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:

H2160 - Dunes with *Hippophae rhamnoides*

ENGLAND

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 (England information only)**
1.2 Habitat code	**2160 - Dunes with Hippophaë rhamnoides**

2. Maps

2.1 Year or period	2013-
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	JNCC (14/11/2017) Spreadsheet of UK SAC information as contained within the Natura 2000 standard data forms submitted to the European Union. http://jncc.defra.gov.uk/page-1461 Brownett, JM., Mills, RS,. (2017) The development and application of remote sensing to monitor sand dune habitats. Journal of Coastal Conservation, Volume 21, Number 5, page 643-656. https://link.springer.com/article/10.1007/s11852-017-0504-x JNCC (2013) 3rd UK Habitats Directive Reporting 2013. UK-level reporting information on Favourable Reference Values. http://jncc.defra.gov.uk/page-6387 Natural England (2015 unpublished) Site of Special Scientific Interest Series short review and assessment for coastal habitat features. JNCC. 2013. Third report by the United Kingdom under article 17 on the implementation of the directive from January 2007 to December 2012 H2160 Dunes with Hippophae rhamnoides Jones L, Garbutt A and Angus S. 2013. Impacts of climate change on coastal habitats, MCCIP Science Review, 4 http://www.mccip.org.uk/media/13315/2013arc_backingpapers_18_chab.pdf Natural England. 2015. Coastal management theme plan (IPENSTP019) http://publications.naturalengland.org.uk/publication/6371629661683712?category=5605910663659520 Natural England. 2015.Climate change theme plan: Developing a strategic approach to climate change adaptation (IPENSTP014) http://publications.naturalengland.org.uk/publication/4954594591375360?category=5605910663659520 Natural England. 2015.Public access and disturbance theme plan: A strategic approach to identifying and addressing significant effects on the features of Natura 2000 sites (IPENSTP022) http://publications.naturalengland.org.uk/publication/6621454219083776?category=5605910663659520 Natural England. 2015. Atmospheric nitrogen theme plan: Developing a strategic approach for England's Natura 2000 sites (IPENSTP013) http://publications.naturalengland.org.uk/publication/6140185886588928?category=5605910663659520

Natural England. 2015. Diffuse water pollution theme plan: Developing a strategic approach to diffuse water pollution for England's Natura 2000 sites (IPENSTP015) http://publications.naturalengland.org.uk/publication/5848526737113088?category=5605910663659520
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Natural England. 2015. Improvement Programme for England's Natura 2000 sites (IPENS): Planning for the future Programme Report - a summary of the programme findings. (NE601). Natural England. http://publications.naturalengland.org.uk/publication/5757712073752576?category=4878851540779008
Hansom J.D., Rennie A.F., Dunlop A. & Drummond J. (2011). A methodology to assess the causes and rates of change to Scotland's beaches and sand dunes Phase 1. Scottish Natural Heritage Commissioned Report No. 364.
Adaptation Sub Committee 2013. Managing the land in a changing climate-Adaptation Sub-Committee progress report 2013. Chapter 5 Regulating services Coastal Habitats. ASC http://www.theccc.org.uk/wp-content/uploads/2013/07/ASC-2013-Book-singles_2.pdf
Jones, L., Garbutt, A., Hansom, J. and Angus, S. (2013) Impacts of climate change on coastal habitats, MCCIP Science Review 2013, 167-179, doi:10.14465/2013.arc18.167-179
Taylor, S., Knight, M., & Harfoot, A. (2014) National Biodiversity Climate Change Vulnerability Model (NBCCVM) http://publications.naturalengland.org.uk/publication/5069081749225472?category=10003
Natural England (2016 Unpublished). Favourable Conservation Status: England Contribution: Coastal Sand Dunes (combining 6 Annex I habitats).
Boardman, C. & Smith, P.H. 2016. Rates of spread of Rosa rugosa (Japanese Rose) determined by GIS on a coastal sand-dune system in Northwest England. J Coast Conserv (2016) 20: 281. https://doi.org/10.1007/s11852-016-0439-7
Doody, P. J. 2013. Sand dune conservation, management and restoration. Springer.
Dynamic Dunes: Daring solutions for Natura 2000 challenges. 2015. Conference presentations https://www.pwn.nl/after-congress and proceedings https://awd.waternet.nl/media/projecten/Life/PDF/Rapport conference Dynamic Dunes 2015.pdf
European Commission 2016. Second Atlantic biogeographic seminar. http://ec.europa.eu/environment/nature/natura2000/platform/events/263_second_atlantic_natura_2000_seminar_en.htm Includes the 'Dune Road Map' from the LIFE Platform meeting 2016 by Houston J. http://ec.europa.eu/environment/nature/natura2000/platform/events/258_ecology_morphology_management_of_coastal_and_inland_dunes_en.htm

