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

Conservation status assessment for the species:

S1376 - Maerl (*Lithothamnium corallioides*)

UNITED KINGDOM

IMPORTANT NOTE - PLEASE READ

- The information in this document represents the UK Report on the conservation status of this species, submitted to the European Commission as part of the 2019 UK Reporting under Article 17 of the EU Habitats Directive.
- It is based on supporting information provided by the geographically-relevant Statutory Nature Conservation Bodies, which is documented separately.
- The 2019 Article 17 UK Approach document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- The reporting fields and options used are aligned to those set out in the European Commission guidance.
- Maps showing the distribution and range of the species are included (where available).
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the UK assessments. Further underpinning explanatory notes are available in the related country-level reports.
- 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 not relevant to this species (section 12 Natura 2000 coverage for Annex II species).
- The UK-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 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK**
1.2 Species code	**1376**
1.3 Species scientific name	**Lithothamnium coralloides**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1995-2017
2.3 Distribution map	Yes
2.4 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
2.5 Additional maps	No

3. Information related to Annex V Species (Art. 14)

3.1 Is the species taken in the wild/exploited?	No	
3.2 Which of the measures in Art. 14 have been taken?	a) regulations regarding access to property	No
	b) temporary or local prohibition of the taking of specimens in the wild and exploitation	No
	c) regulation of the periods and/or methods of taking specimens	No
	d) application of hunting and fishing rules which take account of the conservation of such populations	No
	e) establishment of a system of licences for taking specimens or of quotas	No
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	No
	g) breeding in captivity of animal species as well as artificial propagation of plant species	No
	h) other measures	No

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3.3 Hunting bag or quantity taken in the wild for Mammals and Acipenseridae (Fish)

a) Unit

b) Statistics/ quantity taken	Provide statistics/quantity per hunting season or per year (where season is not used) over the reporting period					
	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
Min. (raw, ie. not rounded)						
Max. (raw, ie. not rounded)						
Unknown	No	No	No	No	No	No

3.4. Hunting bag or quantity taken in the wild Method used

3.5. Additional information

For further details refer to JNCC website for 2019 UK Approach Document and country-level reporting information.

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Marine Atlantic (MATL)

4.2 Sources of information

England
Environment Agency (EA). 2017. Environment Agency: What's in your backyard. 2017 [Online]. [Accessed 27/06/2017].http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683&y=355134&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=mainrivers x=447972&y=104904&lg=1,10,&scale=6
Scotland
Barbera, C., Mallol, S., Verges, A., Cabanellas-Reboredo, M., Diaz, D., & Goni, R. (2017). Maerl beds inside and outside a 25-year-old no-take area. Marine Ecology Progress Series, 572, 77-90.
Hall-Spencer, J. M., & Moore, P. G. (2000). Scallop dredging has profound, long-term impacts on maerl habitats. ICES Journal of marine science, 57(5), 1407-1415.
Hernandez-Kantun, J.J., Hall-Spencer, J.M., Grall, J., Adey, W., Rindi, F., Maggs, C.A., Barbara, I. and Pena, V. (2017) North Atlantic Rhodolith Beds. In Rhodolith/Maerl Beds: A Global Perspective, pp. 265-279. Springer, Cham.
Martin, S., & Hall-Spencer, J. M. (2017). Effects of ocean warming and acidification on rhodolith/maerl beds. In Rhodolith/Maerl Beds: A Global Perspective (pp. 55-85). Springer, Cham.
Melbourne, L. A., Hernandez-Kantun, J. J., Russell, S., & Brodie, J. (2017). There is more to maerl than meets the eye: DNA barcoding reveals a new species in Britain, Lithothamnion erinaceum sp. nov.(Hapalidiales, Rhodophyta). European Journal of Phycology, 52(2), 166-178.
Wilson, S., Blake, C., Berges, J. A., & Maggs, C. A. (2004). Environmental

