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:

H2150 - Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)

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	**2150 - Atlantic decalcified fixed dunes (Calluno-Ulicetea)**

2. Maps

2.1 Year or period	1991-2015
2.3 Distribution map	Yes
2.3 Distribution map Method used	Complete survey or a statistically robust estimate
2.4 Additional maps	No

BIOGEOGRAPHICAL LEVEL

3. Biogeographical and marine regions

3.1 Biogeographical or marine region where the habitat occurs	**Atlantic (ATL)**
3.2 Sources of information	Ashall, J., Duckworth, J., Holder, C. (1992). Sand dune survey of Great Britain. Site report no. 120 Tai Morfa, Dwyfor Wales 1991 (DRAFT VERSION). Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 86). Ashall, J., Duckworth, J., Holder, C. (1992). Sand dune survey of Great Britain. Site report no. 129 Kinmel Bay, Colwyn, Wales 1991 (DRAFT VERSION). Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 98). Ashall, J., Duckworth, J., Holder, C. (1994). Sand dune survey of Great Britain. Site report no. 113 Dunes between Tywyn & Aberdovey, Meirionydd, Wales 1991. Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 81). Ashall, J., Duckworth, J., Holder, C. (1995). Sand dune survey of Great Britain. Site report no. 125 Tywyn Gwyn, Anglesey, Ynys Mon, Wales 1991. Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 94). Ashall, J., Duckworth, J., Holder, C., McConnell, A., Smart, S. (1995). Sand dune survey of Great Britain. Site report no. 108 Whitesands Bay, Preseli, Wales 1991. Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 71). Ashall, J., Duckworth, J., Holder, C., McConnell, A., Smart, S. (1995). Sand dune survey of Great Britain. Site report no. 110 Poppit Sands, Preseli, Wales 1991. Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 73). Ashall, J., Duckworth, J., Holder, C., Smart, S. (1992). Sand dune survey of Great Britain. Site report no. 111 Towyn Warren, Ceredigion, Wales 1991 (DRAFT VERSION). Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 79). Ashall, J., Duckworth, J., Holder, C., Smart, S. (1992). Sand dune survey of Great Britain. Site report no. 112 Ynyslas, Ceredigion, Wales 1991 (DRAFT VERSION). Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 80). Ashall, J., Duckworth, J., Holder, C., Smart, S. (1992). Sand dune survey of Great Britain. Site report no. 115 Morfa Dyffryn Meirionydd (DRAFT VERSION). Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 90). Ashall, J., Duckworth, J., Holder, C., Smart, S. (1994). Sand dune survey of Great Britain. Site report no. 100 Pendine Burrows, Carmarthen, Wales 1991. Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 78). Ashall, J., Duckworth, J., Holder, C., Smart, S. (1994). Sand dune survey of Great Britain. Site report no. 105 Stackpole Warren, Barafundle Bay and Broad Haven South Pembrokeshire, Wales 1991. Joint Nature Conservation Committee (JNCC)

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Ashall, J., Holder, C. (1992). Sand dune survey of Great Britain. Site report no. 130 dunes between Rhyl and Prestatyn, Rhuddlan, Wales 1991 (DRAFT VERSION). Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 99).
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Ashall, J., Holder, C., Duckworth, J. (1995). Sand dune survey of Great Britain. Site report no. 103 Manobier & Swanlake Bay, South Pembrokeshire, Wales 1991. Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 65).
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Holder, C., Smart, S., McConnell, A. (1994). Sand dune survey of Great Britain. Site report no. 101 Caldey Island, South Pembrokeshire, Wales 1991. Joint Nature Conservation Committee (JNCC) Peterborough. (JNCC Report 63).
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4. Range

