




Bottlenose dolphin

The State of Cetaceans **2025**



"...none of this work would be possible without the dedication of ORCA's vast and growing network of citizen scientists."

Foreword

At a time when the health of our planet's oceans is under immense pressure, understanding the lives of the whales, dolphins and porpoises that inhabit them has never been more important – or more urgent. These extraordinary animals are not just charismatic icons of the wild, but vital indicators of ocean health. They live in every ocean on Earth, often far from human view, yet they are increasingly exposed to the cumulative impact of human activities – from climate change to overfishing, noise pollution to vessel strikes.

In this eighth edition of The State of Cetaceans, ORCA gives a tantalising glimpse into the world beneath the waves, exploring data collected on vessels of all types and picking out some of the important things we can learn about whales and dolphins from these platforms of opportunity. The report draws from almost two decades of dedicated monitoring – a staggering 1.6 million kilometres of survey effort – to track changes in cetacean populations, movements and habitats. It is our largest and most comprehensive snapshot to date of how whales and dolphins are faring in our increasingly industrialised oceans.

Crucially, none of this work would be possible without the dedication of ORCA's vast and growing network of citizen scientists. These passionate volunteers – trained and supported by ORCA – have taken to ferries and cruise ships across the globe to gather scientific data that is now helping to shape marine conservation policy at national and international levels. This report is also a celebration of that effort, and a testament to what can be achieved when people come together with a shared purpose.

The findings contained within are both sobering and hopeful. Increases in survey effort continue to reveal important hotspots, while long-term data is helping scientists and policymakers identify population trends and areas where urgent protection is needed. The continued rise in global shipping, and the growing threat of vessel strikes, is rightly a key focus of this report – but so too is the progress being made from mapping Important Marine Mammal Areas, to training over a thousand ship crew in mitigation strategies.

There is still much to be done. But this report shows that, with science, collaboration and public engagement at its heart, we can make the oceans safer for whales and dolphins – and by doing so, protect the wider marine ecosystems they help sustain.

Sally Hamilton ORCA, CEO



Humpback whale

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Report Summary and its Purpose

Despite growing awareness of human impacts on the ocean, the pressures continue to pile onto cetaceans (collectively whales, dolphins and porpoises) and the ecosystems they inhabit. However, scientific progress and management lags behind the fast pace of these growing threats and an up-to-date picture of cetacean distribution and abundance is critical in order to manage these threats and mitigate their impact as much as possible. Citizen science at a large scale is essential to step up monitoring to match management needs and meet conservation goals.

The State of Cetaceans 2025 (SOC) is ORCA’s eighth annual report summarising the findings of cetacean surveys onboard platforms of opportunity (namely ferry and cruise ships) around the world. The report also describes how ORCA’s citizen science data is used to support the charity’s two main conservation goals: creating safer ocean spaces for whales and dolphins, and stopping ships colliding with whales.

Over recent years the geographical scope of ORCA’s work has expanded from the Northeast Atlantic Ocean to cover all of the world’s oceans including the Southern Ocean, Arctic Ocean and Pacific Ocean, which are now monitored regularly.

This report builds on the 19 years’ worth of cetacean sightings and environmental data collected during dedicated ORCA surveys conducted between 2006 and 2024, totalling:

- 4,511 surveys
- 314,154 individual animals recorded
- 52 different species of whales, dolphins and porpoises identified

In this single year alone – 2024:

- 893 surveys were conducted
- 51,514 individual animals were record
- 46 different species of whales, dolphins and porpoises were identified
- 8 species were recorded for the first time on ORCA surveys

This long time series has enabled ORCA to provide population estimates for five commonly seen species around the UK, re-emphasising the importance of citizen science to complement the once-every-decade large-scale surveys such as SCANS. The greater the survey effort the more rapid changes can be identified and conservation measures put in place to achieve our ambition of creating more safer ocean spaces.

With an ever increasing risk of ship collisions threatening whales in the world’s oceans, our work around whale vessel strikes has expanded significantly in recent years. Over the decades, our focus on using commercial vessels as cost-effective cetacean research platforms has enabled us to build close working relationships with many of the global shipping companies, who now regularly approach us to train their bridge crews in vessel strike mitigation. Over a thousand seafarers have undergone ORCA training via our bespoke e-learning platform or face-to-face with one of our specialist trainers.

These long-term collaborations with our key shipping partners have also enabled us to explore how whales and ships interact during a close encounter. This is a fundamental and vital question that needs to be addressed and understood before any technological detection device can be successfully implemented on board ships.

Creating Safe Ocean Spaces

The world's oceans are becoming ever busier with diverse human induced activity. In particular, global vessel traffic is predicted to triple by 2050 (International Transport Forum, 2019). In turn, more of the global biodiversity-rich marine hotspots will be subjected to more and more of these anthropogenic pressures.

When large densities of whales or critical whale habitats start to overlap with high shipping density, whales and dolphins are at an ever increasing risk. Over the last decade there has been a concerted effort to start mapping out Important Marine Mammal Areas (IMMAs) around the world so that these incredible vital hotspots can be preserved and human activity within them limited. This has finally been recognised by the International Maritime Organisation (IMO) announcing the establishment of the first IMO Particularly Sensitive Sea Area (PSSA) to focus solely on the reduction of vessel strike on large whales in the Western Mediterranean Sea.

Our monitoring of the world's oceans is intertwined with the monumental international effort involved in identifying and mapping IMMAs around the globe. Led by the IUCN Marine Mammal Protected Areas Task Force, its sole focus is to identify where the critical whale and dolphin

hotspots are in the world's five oceans. All our data is fed into this vital global initiative, which provides a dynamic real-time atlas of areas that need protection and where human disturbance must be kept to a minimum. This atlas is available for all stakeholders of the sea; its purpose is to create more safe space for whales and dolphins.

ORCA has collected effort based cetacean sightings data since 2006, resulting in 4,511 surveys. ORCA's survey work can be broadly divided into two types of data collection. Firstly, line transect distance sampling surveys, which estimate cetacean densities and are conducted from the bridge of ferries around the UK and cruise ships further afield. The second type of data collection involves a more flexible survey protocol, ORCA OceanWatchers, whereby data is collected alongside public education on board ferries and cruise ships and is used to understand cetacean distribution and hotspots.



Pilot whale

“Our monitoring of the world's oceans is intertwined with the **monumental international effort** involved in identifying and mapping IMMAs around the globe.”

Worldwide survey coverage

ORCA’s survey coverage has historically been concentrated in the Northeast Atlantic and adjacent seas, but in recent years effort has expanded throughout the world’s oceans (**Figure 1 and 2**). This trend continued in 2024, with survey coverage achieved in all oceans (**Table 1**).

