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:

S1364 - Grey seal (*Halichoerus grypus*)

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	**1364**
1.3 Species scientific name	**Halichoerus grypus**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Grey seal

2. Maps

2.1 Sensitive species	No
2.2 Year or period	1991-2018
2.3 Distribution map	Yes
2.4 Distribution map Method used	Complete survey or a statistically robust estimate
2.5 Additional maps	No

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

3.1 Is the species taken in the wild/exploited?	Yes	
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	Yes
	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	Yes
	f) regulation of the purchase, sale, offering for sale, keeping for sale or transport for sale of specimens	Yes
	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

As the conservation status of grey seal is 'Favourable' in all marine regions, section 3.3-3.5 are not required to be filled in. Numbers of takes requested in seal management applications (license request), the actual numbers granted (licence granted), and the total number of grey seals shot each year (2013-2018) are available on the Scottish Government website.

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

Band, B., Sparling, C., Thompson, D., Onoufriou, J., San Martin, E. & West, N. (2016). Refining Estimates of Collision Risk for Harbour Seals and Tidal Turbines Scottish Marine and Freshwater Science Volume 7 Number 17 Published by Marine Scotland Science ISSN: 2043-7722 DOI: 10.7489/1786-1

Baines M.E., Earl S.J., Pierpoint C.J.L. and Poole J. (1995) The west Wales grey seal census. CCW Contract Science Report, no. 131, 238 pp.

Bishop, A. M., Onoufriou, J., Moss, S., Pomeroy, P. P., & Twiss, S. D. (2016). Cannibalism by a male grey seal (Halichoerus grypus) in the North Sea. Aquatic Mammals, 42(2), 137-143. http://dx.doi.org/ 10.1578/ AM.42.2.2016.137

Boyle, D. (2011). Grey Seal Breeding Census: Skomer Island. CCW Regional Report CCW/WW/11/1. 2011.

Brownlow, A., Onoufriou, J., Bishop, A., Davison, N., & Thompson, D. (2016). Corkscrew seals: Grey seal (Halichoerus grypus) infanticide and cannibalism may indicate the cause of spiral lacerations in seals. PLoS ONE, 11(6): 1-14. https://doi.org/10.1371/journal.pone.0156464

Brownlow, A. & Reid, B. (2009:2016). Scottish Marine Animal Stranding Scheme Annual Report (1st January to 31st December).

Bull, J.C., Borger, L., Banga, R., Franconi, N., Lock, K.M., Morris, C.W., Newman, P.B., & Stringell, T.B. (2017a). Temporal trends and phenology in grey seal (Halichoerus grypus) pup counts at Marloes Peninsula, Wales. NRW Evidence Report No: 155, 23pp, Natural Resources Wales, Bangor

Bull, J.C., Borger, L., Franconi, N., Banga, R., Lock, K.M., Morris, C.W., Newman, P.B., & Stringell, T.B. (2017b). Temporal trends and phenology in grey seal (Halichoerus grypus) pup counts at Skomer, Wales. NRW Evidence Report No: 217, 23pp, Natural Resources Wales, Bangor

DG Environment. (2017). Reporting under Article 17 of the Habitats Directive: Explanatory notes and guidelines for the period 2013-2018. Brussels. Pp 188 http://cdr.eionet.europa.eu/help/habitats_art17

Evans. D and Marvela, A. (2013). Assessment and reporting under Article 17 of the Habitats Directive: Explanatory notes and Guidelines. 123pp. https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp

Hammond, P. S., & Wilson, L. J. (2016). Grey Seal Diet Composition and Prey Consumption. Scottish Marine and Freshwater Science, 7(20):1-28. https://doi.org/10.7489/1799-1

Hastie, G.D., Russell, J.F., Lepper, F., Elliot, F., Wilson, B., Benjamins, S., & Thompson, D. (2017) Harbour seals avoid tidal turbine noise: Implications for collision risk. Journal of Applied Ecology. 55(2):684-693. Doi: https://doi.org/10.1111/1365-2664.12981

Hastie, G. D., Russell, D. J., McConnell, B., Moss, S. , Thompson, D. , Janik, V. M. and Punt, A. (2015), Sound exposure in harbour seals during the installation of an offshore wind farm: predictions of auditory damage. J Appl Ecol, 52: 631-640. doi:10.1111/1365-2664.12403

Jones, E. L., McConnell, B.J, Duck, C.D., Morris, C.D., Hammond, P.S., Russell, D.J.F. And Matthiopoulos, J. 2012 Marine distribution of grey and harbour seals around the UK. SCOS Briefing paper 12/06

Lock, K., Newman, P., Burton, M. & Jones, J. (2017). Skomer MCZ Grey Seal Survey, Marloes Peninsula 1992 - 2016. NRW Evidence Report 195

Morgan, L.H., Morris, C.W., & Stringell, T.B. (2018). Grey Seal Pupping Phenology on Ynys Dewi / Ramsey Island, Pembrokeshire. NRW Evidence Report No: 156, 22 pp, Natural Resources Wales, Bangor

Morris, CW, Brownlow, A, Deaville, R, Jepson, P, Perkins, M, Penrose, R, Stringell, T. (In Prep). Grey Seal unusual mortality in Wales: A summary of reported cases from 2012-2017. NRW Evidence Report No: 294, Natural Resources Wales, Bangor.

Northridge, S., Coram, A., & Gordon, J. (2013). Investigations on Seal Depredation at Scottish Fish Farms. Edinburgh: Scottish Government. Available at: https://synergy.st-andrews.ac.uk/smru/files/2015/10/1758.pdf

Northridge, S., Kingston, A. & Thomas, L. (2009:2016). Annual report on the implementation of Council Regulation (EC) No 812/2004. Final report to DEFRA. Sea Mammal Research Unit, St. Andrews, UK.

