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:

H7210 - Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

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	**7210 - Calcareous fens with Cladium mariscus and species of the Caricion dav**

2. Maps

2.1 Year or period	1985-2012
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	Birch, K.S., Jones, P.S., Bosanquet, S.D.S, Reed, D.K & Turner, A.J. (in prep). Application of vegetation survey data for detailed planning and implementation of rich-fen restoration on Anglesey and Llyn, north-west Wales. In: Hanson, J., Jones, P.S. & Farr, G. (in prep.). The Anglesey & Llyn Fens LIFE Project: Proceedings of the Technical Workshop held in October 2013. Natural Resources Wales, Bangor. Birch, K.S., Guest, J.E., Shepherd, S., Milner, P, Jones, P.S. & Hanson, J. (2015). Responses of rich-fen Annex 1 and related habitats to restoration and management undertaken as part of the Anglesey & Lleyn Fens LIFE Project. Final Report of the Anglesey & Lleyn Fens LIFE Project, Technical Report No. 7. Bosanquet, S.D.S. (2009). Lowland Peatland Survey Site Report: Crymlyn Bog (SS69/21P). Natural Resources Wales, Bangor. Farr, G. Whiteman, M., Jones, P.S. & Breen, R. (in prep.) , Wetlands and the Water Framework Directive: Key challenges for achieving good ecological status at the Anglesey and LLyn Fens SACs. In: Hanson, J., Jones, P.S. & Farr, G. (in prep.). The Anglesey & Llyn Fens LIFE Project: Proceedings of the Technical Workshop held in October 2013. Natural Resources Wales, Bangor. Farr, G., Hall, J.,Jones, L., Whiteman, M., Haslam, A. & Philips, N. (2018). Source apportionment of nutrient pressures at groundwater dependent wetlands: Case studies from England and Wales. Report to the Environment Agency; British Geological Survey Internal Report Reference OR/17/021. Guest, D. (2012). Assessing N deposition as a pressure for Article 17 reporting on habitats. CCW HQ internal document. Hanson, J. (2015). LIFE Project Number LIFE07NATUK000948 FINAL Report Covering the project activities from 01/02/2009 to 31/03/2014. Reporting Date 31/12/15. Natural Resources Wales, Bangor. Hanson, J., Jones, P.S. & Farr, G. (in prep.). The Anglesey & Llyn Fens LIFE Project: Proceedings of the Technical Workshop held in October 2013. Natural Resources Wales, Bangor. JNCC (2018). Exceedance of Annex I habitats in SACs. Excel spreadsheet provided 29 May 2018. Jones, P.S., Bosanquet, S.D.S., Reed, D.K., Birch, K.S., Stevens, J. & Turner, A.J. (2011). The habitat composition and conservation of Welsh lowland mires: preliminary results from the Lowland Peatland Survey of Wales. In: Proceedings

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Jones, P.S., Hanson, J. & Farr, G. (in-prep.). The rich-fens of Anglesey and Llyn. In: Hanson, J., Jones, P.S. & Farr, G. (in prep.). The Anglesey & Llyn Fens LIFE Project: Proceedings of the Technical Workshop held in October 2013. Natural Resources Wales, Bangor.
Lathwood, T., Evans, G. & Jones, R. (2015). Soil sampling and Nutrient Planning, Anglesey and Lleyn Fens. Final Report of the Anglesey & Llyn Fens LIFE Project: Technical Report No. 9. Natural Resources Wales, Bangor.
Mountford, E. (2011). A compilation of proposed additions and revisions to vegetation types in the National Vegetation Classification. JNCC Report 448, Joint Nature Conservation Committee, Peterborough.
NRW (2018a). SAC and SPA Monitoring Programme Results 2013-2018. Internal NRW Dataset (Excel spreadsheet).
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Welsh Government (2017). Welsh Statutory Instruments 2017 No. 565 (W. 134) Agriculture Wales: The Environmental Impact Assessment (Agriculture) (Wales) Regulations 2017.
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Whiteman, M. (2011). Cors Bodeilio workshop - Wednesday 12th January 2010: A collaborative project to establish ecological and groundwater investigations to assess significant damage on Groundwater Dependent Terrestrial Ecosystems (GWDTEs). Environment Agency, Leeds.

