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

2019-2024

Conservation status assessment for the habitat:

H9130 - *Asperulo-Fagetum* beech forests

Wales

Cyfoeth Naturiol Cymru
Natural Resources Wales

JNCC

For further information please contact:

Natural Resources Wales, Welsh Government Offices, Cathays Park, King Edward VII Avenue, Cardiff, CF10 3NQ. https://naturalresources.wales

JNCC, Quay House, 2 East Station Road, Fletton Quays, Peterborough, PE2 8YY. https://jncc.gov.uk

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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: *Asperulo-Fagetum* beech forests

Distribution Map

Range Map

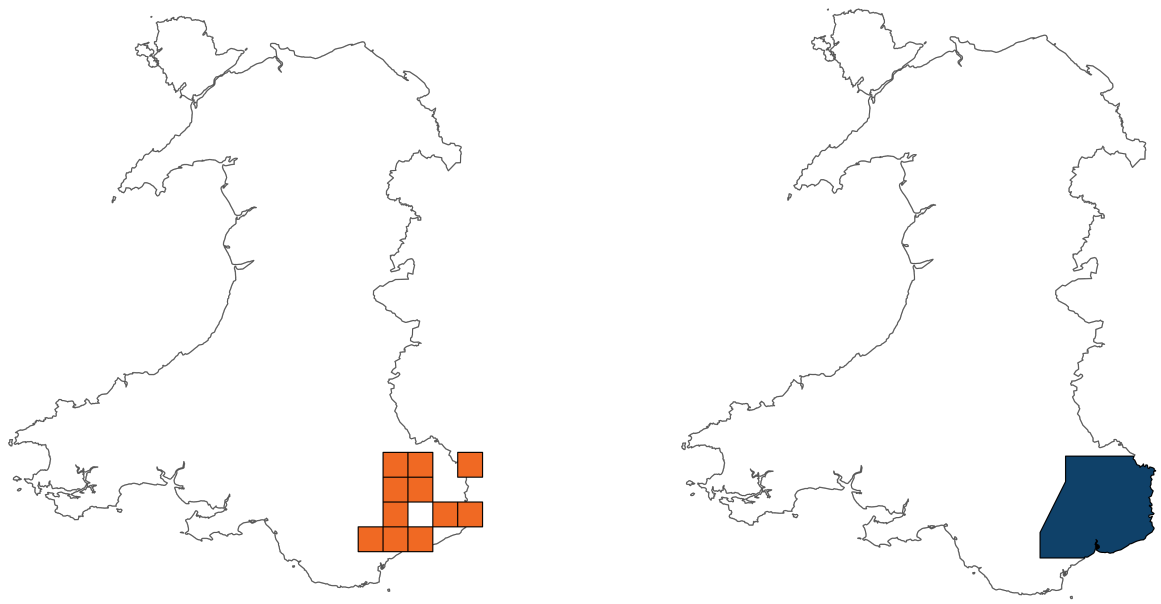

Figure 1: Wales distribution and range map for H9130 - *Asperulo-Fagetum* beech forests. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority. The 10km grid square distribution map is based on available habitat records within the current reporting period.

Table 1: Table summarising the conservation status for H9130 - *Asperulo-Fagetum* beech forests. 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)	**Favourable (FV)**
Area covered by habitat (see section 5)	**Unfavourable-inadequate (U1)**
Structure and functions (see section 6)	**Unknown (XX)**
Future prospects (see section 9)	**Unfavourable-bad (U2)**

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National Level

1. General information

1.1 Country	Wales
1.2 Habitat code	H9130 - *Asperulo-Fagetum* beech forests

2. Maps

2.1 Year or period	1985-2012
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)	1,415.84
4.2 Short-term trend; Period	2013-2024
4.3 Short-term trend; Direction	Stable
4.4 Short-term trend; Magnitude	

a) Estimated minimum

b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
4.5 Short-term trend; Method used	Based mainly on extrapolation from a limited amount of data
4.6 Long-term trend; Period	
4.7 Long-term trend; Direction	
4.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	
4.9 Long-term trend; Method used	

