

Northern Ireland Habitat Action Plan
Purple Moor-grass and Rush Pastures
March 2005

1. Current Status

1.1 Biological status

- 1.1.1 Purple moor-grass and rush pastures occur on poorly drained, usually acidic soils in lowland areas of high rainfall in Western Europe. In Britain and Ireland, this habitat is found mainly in the west, and Northern Ireland contains a large proportion of both the UK and European resource. The habitat is found fragmented in farmland as part parcels, often as wet hollows or field corners, and also as unenclosed larger areas. Much of the Northern Ireland resource is found in County Fermanagh on poorly drained drumlin soils around Upper Lough Erne and on the edges of the Antrim Plateau in a more upland environment. The vegetation grades into “other” agricultural grassland (as defined in the Northern Ireland Countryside Survey (Cooper & McCann, 2001)) at low elevation and into poor fen and wet heath at higher elevation.
- 1.1.2 Purple moor-grass and rush pastures in Northern Ireland encompass a range of plant communities that broadly reflect a number of those communities described in the National Vegetation Classification (NVC) of Great Britain (Rodwell, 1991a) where descriptions and codes are given to associations of plants that are characteristic of particular environmental and management conditions. In Northern Ireland, the two main NVC communities which make up purple moor-grass and rush pasture are species-rich variants of M24 *Molinia caerulea* – *Cirsium dissectum* fen meadow, often found on shallow peaty soils, and M23 *Juncus effusus/acutiflorus* – *Galium palustre* community “rush pasture”, usually found on mineral soils. However, because of biogeographical differences, M23 and M24 communities in Northern Ireland differ significantly from their British counterparts in that they include a range of species e.g. devil’s-bit scabious *Succisa pratensis*, that are not common in the type in Britain. Other NVC types of purple moor-grass and rush pasture within the UK include: M22 *Juncus subnodulosus* – *Cirsium palustre* fen meadow, M25 *Molinia caerulea* – *Potentilla erecta* mire and M26 *Molinia caerulea* – *Crepis paludosa* mire all of which are less commonly found in Northern Ireland. Not all examples of the relevant NVC communities should necessarily be included in the definition. For example, two of the main constituent NVC communities (M23 and M25) can occur as very species-poor variants, and these should generally be excluded from the habitat (Corbett, 2003). These species-poor communities commonly exist as transitions to other habitats with M23 grading to marshy grassland (MG10 *Holcus lanatus* – *Juncus effusus*) and M25 grading to wet heath (M15 *Scirpus cespitosus* – *Erica tetralix* wet heath or M16 *Erica tetralix* – *Sphagnum compactum* wet heath) (Rodwell, 1991).
- 1.1.3 Purple moor-grass and rush pasture in Northern Ireland is difficult to define as it comprises a wide range of species assemblages determined by a range of local factors including soil condition, aspect and management practices. 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. The purple

moor-grass and rush pastures in Northern Ireland are defined, for the purposes of this plan, as being grasslands which:-

- are dominated by purple moor-grass *Molinia caerulea* and/or tall rushes, predominantly Sharp-flowered rush *Juncus acutiflorus*.
- include a suite of characteristic plant species, which vary according to the dominants – for example, species associated with *Molinia*-rich pastures often include devil's-bit scabious, meadow thistle *Cirsium dissectum* and tormentil *Potentilla erecta*, whilst rush-dominated sites may include marsh bedstraw *Galium palustre* and wild angelica *Angelica sylvestris*.
- have < 25% cover of scrub or dwarf shrub.

There is a need to distinguish the species-rich priority habitat, outlined above, from species-poor *Molinia* grassland and rush pastures which are not included in this HAP. These include species-poor modified wet grasslands, characterised by Yorkshire fog *Holcus lanatus* and soft-rush *Juncus effusus*, and species-poor acid flushes dominated by sharp-flowered rush and *Sphagnum* spp. mosses.

- 1.1.4 Although species assemblages will differ between species-rich *Molinia*-dominated pastures and rush-dominated pastures, broadly speaking, characteristic species are: devil's-bit scabious, meadow thistle, glaucous sedge *Carex flacca*, carnation sedge *C. panicea*, flea sedge *C. pulicaris*, tawny sedge *C. hostiana*, cross-leaved heath *Erica tetralix*, quaking grass *Briza media*, lesser spearwort *Ranunculus flammula*, lesser butterfly orchid *Plantanthera bifolia*, orchids of the *Dactylorhiza* genus, marsh hawk's-beard *Crepis paludosa*, primrose *Primula vulgaris*, watermint *Mentha aquatica*, ragged robin *Lychnis flos-cuculi*, marsh pennywort *Hydrocotyle vulgaris*, creeping jenny *Lysimachia nummularia*, marsh bedstraw, wild angelica and the mosses *Breutelia chrysocoma* and *Ctenidium molluscum*.
- 1.1.5 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.
- 1.1.6 Purple moor-grass and rush pastures are a priority for nature conservation because they are highly susceptible to agricultural modification and reclamation throughout their range (UK Biodiversity Steering Group, 1995). Throughout the UK, it is estimated that there is approximately 56,000 ha of the habitat. Although there are no exact figures for loss of the habitat, in Devon and Cornwall, where the habitat is known as Culm Grassland, only 8% of that present in 1900 remains, with a staggering 62% of sites and 48% of the total area being lost between 1984 and 1991. It is thought that the total extent of this habitat in the UK is considerably more than survives in the rest of Europe, with the possible exception of the Republic of Ireland.
- 1.1.7 Northern Ireland holds responsibility for a large portion of the European resource and is also thought to contain about a third (18,700 ha) of the estimated UK total. This equates to approximately 1.2% of the total land area with slightly over half this amount occurring within the Fermanagh District. Elsewhere, however, the resource is widely scattered.

