



Developing a targeted-based programme for HNV farmland in the North Connemara Area



A Report to the Heritage Council

Prepared by

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2011

**An Chomhairle Oidhreachta
The Heritage Council**



Status of the Report

This report has been prepared for the Heritage Council by the European Forum for Nature Conservation and Pastoralism (EFNCP). Please note that this report does not necessarily constitute the views of the Heritage Council, but will be considered by the Heritage Council as it develops its work on High Nature Value farming and may inform future Heritage Council Policy on this and other related matters.

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1.0 Introduction

Connemara lies in the west of Ireland, north of the coastal district of Cois Fharraige and south of Killary harbour. The northern area is dominated by the erosion-resistant quartzite bedrock that forms the mountainous areas of the Twelve Bens, the Maumturk mountain ranges and the intervening valleys. The agricultural system is mainly hill sheep and suckler cows located throughout much of the uplands where unenclosed commonage persists. State-owned coniferous plantations cover much of the floors and sides of the interior valleys. The area makes up one of the largest and most varied sites of conservation interest in Ireland with populations of many rare or scarce plants and animal species. A full scientific description of the area is beyond the scope of this report; further details can be found in Smith *et al.* 2010, Kaule, 2008, Leake and Tanner 2001, Bleasdale 1995, Whilde 1994 and Doyle 1982.



Plate 1: The north Connemara landscape is made up of a mixture of lowland grassland, upland and lowland blanket bog, upland grassland and heath, coastal and forested habitats, many of which are of international conservation importance.

2.0 Farming in North Connemara

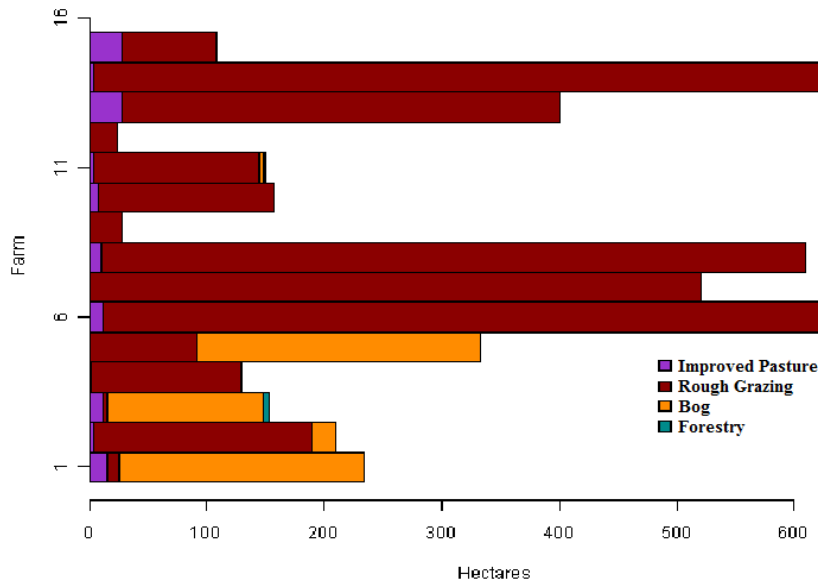
Agriculture has been part of the Connemara landscape for thousands of years. Traditional agricultural practices have moulded and shaped the upland and plant communities. Presently the main agricultural enterprise is sheep production followed by cattle. The agricultural system varies on the type of land; for sheep, it ranges from intensive lamb production where fattened lambs are sold direct to the factory for slaughter, to extensive hill systems where over 90% of the lambs are sold to other areas for finishing.

Smith *et al.* (2010) found that North Connemara, consisting of an agricultural area of 24,455ha, contained 760 farms, indicating an average farm size of 32.1 ha, which is similar to the national average of 31.4 ha. When the rough grazing land (13,610 ha) is

excluded from the total, the average farmed area is approximately 14.3 ha (CSO, Census of Agriculture 2002). Livestock figures for the area were 6,885 cattle and 85,072 sheep equating to a stocking rate of approximately 0.8 LU per hectare (CSO, Census of Agriculture 2002). However, the range of farm sizes varies greatly with some farms over 1000ha.

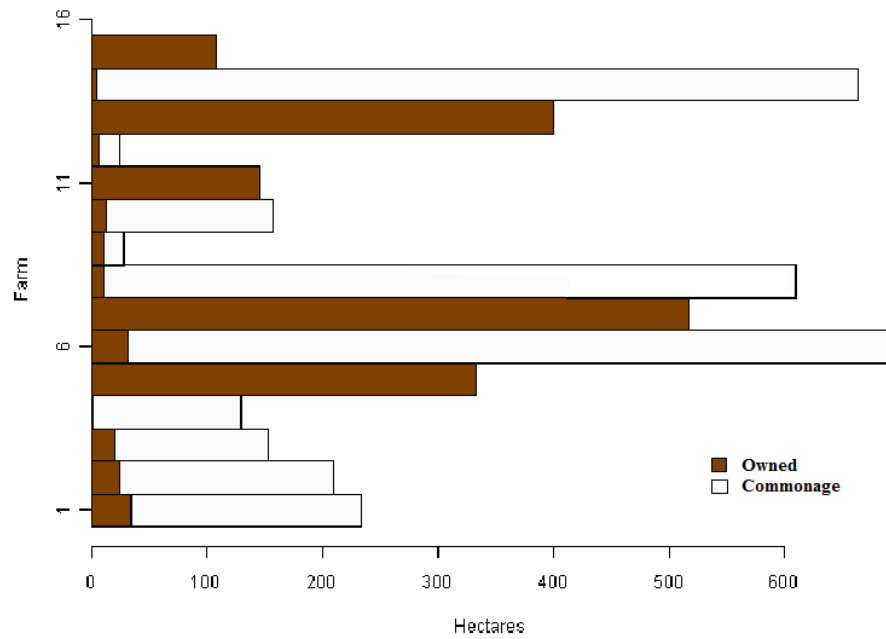
The Irish Uplands Forum (2010) conducted a survey of 15 farms and found an average size of 100ha (Figure 1); however, there was considerable variation. A common theme was that the majority of upland farms consisted mainly of rough grazing or bog with very little improved pasture.

Figure 1: Land usage in the Connemara uplands on a sample of 15 farms



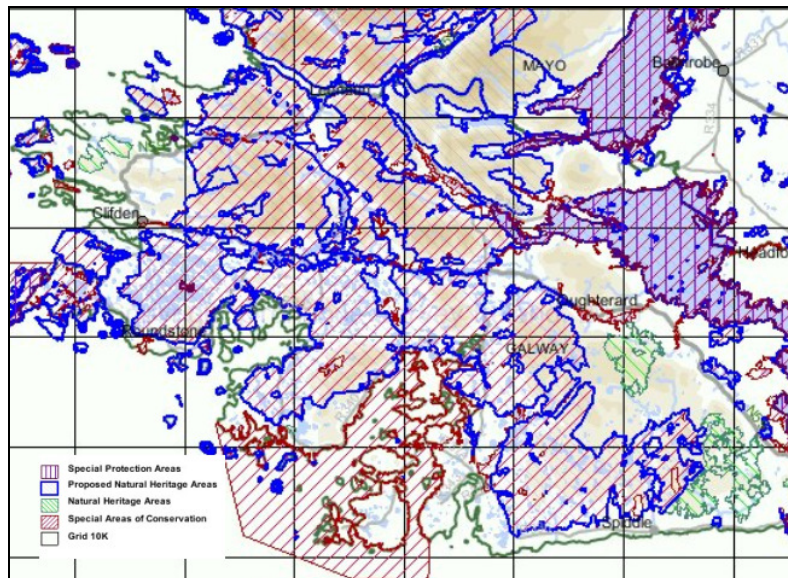
The farms in the area are typically composed of an area of lowland grassland and a larger area of upland commonage. The area of commonage varies but can form over 90% of the farmed area (Smith *et al.* 2010). Commonage is defined as land held in common ownership on which two or more farmers have grazing rights. In the west of Ireland commonage represents 19% of the total farm area, making it a distinctive regional phenomenon. Nearly half of all commonages occur in Connaught (5379), with 2050 in Galway and 2416 in Mayo and in these two counties over 75% of the farms using commonage are below 30 ha in size (CSO, 2002). Figure 2 illustrates the area of commonage in relation to total land holding in a survey of 15 farms by the Irish Uplands Forum (2010).

