping of agricultural and domestic waste and associated pollution degrades and destroys lowland raised bogland in the Lough Neagh Wetlands.

Tree/Scrub Encroachment
Tree and scrub encroachment results on sites where the water table has been lowered and where trees are established along the fringe of the bog. As trees grow, they shade out the natural bog vegetation and also alter the water table and cause further areas to dry out.

Lead Shot
The vegetation of lowland raised bog can be adversely affected by the contamination associated with clay pigeon shooting, as lead shot accumulates on the surface of the bog.

Opportunities

Habitat restoration on former Peat Extraction Sites
Several hundred ha of land will begin to come out of production as peat extraction sites over the next number of years and a number of sites could be targeted, in partnership with the landowner, for restoration as lowland raised bog or other suitable habitat.

Habitat restoration/management and access on cutover bog
Approximately 200ha of cutover lowland raised bog exists in the Lowlands of Clonoe, Derryloughan and Derryvaranbeg area near Washing Bay. These lands are in both private and government ownership. Whilst these are cut-over lowland raised bogs, the majority of the government-owned land retains a quality that is

of conservation interest and could be restored and managed for the benefit of the local environment and the local community.

Annaghaboggy Bog is approx 118ha of cutover bog, and a Site of Local Nature Conservation Importance. Situated near Castledawson, the area is managed / owned by Forest Service and the Moyola Estate and could be targeted for restoration and public access, and managed for its local biodiversity.

Annaghnaboe Bog is approx 87ha of cutover lowland raised bog and a Site of Local Nature Conservation Importance near the Washing Bay and should, in conjunction with bogland at Derryvarranbeg and Derrylouaghan, be restored and managed in one contiguous block for biodiversity.

There is around 120ha of lowland raised bog under management through the Countryside Management Scheme in the Lough Neagh Wetlands much of which is likely to be at or close to a quality recognised as the Northern Ireland priority habitat. These sites could be targeted in partnership with local landowners and degraded habitats restored and managed where required.

Lowland Raised Bog - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
LRB/O1	Map the location and area of all existing Lowland Raised Bog within the Lough Neagh Wetlands	2009
LRB/O2	Maintain extent and condition of near natural intact Lowland Raised Bog in the LNW	2013
LRB/O3	Restore degraded Lowland Raised Bog where the potential exists in the Lough Neagh Wetlands	2013
LRB/O4	Raise awareness of the value of this habitat for biodiversity	2013

Lowland Raised Bog - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TARGET DATE	OBJECTIVES MET
LRB/A1	Compile and maintain an inventory of all key lowland raised bog sites within the Lough Neagh Wetlands and record this information on the Lough Neagh Wetlands GIS and at CEDAR	**LNAC**	DARD / EHS / LNP / UWT / CBC	2008	**LRB/O1**
LRB/A2	Case study 1 site affected by lead shot in clay pigeon shooting and use as a demonstration to encourage the protection of sites from such activity	**EHS**	LNAC / LNP / UWT	2009	**LRB/O2, LRB/O4**
LRB/A3	Develop 1 Watchdog Programme to engage the local community in monitoring key sites which are at risk from illegal dumping/ and/or infilling	**LNP**	EHS / LNAC / UWT / CBC	2009	**LRB/O2, LRB/O4**
LRB/A4	Case Study an organization in the Lough Neagh Wetlands that uses Peat Free Compost in all its horticultural activities, to demonstrate to local government and statutory agencies the practicalities of switching from the use of peat products, to support the development and use of peat substitutes	**LNAC**	EHS / LNP / RSPB / UWT / CBC	2009	**LRB/O2, LRB/O4**
LRB/A5	Target 118 ha of cutover lowland raised bog at Annaghaboggy Bog, near Castledawson. Management should address threats such as hydrology and scrub encroachment, public access and the creation of mesotrophic pools for damselflies/dragonflies.	**LNAC**	EHS / Forest Service / LNP / MDC / RSPB / UWT	2010	**LRB/O2, LRB/O3**
LRB/A6	In the SW Lough Neagh area, target 87ha of cut over lowland raised bog at Annaghaboe, and a further 20ha at the adjacent Derryloughan Bog. Management of these sites should address threats such as hydrology and scrub encroachment, public access and the creation of mesotrophic pools for damselflies/dragonflies.	**LNAC**	EHS / D&STBC / LNP / RSPB / UWT	2010	
LRB/A7	Establish 1 demonstration site to transfer knowledge on applied restoration & management work carried out on a lowland raised bog in the Lough Neagh Wetlands and hold 1 workshop every two years.	**EHS**	DARD / LNAC / LNP / UWT / CBC	2010	**LRB/O4**

LRB/A8	Produce advisory material for landowners and other interested parties on the management and restoration of lowland raised bog	**LNAC**	DARD / EHS / LNP / UWT / CBC	2010	**LRBO2, LRB/O4, LRB/O2**
LRB/A9	Produce advisory material to manage the threat from lead shot used for game shooting/clay pigeon shooting over lowland raised bog in the Lough Neagh Wetlands	**LNAC**	BASC / DARD / EHS / UWT / CBC	2010	**LRB/O2, LRB/O4**
LRB/A10	Monitor 2 sites per year for the presence of Irish Lady's Tresses Orchid, targeting sites with historical records of this species	**EHS**	LNAC / LNP / UWT / CBC	2013	**LRB/O4**
LRB/A11	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit lowland raised bog and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / LNP / UWT	2013	**LRB/O4**
LRB/A12	Write 5 articles (1 article per year) to highlight the importance of lowland raised bog habitat for the biodiversity of the Lough Neagh Wetlands	**LNAC**	DARD / EHS / LNP / UWT / CBC	2013	**LRB/O4**

Lough Neagh Wetlands

Purple moor-grass & rush pasture

Habitat Action Plan

2008 - 2013

Purple moor-grass and rush pasture in the Lough Neagh Wetlands

Introduction

Purple moor-grass and rush pastures occur on poorly drained, usually acidic soils in the lowland areas of the Lough Neagh Wetlands. The habitat is found fragmented in part parcels, often as wet hollows or field corners, along the edges of Lough Neagh. The largest area of the resource is found on the west shore of Lough Beg. At this site, the vegetation of this habitat grades into other agricultural grasslands.

Purple moor-grass and rush pasture comprises a wide range of species assemblages. In general these are grasslands with varying proportions of grasses, sedges and rushes together with a mixture of herbs characteristic of grasslands, wetlands and heathlands. They are dominated by purple moor-grass and/or tall rushes, predominantly sharp-flowered rush. It includes a suite of characteristic plant species, which vary according to the dominants – for example, species associated with purple moor-grass rich pastures often include devil's-bit scabious, meadow thistle, and tormentil, whilst rush-dominated sites may include marsh bedstraw and wild angelica. There will be less than 25% cover of scrub or dwarf shrub present.

There is a need to distinguish the species-rich priority habitat, outlined above, from the species-poor purple moor-grass and rush pastures .These include species-poor modified wet grasslands, characterized by Yorkshire fog and soft rush, and species-poor acid flushes dominated by sharp-flowered rush and *Sphagnum* mosses.

Characteristic species of good purple moor-grass and rush pasture habitat are: devil's-bit scabious, meadow thistle, glaucous sedge, carnation sedge, flea sedge, tawny sedge, cross-leaved heath, quaking grass, lesser spearwort, lesser butterfly orchid, orchids of the *Dactylorhiza* genus, marsh hawk's-beard, primrose, watermint, ragged robin, marsh pennywort, creeping jenny, marsh bedstraw, wild angelica and the mosses *Breutelia chrysocoma* and *Ctenidium molluscum*.

Background

Purple moor-grass and rush pastures often occur in complex mosaics with other communities and habitats such as wet heaths, dry grassland, swamp, scrub and flushes and consequently transitions are often very common. Purple moor-grass and rush pastures frequently grade into marsh and there are many similarities in the range of species present in both.

The conservation value of purple moor-grass and rush pastures can be determined by the condition of the habitat. Favourable condition is defined by the presence of characteristic vegetation which are reliable indicators of the

health of the habitat. These include the abundance and diversity of sedge species; the presence or absence of indicator species such as ragged robin, and orchids of the *Dactylorhiza* genus and the presence or absence of vegetation, species or factors associated with disturbance such as burning, overgrazing or excessive drainage.

Purple moor-grass and rush pastures are important for a number of priority species, including Irish lady's-tresses orchid, skylark, redshank, curlew, lapwing, reed bunting, marsh fritillary butterfly and Irish hare.

Lough Neagh and Lough Beg with their extensive areas of purple moor grass and rush pasture have been designated as one Special Protection Area (SPA) under the European Birds Directive. The Strand on the west shore of Lough Beg holds the largest proportion of this habitat in the wetlands.

Threats

Inappropriate management
Purple moor-grass and rush pastures are dependent upon wet or waterlogged soils, low nutrient levels and medium levels of disturbance. Factors which alter these conditions, or which lead more directly to the destruction of the habitat include drainage, cultivation, fertilizer and pesticide application, ploughing and re-seeding grasslands, the latter being the most significant threat to purple moor-grass and rush pastures. Purple moor-grass and rush pastures are highly susceptible to agricultural modification and reclamation.

Low levels of grazing are necessary to maintain the habitat, which ensures that a low nutrient status is kept and that competitive species are kept in check. Overgrazing causes stress tolerant species to dominate and results in a reduction in species diversity. Supplementary stock feeding can lead to eutrophication as well as localized poaching, where high soil moisture levels result in the soil profile being particularly sensitive to hoof damage.

In the absence of management by cutting, grazing or burning, purple moor-grass and rush pastures undergoes vegetation change leading to rankness and the development of scrub, woodland and, in some cases, heath.

Infilling
Purple moor-grass and rush pastures associated with wet corners and depressions are destroyed as they are in-filled to create level fields and increase the area suitable for cultivation.

Habitat Fragmentation
Habitat fragmentation is a common problem for many sites around Lough Neagh where a reduction of stand size and the separation of small unimproved grassland sites results in reduced opportunities for species colonization.

Opportunities

Habitat management and restoration
This is one of the most threatened habitats in the Lough Neagh Wetlands, where the greatest losses have resulted from conversion to agricultural grasslands. Purple moor-grass and rush pastures are classed as species-rich grasslands and the key to their survival is sensitive grazing management and the application of little or no fertilizers. The conservation of this habitat can be addressed by the management of existing good quality habitat and, where appropriate, the restoration of habitat.

At least 200ha of this priority habitat exists along the west shore of Lough Beg. The habitat also exists in linear, fragmented areas around Lough Neagh, particularly along the south west and southern shores of the Lough. In 2006, works was undertaken to assess the condition of the habitat around Lough Neagh. This identified areas where the habitat is in good condition, where it conformed to the National Vegetation Classification M23. It also highlighted a number of areas where the habitat conformed to the National Vegetation Classification MG10 and M23b. Land classified as MG10 and M23b are areas of degraded Purple Moore-grass and rush pasture but these areas are where restoration work should be targeted, as this is where the habitat is most likely to be restored.

Habitat creation
Habitat creation should also be targeted at land adjacent to very good quality habitat, by producing low nutrient conditions that both protects the existing resource and encourages the characteristic species of the habitat to spread further into these new areas.

Purple Moor-grass & Rush Pasture -
Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
PMG/O1	Identify & Map all existing Purple Moor-grass & Rush Pasture within the Lough Neagh Wetlands	2009
PMG/O2	Maintain extent and condition of Purple Moor-grass & Rush Pasture in the Lough Neagh Wetlands	2009
PMG/O3	Restore degraded Purple Moor-grass & Rush Pasture in the Lough Neagh Wetlands	2013
PMG/O4	Create new Purple Moor-grass & Rush Pasture habitat	2013
PMG/O5	Raise awareness of the value of this habitat for biodiversity	2013

Purple Moor-grass & Rush Pasture - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TARGET DATE	OBJECTIVES MET
PMG/A1	Compile an inventory of all sites that are classed as NVC MG10 and M23b, degraded purple moor-grass and rush pasture which is generally suitable for restoration and management.	**EHS**	DARD / LNAC / LNP / RSPB / UWT / CBC	2008	**PMG/O3**
PMG/A2	Prepare a map inventory indicating the extent and location of all known purple moor-grass and rush pasture in the Lough Neagh Wetlands, by surveying and assessing sites as required	**LNAC**	DARD / EHS / LNP / RSPB / UWT / CBC	2008	**PMG/O1**
PMG/A3	Initiate a Purple Moor-grass & Rush Pasture Recovery Programme and produce restoration & management plans. • Maintain sites that have been classified as good quality purple moor-grass and rush pasture (National Vegetation Classification M23). • Restore habitat on sites which have been classified as degraded purple moor-grass and rush pasture (National Vegetation Classification MG10 and M23b).	**EHS**	DARD / LNAC / LNP / RSPB / UWT / CBC	2010	**PMG/O3**
PMG/A4	Establish a project fund for the co-ordinated approach to the management, restoration and creation of purple moor-grass and rush pasture habitat in the Lough Neagh Wetlands, and to consider the acquisition of land for wet grassland restoration	**LNP**	EHS / DARD /LNAC / RSPB / UWT / CBC	2010	**PMG/O2 PMG O3/ PMG O4**
PMG/A5	Establish 1 demonstration site to transfer knowledge of applied restoration and management of purple moor-grass and rush pasture, and hold 1 training programme every two years	**EHS**	DARD / LNAC / LNP / RSPB / UWT / CBC	2010	**PMG/O5**
PMG/A6	Produce advisory guidelines for local restoration work that identify circumstances where degraded habitat should be restored and managed	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / UWT / CBC	2010	**PMGO4, PMG/O5**

