

Agenda Item 4.3

Reports

National Reports of ASCOBANS Parties

National Report 2

2016 – 2019 National Report:

United Kingdom

Action Requested

Take note

Submitted by

United Kingdom



Note:

Delegates are kindly reminded to bring their own document copies to the meeting, if needed.

ASCOBANS National Reporting Form

1 January 2016 – 31 December 2019

As outlined in [ASCOBANS Resolution 8.1](#) on National Reporting, this form will cover the years 2016, 2017, 2018 and 2019, and all Sections of the Annex to the Resolution:

- Section I: General Information
- Section II: Habitat Conservation and Management (threats and pressures on cetaceans)
- Section III: Surveys and Research
- Section IV: Use of Bycatches and Strandings
- Section V: Legislation
- Section VI: Information and Education
- Section VII: Other Matters

The national reports submitted will inform discussions at the 9th Meeting of the Parties to ASCOBANS (8-10 September 2020).

- All questions apply to the reporting period 2016-2019.
- Region in the tables refers to the sub-regions as defined by the HELCOM and OSPAR, and Areas refers to the sub-areas as defined by ICES. An overview and maps of these can be found in Annex A. Species can be chosen from the drop-down list provided, based on ASCOBANS species list, see Annex B.
- Throughout the form, please include relevant web links and add rows where applicable.

Where possible, National Coordinators should consult with, or delegate to, experts for particular topics so as to ease the reporting burden. The Secretariat has provided a list of potential country contacts as a starting point. Once the baseline information is in place, it should become easier to update in the future.

For any questions, please do not hesitate to contact the Secretariat.

High-level Summary of Key Messages

In your country, for the reporting period from 2016 to 2019, what does this report reveal about:

1. The most successful aspects of implementation of the Agreement? (list up to five items)
 - i) UK was able to contribute considerable financial support to ensure that SCANS-III was delivered
 - ii) UK has continued to enforce pinger use (as per Regulation 812/2004) and has established a new project to test further approaches to mitigating bycatch in inshore fleets
 - iii) the UK continues to implement a dedicated PETs bycatch monitoring scheme; one of the few dedicated schemes in Europe
 - iv) the UK continues to fund the Cetacean Strandings and Investigation Scheme which provides invaluable monitoring on the health of cetaceans
 - v) UK is actively tracking and managing impulsive noise through the development and upkeeping of the Marine Noise Register and advice for SACs.
2. The greatest challenges in implementing the Agreement? (list up to five items)
 - i) Resource limitation (limited funds and number of people working on it)
 - ii) Government reprioritisation in a post-COVID landscape
3. The main priorities for future implementation of the Agreement? (list up to five items)
 - i) Continued focus on improving bycatch monitoring and mitigation

Section I: General Information

A. Country Information

1. Name of Party / Non-Party Range State:
2. Details of the Report Compiler

Name: Julia Sutherland
 Function: Marine Species Advisor
 Organization: Joint Nature Conservation Committee (JNCC)
 Postal Address: JNCC, Inverdee House, Baxter Street, AB11 9QA
 Telephone:
 Email: julia.sutherland@jncc.gov.uk
 Does the Report Compiler act as ASCOBANS National Coordinator (i.e. focal point)?
☒ No ☐ Yes

3. Details of contributor(s)

Topic(s) contributed to: Bycatch; Marine Debris; Pollution/Hazardous Substances; Shipstrike; Surveys and Research (Monitoring Programmes); Use of Stranding Records; Education and Outreach
 Name: Rob Deaville
 Function: CSIP Project Manager
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 Postal Address: Institute of Zoology, ZSL, Regents Park, London, NW1 4RY
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Topic(s) contributed to: A1, A2, B3
 Name: Kelly Macleod
 Function: Senior Marine Mammal Advisor
 Organization: Joint Nature Conservation Committee (JNCC)

<p>Postal Address: JNCC, Inverdee House, Baxter Street, AB11 9QA Telephone: Email: Kelly.macleod@jncc.gov.uk</p>
<p>Topic(s) contributed to: C9 Name: Nikki Taylor Function: Marine Mammal Advisor Organization: Joint Nature Conservation Committee (JNCC) Postal Address: Monkstone House,, City Rd, Peterborough PE1 1JY, United Kingdom Telephone: Email: Nikki.taylor@jncc.gov.uk</p>
<p>Topic(s) contributed to: Bycatch; Resource Depletion; Marine Debris; Pollution/Hazardous Substances; Shipstrike; Surveys and Research (Monitoring Programmes); Education and Outreach Name: Peter GH Evans Function: Director Organization: Sea Watch Foundation (SWF) Postal Address: Ewyn y Don, Bull Bay, Amlwch, Anglesey LL68 9SD Telephone: 01407 832892 Email: peter.evans@bangor.ac.uk</p>
<p>Topic(s) contributed to: A1, B3, B4, B5, C9, C12 Name: Karen Hall Function: Marine Mammal Advisor Organization: Scottish Natural Heritage Postal Address: Stewart Building, Lerwick, Shetland ZE1 0LL Telephone: Email: Karen.Hall@nature.scot</p>
<p>Topic(s) contributed to: A2, B3, B4, B5, C8 Name: Rebecca Walker (NE) Name: Rebecca Walker Function: Marine Mammal Senior Environmental Specialist Organization: Natural England Postal Address: Dragonfly House, 2 Gilders Way, Norwich NR3 1UB Telephone: Email: Rebecca.Walker2@naturalengland.org.uk</p>
<p>Topic(s) contributed to: B4 Name: Tom Stringell Function: Lead Specialist Advisor: Marine Species Organization: Natural Resource Wales Postal Address: Maes y Ffynnon, Penrhosgarnedd, Bangor, Gwynedd, LL57 2DW Telephone: 07789 878284 Email: Tom.Stringell@cyfoethnaturiolcymru.gov.uk</p>
<p>Topic(s) contributed to: Surveys and Research (Monitoring Programmes) Name: James Waggitt Function: Lecturer Organization: Bangor University Postal Address: School of Ocean Sciences, Bangor University, Menai Bridge, LL57 5AB Telephone: 01248 388767 Email: j.waggitt@bangor.ac.uk</p>
<p>Topic(s) contributed to: B3 Name: Philip Hammond (SMRU) Function: Professor at Scottish Oceans Institute Organization: University of St. Andrews Postal Address: SOI, East Sands, University of St. Andrews, KY16 8LB Telephone: Email: psh2@st-andrews.ac.uk</p>
<p>Topic(s) contributed to: C11, B3, VI A Name: Suzanne Beck Function: Fisheries and Aquatic Ecosystems Branch Organization: Agri-Food and Biosciences Institute Postal Address: 18a Newforge Lane, Belfast BT9 5PX</p>

Telephone: 028 902 55157
Email: Suzanne.beck@afbini.gov.uk
Topic(s) contributed to: Section II – 2.3, 5.2, 5.8, 6.2, 9.1, 9.2, 9.5, 13.1 & 15.1 Section III – 3.3
Section VI – 1.3
Name: Stephen Foster
Function: Marine Species Advisor
Organization: Department of Agriculture, Environment and Rural Affairs
Postal Address: DAERA Marine & Fisheries Division, Klondyke Building, 1 Cromac Avenue,
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Copy box if needed.

Section II: Habitat Conservation and Management (threats and pressures on cetaceans)

A. Fisheries-related Threats

1. Bycatch

AIM: to illustrate progress on understanding, monitoring and mitigating bycatch of small cetaceans.

Relevant Resolutions: 8.5, 8.4, 8.3, 7.3, 7.1, 6.1, 5.8, 5.7, 5.5, 3.3

Bycatch, the entanglement of an animal in fishing gear, is identified as a major cause of mortality in small cetaceans. Every effort should be made to reduce bycatch towards zero as quickly as possible. Parties to ASCOBANS have agreed on a number of resolutions that highlight the importance of mitigating bycatch of small cetaceans in the Agreement Area, as available data indicates that levels of bycatch pose a considerable threat to their conservation status. Parties have agreed that modifications of fishing gear and relevant practices shall be applied in order to reduce negative impacts where data indicates unacceptable interaction. The Agreement Area requires improved monitoring, collation of data, and consideration of appropriate mitigation measures, while also taking into account similar work in other areas.

To better understand the extent of the impact of bycatch on small cetaceans, monitoring and mitigation measures in place, and ongoing work in the Agreement Area, countries are requested to provide relevant information.

Note: This section includes bycatch in recreational fisheries.

Questions:

1.1. How is bycatch assessed/monitored in your country?

Year	Method	Used	Percentage (% by monitoring method, of total bycaught animals, by gear type if applicable)
2016	Dedicated observer schemes	<input checked="" type="checkbox"/>	Reported under Council Regulation 812/2004. http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18535 Coverage varies depending on metier level reported; contract aims for ~ 400 monitored days at sea per year. See 1.2 for cetaceans bycaught.
	Fisheries observes	<input checked="" type="checkbox"/>	Sampling under DCF observers. A further 79 days of non-dedicated sampling in static net fisheries was also conducted under other English, Welsh and Northern Irish fishery monitoring programmes, and

			591 days of non-dedicated sampling was also conducted. A single common dolphin was reported in static nets for anglerfish in OSPAR Celtic Seas (ICES division 7e).
	Remote Electronic Monitoring	<input type="checkbox"/>	
	Self-reporting by fisherman	<input type="checkbox"/>	
	Pathological investigation	<input checked="" type="checkbox"/>	n=12 (out of 130 UK necropsies- all species)
	Assessment at stranding site*	<input checked="" type="checkbox"/>	n=35 (out of 123 non-necropsied and BEEP assessed strandings in Cornwall)
2017	Dedicated observer schemes	<input checked="" type="checkbox"/>	Reported under Council Regulation 812/2004. http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18535 Coverage varies depending on metier level reported; contract aims for ~ 400 monitored days at sea per year. See 1.2 for cetaceans bycaught.
	Fisheries observes	<input checked="" type="checkbox"/>	Sampling under DCF observers. 72 days of non-dedicated sampling in static net fisheries was also conducted under other English, Welsh and Northern Irish fishery monitoring programmes, and a further 481 days of non-dedicated sampling was also conducted. No cetaceans recorded as bycatch.
	Remote Electronic Monitoring	<input type="checkbox"/>	
	Self-reporting by fisherman	<input type="checkbox"/>	
	Pathological investigation	<input checked="" type="checkbox"/>	n=22 (out of 144 UK necropsies- all species)
	Assessment at stranding site*	<input checked="" type="checkbox"/>	n=49 (out of 158 non-necropsied and BEEP assessed strandings in Cornwall)
2018	Dedicated observer schemes	<input checked="" type="checkbox"/>	Reported under Council Regulation 812/2004. http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18535 Coverage varies depending on metier level reported; contract aims for ~400 monitored days at sea per year. See 1.2 for cetaceans bycaught.
	Fisheries observes	<input checked="" type="checkbox"/>	Sampling under DCF observers. Over 100 days of non-dedicated sampling in static net fisheries was also conducted under other English, Welsh and Northern Irish fishery monitoring programmes, and roughly 600 days of

			nondedicated sampling was conducted under those same programmes mainly in a variety of demersal trawl fisheries. No cetaceans reported.
	Remote Electronic Monitoring	<input type="checkbox"/>	
	Self-reporting by fisherman	<input type="checkbox"/>	
	Pathological investigation	<input checked="" type="checkbox"/>	n=13 (out of 141 UK necropsies- all species)
	Assessment at stranding site*	<input checked="" type="checkbox"/>	n=38 (out of 85 non-necropsied and BEEP assessed strandings in Cornwall)
2019	Dedicated observer schemes	<input checked="" type="checkbox"/>	Coverage varies depending on metier level reported; contract aims for ~ 400 monitored days at sea per year. See 1.2 for cetaceans bycaught. Coverage lower this year due to multiple issues (e.g. observer issues)
	Fisheries observes	<input checked="" type="checkbox"/>	Data not yet available
	Remote Electronic Monitoring	<input type="checkbox"/>	
	Self-reporting by fisherman	<input type="checkbox"/>	
	Pathological investigation	<input checked="" type="checkbox"/>	n=16 (out of 108 UK necropsies- all species)
	Assessment at stranding site*	<input checked="" type="checkbox"/>	n=47 (out of 109 non-necropsied and BEEP assessed strandings in Cornwall)

Comments:

Additional and more detailed data on UK strandings and necropsies is available in the relevant CSIP annual reports (see Section IV, 1.10)

*NB- data displayed on 'Assessment at stranding site' is derived from data collected by Cornwall Wildlife Trust Marine Strandings Network (CWTMSN) volunteers in Cornwall, England under their Bycatch Evidence Evaluation Protocol (BEEP). Further detail is available in the relevant CWTMSN annual reports (Section IV, 1.10)

Please note, SMASS/SRUC volunteers also assess stranded cetacean carcasses in Scotland for lesions potentially related to bycatch.

1.2. Which species of small cetaceans were recorded as bycatch by commercial fishing in the reporting period?

Overview of bycaught small cetaceans per region. Provide information where available.

Species	Number of bycaught animals observed	Year (incl. season if available)	Gear type	Area	Overall sampling effort	Monitoring method used
CD Short-beaked Common dolphin	6	2016	Unknown	27.7.e	N/A	Necropsies from strandings
CD Short-beaked Common dolphin	1	2016	Unknown	27.7.f	N/A	Necropsies from strandings
HP Harbour porpoise	2	2016	Unknown	27.7.a	N/A	Necropsies from strandings
HP Harbour porpoise	1	2016	Unknown	27.7.f	N/A	Necropsies from strandings
HP Harbour porpoise	1	2016	Unknown	27.4.c	N/A	Necropsies from strandings
KW Killer Whale	1	2016	Unknown	27.6.a	N/A	Necropsies from strandings
CD Short-beaked Common dolphin	11	2017	Unknown	27.7.e	N/A	Necropsies from strandings
CD Short-beaked Common dolphin	1	2017	Unknown	27.7.f	N/A	Necropsies from strandings
HP Harbour porpoise	2	2017	Unknown	27.7.e	N/A	Necropsies from strandings
HP Harbour porpoise	2	2017	Unknown	27.7.f	N/A	Necropsies from strandings
HP Harbour porpoise	2	2017	Unknown	27.7.a	N/A	Necropsies from strandings
HP Harbour porpoise	2	2017	Unknown	27.7.d	N/A	Necropsies from strandings
HP Harbour porpoise	1	2017	Unknown	27.6.a	N/A	Necropsies from strandings
NBW Northern bottlenose whale	1	2017	Unknown	27.6.a	N/A	Necropsies from strandings
CD Short-beaked Common dolphin	10	2018	Unknown	27.7.e	N/A	Necropsies from strandings
CD Short-beaked Common dolphin	1	2018	Unknown	27.7.d	N/A	Necropsies from strandings
HP Harbour porpoise	2	2018	Unknown	27.7.d	N/A	Necropsies from strandings
CD Short-beaked Common dolphin	13	2019	Unknown	27.7.e	N/A	Necropsies from strandings
HP Harbour porpoise	3	2019	Unknown	27.7.d	N/A	Necropsies from strandings
SBW Sowerby's beaked whale	1	2019	Unknown	27.4.b	N/A	Necropsies from strandings
HP Harbour porpoise	10	2016	Static net	27.7	315 dedicated bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive
CD Short-beaked Common dolphin	2	2016	Static net	27.7	315 dedicated bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive
LFPW Long-finned pilot whale	2	2016	Static net	27.7	315 dedicated bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive
CD Short-beaked Common dolphin	1	2016	Static net	27.7.e		DCF sampling
HP Harbour porpoise	5	2017	Static net	27.7	217 dedicated protected species bycatch monitoring days	Dedicated observer scheme under Council Regulation

						812/2004 and Habitats Directive
CD Short-beaked Common dolphin	3	2017	Static net	27.7	217 dedicated protected species bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive
HP Harbour porpoise	2	2018	Static net	27.7.g/27.4.c	172 dedicated protected species bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive
CD Short-beaked Common dolphin	2	2018	Static net	27.7.g	172 dedicated protected species bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive
HP Harbour porpoise	2	2019	Static net	27.7	212 dedicated protected species bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive
CD Short-beaked Common dolphin	6	2019	Static net	27.7	212 dedicated protected species bycatch monitoring days	Dedicated observer scheme under Council Regulation 812/2004 and Habitats Directive

Comments:

Please note, SMASS/SRUC diagnosed the killer whale, northern bottlenose whale and Sowerby's beaked whale in the above table as incidences of 'Entanglement'. Definition used in CSIP annual reports below;

- **Entanglement-** Denotes evidence of entanglement in rope (creel etc.) or discarded fishing gear/marine litter

Numbers reported as Observed by Council Regulation 812/2004 occurred in ICES subarea VII and is the number of animal observed. Estimates overall bycatch are as followed. See reports for caveats and further details

(<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18535>):

- 2016: estimated harbor porpoise bycaught in UK gillnet fishery 771 - 2994 animals (best estimate 1482; CV=0.09) in the absence of pingers, and from 606 and 3114 animals (best estimate 1250 CV=0.11) if all over 12 m boats used pingers in relevant areas; common dolphins are 285 (range 137-922) These estimates include several assumptions.
- 2017: harbor porpoise in UK gillnet fisheries in the absence of pingers is between 718 and 2402 animals (best estimate 1282; CV=0.08), and if all over 12 m boats used pingers in relevant areas is between 587 and 2615 animals (best estimate 1098 CV=0.10). Bycatch estimates for common dolphins are 258 (range 140-737) respectively. These estimates include several assumptions
- The estimate of harbour porpoise bycatch for 2018 in all UK gillnet fisheries in the absence of pingers is between 845 and 1633 animals (best estimate 1150; CV=0.087), and if all over 12 m boats used pingers in relevant areas the estimate is between 660 and 1464 animals (best estimate 948 CV=0.108). These estimates include several assumptions. Bycatch estimates for common dolphins and seals in 2018, with similar caveats, are 248 (range 171-452) and 474 (range 376-691) respectively.

1.3. Which species of small cetaceans were recorded as bycatch by recreational fishing in the reporting period?

Overview of bycaught small cetaceans per region. Provide information where available.

NONE

Species	Number of bycaught animals observed	Year (incl. season if available)	Gear type	Area	Overall sampling effort	Monitoring method used
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Choose an item.				Choose an item.		
Choose an item.				Choose an item.		

1.4. Has there been any notable incidents/issues related to bycatch during the reporting period in your country?

☒ **No.**

☐ **Yes.** Please provide details:

(mass bycatch incidents, unusual species bycatch etc.)

1.5. Are there any mitigation measures in place?

☐ **No.**

☒ **Yes.** Please provide details: What mitigation measures (including alternative gear) are being used and where? (acoustic deterrent devices, seasonal closures, gear modifications etc.)

Mitigation approach	Region	Year implemented	Has the mitigation measure been effective?
Acoustic deterrent devices (DDD-03L)	OIII Celtic Sea		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes. Comments: Data collected by dedicated PETS observers indicates that harbour porpoise bycatch rates continue to be significantly reduced as a result of pinger use. Pinger in use in relevant métiers in subarea 7 and 4 as per Regulation 812/2004
	Choose an item.		<input type="checkbox"/> No <input type="checkbox"/> Yes. Comments:
	Choose an item.		<input type="checkbox"/> No <input type="checkbox"/> Yes. Comments:

1.6. Have there been changes in fishing effort (for fisheries known to have an impact) in the reporting period?

☐ **No.**

☐ **Unknown/not applicable.** Comments:

☒ **Yes.** Please provide details:

There has been a reduction in fishing effort for sea bass in the western English Channel following emergency measures to protect stocks introduced in 2015/16.

1.7. Relevant new research/work/collaboration on bycatch in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

- OSPAR Intermediate Assessment on Bycatch 2017:
https://oap-cloudfront.ospar.org/media/filer_public/f3/43/f343edf0-55e0-4ec0-bc92-428f9d9b1745/harbour_porpoise_bycatch_m6.pdf
- Cetacean Bycatch Observer Monitoring Scheme: Annual Reports on implementation of (EC) Regulations 821/2004 (2012-2018):
<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=18535>
- Are pingers and closed areas useful tools to mitigate bycatch of harbour porpoise in Special Areas of Conservation (SAC)? (JNCC, DEFRA & SMRU).
http://randd.defra.gov.uk/Document.aspx?Document=14698_ME6014HP20191216_Final_IEG_Report_SMRU.pdf
- Development of a Removal Limit Algorithm (RLA) to set limits to anthropogenic mortality of small cetaceans to meet specific conservation objectives, with an example implementation for bycatch of harbour porpoise in the North Sea (Phil Hammond, SMRU).
<https://hub.jncc.gov.uk/assets/8ac9a424-eda5-4062-957e-63d82d3e39cc>
- Omeyer, L. et al (2020) Assessing the Effects of Banana Pingers as a Bycatch Mitigation Device for Harbour Porpoises (*Phocoena phocoena*). Frontiers in Marine Science, 7 Doi: 10.3389/fmars.2020.00285.

- Calderan and Leaper 2019 Review of harbour porpoise bycatch in UK waters and recommendations for management. Report for WWF. 57pp.
- Dolphin and Porpoise Conservation Strategy (due for consultation soon)

1.8. Is the perceived level of pressure from bycatch in your country increasing, decreasing, staying the same or unknown?

To be done per species where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence (e.g. strandings, observer schemes)
HP Harbour porpoise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dedicated observer scheme
BD Bottlenose dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Expert opinion. Proportion of strandings examined at post-mortem (CSIP database)
CD Short-beaked Common dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dedicated observer scheme Proportion of strandings examined at post-mortem (CSIP database)

☐ Not applicable. Comments:

A. Fisheries-related Threats

2. Resource Depletion

AIM: to determine areas where, and to what extent, depletion of fish stocks have occurred during the reporting period. In addition; identify ongoing mitigation efforts regarding detrimental implications for small cetaceans.

Relevant Resolutions: 8.9, 8.3, 7.1, 6.1

Depletion in fish stocks due to overfishing and other factors generates pressure on the favourable conservation status of small cetaceans (through possible food shortage). More integrated management and reductions in fishing effort (also prompted by concern about fish stock depletion or other ecosystem considerations) have been encouraged, especially in areas of known risk. Further research, effective fishery regulations and innovation within certain fishing methods are considered to be helpful steps towards mitigating this pressure.

Parties to ASCOBANS have agreed on a number of resolutions that (1) determine the impact of the depletion of fish stocks on small cetaceans, (2) encourage fishing effort reductions and (3) review new information on these depletions to make recommendations. Resource depletion in the Agreement Area requires improved monitoring, collation of data, and consideration of appropriate mitigation measures, while also taking into account similar work in other areas.

It is of particular interest to ASCOBANS to understand the extent of prey depletions, any related ongoing work, monitoring and mitigation measures in the Agreement Area. Countries are requested to provide relevant information.

Questions:

2.1. Based on the latest stock assessments, are there any notable depletions of fish species which would be a concern for small cetaceans?

☐ No.

☒ Yes. Please provide details.

Several North Sea stocks analytically assessed by ICES have current fishing mortality rates above FMSY, including cod, whiting, haddock, mackerel, and blue whiting. The over-exploitation of such stocks may therefore be of concern to cetaceans that predate on these species. However, it should

be noted that 24 of 32 North Sea stocks assessed by ICES are exploited at rates at or below FMSY, therefore any reduction in prey as a result of over-exploitation is likely to be localised. (ICES. 2016. Greater North Sea Ecoregion – Ecosystem overview. ICES ADVICE 2016, (May),1-22. <https://doi.org/10.17895/ices.pub.3116>)

Stocks of concern identified by ICES (2017) in the Greater North Sea include: Seabass in divisions 4.b-c, 7.a, and 7.d-h (central and southern North Sea, Irish Seal, English Chanel, Bristol Chanel, and Celtic Sea); Cod in division 7.e-k (eastern English Channel and southern Celtic Seas); herring in subareas 1,2,5, and divisions 4.a and 14.a (Norwegian spring-spawning herring, the Northeast Atlantic and Arctic Ocean); horse mackerel in subarea 8 and divisions 2.a, 4.a, 5.b, 6.a, 7.a-c, e-k (Northeast Atlantic); sandeel in divisions 4.b and 4.c (North Sea), and subdivision 20, Sandeel area 2r (Skagerrak, central and southern North Sea); Sole in division 7.d (eastern English Channel). (ICES. 2016. Greater North Sea Ecoregion – Ecosystem overview. ICES ADVICE 2016, (May),1-22. <https://doi.org/10.17895/ices.pub.3116>)

Overall fishing pressure on the commercial fish and shellfish stocks in the Celtic Seas ecoregion has decreased since its peak in 1998 and the average F to FMSY ratios for the combined demersal, flatfish, and pelagic stocks is now close to FMSY. Overall biomass of commercial fish and shellfish stocks in the Celtic Sea has increased and the average SSB to Btrigger ratio for the combined demersal, shellfish, and pelagic stocks in the Celtic Seas ecosystem is now above Btrigger. The fishing effort of bottom mobile gears in the Celtic Seas ecoregion decreased by 35% from 2003 to 2014. This has reduced the spatial fishing footprint and the average number of times the seabed is trawled per year

(https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/2019/EcosystemOverview_CelticSeas_2019.pdf). Nephrops account for the highest landings in the Irish Sea; they are mainly taken in trawl fisheries where they account for more than 90% of the total landings. In the Celtic Sea and west of Ireland hake account for the majority of the landings; they are mainly taken in longline and gillnet fisheries which are also dominated by hake. In the west of Scotland Nephrops again account for the highest landings; they are mainly taken using otter trawls, but also in pots (https://www.ices.dk/sites/pub/Publication%20Reports/Advice/2019/2019/FisheriesOverviews_CelticSeas_2019.pdf).

2.2. Where are these depletions in national waters occurring?

Sub-areas/regions as defined by ICES/OSPAR & HELCOM.

Area	Region
Choose an item.	Choose an item.
Choose an item.	Choose an item.
Choose an item.	Choose an item.

2.3. What measures are being taken to manage pressures on depleted fish stocks, including relevant regulations/guidelines (current / planned / year of implementation)?

Measure	Timeframe information	Relevant driver
DAERA: Management in NI under Maximum Sustainable Yield framework https://www.daera-ni.gov.uk/articles/quota-management-cmo-and-fish-producer-organisations-fixed-quota-allocation-fqa-register-cod	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/410774/UK_2015_Quota_management_rules.pdf	2012 Concordat on Management Arrangements for Fishing Opportunities and Fishing Vessel Licensing in the United Kingdom ' (www.gov.uk/government/publications/concordat-on-management-arrangements-for-fishing-quotas-and-licensing-in-the-uk) as it relates to fish quotas.
English approach to fisheries management in MPAs	https://www.gov.uk/government/collections/managing-fisheries-in-marine-protected-areas	
Marine Scotland fisheries measures for MPAs includes measures relating to sandeels and other prey species.	https://www.gov.scot/policies/marine-environment/marine-protected-areas/	

2.4. Is there any evidence within your country's national waters that resource depletion may be impacting small cetaceans (e.g. evidence of starvation)?

2.5.

☒ **No.**

☐ **Yes.** Please provide details.

Evidence/diagnosis of starvation in a number of UK stranded cetaceans examined at necropsy. But not possible to link this with resource depletion as there are many possible drivers of nutritional loss.

2.6. Are there any national efforts to (e.g. surveys) evaluate cetacean body condition at sea?

☐ **No.**

☒ **Yes.** Please provide details.

SWF ongoing study – Aerial Drone photogrammetry surveys of bottlenose dolphins in Cardigan Bay (West Wales) in combination with vessel-based photo-ID surveys to establish changes in body conditions for individual dolphins

2.7. Relevant new research/work/collaboration on resource depletion in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

Ongoing analyses of spatio-temporal variation in abundance for 12 cetacean species in relation to changes in prey distributions and trends in stock sizes across NW European seas (continuation of the work started within the NERC-Defra funded Marine Ecosystem Research Programme) undertaken by Bangor University / Sea Watch Foundation.

AFBI ongoing study - Combined active and passive acoustic surveys on the assessment of harbour porpoise distribution and clupeid density in the Irish Sea – data collected from the 2016, 2017, and 2019 AFBI herring acoustic surveys (List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

JNCC contracts to develop “calorific maps” of harbour porpoise prey:

(<http://data.jncc.gov.uk/data/c12c1b45-73ba-4402-a8f5-ec0275a72cf1/JNCC-Report-633-FINAL-WEB.pdf>) and to assess importance of prey in degerming harbour porpoise distribution:

Janneke Ransijn, Claire Lacey, Sophie Smout, Philip Hammond and Cormac Booth, in press. Exploring harbour porpoise distribution in the context of prey in the North Sea. JNCC Report ##

2.8. Is the perceived level of pressure from resource depletion in your country increasing, decreasing, staying the same or unknown?

To be done per species where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
HP Harbour porpoise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

☐ **Not applicable.** Comments:

B. Disturbance (incl. potential physical impacts)

3. Noise (impulsive i.e. piling and continuous/ambient i.e. shipping)

AIM: to illustrate progress on understanding, monitoring and mitigating negative effects on small cetaceans from underwater noise during the reporting period.

Relevant Resolutions: 8.11, 8.9, 8.6, 8.4, 8.3, 7.1, 6.2, 6.1

Small cetaceans are especially susceptible to underwater noise due to their high responsiveness to sound and wide hearing range. Good environmental status, as defined by the European Union, suggests that the introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment. Anthropogenic noise pollution has generally increased in recent times and generates a broad range of frequencies due to a wide variety of human activities. Impulsive and continuous noise present different impacts on small cetaceans, which include communicative masking, behavioural response and physiological injury. Noise in marine environments potentially impedes communication, affects distribution and hence feeding and reproduction of small cetaceans. Studies show that not only cetaceans but also fish and other marine life may be negatively impacted by anthropogenic noise.

