Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A

2019-2024

Conservation status assessment for the habitat:

H7120 - Degraded raised bogs still capable of natural regeneration

Wales

Cyfoeth Naturiol Cymru
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JNCC

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Important note - Please read

- The information in this document represents Wales Report under The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A, for the period 2019-2024.
- It is based on supporting information provided by Natural Resources Wales, which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Maps showing the distribution and range of the habitat are included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country reports.
- 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 not relevant to this habitat (section 11 National Site Network coverage for Annex I habitats).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the JNCC website.

Assessment Summary: Degraded raised bogs still capable of natural regeneration

Distribution Map

Range Map

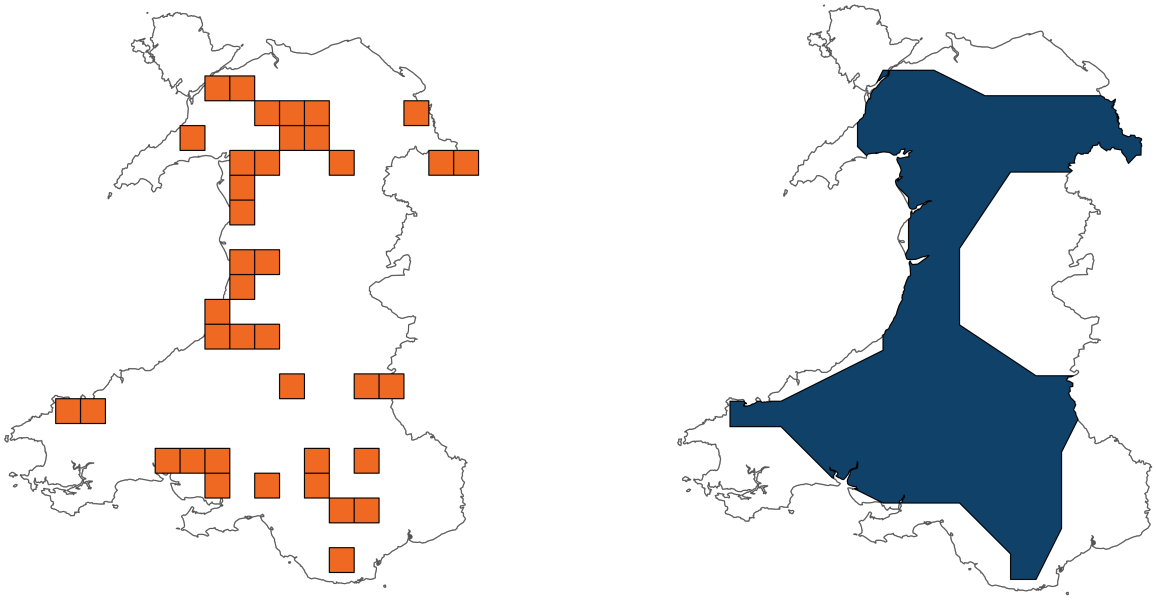

Figure 1: Wales distribution and range map for H7120 - Degraded raised bogs still capable of natural regeneration. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available habitat records within the current reporting period.

Table 1: Table summarising the conservation status for H7120 - Degraded raised bogs still capable of natural regeneration. Overall conservation status for habitat is based on assessments of range, area covered by habitat, structure and functions, and future prospects.

Overall Conservation Status (see section 10)

Unfavourable-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 4)	**Unfavourable-inadequate (U1)**
Area covered by habitat (see section 5)	**Unfavourable-inadequate (U1)**
Structure and functions (see section 6)	**Unfavourable-bad (U2)**
Future prospects (see section 9)	**Unfavourable-bad (U2)**

List of Sections

National Level

1. General information

1.1 Country	Wales
1.2 Habitat code	H7120 - Degraded raised bogs still capable of natural regeneration

2. Maps

2.1 Year or period	1979-2018
2.2 Distribution map	Yes
2.3 Distribution map; Method used	Based mainly on extrapolation from a limited amount of data

2.4 Additional information

No additional information

Biogeographical Level

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs ATL

3.2 Sources of information

See section 13 References

4. Range

4.1 Surface area (km²)	11,572.02
4.2 Short-term trend; Period	2013-2024
4.3 Short-term trend; Direction	Decreasing
4.4 Short-term trend; Magnitude	

a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	Yes
e) Type of estimate	Best estimate
f) Rate of decrease	Decreasing <=1% (one percent or less) per year on average
4.5 Short-term trend; Method used	Based mainly on expert opinion with very limited data
4.6 Long-term trend; Period	2000-2004
4.7 Long-term trend; Direction	Decreasing
4.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	
4.9 Long-term trend; Method used	Based mainly on expert opinion with very limited data

4.10 Favourable Reference Range (FRR)

a) Area (km²)	
b) Pre-defined increment	Current range is less than 2% smaller than the FRR
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

4.11 Change and reason for change in surface area of range

a) Change	Yes
b) Genuine change	Yes

c) Improved knowledge or more accurate data	No
d) Different method	No
e) No information	No
f) Other reason	No
g) Main reason	Genuine change