PMG/A7	Monitor 5 sites per year for the presence of Irish Lady's Tresses Orchid. Target sites with historical records of this species	**EHS**	DARD / FWAG / LNAC / LNP / UWT / CBC	2013	**PMG/O2**
PMG/A8	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit purple moor-grass and rush pasture and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNP / RSPB / UWT / CBC	2013	**PMG/O5**
PMG/A9	Run 5 school programmes (1 per year) at Lough Beg National Nature Reserve to promote the biodiversity associated with purple moor-grass and rush pasture	**RSPB**	EHS / LNAC / LNP / MDC	2013	**PMG/O5**
PMG/A10	Liaise with Greenmount Agricultural College to raise awareness of restoration and management of purple moor-grass & rush pasture and provide input into 1 land management course per year	**LNAC**	DARD / EHS / FWAG / LNP / RSPB	2013	**PMG/O5**

Lowland Raised Bog - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
LRB/O1	Map the location and area of all existing Lowland Raised Bog within the Lough Neagh Wetlands	2009
LRB/O2	Maintain extent and condition of near natural intact Lowland Raised Bog in the LNW	2013
LRB/O3	Restore degraded Lowland Raised Bog where the potential exists in the Lough Neagh Wetlands	2013
LRB/O4	Raise awareness of the value of this habitat for biodiversity	2013

Lowland Raised Bog - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TARGET DATE	OBJECTIVES MET
LRB/A1	Compile and maintain an inventory of all key lowland raised bog sites within the Lough Neagh Wetlands and record this information on the Lough Neagh Wetlands GIS and at CEDAR	**LNAC**	DARD / EHS / LNP / UWT / CBC	2008	**LRB/O1**
LRB/A2	Case study 1 site affected by lead shot in clay pigeon shooting and use as a demonstration to encourage the protection of sites from such activity	**EHS**	LNAC / LNP / UWT	2009	**LRB/O2, LRB/O4**
LRB/A3	Develop 1 Watchdog Programme to engage the local community in monitoring key sites which are at risk from illegal dumping/ and/or infilling	**LNP**	EHS / LNAC / UWT / CBC	2009	**LRB/O2, LRB/O4**
LRB/A4	Case Study an organization in the Lough Neagh Wetlands that uses Peat Free Compost in all its horticultural activities, to demonstrate to local government and statutory agencies the practicalities of switching from the use of peat products, to support the development and use of peat substitutes	**LNAC**	EHS / LNP / RSPB / UWT / CBC	2009	**LRB/O2, LRB/O4**
LRB/A5	Target 118 ha of cutover lowland raised bog at Annaghaboggy Bog, near Castledawson. Management should address threats such as hydrology and scrub encroachment, public access and the creation of mesotrophic pools for damselflies/dragonflies.	**LNAC**	EHS / Forest Service / LNP / MDC / RSPB / UWT	2010	**LRB/O2, LRB/O3**
LRB/A6	In the SW Lough Neagh area, target 87ha of cut over lowland raised bog at Annaghaboe, and a further 20ha at the adjacent Derryloughan Bog. Management of these sites should address threats such as hydrology and scrub encroachment, public access and the creation of mesotrophic pools for damselflies/dragonflies.	**LNAC**	EHS / D&STBC / LNP / RSPB / UWT	2010	
LRB/A7	Establish 1 demonstration site to transfer knowledge on applied restoration & management work carried out on a lowland raised bog in the Lough Neagh Wetlands and hold 1 workshop every two years.	**EHS**	DARD / LNAC / LNP / UWT / CBC	2010	**LRB/O4**

LRB/A8	Produce advisory material for landowners and other interested parties on the management and restoration of lowland raised bog	**LNAC**	DARD / EHS / LNP / UWT / CBC	2010	**LRBO2, LRB/O4, LRB/O2**
LRB/A9	Produce advisory material to manage the threat from lead shot used for game shooting/clay pigeon shooting over lowland raised bog in the Lough Neagh Wetlands	**LNAC**	BASC / DARD / EHS / UWT / CBC	2010	**LRB/O2, LRB/O4**
LRB/A10	Monitor 2 sites per year for the presence of Irish Lady's Tresses Orchid, targeting sites with historical records of this species	**EHS**	LNAC / LNP / UWT / CBC	2013	**LRB/O4**
LRB/A11	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit lowland raised bog and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / LNP / UWT	2013	**LRB/O4**
LRB/A12	Write 5 articles (1 article per year) to highlight the importance of lowland raised bog habitat for the biodiversity of the Lough Neagh Wetlands	**LNAC**	DARD / EHS / LNP / UWT / CBC	2013	**LRB/O4**

Lough Neagh Wetlands

Reedbed

Habitat Action Plan

2008 - 2013

Reedbed in the Lough Neagh Wetlands

Introduction

A reedbed is where common reed *Phragmites communis* dominates an area of wetland vegetation where the water table is at or above ground level for most of the year. Reedbeds are generally considered as swamp communities which provide a habitat for a range of specialist species, especially breeding birds. In the Lough Neagh Wetlands they exist on the margins of Lough Neagh and Portmore Lough.

Background

Reedbeds in Northern Ireland are especially associated with lowland wetlands around the large lakes such as Lough Neagh. Several large stands of more than 10 ha occur around Lough Neagh at sites such as Portmore Lough and Blackers Rock. Reedbeds are generally unmanaged in the Lough Neagh Wetlands and relatively few were ever harvested historically for thatching material. There is virtually no reed harvesting occurring at the present time. This contrasts with Great Britain where many of the most important reedbeds have been traditionally managed as natural resources usually by cutting for thatch which maintained them as reed-dominated sites, effectively keeping the process of succession to scrub and more terrestrial vegetation types in check. In the Republic of Ireland small scale reed harvesting occurs notably along the Shannon estuary. The biodiversity of reedbeds could therefore be significantly enhanced with suitable conservation management.

Reedbeds are often uniform in structure but a diverse structure can be more desirable to maintain key species and diverse species assemblages. For instance the reed warbler prefers tall reeds at the waters edge whereas the sedge warbler can use the drier more mixed fen vegetation with shorter reeds.

Flagship species associated with this habitat include bittern and marsh harrier. These two species are extinct as breeding birds in the Lough Neagh Wetlands, but still occur occasionally and have the potential to re-colonize. To do this they need very large reed beds with the bittern also requiring abundant open shallow water to catch fish and amphibians. Other characteristic breeding birds of this habitat include reed bunting, water rail, sedge warbler, reed warbler (a rare breeding bird in the Lough Neagh Wetlands) and great-crested grebe. The habitat also provides roosting and feeding sites for hen harrier, starling, swallow and sand martin. Otters use reedbeds especially where the reedbeds are close to fen or open water. Few rare plants are associated with reedbeds. However, plant species diversity does increase towards the reedbed edges and this is where the less common vascular plants such as cowbane, greater water parsnip, marsh fern and marsh pea occur.

Maintaining the condition of reedbeds can conflict with the conservation objectives set for other priority wetland habitats. For example, although

common reed is a natural component of many fen communities, its excessive dominance results in the loss of plant diversity and the loss of more open aquatic habitats. Therefore the development of reedbeds at the expense of fen would need very careful consideration.

Threats

Drainage and inappropriate management
Lower water levels result in reedbeds drying out, with consequent invasion of scrub and change to drier vegetation types taking place.

Fragmentation
Small pockets of habitat leading to greater ecological isolation and a reduction in the area of existing reedbeds.

Opportunities

Habitat creation and management
Create large reedbeds for the harvesting and use of local reeds for traditional thatching of buildings in the Lough Neagh Wetlands

New reedbed can be created on sites where water levels can be kept at or just above ground level, and where those levels can be controlled and manipulated.

Establish a demonstration site to transfer knowledge on applied restoration and management of reedbeds

Raise Awareness
Produce educational material that promotes the importance of reedbeds for Wetland biodiversity

Raise awareness of the need to take-up agri-environment options that benefit reedbed

Reedbed - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
R/01	Identify & Map all existing Reedbed within the Lough Neagh Wetlands	2008
R/02	Maintain extent and condition of Reedbed in the LNW	2013
R/03	Restore Reedbed in LNW	2013
R/04	Create new Reedbed	2013
R/05	Raise awareness of the value of this habitat for biodiversity	2013

Reedbed - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
R/A1	Map all existing priority reedbed within the Lough Neagh Wetlands (more than 0.5ha and where it is on average 5m or more wide)	**EHS**	LNAC / LNP / RSPB / CBC	2008	**R/01**
R/A2	Establish 1 demonstration site at Portmore Lough RSPB Nature Reserve and hold training events every two years to transfer knowledge on applied restoration and management of reedbeds	**RSPB**	DARD / EHS / LNAC /LNP / CBC / LCC / Rivers Agency	2008	**R/05**
R/A3	Prioritize the reedbed at Blacker's Rock for management as part of the management of fen and wet grassland there for breeding waders. Address threats such as scrub encroachment	**EHS**	BASC / LNAC / LNP / CDC / RSPB	2009	**R/O2 R/O3**
R/A4	Create at least 2ha of new reedbed on one contiguous block, using sites where water levels can be kept at or just above ground level, and where those levels can be controlled and manipulated. Target areas such as former peat extraction sites.	**LNP**	DARD / EHS / LNAC / Rivers Agency / RSPB / CBC	2010	**R/04**
R/A5	Promote the use of local reeds for thatching and screening and link this to the creation and management of 1 new reedbed of more than 2ha in the Lough Neagh Wetlands	**LNP**	EHS / LNAC / Planning Service / CBC	2010	**R/O4**
R/A6	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit Fen and associated priority species in the Lough Neagh Wetlands.	**LNAC**	DARD / EHS / FWAG / LNP / Service / Rivers Agency / RSPB	2013	**R/05**

Lough Neagh Wetlands

Rivers and Streams

Habitat Action Plan

2008 - 2013

Rivers and Streams in the Lough Neagh Wetlands

Introduction

Six major rivers flow into Lough Neagh, and one river drains the Lough into the sea. The Moyola River enters the Lough along the north-west shore at Ballymaguigan; the Ballinderry River enters the Lough along the western shore north of Ardboe; the River Blackwater enters the Lough at Maghery; the Upper Bann enters the Lough at Charlestown along the southern shore; the Six Mile Water enters the Lough near Antrim Town and the River Main enters the Lough near Randalstown. The Lower Bann then drains Lough Neagh from Toome towards the sea. The Clady River joins the Lower Bann about 15km north of Toome. There are several smaller rivers and streams also flowing into Lough Neagh, including the Crumlin River and the Glenavy River.

About 43% of Northern Ireland, plus a small area of the Republic of Ireland, drain into Lough Neagh via its inflowing rivers and streams. The total area of land that is drained into the Lough via these rivers and streams is about 4,453 square km. With a complex underlying geology, these rivers and streams provide a rich diversity of habitats which support a large number of ecologically important species, some of which are rare and considered to be vulnerable or endangered. The most important of these species are listed in the next section, with a brief description of their basic habitat requirements.

Background

FISH

Atlantic Salmon & Brown Trout

All the major rivers, and many of the smaller tributaries within the Lough Neagh Wetlands, contain populations of Atlantic salmon, river brown trout and dollaghan trout. These rivers are designated as Salmonid Rivers in accordance with the EU Fish Directive and support valuable recreational and commercial fisheries for these species.

Atlantic salmon migrate from the Atlantic Ocean, up the Lower River Bann and into Lough Neagh. This migration can take place during any month of the year but is particularly pronounced in late summer and early autumn. Those fish which enter the river early tend to spend long periods resting in deep pools and the migration to the spawning grounds may take several months. Fish rarely move when the river is low and most migration takes place on a rising or falling flood. They continue up the rivers to spawn in the gravely areas of their tributary streams from late November through to mid February. Eggs (ova) are laid in the gravel beds in depressions excavated by the females, known as ‘redds’. Once fertilised, the ova are buried under gravel and remain there until they hatch in late March or early April. The newly hatched fish, known as alevins, spend the next four or five weeks in the gravel before finally emerging as fry. Juveniles then

move from the spawning areas and take up residence in “nursery areas”, stoney sections of the stream which provide them with food, cover and protection from predators- and where they actively defend territories from other salmon. The fry grow in these nursery areas for one or two years until they become large enough to migrate to sea. At this stage they become silvery and are known as “smolts”. The seaward migration is stimulated by water temperature and takes place in the spring, March to May. The fish grow rapidly in the sea for one or two years and return as adults to the river of their birth to complete their life cycle.

River brown trout & dollaghan brown trout are found in the tributary streams and rivers of Lough Neagh, and are a migratory fish following a similar life cycle, habitat requirements and migration pattern as salmon, but most individuals remain in freshwater all their lives. River brown trout stay in the river all their lives but migrate up and down stream. The Lough Neagh catchment supports a distinctive variety of brown trout known as “dollaghan”. Like salmon, adult dollaghan migrate from the Lough into the feeder rivers during late summer and autumn. They will use even the smallest of streams where the gravel substrate is suitable and the water is clean. Spawning takes place earlier than salmon (October to December) and the fry hatch earlier in the springtime (February to March). The juvenile trout spends two to three years in the stream before migrating downstream to the Lough where it feeds for another two years or so before returning to the rivers to spawn.