Parties to ASCOBANS have agreed on implementation of measures through a number of resolutions that (1) highlight the potential impact that noise pollution may have on small cetaceans in the Agreement Area and (2) commit to reduce the pressure presented by underwater noise. The Agreement Area requires improved monitoring, collation of data, and consideration of appropriate mitigation measures.

To better understand the extent to which noise negatively impacts the health of small cetaceans, and to learn about new work relevant to the topic, countries are requested to provide related information.

Questions:
3.1. To which noise registers/databases has your country contributed to date?

ICES Impulsive Noise Register (for HELCOM and OSPAR Parties)	National registry	Other
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable Specify (e.g. JNCC noise registry): JNCC Marine Noise Registry https://mnr.jncc.gov.uk/	<input type="checkbox"/> Yes <input type="checkbox"/> No Specify:

3.2. Any instances/issues in the reporting period including information on planned or completed significant developments/activities, including the details of monitoring in place before, during and after the project:

Development/ Individual Activity of impulsive noise (e.g. construction, seismic, sonar)	Status	Environmental Impact Assessment (EIA)	Strategic Environmental Assessment (SEA)	Information on noise management and monitoring			Region
				Regulations/ guidelines exist	Monitoring conducted	Mitigation in place	
Construction of various wind farms and other large construction projects Planned, ongoing and complete	Complete	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: https://infrastructure.planninginspectorate.gov.uk	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3	Yes	Yes	Yes	Oil Southern North Sea
Oil and gas surveys Planned, ongoing and complete	Complete	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: https://www.ogauthority.co.uk/licensing-consents/licensing-rounds/	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: http://www.energy-sea.gov.il/English-Site/PublishingImages/Pages/Forms/EditForm/Strategic%20Environmental%20	Yes	Yes	Yes	Oil Southern North Sea

		https://www.gov.uk/topic/oil-and-gas/environment-reporting-and-regulation https://oilandgasukenvironmentallegislation.co.uk/contents/topic_files/offshore/eia.htm	0Assessment%20(SEA)%20-%20English%20Summary.pdf				
Construction of various wind farms and other large construction projects Planned, ongoing and complete	Complete	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: http://marine.gov.scot/marine-projects	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: https://www2.gov.scot/Topics/marine/marineenergy/wind/seareport	Yes	Yes	Yes	Oil North North Sea
Construction of various wind farms and other large construction projects Planned, ongoing and complete	Complete	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: http://marine.gov.scot/marine-projects	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Weblinks: https://www2.gov.scot/Topics/marine/marineenergy/wind/seareport	Yes	Yes	Yes	OIII Irish & Scottish W. Coast

3.3. Relevant new research/work/collaboration on underwater noise in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

Initiatives/funding

- BEIS Offshore SEA Research Programme – and projects/reports/papers under the fund.
- The Crown Estate Enabling Fund – and projects/reports/papers under the fund.
- ORJIP Phase I and Phase II – and projects/reports/papers under the fund.
- Defra's Impacts Evidence Group – and projects/reports/papers under the fund.

- SCOTmer – and projects/reports/papers under the fund (e.g. ECOMMAS).
- SNCB funded projects (e.g. Cumulative impact assessment of Scottish east coast offshore wind farm construction and Review of noise abatement systems for offshore wind farm construction noise and their potential for application in Scottish waters)
- ADD evidence base: <https://hub.jncc.gov.uk/assets/e2d08d7a-998b-4814-a0ae-4edf5d887a02>, Booth et al. 2017 Using the Interim PCoD framework to assess the potential impacts of offshore wind developments in Eastern English Waters on harbour porpoises in the North Sea. Natural England Joint Report, Number 024 York; Guide to population models using in marine mammal impact assessments - <https://hub.jncc.gov.uk/assets/e47f17ec-30b0-4606-a774-cdcd90097e28>)

Projects (also some examples above)

- DEPONS – and papers published as part of this project
- PCoD – and papers published as part of this project
- EU funded projects – e.g. COMPASS, JOMOPANS – and papers published as part of these projects
- Project specific monitoring projects (e.g. East Anglia 1 wind farm harbour porpoise modelling project)

Initiatives/collaborations

- Underwater Sound Forum (USF)
- UK Acoustics Network (UKAN)
- Dolphin and Porpoise Conservation Strategy
-

Papers

- Booth et al (2020) methods for monitoring for the population consequences of disturbance in marine mammals: a review. *Frontiers in Marine Science*, Doi: 10.3389/fmars.2020.00115
- Box et al 2020 The spatial and temporal distribution of loud impulsive noise in UK waters (2015-2018). *Proc. Mtgs. Acoust.* 37, 040001 (2019); doi: 10.1121/2.0001194
- Farcas et al (2020) Validated shipping noise maps of the Northeast Atlantic. *Science of the Total Environment*, 735: 139509
- Graham et al (2019) Harbour porpoise responses to pile driving diminish over time *Royal Society of Open Science*, 6: 190335
- Graham et al (2017) Responses of bottlenose dolphins and harbour porpoises to impact and vibration piling noise during harbour construction. *Ecosphere* 8(5): e01793
- Hastie et al (2019) Effects of impulsive noise on marine mammals: Investigating range-dependent risk. *Ecological Applications*, 29(5) e01906
- Merchant et al (2020) Impulsive noise pollution in the Northeast Atlantic: Reported activity during 2015 – 2017. *Marine Pollution Bulletin*, 152: 110951
- Merchant and Robinson (2020) Abatement of underwater noise pollution from pile-driving and explosions in UK waters, Report of the UKAN workshop held on the 12th November 2019 at the Royal Society, London. 31pp.
- Pine et al (2019) Providing ecological context to anthropogenic subsea noise: Assessing listening space reductions of marine mammals from tidal energy devices. *Renewable and Sustainable Energy Reviews*, 103: 49-57.
- Stone et al. 2017. The effects of seismic operations in UK waters: analysis of Marine Mammal Observer data. *Journal of Cetacean Research and Management* 16: 71-85.
- Tyack and Thomas (2018) Using dose-response function to improve calculations of the impact of anthropogenic noise. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 29(S1): 242-253.
- Wilson et al (2019) A decision framework to identify populations that are most vulnerable to population level effects of disturbance. *Conservation Science and Practice* 2:e149.

- Interreg VA COMPASS Project – underwater noise monitoring in ten locations across OSPAR region III: Irish Sea & Region III: Irish and Scottish West Coast from 2018 – Present.
- Interreg VA MarPAMM Project – underwater noise monitoring in five locations across OSPAR region III: Irish Sea & Region III: Irish and Scottish West Coast from 2019 – Present.

3.4. Report on noise management for cumulative impacts, including relevant regulations and guidelines, seismic shot point densities and level of impact deemed acceptable.

See above.

3.5. Is the perceived level of pressure from underwater noise in your country increasing, decreasing, staying the same or unknown?

To be done per species basis where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
Choose an item.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For all relevant species in the Southern/Central North Sea, development of offshore wind farms, combined with ongoing oil and gas surveys, other construction and shipping means underwater noise has increased between 2016-2019 and will continue to increase in the future as the UK looks to meet our green / net zero targets
Choose an item.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	For all relevant species in the Northern and Central North Sea, development of offshore wind farms, combined with ongoing oil and gas surveys, other construction and shipping means underwater noise has increased between 2016-2019 and will continue to increase in the future as the UK looks to meet our green / net zero targets
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	For all relevant species in the Irish & Scottish West Coast, development of offshore wind farms, and other construction remains limited. Shipping level are expected to remain the same. Therefore underwater noise has not thought to have increased between 2016-2019.

☐ **Not applicable.** Comments:

B. Disturbance (incl. potential physical impacts)

4. Ocean Energy

AIM: to understand the extent and development of current and planned ocean energy projects, and progress in monitoring and mitigation of their negative effects on small cetaceans during the reporting period.

Relevant Resolutions: 8.11, 8.9, 8.6, 8.3, 6.2

Renewable energy is a necessary component of the efforts to supply the energy needs of human populations while combatting climate change. Efforts to harness renewable energy sources, however, should be conducted in a way that does not have a harmful impact on biological diversity and the marine environment. There are potential adverse effects of ocean energy on small cetaceans from such energy projects. In regard to small cetaceans, this can include potential lethal interactions or injury, negative behavioural impacts from displacement and changes in fecundity, calf survival and juvenile and adult mortality. There remains uncertainty regarding quantifying the (magnitude of the) pressure from ocean energy production on small cetaceans.

Parties to ASCOBANS have agreed to introduce precautionary measures and procedures for activities surrounding the development of renewable energy in marine environments in order to minimise and mitigate possible effects on small cetaceans, by following best practices. Parties have committed to investigating such pressures and robustly monitoring and mitigating them through environmental impact assessments. Addressing all aspects relevant to the conservation of protected species in regard to ocean energy and collaboration with other organizations working on or potentially interested in the issue is to the benefit of small cetaceans in the Agreement Area.

It is of particular interest to ASCOBANS to understand current and ongoing renewable energy projects in the Agreement Area, mitigation measures and procedures in use and other work relevant to the topic. Countries are requested to provide information relevant to their activities.

Questions:

Please enter **wind energy** farm data into the table below.

Windfarms listed are those currently under construction and/or newly operational in the reporting period, not those that were operational prior to reporting period. Additional information available at: <https://www.ospar.org/documents?v=36066>) and (<https://www.thecrownestate.co.uk/energy-minerals-and-infrastructure/downloads/maps-and-gis-data/>)

Name of wind farm	Operational date (or foreseen grid connection date)	Area	Output (megawatts per turbine)	Number of turbines	How were the individual wind turbines installed in the seabed?	Was scour protection used?	Noise mitigation during construction used? (multiple ticks possible)	If the wind farm is floating, how was it anchored?	Other mitigation used in pre-/post-construction	Additional information
Hornsea One	02/2019 first operation	27.4.c	1.2GW total	174	Pile-driving	Choose an item.	<input type="checkbox"/> Single bubble curtains <input type="checkbox"/> Double bubble curtains <input type="checkbox"/> Acoustic deterrent devices <input type="checkbox"/> Time/area closures <input type="checkbox"/> Other, please specify:			
Walney Extension	19/2018	27.7	659 MW total	87	Pile-driving	Choose an item.	<input type="checkbox"/> Single bubble curtains <input type="checkbox"/> Double bubble curtains <input type="checkbox"/> Acoustic deterrent devices <input type="checkbox"/> Time/area closures <input type="checkbox"/> Other, please specify:			
Beatrice extension	07/2019	27.4.a	588MW total	84	Choose an item.	Choose an item.	<input type="checkbox"/> Single bubble curtains <input type="checkbox"/> Double bubble curtains <input type="checkbox"/> Acoustic deterrent devices <input type="checkbox"/> Time/area closures <input type="checkbox"/> Other, please specify:			
East Anglia One	09/2019 first operation 2020 expected full capacity	27.4.c	714MW total	102	Choose an item.	Choose an item.	<input type="checkbox"/> Single bubble curtains <input type="checkbox"/> Double bubble curtains <input type="checkbox"/> Acoustic deterrent devices <input type="checkbox"/> Time/area closures <input type="checkbox"/> Other, please specify:			
Hornsea Two	Est 2022	27.4.c	Est 1.8GW total	165	Pile-driving	Choose an item.	<input type="checkbox"/> Single bubble curtains <input type="checkbox"/> Double bubble curtains <input type="checkbox"/> Acoustic deterrent devices <input type="checkbox"/> Time/area closures <input type="checkbox"/> Other, please specify:			
Moray East	Est 2023	27.4.a			Choose an item.	Choose an item.	<input type="checkbox"/> Single bubble curtains <input type="checkbox"/> Double bubble curtains <input type="checkbox"/> Acoustic deterrent devices <input type="checkbox"/> Time/area closures <input type="checkbox"/> Other, please specify:			
Triton Knoll	Est 2021	27.4.c	857MW total	90	Choose an item.	Choose an item.	<input type="checkbox"/> Single bubble curtains <input type="checkbox"/> Double bubble curtains <input type="checkbox"/> Acoustic deterrent devices			

							<input type="checkbox"/> Time/area closures			
							<input type="checkbox"/> Other, please specify:			

4.1. Please enter wave power installation data into the table below.

Name of installation	Operational date (or foreseen grid connection date)	Area	Output (megawatts per turbine)	Number of turbines	How is the installation anchored?	Was scour protection used?	Mitigation used in pre-/during/post-construction	Additional information
Wave Hub Limited (Cornwall)	Unknown	27.7.a	Est 20 MW total			Yes		https://www.wavehub.co.uk/
	dd/mm/yy	Choose an item.				Choose an item.		
	dd/mm/yy	Choose an item.				Choose an item.		

4.2. Please enter tidal energy installation data into the table below.

Name of installation	Operational date (or foreseen grid connection date)	Area	Output (megawatts per turbine)	Number of turbines	Type	Collision mitigation	Other mitigation used in pre-/during/post-construction	Additional information
Minesto Tidal Kite	/06/2018	27.7.a	0.5	1	Other, please specify:	Yes, please specify:	PAM monitoring and adaptive management	Tidal Kite: NW Anglesey, Wales
MeyGen	12/2016	27.4.a	1.5	4 currently operational	Choose an item.	Choose an item.		

4.3. Please enter tidal lagoon/barrage installation data into the table below.

Name of installation	Operational date (or foreseen grid connection date)	Area	Output (megawatts per turbine)	Number of turbines	Type	Collision mitigation	Other mitigation used in pre-/during/post-construction	Additional information
	dd/mm/yy	Choose an item.			Choose an item.	Choose an item.		
	dd/mm/yy	Choose an item.			Choose an item.	Choose an item.		

4.4. Has there been any other instances/issues related to ocean energy during the reporting period in your country?

☐ No.

☒ Yes. Please provide details:

Several tidal stream, tidal range, wave, offshore wind applications currently being assessed in Wales

4.5. How is the pressure managed, incl. relevant regulations / guidelines and the year of implementation (current and planned)?

- Managed through usual consent processes ie licensing, environmental assessments etc
- See legislation in section 3.2. All large projects required to go through the Planning Inspectorate process in England and undertake EIAs and HRAs under the various national and EU legislation.
- Underwater noise guidance for noisy activities in SACs published by JNCC, NE and DAERA (2020).
- JNCC guidance for management of underwater explosions, seismic activity and pile driving.
- All marine projects in Scotland licensed through Marine Scotland and required to go through EIA and HRA
- The Planning Act 2008 (PA2008) process was introduced to streamline the decision-making process for major infrastructure projects, making it fairer and faster for communities and applicants alike. <https://infrastructure.planninginspectorate.gov.uk/application-process/the-process/>

4.6. Relevant new research/work/collaboration on ocean energy in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

For noise impacts – please see section 3.3 above.

Copping, A. *et al.* (2017) 'Understanding the potential risk to marine mammals from collision with tidal turbines', *International Journal of Marine Energy*, 19, pp. 110–123. doi: <https://doi.org/10.1016/j.ijome.2017.07.004>.

4.7. Mark the perceived level of pressure from ocean energy in your country to the table below.

For example, active construction of new developments could increase the pressure, while decommissioning or addition of mitigation measures to pre-existing projects could decrease the pressure.

Energy type	Status 2019 relative to previous years	Nature of the evidence
Wind energy	Increasing	Several applications. Round 4 upcoming, Scotwind preparations and the UK governments green energy targets. Existing windfarm extensions. Ongoing projects going through the consenting and construction process. http://marine.gov.scot/marine-projects
Wave power	Increasing	Several applications in England. Unchanged in Scotland: http://marine.gov.scot/marine-projects
Tidal energy	Increasing	Several applications in England, major increase in planned capacity. Unchanged in Scotland: http://marine.gov.scot/marine-projects
Tidal lagoon/barrage	Increasing	Several applications

Comments:

B. Disturbance (incl. potential physical impacts)

1.1.1 5. Cetacean Watching Industry

AIM: to determine if the developing cetacean watching industry poses a threat to small cetaceans.

Relevant Resolutions: 8.9, 6.1, 5.4

Whale and dolphin watching is a global industry that can provide socio-economic benefits to local communities by attracting tourism, as well as strengthening public awareness of conservation needs. However, it also has the potential of being harmful when it interferes with the behaviour of animals in their natural environment and may even lead to injury or death. As the cetacean watching industry is still scarcely developed in some countries, collecting this data now allows tracking the development of the industry.

It is of particular importance to ASCOBANS to obtain an overview of the current scale of the activities and to monitor the development of the industry in the future. This is done by quantifying the number and locations of operators, reporting negative interactions and providing information on the development and implementation of any guidelines regarding cetacean watching.

Filling out this section accurately and completely will help to detect any indications of potential threats, allow timely mitigation action and enable Parties and Non-Party Range States to work towards a coordinated approach regarding the development of cetacean watching guidelines in the Agreement Area.

Note: We are here only addressing commercial cetacean watching activities which take place from vessels and include viewing of small cetacean species. Operators are defined as those offering trips with a primary focus: they advertise specifically with the aim to see small cetaceans, or a secondary focus: they advertise either for other taxa, such as birds or seals, or large cetaceans, or more general for wildlife, but mention the opportunity to see small cetaceans.

Questions:

5.1. Do you have any commercial small cetacean watching industry operating in your country?

- ☐ **No.** Go to **Question 5.3.**
☒ **Yes.**

5.2. In the table below, provide the sub-regions from which commercial cetacean watching takes place. Please tick the boxes if small cetacean watching is a primary and/or secondary focus of the operators and, in the first case what the target species are.

Overview of commercial small cetacean watching activities per sub-region. If necessary, add rows.

OSPAR / HELCOM Sub- region	Port	Operator	small cetacean watching		Link to website or contact details
			<i>Primary focus / target species</i>	<i>Sec ond ary focu s</i>	

<p>Oll Northern North Sea</p>	<p>Lerwick, Sandwick (Shetland), Burwick (Orkney), John O'Groats Ferry (Caithness), Cromarty, Avoch, Inverness, Nairn, Findhorn, Lossiemouth, Buckie (Moray Firth), Anstruther (Fife), Seahouses (Northumbria), Staithes, Whitby (North Yorks)</p>	<p>Seabirds and Seals, Mousa Ferry, Shetland Wildlife Boat Tours, Wildabout Orkney, John O'Groats Ferry, EcoVentures, Dolphin Trips Avoch, Dolphin Spirit Boat Trips, North 58 Sea Adventures, Scottish Marine Safari, Isle of May Boat Trips, Isle of May Ferry, Farne Island Tours, Billy Shiel's Boat Trips, Whitby Whale Watching</p>	<p>☒</p>	<p>BD Bottlenose dolphin HP Harbour porpoise KW Killer Whale RD Risso's dolphin WBD White beaked dolphin</p>	<p>☒</p>	<p>https://www.seabirds-and-seals.com/ https://www.shetlandseabirdtours.com/ https://www.mousa.co.uk/ https://www.thule-charters.co.uk/ http://www.wildaboutorkney.com/ https://www.orkney.com/listings/petlandssker-boat-trips/ http://www.jogferry.co.uk/ https://www.ecoventures.co.uk/ http://www.dolphintripsavoch.co.uk/ https://dolphinspirit.co.uk/ http://www.north58.co.uk/ https://www.scottishmarinesafari.com/ https://www.isleofmayboattrips.co.uk/faq.php/ https://www.isleofmayferry.com/ https://www.farne-islands.com/ https://farneislandstours.co.uk/whale-watching/ https://www.whitbywhalewatching.net/ https://aquaholics.co.uk/pages/causeway-coast-wildlife</p>
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<p>OIII Irish & Scottish W. Coast</p>	<p>Stornoway, Miavaig, Leverburgh, Tarbert (Western Isles), Ullapool, Achiltibuie, Gairloch, Uig, Portree, Stein, Upper Breakish, Elgol, Armadale, Applecross, Knoydart, Mallaig, Arisaig, Tobermory, Ulva, Acharacle, Oban, Clachan Seil, Ardfarn, Largs, Fairlie</p>	<p>Lewis Boat Trips, Sea Harris, Kilda Cruises, Seascope Expeditions, Shearwater Summer Isle Cruises, Summer Isles Cruises, Summer Isles Sea Tours, Gairloch Marine Centre & Cruises, Hebridean Whale Cruises, Stardust Boat Trips, Go To St Kilda, Diver's Eye Boat Trips, Sea Trek, Bella Jane Cruises, Spirit of Adventure, Misty Isle Boat Trips, Spindrift Boat Trips, Sea fari Adventures, Western Isles Cruises, Selkie Explorers, Arisaig Marine, Sea Life Surveys, Hebridean Whale & Dolphin Trust, Hebrides Cruises, Mull Charters, Staffa Island Cruises, Staffa Tours, Ardnamurchan Charters, Seafari Adventures, Northern Light, Coastal Connection, Sealife Adventures, Craignish Cruises</p>	<p>☒</p>	<p>BD Bottlenose dolphin CD Short-beaked Common dolphin RD Risso's dolphin WBD White-beaked dolphin</p>	<p>☒</p>	<p>https://www.engebret.co.uk https://www.island-cruising.com https://www.seaharris.co.uk https://www.kildacruises.co.uk https://www.sea-scape.co.uk https://www.summerqueen.co.uk https://www.summer-isles.com/summer-isles-cruises.asp https://www.summerisles-seatours.co.uk https://www.porpoise-gairloch.co.uk https://www.hebridean-whale-cruises.co.uk https://www.skyeboat-trips.co.uk https://www.seatrek.co.uk https://www.gotostkilda.co.uk https://www.divers-eye.co.uk https://www.the-spirit-of-adventure.co.uk https://www.bellajane.co.uk https://www.mistyisleboattrips.co.uk https://www.spindrift-boat-trips.co.uk https://www.whalespotting.co.uk https://www.westernislescruises.co.uk https://www.selkie-explorers.co.uk https://www.arisaig.co.uk https://www.sealifesurveys.co.uk https://www.whaledolphintrust.co.uk https://www.hebridescruises.co.uk https://www.mullcharters.com https://www.cruiseline.co.uk/Staffa-Island-Cruises https://www.staffatours.com https://www.west-scotland-marine.com https://www.seafari.co.uk https://www.northernlight-uk.com https://www.coastal-connection.co.uk https://www.sealife-adventures.com https://www.craignishcruises.co.uk</p>
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<p>OIII Irish Sea</p>	<p>Largs, Fairlie, Campbelltown (Scotland), Portrush, Strangford (N Ireland), Port Erin, Port St Mary, Peel (Isle of Man), Conwy, Amlwch, Beaumaris, Menai Bridge, Bangor, Caernarfon, Porthmadog, Pwllheli, Abersoch, Aberdaron, Aberdyfi, Aberystwyth, New Quay, Cardigan (N & W Wales)</p>	<p>Cumrae Voyages, Clyde Porpoise c.i.c., Kintyre Express (Scotland), Portrush Sea Tours, Clear Sky Adventure (N Ireland), Shona Boat Trips, Isle of Man & Calf Boat Trips, Manx Sea Life Safari (Isle of Man) Celtic Cruising, Seekat Charters, Starida Sea Services, Adventure Elements, Menai Rib Ventures, Quest Charters, Ribride, West Coast Ribs (Anglesey), Waterline Boat Charter, Enlli Charters, Abersoch Angling, Bardsey Boat Trips, Dyfi Discoveries, Celtic Spirit Fishing Trips, Dolphin Spotting Boat Trips, Dolphin Survey Boat Trips, Seamor Boat Trips, Jeremy Laufer Aberporth Boat Trips, A Bay to Remember,</p>	<p>☒</p>	<p>BD Bottlenose dolphin CD Short-beaked Common dolphin HP Harbour porpoise RD Risso's dolphin</p>	<p>☒</p>	<p>https://www.cumbraevoyages.co.uk https://www.clydeporpoise.org/ https://www.kintyreexpress.com https://www.portrushseatours.com https://www.shonaboattrips.wixsite.com/calftrips https://www.manxsealifesafari.com https://www.celticcruising.co.uk https://www.seekatcharters.co.uk https://www.starida.co.uk https://www.adventureelements.com https://www.ribride.co.uk https://www.questdiving.co.uk https://www.ribride.co.uk https://www.westcoastribs.co.uk https://www.water-line.co.uk https://www.enll charter.co.uk https://www.abersochangling.co.uk/fishing-trips-and-wildlife-cruises https://www.bardseyboattrips.com https://www.dyfidiscoveries.co.uk https://www.charterboats-uk.co.uk/celticspirit/ https://www.facebook.com/DolphinSpottingBoatTripsNewQuay/ https://www.seamor.org https://www.baytoremember.co.uk https://www.adventurebeyond.co.uk https://www.cardiganbayactive.co.uk</p>
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OIII Celtic Sea	St Justinians, Solva, Dale, Neyland, Oxwich Bay (S Wales), Ilfracombe (N Devon), Newquay, Padstow, Rock, St Ives (N Cornwall), Penzance, Porthleven, Mullion (W Cornwall)	Falcon Boats, Thousand Islands Expeditions, Voyages of Discovery, Solva Boat Trips, Broadside Boat Charters, Celtic Charter, Dale Sailing Company, Shearwater Safaris, Gower Coast Adventures (S Wales), Ilfracombe Sea Safari, Wildlife Coastal Cruises (N Devon), Newquay Jet Safaris, Padstow Sealife Safaris, Cornish Sea Tours, St Ives Bay Wildlife Tours (N Cornwall), Marine Discovery, Rib Logan, Vertical	☒	BD Bottlenose dolphin CD Short-beaked Common dolphin HP Harbour porpoise RD Risso's dolphin WBD White beaked dolphin	☒	https://www.falconboats.co.uk https://www.thousandislands.co.uk https://www.ramseyisland.co.uk https://www.solva.net/boattrips https://www.broadsidedale.co.uk https://www.celticwildcat.com https://www.dale-sailing.co.uk https://www.boatrides.co.uk https://www.gowercoastadventures.co.uk https://www.ilfracombeseasafari.co.uk https://www.ilfracombeprincess.co.uk https://www.newquayjetsafaris.co.uk https://www.padstowsealifesafaris.co.uk/boat-trips/ https://www.cornishseatours.com https://www.stivesboats.co.uk https://www.marinediscovery.co.uk https://www.marinediscovery.co.uk
OII Channel	Falmouth, Megavissey, Fowey (S Cornwall), Teignmouth, Brixham, Paignton, Torquay (S Devon)	AK Wildlife Cruises, Orca Sea Safaris, Cornish Dream Charters, Enterprise Boats, Fowey to Megavissey ferries, Fowey Marine Adventures (S Cornwall), Devon Sea Safari, Naturetrek, Paignton Pleasure Cruises, Boat Trips Torbay (S Devon)	☒	BD Bottlenose dolphin CD Short-beaked Common dolphin HP Harbour porpoise RD Risso's dolphin WBD White beaked dolphin	☒	https://www.akwildlifecruises.co.uk https://www.orcaseasafaris.co.uk https://www.cornishdreamcharters.co.uk https://www.enterprise-boats.co.uk https://www.mevagissey-ferries.co.uk https://www.fma.fowey.com https://www.devonseasafari.com/ https://www.naturetrek.co.uk/tours/seabirds-and-cetaceans-of-lyme-bay https://www.paigntonpleasurecruises.co.uk https://www.funfishtrips.co.uk/brixham-wildlife-sea-fari-cruise/

5.3. Does your country have a definition of the term 'harassment' in general and/or as it relates to the Cetacean Watching Industry? ¹

☒ **No.**

☐ **Yes.** Provide definition below:

There is currently no UK-wide set definition of 'harassment' for small cetaceans, but there are specific mentions of harassment in various documents (see 5.8) and in general harassment is classed as repeated disturbance. In the UK, reference is made to "deliberate disturbance" of European Protected Species (i.e. all cetaceans) in accord with the Habitats Directive. Guidance on how this is defined is given in this link from 2007:

http://archive.jncc.gov.uk/PDF/eps_InterimGuidanceDisturbance_1.The%20DisturbanceOffence.pdf

Also defined in the Wildlife and Countryside Act– reckless disturbance, and relevant licensing requirements for WCA (and EPS licensing).

Marine Scotland: Guidance on the Offence of Harassment at Seal Haul-out Sites (NB not small cetaceans) (https://consult.gov.scot/marine-environment/possible-designation-of-a-seal-haul-out-site/user_uploads/guidance-on-the-offence-of-harassment-at-seal-haul-out-sites.pdf-1)

Whilst there is considerable case law on what constitutes harassment it relates to the harassment of people as opposed to wildlife. Ultimately only a court can judicially determine whether a particular action amounted to harassment or not. It would involve an activity that pesters, torments, troubles or attacks a seal or seals on a designated haul-out site. In particular, it would include any action that causes a significant proportion of seals on a haul-out site to leave that site either more than once or repeatedly or, in the worst cases, to abandon it permanently.

Scottish marine wildlife watching code (<https://www.nature.scot/marinecode>)

However, several factors can transform what appears to be minor into significant disturbance which can have serious long-term impacts: – Repeated disturbance (which can also constitute harassment).

5.4. Have there been any incidents of harassment towards small cetaceans in the context of commercial cetacean watching reported to authorities during the reporting period?

☐ **No.**

☒ **Yes.** Provide information on table below. If necessary, copy table.

Date Various 2016-2018 Scotland	Context of incidence Tour boats approaching dolphins too closely, boats following individuals, cutting off direction of travel, and/or speeding close to dolphins (Scotland)	Outcome for (a) the animal or (b) human (e.g. behavioural response, injury, death) Behavioural response
Legal procedures / court proceedings / convictions that took place Warnings given		Responsible authority for such reports Police Scotland
Link to websites or documentation of this report N/A		
Date 26/08/2017	Context of incidence Party of up to seven boats following a group of Bottlenose Dolphins off Rathlin Island	Outcome for (a) the animal or (b) human (e.g. behavioural response, injury, death) Probably minor impact, some disturbance.
Legal procedures / court proceedings / convictions that took place Organiser written to by DAERA		Responsible authority for such reports Police Service Northern Ireland & Department of Agriculture, Environment and Rural Affairs
Link to websites or documentation of this report N/A		

5.5. Does your country have any operators that offer swimming with dolphins (or other small cetaceans)?

¹ For example, the US Marine Mammal Protection Act uses the term harassment, and defines two levels: Level A harassment means any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild. Level B harassment refers to acts that have the potential to disturb (but not injure) a marine mammal or marine mammal stock in the wild by disrupting behavioural patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. NB. The UK uses the term 'disturbance' in its legislation.

