European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Fourth Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2013 to December 2018

Supporting documentation for the
conservation status assessment for the habitat:

H6410 - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

NORTHERN IRELAND

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this habitat, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this habitat is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was only relevant at UK-level (sections 10 Future prospects and 11 Conclusions).
- For technical reasons, the country-level future trends for Range, Area covered by habitat and Structure and functions are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (Northern Ireland information only)**
1.2 Habitat code	**6410 - Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molin**

2. Maps

2.1 Year or period	2013-2018
2.3 Distribution map	Yes
2.3 Distribution map Method used	Complete survey or a statistically robust estimate
2.4 Additional maps	No

BIOGEOGRAPHICAL LEVEL

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs	**Atlantic (ATL)**
3.2 Sources of information	Data on aerial Nitrogen deposition taken from Air Pollution Information System website - http://www.apis.ac.uk/ NIEA. Internal Condition Assessment Reports (various sites and years). Rodwell, J.S. (1991). British Plant Communities. Volume 2, Mires and heaths. Cambridge: Cambridge University Press Murray, R., McCann, T. and 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. McCann, T., Rogers, D. and Cooper, A. (2009) Northern Ireland Countryside Survey 2007: Field methods and technical manual. Northern Ireland Environment Agency. Northern Ireland Environment Agency, Research and Development Series No 09/07. Belfast. Cooper, A. & McCann, T. (2001). The Northern Ireland Countryside Survey 2000. Environment and Heritage Service, Belfast Grassland Inventory of Northern Ireland 1999-2017. A database of grassland survey sites and grasslands of interest in the Northern Ireland countryside, incorporating contracted work by University of Ulster, ADAS and Allen and Mellon Environmental. Alistair Church NIEA. Cooper, A. & McCann, T. (1994). The Botanical Composition of Grassland Land Cover Types in Northern Ireland. Contract Report to Environment Service, DOE (NI). Rodwell, J.S., Dring, J.C., Averis, A.B.V., Proctor, M.C.F., Malloch, A.J.C., Schaminee, J.H.J & Dargie, T.C.D. 1998. Review of Coverage of the National Vegetation Classification. Lancaster: Unit of Vegetation Science report to the Joint Nature Conservation Committee. Eakin, M. (1994). The Ecology, Management and Conservation of Species-rich Hay Meadows in County Fermanagh. PhD Thesis. Dept Environmental Studies, UUC. Rodwell, J.S. 2004 Lowland Rush-pastures and Fen Meadows in Fermanagh - Towards a definition and sampling procedure. Unpublished Report to DOE.

4. Range

4.1 Surface area (in km²)	
4.2 Short-term trend Period	

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4.3 Short-term trend Direction	Stable (0)		
4.4 Short-term trend Magnitude	a) Minimum	b) Maximum	
4.5 Short-term trend Method used			
4.6 Long-term trend Period			
4.7 Long-term trend Direction			
4.8 Long-term trend Magnitude	a) Minimum	b) Maximum	
4.9 Long-term trend Method used			
4.10 Favourable reference range	a) Area (km²)		
	b) Operator		
	c) Unknown	No	
	d) Method		
4.11 Change and reason for change in surface area of range	No change		
	The change is mainly due to:		
4.12 Additional information			

5. Area covered by habitat

5.1 Year or period	2013-2018		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 35
5.3 Type of estimate	Best estimate		
5.4 Surface area Method used	Complete survey or a statistically robust estimate		
5.5 Short-term trend Period	2007-2018		
5.6 Short-term trend Direction	Decreasing (-)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data		
5.9 Long-term trend Period	1994-2018		
5.10 Long-term trend Direction	Decreasing (-)		
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used			
5.13 Favourable reference area	a) Area (km²)		
	b) Operator		
	c) Unknown	No	
	d) Method		
5.14 Change and reason for change in surface area of range	No change		
	The change is mainly due to:		
5.15 Additional information			

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum	9.81	Maximum	9.81
	b) Area in not-good condition (km²)	Minimum	0.3167	Maximum	0.3167
	c) Area where condition is not known (km²)	Minimum	24.8733	Maximum	24.8733