The most important components of the habitat for both salmon and trout are:

- A plentiful, year round supply of clean well aerated, fast flowing water;
- Abundance of clean spawning gravel 30 to 80mm diameter;
- Good bed cover with stones and boulders up to 500mm diameter;
- Natural overhanging banks providing cover and supporting native vegetation;
- Deep pools
- Freedom from obstacles limiting migration.

The European eel

The eel breeds at sea and has its growing phase in fresh water. Eels frequent every Lough Neagh tributary. They are thought to breed in the South West Atlantic Ocean in the region of the Sargasso Sea. The larval eel (known as Leptocephali) cross the ocean from west to east, before entering European waters and metamorphosing into transparent glass eels. Most glass eels continue their migration into estuaries and then into fresh water. At this stage, the glass eels change again, actively swimming upstream, darkening as pigmentation develops and are known as elvers. Eels are long lived and some females may stay in fresh water for up to 50 years although 10 to 15 years is more common. After the growing stage, the eel undergoes another change and migrates seawards, develops maturing gonads and returns to the Sargasso Sea where it is presumed that spawning takes place.

The eel is fished commercially in Lough Neagh where one of the largest eel fisheries in Europe exists, making it a very important natural resource for the local people.

River Lamprey

River lamprey live in Lough Neagh and in the inflowing rivers. They are migratory, growing to maturity in estuaries before moving into freshwater to spawn in clean rivers and streams. The larva spend several years in silt beds before metamorphosing and migrating downstream to the estuary. It is thought that those found in Lough Neagh do not migrate to the estuary, preferring instead to stay in Lough Neagh to feed and migrate up the rivers to spawn. It has been discovered that they exist in the Lough all year round and research is currently ongoing to confirm if indeed they remain in the Lough without ever migrating to sea. With a very strong chance that this is the case, the Lough Neagh population would be one of only two found in the UK where this occurs, Lough Lomond in Scotland being the other. Adult fish feed by attaching themselves to fish of other species and often inflict extensive damage by rasping away large amounts of flesh from the back. In Lough Neagh lampreys are often found attached to pollan and trout. The river lamprey has declined in Britain over the last hundred years and is now given some protection as a species of community interest under the EU Habitats Directive and in the UK Biodiversity action plan.

Habitat requirements include;

- Suitable estuarine conditions, free from pollution, with suitable prey fish species.
- A clear migration route to the spawning grounds, with suitable river flows and no barriers.
- A stony, gravely substrate to spawn and to hide.
- After hatching, slower flowing nursery areas of sandy silt in fresh water above the estuary.

Brook Lamprey

Brook lamprey are common in the tributaries of Lough Neagh and the Lower River Bann. They never migrate to sea and their spawning and juvenile habits are similar to the river lamprey.

Pollan.

The pollan is one of a handful of freshwater fish native to Ireland. Their limited distribution suggests that they may have been the first species to colonise freshwater in Ireland at the end of the last Ice age. In Lough Neagh, adult pollan mature at two to three years old and spawn on gravels on the Lough bed. The ova hatch after two months or so, depending on the water temperature and the resulting fry feed on zooplankton within the water column. Lough Neagh contains a healthy population of pollan and supports a fishery where the fish are sold locally and exported as food and bait fish. Populations have declined elsewhere in Ireland and the species is listed for protection under the EU Habitats direction.

Other fish
Other fish reported from the rivers and streams of the Lough Neagh Wetlands, include, sea lamprey, stoneloach, minnow, three-spined stickle-back, nine-spined stickle-back, pike, gudgeon, roach, rudd, perch, tench and bream.

BIRDS

Kingfisher
Kingfisher frequents all the rivers and streams in the Lough Neagh Wetlands. The populations in Britain and Ireland are the most important in the whole of Northern Europe. Kingfishers require relatively shallow and slow moving water with thriving populations of small fish on which to feed, and vertical steep river banks of fairly soft material where they can excavate their nesting burrows. Their prey species are very susceptible to water pollution and there may be stretches of river habitat where fish stocks have been reduced or eliminated. The presence of this species is a very good indicator of the quality of rivers and streams. Numbers can crash badly following severe winters but the species is well adapted to make up its numbers again quickly by being able to produce large broods of up to six nestlings, three or four times per year. Recent dry summers have led to declining water quantity in rivers and streams and this could threaten the fish on which kingfishers feed. Low water levels increase the risk of predation at nesting holes normally protected by the water beneath their vertical faces.

Dipper
The dipper is a truly aquatic bird that breeds along rivers and streams in the Lough Neagh Wetlands, where there are weirs with fast running water, and bridges or over-hanging rocks where they build their nests. Rivers and streams that contain dippers have an abundance of invertebrate larva such as mayfly and caddis flies on which to feed. Dippers start breeding from February and those that nest along neutral waterways can lay larger clutches of eggs than those nesting along acidic waters. There are difficulties for dippers in supporting broods along acidic waters because of low invertebrate abundance, and low calcium availability at these sites. Dippers are therefore indicators of acidity by their absence or scarcity.

Grey Wagtail
Grey wagtails are birds with a preference for feeding along fast flowing rivers and streams that are bordered by broadleaved trees and where there are rocks, riffles and areas of gravel. In the Lough Neagh Wetlands areas such as millraces, weirs and canal locks are among the places sought out by this species. Unlike dippers, the breeding abundance of grey wagtail is little affected by the acidification of water courses because of the wider range of insects that they feed on, which includes aquatic and non aquatic species, hence their preference for trees along rivers and streams.

Sand Martin
Sand martins are associated with rivers and streams that have steep sandy banks in the Lough Neagh Wetlands. They are summer migrants that begin to return to the Wetlands in March. Numbers that return to breed are dependent upon the conditions they face in their wintering grounds in the Sahel region of Africa, with population crashes having taken place in the past, following severe Sahel droughts. They nest in colonies in sandy river banks where many pairs will rear two broods if the conditions are suitable. They also feed along the waterways, collecting flies in mid air.

MAMMALS

Otter
The otter is a Northern Ireland Priority Species that lives along rivers and streams in the Lough Neagh Wetlands. There has historically been a healthy population of this species in Northern Ireland but recent surveys suggest that we should be vigilant as there has been a slight decrease in signs of otter activity over the last 20 years. Otters are good indicators of water quality in that they need clean, unpolluted water with a large and varied supply of food. Dense, undisturbed areas of bankside vegetation are also essential to provide cover when the animal is resting during the day and for breeding purposes. Otters are shy, solitary animals that are active mainly at night along rivers and streams. They are always found near freshwater — even in coastal areas the otter must have access to freshwater to wash seawater from their coats. Up to four cubs are usually born during the summer months in an underground den or holt and stay with their mothers for about a year. They feed mainly on fish, frogs and white-clawed crayfish. The actual number of otters present in the Lough Neagh Wetlands is not known.

Daubenton's Bat
Daubenton's Bat, also known as Water Bat because it opportunistically feeds close to water, is thought to be relatively common and fairly widespread in the Lough Neagh Wetlands. It is found on most rivers where it feeds over still water and roosts/hibernates in bridges, stone walls and tree holes. They are at risk from tree removal or from stone walls being modified around bridges etc. The species is considered to be common in the Lough Neagh Wetlands, but in Northern Ireland the total number of animals may be only a few hundred. However, Daubenton's bats are thought to be fairly widespread but not seen very often. It forages typically within 30cm of the surface of the water. Here it either trawls for insects from the surface of the water by gaffing them with its large feet or the tail membrane or takes them directly out of the air (aerial hawking). They can be observed flying continuously back and forth along a river, using a regular flight path.

OTHER FAUNA

White-clawed Crayfish

White-clawed crayfish occur in areas with hard alkaline water and are generally found near undercut or overhanging banks and submerged tree roots and saturated logs. This is a Northern Ireland Priority Species, found in two of the river systems of the Lough Neagh Wetlands - the River Blackwater and the Ballinderry River. Adults can reach up to 12cm in size and the males have bigger claws than females and are more territorial during the breeding season from September to November. They reach maturity and begin to breed at 4 years old. Females spend the winter and early spring with eggs held under their tails, releasing juveniles at the beginning of June. During moulting and the release of juveniles, crayfish are very prone to predation by fish, mammals, birds and even insect larvae. The species is nocturnal, living under rocks and submerged logs or plants during the day, emerging at night to find food. They are omnivorous and their diet includes worms, insect larvae, snails, small fish and macrophytes. Debris like dead leaves that enters water courses can also be important food as crayfish tend to become more vegetarian with age. A major threat to the white-clawed crayfish is posed by the introduction of non-native species of crayfish, which have been farmed in Britain since the late 1970s but has not yet been found in Ireland. Signal crayfish carry the crayfish plague (a virulent disease caused by a fungus) which can spread rapidly, causing drastic losses of native crayfish in rivers. Crayfish plague can be introduced into a waterbody not only by entry of signal crayfish but also by water, fish or equipment that has been in contact with signals. This greatly increases the risk to remaining white-clawed crayfish populations.

Freshwater Pearl Mussel

Freshwater pearl mussels are found in the Ballinderry River. However, the species has disappeared from the lower stretches of the Ballinderry River but are still present in the upper reaches. There is no reason why the species should not re-colonise the lower reaches of this. And other rivers in the Lough Neagh Wetlands, if water quality improves. The Ballinderry River Enhancement Associate is undertaking a breeding programme which could help restock these local rivers...

Threats

Pollution

With around 38% of Northern Ireland and a small area of the Republic of Ireland, draining into Lough Neagh via its rivers and streams, there is considerable threat from activities both within and beyond the boundary of the Lough Neagh Wetlands which cause water pollution and habitat/species removal. The quality of the rivers and streams that feed into Lough Neagh cannot be separated from the quality of Lough Neagh and the Lower River Bann. The Lower River Bann is

the route for fish migrating into the Lough and therefore the quality of the water reaching Lough Neagh via its inflowing rivers, dictates the quality of the Lower Bann.

River Engineering
Loss of gravel beds for spawning fish as a result of drainage and run-off, where silts gather, covering gravel beds that form the breeding habitats of salmonid fishes. Such siltation, if extreme, can cover potential spawning areas or can impact spawning success by smothering eggs buried in the gravel. This can also cause the loss of habitat such as shallow, brisk ripples for spawning fish.

Development beside rivers and on floodplains

River bank erosion caused by unstabalized river banks as a result of tree removal, the presence of livestock and the river bank invasive plant species such as Hymalian balsam, giant hogweed, and rhododendron. For example, species such as rhododendron are very dense and fast growing which shades out light along the riverbed and stops vegetation growing along the riverbank. This causes bank erosion, resulting in silt being washed into the river.

Loss of breeding areas and habitat for species such as white-clawed crayfish

Loss of bank side vegetation and steep sandy banks, trees and stone walls etc. This affects many species including otter, kingfisher, sandmartin, Daubenton's bat etc

Obstructions to migration
Loss of rivers and stream habitat due to culverts being placed to aid development, and the placing of bridge inverts and weirs all prevent fish migration.

Water Levels
Low water levels in summer and future water abstraction from Lough Neagh

Opportunities

Managing Designated / Undesignated Waterways
Where regular maintenance works are carried out to designated watercourses, the rivers/stream should be assessed to determine what work can be undertaken to benefit local biodiversity, and plans developed accordingly with Rivers Agency. Where regular maintenance works are carried out on undesignated water courses the rivers/stream should be assessed to determine what work can be undertaken to benefit local biodiversity, and plans developed with the riparian owners (farmers etc) via Single Farm Payment / Agri-environment schemes. This should include retaining and creating rough grass river margins, re-profiling the banks, creating berms, ensuring fencing is installed to prevent river bank

erosion and poaching where cattle drink in streams. It should also include where appropriate, introducing natural flood management schemes such as the creation of floodplain storage areas and wet meadows.

Stakeholder Groups for river catchments in the Lough Neagh Wetlands, set up as part of the implementation of the Water Framework Directive should be utilized to develop practical river conservation projects

Water Quality
Sustainable Drainage Systems and Constructed wetlands should be promoted and used to address the issue of poor water quality and silting in rivers and streams

Water pollution including highlighting continuous pollution problems should be reported using the EHS Pollution Hotline

Rainwater harvesting should be promoted and used to enhance river water quality and conserve water

Where appropriate, buffer zones should be created along rivers and streams to protect water quality and create linear features for species such as tree sparrow and barn owl. This should be complemented with sensitive land management to ensure that undue pressure is not being placed on riparian land and associated drainage infrastructures, It is worth noting that buffer zones may not be the most effective method of reducing diffuse pollution, as fields in the LNW are often too small to take out the buffer area required and still have a viable working field area. Also a history of sub surface drainage means that most pollutants would simply travel below a buffer strip. Better land management is the most effective way to reduce diffuse pollution.

Surveys
Surveys should be conducted along Key Rivers to highlight threats and identify obstructions to fish and other riparian wildlife, and look for opportunities for enhancement, rehabilitation and restoration projects that focus on local and national priority species. Projects should be carried out as a result of river surveys. The use of volunteers in these surveys should be considered.

Record the location of invasive species along river banks / and in rivers and streams and target areas for local invasive species action plans

Raise Awareness
Raise awareness of water quality and of the creation and management of habitats for river and stream biodiversity

Non-native fish
Control the stocking of non-native fish by using local genetic stock.