4.12 Additional information

No additional information

5. Area covered by habitat

5.1 Year or period	1979-2018
5.2 Surface area (km²)	
a) Minimum	
b) Maximum	
c) Best single value	8.97
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	2013-2024
5.6 Short-term trend; Direction	Decreasing
5.7 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	Yes
e) Type of estimate	Best estimate
f) Rate of decrease	Decreasing <=1% (one percent or less) per year on average

5.8 Short-term trend; Method used	Based mainly on expert opinion with very limited data
5.9 Long-term trend; Period	2000-2024
5.10 Long-term trend; Direction	Decreasing
5.11 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	Decreasing <=1% (one percent or less) per year on average
5.12 Long-term trend; Method used	Based mainly on expert opinion with very limited data
5.13 Favourable Reference Area (FRA)	
a) Area (km²)	
b) Pre-defined increment	Current area is less than 2% smaller than the FRA
c) Unknown	No
d) Method used	Reference-based approach
e) Quality of information	moderate

5.14 Change and reason for change in surface area of range

a) Change	No
b) Genuine change	
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	
f) Other reason	

g) Main reason

5.15 Additional information

No additional information

6. Structure and functions

6.1 Condition of habitat (km²)

Area in good condition	
ai) Minimum	0
aii) Maximum	0
Area not in good condition	
bi) Minimum	5.03
bii) Maximum	5.03
Area where condition is unknown	
ci) Minimum	3.94
cii) Maximum	3.94
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	2013-2024
6.4 Short-term trend of habitat area in good condition; Direction	Uncertain
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

6.7 Typical species; Method used

6.8 Additional information

Typical species were not used directly in the assessment of conservation status for habitat structure and function as a comprehensive list of typical species for each habitat was not available. However, the status of typical species was considered when the condition of individual sites was assessed using Common Standards Monitoring Guidance. Common Standards Monitoring (CSM) data was used to assess the area of habitat in 'good' and 'not good' condition (field 6.1). Species were a component of the attributes assessed under CSM. Therefore, an assessment of species is considered to have formed part of the reporting under field 6.1 which supported the Habitats Structure and Function assessment (field 10.3).

7. Main pressures

7.1 Characterisation of pressures

Table 2: Pressures affecting the habitat, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
PL02: Drainage (mixed or unknown drivers)	Ongoing and likely to be in the future	High (H)
PA22: Drainage for use as agricultural land	Ongoing and likely to be in the future	High (H)
PA08: Extensive grazing or undergrazing by livestock	Ongoing and likely to be in the future	High (H)
PI03: Problematic native species	Ongoing and likely to be in the future	High (H)
PK03: Mixed source air pollution, air-borne pollutants	Ongoing and likely to be in the future	High (H)
PA07: Intensive grazing or overgrazing by livestock	Ongoing and likely to be in the future	High (H)
PA13: Application of natural or synthetic fertilisers on agricultural land	Ongoing and likely to be in the future	High (H)
PI02: Other invasive alien species (other than species of Union concern)	Ongoing and likely to be in the future	Medium (M)

PB01: Conversion to forest from other land uses, or afforestation (excluding drainage)	Ongoing and likely to be in the future	Medium (M)
PB23: Physical alteration of water bodies for forestry (including dams)	Ongoing and likely to be in the future	Medium (M)
PA01: Conversion into agricultural land (excluding drainage and burning)	Ongoing and likely to be in the future	High (H)
PA17: Agricultural activities generating pollution to surface or ground waters (including marine)	Ongoing and likely to be in the future	Medium (M)
PF07: Residential and commercial activities and structures generating pollution to surface or ground waters	Ongoing and likely to be in the future	Medium (M)
PC05: Peat extraction	Ongoing and likely to be in the future	Medium (M)
PJ03: Changes in precipitation regimes due to climate change	Only in future	High (H)
PK04: Atmospheric N-deposition	Ongoing and likely to be in the future	High (H)
PA05: Abandonment of management/use of grasslands and other agricultural and agroforestry systems (e.g. cessation of grazing, mowing or traditional farming)	Only in future	Medium (M)

7.2 Sources of information

See section 13 References

7.3 Additional information

No additional information

8. Conservation measures

8.1: Status of measures

a) Are measures needed?	Yes
b) Indicate the status of measures	Measures identified, but none yet taken

8.2 Main purpose of the measures taken

8.3 Location of the measures taken

8.4 Response to measures

8.5 List of main conservation measures

Table 3: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
MK03: Restoration of habitats impacted by multi-purpose hydrological changes	High (H)
MA13: Manage agricultural drainage and water abstraction (incl. the restoration of drained or hydrologically altered habitats)	High (H)
MA04: Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures	High (H)
MF08: Manage changes in hydrological and coastal systems and regimes for construction and development (incl. restoration of habitats).	High (H)
MA11: Reduce/eliminate air pollution from agricultural activities	High (H)
MA06: Stop mowing, grazing and other equivalent agricultural activities e.g. burning (incl. restore or improve habitats)	High (H)
MB06: Stop forest management and exploitation practices	High (H)
MC02: Adapt/manage exploitation of energy resources	High (H)
MK01: Reduce impact of mixed source pollution	Medium (M)
MA05: Adapt mowing, grazing and other equivalent agricultural activities (e.g. burning)	Medium (M)
MM01: Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes that occur without direct or indirect influence from human activities or climate change	Medium (M)
MB14: Manage drainage and water abstraction for forestry (inc. restoration of drained or hydrologically altered habitats)	Medium (M)

