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 species:

S1377 - Maerl (*Phymatolithon calcareum*)

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 species, 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 species 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; (iii) the field was not relevant to this species (section 12 Natura 2000 coverage for Annex II species) and/or (iv) the field was only relevant at UK-level (sections 9 Future prospects and 10 Conclusions).
- For technical reasons, the country-level future trends for Range, Population and Habitat for the species 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 11 for Annex II, IV and V species (Annex B)

NATIONAL LEVEL

1. General information

1.1 Member State	**UK (England information only)**
1.2 Species code	**1377**
1.3 Species scientific name	**Phymatolithon calcareum**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Maerl

2. Maps

2.1 Sensitive species	No
2.2 Year or period	
2.3 Distribution map	Yes
2.4 Distribution map Method used	
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

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

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5. Range

5.1 Surface area (km²)	1700	
5.2 Short-term trend Period		
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		
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 d) Method	
5.11 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
5.12 Additional information	Unlikely to have been a genuine change, increased range comes from an increase in the evidence base.	

6. Population

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6.1 Year or period		
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	90
6.3 Type of estimate	Best estimate	
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	2007-2018	
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	Insufficient or no data available	
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	
	d) Method	
6.16 Change and reason for change in population size	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 (to maintain the species at FCS)?	Unknown
	b) Is there a sufficiently large area of occupied AND unoccupied habitat of suitable quality (to maintain the species at FCS)?	Unknown

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	2007-2018
7.4 Short-term trend Direction	Unknown (x)
7.5 Short-term trend Method used	Insufficient or no data available
7.6 Long-term trend Period	
7.7 Long-term trend Direction	
7.8 Long-term trend Method used	
7.9 Additional information	Natural England only has detailed surveys of the Maerl Bed within one area, and so we have insufficient data to answer this question. In addition, there is insufficient evidence to understand the requirements of Maerl from the underlying habitat and therefore to define the area of unoccupied habitat.

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Shipping lanes and ferry lanes transport operations (E02)	H
Marine plant harvesting (G04)	M
Marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats (G03)	H
Mixed source marine water pollution (marine and coastal) (J02)	H
Other invasive alien species (other then species of Union concern) (I02)	M
Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging) (E03)	H

Threat	Ranking
Shipping lanes and ferry lanes transport operations (E02)	M
Marine fish and shellfish harvesting (professional, recreational) activities causing physical loss and disturbance of seafloor habitats (G03)	H
Mixed source marine water pollution (marine and coastal) (J02)	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)	H
Other climate related changes in abiotic conditions (N09)	H
Shipping lanes, ferry lanes and anchorage infrastructure (e.g. canalisation, dredging) (E03)	M

8.2 Sources of information	E02: Vessel anchoring is a current pressure on the condition of Maerl. This has

been reduced to a medium threat as future action should reduce this.
G04: The effects of historic harvesting of Maerl are still present in some areas. Recovery is slow, hence the current pressure ranking, but this is not seen as a future threat.
G03: Bottom towed fishing, which may be occurring outside of designated sites is very damaging to Maerl. Although byelaws exist to protect Maerl in some areas, there are other locations with no current management which is why it remains a future threat.
J02: Covers pollution including impacts from nutrient enrichment. Management measures are being put in place which should improve the long term condition of the feature.
I02: Crepidula fornicata are known to be present on Maerl beds. They give out sediment trails and slime that reduce water clarity and shells provide substrate for competing algae to grow which has a negative impact on the Maerl. There is no current effective management.
N01: Some species of maerl are more northerly / cold tolerant than others, so although maerl could grow more, with warming ocean temperatures the distribution of the species could change. The impact of this could be to disperse a maerl bed so it becomes too sparse to ecologically function.
N04: Not known as a current pressure. In the future could disperse maerl so bed becomes too sparse to ecologically function. Suspended sediment from storms may reduce growth capacity.
N09: Ocean acidification will cause a change in the oceanic pH , which Maerl is sensitive to as a coralline algae.
E03: Dredging of shipping lanes may cause siltation of Maerl beds. Future developments of shipping / sea transport infrastructure may introduce additional threats.

