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:

S1349 - Bottlenose dolphin (*Tursiops truncatus*)

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	**1349**
1.3 Species scientific name	**Tursiops truncatus**
1.4 Alternative species scientific name	
1.5 Common name (in national language)	Bottlenose dolphin

2. Maps

2.1 Sensitive species	No
2.2 Year or period	2013-2018
2.3 Distribution map	Yes
2.4 Distribution map Method used	Based mainly on extrapolation from a limited amount of data
2.5 Additional maps	No

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

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

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

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

a) Unit

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

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

3.5. Additional information

BIOGEOGRAPHICAL LEVEL

4. Biogeographical and marine regions

4.1 Biogeographical or marine region where the species occurs

Marine Atlantic (MATL)

4.2 Sources of information

Cheney, B., Graham, I.M., Barton, T.R., Hammond, P.S. & Thompson, P.M. 2018. Site Condition Monitoring of bottlenose dolphins within the Moray Firth Special Area of Conservation: 2014-2016. Scottish Natural Heritage Research Report No. 1021.

Cheney, B., Thompson, P.M., Ingram, S.M., Hammond, P.S., Stevick, P.T., Durban, J.W., Culloch, R.M., Elwen, S.H., Manleber, L., Janik, V.M., Quick, N.J., ISLAS-Villanueva, V., Robinson, K.P., Costa, M., Eisfeld, S.M., Walters, A., Philips, C., Weird, C.R., Evans, P.G.H., Anderwald, P., Reid, R.J., & Wilson, B. (2013). Integrating multiple data sources to assess the distribution and abundance of bottlenose dolphins Tursiop truncatus in Scottish waters. Marine Mammal Review, 437:71-88. DOI: 10.1111/j.1365-2907.2011.00208.x

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

CODA, 2009. Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA). Final Report, 43pp. http://biology.st-andrews.ac.uk/coda/documents/CODA_Final_Report_11-2-09.pdf

David, J. (2006), Likely sensitivity of bottlenose dolphins to pile-driving noise. Water and Environment Journal, 20: 48-54. doi:10.1111/j.1747-6593.2005.00023.x

Deaville, R. (2011:2017). Annual reports for the period 1st January to 31st December. UK Cetacean Strandings Investigation Programme (CSIP). http://ukstrandings.org/csip-reports/

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
Graham, P., Pirotta, I. M. E., Merchant, N. D., Farcas, A., Barton, T. R., Cheney, B., Hastie, G. D and Thompson, P. M. (2017). Responses of bottlenose dolphins and harbor porpoises to impact and vibration piling noise during harbor construction. Ecosphere 8(5):e01793. 10.1002/ecs2.1793
Feingold, D. and Evans, P.G.H. (2014a). Bottlenose Dolphin and Harbour Porpoise Monitoring in Cardigan Bay and Pen Llyn a'r Sarnau Special Areas of Conservation 2011-2013. Natural Resources Wales Evidence Report Series No. 4. 124pp.
Feingold, D. and Evans, P.G.H. (2014b) Connectivity of Bottlenose Dolphins in Welsh Waters: North Wales Photo-Monitoring Report. Natural Resources Wales Research Report. 15pp.
Hammond, P.S., Bearzi, G., Bjorge, A., Forney, K.A., Karkzmarski, L., Kasuya, T., Perrin, W.F., Scott, M.D., Wang, J.Y. , Wells, R.S. & Wilson, B. (2012). Tursiops truncatus. The IUCN Red List of Threatened Species 2012: e.T22563A17347397 http://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T22563A17347397.en
Hammond, P. S., Lacey, C., Gilles, A., Viquerat, S., Borjesson, P., Herr, H., Macleod, K., Ridoux, V., Santos, M. B., Scheidat, M., Teilmann, J., Vingada, J & Oien, N. (2017). Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys. Available here: https://synergy.st-andrews.ac.uk/scans3/files/2017/04/SCANS-III-design-based-estimates-2017-04-28-final.pdf
Heiler,J., Elwen, S. H., Kriesell, H. J & Gridley, T., 2016. Changes in bottlenose dolphin whistle parameters related to vessel presence, surface behaviour and group composition, Animal Behaviour. Volume 117. 2016. Pages 167-177, ISSN 0003-3472. https://doi.org/10.1016/j.anbehav.2016.04.014.
Jepson, P. D., Deaville, R., Barber, J. L., Aguilar, A., Borrell, A., Murphy, S., Barry, J., Brownlow, A., Barnett, J., Berrow, S., Cunningham, A. A., Davison, N,. J., ten Doeschate, M., Esteban, R., Ferreira, M., Foote, A. D., Genov, T., Gimenez, J., Loveridge, J., Llavona, A., Martin, V., Maxwell, D. L., Papachlimitzou, A., Penrose, R., Perkins, M. W., Smith, B., de Stephanis, R., Tregenza, N., Verborgh, P., Fernandez, A and Law, R. J. (2016). PCB pollution continues to impact populations of orcas and other dolphins in European waters. Scientific Reports, 6:1-17. https://doi.org/10.1038/srep18573
JNCC (2010a). The protection of marine European Protected Species from deliberate injury, killing and disturbance. Guidance for the marine area in England and Wales and the UK offshore marine area. Available on request from JNCC.
JNCC (2010b) Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from Piling noise. 2010. JNCC Peterborough. United Kingdom. Available here: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling protocol_August 2010.pdfhttp://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Piling protocol_August 2010.pdf.
JNCC (2010c). JNCC guidelines for minimising the risk of injury to marine mammals from using explosives. August 2010. Available here: http://jncc.defra.gov.uk/pdf/JNCC_Guidelines_Explosives Guidelines_August 2010.pdf
JNCC (2017). JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys Available here: http://jncc.defra.gov.uk/pdf/jncc_guidelines_seismicsurvey_aug2017.pdfhttp://jncc.defra.gov.uk/pdf/jncc_guidelines_seismicsurvey_aug2017.pdf http://jncc.defra.gov.uk/pdf/jncc_guidelines_seismicsurvey_aug2017.pdf
La Manna, G., Ronchetti, F., & Sara. G. (2016). Predicting common bottlenose