MJ02: Implement climate change adaptation measures	Medium (M)
MB05: Adapt/change forest management and exploitation practices	Medium (M)
MA10: Reduce/eliminate point or diffuse source pollution to surface or ground waters (including marine) from agricultural activities	Medium (M)
MA01: Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land	Medium (M)
MC09: Manage/reduce/eliminate air pollution from resource exploitation and energy production	Medium (M)

8.6 Additional information

No additional information

9. Future prospects

9.1a Future trends of parameters

ai) Range	Negative - decreasing <=1% (one percent or less) per year on average
bi) Area	Negative - decreasing <=1% (one percent or less) per year on average
ci) Structure and functions	Negative - slight/moderate deterioration

9.1b Future prospects of parameters

aii) Range	Poor
bii) Area	Poor
cii) Structure and functions	Bad

9.2 Additional information

No additional information

10. Conclusions

10.1 Range	Unfavourable-inadequate (U1)

10.2 Area	Unfavourable-inadequate (U1)
10.3 Specific structure and functions (incl. typical species)	Unfavourable-bad (U2)
10.4 Future prospects	Unfavourable-bad (U2)
10.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
10.6 Overall trend in Conservation Status	Deteriorating

10.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

10.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

10.8 Additional information

No additional information

11. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex I habitat types

11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network (km^2)

a) Minimum	
b) Maximum	
c) Best single value	5.602
11.2 Type of estimate	Best estimate
11.3 Habitat area inside the network; Method used	Based mainly on extrapolation from a limited amount of data

11.4 Short-term trend of habitat area within the network; Direction	Unknown
11.5 Short-term trend of habitat area within the network; Method used	Based mainly on expert opinion with very limited data
11.6 Short-term trend of habitat area in good condition within the network; Direction	Unknown
11.7 Short-term trend of habitat area in good condition within the network; Method used	Based mainly on expert opinion with very limited data

11.8 Additional information

No additional information

12. Complementary information

12.1 Justification of percentage thresholds for trends

No justification information

12.2 Other relevant information

No other relevant information

13. References

Biogeographical and marine regions

3.2 Sources of information

Blackstock, T.H., Howe, E.A., Stevens, J.P., Burrows, C.R. & Jones, P.S. (2010). Habitats of Wales: a comprehensive field survey, 1979-1997. University of Wales Press, Cardiff. 229 pp.

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Jones, P.S. (201b). Towards a National Action Plan for Welsh Peatlands. Written advice to Welsh Government, May 2018. Natural Resources Wales, Bangor.

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Lindsay, R.A., Birnie, R. & Clough, J. (2014). Peat Bogs, Climate and Climate Change. IUCN UK Committee Peatland Programme Briefing Note No. 10.

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NRW (2016b). New LIFE for Welsh Raised Bogs LIFE16 NAT/UK/000646). Application (successful) for EU LIFE Nature Funding. Natural Resources Wales, Bangor.

NRW (2018a). SAC and SPA Monitoring Programme Results 2013-2018. Internal NRW Dataset (Excel spreadsheet).

NRW (2018b). SAC & SPA Monitoring Programme planning spreadsheet 2013 – 2018. Internal NRW Dataset (Excel spreadsheet).

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Main pressures

7.2 Sources of information

No sources of information

14. Explanatory Notes

Field label	Note
2.1: Year or period	New survey evidence since 2018 not incorporated.
2.3: Distribution map; Method used	The distribution map is based primarily on GIS analysis of Phase 2 (plant community level) and Phase 1 data contained in an Arc GIS database (Jones et al., 2018a). 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 and then subsequently an ArcGIS 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 GIS inventory for this habitat. The definition of this habitat is considered in more detail in Stevens (2012) and Jones et al. (2012). The distribution map provided for this habitat is a revised version of that used for the 2013 Article 17 reporting round. The new map contains the following groups of records ('records' in this context refer to individual pure or mixed polygons containing this habitat and based on field mapping evidence). 1. Data resulting from NRWs Lowland Peatland Survey of Wales (Jones et al., 2011), amounting to 4465 records for 25 sites surveyed between 2004 and 2017. This includes data for 5 of the 7 LIFE project sites. 2. Data from the Habitat Survey of Wales (Blackstock et al., 2010) for 40 records. 3. Data for Cors Caron and Cors Fochno based on estimates derived from a range of surveys for the New LIFE for Welsh Raised Bogs LIFE Project. 4. Data provided by Natural England for Fenns', Whixall,

	Bettisfield, Wem & Cadney Mosses SAC. 5. Data for three further sites scheduled for inclusion in the Lowland Peatland Survey or else surveyed but survey reports not yet completed, namely Llyn Alwen, Covert Coch and Afon Lafar peatlands. Phase 1 data was only used where NVC survey information was lacking and the overwhelming majority of records are based on high quality Phase 2 (plant community [NVC] level) survey, mostly undertaken in-house as part of the LPSW programme. The LPSW is still ongoing and further significant lowland records for this habitat will arise leading up to completion of the Lowland Peatland Survey of Wales programme. Together these sources provide records for 39 hectads in Wales and a reasonable impression of the distribution of this habitat, but for the reasons identified here the overall dataset is not regarded as comprehensive. No new survey evidence since 2018 has been incorporated.
3.2: Sources of information	This section has not been updated and is based on the 2012 and 2018 information.
4.3: Short-term trend; Direction	There is no quantitative evidence on which to assess changes in range or surface area over the short or long term. However, changes are now considered probable due to the degradation of archaic peatland of raised bog origin where lacking statutory protection.
4.11: Change and reason for change in surface area of range	Decline suspected over long-term period due to losses to agriculture to a point where H7120 would not be restorable. Losses of H7120 are, unfortunately, not attributable to its restoration to H7110 and this should be a priority for the future.
5.1: Year or period	Date range covers the period between the start of the Habitat Survey of Wales (actually the Upland Vegetation

