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

2019-2024

Draft conclusions for the species:

S1351 - Harbour porpoise

(*Phocoena phocoena*)

Celtic and Irish seas Management Unit

NOT WHOLE UK ASSESSMENT

[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

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This report was produced by JNCC in collaboration with the UK Country Nature Conservation Bodies (CNCBs) and country governments.

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Important note - Please read

- The information in this document represents the draft conclusions for the MU Celtic and Irish seas Reporting under the Habitat Regulations (as amended)[1], for the period 2019-2024. These conclusions are indicative only, and intended to help agencies add any nuance they feel is appropriate for country-level reporting. These assessments will not be published alongside official UK reporting. The guidance has been applied in the same way as for UK-level assessments.
- 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.
- 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: Harbour porpoise

Table 1: Table summarising the conservation status for S1351 - Harbour porpoise (*Phocoena phocoena*). 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)

Unfavourable-bad (U2)

Breakdown of Overall Conservation Status

Range (see section 5)	**Favourable (FV)**
Population (see section 6)	**Unfavourable-bad (U2)**
Habitat for the species (see section 7)	**Unknown (XX)**
Future prospects (see section 10)	**Unknown (XX)**

List of Sections

National Level

1. General information

1.1 Country	MU Celtic and Irish seas
1.2 Species code	S1351
1.3 Species scientific name	*Phocoena phocoena*
1.4 Alternative species scientific name	
1.5 Common name	Harbour porpoise
Annex(es)	II, IV

2. Maps

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

2.5 Additional information

See Phocoena phocoena (UK)

3. Information related to Annex V Species

3.1 Is the species taken in the wild / exploited?

3.2 What measures have been taken?

a) Regulations regarding access to property
b) Temporary or local prohibition on the taking of specimens in the wild and exploitation
c) Regulation of the periods and/or methods of taking specimens
d) Application of hunting and fishing rules which take account of the conservation of such populations

e) Establishment of a system of licences for taking specimens or of quotas

f) Regulation of the purchase, sale, offering for sale, keeping for sale, or transport for sale of specimens

g) Breeding in captivity of animal species as well as artificial propagation of plant species

Other measures

Other measures description

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

a) Unit

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	-	-	-	-	-	-

3.4: Hunting bag or quantity taken in the wild; Method used

3.5: Additional information

No additional information

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)	137,819
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	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	
c) Rate of decrease	

5.9 Long-term trend; Method used	

5.10 Favourable Reference Range (FRR)

a) Area (km²)	137,819
b) Pre-defined increment	
c) Unknown	No
d) Method used	Expert opinion
e) Quality of information	moderate

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 FRV for range is based on the Management Units published by the UK Interagency Marine Mammal Expert Group; first defined in 2015, and reviewed in 2019 and 2023. These Management Units are geographical areas in which animals of a particular species are found and management of human activities is applied. The delineation of boundaries is based on best understanding of the population structure of species, considering jurisdictional boundaries and divisions already used for the management of human activities (IAMMWG, 2023)

There have been no changes in the Management Units boundaries defined for harbour porpoise since 2015.

6. Population

6.1 Year or period	2022

6.2 Population size (in reporting unit)

a) Unit	number of individuals
b) Minimum	12,362
c) Maximum	23,783
d) Best single value	17,146
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	2016-2022
6.8 Short-term trend; Direction	Stable
6.9 Short-term trend; Magnitude	
a) Estimated minimum	
b) Estimated maximum	
c) Pre-defined range	
d) Unknown	
e) Type of estimate	

f) Rate of decrease	
6.10 Short-term trend; Method used	Complete survey or a statistically robust estimate
6.11 Long-term trend; Period	2005-2022
6.12 Long-term trend; Direction	Decreasing
6.13 Long-term trend; Magnitude	
a) Minimum	
b) Maximum	
c) Confidence interval	
d) Rate of decrease	
6.14 Long-term trend; Method used	Based mainly on extrapolation from a limited amount of data

