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:

H6170 - Alpine and subalpine calcareous grasslands

WALES

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 (Wales information only)**
1.2 Habitat code	**6170 - Alpine and subalpine calcareous grasslands**

2. Maps

2.1 Year or period	1996-2005
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	Averis, A., 2002. Vegetation survey of the eastern part of the Carneddau SSSI and cSAC, Conwy, Summer 2001. CCW Science Report 535. Guest, D. 2012. Assessing N deposition as a pressure for Article 17 reporting on habitats. CCW HQ internal document. Harrison, T. 2017. Eryri SAC Monitoring Summary report: 6170 Alpine and subalpine calcareous grasslands. Monitoring Round 2013 to 2018. JNCC. 2004. Common standards monitoring guidance for lowland grasslands. JNCC. http://jncc.defra.gov.uk/PDF/CSM_lowland_grassland.pdf Lewis, H. 2005. Eryri SAC. 6170 Alpine and Sub Alpine Calcareous Grassland. SAC Monitoring report. Mitchell, R.J., Morecroft, M.D., Acreman, M.(14 others). 2007. England Biodiversity Strategy - Towards adaptation to climate change. Final Report to Defra for contract CR0327. Natural England and RSPB, 2014. Climate Change Adaptation Manual. NRW. 2015. Natura 2000 Thematic Action Plan. Air pollution: Nitrogen deposition. LIFE Natura 2000 Programme for Wales. NRW. 2017. Actions Database. NRW internal database. NRW. 2018. Briefing Note. Article 17, 2013-18: Pressures, threats and conservation measures guidance. Internal NRW document. Rodwell, J.S. (ed.). 1992. British plant communities. Volume 3. Grasslands and montane communities. Cambridge University Press, Cambridge Stevens J. & Smith S. 2012. H6170 Alpine and subalpine calcareous grasslands: Wales GIS inventory. CCW HQ dataset. Surry, K. 2012. Eryri / Snowdonia SAC UK0012946. 6170 Alpine and Sub Alpine Calcareous Grassland. SAC Monitoring report 2012. Monitoring cycle 2007 -2012. Turner, A. Unpublished a. NVC survey of Glyder and Yr Wyddfa for CCW, 1996-1998. Turner, A. Unpublished b. NVC survey of Cwm Idwal for CCW, 2004-2005.

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	1996-2005		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 0.017
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	2005-2016		
5.6 Short-term trend Direction	Stable (0)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Complete survey or a statistically robust estimate		
5.9 Long-term trend Period	1996-2016		
5.10 Long-term trend Direction	Stable (0)		
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used	Complete survey or a statistically robust estimate		
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 0.017	Maximum 0.017
	b) Area in not-good condition (km²)	Minimum 0	Maximum 0
	c) Area where condition is not known (km²)	Minimum 0	Maximum 0

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6.2 Condition of habitat Method used	Complete survey or a statistically robust estimate
6.3 Short-term trend of habitat area in good condition Period	2005-2016
6.4 Short-term trend of habitat area in good condition Direction	Stable (0)
6.5 Short-term trend of habitat area in good condition Method used	Complete survey or a statistically robust estimate
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
Mixed source air pollution, air-borne pollutants (J03)	H
Intensive grazing or overgrazing by livestock (A09)	M

Threat	Ranking
Mixed source air pollution, air-borne pollutants (J03)	H
Intensive grazing or overgrazing by livestock (A09)	M
Temperature changes (e.g. rise of temperature & extremes) due to climate change (N01)	M
Change of habitat location, size, and / or quality due to climate change (N05)	M

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	Only inside 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		

Reduce impact of mixed source pollution (CJ01)

Adapt mowing, grazing and other equivalent agricultural activities (CA05)

Reduce impact of outdoor sports, leisure and recreational activities (CF03)

8.6 Additional information

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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	
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 0.017
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	