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

5. Area covered by habitat

5.1 Year or period	1991-2015		
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value 0.3364
5.3 Type of estimate	Best estimate		
5.4 Surface area Method used	Complete survey or a statistically robust estimate		
5.5 Short-term trend Period	2007-2018		
5.6 Short-term trend Direction	Decreasing (-)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.8 Short-term trend Method used	Based mainly on expert opinion with very limited data		
5.9 Long-term trend Period			
5.10 Long-term trend Direction			
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used			
5.13 Favourable reference area	a) Area (km²) b) Operator c) Unknown No d) Method		
5.14 Change and reason for change in surface area of range	Improved knowledge/more accurate data No information on nature of change The change is mainly due to: Improved knowledge/more accurate data		
5.15 Additional information			

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum 0.108	Maximum 0.108

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	b) Area in not-good condition (km²)	Minimum 0.032	Maximum 0.032	
	c) Area where condition is not known (km²)	Minimum 0.196	Maximum 0.196	
6.2 Condition of habitat Method used	Based mainly on expert opinion with very limited data			
6.3 Short-term trend of habitat area in good condition Period	2007-2018			
6.4 Short-term trend of habitat area in good condition Direction	Unknown (x)			
6.5 Short-term trend of habitat area in good condition Method used	Insufficient or no data available			
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period?	No		
6.7 Typical species Method used				
6.8 Additional information				

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Extensive grazing or undergrazing by livestock (A10)	H
Problematic native species (I04)	H
Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	H
Mixed source air pollution, air-borne pollutants (J03)	H
Sports, tourism and leisure activities (F07)	H

Threat	Ranking
Extensive grazing or undergrazing by livestock (A10)	H
Problematic native species (I04)	H
Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	H
Mixed source air pollution, air-borne pollutants (J03)	H
Sports, tourism and leisure activities (F07)	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, but none yet taken
8.2 Main purpose of the measures taken		
8.3 Location of the measures taken		

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8.4 Response to the measures

8.5 List of main conservation measures

Reinstate appropriate agricultural practices to address abandonment, including mowing, grazing, burning or equivalent measures (CA04)
Adapt mowing, grazing and other equivalent agricultural activities (CA05)
Habitat restoration of areas impacted by residential, commercial, industrial and recreational infrastructure, operations and activities (CF02)
Reduce impact of outdoor sports, leisure and recreational activities (CF03)
Management of problematic native species (CI05)
Management of habitats (others than agriculture and forest) to slow, stop or reverse natural processes (CL01)

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

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 0.0437

11.2 Type of estimate

Best estimate

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11.3 Surface area of the habitat type inside the network Method used	Complete survey or a statistically robust estimate
11.4 Short-term trend of habitat area in good condition within the network Direction	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