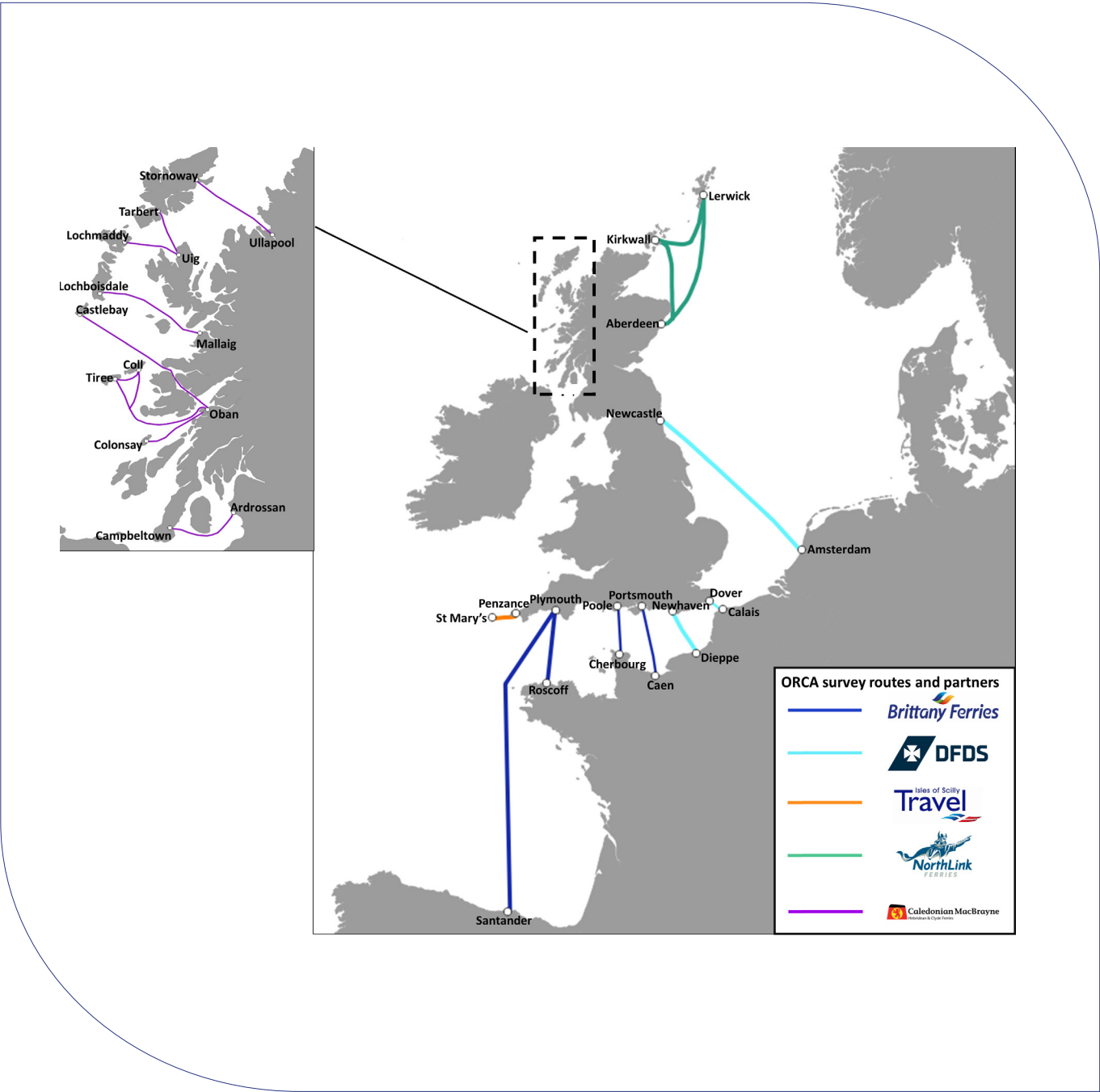


Figure 1: Ferry routes surveyed by ORCA using distance sampling methodology



Figure 2: Global distribution of survey effort using the ORCA OceanWatchers protocol

SEA REGION	ROUTE	YEARS ACTIVE	COMPANY
North Sea	Aberdeen–Lerwick (UK)	2016–2019, 2023–2024	NorthLink Ferries
	Harwich–Esbjerg (UK – Denmark)	2008–2014	DFDS
	Immingham–Gothenburg–Brevik (UK – Sweden – Norway)	2015	DFDS
	Newcastle–Amsterdam (UK – The Netherlands)	2009, 2011–2019, 2022–2024	DFDS
	Newcastle–Bergen (UK – Norway)	2006–2008	DFDS
	Oslo–Frederikshavn–Copenhagen (Norway – Denmark)	2023–2024	DFDS
	Various cruises	2006, 2009–2019, 2021–2024	Ambassador Cruise Line, Cunard, Fred. Olsen Cruise Lines, HX, Noble Caledonia, P&O Cruises, Saga, Silversea
English Channel	Dover–Calais (UK – France)	2016–2020, 2023–2024	DFDS
	Lymington–Yarmouth (UK)	2015	Wightlink
	Newhaven–Dieppe (UK – France)	2018–2019, 2022–2024	DFDS
	Plymouth–Roscoff (UK – France)	2014–2019, 2022–2024	Brittany Ferries
	Plymouth–Roscoff–Cork (UK – France – Ireland)	2014–2019, 2021–2024	Brittany Ferries
	Poole–Cherbourg (UK – France)	2017–2019, 2022–2024	Brittany Ferries
	Portsmouth–Caen (UK – France)	2014–2019, 2022–2024	Brittany Ferries
	Portsmouth–Fishbourne (UK)	2015–2019	Wightlink
	Southampton–Cowes (UK)	2016–2019	Red Funnel
Celtic Sea	Penzance–St Mary’s (UK)	2009–2019, 2022–2024	Isles of Scilly Travel
	Various cruises	2007, 2009–2019, 2021–2024	Ambassador Cruise Line, Fred. Olsen Cruise Lines, HX, Noble Caledonia, P&O Cruises, Saga, Silversea
Irish Sea	Heysham–Douglas (UK)	2011–2013, 2015–2016	Isle of Man Steam Packet Company
	Various cruises	2008–2019, 2021–2024	Ambassador Cruise Line, Fred. Olsen Cruise Lines, HX, Noble Caledonia, Saga, Silversea
Minches and West Scotland	Ardrossan–Campbeltown (UK)	2019, 2022–2023	Caledonian MacBrayne
	Mallaig–Lochboisdale (UK)	2023–2024	Caledonian MacBrayne
	Oban–Castlebay (UK)	2017–2019, 2022–2024	Caledonian MacBrayne
	Oban–Coll–Tiree–Colonsay (UK)	2017–2019, 2022–2024	Caledonian MacBrayne
	Uig–Lochmaddy–Tarbert (UK)	2019, 2022–2024	Caledonian MacBrayne
	Ullapool–Stornoway (UK)	2017–2019, 2022–2024	Caledonian MacBrayne
	Various Cruises	2009–2019, 2021–2024	Ambassador Cruise Line, Fred. Olsen Cruise Line, HX, Noble Caledonia, P&O Cruises, Saga

SEA REGION	ROUTE	YEARS ACTIVE	COMPANY
Bay of Biscay and Iberian Coast	Plymouth–Santander (UK – Spain)	2006–2008, 2022–2024	Brittany Ferries
	Plymouth–Santander–Portsmouth (UK – Spain)	2009–2019	Brittany Ferries
	Portsmouth–Bilbao (UK – Spain)	2014–2019, 2023–2024	Brittany Ferries
	Portsmouth–Santander (UK – Spain)	2014–2019, 2021–2024	Brittany Ferries
	Rosslare–Bilbao (Ireland – Spain)	2023–2024	Brittany Ferries
	Various cruises	2007, 2010–2011, 2013, 2015–2019, 2022–2024	Ambassador Cruise Lines, Celebrity Cruises, Fred. Olsen Cruise Lines, P&O Cruises, Saga, Swan Hellenic
Arctic Ocean	Various cruises	2006, 2009, 2011–2012, 2014–2019, 2021–2024	Ambassador Cruise Line, Atlas Ocean Voyages, Cunard, Fred. Olsen Cruise Lines, HX, Noble Caledonia, Oceanwide Expeditions, P&O Cruises, Saga, Silversea
North Atlantic Ocean	Various cruises	2008, 2011–2012, 2014–2019, 2021–2024	Albatros Expeditions, Ambassador Cruise Line, Atlas Ocean Voyages, Explora Journeys, Fred. Olsen Cruise Lines, HX, P&O Cruises, Saga
South Atlantic Ocean	Various cruises	2019, 2022–2024	Albatros Expeditions, Ambassador Cruise Line, Atlas Ocean Voyages, Celebrity Cruises, HX, Oceanwide Expeditions, PONANT
Indian Ocean	Various cruises	2023–2024	Ambassador Cruise Line, Celebrity Cruises, P&O Cruises
Mediterranean Sea	Various cruises	2007–2008, 2010–2012, 2015–2019, 2021–2024	Ambassador Cruise Line, Explora Journeys, Fred. Olsen Cruise Lines, P&O Cruises, Saga
North Pacific Ocean	Various cruises	2018–2019, 2022–2024	Ambassador Cruise Line, Celebrity Cruises, Crystal Cruises, Fred. Olsen Cruise Lines, HX, Noble Caledonia, Silversea
South Pacific Ocean	Various cruises	2023–2024	Ambassador Cruise Line, Fred. Olsen Cruise Lines, Celebrity Cruises, HX, P&O Cruises
Southern Ocean	Various cruises	2019, 2021–2024	Albatros Expeditions, Atlas Ocean Voyages, Celebrity Cruises, Crystal Cruises, HX

Distance surveyed (effort)

A total of 377,613 kilometres of survey effort was achieved during dedicated ORCA surveys in 2024 (Table 2).

This brings the total amount of effort undertaken during surveys since 2006 to an incredible 1,622,484 kilometres – the equivalent of travelling around the world at the equator more than 40 times. Survey effort increased slightly to 334,707 kilometres in the North Atlantic where most effort was carried out. Survey effort also increased in the Indian, South Atlantic and Southern Oceans. This represents the largest amount of survey effort carried out in the space of a year in ORCA’s history, as well as the broadest spatial coverage so far.

A total of 13,267 hours and 55 minutes were spent actively searching for whales and dolphins in 2024, equating to one and a half years of effort. This represented an additional 2,398 hours and 41 minutes on the amount of time spent looking for cetaceans in 2023 and brings the total hours of effort since 2006 to 52,923 hours and 1 minute – just over six years of effort.