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Distribution Map

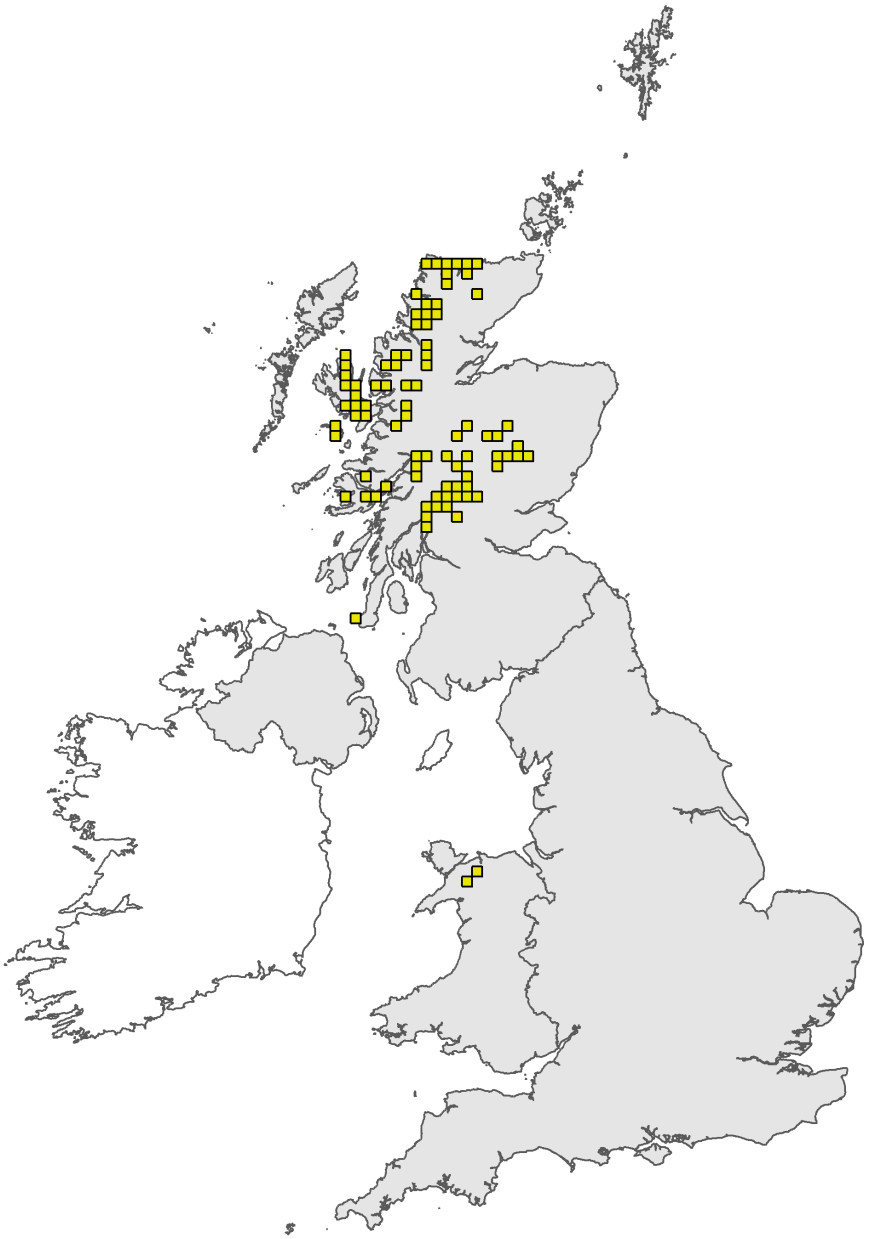

Figure 1: UK distribution map for H6170 - Alpine and subalpine calcareous grasslands. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