In some parts of the world this has become an important tourism industry with potential impacts for both small cetaceans and swimmers. Although scarcely developed, it has occurred within the ASCOBANS Agreement Area, and requires at least background monitoring. Sometimes incidents occur and can lead to harm for small cetaceans and/or swimmers.

☒ **No.** Go to **Question 5.9.**

☐ **Yes.** Provide information in the table below.

Location	Species	Operator	Any reported incidents between small cetaceans or swimmers.
	Choose an item.	(include link to website)	<input type="checkbox"/> No <input type="checkbox"/> Yes, please describe:
	Choose an item.	(include link to website)	<input type="checkbox"/> No <input type="checkbox"/> Yes, please describe:
	Choose an item.	(include link to website)	<input type="checkbox"/> No <input type="checkbox"/> Yes, please describe:

5.6. List any incidents of harassment to small cetaceans during the reporting period in your country in the context of swimming with small cetaceans reported to authorities – and the outcome if known (behavioural response, injury, death, any court proceedings).

Date	Context of incidence	Outcome for (a) the animal or (b) human (e.g. behavioural response, injury, death)	Legal procedures/ court proceedings/ convictions that took place	Responsible authority for such reports	Link to websites or documentation of this report
dd/mm/yy					
dd/mm/yy					
dd/mm/yy					

5.7. Are there any solitary sociable dolphin interactions in your country?

Occasionally, individual solitary dolphins may associate with humans, resulting in increased interactions between the two which may lead to impacts upon either. Sometimes incidents occur and can lead to harm for small cetaceans and/or swimmers.

☐ **No.** Go to **Question 5.12.**

☒ **Yes.** Provide information in the table below.

Region	Date	Species	Link to websites	Reported incidents between small cetaceans and swimmers
OII Southern North Sea	05/2019	BD Bottlenose dolphin	https://www.dorsetwildlifetrust.org.uk/news/dwt-warns-against-marine-wildlife-disturbance https://www.bournemouthcho.co.uk/news/17667705.warning-over-dolphins-after-young-bottlenose-is-photographed-surrounded-by-jet-skiers-off-swanage/	None. Incident with jetskiers and boats circling the dolphin, reported but other than guidance issued as per the link no further action taken
OII Southern North Sea	07/2017 – 03/2018	BD Bottlenose dolphin	http://marinediscovery.co.uk/blog/pierre-the-lone-bottlenose-dolphin/dolphin-watching	None
OII Southern North Sea	09-12/2018	Choose an item.	Beluga whale - https://www.bbc.co.uk/news/uk-england-kent-46255755	None

5.8. Does your country have any mitigation measures (codes of conduct/guidelines) in place in the event of disturbance or harassment in the context of commercial cetacean watching, swimming with cetaceans, and interactions with solitary sociable dolphins?

☐ **No.**

☒ **Yes.** Please add below the type of measures and relevant information:

Measure: (may include regional measures)	<ul style="list-style-type: none"> WiSe Scheme https://www.wisescheme.org – training scheme for minimizing wildlife disturbance, for commercial boat operators and the general public. Sea Watch Foundation https://www.seawatchfoundation.org.uk/marine-code-of-conduct/ - best practice advice for recreational activities. Zoological Society of London https://www.zsl.org/infographic-marine-mammal-code-of-conduct - code of conduct for observing marine mammals in the Greater Thames Estuary
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	<ul style="list-style-type: none"> • The Cornwall Wildlife Trust https://www.cornwallwildlifetrust.org.uk/what-we-do/our-conservation-work/at-sea/marine-and-coastal-code - code of conduct promoting best practice for encountering marine life in Cornwall. • RYA The Green Blue https://www.rya.org.uk/knowledge-advice/planning-environment/Pages/the-green-blue.aspx - guidance proving practical advice and information for recreational boaters, watersports participants, and marine businesses to act in a considerate and environmentally conscious way. • The Blue Flag https://www.blueflag.global/our-programme Award programme with stringent standards for boating tourism operators to meet in order to be awarded certification. • The Pembrokeshire Marine Code https://www.pembrokeshiremarinecode.org.uk/ • Ceredigion Marine Code, Gwynedd Marine Code, Anglesey Marine Code, Conwy Marine Code http://www.penllynarsarnau.co.uk/codes_of_conduct.aspx • Jersey Marine and Coastal code https://www.gov.je/Environment/LandMarineWildlife/Mammals/Pages/Dolphins.aspx • The Northumberland Marine Wildlife Watching Boating Code of Conduct http://www.xbordercurrents.co.uk/documents-and-links/codes-of-conduct/ • The Scottish Marine Wildlife Watching Code https://www.nature.scot/sites/default/files/2017-06/Publication%202017%20-%20The%20Scottish%20Marine%20Wildlife%20Watching%20Code%20SMWWC%20-%20Part%201%20-%20April%202017%20(A2263518).pdf • Thanet Marine Wildlife Watching Code http://www.thanetcoast.org.uk/factfile/thanet-coastal-codes/marine-wildlife-watching-code/ • The Dolphin Space Programme http://www.dolphinspace.org/ - accreditation scheme for wildlife tour boat operators in the Moray Firth. • The Department of Agriculture, Environment and Rural Affairs leaflet - https://www.daera-ni.gov.uk/publications/watch-out-wildlife-crime-marine-wildlife-disturbance • Whale and Dolphin Conservation with UK National Wildlife Crime Unit and partners – Rude to intrude video https://www.wcl.org.uk/we-all-need-our-personal-space-so-do-whales-and-dolphins-its-rudetointrude.asp. <p>These voluntary codes and guidelines make recommendations on best practice such as: appropriate method of approach; minimum distance to cetaceans; appropriate speed and methods to reduce noise; maximum numbers of vessels; and time limits to spend with cetaceans.</p> <p>In 2002, after “Randy”/”Georges” appeared on the Dorset coast and there were many reports of harassment, Sea Watch Foundation, Natural England and Whale and Dolphin Conservation produced a set of guidelines, which Natural England then disseminated. These included instructions to avoid getting in the water with the dolphin; boats should not approach within 100m; if the dolphin approaches, slow down to 5 knots or less, do not turn off engine (if stationary, keep in neutral); local authority to post notices (around Poole Harbour), and volunteer “wardens” to patrol the local beaches to inform the public about the dangers of swimming with the dolphin (one person had a heart attack after a close encounter with the animal).</p> <p>Some years later, Marine Connection produced a publication on solitary dolphins: Goodwin, L. and Dodds, M. (2008) <i>Lone rangers. A report on solitary dolphins and whales including recommendations for their protection</i>. Marine Connection, London. 47pp.</p>
Date of implementation:	Region: Choose an item.

Has the measure been effective?	<input type="checkbox"/> No <input type="checkbox"/> Yes. Comments:
Other information:	

Copy table if needed.

5.9. List any incidents of harassments to small cetaceans during the reporting period in the context of interactions with solitary sociable dolphins reported to authorities – and the outcome if known (behavioural response, injury, death, any court proceedings).

Date	Context of incidence	Outcome for (a) the animal or (b) human (e.g. behavioural response, injury, death)	Legal procedures/ court proceedings/ convictions that took place	Responsible authority for such reports	Link to websites or documentation of this report
05/2019	Jet skiers and boats approaching and circling dolphin	Behavioural response	Warning issued	UK National Wildlife Crime Unit https://www.nwcu.police.uk/	https://www.dorsetwildlifetrust.org.uk/news/dwt-warns-against-marine-wildlife-disturbance
dd/mm/yy					

5.10. Relevant new research/work/collaboration on the cetacean watching industry, “swim with small cetacean” operations, solitary sociable dolphin interactions and their possible effects on small cetaceans in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

Initiatives:

Wise <https://www.wisescheme.org/>

Wild Seas Wales: Consortium to promote sustainable marine recreation in Wales:

<https://wildseas.wales/>

Projects/Reports:

Evaluating Marine Mammal Watching Legislation Regulations and Codes of Conduct, R. Walker (2018) (<https://www.wcmt.org.uk/fellows/reports/evaluating-marine-mammal-watching-legislation-regulations-and-codes-conduct>)

University of St. Andrews Conservation Studies MSc. Project: ‘Approaches to Managing Wildlife Tourism across the UK: Marine Wildlife Watching and Codes of Conduct’ by Sian McGuinness. Supervisors: Sophie Smout (University of St. Andrews), Julia Sutherland (JNCC), Rebecca Walker (NE)

Francesca Mancini (2019) Managing the wildlife tourism commons. PhD Thesis. University of Aberdeen. Supervisors: David Lusseau, George Coghill, Fiona Manson (SNH), Ben Leyshon (SNH)

Alejandra Vergara-Peña (2019) (School of Ocean Sciences, Bangor University) completed a PhD on the effects of marine recreation on bottlenose dolphins in Cardigan Bay, west Wales This included a chapter analysing questionnaire surveys on the dolphin watching industry in Cardigan Bay, Wales. Supervisors: PGH Evans (SWF/BU), L Cordes, J Turner, J Waggitt (BU) (see publication below).

Aleksandra Koroza (School of Ocean Sciences, Bangor University) undertook a Masters thesis examining the effectiveness of Codes of Conduct in Cardigan Bay SAC (see publication below).

De Boer, M., Jones, D., Jones, H. and Knee, R. (2018) Spatial and Temporal Baseline Information on Marine Megafauna-Data Facilitated by a Wildlife Tour Operator. Open Journal of Marine Science, **8**, 76-113. doi: [10.4236/ojms.2018.81005](https://doi.org/10.4236/ojms.2018.81005).

Inman, Brooker, Dolman, McCann, Wilson. 2016. The use of marine wildlife-watching codes and their role in managing activities within marine protected areas in Scotland. Ocean & Coastal Management 132, 1-11.

<https://us.whales.org/wp-content/uploads/sites/2/2018/08/marine-wildlife-watching-codes-scotland.pdf>

Koroza, A.A. (2018) Habitat Use and Effects of Boat Traffic on Bottlenose Dolphins at New Quay Harbour, Cardigan Bay. MSc Thesis, Bangor University. 93pp.

Nunny, L. and Simmonds, M. (2018). Solitary sociable dolphins: a preliminary update. Paper SC/67b/WW06 presented to the IWC Scientific Committee, April-May 2018, Bled, Slovenia (unpublished). 12pp. [Paper available from the Office of this Journal].

Nunny, L. and Simmonds, M.P. (2019). A Global Reassessment of Solitary-Sociable Dolphins. Front. Vet. Sci. 5: 331. [Available at: <https://doi.org/10.3389/fvets.2018.00331>].

Mancini, F., Coghill, G.M., and Lusseau, D. (2017). Using qualitative models to define sustainable management for the commons in data-poor conditions. Environmental Science and Policy, 67, 52–60. <http://doi.org/10.1016/j.envsci.2016.11.002>

Mancini, F., Coghill, G.M., and Lusseau, D. (2018). Using social media to quantify spatial and temporal dynamics of wildlife tourism activities. PLOS ONE, 13(7), e0200565. <http://doi.org/https://doi.org/10.1371/journal.pone.0200565>

Mancini, F., Coghill, G.M., and Lusseau, D. (2018). Quantifying wildlife watchers' preferences to investigate the overlap between recreational and conservation value of natural areas. Journal of Applied Ecology. <http://doi.org/10.1111/1365-2664.13274>

Mancini F., Leyshon B., Manson F., Coghill G.M., and Lusseau D. (2020). Monitoring tourists' specialisation and implementing adaptive governance is necessary to avoid failure of the wildlife tourism commons. Tourism Management. 81. Article 104160

Vergara-Peña, A. (2019) Effects of marine recreation on bottlenose dolphins in Cardigan Bay. PhD thesis, Bangor University. 227pp.

Whiteley, L. (2016). Variation in bottlenose dolphin (*Tursiops truncatus*) whistle parameters in relation to group composition, surface behaviour and vessel sound profiles. MSc thesis, Bangor University. 97pp.

5.11. Have there been any other instances/issues related to cetacean watching industry during the reporting period in your country?

☒ **No.**

☐ **Yes.** Please provide details:

5.12. Is the perceived level of pressure from commercial small cetacean watching in your country increasing, decreasing, staying the same or unknown?

To be done per species where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
BD Bottlenose dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion, and surveys of commercial trip boat encounters
CD Short-beaked	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion

Common dolphin					
KW Killer Whale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion
HP Harbour porpoise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion, and surveys of commercial trip boat encounters
WBD White-beaked dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Expert opinion
RD Risso's dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion, and surveys of commercial trip boat encounters

☐ **Not applicable.** Comments:

B. Disturbance (incl. potential physical impacts)

6. Recreational Sea Use

AIM: to determine whether recreational sea use is detrimental to small cetaceans and, if so, to identify types of activity and areas of concern.
Relevant Resolutions: 8.9, 8.3, 7.1, 6.1, 5.4

Recreational use of the sea by humans includes a wide variety of activities, some of which are known to have a potential negative impact on small cetaceans. This includes the use of RIBs (rigid-hulled inflatable boats), hard-hulled boats exceeding 10 knots in speed, yachts and personal watercrafts such as jet skis, kayaks and surfboards; and excludes recreational fishing and sea-angling.

Interactions can cause animals to change behaviour and move away, but can also have more serious impacts, such as injury or even death due to collision. ASCOBANS has agreed on a number of resolutions that highlight the importance to review all available information on recreational use of the sea. Obtaining an overview of best practices and guidelines will enable comparisons to be made across the Agreement Area, and ultimately may lead to the provision of overall, consistent guidelines that might be developed at a regional or national level. In this section we strive to obtain an overview of potential risk areas and national sources that have data on incidents with small cetaceans related to recreational sea use.

Questions:

6.1. Are data on recreational sea use available for your country?

☐ **No.** Go to **Question 6.3.**

☒ **Yes.** Provide information in the table below:

Type of information: (e.g. number of licenced recreational vessels per region, tourist number per region, other)

[Outside of reporting period but still useful] In 2014, the Scottish Government commissioned Land Use Consultants to undertake a study to fill data gaps on marine recreation and tourism activity in Scotland and to provide baseline information for marine planning.

The Scottish Marine Recreation and Tourism Survey (SMRTS) was carried out between August and October 2015. It was designed to gather information for 23 different recreation and tourism activities undertaken at sea or around the Scottish coastline. For the purposes of this study marine recreation and tourism is defined as: 'including those activities which involve travel away from one's "habitual" place of residence, which have as their host or focus the marine environment and/or the coastal zone'. SMRTS comprised a web-based survey which gathered spatial information on the activities people had undertaken during the previous 12 months and asked detailed questions about their one or two most important activities. A survey of businesses was also undertaken.

Web link or other relevant link to data: (where can this information be found)

<https://www2.gov.scot/Topics/marine/seamanagement/national/RecandTourism>

6.2. Is information on main areas of recreational sea use available for your country?

Many Range States are mapping human activities to fulfil obligations under the EU Maritime Spatial Planning Directive, MSFD, OSPAR, and HELCOM; this information is relevant (though often not readily accessible) to ASCOBANS in understanding the extent and trends of human activities potentially impacting small cetaceans.

☐ No.

☐ Not applicable. Comments:

☒ Yes. Provide information in the table below.

Region	Type of information	Is the data available online?	Provide link to data, or comment on unavailability
OII Northern North Sea	(e.g. maps, GIS, reports)	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	https://www2.gov.scot/Topics/marine/seamanagement/national/RecandTourism
OIII Irish Sea	(e.g. maps, GIS, reports)	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	https://www2.gov.scot/Topics/marine/seamanagement/national/RecandTourism Northern Ireland Marine Mapviewer provides some information on locations for recreation and tourism but numbers of users are not provided. https://apps.d.aera-ni.gov.uk/marinemapviewer/ SWF has density maps of recreational sea use in Cardigan Bay, west Wales from dedicated surveys (see also Vergara-Peña's PhD thesis (2019).
OIII Irish & Scottish W. Coast	(e.g. maps, GIS, reports)	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	https://www2.gov.scot/Topics/marine/seamanagement/national/RecandTourism Northern Ireland Marine Mapviewer provides some information on locations for recreation and tourism but numbers of users are not provided. https://apps.d.aera-ni.gov.uk/marinemapviewer/ HWDT has density maps of recreational sea use in the Sea of Hebrides and Minches, Scottish W. Coast from dedicated surveys

6.3. Were there any incidents of disturbance or harassment to small cetaceans in relation to recreational sea use in your country?

☐ No.

☐ Unknown.

☒ Yes. Provide information in the table below.

Date	Area	Context of incidence	Outcome for (a) the animal or (b) human	Legal procedures/ court proceedings/ convictions	Link to websites or documentation of the incident
06/2019	27.4.b	Jet skier, River Tyne, Newcastle	Behavioural response	None. Warning given.	https://www.dailymail.co.uk/news/article-7219487/Sickening-moment-jet-skiers-speed-pod-dolphins-animals-play-river-Tyne.html
2018	27.4.a	Water sports, Moray Firth	Behavioural response.	None. Warning given.	https://www.scottishlegal.com/article/cops-with-a-porpoise-issue-dolphin-warning

2017	27.6	Water sports / recreational boats, Scotland	Behavioural response	None. Warning given / press releases	https://www.snhprescentre.com/news/paw-scotland-warns-of-risky-dolphin-and-whale-encounters-in-scotland-this-summer
2017	27.4	Water sports / recreational boats, Scotland	Behavioural response	None. Warning given / press releases	https://www.snhprescentre.com/news/paw-scotland-warns-of-risky-dolphin-and-whale-encounters-in-scotland-this-summer

6.4. Does your country have any mitigation measures (codes of conducts/guidelines/laws/rules) in place in the event of disturbance or harassment of small cetaceans through recreational sea use?

☐ No.

☒ Yes. Provide information in table below:

= 100% (Provide information in table below):		
Measure:	Detailed above in section 5.8	
Date of implementation:		Region: Choose an item.
Has the measure been effective?	<input type="checkbox"/> No. <input type="checkbox"/> Yes. Comments:	
Other information:		

Copy table if needed.

6.5. Relevant new research/work/collaboration on disturbance or harassment of small cetaceans through recreational sea use in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

Scottish Marine Wildlife Watching Code (Revised 2017) <https://www.nature.scot/marinecode>

The Scottish Government has produced guidance for marine users on the Protection of European Protected Species from injury and disturbance for Scottish Inshore Waters.

<https://www2.gov.scot/Topics/marine/marine-environment/species/19887/20813/epsguidance>

Dolphin Space Programme <http://www.dolphinspace.org/index.asp?pageid=12982>

Marine recreation evidence briefing: motorised watercraft: Natural England Evidence Information Note EIN027 <http://publications.naturalengland.org.uk/file/5132173002145792>

Managing marine recreation activities: a review of evidence, Natural England Commissioned Report NECR242, November 2017 <http://publications.naturalengland.org.uk/publication/5164654430519296>

Koroza, A.A. (2018) Habitat Use and Effects of Boat Traffic on Bottlenose Dolphins at New Quay Harbour, Cardigan Bay. MSc Thesis, School of Ocean Sciences, Bangor University. 93pp. https://www.seawatchfoundation.org.uk/wp-content/uploads/2019/02/Koroza_Msc-thesis.pdf

Lowe, E. (2016) Impacts of boat activity on Cardigan Bay bottlenose dolphin (*Tursiops truncatus*) behaviour and their implications for the future https://www.welshwildlife.org/wp-content/uploads/cbmwc/2016/04/Emma_Lowe_dissertation_2016.pdf

Vergara-Peña, A. (2019) Effects of marine recreation on bottlenose dolphins in Cardigan Bay. PhD thesis, School of Ocean Sciences, Bangor University. 227pp.

Whiteley, L. (2016) Variation in bottlenose dolphin (*Tursiops truncatus*) whistle parameters in relation to

group composition, surface behaviour and vessel sound profiles. MSc thesis, University of Bangor. 97pp.

WDC Rude to Intrude: <https://uk.whales.org/>

6.6. Have there been any other instances / issues related to recreational sea use in your country during the reporting period?

☒ **No.**

☐ **Yes.** Please provide details:

6.7. Is the perceived level of pressure from recreational sea use in your country increasing, decreasing, staying the same or unknown?

To be done per species where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
BD Bottlenose dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion
CD Short-beaked Common dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion
KW Killer Whale	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion
HP Harbour porpoise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion
WBD White-beaked dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion
RD Risso's dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion

☐ **Not applicable.** Comments:

B. Disturbance (incl. potential physical impacts)

7. Other Sources of Disturbance

AIM: to identify new sources of disturbance that could be a threat to small cetaceans.
Relevant Resolutions: 8.9, 6.1

Overlap of small cetacean and human habitat use is not covered by the questions above, while human activities in the seas are increasing, particularly in the coastal zone. Human activities can, for example, cause a small cetacean to change behaviour, or it can cause physical harm or death. This section aims to identify new sources of disturbance that could be a threat to small cetaceans. The issue of noise is covered under section B3.

7.1. Have there been any incidents of disturbance to small cetaceans in your country during the reporting period, not covered in the items above?

☒ **No.**

☐ **Unknown.**

☐ **Yes.** Please provide information in the table below.

Any incidents of disturbance to small cetaceans not covered in Sections B5 or B6 by the report.

Description of event:	Date: dd/mm/yy	Area: Choose an item.
Outcome for (a) the animal or (b) human	(e.g. behavioural response, injury, death)	
Describe mitigation measures:		

Legal procedures/ court proceedings/ convictions:	
Links to relevant information:	(websites, etc.)

7.2. Relevant new research/work/collaboration on other sources of disturbance in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

C. Habitat Change and Degradation (incl. potential physical impacts)

8. Unexploded Ordnance

AIM: to provide information on the mitigation, management and potential negative impacts of unexploded ordnance on small cetaceans during the reporting period.

Relevant Resolutions: 8.11, 8.9, 8.8, 8.3

Unexploded chemical and conventional munitions present a threat to small cetaceans. Hazards exist from unexploded munitions, which release chronic contaminants, and upon detonation, which is physically hazardous from extreme underwater noise and a sudden release of toxic substances. Unexploded ordnance is a notable threat in many areas, such as the Baltic Sea, where the quantity is unknown, though estimates are high. Information on disposal, state of corrosion and quantities of dumped munition is limited, as are meaningful data on the measured environmental impacts. The significance of this pressure's impact on small cetaceans requires further quantification. However, it is clear that mitigation measures are necessary to support alternatives to detonations, and when no alternative is feasible, to reduce negative impacts on small cetaceans.

In the ASCOBANS Area, millions of tons of unexploded ordnance are present in the marine environment and thousands of sea users, such as fishermen, encounter such munitions every year. Parties have agreed on resolutions to support (1) research investigating the pressure on marine animals and habitat and (2) mitigation measures regarding effects of disintegrating submerged munitions on the marine environment. Parties are to strive towards providing relevant information to required bodies and supporting efforts to address the negative implications from this pressure in other regional and international organizations and waters.

Questions:

8.1. To which registers/databases covering conventional and chemical munitions has your country contributed to date?

<input checked="" type="checkbox"/> OSPAR	<input type="checkbox"/> None	<input type="checkbox"/> Unknown
<input type="checkbox"/> HELCOM	<input type="checkbox"/> Other, please state:	

8.2. Please fill in Table 8.2 below on unexploded ordnance. For explanation of terms, see [AC22/Inf.4.6.c](#).

8.3. Have there been any instances/issues (not listed in Table 8.2) related to the issue of unexploded ordnance during the reporting period in your country?

☐ No.

☒ Yes. Please provide details:

The updated NMFS (2018) and Southall et al (2019) noise criteria for PTS and TTS have meant that PTS estimates for the largest UXOs now extend 12 – 15km. Currently there is no evidenced mitigation which can cover this

8.4. How is the issue of unexploded ordnances being managed?

(incl. mitigation measures, relevant regulations/guidelines, year of implementation; may include planned management)

Through marine mammal mitigation protocols, and through limitation of numbers, frequencies and timings of explosions in some cases

The MMO have added the requirement for bubble curtains to be used for munitions over 50kg. However, there is still no evidence they are effective for UXOs in the North Sea.

Managed by Marine Scotland through licensing processes with mitigation applied on a case by case basis.

JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (2017):
<http://data.jncc.gov.uk/data/e2a46de5-43d4-43f0-b296-c62134397ce4/jncc-guidelines-seismicsurvey-aug2017-web.pdf>

8.5. Relevant new research/work/collaboration on the issue of unexploded ordnance in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

BEIS Offshore Research SEA Programme has funded a UXO project, undertaken by NPL and Loughborough university. The first phase is near completion, with a second phase to take place over the upcoming year (2020/21). Final reports will be available - <https://www.gov.uk/government/publications/uk-offshore-energy-strategic-environmental-assessment-research-projects#history>

8.6. Is the perceived level of pressure from unexploded ordnance in your country:

<input checked="" type="checkbox"/> Increasing	<input type="checkbox"/> Decreasing	<input type="checkbox"/> Staying the same	<input type="checkbox"/> Unknown
Nature of evidence: Increasing due to UXO clearance during windfarm and other consutrction.			

☐ Not applicable. Comments:

Table 8.2 on Unexploded Ordnance (adapted from the OSPAR reporting format). Data missing was unable to be obtained.

OSPAR Ref. No	First located (Area)	Nature of encounter	Date	Type of munition	Action taken	State of munition (corrosion)	Release, Destruction (Area)	Remarks	Depth of Explosion	Estimated net weight of explosive material of demolished UXO	Demolition charge: net weight of explosive material added	Observations during explosion
If available, otherwise leave blank	Please select	Please select	dd/mm/yy	Please select	Please select	Please select	Please select	(incl. mitigation measures taken, if any)	Meters on seafloor / raised	TNT equivalent in kg	TNT equivalent in kg	Please select
	27.4.c	Laying pipelines or cables	Feb – Sept 2019	Choose an item.	Choose an item.	Choose an item.	Choose an item.	98 encountered. ADDs, bubble certains detonating UXOs >50kg at depth of less than 40m or current speeds less than 1.5m/s				Choose an item.
	27.4.c	Laying pipelines or cables	July 2017- June 2018	Choose an item.	Choose an item.	Choose an item.	Choose an item.	24 encountered.				Choose an item.
	27.4.c	Choose an item.	August 2019	Choose an item.	Choose an item.	Choose an item.	Choose an item.	3 encountered. Marine Mammal Observers & ADDs				Choose an item.
	Choose an item.	Choose an item.		Choose an item.	Choose an item.	Choose an item.	Choose an item.					Choose an item.
	Choose an item.	Choose an item.		Choose an item.	Choose an item.	Choose an item.	Choose an item.					Choose an item.
	Choose an item.	Choose an item.		Choose an item.	Choose an item.	Choose an item.	Choose an item.					Choose an item.

C. Habitat Change and Degradation (incl. potential physical impacts)

9. Marine Debris (ingestion and entanglement)

AIM: to illustrate progress, during the reporting period, on understanding, monitoring and mitigating impacts of marine debris on small cetaceans.
Relevant Resolutions: 8.8, 8.3, 6.1

Marine debris, such as macroplastics and discarded fishing gear, poses a threat to small cetaceans due to the potential for these materials to be ingested or to cause entanglement. Commercial fishing operations, recreational fishing and cargo shipping are notable sources of this material, of which the majority is plastic and ghost nets. However, it is assumed that most of the marine litter worldwide comes from land, although this differs per region. Even small amounts of macroplastics that have been ingested may present serious effects on small cetaceans, such as detrimental influence on the gastrointestinal tract or leaching pollutants into the body, potentially leading to mortality or reduced body condition. Entanglement is well-established as a threat to small cetaceans as plastic debris continues to accumulate in aquatic environments, and may cause physical injuries, reduced survival or drowning.

To better understand the impact of marine debris on small cetaceans and measures in place to mitigate these effects, countries are requested to provide relevant information.

Note: Includes macroplastics and discarded fishing gear. Microplastics are covered under Section C 10 Pollution and Hazardous Substances.

Questions:

9.1. Does your country have monitoring in place to assess levels of marine debris?

☐ **No.** Go to **Question 9.3.**

☒ **Yes.** Provide information in the table below:

(e.g. type of litter (size, shape, material), amount, impacts on species, geographical location, etc.; include parameters provided through monitoring)

The UK Cetacean Strandings Investigation Programme routinely records evidence of marine debris ingestion and/or entanglement found in UK stranded cetaceans which undergo to post-mortem examination (see section 9.2). The project also includes the [Scottish Entanglement Alliance](#), which is a collaborative funded project with the aim of engaging with the Scottish inshore fishing industry to better understand the incidence of marine animal entanglements which may be in active or discarded gear, and to develop sustainable, proportional mitigation strategies. The Scottish Marine Animal Strandings Scheme also has an app which collects data on

Scottish Marine Litter Strategy – monitoring of beaches, seabed and water column

Northern Ireland beaches <https://www.daera-ni.gov.uk/articles/marine-litter>

Some research NGOs (e.g. HWDIT, SWF) systematically record marine debris during dedicated cetacean surveys (most data from Irish Sea and West Coast Scotland).