Table 2:
Survey effort during all dedicated ORCA surveys in kilometres and hours by year

YEAR	DISTANCE (KILOMETRES)	EFFORT (HRS AND MINS)
2006	10,402	290 hours and 20 minutes
2007	10,815	341 hours and 43 minutes
2008	12,057	329 hours and 45 minutes
2009	11,166	306 hours and 43 minutes
2010	10,788	359 hours and 44 minutes
2011	19,480	639 hours and 36 minutes
2012	16,019	508 hours and 56 minutes
2013	18,441	588 hours and 47 minutes
2014	94,960	2,408 hours and 43 minutes
2015	93,632	2,568 hours and 29 minutes
2016	84,533	2,490 hours and 26 minutes
2017	100,675	3,000 hours and 55 minutes
2018	103,813	2,983 hours and 17 minutes
2019	127,113	3,904 hours and 55 minutes
2020	6,727	220 hours and 55 minutes
2021	32,834	1,396 hours and 4 minutes
2022	179,486	6,446 hours and 34 minutes
2023	311,934	10,869 hours and 14 minutes
2024	377,613	13,267 hours and 55 minutes
Total	1,622,484 kilometres	52,923 hours and 1 minute



ORCA citizen scientist



ORCA citizen scientist

OCEAN	YEAR																			TOTAL
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Arctic Ocean				1,608	331	291	1,398	1,834	4,619	2,433	4,296	2,811	1,506	3,748	314	3,388	14,369	17,037	12,336	72,318
North Atlantic Ocean	10,402	10,815	12,057	9,558	10,457	19,189	14,621	16,607	90,341	91,199	80,237	97,864	100,400	115,995	6,412	28,108	152,966	266,924	334,707	1,468,857
North Pacific Ocean													1,409	6,303			7,099	12,390	5,930	33,132
Indian Ocean																		127	4,102	4,229
South Atlantic Ocean													498	733		579	3,050	5,924	10,548	21,334
South Pacific Ocean																161	640	6,651	6,472	13,923
Southern Ocean														334		598	1,361	2,882	3,517	8,692
Total	10,402	10,815	12,057	11,166	10,788	19,480	16,019	18,441	94,960	93,632	84,533	100,675	103,813	127,113	6,727	32,834	179,486	311,934	377,613	1,622,484

Table 3: Survey effort during all dedicated ORCA surveys in kilometres by ocean region and year



Sightings

Atlantic spotted dolphins

A total of 51,514 individual animals were recorded in 2024, of which 41,404 individuals were identified as one of 46 cetacean species.

A breakdown of the number of animals seen per species by year is shown in Table 4 and the number of each species recorded in each major ocean is shown in Table 5. The number of individual animals and the number of species recorded in 2024 is greater than in previous years. Excitingly, 14 more species were identified in 2024 than in 2023, of which eight were recorded for the first time in ORCA's dataset. This reflects the increase in survey effort in both distance and time. The total number of animals and species recorded by ORCA on surveys since 2006 is 52 species and 314,154 individual animals

In 2024, Gray's beaked whale and ginkgo-toothed beaked whale were recorded for the first time in ORCA's history. This is due to an increase in survey effort, particularly in the high seas which are difficult to access and data deficient. Ginkgo-toothed beaked whales are seldom recorded alive, which highlights the value of platform of opportunity surveys for assessing cetacean distribution in difficult to reach areas. In addition, Burmeister's porpoise, spectacled porpoise, Clymene dolphin, Indo-Pacific bottlenose dolphin, pygmy killer whale and southern bottlenose whale were recorded for the first time on ORCA surveys this year (Table 4).

Increases in the number of warm water species recorded, including spinner dolphins, Atlantic spotted dolphins, short-finned pilot whales and Bryde's whales, likely reflect increased effort in the tropics and subtropics in 2024. Similarly, increases in Southern Hemisphere endemic species, such as Commerson's dolphins, dusky dolphins, Peale's dolphins and Southern right whales, reflect increased effort in Antarctic and subantarctic areas.

Harbour porpoise

The number of harbour porpoises recorded increased from 3,091 animals in 2023 to 4,114 individuals in 2024 (Table 4). It is possible that this is partly related to an increase in effort in the North Sea along the Newcastle-Amsterdam ferry route. Previous ORCA research has identified this area as a harbour porpoise hotspot (Nielsen et al. 2021). Bycatch remains the biggest threat to harbour porpoises and the level of bycatch mortality in some areas of Europe far exceeds sustainable levels, resulting in precipitous declines in some populations and making effective management efforts critical to their conservation (Carlén et al. 2021). Monitoring efforts to create safe spaces are a key part of this process and can help to ensure that management is effective and targeted appropriately.

Common dolphin

Sightings of common dolphins remained stable compared to 2023 with a slight increase from 23,205 to 23,909 individuals recorded (Table 4). Whether this reflects stabilising levels of effort in areas such as the English Channel and Bay of Biscay where this species is abundant, or a levelling off of the recent increase in common dolphin sightings in these areas requires further investigation. Notably, common dolphin sightings remained high in the central and eastern English Channel this year following the increase observed in 2023 (ORCA, 2024).

Long-finned pilot whale

Fewer long-finned pilot whales were recorded in 2024 despite increased effort in the subarctic areas of the North Atlantic Ocean where this species was frequently

seen in 2023 (Table 4). However, sightings have fluctuated over the years. Previous research suggests that the occurrence of long-finned pilot whales in the North Atlantic is related to changes in oceanographic features like the North Atlantic subpolar gyre (Hatun et al. 2009). As this species is targeted in the Faroese Grind in the North Atlantic, disentangling real population declines from shifts in distribution due to changes in the environment is key and continued monitoring can help to answer these questions.

Sperm whale

There was a large increase in the number of sperm whales recorded from 113 in 2023 to 196 in 2024 (Table 4). Most animals were sighted in the North Atlantic Ocean where there was high survey effort (Table 5), in particular, the Bay of Biscay and the tropical and subtropical Eastern Atlantic. Fewer sperm whales were seen at high latitudes in the North Atlantic. This may be partly driven by an increase in effort in the tropical and subtropical Atlantic in 2024 where pods of females and their young reside year-round. However, the reduction in sightings at higher latitudes cannot be explained by a decline in effort, which remained consistent, nor can the increase in sightings in the Bay of Biscay be explained by a particular increase in survey effort since 2023. This could therefore reflect a real change in the distribution of this species, but further analysis is necessary to investigate the potential drivers of this change.

Baleen whales

More fin whales were seen in 2024, particularly in the Southern Ocean but also in the Bay of Biscay, along the Iberian Peninsula and in oceanic areas of the Northeast Atlantic Ocean (Table 4 and Table 5). The number of humpback whales seen also increased and was especially

high in the Southern Ocean (Table 4 and Table 5). Although the populations of these species and other large whales are thought to be recovering from near extinction following commercial whaling, they face new threats which could hinder their recovery. These anthropogenic threats include increased risk of vessel strike due to increased vessel traffic and reduced prey availability due to climate change (Tulloch et al. 2019). ORCA's data helps to monitor these populations and informs speed restrictions and other measures to mitigate the impact of increased vessel traffic. ORCA's efforts to tackle the threat of vessel strike are discussed in more detail later in this report.

In summary, ORCA's survey coverage continued to expand in 2024, resulting in several new species being added to ORCA's dataset. Some possible changes in the distribution of two deep-water species, sperm whales and long-finned pilot whales, were noted, highlighting the value of ORCA's data for the study of these and other offshore species which are difficult to monitor due to their remote habitat. Monitoring also continued on the better-studied, yet heavily impacted, shelf seas of the North Atlantic where the data collected will contribute to ongoing efforts to manage the impact of human activities, such as fishing and offshore energy installations on cetaceans.

ORCA's data collection in the Southern Ocean, a key area of overlap between recovering whale populations and increased shipping and expanding krill fisheries, also continued in 2024. This data is directly used to map whale densities in order to inform speed restrictions at finer temporal scales and provide information on the distribution and population status of recovering whales.

