Reporting under the Habitat Regulations (as amended)[1]

2019-2024

Conservation status assessment for the species:

S1364 - Grey seal

(*Halichoerus grypus*)

United Kingdom

[1] Habitat Regulations (as amended):

- The Conservation of Habitats and Species Regulations 2017 (as amended), Regulation 9A
- The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended), Regulation 6A
- Report under The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), regulation 3ZA
- The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), regulation 3ZA

For further information please contact:

Joint Nature Conservation Committee. Quay House, 2 East Station Road, Fletton Quays, Peterborough, PE2 8YY. https://jncc.gov.uk

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Important note - Please read

- The information in this document represents the United Kingdom Reporting under the Habitat Regulations (as amended)[1], for the period 2019-2024.
- It is based on supporting information provided by Joint Nature Conservation Committee and UK Country Nature Consevation Bodies (CNCBs), which is documented separately.
- The Habitats Regulations reporting 2019-2024 Approach Document provides details on how this supporting information contributed to the UK Report and the fields that were completed for each parameter.
- Map showing the distribution and range of the species is included.
- Explanatory notes (where provided) are included at the end. These provide additional audit trail information to that included within the assessments. Further underpinning explanatory notes are available in the related country 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 National Site Network coverage for Annex II species).

Further details on the approach to the Habitats Regulations Reporting 2019-2024 are available on the JNCC website.

Assessment Summary: Grey seal

Distribution and Range Map

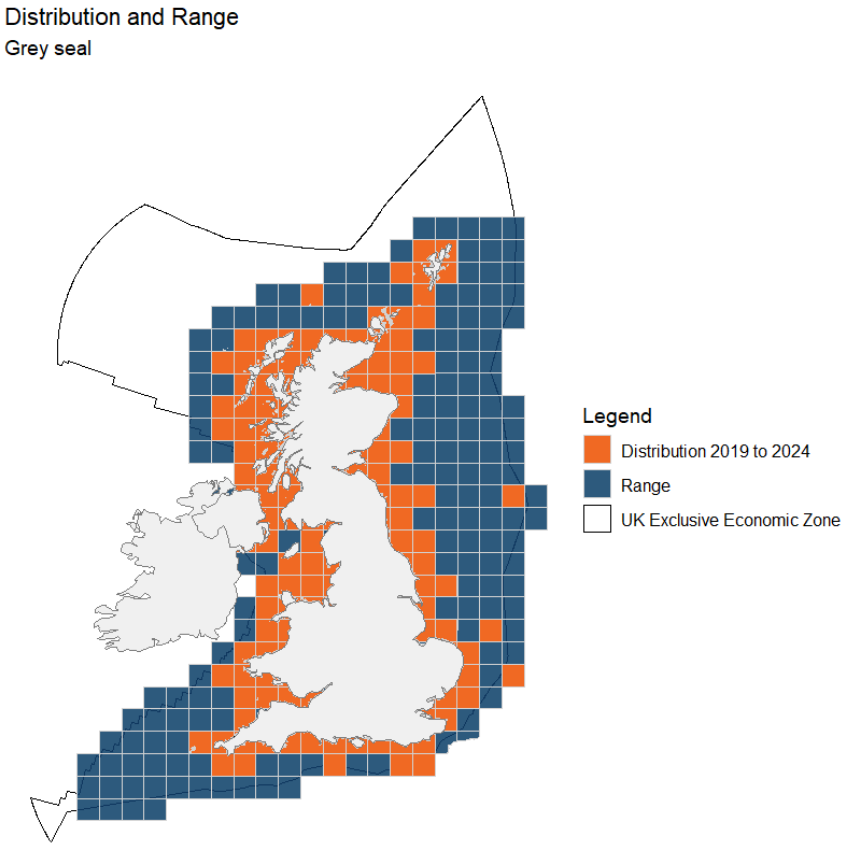

Figure 1: United Kingdom distribution and range map for S1364 - Grey seal (*Halichoerus grypus*). The 50km grid square distribution map is based on available species records within the current reporting period.

Table 1: Table summarising the conservation status for S1364 - Grey seal (*Halichoerus grypus*). Overall conservation status for species is based on assessments of range, population, habitat for the species, and future prospects.