Figure 2: The breakdown of the farm area on 15 sample farms in North Connemara



Commonages are found mostly on upland areas of poor land quality. However these areas are usually higher in semi-natural vegetation. The majority of land in North Connemara is designated under the EU Habitats Directive (Figure 3) for a range of habitat types and species. Maintaining these sites in favourable conservation status is one of the central purposes of the Habitats Directive. Agricultural factors that could threaten achieving favourable condition include land abandonment, uncontrolled burning, intensification of farming practices, overgrazing and under-grazing.

Figure 3: Designated areas for nature conservation in Connemara.



The high reliance on commonage, coupled with the dominance of bog and heath vegetation, meant that the expansion of sheep numbers in the 1980/90s resulted in marked changes in the upland environment as documented by Bleasdale (1995). The

overstocking of sheep, encouraged by EU-funded Sheep Headage Payments and government Ewe Premiums, provided in good faith to support farm incomes in disadvantaged areas like Connemara, had a severe effect on the vegetation of many habitats. More recent government policy has tried to address these issues through the use of agri-environment schemes and specific farm plans.

3.0 Rural Environment Protection Scheme (REPS)

Agri-environment schemes were formed as part of the 1992 MacSharry reforms of the common agricultural policy (CAP) and were invoked as a means of curbing agricultural production and promoting environmental amenities, including scenic, cultural and conservation values for recreation purposes (Bromley and Hodge, 1990). The rural environment protection scheme (REPS) is the Irish Government's response to its obligations under EU Regulation 2078/92. The measure was introduced in 1994 in order to encourage farmers to extensify and farm in an environmentally friendly manner. REPS was a voluntary measure and was open to all farmers, including farm commonage. REPS1 was first introduced by the Irish government in 1994 in accordance with the Regulation (Department of Agriculture Food and Forestry, 1996). The basic scheme comprised 11 mandatory measures, an additional mandatory measure for participants located in specific designated areas of high environmental sensitivity and a number of voluntary supplementary measures. In terms of farm management, the scheme primarily addressed waste management and nutrient control, grassland management and the protection of both wildlife habitats and features of archaeological and historical significance. The scheme was universally available to all Irish farmers; participation was voluntary; it involved the design of a comprehensive farm management plan for each of its participants and the option of a funded training course on environmentally friendly farm practices.

The original REPS scheme was amended and evolved into REPS 2 and currently REPS 3 and REPS 4. There was an unexpectedly poor participation rate for REPS 2. Reasons cited were inadequate compensation, stocking restrictions, the complexity of the scheme and its attached penalties for breaches, as well as high planning costs (Mooney, 2002). REPS 3 was introduced during the summer of 2004 with the aim of rectifying the deficiencies of REPS 2 that led to such poor participation rates (Regan, 2002; Afcon, 2003). The Agri-Environment Options Scheme (AEOS) and the Natura 2000 Scheme replaced REPS in 2010. The Natura 2000 Scheme, as part of AEOS, specifically addresses the challenge of halting the loss of biodiversity in specially designated areas. However, present budgetary restrictions have limited the availability of these schemes.

The National Parks and Wildlife Service Farm Plan scheme for Designated Areas and commonage was introduced in 2006; aimed at farmers in designated areas who do not wish to join REPS, it offers compensation for income foregone due to stocking restrictions. Unlike REPS, payments do not include an incentive element (O'Keeffe, 2005). The NPWS Farm Plan Scheme was curtailed in April 2010 due to budgetary constraints.

4.0 Commonage Framework Plans

Towards the end of the original REPS in 1998–1999, it was noted that REPS, due to its voluntary nature, was not in itself a sufficiently adequate policy in tackling over-grazing on Irish commonages. Such was the concern with the soil degradation caused by overgrazing that the EU threatened to stop all REPS payments to commonage farmers in the west of Ireland. Subsequently, targeted EU legislation was introduced which required all commonage farms, irrespective of whether they were REPS participants, to

farm according to a Commonage Framework Plan (CFP). Allied to this was a recommendation of specific training schemes for commonage farmers who were in REPS (Department of Agriculture Food and Forestry, 2004). These location-specific CFPs were drawn up jointly by an ecologist and an agronomist dictating stocking levels, grazing regime and the exclusion of certain agricultural practices. Since the task of preparing a CFP for every site would take time, a 30% de-stocking on all commonages was introduced as an initial measure until an individual CFP could be prepared.

The implementation of the CFPs has been a source of conflict between farmers and government officials. At farm meetings held by Smith *et al.* (2010), farmers acknowledged that previous stocking levels had been too high and that some reductions were necessary; however the levels of destocking required under the Commonage Framework Plans were cited as being a major economic constraint to the future of farming in the area.

5.0 Main Habitat types of the North Connemara Uplands

Whilst the commonage are a defined geographical area, they are not all closed areas as they link up with other commonage. A large commonage may contain a range of habitat types. Under the Annexed Habitats listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna (92/43/EEC), the main habitats present include; Northern Atlantic wet heaths with *Erica tetralix*[4010], Alpine and Boreal heaths [4060], European Dry heaths [4030], Blanket bogs [7130]. Under Article 17 of the Directive, each member state is obliged to report to the European Commission on the status of listed habitats every six years. Appendix 1 shows a land cover map for the western part the area with the commonage areas overlaid. The status of the main EU Protected Habitats in Ireland (NPWS, 2008) was documented as:

5.1 Wet heath

The overall conservation status of wet heath is considered to be “unfavourable – bad” because of reclamation, afforestation, burning and overgrazing.

5.2 Alpine heath

The overall conservation status of alpine heaths is considered “unfavourable – inadequate” due to threats from afforestation, burning, overgrazing, and recreation.

5.3 Dry Heath

The overall conservation status of dry heath is considered to be “poor” because of afforestation, over-burning, overgrazing, undergrazing and bracken invasion.

5.4 Blanket bogs

The overall conservation status of blanket bogs is considered to be “unfavourable – bad” due to peat extraction, afforestation, reclamation, drainage, erosion, overgrazing, and burning.

5.5 Siliceous scree

The overall conservation status of siliceous scree is considered to be “unfavourable – inadequate” as the impact of threats from overgrazing and recreational activities have not been adequately assessed to date.

5.6 *Nardus* grasslands

The overall conservation status of species-rich *Nardus* grasslands is considered to be “unfavourable – bad” due to changes in grazing management, including overgrazing and undergrazing.

5.7 Rhynchosporion depressions

The overall conservation status of Rhynchosporion depressions is considered to be “favourable” as it is an early successional vegetation community able to exploit degraded conditions.

Grazing management is the main driver influencing the conservation status of the main habitats. The different Annexed habitats have different grazing requirements to maintain species composition and structure. Some habitat types are very sensitive to grazing and require very low levels or no grazing at all, whereas others require moderate levels of grazing. In such a large scale grazing system, defining a sustainable grazing plan which allows for these different requirements is a difficult task when the conservation objective is for them all to achieve favourable condition status.