dolphin habitat preference to dynamically adapt management measures from a Marine Spatial Planning perspective. Ocean & Coastal Management, 130:317-327.
Lassalle, G., Gascuel, D., Le Loc'h, F., Lobry, J., Pierce, G., Ridoux, V., et al. (2012). An ecosystem approach for the assessment of fisheries impacts on marine top predators: the Bay of Biscay case study. ICES Journal of Marine Science, 72(6): 1731-1743
Lohrengel, K., Evans, P.G.H., Lindenbaum, C.P., Morris, C.W., Stringell, T.B. (2018). Bottlenose dolphin monitoring in Cardigan Bay 2014-2016, NRW Evidence Report No: 191, Natural Resources Wales, Bangor.
Louis, M., Viricel, A., Lucas, T., Peltier, H., Alfonsi, E., Berrow, S., Brownlow, A., Covelo, P., Dabin, W., Deaville, R., De Stephanis, R., Gally, F., Gauffier, P., Penrose, R., Silva, M. A., Guinet, C. & Simon-Bouhet, B. (2014). Habitat-driven population structure of bottlenose dolphins, Tursiops truncatus, in the North-East Atlantic. Molecular Ecology, 23: 857-874. DOI: 10.1111/mec.12653
Malinka, C. E., Gillespie, D. M., Macaulay, J. D. J., Joy, R., & Sparling, C. E. (2018). First in situ passive acoustic monitoring for marine mammals during operation of a tidal turbine in Ramsey Sound, Wales. Marine Ecology Progress Series, 590, 247-266. DOI: 10.3354/meps12467
Marine Scotland (2014). The protection of Marine European Protected Species from injury and disturbance. Guidance for Scottish Inshore Waters. 2014.
New, L. F., Harwood, J. , Thomas, L. , Donovan, C. , Clark, J. S., Hastie, G. , Thompson, P. M., Cheney, B. , Scott-Hayward, L. , Lusseau, D. and Costa, D. (2013), Modelling the biological significance of behavioural change in coastal bottlenose dolphins in response to disturbance. Funct Ecol, 27: 314-322
OSPAR (2017). Abundance and distribution of coastal bottlenose dolphins. Available at: https://oap.ospar.org/en/ospar-assessments/intermediate-assessment-2017/biodiversity-status/marine-mammals/abundance-distribution-cetaceans/abundance-and-distribution-coastal-bottlenose-dolphins/
Paxton, C. G. M, Scott-Hayward, L., Mackenzie, M., Rexstad, E & Thomas, L. (2016). Revised Phase III Data Analysis of Joint Cetacean Protocol Data Resources with Advisory Note (2016). JNCC Report 517. http://jncc.defra.gov.uk/page-7201
Pirotta, E., Laesser, B. E., Hardaker, A., Riddoch, N., Marcoux, M., & Lusseau, D. (2013). Dredging displaces bottlenose dolphins from an urbanised foraging patch. Marine Pollution Bulletin, 74(1): 396-402.
Pirotta, E., Merchant, N. D., Thompson, P. M., Barton, T. R., & Lusseau, D. (2014). Quantifying the effect of boat disturbance on bottlenose dolphin foraging activity. Biological Conservation, 181: 82-89. https://doi.org/10.1016/j.biocon.2014.11.003.
Quick, N., Arso, M., Cheney, M., Islas, V., Janik, V., Thompson, P., & Hammond, P.S. (2014). The east coast of Scotland bottlenose dolphin population: Improving understanding of ecology outside the Moray Firth SAC. Report to the UK Department of Energy and Climate Change.
Stone, C. J. (2015). Marine mammal observations during seismic surveys from 1995-2010. Report to JNCC. No 463a. Available here: http://jncc.defra.gov.uk/pdf/JNCC Report 463a_Final.pdf
Stone, C. J., Hall, K. Mendes, S and Tasker, M. L. (2017). The effects of seismic operations in UK waters: analysis of Marine Mammal Observer data. J. Cetacean Red. Manage 16:71-85