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	No
b) Genuine change	
c) Improved knowledge or more accurate data	

d) Different method	
e) No information	
f) Other reason	
g) Main reason	

4.12 Additional information

No additional information

5. Area covered by habitat

5.1 Year or period	1985-2012
5.2 Surface area (km²)	
a) Minimum	
b) Maximum	
c) Best single value	13
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	
5.6 Short-term trend; Direction	Unknown
5.7 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
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	
d) Rate of decrease	
5.12 Long-term trend; Method used	
5.13 Favourable Reference Area (FRA)	
a) Area (km²)	
b) Pre-defined increment	Current area is between 2% and 10% 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	0.49
aii) Maximum	0.49
Area not in good condition	
bi) Minimum	1.26
bii) Maximum	1.26
Area where condition is unknown	
ci) Minimum	11.25
cii) Maximum	11.25
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	
6.4 Short-term trend of habitat area in good condition; Direction	Unknown
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

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
PC01: Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell)	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)
PK04: Atmospheric N-deposition	Ongoing and likely to be in the future	High (H)
PJ14: Other climate related changes in abiotic conditions	Ongoing and likely to be in the future	Medium (M)
PI02: Other invasive alien species (other than species of Union concern)	Ongoing and likely to be in the future	Medium (M)
PB06: Logging or thinning (excluding clear cutting)	Ongoing and likely to be in the future	Medium (M)
PB04: Abandonment of traditional forest management	Ongoing and likely to be in the future	Medium (M)
PF05: Sports, tourism and leisure activities	Ongoing and likely to be in the future	Medium (M)
PI04: Plant and animal diseases, pathogens and pests	Only in future	Medium (M)

PJ03: Changes in precipitation regimes due to climate change	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 and taken
8.2 Main purpose of the measures taken	Maintain the current range, surface area or structure and functions of the habitat type
8.3 Location of the measures taken	Both inside and outside National Site Network
8.4 Response to measures	Medium-term results (within the next two reporting periods, 2025–2036)

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
MC01: Adapt/manage extraction of non-energy resources	High (H)
MI05: Management of problematic native species	High (H)
MK01: Reduce impact of mixed source pollution	Medium (M)
MA11: Reduce/eliminate air pollution from agricultural activities	Medium (M)

MC09: Manage/reduce/eliminate air pollution from resource exploitation and energy production	Medium (M)
MJ02: Implement climate change adaptation measures	Medium (M)
MI03: Management, control or eradication of other invasive alien species	Medium (M)
MB05: Adapt/change forest management and exploitation practices	Medium (M)
MB06: Stop forest management and exploitation practices	Medium (M)
MB02: Maintain existing traditional forest management and exploitation practices	Medium (M)
MB03: Reinstate forest management and exploitation practices	Medium (M)
MF03: Reduce impact of outdoor sports, leisure and recreational activities (incl. restoration of habitats)	Medium (M)

8.6 Additional information

No additional information

9. Future prospects

9.1a Future trends of parameters

ai) Range	Overall stable
bi) Area	Positive - increasing <=1% (one percent or less) per year on average
ci) Structure and functions	Very negative - important deterioration

9.1b Future prospects of parameters

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

9.2 Additional information

No additional information

10. Conclusions

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

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	1.75
11.2 Type of estimate	Best estimate
11.3 Habitat area inside the network; Method used	Complete survey or a statistically robust estimate
11.4 Short-term trend of habitat area within the network; Direction	Stable
11.5 Short-term trend of habitat area within the network; Method used	Complete survey or a statistically robust estimate
11.6 Short-term trend of habitat area in good condition within the network; Direction	Stable
11.7 Short-term trend of habitat area in good condition within the network; Method used	Complete survey or a statistically robust estimate

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

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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	An extensive analysis of the range and extent of H9130 Asperulo-Fagetum beech forests in Wales was carried out in 2012 using GIS, relevant vegetation surveys, geological and climatic data (Latham and Rothwell, 2012). No new information has become available to significantly update this analysis, and there is also no reason to expect that the range and extent of the habitat has changed significantly since 2012; any changes are likely to be trivial in comparison to the confidence in the analysis. For these reasons the figures and analysis for 2012 are reproduced here.
2.3: Distribution map; Method used	(Analysis as for 2012; see section 2.1). 9130 Asperulo-Fagetum beech forests are limited in range to the extreme south-east of Wales where beech is accepted as a native tree. Floristically similar stands do occur elsewhere in Wales where beech has been planted into base-rich woodlands (and some examples recorded as 'D' features on SACs), but these are not included in this analysis. Asperulo-Fagetum beech forests equate to NVC communities W12 and W14 on more base-rich soils (JNCC, 2017) and information on the habitats range can be derived from national NVC surveys in Wales. These are summarised in Latham (2001) and are fairly comprehensive at the scale required for reporting range and are considered adequate for the purpose. No additional significant information has become available since the last reporting round, and it is considered highly unlikely that the habitat has changed its range during this period. Previous estimates of the area of beech woodland in Wales (Latham 2000, 2003) have used a 'proportional representation' approach, calculating the proportion of the total area of woodland surveyed by national surveys that equates to