	Survey in 1979) and the end date of the previous reporting round.
5.2: Surface area	The extent estimate for H7120 was a new estimate prepared for the 2018 reporting round but does not include any subsequent evidence. This figure has a complex derivation based on the following sources. 1. Revised estimates for H7120 extent on SAC sites included within the New LIFE for Welsh Raised Bogs project (NRW, 2016b) based on Lowland Peatland Survey of Wales survey data. During preparation of the LIFE bid the opportunity was taken to re-examine the H7110 and H7120 extent figures for the project sites, resulting in a revised total area of 19.7 ha for H7120 for Cernydd Carmel, Cors Goch, Trawsfynydd, Esgyrn Bottom, Rhosgoch and Waun Ddu. Data for all of these sites are based on recent high quality NVC survey undertaken since 2004 by the Lowland Peatland Survey of Wales (LPSW, Jones et al., 2011). 2. Data for LIFE project sites not includes in the Lowland Peatland Survey of Wales. These data were assessed by D.K. Reed from a range of sources, including contracted NVC survey and the expert opinion of site managers: the resultant totals are 114.16 ha for Cors Caron and 217.7 ha for Cors Fochno. 3. Data from the Habitat Survey of Wales (Blackstock et al., 2010), totalling 256.5 ha. 4. Lowland Peatland Survey of Wales sites (103.1 ha). These data cover 20 sites surveyed since 2004. 5. Extent data for H7120 at Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC (167.6 ha). These data were supplied by Natural England in 2018 and relate to the Welsh resource of the cross-border site only. 1. Extent data for three further sites (totalling 18.3 ha)

	scheduled for inclusion in the Lowland Peatland Survey or else surveyed but survey reports not yet completed, namely Llyn Alwen, Covert Coch and Afon Lafar peatlands. These data appear collectively in the revised inventory for H7120 (Jones et al., 2018a) and amount to a total area of 897 ha. Inevitable uncertainty surrounds this extent estimate. • The derivation of the Natural England figure for Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC is unclear and may not have used the same criteria used for the SAC sites wholly in Wales: this figure needs critical re-examination. • Data for the two large wholly Welsh SAC sites (Cors Fochno and Cors Caron) require critical examination, being based currently on a mixture of expert judgement and out-sourced NVC survey. Other sites known to or suspected to support H7120 occur in Wales (Jones & Birch, 2018a) but are not included in the inventory of Jones et al. (2018): Phase 2 data for some of these still await formal release whilst others of these sites remain un-surveyed.
5.6: Short-term trend; Direction	Decreases considered probable due to ongoing drainage of much of the resource coupled with lack of focussed restoration activity.
5.14: Change and reason for change in surface area	The area data have not been updated for this reporting round; all reported trends are based on expert opinion.
6.1: Condition of habitat	This assessment has not been updated since the 2018 reporting round. The derivation of these figures in based on Jones (2018a). The area judged as being in not good condition is based on SAC monitoring evidence for the four SACs supporting this

	habitat at C grade or higher, all of which indicate unfavourable condition. There is no evidence to indicate any of the Welsh resource is in good condition, though in practice some may be recovering towards H7110. The area recorded here as unknown is the difference between the total area of this habitat in Wales (see section 5, 897 ha) and the area in not good condition.
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 2016 (NRW, 2018a). The spreadsheet cited as NRW (2018a) has been analysed to extract monitoring data for SAC sites for H7120. The related spreadsheet NRW (2018b) has then been checked to see if any monitoring results have been reported which do not figure in NRW (2018b). SAC monitoring data indicates this feature is in unfavourable condition on the 4 Welsh SACs where it occurs as a B-C graded feature: these sites are as follows (with the most recent condition assessment date given in brackets): Cors Caron (October 2003), Cors Fochno (December 2009), Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses (August 2007), and Usk Bat Sites (for Waun Ddu) (August 2016). Only one of these sites has been monitored since the 2012 reporting round, though this is planned for Fenn's & Whixall in the present year. In each case it is assumed that the SAC monitoring assessment relates to the whole H7120 resource. Area estimates are based on the information provided above in section 5.
6.4: Short-term trend of habitat area in good condition; Direction	There are insufficient data to quantify this trend. There are long-standing restoration projects, particularly at Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses which commenced prior to 1994. However, significant parts of the resource are still deteriorating under agricultural management. Note that any increase of the area of this habitat in good condition actually equates to a gain in the area of H7110