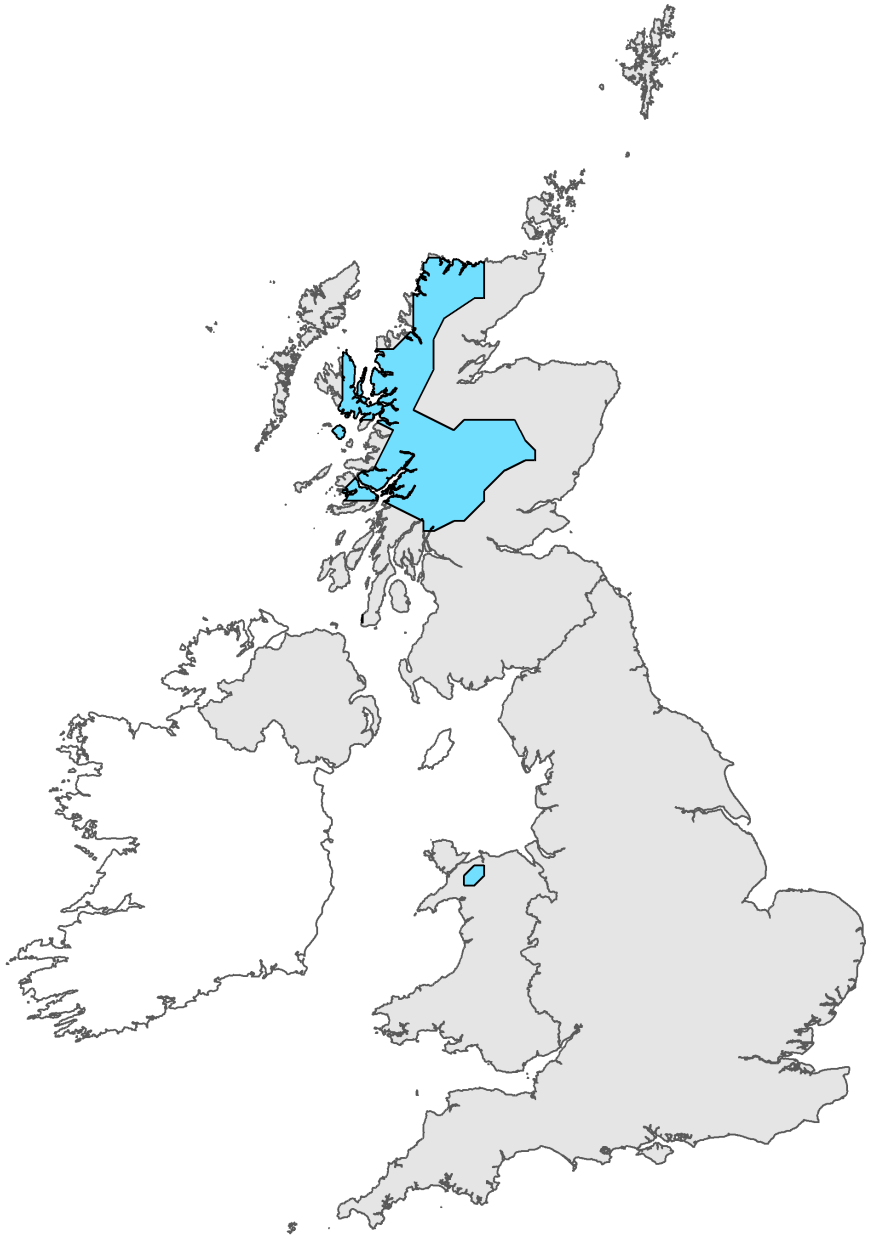

Figure 2: UK range map for H6170 - Alpine and subalpine calcareous grasslands. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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: 6170

Field label	Note
2.3 Distribution map; Method used	The distribution (and extent) is based on the results of three individual NVC (Rodwell, 1992) surveys: Turner, unpublished a; Turner, unpublished b; Averis, 2002. These surveys include all known stands of NVC CG12 and CG14 of any size in Wales. A GIS-based inventory for the habitat was produced using these data sources (Stevens & Smith, 2012). These data are considered to accurately reflect the current distribution of the habitat, which, in Wales, is not thought to occur outside of northern Snowdonia. Although the underpinning habitat survey work was conducted before 2007, the continued presence of the habitat within the individual 10km grid squares has been confirmed during recent SAC monitoring in 2011 and 2016 (Surry, 2012; Harrison, 2017) and the overall distribution map is thus considered accurate and up to date. Six localities for the habitat within Eryri SAC are marked by point locations - each of these is considered to be very small in extent.