- 1.1.8 The distribution and condition of Northern Ireland's purple moor-grass and rush pastures have been assessed through a combination of commissioned research and surveys carried out by Environment and Heritage Service (EHS) staff (Eakin, 1994). Estimates of the extent and relative abundance of fen meadow and species-rich wet grassland (broadly analogous to purple moor-grass and rush pastures) and the relative abundance of high quality habitat within these categories were produced.
- 1.1.9 In Northern Ireland, the best estimate of the area of purple moor-grass and rush pasture is based on the Northern Ireland Countryside Survey (NICS) which conducted investigations into extensive areas of Northern Ireland between 1987 and 1992 (Cooper & Murray, 1987, 1987a; Cooper *et al.*, 1988). The NICS provides the baseline for an assessment of habitat change over time and originally estimated a total of around 26,000 ha of what was defined as 'fen meadow' and 'species-rich wet grassland' (Murray *et al.*, 1992). The Northern Ireland Countryside Survey was repeated in 2000 (NICS 2000) and showed a rapid decline in fen meadow and species-rich wet grassland between 1991 and 1998. The comparable figure from NICS 2000 is an estimate of 18,919 ha. which provides the best estimate of the resource at March 2004. This equates to an overall net loss of about a third of the Northern Ireland purple moor-grass and rush pastures resource between of 1991 and 1998.
- 1.1.10 In Northern Ireland, the greatest losses of the habitat have resulted from conversion to agricultural grasslands with more agriculturally preferred species and from conversion to new areas of conifer plantation. There have been smaller losses to: broadleaf semi-natural woodland, dense scrub, scattered scrub, bent/fescue grassland, wet heath mosaic, dry bog and poor fen. However, this net loss (see 1.1.9 above) is not a reflection of a simple uni-directional change. NICS 2000 indicates that there were significant areas where purple moor-grass and rush pasture has been created, most significantly from other agricultural grassland types e.g. wet heath mosaic, fen and water inundation vegetation. There were smaller gains from broadleaf semi-natural woodland, dense and scattered scrub, coniferous plantation, tall herb/ruderal and bent/fescue grassland. However, it is likely that much of this 'gained' habitat is of poor quality.
- 1.1.11 It is evident that agricultural policy, in particular grant aid for conservation-directed farming practices, is an important factor in the management of the purple moor-grass and rush pasture resource. The Department of Agriculture and Rural Development (DARD) recognises that the key to the survival of species-rich grasslands is sensitive grazing management and the application of little or no fertilisers (DARD, 2001). To date, approximately 23,500 ha of rough moorland grazing has been brought into agri-environment schemes. How much of this equates to the habitat covered by this plan is unknown.
- 1.1.12 The conservation value of purple moor-grass and rush pastures can be determined by the condition of the habitat. Favourable condition is defined by setting targets or target ranges for a series of different attributes. These are components or characteristics of the vegetation that are relatively easy to measure, but which are reliable indicators of the "health" of the habitat. For purple moor-grass and rush pastures these include: abundance and diversity of sedge species; the presence or absence of indicator species e.g. 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.

- 1.1.13 This plan applies to all areas of purple moor-grass and rush pastures in Northern Ireland that maintain a range of characteristic species, but excludes more impoverished forms of the habitat – see definition in 1.1.3. Its conservation interest may chiefly be addressed by maintenance of existing good quality habitat with habitat creation being of lesser importance due to the relatively large coverage in Northern Ireland. For many of the Areas of Special Scientific Interest (ASSIs) in Northern Ireland, purple moor-grass and rush pasture has not been a primary selection feature e.g. Lough Neagh ASSI and many of the fen ASSIs, where the habitat often forms complex mosaics with fen vegetation and swamp communities. In total, the area of habitat protected by ASSIs is 2242.3 ha, which equates to about 13% of the total Northern Ireland resource. This ASSI network includes a variety of sites from across Northern Ireland, including several very small sites, in addition to a number of extensive areas of the habitat, most notably around the large loughs and West Fermanagh Scarplands ASSI/cSAC.
- 1.1.14 In addition to statutory sites, the Ulster Wildlife Trust maintains three sites which support 102 ha of the habitat. Purple moor-grass and rush pastures also occur as a minor constituent of seven National Trust properties.

1.2 Links with other action plans

- 1.2.1 This action plan identifies specific targets and actions required to deliver Northern Ireland's contribution to the UK purple moor-grass and rush pastures habitat action plan (UK Biodiversity Steering Group, 1998).
- 1.2.2 Purple moor-grass and rush pastures may be associated with other habitats depending on land management, soil, edaphic, climatic, hydrological and topographic factors. Associated priority habitats include lowland dry acid grassland, lowland meadow, calcareous grassland, fens and coastal and floodplain grazing marsh. The requirements of these habitats should be taken into account during the implementation of this plan.
- 1.2.3 Purple moor-grass and rush pastures are important for a number of UK priority species identified as part of the UK Biodiversity Action Plan (BAP) programme. With relevance to Northern Ireland, these include the vascular plant Irish lady's-tresses orchid *Spiranthes romanzoffiana*, birds; skylark *Alauda arvensis* and reed bunting *Emberiza schoeniclus*, and lepidoptera and the marsh fritillary butterfly *Euphydryas aurinia*. The requirements of these species should be taken into account during the implementation of this plan.
- 1.2.4 In addition, purple moor-grass and rush pastures are important for a range of Northern Ireland priority species including curlew *Numenius arquata*, Irish hare *Lepus timidus hibernicus* the ground beetle *Carabus clatratus* and blue-eyed grass *Sysyrinchium bermudianum*.
- 1.2.5 An all-Ireland Species Action Plan has been published for the Irish hare.