	YEAR																	
SPECIES	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2022	2023	2024	TOTAL NO.
Burmeister's porpoise (<i>Phocoena spinipinnis</i>)																	6	6
Dall's porpoise (<i>Phocoenoides dalli</i>)													45	625	119		112	901
Harbour porpoise (<i>Phocoena phocoena</i>)	155	121	116	146	170	362	349	498	1,489	1,512	1,405	867	1,635	3,044	2,134	3,091	4,114	21,208
Spectacled porpoise (<i>Phocoena dioptrica</i>)																	3	3
Unidentified porpoise															2		2	4
Atlantic spotted dolphin (<i>Stenella frontalis</i>)												730	71	107	525	489	737	2,659
Atlantic white-sided dolphin (<i>Laegnorhynchus acutus</i>)	4	5				10	100	3	14	34	6	19	28	50	337	168	99	877
Bottlenose dolphin (<i>Tursiops truncatus</i>)	77	122	118	147	74	150	127	143	550	907	563	664	708	829	663	1,143	1,663	8,648
Commerson's dolphin (<i>Cephalorhynchus commersonii</i>)													2	38	88	15	81	224
Common dolphin (<i>Delphinus delphis</i>)	424	709	456	1,219	4,135	5,581	3,635	3,253	11,737	21,242	13	17,355	10,848	15,114	14,664	23,205	23,909	157,499
Clymene dolphin (<i>Stenella clymene</i>)																	290	290
Dusky dolphin (<i>Lagenorhynchus obscurus</i>)													14		83	125	52	274
False killer whale (<i>Pseudorca crassidens</i>)	23											11	5			41	63	143
Fraser's dolphin (<i>Lagenorhynchus hosei</i>)														20			183	203
Hourglass dolphin (<i>Lagenorhynchus cruciger</i>)															105	3	24	132
Northern right whale dolphin (<i>Lissodelphis borealis</i>)													44					44
Indo-Pacific bottlenose dolphin (<i>Tursiops aduncus</i>)																	6	6
Orca (<i>Orcinus orca</i>)	1		1	1		18	10	5	100	54	64	22	15	91	236	243	293	1,154
Pacific white-sided dolphin (<i>Lagenorhynchus obliquidens</i>)													158	482	70		2	712
Long-finned pilot whale (<i>Globicephala melas</i>)	8	207	53	169		39	175	2	207	728	166	259	36	381	196	777	543	3,946
Short-finned pilot whale (<i>Globicephala macrorhynchus</i>)									14	18	20	16	8	11	14	150	216	467
Unidentified pilot whale		2	2		20	23		2	51	351	209	172	97	87	264	245	571	2,096
Pantropical spotted dolphin (<i>Stenella attenuata</i>)																119	227	346
Peale's dolphin (<i>Lagenorhynchus australis</i>)													49	26	22	41	127	265
Pygmy killer whale (<i>Feresa attenuata</i>)																	12	12
Risso's dolphin (<i>Grampus griseus</i>)	1	17	3	9	5	12	23	3	33	47	94	116	82	61	86	246	146	984
Rough-toothed dolphin (<i>Steno bredanensis</i>)												2			10		14	26
Spinner dolphin (<i>Stenella longirostris</i>)															6		557	563
Striped dolphin (<i>Stenella coeruleoalba</i>)	65	87	97	417	155	1,035	515	206	942	2,160	1,579	2,285	1,917	2,010	1,523	2,701	2,981	20,675
White-beaked dolphin (<i>Lagenorhynchus albirostris</i>)	12	61	9	5	1	184	67	281	686	168	461	228	832	292	1,259	1,146	1,093	6,785
Unidentified dolphin	125	301	227	1,021	494	1,253	788	472	2,295	5,150	2,565	3,823	3,000	3,056	2,926	6,774	6,554	40,824

Table 4: Total number of individual animals recorded per species during all dedicated ORCA surveys between 2006 and 2024

	YEAR																	
SPECIES	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2022	2023	2024	TOTAL NO.
Arnoux's beaked whale (<i>Berardius arnuxii</i>)																3	12	15
Blaineville's beaked whale (<i>Mesoplodon densirostris</i>)															4	3	8	15
Cuvier's beaked whale (<i>Ziphius cavirostris</i>)	2	4	6	17	14	20	28	14	140	164	101	103	121	147	46	105	89	1,121
Ginkgo-toothed beaked whale (<i>Mesoplodon ginkgodens</i>)																	1	1
Gray's beaked whale (<i>Mesoplodon grayi</i>)																	13	13
Northern bottlenose whale (<i>Hyperoodon ampullatus</i>)	17	4	6		6	2	2		12	38	7	34	20	20	36	56	46	306
Southern bottlenose whale (<i>Hyperoodon planifrons</i>)																	7	7
Sowerby's beaked whale (<i>Mesoplodon bidens</i>)		3			3	9	5	2	10	4	7	10		29	11	18	23	134
True's beaked whale (<i>Mesoplodon mirus</i>)		3								3			2					8
Strap-toothed beaked whale (<i>Mesoplodon layardii</i>)																7		7
Unidentified beaked whale	4	13	3		4	11	19	4	15	28	75	66	86	137	82	108	152	807
Sperm whale (<i>Physeter macrocephalus</i>)	3	4	2	8	14	20	2	21	27	48	38	68	12	42	112	113	196	730
Beluga (<i>Delphinapterus leucas</i>)							33			1	6		21	200	226	122	75	684
Narwhal (<i>Monodon monoceros</i>)															10			10
Antarctic minke whale (<i>Balaenoptera bonarensis</i>)														34	4	10	6	54
Blue whale (<i>Balaenoptera musculus</i>)							4	10	4	1	26	1	5	32	40	28	23	174
Bowhead whale (<i>Balaena mysticetus</i>)														1		5		6
Bryde's whale (<i>Balaenoptera brydei</i>)											1						8	9
Fin whale (<i>Balaenoptera physalus</i>)	10	19	134	19	9	52	41	50	163	281	384	297	753	815	675	732	971	5,405
Gray whale (<i>Eschrichtius robustus</i>)														2		3		5
Humpback whale (<i>Megaptera novaengliae</i>)					1	31	4	25	47	65	43	127	27	874	819	638	1,699	4,400
Minke whale (<i>Balaenoptera acutorostrata</i>)	6	8	10	15	19	40	70	44	162	92	113	132	171	364	330	773	560	2,909
North Atlantic right whale (<i>Eubalaena glacialis</i>)												1				1	3	5
Sei whale (<i>Balaenoptera borealis</i>)		3			3		3	4	10	3	10	23	31	36	32	125	105	388
Southern right whale (<i>Eubalaena australis</i>)															2	3	6	11
Unidentified whale	16	29	54	6	8	23	56	47	156	288	605	439	488	1,164	1,566	2,054	2,118	9,117
Unidentified cetacean	6	23	6	1		14	12	14	125	119	182	148	135	171	82	708	713	2,459
Total no. of individuals	959	1,745	1,303	3,200	5,135	8,889	6,068	5,103	18,989	33,506	22,121	28,018	21,466	30,392	29,409	46,337	51,514	314,154

Table 4: Total number of individual animals recorded per species during all dedicated ORCA surveys between 2006 and 2024

	OCEAN							
SPECIES	Arctic Ocean	North Atlantic Ocean	North Pacific Ocean	Indian Ocean	South Atlantic Ocean	South Pacific Ocean	Southern Ocean	TOTAL
Burmeister's porpoise						6		6
Dall's porpoise			112					112
Harbour porpoise	77	3,992	16	2			27	4,114
Spectacled porpoise					3			3
Unidentified porpoise			2					2
Atlantic spotted dolphin		736			1			737
Atlantic white-sided dolphin	6	93						99
Bottlenose dolphin		1,320	124	121	25	73		1,663
Commerson's dolphin					81			81
Common dolphin	3	23,694	30	21	2	159		23,909
Clymene dolphin		62			228			290
Dusky dolphin					31	21		52
False killer whale		27	3	9	12	12		63
Fraser's dolphin		36	17			130		183
Hourglass dolphin					19		5	24
Indo-Pacific bottlenose dolphin						6		6
Orca	87	59	24		9	12	102	293
Long-finned pilot whale	2	425			102	14		543
Short-finned pilot whale		118		12	86			216
Unidentified pilot whale	71	493			7			571
Pacific white-sided dolphin			2					2
Pantropical spotted dolphin		38	121	59		9		227
Peale's dolphin					117	8	2	127
Pygmy killer whale				10	2			12
Risso's dolphin		99	16	27		4		146
Rough-toothed dolphin		1			13			14