The successful restoration and maintenance of the described habitats will need to address the grazing issue. Schumaan and Joosten (2008) describe that for the impact of grazing herbivores to be addressed, successful restoration needs a reduction in the number of grazing animals, providing access for animals to less vulnerable areas and preventing access to vulnerable areas. Conservation work to date, under REPS, Commonage Framework plans, has concentrated on the reduction of livestock in the area. The most vulnerable areas on many of the Connemara uplands are thought to be the alpine heath communities (Holland *et al.* 2010). These areas contain internationally important moss species including Lindenberg’s featherwort (*Adelanthus lindenbergianus*), one of the rarest liverworts in Ireland and Britain. Its main distribution is in the mountains of South America and tropical Africa (Long, 2010). *A.lindenbergianus* and others of this community are sterile and few produce gemmae (Paton, 1999), so it will be difficult for the rarer liverworts to recolonise naturally with stocking rates suitable for other adjacent habitat types, such as dry heath.

The European Commission has adopted an ambitious new strategy to halt the loss of biodiversity and ecosystem services in the EU by 2020. One of the targets is to “halt the deterioration in the status of all species and habitats covered by EU nature legislation and achieve a significant and measurable improvement in their status so that, by 2020, compared to current assessments” (European Commission 2011). This report is based on a participation process with members of the Connemara farming community to investigate the possibility of a more targeted and effective support measure to the HNV farmland of the area which takes account of the sustainability of the agriculture system and which will help Ireland meet the targets set out in the EU Biodiversity strategy.

6.0 Developing a target scheme for North Connemara

A common theme running through extensive studies on Connemara is the role of the farmer in managing the landscape and the need for their support in preservation of the upland environment (Whilde 1994, Bleasdale 1995, Kaule 2008, Smith *et al.* 2010, Irish Uplands Forum 2010).

The Afcon report 2003 suggested that the formation of forums could provide a mechanism to galvanize further farmer support for REPS. Instead of focusing on individual farm management plans, agri-environment policies could use forums to broaden the range of participants involved in scheme design, thereby reducing

environmental risk (Short, 2000). This would encourage farmer involvement in agri-environment schemes which include commonage, empowering farmers in the process, as well as making use of local knowledge in the management of a “common pool” resource. Similar recommendations were made by Feehan *et al.* (2005) and Visser *et al.* (2007).

The high reliance of individual farms on commonage will present problems, but as stated by one of the farmers quoted in Smith *et al.* (2010), historically there would have been a traditional grazing management system implemented by commonage shareholders for the hill areas, to regularly evaluate appropriate, sustainable stocking levels. A survey by Di Falco and Van Rensberg (2004) indicated that when commonage was characterised by a certain level of collective activity and participation in decision making, then the incidence of overgrazing was less.

Participation by farmers in the management of specific habitats has been successfully in the BurrenLIFE programme, now managed as the Burren Farming for Conservation Programme (BFCP). The BFCP is fundamentally an environmental programme which targets the delivery of a range of environmental benefits, in particular the production of species rich grasslands and the improvement of water quality. The programme covers 42% of the three main Burren SACs, approximately 13,300 ha of land.

The Heritage Council Study on High Nature Value farmland in Ireland (Smith *et al.*, 2010), includes the following recommendation:

“Trialling a new HNV farming AES through a pilot scheme limited to particular HNV farming regions may be a useful approach in developing methods for scheme design (including local participation) and in testing aspects of implementation, operation and monitoring. Pilot schemes should aim to include regions with contrasting agricultural enterprises and ecosystems to verify the adaptability of the HNV farming AES to different conditions.”

To develop this concept a series of follow up meetings were conducted with members of the initial consultees and local farming representatives. A group of farmers from the North Connemara area visited the Burren to see the work in progress and talk to farmers participating in the BFCP. Follow-up meetings were organised to establish whether a similar scheme would be operable within their area. These meetings were run in conjunction and with the help of Forum Connemara Ltd. A range of sites within the North Connemara area were also visited by the group, to discuss the condition of different habitat types and to obtain views on the future management of similar sites. The main areas discussed were stocking rates, limited area of in-bye land, undergrazing, the required vegetation cover after destocking and invasive species.

6.1 Sustainable grazing levels on extensive upland grazing areas

At the meetings, the BFCP was discussed, identifying areas where it may be transferable or where adaptations were required to meet the needs of North Connemara. Whilst the principles of the scheme were applauded, it was thought that the different conditions and the inclusion of commonage would create difficulties when developing a targeted HNV farmland scheme. A concern of the farmers in North Connemara is that the stocking rate required to produce the favourable condition is much lower than the optimal agricultural stocking rate. Therefore overgrazing is always going to be a bigger threat than undergrazing. This differs from limestone grasslands areas where undergrazing is a greater threat and farmers seem to favour schemes that allow farming along traditional

lines. Table 1 illustrates research for the Scottish mountains when calcareous grassland is compared with a range of upland habitats (Holland *et al.* 2010).

Feature name	Favourable grazing level		Attractiveness to herbivores		Accessibility to herbivores		Vulnerability to too much or too little grazing ³
	Median	Range	Median	Range	Median	Range	
Calcareous grassland (upland)	3	(2 - 3.5)	5	(3 - 5)	5	(3 - 5)	Low vulnerability to too much grazing, but vulnerable to too little grazing
Subalpine dry dwarf-shrub heath	2.5	(1 - 4)	3	(2 - 4)	5	(2 - 5)	Low to medium vulnerability to too much grazing. Low to medium vulnerability to too little grazing
Calamarian grassland and serpentine heath	2.5	(1 - 3)	3	(2 - 5)	4	(2 - 5)	
Blanket bog and valley bog	2	(0.5 - 4)	2	(1 - 3)	3.75	(2 - 5)	Medium vulnerability to too much grazing. Low vulnerability to too little grazing (*woodlands highly vulnerable to no grazing in the long term)
Calcareous scree	2	(0.5 - 2.5)	2	(1 - 4)	2	(1 - 3)	
Transition mire, ladder fen and quaking bog (upland)	2	(1 - 3)	2	(1 - 3.5)	2	(1 - 3)	
Alpine dwarf-shrub heath	2	(0.5 - 4)	2.25	(1.5 - 3)	4	(2 - 5)	
Wet heath	2	(1 - 3)	2.5	(2 - 3)	4.5	(2 - 5)	
Bog woodland	2	(1 - 3)	2.5	(2 - 5)	3	(2 - 4)	
Juniper heath and scrub (upland)	2	(1 - 4)	3	(2 - 5)	4	(3 - 5)	
Wet woodland	2	(1 - 3)	3	(2 - 5)	4	(3 - 5)	
Moss, dwarf-herb, and grass-dominated snow-bed	2	(1 - 3)	3	(2 - 4)	3	(2 - 4)	
Calcareous rocky slopes	2	(0.5 - 3)	3	(2 - 5)	2	(1 - 4)	
Scrub	2	(0.5 - 3)	3.25	(2 - 5)	4	(3 - 5)	
Maritime cliff	2	(1.5 - 3)	3.5	(3 - 4.5)	2	(1 - 2)	
*Upland birch woodland	2	(1 - 3)	3.75	(2 - 5)	5	(3 - 5)	
*Upland oak woodland	2	(1 - 3)	3.75	(2 - 5)	5	(3 - 5)	
Caledonian forest/Native pinewood	2	(1 - 3)	4	(2 - 5)	4.5	(3 - 5)	
Alkaline fen (upland, excluding alpine flush)	2	(1 - 3.5)	4	(2 - 4.5)	4	(2 - 5)	
Spring-head, rill and flush	2	(1 - 3.5)	4	(2 - 4.5)	4	(2 - 5)	
Wetland Springs (including flushes)	2	(1 - 3)	4	(2 - 5)	4	(2 - 5)	
Alpine flush	2	(0.5 - 3)	4	(1 - 5)	4	(2 - 4)	
Limestone pavement	2	(2 - 3)	4	(2 - 5)	2.5	(2 - 3)	
*Upland mixed ash woodland	2	(1 - 3)	4.5	(3 - 5)	5	(3 - 5)	
Alpine summit communities of moss, sedge and three-leaved rush	1.75	(0.5 - 3)	2.25	(2 - 4)	4	(1 - 4.5)	Medium to high vulnerability to too much grazing. Low vulnerability to too little grazing
Siliceous scree	1.5	(0.5 - 4)	2	(1 - 3)	2	(1 - 3)	High vulnerability to too much grazing. Too little grazing is unlikely to be an issue for these vegetation types
Tall herbs (upland)	1.5	(0.5 - 3)	4.75	(3 - 5)	2	(1.5 - 5)	
Montane willow scrub	1	(0.5 - 2)	4	(2 - 5)	2.5	(1.5 - 5)	Very high vulnerability to too much grazing. Too little grazing is not an issue for this vegetation type