- 1.2.6 Relevant published Northern Ireland Species Action Plans include the Irish hare, curlew *Numenius arquata*, redshank *Tringa totanus*, lapwing *Vanellus vanellus*, marsh fritillary *Eurodryas aurinia*, and blue-eyed grass *Sisyrinchium bermudiana*.

2. Current Factors Affecting the Habitat

- 2.1** Purple moor-grass and rush pastures are dependent upon the following conditions: wet or waterlogged soils, low nutrient levels and intermediate levels of disturbance e.g. grazing or cropping. Factors which alter these conditions, or which lead more directly to the destruction of the habitat, are described below.
- 2.1.1 Agricultural improvement – drainage, cultivation, fertiliser and pesticide application, ploughing and re-seeding have all been major causes of habitat loss and continue to be the most significant threat to purple moor-grass and rush pastures. Although purple moor-grass and rush pastures are highly susceptible to agricultural modification and reclamation, the process is more labour intensive and costly than for certain other grassland types because the land generally requires to be drained.
- 2.2.2 Grazing – low levels of grazing are necessary to maintain the habitat by preserving a relatively low nutrient status and by keeping competitive species in check. Overgrazing results in a reduction in species diversity as stress-tolerant species dominate. Supplementary stock feeding can lead to eutrophication as well as localised poaching. Poaching is a particular concern in purple moor-grass and rush pasture habitats where the high soil moisture levels results in the soil profile being particularly sensitive to hoof damage.
- 2.2.3 Burning – small-scale periodic winter burning can be beneficial for maintaining the quality of the habitat by increasing species diversity and keeping more competitive species in check. Too frequent burning, however, results in a loss of species diversity by allowing ruderals to dominate. Burning of the whole site at once can be harmful as it results in a loss of habitat structure and does not provide refuge areas for vertebrates and invertebrates.
- 2.2.4 Abandonment – 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.
- 2.2.5 Afforestation – particularly by commercial coniferous plantations has resulted in significant loss of this habitat. Land dominated by purple moor-grass and rush pasture tends to be difficult to improve agriculturally and its commercial value is therefore relatively low. These factors together with the fast growth rates which conifer species such as Sitka spruce can attain on these soils have resulted in a significant loss of this habitat to afforestation.
- 2.2.6 Infilling – purple moor-grass and rush pastures associated with wet corners and depressions are often in-filled to create level fields and increase the area suitable for cultivation.

- 2.2.7 Habitat fragmentation – reduction of stand size and separation of unimproved grassland parcels results in reduced opportunities for desirable species to colonise relatively impoverished grasslands or areas where changes in management, such as reduction in fertiliser application, would otherwise permit re-establishment of desirable grassland communities. Fragmentation and decrease in parcel size further increases the chances and severity of piecemeal habitat losses and species extinctions in the remnant areas.
- 2.2.8 Planning developments – the perception that unimproved grassland is of little value because of its low agricultural productivity may result in its preferential development for lone houses in the wider countryside or for housing developments on the periphery of existing settlements.
- 2.2.9 Airborne pollution – acidification and nitrogen enrichment from atmospheric deposition could potentially lead to vegetation change.
- 2.2.10 Climate change – summary predictions for temperature and sea level rise as a result of global warming have been modelled by the MONARCH project (Harrison *et al*, 2001). These models indicate a much smaller impact in Ireland than in Britain. Climate change could potentially result in changes in the species composition and diversity of purple moor-grass and rush pasture communities in Northern Ireland and associated invertebrate populations.

3. Current Action

3.1 Legal status

- 3.1.1 Statutory site designation plays an important part in the conservation of purple moor-grass and rush pastures. In 1992, the EC adopted the *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*, known as the ‘Habitats Directive’. The Habitats Directive requires member states to designate and manage Special Areas of Conservation (SACs) for selected habitats (listed in Annex 1 of the Directive) and species (listed in Annex 2). A small proportion of these habitats and species, which are considered to be most in need of conservation at a European level, are given priority status. Purple moor-grass and rush pastures includes one Annex 1 habitat; *Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)*. The UK has listed 34 candidate Special Area of Conservation (cSACs) for their *Molinia* meadows. In Northern Ireland two cSACs (332 ha), West Fermanagh Scarplands and Lough Melvin, identified *Molinia* meadows as one of the cSAC selection features.
- 3.1.2 The *Conservation (Nature Habitats, etc.) Regulations (Northern Ireland) 1995* and *The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2004* (The Habitat Regulations) require competent authorities, when considering a plan or project not directly connected with the management of a European site e.g. an SAC or SPA, to undertake an Article 6 assessment. This assessment will determine if the plan or project, either alone or in combination with other plans or projects, is likely to have a significant impact on the site. In the case of a negative or undetermined assessment, a competent authority may only agree to the

plan or project where it is satisfied that there are no alternative solutions and that the plan or project must be carried out for imperative reasons of overriding public interest, which may be of a social or economic nature. However, if the site hosts a priority habitat or species then the plan or project may only be approved for: a) reasons of human health, public safety, beneficial consequences of primary importance to the environment, or b) other reasons which the Department (DOE), having considered the opinion of the European Commission (EC), determines are imperative reasons of overriding public interest.

