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:

H2130 - Fixed dunes with herbaceous vegetation (`grey dunes`)

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	**2130 - Fixed coastal dunes with herbaceous vegetation ("grey dunes")**

2. Maps

2.1 Year or period	1991-2017
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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4. Range

4.1 Surface area (in km²)		
4.2 Short-term trend Period		
4.3 Short-term trend Direction	Stable (0)	
4.4 Short-term trend Magnitude	a) Minimum	b) Maximum
4.5 Short-term trend Method used		
4.6 Long-term trend Period		
4.7 Long-term trend Direction		
4.8 Long-term trend Magnitude	a) Minimum	b) Maximum
4.9 Long-term trend Method used		
4.10 Favourable reference range	a) Area (km²)	
	b) Operator	
	c) Unknown	No
	d) Method	
4.11 Change and reason for change in surface area of range	Improved knowledge/more accurate data Use of different method	
	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	1991-2017			
5.2 Surface area (in km²)	a) Minimum	b) Maximum	c) Best single value	26.517
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			

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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 Use of different method 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	Maximum	0
	b) Area in not-good condition (km²)	Minimum	14.7306	Maximum	14.7306
	c) Area where condition is not known (km²)	Minimum	11.7864	Maximum	11.7864
6.2 Condition of habitat Method used	Complete survey or a statistically robust estimate				
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
Mixed source air pollution, air-borne pollutants (J03)	H
Other invasive alien species (other then species of Union concern) (I02)	H

Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	H
Problematic native species (I04)	H
Military, paramilitary or police exercises and operations on land (H01)	M
Application of natural fertilisers on agricultural land (A19)	M
Conversion to forest from other land uses, or afforestation (excluding drainage) (B01)	M
Sports, tourism and leisure activities (F07)	M
Mixed source soil pollution and solid waste (excluding discharges) (J04)	M

Threat	Ranking
Extensive grazing or undergrazing by livestock (A10)	H
Mixed source air pollution, air-borne pollutants (J03)	H
Other invasive alien species (other then species of Union concern) (I02)	H
Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) (L02)	H
Problematic native species (I04)	H
Military, paramilitary or police exercises and operations on land (H01)	M
Application of natural fertilisers on agricultural land (A19)	M
Conversion to forest from other land uses, or afforestation (excluding drainage) (B01)	M
Sports, tourism and leisure activities (F07)	M
Mixed source soil pollution and solid waste (excluding discharges) (J04)	M

7.2 Sources of information

7.3 Additional information

8. Conservation measures

8.1 Status of measures	a) Are measures needed?	Yes
	b) Indicate the status of measures	Measures identified and taken
8.2 Main purpose of the measures taken		Restore the habitat of the species (related to 'Habitat for the species')
8.3 Location of the measures taken		Both inside and outside Natura 2000
8.4 Response to the measures		Long-term results (after 2030)
8.5 List of main conservation measures		

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

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Management, control or eradication of other invasive alien species (CI03)
Management of problematic native species (CI05)
Reduce impact of outdoor sports, leisure and recreational activities (CF03)
Reduce impact of military installations and activities (CH01)
Reduce impact of other specific human actions (CH03)
Reduce diffuse pollution to surface or ground waters from agricultural activities (CA11)
Reduce/eliminate air pollution from industrial, commercial, residential and recreational areas and activities (CF06)
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 18.9575
11.2 Type of estimate	Best estimate
11.3 Surface area of the habitat type inside the network Method used	Complete survey or a statistically robust estimate

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11.4 Short-term trend of habitat area in good condition within the network Direction	Stable (0)
11.5 Short-term trend of habitat area in good condition within network Method used	Based mainly on expert opinion with very limited data
11.6 Additional information	