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

Natural England and RSPB, 2014. Climate Change Adaptation Manual. Natural England report 546
Mossman HL, Grant A & Davy AJ. (2013) Implications of climate change for coastal and inter-tidal habitats in the UK. Terrestrial biodiversity climate change impacts report card technical paper. Biodiversity Report Card paper 10
The UK National Ecosystem Assessment Technical Report 2011 Chapter 11: Jones, L. et al. Coastal Margins. The UK National Ecosystem Assessment UNEP-WCMC, Cambridge. http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=dNI5e5W5I5Q%3D&tabid=82
Jones, L., Hall, J., Strachan, I., Field, C., Rowe, E., Stevens, C.J., Caporn, S.J.M., Mitchell, R., Britton, A., Smith, R., Bealey, B., Masante, D., Hewison, R., Hicks, K., Whitfield, C. & Mountford, E. 2016. A decision framework to attribute atmospheric nitrogen deposition as a threat to or cause of unfavourable habitat condition on protected sites. JNCC Report No. 579. JNCC, Peterborough
P.J. Rooney, J.A. Houston, G. Weaver (2011) The conservation and management of Sea Buckthorn (Hippophae rhamnoides) in the UK: report of the workshop at Saltfleetby-Theddlethorpe Dunes and Gibraltar Point SAC, 17-18 September 2009. Sand Dune and Shingle Network: Occasional Paper No. 3, Liverpool Hope University Press.

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	No change The change is mainly due to:		
4.12 Additional information			

5. Area covered by habitat

5.1 Year or period	2013-2018		
5.2 Surface area (in km²)	a) Minimum 2.2	b) Maximum 2.35	c) Best single value 2.275
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	2007-2018		
5.6 Short-term trend Direction	Decreasing (-)		
5.7 Short-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval

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5.8 Short-term trend Method used	Complete survey or a statistically robust estimate		
5.9 Long-term trend Period	1995-2018		
5.10 Long-term trend Direction	Decreasing (-)		
5.11 Long-term trend Magnitude	a) Minimum	b) Maximum	c) Confidence interval
5.12 Long-term trend Method used	Complete survey or a statistically robust estimate		
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	Data collected as part of the WP3 remote sensing of coastal sand dunes project mapped all H2160 sites, except Humber Estuary SAC, which identified a decline in this habitat type.		

6. Structure and functions

6.1 Condition of habitat	a) Area in good condition (km²)	Minimum 1	Maximum 1
	b) Area in not-good condition (km²)	Minimum 1.2	Maximum 1.33
	c) Area where condition is not known (km²)	Minimum 0	Maximum 0.02
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	2007-2018		
6.4 Short-term trend of habitat area in good condition Direction	Stable (0)		
6.5 Short-term trend of habitat area in good condition Method used	Based mainly on extrapolation from a limited amount of data		
6.6 Typical species	Has the list of typical species changed in comparison to the previous reporting period?		No
6.7 Typical species Method used			
6.8 Additional information			

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Mowing or cutting of grasslands (A08)	H
Modification of hydrological flow (K04)	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

Threat	Ranking
Mowing or cutting of grasslands (A08)	H

Modification of hydrological flow (K04)	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

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: Increase the population size and/or improve population dynamics (improve reproduction success, reduce mortality, improve age/sex structure) (related to 'Population')

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

Improvement of habitat of species from the directives (CS03)
Management, control or eradication of other invasive alien species (CI03)
Manage changes in hydrological and coastal systems and regimes for construction and development (CF10)
Manage/reduce/eliminate diffuse pollution to surface or ground waters from resource exploitation and energy production (CC09)
Implement climate change adaptation measures (CN02)

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

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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 2.05
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	Stable (0)
11.5 Short-term trend of habitat area in good condition within network Method used	Based mainly on extrapolation from a limited amount of data
11.6 Additional information	Maximum area used is taken from JNCC SAC data, derived from Standard Data Forms. This is an overestimate as Drigg Coast and Sefton Coast are included which are outside of H1260 natural range. The Natural England/Environment Agency 2012-2017 coastal habitat mapping project (CASI & LiDAR habitat mapping including ground-truthing of data) mapped 101 ha of H1260 which included all designated sites for this habitat except the Humber Estuary (c. 65.98 ha). Saltfleetby-Theddlethorpe Dunes will be resurveyed using the same approach (previously surveyed 2013) this will help to identify if there has been any further change to the extent of this habitat (positive or negative). 79% of habitat in SACs (2013 Audit).