5. Range

5.1 Surface area (km²)	1085484

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

5.2 Short-term trend Period	1994-2018	
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)	1085484
	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	2016	
6.2 Population size (in reporting unit)	a) Unit	number of individuals (i)
	b) Minimum	6302
	c) Maximum	17865
	d) Best single value	10610
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	2005-2016	
6.8 Short-term trend Direction	Unknown (x)	
6.9 Short-term trend Magnitude	a) Minimum	
	b) Maximum	
	c) Confidence interval	

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

6.10 Short-term trend Method used	Insufficient or no data available	
6.11 Long-term trend Period		
6.12 Long-term trend Direction		
6.13 Long-term trend Magnitude	a) Minimum b) Maximum c) Confidence interval	
6.14 Long-term trend Method used		
6.15 Favourable reference population (using the unit in 6.2 or 6.4)	a) Population size b) Operator c) Unknown d) Method	x
6.16 Change and reason for change in population size	No change The change is mainly due to:	
6.17 Additional information	The estimate of population size (6.2) is given as a point estimate (6.2d) with the corresponding 95% confidence intervals (6.2b&c). There is considerable overlap between the confidence intervals of the 2013 estimate and the current estimate, indicating that there is no significant difference between the two values. However, there are too few data points at the UK scale to confidently conclude this.	

7. Habitat for the species

7.1 Sufficiency of area and quality of occupied habitat	a) Are area and quality of occupied habitat sufficient (for long-term survival)?	Unknown
	b) Is there a sufficiently large area of unoccupied habitat of suitable quality (for long-term survival)?	
7.2 Sufficiency of area and quality of occupied habitat Method used	Based mainly on expert opinion with very limited data	
7.3 Short-term trend Period	2007-2018	
7.4 Short-term trend Direction	Unknown (x)	
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
Sports, tourism and leisure activities (F07)	M

Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution (F25)	M
Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (G01)	M
Mixed source marine water pollution (marine and coastal) (J02)	H
Wind, wave and tidal power, including infrastructure (D01)	M

Threat	Ranking
Sports, tourism and leisure activities (F07)	M
Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution (F25)	M
Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (G01)	M
Mixed source marine water pollution (marine and coastal) (J02)	H
Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiote, etc.) due to climate change (N07)	M
Wind, wave and tidal power, including infrastructure (D01)	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

Reduce impact of mixed source pollution (CJ01)
Reduce impact of military installations and activities (CH01)
Control/eradication of illegal killing, fishing and harvesting (CG04)
Reduce bycatch and incidental killing of non-target species (CG05)
Adapt/manage exploitation of energy resources (CC02)

9.6 Additional information: 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 and

its Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS); the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR). A UK Dolphin and Porpoise Conservation Strategy is currently in development, due for publication in 2019. The strategy is intended to support decision making and identify actions necessary to maintain or improve the conservation status of small cetaceans in UK waters. Three Special Areas of Conservation (SAC) have been designated with bottlenose dolphin as a qualifying feature (grade A-C) (see Section 12), which are listed on the JNCC website: Cardigan Bay/ Bae Ceredigion (UK0012712) Wales inshore; Moray Firth (UK0019808) Scotland inshore; Pen Llyn a`r Sarnau/ Lleyn Peninsula and the Sarnau (UK0013117) Wales inshore. The Moray Firth SAC has since been instrumental in identifying the need for a code of conduct for boat operators (http://www.dolphinspace.org/index.asp?pageid=10448). The UK Government funds a national strandings scheme, ongoing since 1990, which aims to;- collate, analyse and report data for all cetacean strandings around the coast of the UK; determine the causes of death 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. The project holds data on natural and anthropogenic causes of death.

10. Future prospects

10.1 Future prospects of parameters	a) Range	Good
	b) Population	Unknown
	c) Habitat of the species	Unknown
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 bottlenose dolphin, 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 and consequently the future prospects for the Population and Habitat parameters are assessed as Unknown; this is due to there being insufficient data to establish current trends for these parameters.	

11. Conclusions

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

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

11.7 Change and reasons for change in conservation status and conservation status trend	a) Overall assessment of conservation status Use of different method The change is mainly due to: Use of different method 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 FRP is unknown; and (ii) the short-term trend direction in Population size is unknown. Conclusion on Habitat for the species reached because: (i) the area of habitat is sufficiently large but (ii) the habitat quality is unknown 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; but (ii) the Future prospects for Population are unknown; and (iii) the Future prospects for Habitat for the species are unknown. Overall assessment of Conservation Status is Unknown because two or more of the conclusions are Unknown. Overall trend in Conservation Status is based on the combination of the short-term trends for Range - stable, Population - unknown, and Habitat for the species - unknown.