	and loss of H7120 area, so in the long-term the area of H7120 should decline!
7.1: Characterisation of pressures	Overview This analysis is based largely upon the 2018 analysis of Pressures and Threats which utilised a number of data sources, with NRWs Action Database (NRW, 2018c) serving as a critical resource. This provides information on 'issues' affecting habitats and species within the protected sites series in Wales and contains a total of 209 management issue entries against the Degraded Raised Bog feature description, of which 184 remain categorised as 'C' and requiring ongoing control, with 18 resolved, 4 withdrawn and 3 unclassified. The current issues apply across a total of 57 management units (many units have more than one management issue recorded) on 4 SSSI, including all of the SACs for which this habitat is a C feature or higher. Restricting the search term to 'Degraded Raised Bog' means that only data for SAC SSSI are reported here – these data are thus not wholly representative of the wider resource as it is to be expected that conservation measures would better mitigate pressures and threats inside the SAC series. Data for the more general SSSI feature of 'raised bog' has also been extracted from the Actions Database: this yields a total of 395 management issue entries against the Raised Bog feature description, of which 303 remain categorised as 'C' and requiring ongoing control. These apply across a total of 91 management units (many units have more than one management issue recorded) on 22 SSSI. However, 2 of these sites (Ffrondeg and Rhos Cilcennin) are unlikely to support raised bog, while other raised bogs on SSSI are not formally recognised as features (e.g. the Nant Ffrancon mires of Eryri [Gwynedd] and Cors Caranod [Ceredigion]). These data have been used to supplement the more meagre data for H7120 where necessary. NRWs Prioritised Implementation Plans for SAC sites (NRW, 2016a) have also been consulted.

Pressures:

PL02 Drainage (including some PA22. Drainage for use as agricultural land)

Adverse hydrological regimes remain the key pressure and threat for H7120 in Wales. NRWs Actions Database has three categories relevant to this pressure/threat. For the H7120 feature specifically, 'Drainage' is noted as a current issue for 20 units on 3 SSSI, with 'Ditch management' affected 16 units on 3 SSSI and 'Water levels' 8 units on 2 SSSI. Taken together, these pressures currently affect 32 units on 3 SSSI. For the wider Raised Bog SSSI feature, the equivalent figures are 17 units and 3 SSSI for drainage, 20 units on 5 SSSI for ditch management, and 21 units on 6 SSSI for water levels. Water levels figure as a medium priority pressure in the Prioritised Improvement Plans (PIPs) for just 1 SAC, with ditch management and drainage cited as high or medium priority issues for 3 SACs. In dealing with figures on the number of units affected by hydrological pressures, it is sometimes difficult to disentangle the root cause of (i.e. the original requirement for) drainage, though the primary driver is likely to be drainage for agricultural purposes. Drainage impacts resulting from past or ongoing drainage for agriculture (i.e. PA22) is estimated to affect a minimum of 22 (54%) of the 41 sites assessed to-date as supporting H7120 in Wales (Jones & Birch, in prep.), with drainage for other purposes also affecting 9 of these sites together with a further 7 sites with no or un-diagnosed agricultural drainage pressures.

PA08 Extensive grazing or undergrazing by livestock

Grazing is a key means of controlling Molinia and scrub, though its requirement should decline as hydrological restoration progresses. Management neglect is a locally important issue for this habitat and relates chiefly to areas with a significant cover of Molinia caerulea; this is often a

symptom of past or ongoing drainage and/or peat cutting, with atmospheric deposition as likely to be reinforcing its dominance (Limpens et al., 2003; Tomassen et al., 2003, 2004). The issue of insufficient grazing was recorded in NRWs Actions Database (NRW, 2018c) as a current issue for H7120 on only 1 unit; the equivalent figures for the wider raised bog feature is 14 units on 9 sites (note though that this includes 2 of the SSSI where raised bog is actually unlikely to occur). Insufficient grazing may have been under-recorded in the Prioritised Implementation Plans (NRW, 2016a), being un-recorded, the closely related issue of 'grazing type and/or timing' ranges from a low to high priority issue for all SACs, being cited as a current issue for 14 units on 2 sites. This is likely to be a more widespread and pressing problem for non-statutory sites supporting H7120.

PI03 Problematic native species

Scrub invasion is cited as a current issue for 27 units on 3 sites for H7120, and on 37 units across 11 sites for the wider feature of raised bog. This is a direct symptom of other pressures creating suitable conditions for scrub expansion, including drainage, past peat cutting and very probably atmospheric nutrient deposition (Tomassen et al., 2003). Scrub invasion is noted as a high or medium priority pressure in the PIPs for 3 SACs (NRM, 2016a). Molinia domination is the other main issue to list here. This pressure is closely linked to PA08 and is often a case of drainage coupled with under-management and atmospheric nutrient deposition (Tomassen et al., 2003). This is likely to be a more widespread and pressing problem for non-statutory sites supporting H7120. The related NRW Actions Database pressure of 'Terrestrial [species] - native and archaeophyte' is also considered here as this appears to relate to scrub encroachment in some instances – chiefly due to under-grazing; this was cited as a current issue for H7120 for 8 units on 2 SSSI, and for raised bog 13 units on 5 SSSI. Insufficient cutting or mowing is highly relevant to

this issue and is cited for 2 units each at Cors Caron and Cors Fochno.