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

Management of professional/commercial fishing (including shellfish and seaweed harvesting) (CG01)
Reduce/eliminate marine pollution from agricultural activities (CA13)
Manage/reduce/eliminate marine pollution from transport (CE04)
Reduce impact of transport operation and infrastructure (CE01)
Reduce/eliminate marine contamination with litter (CF08)
Reduce/eliminate marine pollution from industrial, commercial, residential and recreational areas and activities (CF07)

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9.6 Additional information

10. Future prospects

10.1 Future prospects of parameters

a) Range

b) Population

c) Habitat of the species

10.2 Additional information

There has been historic damage to Maerl which is very slow to recover, and there are high threats in the future from ocean Ph changes and rising temperatures, therefore the outlook for range and population is negative. There is however available habitat for Maerl beds to form in the future, which is why future trends of 'habitat for the species' is judged to remain stable. There are a number of uncertainties affecting this judgement of future prospects; these include the application and interpretation of EU Caselaw to small scale developments within European Sites.

11. Conclusions

11.1. Range

11.2. Population

11.3. Habitat for the species

11.4. Future prospects

11.5 Overall assessment of Conservation Status

11.6 Overall trend in Conservation Status

11.7 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:

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

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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

Distribution Map

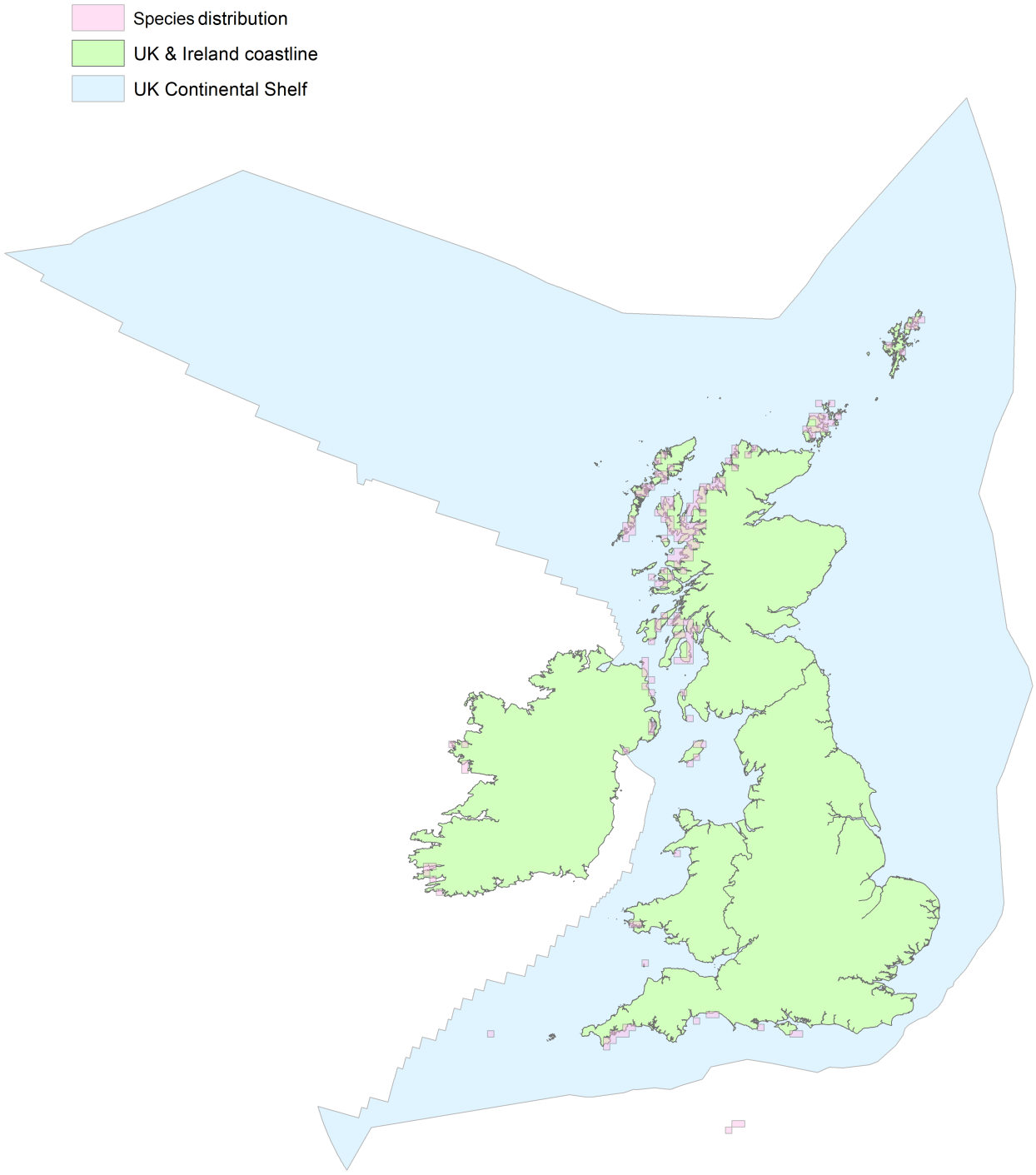

Figure 1: UK distribution map for S1377 - Maerl (*Phymatolithon calcareum*).