Key to numbers: 1=Very Low, 2=Low, 3=Moderate, 4=High, 5=Very High

³ The vulnerability to too much or too little grazing has been derived from the three variables and reflects the desirable impact level, attractiveness and accessibility of the feature.

Table 1: - Averaged (median) “expert opinion” on (a) the grazing level required by the feature in order to attain favourable condition; (b) the attractiveness of the feature to herbivores; and (c) the accessibility of the feature to herbivores (Holland *et al.* 2010).

The calcareous grassland is unique in that it requires a moderate grazing impact to be in favourable condition, but is also attractive and accessible to herbivores. It therefore needs high levels of grazing to be ‘over-grazed’ and low levels of grazing to be ‘under-grazed’. The features highlighted in cyan require a low impact to be in favourable condition, and have a range of attractiveness and accessibility scores. Habitats that are most attractive are most at risk of ‘over-grazing’ if they are accessible. The features in the bottom three groups require low to very low grazing levels in order to maintain favourable condition, and have a range of attractiveness scores. Those that are most attractive to herbivores are at the highest risk of being ‘over-grazed’ if they are accessible. These features require such low grazing pressures to maintain their structures and species compositions that they are unlikely to suffer from ‘under-grazing’ (Holland *et al.* 2010).

6.2 Limited Area of green in-bye land in Connemara

Historically, the semi-improved in-bye land dictated overall stock numbers on a holding (typically it comprised about 10% of the total grazing area in other areas). The poor nature of the soil in North Connemara, and the accompanying elevated precipitation levels means that the ratio of green in-bye land to mountain is lower than in many other parts of Ireland. This has resulted in higher grazing pressures on the mountains and greater difficulty in managing sheep during periods of enforced exclusion. The existing in-bye land which is mainly semi-improved and improved grassland requires continuous management, including drainage and rush management. They are a vital part of the agricultural system but usually fall outside the Natura 2000 sites due to their limited ecological importance. Their importance was acknowledged by Kaule (2008) who described them as having a low conservation value but high value for stabilising the system.

6.3 Undergrazing

Many landowners and local people feel that there is an issue of undergrazing on some parts of the area as a result in the decline in sheep numbers. This is exacerbated on commonages where not all the shareholders farm, but the active farmers are restricted in sheep numbers as a result of CFPs. At present, there is no specific scientific study to indicate problems with undergrazing in the North Connemara uplands. An ecological and socioeconomic study in Iveragh peninsula has shown that under-grazing and cessation of traditional management structures are now emerging as new threats to the Irish upland commons (Kramm *et al.* 2010). A commitment has been made to monitor the condition of commonages to demonstrate, in particular, that initiatives are delivering recovery in overgrazed areas and that undergrazing is not becoming a problem. Ireland also has obligations to monitor the state of SACs containing uplands and peatlands in non-commonage areas. This involves a reassessment of habitats in commonage areas, some of which were assessed as early as 1999, and also of non-commonage areas.

6.4 Defining favourable condition status

Overgrazing was the main issue considered to be affecting the condition status of the main habitat areas of an upland commonage. Therefore, the implementations of Commonage Framework Plans, agri-environment schemes and NPWS Plans have all worked towards addressing this issue in an attempt to restore the vegetation to a more favourable condition. To achieve this, the managers of the commonage need to have a good knowledge of what this condition is. There is, however, a lack of information defining what is favourable condition status of the habitats filtering down to the people farming the Commonage. This has led to a belief among the farming community that favourable condition status is areas of *Molinia*-dominated swards, which they feel have dominated in many areas after the cessation or reduction of grazing. They highlight the present condition of the Connemara National Park, which has adopted a no- or minimum-grazing approach, as proof of the way NPWS would like the mountains to look (Plate 2).



Plate 2: A *Molinia* dominated heath in Connemara National Park with Diamond Hill in the background.

As part of the project, a group of farmers visited a range of habitat types where details of the Conservation Objectives for the SACs were distributed and the information used in determining condition status as per Perrins *et al.* (2009).

6.5 Invasive species

The invasive exotic species giant rhubarb and rhododendron are present in the North Connemara area. Rhododendron thrives in the peaty acidic substrates of the Connemara region and has colonised sections of semi-natural woodlands and the drier parts of bogs and heath, whilst giant rhubarb (*Gunnera*) occurs on a variety of habitats, including coastal cliffs, waterways, roadsides, wet meadows, derelict gardens and fields. The ecology of both these plant species significantly affects the surrounding plant communities, as both are aggressive competitors that often form monospecific stands and tend to shade out other species. During conservation assessments, the cover of non-native species should be less than 1% and therefore their control needs to be addressed in any targeted scheme for the area.

Farmers have also expressed concerns about increases in the area of bracken (*Pteridium aquilinum*), (Smith *et al.* 2010). This has been confirmed in some vegetation survey work by Kaule (2008), particularly on some of the better soils within mountain heaths. In condition assessments, the cover of bracken is recorded when it exceeds 10% within a 4m² quadrat. Bracken favours acid soils and has become an increasing species of the uplands in other parts of Europe, and is difficult to eradicate (Grime *et al.* 1988.). It has little or no biodiversity interest, and in Western Europe it has generally replaced habitats of greater importance (Pakeman *et al.* 2000). It is toxic to grazing animals, harbours ticks, and can be a prolific invader, advancing up to 1.5m per year (Sutherland and Hill 1995). The rate of spread is higher over heavily-burned and grazed areas and is often associated with areas where there has been some disturbance or improvement in the past.

7.0 Addressing the issues through a targeted scheme

7.1 Grazing allocation per commonage

The main issue affecting the condition of the North Connemara uplands is the control of grazing. Presently, the numbers of sheep are based on historical numbers less deductions through the CFPs and REPS schemes. An alternative would be to determine the sustainable stocking rate for an individual commonage based on the area and condition of the habitats present. The total allocation of sheep numbers could be utilised by the farmers actually farming the commonage, and not the total shareholders. This will require agreement among the shareholders and sufficient financial support to make it feasible. It would also require a more formal structure to be established by the shareholders. As already stated, historically there was a traditional grazing management system implemented by commonage shareholders for the hill areas to regularly evaluate appropriate, sustainable stocking levels. Determining suitable grazing levels will be problematic, but existing literature does exist on similar habitat types within Ireland and Scotland. A suitable grazing density could be determined based on the stocking rates as recommended by literature reviews of Milne *et al.* (1998) (Table 2) and the land cover data within the commonage areas.

Table 2: Recommended stocking densities from the literature analysis of Milne *et al.* (1998) to maintain plant productivity/cover.