6.15 Favourable Reference Population (FRP)

ai) Population size	42,622
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	No
b) Genuine change	
c) Improved knowledge or more accurate data	
d) Different method	
e) No information	

f) Other reason

g) Main reason

6.17 Additional information

The population estimate for harbour porpoise in the UK part of the Celtic and Irish Seas has declined between 2005 and 2016 from 42,622 (CV: 0.298 CI: 24,081-75,437) to 17,146 (CV: 0.163 CI: 12,362-23,783) but has been stable since 2016. Over this time, the overall population of porpoises in the NE Atlantic has been stable, which suggests the change observed in CIS may represent a shift in the population distribution to areas outside of this Management Unit. However, current evidence indicates further declines in the density and abundance of harbour porpoise in the wider MU between 2016 and 2022 and is mirrored in both the SCANS IV and ObSERVE 2 surveys (Gilles et al., 2023; Giralt Paradell, et al. 2024). This decline may be driven by distribution change outside of the survey area or a genuine decline in the population (Giralt Paradell, et al. 2024). However, it could also suggest effects from other causes such as bycatch, exposure to anthropogenic toxins, nutritional stress, climate change etc. Further investigation is required.

Wider context provided by the ObSERVE programmes in Irish waters, highlights the Irish portion of the Celtic Sea has been found to be region of relatively high density of harbour porpoise compared to other regions in Irish waters, and a higher density of calf observations year round (Giralt Paradell, et al. 2024).

The FRV for population (42622, CV: 0.298, CI: 24081-75437) was calculated based on estimates from the SCANS II surveys in 2005 (Hammond, et al., 2021) and CODA in 2007 (Hammond, et al., 2009), supplemented with density estimates from neighbouring regions to fill data gaps within the UK EEZ and limit extrapolation where possible; ObSERVE in Irish waters (Rogan, e al., 2018), NASS and T-NASS (Pike, et al., 2019a; Pike, et al., 2019b) and NILS (Leonard and Øien, 2020a; Leonard and Øien, 2020b) surveys in the NAMMCO region.

The NASS 2024 survey in the NAMMCO region will provide wider context for harbour porpoise population in the Northern Atlantic regions once published.

6.18 Age structure, mortality and reproduction deviation	Unknown

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	2005-2022
7.7 Long-term trend; Direction	Unknown
7.8 Long-term trend; Method used	Based mainly on expert opinion with very limited data

7.9 Additional information

As data relating to habitat quality is limited for cetaceans, the assessment of this parameter is based on the conclusions for range and population as a proxy for habitat.

While the range has remained stable, the population of harbour porpoise using the Celtic and Irish Sea management unit is has been increasing in the short term (possibly due to movement from the West Scotland MU) but with a long term decline which is reflected in the wider trend Celtic and Irish Sea with the cause unknown. Therefore, it can be inferred that the habitat quantity is sufficient to support the population but there is potential decline in the habitat quality.

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
PD01: Wind, wave and tidal power (including infrastructure)	Ongoing and likely to be in the future	Medium (M)
PE08: Land, water and air transport activities generating noise, light and other forms of pollution	Ongoing and likely to be in the future	Medium (M)
PF12: Residential, commercial and industrial activities and structures generating noise, light, heat or other forms of pollution	Ongoing and likely to be in the future	Medium (M)
PG01: Marine fish and shellfish harvesting causing reduction of species/prey populations and disturbance of species (professional)	Ongoing and likely to be in the future	Medium (M)
PG13: Bycatch and incidental killing (due to fishing and hunting activities)	Ongoing and likely to be in the future	High (H)
PK02: Mixed source marine water pollution (marine and coastal)	Ongoing and likely to be in the future	High (H)
PI03: Problematic native species	Ongoing and likely to be in the future	High (H)
PJ12: 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)
PH02: Military, paramilitary or police exercises and operations in the marine environment	Ongoing and likely to be in the future	Medium (M)
PI04: Plant and animal diseases, pathogens and pests	Ongoing and likely to be in the future	Medium (M)
PX02: Threats and pressures from outside the Member State	Ongoing and likely to be in the future	Medium (M)

8.2 Sources of information

See section 14 References

8.3 Additional information

PI03: Relating to reported bottlenose dolphin and grey seal attacks on harbour porpoise.