6.2 Condition of habitat Method used	Based mainly on extrapolation from a limited amount of data
6.3 Short-term trend of habitat area in good condition Period	2013-2018
6.4 Short-term trend of habitat area in good condition Direction	Increasing (+)
6.5 Short-term trend of habitat area in good condition Method used	Based mainly on extrapolation from a limited amount of data
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period? No
6.7 Typical species Method used	
6.8 Additional information	

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Conversion from one type of agricultural land use to another (excluding drainage and burning) (A02)	M
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	H
Intensive grazing or overgrazing by livestock (A09)	M
Application of natural fertilisers on agricultural land (A19)	H
Application of synthetic (mineral) fertilisers on agricultural land (A20)	M
Agricultural activities generating air pollution (A27)	H
Drainage for use as agricultural land (A31)	M
Conversion to forest from other land uses, or afforestation (excluding drainage) (B01)	M
Drainage, land reclamation and conversion of wetlands, marshes, bogs, etc. to settlement or recreational areas (F26)	M
Droughts and decreases in precipitation due to climate change (N02)	M

Threat	Ranking
Conversion from one type of agricultural land use to another (excluding drainage and burning) (A02)	M
Abandonment of grassland management (e.g. cessation of grazing or mowing) (A06)	H
Intensive grazing or overgrazing by livestock (A09)	M
Application of natural fertilisers on agricultural land (A19)	M
Application of synthetic (mineral) fertilisers on agricultural land (A20)	M
Agricultural activities generating air pollution (A27)	H
Drainage for use as agricultural land (A31)	M
Conversion to forest from other land uses, or afforestation (excluding drainage) (B01)	M

Drainage, land reclamation and conversion of wetlands, marshes, bogs, etc. to settlement or recreational areas (F26)	H
Droughts and decreases in precipitation due to climate change (N02)	H

7.2 Sources of information

7.3 Additional information

8. Conservation measures

8.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken
8.2 Main purpose of the measures taken		Maintain the current range, population and/or habitat for the species
8.3 Location of the measures taken		Both inside and outside Natura 2000
8.4 Response to the measures		Medium-term results (within the next two reporting periods, 2019-2030)

8.5 List of main conservation measures

Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land (CA01)
Maintain existing extensive agricultural practices and agricultural landscape features (CA03)
Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures (CA04)
Manage the use of natural fertilisers and chemicals in agricultural (plant and animal) production (CA09)
Adapt mowing, grazing and other equivalent agricultural activities (CA05)
Reduce/eliminate air pollution from agricultural activities (CA12)
Implement climate change adaptation measures (CN02)
Manage drainage and irrigation operations and infrastructures in agriculture (CA15)
Prevent conversion of (semi-) natural habitats into forests and of (semi-)natural forests into intensive forest plantation (CB01)

8.6 Additional information

9. Future prospects

9.1 Future prospects of parameters	a) Range
	b) Area
	c) Structure and functions

9.2 Additional information

10. Conclusions

10.1. Range

10.2. Area

10.3. Specific structure and functions (incl. typical species)

10.4. Future prospects

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

10.5 Overall assessment of Conservation Status	
10.6 Overall trend in Conservation Status	
10.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status No change The change is mainly due to: b) Overall trend in conservation status No change The change is mainly due to:
10.8 Additional information	

11. Natura 2000 (pSCIs, SCIs, SACs) coverage for Annex I habitat types

11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network (in km² in biogeographical/ marine region)	a) Minimum b) Maximum c) Best single value 3.32
11.2 Type of estimate	Best estimate
11.3 Surface area of the habitat type inside the network Method used	Complete survey or a statistically robust estimate
11.4 Short-term trend of habitat area in good condition within the network Direction	Stable (0)
11.5 Short-term trend of habitat area in good condition within network Method used	Complete survey or a statistically robust estimate
11.6 Additional information	