9.2. Are these data publicly available?

☐ **No.**

☒ **Yes.** Please provide a link:

CSIP 2016 annual report (Appendix)
http://sciencesearch.defra.gov.uk/Document.aspx?Document=14577_FINALUKCSIPAnnualReport2016.pdf

CSIP 2017 annual report (Appendix)
http://sciencesearch.defra.gov.uk/Document.aspx?Document=14578_FINALUKCSIPAnnualReport2017.pdf

CSIP 2011-2017 final contract report (Appendices)
http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf

CSIP 2018 annual report (Appendix)

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14699_ME6008UKCSIPAnnualReport2018.pdf

CSIP 2019 annual report (Appendix)

In press- will be published here;

<http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=20101&FromSearch=Y&Publisher=1&SearchText=strandings&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description>

<https://www2.gov.scot/Topics/marine/marine-environment/litter>

<https://www.gov.scot/policies/marine-environment/marine-litter/>

Appendix 3 in Appendices to FINAL CSIP Contract Report 2011-

2017<http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17835>

9.3. What species of small cetaceans were found to have been impacted by marine debris?

Species	# of impacted individuals	Year	Region	Description of the impact
HP Harbour porpoise	1	2016	OII Northern North Sea	Non-fatal and incidental ingestion (Small fragment of paper/debris in the fundic stomach)
CD Short-beaked Common dolphin	1	2016	OII Channel	Non-fatal and incidental ingestion (small fragment of plastic in the cardiac stomach)
WBD White-beaked dolphin	1	2016	OII Northern North Sea	Non-fatal and incidental ingestion (small fragments of debris in the oesophageal and cardiac stomach lumen)
HP Harbour porpoise	1	2017	OII Northern North Sea	Non-fatal and incidental ingestion (ear bud shaft in the oesophageal lumen)
HP Harbour porpoise	1	2017	OII Southern North Sea	Non-fatal and incidental ingestion (small piece of folded plastic within the cardiac stomach)
CD Short-beaked Common dolphin	1	2017	OIII Celtic Sea	Non-fatal and incidental ingestion (small piece of blue synthetic material in the cardiac stomach lumen)
CD Short-beaked Common dolphin	1	2017	OII Southern North Sea	Non-fatal and incidental entanglement (evidence of entanglement in linear material in a common dolphin in the Thames)
BD Bottlenose dolphin	1	2017	OII Northern North Sea	Non-fatal and incidental ingestion (small fragment of plastic within the cardiac stomach)
SD Striped dolphin	1	2017	OII Channel	Non-fatal and incidental ingestion (short fragment of green cord in the cardiac stomach)
NBW Northern bottlenose whale	1	2017	OIII Irish Sea	Evidence of fatal entanglement (tailstock and ventral tail flukes). Unclear if active gear or debris/discarded gear.
CD Short-beaked Common dolphin	2	2018	OIII Celtic Sea	Non-fatal and incidental ingestion (small pieces of plastic/foil in cardiac

				stomach; plastic collar from a container/bottle in cardiac stomach)
SD Striped dolphin	1	2018	OIII Celtic Sea	Non-fatal and incidental ingestion (fragments of plastic in the cardiac stomach)
WBD White-beaked dolphin	1	2018	OII Channel	Non-fatal and incidental ingestion (small section of green multifilament twine in the cardiac stomach)
RD Risso's dolphin	1	2018	OII Southern North Sea	Non-fatal and incidental ingestion (fragments of a rubber glove in the cardiac stomach)
HP Harbour porpoise	2	2019	OIII Irish Sea	Non-fatal and incidental ingestion (small fragments of plastic in the cardiac stomach)
CD Short-beaked Common dolphin	1	2019	OII Channel	Non-fatal and incidental ingestion (small fragments of plastic in the cardiac stomach)
KW Killer Whale	1	2019	OII Southern North Sea	Non-fatal and incidental ingestion (plastic sheet fragment/s in the cardiac stomach into oesophagus)

9.4. Are there any mitigation measures in place?

☐ No.

☒ Yes. Provide information in the table below.

(Mitigation measures might include e.g. changes in gear to prevent loss, entanglement response, adoption of measures to reduce land-based/boat-based sources of marine debris)

Measure:	see https://www.gov.scot/policies/marine-environment/marine-litter/		
Date of implementation:		Region: Choose an item.	
Has the measure been effective?	<input type="checkbox"/> No. <input type="checkbox"/> Yes. Comments:		
Other information:			

Copy table if needed.

Copy table if needed.

Measure:	British Divers Marine Life Rescue – Large Whale Disentanglement Team (LWDT) - trained team of members to respond to reports of whale entanglements The Scottish Entanglement Alliance runs a programme of training to enable Scottish fishers to safely disentangle whales spotted at sea.		
Date of implementation:	2018	Region: Choose an item.	
Has the measure been effective?	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Comments: There have been successful releases of entangled animals at sea e.g. https://bdmlr.org.uk/orknet-humpback-freed		
Other information:			

9.5. How is marine debris managed? (incl. relevant regulations / guidelines and the year of implementation, current and planned)

<ul style="list-style-type: none"> Guidelines for the collection of offshore litter data International Convention for the Prevention of Marine Pollution from Ships (MARPOL 73/78) and its Annex V (which prohibits the at-sea disposal of plastics and waste from ships) Directive 2000/59/EC: EU Port Waste Reception Directive - the European Parliament and of the Council on port reception facilities for ship-generated waste and cargo residues Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) Convention on the Trans-boundary Movements of Hazardous Wastes and Their Disposal (Basel Convention: http://www.basel.int/) 			
--	--	--	--

- [Marine Strategy Framework Directive Good Environmental Status indicator 10](#) (the MFSD will also apply to all Water Framework Directive water bodies for litter)
- [EU Single-use Plastics Directive](#)

9.6. Relevant new research/work/collaboration on marine debris in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information e.g. link to OSPAR reports)

Nelms, S.E., Barnett, J., Brownlow, A., Davison, N.J., Deaville, R., Galloway, T.S., Lindeque, P.K., Santillo, D. and Godley, B.J. (2019) Microplastics in marine mammals stranded around the British coast: ubiquitous but transitory? *Nature Scientific Reports* <https://www.nature.com/articles/s41598-018-37428-3>

CSIP 2016 annual report (Appendix)

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14577_FINALUKCSIPAnnualReport2016.pdf

CSIP 2017 annual report (Appendix)

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14578_FINALUKCSIPAnnualReport2017.pdf

CSIP 2011-2017 final contract report (Appendices)

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf

CSIP 2018 annual report (Appendix)

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14699_ME6008UKCSIPAnnualReport2018.pdf

CSIP 2019 annual report (Appendix)

In press- will be published here;

<http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=20101&FromSearch=Y&Publisher=1&SearchText=strandings&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description>

<https://www.gov.scot/policies/marine-environment/marine-litter/>

For example:

- supporting KIMO's [Fishing For Litter](#), which helps fishermen remove and bring ashore litter that they catch in their nets.
- supporting KIMO's '[Pick Up 3 Pieces](#)' initiative, which encourages beach visitors to take 3 pieces of litter with them when they leave; and
- funding of [Local Coastal Partnerships](#) around Scotland's coastline which all have a role to play in supporting beach cleans and other efforts to reduce marine litter.
- supporting [SCRAPbook](#), a collaborative project between the [Moray Firth Partnership](#) and [Sky Watch](#) to map the litter hot spots round Scotland's mainland coastline and support their clean-ups. We provide funding for two marine litter officers and an engagement officer, who will support and carry out beach cleans in less accessible areas, guided by SCRAPbook data.

9.7. Is the perceived level of pressure from marine debris in your country increasing, decreasing, staying the same or unknown?

To be done per species where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Unknown for all species based on UK strandings programme
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

☐ **Not applicable.** Comments:

C. Habitat Change and Degradation (incl. potential physical impacts)

10. Pollution and hazardous substances (incl. microplastics)

AIM: to illustrate progress on understanding, monitoring and mitigating impacts of important current and emerging pollution-related hazards on small cetaceans. during the reporting period
Relevant Resolutions: 8.9, 8.8, **8.7**, 8.4, 8.3, **7.4**, 7.1, 6.1, 5.7

Marine environments have been subject to a wide range of different types of pollution over the last decades. Top predators, such as small cetaceans that feed on higher trophic prey, tend to accumulate many of these potentially hazardous substances. There are a number of contaminants and pathogens that are known, or suspected, to have impacts on small cetacean health, immune status or reproduction. These include, for example: polychlorinated biphenyls (PCBs) and other persistent organic pollutants (POPs), oil pollution (polycyclic aromatic hydrocarbons), toxins from harmful algal blooms (HABs), sewage, radionuclides, toxic elements, tri-butyl tin (TBT), morbillivirus, and Brucella. In addition, micro- and nano-plastics are also present in marine environment and their impacts are presently poorly understood.

Monitoring can be done using body tissue from small cetaceans obtained from live animals through biopsies, or from dead animals that are generally found on the shore. Necropsies allow the sampling of different types of tissue such as blubber, muscle, kidney or liver and these can be analyzed subsequently.

To better understand the impact of contaminants on small cetacean health, to detect new emerging hazards and to work towards a common protocol for analyzing samples, countries are asked to provide information on their programs.

Note: Includes microplastics. Macroplastics and discarded fishing gear are covered under Section C 9 Marine Debris.

Questions:

10.1. Does your country conduct monitoring of pollutants in small cetaceans?

Several pollutants have serious effects on individual small cetaceans and can threaten populations. The aim is to capture the nature of existing monitoring and identify gaps in terms of which pollutants are monitored, the extend of this monitoring and the establishment of securely funded long-term data series.

☐ **No.** Go to **Question 10.7.**

☒ **Yes.**

Comments:

Through a long term collaboration between the UK Cetacean Strandings Investigation Programme and the Centre for Environment, Fisheries and Aquaculture Science (Cefas), one of the worlds largest datasets on pollutants in cetaceans has been generated.

A long-term time series of levels of PCBs, OCPs, PBDEs, HBCD and PFCs in harbour porpoises is being added to each year. In addition, samples from a variety of other UK stranded marine mammals have also been analysed (see below).

Microplastics are also monitored through stomach contents analysis as part of post-mortem analysis of stranded animals.

10.2. Who is carrying out the pollutant monitoring program? Please provide information on the institution(s)/agencies that collect the samples and carry out the analyses. Copy table if needed.

Name: Cetacean Strandings Investigation Programme (CSIP)
 Role in monitoring: Sample collection
 Postal Address: Cetacean Strandings Investigation Programme, Institute of Zoology, Regents Park, London, NW1 4RY, UK
 Contact Person: Rob Deaville (on behalf of the CSIP consortium)
 Telephone: +442074496672
 Email: rob.deaville@ioz.ac.uk
 Weblink: www.ukstrandings.org

Name: The Centre for Environment, Fisheries and Aquaculture Science
 Role in monitoring: Sample analyses
 Postal Address: Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk, NR33 0HT, UK
 Contact Person: Jon Barber
 Telephone: +44 (0)1502 524486

Email: jon.barber@cefas.co.uk
 Weblink: www.cefas.co.uk

10.3. Select the small cetacean species that were covered by your monitoring program during the reporting period. Mark the year in which the species was sampled with an x

2016	2017	2018	2019	Species ²	2016	2017	2018	2019	Species
76	74	71	56	Harbour porpoise	1	1	4	3	SBW Sowerby's beaked whale
36	47	45	41	CD Short-beaked Common dolphin	1	4	1	2	BD Bottlenose dolphin
4	4	6	2	SD Striped dolphin	1	2	0	1	KW Killer Whale
5	2	4	0	WBD White-beaked dolphin	1	1	1	0	AWSD Atlantic white-sided dolphin
4	4	2	0	RD Risso's dolphin	0	0	2	0	CBW Cuvier's Beaked Whale
0	4	5	2	LFPW Long-finned pilot whale	0	1	0	0	NBW Northern bottlenose whale
				Choose a species	1	0	0	1	PSW Pygmy sperm whale

Comments:

NB the above details numbers of stranded cetaceans examined at necropsy by the UK Cetacean Strandings Investigation Programme, where samples for potential pollutant analyses were collected. It does not indicate those where subsequent analyses occurred.

Please note, in addition to the above, SMASS/SRUC volunteers collected 265 additional sets of samples from 12 species of non-necropsied cetacean between 2016-2019, which are also available for potential analyses.

During the reporting period, contaminant analyses were carried out at Cefas on a large number of samples collected above (see Section 10.8 for more detail).

10.4. Select the source of your samples (multiple answers possible)

- ☒ Necropsy from stranding
- ☒ Necropsy from bycatch
- ☐ Sample from live stranding
- ☐ Biopsy from live animal
- ☐ Other (specify in comments)

Comments:

Samples collected under the aegis of the UK Cetacean Strandings Investigation Programme.

10.5. Select the geographical coverage of your monitoring program (several answers are possible)

A map of the OSPAR and HELCOM regions and sub-regions can be found in the Annex A.

² Please refer to Annex B for list of species, including scientific names.

OSPAR Region I Arctic Waters <input type="checkbox"/> Norwegian Sea OSPAR Region II Greater North Sea <input type="checkbox"/> Dogger Bank <input checked="" type="checkbox"/> Southern North Sea <input checked="" type="checkbox"/> Northern North Sea <input checked="" type="checkbox"/> Channel <input type="checkbox"/> Norwegian Trench <input type="checkbox"/> Skagerrak OSPAR Region III Celtic Sea <input checked="" type="checkbox"/> Celtic Sea <input checked="" type="checkbox"/> Irish Sea <input checked="" type="checkbox"/> Irish & Scottish W. Coast	OSPAR Region IV Bay of Biscay and Iberian Coast <input type="checkbox"/> N. Bay of Biscay <input type="checkbox"/> Iberian Sea <input type="checkbox"/> Gulf of Cadiz OSPAR Region V Wider Atlantic <input type="checkbox"/> subregions? HELCOM <input type="checkbox"/> Bothnian Bay <input type="checkbox"/> Bothnian Sea <input type="checkbox"/> Archipelago Sea <input type="checkbox"/> Åland Sea	HELCOM cont. <input type="checkbox"/> Gulf of Finland <input type="checkbox"/> Northern Baltic Proper <input type="checkbox"/> Western Gotland Basin <input type="checkbox"/> Eastern Gotland Basin <input type="checkbox"/> Gulf of Riga <input type="checkbox"/> Gdansk Basin <input type="checkbox"/> Bornholm Basin <input type="checkbox"/> Arkona Basin <input type="checkbox"/> Kattegat <input type="checkbox"/> Belt Sea <input type="checkbox"/> The Sound
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10.6. Select the contaminant / pathogen analyses you have conducted for small cetaceans.

<input checked="" type="checkbox"/> POPs (e.g. PCBs)	<input checked="" type="checkbox"/> Radionuclides	<input checked="" type="checkbox"/> Brucella	<input type="checkbox"/> Others:
<input type="checkbox"/> Oil (e.g. PAHs)	<input type="checkbox"/> Toxic elements	<input checked="" type="checkbox"/> Microplastics	<input type="checkbox"/> Others:
<input type="checkbox"/> HAB toxins	<input type="checkbox"/> TBT	<input type="checkbox"/> Nanoplastics	<input type="checkbox"/> Others:
<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Morbillivirus	<input type="checkbox"/> Others:	<input type="checkbox"/> Others:

Comments:

10.7. Does your country determine microplastics in small cetaceans?

☐ **No.** Go to **Question 10.9.**

☒ **Yes.** Please provide information in the table below:

Do you have a specific protocol to monitor microplastic in small cetaceans? ☐ **No** ☒ **Yes**
If yes, please provide details and weblinks or upload document.

ASCOBANS/ACCOBAMS. 2019. "European Best Practice on Cetacean Post-mortem Investigation and Tissue Sampling." OSF Preprints. October 7. doi:10.31219/osf.io/zh4ra <https://osf.io/zh4ra/>

Nelms, S.E., Barnett, J., Brownlow, A., Davison, N.J., Deaville, R., Galloway, T.S., Lindeque, P.K., Santillo, D. and Godley, B.J. (2019) Microplastics in marine mammals stranded around the British coast: ubiquitous but transitory? *Nature Scientific Reports* <https://www.nature.com/articles/s41598-018-37428-3>

There is currently no agreed protocol between Parties. Best practice needs to be established to make sure that all results obtained are comparable between research institutes. In particular, it is essential to avoid contamination of samples during processing, e.g. with airborne microplastic fibres.

10.8. Relevant new research/work/collaboration on impact of pollution and hazardous substances (incl. microplastics) on small cetaceans in your country.

We need to capture information on new knowledge arising from monitoring schemes or other research projects, especially results which enhance our understanding of impacts of hazardous pollutants and/or assess their known or likely effects on small cetacean population status (e.g. considering PCB concentrations in blubber in relation to threshold for inhibition of reproduction). Where relevant, please report separately per pollutant, species and area.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

PhD project: "Persistent Organic Pollutants: Assessing the threat to cetaceans."

Organisations: Zoological Society of London, Brunel University London

Funding: Natural Environment Research Council

Student: Rosie Williams

Weblinks to project: <https://www.zsl.org/science/users/rosie-williams>

<https://london-nerc-dtp.org/profile/williamsr/>

PhD project: “Marine litter, microplastics and marine megafauna”

Organisation: University of Exeter, Plymouth Marine Laboratory

Student: Sarah Nelms

Weblinks to project: https://biosciences.exeter.ac.uk/staff/profile/index.php?web_id=Sarah_Nelms

MSc project: “Causes of spatio-temporal trends in skin lesions of Welsh bottlenose dolphins” (2019)

Organisation: Bangor University, Sea Watch Foundation

Student: Anastasios Stylus

Supervisors: PGH Evans, JJ Waggitt

Masters by Research: “The lesion profile of cetaceans diagnosed with neurobrucellosis in Scottish waters 1990 to March 2019.”

Organisations: Scotland’s Rural College (SRUC)/Moredun Institute/ Roslin Institute/ Univeristy of Edinburgh

Funding: Scotland’s Rural College (SRUC)

Student: Nicholas Davison

Peer reviewed publications

Acevedo-Whitehouse, K., Cole, K.J., Phillips, D.H., Jepson, P.D., Deaville, R. and Arlt, V.M. (2018) Hepatic DNA Damage in Harbour Porpoises (*Phocoena phocoena*) stranded along the English and Welsh Coastlines. *Environmental and Molecular Mutagenesis*. **59(7)**, 613-624. doi: 10.1002/em.22205

Desforges, J.P., Hall, A., McConnell, B., Asvid, A.r., Barber, J.L., Brownlow, A., De Guise, S., Eulaers, I., Jepson, P.D., Letcher, R.J., Levin, M., Ross, P.S., Samarra, F., Víkingsson, G., Sonne, C., Dietz, R. (2018) Predicting global killer whale population collapse from PCB pollution. *Science*,. **361 (6409)** pp. 1373-1376. DOI: 10.1126/science.aat1953

Desforges, J.P., Hall, A., McConnell, B., Rosing Asvid, A., Barber, J.L., Brownlow, A., De Guise, S., Eulaers, I., Jepson, P.D., Letcher, R.J., Levin, M., Ross, P.S., Sonne, C. and Dietz, R. (2019) Response to L. Witting: PCBs still a major risk for global killer whale populations. *Marine Mammal Science* **35(3)**:1201-1206., DOI:10.1111/mms.12615

Gajdosechova, Z. Brownlow, A., Cottin, N.T. Fernandes, M., Read, F.L., Urgast, D.S., Raab, A., Feldmann, J. and Krupp, E.M. (2016) Possible link between Hg and Cd accumulation in the brain of long-finned pilot whales (*Globicephala melas*). *Science of The Total Environment Volumes 545–546*, Pages 407–413.

Gajdosechova, Z., Lawan, M.M., Urgast, D.S., Raab, A., Scheckel, K.G., Lombi, E., Kopittke, P.M., Loeschner, K., Larsen, E.H., Woods, G., Brownlow, A., Read, F.L., Feldmann, J. and Krupp, E.M. (2016) In vivo formation of natural HgSe nanoparticles in the liver and brain of pilot whales. *Nature Scientific Reports* **6**, 34361; doi: 10.1038/srep34361

Jepson, P. D., Deaville, R., Barber, J. L., Aguilar, À., Borrell, A., Murphy, S., Barry, J., Brownlow, A., Barnett, J., Berrow, S., Cunningham, A. A., Davison, N., ten Doeschate, M., Esteban, R., Ferreira, M., Foote, A. D., Genov, T., Giménez, J., Loveridge, J., Llavona, Á., Martin, V., Maxwell, D. L., Papachlimitzou, A., Penrose, R., Perkins, M. W., Smith, B., de Stephanis, R., Tregenza, N., Verborgh, P., Fernandez, A. & Law, R. J. (2016a) PCB pollution continues to impact populations of orcas and other dolphins in European waters. *Scientific Reports* **6**: 18573 doi:10.1038/srep18573

Jepson, P.D. and Law, R.J. (2016b) Persistent pollutants, persistent threats: Polychlorinated biphenyls remain a major threat to marine apex predators such as orcas. *Science*, **352**: 1388-1389. doi: 10.1126/science.aaf9075

Law, R.J. and Jepson, P.D. (2017) Europe’s insufficient pollutant remediation. *Science*, **356**, 148. doi: 10.1126/science.aam6274

Murphy, S., Law, R., Deaville, R., Barnett, J., Perkins, W., Brownlow, A., Penrose., Davison, N., Barber, J., & Jepson, D. (2018). Chapter 1: Organochlorine Contaminants and Reproductive Implications in Cetaceans: A Case study of the Common Dolphin. In *Marine Mammal Ecotoxicology Impact of Multiple Stressors on Population Health*. pg. 3-38. <https://doi.org/10.1016/B978-0-12-812144-3.00001-2>

Nelms, S.E., Barnett, J., Brownlow, A., Davison, N.J., Deaville, R., Galloway, T.S., Lindeque, P.K., Santillo, D. and Godley, B.J. (2019) Microplastics in marine mammals stranded around the British coast: ubiquitous but transitory? *Nature Scientific Reports* **9**(1):1075. doi: 10.1038/s41598-018-37428-3.

Schnitzler, J.G., Pinzone, M., Autenrieth, M., van Neer, A., IJsseldijk, L.L., Barber, J.L., Brownlow, A., Deaville, R., Jepson, P.D., Schaffeld, T., Thomé, J.P., Tiedemann, R., Das, K. and Siebert, U. (2018) Inter-individual differences in contamination profiles of stranded sperm whales: Can the contamination be used as tracer of social group association? *Scientific Reports* **8**: 10958

Stuart-Smith, S. and Jepson, P.D. (2017) Persistent threats need persistent counteraction: responding to PCB pollution in marine mammals. *Marine Policy* **84**: 69-75.

Tierney K.M., Muir, G.K.P., Cook, G.T., Heymans, J.J., MacKinnon, G., Howe, J.A., Xu, S., Brownlow, A., Davison, N.J., ten Doeschate, M. and Deaville, R. (2017) Nuclear reprocessing-related radiocarbon (¹⁴C) uptake into UK marine mammals. *Marine Pollution Bulletin* <https://doi.org/10.1016/j.marpolbul.2017.07.002>

Williams, R.S., Curnick, D.J., Barber, J.L., Brownlow, A., Davison, N.J., Deaville, R., Perkins, M., Jobling, S. and Jepson, P.D. (2019) Juvenile harbour porpoises in the UK are exposed to a more neurotoxic mixture of polychlorinated biphenyls than adults. *Science of The Total Environment*, p.134835. <https://doi.org/10.1016/j.scitotenv.2019.134835>

Analyses summary:

During the triennial period (2016-2018), the following analyses on contaminants were also carried out by CEFAS;

PCBs in apex predators

- The long-term time series of polychlorinated biphenyls (PCBs) in UK stranded harbour porpoises was extended during the reporting period, with analyses conducted on animals which stranded between 2015 and 2017 (n=61). Results of the extended time series were published recently (Williams, R., ten Doeschate, M., Curnick, D.J., Brownlow, A., Barber, J., Davison, N., Deaville, R., Perkins, M., Jepson, P. and Jobling, S. (2020) Levels of polychlorinated biphenyls are still associated with toxic effects in harbour porpoises (*Phocoena phocoena*) despite having fallen below proposed toxicity thresholds. *Environmental Science and Technology* 54(4), 2277-2286. DOI: 10.1021/acs.est.9b05453). This study found that levels are now declining after a long period of stability and mean levels are now below the proposed threshold for onset of effects. However, it was calculated that levels are still associated with increased rates of infectious disease mortality such that an increase in PCBs blubber concentrations of 1 mg/kg lw corresponds with a 5% increase in risk of infectious disease mortality. Samples from UK stranded harbour porpoises from 2018 (n=20) have been sent to CEFAS and are pending examination.
- Following on from the body of work on PCB levels in apex predators (Jepson et al. 2016a, see above), analyses of PCBs in an additional 7 killer whales (KIW) and 25 bottlenose dolphins (BND) from the UK were also carried out during this period. This included the analyses for 'Lulu' which received much news coverage (e.g. www.bbc.co.uk/news/science-environment-39738582). Assessing the overall results of total PCBs on a lipid weight basis against the two toxicology thresholds discussed in Jepson et al. 2016a (lowest 9mg/kg lw, highest 41mg/kg lw), 78% of BNDs (26/46) and 100% of KIW (9/9) are above the lowest threshold and 50% of BNDs (23/46) and 89% of KIW (8/9) are above the highest threshold. In comparison, for UK harbour porpoises examined usually ~40% are above the lowest threshold and none are above the highest.

During the triennial period (2016-2018), the following analyses were conducted on samples from UK stranded harbour porpoises.

Polybrominated diphenyl ethers (PBDEs)

Harbour porpoise blubbers from 2014 and 2015 (n=40) were analysed to update time trends

- Total PBDE mean levels in 2015 were lower than those measured last in 2008 (sum 9 BDEs 0.22 vs 0.67 mg/kg lw, respectively) and are now <10% of the levels observed at the peak in 2000. However, the rate of decline has slowed down in recent years.

Hexabromocyclododecane (HBCD)

Harbour porpoise blubbers from 2014 (n=20) were analysed to update the time series.

- Previously observed declines up to 2006 have not continued. Mean levels of HBCD in 2014 were similar to those found in 2006 (sum 3 HBCDs 0.83 vs 0.82 mg/kg lw total HBCD). Levels of HBCD were higher than PBDEs as a result of their decline.

Perfluorinated chemicals (PFASs) including perfluorooctane sulphonate (PFOS)

Harbour porpoise livers from 2012-2014 (n=60) were analysed to update/start time trends.

- Of the 15 PFAS analysed, 6 were ubiquitous (PFOS, FOSA, PFNA, PFDcA, PFUnA and PFTTrDA), a further 5 were present in the majority of samples (PFHxS, PFDcS, PFHpA, PFDODA and PFTTeDA), 2 were detected fairly frequently (PFHxA and PFOA) and the other 2 were only occasionally detected (PFPeA and PFBuS). Mean PFOS concentration for 2012-14 (178 ug/kg ww) was approximately one third of that observed previously for 2001-03 (600 ug/kg ww), indicating that levels have declined. In comparison, the sum of PFCAs was lower: 39 ug/kg ww, but there is no earlier data to compare with to investigate time trends. (PFCAs, PFASs and FOSA in harbour porpoises (*Phocoena phocoena*) stranded or bycaught in the UK during 2012-2014. (2016) J.L. Barber, A. Papachlimitzou, S. Losada, P. Bersuder, R. Deaville, A. Brownlow, R. Penrose, P.D. Jepson, R.J. Law. *Organohalogen Compounds* 2016, **78**, 119-123.)

During 2018, an additional project was commissioned by UK government to build on these studies, by looking at levels of PCBs and other chemicals of concern across a range of additional UK marine mammal species ('*Contaminants in Marine Mammals*, project code C7774'). In addition to continued analyses of samples from harbour porpoise, killer whale and bottlenose dolphin, samples from UK stranded short-beaked common dolphins, white-beaked dolphins, Atlantic white-sided dolphins, striped dolphins and Risso's dolphins plus two pinniped species (grey and harbour seals) were also analysed. Chemicals of concern, all persistent organic pollutants (POPs), included PCBs, organochlorine pesticides (OCPs), PBDEs HBCDs and PFASs including perfluorooctane sulphonate (PFOS).

The objectives of this project was to generate the data necessary to:

- 1) investigate levels of PCBs, OCPs, PFAS, PBDEs and HBCDs in nine indicator species (killer whale, bottlenose dolphin, white-beaked dolphin, Risso's dolphin, Atlantic white-sided dolphin, short-beaked common dolphin, striped dolphin, grey seal and harbour seal) to assess the risk of marine mammal populations to exposure to these chemicals.
- 2) investigate recent temporal and spatial trends of PCBs, OCPs, PFAS, PBDEs and HBCDDs in UK harbour porpoises to see if elimination or mitigation activities are having an effect on environmental concentrations
- 3) investigate the distribution of PCBs between tissues to see if significant mobilisation of contaminants occurs during starvation or in heavily contaminated individuals

Samples were selected from the period 2008-2018 and a total of 190 samples were selected for PCBs analysis, 95 samples for PBDEs and OCPs, 115 samples for HBCDDs, and 60 for PFAS analysis. Analysis of samples was completed during the latter part of 2019 and results will be published shortly.

ChemPop

The Zoological Society of London (one of the partners in the UK Cetacean Strandings Investigation Programme) is also a partner organisation within a NERC funded project consortium- '*ChemPop- what are the impacts of chemicals on wildlife populations*'.

<https://www.ceh.ac.uk/our-science/projects/chempop-does-discharge-chemicals-environment-harm-wildlife-populations>

ChemPop aims to identify which populations and environments are doing well under the current chemical regime in the UK and which are not. This will allow the UK to focus its research where the greatest wildlife declines are occurring. It has two broad research questions;

- What are the impacts of hazardous chemicals on populations, ecosystems and ecosystem services?
- What is their relation to other pressures in the environment?

It aims to address these questions through data mining of Britain's extensive wildlife monitoring databases, some of which date back more than 40 years. The programme will investigate chemical exposure in terrestrial, freshwater and marine ecosystems around the UK and is due to run for four years between 2018 and 2022.