tolerances of free-living coralline algae (maerl): implications for European marine conservation. Biological Conservation, 120(2), 279-289.
Marine Scotland Consultation Webpage for Priority Marine Feature Consultation https://consult.gov.scot/marine-scotland/priority-marine-features
Wales
Barbera, C., Bordehore, C., Borg, J.A., Glemarec, M., Grall, J., Hall-, J. M., De La Huz, Ch., Lanfranco, E., Lastra, M., Mooree, P.G., Mora, J., Pita, M.E., Ramos-Espla, A.A., Rizzo, M., Sanchez-Mata, A., Seva, A., Schembri, P.J., and Valle, C. 2003. Conservation and management of northeast Atlantic and Mediterranean maerl beds. Aquatic Conserv: Mar. Freshw. Ecosyst. 13: S65-S76
Barnes, R.S.K., Coughlan, J. and Holmes, N.J. 1973. A preliminary survey of the macroscopic bottom fauna of the Solent, with particular reference to Crepidula fornicata and Ostrea edulis. Proc Malacol Soc Lond 40 253-275.
Blake, C. (2005). Use of fossil and modern coralline algae as a biogenic archive. PhD thesis, Queen's University Belfast
Bosence, D. & Wilson, J. (2003). Maerl growth, carbonate production rates and accumulation rates in the northeast Atlantic. Aquatic Conservation: Marine and Freshwater Ecosystems, 13, S21-S31.
Bunker, F. StP. D. & Camplin, M. D. 2007. A study of the Milford Haven maerl bed in 2005 using drop down video and diving. A report to the Countryside Council for Wales by MarineSeen. CCW Contract Science Report No. 769. Countryside Council for Wales, Bangor. 174pp + iii.
Bunker, F. StP. D. 2011. Monitoring of a maerl bed in the Milford Haven Waterway, Pembrokeshire, 2010. A report to the Countryside Council for Wales by MarineSeen. CCW Contract Science Report No. 979. 145pp + iii
Bunker, F. St. P. D., Diaz-Tapia, P. and Maggs, C. A. (in prep). Monitoring a maerl bed in Milford Haven between 2005 and 2016. NRW Evidence Report No: 213, Natural Resources Wales, Bangor
Chauvaud, L., Jean, F., Ragueneau, O. and Thouzeau, G. 2000. Long term variation of the Bay of Brest: benthic-pelagic coupling revisited. Marine Ecology Progress Series 200 35-48.
Eckard, R. S., Pellerin, B. A., Bergamaschi, B. A., Bachand, P. A. M., Bachand, S. M., Spencer, R. G. M., & Hernes, P. J. (2017). Dissolved organic matter compositional change and biolability during two storm runoff events in a small agricultural watershed. Journal of Geophysical Research: Biogeosciences, 122, 2634-2650. https://doi.org/10.1002/2017JG003935
Edwards P. 2014. Nutrient concentrations in the Milford Haven catchment area. Tech. memo: TMW14-09 Natural Resources Wales. NRW.
Grall, J. and Hall-Spencer, J.M. 2003. Problems facing maerl conservation in Brittany. Aquatic Conservation: Marine and Freshwater Ecosystems 13(S1) S55-S64.
Hall-Spencer J, Moore P. 2000. Scallop dredging has profound, long-term impacts on maerl habitats. ICES J Mar Sci. 57(5):1407-15.
Hebog. 2005. Milford Haven Maintenance Dredging Assessment: Biological & Sediment Characterisation. Report to Milford Haven Port Authority. Project No. HE1632.
Manac'h, N. 1995. La biodeposition de la crepidule (Crepidula fornicata). Impact sur l'ecosysteme de la rade de Brest. Rapport IFREMER-DEL no. 95-15.
Milford Haven Port Authority Dredging Strategy Document (Revision 2), June 2016, Anthony D. Bates Partnership LLP
MCCIP. 2017. Marine Climate Change Impacts: 10 years' experience of science to policy reporting. (Eds. Frost M, Baxter J, Buckley P, Dye S and Stoker B) Summary Report, MCCIP, Lowestoft, 12pp.doi: 10.14465/2017.arc10.000-arc