4. Range

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

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	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	1985-2012		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 0.628
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	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	0.043	Maximum	0.043
	b) Area in not-good condition (km²)	Minimum	0.585	Maximum	0.585
	c) Area where condition is not known (km²)	Minimum	0	Maximum	0
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	2007-2018				
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 expert opinion with very limited data				
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period?		No		

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6.7 Typical species Method used

6.8 Additional information

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Extensive grazing or undergrazing by livestock (A10)	H
Abandonment of management/use of other agricultural and agroforestry systems (all except grassland) (A07)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	H
Drainage for use as agricultural land (A31)	H
Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	H
Mixed source air pollution, air-borne pollutants (J03)	M
Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (C01)	M
Conversion into agricultural land (excluding drainage and burning) (A01)	M

Threat	Ranking
Extensive grazing or undergrazing by livestock (A10)	H
Abandonment of management/use of other agricultural and agroforestry systems (all except grassland) (A07)	H
Agricultural activities generating diffuse pollution to surface or ground waters (A26)	H
Drainage for use as agricultural land (A31)	H
Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	H
Mixed source air pollution, air-borne pollutants (J03)	M
Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (C01)	M
Conversion into agricultural land (excluding drainage and burning) (A01)	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		Restore the habitat of the species (related to ‘Habitat for the species’)

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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	

Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures (CA04)

Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes (CL01)

Reduce diffuse pollution to surface or ground waters from agricultural activities (CA11)

Restore habitats impacted by multi-purpose hydrological changes (CJ03)

Manage drainage and irrigation operations and infrastructures in agriculture (CA15)

Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land (CA01)

Adapt/manage extraction of non-energy resources (CC01)

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	

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

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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	0.613
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	Increasing (+)	
11.5 Short-term trend of habitat area in good condition within network Method used	Based mainly on expert opinion with very limited data	
11.6 Additional information		