10.9. If applicable, list any additional evidence/data of reduced impacts of pollutants on small cetaceans following implementation of national mitigation measures (e.g. decline of contaminant levels in blubber over time).

10.10. Have there been any instances/issues related to pollution and hazardous substances in your country during the reporting period?

☒ **No.**

☐ **Yes.** Please provide details:

10.11. Is the perceived level of pressure from pollution and hazardous substances in your country increasing, decreasing, staying the same or unknown?

To be done per species where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
HP Harbour porpoise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
CD Short-beaked Common dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
SD Striped dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
WBD White-beaked dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
RD Risso's dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
LFPW Long-finned pilot whale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
SBW Sowerby's beaked whale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
BD Bottlenose dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
KW Killer Whale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
AWSD Atlantic white-sided dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
CBW Cuvier's Beaked Whale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
NBW Northern bottlenose whale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration
PSW Pygmy sperm whale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Strandings/necropsies and CSIP/Cefas collaboration

☐ **Not applicable.** Comments:

Given the range of pollutants and hazardous substances listed in 10.6, the summary table above is a crude way of trying to assess the perceived level of pressure related to these substances- it's difficult to provide an overall assessment of the impact of such a broad range of potential pressures within a single table.

In the UK, it should be noted that a globally significant dataset on POPs and other pollutants of concern has been generated, giving an insight into their potential impact on a number of cetacean species.

C. Habitat Change and Degradation (incl. potential physical impacts)

11. Ship Strikes

AIM: understanding the potential risk of ship strike as a cause of injury/death in small cetaceans.
Relevant Resolutions: 8.9, 8.2, 8.1, 6.1, 5.4

Ship strikes are collisions between vessels and cetaceans. In the last decades, evidence has emerged that ship strikes might occur more often than previously thought and can have a significant impact on small resident cetacean populations. Most research so far has focused on large cetaceans as those animals are often carried visibly into port at the bow of a vessel. For small cetaceans, ship strike events are not well documented.

Ship strike occurrence is directly linked to the frequency of shipping activity, including such directed at cetaceans, i.e. cetacean watching. To quantify this pressure, it is important to know what kind of vessels are involved in the strike, as well as the type, size and speed of the vessel. But it is also important to have information on the small cetaceans involved, in particular if the animals were engaged in certain behaviour such as feeding.

Ship strike can cause direct death or injury in cetaceans. Even collisions that are non-fatal might leave individuals with a reduction in their chance of survival. To determine the occurrence of ship-strikes, different sources are used. For small cetaceans, direct observations are the rarest. Necropsies of stranded animals can find evidence of characteristic trauma and photographs of animals that survived ship strikes can show typical injuries, such as marks left by propellers. One way to quantify how many animals in a population are impacted by ship strike is to assess the percentage of animals in a photo-identification catalogue that bear ship strike marks.

As this is still a not well documented threat, this section aims to obtain an overview of what kind of data and research is available and ongoing in the countries.

Questions:

11.1. Are there reports available in your country of ship strikes with small cetaceans from visual observations?

The International Whaling Commission (IWC) has a global database for ship strike incidents with small cetaceans. Whether or not your country is Party to the IWC, it is encouraged for countries to provide all ship strike incident information to the IWC database.

☐ No.

☐ Yes. Please provide information from the reporting period in the table below.

Has the ship strike been submitted to the IWC Ship Strike Database?	Region	Species (if known)	Date of incident (dd/mm/yy)	Contact (if available contact details of the observer)	Description of the observed incidence (Group size if other cetaceans present, dead/alive after collision, animal retrieval, animal being dead before collision, other information, vessel type/name, speed, damage to vessel or injuries to people)	Is there a necropsy report?	Websites, other information, photographs or publications: (provide links)
Choose an item.	Choose an item.	Choose an item.				Choose an item. Link:	
Choose an item.	Choose an item.	Choose an item.				Choose an item. Link:	
Choose an item.	Choose an item.	Choose an item.				Choose an item. Link:	

11.2. Are there reports in your country of vessel strikes from necropsies of stranded animals for the reporting period?

☐ No.

☒ Yes. Please provide information in the table below.

General Information			Necropsied animals		Comments
Year	Region	Species	Number of animals with cause of death ship strike (e.g. animals showing ship strike markings ³)		
			possible	certain	
2017	OII Channel	CD Short-beaked Common		1	Diagnosed from necropsy of strandings
2017	OIII Celtic Sea	CD Short-beaked Common		1	Diagnosed from necropsy of strandings
2018	OII Channel	HP Harbour porpoise		1	Diagnosed from necropsy of strandings
2019	OIII Celtic Sea	CD Short-beaked Common		1	Diagnosed from necropsy of strandings
Provide source of information and database link if applicable: CSIP 2017, 2018 and 2019 annual reports (see section IV, 1.10). Database link http://data.ukstrandings.org (not currently publicly accessible- see section IV, 1.5 for more information)					

³ These can be sub-acute (animal dies not immediately after the ship-strike) or chronic lesions (scar forming starts, but there is likely infection/inflammation) or healed lesions that are unrelated to the cause of death (although they could have affected an animals health status in the longer term).

11.3. Does your country have a protocol in use to determine that a cause of death in post-mortem examination is due to a vessel strike?

- ☐ **No.**
☒ **Yes.** Please provide information below:

All cetacean post-mortem investigations (including tissue sampling) in the UK between 2011-2019 were conducted using standardized and systematic necropsy procedures;

Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final Contract Report Appendices, 2011-2017. pp24-38
http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf

Following a joint ASCOBANS/ACCOBAMS workshop held in Padua, Italy in July 2019 to revise European necropsy protocols¹, revisions to UK necropsy protocols are being assessed.

¹ASCOBANS/ACCOBAMS. 2019. "European Best Practice on Cetacean Post-mortem Investigation and Tissue Sampling." OSF Preprints. October 7. doi:10.31219/osf.io/zh4ra <https://osf.io/zh4ra/>

11.4. Is there evidence in your country from existing photo-identification catalogues of small cetaceans of any non-lethal ship strike during the reporting period?

For populations of small cetaceans, such as bottlenose dolphins, one can identify those animals in photo-identification catalogues of animals that show ship-strike evidence (e.g. scars). Monitoring the % of animals that show ship strike evidence can be a useful tool to monitor the development of this threat.

- ☐ **No.**
☒ **Yes.** Please provide information in the table below.

Overview of ship strike evidence in photo-identification catalogues

General Information			Photo-identified animals in the catalogue			
Year	Region	Species	# individual animals in the photo-identification catalogue	# animals showing ship strike markings (e.g. scars)		
				possible	certain	Unknown
	OIII Irish Sea	BD Bottlenose dolphin	308	4		
	Choose an item.	Choose a species				
	Choose an item.	Choose a species				

11.5. Do you have any other photographs or evidence of ship strikes outside of photo-identification catalogue?

- ☐ **No.**
☒ **Yes.** Please provide details:

See: Lohrengel, K., Evans, P.G.H., Lindenbaum, C.P., Morris, C.W. and Stringell, T.B. (2017) Bottlenose dolphin and harbour porpoise monitoring in Cardigan Bay and Pen Llŷn a'r Sarnau Special Areas of Conservation, 2014-16. NRW Evidence Report No: 191. Natural Resources Wales, Bangor. 154pp.

11.6. Relevant new research/work/collaboration on ship strike and its possible effects on small cetaceans in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

As part of the NERC/Defra funded MERP (Marine Ecosystem Research Programme) Project, Sea Watch Foundation / Bangor University have been developing risk maps applied across NW European Seas for all the major cetacean species, by mapping shipping of different sizes & speeds using AIS data and

comparing the extent of overlap with densities for each species derived from species distribution maps prepared as the main output of this element of the research programme. Risk factors for each species are being developed based upon the results of the IWC ship strike database and necropsy results from Strandings Investigation Programmes.

PhD project: "Vessel collisions with cetaceans: behavioural responses and areas of risk in the North-East Atlantic."

Organisations: University of Portsmouth

Funding: University of Portsmouth

Student: James R Robbins

Supervisors: Dr Sarah Marley, Professor Alex Ford, Lucy Babey

Weblinks to project:

[https://researchportal.port.ac.uk/portal/en/projects/vessel-collisions-with-large-whales-behavioural-responses-and-areas-of-risk\(9fcca599-e4db-435e-bd2e-3194d0a29c69\).html](https://researchportal.port.ac.uk/portal/en/projects/vessel-collisions-with-large-whales-behavioural-responses-and-areas-of-risk(9fcca599-e4db-435e-bd2e-3194d0a29c69).html)

[https://researchportal.port.ac.uk/portal/en/persons/james-robbins\(9f322b1f-da0c-4780-bbf0-db7b93be3e68\).html](https://researchportal.port.ac.uk/portal/en/persons/james-robbins(9f322b1f-da0c-4780-bbf0-db7b93be3e68).html)

This new project aims to investigate several key elements of collisions that are currently little understood in the North-East Atlantic. Maritime traffic densities and temporal changes are being investigated in the North-East Atlantic, in collaboration with Sea Watch Foundation / Bangor University, which will inform spatio-temporal models of collision risk for twelve cetacean species, and risk of mortality. A behavioural study will investigate the behavioural response of large whales to a large oncoming vessel, in partnership with ORCA and the University of St Andrews. Further avenues are being investigated which will involve analysing stranding locations and dive depths of tagged animals to identify further areas of risk and the proportion of time animals spend in surface waters where they are at risk of collision.

11.7. List any management/policy actions/relevant regulations/guidelines related to mitigating ship strike for small cetaceans (re-routing, tracking animals, ship speed limits) in your country and the year of implementation (current and planned).

Provide web links if available.

11.8. Have there been any other instances / issues of ship strike on small cetaceans in your country in the reporting period?

☐ **No.**

☐ **Yes.** Please provide details:

11.9. Is the perceived level of pressure from ship strikes on small cetaceans in your country increasing, decreasing, staying the same or unknown?

To be done per species where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
BD Bottlenose dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	UK strandings programme
HP Harbour porpoise	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	UK strandings programme
CD Short-beaked Common dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	UK strandings programme

☐ **Not applicable.** Comments:

A relatively low incidence of ship strikes recorded in UK stranded small cetaceans examined at post-mortem (e.g. Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final Contract Report, 2011-2017)¹

C. Habitat Change and Degradation (incl. Potential physical impacts)

12. Climate change (incl. ocean acidification)

AIM: to illustrate progress on understanding, monitoring and mitigating negative effects of important and emerging climate change related impacts on small cetaceans.
Relevant Resolutions: 8.9, 8.4, 8.3, 7.4, 7.1, 6.1, 5.7

It is certain that climate change is altering the habitat of cetaceans. However, our understanding of how the predicted changes will impact different species and populations can be further developed by identifying issues and trends through reporting. CMS⁴ highlights the importance of addressing potential issues through the engagement of (1) researchers to better understand the underlying processes, as well as (2) conservation managers and policy makers to monitor changes and to mitigate negative impacts. Focus should be given to understanding tangible climate change effects relevant to cetaceans, such as changing ocean temperatures, prey depletion / prey range shifts, ocean acidification, increased frequency and intensity of ocean storms, changes in sea ice and weakening of the North Atlantic Drift. Such occurrences require that we gather evidence on the existence and nature of climate change effects on small cetaceans and evaluate current monitoring programmes and mitigation measures.

This section aims to provide an overview of what kind of activities are already ongoing in the member states to address climate change. The focus is on those actions specifically regarding cetaceans as well as the most likely impacts on their habitat and prey. Climate change possibly represents one of the most important future threat to the status of cetaceans in the ASCOBANS region. Direct effects may arise due to ocean warming, resulting in distribution shifts (generally northward) so that the animals continue to occupy waters with temperature regimes compatible with their thermal niches. Key indirect effects will result from changes in prey distribution and abundance due to ocean warming, ocean acidification and changes in ocean current systems.

Questions:

12.1. Does your country undertake monitoring that has potential to contribute to knowledge and identification of climate impacts on small cetaceans?⁵

Climate change will have a multiplicity of possible direct and indirect effects on small cetaceans. Attempting to quantify this is challenging, these questions are aimed to provide an overview of the type of monitoring programmes that are conducted that may provide indirect evidence of climate change on small cetaceans.

- ☐ **No.** Go to **Question 12.3.**
☒ **Yes.** Continue to **Question 12.2.**

12.2. Which effects has your country been monitoring during the reporting period?

Overview of monitoring activities related to climate change effects on small cetaceans. Please add additional direct or indirect effects if applicable.

Monitoring activity	Comments <i>(if possible, provide e.g. contact / link to project)</i>
<input checked="" type="checkbox"/> Changes in small cetacean abundance	Evans, P.G.H. and Waggitt, J.J. (2020) Impacts of climate change on marine mammals, relevant to the coastal and marine environment around the UK. MCCIP Scientific Review 2020, 421-455.
<input checked="" type="checkbox"/> Changes in small cetacean distribution	See abundance.
<input checked="" type="checkbox"/> Changes in small cetacean migration or movement range	See abundance. Nykänen, M., Dillane, E., Englund, A., Foote, A.D., Ingram, S.N., Louis M., Mirimin, L., Oudejans, M., and Rogan, E. (2018) 'Quantifying

⁴ [CMS Resolution 12.21](#) on Climate Change and Migratory Species.

⁵ This refers to direct and indirect effects.

Monitoring activity	Comments (if possible, provide e.g. contact / link to project)
	dispersal between marine protected areas by a highly mobile species, the bottlenose dolphin, <i>Tursiops truncatus</i> , Ecology & Evolution, 8(18): 9241-9258
<input checked="" type="checkbox"/> Changes in small cetacean migration or movement timing	See abundance
<input type="checkbox"/> Changes in small cetacean community structure	
<input checked="" type="checkbox"/> Changes in reproductive success and timing in small cetaceans	Arso Civil, M., Cheney, B., Quick, N.J., Thompson, P.M. and Hammond, P.S., (2017) A new approach to estimate fecundity rate from inter-birth intervals. <i>Ecosphere</i> . 8, 4, 10 p., e01796
<input checked="" type="checkbox"/> Changes in prey (fish) abundance and distribution	Ransijn, J.M., Booth, C., and Smout, S.C. (2019) A calorific map of harbor porpoise prey in the North Sea. JNCC Report No. 633. JNCC, Peterborough, ISSN 0963 8091. Wright, P.J., Pinnegar, J.K., and Fox, C. (2020) Impacts of climate change on fish, relevant to the coastal and marine environment around the UK. MCCIP Science Review 2020, 354-381.
<input checked="" type="checkbox"/> Changes in timing of prey (fish) spawning and migration	Wright, P.J., Pinnegar, J.K., and Fox, C. (2020) Impacts of climate change on fish, relevant to the coastal and marine environment around the UK. MCCIP Science Review 2020, 354-381.
<input checked="" type="checkbox"/> Changes in fishing effort	Data available through ICES STECF data: https://stecf.jrc.ec.europa.eu/data-dissemination Check Marine Scotland Pinnegar, J.K., Garrett, A., Simpson, S.D., Engelhard, G.H., and van der Kooij, J. (2017) Fisheries. Marine Climate Change Impacts Partnership (MCCIP) Science Review 2017: 1-17. doi: 10.14465/2017.arc10.007-fis Pinnegar, J.K., Wright, P.J., Maltby, K., and Garrett, A. (2020) Impacts of climate change on fisheries, relevant to the coastal and marine environment around the UK. MCCIP Science Review 2020, 456-481
<input checked="" type="checkbox"/> Changes in the occurrence of pathogens (from sampled individuals)	The UK strandings programme (CSIP) produces annual reports of findings, including incidence of pathogens diagnosed during necropsies (see Section IV, 1.10 for links). Also see section 10.8 for details of <i>Brucella</i> sp. analysed in small cetaceans.
<input checked="" type="checkbox"/> Incidences of algal blooms (if yes, where; specify year)	There is some time series data on the abundance of algal toxins in shellfish. Food Standards Scotland shellfish monitoring program (http://marine.gov.scot/themes/biotoxin-monitoring).
<input type="checkbox"/> ...	

12.3. Relevant new research/work/collaborations which provide evidence/data about climate change, including its emerging potential issues and effects, on small cetaceans in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information); include the species concerned, the climate change effect observed, who did the work)

Michael Williamson PhD student a Kind College London, summer intern collaborating with ZSL and JNCC (Robert Deaville, ZLS; Nikki Taylor, JNCC): Exploring the potential for marine mammal strandings data as an indicator for impacts of climate change. Aims: Are rising ocean temperatures causing changes in frequency or species compositions of cetacean strandings in the UK; Can cetacean stranding data be used as an indicator for the effects of climate change in the UK.

Janneke Ransijn PhD Project in progress at St Andrews: "Marine mammal predators and ecosystem change in European Atlantic seas." Supervisors Sophie Smout and Phil Hammond. Harbour porpoise and food intake related to food availability. Composition of HP diets is substantially associated with sandeel abundance, so climate-driven changes in sandeel populations are very likely to impact these populations (along with other expected changes in prey community composition).

As part of the NERC/Defra funded MERP (Marine Ecosystem Research Programme) Project, Sea Watch Foundation / Bangor University have been mapping temporal changes in the abundance and distribution of 37 fish and 9 cephalopod species as well climate indices (temperature, salinity, stratification, NAO, AMO) and relating these to temporal trends in the abundance and distribution of all cetacean species occurring regularly in NW European seas. Some of the results are in Evans. and Waggitt (2020).

Bairstow, A. (2017) *The effects of climate change on Northwest European cetaceans*. MSc Thesis, University of Bangor. 35pp.

Evans, P.G.H. and Waggitt, J.J. (2020) Impacts of climate change on marine mammals. MCCIP Science Review 2020, 421-455.

MacDonald, A., Speirs, D.C., Greenstreet, S.P.R. and Heath, M.R. (2018) Exploring the Influence of Food and Temperature on North Sea Sandeels Using a New Dynamic Energy Budget Model. *Frontiers in Marine Science*, **5**, 53–14.

Simmonds M.P. (2017) Evaluating the Welfare Implications of Climate Change for Cetaceans. In: Butterworth A. (eds) *Marine Mammal Welfare*. Animal Welfare, vol 17. Springer, Cham https://doi.org/10.1007/978-3-319-46994-2_8

12.6. Have there been any instances / issues related to identified trends in small cetacean populations as a result of climate change in your country during the reporting period?

☐ **No.**

☐ **Yes.** Please provide details:

Potential issues: shift or contraction in range; changes to physical habitat; changes to food web, prey distribution and availability and predator-prey relationships; increased susceptibility to disease and contaminants; effects on reproductive success (Evans & Waggitt, 2019)

12.7. Is the perceived level of pressure from climate change to small cetaceans in your country increasing, decreasing, staying the same or unknown?

To be done per species. basis where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
HP Harbour porpoise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion in relation to documented prey responses
BD Bottlenose dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion in relation to documented prey responses
RD Risso's dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion in relation to documented prey responses
CD Short-beaked Common dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion in relation to documented prey responses
WBD White-beaked dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Expert opinion in relation to documented prey responses

☐ **Not applicable.** Comments:

C. Habitat Change and Degradation (incl. potential physical impacts)

13. Physical Habitat Change (e.g. from construction)

AIM: human activities in the Agreement Area have the potential to impact upon small cetaceans. Tracking those activities that cause physical habitat change and improving our understanding of their relative impacts will help shape any necessary mitigation action required.
Relevant Resolutions: 8.11, 8.9, 8.6, 8.4, 8.3, 7.1, 6.2, 6.1, 5.7

This section aims to review new information on physical habitat change, e.g. from construction, and its impacts on small cetaceans, their prey and their habitat, and make recommendations to Parties and other relevant authorities for further action.

The collation of this information will contribute to the development of risk maps showing the spatial and temporal (by season) distribution of activities that have an impact on small cetaceans, including information provided in National Reports, taking into account the work done by other organizations.

Note: In the term “physical habitat change”, we include a) coastal/marine construction – artificial islands, harbours, bridges, oil/gas platforms, wind turbines, tidal turbines; and b) seabed damage – dredging, bottom trawling.

Questions:

13.1. Provide spatial information on locations (in form of maps and/or links) of physical habitat change in your country by activity type (dredging, marine construction, coastal construction) for the reporting period.

Many range states are mapping human activities to fulfil obligations under the EU Maritime Spatial Planning Directive, MSFD, OSPAR, and HELCOM; this information is relevant (though often not readily accessible) to ASCOBANS in understanding the extent and trends of human activities potentially impacting small cetaceans.

Region	Type of information (e.g. maps, GIS, reports)	Is the data available online?	Provide web link to data, or comment on unavailability
Oil Northern North Sea	Marine Scotland hosts information for Scotland. See regulations for information eg MSLOT MMO hosts information for England and Wales. Marine Information System (MIS) provided by the MMO. The Marine Information System (MIS) is provided by the Marine Management Organisation (MMO) primarily to communicate the contents of adopted marine plans in England. The mapping function of the system sets out the spatial extent of marine plan policies alongside summarised information and a link to further information. The mapping function also provides further	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	https://www2.gov.scot/Topics/marine/Licensing/marine http://marine.gov.scot/maps/nmpi http://mis.marinemanagement.org.uk/ http://defra.maps.arcgis.com/apps/webappviewer/index.html?id=3dc94e81a22e41a6ace0bd327af4f346

	information to put marine plans into context, such as spatial information related to marine licensing		
OIII Celtic Sea	Same as OII	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	Same as OII https://apps.dera-ni.gov.uk/marinemapviewer/
OIII Irish Sea	Same as OII	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes	Same as OII https://apps.dera-ni.gov.uk/marinemapviewer/

13.2. Does your country have any reported cases of physical habitat change (e.g. dredging, marine construction, coastal construction) impacting small cetaceans during the reporting period?

☒ **No.**

☐ **Yes.** Please provide details:

Provide web links if available.

13.3. Does your country have any mitigation measures (regulations/guidelines) to prevent impacts on small cetaceans during physical habitat change activities (e.g. dredging, marine construction, coastal construction)?

☐ **No.**

☒ **Yes.** Please provide details below:

Overview of mitigation measures related to small cetaceans and physical habitat change activities.

Measure:	Normally developed as part of marine mammal mitigation plans for projects, which are a requirement of EIAs for offshore development
Industry:	
Activity type:	
Has the measure been effective?	<input type="checkbox"/> No. <input type="checkbox"/> Yes. Comments:
Other information:	https://www2.gov.scot/Topics/marine/marine-environment/mpanetwork/MPAMGT/protectedareasmgt

Copy table if needed.

13.4. Relevant new initiatives/projects/publications (reports, theses, papers in journals, books) in your country during the reporting period on impacts from physical habitat change on small cetaceans (incl. title, organization, lead author).

Provide web links if available.

Most of the studies on human activities such as construction and the potential impacts on small cetaceans are related to disturbance due to noise and/or presence of vessels rather than physical habitat change. These studies are usually covered in National Reporting Section B4 Ocean Energy.

Jamie McAuley et al at the Sea Mammal Research Unit (University of St. Andrews): tracking cetaceans around offshore installations <http://www.smrु.st-andrews.ac.uk/person/jdjm/>; Doug Gillespie et al <http://www.smrु.st-andrews.ac.uk/person/dg50/> using passive acoustics to study how small cetaceans (harbour porpoise and dolphins) behave in the immediate vicinity of tidal energy devices

Cox, S.L, Witt, M.J., Embling, C.B., Godley, B.J., Hosegood, P.J., Miller, P.I., Votier, S.C., and Ingram, S.N. (2017) 'Temporal patterns in habitat use by small cetaceans at an oceanographically dynamic marine renewable test site in the Celtic Sea', Deep Sea Research Part II: Topical Studies in Oceanography, 141: 178-190.

Evans, P.G.H. (2017) Habitat pressures. Pp. 441-446. In: *Encyclopedia of Marine Mammals* (Editors B. Würsig, J.G.M. Thewissen and K.M. Kovacs). 3rd Edition. Academic Press, San Diego. 1,157pp.

Graham, I.M., Merchant N.D., Farcas, A., Barton T.R., Cheney B., Bono, S., and Thompson P.M. (2019) Harbour porpoise responses to pile-driving diminish over time. Royal Society Open Science, 6: 190335. <http://dx.doi.org/10.1098/rsos.190335>

13.5. Have there been any other instances/issues in your country regarding physical habitat change during the reporting period?

☐ **No.**

☐ **Yes.** Please provide details:

13.6. Is the perceived level of pressure from physical habitat change in your country increasing, decreasing, staying the same or unknown?

To be done per species basis where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
HP Harbour porpoise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
BD Bottlenose dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
RD Risso's dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
CD Short-beaked Common dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
WBD White-beaked dolphin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

☐ **Not applicable.** Comments:

C. Habitat Change and Degradation (incl. potential physical impacts)

14. Other issues

14.1. List any other issues related to habitat change and degradation not mentioned above.

D. Management of Cumulative Impacts

15. Marine Spatial Planning

AIM: to provide information on existing and proposed marine spatial plans and processes during the reporting period that may impact small cetaceans.
Relevant Resolutions 8.9, 8.6, 8.3

A growing demand for use of maritime space increases pressure on ecosystems and marine resources. Marine ecosystems with good environmental status provide notable benefits to a number of economic outputs. Implementation of an integrated spatial planning and management approach can better mitigate negative impacts from maritime activities on marine environments. Spatial planning can support sustainable marine development through coordinated, coherent and transparent decision-making and the encouragement and identification of multi-purpose uses in relevant projects. Marine spatial planning is essential when selecting the most appropriate siting for marine-based projects. Particular attention should be given to critical habitat and relevant species, such as small cetaceans, in order to achieve good environmental status.

ASCOBANS Parties have agreed on a number of resolutions that support the integration of marine spatial planning into development processes. Small cetaceans benefit from good marine spatial planning and this is

highlighted in the resolutions. Countries are requested to provide information relevant to their country in this regard.

Questions:

15.1. Please provide information in regard to current and foreseen marine spatial planning.

National plans(s) and processes in force:	Welsh National Marine Plan
National plan(s) and processes in preparation:	Marine Plan for Northern Ireland has been drafted https://www.daera-ni.gov.uk/articles/marine-plan-northern-ireland
Further information, including links to online resources and maps where available:	https://gov.wales/welsh-national-marine-plan-document
Transboundary plans(s) and processes in force:	
Transboundary plan(s) and processes in preparation:	
Further information, including links to online resources and maps where available:	

15.2. Have there been any other instances/issues in your country regarding marine spatial planning during the reporting period?

☐ **No.**

☒ **Yes.** Please provide details:

Welsh National Marine Plan

15.3. Relevant new research/work/collaboration on marine spatial planning in your country.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)

Evans, P.G.H. (2018) Marine protected areas and marine spatial planning for the benefit of marine mammals. *Journal of the Marine Biological Association of the United Kingdom*, 98(5): 973-976. doi:10.1017/S0025315418000334

E. Area-based Conservation / Marine Protected Areas

16. Protected areas, e.g. Natura 2000 sites

AIM: to provide information on existing and proposed marine protected areas with small cetaceans as part of the selection criteria.
Relevant Resolutions: 5.7

Marine protected areas (MPAs) are considered under numerous agreements (including the Convention on Biological Diversity, Habitats Directive, Bern Convention, Ramsar Convention, OSPAR Convention, HELCOM, ACCOBAMS, MSFD) as a tool to achieve conservation goals. Part of ASCOBANS remit is to provide expert advice on the conservation and management of small cetaceans. This includes inviting Parties and Range States to continue or initiate research aimed at locating areas of special importance to the survival (in particular breeding and feeding) of small cetaceans as suitable sites for the establishment of protected areas. This also includes advising on appropriate management measures in these areas, on their own or in the context of other intergovernmental bodies to ensure the protection of small cetaceans.

To monitor the progress of such work to fulfil the obligations of Resolution 5.7 and actions in the workplan, ASCOBANS requires information (e.g. location, species, status, spatial data, management plans and

monitoring) on existing and proposed marine protected areas with small cetaceans as part of the selection criteria.

It is of particular interest to ASCOBANS to obtain an overview of the current scale of marine protected areas and to review best practice approaches to management of marine protected areas, in order to make recommendations to Parties.

Questions:

16.1. Does your country have MPAs (existing or proposed) where small cetaceans are the primary reason for the (proposed) designation?

☐ No.

