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:

H7240 - Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*

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	**7240 - Alpine pioneer formations of Caricion bicoloris-atrofuscae**

2. Maps

2.1 Year or period	2012-2016
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	Hearn, S. (in prep). Eryri SAC monitoring summary report: 7240 Alpine pioneer formations of Caricion bicoloris-atrofuscae. NRW internal report. Hill, M.O., Preston, C.D., Bosanquet, S.D.S & Roy, D.B. (2007). BRYOATT: Attributes of British and Irish Mosses, Liverworts and Hornworts. NERC Jones, P.S. (2012). Supporting documentation for the Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012. Conservation status assessment for Habitat: H7240 - Alpine pioneer formations of the Caricion bicoloris-atrofuscae. NRW. Jones, P.S., Stevens, J., Bosanquet, S.D.S., Turner, A.J., Birch, K.S. & Reed, D.K. (2012b). Distribution, extent and status of Annex I wetland habitats in Wales: supporting material for the 2013 Article 17 assessment. Countryside Council for Wales, Bangor. Lewis, H. (2003). 7240 Alpine pioneer formations of Caricion bicoloris-atrofuscae. SAC Monitoring report. NRW internal report. Lewis, H. (2012). 7240 Alpine pioneer formations of Caricion bicoloris-atrofuscae. SAC Monitoring report. NRW internal report. NRW, 2013. Supporting documentation for the Third Report by the United Kingdom under Article 17 for Wales; H7240 Alpine pioneer formations of Caricion bicoloris-atrofuscae. JNCC. Available from: http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/H7240_WALES.pdf [Accessed 4th September 2018] Stevens, J., Turner, A.J. & Jones, P.S. (2012). H7240 Alpine pioneer formations Habitat Inventory for Wales. Countryside Council for Wales, Bangor. Turner, A.J. (2011). A conspectus of the vegetation of the Welsh uplands, with particular reference to Snowdonia. In: Proceedings of a Memorial Conference for Dr David Paul Stevens 1958-2007: Grassland Ecologist and Conservationist. Eds: Blackstock, T.H., Howe, E.A., Rothwell, J.P., Duigan, C.A & Jones, P.S. pp. 116-134. CCW Staff Science Report 10/03/05, Countryside Council for Wales, Bangor.

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	1996-2012		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 0.03
5.3 Type of estimate	Best estimate		
5.4 Surface area Method used	Based mainly on extrapolation from a limited amount of data		
5.5 Short-term trend Period	2007-2018		
5.6 Short-term trend Direction	Unknown (x)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Insufficient or no data available		
5.9 Long-term trend Period			
5.10 Long-term trend Direction			
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 0.03	Maximum 0.03
	b) Area in not-good condition (km²)	Minimum 0	Maximum 0
	c) Area where condition is not known (km²)	Minimum 0	Maximum 0

6.2 Condition of habitat Method used	Based mainly on expert opinion with very limited data
6.3 Short-term trend of habitat area in good condition Period	2007-2018
6.4 Short-term trend of habitat area in good condition Direction	Unknown (x)
6.5 Short-term trend of habitat area in good condition Method used	Insufficient or no data available
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
Intensive grazing or overgrazing by livestock (A09)	H
Mixed source air pollution, air-borne pollutants (J03)	H
Sports, tourism and leisure activities (F07)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Temperature changes (e.g. rise of temperature & extremes) due to climate change (N01)	M
Droughts and decreases in precipitation due to climate change (N02)	M
Increases or changes in precipitation due to climate change (N03)	M
Change of habitat location, size, and / or quality due to climate change (N05)	M
Desynchronisation of biological / ecological processes due to climate change (N06)	M

Threat	Ranking
Intensive grazing or overgrazing by livestock (A09)	H
Mixed source air pollution, air-borne pollutants (J03)	H
Sports, tourism and leisure activities (F07)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Temperature changes (e.g. rise of temperature & extremes) due to climate change (N01)	H
Droughts and decreases in precipitation due to climate change (N02)	H
Increases or changes in precipitation due to climate change (N03)	M
Change of habitat location, size, and / or quality due to climate change (N05)	H

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Desynchronisation of biological / ecological processes due to climate change (N06) 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

Maintain existing extensive agricultural practices and agricultural landscape features (CA03)

