

National Whale and Dolphin Watch 2018



28th July - 5th August

Facts and Figures



-  1328 hours of observation
-  1626 sightings reported
-  7924 individual animals
-  13 different species

-  131 land watch sites
-  61 vessels
-  UK sightings rate of 1.22 animals per hour of watching!

Memorable sightings include... humpback whales in Yorkshire and Aberdeenshire, striped dolphins live stranding in South Wales, Sowerby's beaked whale in East Lothian, fin whales in Northeast Scotland and Outer Hebrides, and large pods of short-beaked common dolphins off Puffin Island and Menai Bridge in North Wales.

Introduction

2018 marked the seventeenth year of Sea Watch Foundation's National Whale and Dolphin Watch event. Sea Watch Foundation has monitored whales, dolphins and porpoises in British waters for over forty years with the help of volunteer observers all around the country. For the past 16 years this has been spearheaded through an annual national recording event, the National Whale and Dolphin Watch (NWDW), which marks the long-lasting collaboration between citizen scientists, wildlife enthusiasts, the general public, and researchers alike.

The aim of the survey has been to obtain a snapshot picture of the status and distribution of some of the species of cetaceans (whales, dolphins and porpoises) recorded in UK waters through systematic watches from both land and sea, and casual watches, whilst also raising public awareness of the wealth of marine mammals we have around our coasts.

The use of 'non-scientific members' of the general public or 'non-specialist volunteers' to collect data on cetaceans to investigate their status, distribution, abundance and wellbeing has been pioneered in the UK by the Director of Sea Watch Foundation. This organisation, dedicated to marine research, conservation and education, established a nationwide citizen science project in the 1970s by creating a network of voluntary observers who report sightings of cetaceans from all around the UK, and whose help is vital to improve our knowledge of the health of the marine environment and its inhabitants. Sea Watch Foundation encourages observations and recording throughout the year, but it is during the NWDW event that everyone is given a unique opportunity to collect a large amount of scientifically valuable data over a concentrated time period, and to learn from each other at publicised sites.





A selection of photographs from this year's event: (left to right, top to bottom): Bottlenose dolphins off Berwick-upon-Tweed, ©Amber Thomas /SWF. A Sea Watch Intern looking out for dolphins off New Quay wall, ©SWF. Bow-riding mother and calf short-beaked common dolphin off Newquay, Cornwall, ©Peter Hazlehurst. Sea Watch Interns conducting a land watch from New Quay harbour, Wales, ©SWF. Harbour porpoises leaping out of the water at Berry Head, ©Graham Collins. White-beaked dolphins photographed off North Blyth, ©Martin Kitching. Students from the University of Hull conducting a land watch from Filey Brigg, ©University of Hull. Rhiannon Nicholson, Sea Watch's National Whale and Dolphin Watch Assistant and other Research Interns from period 3 conducting activities at New Quay Harbour, ©Lorna Scott. Front Cover image: ©Karen Dean.

NWDW 2018 revealed striking biodiversity with an impressive thirteen species of cetaceans seen around the British Isles, a number which was only been recorded once before. The

total number of sightings collected was larger than last year, and the highest reported so far.

This year's NWDW marks also the great collaborations with sixteen different conservation and recording organisations, including ORCA, MARINELife, Whale and Dolphin Conservation (WDC), and Hebridean Whale and Dolphin Trust (HWDT), which have contributed data collected from boats (inshore and offshore) and from land stations in different parts of the UK.



Volunteer Sea-watchers at Eyemouth Fort on August 5th.
Photo credit: Eyemouth Voluntary Marine Reserve



Volunteer Sea-watchers looking out into Wembury Bay on August 4th.
Photo credit: Wembury Marine Centre

Results

Effort

During the 2018 NWDW, 358 volunteer observers all over the UK spent a total of 1,328 hours collecting effort-related data (including information on environmental parameters collected at regular intervals throughout each watch) stationed at 131 land watch sites and on 61 vessels around the British Isles (Fig.1). An additional 163 observers reported casual sightings both from land and at sea. A further 1,186 unnamed individuals were recorded attending the NWDW event, whilst many more people in reality may well have attended but not been counted.