Best Practice advice
Produce best practice advice for farmers and developers.

Rivers and Streams - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
RV/01	To maintain the extent and quality of River & Stream habitats	2013
RV/02	To Restore river and stream habitats to good ecological status in line with the Water Framework Directive	2013
RV/03	To raise awareness of River and Stream conservation	2013

Rivers and Streams - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
RV/A1	Form 1 Stakeholder Group for the Coppies River catchments in the Lough Neagh Wetlands, in line with the Water Framework Directive / River Basin Management Plan and develop practical river conservation projects through this group	**LNP**	EHS / LNAC / MDC / Moyola Angling Club / DCAL / DARD / Rivers Agency / QPANI	2008	**RV/02**
RV/A2	Initiate a programme that creates at least one Sustainable Drainage System that addresses the issue of sediment loading in rivers. Use this as a demonstration site and hold 5 workshops (1 workshop each year) to promote the use of these systems and to promote the wise use of water	**LNP**	LNAC / EHS / Rivers Agency / Planning Service DARD / QPANI / CBC	2008	**RV/02**
RV/A3	Initiate a programme that creates at least 1 Water Harvesting project to enhance river water quality and conserve water. Use this as a demonstration site and hold 1 workshop each year to promote the use of these systems and to promote the wise use of water	**LNP**	EHS / LNAC / Northern Ireland Water / Planning Service / QPANI / CBC	2009	**RV/02 / RV/03**
RV/A4	Initiate a programme that creates at least one Constructed Wetland that treats water that is being discharged into rivers from septic tanks. Use this as a demonstration site and hold 5 workshops (1 workshop each year) to promote the use of these systems and to promote the wise use of water	**LNP**	LNAC / EHS / Planning Service / CBC	2010	**RV/02**
RV/A5	Survey 1 river per year highlight threats and obstructions to fish and other riparian wildlife, and identify opportunities for enhancement, rehabilitation and restoration projects that focus on local and national priority species. As part of these surveys, map the location of invasive species along river banks and in the rivers/streams in the Lough Neagh Wetlands and use this to set targets for local invasive species action plans.	**LNP**	EHS WMU / DCAL / EHS / Rivers Agency / DARD / BREA / LNAC / CBC	2013	**RV/01 RV/02**

RV/A6 [illegible]	[illegible: two lines of text printed over each other] rational priority species.	**ENB**	[illegible] / WWF/BREA / DCAL / DARD / CBC	2013	**RV/01 / RV/02**
RV/A7	Promote the uptake of volunteer surveys along Rivers & Streams in the Lough Neagh Wetlands.	**LNP**	LNAC / RSPB / EHS / CVNI / UWT / WWF/BREA / CBC	2013	**RV/03**
RV/A8	Write 5 articles (1 article per year) to highlight the importance of water quality in rivers and stream for biodiversity, highlight the range of species found in rivers and streams and promote the appropriate management of riparian habitats in the Lough Neagh Wetlands	**LNAC**	LNP / DCAL / EHS / DARD / QPANI / Rivers Agency / RSPB / UWT / WWF/BREA / CBC	2013	**RV/03**
RV/A9	Raise awareness on an annual basis among agri-environment scheme advisors, and promote the take-up of agri-environment options that benefit rivers and streams in the Lough Neagh Wetlands	**LNAC**	LNP / DCAL / EHS / DARD / FWAG / Rivers Agency / RSPB / UWT / WWF/BREA	2013	**RV/03**
RV/A10	Raise awareness on an annual basis among Developers of the damage caused to biodiversity by culverting rivers and streams as part of developments, and inform planners and developers about alternative action that safeguard these habitats	**LNAC**	LNP / DCAL / Planning Service / EHS / Rivers Agency RSPB / UWT / WWF/BREA / CBC	2013	**RV/03**
RV/A11	Encourage stakeholders to report water pollution and highlight continuous pollution problems to Statutory Agencies, using the Pollution Hotline	**EHS**	LNAC / LNP / WWF/BREA / CBC	2013	**RV/01 / RV/02 / RV/03**
RV/A12	Ensure that biodiversity issues are taken into account during the planning and implementation of maintenance works on designated watercourses	**Rivers Agency**	LNAC / DARD / EHS / CBC	2013	**RV/01 / RV/02**

Lough Neagh Wetlands

Wet Woodland Habitat Action Plan

2008 - 2013

Wet Woodland in the Lough Neagh Wetlands

Introduction
Wet woodland occurs on poorly drained or seasonally waterlogged soils. The wet woodland resource is diverse in composition and structure, usually dominated by willow, alder, or downy birch but also sometimes includes ash or oak on the drier riparian areas or margins of flushes.

Wet woodland habitats occur on a range of soil types including nutrient-rich mineral and acid soils and nutrient-poor peaty soils. They occur on the margins of water bodies along lowland and upland streams, on hill-side flushes and as successional habitat on fens and bogs. Wet woods frequently occur in a mosaic with other woodland habitats and with wetland habitats. Boundaries with other woodland types can sometimes be sharp but are often gradual transitions. The type of wet woodland may change over time through succession, depending on the hydrological conditions and the management of the wood and surrounding habitat. Management of mosaic sites needs to consider wet woodland in relation to the requirements of each of the habitats.

Background
In many areas of the wetlands, wet woodland is generally unmanaged and is often utilized for grazing and shelter by livestock. In the past, wet woodlands around Lough Neagh containing willow were coppiced. Much of the current resource is largely secondary and of relatively recent origin that is less than 100 years old.

The conservation value of wet woodland can be partly determined by the condition of the habitat. Favourable condition is determined by the percentage of native trees and shrubs, the vegetation structure, the presence of key indicator species and the absence of vegetation, species or factors associated with disturbance such as invasive species, overgrazing or dumping.

Wet woodland can be of significant value for flora and fauna. Rare plant species include elongated sedge and large bitter-cress, while relict species from the former open wetlands or ground flora are found in old woodlands, including bog mosses *Sphagnum* spp., sedges *Carex* spp., marsh marigold, bottle sedge, and common marsh-bedstraw. Standing and fallen dead wood is an important element of wet woodland, and its association with water provides specialized habitats not found in dry woodland types. The high humidity found in the wet woodland favours bryophyte growth.

Wet woodland fauna has been poorly recorded but the number of invertebrate species associated with alder, downy birch and willow is very large. Wet woodland habitat also provides cover and breeding sites for otter and is of value for bats.

Threats

Inappropriate management
Inappropriate grazing by domestic livestock and general lack of woodland management.

Invasive species
Invasive species such as sycamore, rhododendron, Himalayan balsam and giant hogweed.

Habitat loss and fragmentation
Habitat loss and fragmentation can lead to greater ecological isolation of existing woods through the removal of trees in field boundaries and small patches of wet woodland and scrub in fields.

Water Levels
Changes in water levels due to drainage, agricultural practices, peat extraction, drought and climate change.

Nutrient enrichment
Nutrient enrichment may occur from spray drift or runoff from adjacent agricultural land.

Pesticides
Pesticide drift into woodland margins may cause localized damage to some flora and fauna.

Opportunities

Habitat creation, restoration and management
Identify the areas of ancient or long established Wet Woodland and prioritize for restoration and management. Promote the use of trees of Local Genetic Origin and plant new woodland on sites adjacent to existing woodland, and where the ground flora is suitable for recovery of this habitat.

Produce and implement management and or restoration plans, and include plans to link up fragmented sites.

Nutrient Management
Promote the need for Nutrient Management Plans for areas adjacent to wet woodland.

Mapping
Map the location of all wet woodland larger than 0.5ha. Compile a register of all Wet Woodland sites around Lough Neagh that are >0.5ha.

Protect against infilling
Monitor key sites which are at risk from illegal dumping and/or infilling, especially fir inappropriate building developments.

Raise awareness
Raise awareness of wet woodland and its biodiversity.

Wet Woodland - Objectives & Targets

Objectives & Targets

	OBJECTIVE	TARGET
WW/01	Identify & Map all existing Wet Woodland within the Lough Neagh Wetlands	2009
WW/02	Maintain the area and condition of all Priority Wet Woodland	2013
WW/03	Restore degraded Wet Woodland on ancient and long established woodland sites	2013
WW/04	Create new wet woodland	2013
WW/05	Raise awareness of the value of this habitat for biodiversity	2013

Wet Woodland - Action

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
WW/A1	Map the location of all sites that are more than 0.5ha and compile a register of all sites in the Lough Neagh Wetlands and store information on the Lough Neagh Wetlands GIS	**Woodland Trust**	DARD / EHS / Forest Service / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / Rivers Agency	2008	**WW/01**
WW/A2	Produce a management plan for Traad Local Nature Reserve and manage for wet woodland	**MDC**	LNP / LNAC / EHS	2008	**WW/02 / WW/03**
WW/A3	Develop a Watchdog Programme to engage the local community in monitoring key sites which are at risk from illegal dumping/ and/or infilling	**LNP**	Woodland Trust / CVNI / EHS / LNAC / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC	2008	**WW/02 / WW/05**
WW/A4	Identify ancient or long established Wet Woodland, including those that have been reduced and fragmented, and prioritize for restoration and management. Then produce and implement habitat creation, management and/or restoration plans for contiguous block(s) of habitat that plant up areas next to good quality wet woodland and link up fragmented sites by creating habitat corridors	**Woodland Trust**	DARD / EHS / Forest Service / FWAG / LNAC / LNP / Rivers Agency/ QPANI	2010	**WW/02 / WW/03 / WW/04**

WW/A5	Establish 1 demonstration site to transfer knowledge of applied restoration and management of wet woodland habitat and hold 1 training programme on the conservation, management and restoration of wet woodland habitat	**EHS**	Woodland Trust / CVNI / DARD / Forest Service / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / Planning Service / Rivers Agency	2010	**WW/02 / WW/03 / WW/05**
WW/A6	Hold one event every 2 years to celebrate the biodiversity value of Wet Woodland	**LNP**	CVNI / DARD / EHS / Forest Service / FWAG / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / Planning Service / Rivers Agency / Woodland Trust	2013	**WW/05**
WW/A7	Write 1 article per year to promote the biodiversity value of wet woodland and to highlight the threat to habitat	**LNAC**	Woodland Trust / CVNI / DARD / EHS / FWAG / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BBC / Rivers Agency	2013	**WW/05**
WW/A8	Raise awareness, on an annual basis, among agri-environment scheme advisors of the need to promote the take-up of agri-environment options that benefit wet woodland and associated priority species in the Lough Neagh Wetlands.	**LNAC**	Woodland Trust / CVNI / DARD / EHS / Forest Service / FWAG / LNP / Rivers Agency	2013	**WW/05**

6. Action to Control the spread of Non-Native Invasive Species

The threat from non-native invasive species is as serious as habitat destruction. To emphasis just how serious a threat exists to local biodiversity within the Lough Neagh Wetlands, this Local Biodiversity Action Plan contains a Non-Naive Invasive Species Action Plan. The Local Biodiversity Partnership for the Lough Neagh Wetlands includes Conservation Volunteers Northern Ireland (CVNI). An Invasive Species Officer has been appointed by CVNI to help deliver action locally.

The economic and social costs of non-native invasive species can be immense. A particularly prominent case is the introduction of the European zebra mussel to the Great Lakes of North America. This case is relevant to Lough Neagh, where the zebra mussel has been discovered for the first time in 2005.

In the Great Lakes of North America, zebra mussels smother native clams and mussels and cluster around warm water outflow pipes from power stations. Mitigating the damage caused by zebra mussels has so far cost the USA 5 billion dollars!

10% of non-native species imported into a region subsequently appear in the wild, 10% of these establish themselves as self-sustaining populations and 10% of the established species, i.e. 0.1% of imported species, then become invasive.

On a global scale, the most severe impacts of non-native species on native biodiversity have occurred on remote islands, where the native flora and fauna is less diverse, more isolated and so is more susceptible to invasion. Ireland is comparatively isolated from continental Europe, reflecting its separation by sea since the last glaciation. As a result Ireland is home to a reduced number of native species in comparison with much of continental Europe. Increasing global trade and migration over the last century have led to a marked increase in the rates of species introductions to Ireland, resulting in more frequent and noticeable impacts upon native biodiversity.

In the Lough Neagh Wetlands, efforts to prevent the introduction and spread of non-native invasive species will continue alongside efforts to create, restore and manage habitats, and efforts to restore and expand native species populations.

Lough Neagh Wetlands

Non-native Invasive Species

Action Plan

2008 - 2013

Introduction

Non-native invasive species are plants or animals that have evolved in a different area or country and that have found their way to a new area where they can out compete the native or indigenous plants or animals. The most prominent negative impacts for biodiversity from non-native invasive species appear to be direct competition with native species. Alterations to habitats and influence of parasites and pathogens jointly take second place.

The following non-native species have been recorded in the Lough Neagh Wetlands and are considered to be among those that can be targeted effectively through a local biodiversity action plan, either through practical action or used as flagship species to raise awareness of invasive species and the threat that they pose to biodiversity.