	OCEAN							
SPECIES	Arctic Ocean	North Atlantic Ocean	North Pacific Ocean	Indian Ocean	South Atlantic Ocean	South Pacific Ocean	Southern Ocean	TOTAL
Spinner dolphin			282	200	35	40		557
Striped dolphin		2,392	58	194		337		2,981
White-beaked dolphin	382	711						1,093
Unidentified dolphin	87	5,697	211	47	101	411		6,554
Arnoux's beaked whale							12	12
Blainville's beaked whale		6				2		8
Cuvier's beaked whale		78			2	9		89
Gingko-toothed beaked whale						1		1
Gray's beaked whale					6	7		13
Northern bottlenose whale	5	41						46
Southern bottlenose whale					5	2		7
Sowerby's beaked whale		23						23
Unidentified beaked whale		116	6	2	7	17	4	152
Sperm whale	27	136		13	13	7		196
Beluga		75						75
Antarctic minke whale					1		5	6
Blue whale		13			6	1	3	23
Bryde's whale		3		4		1		8
Fin whale	22	570	16		123		240	971
Humpback whale	373	182	103		373	5	663	1,699
Minke whale	41	513	2		2	2		560
North Atlantic right whale		3						3
Sei whale	1	24			69	6	5	105
Southern right whale					5		1	6
Unidentified whale	116	1,234	39	5	419	18	287	2,118
Unidentified cetacean	26	632	10	4	32	3	6	713
Total	1,326	43,642	1,194	730	1,937	1,323	1,362	51,514

Table 5: The number of individual animals recorded per species and ocean region during all dedicated ORCA surveys between 2006 and 2024

Whale and dolphin population estimates in UK waters

ORCA has collected data from repeated cetacean surveys using standardised line transect distance sampling methodologies from the bridge of ferries around the UK over the past 19 years.

By combining this information, it is possible to estimate how many individual animals live in different regions of the UK and nearby waters. To make these abundance estimates, density surface modelling (DSM) techniques are employed. The application of the DSM technique is only appropriate when there have been enough sightings of a species to produce a reliable detection function. Therefore, this analysis focuses on the following five species commonly recorded during ORCA surveys:

harbour porpoise, bottlenose dolphin, common dolphin, white-beaked dolphin, and minke whale.

The DSM technique was carried out using sightings collected between 2006 and 2024 for the Northern Isles, North Sea and English Channel regions of the UK. Water depth was included as an environmental covariate. Within these regions areas of most importance for each species are identified and detailed below.



Harbour porpoise

“ORCA has collected data from repeated standardised cetacean surveys from the bridge of ferries around the UK over the past 19 years.”

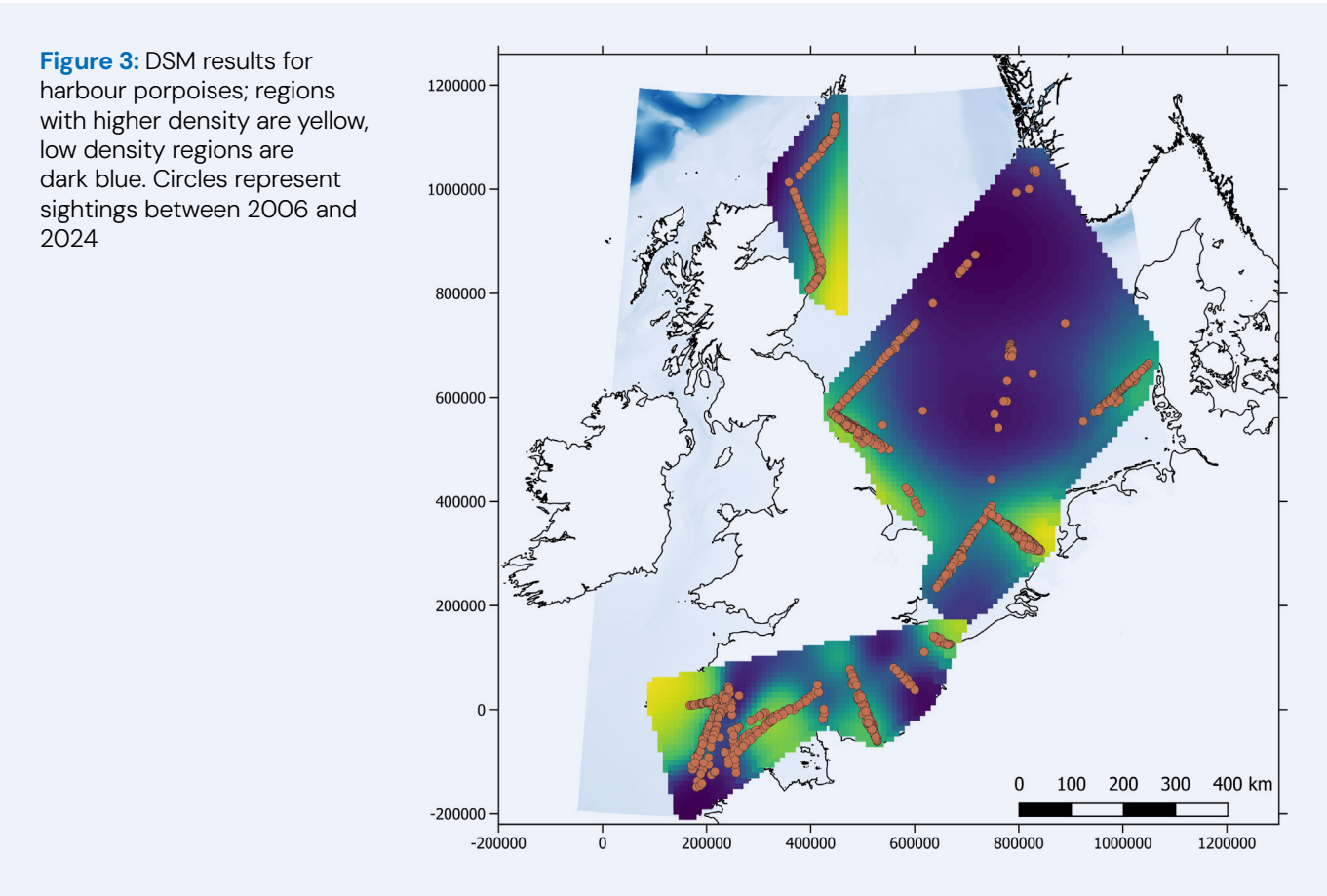
Harbour porpoise

From 2006 to 2024, harbour porpoises were most commonly seen in the North Sea, with an estimated population of 10,600 individuals. Smaller populations were found in the Northern Isles (1,187) and English Channel (569); **Table 6**.

REGION	ESTIMATED NUMBER (ABUNDANCE)	RANGE (95% CONFIDENCE LIMITS)	VARIATION (COEFFICIENT OF VARIATION)
English Channel	569	401 – 807	0.179
North Sea	10,622	7,935 – 14,218	0.149
Northern Isles	1,187	573 – 2,459	0.382

Table 6: Abundance estimates for harbour porpoise derived using DSM from sighting between 2006 and 2024

In the North Sea, the highest harbour porpoise densities were in the shallow regions of the southern North Sea, including the coasts of England, the Netherlands, and Denmark (Figure 3). This matches other studies, such as the routine SCANS surveys – large-scale ship and aerial surveys that take place approximately once a decade to determine the distribution and abundance of cetaceans in Northeast Atlantic waters (Hammond et al. 2017; Gilles et al. 2023).



