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:

H5130 - *Juniperus communis* formations on heaths or calcareous grasslands

WALES

IMPORTANT NOTE - PLEASE READ

- The information in this document is a country-level contribution to the UK Report on the conservation status of this habitat, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- The 2019 Article 17 UK Approach document provides details on how this supporting information was used to produce the UK Report.
- The UK Report on the conservation status of this habitat is provided in a separate document.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Explanatory notes (where provided) by the country are included at the end. These provide an audit trail of relevant supporting information.
- Some of the reporting fields have been left blank because either: (i) there was insufficient information to complete the field; (ii) completion of the field was not obligatory; and/or (iii) the field was only relevant at UK-level (sections 10 Future prospects and 11 Conclusions).
- For technical reasons, the country-level future trends for Range, Area covered by habitat and Structure and functions are only available in a separate spreadsheet that contains all the country-level supporting information.
- The country-level reporting information for all habitats and species is also available in spreadsheet format.

Visit the JNCC website, https://jncc.gov.uk/article17, for further information on UK Article 17 reporting.

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (Wales information only)**
1.2 Habitat code	**5130 - Juniperus communis formations on heaths or calcareous grasslands**

2. Maps

2.1 Year or period	2009-2017
2.3 Distribution map	Yes
2.3 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
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	Bunch, N., Cheffings, C., & Robinson, A. 2016 Decision-making guidance for managing Phytophthora infections in Vaccinium myrtillus populations JNCC Report No: 578 Defra 2014 Tree Health Management Plan Dines, T.D. & Daniels, A. (2006) Wales Juniper Inventory - An inventory of Juniper sites in Wales and an assessment of populations in Snowdonia Species Challenge Fund Report, Plantlife, UK Forestry Commission. 2012. Phytophthora austrocedrae on juniper factsheet. Forestry Commission. 2016. Distribution of confirmed infection of Phytophthora austrocedrae map. Guest, D. 2012. H5130 Juniperus communis formations on heaths or calcareous grasslands: Definitions adopted for mapping on calcareous sites in lowland Wales. CCW Internal Document. Guest, D. 2012. Assessing N deposition as a pressure for Article 17 reporting on habitats. CCW HQ internal document. Mallik, A.U. & Gimingham, C.H., 1983. Regeneration of heathland plants following burning. Vegetatio, 53: 45-58. NRW. 2017 Actions Database. NRW internal database. Thomas, P.A., El-Barghathi, M. & Polwart, A., 2007. Biological Flora of the British Isles: Juniperus communis L. Journal of Ecology, 95(6): 1404-1440. Turner, A. 2012. Assessment of the status of vegetation with Juniperus communis in the Cwm Bychan and Moel Meirch areas. CCW Internal Document. Underhill-Day, J. C. 2005 A literature review of urban effects on lowland heaths and their wildlife J C Underhill-Day. RSPB. English Nature Research Reports Number 623. Ward, L.K., & Lakhani, K.H., 1977. The conservation of juniper: the fauna of food plant island sites in southern England. Journal of Applied Ecology, 14, 121-135. Welsh Government. 2015. Improving opportunities to access the outdoors for responsible recreation. Consultation Document WG 25568.

4. Range

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

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4.3 Short-term trend Direction	Stable (0)		
4.4 Short-term trend Magnitude	a) Minimum	b) Maximum	
4.5 Short-term trend Method used			
4.6 Long-term trend Period			
4.7 Long-term trend Direction			
4.8 Long-term trend Magnitude	a) Minimum	b) Maximum	
4.9 Long-term trend Method used			
4.10 Favourable reference range	a) Area (km²)		
	b) Operator		
	c) Unknown	No	
	d) Method		
4.11 Change and reason for change in surface area of range	No change		
	The change is mainly due to:		
4.12 Additional information			

5. Area covered by habitat

5.1 Year or period	2009-2017		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 0.01
5.3 Type of estimate	Best estimate		
5.4 Surface area Method used	Based mainly on extrapolation from a limited amount of data		
5.5 Short-term trend Period	2007-2017		
5.6 Short-term trend Direction	Uncertain (u)		
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	Unknown (x)		
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used	Insufficient or no data available		
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	Maximum 0
	b) Area in not-good condition (km²)	Minimum 0	Maximum 0
	c) Area where condition is not known (km²)	Minimum 0.01	Maximum 0.01