Invasive species present in the Lough Neagh Wetlands

Terrestrial Plants

Rhododendron *Rhododendron ponticum* - Invades habitats such as Lowland Raised Bog in the Lough Neagh Wetlands. Plants form impenetrable thickets, which cast deep shade and reduce native plant cover, with knock on negative impacts for native animals. They also secrete allelopathic toxins which reduce the regeneration of native plants. The plant is difficult to control because of successful regeneration after cutting, herbicide application or fire. Rhododendron spreads locally by layering and abundantly through the production of huge numbers of tiny wind dispersed seeds and it is economically expensive to control. Practical control includes manual labour, mechanical removal, herbicide application and stem injection with herbicides. Physical methods of control may cost between £1500 – £7000 per hectare and require hard physical labour. The general costs of herbicide are estimated at £85 – £400 per hectare for the chemicals alone. However, the waxy foliage can provide a barrier to herbicide uptake and there are health and environmental risks associated with volatilisation, drift and leaching into watercourses. Rhododendron also acts as a host for a serious plant disease known as Sudden Oak Death (Phythopthora ramorum), which kills some native tree species. This is widespread across England. Sudden Oak Death Syndrome was discovered in Derry City in 2007 and was reported to be the first time it has been detected on a plant not imported into Northern Ireland. A 100 metre exclusion zone had been implemented around the infected rhododendron plant, and the plant destroyed in line with measures designed to control the spread of the fungus, in an effort to ensure that the disease does not establish in Northern Ireland as it has the potential to cause significant damage to trees and landscapes. DARD issued information leaflets to nearby gardeners.

Giant hogweed *Heracleum mantegazzianum* , Giant hogweed spreads mainly along river and canal corridors. Colonization and spread have been mainly in a downstream direction reflecting the dependence of the plant upon seed dispersal by flowing water. Giant hogweed poses a health hazard to humans as skin contact with the sap of the plant causes irritation, particularly in direct sunlight. Symptoms include skin blisters and rashes, which appear 24 - 48 hours after contact and often require hospital treatment. Post-inflammatory hyper-pigmentation can persist for 6 years after initial contact. On the Ballinderry River in Co Tyrone, dense bankside infestations have developed. The plant excludes indigenous herbaceous plants, which are essential in maintaining riverbank stability. In winter Giant Hogweed dies back, exposing the soil which is washed into rivers, altering substrate characteristics and providing favourable conditions for abundant aquatic plant growth, whilst rendering river substrates unsuitable for salmon spawning. In Northern Ireland the planting of Giant Hogweed was made illegal under the 1985 Wildlife Order. Long term control and ultimate eradication can only be achieved through a coordinated and comprehensive management strategy. Giant hogweed populations can only be perpetuated via seeds and control measures applied before flowering and seed set will limit recruitment to subsequent generations, and, if applied systematically over a number of years, will ultimately deplete the seed bank reserve. The longevity of seeds in the soil is unknown, although there are indications that the vast majority of viable seeds germinate within one year. Results from extensive trials have demonstrated the susceptibility of Giant Hogweed to glyphosate. These studies have resulted in the creation of a step-by-step protocol for the long-term control of the species using glyphosate. This methodology, if strictly adhered to could lead to successful eradication of the plant if the areas are not re-infested from external sources. However, it is important to exercise caution when planning to use herbicides near watercourses as transfer of these chemicals to streams and rivers can result in the loss of aquatic plants, damaging habitat and food chains. This is particularly important where rivers are designated as Special Areas of Conservation for their water plant communities.

Japanese knotweed *Fallopia japonica* & Himalayan balsam *Impatiens glandulifera* - Japanese knotweed and Himalayan Balsam have similar impacts along watercourses. Himalayan balsam is a particularly serious threat to water courses given its reproductive cycle is very well suited to riparian ecosystems such as the low lying topography in the Lough Neagh Basin. The vigour with which the plant annually colonises virgin territory is alarming. It is an aggressive colonist and very good at shading local flora, and just like giant hogweed, will die back in winter to expose soil leading to cause erosion. Japanese knotweed and Giant Hogweed are both treated as controlled waste. It is an offence to move ground material that has been polluted with the seed of these plants. Material classed as controlled waste requires Waste Transfer authorization.

Aquatic/Semi-aquatic Plants

The following species are established in the L. Neagh basin and give rise to serious concern as they are highly invasive and can displace native vegetation over large areas.

Water fern *Azolla filiculoides*
Water fern already exists in plague proportions in some years in eastern Lough Neagh. The Lagan Canal can become blocked with floating accumulations that shut off light and cause serious deoxygenation of the water underneath.

New Zealand pigmy weed (also known as Australian stonecrop) *Crassula helmsii*
New Zealand Pygmy weed is a serious threat to water margin habitats and has caused extensive damage to waterways in places in southern Britain. It grows explosively along shorelines out-competing native vegetation. It is established in Lough Beg.

Floating pennywort *Hydrocotyle ranunculoides*
Floating Pennywort has a similar growth habit to Pygmy weed and with similar problems. It has established at Dunadry weir on the Sixmilewater and is likely to spread.

Nuttall's Waterweed *Elodea nuttallii*
This highly invasive species exists in the Lower Bann River. It can, given the correct conditions, result in excessive growth.

New Zealand Pygmy weed and Floating Pennywort are best combated by eradication, education and prevention. They are spread mainly by owners of garden ponds dumping material in lakes and rivers. An education program that targets garden centres which sell these weeds, seems vital. Monitoring the spread of these species is also essential.

Aquatic Animals

Zebra mussels *Dreissena polymorpha* – In new areas zebra mussels can increase to plague proportions and filter the water, decreasing the amount of zooplankton and food available for other species including fish. They make the water clearer resulting in increased plant growth, which impedes fishing and boat navigation. They have been shown to cause toxic algal blooms as they can mask the impacts of nutrient enrichment although it is thought that increased micro growth is unlikely to happen in Lough Neagh because of the wind drive nature of the water body.

Zebra Mussels not only have an environmental impact but an economic impact. They damage boat engines, block water abstraction pipes and foul jetties. The main type of transportation/movement (vector) for the primary introduction of the zebra mussel into Ireland was boating. Boats, imported for private use mainly on

the Shannon Navigation system, were lifted from British waters onto trailers, transported to Ireland by ferry and lifted into Irish waters within a day. They were introduced passively to the Lower Shannon River before 1994 and were recorded in the Limerick docks at the top of the Shannon estuary in the spring of 1995. Following establishment they became attached to leisure craft and were carried upstream via locks and swing bridges to the entire navigation on Lough Derg, Lough Ree, Lough Key and several smaller lakes by 1996. From the River Shannon Waterway they were accidentally carried into the Erne on the bottom of boats. By 1996, zebra mussels had become established in Lower Lough Erne. It is believed that they were introduced via the recently restored Shannon-Erne Waterway but this has not been proven. It is equally possible that they reached the system via overland movement of boats with mussels attached to the hulls. They can also be transferred on fishing equipment and in the coolant water of engines. The species somehow reached Lough Neagh by 2005.

Zebra mussels can impact fish populations through alterations of the food web. Heavy infestations of zebra mussels interferes with the feeding, respiration and reproduction of native freshwater mussels. In extreme cases, zebra mussels can cause sufficient freshwater mussel mortality to eliminate populations, as was the case in Lough Erne. The likely impact on Lough Neagh is presently unknown. It is thought that the lack of a hard substrate over most of the lough, which they require to settle on, may limit the overall effect because zebra mussels typically recruit to hard surfaces eg. Rocks, piers, boats etc, but they have been known to recruit to soft lake sediments in the USA.

Crayfish plague *Aphanomyces astaci* **-** This plague threatens the white-clawed crayfish. Since the first confirmed outbreak of the plague fungus in Lough Lene, Co. Westmeath in 1987 and its suspected recurrence elsewhere, repeated surveys have indicated the loss of stocks from several midland lakes. Invasive North American Signal Crayfish is the main carrier of the plague, to which it is immune. The Signal Crayfish to date has not been found in Ireland.

The one diagnosed outbreak of crayfish plague in Ireland is believed to be the result of fungal spores introduced by fishermen on wet gear. The reintroduction of native crayfish to Lough Lene sometime after the eradication of infected native crayfish appears to have been successful.

Fresh water shrimps *Gammarus pulex, Crangonyx pseudogracilis, Gammarus tigrinus* – Gammarus pulex was introduced in the 1950's by humans to provide additional feeding for native brown trout in the Ballinderry River system in the Lough Neagh Wetlands. *Gammarus pulex* displaces the native *Gammarus duebeni celticus*. The reduction and decline of the native invertebrate community distribution and diversity occurs through both competitive and predation mechanisms. The change in the diet of the native trout to that dominated by the introduced *G. pulex* has unknown effects on the population biology of trout. The other two shrimps, *Crangonyx pseudogracilis*, and *Gammarus tigrinus* are from

North America and occur in Lough Neagh but their impact is thought to be much less.

Threats

Species that threaten to invade the Lough Neagh Wetlands
There are a number of species that have not yet been recorded in Ireland but could cause significant problems if they became established here.

Non-native Crayfish
Non-native crayfish species, such as Turkish crayfish, *Astacus leptodactylus* and North American signal crayfish, *Pacifastacus leniusculus*, which can both host the crayfish plague responsible for decimating native crayfish and freshwater fish populations in both Great Britain and Europe. Northern Ireland currently has legislation in place to prevent the importation of non-native crayfish for aquaculture purposes. However, there is currently no legislation preventing the importation of live crayfish as food items. Restaurants and fish and wholesale markets are advised to follow the Crayfish Code of Practice, although no legal enforcement exists.

Shrimps
Several invasive shrimps from south-east Europe are spreading towards Ireland and have reached Britain. They are likely to have a negative impact upon native species. These include the *Dikerogsmmarus villosus* which can be a threat to all smaller *Gammarus*.

Fish Parasites
The nematode parasite *Anguillicola crassus* that infects the swim-bladders of European eels has already been introduced to Lough Neagh, and now infects a large proportion of individuals. Other potentially important fish parasites include *Gyrodactylus salaries*, a parasite that infects the skins and fins of salmon and can both kill and cause serious harm. This parasite is native to waters of the Baltic in Russia, where its impact upon native fish populations is small. However *G. salaris* is thought to have been introduced to Norway by stocking with resistant Swedish stock in the mid 1970s. The only known means of eliminating the parasite is to poison the whole river system and re-stock.
By 1984 the Norwegian salmon fisheries had sustained losses of between 250-500 tonnes per year.

Zander
A prominent invasive species present in Great Britain is zander, a fish introduced for sport. Zander are an open water predator that are well adapted to feeding under turbid water or low-light conditions, and as such represent a particular threat to the fishes of Lough Neagh, in particular pollan. Other fish species present in Great Britain that represent potential nuisance invaders include, the ruffe, the common carp, and the topmouth gudgeon. The chub has now

established in the River Inny in Co Westmeath and is the subject of eradication efforts by the Central Fisheries Board. A chub management plan is being prepared as part of the Invasive Species Ireland Programme.

Climate Change
Current members of the Lough Neagh fish community whose performance and mortality are currently controlled through climate e.g. via over-wintering mortality (roach) or lack of suitable spawning temperatures (bream) could respond positively to increased temperatures following climate change.

Activities that could help introduce and spread non-native invasive species

Hunting, Wildfowl and game stocking
Bait organisms used for angling are exported beyond their normal range and may be discarded alive to the wild to form new populations. An example of a bait organism brought into the Lough Neagh Wetlands, is the freshwater shrimp *Gammarus pulex,* introduced as prey for the native Brown trout in the Ballinderry River system. So what is the opportunity? - to educate anglers?

Numerous bird species have established wild populations either through deliberate releases or accidental escapes. Examples include the ruddy duck. Breeding populations are found in Lough Neagh where approximately 89 birds breed, and on Portmore Lough where approximately 54 birds breed. Explain why they are a threat.

The Brown Hare is a non native species which exists in parts of the Lough Neagh Wetlands and threatens the endangered Irish hare. Threats to the Irish hare include competition with the brown hare and hybridization between the brown and Irish hare.

Horticulture, amenity and ornamental planting, stocking and collections
Examples of invasive terrestrial plants introduced to habitats in the Lough Neagh Wetlands in this manner include Rhododendron, giant hogweed, Japanese knotweed and Himalayan balsam.

Invasive ornamental aquatic plant species introductions include New Zealand pigmyweed, which, according to CEDaR has been recorded at Lough Beg. A recent arrival in Northern Ireland - first noticed in a pool at Gosford in 1984 it is a native of New Zealand which has spread across Great Britain in recent years and has a deleterious effect on other aquatic flora. This plant is introduced for garden ponds and escapes into watercourses, or is thrown out by gardeners. Water fern and Floating Pennywort are equally damaging and spread in a similar way. Move up to previous section. Lowland raised bog, old oakwoods and heath are affected by the spread of rhododendron, a shrub that invades native vegetation and shades out sunlight.

Pet shops, aquaria and scientific institutions

The trade in ornamental fish presents an interesting case. In Northern Ireland, imports of ornamental fish, molluscs and plants are allowed subject to the granting of an Import License and compliance with EU requirements. Voluntary trade organizations have taken the lead in reducing illicit trade and associated spread of invasive species and vectors of disease. It has been suggested that the international trade in tropical and ornamental fish has been responsible for the direct spread of diseases such as Epizootic Ulcerative Syndrome (caused by the bacteria Yersinia ruckeri) in a number of European countries. The Asian topmouth gudgeon is another non-native invasive species that can spread an infectious parasite that is closely related to 'Rosette Agent' - known to be deadly to salmon and trout. Topmouth gudgeon are already spreading across England and Wales.