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

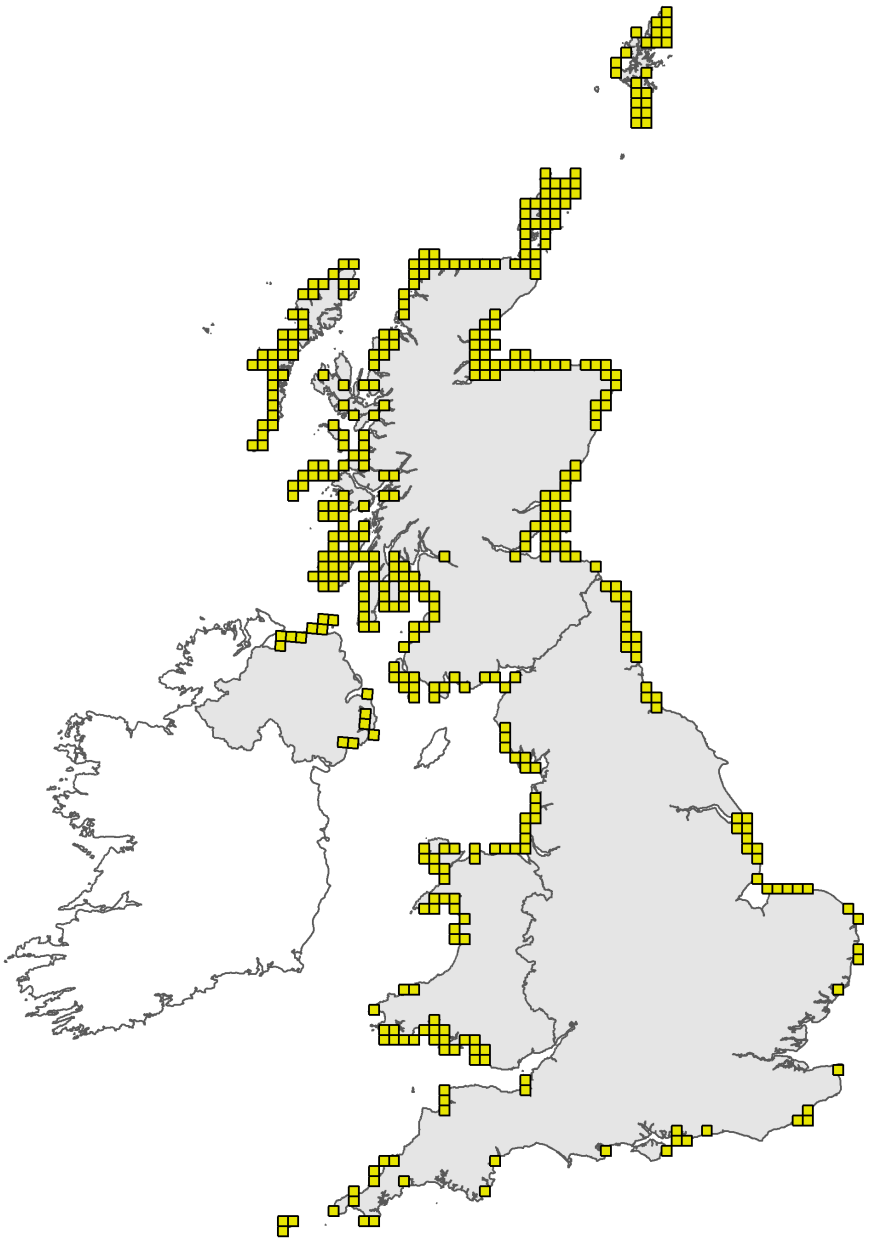

Figure 1: UK distribution map for H2130 - Fixed dunes with herbaceous vegetation (`grey dunes`). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