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

6.2 Condition of habitat Method used	Insufficient or no data available
6.3 Short-term trend of habitat area in good condition Period	2007-2018
6.4 Short-term trend of habitat area in good condition Direction	Unknown (x)
6.5 Short-term trend of habitat area in good condition Method used	Insufficient or no data available
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period? No
6.7 Typical species Method used	
6.8 Additional information	

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Extensive grazing or undergrazing by livestock (A10)	H
Burning for agriculture (A11)	H
Problematic native species (I04)	H
Other invasive alien species (other then species of Union concern) (I02)	M
Sports, tourism and leisure activities (F07)	M
Mixed source air pollution, air-borne pollutants (J03)	M
Change of habitat location, size, and / or quality due to climate change (N05)	M

Threat	Ranking
Extensive grazing or undergrazing by livestock (A10)	H
Burning for agriculture (A11)	H
Problematic native species (I04)	H
Other invasive alien species (other then species of Union concern) (I02)	H
Sports, tourism and leisure activities (F07)	M
Mixed source air pollution, air-borne pollutants (J03)	M
Change of habitat location, size, and / or quality due to climate change (N05)	M
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	H

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

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8.2 Main purpose of the measures taken	Maintain the current range, population and/or habitat for the species
8.3 Location of the measures taken	Only inside Natura 2000
8.4 Response to the measures	Medium-term results (within the next two reporting periods, 2019-2030)

8.5 List of main conservation measures

- Adapt mowing, grazing and other equivalent agricultural activities (CA05)
- Management of problematic native species (CI05)
- DO NOT USE Management, control or eradication of other alien species (CI04)
- Other measures related to problematic species (CI06)
- Reduce impact of outdoor sports, leisure and recreational activities (CF03)
- Implement climate change adaptation measures (CN02)
- Reduce/eliminate air pollution from agricultural activities (CA12)
- Manage/reduce/eliminate air pollution from transport (CE03)

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

Report on the main results of the surveillance under Article 17 for Annex I habitat types (Annex D)

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	0.01
11.2 Type of estimate		Best estimate
11.3 Surface area of the habitat type inside the network Method used		Based mainly on extrapolation from a limited amount of data
11.4 Short-term trend of habitat area in good condition within the network Direction		Unknown (x)
11.5 Short-term trend of habitat area in good condition within network Method used		Insufficient or no data available
11.6 Additional information		