Ocean Ecology Limited. (2018). An Estimation of grey seal Halichoerus grypus pup production within the Pen Llyn a'r Sarnau SAC. Technical Note. Prepared for Natural Resources Wales. OEL_NRWSLP0817_TCN_V01.

Onoufriou, J., & Thompson, D. (2014). Testing the hypothetical link between shipping and unexplained seal deaths: Final report. Marine Mammal Scientific Support Research Programme MMSS/001/11. Available at: http://www.bdmlr.org.uk/uploads/documents/reports/Corkscrew Seals Report.pdf

Russell, D. J. F., Jones, E. L. and Morris, C. D. (2017). Updated Seal Usage Maps: Estimated at-sea Distribution of Grey and Harbour Seals. Scottish Marine and Freshwater Science Vol 8 No 25. pp. 25. DOI: 10.7489/2029-1. Accessed June 2018 from; https://data.marine.gov.scot/dataset/estimated-sea-distribution-grey-and-harbour-seals-updated-maps-2017

SCOS, (2016). Scientific Advice on Matters Related to the Management of Seal

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Populations: 2016. http://www.smru.st-andrews.ac.uk/files/2017/04/SCOS-2016.pdf
SCOS, (2017). Scientific Advice on Matters Related to the Management of Seal Populations: 2017. http://www.smru.st-andrews.ac.uk/files/2018/01/SCOS-2017.pdf
Strong P.G., Lerwill J., Morris S.R. and Stringell T.B. (2006) Pembrokeshire marine SAC grey seal monitoring 2005. CCW Marine Monitoring Report, no. 26, unabridged version (restricted under license), 54 pp.
Westcott S.M and Stringell T.B. (2003) Grey seal pup production for North Wales, 2002. CCW Marine Monitoring Report, no.5, 57 pp.
Westcott, S, M & Stringell, T.B. (2004). Grey seal distribution and abundance in North Wales, 2002-2003. Bangor, CCW Marine Monitoring Report No: 13. 80pp.

5. Range

5.1 Surface area (km²)	625484	
5.2 Short-term trend Period	1988-2018	
5.3 Short-term trend Direction	Stable (0)	
5.4 Short-term trend Magnitude	a) Minimum	b) Maximum
5.5 Short-term trend Method used	Based mainly on extrapolation from a limited amount of data	
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)	625484
	b) Operator	
	c) Unknown	
	d) Method	Range estimated for the current period matches the range given in the 2013 reporting round (excluding analytic differences).
5.11 Change and reason for change in surface area of range	Use of different method	
	The change is mainly due to:	Use of different method
5.12 Additional information	Range estimated for the current period matches the range given in the 2013 reporting round (excluding analytical differences). This range is considered sufficient and includes all significant ecological variations to ensure survival of the species. Areas within the range are utilised to a lesser or greater extent.	

6. Population

6.1 Year or period	2017	
6.2 Population size (in reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	118500
	c) Maximum	155200
	d) Best single value	138700

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6.3 Type of estimate	95% confidence interval	
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	Complete survey or a statistically robust estimate	
6.7 Short-term trend Period	2005-2017	
6.8 Short-term trend Direction	Increasing (+)	
6.9 Short-term trend Magnitude	a) Minimum b) Maximum c) Confidence interval	
6.10 Short-term trend Method used	Complete survey or a statistically robust estimate	
6.11 Long-term trend Period	1993-2017	
6.12 Long-term trend Direction	Increasing (+)	
6.13 Long-term trend Magnitude	a) Minimum b) Maximum c) Confidence interval	
6.14 Long-term trend Method used	Complete survey or a statistically robust estimate	
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size b) Operator c) Unknown d) Method	73100 with unit number of individuals (i) The favourable reference value (FRV) for population is equivalent to the FRV set in the UKÔÇÖs 3rd reporting round (2013) and is based on the modelled population estimate for grey seal abundance in 1992 when the Habitats Directive was adopted. (See species audit text for further detail)
6.16 Change and reason for change in population size	Genuine change The change is mainly due to:	Genuine change
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)? b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	Yes
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on extrapolation from a limited amount of data	
7.3 Short-term trend Period	2007-2018	

7.4 Short-term trend Direction	Stable (0)
7.5 Short-term trend Method used	Based mainly on expert opinion with very limited data
7.6 Long-term trend Period	
7.7 Long-term trend Direction	
7.8 Long-term trend Method used	
7.9 Additional information	

8. Main pressures and threats

8.1 Characterisation of pressures/threats

Pressure	Ranking
Management of fishing stocks and game (G08)	M
Bycatch and incidental killing (due to fishing and hunting activities) (G12)	M
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	M

Threat	Ranking
Wind, wave and tidal power, including infrastructure (D01)	M
Management of fishing stocks and game (G08)	M
Bycatch and incidental killing (due to fishing and hunting activities) (G12)	M
Interspecific relations (competition, predation, parasitism, pathogens) (L06)	M
Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiote, etc.) due to climate change (N07)	M

8.2 Sources of information	
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		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

Reducing the impact of (re-) stocking for fishing and hunting, of artificial feeding and predator control (CG03)

9.6 Additional information	Thirteen Special Areas of Conservation (SAC) have been designated with grey seals as a qualifying feature (grade A-C), which are listed on the JNCC website:

(UK0017072) Berwickshire and North Northumberland Coast (England inshore & Scotland inshore); (UK0012712) Cardigan Bay/ Bae Ceredigion (Wales inshore); (UK0017096) Faray and Holm of Faray (Scotland inshore); (UK0030170) Humber Estuary (England inshore); (UK0030172) Isle of May (Scotland inshore); (UK0013694) Isles of Scilly Complex (England inshore); (UK0013114) Lundy (England inshore); (UK0012694 Monach Islands (Scotland inshore); (UK0012696) North Rona (Scotland inshore); (UK0013116) Pembrokeshire Marine/ Sir Benfro Forol (Wales inshore); (UK0013117) Pen Llyn a`r Sarnau/ Lleyn Peninsula and the Sarnau (Wales inshore); (UK0030384) The Maidens (Northern Ireland inshore); (UK0030289) Treshnish Isles (Scotland inshore).Other sites (MPAs) designated under domestic legislation in the UK (e.g. Marine Conservation Zones (MCZ); Site of Special Scientific Interest (SSSI) Area of Special Scientific Interest (ASSI)) have grey seals as 'features' and contribute to the conservation and management of the species. Furthermore, under Section 117 of the Marine (Scotland) Act 2010, Scottish Ministers, consulting with the Natural Environment Research Council (NERC), are permitted to designate specific seal haul-out sites to provide additional protection for seals from intentional or reckless harassment. 194 seal haul-out sites, including key breeding sites along with a number of additional specific sites proposed by respondents, were designated through The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 with the addition of the River Ythan in 2017. https://www.gov.scot/Topics/marine/marine-environment/species/19887/20814/haulouts. The UK has been committed to supporting several international agreements and conventions on the conservation of marine mammals and the marine environment in general. For example: The Convention on Migratory Species (CMS); the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). The UK Government funds a national strandings scheme, ongoing since 1990, with a Scottish arm (Scottish Marine Animal Strandings Scheme) which monitors causes of death in seals.

10. Future prospects

10.1 Future prospects of parameters

a) Range	Good
b) Population	Good
c) Habitat of the species	Good

10.2 Additional information

These results are based on the current conservation status for each parameter combined with the future trend for each parameter. The future trend is an estimate of how the parameter is likely to progress into the future, using the current trend as a baseline and considering the balance between threats and measures to assess how these are likely to affect that trend over the next two reporting cycles (12 years). For grey seal, the future trend of Range is assessed as Overall Stable. As the current conservation status for Range is Favourable for this species, the future prospects are considered Good.
The future trend for the Population parameter is assessed as Positive - increasing 22641% (one percent or less) per year on average largely due to the current trajectory of the population and no indication of any increase in threats. As the current conservation status of this parameter is Favourable, the future prospects are assessed as Good for this species.
The future trend for the Habitat parameter is assessed as Overall Stable indicating a balance between measures and threats; as the current conservation status for Range is Favourable for this species, the future prospects are considered Good.

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11. Conclusions

11.1. Range	Favourable (FV)
11.2. Population	Favourable (FV)
11.3. Habitat for the species	Favourable (FV)
11.4. Future prospects	Favourable (FV)
11.5 Overall assessment of Conservation Status	Favourable (FV)
11.6 Overall trend in Conservation Status	Improving (+)
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	Conclusion on Range reached because: (i) the short-term trend direction in Range surface area is stable and (ii) the current Range surface area is approximately equal to the Favourable Reference Range. Conclusion on Population reached because: (i) the short-term trend direction in Population size is increasing and (ii) the current Population size is greater than the Favourable Reference Population. Conclusion on Habitat for the species reached because: (i) the area of habitat is sufficiently large and (ii) the habitat quality is suitable for the long-term survival of the species; and (iii) the short-term trend in area and quality of habitat is stable. Conclusion on Future prospects reached because: (i) the Future prospects for Range are good; (ii) the Future prospects for Population are good; and (iii) the Future prospects for Habitat for the species are good. Overall assessment of Conservation Status is Favourable because all of the conclusions are Favourable. Overall trend in Conservation Status is based on the combination of the short-term trends for Range - stable, Population - increasing, and Habitat for the species - stable. The conclusion reached on the Overall trend is as prescribed within the rules of the EU guidelines. The grey seal continues to be in favourable conservation status with good future prospects and an increasing population trend.

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	number of individuals (i)
	b) Minimum	
	c) Maximum	
	d) Best single value	48000
12.2 Type of estimate	Best estimate	

12.3 Population size inside the network Method used	Complete survey or a statistically robust estimate
12.4 Short-term trend of population size within the network Direction	Stable (0)
12.5 Short-term trend of population size within the network Method used	Complete survey or a statistically robust estimate
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