Overall Conservation Status (see section 11)

Favourable (FV)

Breakdown of Overall Conservation Status

Range (see section 5)	**Favourable (FV)**
Population (see section 6)	**Favourable (FV)**
Habitat for the species (see section 7)	**Unknown (XX)**
Future prospects (see section 10)	**Favourable (FV)**

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National Level

1. General information

1.1 Country	United Kingdom
1.2 Species code	S1364
1.3 Species scientific name	*Halichoerus grypus*
1.4 Alternative species scientific name	
1.5 Common name	Grey seal
Annex(es)	II, V

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2019-2022
2.3 Distribution map	Yes
2.4 Distribution map; Method used	Complete survey or a statistically robust estimate

2.5 Additional information

The distribution map is based on verified sightings data of grey seal between 2019 and 2024, and a modelled at-sea distribution based on terrestrial count data and telemetry data collected between 1991 - 2016. The sightings were collated from SCANS IV, Pelagis French surveys, NBN Atlas, European Seabirds at Sea, the Joint Cetacean Data Programme, POSEIDON project, University of Aberdeen, The Crown Estate Marine Data Exchange, Whale and Dolphin Conservation, Hebridean Whale and Dolphin Trust, ORCA, Sea Watch Foundation, Marine Discovery Penzance, Sussex Dolphin Project, Cornwall Seal Group Research Trust, Cardigan Bay Marine Wildlife Centre, Natural England, Sea Trust and The Royal Society for the Protection of Birds (RSPB). The modelled distribution was produced for the ‘Updated Seal Usage Maps: Estimated at-sea Distribution of Grey and Harbour Seals” project conducted by the Sea Mammal Research Unit (SMRU) in St. Andrews, Scotland (Russell et al., 2017).

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?	Yes
3.2 What measures have been taken?	
a) Regulations regarding access to property	No
b) Temporary or local prohibition on 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
Other measures	No
Other measures description	

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

a) Unit	number of individuals

Table 2: Quantity taken from the wild during the reporting period (see 3.3a for units). For species with defined hunting seasons, Season 1 refers to 2018/2019 (autumn 2018 to spring 2019), and Season 6 to 2023/2024. For species without hunting seasons, data are reported by calendar year: Year 1 is 2019, and Year 6 is 2024.

	Season/ year 1	Season/ year 2	Season/ year 3	Season/ year 4	Season/ year 5	Season/ year 6
b) Minimum	-	-	-	-	-	-

c) Maximum	-	-	-	-	-	-
d) 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 (2019-2024) are available on the Scottish Government website.

Biogeographical Level

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs MATL

4.2 Sources of information

See section 14 References

5. Range

5.1 Surface area (km²) 625,449

5.2 Short-term trend; Period 2013-2022

5.3 Short-term trend; Direction Stable

5.4 Short-term trend; Magnitude

a) Estimated minimum

b) Estimated maximum

c) Pre-defined range	
d) Unknown	
e) Type of estimate	
f) Rate of decrease	
5.5 Short-term trend; Method used	Complete survey or a statistically robust estimate
5.6 Long-term trend; Period	1988-2024
5.7 Long-term trend; Direction	Stable
5.8 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Rate of decrease	
5.9 Long-term trend; Method used	Complete survey or a statistically robust estimate

5.10 Favourable Reference Range (FRR)

a) Area (km²)	625,449
b) Pre-defined increment	
c) Unknown	No
d) Method used	Model-based approach
e) Quality of information	high

5.11 Change and reason for change in surface area of range

a) Change	No
b) Genuine change	
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	

f) Other reason	
g) Main reason	

5.12 Additional information

The distribution is based on verified sightings of grey seal between 2019 and 2024, and a modelled at-sea distribution based on terrestrial count data and telemetry data collected between 1991 - 2016. The sightings were collated from SCANS IV, Pelagis French surveys, NBN Atlas, European Seabirds at Sea, the Joint Cetacean Data Programme, POSEIDON project, University of Aberdeen, The Crown Estate Marine Data Exchange, Whale and Dolphin Conservation, Hebridean Whale and Dolphin Trust, ORCA, Sea Watch Foundation, Marine Discovery Penzance, Sussex Dolphin Project, Cornwall Seal Group Research Trust, Cardigan Bay Marine Wildlife Centre, Natural England, Sea Trust and The Royal Society for the Protection of Birds (RSPB). The modelled distribution was produced for the 'Updated Seal Usage Maps: Estimated at-sea Distribution of Grey and Harbour Seals" project conducted by the Sea Mammal Research Unit (SMRU) in St. Andrews, Scotland (Russell et al., 2017).