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

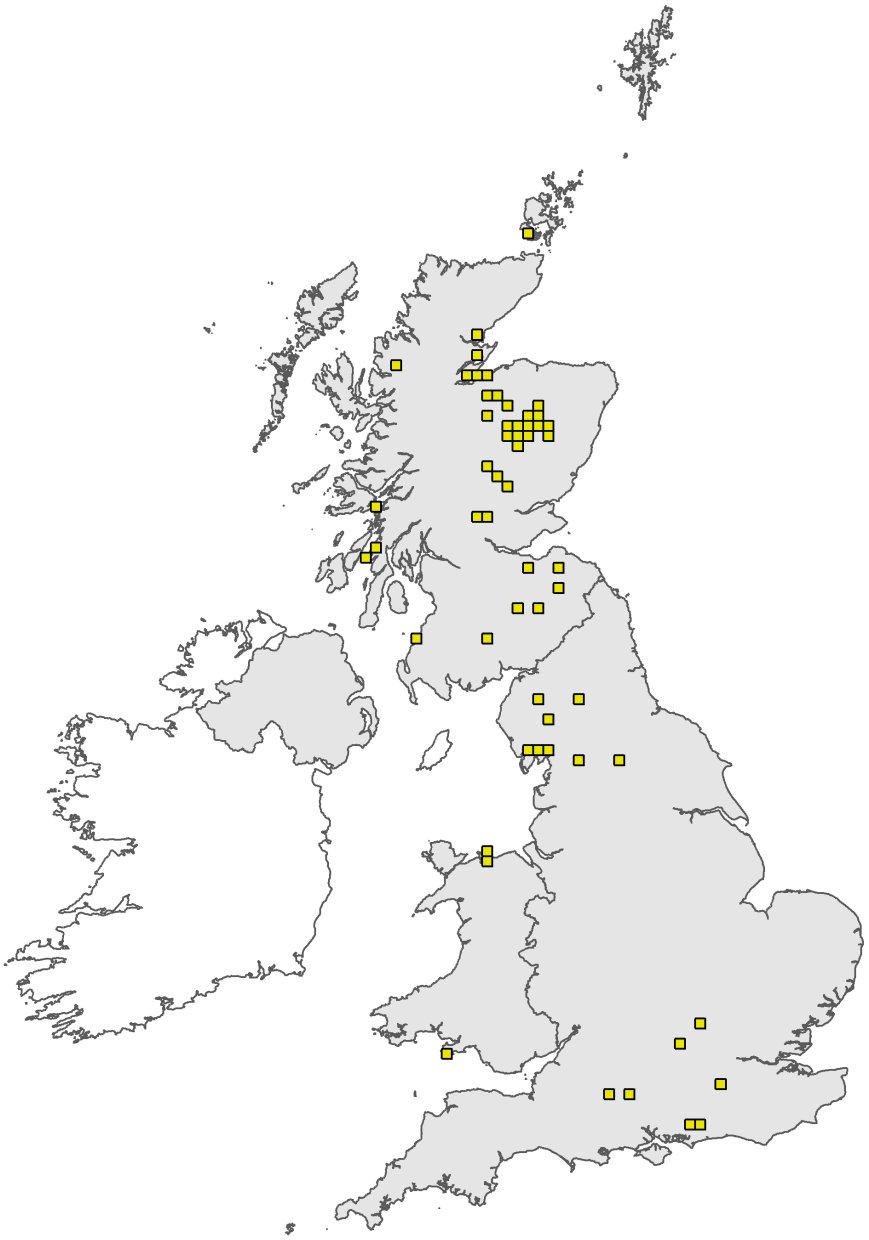

Figure 1: UK distribution map for H5130 - *Juniperus communis* formations on heaths or calcareous grasslands. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The 10km grid square distribution map is based on available habitat records which are considered to be representative of the distribution within the current reporting period. For further details see the 2019 Article17 UK Approach document.