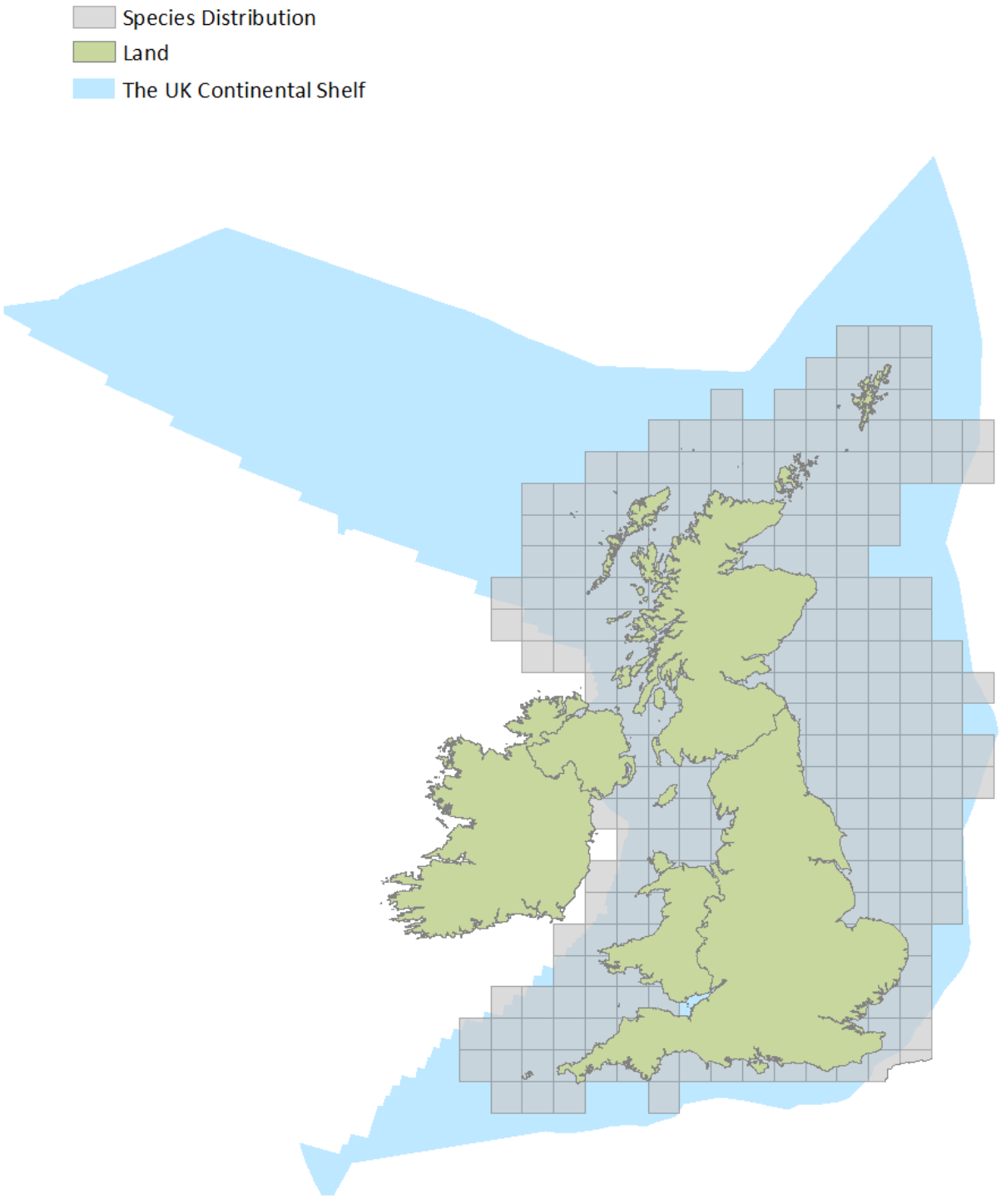

Figure 1: UK distribution map for S1364 - Grey seal (*Halichoerus grypus*).

The 50km 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

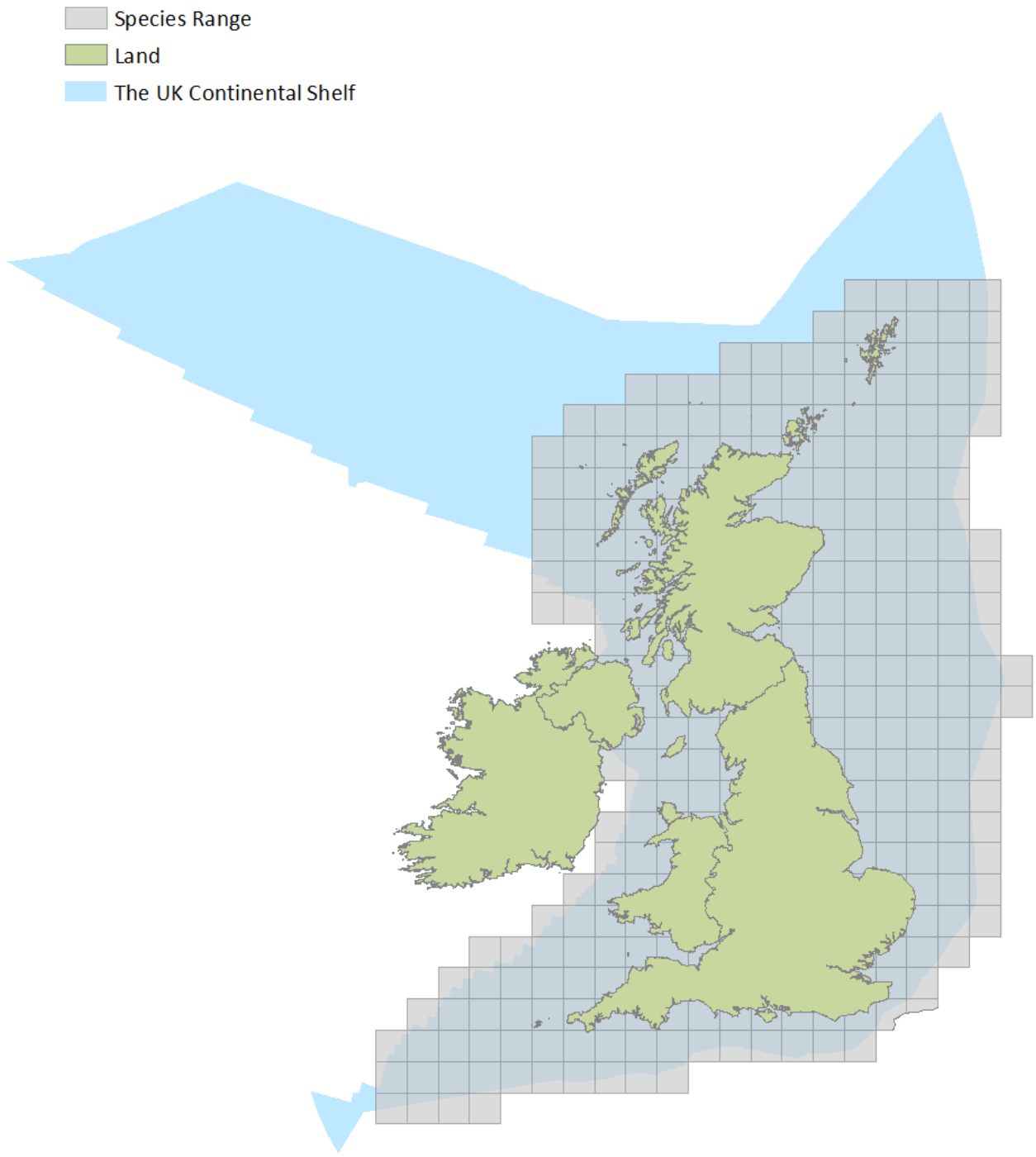

Figure 2: UK range map for S1364 - Grey seal (*Halichoerus grypus*).