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: 220 c) Maximum: 309 d) Best single value: 250
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	

Report on the main results of the surveillance under Article 11 for Annex II, IV and V species (Annex B)

13.2 Trans-boundary assessment

13.3 Other relevant Information

Distribution Map

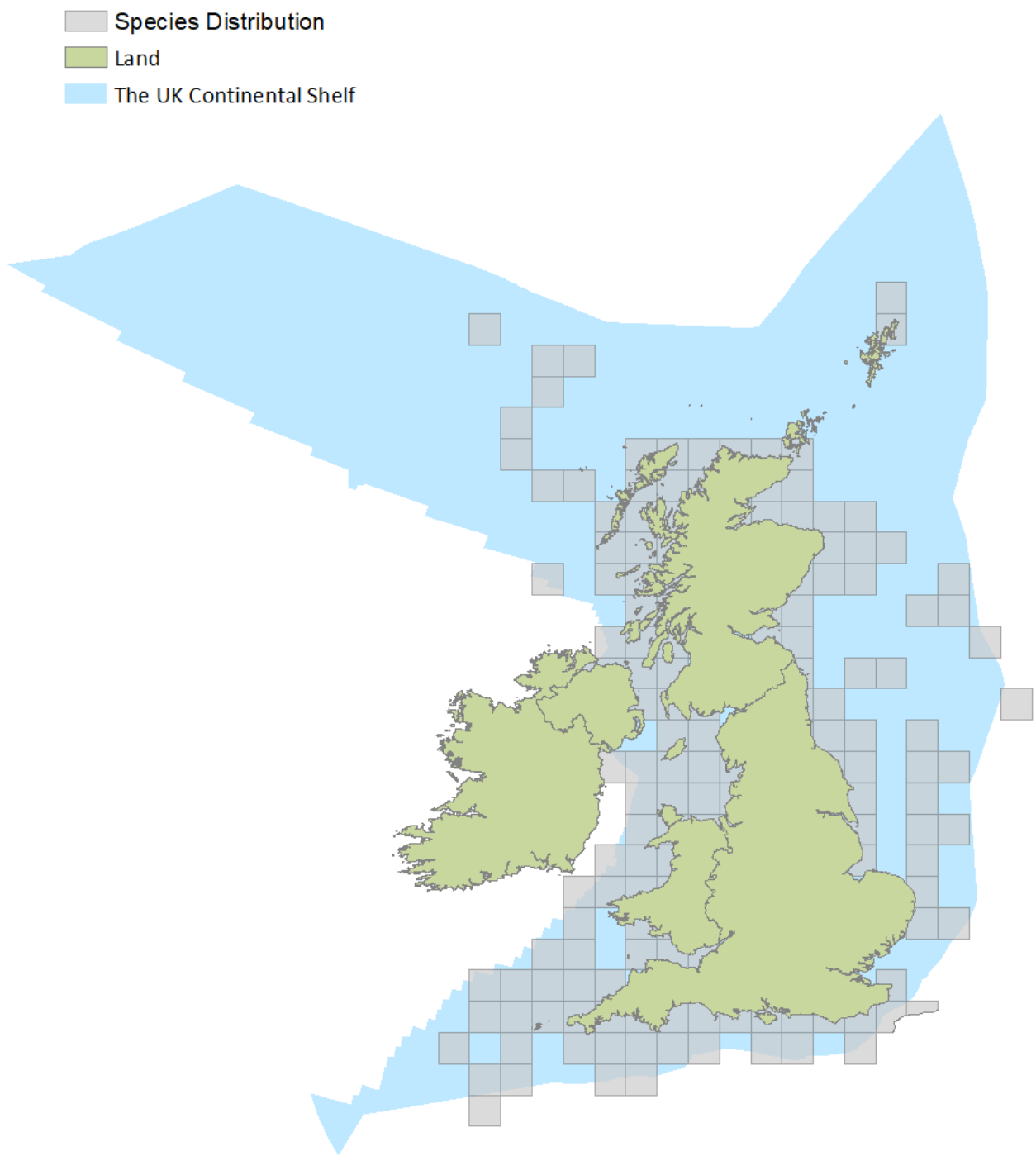

Figure 1: UK distribution map for S1349 - Bottlenose dolphin (*Tursiops truncatus*).