Moore, J. and Mercer, T. in prep. Monitoring Survey of Maerl in Milford Haven Waterway 2017. NRW Evidence Report No: 288, 26pp, Natural Resources Wales, Bangor.
NRW. 2017. NRW Actions Database. Internal Data source.
NRW. 2018. Pembrokeshire Marine / Sir Benfro Forol Special Area of Conservation: Indicative site level feature condition assessments 2018. NRW Evidence Report Series, Report No: 233, 67pp, NRW, Bangor.
Pembrokeshire Marine SAC. 2018. Available online: http://www.pembrokeshiremarinesac.org.uk/english/special/voluntary_sensitive_habitat_protection_zones.htm
RPS. 2006. Maerl Monitoring - Winter 2005 to Winter 2006. South Hook Jetty, Milford Haven. A report by RPS Planning & Development to South Hook LNG Terminal Company Ltd
RPS PTE. 2006. ROV Maerl Survey. South Hook. For Besix-Kier J.V. JER2580R200905JEv1.1. 20th September 2005.
RPS. 2008. Maerl Monitoring - Winter 2005 to Summer 2008. South Hook Jetty, Milford Haven. A report by RPS Planning & Development to South Hook LNG Terminal Company Ltd.
Scallop Fishing (Wales) (No.2) Order 2010 . Available online: http://www.legislation.gov.uk/wsi/2010/269/made
Thomas, R. April 2014. Diffuse Water Pollution in Wales. Issues, solutions and engagement for action. Natural Resources Wales. Accessed 29/09/2015. Available online: https://naturalresources.wales/media/4059/diffuse-water-pollution-in-wales.pdf)
Wilson, S., Blake, C., Berges, J. A. and Maggs, C.A. 2004. Environmental tolerances of free-living coralline algae (maerl): implications for European marine conservation. Biological Conservation 120. 283-293.
Maerl Article17 GIS processing notes 2018.doc, NRW unpublished
CCW sidescan. 2009. Side scan of the Milford Haven including the Milford Haven Maerl Bed. Data held internally in NRW.
NRW Thematic Action Plans. Available online: https://naturalresources.wales/about-us/our-projects/nature-projects/life-n2k-wales/life-n2k-thematic-action-plans/?lang=en [Accessed on 29/05/18]
N.Ireland
Wilson, S; Blake, C; Berges, J.A; Maggs, C.A., 2004. Environmental tolerances of free-living coralline algae (maerl): implications for European marine conservation. Biological Conservation 120 (283-293).
Hall-Spencer, J.M & Moore, P.G (2000). Scallop dredging has profound long-term impacts on maerl habitats. ICES Journal of Marine Science 57 (1407-1415).
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5. Range

5.1 Surface area (km²)	17600

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5.2 Short-term trend Period	2007-2018	
5.3 Short-term trend Direction	Uncertain (u)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used	Insufficient or no data available	
5.6 Long-term trend Period		
5.7 Long-term trend Direction		
5.8 Long-term trend Magnitude	a) Minimum	b) Maximum
5.9 Long-term trend Method used		
5.10 Favourable reference range	a) Area (km²)	
	b) Operator	
	c) Unknown	x
	d) Method	A quantitative area estimate for range cannot be provided, and based on our current understanding it is not possible to indicate favourable reference range.
5.11 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
5.12 Additional information	5.1-It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may not be reliable. Therefore, all records of maerl species in UK waters were used to create the distribution map and range map. The number of 10 x 10 grid squares containing maerl records were used to calculate the range. 5.3-Data is limited and it is not possible to directly compare with previous years due to difficulties with species identification. Therefore the short-term trend is uncertain. 5.11-It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may not be reliable. . Therefore, all records of maerl species in UK waters were used to create the range map for both maerl reports (S1376 and S1377). A different method was used for the 2013 reports as a combination of Lithothamnium corallioides and mixed maerl bed records were used to calculate range for S1376 and a combination of Phymatolithon calcareum species records and mixed maerl bed records were used to calculate range for S1377. For further details see JNCC website for 2019 UK Approach Document.	