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

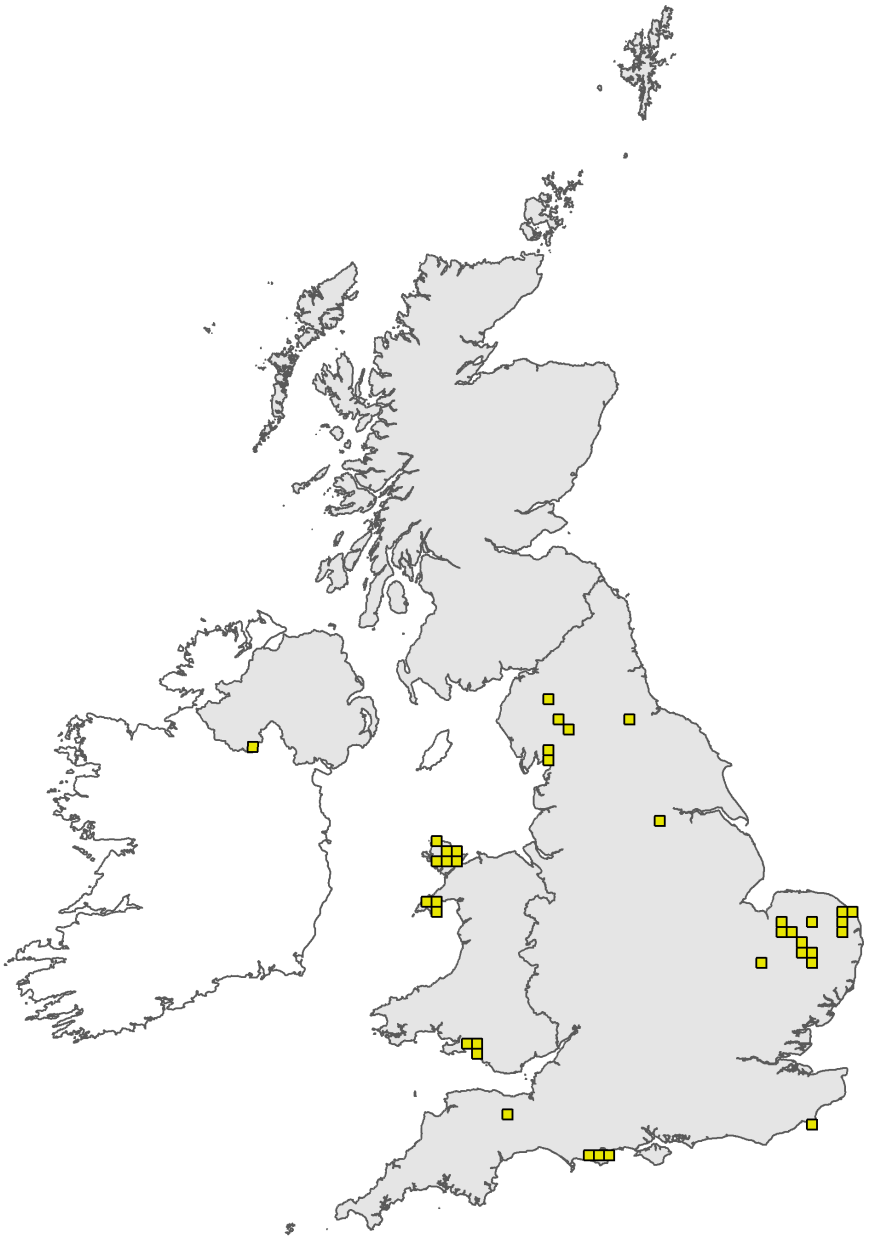

Figure 1: UK distribution map for H7210 - Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 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 H7210 - Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*. 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: 7210

Field label	Note
2.3 Distribution map; Method used	The distribution map provided for this habitat is the same as that used for the 2013 Article 17 reporting round. It is based on virtually complete survey of the resource. Most of the records for this habitat in Wales are based on recent high quality Phase 2 (plant community [NVC] level) survey undertaken as part of the Lowland Peatland Survey of Wales [LPSW], (Jones et al., 2011). This survey began in 2004 and is still (2018) ongoing. Phase 2 mapping yields polygon records assigned to NVC communities/sub-communities and non-NVC units mapped to 1:2500 and transferred to a Mapinfo GIS platform (see Stevens, 2012). Polygons (whether relating to individual vegetation types or mosaics) for plant communities/sub-communities judged as conforming to this habitat were selected and used to create a Mapinfo inventory for this habitat based on polygon locations and areas and also hectad presence. The definition of this habitat follows Table 6.1 of Jones et al. (2012). The distribution map includes two hectad records for this habitat from data sources other than the LPSW - SH32 (Cors Llyferin) and SH37 (Y Werthyr). For all but one hectad record (SH32), presence of this habitat has been confirmed since 2000. Further survey work will characterise additional known and some likely unknown stands of this habitat on land managed by third parties and is an evident priority.

Habitat code: 7210 Region code: ATL

Field label	Note
4.3 Short term trend; Direction	No definite losses or gains appear to have occurred within the Welsh heartland of this habitat on Anglesey & Llyn, though it is possible that losses have occurred on non-statutory sites. We therefore assume the range for this habitat is stable in the short-term.
4.11 Change and reason for change in surface area of range	The judgement of no change is because habitat distribution data from the last reporting period have been used and no changes made. Changes in surface area of range may actually have occurred since the last reporting period. Habitat range is determined by the Habitat Map (2.3) and therefore uses the same evidence sources.
5.1 Year or period	A broad date range of 1985-2012 has been given as one site record dates from 1985 (Cors Llyferin, SH 32). However most records are based on survey post 2004.
5.4 Surface area; Method used	See section 2.3. The extent of this habitat within the SAC sites notified for this habitat in Wales is estimated as 76.1 ha based on recent Phase 2 survey by the Lowland Peatland Survey of Wales: this comprises 33.6 ha for Cors Crymlyn (Bosanquet, 2009) and 5.1 and 37.4 ha for the Corsydd Llyn and Corsydd Mon SACs respectively (Birch et al., in prep.). This area figure is actually greater than that given under 5.2 , largely because some of the survey data assessed by Birch et al. post-dates the analysis on which the section 5.2 figure is based (this being the area figure used for the previous Article 17 reporting round).
5.8 Short term trend; Method used	Other than the SAC monitoring programme, there is no NRW system in place for monitoring and recording losses and gains. No definite losses or gains in area appear to have occurred within the Welsh heartland of this habitat on Anglesey & Llyn, though it is possible that losses have occurred on non-statutory sites.