☒ Yes. Please provide details/updates in table below:

Name (full name of MPA)	ASCOBANS Action Plan	Region	Size (km ²)	Species	MPA status	Date of designation (if applicable)	Legislation/ directive (e.g. Habitats Directive)	Is there a site-specific management plan in place?	Link to shapefile and/or online map	Link to any other online information
Bristol Channel Approaches	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input checked="" type="checkbox"/> Not Applicable	OIII Celtic Sea	5849.94	HP Harbour porpoise (Copy drop-down to add more species)	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	02/2019	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: Conservation objectives and advice on operations are available here: https://jncc.gov.uk/our-work/bristol-channel-approaches-mpa/	https://sac.jncc.gov.uk/site/UK0030396 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
Inner Hebrides and the Minches	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input type="checkbox"/> Not Applicable	OIII Irish & Scottish W. Coast	13813.9137	HP Harbour porpoise	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	12/2018	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: https://sitelink.nature.scot/site/10508	https://sac.jncc.gov.uk/site/UK0030393 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
North Anglesey Marine	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan	OIII Irish Sea	3249.49	HP Harbour porpoise	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation	02/2019	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: Conservation objectives and advice on	https://sac.jncc.gov.uk/site/UK0030398 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	

	<input type="checkbox"/> Common Dolphin SAP <input checked="" type="checkbox"/> Not Applicable				<input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable			operations are available here: https://jncc.gov.uk/our-work/north-anglesey-marine-mpa/		
North Channel	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input checked="" type="checkbox"/> Not Applicable	OIII Irish Sea	1603.67	HP Harbour porpoise	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	02/2019	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: Conservation objectives and advice on operations are available here: https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	https://sac.jncc.gov.uk/site/UK0030399 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
Southern North Sea	<input type="checkbox"/> Jastarnia Plan <input checked="" type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input type="checkbox"/> Not Applicable	OII South ern North Sea	36950.54	HP Harbour porpoise	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	02/2019	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: Conservation objectives and advice on operations are available here: https://jncc.gov.uk/our-work/southern-north-sea-mpa/	https://sac.jncc.gov.uk/site/UK0030395 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
West Wales Marine	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input checked="" type="checkbox"/> Not Applicable	OIII Irish Sea	7376.14	HP Harbour porpoise	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	02/2019	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: Conservation objectives and advice on operations are available here: https://jncc.gov.uk/our-work/west-	https://sac.jncc.gov.uk/site/UK0030397 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	

								wales-marine-mpa/		
Cardigan Bay	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input checked="" type="checkbox"/> Not Applicable	OIII Irish Sea	958.5706	BD Bottlenose dolphin	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	12/2004	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: http://www.cardiganbaysac.org.uk/pdf%20files/Cardigan%20Bay%20CSAC%20Management%20Plan%20(2001).pdf http://www.cardiganbaysac.org.uk/pdf%20files/Cardigan_Bay_SAC_Management_Scheme_2008.pdf	https://sac.incc.gov.uk/site/UK0012712 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
Moray Firth	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input checked="" type="checkbox"/> Not Applicable	OII Northern North Sea	1512.7399	BD Bottlenose dolphin	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	03/2005	Habitats Directive	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Link: https://morayfirth-partnership.org/sac-management-group/	https://sac.incc.gov.uk/site/UK0019808 https://sitelink.nature.scot/site/8327 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
North East Lewis	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input checked="" type="checkbox"/> Not Applicable	OIII Irish & Scottish W. Coast	907 km ²	RD Risso's dolphin	<input type="checkbox"/> Designated <input type="checkbox"/> Submitted <input checked="" type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	N/A	Habitats Directive	<input checked="" type="checkbox"/> No. <input type="checkbox"/> Yes. Link:	https://www.nature.scot/sites/default/files/2019-06/North-east%20Lewis%20possible%20MPA%20-%20Data%20Confidence%20Assessment.pdf	

<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input type="checkbox"/> Not Applicable	Choose an item.	1512.7399	Choose an item.	<input type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	dd/mm/yy		<input type="checkbox"/> No. <input type="checkbox"/> Yes. Link:		
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16.2. Does your country have MPAs (existing or proposed) with small cetaceans are forming part of the selection criteria?

☐ No.

☒ Yes. Please provide details/updates in table below:

Name (full name of MPA)	ASCOBANS Action Plan	Region	Size (km ²)	Species forming part of selection criteria	MPA status	Date of designation (if applicable)	Legislation/ directive (e.g. Habitats Directive)	Is there a site-specific management plan in place?	Link to shapefile and/or online map	Link to any other online information
Skerries and Causeway	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input type="checkbox"/> Not Applicable	OIII Irish Sea	108.6743	HP Harbour porpoise	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	09/2017	Habitats Directive	<input type="checkbox"/> No. <input type="checkbox"/> Yes. Link:	https://sac.jncc.gov.uk/site/UK0030383 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
Pen Llŷn a'r Sarnau/ Llyn Peninsula and the Sarnau	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan <input type="checkbox"/> Common Dolphin SAP <input type="checkbox"/> Not Applicable	OIII Celtic Sea	1460.1052	BD Bottlenose dolphin	<input checked="" type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	12/2004	Habitats Directive	<input type="checkbox"/> No. <input type="checkbox"/> Yes. Link:	https://sac.jncc.gov.uk/site/UK0013117 https://jncc.gov.uk/our-work/uk-protected-area-datasets-for-download/	
	<input type="checkbox"/> Jastarnia Plan <input type="checkbox"/> North Sea Plan <input type="checkbox"/> WBBK Plan	Choose an item.		Choose an item.	<input type="checkbox"/> Designated <input type="checkbox"/> Submitted <input type="checkbox"/> Under consultation <input type="checkbox"/> Recommended <input type="checkbox"/> Not Applicable	dd/mm/yy		<input type="checkbox"/> No. <input type="checkbox"/> Yes. Link:		

	<input type="checkbox"/> Common <input type="checkbox"/> Dolphin SAP <input type="checkbox"/> Not Applicable									
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16.3. Provide information on management measures, including regulations/guidelines, particularly relevant to small cetaceans in MPAs listed above. Including any temporal/spatial restriction of activities (i.e. seasonal fishery closures).

In order to monitor implementation of MPA management measures and make recommendations on best practice, we need to understand what management measures are being used and be aware of examples of what approaches are proving effective.

Site Name	Pressure (add pressures per site as applicable)	Measure (add measures per pressure per site as applicable)
Moray Firth & Inner Hebrides and the Minches	MPA Management Measures/Improving protection of PMF	Advice: https://www2.gov.scot/Topics/marine/marine-environment/mpanetwork/inshorempas/Management/PMFStakeholder
Bristol Channel Approaches, Southern North Sea, North Channel, North Anglesey Marine, West Wales Marine	Conservation Objectives for the site; and advice on any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated.	https://hub.jncc.gov.uk/assets/505b3bab-a974-41e5-991c-c29ef3e01c0a#BCA-ConsAdvice.pdf https://hub.jncc.gov.uk/assets/206f2222-5c2b-4312-99ba-d59dfd1dec1d#SouthernNorthSea-conservation-advice.pdf https://hub.jncc.gov.uk/assets/be0492aa-f1d6-4197-be22-e9a695227bdb#NorthChannel-conservation-advice.pdf https://hub.jncc.gov.uk/assets/f4c19257-2341-46b3-8e29-49665cd8f3d2#NorthAnglesey-Conservation-Advice.pdf https://hub.jncc.gov.uk/assets/029e40f3-5f67-4168-b10d-8730f2c40e0a#WWW-conservation-advice.pdf

16.4. Provide details of existing or proposed monitoring schemes related to the effectiveness of MPAs / management measures listed above for small cetaceans.

Monitoring programmes: Moray Firth SAC – University of Aberdeen Cardigan Bay and Pen Llyn a'r Sarnau SACs – Sea Watch Foundation North East Lewis MPA – Whale & Dolphin Conservation

16.5. Relevant new research/work/collaboration relating to MPAs in your country.

In order to plan future approaches for MPA management and monitoring we need to be aware of current gaps and emerging issues.

<p>(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information; include the species concerned, who did the work)</p> <p>Development of UK Dolphin and Porpoise Conservation strategy (due for publication 2020): A UK wide strategy developed by Marine Scotland in Collaboration with DEFRA, DAERA, JNCC, NE, NRW, and SNH. The strategy aims to ensure effective management to achieve and/or maintain favourable conservation status for eight of the most commonly occurring dolphin and porpoise species in UK waters.</p> <p><i>Evans, P.G.H. (2018) Marine protected areas and marine spatial planning for the benefit of marine mammals. Journal of the Marine Biological Association of the United Kingdom, 98(5): 973-976. doi:10.1017/S0025315418000334</i></p> <p>Lohrengel, K., Evans, P.G.H., Lindenbaum, C.P., Morris, C.W. and Stringell, T.B. (2017) Bottlenose dolphin and harbour porpoise monitoring in Cardigan Bay and Pen Llyn a'r Sarnau Special Areas of Conservation, 2014-16. NRW Evidence Report No: 191. Natural Resources Wales, Bangor. 154pp.</p> <p>Lopes, K.F.C.F. (2017) Habitat preference of bottlenose dolphin (<i>Tursiops truncatus</i>) in Cardigan Bay. MSc Thesis, University of Bangor. 54pp.</p>
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Nuuttila, H.K., Courtene-Jones, Winnie, Baulch, S., Simon, M., and Evans, P.G.H. (2017) Don't forget the porpoise: Acoustic monitoring reveals fine scale temporal variation between bottlenose dolphin and harbour porpoise in Cardigan Bay SAC. *Marine Biology*, 164: 50. doi:10.1007/s00227-017-3081-5.

Section III: Surveys and Research

A. Biological Information (per species)

1. Abundance estimates

AIM: to provide new information on abundance and life history parameters of small cetaceans during the reporting period.

Relevant Resolutions: 8.5, 8.4, 8.3, 7.1, 6.1, 5.7, 5.5, 4.7, 3.5, 3.3

Abundance estimates and information on life history are of critical importance for the determination of broader species attributes such as populations levels, health and overall status. These parameters can contribute towards determination of GES and provide a reference for mortality events. Abundance and life history parameters are typically assessed from monitoring programmes. Fluctuations in these parameters can provide insight into trends in populations. Information on abundance and life history parameters can inform the need for mitigation measures, and regional assessment of these parameters allows for a more spatially targeted and concentrated response to support national assessments.

In the ASCOBANS Area, small cetacean abundance and life history should be monitored in response to a number of ASCOBANS resolutions. Continued monitoring of these parameters is essential to understanding current status and trends.

Questions:

1.1. Please submit the relevant information on national dedicated surveys on abundance and distribution during the reporting period into the table below.

If additional space is required, please submit the information in an excel table. Attach maps separately, clearly marking which survey they apply to. **Note:** Information relevant to SCANS-III is to be provided in question 1.2.

Location	Project	Time period	Method	Species	Animal abundance (including confidence limits or CV)	Link to project/report/publication
			(e.g. line transect, , Photo ID, etc.)	Choose an item.		
			(e.g. line transect, Photo ID, etc.)	Choose an item.		
			(e.g. line transect, Photo ID, etc.)	Choose an item.		

Relevant information on distribution during the reporting period:

(Include species, method, time period, weblinks, and other relevant information)

1.2. Other relevant new research/work/collaboration on abundance estimates in regard to small cetaceans in your country during the reporting period.

(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study and information relevant to SCANS-III; web links to other relevant 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.

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, 162pp, Natural Resources Wales, Bangor for 2016 estimate of coastal bottlenose in Wales
 Robbins, J.R., Babey, L., Embling, C.B. (in review) 'Citizen science in the marine environment: A case-study estimating common dolphin densities in the north-east Atlantic', PeerJ [and accepted for a poster @ WMM 2019.

SCANS III: <https://synergy.st-andrews.ac.uk/scans3/files/2017/05/SCANS-III-design-based-estimates-2017-05-12-final-revised.pdf>

Waggitt JJ, Evans PGH, Hiddink JG et al. (2019). Distribution Maps of cetacean and seabird populations in the North-East Atlantic. *Journal of Applied Ecology*, 57: 253-269

Weir, C.R., Hodgins, N.K., Dolman, S.J., and Walters, A.E.M. (2018) Risso's dolphins (*Grampus griseus*) in a proposed Marine Protected Area off east Lewis (Scotland, UK), 2010–2017. *Journal of the Marine Biological Association of the United Kingdom*,

SW bottlenose dolphin population: Collation of photos of bottlenose dolphins from citizen scientists, whale-watching organisations and other local organisations (such as the Cornwall Seal Group) to carry out a photo-ID based abundance estimate of the bottlenose dolphin populations in the Southwest UK in 2017. This was carried out as part of the Southwest bottlenose dolphin consortium (with Cornwall Wildlife Trust), analysis carried out by a University of Plymouth masters (MRes) student (Rebecca Dudley) to estimate a population of only 28 dolphins, showing this to be a highly vulnerable population. Contact: Dr. Clare Embling, Dr Simon Ingram University of Plymouth

Cornwall line transect surveys: Visual-acoustic surveys have been carried out along the south Cornish coast from Plymouth to the Scilly Isles for 1-2 weeks for the past 3 years (August 2017, August 2018, June & July 2019). These surveys used standard line-transect visual survey methodology (single platform) and a towed hydrophone array. All marine animals were recorded (cetaceans, seals, sharks, sunfish, seabirds, jellyfish and marine litter). Data analysed within undergraduate dissertation projects analysing the habitat use of harbour porpoises with environmental variables. The visual-acoustic data for harbour porpoises will be analysed by an MRes student in 2019-2020. Contact: Dr. Clare Embling, Dr Simon Ingram University of Plymouth

MRes (Kimberly Nielsen, 2018) 'Spatial and temporal variability in porpoise density: implications for conservation in UK seas', in collaboration with ORCA, reported in ORCA publication 'State of European Cetaceans 2018', accepted for poster @ WMM 2019. Used distance analysis to estimate abundance and densities of harbour porpoises from 10 years of ORCA data. Contact: Dr. Clare Embling, Dr Simon Ingram University of Plymouth

1.3. Is the abundance of species in your country increasing, decreasing, staying the same or unknown? To be done per species basis where applicable.

Species	Increasing	Decreasing	Staying the same	Unknown	Nature of the evidence
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Choose an item.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

☐ **Not applicable.** Comments:

A. Biological Information (per species)

2. New information on life history parameters

2.1. Is there new information on the following life history parameters in the reporting period?

Age of sexual and physical maturity	<input type="checkbox"/> No <input type="checkbox"/> Yes Please describe: Species: Choose an item.
Inter-birth intervals	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes Please describe: Inter-birth intervals: Arso Civil et al. (2017); Cheney et al. (2019). Arso Civil, M, Cheney, B, Quick, NJ, Thompson, PM & Hammond, PS (2017). A new approach to estimate fecundity rate from inter-birth intervals. Ecosphere 8(4):e01796. doi: 10.1002/ecs2.1796. Inter-birth interval estimates derived from photo-ID monitoring of bottlenose dolphins in Cardigan Bay undertaken by SWF (see Lohrengel et al. 2018). Species: Choose an item.
Calf and adult mortality rates	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes Please describe: Calf and adult mortality rates: Arso Civil et al. (2019a); Cheney et al. (2019). Arso Civil, M, Quick, N, Cheney, B, Islas-Villanueva, V, Graves, JA, Janik, V, Thompson, PM & Hammond, PS (2019a). Variations in age- and sex-specific survival rates could explain population trend in a discrete marine mammal population. Ecology and Evolution 9: 533-544. doi:10.1002/ece3.4772. Calf mortality rate estimates derived from photo-ID monitoring of bottlenose dolphins in Cardigan Bay undertaken by SWF (see Lohrengel et al. 2018). Species: Choose an item.
Potential reproductive span/capacity	<input type="checkbox"/> No <input type="checkbox"/> Yes Please describe: Species: Choose an item.
Longevity	<input type="checkbox"/> No <input type="checkbox"/> Yes Please describe: Species: Choose an item.
Diet	<input type="checkbox"/> No <input type="checkbox"/> Yes Please describe: Species: Choose an item.
Age and sex structure	<input type="checkbox"/> No <input type="checkbox"/> Yes Please describe: Species: Choose an item.
Other relevant factors	<input type="checkbox"/> No <input type="checkbox"/> Yes Please describe: Species: Choose an item.

For each life history parameter, provide web links and details where applicable and add more species if necessary.

B. Monitoring Programmes

3. Overview of current monitoring and survey schemes

AIM: to provide information on the progress of monitoring programmes, relevant methodologies and aims thereof, and status of small cetaceans during the reporting period.
Relevant Resolutions: 8.11, 8.9, 8.8, 8.5, 8.4, 8.3, 7.3, 7.1, 6.1, 5.7

Monitoring programmes provide important data on biological and environmental attributes, such as population status, abundance and spatial-temporal distribution. They create opportunities for new research and development, including potential improvements to methodology for monitoring in terms of accuracy, practicality and cost efficiency.

In the ASCOBANS Area, application of coherent monitoring programmes focused on small cetaceans, which collect and provide objective, robust and comparable data, is a key component in understanding and improving

the conservation status of small cetaceans through appropriate management. Parties have agreed to design, implement and support relevant monitoring programmes through a number of resolutions. Such efforts are also supported by legislation from a number of bodies which identify monitoring as a requirement in management systems. Additionally, Parties have been encouraged to coordinate their monitoring programmes, which promotes international cooperation and synergies. Parties have also been encouraged to review such monitoring programmes and propose improvements for the betterment of conservation efforts.

It is the interest of ASCOBANS to understand the current monitoring programmes utilised, their outputs, and future activities in the Agreement Area. Countries are requested to provide information relevant to their activities as well as potential improvements to such programmes and efforts.

Questions:

3.1. Are there national monitoring programmes that enable assessment of the Conservation Status of small cetaceans in your waters (i.e. provides abundance estimates and/or life history parameters and information on pressures)?

☐ No.

☒ Yes. Please provide an overview in the table below.

Within MPAs	<p>Approach:</p> <p><input type="checkbox"/> Line transect surveys <input checked="" type="checkbox"/> Photo-ID <input type="checkbox"/> Strandings</p> <p><input checked="" type="checkbox"/> Passive Acoustic Monitoring <input type="checkbox"/> Other, please specify:</p> <hr/> <p>Target Species: (Copy drop-down to add more species) HP Harbour porpoise</p> <hr/> <p>Institution(s):</p> <p>Photo-ID: Cheney et al. (2018; 2019); bottlenose dolphin; https://www.abdn.ac.uk/lighthouse/</p> <p>Cheney, B., Graham, I.M., Barton, T.R., Hammond, P.S. and 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.</p> <p>Cheney, B.J., Thompson, P.M. and Cordes, L.S. (2019). Increasing trends in fecundity and calf survival of bottlenose dolphins in a marine protected area. <i>Scientific Reports</i>, 9: 1767. https://doi.org/10.1038/s41598-018-38278-9</p>
Within MPAs	<p>Approach:</p> <p><input checked="" type="checkbox"/> Line transect surveys <input checked="" type="checkbox"/> Photo-ID <input type="checkbox"/> Strandings</p> <p><input type="checkbox"/> Passive Acoustic Monitoring <input type="checkbox"/> Other, please specify:</p> <hr/> <p>Target Species: (Copy drop-down to add more species) BD Bottlenose dolphin</p> <hr/> <p>Institution(s): (Name, website, etc)</p> <p>NRW, Sea Watch – 2016 only (no funding since then) for bottlenose dolphin monitoring in Wales</p> <p>Institution(s): UK Cetacean Strandings Investigation Programme (see Section IV, 1.6)</p> <p>Photo-ID: Arso Civil et al. (2019) ; bottlenose dolphin; http://www.smru.st-andrews.ac.uk/ Arso Civil, M, Quick, NJ, Cheney, B, Pirota, E, Thompson, PM & Hammond PS (2019b). Changing distribution of the east coast of Scotland bottlenose dolphin population and the challenges of area-based management. <i>Aquatic Conservation: Marine and Freshwater Ecosystems</i> 29(S1): 178-196. DOI:10.1002/aqc.3102</p>
Wider Seas	<p>Approach:</p> <p><input checked="" type="checkbox"/> Line transect surveys <input type="checkbox"/> Photo-ID <input type="checkbox"/> Strandings</p> <p><input type="checkbox"/> Passive Acoustic Monitoring <input type="checkbox"/> Other, please specify:</p>

	Target Species: (Copy drop-down to add more species) HP Harbour porpoise
	Institution(s): (Name, website, etc) Lead organisation University St Andrews, UK. Line transect: SCANS-III; species = harbour porpoise, bottlenose dolphin, Risso's dolphin, white-beaked dolphin, white-sided dolphin, common dolphin, striped dolphin, pilot whale, all beaked whale species combined, sperm whale, minke whale and fin whale; https://synergy.st-andrews.ac.uk/scans3/files/2017/05/SCANS-III-design-based-estimates-2017-05-12-final-revised.pdf
Wider Seas	Approach: <input type="checkbox"/> Line transect surveys <input checked="" type="checkbox"/> Photo-ID <input type="checkbox"/> Strandings <input checked="" type="checkbox"/> Passive Acoustic Monitoring <input type="checkbox"/> Other, please specify:
	Target Species: (Copy drop-down to add more species) HP Harbour porpoise BD Bottlenose dolphin
	Institution(s): (Name, website, etc) Agri-Food & Bioscience Institute in Northern Ireland
Wider Seas	Approach: <input type="checkbox"/> Line transect surveys <input type="checkbox"/> Photo-ID <input type="checkbox"/> Strandings <input checked="" type="checkbox"/> Passive Acoustic Monitoring <input type="checkbox"/> Other, please specify:
	Target Species: (Copy drop-down to add more species) HP Harbour porpoise
	Institution(s): See 3.3 below
Wider Seas	Approach: <input checked="" type="checkbox"/> Line transect surveys <input checked="" type="checkbox"/> Photo-ID <input type="checkbox"/> Strandings <input type="checkbox"/> Passive Acoustic Monitoring <input type="checkbox"/> Other, please specify:
	Target Species: Risso's dolphin; Killer whales
	Institution(s): Whale and Dolphin Conservation (WDC); HWDT, CCRU and SMRU Rissos dolphins (photo ID and transect surveys) by WDC in Scotland Killer whales (photo ID work by HWDT, CRRU, SMRU) in Scotland Click or tap here to enter text.

3.2. Please provide the relevant information with regards to aerial surveying activities.

Number of surveys	Area covered	Species	Timeframe of survey
	North Wales: digital surveys Colwyn Bay (NW5) windfarms	HP Harbour porpoise	Summer 2016 – winter 2017
	South East England: East Anglia wind farms	Choose an item.	September 2015 and April 2016
		Choose an item.	

3.3. Please provide the relevant information with regards to Passive Acoustic Monitoring (PAM).

Location of moored instruments	Timeframe of survey	Species	Make and model of instruments used
AFBI - Skerries & Causeway SAC, Northern Ireland	2018-present continuous monitoring	HP Harbour porpoise	C-POD, Soundtrap with click detector, Vemco VR2AR
AFBI – Outer Copeland Islands, North Channel	2019-present continuous monitoring	HP Harbour porpoise	C-POD, Soundtrap with click detector, Vemco VR2AR
COMPASS – Middle Bank, south of Islay	2018-present continuous monitoring	HP Harbour porpoise	C-POD, Soundtrap with click detector, Vemco VR2AR

COMPASS – Malin, Ireland	2018-present continuous monitoring	HP Harbour porpoise	C-POD, Soundtrap with click detector, Vemco VR2AR
MarPAMM - Carlingford Lough, Northern Ireland	2019 (trial deployment ~ 3 months)	HP Harbour porpoise	C-POD, Soundtrap with click detector
AFBI - 38a oceanographic buoy, western Irish Sea	2016-present continuous monitoring	HP Harbour porpoise	C-POD, Soundtrap with click detector
ECOMASS: East coast of Scotland	Spring 2016 – present	HP Harbour porpoise BD Bottlenose dolphin	(C-PODs and SM2Ms) are deployed at 30 sites across 10 locations along the east coast

3.4. Are any of these programmes carried out in collaboration with other countries?

☐ No.

☒ Yes. Describe below:

Programme	Collaborators	Links
COMPASS	NI/Scotland/ROI project Marine Mammal Work Package: Agri-Food & Biosciences Institute, Scottish Association for Marine Science, Marine Scotland Science	https://compass-oceanscience.eu/
MarPAMM	NI/Scotland/ROI project Marine Mammal Work Package: Agri-Food & Biosciences Institute, Marine Scotland Science, University College Cork	https://www.mpa-management.eu/
SCANS III	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., and Øien, N. (2017) Estimates of cetacean abundance in European Atlantic waters in summer 2016 from the	https://synergy.standrews.ac.uk/scans3/files/2017/05/SCANS-III-design-based-estimates-2017-05-12-final revised.pdf.

	SCANS-III aerial and shipboard surveys.	
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3.5. Please provide details on any planned activities relevant to monitoring programmes.

Provide web links if available.

North coast NI bottlenose dolphin survey – joint survey with AFBI and IWDG – scheduled for May 2020 but cancelled due to Covid –rescheduled for later in 2019/2020.

3.6. Relevant outputs/findings from monitoring programmes to note.

Species	Relevant outputs
BD Bottlenose dolphin	<p>Gibson et al. 2020 Using social media as a cost-effective resource in the photo-identification of a coastal bottlenose dolphin community http://dx.doi.org/10.1002/aqc.3356</p> <p>Beck & Gibson 2018. AFBI Coastal Bottlenose Dolphin Photo-Identification Catalogue. Agri-Food and Bioscience Institute. DOI: 10.13140/RG.2.2.23649.25447 https://www.researchgate.net/publication/337195281_AFBI_Coastal_Bottlenose_Dolphin_Photo-Identification_Catalogue</p>
HP Harbour porpoise	<p>Beck 2020. Developing a cost-effective monitoring strategy for coastal cetaceans. PhD Thesis (submission June 2020). Queen's University Belfast.</p> <p>Beck et al. 2019 Fine-scale distribution of harbour porpoise within a coastal Marine Protected Area. World Marine Mammal Conference, Barcelona, Spain. DOI: 10.13140/RG.2.2.18641.28006 https://www.researchgate.net/publication/338007139_Fine-scale_distribution_of_harbour_porpoise_within_a_coastal_Marine_Protected_Area</p> <p>Bouveroux, T., Waggitt J.J., Belhadjer, A., Cazenave, P.W., Evans, P.G.H., Kiszka, J.J. (2020) Modelling fine-scale distribution and relative abundance of harbour porpoises in the Southern Bight of the North Sea using platform-of-opportunity data. <i>Journal of the Marine Biological Association of the United Kingdom</i>, 1–9. https://doi.org/10.1017/S0025315420000326.</p> <p>Gibson 2017. Drivers of harbour porpoise foraging in a special area of conservation. BSc Thesis. Queen's University Belfast</p>
All species	<p>Crawley, D., Coomber, F., Kubasiewicz, L., Harrower, C., Evans, P., Waggitt, J., Smith, B., and Mathews, F. (2020) <i>Atlas of the Mammals of Great Britain and Northern Ireland</i>. Published for The Mammal Society by Pelagic Publishing, Exeter. 205pp.</p> <p>Malone, K. (2019) <i>Assessing long-term trends in abundance and distribution of cetacean populations in the United Kingdom using citizen science sighting data</i>. M.Sc. thesis, Bangor University. 43pp.</p> <p>(Provide web links if available)</p>

See Outputs under UK Stranding Programmes (Section IV, 1.10)

B. Monitoring Programmes

4. Other research (not mentioned elsewhere in Section II, III or IV)

4.1. Please provide relevant information in regard to other research (not mentioned elsewhere in Sections II, III, IV).

Project name	Institution	Duration	Aim(s)/Objective(s)	Method

Section IV: Use of Strandings Records

A. Stranding Network and Strandings

AIM: to provide information on stranding events and demonstrate progress of stranding networks in understanding, monitoring and mitigating strandings of small cetaceans.
Relevant Resolutions: 8.10, 8.7, 8.4, 8.3, 7.4, 7.3, 7.1, 6.1, 5.7

Stranding of cetaceans is an ever-present occurrence and analysis through necropsy and sampling can provide indications of reason for injury and death. Stranding numbers also provide information on population status, abundance and distribution. Effective response to strandings contributes to the maintenance of favourable conservation status of small cetaceans and also has implications for animal welfare. Comprehensive stranding networks are a critical asset in managing small cetacean strandings and have resulted in large numbers of animals rescued and returned to sea. These networks also have the capacity to guide the public on animal welfare, human health and safety considerations during stranding events.

In the effort to mitigate the anthropogenic causes of these occurrences, Parties have agreed to measures through a number of resolutions. Continued monitoring of stranding causation and further developing guidance for best practices in stranding response and necropsies was identified by Parties as important tasks to pursue, as was setting up stranding response networks. This information is to align with appropriate sampling practices and countries should ensure that the data is available for researchers. Additionally, development and support of international strandings databases and regular reporting is conducted through relevant research institutes and stranding schemes. ASCOBANS Secretariat encourages the ongoing funding and support of engagement with organizations for further development of guidelines, best practices and maintaining dataflow for capacity building across stranding networks.

To better understand the extent to which stranding events occur and how these events are managed, it is the interest of ASCOBANS for countries to provide the relevant information on these occurrences within the Agreement Area, procedures undertaken in response to stranding events, necropsies and information on stranding networks.

Questions:

1.1. Is there a national stranding network in place?

- ☐ **No.** Go to **Question 1.4.**
☒ **Yes.** Please provide details:

The collaborative UK Cetacean Strandings Investigation Programme (CSIP) is contracted by UK government to collect/collate, analyse and report data on all cetacean strandings around the UK coast; and to undertake post-mortem examinations on a proportion of stranded animals to learn more about the anthropogenic pressures these species face in UK waters. Partner organisations are the Institute of Zoology, Zoological Society of London (ZSL), Scotland's Rural College, Inverness (SRUC), the Natural History Museum (NHM), Marine Environmental Monitoring (MEM), Cornwall Wildlife Trust Marine Strandings Network (CWTMSN) and University of Exeter (UoE). The CSIP has been funded since 1990, with current funding from Defra and the Devolved Governments of Scotland and Wales. JNCC administers the strandings programme contract on behalf of funders.

1.2. Does the national stranding network cover the whole, or part of the reporting country's coastline?

- ☒ **Whole coastline.**
☐ **Part of the coastline.** Please provide details:

1.3. Are necropsies carried out to determine cause of death?

☐ **No.**

☒ **Yes.** Please provide details:

All cetacean post-mortem investigations (including tissue sampling) in the UK between 2011-2019 were conducted using standardised and systematic necropsy procedures;

Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final Contract Report Appendices, 2011-2017. pp24-38

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf

See Section 1.10 (national and regional strandings reports) for additional details.

Following a joint ASCOBANS/ACCOBAMS workshop held in Padua, Italy in July 2019 to revise European necropsy protocols¹, revisions to UK necropsy protocols are being assessed.

¹ASCOBANS/ACCOBAMS. 2019. "European Best Practice on Cetacean Post-mortem Investigation and Tissue Sampling." OSF Preprints. October 7. doi:10.31219/osf.io/zh4ra <https://osf.io/zh4ra/>

1.4. Is there a database of strandings?

☐ **No.** Go to question 1.6.

☒ **Yes.** Continue to question 1.5.