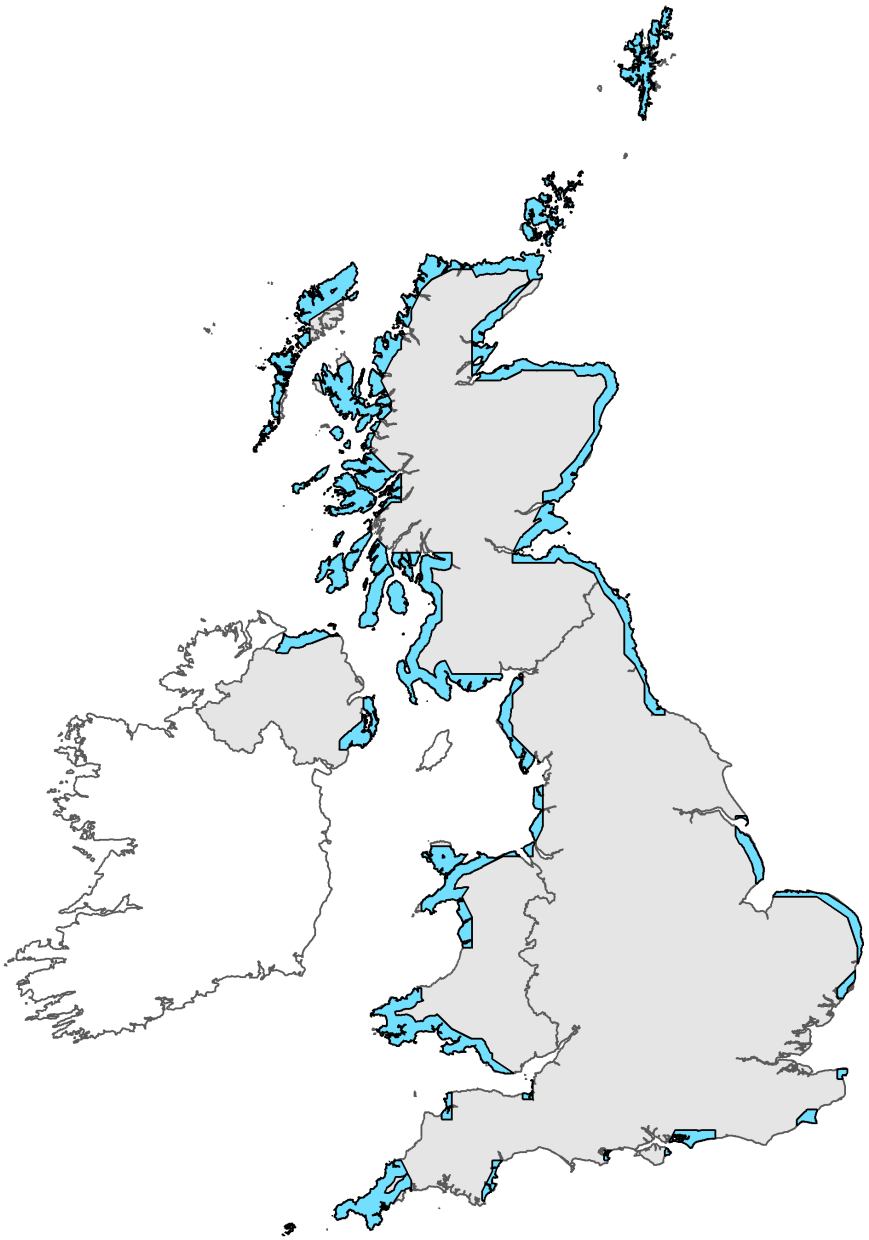

Figure 2: UK range map for H2130 - Fixed dunes with herbaceous vegetation (`grey dunes`). Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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: 2130

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 H2130* Fixed dunes with herbaceous vegetation ('grey dunes') 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 (SECONDARY DATA SOURCE): Coastal habitat mapping and monitoring utilising remote sensing PhD Thesis (Jones, 2017). The study focused on the use of Very High Resolution (VHR) optical imagery for retrieving parameters to identify associations that can separate habitat boundaries for extent mapping down to species level for indicators of condition, with a focus on operational use. The Earth Observation Data for Habitat Monitoring (EODHaM) system was implemented using Worldview-2 data from two periods (July and September 2016), in situ data and local ecological knowledge for two sites in Wales, Kenfig Burrows SAC and Castlemartin SSSI. Data source 4 (SECONDARY DATA SOURCE): Phase I Survey Information. The following mapping category was included for the Fixed dune grassland; H6.5 Dune grassland - All grassland occurring on consolidated and flattened dunes should be classified in this category. Generally, little Ammophila arenaria will be present. Data source 5 (SECONDARY DATA SOURCE): Phase II NVC survey of Stackpole NNR. This was an individual site survey targeting coastal habitat vegetation (grassland, dune, heath and maritime vegetation) within the NNR at Stackpole. The Sand Dune surveys (Dargie, 1995) were carried out over 20 years ago and so several intra-site changes are likely to have occurred, but, no sites have been lost or irreversibly damaged. H2130 vegetation equates to NVC communities; SD7, SD8, SD9, SD10, SD11, SD12 and SD19. The range has increased since the 2012 report, however, this is not a genuine increase, but results from the inclusion of the Phase 1 dataset, where \H6.5 Dune grassland\ has been included in the mapping analysis. The 2018 data is considered to give good representation of the current distribution and extent of this habitat.