12. Complementary information

12.1 Justification of % thresholds for trends	
12.2 Other relevant information	

Distribution Map

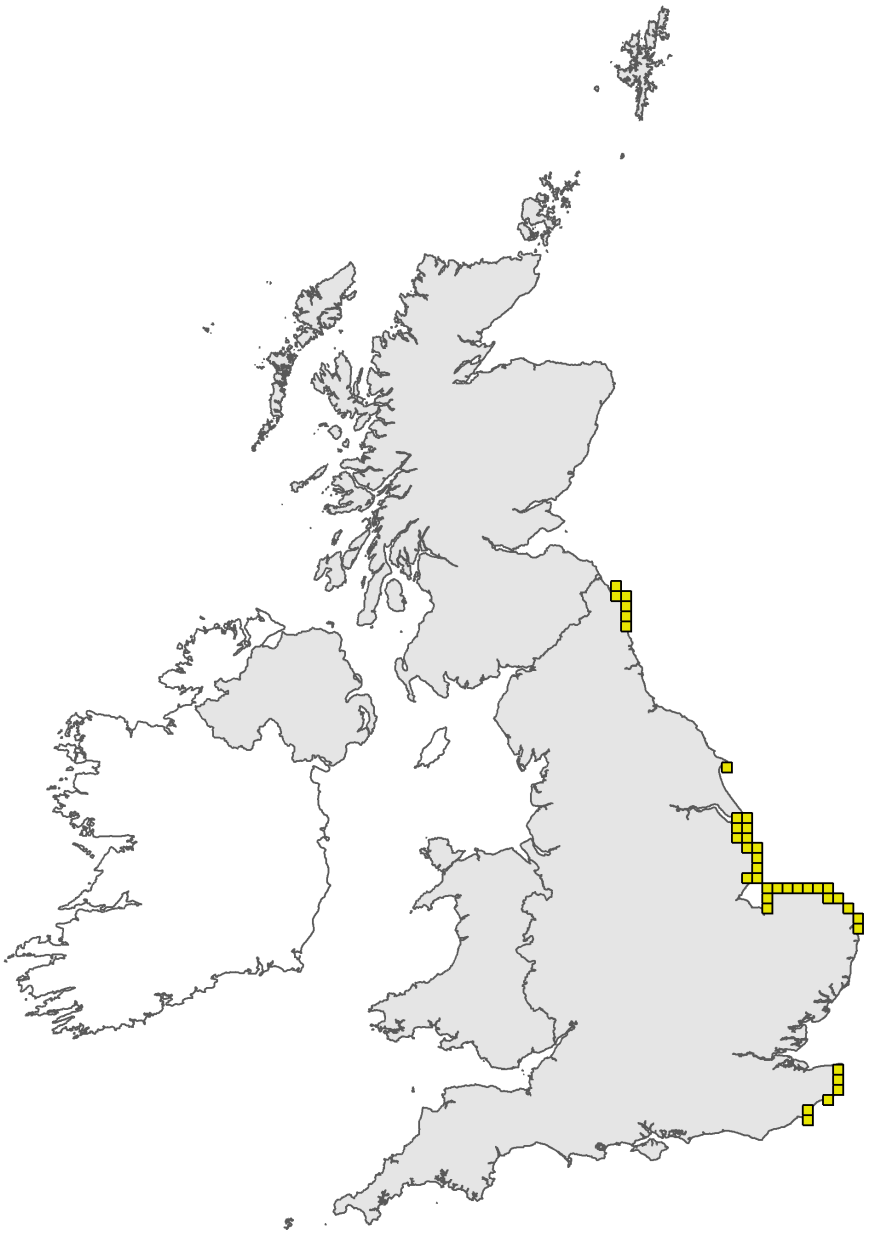

Figure 1: UK distribution map for H2160 - Dunes with *Hippophae rhamnoides*. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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 H2160 - Dunes with *Hippophae rhamnoides*. 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: 2160

Field label	Note
2.2 Distribution map	2013 UK Habitat Reporting data used. Terrestrial Habitat 10km Square Distribution Map and Data Sources.
2.3 Distribution map; Method used	Map derived from data provided by JNCC Terrestrial Habitat 10-km Square Distribution Map Data and Sources. No new locations have been recorded since 2013.