6.2 Condition of habitat; Method used	Assessment of structure and function within SACs is based on the results of common standards monitoring visits undertaken between 2007 and 2012 (NRW, 2018a). These data indicate unfavourable condition for the calcareous fen feature on all three SACs. The assessments for Corsydd Mon and Llyn pre-date some of the recovery noted as resulting from the restoration work undertaken as part of the Anglesey & Llyn Fens LIFE project (Birch et al., 2015); expert judgement (P.S.Jones, 2018) suggests 4.3 ha of H7210 can now be regarded as favourable (2.3 ha at Bodeilio and a minimum of 1.0 ha at each of Cors Goch and Cors Erddreiniog). The rest of the resource includes the remainder of the SAC resource, all of which has to be regarded as in unfavourable condition based on the monitoring evidence. The extra-SAC sites are considered to be in unfavourable condition, chiefly due to over-dominance of Cladium.
6.4 Short term trend of habitat area in good condition; Direction	This is based on the expectation that the area of H7210 in good condition on the Anglesey & Llyn Fens has been continuing to expand, but only if the current programme of after-LIFE site management actions continues, and expands.

7.1 Characterisation of pressures/ threats	Pressures: A10 Extensive grazing or undergrazing by livestock Management neglect remains a key factor for this habitat, resulting in the over-dominance of Cladium to the detriment of the short-sedge elements. This was a major factor on the Anglesey & Llyn Fens LIFE sites at the start of the LIFE project and it has remained a key factor throughout the 2013-18 reporting period due to ongoing lack of management at Crymlyn and across parts of the Anglesey & Llyn Fens sites; chiefly those areas under 3rd party ownership/management, but also including areas under NRWs management where resources constrain the extent of after-LIFE actions. Insufficient grazing is cited as an issue on 34 units across 9 SSSI (NRW, 2018). Grazing type or timing affects 31 units on 7 SSSI: these two issues together overlap (i.e. some SSSI units have both issues cited) and in total 53 units on 10 SSSI (i.e. the majority supporting H7210 in Wales) have one or both of these issues recognised. Grazing issues (including insufficient grazing and grazing type/timing issues) feature as high or medium priority and urgency issues on the three SACs supporting this habitat in the respective Prioritised Improvement Plans. A07. Abandonment of management/use of other agricultural and agroforestry systems (all except grassland). This is closely linked to A10, with insufficient cutting/mowing acknowledged as an issue for 38 units on 6 SSSI, all within the Anglesey Fens or Llyn Fens SAC (NRW, 2018). Insufficient cutting/mowing is recognised as a high priority and high urgency issue on the Corsydd Mon and Corsydd Llyn SACs in the Prioritised Improvement Plans for these sites. Cutting/mowing (sometimes in conjunction with controlled burns) are a necessary perquisite for achieving sustainable grazing of this habitat. Lack of burning management is also covered under this heading and affects 7 units across 5 SSSI. Habitat fragmentation is cited as an issue for 22 units and 7 SSSI and relates to a combination of this pressure but also AO1. A26 Agricultural activities generating diffuse pollution to surface or ground waters Inorganic nitrogen concentrations in groundwater still exceed the site-specific threshold for N in groundwater for at least parts of the H7210 resource (Farr et al., 2018) with agriculture the most likely immediate source (SWS, 2010; Farr et al, in prep.). Water pollution from diffuse sources is cited as an issue for 37 units across 10 SSSI (NRW, 2018b) and as a high priority and high urgency issue on the Crymlyn Bog and Corsydd Llyn SACs in the Prioritised Improvement Plans for these sites. A31 Drainage for use as agricultural land Drainage remains a cited issue for 13 units on 5 SSSI in NRWs Actions Database (NRW, 2018b) and chiefly relates to the management of marginal drains abutting agricultural land, and internal drains where these carry water through SAC sites from surrounding agricultural land. There is some overlap between this pressure and K02. Drainage which would also be scored as High. Ditch management remains an issue of 16 units on 7 SSSI and is closely related to another issue, water levels, which remains an issue for 31 units on 9 SSSI. Some units are subject to both pressures and a total of 38 units on 10 SSSI have one or both of these issues recognised. L02 Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) This pressure is closely linked to A07 and A10 and manifests mainly as scrub encroachment into under-managed stands - this is cited as an issue on 29 units across 8 SSSI - but also the development of over-dominance on the part of Cladium mariscus to the point that states are no longer referable to H7210. JO3 Mixed source air pollution, air-borne pollutants. H7210 is considered to be sensitive to deposition of reactive nitrogen but lacks a formally agreed critical load. Assessment of the likely significance of atmospheric N deposition was therefore based on a inferred critical load value of 15 kg N/ha/yr which was based on value used for the related Alkaline fens habitat H7230. The extent of the the resource in Wales subject to N deposition in excess of 15 kg N/ha/yr) has been assessed using the approach of Guest (2012) and using updated deposition data based. Using a data overlay method in ARC GIS, 8% of the habitat by area (polygon data) was recorded at or above the relevant lower Critical Load limit. CO1. Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell)& AO1 Conversion into agricultural land (excluding drainage and burning). Losses of this habitat to agricultural improvement or mineral extraction are less significant, largely due to EIA