- 3.1.3 Under the terms of the Habitat Regulations, the above Article 6 assessment by the competent authority is required for plans or projects e.g. land reclamation, which are outside European sites but may still have an impact on the site.
- 3.1.4 Guidance to help competent authorities and others to interpret the Habitat Regulations has been published (EHS, 2002).
- 3.1.5 Guidance on the completion of an Article 6 assessment has also been published (European Commission, 2000)
- 3.1.6 At 31st March 2004, 22 of the ASSIs designated under the *Nature Conservation and Amenity Lands (Northern Ireland) Order 1985*, identified purple moor-grass and rush pastures as a selection feature. Further declarations of sites by the Department of the Environment under the *Environment (Northern Ireland) Order 2002* will follow as sites of appropriate conservation status are identified.
- 3.1.7 In addition to statutory sites, the Ulster Wildlife Trust maintains three sites which support 102 ha of the habitat. Purple moor-grass and rush pastures also occur as a minor constituent of seven National Trust properties (Davidson, 2003).
- 3.1.8 In 2000, the Northern Ireland Biodiversity Group (NIBG) made its Recommendations to Government (NIBG, 2000). These were largely accepted by the Northern Ireland Executive in 2002, with the publication of the *Northern Ireland Biodiversity Strategy* (DOE, 2002). *The Regional Development Strategy 2025* (DRD, 2001) is underpinned by the sustainable approach and includes Strategic Planning Guidelines (SPGs) on the protection of the environment which brings together a comprehensive collection of natural heritage and built heritage strategic guidance that includes sustaining and enhancing biodiversity.
- 3.1.9 Regional Planning and Transportation Division within DRD is responsible for co-ordinating the implementation of the *Regional Development Strategy (RDS) for Northern Ireland 2025* (DRD, 2001). The RDS contains a Spatial Development Strategy and related Strategic Planning Guidelines (SPGs). The emphasis in the SPGs is on competitiveness, sustainable development and tackling social exclusion and division. Operational policies to give effect to the SPGs are contained in Planning Policy Statements (PPSs). Some of these policies have a direct or indirect bearing on the prevention of adverse impacts on priority habitats and species.
- 3.1.10 *PPS2 Planning and Nature Conservation* (DOE, 1997) (under review) contains planning policy for the hierarchy of sites of nature conservation importance. It also addresses trees and woodlands, protection of species and peatlands.

- 3.1.11 *PPSI4 Sustainable Development in the Countryside* is due to be published by the end of 2005.
- 3.1.12 Site protection policies are included in Development Plans. Sites of Local Nature Conservation Importance (SLNCIs) are being identified for consideration by Planning Service for inclusion in Development Plans. Where such sites are confirmed in adopted plans, specific planning policies will be applied to development proposals on those sites. The SLNCI network will include a significant number of purple moor-grass and rush pasture sites that are not within areas designated as ASSIs or NNRs.
- 3.1.13 Semi-natural areas, which are likely to be of particular environmental importance, are protected through the *Environmental Impact Assessment (Uncultivated Land and Semi-Natural Areas) Regulations (Northern Ireland) 2001*. These regulations, which came into operation in Northern Ireland in February 2002, are administered by DARD and seek to ensure that agricultural development of uncultivated land or semi-natural areas must first be assessed for environmental significance. This would also include cases where the land-use changes are aimed at restoring or enhancing purple moor-grass and rush pasture.
- 3.1.14 *The Environmental Impact Assessment (Forestry) Regulations (Northern Ireland) 2000* require anyone who wishes to carry out a project including afforestation, deforestation, forest road works or forest quarry works that is likely to have significant effects on the environment to obtain consent for the work from the Department of Agriculture and Rural Development.
- 3.2.15 The UK Woodland Assurance Standard (UKWAS Steering Group, 2000), a voluntary certification standard, requires that valuable semi-natural habitats are being treated in a manner that does not lead to further loss of biodiversity. Forest Service is certified against this standard and is undertaking a survey of its lands to identify valuable semi-natural habitats.
- 3.2.16 Forest Service acquisition policy is outlined in *Afforestation – the DANI Statement on Environmental Policy* (DANI, 1993). It states that there should be a presumption against afforestation of botanically rich sites, which have undergone little disturbance for many years.
- 3.1.17 Certain large-scale development projects and developments likely to have a significant impact may require an Environmental Impact Assessment (EIA) under the *Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 1999*. EIA is mandatory for those types of projects listed in Schedule 1 to the Regulations and is also required for those types of projects, listed and described in Schedule 2 to the Regulations, which is either wholly or in part in a 'sensitive area' or meet or exceeds one of the relevant thresholds and is likely to have significant environmental effects. Sensitive areas include designated Areas of Special Scientific Interest (ASSIs), including Ramsar sites, a designated Area of Outstanding Natural Beauty (AONB), a designated National Park, World Heritage Site, Scheduled Historic Monument or European Site as defined in regulation 9 of the *Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995*. EIAs assist Planning Service and EHS in reaching decisions regarding environmental impacts of proposed developments.

