

**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:

H21A0 - Machairs

SCOTLAND

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 (Scotland information only)
1.2 Habitat code	21A0 - Machairs

2. Maps

2.1 Year or period	1983-2016
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	<p>https://www.environment.gov.scot/our-environment/habitats-and-species/habitat-map-of-scotland/</p> <p>The Sand Dune Vegetation Survey of Scotland, Tom Dargie 1994-2000 National Report</p> <p>The Sand Dune Vegetation Survey of Scotland 2012 SNH Natural Spaces dataset Angus, S. 2006. De tha machair? Towards a machair definition. Sand dune machair 4,7-22. Aberdeen Institute for Coastal Science & Management, Aberdeen</p> <p>Janine M Morris, Site Condition Monitoring of Coastal Habitats. (National Contract, Year 2009-2010) and Site Condition Monitoring of Coastal Habitats (National Contract, Year 2010-2011). Contract No: 25639</p> <p>SNH Site Condition Monitoring results Cycle 3 (from 1 April 2012): see Scotland's environment website. [From the website Detailed tab, select Coastal features by clicking the Feature filter on the left of the screen, then Feature Category= Coast. Data can be exported to spreadsheet by right clicking the table at the bottom of the screen, then Export, then Export Table. Cycle 3 assessments can be seen by filtering the spreadsheet on the 'LatestAssessedSCMcycle' column].</p> <p>SNH Site Condition Monitoring results Cycle 3 (from 1 April 2012): see Scotland's environment website. [From the website Detailed tab, select Coastal features by clicking the Feature filter on the left of the screen, then Feature Category= Coast. Data can be exported to spreadsheet by right clicking the table at the bottom of the screen, then Export, then Export Table. Cycle 3 assessments can be seen by filtering the spreadsheet on the 'LatestAssessedSCMcycle' column].</p> <p>http://jncc.defra.gov.uk/pdf/Article17Consult_20131010/H21A0_SCOTLAND.pdf</p>

4. Range

4.1 Surface area (in km ²)	
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

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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
 The change is mainly due to: Improved knowledge/more accurate data

4.12 Additional information

Final data has become available from translation of the Sand Dune Survey of Scotland to Annex I habitats as well as some other NVC surveys and this has given a more complete picture of the distribution of this habitat in Scotland. Stewart Angus has prepared a final map of machair available in HabMoS.

5. Area covered by habitat

5.1 Year or period

1983-2016

5.2 Surface area (in km²)

a) Minimum b) Maximum c) Best single value 116.8

5.3 Type of estimate

95% confidence interval

5.4 Surface area Method used

Complete survey or a statistically robust estimate

5.5 Short-term trend Period

2001-2016

5.6 Short-term trend Direction

Stable (0)

5.7 Short-term trend Magnitude

a) Minimum b) Maximum c) Confidence interval

5.8 Short-term trend Method used

Based mainly on extrapolation from a limited amount of 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
 The change is mainly due to: Improved knowledge/more accurate data

5.15 Additional information

The Sanddune Survey of Scotland has now been completely translated from NVC to Annex I habitats and is available through HabMoS which has given a revised extent figure for this habitat (which is less than previously reported).

6. Structure and functions

6.1 Condition of habitat

a) Area in good condition (km²) Minimum 41.65 Maximum 41.65
 b) Area in not-good condition (km²) Minimum 2.75 Maximum 2.75
 c) Area where condition is not known (km²) Minimum 72.4 Maximum 72.4

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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	2001-2016
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	2.4% of the habitat is in unfavourable condition (by area), 35.7% is in favourable condition (by area) and the remaining 62% lies outwith designated sites so we don't have direct information on condition. We hope that these figures serve as a proxy for condition of machair outside designated sites

7. Main pressures and threats

7.1 Characterisation of pressures/threats

Pressure	Ranking
Application of synthetic (mineral) fertilisers on agricultural land (A20)	H
Closure or restricted access to site/habitat (H06)	M
Intensive grazing or overgrazing by livestock (A09)	M
Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	H
Sea-level and wave exposure changes due to climate change (N04)	M
Modification of hydrological flow or physical alteration of water bodies for agriculture (excluding development and operation of dams) (A33)	M
Flooding (natural processes) (M08)	M
Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization) (L01)	M
Increases or changes in precipitation due to climate change (N03)	M
Threat	Ranking
Application of synthetic (mineral) fertilisers on agricultural land (A20)	H
Closure or restricted access to site/habitat (H06)	M
Intensive grazing or overgrazing by livestock (A09)	M