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

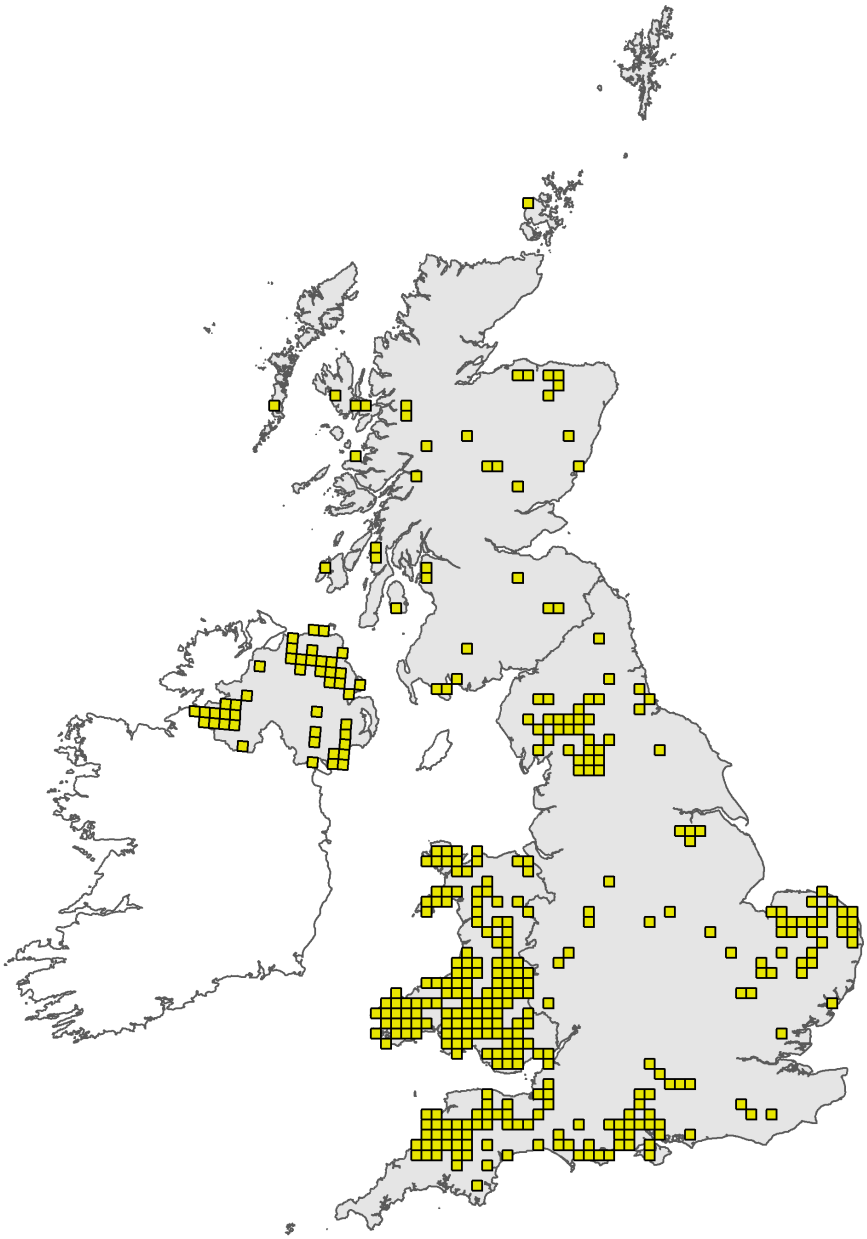

Figure 1: UK distribution map for H6410 - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available habitat records which are considered to be representative of the distribution within the current reporting period. For further details see the 2019 Article17 UK Approach document.