The assessment of range in the current report uses the same range as the previous report (2007-2012) as the distribution of Grey seal (*Halichoerus grypus*) is not thought to have changed since the previous reporting round. The 2007-2012 range was based on interpolation of distribution data collated for the

2007-2012 report, predicted Grey seal (*Halichoerus grypus*) distribution obtained through modelling of at-sea (telemetry) and haul-out data collected from 1988 to 2012 (Jones et al., 2012) and expert judgement was used to predict where the likely boundaries of the species range occur. The range was developed to represent the greatest likely extent of the species considering year-round distribution of haul-out and at-sea data. A 50x50km grid was used and the projection is ETRS LAEA 5210.

Explanatory Notes

Species name: Halichoerus grypus (1364)

Field label	Note
2.1 Sensitive species	This refers to sensitivities around publishing distribution data.
2.3 Distribution map	The UK has over a third of the world's breeding population of grey seals. Approximately 88% of UK grey seals breed at colonies in Scotland with the main concentrations in the Outer Hebrides and Orkney. There are also breeding colonies in Shetland, on the north and east coasts of mainland Britain and in south west England and Wales. Grey seals range widely to forage and foraging trips can last up to 30 days. Telemetry data suggests that most foraging occurs within 100km of a haul-out site, but this species is known to forage several hundred kilometres offshore. As a result, they have a much wider distribution at sea compared with harbour seals (SCOS, 2017). The distribution map (Annex A) is based on a combination of confirmed sightings data from 2013-2018 (including confirmed at-sea sightings and terrestrial count data from ORCA and the National Biodiversity Network [NBN]) and predicted grey seal distribution obtained through modelling terrestrial count data and telemetry data collected from 1991 to 2016 (Russell et al., 2017). The distribution is based on the best available data for this species and is considered statistically robust. It should be noted that seals can be difficult to spot at sea, and information relating to the at-sea distribution is heavily reliant on telemetry data. The derived distribution map is a good representation of grey seal distribution in UK waters due to a combination of terrestrial and at-sea counts and modelling techniques.
2.5 Additional maps	The range map for grey seals in UK waters is shown in Annex B. No evidence of change since the 2013 reporting round. The 2013 range was based on interpolation of distribution data collated for the 2013 report. Predicted grey seal distribution was obtained through modelling of at-sea (telemetry) and haul-out data collected from 1988 to 2012 (Jones et al., 2012) and expert judgement was used to predict where the likely boundaries of the species range occured. The range represents the greatest likely extent of the species considering year-round distribution of haul-out and at-sea data.
3.1 Is the species take in the wild/ exploited	Grey seal is an Annex V species and can be shot legally in UK waters to prevent damages to fisheries or fish-farms, and to protect the welfare of farmed fish. In Scotland, under the Marine (Scotland) Act 2010, the shooting of seals is only legal under specific license, and licence holders are required to report takes including nil returns. The same applies in Northern Ireland under the Wildlife (Northern Ireland) Order 1985 (as amended). In England and Wales, the Conservation of Seals Act 1970 prohibits the shooting of seals during the closed season (1st September to 1st December for grey seal). The Conservation of Seals (England) Order 1999 protects grey and harbour seals on the east coast of England, from the Border at Berwick to Newhaven Pier. However, Section 9 of the Conservation of Seals Act 1970 details general exceptions whereby a seal can be shot legally during the closed season or in an area where the killing or taking of seals is prohibited. Under 9.(1)(c) fisherman are permitted to kill a seal in order to prevent it causing damage to their fishing tackle, net, or fish in their net, provided the seal is in the vicinity of the equipment at the time of shooting. Shootings in England and Wales are not required to be reported.

Species name: Halichoerus grypus (1364) Region code: MATL

Field label	Note
5.3 Short term trend; Direction	Range for the current report (625,484km2) is equal to the range presented in the UK's 3rd reporting round (627,999km2).

5.5 Short term trend; Method used	The 2013 range was based on interpolation of distribution data collated for the 2013 report, predicted grey seal distribution obtained through modelling of telemetry data and terrestrial count data collected from 1988 to 2012 (Jones et al., 2012) and expert judgement was used to predict where the likely boundaries of the species range occur. The distribution data collated for the current report was compared with the predicted range from the 2013 report. As there was no discernible difference between the reporting rounds, the range is considered stable.
5.10 Favourable reference range	The favourable reference range is approximately equal to the surface area given in Section 5.1
5.11 Change and reason for change in surface area of range	Range is considered stable but there is a minor difference in the range value between this report and the 3rd reporting round (2013). The difference is due to the use of a slightly different grid template and does not represent an actual difference in the species range between reporting rounds.
6.1 Year or Period	The population estimate is taken from the report of the Special Committee on Seals (SCOS) (SCOS-BP, 18/04) report and is the modelled estimate of total grey seal abundance in UK waters for the year 2017. The estimate of the total population size for regularly monitored sites is derived from Bayesian state-space models of grey seal population dynamics to estimate population size from the pup production estimates, and independent total population estimates from 2008 and 2014 (SCOS-BP, 18/04).
6.2 Population size	The current estimate is based on pup-count survey estimates from 1984-2016, and independent estimate of total adult population for 2008 and 2014. These values were fed into the model to give a total (adult) population estimate for 2017 and is presented as a posterior mean (135,700) with 95% credible intervals (118,500 - 155,200). Best single value is the point estimate.
6.6 Population size; Method used	The estimate of the total population size is derived from Bayesian state-space models of grey seal population dynamics to estimate (total adult) population size from pup production estimates, and independent total population estimates (SCOS, 2018). Biennial surveys are conducted to provide counts of grey seal pups across the major grey seal aggregations in the UK. The independent estimates are derived from counts made during the harbour seal moult surveys which are conducted across a ~ 5-year period. These surveys give independent estimates of total adult grey seal abundance before the breeding season and are used to inform the state-space model. The estimate is of total grey seal abundance for the regularly monitored colonies, accounting for ~ 90 % of grey seals breeding in the UK. An estimated 10 % breed at sites which are not regularly monitored, and these are not included in the model (SCOS-BP, 18/04) or in the values given.
6.8 Short term trend; Direction	The model provided estimates of population size at the beginning of each breeding season from 1984-2017 and these values were presented in SCOS (2018) (SCOS-BP, 18/04). These data show an increasing trend (Figure 1, Annex C; for full assessment see SCOS-BP, 18/04).
6.10 Short term trend; Method used	Estimates of population size for regularly monitored colonies were derived using the Bayesian state-space models of grey seal population dynamics to estimate population size from the pup production estimates and independent estimates of total adult abundance. Values for the period 2005-2017 were used to assess the short-term trend in grey seal abundance. The assessment only includes colonies which are regularly monitored, but these are considered to be representative of the trend in the UK population.
6.12 Long term trend; Direction	Data show an increasing trend over the long-term for grey seal, though the rate of increase appears to be diminishing in recent years (Figure 2, Annex C; SCOS, 2018).