Habitat code: 2130 Region code: ATL

Field label	Note
4.3 Short term trend; Direction	Changes to the 10km square distribution and linked range of H2130 in Wales are considered unlikely to have occurred in the last 12 years. While significant fluxes in the extent of this habitat have been noted at individual sites, there are no known examples where the habitat has been entirely lost from an individual site within this time period.
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 previous report in 2012, however, re-examination of the underpinning habitat maps has resulted in the addition of some 10km squares, where the habitat is known to occur.
5.1 Year or period	The data used to produce the total area figure are predominantly from 1991 - 1995. Post 1995 information includes remote sensing habitat data for Kenfig from 2017 (Jones, 2017). This new dataset is considered to provide good coverage for Kenfig, however, the data from the Sand Dune Vegetation Survey Wales (Dargie, 1995) is rather old and may no longer provide an accurate representation of the current area of the feature.

5.2 Surface area	(2651.70 ha)
5.3 Type of estimate	Estimate is mostly based upon an old data set (Sand Dune Vegetation Survey of Great Britain - Wales (Dargie, 1995)), which has been filtered to only include records containing SD7, SD8, SD9, SD10, SD11, SD12 and SD19 (corresponding NVC communities for the Annex I habitat type). The only contemporary data is for Stackpole which was mapped in 2012 (Sutton, 2012) and Kenfig where remote sensing data has been used to derive the extent of the H2130 habitat (Jones, 2017). It is very likely that the habitat has changed in extent on some sites due to vegetation succession and changes in management.
5.8 Short term trend; Method used	There is limited information on short term trends in extent for this habitat. Studies show there has been a clear trend towards increasing stabilisation that has likely resulted in the loss of part of this habitat due to successional changes with grasslands being lost to scrub development (Rhind et al. 2008, Rhind & Jones 2009). However, these losses have to some extent been offset by positive conservation management on some sites, notably extensive removal of Sea buckthorn from Merthyr Mawr and Pembrey, scrub control and introduced grazing to Kenfig. However, the gains remain localised and the wider situation is likely to remain one of net decline of the habitat.
5.14 Change and reason for change in surface area	The change in the estimated area of this habitat is the result of the re-analysis of existing survey data (see section 5.2) in addition to the more accurate data for the areas of fixed dune grassland identified through remote sensing at Kenfig (Jones, 2017). 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.
6.1 Condition of habitat	Based on habitat condition monitoring results from last reporting round
6.2 Condition of habitat; Method used	There is little information available about the condition of H2130 on SAC sites where the feature is not notified as A-C grade (16%) and SSSI sites which are not part of the N2K series (7%). Together these sites represent 23% of the total habitat in Wales. There is very little information about habitat condition on non-statutory sites. Together these sites represent only 528.64 ha 2261 20% of the total habitat in Wales.