Note: G = grass, H = heathland B = Blanket bog. (as quoted in Kaule, 2008).

Recommended Maximum density (ha ⁻¹)		Comments	
Sheep	Cattle		
G	4.67 1.33 1-7	0.2 - 1.5	Values for medium size sheep e.g. Blackface on: Good grass Poor grass Chalk grassland
H	1.56 0.39 0.14		Values for medium size sheep e.g. Blackface on: Young heather Intermediate heather Old heather
B	0.5 <0.6 0.6 0.47 0.38		Blanket bog <i>Calluna-Eriophorum</i> bog Small breed e.g. Welsh Mountain Medium breed e.g. Blackface or Swaledale Large breed e.g. cross-bred grey face or Mules

By concentrating on a small number of commonages, information can be obtained that can be used for the management of future commonages within Connemara and the rest of Ireland. The scheme would differ from other initiatives, as the basic principal would focus on the retention of grazing at a stocking density that is attuned to the ecological carrying capacity of the system, not the agricultural carrying capacity. The ecological carrying capacity is lower and therefore less economic for the farmer. In the past, the Department of Agriculture and Food recommended that upland blanket bogs could withstand a stocking rate of 1.7 sheep per hectare. But Dúchas -The Heritage Service, recommended that appropriate stocking rates on wet heaths should be in the range of 0.2 sheep per hectare, while the stocking rate could rise to 0.6 sheep per hectare on lowland dry heath with good heather growth. They recommended that stocking rates on blanket bog where there is moderate damage should be kept between 0.15 and 0.4 sheep per hectare (Cabot, 1999). Recent changes in the Disadvantaged Area Payment Schemes in the 2012 Budget, announced December 2011, has increased the minimum stocking rate for payment from 1 ewe per hectare to 2 ewes per hectare, thereby further reducing the economics of maintaining a stocking rate which reflects the ecological carrying capacity.

7.2 Maintenance of green in-bye land.

Maximising the contribution of the green in-bye land will help reduce the grazing pressure on the mountain areas. Despite its importance, areas of permanent pasture are in poor agricultural condition as a result of scrub invasion with willow (*Salix* spp.) and whins (*Ulex europea*). Other areas are dominated by soft rush (*Juncus effusus*), greatly reducing their agricultural output. Areas of in-bye land could be improved through targeted scrub control, soft rush (*Juncus effusus*) control, improved fencing to control sheep and improvements in land fertility. Smith *et al.* (2010) state that the areas of in-bye land need to receive continuous management, including drainage. Relaxation of management often results in the recolonisation of sections of the “green land” by common rush and other plants typical of wet grasslands. This often results in “rushy

pastures” in the vicinities of the farm houses, particularly in field areas with lowlying topography.

7.3 Re-introduction of cattle grazing.

Traditionally, cattle were a very important part of the agricultural output of the area but they declined dramatically in numbers over a number of years. Several factors are responsible for their decline, including the general expansion of sheep numbers under CAP in the 1980s, the preference of farmers to farm sheep under the CFPs and the need to exclude cattle from mountain streams as a part of REPS. More recently, the high costs associated with complying with slurry storage requirements under the Nitrates Directive have also prevented farmers from reverting to cattle farming.

Mixed grazing systems are widely recognised as being the best form of management for upland areas (English Nature, 2001). Because of their different grazing action, cattle are less selective than sheep and can exist on forage of lower nutritional value. Cattle also tend to move to more accessible parts of the sward or to graze other communities when their preferred areas have been grazed too closely to allow intakes to be maintained. Experimental work in Ireland, Scotland and Wales has shown that periods of grazing by cattle can be beneficial in terms of controlling invasive hill species such as *Molinia* and *Nardus*. A study on the effects of cattle grazing on *Molinia*-dominated blanket bog was undertaken by Dunne and Doyle (1997, 1998) in Ireland. A cattle grazing programme was implemented for either one year or five consecutive years using Kerry cattle at 1 heifer/ha for the summer only. The cattle reduced the cover but not the frequency of *Molinia* after one year and this decline continued over the five years. There was also a significant reduction in sward height and cattle trampling broke up some of the *Molinia* tussocks. This can increase the suitability of the site for moorland birds and invertebrates. Where rushes or vigorous sedge species were present, these species were able to take advantage of the newly created bare ground and expand. However, in terms of species diversity, the ericoid shrubs, some bryophytes and small herbs were vulnerable to cattle grazing, with some bryophytes being lost after four years of cattle grazing.

A controlled grazing policy using cattle on the some commonage could be an important management tool to improve the condition of some areas.

7.4 Restoration of damaged areas.

Some areas that have been overgrazed (Plate 3) in the past or cut for bracken control may no longer contain sufficient seed source for successful regeneration. Recent work in Wales has identified the following techniques as successful for the restoration of badly damaged areas.

- Transplanting. Whole heather plants are transplanted from another area or another moor. This, however, is time-consuming, expensive and labour intensive.
- Brashing. After seed pods have formed in the autumn (October-November), heather is cut at ground level and moved to a pre-prepared site. The seeds are then released onto the new areas to germinate.
- Harvesting Seed Only. A recent development is to take just the seed or seed in the pods from healthy heather. One machine in use literally hovers up the seed only, whilst another, "brush machine", snaps off the entire seed pods.



Plate 3. A severely damaged area of commonage, caused by historical overgrazing, which would require specific management to encourage regeneration.

7.5 Control of purple-moor grass (*Molinia*).

Although *Molinia* is present as a typical component of many upland vegetation communities, it does become dominant in some situations, often to the exclusion of other species. Farmers dislike the species owing to its poor palatability for livestock and also see it as a fire risk. From a conservation viewpoint, it can lead to species-poor landscapes (Chambers *et al.* 1999). Landscapes dominated by *Molinia* are also deemed to be monotonous and unattractive for visitors, having low amenity value, and are regarded as degraded (Yeo, 1997).

The species has a high growth rate compared with many other upland moorland species (Grime *et al.* 1988), allowing it to take advantage of gaps created in the sward after disturbance such as burning, grazing, heather beetle attack, etc. through rapid vegetative regrowth. The young fresh shoots of *Molinia* are digestible but they become tough and less palatable over the late summer and autumn season. There is therefore a short period, typically April/May to July, when *Molinia* may be quite heavily selected for grazing especially if more palatable grasses are limited (Grant *et al.* 1976, 1987). In addition, as *Molinia* becomes more dominant and forms dense tussocks, sheep do not readily access these areas for forage, resulting in increasing litter build-up and denser vegetation.

These grazing preferences can have significant effects on the way the vegetation develops, and these effects could potentially be directed towards achieving habitat management and restoration in *Molinia* areas. Long-term grazing studies undertaken on upland wet heath areas indicate that the outcome of management by sheep grazing relates to the initial abundance of the *Molinia* in the vegetation. On areas where *Molinia* was co-dominant with *Calluna*, Adamson *et al.* (2002) found that year-round stocking levels of 0.66 Scottish Blackface ewes/ha imposed for five years resulted in an increased cover of *Calluna* and reduction in *Molinia*. However, the same grazing treatment on areas of *Molinia*-dominated wet heath (where *Calluna* was sub-dominant rather than co-dominant to the grass) appeared insufficient on its own to reduce *Molinia* dominance and enhance dwarf shrub cover.

The mixed grazing by sheep and cattle appears successful at reducing dominance and possibly also the cover of *Molinia* on moorland areas where it has up to 60-80% cover.

Off-wintering is also likely to be necessary to protect dwarf shrub species from sheep grazing during the winter season. The early re-introduction of grazing in each spring (but not before the leaves emerge) appears to be important to ensure *Molinia* growth is grazed early and regrowth of fresh leaf is produced throughout the summer. Such management is likely to result in a habitat characteristic of wet heath vegetation.