PX02: Relating to continued whaling of this species outside of UK waters which may be having an impact on populations.

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
MC02: Adapt/manage exploitation of energy resources	High (H)
MG04: Control/eradication of illegal killing, fishing and harvesting of wild plants, fungi and anmals	High (H)
MG05: Reduce bycatch and incidental killing of non-target species	High (H)
MH01: Reduce impact of military installations and activities	High (H)
MK01: Reduce impact of mixed source pollution	High (H)
MC03: Adapt/manage renewable energy installation, facilities and operation (excl. hydropower and abstraction activities)	High (H)

MG01: Management of professional/commercial fishing, shellfish and seaweed harvesting (incl. restoration of habitats)	High (H)

9.6 Additional information

Seven Special Areas of Conservation (SAC) have been designated with harbour porpoise as a qualifying feature (grade A-C) (see Section 12). Skerries and Causeway SAC was desinated in 2013 as a multi-feature site, followed by six single-feature sites for harbour porpoise, designated in 2016/17 (Heinanen & Skov, 2015, IAMMWG, 2015) which are listed on the JNCC website: Bristol Channel Approaches / Dynesfeydd Mor Hafren (UK0030396) England inshore & England offshore & Wales inshore & Wales offshore; Inner Hebrides and the Minches (UK0030393) Scotland inshore; North Anglesey Marine / Gogledd Mon Forol (UK0030398) Northern Ireland offshore & Wales inshore & Wales offshore; North Channel (UK0030399) Northern Ireland inshore & Northern Ireland offshore; Skerries and Causeway (UK0030383) Northern Ireland inshore; Southern North Sea (UK0030395) England inshore & England offshore; West Wales Marine / Gorllewin Cymru Forol (UK0030397) Wales inshore & Wales offshore. 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 and its Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) implementing its Conservation Plan for Harbour Porpoises (Phocoena phocoena L.) in the North Sea (Reijnders et al, 2009); the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). A UK Cetacean Conservation Strategy is currently in development, due for publication shortly. The strategy is intended to support decision making and identify actions necessary to maintain or improve the conservation status of cetaceans in UK waters. Defra and devolved administrations fund national strandings schemes for cetaceans which aim to: collate, analyse and report data for all cetacean strandings around the coast of the UK; determine the causes of death (both natural and anthropogenic) in stranded cetaceans, including bycatch and physical trauma and;

undertake surveillance on the incidence of disease in stranded cetaceans in order to identify any substantial new threats to their conservation status. Harbour porpoise is the most commonly stranded cetacean in the UK and, therefore, the project holds significant data on natural and anthropogenic causes of death. The UK have several voluntary wildlife watching guidelines which are publicly available however, while these are endorsed by the UK government and devolved administrations, there is no mandate for operators or individuals to adopt them. Survey: In 2022, the UK was a major funder of the fourth SCANS project which completed a survey for cetaceans in the European Atlantic to generate precise estimates of abundance. These data were collected through aerial and vessel survey over 6 weeks and the results enable assessment at a biologically appropriate spatial scale. Results are available: https://www.eoliennesenmer.fr/sites/eoliennesenmer/files/fichiers/2024/09/doc00085242.pdf

10. Future prospects

10.1a Future trends of parameters

ai) Range	Overall stable
bi) Population	Negative - decreasing <=1% (one percent or less) per year on average
ci) Habitat for the species	Unknown

10.1b Future prospects of parameters

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

10.2 Additional information

No additional information

11. Conclusions

11.1 Range	Favourable (FV)
11.2 Population	Unfavourable-bad (U2)
11.3 Habitat for the species	Unknown (XX)
11.4 Future prospects	Unknown (XX)

11.5 Overall assessment of Conservation Status	Unfavourable-bad (U2)
11.6 Overall trend in Conservation Status	Stable

11.7 Change and reason for change in conservation status

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.7 Change and reason for change in conservation status trend

This field is not reported as the period 2019-2024 marks the first instance in which conservation status has been assessed at the national level, meaning no comparisons to previous reports can be drawn.