3.2 Management, research and guidance

- 3.2.1 EHS, as part of the requirements of the Habitats Directive, has prepared conservation objectives for those sites submitted as cSACs. Common standards monitoring protocols are also being established across the UK to assess the condition of purple moor-grass and rush pastures within designated sites. However, standards for assessing favourable condition of the habitat in the wider countryside have not yet been agreed.
- 3.2.2 Where purple moor-grass and rush pastures occur in ASSIs it is protected by control of potentially damaging operations and by the application of targeted conservation objectives. Management/rehabilitation plans exist for NNRs owned or leased by EHS. Small areas of purple moor-grass and rush pastures are present on the National Trust properties of Crom, Glenarm, Giant's Causeway (Aird), Florence Court, Castle Coole, Argory and Grangemore, but none of these sites are of major importance for the resource in Northern Ireland (Davidson, 2003). Advice on undesignated areas will depend on detection of the habitat. It is believed that only a very small area of this habitat exists on undesignated land within Forest Service estate, although this will be verified in a survey currently underway, to identify and locate priority habitats within all Forest Management Units.
- 3.2.3 The Management of Sensitive Sites scheme (MOSS), launched in 2002 by EHS, is a voluntary scheme designed to ensure the positive management of ASSIs and the site features, such as purple moor-grass and rush pastures. Under the scheme, landowners can receive payment for carrying out conservation work within the framework of a written agreement. MOSS covers issues such as agricultural improvement, grazing and control of invasive scrub species. One-off payments for works such as fencing and scrub clearance to assist grazing can be made.
- 3.2.4 DARD, through its Countryside Management Branch (CMB), has developed a series of agri-environment schemes including the Environmentally Sensitive Areas (ESA) Scheme (revised in 2000) and the Countryside Management Scheme (CMS). A further revision to both the ESA and CMS has recently been approved under the current Northern Ireland Rural Development Programme (2000-2006). to the current Northern Ireland Rural Development Programme (2000-2006). Their objective is to protect and enhance semi-natural habitats by encouraging more sensitive management practices. Both these schemes have similar management provisions, are voluntary and apply to the whole farm.
- 3.2.5 The designation of ESAs commenced in 1988 and today there are five ESAs in Northern Ireland. DARD has determined a number of priority habitats which, if they occur on the farm, must be brought under agreement and managed according to relevant prescriptions determined by DARD. The priority habitats most closely associated with purple moor-grass and rush pastures are "species-rich wet grassland" (in ESA, New ESA & CMS) and "fen meadow" (in New ESA and CMS only). A sample of these habitats are under long-term monitoring by QUB's Agri-environment Monitoring Unit (QUB, 2004a). There are currently 2,612 ha of these habitats managed under agri-environment schemes. The West Fermanagh and Erne Lakeland ESA constitutes the most important current initiative to conserve the purple moor-grass and rush pasture habitat (UK Biodiversity Steering Group, 1995).

- 3.2.6 The Habitat Improvement Scheme (HIS) aims to help farmers protect, enhance and establish habitats which are considered to have major conservation value. This is achieved by taking land out of agricultural production or by entering into a 10 year agreement which involves extensive grazing based on non-application of fertilizers and pesticides to the land. No new applications for the HIS are being accepted as the scheme closed in mid-1999. The scheme has been replaced by the Countryside Management Scheme (CMS).
- 3.2.7 The CMS, launched in 1999, was developed with the primary aim of maintaining and enhancing biodiversity and is open to application from all farmers and landowners outside ESAs. As funding is limited, entry into the scheme is competitive, being based on who can offer the greatest environmental benefits. DARD can provide area-based payments on blocks of > 0.1 ha in area within the farm unit, where it meets clearly defined criteria. The priority habitat must be brought under agreement and managed according to the specific objectives and prescriptions of the agri-environment scheme. A sample of these habitats are under long-term monitoring by QUB's Agri-environment Monitoring Unit (QUB, 2004b). The CMS has a voluntary option to protect and enhance grass margins adjoining ASSIs, NNRs, SACs, watercourses, lakes, woodlands or field boundaries. Grass margins are at least 2m wide and of a length which DARD will decide. The option of creating grass margins promotes the protection of sensitive habitats from pesticide drift or nutrient enrichment. No grazing, and usually no mowing, is allowed within the buffer strip and funds are available for fencing.
- 3.2.8 DARD has developed the Entry Level Countryside Management Scheme (ELCMS) which is due to open mid 2005. ELCMS has been designed to be easily accessible and to deliver a range of basic agri-environment improvements. Participants in the scheme will be required to undertake a field boundary management module, one of 3 possible water quality modules and one of 5 further biodiversity modules. The scheme will complement the existing agri-environment programme.
- 3.2.9 The introduction of Good Farming Practice (GFP), which is applicable to farmers receiving Less Favoured Area (LFA) compensatory payments and those who enter any of the agri-environment schemes, provides protection for semi-natural habitats, including purple moor-grass and rush pastures. GFP consists of compliance with all environmental legislation, 8 verifiable standards and retaining copies of the Codes of Good Agricultural Practice for water, soil and air. These standards and codes apply to the whole farm and are compatible with the need to safeguard the environment and maintain the countryside by sustainable farming. Over 70% of Northern Ireland is classified as LFA.
- 3.2.10 All Farmers who receive the Single Farm Payment are required to comply with cross compliance from 1st January 2005. Part of cross compliance requires the farmer to keep all their land in 'Good Agricultural and Environmental Condition' and these measures are similar to GFP. As such Farmers are not allowed to destroy any semi-natural habitat.
- 3.2.11 DARD has developed a Grassland Fertiliser computer programme which provides farmers with fertiliser recommendations that best match the nutrient requirements for

their soil and crop, and in so doing avoid over-supply of nutrients to the detriment of the environment. Adherence to minimum fertiliser prescriptions (and preferably no fertiliser application at all) is essential in the vicinity of purple moor-grass and rush pastures, where nutrient drift can result in changes in species composition and habitat status.