However, areas with almost complete *Molinia* dominance (perhaps >80%) and with few other species of interest appear to show most rapid reversion to a more diverse moorland vegetation, through a combination of mechanical techniques combined to produce a site-specific restoration programme over, perhaps, three years. The introduction of seed appears to be important in this approach, as most areas with this degree of *Molinia* dominance do not have a local seed source or seed bank from which species can readily re-establish (Anderson *et al.* 2006).

7.5.1 Cutting

Milligan *et al.* (2004) suggests that cutting *Molinia* vegetation three times over a 12 month period consistently reduced *Molinia* cover and vegetation height while improving species diversity in several upland moorland sites. Where this thrice cutting was combined with sheep grazing at moderate stocking levels (1.8 ewes ha), this treatment appeared the most effective in developing a more diverse moorland species composition.

Trials by the Heather Trust in England cut small areas of open *Molinia* moorland in order to draw grazing animals into the area. This has been implemented on two different moorland areas using either sheep or cattle as the grazing animal. In both cases, the grazing animals have been drawn to the cut or mown area and therefore ‘mob-stock’ such areas of their own accord without fencing or shepherding. This approach might be especially successful for areas where fencing is problematic, such as on areas of commonage.

7.5.2 Herbicides

The application of herbicide to *Molinia*-dominated moorland and to mixed *Calluna Molinia* moor has proved successful in controlling *Molinia* by reducing height and cover (Todd *et al.* 2000, Marrs *et al.* 2004). In several studies, glyphosate was the herbicide used, and was found to be effective at reducing *Molinia* in the majority of sites, but did result in damage to *Calluna* plants on some areas and therefore would be unsuitable in the area.

7.6 Shepherding of sheep.

Whilst it is theoretically possible to determine the appropriate level of grazing for a grazing unit that contains a number of different vegetation types, the attractiveness and accessibility of the habitat types is also important. The bryophyte-rich and liverwort-rich heaths, particularly associated with north and north-east-facing slopes, the rarest and internationally most important upland habitats in the area are very prone to overgrazing. Williams *et al.* (2009) found that, in a study of grazing distribution on a Connemara hill farm, the most severe vegetation damage was associated mainly with blanket bog on the mountain ridge (northern boundary) and also, in places, at low altitude. Use of very severely damaged areas was greatest in summer during the plant growing season and therefore inhibited vegetation recovery. Temporary exclusion of livestock or reduction of stocking rates during this season would facilitate an improvement in habitat condition. The study also found that a large area of the farm, particularly the blanket

bogs, was avoided by livestock, which had the effect of increasing the stocking rate elsewhere.

Traditional shepherding is no longer a practice on hill farms in Ireland, but previous generations farmed full-time and moved their sheep around to areas where there was grazing. A re-introduction of this practice would allow habitat types that are very sensitive to grazing and trampling to have very low levels of grazing or no grazing, yet allow the other habitat types to be farmed with moderate levels of grazing. However, the present economics of hill farming and the need for off-farm work means that a return to shepherding is unrealistic. Other methods of controlling sheep access need to be considered, such as fencing or the use of supplementary feeding in particular areas. The latter is problematic, as sheep can become reliant on feed and start to lose hefting traits. It also leads to localised trampling and results in an increase of nutrients entering the system.

7.7 Fencing to aid management of specific habitats.

In the absence of shepherding, the temporary erection of stock-proof fencing to control grazing distribution on certain habitat types could be considered. Kaule (2008) argued against fencing, citing that it leads to “fragmentation of pastures for large scale grazing, with serious consequences for the integrity and sustainable functioning of the system.” However, in the absence of traditional shepherding, without fencing the overall stocking levels that would be needed on the commonage to achieve results would be so low it would be entirely uneconomic for the sheep farmers. Fencing could be either permanent in certain situations or temporary. In some circumstances, “virtual fencing” may also be a viable alternative. Virtual fencing is an alternative to traditional fencing for large grazing areas. Tags are placed on the stock’s ears - these emit an irritating sound or shock to encourage them to stay outside a virtual exclusion zone. The zone is created by a transmitting device which can be easily maintained and the boundary can be altered remotely (Quigley *et al.* 1990; Rouda 1999).

7.8 Control of weed species and scrub.

7.8.1 *Gunnera*

Trials in Ireland have been conducted in the control of *Gunnera* using Glyphosate. Selective methods of applying herbicide are effective, *i.e.* cut and paint or cut and injection and, despite being labour intensive, the quantity of herbicide used is minimal, reducing the cost and the impact to the neighbouring environment. Initial applications are not 100% successful, so re-application of the herbicide is often required. *Gunnera* is not a present problem on the commonage areas at present, as it is found more on waterway edges, roadsides, wet meadows, derelict gardens and fields.

7.8.2 *Rhododendron*

Rhododendron has relatively few insects associated with it in Ireland. It also is poisonous to grazing animals. The control of *Rhododendron* is required in some areas, both to reduce the chances of further spread and to improve the conservation status of some upland habitats. Some sites are currently lightly- to moderately-infested and will degenerate into more severe infestations leading to habitat deterioration within 10-15 years (Higgins, 2008).

A range of tested control measures, which vary depending on the site and condition of the plants, exists. Some methods, such as mechanical removal, have a high ground disturbance associated with them and therefore, would be unsuitable on sites of high

nature conservation. Rhododendron control, using appropriate techniques, could be included in the future management of some North Connemara Commonages.

7.8.3 Bracken

Control of bracken should be one of the measures in the management of commonage. The use of herbicides has been successful in controlling bracken but it is not selective. Vegetation development after conventional bracken control with herbicide in the uplands is often slow, and rarely results in the development of the target community. Control by cutting has also been successful. Where it is cut once, in late July, there will be a 50% reduction in bracken cover over 3-6 years, with 10-30% left after 10 years; where it is cut twice in June/July, only 10% will remain after two years (Lowday and Marrs, 1992).

7.9 Improved marketing of Connemara hill lamb

The future sustainability of sheep production in the area will also rely on the regional marketing of high quality products. Market demand for products from farming systems that conserve nature may represent an important economic opportunity for HNV farming. In February 2007, Connemara Hill Lamb Ltd. achieved the European Protected Geographical Indication (PGI) status. This means that the use of the name Connemara Hill Lamb is reserved exclusively for hill lambs born and reared within the designated area by registered members of Connemara Hill Lamb Ltd., and is protected against imitation, exploitation or misuse.

Improved lamb prices through marketing of Connemara Hill lamb, highlighting the importance of the farming system to the maintenance of the biodiversity of the area, will help with the long-term financial viability of the area.