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Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defences or coastal protection works and infrastructures) (F08)	H
Sea-level and wave exposure changes due to climate change (N04)	H
Modification of hydrological flow or physical alteration of water bodies for agriculture (excluding development and operation of dams) (A33)	H
Flooding (natural processes) (M08)	M
Abiotic natural processes (e.g. erosion, silting up, drying out, submersion, salinization) (L01)	H
Increases or changes in precipitation due to climate change (N03)	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	Maintain the current range, population and/or habitat for the species	
8.3 Location of the measures taken	Both inside and outside 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)

Manage the use of natural fertilisers and chemicals in agricultural (plant and animal) production (CA09)

Maintain existing extensive agricultural practices and agricultural landscape features (CA03)

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	Future prospects for this habitat from climate change are currently being studied. Changes such as sea level rise, increased precipitation and change in rainfall patterns, increased flooding and saline intrusion may all have an impact.

10. Conclusions

10.1. Range

10.2. Area

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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 16.83

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

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

12. Complementary information

12.1 Justification of % thresholds for trends

12.2 Other relevant information

Distribution Map

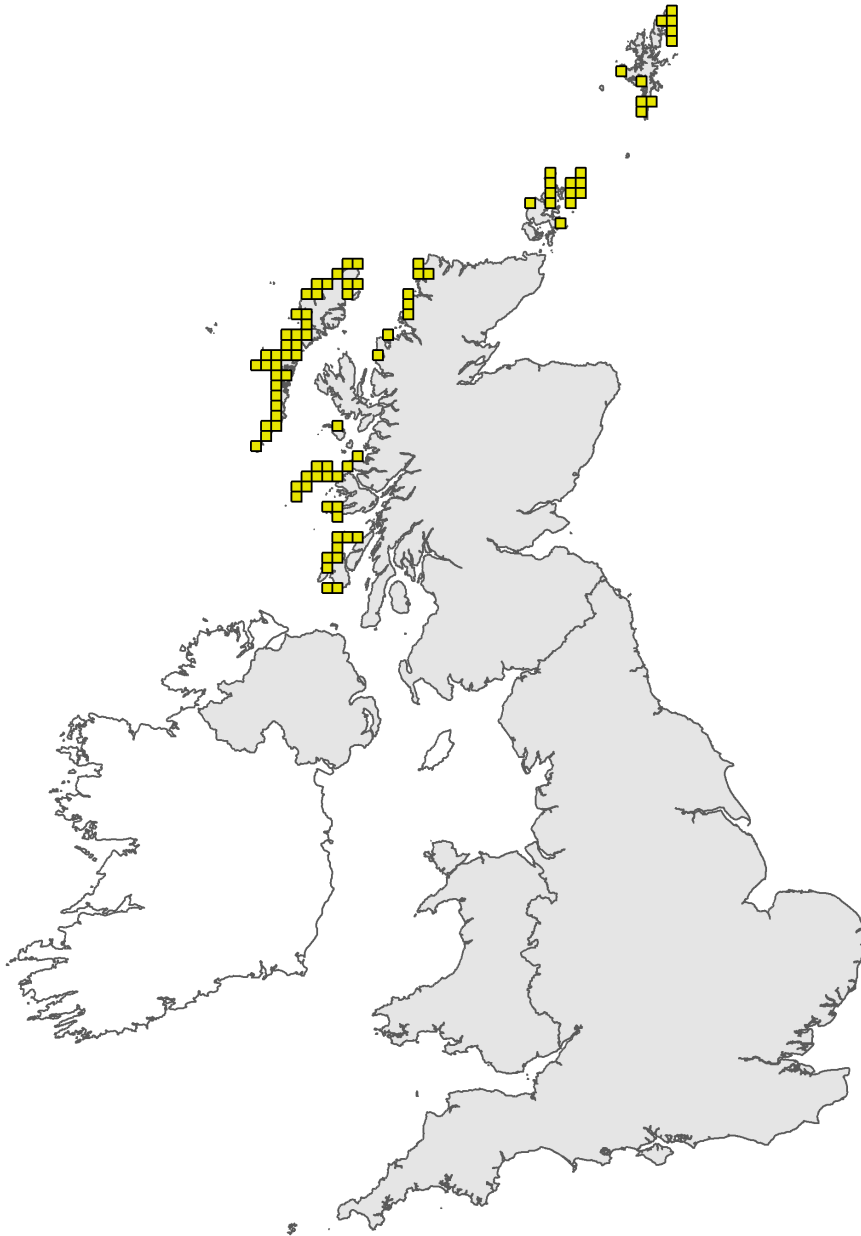


Figure 1: UK distribution map for H21A0 - Machairs. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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