6. Population

6.1 Year or period	2005-2017	
6.2 Population size (in reporting unit)	a) Unit	number of map 1x1 km grid cells (grids1x1)
	b) Minimum	
	c) Maximum	
	d) Best single value	604
6.3 Type of estimate	Best estimate	

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6.4 Additional population size (using population unit other than reporting unit)	a) Unit	
	b) Minimum	
	c) Maximum	
	d) Best single value	
6.5 Type of estimate		
6.6 Population size Method used	Based mainly on extrapolation from a limited amount of data	
6.7 Short-term trend Period	2005-2018	
6.8 Short-term trend Direction	Uncertain (u)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.10 Short-term trend Method used	Based mainly on expert opinion with very limited data	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		
6.13 Long-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	
6.14 Long-term trend Method used		
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size	
	b) Operator	
	c) Unknown	x
	d) Method	Based on our current understanding it is not possible to indicate favourable reference population.
6.16 Change and reason for change in population size	Genuine change Improved knowledge/more accurate data	
	The change is mainly due to:	Improved knowledge/more accurate data
6.17 Additional information		

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (for long-term survival)?	Unknown
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on expert opinion with very limited data	
7.3 Short-term trend Period	2005-2018	
7.4 Short-term trend Direction	Decreasing (-)	
7.5 Short-term trend Method used	Based mainly on expert opinion with very limited data	
7.6 Long-term trend Period		

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7.7 Long-term trend Direction

7.8 Long-term trend Method used

7.9 Additional information

7.4-The short-term trend was assessed by the four countries and the results were aggregated (see 2019 UK Approach Document). The short-term trend is identified as decreasing. In 2013, the trend was unknown, however, improved mapping methods and data availability have enabled a trend to be identified in 2019.
For methods see JNCC website for 2019 UK Approach Document and country-level reporting information.

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Agricultural activities generating marine pollution (A28)	M
Shipping lanes and ferry lanes transport operations (E02)	M
Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging) (E03)	H
Industrial or commercial activities and structures generating marine pollution (excluding marine macro- and micro-particular pollution) (F21)	M
Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (G01)	H
Marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats (G03)	H
Marine plant harvesting (G04)	M
Marine aquaculture generating marine pollution (G16)	M
Other invasive alien species (other then species of Union concern) (I02)	M
Mixed source marine water pollution (marine and coastal) (J02)	M

Threat	Ranking
Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging) (E03)	M
Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (G01)	M
Marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats (G03)	H
Marine plant harvesting (G04)	M
Marine aquaculture generating marine pollution (G16)	M
Other invasive alien species (other then species of Union concern) (I02)	H

Temperature changes (e.g. rise of temperature & extremes) due to climate change (N01)	H
Sea-level and wave exposure changes due to climate change (N04)	M
Change of habitat location, size, and / or quality due to climate change (N05)	H
Other climate related changes in abiotic conditions (N09)	M

8.2 Sources of information

8.3 Additional information

There were often more than ten pressures or threats (of high or medium importance) identified, and an aggregation method was used to identify the top ten of each. As a result the top ten lists for the feature may not correspond with each other. For example, a pressure may be in the reported top ten list, but may not appear in the top ten list of threats. This does not necessarily mean that the threat was not listed but instead it is in the extended list of threats that did not make the top ten but are detailed in the additional information section.
The following pressures were also identified, however, a maximum of 10 could be listed: D05- Development and operation of energy production plants (including bioenergy plants, fossil and nuclear energy plants), E07- Land, water and air transport activities generating marine pollution, F07- Sports, tourism and leisure activities, F20- Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro-particular pollution)
The following threats were also identified, however, a maximum of 10 could be listed: D05- Development and operation of energy production plants (including bioenergy plants, fossil and nuclear energy plants), E07- Land, water and air transport activities generating marine pollution, F07- Sports, tourism and leisure activities, F20- Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro-particular pollution), F21- Industrial or commercial activities and structures generating marine pollution (excluding marine macro- and micro-particular pollution), A28- Agricultural activities generating marine pollution, C01- Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell), C07- Dumping/depositing of dredged materials from marine extraction, D01- Wind, wave and tidal power, including infrastructure, E02- Shipping lanes and ferry lanes transport operations, J02- Mixed source marine water pollution (marine and coastal)
For methods see JNCC website for 2019 UK Approach Document and country-level reporting information.