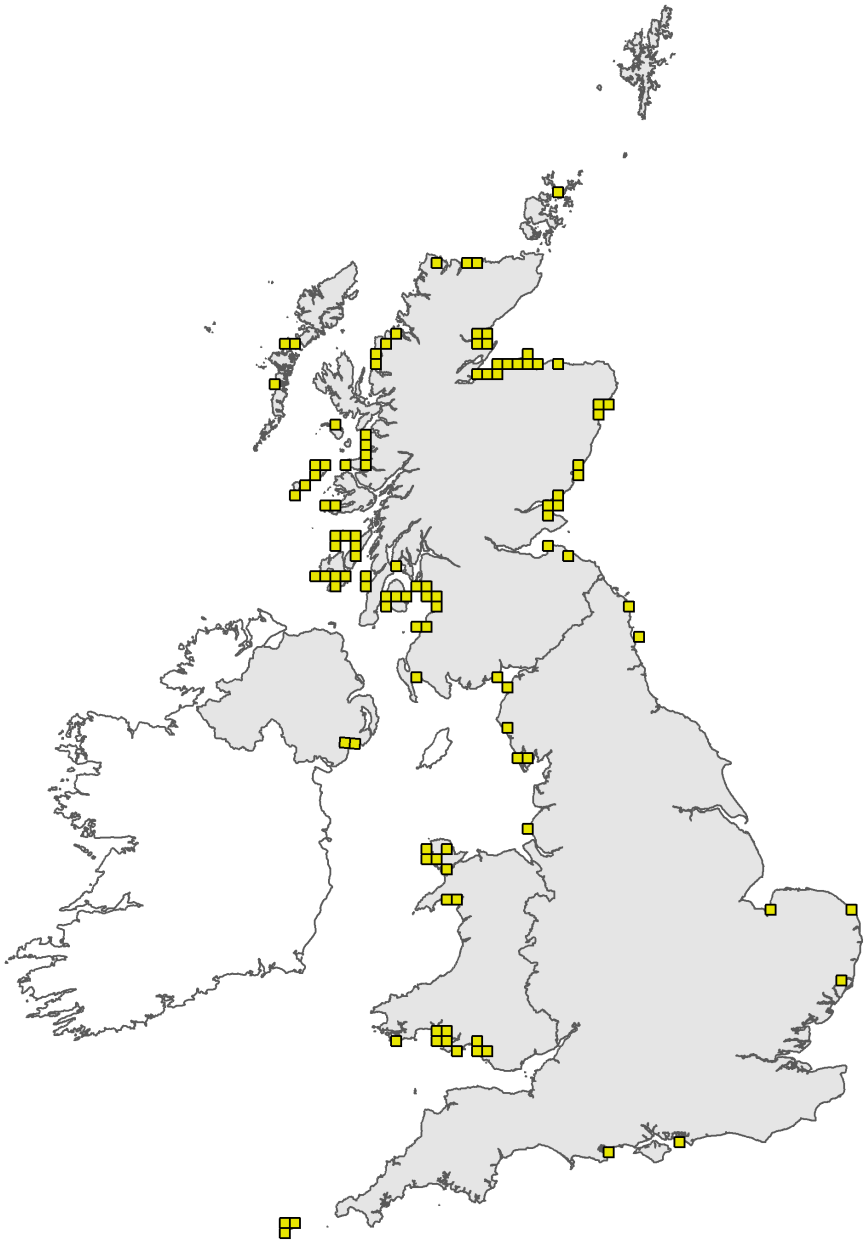

Figure 1: UK distribution map for H2150 - Atlantic decalcified fixed dunes (*Calluno-Ulicetea*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