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

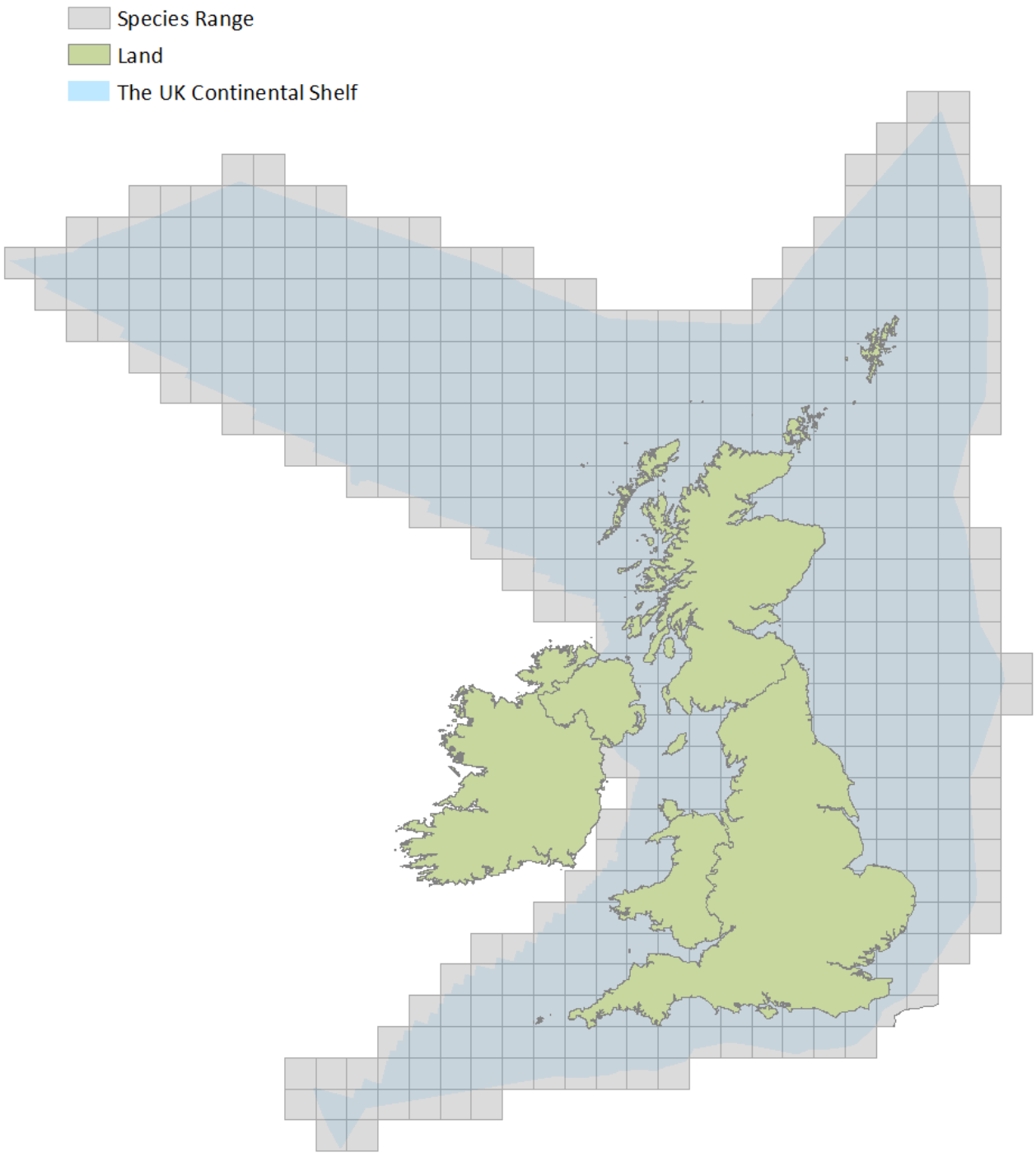

Figure 2: UK range map for S1349 - Bottlenose dolphin (*Tursiops truncatus*).

The range for the 2013-2018 report was based on an analysis of effort related survey data spanning 1994-2010 compiled for the Joint Cetacean Protocol (JCP) undertaken by Paxton et al. (2016). The estimated range was based on a modelled prediction of Bottlenose dolphin (*Tursiops truncatus*) distribution

during August 2010 (see Paxton et al., 2016 for further detail) and adapted based on additional sightings data and expert knowledge for the current reporting period. The range was mapped using a grid of 50x50km resolution and projected to ETRS LAEA 5210.

Explanatory Notes

Species name: Tursiops truncatus (1349)

Field label	Note
2.1 Sensitive species	This refers to sensitivities around publishing distribution data.
2.3 Distribution map	Two distinct ecotypes of bottlenose dolphin are recognised in UK waters - a wide-ranging offshore type, and a more philopatric inshore type (Louis et al., 2014). In UK waters, there are around 700 coastal bottlenose dolphins living in four groups (OSPAR 2017). The largest groups occur off the east coast of Scotland (including the Moray Firth SAC) known as the East Coast group, and off the coast of Wales (including both the Cardigan Bay and the Pen Llyn a'r Sarnau SACs). The other two smaller groups occur off the southwest coast of England and off the west coast of Scotland. Persistently high densities of bottlenose dolphin are found in these areas, and although some individuals are known to move about the coast, these localised, semi-resident populations are considered geographically discrete from those observed offshore. Because of higher survey effort in inshore areas compared to offshore areas beyond the continental shelf, the distribution map likely underrepresents the distribution along/beyond the shelf edge. It is likely that the species can be found anywhere within their range (see map in Section 2.5). The distribution map is based on actual sightings of bottlenose dolphin, covering the UK Exclusive Economic Zone (EEZ) and UK Continental Shelf area (hereafter referred to as 'UK waters') between 2013 and 2018. This collates sightings data from the SCANS III, National Biodiversity Network, SeaWatch Foundation, MARINElife and ORCA datasets and includes both effort related sightings and confirmed opportunistic sightings collected from land, ship and aerial platforms during this period.
2.4 Distribution map; Method used	The distribution map (see Annex A) shows the actual sightings of bottlenose dolphin in UK waters between 2013 and 2018. The resulting map is a good representation of bottlenose dolphin distribution on the continental shelf and is biased towards areas with greater survey effort and high densities of animals. As a result, the offshore component appears under-represented, and although sightings are less common in offshore waters, it is likely that the species can be found anywhere within their range and not just where the distribution map indicates (see Annex B).
2.5 Additional maps	Predicted range for bottlenose dolphin in UK waters. Bottlenose dolphin range widely and can be observed throughout UK waters. No evidence of change since 2013 reporting round. The 2013 range was based on an analysis of effort related survey data spanning 1994-2010 compiled for the Joint Cetacean Protocol (JCP) undertaken by Paxton et al. (2016). The current range was adapted based on additional sightings data and expert knowledge (see Paxton et al., 2016 for further detail). The range map combines that of both inshore and offshore bottlenose dolphins in UK waters. In many inshore areas, bottlenose dolphins maintain definable, long-term multigenerational home ranges (Hammond et al., 2012). The Scottish East Coast bottlenose dolphins are a resident group that range along the east coast from the Moray Firth past Aberdeen and down to the Firths of Tay and Forth (Cheney et al., 2013; Quick et al., 2014). Individuals from the Cardigan Bay semi-resident population are frequently sighted off the north coast of Anglesey and around the Isle of Man during winter months (Feingold & Evans 2014a, b; Lohrengel et al., 2018). Modelling correctly predicts the known high-density areas of resident bottlenose dolphins, as well as a high-density area off the coast of south-west of England (Paxton et al., 2016). With the exception of these coastal populations, densities of the widespread, offshore type are low on the continental shelf (SCANS-II, 2008; SCANS-III, 2016).