9. Conservation measures

9.1 Status of measures

a) Are measures needed? Yes

b) Indicate the status of measures Measures identified and taken

9.2 Main purpose of the measures taken

Maintain the current range, population and/or habitat for the species

9.3 Location of the measures taken

Both inside and outside Natura 2000

9.4 Response to the measures

Medium-term results (within the next two reporting periods, 2019-2030)

9.5 List of main conservation measures

Reduce/eliminate marine pollution from agricultural activities (CA13)
Reduce impact of transport operation and infrastructure (CE01)
Manage/reduce/eliminate marine pollution from transport (CE04)
Reduce/eliminate marine pollution from industrial, commercial, residential and recreational areas and activities (CF07)
Reduce/eliminate marine contamination with litter (CF08)
Management of professional/commercial fishing (including shellfish and seaweed harvesting) (CG01)
Management of hunting, recreational fishing and recreational or commercial harvesting or collection of plants (CG02)
Reduce/eliminate marine pollution from marine aquaculture (CG08)
Other measures to reduce impacts from marine aquaculture infrastructures and operation (CG09)
Adopt climate change mitigation measures (CN01)

9.6 Additional information

This section is not a requirement for Annex V species, however, measures are in place and so have been reported in this section for extra information.
The following conservation measures were also identified, however, a maximum of 10 could be listed: CI03- Management, control or eradication of other invasive alien species, CC05- Adapt/manage fossil energy installation, facilities and operation, CF03- Reduce impact of outdoor sports, leisure and recreational activities, CF12- Other measures related to residential, commercial, industrial and recreational infrastructures, operations and activities, CC03- Adapt/manage renewable energy installation, facilities and operation, CC01- Adapt/manage extraction of non-energy resources, CF10- Manage changes in hydrological and coastal systems and regimes for construction and development.
For methods see JNCC website for 2019 UK Approach Document and country-level reporting information.

10. Future prospects

10.1 Future prospects of parameters

a) Range	Poor
b) Population	Poor
c) Habitat of the species	Unknown

10.2 Additional information

Future trends for each parameter were selected by the four countries and then aggregated to give a future trend for the UK (see 2019 UK Approach Document). Table 25 in the EU Guidelines was used to bring the future trend and conservation status of each parameter together to conclude on future prospects.
10.1a) The future prospects are poor because the future trend of range is thought to be negative and the conclusion for range is unknown. The future prospects were unknown in 2013, however, improved knowledge has enabled this field to be completed in 2019.
10.1b) The future prospects are poor because the future trend of population is thought to be negative and the conclusion for population is unknown. The future prospects were unknown in 2013, however, improved knowledge has enabled this field to be completed in 2019.
10.1c) The future prospects are unknown because the future trend for habitat for the species is thought to be stable and the conclusion for habitat for the species is unknown. The future prospects were also unknown in 2013.
For further details on approaches taken in this section see JNCC website for the 2019 UK Approach Document and relevant country-level reporting information.

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11. Conclusions

11.1. Range	Unknown (XX)
11.2. Population	Unknown (XX)
11.3. Habitat for the species	Unknown (XX)
11.4. Future prospects	Unfavourable - Inadequate (U1)
11.5 Overall assessment of Conservation Status	Unfavourable - Inadequate (U1)
11.6 Overall trend in Conservation Status	Unknown (x)
11.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status Improved knowledge/more accurate data Use of different method The change is mainly due to: Improved knowledge/more accurate data b) Overall trend in conservation status No change The change is mainly due to:
11.8 Additional information	

12. Natura 2000 (pSCIs, SCIs and SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network (on the biogeographical/marine level including all sites where the species is present)	a) Unit b) Minimum c) Maximum d) Best single value
12.2 Type of estimate	
12.3 Population size inside the network Method used	
12.4 Short-term trend of population size within the network Direction	
12.5 Short-term trend of population size within the network Method used	
12.6 Additional information	

13. Complementary information

13.1 Justification of % thresholds for trends	
13.2 Trans-boundary assessment	
13.3 Other relevant Information	It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may

not be reliable. Therefore, information and knowledge of all maerl species in UK waters were used to complete reports S1376 and S1377. Therefore, the reports are identical. Section 9 is not a requirement for Annex V species, however, conservation measures are in place and so have been reported on in this section for extra information.