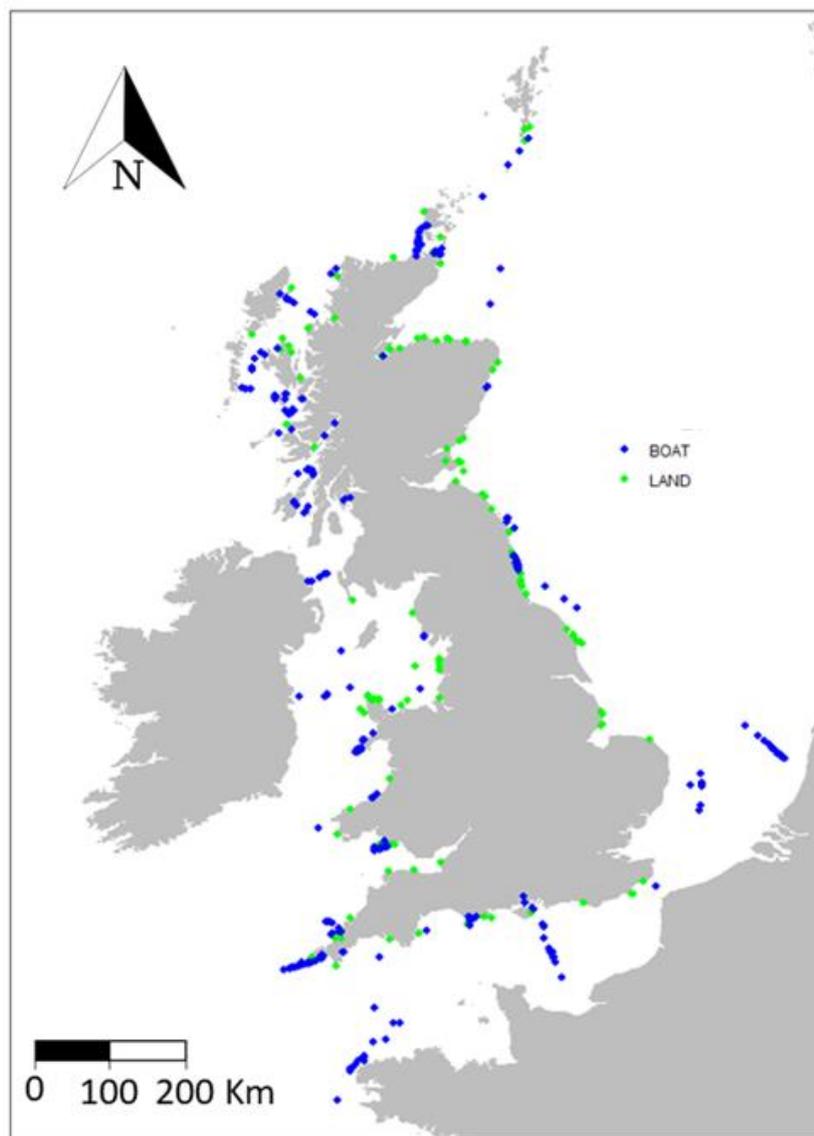


Figure 1. Watch locations for NWDW 2018 (n=192). Blue are locations of boat watches, green of land watches

The 2018 event totalled 1,328 hours of watches conducted, over 100 hours more than in 2016. Over forty-three percent of the total amount of hours spent collecting effort-related data came from land-based locations. Around 370 hours were spent conducting offshore boat trips by volunteers during ORCA’s Ocean Watch event which was arranged to coincide with the NWDW. Dolphin Spotting Boat Trips, a Recommended Boat Operator based in New Quay, spent a total of 66 hours conducting commercial dolphin watching tours, while HWDT, a regional charity operating in the Inner and Outer Hebrides spent 64 hours of effort time conducting boat trips.

With regards to the amount of effort hours spent collecting data in each region around the country, this varied widely, and was strongly linked to observer numbers, the presence of a regional coordinator as well as links with other organisations, which together produced the highest levels of effort data collection (Fig 2.).