International freight, tourism and travel

Non-native species are commonly transported via freight and tourism, e.g. with the import of plants and plant products. For example, the New Zealand flatworm was accidentally introduced to Northern Ireland in soil traded in pots, trays and root-balled plants. It is a voracious predator of our native earthworm.

Fishing equipment, angling and pleasure boats

Movements of infested fishing gear or boats may allow species to colonize new regions. A threat that has already been recorded in Ireland is crayfish plague, caused by the fungus *Aphanomyces astaci*. The plague is usually introduced with the North American signal crayfish. In October 1987 the plague was recorded in Ireland in Lough Lene and destroyed most of the stock of native crayfish in one lake system. Outbreaks of the disease have not been noted since. The North American signal crayfish is not yet present in Ireland and, therefore, was not the vector responsible for the introduction of the plague to Ireland.

Crayfish plague can be introduced into a water-body by water, fish or equipment that has been in contact with signal crayfish and these may have been the vectors in the case of crayfish plague in Ireland. Spores of the fungus are able to survive in moist conditions such as on muddy boots and fishing gear. The spread of crayfish plague is difficult to control because it could be carried from one population to another by many different vectors. Opportunities exist to educate boaters and fishermen of the dangers of introduction and of the need to wash equipment . etc

Inland waterways

The existence of old canal systems and new waterways has allowed for the ready transmission of species, either by moving on their own accord or by inadvertently being carried by boats. The opening up of new waterways and restoration of canals creates corridors which allow the spread of non-native species by natural dispersal and via water crafts. An example of inland waterways aiding the spread of an invasive species in Ireland is the spread of the

zebra mussel from the River Shannon to Lough Erne. It is believed that this species spread via the Shannon-Erne Waterway which was opened in 1994, or perhaps overland on a boat being moved from one place to the other. The subsequent spread to Lough Neagh via a boat being transported over land can not be ruled out.

It is important to distinguish between new introductions to a country and secondary spread to an area such as the Lough Neagh Wetlands as different vectors may be involved. The most likely ways of new species being introduced or further spread taking place to Lough Neagh from other areas is by human activities such as recreational boating, pet keeping, gardening, tourism, etc.

Opportunities

Management and eradication programs in the Lough Neagh Wetlands are likely to be more successful if supported by an informed and co-operative public. An awareness of the community benefits arising from actions to manage the threat posed by non native invasive species can increase the willingness of the public to contribute to an attempt to rectify the problem.

Issues that can be highlighted to the general public, include the risks of unwanted introductions through the dumping of garden waste. There are however many ways that non-native invasive species can be introduced and spread within the Lough Neagh Wetlands. In order to reduce the potential for this to happen, information should be disseminated to the stakeholders of the wetlands to increase awareness of the the spread of non-native invasive species can be prevented. As highlighted in the threats section above, information should be targeted at stakeholders responsible for hunting, wildfowl and game stocking;
horticulture, amenity and ornamental planting, stocking and collections;
pet shops; aquaria; scientific institutions; International freight companies, tourism and travel companies; anglers; commercial fishermen; suppliers of commercial fishing and angling equipment; pleasure boat users etc.

Invasive Species - Action

Objectives & Targets

	OBJECTIVE				TARGET
IS/01	Map the spread of invasive species in the Lough Neagh Wetlands to help target control and eradication programmes				2008
IS/02	Reduce the spread of harmful invasive species by carrying out practical control measures and developing a local knowledge base on effective control methods				2013
IS/03	Increase awareness of the threat facing native biodiversity as a result of the spread of harmful invasive species in the Lough Neagh Wetlands				2013

Actions

	ACTION	LEAD PARTNER	PARTNERS	TO BE ACHIEVED BY 31st Dec:	OBJECTIVES MET
IS/A1	Collate existing non-native invasive species records from local stakeholders, and establish a database on GIS, to identify black-spots. Then continue to gather new records.	**LNAC**	EHS / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2008	**IS/01**
IS/A2	Undertake control and eradication programmes on alien aquatic invasive species, starting at the headwaters of the Ballinderry River in Co Tyrone. Use the project to gather and transfer knowledge to local stakeholders on how to effectively control and eradicate invasive non-native species	**BREA**	CVNI / DARD / DCAL / EHS / Forest Service / LNAC / LNP / CDC / Rivers Agency / WWF / CBC	2009	**IS/02**
IS/A3	Initiate 1 new project to control Rhododendron where it threatens one key lowland raised bog in the Lough Neagh Wetlands, and transfer knowledge to local stakeholders on how to effectively manage the species	**LNAC**	CVNI / DARD / EHS / Forest Service / FWAG / LNP / UWT / CBC	2010	**IS/02**
IS/A4	Establish 1 local project to record and map invasive species in the Lough Neagh Wetlands and store this information on the Lough Neagh Wetlands GIS and at CEDAR	**LNAC**	CVNI / DARD / DCAL / EHS / Forest Service / FWAG / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC / Rivers Agency / BREA	2010	**IS/01**

IS/A5	Lobby for stronger legislative powers to act and prevent or control the spread of non-native invasive species in Northern Ireland	**LNAC**	AFBI / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2010	**IS/03**

IS/A6	Hold 1 event every two years to raise awareness of the threat facing wetland wildlife as a result of non-native invasive species	**EHS**	CVNI / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC / BREA	2010	**IS/03**
IS/A7	Produce / Disseminate Invasive Species advisory information for the Lough Neagh Wetlands, on subjects that include; • managing the threat facing native fish species of freshwater river systems and eutrophic lakes as a result of pike, roach, tench and other non-native fish species being introduced • managing the threat facing earthworms from the introduced New Zealand flatworm • managing the threat facing native ground-nesting birds, mammals, fish and crustaceans from the introduced American mink • managing the threat facing freshwater eels from eel swim-bladder nematode • managing the threat facing white-clawed crayfish from crayfish plague • managing the threat facing riparian habitats from introduced Giant Hogweed, Japanese knotweed and Indian balsam and other aquatic plant species • manage the threat from non-native pond species	**LNAC**	DARD / DCAL / EHS / Forest Service / FWAG / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC / Rivers Agency / WWF/BREA	2010	**IS/03**
IS/A8	Undertake 6 river surveys (1 per year) to record the location of invasive species along river banks in the Lough Neagh Wetlands and use this to set targets for local invasive species projects	**LNP**	DCAL / EHS / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC / Ulster Angling Federation / BREA	2013	**IS/01**

IS/A9	Hold 1 workshop each year to train relevant stakeholders to manage the threat from invasive species	**LNP**	EHS / LNAC / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2013	**IS/02**
IS/A10	Ensure that all policies associated with the assessment of activities proposed within or adjacent to designated SPAs / SACs in the Lough Neagh Wetlands include a requirement to screen for the likely significant impact caused by the activity becoming a pathway or vector for invasive non-native species	**EHS**	DARD / DCAL / Forest Service / LNAC / LNP / CBC	2013	**IS/03**
IS/A11	Ensure that all new plans for developments incorporate the precautionary principal to ensure non-native invasive species are not introduced	**LNAC**	EHS / LNAC / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC	2013	**IS/03**
IS/A12	Write 6 articles (1 per year) to promote responsible ownership as part of the legitimate trade in non-native species, as a means of minimizing the risk and subsequent threat posed by irresponsible keeping and release of non-native invasive species into the wild. Also promote the threat from invasive species to biodiversity, and the health risks associated with giant hogweed, and associated legislation which prohibits the introduction and spread of invasive species	**LNAC**	EHS / LNP / MDC / CDC / D&STBC / CBC / LCC / ABC / BCC / BREA	2013	**IS/03**

7 . Getting Involved – How you can make a difference

Local biodiversity can be conserved and protected by taking many small steps. The following pages outline some of the most productive steps that you can take locally.

7.1 Getting involved in Planning

The planning process encourages people with an interest in a proposed development to comment on applications. You can help to protect and enhance your local biodiversity by influencing planning decisions in your area.

Finding out about planning applications

There are a number of ways to find out about the planning applications in your area:

- notices posted at the site of the proposed development
- advertisements in the local paper
- neighbours or adjacent landowners will be notified and planning consultees will be informed
- files at your local divisional planning office
- the Planning Service website.

Applications are listed by Council area according to the schedules for discussion at Council planning committees. Once a planning application has been announced, interested parties have to submit their responses before a deadline that will be a minimum of 14 days.

Different types of planning application

A planning application can be ‘full’ or ‘outline’. Full planning applications include every detail needed for the Planning Service to decide whether the proposal can go ahead. Outline applications need contain only enough information for the Planning Service to decide whether the principle and broad type of development is acceptable although the Planning Service may request further details. If an outline application is approved, then the applicant must submit a ‘reserved matters’ application that addresses all the outstanding details, such as visual appearance, servicing and landscaping. This must also be approved before development can start.

The differences between these types of planning application can affect the scope of your comments. For example, if you missed an opportunity to comment on an outline application for a development that affects a wildlife site and it was approved, the scope of any objections to the follow-up ‘reserved matters’ application can only relate to the detailed design and layout of the development, not the principle of it.

Why might you take action?

You may want to object to a proposed development as it will have an impact on the countryside and wildlife in your area. An important first step is to assess the wildlife value of the site. You may also feel that the development could be made more sympathetic to the local environment, enhancing opportunities for biodiversity. It is important that your concerns have some weight to them, as the planning officers will be influenced only by facts. Your involvement in the planning system may not be limited to objecting to potentially harmful planning applications. In some circumstances you might want to support an application, as it will be beneficial to biodiversity and be built with consideration for local wildlife.

Early involvement

It is very important to get involved at a very early stage in the planning process. Once the objection period lapses there is little or no opportunity for influencing planning decisions. However, because many applications are subject to delays it is worth contacting the Planning Officer dealing with the case if you are unsure of deadlines.

Commenting on planning applications

You must send written comments to the relevant Planning Division that will be determining the application. When submitting a written comment on an application, whether to object to or support it, you should remember the following:

● All planning applications have a name and a specific reference number that you should clearly refer to.

● Clearly state why you are objecting or supporting the development. Include the wording 'I/We object' or 'I/We support' in the text.

● You must act within a set timescale, responding before the consultation deadline (if you don't have a letter from the Planning Service with this on, you can find it out by ringing the local Planning Service Office).

● State your name, address and other contact details.

● Be concise and polite! Keep your letter short, a maximum of two sides – put any detailed comments in a supporting document if necessary.

● Include information about important habitats and wildlife at the site that you have found (see How important is your wildlife site leaflet).

● If there has already been a refusal for a similar application at the site, refer to the 'reasons for refusal' in the previous decision notice.

● It may be useful when making a submission with a nature conservation element to send copies of letters of objection to Environment and Heritage Service, Council for Nature Conservation and the Countryside and other relevant environmental organisations.

● Planners will also be particularly keen to hear your views on non-wildlife impacts of development such as traffic congestion in the local area, over-burdening of parking spaces and public transport, demands for water from local rivers or resulting pollution in rivers and streams.

If you want your concerns to be taken seriously

● Don't include hearsay or information you are unsure about.
● Don't include unsubstantiated criticism of the Planning Division or the applicant, eg personal circumstances or character.
● Don't exaggerate your claims.
● Don't include information unrelated to the development or its impacts.
● Don't make reference to the effect of the development on property values.

Some additional things to consider when responding to a planning application

The Planning Service often imposes planning conditions with planning permission agreements. Planners may welcome suggestions of conditions from interested parties, particularly if they help to make a proposal acceptable. It can be helpful to specify what conditions you think are needed in your letter to the planners.

Consider for example:
● Do the proposals retain (as far as possible) any existing wildlife features on the site like ponds and hedgerows?
● Do the proposals use native plants and trees in any landscaping designs?
● Could the development be redesigned, phased or laid out differently to reduce its effects on wildlife? Care needs to be taken in drawing them up and to be useful suggested conditions must be:

- Relevant to planning matters and to the permission
- Clear and precise
- Enforceable
- Reasonable.

Documents that may help you

When making detailed comments about a planning application you may want to refer to some of the following documents.

Area Plans

The Area Plans are a collection of documents and maps, and their function is to plan changes to local council areas over the next 10–15 years. New and proposed Area Plans can be viewed at the Planning Service website. You can use this information to compare how a planning application conforms to guidelines set out in the Area Plans. For example, if an area of open space has been zoned for housing, there is limited scope for objecting to a housing development for that site. Alternatively, if an area is identified in the plan as a Site of Local Nature Conservation Importance (SLNCI) it offers support for objections to housing or industrial development on that site.

Planning Policy Statements (PPSs)

PPSs contain policies on land use and other planning matters in Northern Ireland, and they can also be found on the Planning Service website. PPS2 contains nature conservation policies.

Environmental Impact Assessment (EIA)

For applications that are likely significantly to affect the environment, an EIA must be carried out. The purpose of an EIA is to assess the extent of the development and try to reduce the negative impacts that it will have. Where one must be carried out, a report on the EIA (usually referred to as the Environmental Statement (ES)) is submitted as part of the planning application and you should be able to read it at the local Divisional Planning Office. Copies of parts of the ES can often be requested for a small fee but if you are serious about objecting to a planning application it is better to own a complete copy so you have easy access to all the detailed information. This may be expensive and considering pooling resources with other campaigning organisations may be the best approach. You can include comments about the EIA and the Environmental Statement in your objection letter if you feel it does not comprehensively address all the development's likely impacts on the environment.