Reduce/eliminate air pollution from industrial, commercial, residential and recreational areas and activities (CF06)

Reduce impact of mixed source pollution (CJ01)

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

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

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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 0.03
11.2 Type of estimate	Best estimate
11.3 Surface area of the habitat type inside the network Method used	Based mainly on extrapolation from a limited amount of data
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	Based mainly on extrapolation from a limited amount of data
11.6 Additional information	

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

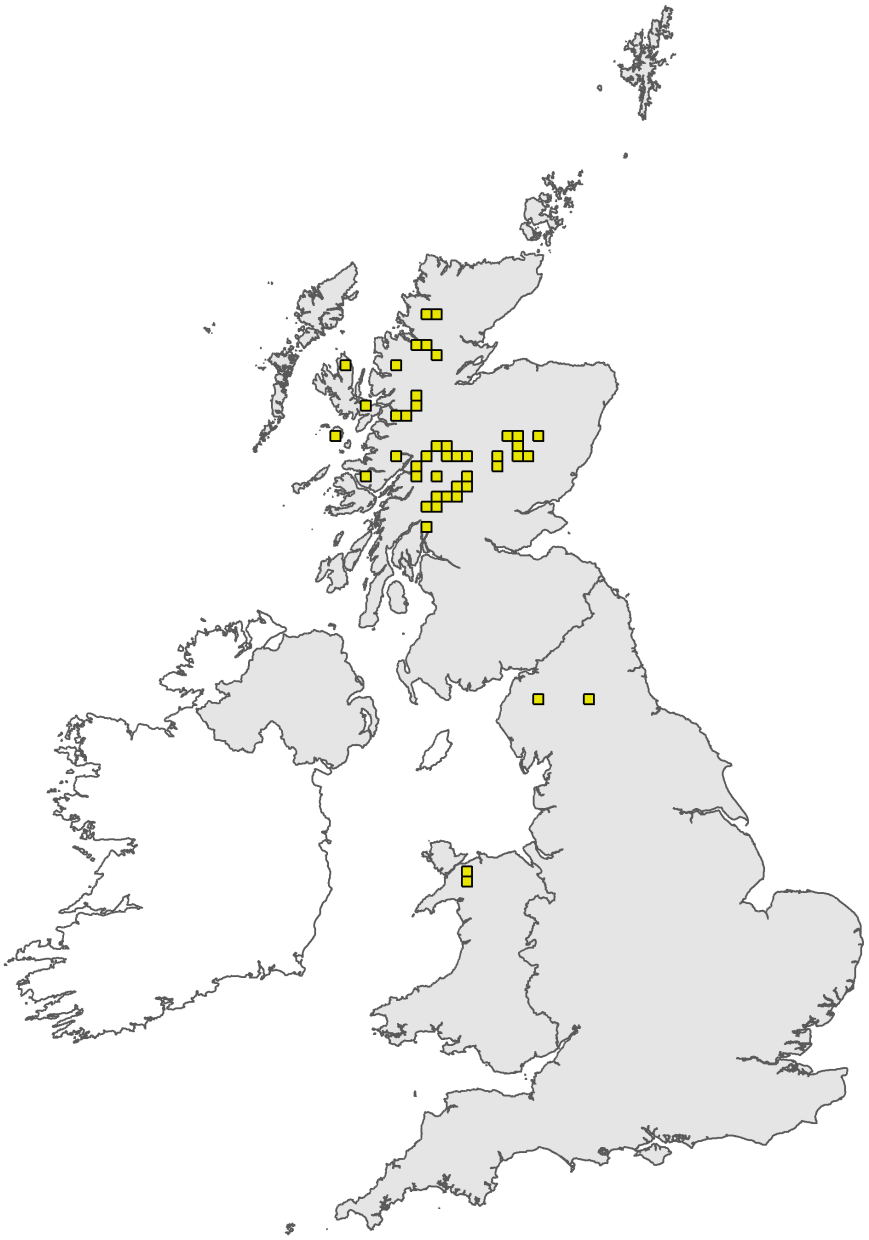

Figure 1: UK distribution map for H7240 - Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas 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 H7240 - Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*. 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: 7240