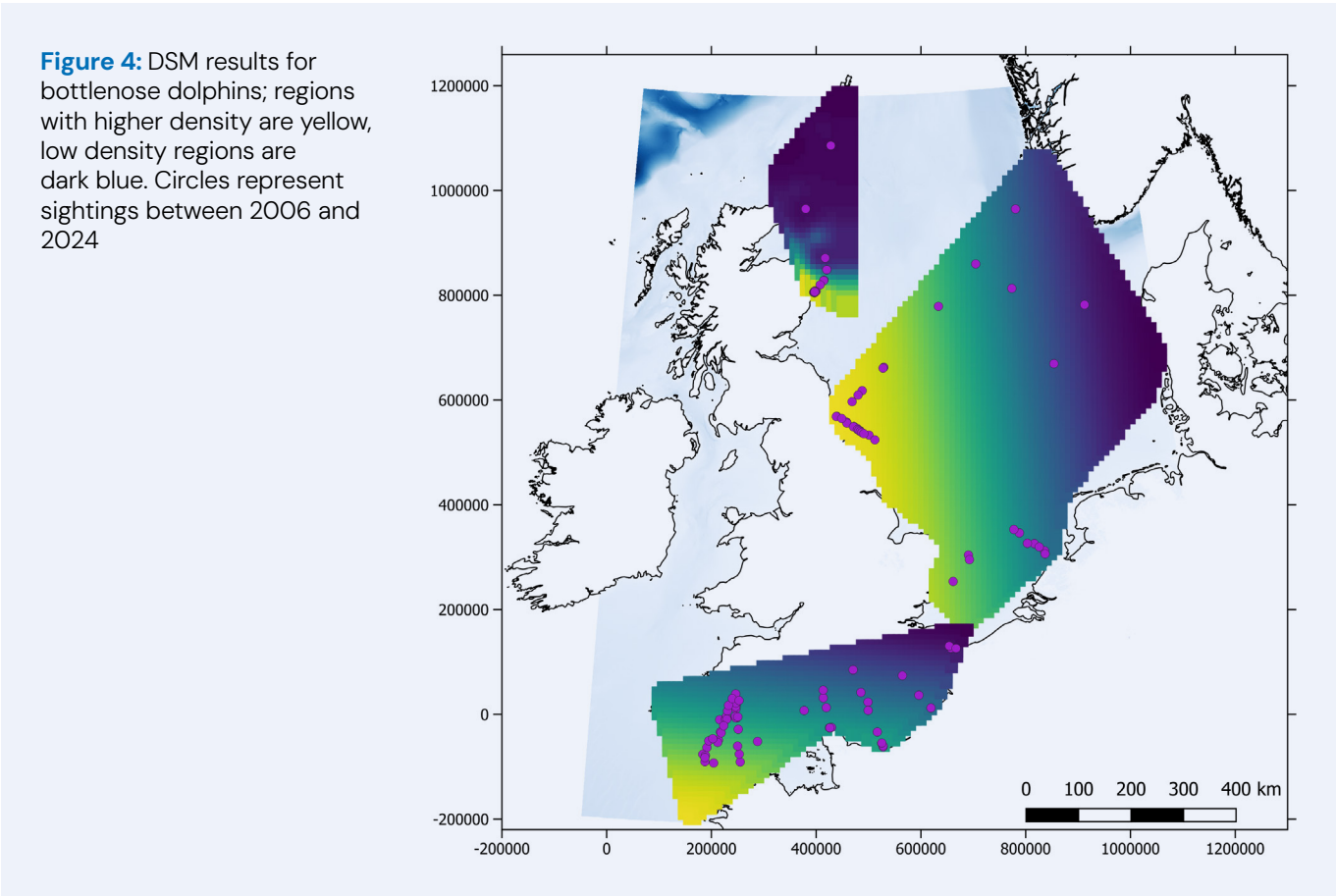
Since the early 2000s, a marked shift in harbour porpoise distribution became evident in the North Sea, with higher densities in northern areas in the 1990s shifting south in 2005 (Hammond et al. 2013). ORCA’s findings support this, though they do not capture the more recent rise in porpoises in the central North Sea (Gilles et al. 2023), likely due to fewer surveys in that area and thus the survey effort may have been too low to capture this recent development.

Bottlenose dolphin

Bottlenose dolphins were most commonly seen along the UK coastline in the North Sea and Northern Isles, with estimated density numbers of 1,213 and 1,044, respectively (Table 7 and Figure 4). These areas of elevated density are in line with those identified during the SCANS surveys (Hammond et al. 2013; Hammond et al. 2017; Gilles et al. 2023).

REGION	ESTIMATED NUMBER (ABUNDANCE)	RANGE (95% CONFIDENCE LIMITS)	VARIATION (COEFFICIENT OF VARIATION)
English Channel	390	205 – 743	0.334
North Sea	1,213	385 – 3,820	0.613
Northern Isles	1,044	306 – 3,561	0.661

Table 7: Abundance estimates for bottlenose dolphin derived using DSM from sighting between 2006 and 2024



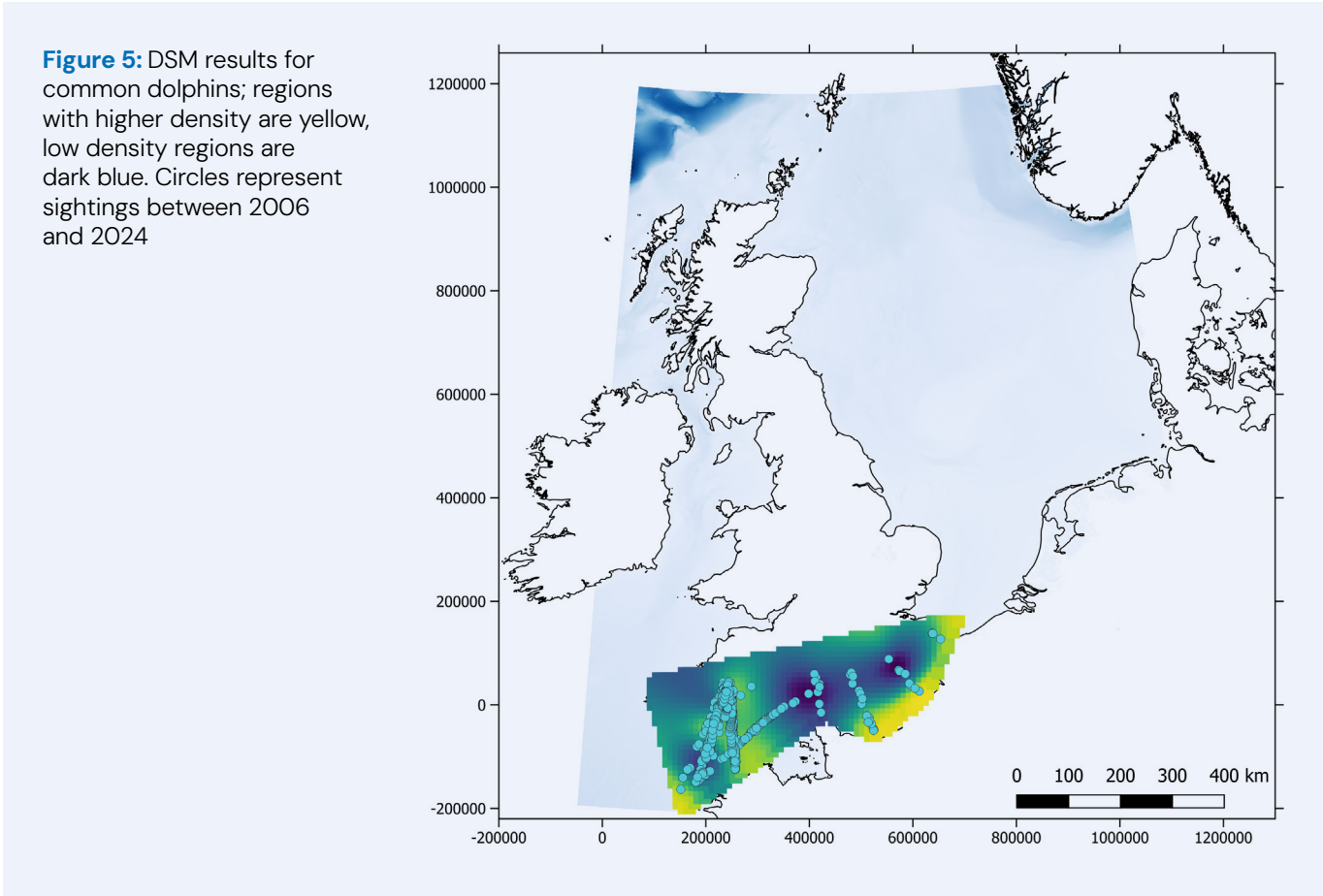
Common dolphin

Sightings of common dolphins in the Northern Isles and North Sea were too few to allow a robust estimation of abundance. However, in the English Channel, an estimate of 18,236 individuals was derived (Table 8). This number aligns well with a recent estimate of 18,406 dolphins from the SCANS-III surveys (Gilles et al. 2023).