11.8 Additional information

Summarising harbour porpoise at Management Unit (MU) scale is a new inclusion for reporting under the Habitats Regulations.

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 stable; but (ii) the best estimate for population size is more than 25% less 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 Poor; and (iii) the Future prospects for Habitat for the species are Unknown.

Overall assessment of Conservation Status is Unfavourable-bad because one or more conclusions are Unfavourable-bad.

Overall trend in Conservation Status is based on the combination of the short-term trends for Range - stable, Population - stable, 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	
12.2 Type of estimate	
12.3 Population size inside the network; Method used	Insufficient or no data available
12.4 Short-term trend of population size within the network; Direction	Unknown
12.5 Short-term trend of population size within the network; Method used	Insufficient or no data available
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

There is currently no population abundance data for the Bristol Channel Approaches SAC, North Anglesey Marine SAC, West Wales Marine SAC or North Channel for harbour porpoise. The SAC was designated based on high modelled relative density rather then absolute abundance.

Harbour porpoise are highly mobile with individuals moving through and out of the SAC area regularly. For information on harbour porpoise within the harbour porpoise SAC within the Celtic and Irish seas, please refer to the Phocoena phocoena (MU Celtic and Irish seas) assessment.

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

IAMMWG. 2023. Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091. https://hub.jncc.gov.uk/assets/b48b8332-349f-4358-b080-b4506384f4f7

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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	PJ12 Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiot, etc.) due to climate change. This pressure has the potential to impact the population directly through mortality caused by starvation and would be expected to have a broad impact across the UK species range. The effects of climate change on harbour porpoise are likely to be mediated through variation in prey resource initially. The species consumes a wide variety of prey, although usually focusing on three or four species at any one time. Harbour porpoise may therefore adapt to new food sources, potentially reducing the impact of this threat. Of stranded animals necropsied or examined further around the UK between 2019 - 2022, starvation/hypothermia was attributed as cause of death in 42 harbour porpoise (Deaville, 2019:2024; Brownlow et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023). It should be noted however, that prey depletion/starvation can result from both natural and anthropogenic causes.
8.1: Characterisation of pressures	PI03 Problematic native species. Reports of violent interactions between bottlenose dolphins and harbour porpoises in UK waters are well documented (Barnett, Davison, & Jepson, 2009; Stringell et al., 2015). 70 animals examined by the UK CSIP between 2019-2022 had a cause of death of bottlenose dolphin attack (Deaville, 2019:2024; Brownlow et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023). Grey seals are also known to predate harbour porpoises (Leopold et al., 2014), although much fewer animals necropsied by the CSIP and SMASS had a cause of death attributed to grey seal predation (29, across both stranding schemes between 2019-2022; Deaville, 2019:2024; Brownlow et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023). Risk of grey seal predation is likely

	regionally high around the UK, coinciding predominantly in coastal areas where grey seals are found (e.g. several reports have been confirmed in and around Ramsey Sound in Wales). Grey seals attacks are a leading cause of death in animals stranded in the Netherlands (Ijsseldijk et al., 2022). The combined pressure of other species predating and attacking harbour porpoise results in a High grading for this pressure.
8.1: Characterisation of pressures	PK02 Mixed source marine water pollution (marine and coastal). PCBs are recognised as one of the most significant pollutants impacting harbour porpoise. Evidence suggests PCB levels have stabilised since the ban in the mid-1908s following a drop, but are no longer reducing at the same rate (Jepson et al., 2016). In animals sampled between 2014 - 2018, 48% showed chemical contaminant levels well above thresholds for negative impacts (Williams et al., 2020a; 2023). This pressure impacts fecundity and survival, mediated through the diet (bioaccumulation), causing reduced resilience to disease and lower fecundity through increased foetal mortality and reduced testes weight in males (Hall et al., 2006; Murphy et al., 2015; Jepson et al., 2016; Williams et al., 2021). Further, it has been suggested that juveniles are at higher risk of exposure to neurtoxic mixtures of chemicals, at a time when they are more vulnerable to the effects and thus, imapcts on development are likely (Williams et al., 2020b). The influence is long-term and intergenerational, with the pressure ubiquitous across the species range. It is difficult to disentangle sources of chemical pollution in the marine environment. Though it is possible that the most significant pollutants are industry related, many can also be assigned to alternative sources.
8.1: Characterisation of pressures	PG13 Bycatch and incidental killing (due to fishing and hunting activities). The UK Cetacean Strandings Investigation Programme (CSIP) and the Scottish Marine Animal Strandings Scheme (SMASS) has identified bycatch as the most important anthropogenic cause of death in this species, with 18 animals examined post mortem between