Field label	Note
2.1 Year or period	All digitised records date from surveys undertaken between 1996 and 2005 (see Table H7240.1 of Jones et al., 2012b). Presence of this habitat has been confirmed in both hectads during monitoring in 2012, and (for the northern of the two squares) 2016 (Lewis 2012; Hearn 2016).
2.4 Additional maps	Records for this habitat in Wales come from upland Phase 2 (plant community [NVC] level) - see table H7240.1 of Jones 2012b for sources - and also the expert knowledge of A.J. Turner. Phase 2 mapping yields polygon records assigned to NVC communities/sub-communities and non-NVC units mapped and then transferred to a Mapinfo GIS platform. Polygons (whether relating to individual vegetation types or mosaics) for plant communities/sub-communities judged as conforming to this habitat have been selected and used to create a Mapinfo inventory for this habitat based on polygon locations and areas and also hectad presence. Most occurrences of this habitat are as small patches and the survey data may not be complete, though the discovery of new locations beyond the current two hectads is considered unlikely.

Habitat code: 7240 Region code: ATL

Field label	Note
4.3 Short term trend; Direction	There are no data to suggest a change in range of this habitat which is likely to remain confined to montane locations in Snowdonia.
5.3 Type of estimate	This value of 3 ha is an estimate of likely maximum total extent based on expert opinion (A.J. Turner). The sum total of polygons mapped as this habitat is significantly lower (0.99 ha), reflecting the possibility that (i) not all stands may have been located and (ii) that accurate area measurements are difficult because many examples of this habitat are tiny (<10 m2) and will have fallen below the minimum mappable unit thresholds of the surveys described under
5.6 Short term trend; Direction	Lewis (2012) notes an increase in the area of this habitat at one of its localities (Cwm Glas Bach) on Eryri and its apparent disappearance from another (Cwm Glas Mawr). However accurate assessments of extent and changes in extent have not been undertaken and no recent information on this parameter is available for most stands.
6.2 Condition of habitat; Method used	This assessment is based largely on condition monitoring of Eryri SAC in 2012, which found the habitat to be in favourable condition (Lewis 2012). A more recent monitoring visit in 2016 (Hearn in prep) provisionally concluded that stands at Cwm Glas Bach were still in favourable condition and given the stability of management it is likely that the condition of the other key areas of the habitat within the SAC have remained favourable.
6.5 Short term trend of habitat area in good condition; Method used	This assessment is based on 2012 and 2016 common standards monitoring assessments of the habitat on Eryri SAC (Lewis 2012; Hearn in prep.), both of which found the habitat monitored to be in favourable condition (although both assessments only considered only parts of what is a highly fragmentary feature). Comparison to an earlier monitoring assessment in 2003 (Lewis 2003) indicates a degree of flux in some stands, perhaps in response to variation in grazing intensity.