1.5. Is the data available online or downloadable on request?

☐ **No.**

☒ **Yes.** Please provide details:

The current CSIP web accessed relational database (<http://data.ukstrandings.org/>) facilitates the entry of data on UK stranded cetaceans, marine turtles, basking sharks and seals by partners within the CSIP consortium. It is not currently public facing (email and password required), although a project is underway to allow display of data to the public from a ZSL administered portal.

Regional web accessible databases and offline databases are also held by the Scottish Marine Animal Strandings Scheme and the Cornwall Wildlife Trust Marine Strandings Network.

1.6. Provide details for the institution(s) responsible for a stranding database, responding to live-strandings, collection of carcasses, and for conducting necropsies.

Responsible Institution	Responsibility	Phone number	Email	Website
UK Cetacean Strandings Investigation Programme	<input type="checkbox"/> Responding to live-strandings <input checked="" type="checkbox"/> Collection of carcasses <input checked="" type="checkbox"/> Necropsies <input checked="" type="checkbox"/> Stranding database	+44 800 652 0333	rob.deaville@ioz.ac.uk	https://www.zsl.org/science/research/uk-cetacean-strandings-investigation-programme-csip
Scottish Marine Animal Strandings Scheme	<input type="checkbox"/> Responding to live-strandings <input checked="" type="checkbox"/> Collection of carcasses	+44 1463 246043 and +44 79792458 93	andrew.brownlow@sruc.ac.uk and strandings@sruc.ac.uk	https://strandings.org/smass/

	<input checked="" type="checkbox"/> Necropsies <input checked="" type="checkbox"/> Stranding database			
Cornwall Wildlife Trust Marine Strandings Network	<input type="checkbox"/> Responding to live-strandings <input checked="" type="checkbox"/> Collection of carcasses <input type="checkbox"/> Necropsies <input checked="" type="checkbox"/> Stranding database	+44 345 201 2626	strandings@cornwallwildlifetrust.org.uk	https://www.cornwallwildlifetrust.org.uk/what-we-do/our-conservation-work/at-sea/marine-strandings-network
Department of Agriculture, Environment and Rural Affairs (Northern Ireland Government)	<input checked="" type="checkbox"/> Responding to live-strandings <input checked="" type="checkbox"/> Collection of carcasses <input checked="" type="checkbox"/> Necropsies <input checked="" type="checkbox"/> Stranding database	+44 28 905 69757	Marine.Wildlife@daera-ni.gov.uk	https://www.daera-ni.gov.uk/marine-wildlife-questions-answers
Department of the Environment, Food and Agriculture (Isle of Man Government) (in collaboration with the Manx Wildlife Trust)	<input checked="" type="checkbox"/> Responding to live-strandings <input checked="" type="checkbox"/> Collection of carcasses <input checked="" type="checkbox"/> Necropsies <input checked="" type="checkbox"/> Stranding database	+44 1624685844 +44 7624300525	peter.duncan@gov.im	https://www.gov.im/about-the-government/departments/environment-food-and-agriculture/ecosystem-policy-and-energy/wildlife-biodiversity-and-protected-sites/wildlife/
British Divers Marine Life Rescue	<input checked="" type="checkbox"/> Responding to live-strandings <input type="checkbox"/> Collection of carcasses <input type="checkbox"/> Necropsies <input type="checkbox"/> Stranding database	+44 1825 765546	julia@bdmlr.org.uk and info@bdmlr.org.uk	https://bdmlr.org.uk
Royal Society for the Prevention of Cruelty to Animals	<input checked="" type="checkbox"/> Responding to live-strandings <input type="checkbox"/> Collection of carcasses <input type="checkbox"/> Necropsies <input type="checkbox"/> Stranding database	+44 300 1234999	wildlife@rspca.org.uk	https://www.rspca.org.uk/home
Scottish Society for the Prevention of	<input checked="" type="checkbox"/> Responding to live-strandings <input type="checkbox"/> Collection	+44 8000 999999		https://www.scottishspca.org

Cruelty to Animals	of carcasses <input type="checkbox"/> Necropsies <input type="checkbox"/> Stranding database			
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1.7. Are any cases photographed, measured or sampled even if not collected for necropsy?

☐ No.

☒ Yes. Please provide details:

Photographs from a majority of UK stranding events (including those not recovered for necropsy) are routinely sent to national and regional stranding network/s from members of public, local authorities and other reporting bodies.

In addition, in Scotland the Scottish Marine Animal Strandings Scheme (SMASS) strandings volunteer network (<https://strandings.org/smass/about/volunteer/>) collects photos, data and samples from a large number of non-necropsied animals. In Cornwall, the Cornwall Wildlife Trust Marine Strandings (CWTMSN) Network volunteer scheme (<https://www.cornwallwildlifetrust.org.uk/what-we-do/our-conservation-work/at-sea/marine-strandings-network>) routinely photographs and records morphometric data from non-necropsied animals, also conducted alongside its Bycatch Evidence Evaluation Protocol (BEEP) programme. In the rest of England and in Wales, *ad hoc* collection of samples takes place on rarer species, through contacts with volunteers from British Divers Marine Life Rescue (BDMLR) and other voluntary and statutory bodies.

For more detail, see national and regional annual reports (see Section 1.10)

1.8. Provide details relevant for recorded stranding events during the reporting period.

Reporting year	Species	Region	Total animals stranded	Number of dead animals	Number of animals stranding alive	Response to live stranding (describe # of successful cases and methods used)
2016	HP Harbour porpoise	Choose an item.	n=468	n=449 (of which n=9 at sea or entangled)	n=19	died on beach (n=11); euthanised (n=4); refloated (n=4)
2016	CD Short-beaked Common dolphin	Choose an item.	n=169	n=159 (of which n=7 at sea or entangled)	n=10	died on beach (n=6); euthanised (n=4)
2016	WBD White-beaked dolphin	Choose an item.	n=20	n=18	n=2	euthanised (n=1); refloated (n=1)
2016	LFPW Long-finned pilot whale	Choose an item.	n=13	n=13	0	N/A
2016	RD Risso's dolphin	Choose an item.	n=12	n=10	n=2	died on beach (n=1); refloated (n=1)
2016	SD Striped dolphin	Choose an item.	n=12	n=11 (of which n=1 at sea or entangled)	n=1	euthanised (n=1)
2016	BD Bottlenose dolphin	Choose an item.	n=10	n=9	n=1	refloated (n=1)
2016	AWSD Atlantic white-sided dolphin	Choose an item.	n=2	0	n=2	euthanised (n=1); refloated (n=1)
2016	SBW Sowerby's beaked whale	Choose an item.	n=1	n=1	0	N/A

2016	CBW Cuvier's Beaked Whale	Choose an item.	n=1	n=1	0	N/A
2016	NBW Northern bottlenose whale	Choose an item.	n=1	n=1	0	N/A
2016	PSW Pygmy sperm whale	Choose an item.	n=1	n=1	0	N/A
2016	KW Killer Whale	Choose an item.	n=1	n=1	0	N/A
2017	HP Harbour porpoise	Choose an item.	n=509	n=499 (of which n=10 at sea or entangled)	n=10	refloated (n=5); died on beach (n=4); euthanised (n=1)
2017	CD Short-beaked Common dolphin	Choose an item.	n=240	n=229 (of which n=12 at sea or entangled)	n=11	died on beach (n=7); refloated (n=3); euthanised (n=1)
2017	LFPW Long-finned pilot whale	Choose an item.	n=19	n=15	n=4	euthanised (n=2); died on beach (n=1); refloated (n=1)
2017	WBD White-beaked dolphin	Choose an item.	n=15	n=12	n=3	died on beach (n=2); refloated (n=1)
2017	RD Risso's dolphin	Choose an item.	n=12	n=11 (of which n=1 at sea or entangled)	n=1	euthanised (n=1)
2017	BD Bottlenose dolphin	Choose an item.	n=11	n=11	0	N/A
2017	SD Striped dolphin	Choose an item.	n=11	n=9	n=2	died on beach (n=2)
2017	SBW Sowerby's beaked whale	Choose an item.	n=5	n=4	n=1	refloated (n=1)
2017	AWSD Atlantic white-sided dolphin	Choose an item.	n=4	n=4	0	N/A
2017	KW Killer Whale	Choose an item.	n=4	n=4	0	N/A
2017	CBW Cuvier's Beaked Whale	Choose an item.	n=3	n=3	0	N/A
2017	NBW Northern bottlenose whale	Choose an item.	n=1	n=1	0	N/A
2018	HP Harbour porpoise	Choose an item.	n=520	n=498 (of which n=6 at sea or entangled)	n=22	died on beach (n=9); refloated (n=7); euthanised (n=6)
2018	CD Short-beaked Common dolphin	Choose an item.	n=187	n=160	n=27	refloated (n=15); died on beach (n=11); euthanised (n=1)
2018	CBW Cuvier's Beaked Whale	Choose an item.	n=59	n=58 (of which n=3 at sea or entangled)	n=1	died on beach (n=1)
2018	WBD White-beaked dolphin	Choose an item.	n=28	n=26	n=2	euthanised (n=2)
2018	RD Risso's dolphin	Choose an item.	n=15	n=15	0	N/A
2018	SD Striped dolphin	Choose an item.	n=13	n=6	n=7	died on beach (n=3); refloated (n=3); euthanised (n=1)

2018	LFPW Long-finned pilot whale	Choose an item.	n=13	n=7	n=6	died on beach (n=4); refloated (n=1); euthanised (n=1)
2018	NBW Northern bottlenose whale	Choose an item.	n=13	n=13	n=0	N/A
2018	BD Bottlenose dolphin	Choose an item.	n=8	n=8	n=0	N/A
2018	SBW Sowerby's beaked whale	Choose an item.	n=8	n=6 (of which n=1 at sea or entangled)	n=2	died on beach (n=2)
2018	AWSD Atlantic white-sided dolphin	Choose an item.	n=3	n=3	n=0	N/A
2018	KW Killer Whale	Choose an item.	n=1	n=1	n=0	N/A
2019	HP Harbour porpoise	Choose an item.	n=455	n=433 (of which n=8 at sea or entangled)	n=22	died on beach (n=10); refloated (n=9); euthanised (n=3)
2019	CD Short-beaked Common dolphin	Choose an item.	n=251	n=231 (of which n=7 at sea or entangled)	n=20	died on beach (n=8); refloated (n=7); euthanised (n=5)
2019	LFPW Long-finned pilot whale	Choose an item.	n=14	n=12	n=2	died on beach (n=1); refloated (n=1)
2019	RD Risso's dolphin	Choose an item.	n=12	n=12 (of which n=1 at sea or entangled)	0	N/A
2019	BD Bottlenose dolphin	Choose an item.	n=10	n=10	0	N/A
2019	SD Striped dolphin	Choose an item.	n=10	n=9	n=1	died on beach (n=1)
2019	WBD White-beaked dolphin	Choose an item.	n=7	n=4	n=3	refloated (n=2); died on beach (n=1)
2019	SBW Sowerby's beaked whale	Choose an item.	n=4	n=2	n=2	euthanised (n=2)
2019	AWSD Atlantic white-sided dolphin	Choose an item.	n=2	n=2	0	N/A
2019	KW Killer Whale	Choose an item.	n=2	n=2	0	N/A
2019	CBW Cuvier's Beaked Whale	Choose an item.	n=1	n=1	0	N/A
2019	PSW Pygmy sperm whale	Choose an item.	n=1	n=1	0	N/A

Please note;

Annual stranding figures above given for the UK as a whole. OSPAR regions not detailed, too complex to provide a breakdown over the six regions across the UK.

The UK strandings programme also records data on cetaceans found entangled in gear or floating dead at sea (n=66, 2016-2019).

For further detail on UK strandings (2016-2019), see relevant UK annual reports (see section 1.10 below).

1.9. Provide details relevant to necropsies.

Protocol used for dissection methodologies, collection of samples etc.	Number of carcasses necropsied	What causes of death were identified? (add percentage if available)	Comment
Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final	n=130 (2016, all species)	Various (see 2016 CSIP annual report)	See 2016 CSIP annual report for further details

Contract Report Appendices, 2011-2017. pp24-38 http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf			http://sciencesearch.defra.gov.uk/Document.aspx?Document=14577_FINALUKCSIPAnnualReport2016.pdf
Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final Contract Report Appendices, 2011-2017. pp24-38 http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf	n=144 (2017, all species)	Various (see 2017 CSIP annual report)	See 2017 CSIP annual report for further details http://sciencesearch.defra.gov.uk/Document.aspx?Document=14578_FINALUKCSIPAnnualReport2017.pdf
Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final Contract Report Appendices, 2011-2017. pp24-38 http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf	n=141 (2018, all species)	Various (see 2018 CSIP annual report)	See 2018 CSIP annual report for further details http://sciencesearch.defra.gov.uk/Document.aspx?Document=14699_ME6008UKCSIPAnnualReport2018.pdf
Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final Contract Report Appendices, 2011-2017. pp24-38 http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf	n=108 (2019, all species)	Various (see 2019 CSIP annual report)	See 2019 CSIP annual report for further details In press (see section 1.10)

1.10. Other relevant new research/work/collaboration on strandings and stranding networks in your country.

<p>(List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)</p> <p>List initiatives/ projects (incl. PhD, MSc); publications (reports, theses, papers in journals, books) from any study; web links to other relevant information)</p> <p>Peer reviewed literature</p> <p>Acevedo-Whitehouse, K., Cole, K.J., Phillips, D.H., Jepson, P.D., Deaville, R. and Arlt, V.M. (2018) Hepatic DNA Damage in Harbour Porpoises (<i>Phocoena phocoena</i>) stranded along the English and Welsh Coastlines. <i>Environmental and Molecular Mutagenesis</i>. 59(7), 613-624. doi: 10.1002/em.22205</p> <p>Coombs, E.J., Deaville, R., Sabin, R.C., Allan, L., O'Connell, M., Berrow, S., Smith, B., Brownlow, A., ten Doeschate, M., Penrose, R., Williams, R., Perkins, M.W., Jepson, P.D. and Cooper, N. (2019) What can cetacean stranding records tell us? A study of UK and Irish cetacean diversity over the past 100 years. <i>Marine Mammal Science</i>; DOI:10.1111/mms.12610</p> <p>Davison, N.J., ten Doeschate, M.J.I., Dagleish, M.P., Read, F.L., Reid, R.J., Foster, G., Brownlow, A. and Barley, J. (2016) Twin fetuses in an Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>) stranded on the</p>

coast of Scotland, UK. *Journal of the Marine Biological Association of the United Kingdom* doi:10.1017/S0025315415002246

Desforges, J.P., Hall, A., McConnell, B., Rosing Asvid, A., Barber, J.L., Brownlow, A., De Guise, S., Eulaers, I., Jepson, P.D., Letcher, R.J., Levin, M., Ross, P.S., Sonne, C. and Dietz, R. (2019) Response to L. Witting: PCBs still a major risk for global killer whale populations. *Marine Mammal Science* **35**(3):1201-1206., DOI:10.1111/mms.12615

Desforges, J.P., Hall, A., McConnell, B., Asvid, A., Barber, J.L., Brownlow, A., De Guise, S., Eulaers, I., Jepson, P.D., Letcher, R.J., Levin, M., Ross, P.S., Samarra, F., Víkingsson, G., Sonne, C., Dietz, R. (2018) Predicting global killer whale population collapse from PCB pollution. *Science*. **361** (6409) pp. 1373-1376. DOI: 10.1126/science.aat1953

ten Doeschate, M.T.I., Brownlow, A., Davison, N., & Thompson, P. (2017). Dead useful; methods for quantifying baseline variability in stranding rates to improve the ecological value of the strandings record as a monitoring tool. *Journal of the Marine Biological Association of the United Kingdom*, 1-5. <https://doi.org/10.1017/S0025315417000698>

Esteban, R., Verborgh, P., Gauffier, ., Gimenez, Giménez, J, Martín, V., Pérez-Gil, M., Tejedor, M., Almunia, J., Jepson, P.D., García-Tiscar, S., Barrett-Lennard, L.G., Guinet, C., Foote, A.D. and de Stephanis, R. Using a multi-disciplinary approach to identify a critically endangered killer whale management unit. *Ecological Indicators* **66** 291–300 doi:10.1016/j.ecolind.2016.01.043

Fontaine, M.C., Thatcher, O., Ray, N., Piry, S. Brownlow, A. Davison, N.J., Jepson, P., Deaville, R. and Goodman, S.J. (2017) Mixing of porpoise ecotypes in south western UK waters revealed by genetic profiling. *Royal Society Open Science*. 4: 160992. <http://dx.doi.org/10.1098/rsos.160992>

Foote, A.D., Martin, M., Louis, M., Pacheco, G., Robertson, K., Sinding, M-H., Amaral, A., Baird, R., Baker, S., Ballance, L., Barlow, J., Brownlow, A., Collins, T., Constantine, R., Dabin, W., Dalla Rosa, L., Davison, N.J., Durban, J., Esteban, R., Ferguson, S., Gerodette, T., Guinet, C., Hanson, B., Hoggard, W., Matthews, C., Samarra, F., de Stephanis, R., Tavares, S., Tixier, P., Totterdell, J., Wade, P., Gilbert, T., Wolf, J. and Morin, P. (2019). Killer whale genomes reveal a complex history of recurrent admixture and vicariance. *Molecular Ecology* DOI:10.1111/mec.15099

Foster, G., Whatmore, A.M., Dagleish, M.P., Malnick, H., Gilbert, M.J., Begeman, L., Macgregor, S.K., Davison, N.J., Roest, H.J., Jepson, P.D., Howie, F., Muchowski, J., Brownlow, A.C., Wagenaar, J.A., Kik, M.J.L., Deaville, R., ten Doeschate, M.T.I., Barley, J., Hunter, L. and IJsseldijk, L.L. (2019). Forensic microbiology reveals that *Neisseria animaloris* infections in harbour porpoises follow traumatic injuries by grey seals. *Nature Scientific Reports* **9**:14338 <https://doi.org/10.1038/s41598-019-50979-3>

Gajdosechova, Z. Brownlow, A., Cottin, N.T. Fernandes, M., Read, F.L., Urgast, D.S., Raab, A., Feldmann, J. and Krupp, E.M. (2016) Possible link between Hg and Cd accumulation in the brain of long-finned pilot whales (*Globicephala melas*). *Science of The Total Environment* Volumes 545–546, Pages 407–413.

Gajdosechova, Z., Lawan, M.M., Urgast, D.S., Raab, A., Scheckel, K.G., Lombi, E., Kopittke, P.M., Loeschner, K., Larsen, E.H., Woods, G., Brownlow, A., Read, F.L., Feldmann, J. and Krupp, E.M. (2016) In vivo formation of natural HgSe nanoparticles in the liver and brain of pilot whales. *Nature Scientific Reports* **6**, 34361; doi: 10.1038/srep34361

Genov, T., Jepson, P.D., Barber, J.L., Hace, A., Gaspari, S., Centrih, T., Lesjak, J. and Kotnjek, P. (2018) Linking organochlorine contaminants with demographic parameters in free-ranging common bottlenose dolphins from the northern Adriatic Sea. *Science of the Total Environment* **657**: 200-212.

IJsseldijk, L.L., ten Doeschate, M.T.I., Davison, N.J., Gröne, A. and Brownlow, A.C. (2018). Crossing boundaries for cetacean conservation: Setting research priorities to guide management of harbour porpoises. *Marine Policy*, **95**:77-84. <https://doi.org/10.1016/j.marpol.2018.07.006>

IJsseldijk, L.L. Brownlow, A., Davison, N.J., Deaville, R., Haelters, J., Keijl, G., Siebert, U. and ten Doeschate, M.T.I. (2018) Spatiotemporal trends in white-beaked dolphin strandings along the North Sea coast from 1991–2017 *Lutra* **61** (1): 153-163

Jepson, P. D., Deaville, R., Barber, J. L., Aguilar, À., Borrell, A., Murphy, S., Barry, J., Brownlow, A., Barnett, J., Berrow, S., Cunningham, A. A., Davison, N., ten Doeschate, M., Esteban, R., Ferreira, M., Foote, A. D., Genov, T., Giménez, J., Loveridge, J., Llavona, À., Martin, V., Maxwell, D. L., Papachlimitzou, A., Penrose,

R., Perkins, M. W., Smith, B., de Stephanis, R., Tregenza, N., Verborgh, P., Fernandez, A. & Law, R. J. PCB pollution continues to impact populations of orcas and other dolphins in European waters. *Scientific Reports* **6**: 18573 doi:10.1038/srep18573

Jepson, P.D. and Law, R.J. (2016) Persistent pollutants, persistent threats: Polychlorinated biphenyls remain a major threat to marine apex predators such as orcas. *Science* **352**: 1388-1389. doi: 10.1126/science.aaf9075

Kershaw, J.L. Brownlow, A., Ramp, C.A., Miller, P.J.O. and Hall, A.J. (2019) Assessing cetacean body condition: Is total lipid content in blubber biopsies a useful monitoring tool? *Aquatic Conservation: Marine and Freshwater Ecosystems* **29(S1)**:271–282.

Kershaw, J.L., Sherrill, M., Davison, N.J., Brownlow, A. and Hall, A.J. (2017) Evaluating morphometric and metabolic markers of body condition in a small cetacean, the harbor porpoise (*Phocoena phocoena*). *Ecology and Evolution*. <http://onlinelibrary.wiley.com/doi/10.1002/ece3.2891/full>

Law, R.J. and Jepson, P.D. (2017) Europe's insufficient pollutant remediation. *Science* **356**, 148. doi: 10.1126/science.aam6274

McGowen, M., Tsagkogeorga, G., Álvarez-Carretero, S., dos Reis, M., Struebig, M., Deaville, R., Jepson, P.D., Jarman, S., Polanowski, A., Morin, P.A. and Rossiter, S.J. (2019) Phylogenomic resolution of the cetacean tree of life using target sequence capture. *Systematic Biology* **3**, pp. 479-501 <https://doi.org/10.1093/sysbio/syz068>

Monteiro, S.S., Vingada, J.V., López, A., Pierce, G.J., Ferreira, M., Brownlow, A., Mikkelsen, B., Niemeyer, M., Deaville, R., Eira, C., Piernney, S. (2016) Major Histocompatibility Complex (MHC) class II sequence poly-morphism in long-finned pilot whale (*Globicephala melas*) from the North Atlantic. *Marine Biology Research* doi: 0.1080/17451000.2016.1174266

Morrell, M., Brownlow, A., McGovern, B., Raverty, S., Shadwick, R.E., Andrew, M. (2017) Implementation of a method to visualize noise-induced hearing loss in mass stranded cetaceans. *Scientific Reports* **7**, doi:10.1038/srep41848

Murphy, S., Law, R.J., Deaville, R., Barnett, J., Perkins, M.W., Brownlow, A., Penrose, R., Davison, N.J., Barber, J.L. and Jepson, P.D. (2018). Organochlorine Contaminants and Reproductive Implication in Cetaceans. In book: *Marine Mammal Ecotoxicology* (ISBN: 9780128121443), Editors: Maria Cristina Fossi Cristina Panti, Part 1, Chapter 1. Pages 3-38

Nelms, S.E., Barnett, J., Brownlow, A., Davison, N.J., Deaville, R., Galloway, T.S., Lindeque, P.K., Santillo, D. and Godley, B.J. (2019) Microplastics in marine mammals stranded around the British coast: ubiquitous but transitory? *Nature Scientific Reports* **9(1)**:1075. doi: 10.1038/s41598-018-37428-3.

Nykänen, M., Louis, M., Dillane, E., Alfonsi, E., Berrow, S., O'Brien, J., Brownlow, A., Covelo, P., Dabin, W., Deaville, R., de Stephanis, R., Gally, F., Gauffier, P., Ingram, S.N., Lucas, T., Mirimin, L., Penrose, R., Rogan, E., Silva, M.A., Simon-Bouhet, S. and Gaggiotti, O.E. (2019) Fine-scale population structure and connectivity of bottlenose dolphins (*Tursiops truncatus*) in European waters and implications for conservation. *Aquatic Conservation: Marine and Freshwater Ecosystems* **29(S1)**:197–211

Nykänen, M., Kaschner, K., Dabin, W., Brownlow, A., Davison, N.J., Deaville, R., Garilao, C., Thomas, M., Gilbert, P., Penrose, R., Islas-Villanueva, V., Wales, N., Ingram, S.N., Rogan, E., Louis, M. and Foote, A.D. (2019) Post-glacial colonization of northern coastal habitat by bottlenose dolphins: A marine leading-edge expansion? *Journal of Heredity*, DOI:10.1093/jhered/esz039

Peltier H., Authier, M., Deaville, R., Dabin, W., Jepson, P.D., van Canneyt, O., Daniel, P., Ridoux, V. (2016) Small cetacean bycatch as estimated from stranding schemes: the common dolphin case in the northeast Atlantic. *Environmental Science and Policy* pp7-18. doi: 10.1016/j.envsci.2016.05.004

Raverty, S., Duignan, P.J., Jepson, P.D. and Morell, M. (2018) Marine Mammal Gross Necropsy. Chapter 13 in 'CRC - Handbook of Marine Mammal Medicine 3rd ed'. Editors: F.M.D. Gulland, L.A. Dierauf and K.L. Whitman

Stuart-Smith, S. and Jepson, P.D. (2017) Persistent threats need persistent counteraction: responding to PCB pollution in marine mammals. *Marine Policy* **84**: 69-75.

Tierney K.M., Muir, G.K.P., Cook, G.T., Heymans, J.J., MacKinnon, G., Howe, J.A., Xu, S., Brownlow, A., Davison, N.J., ten Doeschate, M. and Deaville, R. (2017) Nuclear reprocessing-related radiocarbon (¹⁴C) uptake into UK marine mammals. *Marine Pollution Bulletin* <https://doi.org/10.1016/j.marpolbul.2017.07.002>

Whatmore, A., Dawson, C., Muchowski, J., Perrett, L.L. Stubberfield, E., Koylass, M., Foster, G., Davison, N.J., Quance, C., Sidor, I.F., Field, C.L. and St. Leger, J. (2017) Characterisation of North American *Brucella* isolates from marine mammals. *PLoS ONE* **12**(9): e0184758.
<https://doi.org/10.1371/journal.pone.0184758>

Williams, R.S., Curnick, D.J., Barber, J.L., Brownlow, A., Davison, N.J., Deaville, R., Perkins, M., Jobling, S. and Jepson, P.D. (2019) Juvenile harbour porpoises in the UK are exposed to a more neurotoxic mixture of polychlorinated biphenyls than adults. *Science of The Total Environment*, p.134835.
<https://doi.org/10.1016/j.scitotenv.2019.134835>

Reports

Brownlow, A., Davison, N.J. and ten Doeschate, M. (2019) Scottish Marine Animal Strandings Scheme Annual Report 2018

https://strandings.org/smass/publications/reports/SMASS_Annual_Report_2018.pdf

Brownlow, A., Davison, N.J. and ten Doeschate, M. (2018) Scottish Marine Animal Strandings Scheme Annual Report 2017

https://strandings.org/smass/publications/reports/SMASS_Annual_Report_2017.pdf

Brownlow, A., Davison, N.J. and ten Doeschate, M. (2017) Scottish Marine Animal Strandings Scheme Annual Report 2016

http://www.strandings.org/smass/publications/reports/SMASS_Annual_Report_2016.pdf

Brownlow, A., Davison, N.J. and ten Doeschate, M. (2016) Scottish Marine Animal Strandings Scheme Annual Report 2015

http://strandings.org/smass/publications/reports/SMASS_Annual_Report_2015.pdf

Clear, N., Hawtrey-Collier, A. and Williams, R. (2019) Cornwall Wildlife Trust Marine Strandings Network 2018 Annual Summary report of Marine Strandings in Cornwall and the Isles of Scilly.

<https://www.cornwallwildlifetrust.org.uk/sites/default/files/2019-09/2018%20Summary%20Report%20-%20Marine%20Strandings%20in%20Cornwall%20and%20the%20Isles%20of%20Scilly.pdf>

Clear, N., Hawtrey-Collier, A., Williams, R. and Yarham, C. (2018) Cornwall Wildlife Trust Marine Strandings Network 2017 Annual Summary report of Marine Strandings in Cornwall and the Isles of Scilly.

<https://www.cornwallwildlifetrust.org.uk/sites/default/files/2019-08/2017%20Summary%20Report%20-%20Marine%20Strandings%20in%20Cornwall%20and%20the%20Isles%20of%20Scilly.pdf>

Crosby, A., Hawtrey-Collier, A. and Clear, N. (2017) Cornwall Wildlife Trust Marine Strandings Network 2016 Annual Summary report of Marine Strandings in Cornwall and the Isles of Scilly.

<https://www.cornwallwildlifetrust.org.uk/sites/default/files/2019-08/2016%20Summary%20Report%20-%20Marine%20Strandings%20in%20Cornwall%20and%20the%20Isles%20of%20Scilly.pdf>

Crosby, A., Hawtrey-Collier, A., Clear, N. and Williams, R. (2016) Cornwall Wildlife Trust Marine Strandings Network 2015 Annual Summary report of Marine Strandings in Cornwall and the Isles of Scilly.