	2019-2022 having a cause of death of bycatch (Deaville, 2019:2024; Brownlow et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023). In 2016, Northridge et al (2017) estimated total bycatch of porpoises for UK gillnet fishing vessels over 12m to be 1482 (assuming no pingers were used). Taylor et al. (2022) found that harbour porpoise bycatch estimates for 2020 were significantly exceeding thresholds for anthropogenic removals in all three OSPAR assessment units that include UK waters (Greater North Sea AU, Irish and Celtic Seas AU, and West Scotland and Ireland AU). However, there is low confidence in bycatch estimates due to incomplete monitoring across all fleets impacting the populations.
8.1: Characterisation of pressures	PG01 Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species. A lack of food has a direct and immediate influence on the individual. Starvation/ hypothermia was attributed as cause of death in 42 harbour porpoise necropsied or examined further by CSIP and SMASS between 2019-2022 (Deaville, 2019:2024; Brownlow et al., 2020; Davison & ten Doeschate, 2022; Scottish Marine Animal Stranding Scheme, 2022; 2023). It should be noted, however, that prey depletion can result from both natural and anthropogenic causes. No link has been specifically identified between commercial fishing practices and the cases of harbour porpoise starvation recorded through strandings schemes. Evidence for the effect of permanently placed ADDs associated with aquaculture includes their potential to affect regional movement patterns and density. Exposure is high in some regions and disturbance has been demonstrated on the west coast of Scotland (Findlay et al., 2021; 2024; Kyhn et al., 2015) and in German water (Schaffeld, 2020).
8.1: Characterisation of pressures	PF12 Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution. Although when acting independently not all sources of noise are a risk to harbour porpoise, the cumulative impact

	of activities can affect distribution, behaviours and communication of animals (Heiler et al, 2016). There has been much research within Europe aiming to better understand the non-lethal impacts of cumulative noise on harbour porpoise (e.g. Nabe-Nielsen et al., 2017). Pressure expected to continue in the longer term. 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. However, increased impact should be mitigated through development of new technologies and implementation of assessments of risk and mitigation techniques.
8.1: Characterisation of pressures	PE08 Land, water and air transport activities generating noise pollution: Vessel and aircraft traffic is widespread in the marine environment, particularly in the continental shelf region. Evidence indicates that harbour porpoises avoid heavy traffic areas (Dyndo et al., 2015) and react to shipping noise through behavioural changes, including displacement (Benhemma et al., 2021; Fernandez-Betelu et al., 2024; Pigeault et al., 2024). Shipping noise has also been linked to reduced foraging (Wisniewska et al 2018).
8.1: Characterisation of pressures	PD01 Wind, wave and tidal power, including infrastructure. Pile driving during the construction phase for renewables infrastructure is a known cause of disturbance/ displacement of harbour porpoise (Brandt et al., 2011; Carstensen et al., 2006; Dahne et al., 2013; Benhemma et al., 2021). This pressure may also affect hearing through injury which could have an indirect influence on foraging efficiency (Bailey et al., 2010). Exposure to this pressure is limited both spatially and temporarily, although it may be regionally significant when occurring. There is also potential collision risk with submerged installations, although evidence of risk is limited. There is also evidence that harbour porpoise will be dsiplace during decommissioning phase of offshore infrastructure, although this is mainly linked to vessel presence (Fernandez-Betelu et al., 2024) There are considerable legal and societal obligations to meet clean energy requirements which will result in an