District Council planning committee meetings

Local authorities have planning committees for considering planning applications. The Planning Service consults with Councils at monthly meetings at which councils can make recommendations to the Planning Service for approval or refusal. You can ask your local councillor to represent your views at that meeting.

What happens to an application once your comments have been submitted?

Once your objection has been submitted it will be considered together with others in the decision-making process. Letters of objection are normally acknowledged within five working days of their receipt. Objectors should be kept informed about changes to an application or additional information that has been provided by the developers. However, just to be sure, it is worthwhile keeping in touch with the planning office for up to date information. The final decision may be made many months after the initial application. With each decision, the Planning Service issues a decision notice. Where the decision is to grant permission, the decision notice lists any planning conditions which may be attached to the permission. The notice may also include informatives, which are recommendations to the applicant, while conditions are mandatory. If the permission is refused, the notice will list reasons for refusal. The decision notice is not automatically sent out to every objector, but can be requested from the planning office for a small cover charge.

Appeals against a decision

If a planning application is refused, applicants can take their application to appeal. In Northern Ireland, third parties (eg the general public) cannot appeal against a planning decision. However, if you have made an objection to a

planning application, which is then refused and the developer appeals, you have the right to make further representations to this appeal, and if an inquiry is held, to appear at the inquiry to make your case. The Planning Service should get in contact with you with the details of what you have to do when the appeal is lodged. For more information about how the appeals process works look at the Planning Appeals Commission website.

Complaining to the Divisional Planning Office
If you have a complaint about the way a planning application was dealt with (rather than the nature of the proposal) you can report it to the Divisional Planning Office. Full details of the complaints procedure are available on the Planning Service website.

7.2 Getting Involved in Area Plans

What is an Area Plan?
Area Plans provide information on land-use proposals and policies that will guide planning decisions in a local area over the next 10–15 years. Area Plan maps show specific information on land allocation for a range of land uses including nature conservation. Until recently, most Area Plans covered one council area. Now most new plans cover a number of adjoining Council areas within the relevant Planning Division. The list of plans is available on the Planning Service website.

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Getting involved
The 'plan-led' system allows you to have a say in planning decisions which will affect your area. It is important to get the policies right because reference to Planning Policy Statements (PPSs) and Area Plans may support any objections you have to planning applications.

Planning consultation documents
There are several opportunities for getting involved:
● **Issues Paper** – where the Planning Service asks for views on the main issues and preliminary proposals relevant to the Area Plan
● **Draft Plan** – a complete Draft Plan is presented for comments. This gives scope to comment on proposed land-use allocations shown in the maps or the plan policies.

Issues Papers and Draft Plans subject to public consultation are on the Planning Service website. Each document gives an address for written comments and the deadline for consultation. It is important to object to proposals you feel would harm the environment, but also to write in support of aspects of the plan with which you agree. This is because measures designed to protect the environment may receive objections from developers. If there are no supporters to counter these objections, it may be more difficult for planners to justify their retention.

When a draft plan is issued, there are six weeks for objections to be received by the Planning Service. The Department sends a Rebuttal Statement to all objectors in which they either accept the comments and undertake to amend the draft plan, or rebut the objections, stating why they do not intend to alter the plan. Once the Area Plans have been adopted, they will be kept under review by the Planning Service and will periodically be replaced.

Area Plan inquiries
Most plans are the subject of a public inquiry, where objections are heard by the Planning Appeals Commission (PAC). If you have made objections to a draft plan that have not been addressed by the Planning Service in its rebuttal, then you will be invited to participate in the public inquiry. Inquiry procedures are available on the PAC website.

What can I say?
If you are responding to an Area Plan consultation, there are certain things you might want to mention.
● Has the Planning Service identified all the sites in your area important for biodiversity? If not, mention them, being as specific as you can. The key thing is that the Planning Service and EHS know about them.
● Are any sites that are important for biodiversity under threat due to proposed site allocations?
● Encourage the Planning Service to write policies encouraging developers to restore or create new habitat. If you can suggest areas where this may be possible, make sure that the Planning Service knows.
● Encourage the Planning Service to establish green (wildlife) corridors between areas important for biodiversity. Make specific suggestions if you are aware of places where this can be done.
● You could make suggestions about how the Planning Service could write policies to encourage developers to maximise the biodiversity in new schemes, for instance by building ponds.

Environmental NGOs with an interest in planning issues
Many organisations have developed significant expertise in planning issues (see Contact book Northern Ireland). A conservation organisation may be making a similar case to your own, and a co-ordinated approach to commenting on planning issues would be beneficial.

Further information
Planning Service www.planningni.gov.uk
Planning Appeals Commission www.pacni.gov.uk

7.3 How important is your wildlife site?

You can use the following information to support your comments on planning applications or Area Plans, or to lobby for site protection. Sites that are internationally and nationally important for wildlife are protected by law. As well as the nationally important sites, such as Areas of Special Scientific Interest (ASSIs), there are local designations that are recognised by the Planning Service. The area you are trying to protect may not have a specific nature conservation designation. This may be because the site has not been designated yet, or that the wildlife value of the site is not high enough to warrant its protection on conservation grounds alone.

Conservation designations
Your first step should be to find out if the site is already protected. There is a list of designated sites contained within this Local Biodiversity Action Plan (see Chapter 8.0). There are many types of conservation designations, based on a wide range of wildlife, geological, landscape and historical features. If a site is protected, or it qualifies for protection, the Planning Service will take this into account when making planning decisions. The type of designation depends on how important the site is in a local, national or international context. The higher the wildlife value, the greater the legal and statutory protection in local planning policy, UK, EU and international law. It is therefore vital to check if the land affected by the planning proposal has a conservation designation. It would also be important to know whether there is a designated site so close by that local biodiversity could be affected indirectly (eg through disturbance, light pollution, or impacts on hydrology). The main types of site protected for wildlife are listed below. The international and national sites are shown on the Environment & Heritage Service (EHS) website at www.ehsni.gov.uk/natural Local sites are mapped in the Area Plans, obtainable from the Planning Service.

- **Special Protection Area (SPA)** These are internationally important sites for birds, designated under the European Directive on the Conservation of Wild Birds (the Birds Directive).

- **Special Areas of Conservation (SAC)** The European Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive) requires the protection of these sites for threatened habitats and species.

- **Area of Special Scientific Interest (ASSI)** These are nationally important wildlife sites protected under law by the Environment (NI) Order 2002.

- **National Nature Reserve (NNR)** Reserves are set aside and managed for conservation purposes, with protection under the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985.

- **Site of Local Nature Conservation Importance (SLNCI)** and **Local Nature Reserve (LNR)** Local wildlife sites are protected from development by policies in the Area Plan. If a site has a conservation designation, it is worth finding out why the site was designated. For instance, was it because of important wintering wading bird flocks or because of a geological formation? If a planning proposal is likely to affect the reasons for designation, it is important to mention this in your letter of objection. Generally, a site with a conservation designation is easier to defend than a site with none. National sites and local sites are protected by policies in Planning Policy Statement 2 (Nature Conservation) Development which would harm those sites not permitted unless there are development reasons which outweigh the value of the site. In that instance, appropriate measures should also be taken to minimize and compensate for impacts. International sites are protected by the Conservation (Natural habitat etc) Regulations (NI) 1995 in Northern Ireland. If development is proposed which may affect an international site, an 'Article 6' assessment must be completed. If this shows that the site will be adversely affected by the development, or cannot prove that it won't be, then the development can proceed only if there are no alternative suggestions and there are 'imperative reasons of overriding public interest'. The Government also has to ensure that appropriate habitats are created in compensation.

The wildlife value of your site

If there is no designation but you are convinced that the site is valuable for wildlife, then you can lobby for its protection. If you believe this is the case, you should provide as much information on the site to EHS, to lobby for designation as an ASSI or as a SLNCI. You can also lobby for SLNCI designation by commenting on the draft Area. To achieve this, you will almost certainly need time for data collection and considerable support from local wildlife organisations and your local Biodiversity Officer. You will need clear, scientifically gathered evidence to show that the site meets the relevant criteria. You can request records held by The Centre for Environmental Data and Recording (CEDaR) at the Ulster Museum.

Surveying your site

If you decide to do your own survey, perhaps because there are no traceable records for the site, there are a few useful guidelines to follow.

- Make sure that you have the permission of the landowner if the land is not public.
- Ideally, try to visit the site several times during the year to find out when it has the most wildlife interest. Winter can be important, and spring and autumn are significant for migrating birds. Regular recording is the most valuable means of surveying.
- Always include the date, time, and location or Ordnance Survey grid reference.

- You should also document how you obtained information on any bird or other animal. For example, did you see or hear it? Was it breeding on site? Was it feeding, or did you find tracks? Soft ground, mud or snow cover can be good for detecting footprints, which along with droppings can be useful to identify mammals.
- Making a note of any unusual weather conditions could also prove useful. You should take care when surveying the site not to disturb any wildlife. Disturbing some species is a criminal offence.

The best time to survey for breeding birds or flowering plants is early spring to late summer in the early morning or evening. Try to record the following:

- Birds, especially protected species such as barn owls and kingfishers
- Butterflies and dragonflies
- Mammals, especially badgers and bats, all of which are protected species
- Reptiles and amphibians
- Ponds, streams and boggy areas, as they are normally rich in wildlife
- Native woodland, particularly with mature trees
- Big, bushy hedgerows, noting the presence of mature trees
- Different types of plants – try to find out their names, especially if you think they are rare or important plants.

Recreation and landscape

Assessing the recreational and landscape value of your wildlife site may be particularly useful. You may want to note:

- Do people use the site for jogging, cycling or walking?
- Do children use the site for playing or for educational purposes?
- How far will people have to travel to the nearest wildlife site if this one disappears?
- Will development have an adverse impact on the local landscape?

A site may be easier to protect if you can show it is important to local people as well as local wildlife.

Further information

CEDaR www.habitas.org.uk/cedar/
EHS www.ehsni.gov.uk
Planning Service www.planningni.gov.uk

7.4 Legal Protection for Biodiversity

The Wildlife Order

The Wildlife (Northern Ireland) Order 1985 (as amended 1995) is the main piece of legislation that protects all wild birds in Northern Ireland.

Birds

It is illegal to intentionally take, injure or kill any wild bird, or to take, damage or destroy an active nest or its contents. More than 60 species of bird, specified on

Schedule 1 of the Wildlife Order, are given additional protection either because they have a history of persecution or because they are particularly rare. These birds are protected in exactly the same way as other species but the penalties for anyone convicted of offences concerning them are substantially greater.
Remember that this legal protection is on the bird, **not on its habitat**. Only while a bird is nesting does the nest site receive legal protection. Consequently, the presence of nesting birds can only delay a development, not prevent it. The nest site can be destroyed quite legally (if it does not have any other form of protection) when the bird has finished breeding for that year and is no longer using the nest.

Birds' breeding seasons vary significantly, depending on the species and on weather conditions. The law does not define a bird's breeding season. The law protects all active nests regardless of the time of year. Since most nesting attempts take place in spring and early summer, it is recommended that any work that would risk destruction of active nests, such as tree felling and clearance of scrub, should be avoided between mid-March and August (earlier after a mild winter). Work outside this period runs less risk of destroying active nests, but since birds have been recorded nesting in every month of the year, care is needed at all times to avoid committing an offence.

Article 4 of the Wildlife Order states that a person is only committing a crime if he or she knows that an active nest is present and still goes ahead with the work, destroying the nest in the process (ie the damage is intentional). This wording is likely to be revised to include 'reckless' acts which result in damage or disturbance. If a nest is destroyed as the incidental result of an otherwise legal activity that could not have reasonably been avoided, particularly if the person was not aware of the nest's presence, no crime was committed. If you know that an area to be developed contains an active bird's nest, it is important to immediately inform the people carrying out the work, and most importantly to document that you have informed them of this. This way they cannot claim they did not know of the presence of the nest.

Planning permission does not override the Wildlife Order. Licences for certain works which would affect breeding birds may be obtained from the Environment & Heritage Service (EHS). These works are defined under article 18 of the Wildlife Order and include reasons for public health and safety. There is no provision in the legislation for nest removal specifically for building work, and therefore a licence may not be granted. Even minor projects that may or may not require planning permission can risk contravening the Wildlife Order. It is important to take nesting birds into consideration when planning any kind of home improvement work.

How to get the best for birds in the planning system
You can respond to Area Plan consultations or write to EHS to identify any local sites important for birds which should be designated. You can object to

proposed developments that may damage a site used by birds. However, because the Wildlife Order protects nests only during the breeding season, a condition requiring the developer to schedule works outside the breeding season is a legally acceptable way to overcome an objection based on the presence of breeding birds.

Planning conditions can be used to benefit birds. A common problem is loss of nesting sites for birds such as barn owls as outbuildings or barns are converted. Appropriate planning conditions might include incorporating an owl window into the design or erecting and maintaining owl nesting boxes if there are suitable trees close by. If you think your objection based on wildlife impacts might not result in the outright refusal of a planning application, think about how the development could be phased, redesigned or operated in a way that reduces the impact, and suggest to the local authority they secure this by a 'planning condition'. If the above options are not appropriate, and wildlife habitat is going to be lost because of the development, the permission could contain a 'condition' that requires the creation of an equal or greater area of the same habitat nearby. Other special tests need to be met regarding damage or risk of this to internationally designated sites before any habitat compensation can be contemplated.