Habitat code: 2160 Region code: ATL

Field label	Note
4.10 Favourable reference range	Note s on 4.10 Favourable reference range! Data taken from 2013 spreadsheet habitat reporting on favourable reference values.
5.2 Surface area	Natural range in England limited to the east coast, however, 2 sites on the north west coast Drigg Coast and Sefton Coast incorrectly report areas of 15.36 ha and 18.37 ha respectively in the N2K standard data forms for the sites. Maximum area used is taken from JNCC SAC data, derived from Standard Data Forms. This is an overestimate as Drigg Coast and Sefton Coast are included which are outside of H1260 natural range. The Natural England/Environment Agency 2012-2017 coastal habitat mapping project (CASI & LiDAR habitat mapping including ground-truthing of data) mapped 101 ha of H1260 which included all designated sites for this habitat, except the Humber Estuary (c. 65.98 ha). Saltfleetby-Theddlethorpe Dunes will be resurveyed using the same approach (previously surveyed 2013) this will help to identify if there has been any further change to the extent of this habitat (positive or negative).The current area is wider than the natural area, both beyond as well as within it, as a result of planting and subsequent expansion.
5.15 Additional information	Area of habitat has increased within and outside of its natural range as a result of planting and subsequent expansion, and natural expansion. Rooney et al., (2011) state its widespread expansion, since the 1950's, is most probably due to a reduction in grazing pressure from rabbits after myxomatosis depleted the population. It continues to spread where no control measures are put in place. Management is required to create a balance between scub and grassland habitats through scrub control and grazing.
5.15 Additional information	Data collected as part of the WP3 remote sensing (including ground-truthing) of coastal sand dunes project mapped all H2160 sites, except Humber Estuary SAC, which identified a decline in this habitat type. Saltfleetby-Theddlethorpe Dunes SSSI was mapped in 2013 and is to be remapped (applying the same methods) in 2018 which will confirm whether there is a trend of decline.
6.2 Condition of habitat; Method used	The 2013 reports were used and the 2013 range information provided by JNCC. SSSI reporting data was obtained from Natural England's, aggregated to feature level by data analyst. Some of the SSSI data has poor correspondence with Annex I features, and unit area was not equivalent to habitat area. Information from previous reporting rounds and the SAC data used to check for anomalies, and adjusted figures using expert judgement.
6.4 Short term trend of habitat area in good condition; Direction	25% or more of Annex I habitats were not assessed under the SSSI condition assessment monitoring programme - to assign decreasing condition to the feature expert opinion is used, based on a few surveys as part of sand dune habitat mapping work programme

6.8 Additional information	Sand dunes are one of the terrestrial N2K sites identified in 2015 as in poor condition. Reasons for unfavourable condition of all sites = diffuse pollution; water levels/drainage, grazing, invasive species (scrub)
7.3 Additional information	Threats to coastal and inland dunes in northwest Europe include loss and fragmentation of habitats, reduction in area of open sand, succession to scrub and woodland and impact of invasive alien species. Problems are exacerbated in many regions due to Nitrogen deposition. In recent decades a dynamic approach to coastal dune management has gained recognition and LIFE projects have been at the forefront of developing new approaches to rejuvenating and restoring dune habitats.
7.3 Additional information	NE (2015) Improvement Programme for England's Natura 2000 Sites (IPENS) Programme Report: a summary of the programme findings (NE601) states '...threats are known to be the greatest for coastal, ...habitats due to their direct dependence on coastal processes, hydrology and temperature.'
7.3 Additional information	For most coastal sand dunes in England the issue of coastal erosion due to insufficient sand supply lead to concerns of how resilient these habitats will be in the future to the potential impacts of climate change (RSL, increase in storms, etc.). In recent decades a dynamic approach to coastal dune management has gained recognition and LIFE projects have been at the forefront of developing new approaches to rejuvenating and restoring dune habitats.
7.3 Additional information	NE (2015) Climate change theme plan. Developing a strategic approach to climate change adaptation states sand dunes have a medium relative sensitivity to climate change.
10.3 Specific structure and functions	Data as of 4/7/18 based on Reportable Condition of Annex 1 habitats within SSSI units, specifically Annex 1 feature. All Dune Habitat types areas are based on coastal sand dunes PHI within each SSSI unit.
10.7 Change and reasons for change in conservation status and conservation status trends	The reduction in area of H2160 has been predominantly due to past management practices which have reduced the area of this habitat in its favourable range. This is now being addressed through a change in management practices.
10.8 Additional information	The reason for change is a genuine reduction in Hippophae rhamnoides habitat due to management on the Lincolnshire Coasta and south Humberside; this is verified by up-to-date WP3 sand dune habitat mapping data of Saltfleetby-Theddlethorpe Dunes and Gibraltar Point.
11.4 Short term trend of habitat area in good condition within the network; Direction	A higher area of habitat in the network has been assessed as 'favourable' or 'recovering' compared to the area assessed as 'not assesed'. In the absence of further information this has been determined to be at least 'stable'