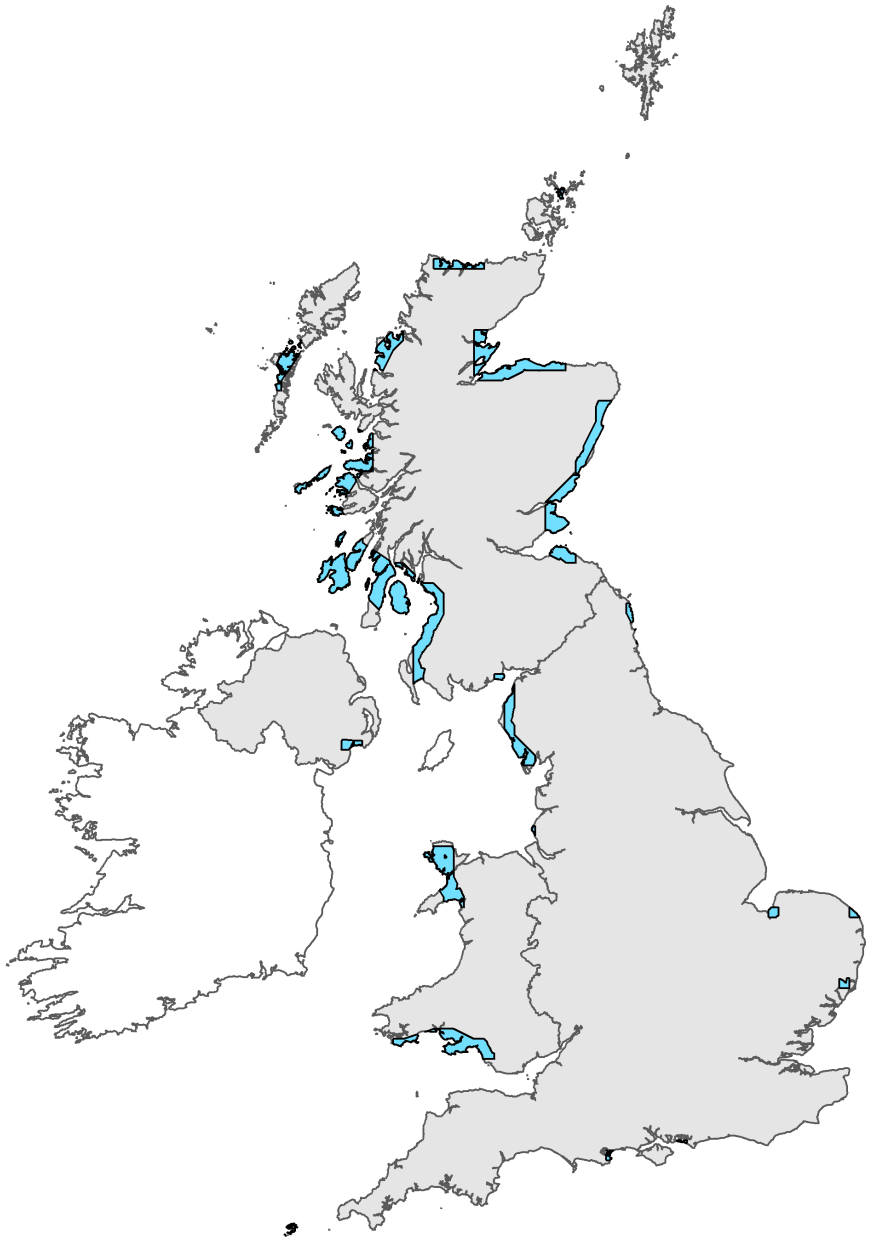

Figure 2: UK range map for H2150 - Atlantic decalcified fixed dunes (*Calluno-Ulicetea*). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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: 2150

Field label	Note
2.3 Distribution map; Method used	The 10km square distribution and habitat area estimates are derived from a combination of different original sources, summarised below. A single aggregated GIS layer has been created for this habitat across Wales (data source 1 below) pulling together the maps and records from the other listed sources. Detailed processing notes for the 2018 Article 17 extent layer have been produced (Kay, 2018). Data source 1 (MAIN DATA SOURCE): Digital GIS Map Layer: Article 17 H2150 Atlantic decalcified dunes (Calluno - Ulicetea). Extent Layer 2018 (Kay, 2018). Data source 2 (MAIN DATA SOURCE): Sand Dune Vegetation Survey of Great Britain Part 3 - Wales (Dargie, 1995). This was a comprehensive survey of all sand dunes in Wales (see published sources) based on the UKs National Vegetation Classification (NVC) (Rodwell, 2000). Data source 3 (MAIN DATA SOURCE): NRW survey and assessment of H11 Calluna vulgaris - Carex arenaria Dune Heath 2014-2015 (Sherry, 2015). This survey mapped dune heath at four location in Wales which are believed to be the largest extant areas of the habitat in Wales. The Sand Dune surveys (Dargie, 1995) were carried out over 20 years ago and so several intra-site changes are likely to have occurred with one site known to have been virtually lost with only fragments of H2150 habitat remaining. As with the 2007 and 2013 reporting, all H (Heath) communities recorded occurring on sand dune systems were included rather than just H11 and H1d as listed in the Interpretation Manual of European Union Habitats. The 2018 data is considered to give a good representation of the current distribution and extent of this habitat.