8.0 Conclusions

North Connemara is an agricultural area, but due to natural restrictions, it is not competitive with any of the high and medium productive regions of Europe. However, the blanket bogs and heaths of the area are important habitats for a range of vascular plant and bryophyte species of an oceanic or Atlantic distribution in Europe, several of which have an important part of their EU and world distribution in Ireland. This has been recognised through the high percentage of the area that is declared a Special Area of Conservation under the EU Habitats Directive. The poor economic returns from the limited farming systems require some level of support. Unsuitable agricultural supports in past policies lead to an explosion of sheep numbers and a degradation of habitats. These include disappearance of heath and semi-natural grasslands, reduced habitat for rare species (*e.g.* red grouse), the loss of peat and a reduction in water quality, and led to an associated decline in salmonid species (Bleasdale, 1995; Bleasdale and Sheehy-Skeffington, 1995; Douglas, 1995; Hickie *et al.*, 1999; Huang, 2002). The degradation of peatlands is now recognised as a major and growing source of anthropogenic greenhouse gas emissions. Carbon dioxide emissions from peatland drainage, fires and exploitation are estimated to currently be equivalent to at least 3,000 million tonnes per annum or equivalent to more than 10% of the global fossil fuel emissions. Peatland restoration for reducing greenhouse gas emissions is seen as a very cost-effective measure for long term climate change mitigation and adaptation (Parish *et al.* 2007). The Commonage Frameworks Plan, REPS and the NPWS Farm Plan have all been measures to rectify the negative effects of overgrazing. However, many of the habitats have yet to achieve a favourable condition status. For Ireland to meet the EU 2020 Biodiversity targets, specific management measures which are fully embraced by the farming community will be required. The success of grass-roots programmes such as the BurrenLIFE and

BFCP has resulted in 42% of the three main Burren SACs, approximately 13,300 ha of land, being farmed to achieve favourable condition status. Similar types of approaches have been suggested for upland areas but lack detail in suggested actions. In keeping with the aims of the EFNCP, the preparatory work in the production of this report has brought together ecologists, nature conservationists, farmers and policy-makers to make some proposals for future schemes for the Connemara uplands.

Devising a BFCP scheme for the area is not without difficulties. The nature of calcareous grasslands and limestone pavements means that undergrazing is always a bigger threat than overgrazing. Undergrazing leads to scrub encroachment mainly by hazel, but, with specific measures, it is possible to encourage the active farming in the area with the associated restoration of diverse grasslands. For the habitats of the North Connemara area, overgrazing is a bigger threat than undergrazing. The lack of a seed source in upland areas means that it is unlikely scrub regeneration will lead to unfavourable conditions in the immediate future. Therefore, any future measures will still require low or reduced stocking rates. This is a particular issue for the farming community as it prevents them responding to the market place which is the basic principle of the 2003 CAP reform. In addition, under BurrenLIFE and BFCP, the land was in single entity ownership. A large area of the farms in the Connemara uplands is under commonage, some with up to 70 different shareholders. Without a good regulatory process, it would be difficult to administer a targeted scheme. The agreement of all shareholders to a collective management agreement would be a necessary prerequisite of any future programme. The main criterion for the programme would be maintenance or restoration of semi-natural habitats on the commonage to favourable conservation status.

Payment for land management should be given only to those who are engaged in and actively involved in it. However, any future payments from a targeted scheme could lead to previously inactive shareholders commencing farming again. This would have a dramatic effect on the overall management and lead to disputes. The collective management agreement would need to address this where the active shareholders rent, through conacre or lease, the inactive shares. This would also lead to a higher percentage of the commonage being eligible as forage area under the proposed CAP reform post 2013, which is still most likely to be the main source of funding for the farmers on the commonage.

8.1 Funding a targeted based scheme.

Conservation work in the Burren region received its initial funding through the EU LIFE Nature programme. LIFE is the EU's financial instrument supporting environmental and nature conservation projects, and focuses on issues such as agri-environmental management tools, as well as grasslands, bog and scrublands conservation and restoration. It co-finances best practice or demonstration projects that contribute to the implementation of the Birds and Habitats Directives and the Natura 2000 network. The BurrenLIFE was a five year research programme that produced a blueprint for the agricultural management of priority habitats designated under the EU Habitats Directive. The tested and costed 'blueprint' developed through BurrenLIFE formed the basis for the new BFCP, which is run under Article 68 of EU Regulation 73/2009. Article 68 allows all Member States to retain up to 10 per cent of their national ceilings for direct payments to provide support to specific sectors, for an expanded range of purposes, which include protecting the environment and payments for disadvantages faced by specific sectors in economically-vulnerable or environmentally-sensitive areas, as well as for economically-vulnerable types of farming. The Common Agricultural Policy is

due to be reformed by 2013, therefore any future projects will most likely be under CAP post-2013.

8.1.1 LIFE+

A specific LIFE programme for the commonage in Connemara would help demonstrate correct methods and procedures in managing multi-ownership land to achieve favourable condition status. A project could look at many of the issues outlined in Section 7.0 to determine both their suitability and effect to produce a blueprint for the agricultural management of commonage upland habitats designated under the EU Habitats Directive. A previous EU LIFE funded project looked at common land management in upland Wales (Appendix 2) and an examination of the processes and results of this project may give further insight into the suitability of a similar project in North Connemara.

This could be a stand-alone project or part of a wider programme that looks at management of upland areas in Ireland. The uplands have special significance for society, in particular for tourism, recreation and community well-being, as areas of high quality landscape, rich heritage and biodiversity. Issues have been identified in other mountain areas which a LIFE project could address, and results could be incorporated into future policy for the uplands.

There have been significant reductions in sheep numbers in recent years in the Wicklow mountains. This has led to less activity on the hills, resulting in an accumulation of vegetation in some areas and reduced biodiversity from heather monocultures. This has increased the threat to existing moorland habitats, forest owners and property owners from uncontrolled wildfires. Local knowledge of controlled burning is diminishing as this traditional practice is no longer common. There has been an increase in uncontrolled fires. An element of a LIFE programme for the Irish uplands could look at best practices for heather burning and restoration of over-burned and under-grazed areas. The resulting information would help in the development of future programmes for the upland areas of Ireland.

The Irish uplands are an important habitat for many bird species. A recent report by BirdWatch Ireland (2010) identifies 22 species, of which 7 are Red listed species and 13 Amber listed in the Birds of Conservation Concern list (Lynas *et al.* 2007). Twelve species are listed on Annex 1 of the European Birds Directive. The correct future management of upland habitats is vital to reverse the decline in bird numbers.

Uncertainties about the factors affecting a species and the specific management required needs to be identified through research and monitoring so that effective agri-environment schemes can be developed. The Golden Eagle Trust is working in Donegal to establish a viable self-sustaining breeding population of golden eagles in north-west Ireland, after an absence of almost 100 years. An element of the Irish Uplands Life Project could build on the success of this project, specifically on habitat management, food chains within the area and the success of targeted measures to enhance upland bird populations.

8.1.2 CAP- post 2013

On 12 October 2011, the Commission presented a set of legal proposals designed to make the CAP a more effective policy for a more competitive and sustainable agriculture and vibrant rural areas. Following a debate in the European Parliament and the Council, the approval of the different regulations and implementing acts is expected

by the end of 2013, with a view to having the CAP reform in place as from 1st January 2014. In the present proposals, there is recognition that agriculture production is more difficult in some areas but is essential for preserving biodiversity and dynamic rural territories and areas. Disadvantaged regions with natural constraints can be taken into account when calculating direct payments and receive additional payments. This is optional and does not affect the LFA options available under Rural Development. Member States retain flexibility to define up to 10% of their agricultural area for specific constraints to preserve or improve the environment. This is a similar scheme to the existing LFA and in the past it has concentrated on broad areas, rather than supporting specific types of farming in the designated areas. For example, proposed changes in the Disadvantaged Areas Scheme minimum stocking rate from 0.15 to 0.3 LU/ha under the Ireland Budget 2012 may actually reduce support to some upland areas, where stocking rates are naturally low. Therefore future additional payments for areas with natural constraints will require the Rural Development Plan to incorporate a suite of measures that specifically targets the upland areas.