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

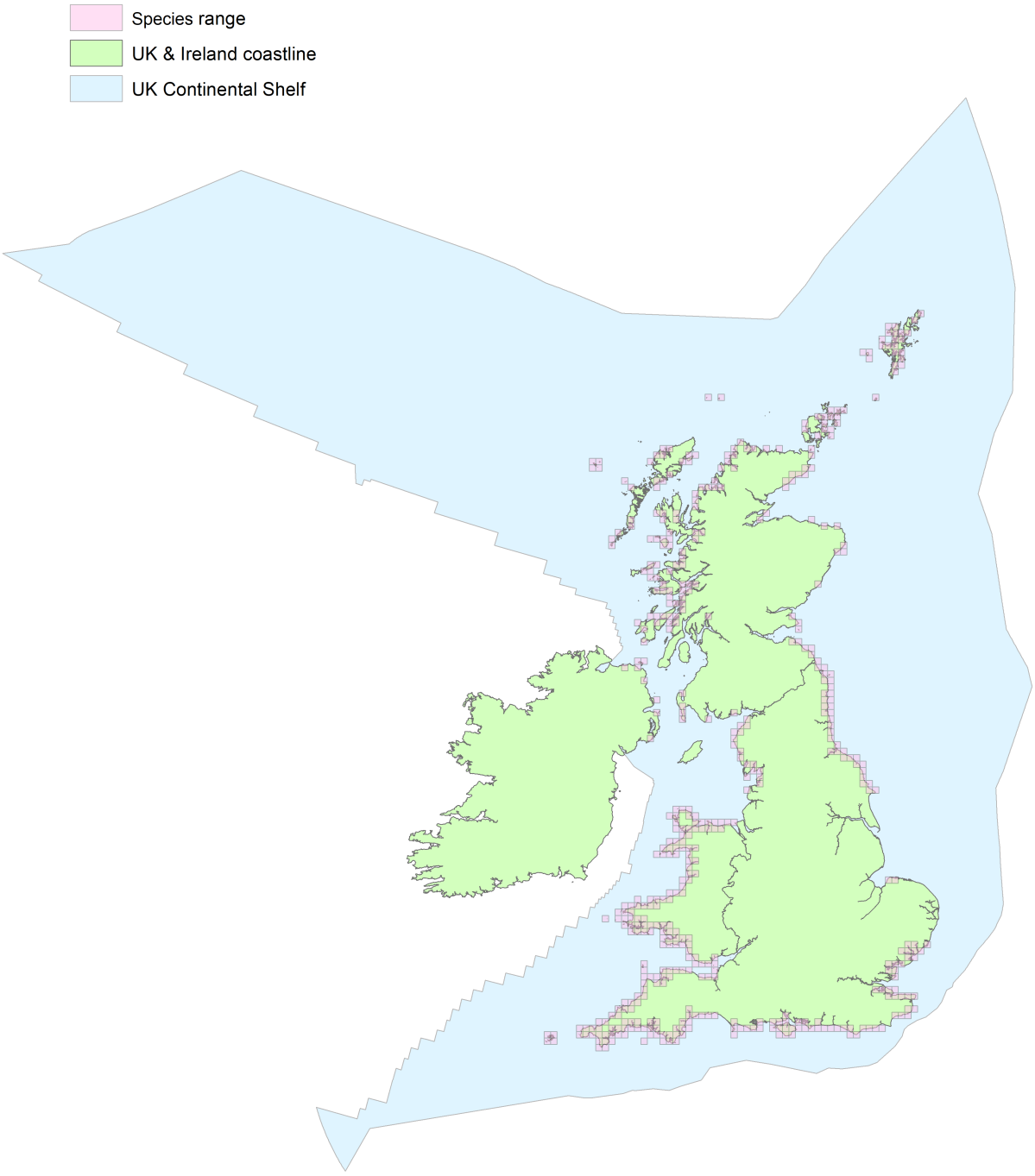

Figure 2: UK range map for S1377 - Maerl (*Phymatolithon calcareum*).

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: Phymatolithon calcareum (1377) Region code: MATL

Field label	Note
7.1 Sufficiency of area and quality of occupied habitat	Natural England only has detailed surveys of the Maerl Bed within one area, and so we have insufficient data to answer this question. In addition, there is insufficient evidence to understand the requirements of Maerl from the underlying habitat and therefore to define the area of unoccupied habitat.
7.2 Sufficiency of area and quality of occupied habitat; Method used	Natural England only has detailed surveys of the Maerl Bed within one area, and so we have insufficient data to answer this question. In addition, there is insufficient evidence to understand the requirements of Maerl from the underlying habitat and therefore to define the area of unoccupied habitat.
7.3 Short term trend; Period	Natural England only has detailed surveys of the Maerl Bed within one area, and so we have insufficient data to answer this question. In addition, there is insufficient evidence to understand the requirements of Maerl from the underlying habitat and therefore to define the area of unoccupied habitat.
7.4 Short term trend; Direction	Natural England only has detailed surveys of the Maerl Bed within one area, and so we have insufficient data to answer this question. In addition, there is insufficient evidence to understand the requirements of Maerl from the underlying habitat and therefore to define the area of unoccupied habitat.
7.5 Short term trend; Method used	Natural England only has detailed surveys of the Maerl Bed within one area, and so we have insufficient data to answer this question. In addition, there is insufficient evidence to understand the requirements of Maerl from the underlying habitat and therefore to define the area of unoccupied habitat.
8.1 Characterisation of pressures/ threats	E03: Dredging of shipping lanes may cause siltation of Maerl beds. Future developments of shipping / sea transport infrastructure may introduce additional threats.
8.1 Characterisation of pressures/ threats	N09:Ocean acidification will cause a change in the oceanic pH , which Maerl is sensitive to as a coralline algae.