The FRR was based on interpolation of distribution data and predicted grey seal 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 limited at-sea data.

6. Population

6.1 Year or period	2022

6.2 Population size (in reporting unit)

a) Unit	number of individuals
b) Minimum	146,700
c) Maximum	178,500
d) Best single value	162,000
6.3 Type of estimate	95% confidence interval
6.4 Quality of extrapolation to reporting unit	high

6.5 Additional population size (using population unit other than reporting unit)

a) Unit	
b) Minimum	
c) Maximum	
d) Best single value	
e) Type of estimate	
6.6 Population size; Method used	Complete survey or a statistically robust estimate
6.7 Short-term trend; Period	2016-2019
6.8 Short-term trend; Direction	Increasing
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	Increasing 13 - 25%
d) Unknown	No
e) Type of estimate	95% confidence interval
f) Rate of decrease	
6.10 Short-term trend; Method used	Complete survey or a statistically robust estimate
6.11 Long-term trend; Period	2003-2022
6.12 Long-term trend; Direction	Increasing
6.13 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	

6.14 Long-term trend; Method used	Complete survey or a statistically robust estimate

6.15 Favourable Reference Population (FRP)

ai) Population size	109,500
aii) Unit	number of individuals
b) Pre-defined increment	
c) Unknown	No
d) Method used	Model-based approach
e) Quality of information	high

6.16 Change and reason for change in population size

a) Change	Yes
b) Genuine change	Yes
c) Improved knowledge or more accurate data	No
d) Different method	Yes
e) No information	No
f) Other reason	No
g) Main reason	Genuine change

6.17 Additional information

The grey seal population is modelled by the Special Committee on Seals, based on systematic surveys of grey seal pup production and scaled up to the total population size (SCOS 2022).

The FRV, long and short term trends are based on modelled outputs published by SCOS (Russell, et al., 2016). These outputs were also used for the 2023 OSPAR QSR indicator assessment for seal abundance (Banga, et al., 2023).

2008: 105,245 (95% CI: 87,797 – 130,856) (Russell, et al. 2016)

2014: 151,725 (95% CI: 126,571 – 188,647) (Russell, et al. 2016)

2022: 162,000 (95% CI 146,700-178,500)(SCOS, 2022)

6.18 Age structure, mortality and reproduction deviation	No deviation from normal

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat (for long-term survival)

a) Is area of occupied habitat sufficient?	Unknown
b) Is quality of occupied habitat sufficient?	Unknown
c) If No or Unknown, is there a sufficiently large area of unoccupied habitat of suitable quality?	Unknown

7.2 Sufficiency of area and quality of occupied habitat; Method used

a) Sufficiency of area of occupied habitat; Method used	Based mainly on expert opinion with very limited data
b) Sufficiency of quality of occupied habitat; Method used	Based mainly on expert opinion with very limited data

7.3 Short-term trend; Period

7.4 Short-term trend; Direction	Unknown
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	Uncertain
7.8 Long-term trend; Method used	Based mainly on expert opinion with very limited data

7.9 Additional information

Direct evidence of pinniped habitat quality is limited as presently, a comprehensive understanding of the key elements important to the species is undetermined. In some

cases, conclusions for species range and population could be indicative of habitat quality by proxy, however confidence in assessment outputs would be low.

Abundance of grey seals at the UK scale have increased continuously since the 1990s. Range of the species has remained stable, over this time, though grey seals have increased their spread across the available habitat in their commonly found locations over time (Banga et al, 2023.)