- 3.2.12 The Rivers Agency, as the statutory Drainage and Flood Protection Authority for Northern Ireland is responsible for maintaining the effective drainage function of designated watercourses under the *Drainage (Northern Ireland) Order 1973*. All drainage and flood defence proposals are subject to the *Drainage (Environmental Assessment) Regulations (Northern Ireland) 1991*, as amended, which requires an assessment, at planning stage, of the environmental impact of the proposed works. Rivers Agency also consults with EHS on their annual programme of drainage maintenance, where this may have an impact on designated sites of nature conservation importance. This includes both localised operations such as the maintenance of outfalls for field drains and more significant river maintenance works. Purple moor-grass and rush pastures typically exists on marshy ground, often close to open waterways and as such may be at risk from changes in groundwater levels resulting from drainage works. The Rivers Agency is committed to avoiding disturbance to purple moor-grass and rush pasture where possible, and where disturbance is unavoidable, it will minimise that disturbance, and reinstate sensitively based on the conservation criteria for purple moor-grass and rush pasture.
- 3.2.13 Roads Service has produced a booklet entitled *Road Service Environmental Handbook* (DOE, 1998), which provides guidance on the maintenance of roadside verges. While recognising the importance of herb-rich verges, it does not prescribe specific management measures.
- 3.2.14 The *Northern Ireland Countryside Survey* (NICS), funded by EHS, is a sample survey of Northern Ireland vegetation communities used to estimate the extent and distribution of broad habitats such as species-rich grasslands. Repeat surveys are used to assess land use change. The first phase in the process was *A land classification and landscape ecological study of Northern Ireland* carried out in the early 1990s (Murray *et al.*, 1992). The *NICS 2000* (Cooper & McCann, 2001) repeated the survey in 1998 (see Section 1.1.9).
- 3.2.15 Other relevant information is gathered through specialist biological recording groups, Non-Governmental Organisations (NGOs), universities and other government bodies. Biological records are currently stored in the Museum and Galleries of Northern Ireland (MAGNI) at the Centre for Environmental Data and Recording (CEDaR). CEDaR was established in 1995 in partnership with EHS, MAGNI and the biological recording community. There are currently over 1.4 million records held by CEDaR and there are developments underway to make these records more accessible through the Internet. This will be achieved through the National Biodiversity Network, a union of organisations throughout the UK working together to create an information network of accessible biological data for biodiversity information.
- 3.2.16 Grassland management advice is available from EHS - Regional Operations staff and the MOSS team, DARD - CMB and NGOs such as the Ulster Wildlife Trust (UWT) the National Trust (NT) and Conservation Volunteers for Northern Ireland (CVNI).

The experience of grassland managers is also developed and promoted through organisations such as the Royal Institution of Chartered Surveyors.

- 3.2.17 Appointment of Local Biodiversity Officers by many District Councils in Northern Ireland will result in the development of Local Biodiversity Action Plans (LBAPs). These plans will encourage, co-ordinate and inform local biodiversity action.

4 Action Plan Targets

- 4.1** Maintain the total extent of purple moor-grass and rush pastures in Northern Ireland at 18,919 ha.
- 4.2** Maintain condition, where favourable, of the existing resource.
- 4.3** Achieve favourable condition of all significant stands of purple moor-grass and rush pastures within ASSIs and SACs by 2010.
- 4.4** For stands outside ASSIs, achieve favourable condition over 75% of the resource by 2015.

5. Proposed Actions with Lead Agencies

5.1 Policy and legislation

- 5.1.1 By 2005, initiate discussions with other government departments to ensure appropriate consultation mechanisms exist for proposed changes in land use.
(ACTION: DARD, EHS, Planning Service, Forest Service)
- 5.1.2 By 2006, review *Planning Policy Statement 2 (PPS2) – Planning and Nature Conservation*, to include policies relating to the conservation of priority habitat and species.
(ACTION: Planning Service, EHS)
- 5.1.3 By 2005, produce *Planning Policy Statement (PPS14) on Sustainable Development in the Countryside* which includes objectives to minimise the impact of housing development on the environmental resources of habitat, water quality and biodiversity of the rural area, thereby contributing to the conservation of biodiversity in Northern Ireland.
(ACTION: DRD, EHS, Planning Service)
- 5.1.4 Identify further examples of purple moor-grass and rush pastures as SLNCIs for consideration for adoption into appropriate Development Plans.
(ACTION: EHS, Planning Service)
- 5.1.5 Ensure that important purple moor-grass and rush pastures sites not already identified e.g. as SLNCIs, are recognised and, where appropriate, site protection policies are included in Development Plans and other strategic plans including Local Biodiversity Action Plans (LBAPs).
(ACTION: Planning Service, EHS, DARD, District Councils, Forest Service)

- 5.1.6 In the preparation of Planning Policy Statements, the promotion of biodiversity will be taken into account where appropriate.
(ACTION: Planning service, DRD, EHS)
- 5.1.7 Continue to establish appropriate management and stocking levels on unimproved grassland areas by promoting agri-environment schemes and implementing environmental cross-compliance conditions including GFP.
(ACTION: DARD, EHS)
- 5.1.8 By 2006, ensure that all farmers receiving agri-environment scheme payments and LFA Compensatory Allowance Payments are complying with GFP.
(ACTION: DARD, EHS)
- 5.1.9 By 2007, ensure that agri-environment scheme prescriptions relevant/appropriate to purple moor-grass and rush pasture are contributing to maintaining and enhancing the habitat across Northern Ireland.
(ACTION: DARD, EHS)
- 5.1.10 Consider a review of Countryside Management Scheme and Environmentally Sensitive Areas Scheme to include streamlining of habitats/options to 'fit' with Biodiversity Action Plan habitat definitions if there is to be a review of agri-environment schemes under the new Rural Development Programme (2007 – 2013)
(ACTION: DARD)
- 5.1.11 Consider the requirements of purple moor-grass and rush pastures when grant-aiding new woodland planting schemes.
(ACTION: Forest Service)
- 5.1.12 By 2005, seek to encourage positive environmental change through the reformed Common Agricultural Policy (CAP), for example, by promoting sustainable agricultural management of purple moor-grass and rush pastures.
(ACTION: DARD, EHS)
- 5.1.13 By 2007, ensure purple moor-grass and rush pastures are adequately protected through the CAP.
(ACTION: DARD, EHS)

5.2 Site safeguard and management

- 5.2.1 By 2006, produce conservation objectives for all statutory sites with purple moor-grass and rush pastures including cSACs, ASSIs and NNRs.
(ACTION: EHS)
- 5.2.2 By 2006, develop agreed methods for describing and assessing favourable condition for purple moor-grass and rush pastures.
(ACTION: EHS)
- 5.2.3 By 2007, initiate measures intended to achieve favourable condition of all significant stands of purple moor-grass and rush pastures within ASSIs.
(ACTION: EHS)