PK04: Atmospheric N-deposition and PK03 Mixed source air pollution, air-borne pollutants

Air pollution is cited as a current issue for H7120 for only 4 units across 2 SACs in NRWs Actions Database (NRW, 2018c). Searching for this issue in NRW (2018c) for the more generic SSSI feature of raised bog reveals it has been recorded as a current issue on 12 units on four SSSI. Air pollution is cited as a high priority issue for H7120 in NRWs Prioritised Improvement Plans (NRW, 2016a) for the four SACs on which this habitat occurs as a feature at C grade or higher. The extent of the H7120 resource in Wales subject to N deposition in excess of the critical load for this habitat (5 kg N/ha/yr) has been assessed using the agreed approach and using updated deposition data based on the updated extent estimate of 897 ha. Using a data overlay method in ARC GIS (Kay, 2018), 100% of the habitat by area (polygon data) was recorded at or above the relevant lower Critical Load limit. NRWs Actions Database needs to be updated to ensure this issue is correctly recorded as a current issue for all SAC and SSSI units.

PA07 Intensive grazing or overgrazing by livestock

This is a current issue on 3 units on 2 SAC and reaches its most extreme levels at Waun Ddu, parts of Usk Bat Sites SAC (see cover photo). More generally for the wider raised bog feature, this is listed as a current issue on 6 units across 5 SAC. This issue is known to be a current and ongoing pressure for at least two other sites, the non-statutory Cors Blaenduad (Carmarthenshire), and the tiny raised bogs of the Afon Lafar (Carneddau).

PI02 Other invasive alien species (other than species of Union concern)

Terrestrial non-native species are a current issue for H7120 on 3 units on 3 SAC: the species concerned include conifers, Rhododendron and Japanese knotweed. More widely, for the raised bog feature, this is reported as a current issue for 13 units on 7 SSSI. This issue is only recorded as a low priority pressure in the relevant PIPs.

PB01 Conversion to forest from other land uses, or afforestation (excluding drainage) & PB23 Physical alteration of water bodies for forestry (including dams).

These two pressures are closely linked and relate to ongoing impacts resulting from the past afforestation of a number of raised bogs, with at least three sites included (two sites at Llanbrynmair and Fenn's & Whixall Mosses). The need to remove trees from the peat body of raised mire sites, and the need to remove conifer seedlings from unafforested bog flanked by conifer plantations, is captured to some extent in the issue category 'insufficient tree management' which is noted as a current issue for 22 units on 2 SAC in NRW (2018c). The Actions Database category 'Habitat loss & fragmentation) relates to both this issue (as conifer plantations causing fragmentation of semi-natural peatland habitats within peat bodies) and also loss of semi-natural habitat to agricultural improvement; for H7120 this issue was noted as current for 11 units on 2 SAC, being recorded as a medium priority pressure on both sites (Cors Fochno and Fenn's and Whixall Mosses) in the relevant PIPs (NRW, 2016).

PA01 Conversion into agricultural land (excluding drainage and burning)

The context of this pressure is the ongoing legacy of impacts relating to the past conversion of lowland raised bog to agricultural land, rather than the ongoing or future loss of this ecosystem to this pressure. The extent of this issue is demonstrated by comparing the sum total area of

H7110 and H7120 (2485 ha) with the estimated original extent of raised bog ecosystems in Wales (4123 ha) based on the analysis by Jones & Birch (in prep.). Much of the difference (1638 ha) consists of modified but sometimes semi-natural habitats on deep peat, as well as semi-improved and improved grassland. The significant modification of peat bodies which this figure represents constrains the long-term resilience of these ecosystems and represents an ongoing pressure.

PA17 Agricultural activities generating diffuse pollution to surface or ground waters (including marine).

For H7120, this only affects 2 units on 1 SAC, but may be an under-reported pressure.

PF07 Other residential and recreational activities and structures generating point pollution to surface or ground waters

This is listed as a current issue for 3 units at Cors Fochno.

PC05 Peat extraction

Extant permission for peat extraction exists for a handful of sites and past extraction has significantly damaged many, with its after effects in terms of drainage impacts ongoing. Potential future or ongoing peat extraction affects 3 units at Fenn's & Whixall Mosses.

PJ03 - Changes in precipitation regimes due to climate change

PJ01 - Temperature changes and extremes due to climate change There is little specific evidence indicating impacts due to these pressures at the present time; any such impacts would, in any case, be difficult to disentangle from current drainage mediated impacts.

Threats:

These were assessed in a similar way to pressures. However, issues in the Actions Database which had been 'completed' or were 'underway' were not included in the assessment of threats.

PL02 Drainage (including some PA22. Drainage for use as agricultural land)

The New LIFE for Welsh Raised Bogs Project (NRW, 2016b) will deal with a significant range of drainage issues affecting the H7120 resource on the 7 project sites. The rather modest number of units for which drainage related issues have been resolved to-date (a single unit of a single SAC each for drainage and water levels and 3 units on 3 SAC for ditch management) underlines how difficult it is to effectively eliminate drainage pressures, particularly where these present at the edges or even beyond the boundary of protected sites. This argues for a new and more holistic ecosystems approach to defining and then managing hydrological protection zones around the margins of protected peatland sites. Non-statutory sites remain at significant risk from drainage, with a key existing mechanism (Glastir Advanced) showing no uptake of the rewetting option (403) at present (Milner, 2018). The Environmental Impact Assessment Regulations (Welsh Government, 2017), provide some protection against this pressure for all sites.