8.1 Characterisation of pressures/ threats	N04: Not known as a current pressure. In the future could disperse maerl so bed becomes too sparse to ecologically function. Suspended sediment from storms may reduce growth capacity.
8.1 Characterisation of pressures/ threats	N01: Some species of maerl are more northerly / cold tolerant than others, so although maerl could grow more, with warming ocean temperatures the distribution of the species could change. The impact of this could be to disperse a maerl bed so it becomes too sparse to ecologically function.
8.1 Characterisation of pressures/ threats	I02: Crepidula fornicata are known to be present on Maerl beds. They give out sediment trails and slime that reduce water clarity and shells provide substrate for competing algae to grow which has a negative impact on the Maerl. There is no current effective management.
8.1 Characterisation of pressures/ threats	J02: Covers pollution including impacts from nutrient enrichment. Management measures are being put in place which should improve the long term condition of the feature.
8.1 Characterisation of pressures/ threats	G03: Bottom towed fishing, which may be occurring outside of designated sites is very damaging to Maerl. Although byelaws exist to protect Maerl in some areas, there are other locations with no current management which is why it remains a future threat.
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8.1 Characterisation of pressures/ threats	E02: Vessel anchoring is a current pressure on the condition of Maerl. This has been reduced to a medium threat as future action should reduce this.
10.1 Future prospects of parameters	There has been historic damage to Maerl which is very slow to recover, and there are high threats in the future from ocean Ph changes and rising temperatures, therefore the outlook for range and population is negative. There is however available habitat for Maerl beds to form in the future, which is why future trends of 'habitat for the species' is judged to remain stable. There are a number of uncertainties affecting this judgement of future prospects; these include the application and interpretation of EU Caselaw to small scale developments within European Sites.