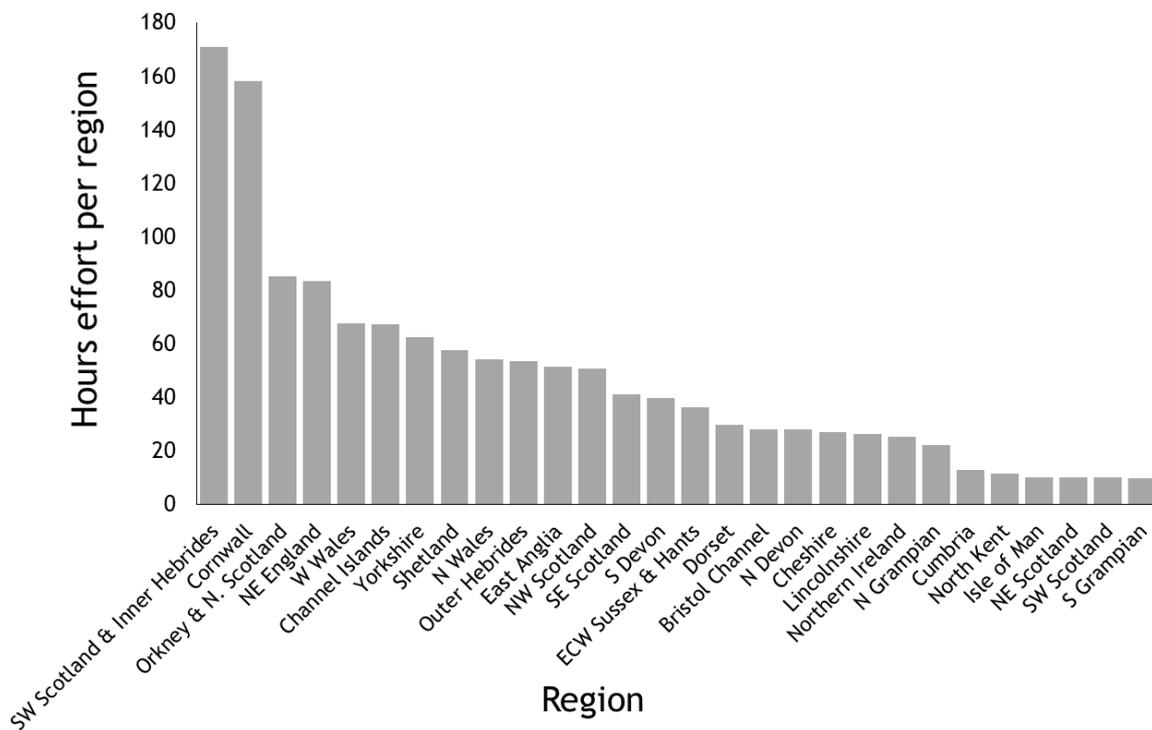


Figure 2. Number of hours of effort-related data collected by region

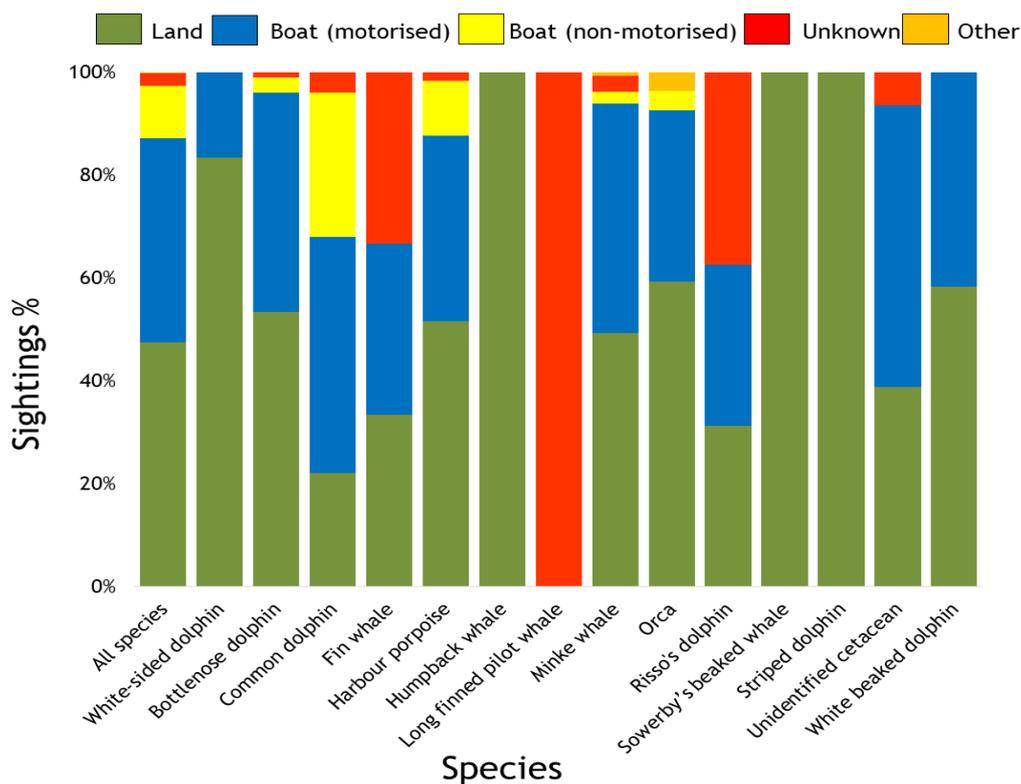


Figure 3. Proportion of sightings per species reported from land, boats (motorised and non-motorised), other (e.g. helicopter, and rig) and unknown platforms

Forty-seven percent of all sightings was recorded from the land during the 2018 event. The type of platform from which whales and dolphins were sighted varied according to each species' distribution and habitat use (Fig.3). Species such as harbour porpoise, bottlenose dolphin, and minke whale have a widespread coastal distribution and, as the results show, most of their sightings were recorded from land. Short-beaked common dolphins, an ocean species known for their offshore distribution, were mainly sighted from motorised vessels. Striped dolphins, which were only recorded once were also sighted from a vessel. Atlantic white-sided dolphins were sighted six times, and, unusually, 83% of those times it was from land.

Weather

The ability to detect cetaceans and collect sightings information is strongly affected by several weather parameters such as sea state, glare, swell height and visibility. When the weather deteriorates due to strong winds and/or heavy rain, watches may even be cancelled altogether as conditions are no longer suitable to collect presence and absence data. Taking this into account, every year, NWDW is organized over a period of nine days to increase the chances of getting favourable weather conditions to conduct land and boat watches at different sites around the UK. This year, weather was changeable, with temperatures generally well above average. A summary of the weather conditions and daily sighting maps are provided in Appendices 1 and 2.