Asperulo-Fagetum habitat and applying this proportion to figures for the total woodland area in Wales to estimate the total area of Asperulo-Fagetum. The approach makes the assumption that surveys are broadly representative of the overall woodland resource in Wales (Latham, 2001) and used CCW Phase 1 Habitat Survey for total resource figures (Blackstock et al., 2010).

The current analysis uses this broad approach, but seeks to refine previous estimates by clarifying the native boundary of beech, and stratifying within it by broad rock types to help distinguish between beech woods of neutral-basic soils (Asperulo-Fagetum) and those of acid soils (Atlantic acidophilous beech forests). Beech is only considered native in southeast Wales. In the analysis for 'Priority Habitats of Wales' guidance for the Biodiversity Action Plan, Latham (2003) defined the range as 'the former administrative counties of Gwent and the eastern halves of Mid and South Glamorgan, and a GIS boundary drawn informed by published maps, e.g. Forestry Commission (2003)". The current analysis revisited that boundary layer, adjusting its location so that didn't divide woodland units and as far as possible kept to un-wooded areas; stands known to contain beech adjacent to the boundary were considered individually to make a judgment as to whether the beech was native or not. In reality, there is unlikely to be a hard boundary line for native beech, and a decreasing proportion of native beech abundance away from native core areas seems much more likely. However, it is far beyond the scope of the current analysis to take this into account and an informed but pragmatic boundary seemed the most reasonable way ahead. In the following, the area enclosed by this boundary is referred to as the 'beech zone'. The beech zone was stratified from British Geological Survey 1: 250,000 maps (licensed to CCW's MapInfo GIS) into: 1.) Rock types that generally weather to form base-rich to neutral soils (mainly including limestones and argillaceous rocks) likely to support a high abundance Asperulo-Fagetum beech forest, and; 2) Rock types that

generally weather to form neutral to acidic soils (mainly sandstones) likely to support a lower abundance of Asperulo-Fagetum beech forest. A perfect separation of 'acid' and 'basic' beech types was not expected, but the hope was that it would help refine proportional estimates if the total areas of woodland on each broad rock types were unequal. The distinction was also intended to provide a consistent way of dealing with W14 Fagus sylvatica – Rubus fruticosus woodland which can be considered to be either Asperulo-Fagetum or Atlantic acidophilous beech forest depending on the details of its composition and associated woodland types: examples overlying base-rich rocks were considered to be Asperulo-Fagetum, those overlying acidic rock types to be Atlantic acidophilous beech forest.

The total area of woodland ('Broadleaved' and 'Mixed, predominantly Broadleaved') within the beech zone, and overlying base-rich to neutral, and acidic rock types within it was calculated in GIS from the National Forest Inventory (NFI) (Forestry Commission, 2011). The total area of woodland surveyed with NVC (including W12 and W14) within each zone was taken from survey records (Latham, 2001). The total area of woodland overlying base-rich to neutral rock types in the beech zone was calculated as 9035.1 ha. Within this zone, 970.3 ha of woodland were surveyed with NVC, of which 85.1ha were W12 and 22.4ha as W14 (assumed to be Asperulo-Fagetum over these rock types), giving a proportion of (85.1+22.4)/970.3 = 0.1108. Applying this to the total woodland area = 9035.1 x 0.1108 = 1001ha. The total area of woodland overlying acidic to neutral rock types in the beech zone was calculated as 7132.7 ha. Within this zone, 733.3 ha of woodland were surveyed with NVC, of which 28.45ha were W12 (W14 is excluded as assumed to be Atlantic acidophilous beech forest over these rock types), giving a proportion of 28.45/733.3 = 0.0388. Applying this to the total woodland area = 7132.7 x 0.0388 = 278 ha. The totals for both rock types within the beech zone is 1001 + 278 = 1279ha. This