REGION	ESTIMATED NUMBER (ABUNDANCE)	RANGE (95% CONFIDENCE LIMITS)	VARIATION (COEFFICIENT OF VARIATION)
English Channel	18,236	12,903 – 25,774	0.177

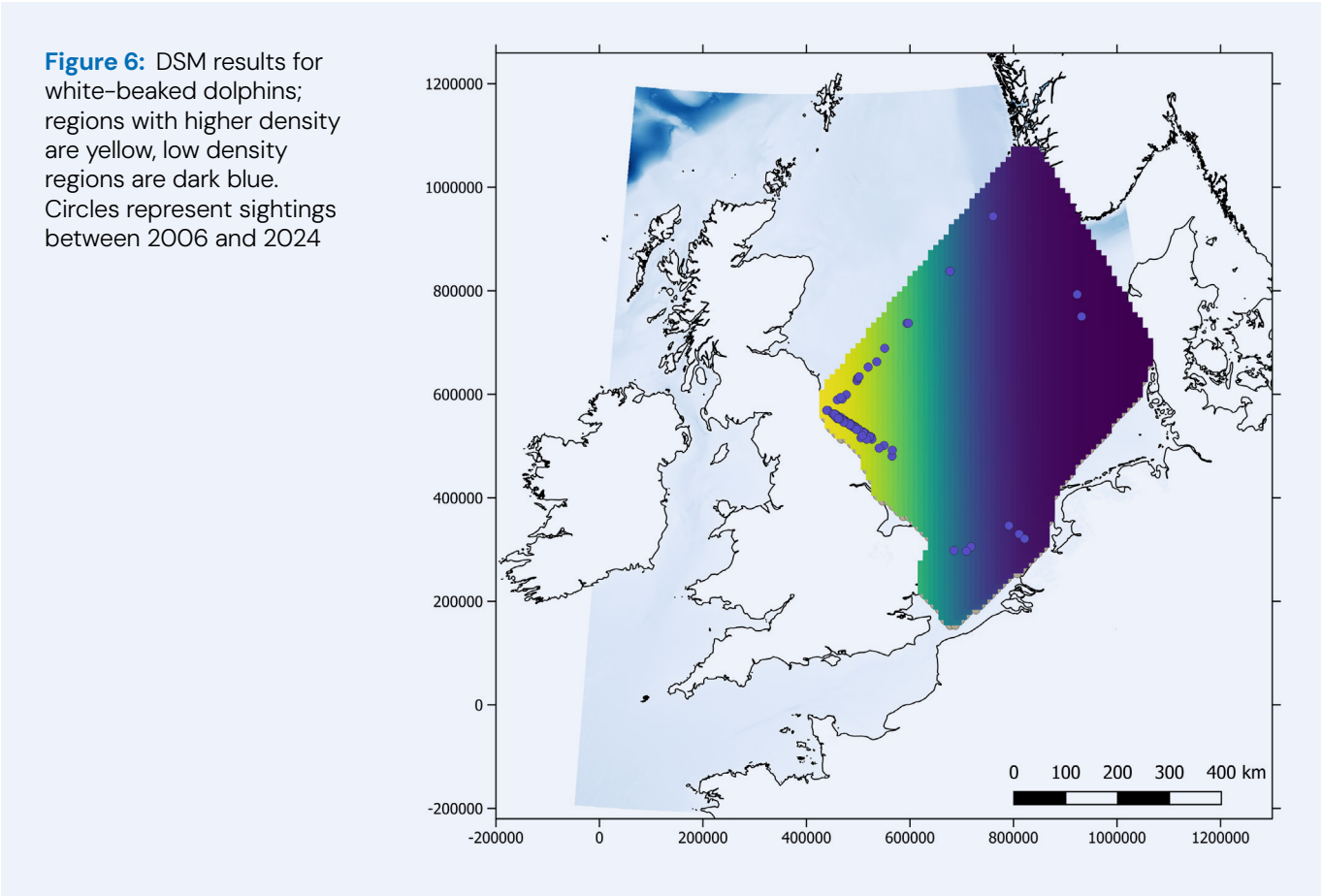
Table 8: Abundance estimates for common dolphin derived using DSM from sighting between 2006 and 2024

Common dolphin distribution appeared patchy in the English Channel (Figure 5), with highest densities estimated along the French coast – especially in the western Channel. ORCA surveys have recorded more common dolphin sightings in the eastern Channel when compared with SCANS-III, where very few sightings were made east of Exmouth/Cherbourg (Gilles et al. 2023). Further investigation of the ORCA data is required to determine how common dolphin distribution has changed in the English Channel over time, particularly with regards to the SCANS surveys which seem to document an eastward shift in distribution from the North Atlantic and/or the Bay of Biscay to the English Channel.



White-beaked dolphin

White-beaked dolphins were only recorded often enough to estimate density in the North Sea, and sightings were almost exclusively in the northwest part (Figure 6). An estimation of 2,278 dolphins in this region was derived (Table 9).



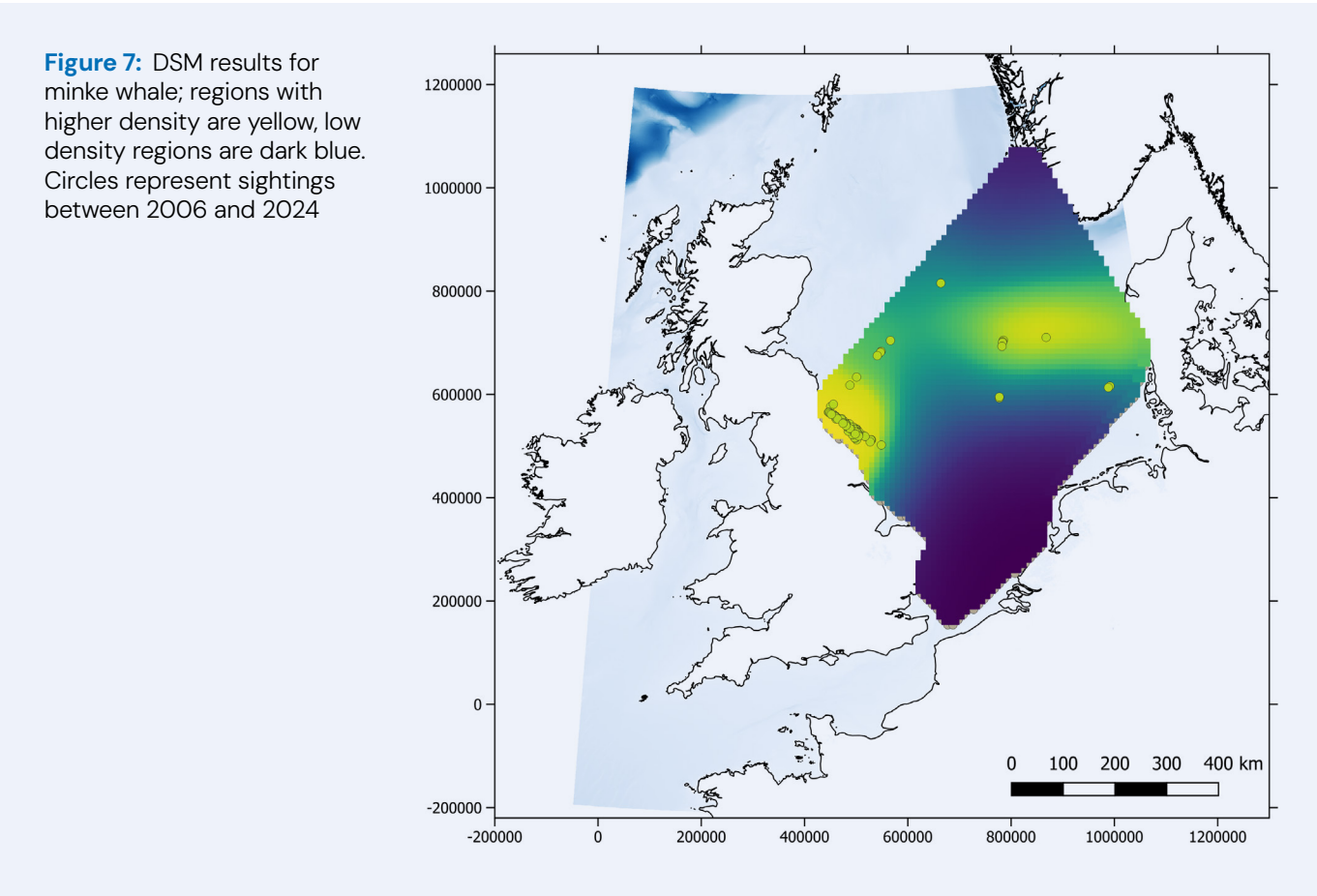
REGION	ESTIMATED NUMBER (ABUNDANCE)	RANGE (95% CONFIDENCE LIMITS)	VARIATION (COEFFICIENT OF VARIATION)
North Sea	2,278	1,152 – 4,506	0.354

Table 9: Abundance estimates for white-beaked dolphin derived using DSM from sighting between 2006 and 2024

The clustering of sightings in the northwest region of the North Sea is also reported in other surveys, such as SCANS (Hammond et al. 2013; Hammond et al. 2017; Gilles et al. 2023). However, the most recent estimate from SCANS suggests the number is higher (5,006 dolphins; Gilles et al. 2023), although once the ORCA estimates are corrected for missed animals, the results are likely to be very similar.

Minke whale

Minke whale sightings were mainly in the central western North Sea (**Figure 7**), where 251 individuals were estimated (**Table 10**). Other regions did not contain enough sightings for density estimations to be made.