Range Map

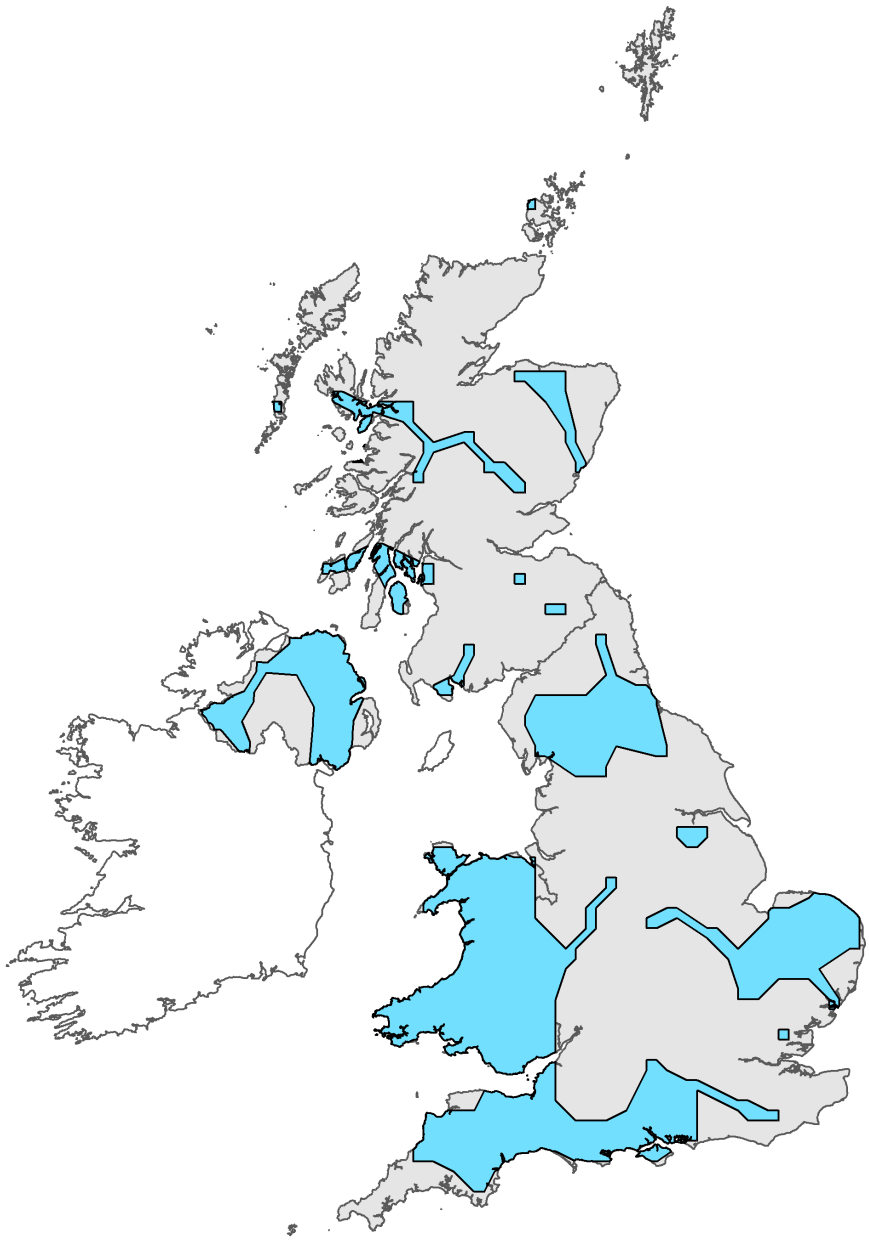

Figure 2: UK range map for H6410 - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this habitat was 25km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Habitat code: 6410

Field label	Note
2.1 Year or period	2013-2018
2.2 Distribution map	Molinia grasslands are found mainly on moist peats and peaty gley soils. Species-rich purple moor-grass Molinia caerulea grasslands are scattered across the UK, with concentrations in south-west England, western and central Wales, East Anglia, northern England and NI. The habitat is represented by two main NVC communities: M24 Molinia caerulea-Cirsium dissectum fen-meadow (with different forms, including a heathy form found mainly in south Wales and south-west England (and NI)), and M26 Molinia caerulea-Crepis paludosa mire, which occurs more locally in northern England and north Wales (fairly localised in NI and generally only occurs in small stands). NI has a high proportion of the UK resource. In addition, NI communities appear be significantly different in an ecological sense from those of GB. 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. Molinia grasslands 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.
2.3 Distribution map; Method used	Most of the H6410 habitat in NI SACs and ASSIs was visited during the period of the report. Estimate based on partial data with some extrapolation and/or modelling; hence reported as Complete survey or a statistically robust estimate

Habitat code: 6410 Region code: ATL

Field label	Note
3.1 Biogeographic or marine region where the habitat occurs	ATL
4.3 Short term trend; Direction	stable
4.10 Favourable reference range	There are likely to have been substantial losses of this habitat in the UK over the last 50 years, which have caused a contraction in range. Although this is unlikely to be a problem now, these historic losses to forestry and to intensive agriculture, almost certainly mean that the habitat was formerly much more extensive in range. However, there is no evidence to suggest that the NI range has declined since 1988.
4.11 Change and reason for change in surface area of range	Substantial survey work has been undertaken in western Northern Ireland where the main area of H6410 occurs. This has increased the surface area of the habitat but the range remains unaffected.
5.1 Year or period	2013 - 2018
5.2 Surface area	35Km2