Distribution Map

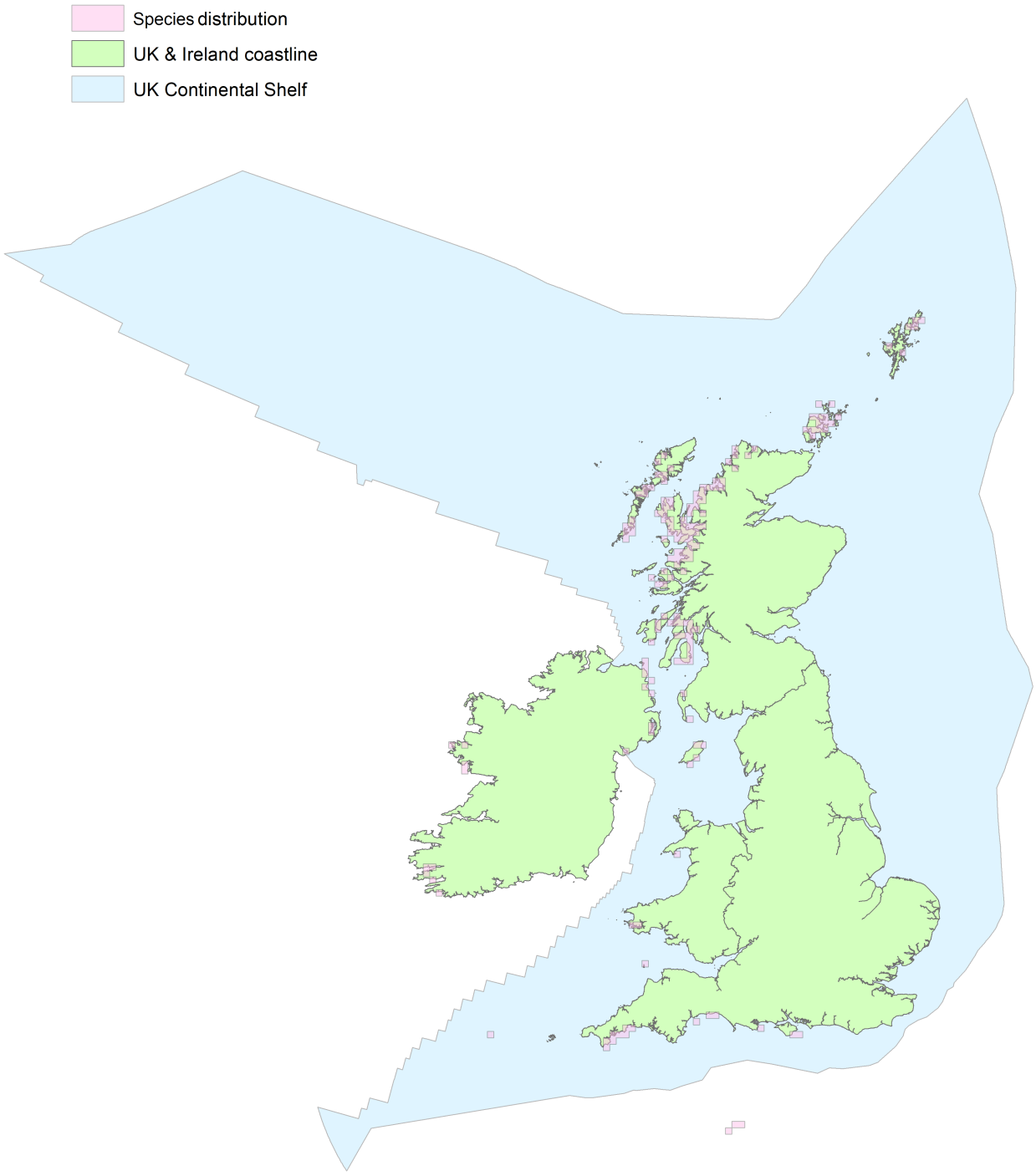

Figure 1: UK distribution map for S1376 - Maerl (*Lithothamnium corallioides*).

The 10km grid square distribution map is based on available species records within the current reporting period. For further details see the 2019 Article 17 UK Approach document.