Threats related to insufficient management or management neglect (PA05 & PI03) will continue for the foreseeable future due to the following principal factors: (i) lack of resources for promoting and funding management agreements on statutory sites under third party management, and (ii) the inadequacy of current mechanisms for promoting and where necessary enforcing the sustainable management of examples outside the protected sites series, particularly where these occur as

small elements within otherwise intensively farmed contexts, and (iii) insufficient resources for bringing the whole NNR resource under restoration management. The New LIFE for Welsh Raised Bogs project should deliver sustainable grazing where needed on the project, though this will need to be maintained in the after-LIFE phase.

PI03 Problematic native species

The issue of scrub invasion should reduce as implementation of NRWs New LIFE for Welsh Raised Bogs project progresses, though this will remain on threat across non-SAC SSSI and non-statutory sites. Mowing and grazing will also be used on the project sites, primarily to reduce the dominance of Molinia and to address young scrub.

PK04: Atmospheric N-deposition and PK03 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 High pressure (threat) to the habitat in Wales. A provisional analysis using projected exceedance data for 2030 indicates that the area of SAC (on which H7120 is a feature) which falls in areas where deposition is above the relevant critical load will not fall at all from the 2013-2015 estimate by 2030 (JNCC, 2018).

PA07 Intensive grazing or overgrazing by livestock

This isue should be resolved by the New LIFE for Welsh Raised Bogs Project (NRW, 2016b) at Waun Ddu (part of Usk Bat Sites SAC - see cover photo), though sustaining reductions in grazing level after the project ends in 2021 may be quite challenging. This issue has not been resolved to-date on any of the SAC sites.

PB01 Conversion to forest from other land uses, or

afforestation (excluding drainage) & PB23 Physical alteration of water bodies for forestry (including dams).

This pressure will continue as a future threat, particularly for the two non-statutory sites affected. This is because there is at present no financial mechanism for making peatland restoration after afforestation an attractive prospect relative to replanting.

PI02 Other invasive alien species (other then species of Union concern)

These will remain a threat whilst these species remain in the vicinity of raised bogs sites, though this can be mitigated by hydrological restoration to some degree.

PA17 Agricultural activities generating diffuse pollution to surface or ground waters (including marine).

Given the localised nature of this pressure its resolution should be feasible in the next two reporting rounds.

PC05 Peat extraction

Extant permission for peat extraction exists for a handful of sites and may be exercised in the next two reporting rounds. The effects of past peat extraction will be ongoing and can only be partially mitigated by hydrological restoration because of the impact on surface profiles of sites.

PJ03 - Changes in precipitation regimes due to climate change

Modelling predicts that water table draw-down in peat bogs during summer will become more marked (Lindsay et al., 2014). Increased temperatures may lead to increased decomposition of peat-forming material in active, healthy bogs, although this is still an issue of debate. However, the

	resilience of ombrogenous bogs to climate change has been convincingly linked to the living surface (acrotelm) of 'active' bogs; thus restoration to sustain or restore this critical feature is the best approach for mitigating the effects of climate change.
8.1: Status of measures	'a' selected because measures already underway relate only to H7120 supporting semi-natural vegetation. None of the hypermodified element of H7120 is included.
8.5: List of main conservation measures	Much of this narrative is based on the 2018 report. The majority of measures are not fully implemented. A total of 560.2 ha of this habitat (see section 11.1 below) is included within this SAC series. Very little activity has been undertaken to restore H7120 outside the SAC series, especially where this is under damaging intensive agricultural management. MK03 and MA13, hydrological interventions. A significant number of hydrological pressures remain to be addressed, with many of those within the SACs being subject to planned actions as part of the two current LIFE projects. However, better mechanisms are needed to address drainage at the margins of or beyond the boundaries of protected sites. Hydrological restoration is a key element of the New LIFE for Welsh Raised Bogs project and the expertise developed needs to be applied to other Welsh H7120 sites to ensure hydrological restoration yields a more sustainably managed suite of raised bog ecosystems, thus minimising or even preventing the need for repeated future interventions aimed at tackling recurring problems such as scrub invasion. Additional resources will be required to maintain hydrological restoration infrastructure within NNRs in the after-LIFE phase of the two LIFE projects, and to enable this work on non-SAC NNRs, such as Cors Goch, Llanllwch. Land management actions relating to grazing (MA04, MA05, MM01).

Only 20.3 ha of this habitat are included under NRW land management agreements (Milner, 2018), which is a key mechanism for promoting effective sustainable grazing, and this appears to represent a very minor decrease since 2012 when the area of H7120 in SSSI with 'raised bog' as a feature and under a Land Agency agreement was 21.5 ha. Section 9.1c. demonstrates the rather restricted areas of this habitat under agri-environment agreements. Further effort is clearly needed to expand sustainable grazing across the resource (where needed) and the New LIFE for Welsh Raised Bogs project will generate important experience and demonstration sites for this purpose. Actions under MA05 should include the restoration of peat-forming conditions on land currently under purely agricultural management: this relates to substantial areas of deep peat under semi-improved and improved grassland (and other land-cover types) peripheral to many of our lowland raised bog sites. This action is essential in order to secure long-term ecosystem resilience.