- 5.2.4 By 2010, review the coverage of purple moor-grass and rush pastures within both the ASSI and NNR series and notify further sites as necessary to fill significant gaps in the range of variation throughout Northern Ireland.
(ACTION: EHS)
- 5.2.5 By 2006, prioritise areas, timescales and targets, based on designation status and restoration potential, for the conservation and improvement and expansion of purple moor-grass and rush pastures.
(ACTION: EHS, DARD, Forest Service)
- 5.2.6 By 2007, target positive management through MOSS, agri-environment schemes, the LBAP process and grant aid for biodiversity to secure favourable management on purple moor-grass and rush pasture sites (including SLNCIs) prioritised in 5.2.5, according to agreed timescales.
(ACTION: EHS, DARD, Forest Service)
- 5.2.7 By 2006, promote and implement the management and restoration of areas of purple moor-grass and rush pastures owned or part-funded by government.
(ACTION: EHS, DARD, Forest Service, District Councils)
- 5.2.8 By 2005, ensure that, where relevant, biodiversity priorities are addressed in the management of monuments in state care, scheduled monuments and listed buildings.
(ACTION: EHS, DARD)
- 5.2.9 By 2006, seek to identify further examples of purple moor-grass and rush pastures as SLNCIs in Development Plans.
(ACTION: Planning Service, EHS)

5.3 Advisory

- 5.3.1 By 2006, provide information to landowners and occupiers on the status and conservation importance of purple moor-grass and rush pastures through the production, promotion and dissemination of literature.
(ACTION: EHS, DARD)
- 5.3.2 By 2006, review relevant guidelines and advisory material to promote the use of good agricultural practices that minimise the impact of fertilisers, herbicides and pesticides on purple moor-grass and rush pasture.
(ACTION: DARD, EHS)
- 5.3.3 By 2005, promote awareness of the EIA Regulations by contacting representatives of farmers, land agents, the legal profession and other relevant organisations.
(ACTION: EHS, DARD, Planning Service)
- 5.3.4 By 2006, provide advice to land owners about suitable management, including grazing regimes appropriate to the geographical distribution and ecological variation found in purple moor-grass and rush pastures.
(ACTION: DARD, EHS, Forest Service)

- 5.3.5 By 2006, encourage applications from potential partners to obtain funding to bring areas of purple moor-grass and rush pastures into favourable management.
(ACTION: EHS, DARD, Forest service, Water Service, District Councils)
- 5.3.6 By 2006, develop guidelines that identify those circumstances under which degraded purple moor-grass and rush pasture restoration should be actively encouraged.
(ACTION: EHS, DARD)
- 5.3.7 By 2006, develop guidance on management and restoration practices for purple moor-grass and rush pastures.
(ACTION: EHS, DARD)
- 5.3.8 By 2007, develop and promote awareness and training programmes on the conservation, management and restoration of purple moor-grass and rush pastures through key organisations/individuals involved in the delivery of advice to farmers and land managers.
(ACTION: EHS, DARD)
- 5.3.9 By 2010, develop demonstration sites such as Leathemstown and Quoile to reflect the range of ecological variation and applied management techniques throughout Northern Ireland's purple moor-grass and rush pasture resource.
(ACTION: EHS, DARD)

5.4 International

- 5.4.1 Further develop links with the Republic of Ireland and other European and international organisations and programmes such as the European Environment Agency and the European Centre for Nature Conservation, to promote the exchange of information and experience in research, management techniques, education and conservation strategies for the conservation of purple moor-grass and rush pastures.
(ACTION: EHS)

5.5 Monitoring and research

- 5.5.1 By 2006, set standards for assessing favourable condition of purple moor-grass and rush pasture throughout Northern Ireland.
(ACTION: EHS, DARD)
- 5.5.2 By 2006, establish surveillance and monitoring programmes to assess the condition of purple moor-grass and rush pasture habitats within designated sites to aid site management.
(ACTION: EHS)
- 5.5.3 By 2007, initiate monitoring programmes to establish the effectiveness of government funded schemes and management methods in achieving the targets of this plan.
(ACTION: DARD, EHS, Forest Service)
- 5.5.4 By 2008, initiate a programme to monitor the total extent and condition of the purple moor-grass and rush pasture resource.
(ACTION: EHS)

- 5.5.5 By 2008, produce an inventory of purple moor-grass and rush pasture restoration and re-establishment projects in Northern Ireland.
(ACTION: EHS)
- 5.5.6 By 2006, review the requirement for and if necessary, commission applied research to help develop beneficial and practical management techniques (including appropriate stocking levels) for the enhancement and restoration of purple moor-grass and rush pastures and populations of associated characteristic species.
(ACTION: DARD, EHS)
- 5.5.7 Encourage access throughout Britain and Ireland to the records held at CeDAR by contributing to the National Biodiversity Network www-based catalogue of survey information.
(ACTION: EHS)
- 5.5.8 By 2010, monitor purple moor-grass and rush pasture restoration sites so that management resources can be focused on areas most likely to show a positive response.
(ACTION: EHS)
- 5.5.9 By 2015, review the requirement for further research on the effects of pollution and climate changes on purple moor-grass and rush pastures, and promote research needs accordingly.
(ACTION: EHS)
- 5.5.10 By 2006, set in place a reporting and monitoring structure to encourage progress towards the delivery of the targets and the completion of actions identified in this plan.
(ACTION: EHS)