6.14 Long term trend; Method used	Estimates of population size were derived using the Bayesian state-space models of grey seal population dynamics to estimate population size from the pup production and independent estimates. Values for the period 1993-2017 were used to assess the long-term trend in grey seal abundance (SCOS-BP, 18/04; see SCOS, 2018). The assessment only includes colonies which are regularly monitored, but these are representative of the trend in the UK population.
6.15 Favourable reference population	The favourable reference value (FRV) for population is equivalent to the FRV set in the UK's 3rd reporting round (2013) and is based on the modelled population estimate for grey seal abundance in 1992 when the Habitats Directive was adopted. However, model parameters are revisited annually by SCOS which often leads to changes in the estimated population abundance values as the methods develop. As a result, the FRV is being updated in line with methodological changes in how these estimates are derived. The estimate for abundance in 1992 is 73,100 (95% CI 64,400 - 85,300), and replaces the previous estimate used to set the FRV in the UK's 3rd reporting round which was 66,500 (95% CI 56,700 - 81,800). The difference in FRV reported in this reporting round and the 2013 reporting round are a result of refined methodology.
6.16 Change and reason for change in population size	The estimated population abundance has increased since the UK's 3rd reporting round (2013) and it is estimated that total population sizes for the biennially monitored colonies have increased by approximately 1.8% p.a. (SCOS, 2018) between 2012 and 2017. This represents a genuine change in abundance between reporting rounds.
7.1 Sufficiency of area and quality of occupied habitat	There is considerable information available relating to grey seal habitat preference during the breeding and moult seasons when they congregate on land for extended periods. Grey seals typically breed on remote uninhabited islands or coasts and in small numbers in caves. UK pup production estimates are based on aerial surveys. This survey technique is thought not to be suitable for several colonies around SW England and Wales where up to approximately 50% of pupping occurs in sea caves and cryptic habitats (Stringell et al., 2014). For such habitats, ground counts are required. Ground surveys around Wales indicate that pup production has increased, and pupping continues to occur in cave and cryptic sites, suggesting the available habitat is sufficient (Baines et al., 1995; Bull et al., 2017a&b; Morgan et al., 2018; Westcott & Stringell 2003, 2004; Strong et al., 2006; and Lock et al., 2017). Telemetry studies show that grey seals may range widely to forage and frequently travel over 100km between haul-out sites (SCOS, 2017). There is no evidence that foraging, moulting or breeding sites have diminished, indicating that the area of habitat available to grey seals has not declined. However, these data do not provide information on the quality of the habitat, particularly in relation to foraging areas. In the absence of information relating to habitat quality, the assessment of this parameter is based on the assessment of range and population for the species. Both the range and population of grey seals are considered favourable. The population is increasing, though the rate of increase has declined, and the abundance estimate is above historic estimates. As the population is increasing, it is assumed that the available habitat must be of sufficient area and quality.
7.2 Sufficiency of area and quality of occupied habitat; Method used	While there is considerable evidence of the habitat and feeding preferences of grey seals, there has been no significant assessment of the availability or relative quality of such habitat in the UK. Assessments of population and range have therefore been used as a proxy for assessing habitat quality.
7.4 Short term trend; Direction	Habitat was previously assessed as stable in the short-term for grey seals and this is not thought to have changed in the current reporting round. The grey seal population is increasing, and abundance estimates are considerably higher than the FRV. There are insufficient data to assess whether the increase in population is linked to an increase in the quality or availability of habitat, but it is evident that this has not deteriorated. Thus, it is concluded that habitat is stable over the short-term.