7.1 Characterisation of pressures/ threats	Data held in NRWs Special Sites Actions Database (NRW, 2018), which provides information on \issues\ affecting habitat and species within the protected sites series in Wales, were used to provide a basis for quantifying pressures / threats relating to the habitat. The special sites (SSSI and SAC) include 80% of the H2130 resource in Wales by area. Pressures: Five pressures are ranked as High: A10 - Extensive grazing or under-grazing by livestock J03 - Mixed source air pollution, air-borne pollutants I02 - Other invasive alien species (other than species of Union concern) L02 - Natural succession resulting in species composition change (other than by direct changes of agricultural or forestry practices) I04 - Problematic native species A10 - Establishing and maintaining adequate grazing has been an ongoing problem for a number of sites and several sites are now showing evidence of insufficient grazing, resulting in rank grassland vegetation and scrub encroachment. Efforts are being made to reverse this trend on a number of sites. For example, insufficient grazing has been partially resolved at Kenfig and Aberffraw. At Kenfig the erection of fences and the introduction of new grazing stock has allowed targeted grazing on the habitat. At Aberffraw shepherded cattle grazing has allowed the fixed dune grassland to be grazed where previously it has been problematic to use heavy stock due to a lack of fencing on the site. J03 - There have been concerns over the levels of atmospheric nitrogen pollution and its links to soil enrichment and eutrophication. 87% of the fixed dune grassland in Wales is in areas which are currently subject to Nitrogen deposition rates which exceed the relevant Critical Load mapping value. I02 - Several dune systems in Wales (particularly in south Wales) have been badly affected by Sea buckthorn (Hippophae rhamnoides) invasion. L02 - Natural succession has undoubtedly been influenced by atmospheric nitrogen deposition and eutrophication of ground water and coupled with the lack of geomorphological processes, most sand dune sites in Wales are undergoing succession towards more stable rank grassland and scrub communities. I04 - Lack of appropriate grazing combined with increasing levels of stabilisation have led to native scrub species encroachment on several sites. The following pressures are considered to be important and are ranked as having a Medium impact: H01 - Military, paramilitary or police exercises and operations on land A19 - Application of natural fertilisers on agricultural land B01 - Conversion to forest from other land uses, or afforestation (excluding drainage) F07 - Sports, tourism and leisure activities J04 - Mixed source soil pollution and solid waste (excluding discharges) H01 - This relates to various factor such as military use and inappropriate vehicle use. Several of the sand dune sites in Wales have been historically used by the military and some are currently used by the military. Historical pressures relate to abandoned and demolished buildings and structures within the fixed dune grassland and the threat of Unexploded Ordnance (UXO) to management practices for habitat conservation. Where sand dune sites are currently used by the military the risk of UXO is great and military exercises can preclude the occurrence of conservation management due to safety issues. A19 & J04 - This has been a problem at Aberffraw where abattoir slurry was being spread on adjacent fields to the dune system. B01 - Opportunities to restore areas of fixed dune grassland and dynamic conditions are constrained by existing conifer plantations and future forest plans for re-stocking within these conifer plantations on sand dunes. F07 - Problems include vehicle access, pedestrian access, camping and making fires within the habitat. The effect of pedestrian access can be significant where access to beaches through the dune front can cause significant erosion. Many Welsh sand dunes support golf courses and despite dune flora being \maintained\ outside of the fairways and greens, the habitat can still be significantly modified by mowing, abstraction / drainage and fertilisation. The following pressure is important and ranked as having a Medium impact but has not been included for UK reporting purposes. N04 - Sea-level and wave exposure changes due to climate change N04 - Climate change (changes in precipitation and increased storminess) and predicted sea-level rise is likely to represent a significant and long term risk to this habitat. The extent and severity of the likely impact over the next two reporting cycles is unclear, with the main impacts anticipated over longer

	timescales. Climate change and predicated sea-level rises are likely to therefore result in overall loss of the sand dune habitat and may affect this feature in the future. Threats: Four threats (ranked High) were identified and assessed in a similar way to the pressures outlined above (Guest, 2012a). In addition to the threats listed in section 7.1, Climate Change could pose a significant threat to the series of sand dune systems in Europe. 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.
8.5 List of main conservation measures	In Wales the vast bulk of the habitat by area falls within the protected sites series (80% is on SSSI's and 61% is listed as a SAC feature). 26% of the total on SSSI is covered by management agreement. 17% of the habitat by area is covered by Glastir Advanced agreements. 0.5% is covered by \grazed pasture - no inputs\ 14% is covered by \management of sand dunes\ 3% is covered by \management of sand dunes with mixed grazing\. 11% of the habitat by area is covered by Glastir Entry agreements.<0.1% is covered by \grazed pasture - no inputs\ ><0.1% is covered by \grazed pasture - no inputs and mixed grazing\ 10% is covered by \management of sand dunes\ 0.5% is covered by \management of sand dunes with mixed grazing\. 6% of the habitat by area is covered by Glastir Entry Commons. Efforts have been made on several sites to maintain the open nature of this habitat, which can become invaded by scrub and invasive species. These management measures have included grazing and mowing (CA04). On overly mature sites, turf stripping is also often a necessary requirement to re-establish links with geomorphological processes (CL01). Specific management measures are required and include increased or reintroduced grazing management (CA04) and invasive species (CI03) and native scrub control (CI05). Many golf courses lie within the Welsh sand dune SACs and the fine-tuning of normal management practices (CA04, CI03, CI05, CF03, CL01) could help to conserve significant areas of H2130 (Houston, 2008). Efforts are in place to implement restoration of H2130 via externally funded projects under the EU LIFE programme and Heritage Lottery Fund (CA04, CA11, CF03, CF06, CF10, CH03, CI03, CI05, CL01). Other conservation measures include special projects, e.g. towards BAP targets for maintenance, improvement of condition, restoration and expansion of the resource (CA04, CF03, CH01, CH03, CI03, CI05, CL01). Regulations may often be inadequate to fully protect the habitat, e.g. in tackling under-management or neglect. Measures which are already being implemented are shown in italics in