The presence of certain other animals, such as bats and hares, and many species of plants and invertebrates, gives a higher degree of year-round legal protection to their habitat than birds. An objection to a planning application may be more likely to succeed if one of these species is present

Other Biodiversity

Wildlife law is straightforward with respect to birds as all wild birds are protected by law. With other animal groups and plants, the presence and degree of legal protection to any one species varies. It is recommend that you consult the relevant specialist organisation to find out what legal protection is given to the species you are interested in. A leaflet entitled Wildlife Law and You explains more and is available from the publications section of the Environment & Heritage Service website.

The presence of many groups of plants and animals can add weight to your case by giving a higher degree of legal protection to the land you are interested in protecting. In fact, sometimes they can help your case more than the presence of birds. This is because birds are deemed mobile and not tied to a piece of habitat except while they are nesting. In other words, if a piece of feeding area or a roost site disappears, birds are able to move elsewhere easily. However, this is considered not to be the case for plants, invertebrates, amphibians, reptiles and even some mammals. Consequently, bat roosts are protected all year, regardless of whether or not bats are using them at the time, and wetlands with smooth newts or meadows with rare orchids cannot be changed without risking the demise of that local population.

Further information
Wildlife Order (and other legislation) is available on www.ehsni.gov.uk/natural/legs/legs.shtml

7.5 Protecting hedgerows, trees and woodlands

Protecting countryside hedges

Hedgerows are an important feature of the Lough Neagh Wetlands. Most of our hedges are now 100–150 years old. As most fields are small (less than 2 ha/5 acres), the large number of field boundaries is a vital resource for wildlife. Hedges and their associated banks and ditches are the main habitat for native woodland and grassland wildlife on many lowland farms. There is no specific legislation in Northern Ireland protecting hedgerows from removal.

Cutting farm hedges may not destroy the hedge, but badly timed maintenance can damage or destroy nests in the hedge. In order to receive direct agricultural support farmers must ensure that land is managed in Good Agricultural and Environmental Condition (GAEC). According to GAEC, the removal of field boundaries is not permitted except by prior written permission from DARD. In addition, hedge cutting, coppicing or laying is not permitted between 1 March and 31 August. It is advised that countryside hedges should be cut in January or February if possible, to allow birds to eat most of the berry crop in early winter, and to nest safely in spring. The Wildlife Order does not give legal protection to hedgerows. However, it gives legal protection to the birds nesting in the hedge, and so intentional disturbance or damage to a breeding bird, its nest, eggs or young is a criminal offence. If Schedule 1 species are involved, including all birds of prey, there is a special penalty. Consequently, the presence of nesting birds cannot prevent hedgerow removal, but can delay it until after the breeding season

Protecting individual trees

The only way to give protection to a single tree or a group of trees is for the Planning Service to issue a Tree Preservation Order (TPO). A TPO can only be issued on trees that have historical, landscape or amenity value in their own right. A tree with a TPO cannot even be trimmed without the permission of the Planning Service. Unlimited fines can be issued to anyone in breach of a TPO. A TPO does not give full protection to a woodland that falls within forestry regulations. An information leaflet on TPOs is available from the Planning Service website. If a tree is felled despite a TPO, the Planning Service can insist on an appropriate replacement close by. The Wildlife Order does not offer legal protection to a tree. Since the Order protects active nests of all wild birds, it should prevent felling and many types of tree surgery during the nesting season, if the tree is being used by nesting birds. If a tree is due to be felled, the presence of nesting birds can only delay the work, not prevent it. If the tree in question is old and contains hollows large enough to be suitable for bats, it is

worth establishing whether a bat roost exists. Bat roosts are fully protected all year round, and provide protection for the tree as long as the bats are around. Please note that a special licence is required to inspect bat roosts – contact a local bat group for assistance.

Trees and public safety

Safety concerns can take priority. Dead, dying or dangerous branches or trees that pose an immediate danger can be legally removed if there is no other reasonable solution, such as temporary closure of a path, regardless of birds nesting. Sadly, from a wildlife point of view, it is often the oldest trees full of dead wood, fungi and holes that are seen as dangerous. The Roads Service can carry out or order hedge trimming or removal if there is an immediate safety hazard. Information on the maintenance of roadside hedges can be found on the Road Service website. Clearance of trackside vegetation by rail companies is normally carried out to maintain the safety of railways.

Woodland

Ancient woodland (land that has been continuously wooded since at least 1600) is particularly scarce and is found only in isolated fragments. These are of the highest conservation and historical value. Ancient woodland is not a statutory designation, and it does not afford the wood any legal protection, although some woodland may be declared as Areas of Special Scientific Interest. However, it is worth finding out if a woodland you are trying to protect is ancient, as this can add weight to your case. The Woodland Trust has an Ancient Woodland Inventory as a first step towards safeguarding these sites. If you know of a threat to ancient woodland, please contact the Woodland Trust for advice on how to protect the site. Some ancient woodlands may be protected as Sites of Local Nature Conservation Importance (SLCNIs). Check with the Environment & Heritage Service (EHS) or Planning Service to see whether this is the case. If they are designated, the Area Plan should contain policies to safeguard them. If not, and time allows, it may be possible to build a case that demonstrates the woodland meets the criteria for designation as a local wildlife site.

While we have some remnants of ancient woodland, and a percentage of our woodland resource is managed for wildlife, it must be remembered that many woodlands were planted as a crop. The long crop rotation (some species can take 50 years to mature to felling age) sometimes makes people forget that when the crop is ready to be harvested, the trees will be cut down. Since felling and replanting of woodland is the best time to influence the future wildlife value of the site, it is worth discussing your concerns or suggestions about a woodland with the Forest Service (DARD) or conservation agencies such as the Woodland Trust.

Northern Ireland remains the only country in the UK where felling licences are not employed to control the felling of woodland. Regrettably, TPOs do not offer a foolproof system for protecting woodlands. When planning permission is given for a development, felling or clearing of trees is exempt from forestry controls. As a

result, a planning approval can allow the woodland to be cleared without the need for a felling licence or other approval. This exemption also applies to any use of land that is 'permitted development', that is certain development that can proceed with little or no control over the impact on trees or wildlife.

Planning conditions

Planning approvals often have conditions attached. If it is not possible to prevent a development from going ahead, you might be able to persuade the Planning Service to approve the plan on condition that certain trees or an area of woodland is retained. These proposals need to be realistic, as they can only be considered if the trees do not occupy the area the building is intended to go on. Planning permission granted on an area of woodland does not give permission to clear the vegetation on the site while birds are nesting. The Wildlife Order overrides planning regulations.

Woodland in the Wrong Place?

Woodlands can be wonderful for wildlife, but they can also be quite barren, depending on the species composition and management of the woodland. If woodland is planted in the wrong place, it can ruin other valuable wildlife habitats. For instance, many heaths and bogs, habitats of high conservation value, have been lost in the past to development and afforestation. Removal of conifer plantations of low conservation value to restore heathland is a positive conservation measure, which will have long-term benefits for a threatened habitat and its rare wildlife.

Many woodland management techniques look dramatic, and it is easy to understand that people are concerned for the wood. You should bear in mind that sometimes felling and other tree work is carried out for beneficial reasons. Coppicing is an old management technique in which trees are cut to ground level, allowing them to re-grow from the base. This opens up woodland areas temporarily, allowing flowers and other wildlife to flourish, as well as providing a sustainable supply of wood. Pollarded trees are cut regularly at about 2 m (6 ft), allowing them to re-grow from this point. The technique is often used on trees such as willows and poplars, often to extend the life of the tree. As a young wood grows and matures, the initial planting density becomes too great and the trees need to be thinned. Removing a proportion of trees, leaves those that remain more room to grow. Over the years, there has been a lot of inappropriate planting of non-native trees, even within ancient woodlands. Removing these will allow the wood to develop a more native character, which suits our wildlife much better.

Further information
Bat Group www.bats-ni.org.uk
Forest Service www.forestserviceni.gov.uk
Planning Service www.planningni.gov.uk (TPO leaflets under FAQs)
Roads Service www.roadsni.gov.uk (see FAQ section)
Woodland Trust www.woodland-trust.org.uk and www.woodsunderthreat.info for information on woods and planning.

8. Designated Sites in the Lough Neagh Wetlands

Site Name	Grid Ref	Landscape Character Area	p.RAMSAR	RAMSAR	ASSI	pSPA	SAC	LNR	NNR	NR	SLNCI
Lough Neagh/Beg	H J 01 80			YES	YES	YES		YES	YES	YES	
Brookend	H 94 72	LCA 48			YES					YES	
Drumcrow	H 868 625	LCA 64			YES						
Lough Beg	H 98 95	LCA 52		YES	YES	YES			YES		
Lough Neagh (and Islands ?)	J 02 80			YES	YES	YES			YES		
Montiaghs Moss	J 09 66	LCA 62			YES		YES				
Peatlands Park	H 90 61	LCA 64			YES		YES				
Portmore Lough	J 11 69	LCA 63			YES						
Rea's Wood	J 14 85	LCA 61			YES		YES		YES		
Toome	H 98 91	LCA 61			YES						
Randalstown Forest	J 09 88	LCA 61			YES				YES		
Farrs Bay	J 09 87	LCA 61			YES				YES		
Oxford Island	J 04 61	LCA 64			YES				YES		
Annagarrif	H 905 610	LCA 64			YES				YES		
Mulenakill	H 893 610	LCA 64			YES				YES		
Aghnaddaragh	J 130 730	LCA 62			YES						
Black Lough	C931 045	LCA 52	YES								YES
Charley's Hill	H926 957	LCA 52									YES
Curdian	C905 030	LCA 52									YES
Drumlamph (Annaghaboggy)	H925 967	LCA 52									YES
Drumlamph Road	H939 970	LCA 52									YES
Hollyhill Wood	H933 979	LCA 52									YES

Lough Beg (Newferry)	H986 980	LCA 52			YES
Moneystaghan Bog	C946 009	LCA 52			YES
The Island (Dreenan) S Bog	C910 014	LCA 52			YES
Lough Beg (Mullanakil)	H982 978	LCA 52			YES
McCallen's Town	C956 017	LCA 52			YES
Stuart Hall	H 891 720	LCA 48			YES
Killycolpy	H 823 717	LCA 48			YES
Rusky	H 902 799	LCA 48			YES
Gort Moss	H 949 790	LCA 48			YES
Moyagoney Bog	C937 063	LCA 52			YES
Moyola/Waterfoot	H963 896	LCA 52			YES
The Island (Dreenan) N Bog	C913 029	LCA 52			YES
Tyranee	C969 049	LCA 52			YES
Cottage Wood	H997 928	LCA 52			YES
Coalisland Sand Pit	H 851667	LCA 64			YES
Annaghnaboe	H 884647	LCA 64			YES
Derryvane South	H 995580	LCA 64			YES
Derryvane North	H 991586	LCA 64			YES
Foy More	H 972586	LCA 64			YES
Craigavon Lake North	J 050 580	LCA 64			YES
Derrykeeran	H 967598	LCA 64			YES
Ballymacombs More	H 98 99	LCA 52	YES		
Derryvore	J 01 56	LCA 64	YES		
Culnafay	H 99 98	LCA 52	YES		

9. Biodiversity Partnership

The people of the Lough Neagh Wetlands are the most important link within the Lough Neagh Wetlands Biodiversity Partnership, the individuals and interest groups of which there are too many to mention.

The Species and Habitat Action Plans will be delivered by the Biodiversity Partnership, with a number of organisations identified to help take the lead give support to the delivery of action.

The following list it intended to clarify the names of the partner organisations listed in the Species and Habitat Action Plans.

ABC - Antrim Borough Council

BASC – British Association for Shooting & Conservation

BBC – Ballymena Borough Council

BREA – Ballinderry River Enhancement Association

Bulrush – Bulrush Horticultural Ltd

CBC - Craigavon Borough Council

CDC – Cookstown District Council

CVNI – Conservation Volunteers Northern Ireland

DCAL – Department of Culture, Arts and Leisure (Inland Fisheries Branch)

DARD – Department of Agriculture & Rural Development

D&STBC – Dungannon & South Tyrone Borough Council

EHS – Environment & Heritage Service

Forest Service – Forest Service of Northern Ireland (Agency within DARD)

FWAG – Farming and Wildlife Advisory Group

IWSSG – Irish Whooper Swan Study Group

LCC - Lisburn City Council

LNAC – Lough Neagh Advisory Committee

LNP – Lough Neagh Partnership

MDC – Magherafelt District Council#

NIW – Northern Ireland Water

Planning Service – Northern Ireland Planning Service

QPANI – Quarry Products Association Northern Ireland

Rivers Agency – Rivers Agency (Agency within DARD)

RSPB – Royal Society for the Protection of Birds

Shaftesbury Estate – The Shaftesbury Estate of Lough Neagh Ltd

Ulster Angling Federation

UWT – Ulster Wildlife Trust

Woodland Trust

WWF – World Wide Fund for Nature

Wildfowl & Wetlands Trust

10. Costs associated with the delivery of the Lough Neagh Wetlands Local Biodiversity Action Plan

A paper will appear here shortly identifying which of the actions in each of the plans have been delivered already, those that will be delivered in the short term and those actions which may be more aspirational.

For those actions considered to be more aspirational, additional funding and support will be required for the successful delivery of these. Potential funding sources will be identified against each case. This approach will help cost the Lough Neagh Wetlands Local Biodiversity Action Plan, and will help identify where funds are currently being directed.