Range Map

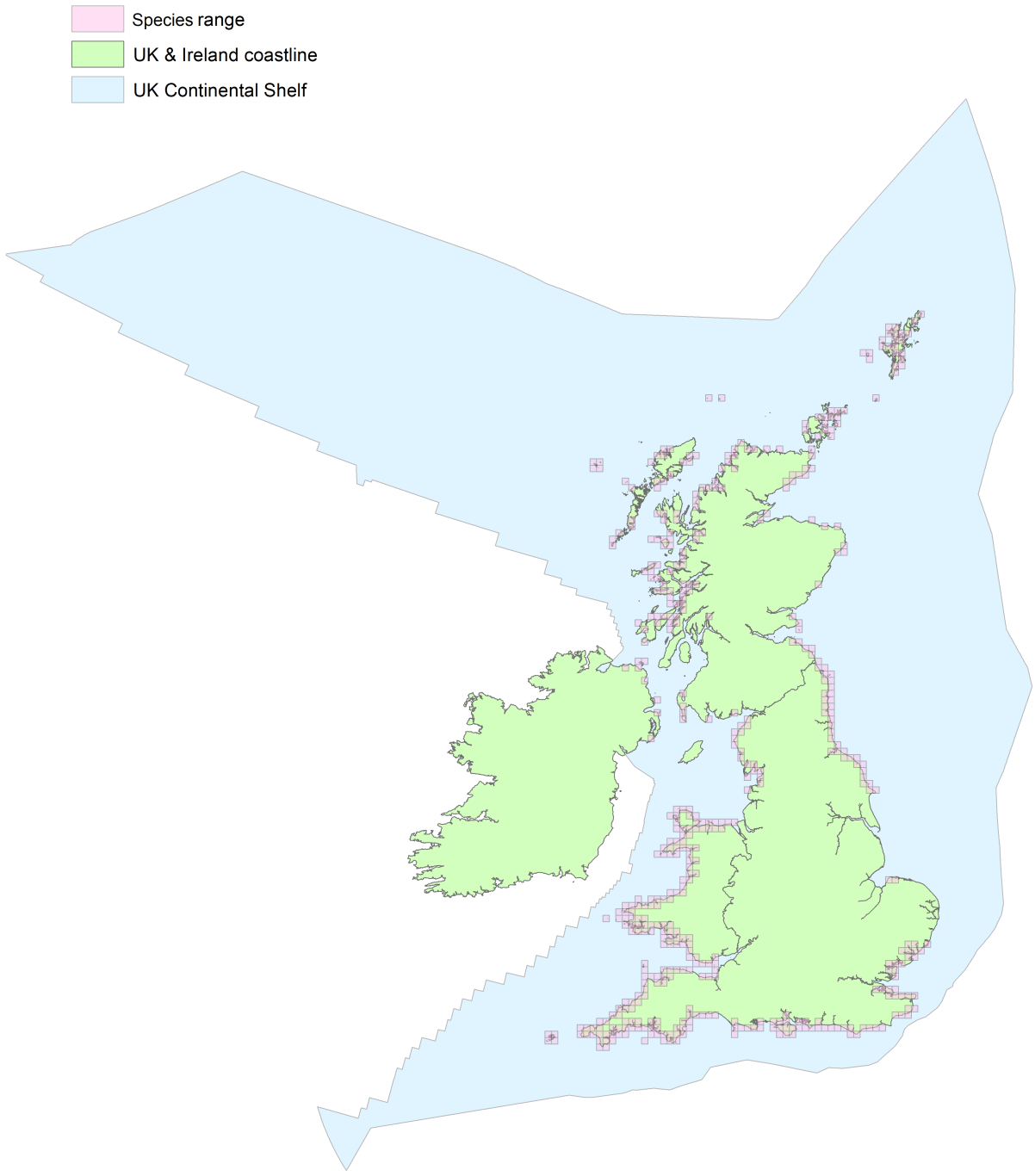

Figure 2: UK range map for S1376 - Maerl (*Lithothamnium corallioides*).

It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may not be reliable. Therefore, all records of maerl species in UK waters were used to create the distribution map and range map. The number of 10x10km grid squares containing maerl records were used to calculate the range.