Habitat code: 2150 Region code: ATL

Field label	Note
4.3 Short term trend; Direction	Recent changes in the 10km2 distribution and related range of H2150 in Wales are considered to be unlikely to have occurred. However, systematic resurvey of most sites of most known and potential sites has not been undertaken and large fluxes in the extent of habitat are known to have occurred at some sites since they were first surveyed in the early 1990's. The scale of these changes and the small size and fragmented distribution of remaining stands makes the range more susceptible to change than some other habitats and reduces the confidence associated with this assessment.
4.11 Change and reason for change in surface area of range	There is no evidence of actual change in the range of this habitat since the last report in 2013. Re-analysis of the Sand Dune surveys (Dargie, 1995) dataset and the addition of the Sherry (2015) dataset has resulted in 16, 10km squares where this habitat occurs. The range now differs to that reported in 2007, however, this is due to a different interpretation method of the original data set (and a more recent dataset (Sherry, 2015)), rather than a genuine decrease in the range of the feature (see 2.3 for more details).
5.3 Type of estimate	The area figure has been derived from the Sand Dune surveys (Dargie, 1995) dataset using occurrences of all H (Heath) communities and the 2015 NRW dune heath survey (Sherry, 2015), to determine an area figure for the Annex I habitat. Despite the age of the bulk of the data, this survey gives good coverage of the habitat in Wales at that time.

5.4 Surface area; Method used	The total area comes from the Phase 2 Sand Dunes Survey of Great Britain (Dargie, 1995) with surveys carried out in Wales in the early 1990s (see published sources) and a more recent NRW survey of dune heath (Sherry, 2015). Both surveys were based on the UK's National Vegetation Classification (NVC) (Rodwell 2000). The Sand Dune surveys (Dargie, 1995) were carried out over 20 years ago and so several intra-site changes are likely to have occurred with one site known to have been virtually lost with only fragments of H2150 habitat remaining (Sherry, 2015).
5.6 Short term trend; Direction	The short-term trend for this habitat in Wales is likely to be decreasing due to the habitat being reduced to very small patches that are susceptible to invasion from scrub and other unwanted species.
5.8 Short term trend; Method used	The assessment is based on NRWs 2015 report (Sherry, 2015) which outlined a reduction in area of dune heath on one site and reports of decline in the habitat from various site visits.
5.14 Change and reason for change in surface area	Genuine change in surface area has been recorded from two sites in Wales - Cymyran and Pennard Burrows (Sherry, 2015) since the Sand Dune Survey (Dargie, 1995). The change in the estimated area of this habitat is also the result of the re-analysis of existing sand dune NVC survey data (Dargie, 1995) (see section 5.2) in addition to the areas recorded from the 2015 dune heath survey work (Sherry, 2015). Furthermore, a site where the feature is known to have been virtually lost over 20 years ago (Crymlyn), has been reduced from 21.28ha to 1.1ha in the surface area calculation (included in the 2007 and 2012 reports), thereby reducing the overall surface area of the feature from that recorded in 2007 and 2012. The reasons for the change in surface area have been outlined above and without a complete up-to-date survey of the feature across Wales it is impossible to determine an accurate surface area figure for this report.
6.2 Condition of habitat; Method used	H2150 is not a notified N2K feature on any of the Welsh SACs and resultantly the feature has not been condition assessed using Common Standards Monitoring (CSM) methodology. The condition of the habitat was recorded (but not formally assessed) during the NRW 2015 survey (Sherry, 2015) and has been used to derive the figures in section 6.1. This survey did not address all the dune heath in Wales resultantly there is a large figure for the area of dune heath where the condition is not known. There is very little information available regarding the condition of the habitat both on statutory and non-statutory sites, due to small patch sizes of the habitat and relative isolation in all but a few examples. The habitat is likely to be affected by scrub and bracken encroachment, over or under-grazing and the negative effects associated with atmospheric nitrogen deposition. 55.7% of the habitat resource in Wales is found in areas where the deposition of atmospheric nitrogen (2013-15 data) exceeds the Critical Load. The remainder of the habitat may be also be affected, to a lesser extent, by sub-critical load deposition. Condition is essentially unknown for over half of the dune heath habitat in Wales.