	regs (Welsh Government, 2017) and other mechanisms. Threats: A10 Extensive grazing or undergrazing by livestock This continues as a threat due to the lack of any foreseeable mechanism for encouraging the favourable management of sites outside the protected sites series and because of insufficient resources for managing examples within SSSI managed by third parties. A07. Abandonment of management/use of other agricultural and agroforestry systems (all except grassland). This is likely to continue as a threat for the same reason cited for A10. A26 Agricultural activities generating diffuse pollution to surface or ground waters Resolution of this threat requires comprehensive catchment-level integration of a range of existing and new measures aimed at reducing and mitigating nutrient inputs, coupled with much more intensive monitoring of groundwater and shallow marginal seepage pathways to determine the effectiveness of measures. This intervention is not currently underway or planned. A31 Drainage for use as agricultural land This will remain as a threat due to the ongoing pressure to provide drainage freeboard for neighbouring agricultural land-uses and lack of use of the Water Level Management Plan mechanism. L02 Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) This threat is closely linked to A10 and A07 but also reflects the probable influence of atmospheric nitrogen deposition (JO3). This will remain a threat until all key stands of H7210 are under active management to retain and expand the open short-sedge and related floristic elements of this habitat. JO3 Mixed source air pollution, air-borne pollutants. Despite modest projected reductions in the overall deposition rates for atmospheric nitrogen in the UK, air pollution is expected to remain a threat to the habitat in Wales CO1. Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell)& AO1 Conversion into agricultural land (excluding drainage and burning). Further losses of this habitat to agricultural improvement or mineral extraction are expected to remain less significant, largely due to EIA regs (Welsh Government, 2017) and other mechanisms.
8.1 Status of measures	NOTE: all required measures have been identified and some are underway across the Corsydd Mon and Corsydd Llyn SACs as a result of the Anglesey & Llyn Fens LIFE project and its after-LIFE element, but these measures need extending across the whole resource of H7210 on these sites and also Corsydd Mon, as well as the wider resource outside the protected sites network.