	figure has spurious precision, and a pragmatic estimate for the area of Asperulo-Fagetum beech forest in Wales is 1,300 ha, with a suggested range of 1,000 – 1,500ha (it is beyond the scope of this study to include formal errors).
4.3: Short-term trend; Direction	See 4.11
4.11: Change and reason for change in surface area of range	The distribution of Asperulo-fagetum beech forests in Wales has not been re-assessed for the current report and 10 km squares from which it has been reported are unchanged.
5.1: Year or period	Total evidence range 1985-2012. Base area figures from NFI are from 2006 (aerial photography derived, published under NFI 2011), some assumptions on proportions used in calculations derive from surveys accumulated from 1985 – 2000.
5.2: Surface area	The area figures have been derived from analysis of the proportional representation of H9130 within relevant vegetation surveys, stratified by environmental zones across Wales. The scope of this analysis did not allow for a formal statistical treatment of errors, and some expert judgement has been used to derive pragmatic range values. Also see comments in section 2.3
5.4: Surface area; Method used	The area figures have been derived from analysis of NFI woodland data (Forestry Commission, 2011) relevant vegetation surveys (Latham, 2001), and geological data (NRW and legacy licensed GIS datasets). The scope of this analysis did not allow for a formal statistical treatment of errors, and some expert judgement has been used to derive pragmatic range values. See section 2.3 and Latham and Rothwell (2012) for a fuller description.
5.8: Short-term trend; Method used	There is no evidence available to judge short-term trends in the total area of this habitat. The total extent figures are derived from data with a wide time base, and their confidence errors are likely to be very much larger than any figures for ad hoc changes that may be reported.
6.1: Condition of habitat	Figures adjusted from SDF by proportion based on reassessment of areas for 2013 submission.

6.2: Condition of habitat; Method used	Some assessment of structure and function can be made from the results of Common Standards Monitoring (NRW, 2018) where the habitat occurs as a feature on three SACs, representing c. 13% of the total resource. This is the only evidence source that confidently identifies this habitat. At the most recent assessment the majority of the habitat by area was in unfavourable condition (c. 78%), although 1/3 sites were assessed as Favourable overall. Unfavourable condition at the one site (which causes the dominance of the 'Unfavourable' result by area) was primarily due to the impacts of deer, limiting tree regeneration; other concerns relate to a variety of factors such as structural development, quarrying impacts and localised leisure activities, but these are not severe enough to cause other sites to be unfavourable. The overall condition of the habitat therefore may be closely linked to deer pressure which currently appears to be relatively localised. It's possible to speculate that condition across the wider resource may be generally good.
6.3: Short-term trend of habitat area in good condition; Period	For the 3 sites that have been reassessed between 2013 and 2020, 1 has changed condition (representing c. 28% of total habitat area on SAC and c. 3% of the total resource). However, this is due to an improved understanding of the ecology of the site rather than real change (Wilkinson, 2010) and it is not possible to draw wider conclusions. This was re-assessed in 2020 and determined that there had been no change and remains in Favourable condition
6.4: Short-term trend of habitat area in good condition; Direction	One site has been assessed as having changed condition from Unfavourable to Favourable during this period. However, this is due to an improved understanding of the ecology of the site rather than real change (Wilkinson, 2010) and it is not possible to draw wider conclusions. This was re-assessed in 2020 and determined that there had been no change and remains in Favourable condition

7.1: Characterisation of pressures	Pressures: Four pressures are ranked as High. PI03 deer browsing ([predominantly by naturalised fallow deer Dama dama), has serious impacts on regeneration and composition, for example within the SAC sites in the Wye Valley. PC01 extraction of rock through quarrying is a local, but serious pressure, which may result in total woodland loss as the habitat's limestone substrate is quarried away; there may also be effects of dust deposition and from modified hydrology. PK04 Atmospheric N-deposition and PK03 Mixed source of air pollution, air-borne pollutants, appears to be universal with all areas in receipt of deposition rates for atmospheric nitrogen in excess of the critical load for the habitat, although the impacts for this habitat are largely unquantified. Several pressures were considered to have a medium impact. PJ14 'Other climate related changes in biotic conditions' has been included as a catch-all for the complex of interactions relating to long-term habitat loss, fragmentation, reduction of permeability of the matrix leading to reduced ecological connectivity, combined with the additional pressures of climate change that may require habitat range adaptation. They also interact with many of the specific climate change pressures that have been listed. These impacts are hard to quantify but likely to be ongoing and suggested here to be Medium (i.e. rather than high as entered for other woodland habitats such as Tilio Acerion) because the habitat's relatively good representation and connectivity within its range, and the expectation that its ecological range may expand with

climate change.