8. Main pressures

8.1 Characterisation of pressures

Table 3: Pressures affecting the species, including timing and importance/impact ranking. Pressures are defined as factors acting currently and/or during the reporting period (2019–2024). Rankings are: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Pressure	Timing	Ranking
Wind, wave and tidal power (including infrastructure)	Ongoing and likely to be in the future	Medium (M)
Management of fishing stocks and game	Ongoing and likely to be in the future	Medium (M)
Bycatch and incidental killing (due to fishing and hunting activities)	Ongoing and likely to be in the future	Medium (M)
Problematic native species	Ongoing and likely to be in the future	Medium (M)
Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiote, etc.) due to climate change	Ongoing and likely to be in the future	Medium (M)
Sea-level rise due to climate change	Ongoing and likely to be in the future	Medium (M)
Cyclones, storms, or tornados due to climate change	Ongoing and likely to be in the future	Medium (M)

8.2 Sources of information

See section 14 References

8.3 Additional information

PJ04: Grey seals may be able to adapt to these changes in isolation but in combination with coastal developments (i.e., flood defenses), potential impacts to breeding/haul out sites arise.

PJ07: Grey seals may be able to adapt to these changes in isolation but in combination with coastal developments (i.e., flood defenses), potential impacts to breeding/haul out sites arise.

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 National Site Network
9.4 Response to measures	Medium-term results (within the next two reporting periods, 2025–2036)

9.5 List of main conservation measures

Table 4: Key conservation measures addressing current pressures and/or anticipated threats during the next two reporting periods (2025–2036). Measures are ranked by importance/impact: High (direct/immediate influence and/or large spatial extent) and Medium (moderate direct/immediate influence, mainly indirect and/or regional extent).

Conservation measure	Ranking
Reducing the impact of (re-) stocking for fishing and hunting, of artificial feeding and predator control	High (H)
Adapt/manage renewable energy installation, facilities and operation (excl. hydropower and abstraction activities)	High (H)
Adapt/manage exploitation of energy resources	High (H)

9.6 Additional information

Thirteen Special Areas of Conservation (SAC) have been designated with grey seals as a qualifying feature (grade A-C): (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. As a European Protected Species, protection is also provided throughout UK waters and it is an offence to kill, injure or disturb. The UK remains committed to the conservation of marine mammals in UK waters and the implementation of measures to mitigate the impact of pressures and conservation measures have been undertaken in the UK and adjacent waters as part of the requirements of the Habitats Regulations. Such measures include monitoring bycatch, monitoring strandings data to monitor current and identify emerging pressures, application of appropriate management measures, and noise monitoring and mitigation with regards to offshore industry. This is reflected in the list of conservation measures under field 9.5. The UK also supports a range of 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 Scottish Government funds a national strandings scheme (Scottish Marine Animal Strandings Scheme) which includes seals. The Cetacean Strandings Investigation Programme (CSIP), which is funded by Defra and covers England and Wales has included seals in their programme of work since 2021. Coordinated, national monitoring of seals carried out by the Sea Mammal Research Unit have improved understanding of the size, distribution and status of UK seal populations.

10. Future prospects

10.1a Future trends of parameters

ai) Range	Overall stable
bi) Population	Very Positive - increasing >1% (more than one percent) per year on average
ci) Habitat for the species	Unknown

10.1b Future prospects of parameters

aii) Range	Good
bii) Population	Good
cii) Habitat for the species	Unknown

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Favourable (FV)
11.2 Population	Favourable (FV)
11.3 Habitat for the species	Unknown (XX)
11.4 Future prospects	Favourable (FV)
11.5 Overall assessment of Conservation Status	Favourable (FV)
11.6 Overall trend in Conservation Status	Stable

11.7 Change and reason for change in conservation status

a) Change	No
b) Genuine change	

c) Improved knowledge or more accurate data	
d) Different method	
e) No information	
f) Other reason	
g) Main reason	

11.7 Change and reason for change in conservation status trend

a) Change	Yes
b) Genuine change	No
c) Improved knowledge or more accurate data	No
d) Different method	No
e) No information	No
f) Other reason	Yes
g) Main reason	Other reasons

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 equivalent to the Favourable Reference Range.

Conclusion on Population reached because: (i) the short-term trend direction in Population size is increasing; and (ii) the best estimate for population size is greater than the Favourable Reference Population.