Species name: Tursiops truncatus (1349) Region code: MATL

Field label	Note

5.3 Short term trend; Direction	Range for the current report (1,085,484 km2) is equal to the range presented in the 3rd reporting round (2013) (1,057,457km2).
5.5 Short term trend; Method used	The 2013 reported range was based on an analysis of effort related survey data spanning 1994-2010 compiled for the Joint Cetacean Protocol (JCP) undertaken by Paxton et al. (2016). The estimated range was based on a modelled prediction of bottlenose dolphin distribution during August 2010 and adapted based on additional sightings data and expert knowledge (see Paxton et al., 2016 for further detail). 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 3rd (2013) and 4th (2019) 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 UK's 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	This is when the SCANS-III survey was conducted (Hammond et al. 2017).
6.2 Population size	SCANS-III block estimates of abundance have been pro-rated by area across UK waters. Minimum and maximum are the lower and upper 95% confidence intervals respectively. The best single value is the point estimate and is a single estimate that includes both inshore and offshore populations within UK waters.
6.6 Population size; Method used	The SCANS-III survey was designed to provide robust estimates of cetacean abundance. The survey provides complete survey coverage of UK EEZ waters. The area west of the EEZ out to the UK Continental Shelf boundary was assumed to have the same density of animals as the adjacent survey block from SCANS-III. The resulting estimates are considered statistically robust.
6.8 Short term trend; Direction	Short-term trend is Unknown as some data are available, but they are not enough to accurately determine direction at the UK scale. The estimate of UK abundance in 2016 (SCANS-III; 10,610 95%CI =6302-17865) is within 1% of the 2005-2007 estimate (CODA and revised SCANS-II: 10,705 95% CI = 6483-17675) and the confidence intervals overlap considerably. However, with only two data points it is not possible to explore trends of the UK wide populations. Regionally, numbers along the east coast of Scotland have increased (Cheney et al., 2014; Figure 1, Annex C). Abundance estimates from line transects and photo-ID from the wider Cardigan Bay surveys suggest no evidence of decline (Figure 2, Annex C) but estimates in 2013-2015 were the lowest recorded; however, it cannot yet be discerned whether this is a decline or redistribution. More frequent population surveys are required to ascertain changes in population abundance in UK waters in the short-term.
6.15 Favourable reference population	This is the second reliable abundance estimate following a dedicated survey covering UK waters for this species. The 3rd UK Article 17 report set an FRV for bottlenose dolphin abundance. This was based on the population estimate, derived from the SCANS II (2005) and CODA (2007) surveys. This value has subsequently been updated to reflect changes in how the original estimate was derived (detailed in Hammond et al., 2017). However, with only two reliable population estimates we cannot assess trend for this species in UK waters and without reliable trend information it is not possible to state whether either of these estimates represents a favourable reference population. The FRP is therefore currently Unknown.