The CAP post-2013 proposals still contain the first pillar which aims to support farmers on an annual basis to meet the challenges which are common to the whole EU and the second pillar which can be adapted to the local realities of each Member State, in particular to support competitiveness, innovation, the fight against climate change and the sustainability of agriculture. Priority 4 of the new European Agricultural Fund for Rural Development (EAFRD) focuses on restoring and preserving biodiversity, including Natura 2000 areas and areas of HNV farming. At least 25% of Member States' Rural Development funding envelope must be allocated to issues related to land management and climate change measures, including agri-environment schemes and LFA. Future agri-environment schemes could be based on specific requirements in the area and target specific outcomes. Member States will also have the possibility to design sub-programmes with higher support rates, with mountain areas specifically listed (Article 8). The use of Article 8 may allow the implementation of specific targeted measures that could be incorporated into the Rural Development Plan, which will maintain farming in these upland areas and help meet targets under the EU Biodiversity 2020.

The list of measures of particular relevance to mountain areas includes:

- Payments to areas facing natural or other specific constraints
- Agri-environment operations
- Co-operation
- Investments in physical assets
- Farm and business development in rural areas
- Quality schemes for agricultural products and foodstuffs
- Knowledge transfer and information actions

The list also includes measures targeted more at the social structure of mountain rural areas which also would contribute to maintaining the rural population; these include:

- Basic services and village renewal in rural areas
- Knowledge transfer and information actions
- Setting up of producer groups
- Leader

The possibility for sub-programmes for mountain areas within Ireland as part of the Rural Development Plan offers the best approach for targeting aid through a serious of

measures that will benefit areas of High Nature Value farming such as North Connemara. This approach will help address the priorities under the Europe 2020 strategy of restoring, preserving and enhancing ecosystems dependent on agriculture.

Article 36 also offers financial support for measures that promote forms of co-operation between groups for work that will contribute to achieving the objectives and priorities of Rural Development Policy. Groups, *e.g.* farmers, researchers, advisors can set up an operational group that draws up a plan giving a description of a project to be developed tested and implemented. Possible themes include pilot projects and collective approaches to environmental projects and ongoing environmental practices. The costs involved can be supported under “Co-operation” measures. Possibilities for North Connemara include the establishment of a group incorporating farmers, government bodies and research institutes to develop a project to look at sustainable grazing of a commonage which will produce specific guidelines for managing extensive upland grazing areas where habitats have different requirements.

The success of the BFCP programme has shown that by adopting a dedicated management framework and harnessing the expertise and ability of the farming community, real gains can be achieved which both maintain and enhance the condition of Ireland’s biodiversity. A similar programme using the financial tools available can be developed for the North Connemara area; the results will not only improve the biodiversity, agricultural stability and social fabric of the area, but the conservation and restoration of peatlands can also provide a major contribution to the mitigation of climate change (Couwenberg, 2011).

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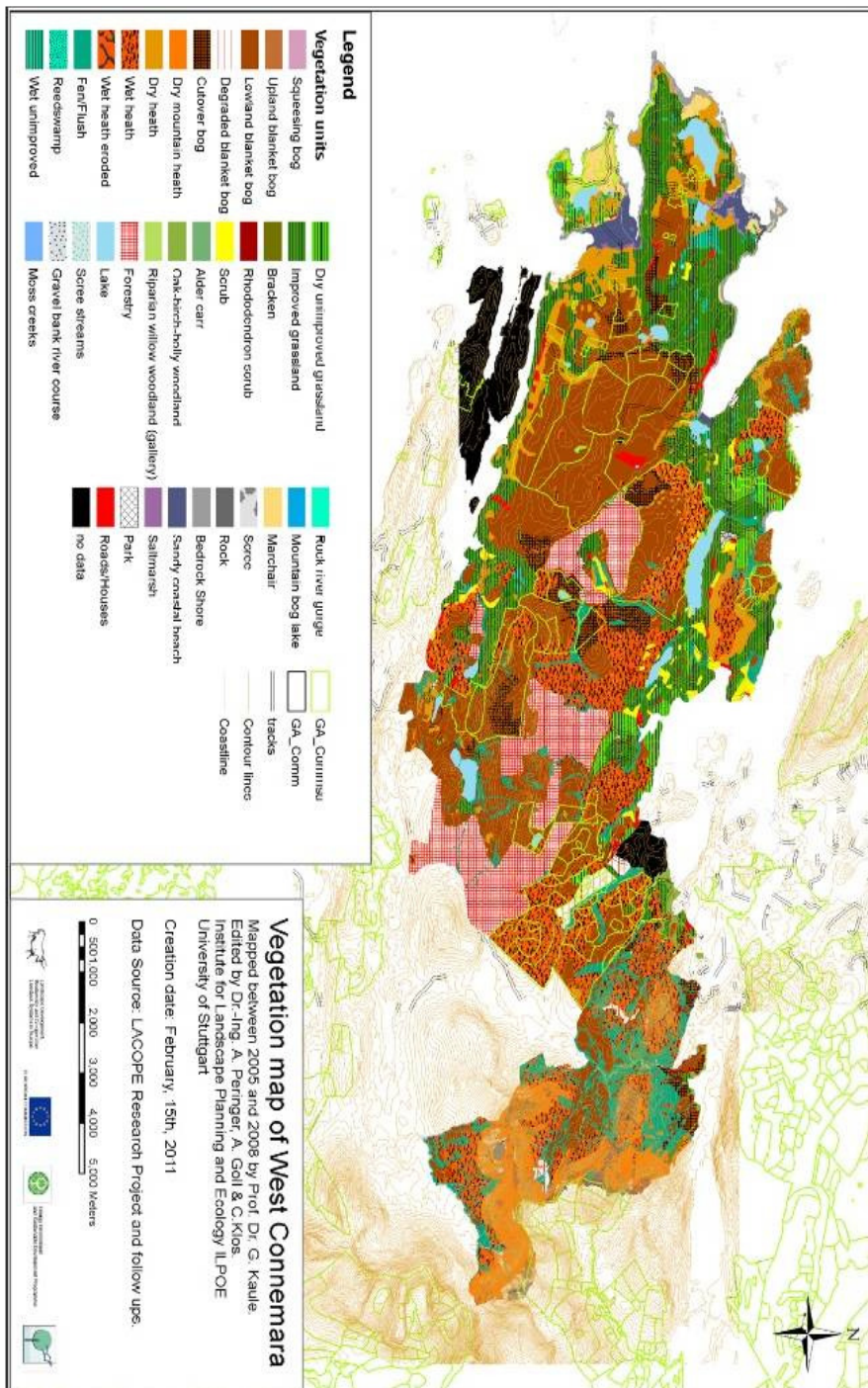
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Appendix 1. The different land class categories in North West Connemara with the commonages overlaid (Kaule 2008).



Appendix 2 Welsh LIFE project on Common land.

COMMON LAND MANAGEMENT IN UPLAND WALES (1994)

LIFE94 ENV/UK/000557

The project aims to investigate methods of improving management and reconciling different interests for a category of land with high landscape, wildlife, recreation and agriculture value, thus promoting sustainability in common land management. Under the project, research will be carried out into the issues affecting Common Land Management on 15,000 hectares of common land on Mynydd Du, within the Brecon Beacons National Park. Surveys and research are being carried out on agricultural land use, recreation, vegetation, archaeology, landscape and wildlife. A key element of the project will be a detailed social survey linked to a series of group discussions with Commoners, other local residents and visitors. The inclusion of the agricultural community from the beginning of the project is recognised as vital. These consultations should also provide further insight into people's perception of the value of common land which will feed into the management proposals and the development plan. Practical land management will be carried out by commoners and local contractors. The intention is to experiment with methods of improved stock management to further the landscape, wildlife, recreation and agricultural values of the commons. These methods are likely to include improved shepherding, heather management, etc. Advice will be provided at the major access points onto the commons as an experimental approach to the problems generated by vehicles, mountain bikes and walkers. The project aims to reconcile the uses of the mountain and produce a plan for future sustainable management. It is hoped that this will contribute to a blueprint for Common Land Management throughout Europe.