8.5 List of main conservation measures	CA04. Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures This concerns the need to address insufficient grazing and the lack of cutting and in some cases burning on sites under third party management. The Anglesey & Llyn Fens LIFE project (Hanson, 2015) has successfully demonstrated the measures which need to be taken to restore derelict H7210 and these are being pursued within the NNR sections of the Corsydd Mon and Llyn SACs to some extent in the after-LIFE phase (see CL01) and also on some areas of third party ownership. However, some critical locations for H7210 remain effectively un-managed, including the Cors y Farl and Cors Bodeilio Common sections of the Corsydd Mon SAC and parts of Cors Goch within the same SAC and Cors Crymlyn. CL01. Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes This is interpreted as pursing essentially the same measures described under CA04 but on land under NRWs direct management as NNRs. The after-LIFE phase of management is proving effective where is it being employed but needs to be extended through additional resources to cover the whole of the H7210 resource under direct conservation ownership/management. CA11 Reduce diffuse pollution to surface or ground waters from agricultural activities This is the major measure required to reduce nutrient income to the sites supporting H7210 from both runoff and groundwater discharge - it applies mainly to Corsydd Mon and Corsydd Llyn. Evidence to date suggests that agri-environment measures have been ineffective in this regard, with limited uptake to the scheme and then limited application of measures within the scheme which might be used to reduce nutrient income. Work done under the Anglesey & Lleyn Fens LIFE project (Hanson, 2015) enabled the production of independent Nutrient Efficiency Reports (NER) for 16 farms within the catchments of the Anglesey & Lleyn Fens SACs (Lathwood et al., 2015). Soil test results and nutrient efficiency studies identified opportunities at 12 out of the 16 farms to reduce the amount of fertilisers applied to the land. Subsequent contact with the participating farmers indicated that 12 of the 16 intended to change their nutrient management practice and adopt all of the NER recommendations. This represents a potentially highly cost-effective means of reducing leakage of excess nutrients into the fens from their catchments and is commended as an approach which could be utilised more widely under a Water Framework Directive Programme of Measures to address failing groundwater quality within the groundwater bodies underpinning the two SACs. However, in the after-LIFE phase it is not clear how many of the participating farms subsequently implemented nutrient application reduction measures. However, a key finding of both the LIFE project and a technical workshop (Whiteman, 2011) held in 2010 to discuss catchment level intervention options for reducing nutrient loading within the groundwater bodies of the two SACs is that it is by no means clear whether the primary mechanisms which Natural Resources Wales could deploy will be sufficient to yield appropriate water quality in groundwater. This suggests the need for a new mechanism to operate off protected sites but within their catchments which offers financially realistic incentives for nutrient reduction measures. The combined catchment area of the Corsydd Llyn and Corsydd Mon fen sites is only 736 ha (Jones & Hanson, in prep.), making such mechanisms potentially achievable. CJ03. Restore habitats impacted by multi-purpose hydrological changes & CA 15 Manage drainage and irrigation operations and infrastructures in agriculture. Significant progress has been made for these measures under the Anglesey & Llyn Fens LIFE project, but further intervention is required across both these SACs and Cors Crymlyn to address a wide range of hydrological impacts posed by agricultural drainage (Corsydd Mon and Corsydd Llyn) and the management of water courses and hydrological inputs (Cors Crymlyn). Measures at the last site would require intervention at the scale of a LIFE project. CA01. Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land. Damage and habitat loss of the closely related (and often co-occurring) H7230 has occurred on three non-statutory sites on Anglesey since the last reporting period (NRW, 2018c) - in all cases this was due to agricultural intensification.

	Dialogue needs to be established with the owners/managers of all non-statutory sites for this habitat and incentives for securing positive management put in place. CC01. Adapt/manage extraction of non-energy resources Quarrying activity at one location poses a potential threat to this habitat within the Corsydd Mon SAC, though the tendency for this habitat to occur on deposits of peat towards the centre of sites rather than the margins probably means it is less vulnerable than H7230. The primary requirement for action is to ensure monitoring of the effects of quarrying on groundwater levels are suitable for detecting early changes which might be reversible through changes to quarrying practice. CJ01. Reduce impact of mixed source pollution Although only 8% of this habitat is estimated to be subject rates of atmospheric deposition of reactive nitrogen in excess of the inferred critical load of 15 kg N/ha/yr, this figure is estimated not to change up until 2030 (JNCC, 2018).
9.1 Future prospects of parameters	Whilst this habitat may experience small-scale reductions in area these are unlikely to lead to significant impacts on range. The assessment of negative is based on the pressures A07. Abandonment of management/use of other agricultural and agroforestry systems (all except grassland) , 5 L02 Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) and AO1 Conversion into agricultural land (excluding drainage and burning), all of which are likely to lead to losses of this habitat in the near future. This is based on the pressures A10 Extensive grazing or undergrazing by livestock and A07. Abandonment of management/use of other agricultural and agroforestry systems (all except grassland), though any trends resulting from these pressures may be offset or actually outweighed by the steady improvements in condition resulting from after-LIFE actions on two of the three SACs for this habitat. The lack of ongoing lack of large-scale restoration for this habitat at Cors Crymlyn will certainly contribute to this trend.