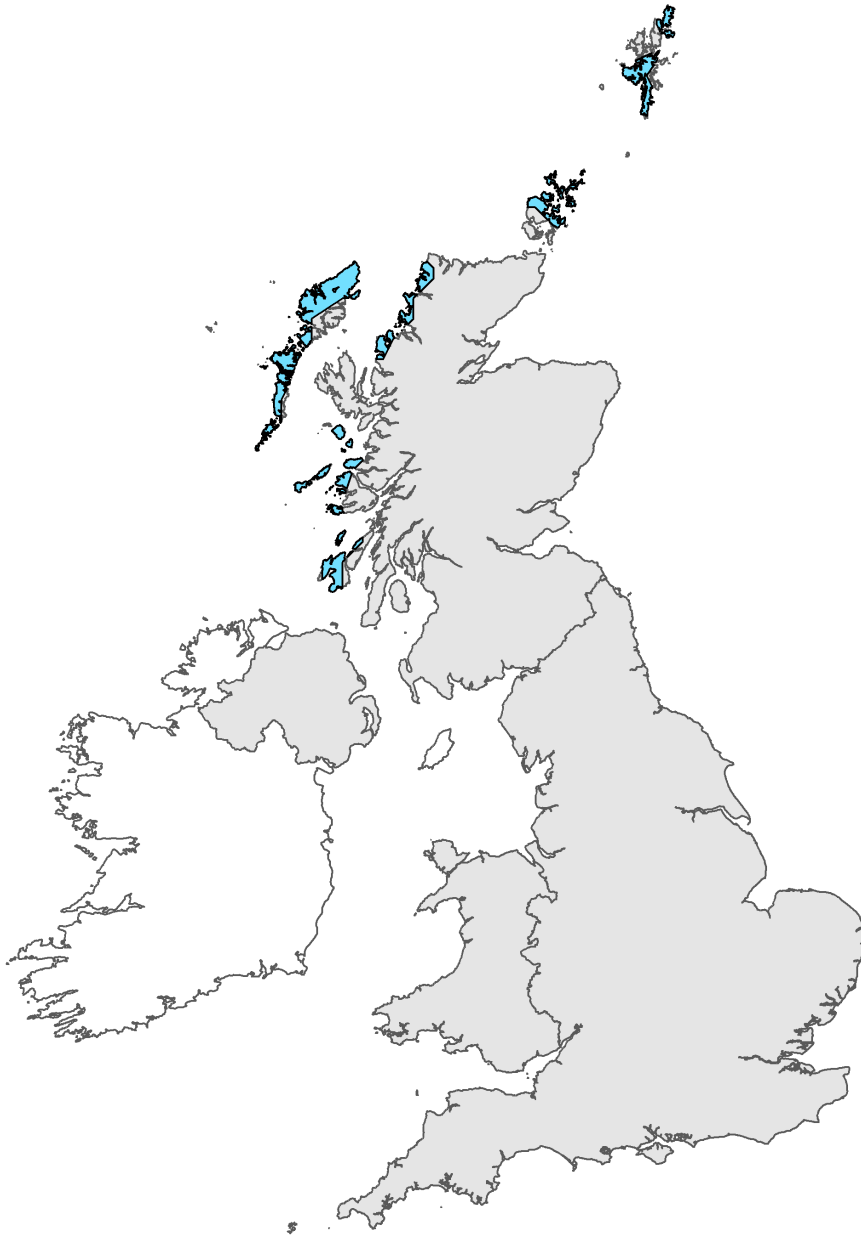


Figure 2: UK range map for H21A0 - Machairs. Coastline boundary derived from the Oil and Gas Authority's OGA and Lloyd's Register SNS Regional Geological Maps (Open Source). Open Government Licence v3 (OGL). Contains data © 2017 Oil and Gas Authority.

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.