	increase in the increased development of the renewable energy industry. Novel industries such as tidal and wave power also have the potential to introduce new impacts, such as collision risk (Malinka et al., 2018) and displacement from key habitat.
8.1: Characterisation of pressures	PI04 Plant and animal disease, pathogens and pests. Necropsies of stranded animals highlights consistent evidence of parasitic infestation and infection from pathogens (Deaville 2011:2024) which may have individual and population-level impacts although no such link has been made through the strandings schemes.
8.1: Characterisation of pressures	PX02 Threats and pressures from outside the member state. Harbour porpoise are still hunted without quotas in the Faroe Islands and Greenland. Limited catch data is available for harbour porpoise catch in the Faroe Islands but the average annual number of animals taken between 2000 and 2023 in Greenland was 2,590, ranging from 1605 in 2000 to 3619 in 2023 (https://nammco.no/marine-mammal-catch-database/).
8.1: Characterisation of pressures	PH02 Military, paramilitary or police exercises and operations in the marine environment. The general risk of military activities (e.g., sonar exercises) to harbour porpoise population(s) around the UK is low. However, consensus among marine mammal advisers, highlight potential regional risks during military exercises. These more commonly occur off the northwest of Scotland and in the southwest approaches (from UK Porpoise, Dolphin and Whale, in prep). Evidence suggests that even in the absence of changes in behviours or movement patterns, exposure to sonar may cause impacts such as bradycardia (Elmegaar et al., 2021).
8.1: Characterisation of pressures	PC07 Geotechnical surveying. Seismic and other geotechnical surveys may have an immediate influence on harbour porpoise, causing disturbance. This may indirectly influence survival and/or fecundity. Harbour porpoise are sensitive to geotechnical survey activity (e.g Stone, 2015; Stone et al., 2017). The impact of this pressure is indirect with evidence of recovery/return once the pressure is

	removed (Thompson et al., 2013). Exposure to this pressure is limited both spatially and temporarily, although it may be regionally significant when occurring. Pressures are likely to be higher in the North Sea and Celtic and Irish Seas. Close proximity to noise created by geotechnical activity also has potential to cause injury, although evidence for the impact and level of risk is limited. This is also mitigated through guidance on operations such as soft start and on board marine mammal observers.
9.5: List of main conservation measures	MJ01 Reduce impact of mixed source pollution: The impact of chemical pollution on harbour porpoise remains an issue (Murphy et al., 2010; Murphy et al., 2015; Jepson et al., 2016), however, establishing measures beyond the historic ban on PCB use, has not been achieved to date. Further information is required to understand where exposure is occurring to be able to identify appropriate measures.
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).
9.5: List of main conservation measures	MG04 Control/eradication of illegal killing, fishing and harvesting: The Habitats Directive is transposed into UK law under the Habitat Regulations (HR) for England and Wales (as amended) and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended), which make it an offence to kill, injure, capture or disturb European marine protected species. Similar legislation exists for Scottish and Northern Irish inshore waters.
9.5: List of main conservation measures	MH01 Reduce impact of military installations and activities: The UK Ministry of Defence (MOD) has a Statement of Intent with UK Statutory Nature Conservation Bodies concerning conduct in relation to marine disturbance and has developed a real-time alert procedure for naval training operations.
9.5: List of main conservation measures	MG05 Reduce bycatch and incidental killing of non-target species: The UK is implementing the EU Technical Conservation Measures Regulation transposed into UK regulations which lays down measures concerning incidental catches of vulnerable species in fisheries, and