Volunteer Sea-Watchers dolphin watching off Newquay, Cornwall on August 3rd.
Photo credit: Newquay Seasafaris and Fishing

Sightings

1,626 sightings of cetaceans totalling 7,924 individual animals were reported during NWDW 2018 (Fig.4). This number of sightings is the highest ever recorded. Thirteen different cetacean species were recorded around the UK which has only one been recorded before.



Volunteer Sea-Watchers dolphin watching off Oxwich Bay, Wales, on August 4th.
Photo credit: Gower Coast Adventures

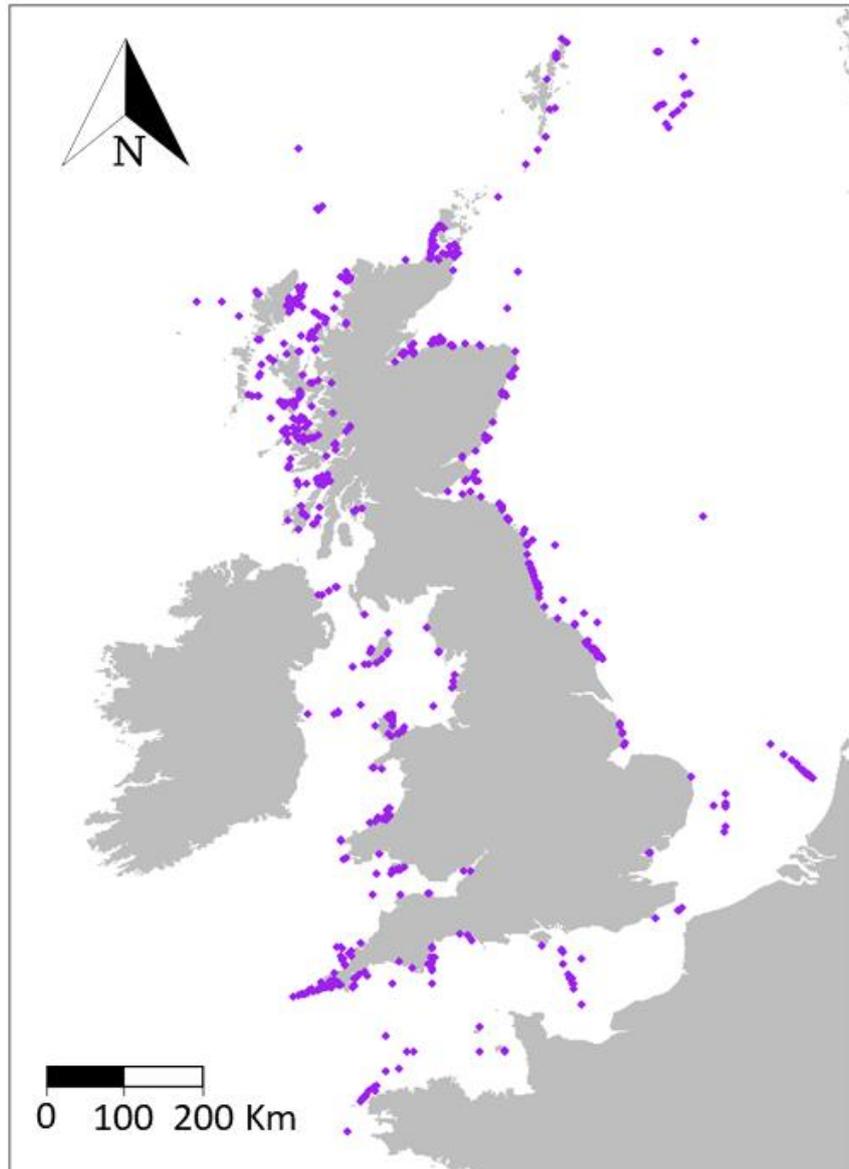


Figure 4. Sightings of cetaceans during NWDW 2018 (n=1626)

With regards to the distribution of cetacean sightings around the UK, this depends on various factors: the effort spent by each observer, the species distribution, and their sightability (how easily the animals can be detected). Scotland recorded the highest number of sightings (n=757, 46.6% of all the records), closely followed by England with 586 sightings (36.0% of total records), then Wales with 242 sightings (14.9% of total sightings records). Around the Channel Islands, observers reported 26 sightings (1.60% of the total), and there were nine reports from around the Isle of Man (0.55%). Six sightings were also recorded in Northern Ireland (0.4%).