9.1 Future prospects of parameters	9.1a Future prospects of - range. Significant change to the 10km square distribution and linked range is considered unlikely to occur within the short to medium term, as it would require either the total loss of the habitat within a hectad or its creation/restoration within a square where it is not currently represented.. 9.1b Future prospects of - area Fundamentally, it is the loss of traditional management practices which has had most impact on the evolution of sand dune systems from the dynamic state to the stable state (Houston, 2008). The lack of dynamic processes and dune stabilisation across the wider Welsh sand dune systems has had a negative impact on Fixed dunes with herbaceous vegetation. The main threats to the habitat come from over-stabilisation (through techniques to prevent sand-drift), a lack of appropriate grazing levels, growth of native and non-native (introduced) scrub, afforestation and non-native species. The most significant concern for the habitat is the impact of atmospheric nutrient deposition (Houston, 2008). Planned interventions outlined in active bids for funding sand dune restoration in Wales under the EU LIFE programme and Heritage Lottery Fund have the potential to mitigate or reverse these declines over significant areas and if successful, should provide a more optimistic outlook for the habitat in the medium term. 9.1c Future prospects of -structure and function The habitat is being adversely affected by several factors which are negatively affecting its structure and function, such as, * over and under-grazing (under-grazing is related to increased grassiness and scrub encroachment), * nutrient enrichment (from a variety of different sources) leading to loss of characteristic species, * recreational activities such as vehicle use, motorcycles and golf courses, where the vegetation is severely modified by excessive management (mowing, fertilizing and re-seeding), * scrub and invasive alien species encroachment which is exacerbated by a lack of grazing, * changes in hydrology and atmospheric N deposition. Changes to the local hydrology of the sand dune such as forestry plantations, drainage of adjacent land and abstraction. Climate change could pose a significant threat to the series of sand dune systems in Europe. 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. SAC monitoring has revealed that many areas of the habitat are in poor condition (see 6.2), mostly due to successional development linked to increasing levels of stabilisation. 87% of the habitat is found in areas where the deposition of atmospheric nitrogen (2013-15 data) exceeds the Critical Load. Despite modest predicted declines in deposition levels for the UK, indications are that this will have little impact on the proportion of the habitat in areas of Critical Load exceedance in the medium-term. Projected deposition estimates for the welsh SACs on which H2130 is a feature in fact show a small (3%) rise in the area in Critical Load exceedance.
11.1 Surface area of the habitat type inside the pSCIs, SCIs and SACs network	18.9575 km2 (1895.75ha) (Best single value) This is the total surface area of the feature within SACs (irrespective of whether the feature has been notified).
11.3 Surface area of the habitat type inside the network; Method used	The surface area figure for the habitat inside the SAC network has been derived from a number of sources (see Section 2.3) and is mostly based upon an old data set (Sand Dune Vegetation Survey of Great Britain - Wales (Dargie, 1995)), which has been filtered to only include records containing NVC communities SD7, SD8, SD9, SD10, SD11, SD12 and SD19. The only contemporary data is for Kenfig, where remote sensing data has been used to derive the extent of the H2130 habitat (Jones, 2017) and Stackpole (Sutton, 2012) where an individual site NVC survey was undertaken and area of H2130 habitat has been calculated. 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	All of the 5 SACs supporting this feature were reported as being in 'unfavourable condition' in the 2007-2012 reporting round and are likely to be in the same condition in this reporting round, on this basis the short-term trend of the habitat in good condition is reported as \stable\.