5.3 Type of estimate	Best estimate based on SAC, ASSI extent figures and information held in Northern Ireland Grassland Inventory. NICS estimated 5290 ha of fen meadow - which is the closest equivalent to H6410. The S.E. of the estimate is 17.6 km2. Figure quoted in the 2012 Report for NI was 1000 ha. This was based upon the premise that H6410 represents a subset of the Fen Meadow habitat; previous work (Cooper and McCann, 1994) suggested that around 16% of fen meadow conforms to good quality examples of H6410. Given that the current extent of H6410 within SACs and ASSIs in NI now stands at over 1000ha combined with additional information from grassland and ortho-survey we have revised the estimate from the 2012 Report to a more realistic 3500ha.
5.4 Surface area; Method used	Complete survey or statistically robust estimate
5.5 Short term trend; Period	2007-2018
5.6 Short term trend; Direction	Direction - Decrease<1% per
5.8 Short term trend; Method used	Complete survey or a statistically robust estimate. Change in surface area is from non-directional fluctuation as a result of additonal surveys and monitoring figures for the habitat, particularly in the western parts of Northern Ireland.
5.9 Long term trend; Period	1988-2018
5.10 Long term trend; Direction	decrease >1% per year
5.12 Long term trend; Method used	From the 2007 report, Northern Ireland Countryside Survey (NICS) suggested an 18% decline between 1991 and 1998 in 'Fen meadow' category (this grassland type takes in M24 and M26, but also loosely includes types of M23 and M6). NICS indicated that a large part of the 1991-98 loss of fen meadow was due to conifer plantation, a problem shared in other parts of the UK, e.g. Devon and Cornwall. The most recent analysis from NICS (covering period 1998 to 2007) suggests a very similar decline. It is possible that this decline has slowed in more recent times, as agri-environment schemes are implemented and forestry policy has changed. Declines continue due to small scale housing development in the countryside, particularly in western parts of the country. Across parts of Northern Ireland outside of Agri-Env, losses are likely to have occurred due to intensive agricultural practices.
5.14 Change and reason for change in surface area	On the one hand, the NICS data indicates that the habitat has declined in extent over time. On the other hand, the overall estimate of habitat extent for NI has increased significantly since the last report. This change is due to improved knowledge/more accurate data. A substantial near-completion of surveys for the habitat in most of Fermanagh and parts of Tyrone for designation of ASSIs has increased knowledge of the surface area of the habitat.
6.1 Condition of habitat	All 306.08ha in SAC in favourable condition 26.5 ha of habitat on SACs in unfavourable condition; 675.34 ha of the habitat on ASSIs in favourable condition and 21 ha of the habitat on ASSIs unfavourable recovering condition. 31.67 ha of habitat in ASSIs is in unfavourable condition and 40.2 ha in unknown condition. The condition of the habitat on SACs and ASSIs is a moderate indicator of the condition in the wider countryside, as a reasonable proportion of the habitat is within the protected sites network.
6.2 Condition of habitat; Method used	Data taken from the most recent Common Standards Monitoring on SACs and ASSIs that contain the habitat.
6.3 Short term trend of habitat area in good condition; Period	Data taken from the most recent Common Standards Monitoring on SACs and ASSIs that contain the habitat.
6.4 Short term trend of habitat area in good condition; Direction	Improving. Evidence suggests more land within SAC and ASSI is in improving condition.