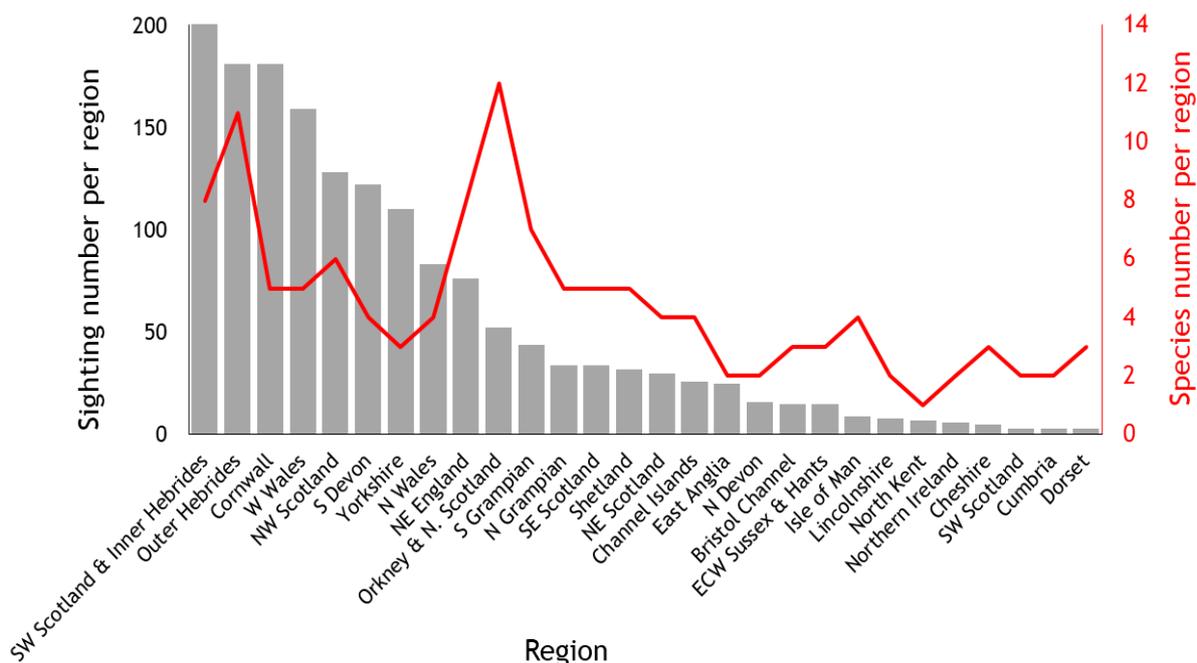


Figure 5. Number of sightings (casual and effort-related) and species per region during NWDW 2018

Southwest Scotland and Inner Hebrides (219 sightings), the Outer Hebrides and Cornwall (each n=181) were the regions which collected the highest number of sightings, closely followed by West Wales (159 sightings).

Orkney and the north of Scotland (n=12), recorded the highest number of species (n=8) in each region. The Outer Hebrides (n=11), Southwest Scotland and Inner Hebrides (n=8), and Northeast England (n=8) also recorded high species diversity. Cornwall, West Wales, Southeast Scotland, North Grampian, and Scotland recorded each a total of 5 species, showing a relatively high regional species diversity as well. North Kent had low species diversity (one species recorded).

The proportion of “casual” sightings (without associated effort data) and “effort-related” sightings has changed compared to last year, with a larger number of effort sightings being collected, which accounts this year for 66.6% of all sighting records reported during the event. The casual sightings account for 33.4%.

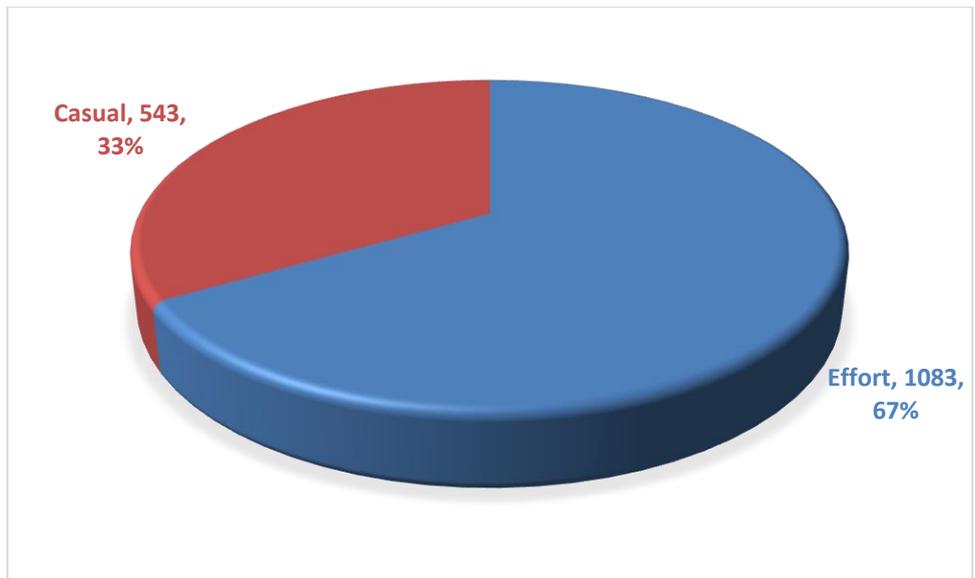


Figure 6. Proportion of effort related sightings (n=1083; 66.6%) and casual sightings (n=543; 33.4%) recorded during NWDW 2018

Figure 7 shows that South Grampian, Outer Hebrides, South Devon, Northeast and Northwest Scotland as well as West Wales are at the top of the list with sighting rates far superior to “2” (indicating an average of two or more cetaceans seen per hour of watching). Based on this year’s results, the UK’s national average sightings rate has increased compared to last year (2018 average sightings rate = 0.93) with over one cetacean seen for each hour of watching.