Conclusion on Habitat for the species reached because: (i) it is unknown whether the area of habitat is sufficiently large; (ii) it is unknown if habitat quality is sufficient for the long-term survival of the species; and (iii) the short-term trend in area and quality of habitat is unknown.

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 unknown.

Overall assessment of Conservation Status is Favourable because all conclusions, except for Habitat, 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 - unknown.

12. UK National Site Network (pSCIs, SCIs, SACs) coverage for Annex II species

12.1 Population size inside the pSCIs, SCIs and SACs network

a) Unit	number of individuals
b) Minimum	
c) Maximum	
d) Best single value	67,168
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	Increasing
12.5 Short-term trend of population size within the network; Method used	Complete survey or a statistically robust estimate
12.6 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Direction	Unknown
12.7 Short-term trend of habitat for the species inside the pSCIs, SCIs and SACs network; Method used	Insufficient or no data available

12.8 Additional information

The total SAC population estimate for grey seals is a collation of the latest estimates from routine monitoring of SACs in England and Scotland, and an overall estimate for grey seals in Wales. SMRU provided grey seal pup production counts for Scottish and English SACs from 2010 - 2023 which were converted into an overall estimate and

combined with the total grey seal population for Wales (provided by NRW). It should be noted that the data used to calculate the SAC site network estimate differs from previous reporting and therefore, the numbers are not comparable to those in the last Article 17 report. To identify the trend, an estimate for the 2013-2018 reporting period was back calculated and compared to the best estimate for 2023. Short-term trend for this reporting is defined as between 2018-2023, to be consistent with the harbour seal reporting.

13. Complementary information

13.1 Justification of percentage thresholds for trends

No justification information

13.2 Trans-boundary assessment

No trans-boundary assessment information

13.2 Other relevant information

No other relevant information

14. References

Biogeographical and marine regions

4.2 Sources of information

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Main pressures

8.2 Sources of information

No sources of information

15. Explanatory Notes

Field label	Note
8.1: Characterisation of pressures	PG09 Management of fishing stocks and game. 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 2017-2020, 236 grey seals were reported as shot around Scottish fish farms (Scottish Government website, https://www.gov.scot/publications/marine-licensing-seal-licensing-records-2011-present/). 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 2020 this was calculated at 6,079 for grey seals in Scotland (Scottish government website, https://www.gov.scot/publications/marine-licensing-seal-licensing-records-2011-present/pages/2020/). The 37 (no data from Q4) seals shot in Scotland in 2020 therefore equates to 0.6% 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. In England and Wales, the shooting of seals was permitted under the Conservation of Seals Act 1970 until March 2021, 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. However, with no requirement to report seals taken the extent of pressure was unknown. Changes to the legislation now prohibits 'netsman's defence.' Similarly under the Marine (Scotland) Act 2010, it was permitted take seals under a licence for the purpose of 'preventing serious damage to fisheries and

	fish farms” and 'to protect the health and welfare of farmed fish” until February 2021 when legislation removed these as grounds of which Scottish Ministers could grant licences to take or kill seals. With changes to the legislation and the number of licences granted and number of seals shot declining since 2011, the future threat is unlikely to worsen.
8.1: Characterisation of pressures	PI03 Problematic native species. 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). 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 2019 - 2022, although this is also observed all around the UK. Of the 252 grey seals necropsied or examined by SMASS through images in this period, 230 (91%) were diagnosed as possible 'corkscrew' (Davison et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023). 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, 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 (Brownlow et al., 2017).
8.1: Characterisation of pressures	PG13 Bycatch and incidental killing (due to fishing and hunting activities). The OSPAR M6 Marine Mammal Bycatch Indicator calculated the 2020 bycatch estimate for grey seal as 704 in the North Sea and 1632 in the Celtic Sea however, neither exceed the OSPAR bycatch thresholds (7,171 and 3,647 in the North Sea and Celtic Sea, respectively; Taylor et al., 2022). Furthermore, between 2019-2022, 7 of the 252 grey seals (2.7%) necropsied by SMASS died due to entanglement, however, the source of entanglement is unclear (Davison et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023). Bycatch is a regional pressure and therefore rated Medium.
8.1: Characterisation of pressures	PJ12 Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiot, etc.) 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. Analysis of changing fish distributions (19 species across 73 commercial stocks) demonstrated that many species have undergone a shift in distribution over the last three decades