7.5 Short term trend; Method used	The assessment of trend is based largely on expert opinion, using trends in range and population as a proxy for habitat condition. This is based on the assessment of habitat sufficiency and quality in the UK's 3rd (2013) and 4th (2019) reporting rounds.
8.1 Characterisation of pressures/ threats	G08 Management of fishing stocks and game: Application of pressure: Used to identify risk from predator control when associated with aquaculture. Under the Marine (Scotland) Act 2010, grey seals can be legally shot under specific license at fish farms and during salmon netting operations to prevent damage to and loss of stock. Despite evidence to suggest that harbour seal typically have a higher attendance at farm sites than grey seals, grey seals are considered to be responsible for a greater portion of damage to fish farm sites and fisheries (Northridge,et al., 2013). Between 2011-2016, 1,319 grey seals were reported as shot around Scottish fish farms, with numbers ranging from 366 in 2011 to 75 in 2016 (Scottish Government website, http://www.gov.scot/Topics/marine/Licensing/SealLicensing). The potential biological removal (PBR) (threshold of anthropogenic removal before impacting the ability to maintain a sustainable population) is calculated annually by SMRU using the latest seal counts, and in 2016 the was calculated at 3,584 for grey seals in Scotland (Scottish government website, http://www.gov.scot/Topics/marine/Licensing/SealLicensing). The 75 seals shot in Scotland in 2016 therefore equates to 2.7% of the PBR and is considered unlikely to have long term effects on the grey seal population. However, this number is likely an underestimate as the number of seals killed by shooting is not reported outside Scotland. 20 of the 175 grey seals (10%) necropsied by SMASS between 2009-2016 died due to gunshot wounds (confirmed), making gunshot the most significant anthropogenic cause of death observed in stranded grey seals. In England and Wales, under The Conservation of Seals Act 1970, the shooting of seals is permitted, even without licence, to prevent a seal causing damage to fishing net, fishing tackle, or fish held in the net, so long as the seal is in the vicinity of the net at time of shooting. The pressure is expected to continue into the longer term. Both the number of licenses granted, and number of seals shot annually has been declining in Scotland since 2011, suggesting the short-term threat is unlikely to worsen. Although the trend in licencing and shooting is unknown for the rest of the UK, grey seals are most abundant around Scotland and the threat is therefore most relevant to that area.
8.1 Characterisation of pressures/ threats	G12 Bycatch and incidental killing (due to fishing and hunting activities): Application of pressure: Used to identify risk from bycatch in active and inactive fishing gears. Bycatch is a pressure on grey seals. Between 2011-2016, it has been estimated that 2,938 seals have been bycaught in static net fishing operations in UK waters from UK vessels (Annual reports on the implementation of Council Regulation (EC) No 812/2004, 2011:2016). However, it is important to note that these estimates should be viewed in light of the caveats associated with extrapolating data and should be used for guidance only. The estimates also combine grey and harbour seal estimates given limitations in confidence in identification of young animals. However, it is assumed with some confidence, that the majority are grey seals. Estimates range from a low in 2011 of 370 (95% CI 231-1706) to a high in 2016 of 610 (95% CI 449-1262) (Table 1, Annex C). Furthermore, between 2009-2016, 5 of the 175 grey seals (2%) necropsied by SMASS died due to entanglement, however, the source of entanglement is unclear, but there are known reports from pot fisheries. Bycatch is a regional pressure and therefore rated Medium.

8.1 Characterisation of pressures/ threats	L06 Interspecific relations (competition, predation, parasitism, pathogens,): Application of pressure: Used to identify risk from intraspecific as well as interspecific relations. Intraspecific predation is of concern for grey seals, with evidence to show that adult male grey seals are capable of producing the 'corkscrew' lacerations previously attributed to contact with rotating boat propeller blades (Onoufriou and Thompson, 2014; Brownlow et al., 2016, Bishop et al, 2016) (Although to note, investigation found that boats were also able to make similar lacerations and therefore may still be the cause of some historic cases). A single adult male was witnessed killing 8 grey seal pups in a 10-day period during breeding season on the Isle of May, with an additional 6 corkscrew carcasses found within the same period (Brownlow et al., 2016). 'Corkscrew' lacerations were the leading cause of death in grey seals as reported by SMASS between 2009 - 2016, although this is also observed all around the UK. Of the 175 grey seals necropsied or examined by SMASS through images in this period, 105 (51%) were diagnosed as possible 'corkscrew' cases, with 30 (15%) of those confirmed through necropsy (SMASS Annual Reports). Carcasses bearing signs of cannibalistic attacks by adult male grey seals on weaned pups has also been observed regularly in Wales since 2009, however these attacks produced ragged, circular wounds on the back of the neck and shoulders, suggesting not all grey seal predations result in characteristic corkscrew lesions (Boyle, 2011; Brownlow et al., 2016). Possible interspecific competition with harbour seals may arise from an overlap in diet. Research into the diet of grey and harbour seals (funded by the Scottish Government with additional support from Natural England) carried out in 2011 and 2012 (Hammond & Wilson, 2016) indicated that both species of seal feed on similar prey, in the same regions, and at the same time of the year. However, the fish size class preferred varied between species, thus whether this overlap is evidence for competition requires further investigation (SCOS, 2017). The reason for interspecific predation of grey seals on harbour seals is unknown. The issue is evident, but the population is increasing therefore the pressure is Medium grading. Pressure is expected to continue in the longer term. Whilst the number of corkscrew seals recorded by the SMASS has increased over the years, from 0 in 2009 to 53 in 2016, this is likely to be a reflection of increased understanding of the pressure as well as increased reporting effort following SMASS training, and not necessarily a reflection of increased mortality in the species (SMASS annual report, 2016).
8.1 Characterisation of pressures/ threats	N07 Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiot, etc.) due to climate change: Application of pressure: Used to identify risk of changes in availability of prey due to climate change. There is no current evidence for the effects of climate change on grey seals. The effects of climate change on grey seal is likely to be mediated through variation in prey resource initially. Grey seals have a varied diet, predominantly made up of sandeel and gadoids (particularly cod and ling), with dominant prey species ranging between regions (Hammond and Wilson, 2016). The species may therefore be able to adapt to changes in prey distribution as a result of climate change.