7.1 Characterisation of pressures/ threats

Pressures and threats are largely taken from the 2012 report (NRW 2013) with the categories used for reporting updated to the new reporting classes and codes on the basis of the supporting text and where necessary expert judgement. The methodology used to derive the pressures and threats for the 2012 report was described as follows. 'CCWs Actions Database has been used to extract information on 'issue sub-categories' (namely management or other issues relevant to the condition of nature conservation features) for individual management units on protected sites - see Guest [D] (2012). The database was firstly searched for records of the SSSI feature montane flush and spring occurring within management units within SAC SSSIs. The search was not limited to examples of the habitat occurring as a key habitat due to the already low sample size. The extracted population of records amounted to 50 units with management issues ('issue sub-categories') identified across 7 SSSI SAC components, but unfortunately the sites on which this habitat occurs in north Wales were not included. The representation of sub-issue categories on SACs has been calculated as a % of component SSSI of the SACs rather than just SACs to give a better indication of how many sites actions are relevant to. Some 18 units for this habitat were accepted as having genuine null actions for this habitat. The montane flush and spring SSSI category will include habitats additional to H7240 but these will be subject to similar pressures.' Pressures: A09: Intensive grazing or overgrazing by livestock. Over-grazing which affects 14.7% of SSSI units for montane flush and spring. Improvements in the condition of this feature within the Eryri SAC have been attributed at least in part to a decrease in grazing pressure, and this reflects concerted efforts on the part of CCW and its partners to address this. Light grazing is beneficial to a degree though and insufficient grazing was listed as a 'sub-issue category' for 8.8% of SSSI units supporting this feature, though none of the SAC stands were included in this analysis. Concerns over grazing type/timing were registered for 38% of the SSSI features, suggesting that a more mixed grazing regime than simply sheep, with periodic grazing by larger grazing animals, could be beneficial. However, the relevance of this to the decidedly montane examples of H7240 is unclear. J03: Mixed source air pollution, air-borne pollutants. Recorded as an issue for only 6% of units with montane flush and spring, this pressure is undoubtedly under-represented in the actions database. Overlay of the habitat distribution and extent data described under 1.1.2 with N deposition data suggests 100 % of the resource is subject to N deposition in excess of the 15 kg/ha/yr critical load based on 2009 deposition data. It is of some concern that the national modelling data may underestimate local point sources such as intensive poultry units. Visible evidence for atmospheric nutrient enrichment is less tangible. It is to be expected that this habitat would be very sensitive to atmospheric pollution given that its signature species Blindia acuta has a nitrogen (or more accurately fertility) indicator score of just 1 characterised as indicating species of 'extremely infertile sites' (Hill et al., 2007). The context of this habitat on steep slopes subject to more or less continual flushing from above suggests it probably receives a significant annual N load even though the concentration of N in precipitation is likely to be low. Visible evidence for atmospheric nutrient enrichment is less tangible. F07: Sports, tourism and leisure activities. One of the stations for this habitat is adjacent to an access route to the summit of Snowdon subject to year-round access pressure. Its unclear whether the habitat has actually suffered any impacts from this - but it is possible that some small examples of the habitat are damaged by trampling or climbing, particularly during periods of ice or snow cover. I02: Invasive non-native species. The primary pressure in this regard is the ongoing spread of the non-native Epilobium brunnescens which is covered during SAC condition monitoring for this feature. N: Climate change. This may already constitute a current pressure for this montane feature which is at the edge of UK range and thus presumably bioclimatic envelope. Examples which may conform to depauperate expressions of the main relevant NVC community (M11) in south Wales (Turner, 2011) may be especially vulnerable: whilst it is debateable whether these currently conform to H7240 they may once have in the past. Threats: J03: Mixed source air pollution, air-borne pollutants.

	This is likely to remain as a threat for the foreseeable future despite reductions in N deposition. The projected 2020 deposition regime for N suggests that 100% of the habitat will continue to receive inputs in excess of the critical load. F07: Sports, tourism and leisure activities. A continuing and possibly growing threat given the significant visitor pressure experienced by the Eryri and Carneddau uplands. A09: Intensive grazing or overgrazing by livestock remains as a current threat because of the significance of any changes in stocking rates and because stands of this habitat are likely to experience over-grazing even under rates which are acceptable on a management unit basis. The impact of grazing on this feature needs to be monitored. I02: Invasive non-native species. The primary threat in this regard is the ongoing spread of the non-native Epilobium brunnescens which is covered during SAC condition monitoring for this feature. N: Climate change. This is a significant current and future threat. Optimal management is the only practical means of mitigating its impacts.
8.5 List of main conservation measures	CA03: Maintain existing extensive agricultural practices and agricultural landscape features. Very light ongoing grazing is likely to be beneficial but this habitat is vulnerable to over-grazing. Management agreements are currently in place to ensure suitable grazing rates are maintained. CF06: Reduce/eliminate air pollution from industrial, commercial, residential and recreational areas and activities. Stringent regulation of these processes is required to achieve reductions in N deposition both locally and at member state level. CJ01: Reduce impact of mixed source pollution. No measures are currently in place to protect this habitat close to footpaths from trampling and erosion.
9.1 Future prospects of parameters	9.1a. Changes to the 10km2 distribution and linked range of habitat H7240 in Wales are considered unlikely to occur within the next two reporting cycles (12 years). In the longer-term climate change, potentially exacerbated by the cumulative impact of excess deposition of reactive nitrogen, may represent a risk to the habitat which, in Wales, is at the southern-most limit of its UK distribution. 9.1c. Excess deposition of atmospheric pollutants, notably reactive nitrogen, and other pernicious threats such as climate change present ongoing threats to this habitat which are not currently addressed by any existing or planned conservation measures. These adverse influences are considered likely to lead to a deterioration in the habitats structure and function, although the timescale over which they take effect is unclear