MK01 Reduce impact of mixed source pollution, MC09 Manage/reduce/eliminate air pollution from resource exploitation and energy production, & MA11 Reduce/ eliminate air pollution from agricultural activities.

National regulations are in place but have been insufficient to prevent continued high levels of N deposition nationally (MC09) and locally increasing ammonia pollution from expansion of poultry units (MA11).

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 continues to impact semi-natural habitats in Wales. These regulations are not habitat-specific, however with introduction of The Environment (Air Quality and Soundscapes) (Wales) Act

2024 in Wales, brings in new national targets for air quality pollutants, with the potential of directly influencing habitat protection.

This key legislative advancement requires mandatory targets for fine particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$) to be established by February 2027, including new powers for Welsh Ministers to set pollutant-specific targets in future years (e.g., ammonia, nitrogen dioxide) linked to biodiversity outcomes, potentially enabling future habitat-sensitive thresholds.

Welsh Government have also introduced The Agriculture (Wales) Act in 2023. It aims to establish a framework of Sustainable Land Management (SLM) objectives to underpin agricultural support, including the Sustainable Farming Scheme (SFS). The Act provides Welsh Ministers with the power to provide support (financial or otherwise) for or in connection with 15 purposes, including 'Improving air quality'. Welsh Government published a consultation on the SFS which closed in March 2024. Welsh Ministers will not be making final scheme design decisions until further stakeholder work is undertaken.

Addressing forestry impacts – MB05

Resolution of this threat demands a new approach for afforested peatlands, with a more explicit focus on the restoration of Annex 1 habitats.

MF08 Manage changes in hydrological and coastal systems and regimes for construction and development (incl. restoration of habitats).

This requires a significant ecosystem-based initiative making full use of NRWs new remit and the legislative powers in Wales support the sustainable management of natural resources, the aim being to create more sustainable natural solutions to managing flood-risk which also create

	more natural marginal hydrological regimes for raised bog sites, with a strong focus at Cors Fochno but also Arthog Bog. MA10 Reduce/eliminate point or diffuse source pollution to surface or ground waters (including marine) from agricultural activities & MK01 Reduce impact of mixed source pollution. Only localised action is required to address both diffuse and point-source nutrient impacts. MA01 Prevent conversion of natural and semi-natural habitats, and habitats of species into agricultural land. This is not thought to be a major threat but ongoing vigilance by NRW and WG EIA staff is essential to prevent further losses of this already diminished resource. MJ02 Implement climate change adaptation measures A national action plan for achieve the restoration of this habitat has been proposed (Jones, 2018c) as part of a proposed national action plan for Welsh peatlands, with action LRB.1 stating 'Implement a national conservation/ restoration programme to ensure all 55 Welsh raised bogs are resilient to future change and support the characteristic ecosystems of active raised bog, thus maximising the security of carbon stocks and enhancing the provision of core ecosystem services such as greenhouse gas regulation and natural flood management". This plan needs to be implemented across the suite of raised bog sites (H7110 and H7120) in Wales.
9.1:Future trends and prospects of parameters	Area: Loss of area of H7120 resource under agricultural management expected. Structure & function:

	The Future prospects for Structure and functions takes into account that at least 25% of the habitat area is expected to be in unfavourable (not good) condition in c.2035 due to nutrient N critical load exceedance, unless additional measures are taken to reduce N deposition impacts.
10.1: Range	Conclusion on Range reached because:(i) the short-term trend direction in Range surface area is decreasing by 1% per year or less; and (ii) the current Range surface area is approximately equal to the Favourable Reference Range.
10.2: Area	Conclusion on Area reached because:(i) the short-term trend direction in Area is decreasing by 1% per year or less; (ii) the current Area is approximately equal to the Favourable Reference Area; and iii) the change in distribution pattern is unknown.
10.3: Specific structure and functions	Conclusion on Structure and function reached because: i) habitat condition data indicates that more than 25% of the habitat is in unfavourable (not good) condition; ii) short-term trend in area of habitat in good condition is uncertain; and iii) expert opinion determines that there are significant issues for this habitat, with significant parts of the resource still deteriorating under agricultural management.
10.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are poor; (ii) the Future prospects for Area covered by habitat are poor; and (iii) the Future prospects for Structure and function are bad.
10.5: Overall assessment of Conservation Status	Overall assessment of Conservation Status is Unfavourable-bad because two of the conclusions are Unfavourable-bad.
11.1: Surface area of the habitat type inside the pSCIs, SCIs and SACs network	This estimate is derived from the sum total area of H7120 recorded on SAC sites in Wales and includes SAC examples where the habitat is not a feature.
5.13: Favourable Reference Area (FRA)	The UK-level FRV for surface area was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any

	combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current habitat extent and trends.
4.10: Favourable Reference Range (FRR)	The UK-level FRV for range was developed by JNCC using an audit trail based on the year the FRV was first established and any changes made in subsequent reporting rounds. The audit may draw from any combination of the 2007, 2013, or 2019 Habitats Directive reports and reflects the full rationale used for the 2019 Article 17 reporting. This FRV was reviewed by Welsh experts and considered appropriate for use in Wales based on current distribution and trends.