	more generally the bycatch obligations within the Habitats Regulations. Since 2004, a dedicated bycatch monitoring programme has been in place, with both dedicated and non-dedicated onboard observers collecting data on bycatch numbers. These data inform implementation and potential effectiveness of measures such as pingers. There is a requirement for all fishing vessels over 12m using gill nets or entanglement nets to use pingers under the criteria laid out in the regulation. Inshore Vessel Monitoring System (iVMS) devices are being implemented for under-12 metre fishing vessels, allowing data on latitude, longitude, course and speed to be recorded and help improve the management and sustainability of the marine environment. Legislation to make iVMS mandatory on under-12 metre vessels is expected to come into effect in 2024 in England. In Scotland, consultation on the introduction mandatory electronic tracking for under-12 metre vessels was carried out in late 2023. Legislation requiring iVMS for under-12 metre vessels operating in Welsh waters has been in place since 2022. Since February 2022 it has been mandatory for under-10 metre fishing vessels in English and Welsh waters to create and submit a catch record for every fishing trip through the Catch Recording Application (Catch App or Record your Catch). Data is collected on vessel, trip, gear, area fished and catch and can be used to inform on fishing activity by gear type and species. Furthermore, the UK Marine Wildlife Bycatch Mitigation Initiative (published August 2022) aims to improve our understanding of bycatch and entanglement of sensitive marine species through monitoring and scientific research, identify 'hotspot" or high-risk areas/gear types/fisheries in which to focus monitoring and mitigation, and develop and implement effective measures to minimise bycatch/entanglement. Currently work is progressing towards development of a bycatch risk framework across all PET species to apply all available evidence and support targeted monitoring.
9.5: List of main conservation measures	MG01 Management of professional/commercial fishing, shellfish and seaweed harvesting (incl. restoration of habitats). Fisheries Management Plans (FMPs) are

	currently being developed across all administrations for fisheries with perceived threats or pressures to the marine environment. FMPs are required under the Fisheries Act 2020 which provides the framework for management fisheries outside the EU Common Fisheries Policy. The Joint Fisheries Statement (agreeing the delivery of the 8 objectives of the Fisheries Act 2020) sets out plans for 43 FMPs. Publication of FMPs started last year and is expected to continue for 2-3 years. Some are being jointly developed, others by a single authority for its own waters. 6 FMPs have now been published.
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	Record your Catch). Data is collected on vessel, trip, gear, area fished and catch and can be used to inform on fishing activity by gear type and species. Furthermore, the UK Marine Wildlife Bycatch Mitigation Initiative (published August 2022) aims to improve our understanding of bycatch and entanglement of sensitive marine species through monitoring and scientific research, identify 'hotspot" or high-risk areas/gear types/fisheries in which to focus monitoring and mitigation, and develop and implement effective measures to minimise bycatch/entanglement. Currently work is progressing towards development of a bycatch risk framework across all PET species to apply all available evidence and support targeted monitoring.
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	MH01 Reduce impact of military installations and activities: To reduce the risk of noise impact on marine mammals, the UK Ministry of Defence (MOD) has a Statement of Intent with UK Statutory Nature Conservation Bodies concerning conduct in relation to marine disturbance. The MOD has

	developed a real-time alert procedure for naval training operations. This enables localised information on cetacean sightings to be incorporated into the training schedule and for operations to be relocated if necessary.
9.5: List of main conservation measures	MG04 Control/eradication of illegal killing, fishing and harvesting: The Habitats Directive is transposed into UK law under the Habitat Regulations (HR) for England and Wales (as amended) and the Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended), which make it an offence to kill, injure, capture or disturb European marine protected species. Similar legislation exists for Scottish and Northern Irish inshore waters.
9.5: List of main conservation measures	MK01 Reduce impact of mixed source pollution: The impact of chemical pollution on short-beaked common dolphins remains an issue (Jepson et al., 2016), however, establishing measures beyond the historic ban on PCB use, has not been achieved to date. Further information is required to understand where exposure is occurring to be able to identify appropriate measures.
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).
9.5: List of main conservation measures	MG01 Management of professional/commercial fishing, shellfish and seaweed harvesting (incl. restoration of habitats). Fisheries Management Plans (FMPs) are currently being developed across all administrations for fisheries with perceived threats or pressures to the marine environment. FMPs are required under the Fisheries Act 2020 which provides the framework for management fisheries outside the EU Common Fisheries Policy. The Joint Fisheries Statement (agreeing the delivery of the 8 objectives of the Fisheries Act 2020) sets out plans for 43 FMPs. Publication of FMPs started last year and is expected to continue for 2-3 years. Some are being jointly developed, others by a single authority for its own waters. 6 FMPs have now been published.