PI02 Invasive non-native species are widespread, involving species such as Prunus laurocerasus cherry laurel.

PB06 and PB04 relate to woodland management and the need for a balance of appropriate management across the resource. For example, an absence of intervention may result an even-aged structure with reduced structural diversity, whilst excessive or inappropriately located thinning can damage good structure from natural processes. However, these pressures may not be particularly well understood for this habitat as beech woodland can naturally have a uniform structure (pers. obs. from eastern European 'virgin' beech forests) and their significance may be exaggerated.

PF05 recreational activities (often illegal) can have important local impacts, causing damage to woodland ground flora regeneration and erosion.

Method used – pressures

The assessment was based on the submission for 2013 (NRW, 2013), reconsidered using expert knowledge and updated accordingly for 2018. The data held in the 'Actions Database' were used to provide a basis for quantifying pressures/threats relating to Asperulo-fagetum beechwood habitat, coupled with expert judgement on the severity of these pressures/threats (at a generic level) to give an overall evaluation of the pressure/threat level (for more details see Guest, 2012). For woodland, the Actions Database does not list Annex 1 habitats on SSSIs, so this analysis is based primarily on issues recorded on SACs, informed where possible by knowledge of the habitat on SSSIs elsewhere.

Threats:

The pressures identified above can be expected to remain.

PI02 invasive species may well increase in abundance and additional species become a problem, possibly encouraged by climate change.

PI03 deer browsing is currently only a localised issue in Wales but experience from Scotland and England suggests that it could present a significant threat to the habitat as deer populations are likely to expand and increase in density, and may increasingly involve non-native species, particularly muntjac Muntiacus reevesi (I02/3?)

PI04 remains a serious concern with the increase of tree pathogens in recent years, notably Phyophthora ramorum and related species (Forestry Commission, 2018), some of which affect beech (Packham et al., 2012). However, none are currently known to be having a significant or widespread impact on beech in Wales. Ash is a minor component of the habitat and is expecting to significantly decline through the impacts of Chalara ash die-back. Perversely, a decline in ash trees could lead to the expansion of beech and expansion of Asperulo-fagetum habitat at the expense of ash woodland (including Tilio-Acerion) in the future.

PJ03 'droughts and decreases in precipitation due to climate change' may generally have a negatively impact on beech woodland throughout its European range (Packham et al., 2012). However local losses may be more than off-set by the increase in climate-space for the habitat in Wales (e.g. Wesche et al., 2006).

Method used – threats: Expert opinion

The pressures identified in pressures were used as a basis for threats, but additional information and expert opinion used to extrapolate to possible future impacts, and also to

	identify large scale issues such as those of climate change that are not evident on a site reporting basis.
8.1: Status of measures	While the majority of most important measures have been identified and taken, in reality some identified measures have not yet been taken while other interventions are needed but the mechanisms have not been resolved.
8.2: Main purpose of the measures taken	The majority of the most important measures currently being undertaken are focused on maintaining the structure and functions of existing stands of Asperulo-fagetum beech forest habitat. However several are also aimed at restoring the structure and functions both on individual sites and to the resource as a whole.
8.5: List of main conservation measures	MC01 Adapt/manage extraction of non-energy resources. This largely relates to mitigating issues arising from proximity to limestone quarries through planning and negotiation. MI05: Management of problematic native species - the management of deer and their impacts. The long-term objective is to have populations of deer present at levels appropriate to their ecological situation, allowing them to deliver a positive ecosystem function. MK01 Reduce impact of mixed source pollution. MA11: Reduce/eliminate air pollution from agricultural activities MC09: Manage/reduce/eliminate air pollution from resource exploitation and energy production The impacts are probably high and significant on this habitat, but it is not clear what actions may be done locally to reduce in addition to national current regulation of air pollution, hence the Medium ranking assigned here.

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.

MJ02: Implement climate change adaptation measures.