Explanatory Notes

Species name: Lithothamnium coralloides (1376) Region code: MATL

Field label	Note
5.1 Surface area	It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may not be reliable. Therefore, all records of maerl species in UK waters were used to create the distribution map and range map. The number of 10 x 10 grid squares containing maerl records were used to calculate the range.
5.3 Short term trend; Direction	Data is limited and it is not possible to directly compare with previous years due to difficulties with species identification. Therefore the short-term trend is uncertain.
5.11 Change and reason for change in surface area of range	It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may not be reliable. . Therefore, all records of maerl species in UK waters were used to create the range map for both maerl reports (S1376 and S1377). A different method was used for the 2013 reports as a combination of Lithothamnium corallioides and mixed maerl bed records were used to calculate range for S1376 and a combination of Phymatolithon calcareum species records and mixed maerl bed records were used to calculate range for S1377.
6.2 Population size	It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may not be reliable. Therefore, all records of maerl species in UK waters were used to map population size for both maerl reports (S1376 and S1377).
6.8 Short term trend; Direction	The short-term trend of the population size was assessed by the four countries and the results were aggregated (see 2019 UK Approach Document). The short-term trend was identified as uncertain.
6.16 Change and reason for change in population size	It is recognised that it is extremely difficult to distinguish maerl species without genetic testing and previous identification of UK maerl species in surveys may not be reliable. Therefore, all records of maerl species in UK waters were used to create the population map for both maerl reports (S1376 and S1377). A different method was used for the 2013 reports as a combination of Lithothamnium corallioides and mixed maerl bed records were used to calculate population for report number S1376 and a combination of Phymatolithon calcareum species records and mixed maerl bed records were used to calculate population for report number S1377. The change in population size is, therefore, a result of a different reporting method.
7.4 Short term trend; Direction	The short-term trend was assessed by the four countries and the results were aggregated (see 2019 UK Approach Document). The short-term trend is identified as decreasing. In 2013, the trend was unknown, however, improved mapping methods and data availability have enabled a trend to be identified in 2019.
10.1 Future prospects of parameters	Future trends for each parameter were selected by the four countries and then aggregated to give a future trend for the UK (see 2019 UK Approach Document). Table 25 in the EU Guidelines was used to bring the future trend and conservation status of each parameter together to conclude on future prospects.
10.1a Future prospects of parameters - Range	The future prospects are poor because the future trend of range is thought to be negative and the conclusion for range is unknown. The future prospects were unknown in 2013, however, improved knowledge has enabled this field to be completed in 2019.
10.1b Future prospects of parameters - Population	The future prospects are poor because the future trend of population is thought to be negative and the conclusion for population is unknown. The future prospects were unknown in 2013, however, improved knowledge has enabled this field to be completed in 2019.

10.1c Future prospects of parameters - Habitat of the species	The future prospects are unknown because the future trend for habitat for the species is thought to be stable and the conclusion for habitat for the species is unknown. The future prospects were also unknown in 2013.
11.8 Additional information	11.1- Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is uncertain; and (ii)the Favourable Reference Range is unknown. 11.2-Conclusion on Population reached because: (i) the short-term trend direction in Population size is uncertain; and (ii) the Favourable Reference Population is unknown. 11.3- Conclusion on Habitat for the species reached because: (i) the area of occupied and unoccupied habitat is unknown and (ii) the habitat quality is unknown for the long-term survival of the species; and (iii) the short-term trend in area of habitat is decreasing. 11.4-Conclusion on Future prospects reached because: (i) the Future prospects for Range are poor; (ii) the Future prospects for Population are poor; and (iii) the Future prospects for Habitat for the species are unknown. The future prospects were unknown in 2013, however, improved knowledge allowed a conclusion to be drawn in 2019. 11.5-Overall assessment of Conservation Status is Unfavourable-inadequate because one or more of the conclusions are Unfavourable-inadequate. 11.6-Overall trend in Conservation Status is based on the combination of the short-term trends for Range - uncertain, Population - uncertain, and Habitat for the species - decreasing. 11.7-The overall assessment of Conservation Status has changed between 2013 and 2019 because the conclusion for future prospects has changed from unknown to unfavourable-inadequate. The changes have occurred as a result of improved knowledge and mapping methods. For methods see JNCC website for 2019 UK Approach Document and country-level reporting information.