8.1 Characterisation of pressures/ threats	D01 Wind, wave and tidal power, including infrastructure: Application of pressure: Used where there is evidence that this pressure alone, has a pressure or threat rating of Medium or above. There is limited evidence of operational impact on seals, and much of the focus has been on harbour seals rather than grey seals. Studies show potential collision risk for renewables such as tidal turbines, and risk of exclusion/displacement of animals from suitable habitats due to physical or perceived barriers (Band et al., 2016; Hastie et al, 2017). Furthermore, pile driving during the construction of offshore windfarms has the potential to cause auditory damage in pinnipeds (Hastie et al., 2015). However, there is also evidence to suggest that windfarm infrastructure, once in place, may act as an artificial reef and offer foraging opportunities to seals (Russell et al., 2017). There are considerable legal and societal obligations to meet clean energy requirements which will result in an increase in the development of the renewable energy industry. Pressures around the growth of the industry include increased construction noise (resulting in disturbance and injury), collision risk to seals and displacement from key habitat. The influence of these pressures can be indirect and direct, resulting in disturbance, injury or mortality. Exposure is regional, resulting in a Medium threat grading.
8.1 Characterisation of pressures/ threats	General information for grey seals: Pressure ranking for grey seal is mainly based on expert opinion. Investigation of seal mortality is primarily conducted by the Scottish Marine Animal Strandings Scheme (SMASS, www.strandings.org). Between 2009-2016, 1005 grey seals were reported as stranded around the coast of Scotland, of which 175 were necropsied and some further analysis was completed using images (e.g. for 'corkscrew' cases). The leading cause of death in necropsied grey seals was from grey seal cannibalism, including 'corkscrew' injuries (possible 51% and confirmed 15%), followed by physical trauma from gunshot (10%). There were also five entanglement cases, although it is unclear as to the source of the entanglement (SMASS annual reports, http://www.strandings.org/smass/publications/). Seals are currently recorded and analysed primarily in Scotland predominantly due to issuing of licences for management of the animals concerning aquaculture. Some limited reporting and post mortem has also occurred in Wales, on an ad hoc basis. Of two post mortems conducted in Wales, one was identified as grey seal predation (spiral lacerations) and the other was peritonitis, however the root cause of this is unknown (Morris et al., in prep).
9.5 List of main conservation measures	CG03 Reducing the impact of (re-) stocking for fishing and hunting, of artificial feeding and predator control: In England and Wales, the Conservation of Seals Act 1970 prohibits the shooting of seals during a close season (1st September to 31st December for grey seals, and 1st June to 31st August for harbour seals) except under license issued by either the Secretary of State or by the devolved powers. The Act also allows the Secretary of State and devolved powers to prohibit by way of an order the killing, injury, or taking of either or both seal species in any area specific in the order. The Conservation of Seals (England) Order 1999 protects grey and harbour seals on the east coast of England, from the Border at Berwick to Newhaven Pier. Under section 9.1(c) of the Conservation of Seals Act 1970, fishermen are permitted to kill any seal during close season, or in an area where the killing or taking of seals is prohibited, to prevent the seal from causing damage to fishing tackle, fishing net, or to fish in the net, provided the seal in the vicinity of said equipment at the time. The Scottish government repealed the Conservation of Seals Act 1970 and replaced it with the Marine (Scotland) Act 2010. Under this new Act, the shooting of all seals in Scotland must be licensed and all seals shot reported. Application are granted for both 'the prevention of damage to fisheries and fish farms' and for 'protecting the health and welfare of farmed fish'. In Northern Ireland, grey and harbour seals are protected under The Wildlife (Northern Ireland) Order 1985 (Schedule 5, 6, and 7) as amended.

10.1 Future prospects of parameters	10.1a Range: The overall assessment of this parameter is favourable and there is no evidence that risk is increasing in the next 12 years (two reporting rounds). 10.1b Population: The overall assessment of this parameter is favourable and there is no evidence that risk is increasing in the next 12 years (two reporting rounds). 10.1c Habitat of the species: The overall assessment of this parameter is favourable and there is no evidence that risk is increasing in the next 12 years (two reporting rounds).
11.1 Range	There is no evidence to suggest range has changed since the last reporting round (2013) and therefore the range assessment remains Favourable.
11.2 Population	The current UK grey seal population estimate is considerably greater than the UK FRV for this species, and both the short and long-term trends show a continued increase in grey seal abundance, though the pace of increase is slowing. Based on this evidence, the conclusion for the population parameter is Favourable for this species in UK waters.
11.3 Habitat for the species	In the absence of sufficient data relating to habitat quality, the assessment of habitat for grey seals is based on both the range and population assessments. As the population is increasing, and both range and population are considered Favourable, it is assumed that the supporting habitat must also be Favourable.
11.4 Future prospects	All parameters have good future prospects resulting in an overall assessment of future prospects as Favourable.
11.5 Overall assessment of Conservation Status	All parameters are assessed as Favourable therefore the overall assessment of conservation status is Favourable.
11.6 Overall trend in Conservation Status	The overall assessment has not changed since the UK's 3rd reporting round (2013).
12.2 Type of estimate	The population estimate for the grey seals in the UK is based on pup production counts. Aerial surveys of the main breeding colonies in Scotland are conducted biennially by SMRU. Elsewhere in the UK, breeding colonies are surveyed intermittently by foot by SNH (Shetland), the National Trust (Farne Island and Blakeney Point), Lincolnshire Wildlife Trust (Donna Nook), NE (Horsey/Wintertion), and NRW (Skomer, Marloes Peninsula), and RSPB (and Ramsey Island, and Bardesy Island). Some of these pup counts are combined by SMRU to give a total grey seal population estimate for the UK, as detailed in SCOS Report 2016. Grey seal population estimates are typically reported by seal management unit, and not by specific SAC. The population estimate for the grey seal SACs network reported here is therefore a best estimate based on approximate estimates available from grey seal SACs as detailed in SCOS 2016, with additional information on Welsh sites provided by NRW (Morgan et al., 2018; Bull et al., 2017a; Bull et al., 2017b; Ocean Ecology Limited, 2018).
12.3 Population size inside the network; Method used	Population size is based dedicated surveys of breeding colonies as described in audit section 12.2.
12.4 Short term trend of the population size within the network; Direction	Short-term trend is considered stable for the grey seal population within SACs for 2004-2016.