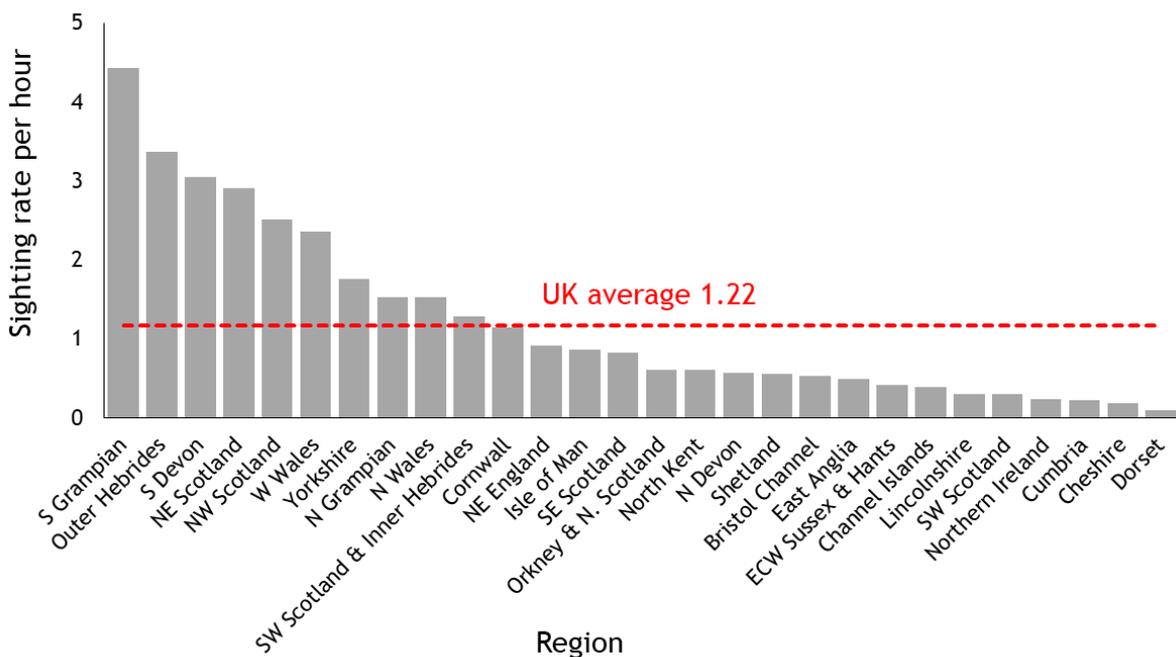


Figure 7. Sighting rates per region during NWDW 2018. The overall average UK sighting rate 1.12 sightings per hour

Harbour Porpoise



Harbour porpoises photographed off Point Lynas, Anglesey, on July 31st.
Photo credit: Ben Murcott

Harbour porpoises are the most commonly seen species in most parts of the UK, which was reflected by this year's NWDW results with sightings all around the British Isles. The species was recorded 795 times and made up almost half of all records for the event (48.9%). Figure 8 shows that sightings were distributed around the whole of the UK coastline and especially concentrated in Northeast Cornwall, the Inner and Outer Hebrides, North and West Wales. The size of groups of this species varied from a single individual to the largest aggregation of 30 animals which was seen at Lamorna, Cornwall (Table 1).