7.1 Characterisation of pressures/ threats	The assessment for the pressures and threats for H2150 is mainly based on expert judgement on the severity of these pressures and threats (at a generic level), to give an overall evaluation of the pressure and threat level. It must be noted that this habitat is not specifically identified in the NRW Action database, therefore, no information can be provided regarding any identified issues for the habitat. Pressures: The special sites (SSSI and SAC) include 52% of the H2150 resource in Wales by area. The following pressures are considered important A10 - Extensive grazing or under-grazing by livestock I04 - Problematic native species. L02 - Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices). J03 - Mixed source air pollution, air-borne pollutants. F07 - Sports, tourism and leisure activities. A10 - Some degree of grazing is normally necessary to maintain the typical dune heath communities of H2150. The H2150 habitat in Wales is typically under-grazed leading to invasion by coarse grasses and scrub. I04 - Gorse, scrub and/or bracken can spread into dune heath and this encroachment is problematic on several sites where there has been an abandonment of management (i.e. grazing). L02 - Because of the lack of mobility and dynamism most dune systems in Wales are undergoing succession towards more stable \rank vegetation\ and undesirable scrub communities, probably exacerbated by increasing levels of eutrophication due in part to atmospheric pollution and possibly ground water contamination in places. J03 - There are concerns over the levels of atmospheric nitrogen pollution and its links to soil enrichment and eutrophication within sand dune systems. Air pollution (N deposition) is assessed separately using a defined approach (Guest, 2012b), using updated deposition data. 55.7% of the habitat resource in Wales is found in areas where the deposition of atmospheric nitrogen (2013-15 data) exceeds the Critical Load. The remainder of the habitat may be also be affected, to a lesser extent, by sub-critical load deposition. F07 - Dune heath is particularly susceptible to the negative effects of visitor pressure (including trampling), horse riding and effects from both motorised and non-motorised vehicles. Dune heath tends to occur towards the back of dune systems where the substrate has become acidified by leaching and in areas out of the reach of calcareous sand rain. These areas are at the highest risk from recreational activities e.g. golf. Threats: Four threats were identified and assessed in a similar way to the pressures outlined above (Guest, 2012a). Climate Change and sea-level rise could pose a significant threat to the series of sand dune systems in Wales. Most dune systems have been formed by natural sand movement, but now lie within more stable dune systems. The lack of mobility and dynamism most dune systems in Wales are undergoing results in succession moving towards more stable \rank vegetation\ and undesirable scrub communities, probably exacerbated by increasing levels of eutrophication, due in part to atmospheric pollution and possibly ground water contamination in places. All the main pressures affecting the habitat in Wales are considered to be ongoing and are expected to continue to impact the habitat over the next two reporting cycles
9.1 Future prospects of parameters	Despite several ongoing threats to the habitat, statutory protection of half of the sites with the habitat provides protection against total loss and changes to the 10km2 distribution are considered unlikely in the short to medium term. The habitat is known to be under significant and ongoing pressures / threats due to atmospheric pollution, over stabilisation of dune systems, insufficient grazing and associated scrub and bracken encroachment. However, conservation measures have had some local successes in restoring some small areas of dune heath and externally funded projects may offer significant potential for wider scale restoration and expansion of dune heath if funding is successful. As such the future trend in habitat area must be considered as \unknown\.
11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network	This is the total surface area of the feature within SACs. However, H2150 is not a notified N2K feature on any of the Welsh SACs.

11.3 Surface area of the habitat type inside the network; Method used	The surface area figure for the habitat type inside the SAC network has been derived from the Sand Dune Survey (Dargie, 1995) dataset using occurrences of all H (Heath) communities recorded occurring on sand dune systems to determine an area figure for the Annex I habitat. It is very likely that the habitat has changed in extent on some sites due to vegetation succession and changes in management.
11.4 Short term trend of habitat area in good condition within the network; Direction	Despite the habitat occurring within the N2K site network, the habitat is not listed as an A-C grade N2K feature and therefore, not subject to condition monitoring using CSM. Furthermore, there is insufficient other data available on which to assess trends within the N2K series, therefore, condition is essentially unknown for this habitat in Wales.