Range Map

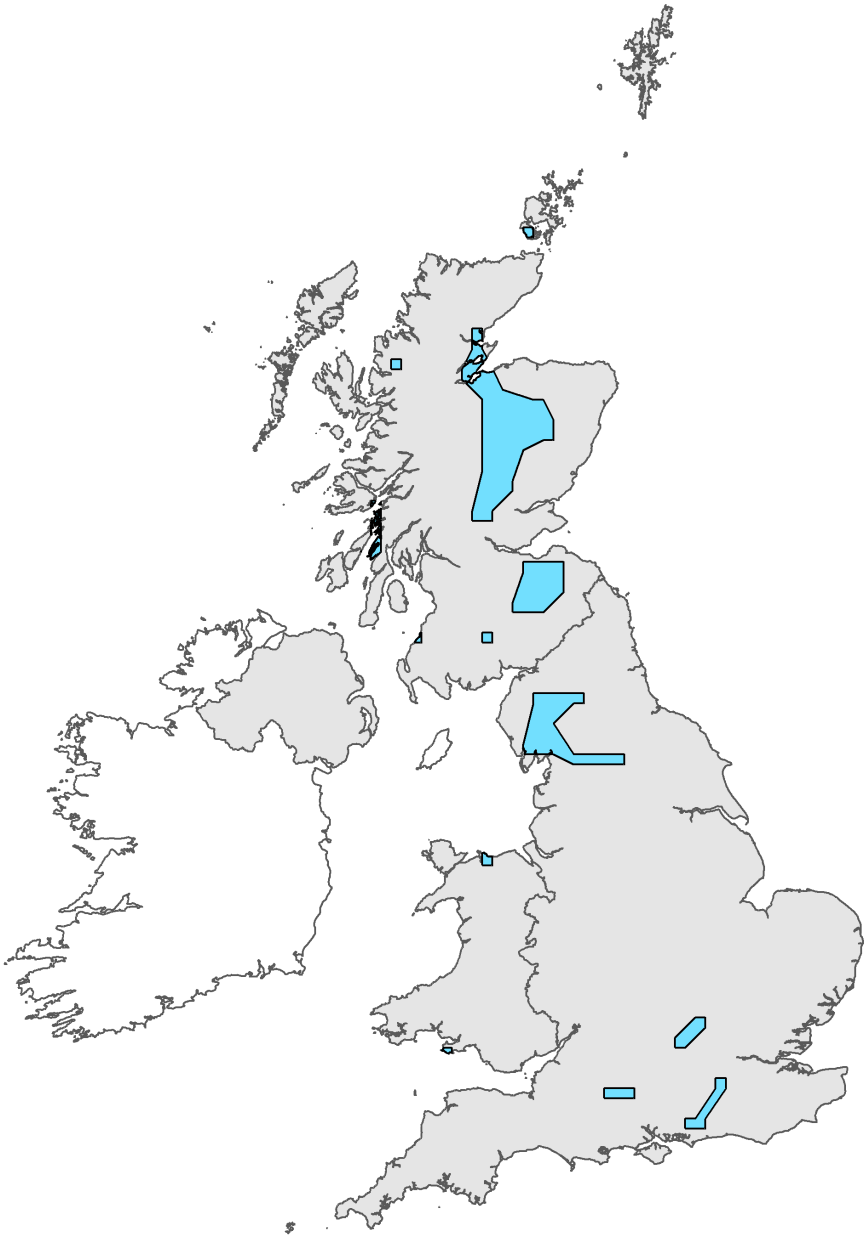

Figure 2: UK range map for H5130 - *Juniperus communis* formations on heaths or calcareous grasslands. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

The range map has been produced by applying a bespoke range mapping tool for Article 17 reporting (produced by JNCC) to the 10km grid square distribution map presented in Figure 1. The alpha value for this habitat was 25km. For further details see the 2019 Article 17 UK Approach document.

Explanatory Notes

Habitat code: 5130

Field label	Note
2.3 Distribution map; Method used	The habitat is known from 3 10km squares SH88 and SH87 on the limestone of the Creuddyn Peninsula of North Wales and on SS48 on the cliffs of the Gower Peninsula east of Oxwich Bay. The 10km square distribution map for H5310 is derived from a series of site visits to known Juniper localities prior to the formation of NRW. Sites for survey were selected from a near comprehensive survey of Juniper in Wales by Dines and Daniels (2006 and subsequent updates), with all localities supporting in excess of 20 plants of Juniper communis ssp. communis considered as candidate sites for the community. Two lowland 10km squares with sites meeting these criteria were not visited in 2012, one was included as a point record on the strength of evidence from earlier survey work (although at that stage the habitat was not recognised) in combination with more recent records confirming the continued presence of a large population of Juniper in the area (Dines & Daniels, 2006) and the structural suitability of the vegetation (as assessed from 2009 aerial photographs). The second example was excluded on the basis that the population is reported as being composed of more scattered individuals including examples on limestone pavement (H8240), which are most likely to be assignable to that annex I habitat. On the limestone, only sites supporting frequent to abundant Juniper in association with other scrub and grazing intolerant species were considered assignable to the habitat (see Guest 2012 for further info). In the Welsh uplands, the majority of Juniper plants tend to be taxonomically closer to J. ssp. nana in character and most examples fall within other vegetation types (notably Alpine & Boreal heath & European dry heath). Larger populations supporting known plants of J. communis communis and morphologically intermediate individuals where revisited in 2012 (Turner, 2012), but no examples of H5310 in heathland settings in the uplands and sub-uplands of north Wales were identified. Overall the 10km square distribution is consider to a reasonably comprehensive and accurate reflection of the distribution of the habitat in Wales at this scale. Juniper itself is however much more widespread and it remains possible that small isolated clusters of plants which approach the habitat in character will be found outside the mapped distribution. No further information gathered since 2012.

Habitat code: 5130 Region code: ATL

Field label	Note
4.3 Short term trend; Direction	Whilst this habitat is poorly understood and data assessment was last undertaken in 2012 given the restriction to 3 x 10km squares, the short-term range is considered to be stable.
5.6 Short term trend; Direction	There is no direct evidence against which to evaluate trends in the extent of H5130 in Wales. Revisits to larger Juniper populations on Gower in 2012 identified no significant changes in the number of plants over the previous seven to nine years when compared to records presented in Dines and Daniels (2006) suggesting a short-term stability over this period.
6.1 Condition of habitat	No condition data is available.