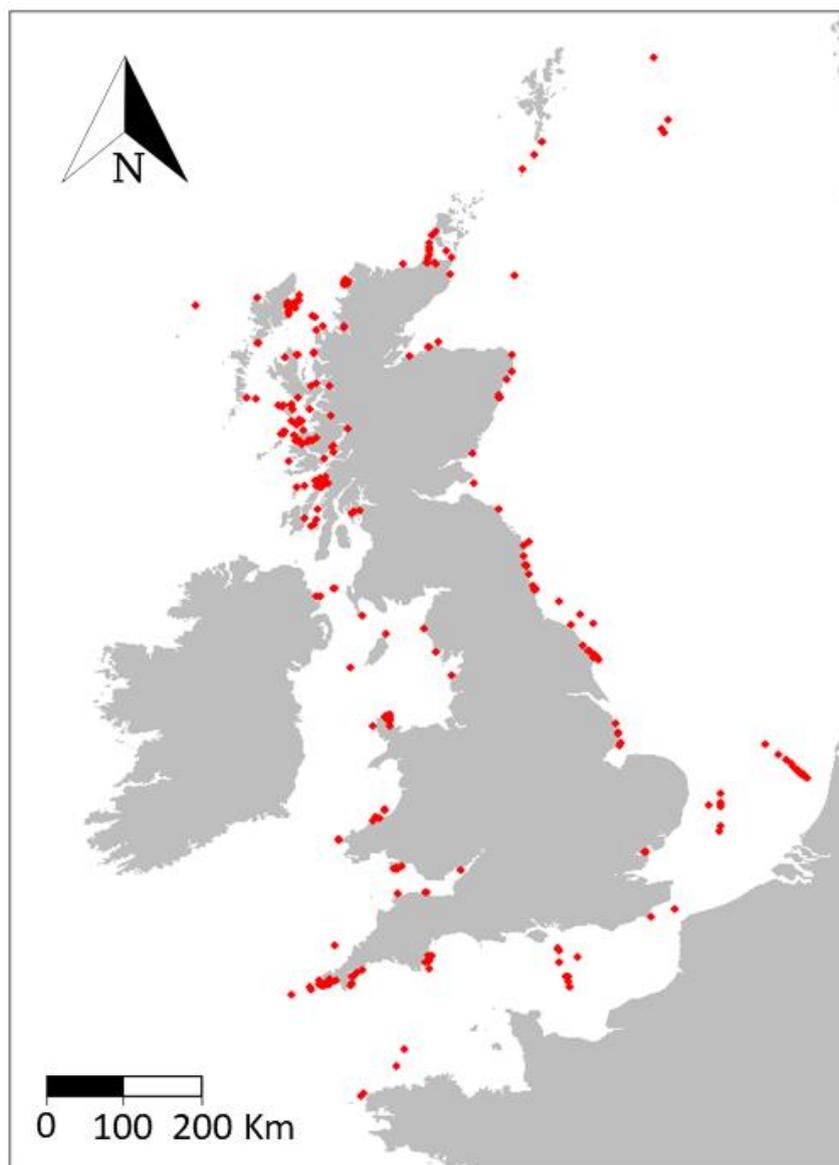


Figure 8. Sightings of harbour porpoise during NWDW 2018 (n=795; 48.9%)

Bottlenose dolphin

Bottlenose dolphins were the second most frequently reported species during NWDW, with 317 sightings (19.5%). Two large semi-resident populations of bottlenose dolphins occur in UK waters: one in Cardigan Bay, West Wales, and the other in the Moray Firth, Northeast Scotland. Dolphins from both these populations were recorded during the event, as shown in Figure 9. A total of 1,640 individual bottlenose dolphins were recorded during this year's event, although we cannot be sure that they were of different individuals since photo-ID images were not collected from all sightings. There is therefore the possibility that several individuals were spotted more than once. The largest group of 60 individuals was seen off Peel Castle, on the Isle of Man, an unusually high number for coastal sightings during summer months (Fig. 9, Table 1).



Bottlenose dolphins photographed off Berwick-upon-Tweed, Northumberland, on July 31st.
Photo credit: Amber Thomas



Bottlenose dolphins photographed off Falmouth, Cornwall, on August 5th.
Photo credit: David Matheson



Figure 9. Sightings of bottlenose dolphins during NWDW 2018 (n=317; 19.5%)

Short-beaked common dolphin



Short-beaked common dolphins photographed off Gerrans Bay, Cornwall, on August 3rd.
Photo credit: Rupert Kirkwood

Common dolphins were the third most abundant species recorded during the 2018 NWDW event, with 244 sightings being made, accounting for 15.0% of all records. The species showed a predominantly westerly distribution (Fig 10). The largest group (300) was recorded off Bexington, Dorset (Table 1).



Short-beaked common dolphins photographed off Newquay, Cornwall on August 3rd.
Photo credit: Newquay Seasafaris and Fishing