6.5 Short term trend of habitat area in good condition; Method used	The current condition of the habitat structure and functions was assessed using Common Standards Monitoring site condition monitoring. This involved assessing the following attributes: - Extent - Grass:herb ratio - Positive indicator species - Negative indicator species - Indicators of local distinctiveness - Height - Litter - Bare ground Within protected site network 31.45% of the Molinia meadow H6410 habitat is within SAC/ASSI designation and of that 89.15% of the habitat is in favourable condition, 1.9% is in unfavourable recovering condition, 5.28% is in unfavourable condition and 3.65% is in unknown condition. Of the entire surface area of the habitat H6410 28.04% of the habitat is in favourable condition, 0.6% is in unfavourable recovering condition, 0.9% is in unfavourable condition and 69.69% is in unknown condition.
7.1 Characterisation of pressures/ threats	Although there have been losses of the habitat within Northern Ireland there is still a healthy resource remaining and recent survey work has confirmed the presence of a large resource in Western Fermanagh. Around other parts of Northern Ireland (outside of agri-environment schemes), losses are likely to have occurred due to intensive agriculture. Eu-Molinion wet grasslands in the UK have been traditionally managed as rough grazing, particularly by cattle, and to a much lesser extent by cutting to maintain favourable structure and function. A major current problem is agricultural neglect and abandonment, leading to litter build-up and scrub invasion. Less prevalent than under-grazing, overgrazing by sheep is still sometimes reported, along with occasional poaching and trampling by livestock during wet periods. The management of surface and groundwater is clearly crucial to providing the surface groundwater requirements of this habitat type, as are its constituents, for example basic ions such as calcium, its pH, and quantity of the plant nutrients nitrogen and phosphorus. Based upon NI Countryside Survey, some of the habitat loss in the past was due to afforestation, particularly conifers during the period from 1998 to 2007. Current forestry policy should ensure that this is no longer the case. The habitat is sensitive to aerial deposition of Nitrogen. Based on an assessment of the exceedence of relevant critical loads air pollution is considered to be a potentially significant pressure to the structure and function of this habitat. The critical load for the habitat is 15-25 kg N/ha/yr. West Fermanagh Scarplands is the largest single area for H6140 and has a predicted deposition of between 8.7 and 12.3 kg/N/ha/yr (average 9.2). However, other sites with the habitat - particularly in the east of the province - do exceed these levels.
7.2 Sources of information	Northern Ireland Countryside survey; NIEA condition assessment of designated sites; NIEA survey of grasslands for designation of ASSIs and from surveying potential ASSIs using the Northern Ireland Grassland Inventory.
7.3 Additional information	Assessment of pressures based upon 3 data sources: NICS, NIEA condition assessment and survey of grasslands for ASSI designation. NICS pressures have been based upon an analysis of transitions between NI countryside survey field mapped habitats. Estimated from baseline 1998 to re-survey 2007 in 288 25ha samples. Condition assessments based on CSM provide a means to assess the structure and functioning of H6410 in the UK. Re-survey of grasslands within NI grassland Inventory for selection as ASSI has allowed an assessment of change in un-notified grasslands in parts of the wider countryside.
8.1 Status of measures	Measures identified and being taken in the form of Conservation management plans within SAC's and through Environmental Farming Scheme on ASSI's and in the wider countryside. Some measures such as development pressure to be identified through development plans in local councils and agricultural air pollution yet to be implemented.
8.2 Main purpose of the measures taken	This is a habitat that requires a low level of grazing to maintain it, so the main measures are to encourage extensive grazing in sites that contain the habitat. Some of the sites are owned and managed by NIEA and other nature conservation bodies so there is effective control of the management regime within these.

8.3 Location of the measures taken	Both inside and outside of Natura 2000
9.1 Future prospects of parameters	Overall assessment is stable. The main current threat to the habitat is a reduction or cessation in grazing; Conservation Management Plans in preparation, Interreg project and the current Envirnmental Farming Scheme are intended to encourage the maintenance of appropriate grazing regimes. Atmospheric Nitrogen is a reduced threat in this particular habitat (compared to other grassland habitats), as the main area for the habitat is in the west, where atmosperic Nitrogen loadings are lower and critical thresholds not exceeded.
10.1 Range	Range has been assessed as favourable based on continued presence noted throughout the habitats occurrence across designated sites in Northern Ireland
10.2 Area	Area is considered to have declined based upon historical NICS trends and evidence collated from Grassland ASSI designation surveys whereby some sites have been lost to agricultural intensification, abandonment or very localised devlopment pressures.
10.3 Specific structure and functions	The trend in condition of H6410 within the protected sites network is improving with condition within 1 of the 2 SAC's changing from unfavourable to favourable during the reporting cycle. The general picture within SAC/ASSI is reasonable with 89.15% of H6410 in favourable condition and an additional 1.9% in unfavourable recovering, only 5.28% of H6410 is in unfavourable condition. The assessment has concluded unfavourable inadequate based on an unknown condition of the habitat within the wider countryside outside of protected sites. Only 31.45% of H6410 is within protected sites.
11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network	332.58 ha recognised as qualifying SAC features, an additional 18.6 ha within Monawilkin SAC not qualifying as ASSI feature.