<https://www.cornwallwildlifetrust.org.uk/sites/default/files/2019-08/2015%20Summary%20Report%20-%20Marine%20Strandings%20in%20Cornwall%20and%20the%20Isles%20of%20Scilly.pdf>

Deaville, R. (compiler) (2020) UK Cetacean Strandings Investigation Programme annual report, 2018

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14699_ME6008UKCSIPAnnualReport2018.pdf

Deaville, R. (compiler) (2019) UK Cetacean Strandings Investigation Programme Final Contract Report, 2011-2017

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14514_FINALCSIPContractReport2011-2017.pdf

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14579_AppendicestoFINALCSIPContractReport2011-2017.pdf

Deaville, R. (compiler) (2018) UK Cetacean Strandings Investigation Programme annual report, 2017

http://sciencesearch.defra.gov.uk/Document.aspx?Document=14578_FINALUKCSIPAnnualReport2017.pdf

Deaville, R. (compiler) (2017) UK Cetacean Strandings Investigation Programme annual report, 2016
http://sciencesearch.defra.gov.uk/Document.aspx?Document=14577_FINALUKCSIPAnnualReport2016.pdf

Deaville, R. (2017) Web-Accessed Database for Marine Mammal Stranding and Necropsy Data (2017) Report to ASCOBANS Secretariat for small scale funding agreement (reference SSFA 2015-1 and SSFA 2017-02)

Deaville, R. (compiler) (2016) UK Cetacean Strandings Investigation Programme annual report, 2015
http://sciencesearch.defra.gov.uk/Document.aspx?Document=14001_FINALUKCSIPAnnualReport2015.pdf

IWC Report 'Consideration of Non-Hunting Related Aspects of Cetacean Welfare', workshop held at Kruger national park, South Africa May 2016 (2017) RS6230_66_WKM&WI_Rep01
<https://archive.iwc.int/pages/view.php?ref=6230&k=c0e34c50b4>

IWC Report 'Developing Practical Guidance for the Handling of Cetacean Stranding Events', workshop held at Kruger National Park, South Africa May 2016 (2017) RS6231_66_WKM&WI_Rep02
<https://archive.iwc.int/pages/view.php?ref=6231&k=c0e34c50b4>

Penrose, R.S. (2019). Marine Mammal & Marine Turtle Strandings (Welsh Coast) Annual Report 2018
<http://www.strandings.com/Graphics%20active/2018%20Marine%20Mammal%20Strandings%20Annual%20Report.pdf>

Penrose, R.S. (2018). Marine Mammal & Marine Turtle Strandings (Welsh Coast) Annual Report 2017
<http://www.strandings.com/Graphics%20active/2017%20Marine%20Mammal%20Strandings%20Annual%20Report.pdf>

Penrose, R.S. (2017). Marine Mammal & Marine Turtle Strandings (Welsh Coast) Annual Report 2016
<http://www.strandings.com/Graphics%20active/2016%20Marine%20Mammal%20Strandings%20Annual%20Report.pdf>

Penrose, R.S. (2016). Marine Mammal & Marine Turtle Strandings (Welsh Coast) Annual Report 2015
<http://www.strandings.com/Graphics%20active/2015%20Marine%20Mammal%20Strandings%20Annual%20Report.pdf>

Tindall, C., Hetherington, S., Bell, C., Deaville, R., Barker, J., Borrow, K., Oakley, M., Bendal, V., Engelhard, G. (Eds) (2019) Hauling Up Solutions: Reducing Cetacean Bycatch in UK Fisheries, Final Workshop Report. 31pp. www.cefas.co.uk/cetacean-by-catch-workshop

Please note, all SMASS annual reports also available on the Open Science Framework at DOI 10.17605/OSF.IO/KS2V6 (<https://osf.io/ks2v6/>)

Section V: Legislation

A. Overview of Legislative Framework

AIM: to provide information on national, regional and international legislation and guidelines relevant to small cetaceans during the reporting period.

Relevant Resolutions: 8.10, 8.9, 8.8, 8.6, 8.5, 8.4, 8.3, 7.1, 6.2, 6.1, 5.7, 5.4

Legislation and guidelines are a key component of efforts to support favourable conservation status of small cetaceans in the ASCOBANS Area. A number of existing legislation and guidelines bear relevance to

conservation efforts for small cetaceans on national, regional and international scales. Regular updating and adaptation of guidelines and legislation (where applicable) can ensure ongoing prevention, minimization and reduction of negative impacts of marine activities on small cetaceans. In addition, these actions support transparent and reliable management.

Parties to ASCBOANS have agreed to support the requisition, development and the implementation of legislation and guidelines to assess, minimize and mitigate pressures on favourable conservation status of small cetaceans in the Agreement Area. Parties have committed to these actions through a number of resolutions regarding pressures known to be detrimental to small cetaceans. It is in the interest of ASCOBANS for countries to provide information on current and foreseen national, regional and international legislation and guidelines relevant to small cetaceans in the Agreement Area.

Questions:

1.1. Please provide the applicable information regarding legislation and guidelines relevant to small cetaceans in the table below.

Are national guidelines relevant for small cetaceans currently in place in your country?	<input type="checkbox"/> No. <input type="checkbox"/> Yes. Please identify the guidelines concerned:
Is national legislation relevant for small cetaceans currently in place in your country?	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Please identify the legal statutes concerned: <ul style="list-style-type: none"> • The Conservation of Species and Habitats Regulations (2017) • The Conservation of Offshore Species and Habitats Regulations (2017)
Are regional and/or international guidelines relevant for small cetaceans currently in place in your country?	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Scottish Marine Wildlife Watching Code
Is regional and/or international legislation relevant for small cetaceans currently in place in your country?	<input type="checkbox"/> No. <input checked="" type="checkbox"/> Yes. Please identify the legal statutes concerned: Legislation and Conventions: <ul style="list-style-type: none"> • Marine (Scotland) Act 2010 • The Marine Act (Northern Ireland) 2013 & The Conservation Regulations (Northern Ireland) (1995) • EU Marine Strategy Framework Directive • OSPAR • CMS • CBD • CITES

1.2. Have there been any instances/issues related to national, regional and/or international legislation during the reporting period in your country?

☐ No.

☐ Yes. Please provide details:

Lack of specific regulations related to wildlife watching – disturbance levels increasing...

Section VI: Information and Education

A. Education and outreach

AIM: to determine if there are gaps in the outreach and education activities and if additional material should be produced in your country or by the Secretariat (e.g. on certain themes, species, regions, languages, for certain target audiences).
 Relevant Resolutions: 8.13, 8.3, 8.2, 5.8,

ASCOBANS Communication, Education and Public Awareness (CEPA) Plan⁶ was presented at the 17th Meeting of the Advisory Committee. The purpose of the CEPA Plan was to identify actions and activities to be undertaken by the Secretariat, Parties and relevant partners. In addition, the Advisory Committee recommended the following overarching principles: (i) Carefully identifying the audience – e.g. children, students, policy makers, fishers – and making materials appropriate to each particular audience; (ii) Noting that different localities, communities and cultures may require different approaches; (iii) Preparing outreach and education materials in relevant languages (including on the website); and (iv) Building joint initiatives with ‘partner’ organizations and others. The CEPA aimed for more effective engagement with audiences, greater impact upon audiences, closer relationship with key conservation issues; more effective connection with educational, fundraising and promotional initiatives; and more effective and easily understood communication of relevant areas of science. In this spirit, the purpose of this section is to highlight successes and to identify potential gaps in outreach and education activities and related materials.

Questions:

1.1. List education/outreach activities in the reporting period in your country, which are of relevance to conservation of small cetaceans in the ASCOBANS Area (e.g. activities during the International Day of the Baltic Harbour Porpoise in May)

1.2.

Organiser	Name of activity (incl. translation to English, where applicable)	Date(s)	Location	Target audience (general public, scientists, children, fishers; other – please state)	Links (for further information)
WDC Education	Various – school talks, outdoor activities, community visits - cetaceans in Scotland, particularly bottlenose dolphins	2016 - 2019	Various	schools, general public, communities	https://dolphincentre.whales.org/
HWDT	Talks, volunteering opportunities, research, surveys, Whale track app, Hebridean whale trail	2016 - 2019	West coast of Scotland	general public, communities, schools, scientists	https://hwdt.org/
Shorewatch	Volunteer opportunities, data gathering	2016-2019	Scotland, various locations	General public	http://www.wdcs.org/national_regions/scotland/shorewatch/
SEA WATCH FOUNDATION: Orca watch	Events, Citizen Science Volunteering, social media platform	2016-2019	Caithness, Orkney & Shetland	General public, scientists	https://www.seawatchfoundation.org.uk/orca-watch-2019/

⁶ See [AC17 Report](#), Annex 10 (starting on page 65).

Organiser	Name of activity <i>(incl. translation to English, where applicable)</i>	Date(s)	Location	Target audience <i>(general public, scientists, children, fishers; other – please state)</i>	Links (for further information)
ORCA: surveyors/wildlife officers	Events, data gathering, publications	2016-2019	UK	General public, scientists	https://www.orcaweb.org.uk/get-involved/train-to-be-a-marine-mammal-surveyor
ORCA	Whale education month	2016-2019	UK	Schools (children aged 7-11 years)	https://www.orcaweb.org.uk/get-involved/orca-in-schools
SEA WATCH FOUNDATION: National Whale and Dolphin Watch	Events, data gathering, Citizen Science Volunteering, social media platform	2016 - 2019	UK	General public, scientists	https://www.seawatchfoundation.org.uk/nwdw/
CSIP (ZSL)	CSI of the Sea (public demonstration dissections of stranded cetaceans)	2016-2019 (various)	Zoological Society of London; National Marine Aquarium; British Science Festival	General public; scientists	www.zsl.org/science/whats-on/csi-of-the-sea www.zsl.org/science/whats-on/csi-of-the-sea-pollutants-in-our-seas https://www.zsl.org/science/whats-on/csi-of-the-sea-online-event https://www.youtube.com/watch?v=JybKVQb6dYQ https://www.youtube.com/watch?v=jX4t07BgxBY
CSIP (SMASS, SRUC)	Volunteer network for stranding responses	2016-2019	Scotland	General public,	Since 2014, SMASS has implemented an initiative to recruit and train collaborators and members of the public in the safe, reliable and accurate measurement and sampling of dead stranded marine animals. This encourages the public to report strandings and improves the range and breadth of data from cases unsuitable or logistically impossible to collect for post mortem examination. This programme has proved invaluable to SMASS in both providing rapid and reliable information and images about strandings and in many cases measurement and samples from cases too autolysed, or remote, to enable a necropsy. Since beginning this initiative SMASS have trained 210 people around the Scottish coastline
Irish Whale and Dolphin Group	Whale Watch	A day in May - annually	3 sites in Northern Ireland (sites 18, 19 and 20)	General public	https://iwdg.ie/whale-watch-ireland-2017-results/

Organiser	Name of activity <i>(incl. translation to English, where applicable)</i>	Date(s)	Location	Target audience <i>(general public, scientists, children, fishers; other – please state)</i>	Links (for further information)
			in linked report.)		
SEA WATCH FOUNDATION	Talks, Training Courses, School Visits, Citizen Science Volunteering, social media platform	2016-2018	UK	General public, scientists, marine stakeholders,	https://www.seawatchfoundation.org.uk/
Ulster Wildlife	Living Seas	Various events and school visits annually	Northern Ireland	General public and schools	https://www.ulsterwildlife.org/what-we-do/protect-wildlife-havens-land-and-sea/protect-wildlife-sea https://www.ulsterwildlife.org/blog/dave-wall/cetaceans-and-cretaceous-north-antrim-coast https://www.larnettimes.co.uk/news/a-great-time-to-head-to-the-coast-and-catch-a-glimpse-of-these-amazing-creatures-1-8534210
Agri-Food & Biosciences Institute & Irish Whale and Dolphin Group	Evening of talks – Cetacean ID, Current Research, Ways to get Involved	2018	Belfast	General public/scientists	
Irish Whale and Dolphin Group	World Ocean's day boat trip	Annual cetacean watching boat tour	Portrush, County Antrim	General public	
Irish Whale and Dolphin Group	Natural World Day Portballintrae, Science uncovered Ulster Museum, Ballynature Day, Girona Gold maritime festival, National trust whale watch	Outreach stalls/stands through annual festivals	Various (NI)	General public	
Irish Whale and Dolphin Group	Trail of the whale library tour	2019	Bangor and Warren Point	General public	https://iwdg.ie/on-the-trail-of-the-whale-library-tour/
DAERA Marine & Fisheries Division	Salmon & Whiskey Festival – Marine conservation portable display featuring cetaceans.	8&9 June 2019	Bushmills	General public	

1.3. List current information/outreach materials produced in your country, which are of relevance to ASCOBANS Area and species.

Name of publication (incl. translation into English, where applicable)	Author(s)	Publisher	Year	Links (to download publication)	Can ASCOBANS distribute the link to publication for outreach purposes?
Northern Ireland's Ocean Giants: 2-sided A4 chart and code of conduct for local marine mammals (11 spp.) including small cetaceans (5 spp.)	Ulster Wildlife	Ulster Wildlife		https://www.ulsterwildlife.org/sites/default/files/2019-08/111085%20Ulster%20Wildlife%20-%20Ocean%20Giants.pdf	<input type="checkbox"/> No <input type="checkbox"/> Yes
					<input type="checkbox"/> No <input type="checkbox"/> Yes

1.4. List other organizations engaged in outreach relevant to the ASCOBANS Area, incl. web links.

1.5. List other initiatives/work/collaboration relevant to the ASCOBANS Area that are not included above.

1.6. List any gaps in your country's outreach relevant to the ASCOBANS Area. What would be needed to fill these gaps?

Promotion of the 'Beachtracker' app to assist in reporting strandings, quantifying survey effort and qualitatively assessing visible marine litter on the coastline

1.7. Resources permitting, are there any materials that you think the ASCOBANS Secretariat should produce?

☐ **No.**

☐ **Yes.** Please describe what, and why:

Section VII: Other Matters

A. Other information or comments important for the Agreement:⁷

B. Difficulties in implementing the Agreement:

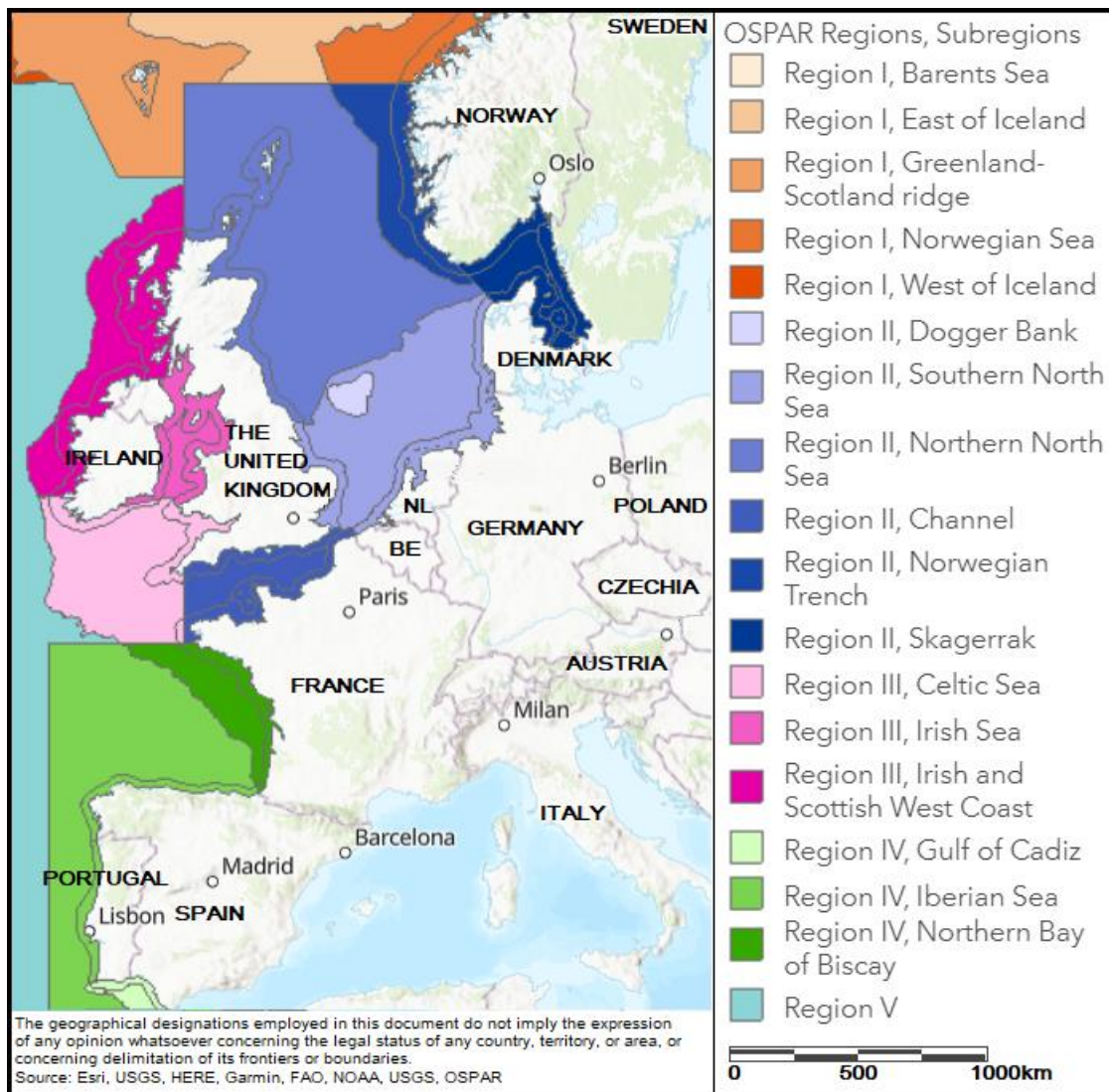
⁷ Opportunity to include other information relevant to the topics covered in this form but which are missing.

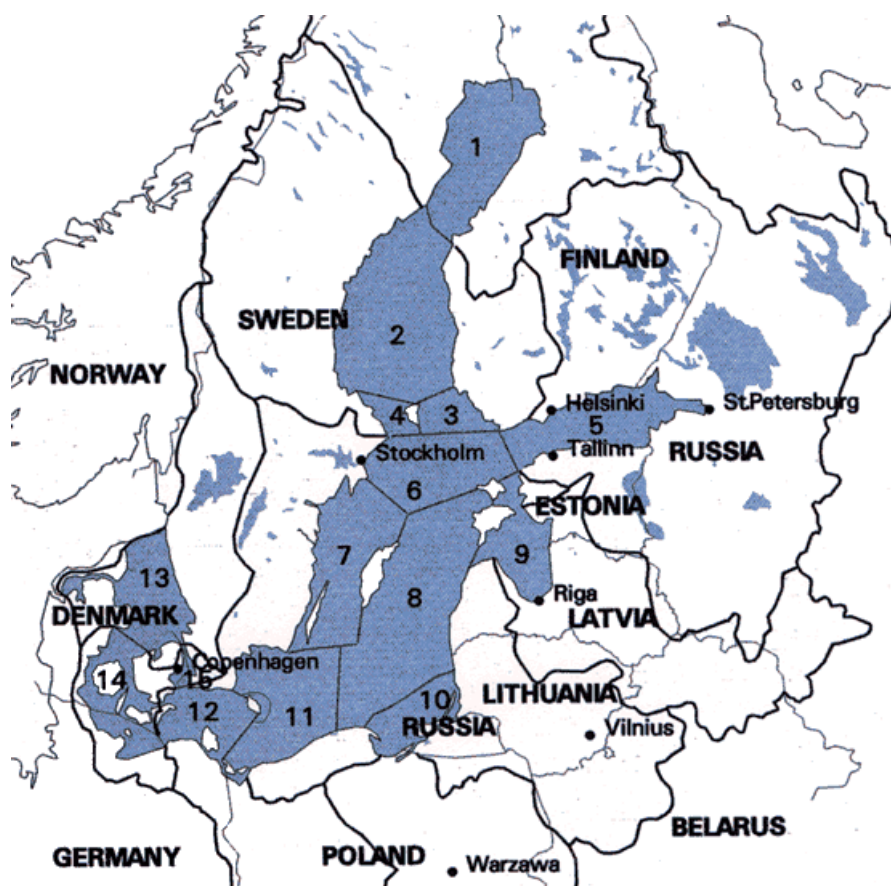
Annex A: Overview of the sub-regions as defined by OSPAR and HELCOM, and areas as defined by ICES.

Drop-down menu sub-regions OSPAR and HELCOM

Choose an item.

OSPAR Region I Arctic Waters <input type="checkbox"/> Norwegian Sea OSPAR Region II Greater North Sea <input type="checkbox"/> Dogger Bank <input type="checkbox"/> Southern North Sea <input type="checkbox"/> Northern North Sea <input type="checkbox"/> Channel <input type="checkbox"/> Norwegian Trench <input type="checkbox"/> Skagerrak OSPAR Region III Celtic Sea <input type="checkbox"/> Celtic Sea <input type="checkbox"/> Irish Sea <input type="checkbox"/> Irish & Scottish W. Coast	OSPAR Region IV Bay of Biscay and Iberian Coast <input type="checkbox"/> N. Bay of Biscay <input type="checkbox"/> Iberian Sea <input type="checkbox"/> Gulf of Cadiz OSPAR Region V Wider Atlantic <input type="checkbox"/> HELCOM <input type="checkbox"/> Bothnian Bay <input type="checkbox"/> Bothnian Sea <input type="checkbox"/> Archipelago Sea <input type="checkbox"/> Åland Sea	HELCOM cont. <input type="checkbox"/> Gulf of Finland <input type="checkbox"/> Northern Baltic Proper <input type="checkbox"/> Western Gotland Basin <input type="checkbox"/> Eastern Gotland Basin <input type="checkbox"/> Gulf of Riga <input type="checkbox"/> Gdansk Basin <input type="checkbox"/> Bornholm Basin <input type="checkbox"/> Arkona Basin <input type="checkbox"/> Kattegat <input type="checkbox"/> Belt Sea <input type="checkbox"/> The Sound
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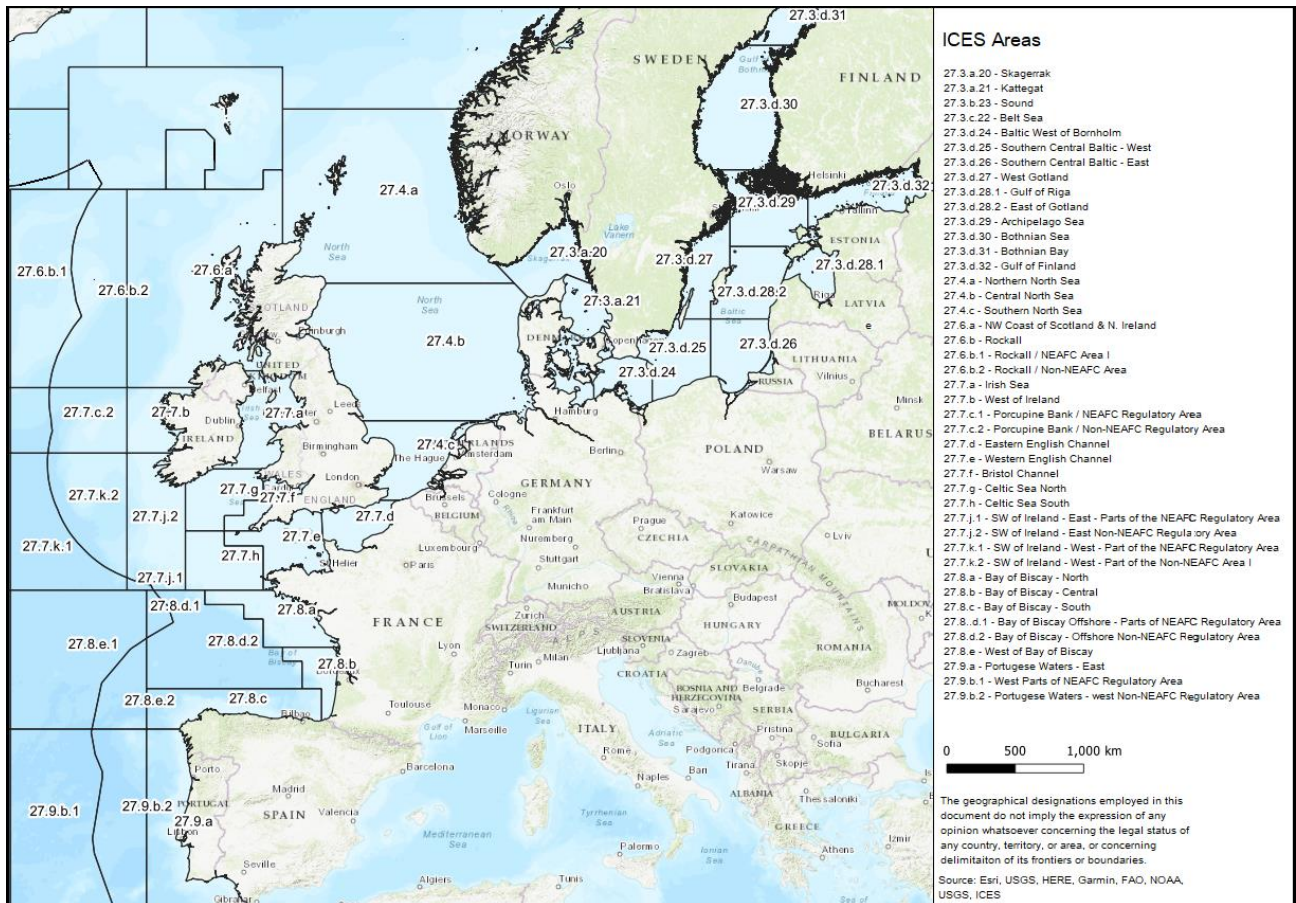
A map of the Baltic Sea drainage basins (catchment area), and marine subdivisions, including basins.

1. Bothnian Bay
2. Bothnian Sea
3. Archipelago Sea
4. Åland Sea
5. Gulf of Finland
6. Northern Baltic Proper
7. Western Gotland Basin
8. Eastern Gotland Basin
9. Gulf of Riga
10. Gdansk Basin
11. Bornholm Basin
12. Arkona Basin
13. Kattegat
14. Belt Sea
15. The Sound

Drop-down menu of ICES Areas

Choose an item.

Area	Area Description	Area	Area Description
27.3	Skagerrak, Kattegat, Sound, Belt and Baltic Seas	27.7.b	West of Ireland
27.3.a	Skagerrak and Kattegat	27.7.c	Porcupine Bank
27.3.a.20	Skagerrak	27.7.c.1	Porcupine Bank / NEAFC Reg. Area
27.3.a.21	Kattegat	27.7.c.2	Porcupine Bank / Non-NEAFC Reg. Area
27.3.b.c	Sound and Belt Sea	27.7.d	Eastern English Channel
27.3.b.23	Sound	27.7.e	Western English Channel
27.3.c.22	Belt Sea	27.7.f	Bristol Channel
27.3.d	Baltic Sea	27.7.g	Celtic North Sea
27.3.d.24	Baltic West of Bornholm	27.7.h	Celtic Sea South
27.3.d.25	Southern Central Baltic – West	27.7.j	SW of Ireland – East
27.3.d.26	Southern Central Baltic – East	27.7.j.1	SW of Ireland – East – Parts of the NEAFC Reg. Area
27.3.d.27	West of Gotland	27.7.j.2	SW of Ireland – East – Non-NEAFC Reg. Area
27.3.d.28.1	Gulf of Riga	27.7.k	SW of Ireland - West
27.3.d.28.2	East of Gotland	27.7.k.1	SW of Ireland – West – Part of the NEAFC Reg. Area
27.3.d.29	Archipelago Sea	27.7.k.2	SW of Ireland – West – Part of the Non-NEAFC Area I
27.3.d.30	Bothnian Sea	27.8	Bay of Biscay
27.3.d.31	Bothnian Bay	27.8.a	Bay of Biscay North
27.3.d.32	Bay of Finland	27.8.b	Bay of Biscay Central
27.4	North Sea	27.8.c	Bay of Biscay South
27.4.a	Northern North Sea	27.8.d	Bay of Biscay Offshore
27.4.b	Central North Sea	27.8.d.1	Bay of Biscay Offshore – Part of the NEAFC Reg. Area
27.4.c	Southern North Sea	27.8.d.2	Bay of Biscay Offshore – Non-NEAFC Reg. Area
27.6	Rockall, NW Coast of Scotland and N. Ireland	27.8.e	West of Bay of Biscay
27.6.a	NW Coast of Scotland and N. Ireland	27.9	Portuguese Waters
27.6.b	Rockall	27.9.a	Portuguese Waters – East
27.6.b.1	Rockall / NEAFC Reg. Area I	27.9.b	Portuguese Water - West
27.6.b.2	Rockall / Non-NEAFC Reg. Area	27.9.b.1	Portuguese waters – West Part of the NEAFC Reg. Area
27.7	Irish Sea, West of Ireland, Porcupine Bank, Eastern and Western English Channel, Bristol Channel, Celtic Sea North and South, and Southwest of Ireland – East and West	27.9.b.2	Portuguese waters – Non-NEAFC Reg. Area
27.7.a	Irish Sea		



Annex B: Species covered by ASCOBANS

Code	Common name	Scientific name
AWSD	Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>
BBW	Blainville's beaked whale	<i>Mesoplodon densirostris</i>
BD	Bottlenose dolphin	<i>Tursiops truncatus</i>
CBW	Cuvier's beaked whale	<i>Ziphius cavirostris</i>
CD	Short-beaked Common Dolphin	<i>Delphinus delphis</i>
FKW	False killer whale	<i>Pseudorca crassidens</i>
GBW	Gervais' beaked whale	<i>Mesoplodon europaeus</i>
HP	Harbour Porpoise	<i>Phocoena phocoena</i>
KW	Killer Whale	<i>Orcinus orca</i>
LFPW	Long-finned pilot whale	<i>Globicephala melas</i>
NBW	Northern bottlenose whale	<i>Hyperoodon ampullatus</i>
PKW	Pygmy killer whale	<i>Feresa attenuata</i>
PSW	Pygmy sperm whale	<i>Kogia breviceps</i>
RD	Risso's dolphin	<i>Grampus griseus</i>
RTD	Rough-toothed dolphin	<i>Steno bredanensis</i>
SBW	Sowerby's beaked whale	<i>Mesoplodon bidens</i>
SD	Striped dolphin	<i>Stenella coeruleoalba</i>
SFPW	Short-finned pilot whale	<i>Globicephala macrorhynchus</i>
TBW	True's beaked whale	<i>Mesoplodon mirus</i>
WBD	White-beaked dolphin	<i>Lagenorhynchus albirostris</i>

Drop down menu small cetacean species:

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