Habitat code: 6170 Region code: ATL

Field label	Note
4.3 Short term trend; Direction	See 4.11
4.11 Change and reason for change in surface area of range	There has been no additional survey in the intervening period and no reported changes to range during SAC monitoring.
5.3 Type of estimate	The extent is based on the results of three individual NVC (Rodwell, 1992) surveys: Turner, unpublished a; Turner, unpublished b; Averis, 2002. These surveys include all known stands of NVC CG12 and CG14 of any size in Wales. A GIS-based inventory for the habitat has been produced using these data sources (Stevens & Smith, 2012). These data are considered to accurately reflect the current extent of the habitat. Although there are six additional localities for the habitat within Eryri SAC marked only by point locations, each of these is considered to be very small in extent. Although the underpinning habitat survey work was conducted before 2007, no changes in extent have been recorded during SAC monitoring in 2011 and 2016 (Surry, 2012; Harrison, 2017).
5.5 Short term trend; Period	The intervening dates between the past three monitoring visits.
5.8 Short term trend; Method used	All of the habitat in Wales falls within Eryri SAC and was monitored in 2005, 2011 and 2016 (Lewis, 2005; Surry, 2012; Harrison, 2017). Monitoring includes the principal stands of the habitat. No changes in the extent of any habitat patches have been recorded between monitoring cycles, although the full extent of the habitat is not assessed during monitoring due to its fragmentary nature.
5.9 Long term trend; Period	The dates between the original survey work and the last monitoring report.
5.12 Long term trend; Method used	All of the habitat in Wales falls within Eryri SAC. Monitoring of the habitat in Eryri SAC was undertaken in 2005, 2011 and 2016 (Lewis, 2005; Surry, 2012; Harrison, 2017). The monitoring included the principal stands of the habitat. No changes in the extent of any habitat patches have been recorded since the original surveys (Turner, unpublished a; Turner, unpublished b; Averis, 2002) or between monitoring cycles, although the full extent of the habitat is not assessed during monitoring due to its fragmentary nature.
5.14 Change and reason for change in surface area	There has been no additional survey in the intervening period and no reported changes to extent during SAC monitoring.

6.2 Condition of habitat; Method used	Assessment of structure and function is based on the results of common standards monitoring (JNCC, 2004) undertaken in Eryri SAC in 2011 (Surry, 2012) and 2016 (Harrison, 2017). Both reports concluded that the habitat was in favourable condition overall. Although previous monitoring results (Lewis, 2005) reported unfavourable condition for the habitat, Surry (2012) considered that this was largely due to non-representative sampling and that it was not possible to conclude that there had been a significant change in condition between 2005 and 2011. Eryri SAC has 100% of the habitat extent in Wales.
6.3 Short term trend of habitat area in good condition; Period	These are the years between the most recent three monitoring visits covering Eryri SAC (Lewis, 2005; Surry, 2012; Harrison, 2017).
6.5 Short term trend of habitat area in good condition; Method used	See 6.2
7.1 Characterisation of pressures/ threats	Information on pressures and threats was largely taken from conclusions in the SAC monitoring reports (Lewis, 2005; Surry, 2012; Harrison 2017), supplemented by interrogation of data held in NRW's Special Sites Actions Database (NRW, 2017), which provides information on 'issues' affecting habitats and species within the protected sites series in Wales (NRW, 2018). Two pressures are identified as relevant to the habitat from interogation of the Actions Database: over-grazing (A09) and recreation (F07). Grazing by sheep was noted as having a negative impact on the habitat by Lewis (2005), but Surry concluded that there was no evidence of high grazing pressure to stands of the habitat accessible to sheep. However, three of the six management units with the habitat are noted as having problems with feral goats, which are known to access and graze ledge vegetation; A09 is therefore given a Medium ranking. F07 is limited to human trampling (desire lines), but these cover only a very small part of the feature (Surry, 2012), so F07 is given Low ranking. I02 invasive non-natives is given a low raking. This refers to Epilobium brunnescens, which occurs in some stands of the habitat, but overall at less than 1% cover (Surry, 2012; Harrison, 2017). No change in the threat level from over-grazing (A09), trampling (F07) and invasive non-native species (I02) is anticipated in the foreseeable future. Interogation of data from the Actions Database suggests that actions to deal with goat grazing have been identified but are mostly either not completed or not yet underway. A critical load level of 5 kg ha/year (lower level) of atmospheric nitrogen has been formally allocated to this habitat. Air pollution (N deposition) (J03) is assessed separately using a defined approach (Guest, 2012), using updated deposition data. Using a data overlay method in ARC GIS, 100% of the habitat by area (polygon data) was recorded at or above the lower Critical Load limit and the habitat is given a High ranking. Despite modest projected reductions in the overall deposition rates for atmospheric nitrogen, air pollution (J03) is expected to remain a High pressure (threat) to the habitat (Guest, 2012). Montane habitats are listed as having high sensitivity to climate change (Natural England & RSPB, 2014) (N01, N02, N03, N05). As the condition of the habitat is currently considered favourable (Harrison, 2017), these are given Low ranking as pressures, but N01 and N05 are elevated to Medium ranking as threats. N01: Arctic alpine species are adapted to low temperatures and short growing seasons and could be particularly susceptible to increased levels of competition caused by higher temperatures (Natural England & RSPB, 2014). N05: Decline in quality or character of the habitat would occur if key arctic-alpine plants were to decline. Some arctic-alpine species are at their southern British limits in Wales. N03: Increased winter rainfall levels could also adversely affect arctic species to some extent (Mitchell et al., 2007; Natural England & RSPB, 2014). N03 and N02 (decrease in precipitation) are given Low threat rankings using expert judgement. It should be noted, however, that the climate change rankings could change over time as the effects of climate change become clearer.