	and two thirds of species (including key grey seal prey species) underwent a northward shift in distribution which was not mirrored in seal populations (Baudron et al., 2020). The authors of the study highlight a correlation between a relative increase in seal numbers in southern parts of grey seals range compared to the central and northern part over a similar time period (Baudron et al., 2020). Seven grey seals necropsied by SMASS between 2019 and 2022 died of starvation (Davison et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023) however, there is no evidence to confirm the cause of this.
8.1: Characterisation of pressures	PD01 Wind, wave and tidal power, including infrastructure. 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; SCOS, 2022). Furthermore, pile driving during the construction of offshore windfarms has the potential to cause auditory damage in pinnipeds (Hastie et al., 2015; Whyte et al., 2020). 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	PJ04 Sea-level rise due to climate change. Increased storm frequency and sea level rises leave those pinniped species which breed or haul-out along low-lying coastal areas

	particularly vulnerable to storm surges (Evans & Bjorge, 2013; Zicos et al., 2018; Backe et al., 2021). Current increases in sea level are small compared to previous ice ages and therefore, breeding areas should remain largely unimpacted by current monitoring. However, previous sea level rise has not also been in combination with human infrastructure development and so impacts to breeding and hauling out sites might occur (e.g., flood defences and increased sea rises limits the intertidal space available) (SCOS, 2021)
8.1: Characterisation of pressures	PJ07 Cyclones, storms or tornados due to climate change. While the impact may be larger for grey seals due to differences in pup development, increased storm frequency and intensity (and resulting flooding) due to climate change leave both pinniped species which breed or haul-out along low-lying coastal areas particularly vulnerable to storm surges (Evans & Bjorge, 2013; Zicos et al., 2018; Buche & Stubbings, 2018). Severe storms in 2017 led to particularly high levels of grey seal pup mortality in the UK, whereby 75% of grey seal pups around all major breeding sites in Wales were reported to be lost (SCOS, 2018). Similarly, in 2021, at least 225 pups were found washed up along the Scottish east coast after a storm event.
9.5: List of main conservation measures	MG03 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.
9.5: List of main conservation measures	MC02 Adapt/manage exploitation of energy resources: Guidance for the protection of marine European Protected Species from deliberate injury, killing and disturbance has been drafted (JNCC 2010a; Marine Scotland, 2014). Marine Industries generate a variety of noise through activities such as geophysical surveys (e.g. seismic surveys (JNCC 2017)), construction (e.g. pile driving (JNCC 2010b)) and decommissioning (e.g. use of explosives (2010c)). As part of the licencing procedures, developers and operators are required to utilise JNCC guidelines to minimise the risk of injury to cetaceans when undertaking such activities (JNCC, 2010b, 2010c; 2017; 2023; 2025; JNCC, Natural England & Cefas, 2025). The guidelines advise on conducting marine mammal observations prior to and during the activity and, where suitable, utilising procedures such as soft start (gradual introduction of the sound) to reduce and avoid direct harm to animals. A review of the marine mammal observer data demonstrated the effectiveness of soft start approach (Stone et al, 2017).
9.5: List of main conservation measures	MC03 Adapt/manage renewable energy installation, facilities and operation (excl. hydropower and abstraction activities): Guidance for the protection of marine European Protected Species from deliberate injury, killing and disturbance has been drafted (JNCC 2010a; Marine

Scotland, 2014). Marine Industries generate a variety of noise through activities such as geophysical surveys (e.g. seismic surveys (JNCC 2017)), construction (e.g. pile driving (JNCC 2010b)) and decommissioning (e.g. use of explosives (2010c)). As part of the licencing procedures, developers and operators are required to utilise JNCC guidelines to minimise the risk of injury to cetaceans when undertaking such activities (JNCC, 2010b, 2010c; 2017; 2023; 2025; JNCC, Natural England & Cefas, 2025). The guidelines advise on conducting marine mammal observations prior to and during the activity and, where suitable, utilising procedures such as soft start (gradual introduction of the sound) to reduce and avoid direct harm to animals. A review of the marine mammal observer data demonstrated the effectiveness of soft start approach (Stone et al., 2017).