REGION	ESTIMATED NUMBER (ABUNDANCE)	RANGE (95% CONFIDENCE LIMITS)	VARIATION (COEFFICIENT OF VARIATION)
North Sea	251	131 – 481	0.335

Table 10: Abundance estimates for minke whale derived using DSM from sighting between 2006 and 2024

Other surveys suggest the minke whale population could be larger within this region, with an equivalent estimate from the most recent SCANS survey being 2,111 individuals (Gilles et al. 2023). However, the confidence of that estimate was quite low, and the estimate from the ORCA data falls within the lower end of that range (238 whales).

Conclusion

This early analysis shows the strength of ORCA’s long-term cetacean sightings dataset in informing cetacean conservation.

However, current models only include one environmental covariate, water depth. Future analyses will therefore incorporate more comprehensive environmental information into the DSM process, providing more meaningful results. As this is a preliminary analysis, the full dataset was used without separating it by year, meaning it does not yet account for year-to-year changes in where animals are found. This is particularly relevant for those species, such as the harbour porpoise, that have shown considerable shifts in distribution over time. In addition,

the analysis presented here does not correct for the probability of missing animals. This means the numbers shown are likely to underestimate actual densities because some animals may have been underwater or out of view during surveys.

Despite these initial shortcomings, the analyses presented here demonstrate the power of the ORCA dataset for determining cetacean trends and patterns in distribution. Therefore, as more environmental data is added and year-by-year changes are considered, future results will offer even clearer insights into how these species are distributed and how their numbers may be changing over time.



Minke whale

Stopping Ships Colliding with Whales

Vessel strike, where whales get hit by ships, is one of the greatest threats facing large whales today.

A recent study (Nisi et al. 2024) has shown that it would only need to protect 2.5% of the world's oceans to save 90% of the large whales from vessel strike.

Anywhere vessels and cetaceans coincide there is a risk of collision. The only effective measures are to avoid critical habitats and reduce vessel speeds. With global shipping trade set to triple by 2050 (International Transport Forum, 2019), vessel strike risk will only increase. Cetacean distributions are not predictable enough to allow re-routing and vessel strike today remains the largest mortality threat for large whales worldwide.

The only scientifically proven measure to effectively reduce vessel strike risk are slower speeds. For economic reasons blanket slowdowns over large areas are the least viable option for the shipping industry. Their preference is real-time cetacean detection using onboard technology, but this technology remains unproven and may only work in certain regions or scenarios. The fundamental question still remains: can large vessels slow down quickly enough once an animal is detected ahead.

This question today still remains largely unanswered. There needs to be a rebalancing where resources are reallocated away from technology detection until there is a better understanding of the behaviour of the whale during a close encounter.

Our following two behaviour research projects are trying in part to address this knowledge gap:

- 1) Analysing whale and ship interactions in Alaska where scientists are tracking humpback whales coming in from the horizon towards the vessel and calculating the closest point of approach (CPA). Any manoeuvres made by the whales or vessels are recorded
- 2) Recording fine scale behaviour of fin whales from the bridge of a large ferry using a 2-tiered camera system inside the bridge as well as external cameras under the bridge wings

We have research scientists working on the bridge of cruise ships in Alaska looking at how whales and ships interact during a close encounter and fine scale behaviour of fin whales in the Bay Biscay as they track towards the vessel.

As outlined above, ultimately the best way to stop vessel strike is to keep whales and ships apart. Our work in the Southern Ocean with the British Antarctic Survey and HX is doing just that. Identifying high density areas of large whales to create geofenced areas to ensure the cruise sector limits disturbance in this incredible and important feeding ground.

Small adjustments to itineraries can also have a significant impact on reducing vessel strike risk. The shipping company MSC agreeing to reroute around the Hellenic



Fin whale

“Anywhere vessels and cetaceans coincide there is a risk of collision – one of the greatest threats facing large whales today.”

Trench in the Mediterranean Sea, an incredibly important hotspot for sperm whales, is just one example of this. Therefore, another important aspect of vessel strike mitigation is the training of bridge crews and itinerary planners, building awareness around known whale hotspots and encouraging voluntary adjustments to the itinerary to avoid the most critical hotspots.

To date we have worked with numerous shipping companies and trained over a thousand individual crew members who collectively travel the expanse of the globe from the polar regions, Indian Ocean across the Atlantic and Pacific Oceans and into the Mediterranean Sea. Crew training is a vital component of reducing the risk of vessel strike, with engagement and compliance with both voluntary and mandatory vessel strike mitigation

measures often heavily reliant on seafarer engagement. Educating crew about the importance and impact of these measures is an essential part of protecting whales from vessel strike.

The following companies have undergone ORCA vessel strike mitigation training either using our online e-learning platform and/or receiving face-to-face training with an ORCA vessel strike expert.

Over a thousand crew members from 12 shipping companies have undergone our ORCA vessel strike training programme (Table 11), with several companies incorporating our training within their own internal training system, resulting in even more bridge crew trained in high volumes.

SHIPPING COMPANY	NUMBER OF CREW TRAINED	OCEAN REGION OF FOCUS IN THE TRAINING
Brittany Ferries	60	Northeast Atlantic Ocean
Columbia Cruise Services	12	Worldwide coverage
Disney Cruise Line	207	Worldwide coverage
Hapag-Lloyd Cruises	30	Arctic and Southern Oceans
HX Cruises Ltd	45	Worldwide coverage
Just Be Maritime (cadet training)	9	Worldwide coverage
MSC Cruises	693	Worldwide coverage
Precious Shipping	55	Indian Ocean
Quark Expeditions	17	Arctic and Southern Oceans
SeaKeepers	70	Worldwide coverage
Villa Vie Residences	19	Worldwide coverage
Virgin Voyages	32	Worldwide coverage

Table 11: Summary of ORCA’s vessel strike training statistics per shipping company

In addition to our global vessel strike training programme, we have been working with the Association of Arctic Expedition Cruise Operators (AECO) to develop a tailored polar vessel strike mitigation course for all cruise vessels operating in polar waters. The content of the course focuses on the Arctic and Antarctic and how to respond when whales and vessels overlap in high densities. With the importance of polar regions for large whales, it is essential that crew are extra vigilant of the risk of collision, and with cruise companies making up the bulk of vessel traffic in these regions, engaging with operators in this region is an important step in keeping these remote areas safe for large whales that rely on them. This training is primarily aimed at the bridge crews and expedition staff on board expedition ships exploring the high Arctic and

Antarctica. To date, 76 crew members from various cruise companies have completed the polar vessel strike training.

ORCA’s vessel strike training not only teaches officers about how they can contribute to vessel strike mitigation in critical hotspots, but it can also inspire them to take further action. Officers will regularly continue their conservation journey by completing ORCA’s OceanWatchers training so that they can take an active part in monitoring cetaceans globally. The data they collect forms part of a feedback loop which then informs future versions of our vessel strike mitigation training, allowing seafarers to contribute towards refining our knowledge of cetaceans and helping to build a clearer picture of where shipping and whale habitats overlap.



Humpback whale

Thank you

An overwhelming gratitude of thanks goes to every one of our members and supporters for all their time, support and joy they have given us over many years.

The Ocean Conservationists, the office support, without whose enthusiasm and dedication to the cause, ORCA could not function. The IT wizardry of the app and the data portal team: John Van Breda of Biodiverse IT, Karolis Kazlauskis and Villius Stankaitis of Flumens seeing sightings records magically appearing in the Portsmouth office from the bottom of the world still blows our mind.

Russell Leaper and Dr Jonathan Gordon for all their scientific expertise and guidance, gently nudging us in the right direction on how to study whale behaviour in the presence of large vessels. Dr Oliver Boisseau and Richard McInaghghan from Marine Conservation Research for their analytical and GPS super powers.

However, the biggest shoutout goes to our incredible network of over 700 volunteer Marine Mammal Surveyors, who practically run the UK offshore monitoring programme. Each one of you has played a role in this vital monitoring work, which can only take place thanks to your contribution – whether in the past, present or future.

We must also not forget one of our most treasured and longstanding ferry partnerships – Brittany Ferries who not only allow us on board across their fleet of ships but provide us with invaluable donated office space – Thank you.

Lastly we would also like to extend our thanks to the ORCA patrons Mark Carwardine, Chris Packham, Nigel Marvin and Lizzie Daly for all their continued support.



Cuvier's beaked whales

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*active in 2024

Corporate members

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Mark Carwardine

"If we can't look after animals as awe-inspiring, enigmatic and downright remarkable as cetaceans, what can we do?"

Mark Carwardine

ORCA patron, zoologist, conservationist



Orca