8.5 List of main conservation measures	Using data from the Actions Database, 100% of Actions relevant to the habitat are either Identified, Underway or Completed. As 100% of the habitat falls within statutory sites, it is concluded that all Conservation Measures directed at site management are therefore identified or taken and should have an impact in the next 12 years. NRWs Actions Database (NRW, 2017) lists 6 management units with H6170 as a key or compatible feature, containing a total of 17 actions; 53% of these are expected to have a positive impact on the habitat in the next 12 years (Actions listed as Completed, Underway, Planned or Agreed in principle). Two categories of action/measures are recorded: CA05, aimed at reducing grazing management (Pressure/Threat A09), and CF03, aimed at combating/preventing recreational damage (Pressure/Threat F07). Both of these are listed for 67% of management units. CA05: Almost the whole habitat area in Wales is covered by a Glastir Advanced option aimed at good or improved grazing management of livestock. (Pressure/Threat A09). Thematic Action Plans have been produced for SACs; these provide priorities for each theme. CJ01: The Natura 2000 Thematic Action Plan sets out the policy surrounding air pollution in Wales. There are various air quality strategies and initiatives in place to protect and enhance biodiversity. Air quality limit values set out in the Air Quality Strategy (AQS) are transposed into national legislation by the Air Quality Standards Regulations 2010. Nitrogen deposition, however, is still a major issue on semi-natural habitats in the UK. These regulations are not habitat-specific (NRW, 2015). (Pressure/Threat J03).
9.1 Future prospects of parameters	9.1a future prospects of - range Climate change and to a lesser extent atmospheric pollution may represent long term threats to the altitudinal and geographic range of the habitat in Wales. However, other factors are largely under control and in the shorter term the habitats range is expected to remain stable. 9.1b Future prospects of - area The evidence from monitoring of Eryri SAC suggests the habitat has been stable in area over at least the past two monitoring rounds (see 5.3). This site supports 100% of the habitat in Wales. Site management factors appear to be under control or having low impact on extent, although the long-term effects of atmospheric pollution and climate change are unclear. 9.1c Future prospects of -structure and function The evidence from monitoring of Eryri SAC suggests the habitat has been in favourable condition over the past two monitoring rounds (see 5.3). This site supports 100% of the habitat in Wales. Site management factors appear to be under control or having low impact on condition. However, ongoing exceedance of critical loads for nitrogen deposition, potentially exacerbated by the adverse impacts of climate change, represent threats that are not currently addressed by existing management measures and are likely to have a negative impact on the habitats structure and function in the future.
11.4 Short term trend of habitat area in good condition within the network; Direction	Assessment of structure and function is based on the results of common standards monitoring (JNCC, 2004) undertaken in Eryri SAC in 2011 (Surry, 2012) and 2016 (Harrison, 2017); Eryri SAC has 100% of the habitat extent in Wales. Both reports concluded that the habitat was in favourable condition overall. Although previous monitoring results (Lewis, 2005) reported unfavourable condition for the habitat, Surry (2012) considered that this was largely due to non-representative sampling and that it was not possible to conclude that there had been a significant change in condition between 2005 and 2011.