7.1 Characterisation of pressures/ threats	Data held in NRW's Special Sites Database (NRW 2017), which provides information on issues needing action, was used to quantify pressures and threats relating to the habitat. Pressures: Issues are recorded for this habitat on only 1 SSSI on Gower. All relevant actions relate to agricultural management and include grazing type/timing and scrub control (A10). Burning is a known issue on the Gower coast, Juniper is known to be intolerant of burning particularly hot dry burns (Mallik and Gimingham 1983) (A11). Climate change may also be a factor here and may additionally be a pressure in germination rates as a consequence of milder winter temperatures insufficient to break seed dormancy (Forestry commission, 2009) (N05). Phytophthora austrocedrae, one of a family of highly contagious fungus-like plant pathogens, has been identified as causing mortality and dieback in wild populations of juniper in northern England and Scotland. Two incidents have been mapped in Wales one in a nursery/distributor/retail and one in the wider environment. A third nursery incident is recorded on the English/Welsh border (Forestry Commission 2016). This pressure best aligns to the recently established I05 category (plant and animal diseases, pathogens and pests) however this category isn't currently available for internal UK reporting purposes. (I02 & I04). Increased recreation also increases the chances of pathogens to move between sites across the UK. Pathogens can be moved to on clothes, footwear, vehicles and pets (Defra 2014) (F07). Air pollution (N deposition) is assessed separately using a defined approach (Guest, 2012, using updated deposition data). It is not possible to calculate the area of habitat where nitrogen deposition exceeds the Critical Load limit (15kg/ha/yr.) due to insufficient data. However, using a data overlay method in ARC GIS, one of the 10km squares SH87 falls within an area where deposition exceeds the Critical Load (J03). Threats: Grazing issues (A10) and threats from burning (A11) are nitrogen deposition (J03) are expected to continue as a threat. The limestone habitats of the coast occupied by Juniper are particularly vulnerable to invasion by non-native species both as a consequence of their open character and the proximity of seed sources from domestic gardens and already naturalised populations. Holm oak and non-native cotoneasters are likely to be a particular problem which could be further exacerbated by climate change (I04 & I02). The vast majority of heathland is open access and pressures are likely to grow in response to various initiatives to meet goals of improving the opportunities to access the outdoors for responsible recreation (Welsh Government 2015). Increasing public use on small lowland heathland sites has been shown to cause direct damage such as creation of new paths on desire lines, accidental and deliberate fire and the localised enrichment of vegetation by dog faeces and urine (Underhill 2005) (F07). Increased recreation also increases the chances of pathogens to move between sites across the UK. Pathogens can be moved to on clothes, footwear, vehicles and pets (Defra 2014). This pressure best aligns to the recently established I05 category (plant and animal diseases, pathogens and pests) however this category isn't currently available for internal UK reporting purposes. (I02 & L06). Stands of H5310 in Wales are small and highly fragmented as are populations of Juniper. Such stands will be vulnerable to edge effects and will only support a limited specialist invertebrate fauna in comparison to larger populations of juniper (Ward & Lakhani, 1977) (N05). Climate change has been highlighted as a threat to Juniper populations for a number of reasons including: reduction in germination rates as a consequence of milder winter temperatures insufficient to break seed dormancy (Forestry commission, 2009) (N05).

8.5 List of main conservation measures	NRW Actions Database details what conservation actions have been identified to address issues; conservation actions have been identified on 1 SSSI containing the Juniper formations habitat on the Gower. These actions relate to land management agreements either through agri-environment or NRW(CA05, CA12, CI05, CI04, CN02). It is not possible to calculate the exact area of habitat within Management Agreement due to the lack of a habitat map. However, NRW Management Agreements cover 126.08 hectares within the three 10km squares particularly SH87 and SS48 with a small area in SH88 (CA05, CI05, CI04, CF03). As the habitat is located within protected sites within these squares it is likely that it falls within the Management Agreements and this is confirmed by the Actions Database. Only habitat within SS48 is covered by Glastir Advanced prescriptions (CA05). NRW Management Agreements, direct action by landowners and tenants, direct NRW management and partnership working etc. can help address recreation issues (CF03). National regulations are in place but have been insufficient to prevent continued high levels of N deposition nationally (CE03, CA12) A decision-making framework has been developed to guide management response to Phytophthora outbreaks on heathland (Bunch et al. 2016). Whilst this has not been aimed at Juniper it could be adapted to deal with future Phytophthora austrocedrae outbreaks (CI06)
9.1 Future prospects of parameters	There is insufficient evidence to determine the future of the habitat in Wales. While some stands of H5310 are likely to be maintained as a consequence of the shallow soils and exposed nature of the sites they occupy others require regular intervention to maintain them in the long term. At present, all known or mapped stands of H5310 fall at least partially within 2 SACs (Limestone Coast of South West Wales and Creuddyn Peninsula Woods). Other lowland populations of Juniper communis also occur on SACs notably Glannau Ynys Gybi and St David's. However, a small number of potential sites for the habitat and colonies of Juniper fall outside the SSSI series and must be regarded as particularly vulnerable to loss or degradation.
11.3 Surface area of the habitat type inside the network; Method used	At present, all known or mapped stands of H5310 fall, at least partially, within SACs as do most other lowland populations of Juniper communis. However, the habitat is not a notified feature on any SAC.