This relates to the broad need to develop the resilience of the Asperulo-fagetum beechwood resource beyond the individual site level, planning large scale ecological networks that provide functional connectivity for relevant

species between protected sites that allows both mitigation for long-term habitat loss and fragmentation and the capacity for climate change adaptation, including planning for and facilitating the range expansion of beech where appropriate (e.g. Watts et al., 2005; Latham et al. 2013).

MI03 Management, control or eradication of other invasive alien species.

INNS are medium problem but a significant threat to Asperulo-fagetum habitat, and continued management, vigilance and contingency planning are required.

MB05 Adapt/change forest management and exploitation practices

MB06 Stop forest management and exploitation practices

MB02 Maintain existing traditional forest management and exploitation practices

MB03 Reinstate forest management and exploitation practices

These measures relate to different aspects of the need to have appropriate management across the Asperulo-fagetum habitat resource to benefit the full-range of its dependent biodiversity, putting the right management in the right place. This means both active interventions where they promote structural diversity and other benefits, as well as minimum intervention where natural processes are operating well.

MF03 Reduce impact of outdoor sports, leisure and recreational activities.

This is likely to be achieved through careful site and visitor management, through both regulation and awareness raising.

	MI06: Controlling and eradicating plant and animal diseases, pathogens and pests. This primarily relates to vigilance and the development of management and contingency plans to address the impacts of tree pathogens such as Phyophthora species.
9.1:Future trends and prospects of parameters	Range: The habitat currently has limited range in Wales, being restricted to its accepted native range and appropriate soils. However, the climate-envelope for the habitat is likely to expand north and westwards with climate change (Wesche et al., 2006), giving some potential for range expansion on suitable soils both through colonisation and acceptance of the native status of habitat originating through beech planting. There may be simultaneous minor losses of habitat within its current range as conditions locally become too dry. Area: On balance the future trend is considered to be positive. A general increase in woodland cover looks likely in Wales as it is supported by WG policy. This gives potential for Asperulo-fagetum beech forest to expand its area, facilitated by the expansion of its climate-envelope north and westwards with climate change, although the potential is tempered somewhat because base-rich soil types also become rarer to the north and west. There may be simultaneous minor losses of habitat within its current range as conditions locally become too dry. Significant gains in area are also likely to come from restoring ancient woodland (PAWS) sites, again supported by WG policy. Perversely, Asperulo-fagetum beech forest may benefit from the loss of ash trees to Chalara ash dieback, as it may replace ash trees leading to the progressive shift of some ash woodland types (W8, W9) to beech woodland (which is

	some case may involve the loss of Tilio-Acerion forests). Currently all ancient woodland in Wales is afforded protection through Planning Policy Wales 12 as an irreplaceable habitat. This includes most areas of annex 1 woodland habitat but not all. Structure and function: There are both positive and negative factors in operation with many uncertainties for the future, so it is not possible to form a confident opinion over whether either will prevail or whether they will cancel each other out overall leading to a stable future trend. 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 stable; 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 unknown; (ii) the current Area is not more than 10% below the Favourable Reference Area and iii) there has been no significant change in distribution pattern within range
10.3: Specific structure and functions	Conclusion on Structure and function reached because the condition of the habitat is unknown as over 75% of the habitat has 'unknown' condition.
10.4: Future prospects	Conclusion on Future prospects reached because: (i) the Future prospects for Range are good; (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 one or more of the conclusions are Unfavourable-bad.

11.3: Surface area of the habitat type inside the network; Method used	NVC maps exist for the majority of woodland SACs in Wales; surveys are described in Latham (2001) and digitised by GIS analysis (held on NRW GIS system). Areas of Asperulo-fagetum beech forest have previously been calculated for inclusion on JNCC's data forms: values for each of these for which the habitat is listed as a feature (grades A-D) were compiled, but then compared with habitat maps to re-assess the total area of Asperulo-fagetum beech forest included on SACs rather than that originally mapped as a feature.
11.4: Short-term trend of habitat area within the network; Direction	For the 3 sites that have been reassessed between 2007 and 2017 (NRW, 2018), 1 has changed condition (representing c. 28% of total habitat area on SAC). However, this is due to an improved understanding of the ecology of the site rather than genuine change, and the underlying condition is considered to be unchanged (Wilkinson, 2010).
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.