5.6 Communications and publicity

- 5.6.1 By 2006, devise a strategy for ensuring effective distribution of existing advisory material to grassland managers and if gaps are identified, produce and disseminate appropriate material to fill these.
(ACTION: EHS, DARD)
- 5.6.2 By 2006, promote the conservation of purple moor-grass and rush pastures through the scientific press and popular media.
(ACTION: EHS, DARD)
- 5.6.3 By 2008, facilitate production of a simple web-site, an attractive booklet and CD-ROM for the public and schools which explains the conservation importance of purple moor-grass and rush pastures in Northern Ireland.
(ACTION: EHS, Department of Education, DARD)
- 5.6.4 By 2008, aim to achieve a minimum of 200 school groups attending grassland education programmes each academic year.
(ACTION: EHS, DARD)

- 5.6.5 By 2008, encourage appropriate access as well as interpretative and educational provisions on key grassland sites to increase enjoyment and public awareness of the biodiversity of purple moor-grass and rush pastures.
(ACTION: EHS, DARD, Forest service, Water Service, District Councils)

6. Costings

- 6.1 A table showing the global costs for this and other HAPs is available on the EHS/Biodiversity web page.

7. References

- Cooper, A. & Murray, R., 1987a. *A landscape ecological study of the Antrim Coast and Glens and Causeway Coast Areas of Outstanding Natural Beauty*. Unpublished report to the Countryside and Wildlife Branch, Department of the Environment for Northern Ireland. Department of Environmental Studies, University of Ulster, Jordanstown.
- Corbett, P., 2003. *Grassland Habitats*. Internal discussion paper. Environment and Heritage Service, Belfast.
- Davidson, P., 2003. *Draft National Trust Northern Ireland Biodiversity Strategy*. National Trust.
- Department of Agriculture for Northern Ireland. 1993. *Afforestation – the DANI statement on environmental policy*. Department of Agriculture for Northern Ireland. Belfast.
- Department of Agriculture and Rural Development, 2001. *Environmentally Sensitive Areas Scheme – Explanatory booklet*. DARD, Belfast.
- Department of the Environment, 1998. *Roads Service Environmental Handbook*. Roads Service, Belfast.
- Department of the Environment for Northern Ireland. (1997). *Planning Policy Statement 2: Planning and Nature Conservation*. Department of the Environment for Northern Ireland (Planning Service), Belfast.
- Department of the Environment for Northern Ireland, 2000. *Northern Ireland Species Action Plans – Irish Hare, Chough, Curlew*. Environment and Heritage Service, Belfast.
- Department of the Environment for Northern Ireland, 2002. *Northern Ireland Biodiversity Strategy*. Environment and Heritage Service, Belfast.
- Department of Regional Development, 2001. *The Regional Development Strategy 2025*. DRD, Belfast.

- Eakin, M. (1994). *The Ecology, Management and Conservation of Species-rich Hay Meadows in County Fermanagh*. PhD Thesis. Dept Environmental Studies, UUC.
- Environment and Heritage Service (2002) Habitats Regulations. A guide for competent authorities. EHS
- European Commission (2000). Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Luxemburg.
- Harrison, P.A., Berry, P.M. & Dawson, T.P. 2001. *Climate Change and Nature Conservation in Britain and Ireland: Modelling natural responses to climate change (the MONARCH project)*. UKCIP Technical Report, Oxford.
- Murray, R., McCann, T. & Cooper, A., 1992. *A Land Classification and Landscape Ecological Study of Northern Ireland*. Department of the Environment NI and Department of Environmental Studies, University of Ulster, Coleraine.
- Northern Ireland Biodiversity Group, 2000. *Biodiversity in Northern Ireland: Recommendations to Government for a Biodiversity Strategy*. HMSO, Belfast.
- QUB, 2004a. Monitoring and evaluation of the ESA scheme between 1993 and 2003. Report to DARD.
- QUB, 2004b. Baseline monitoring of the countryside management scheme in Northern Ireland. Report to DARD.
- Rodwell, J.S. (ed), 1991. *British Plant Communities Vol 3 – Grassland and Montane Communities*. University Press, Cambridge.
- Rodwell, J.S. (ed), 1991a. *British Plant Communities Vol 2 – Mires and Heaths*. University Press, Cambridge.
- UK Biodiversity Steering Group, 1995. *Biodiversity: the UK Steering Group Report, Vol II: Action Plans*. HMSO, London
- UK Biodiversity Steering Group, 1998. *UK Biodiversity Group Tranche 2 Action Plans: Volume II – terrestrial and freshwater species and habitats*. HMSO, London.
- UKWAS Steering Group, 2000. *The UK Woodland Assurance Standard*. UKWAS Steering Group. Forestry Commission. Edinburgh.

List of Useful Acronyms

ASSI	Area of Special Scientific Interest
BAP	Biodiversity Action Plan

CEDaR	Centre for Environmental Data and Recording
CMD	Countryside Management Division
CMS	Countryside Management Scheme
DARD	Department of Agricultural and Rural Development
DCAL	Department of Culture, Arts and Leisure
DETI	Department of Enterprise, Trade and Industry
DOE	Department of the Environment
DRD	Department for Regional Development
EHS	Environment and Heritage Service
ESA	Environmentally Sensitive Area
ESCRs	Earth Science Conservation Review Site
HAP	Habitat Action Plan
JNCC	Joint Nature Conservation Committee
MAGNI	The National Museums and Galleries of Northern Ireland
NIBG	Northern Ireland Biodiversity Group
NICS	Northern Ireland Countryside Survey
NNR	National Nature Reserve
PPG	Planning Policy Guideline
PPS	Planning Policy Statement
RA	Rivers Agency
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAP	Species Action Plan
SLNCI	Sites of Local Nature Conservation Importance
SoCC	Species of Conservation Concern
SPA	Special Protection Area
WFD	Water Framework Directive
WWT	Wildfowl and Wetlands Trust