7.1 Sufficiency of area and quality of occupied habitat	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. Although bottlenose dolphin range is considered stable, with only two data points it is not possible to explore trends relating to their abundance at the UK scale and must conclude that the population parameter for this species is Unknown. As the population parameter is Unknown, we cannot conclude that the supporting habitat is sufficient.
8.1 Characterisation of pressures/ threats	J02 Mixed source marine water pollution (marine and coastal). Application of pressure: Used to identify risk from marine and coastal pollution. The general impact of contaminants on cetaceans is well documented, including impacts on the immune system and reproduction (Jepson et al., 2016). The concentration is highly dependent on the age, sex, reproductive state and nutritional condition of the animals in addition to the intake via the food web. Coastal populations of bottlenose dolphin will have a much higher level of exposure than animals offshore. Bottlenose dolphin was one of four species found to have PCB levels significantly higher than other species, which is linked with possible low reproductive capacity consistent with PCB-induced toxicity (Jepson et al., 2016).
8.1 Characterisation of pressures/ threats	General information for bottlenose dolphin: Pressure ranking is mainly based on expert opinion and data from post mortem of stranded animals, which indicate sources of mortality for this species. A literature search was carried out to support the assessments. The UK Dolphin and Porpoise Conservation Strategy (initial draft presented to stakeholders in April 2018) was used in support of identification of pressures and threats. Bottlenose dolphins in coastal areas are exposed to a wide variety of pressures and threats. Those inhabiting predominantly offshore waters face lower levels of pressure from human activity. Between 2000 and 2017, 164 bottlenose dolphins were reported as stranded in the UK, of which 55 were examined at post mortem by the UK Cetacean Strandings Investigation Programme (CSIP). The main causes of death were found to be infectious disease (9%), live stranding (9%), bycatch (5%) and starvation (5%) (Deaville 2011:2017): http://ukstrandings.org/csip-reports).
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 an impact rated Medium or above. Pile driving during the construction phase for renewable infrastructure is a known cause of disturbance/displacement of bottlenose dolphins (David, 2006; Graham et al., 2017). The influence of this pressure is indirect with evidence of recovery/return once the pressure is removed. Bottlenose dolphins are also at risk from collision with sub-surface marine renewable devices such as tidal turbines (Malinka et al., 2018). Exposure to these pressures is likely to be of higher risk to coastal populations rather than the offshore populations, therefore the Medium grading reflects the highest risk. There are considerable legal and societal obligations to meet clean energy requirements which will result 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/ threats	F07 Sports, tourism and leisure activities: Application of pressure: Used to identify risk of wildlife watching activities. The impact of wildlife watching, and other leisure activities, is indirect with evidence of recovery/return once the pressure is removed. Exposure to this pressure is limited both spatially and temporally, although it may be regionally significant when occurring e.g. for coastal populations (Lohrengel et al., 2018). Boat presence is associated with a short-term reduction in foraging activity in bottlenose dolphins (New et al., 2013). Physical boat presence alone, as opposed to noise, is enough to cause short-term disruption (Pirotta et al., 2014). Disturbance from tourism activities impacts distribution and communication between bottlenose dolphins (La Manna et al., 2016. Heiler et al., 2016). However, this predominantly affects coastal populations therefore the risk is localised. The grading reflects the highest level of risk for coastal populations, whereas risk for offshore populations would be low. Mitigation exists for key coastal populations in both the east of Scotland and Cardigan Bay in Wales in the form of codes of conduct for interacting with the species.
8.1 Characterisation of pressures/ threats	F25 Industrial or commercial activities and structures generating noise, light, heat or other forms of pollution. Application of pressure: Used to identify risk of the cumulative effects of noise on cetaceans. Cetaceans rely on echolocation for navigation, foraging and communication, making them sensitive to noise in the marine environment. Although different sources of disturbance have been identified as potential pressures in the pre-defined EU list, these pressures independently have not been identified as Medium or High risk to bottlenose dolphins in UK waters. However, the cumulative impact of activities can affect distribution and communication of animals (Heiler et al., 2016). Commercial activities such as a dredging have the potential to cause displacement of coastal bottlenose dolphin populations (Pirotta et al., 2013). Impacts are likely greater for the coastal bottlenose dolphin compared to its offshore counterpart. This pressure expected to continue in the longer term.
8.1 Characterisation of pressures/ threats	G01 Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species. Application of pressure: Used to identify risk from prey depletion and disturbance due to fishing activity. A lack of food has a direct and immediate influence on the individual. Starvation is identified as an important cause of death for bottlenose dolphins in UK waters, where 5% (4/55 individuals) of post mortem investigations (2000 - 2017) confirmed starvation as the cause of death in adult animals. There is evidence to suggest that bottlenose dolphin may be the species of toothed cetacean most sensitive to resource depletion with a food-energy requirement three times that of the species with next highest requirement, the common dolphin (Lassalle et al., 2012). There is also a direct overlap identified between bottlenose dolphin diet preferences and commercially targeted species (Lassalle et al., 2012). However, no link has been identified between commercial fishing practices and the cases of cetacean starvation in UK waters
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 as a result of climate change. There is no current evidence for the effects of climate change on bottlenose dolphins. The effect is likely to be mediated through variation in prey resource initially. Lassalle et al (2012) noted that bottlenose dolphin may be more susceptible to a decline in food source due to the required prey biomass for their survival in comparison to other species. However, their varied diet will likely reduce impact of changing availability of species through diversification.

9.5 List of main conservation measures	CH01 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	CG04 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	CG05 Reduce bycatch and incidental killing of non-target species: The UK is implementing the European Council Regulation EC 812/2004, which lays down measures concerning incidental catches of cetaceans in fisheries, and more generally the bycatch obligations within the Habitats Directive. Since 2004, a dedicated bycatch monitoring scheme has been in place, managed by the Sea Mammal Research Unit at University of St Andrews, 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.
9.5 List of main conservation measures	CC02 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), construction (e.g. pile driving) and decommissioning (e.g. use of explosives). 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; JNCC 2017). 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 (e.g Stone, 2015) demonstrated the effectiveness of soft start approach (Stone et al. 2017). Habitats Regulations Assessments (HRA) and Environmental Impact Assessments (EIA) processes are also applied where plans/projects present the risk of injury, mortality or disturbance within SACs or wider seas as part of the UK's consenting process.
9.5 List of main conservation measures	CJ01 Reduce impact of mixed source pollution: The impact of chemical pollution on bottlenose 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.
10.1 Future prospects of parameters	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); Population: Insufficient information to assess the status of this parameter. Although the pressures impacting this parameter are not thought to be increasing and there are no threats identified which are likely to impact in the next 12 years, the uncertainty surrounding the current status of this parameter make it impractical to predict future prospects; Habitat of species: Insufficient information to assess the status of this parameter. Although the pressures impacting this parameter are not thought to be increasing and there are no threats identified which are likely to impact in the next 12 years, the uncertainty surrounding the current status of this parameter make it impractical to predict future prospects.

11.1 Range	There is no evidence to suggest range has changed since the last reporting round (2013) and the range assessment therefore remains Favourable.
11.2 Population	The FRV is Unknown. Therefore, the current abundance cannot be compared to the FRV and the conclusion for population is Unknown.
11.3 Habitat for the species	Range is Favourable but population is Unknown. Therefore, the quality of habitat for the species cannot be inferred in the absence of population information.
11.4 Future prospects	There are two or more Unknown results (population and habitat) therefore future prospects are Unknown.
11.5 Overall assessment of Conservation Status	There are two or more Unknown results (population, habitat and future prospects) therefore the overall assessment of conservation status is Unknown.
11.7 Change and reasons for change in conservation status and conservation status trend	The assessment has changed from Favourable in the UK 3rd reporting round (2013) to Unknown due to a revised approach to dealing with limited data and interpretation of the guidance relating to the Favourable Reference Values (FRVs). According to the Art17 reporting guidance (DG Environment, 2017) assessment of the population parameter is based on how the current estimate compares with the Favourable Reference Population (FRP). A population is considered Favourable if the species abundance estimate is not below the FRP. Due to data limitations, cetacean FRPs were set based on the best UK abundance estimates made as close in time as possible to when the Habitats Directive was adopted. This approach was taken in the UK 3rd reporting round (2013) and was supported by the Article 17 Guidance at the time (Evans and Marvela, 2013). However, the UKs interpretation of the FRP concept has changed between reporting rounds and concludes that information on trends needs to be understood to set an FRP.A minimum of three data points is required to explore trends and considering the large confidence intervals often associated with cetacean abundance estimates, the statistical power to detect anything beyond a dramatic change is likely to be limited from only three estimates. Where less than three data points are available, identification of trends is not possible. The change in the overall conclusion is therefore driven by this change in approach between the reporting rounds.
12.2 Type of estimate	Bottlenose dolphin SACs are utilised by animals from wider populations. Abundance estimates of the number of individuals using the Moray Firth SAC and Cardigan Bay SAC are calculated annually based on photo-identification and mark-recapture analysis (Cheney et al., 2018; Lohrengel et al., 2018). No estimate is available for the Pen Llyn a'r Sarnau SAC. The population size within the SAC network reported here was calculated by combining the 2016 abundance estimates for the Moray Firth SAC (Cheney et al., 2018) and Cardigan Bay SAC (Lohrengel et al., 2018) to give a 'best estimate' value. Given these numbers do not contain individuals using the Pen Llyn a'r Sarnau SAC, they likely underestimate the overall number of animals utilising the whole SAC network each year. Annual abundance estimates for the SACs with 95% CIs are detailed in audit section 12.4.
12.3 Population size inside the network; Method used	SAC population estimates are statistically robust, based on mark-recapture analysis of photo identification data (detailed in audit section 12.4)

12.4 Short term trend of the population size within the network; Direction	Short-term trend for 2005-2016 is considered stable for bottlenose dolphins using the SAC network. Yearly population estimates from 2005-2016 are reported here for the Moray Firth SAC (Table 1, Annex C) and the Cardigan Bay SAC (Table 2, Annex C). Despite inter-annual variability (shown in Figure 3, Annex C), the number of bottlenose dolphins using the Moray Firth SAC has remained stable. The proportion of the east coast of Scotland population that use the SAC has declined, however this is most likely due to the overall increase in population size with over 50% of the east coast population utilising the SAC each year (Cheney et al., 2018). Population estimates for Cardigan Bay SAC are reported in Table 2 (Annex C). Whilst there are no population estimates for the for Pen Llyn a'r Sarnau SAC, CMR surveys of 'wider Cardigan Bay' have been conducted since 2005. This 'wider Cardigan Bay' area includes the Cardigan Bay SAC and extends north of the Cardigan Bay SAC up to the Llyn Peninsula, covering part of the Pen Llyn a'r Sarnau SAC. Population estimates from wider Cardigan Bay are therefore reported here for comparison to the Cardigan Bay SAC population estimates. Despite some fluctuation, the number of bottlenose dolphin using the Cardigan Bay SAC is considered broadly stable (OSPAR, 2017), however further trend analysis is underway as there is some evidence to suggest a decline in the last 10 years (Lohrengel et al., 2018).