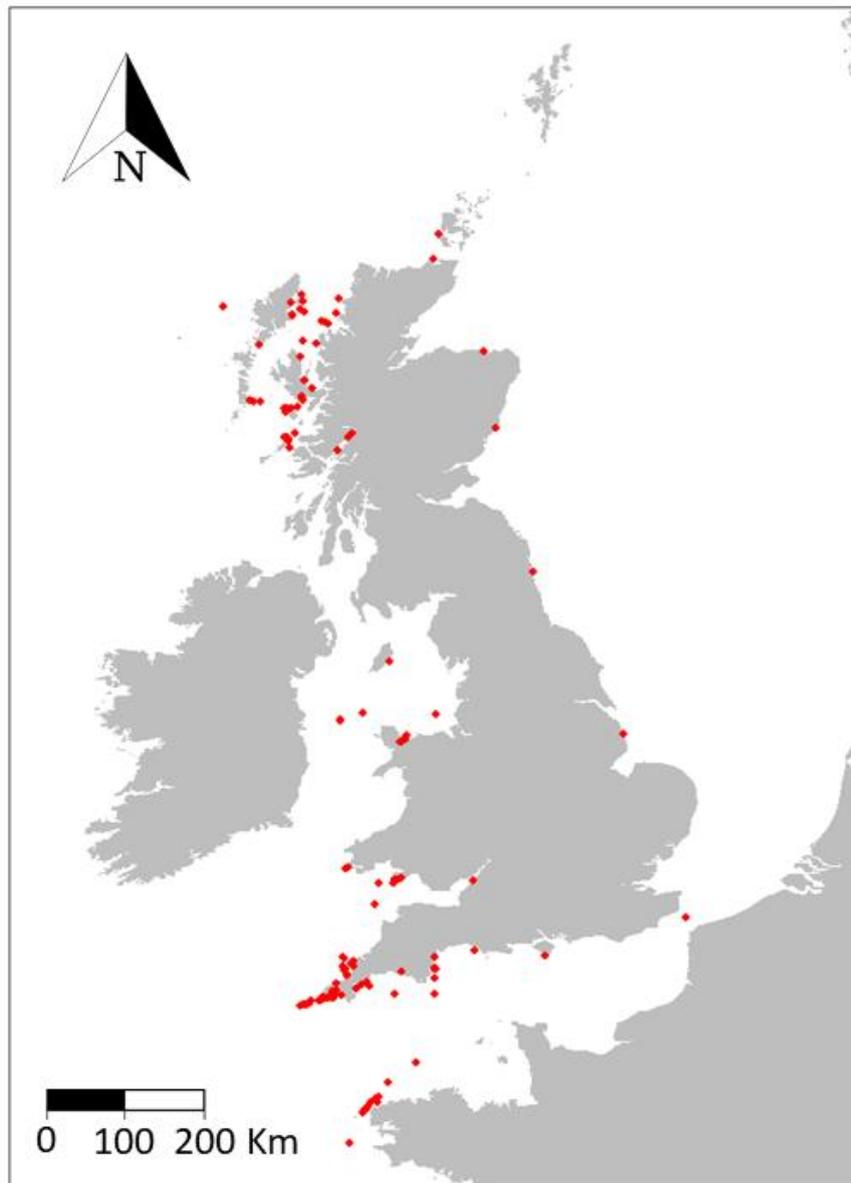


Figure 10. Sightings of short-beaked common dolphin during NWDW 2018 (n=244; 15.0%)

Minke whale

The minke whale was the most frequently reported whale species (n=144), accounting for 8.9% of all sightings. The species was mainly seen in the Outer Hebrides, but with several sightings also in the Inner Hebrides, Southeast Scotland, Yorkshire, and Northumberland (Fig. 11). The largest group of three minke whales was seen in Aberdeenshire and Northumberland (Table 1).



Common minke whale photographed off Penzance, Cornwall, on August 3rd.
Photo credit: Hannah Jones / Marine Discovery Penzance

Orca



Orcas photographed off Shetland, on July 29th. Photo credit: Hugh Harrop / Shetland Wildlife

Orcas were reported 27 times during the event, all in North Scotland, in the waters around Shetland, Orkney, and the Pentland Firth. The largest group consisted of nine animals in Shetland (Fig. 12; Table 1).



Figure 11. Sightings of minke whales during NWDW 2018 (n=144; 8.9%)



Figure 12. Sightings of orcas during NWDW 2018 (n=27; 1.66%)

White-beaked dolphin



White-beaked dolphins photographed off North Blyth, on August 3rd.
Photo credit: Martin Kitching / MARINELife.

White-beaked dolphins were reported 24 times (1.5% of total sighting reports) and were concentrated off Dorset, Northumberland, Caithness, and Orkney. The maximum observed group size for this species was 40 animals, seen off Scrabster, Caithness (Fig. 13, Table 1).



Figure 13. Sightings of white-beaked dolphins during NWDW 2018 (n=24; 1.5%)

Risso's dolphin

Risso's dolphins were recorded around the Isle of Man, Anglesey Orkney and Shetland. This species appeared 16 times (1.0% of all sightings). Group size varied from one animal to 40 seen off Peel Castle, Isle of Man (Fig. 14; Table 1).

Atlantic white-sided dolphin



Atlantic white-sided dolphins photographed off Lerwick, Shetland, on August 3rd.
Photo credit: Hugh Harrop / Shetland Wildlife

There were six records of Atlantic white-sided dolphins (0.4% of all records), with groups ranging from one individual sighted off Scremerston, Northumberland, to 200 individuals sighted off Dales Voe, Shetland (Fig. 14, Table 1).

Humpback whale



Humpback whale photographed at RSPB Bempton Cliffs reserve, Yorkshire, on July 30th.
Photo credit: Jo Symon

There were five humpback whale records (0.3% of all sightings), from Aberdeenshire, Yorkshire and the Isle of Lewis (Fig. 14, Table 1).

Other cetacean species

Striped dolphins made one appearance during the NWDW, off Carmarthenshire, with one animal live stranding at Pendine on July 31st (Fig. 14, Table 1). There were two sightings of long-finned pilot whales during the NWDW, accounting for 0.1% of the total number of sightings. Both sightings occurred in the Outer Hebrides, one of five animals off North Rona, and the other one of 30 individuals sighted off the Butt of Lewis (Fig. 14; Table 1). Three fin whale records were reported: in Caithness, Aberdeenshire, and from the Outer Hebrides. Finally, there were also 41 reports of unidentified cetaceans, including 110 individuals. These unidentified sightings reports were spread around the UK (Fig. 15, Table 1).

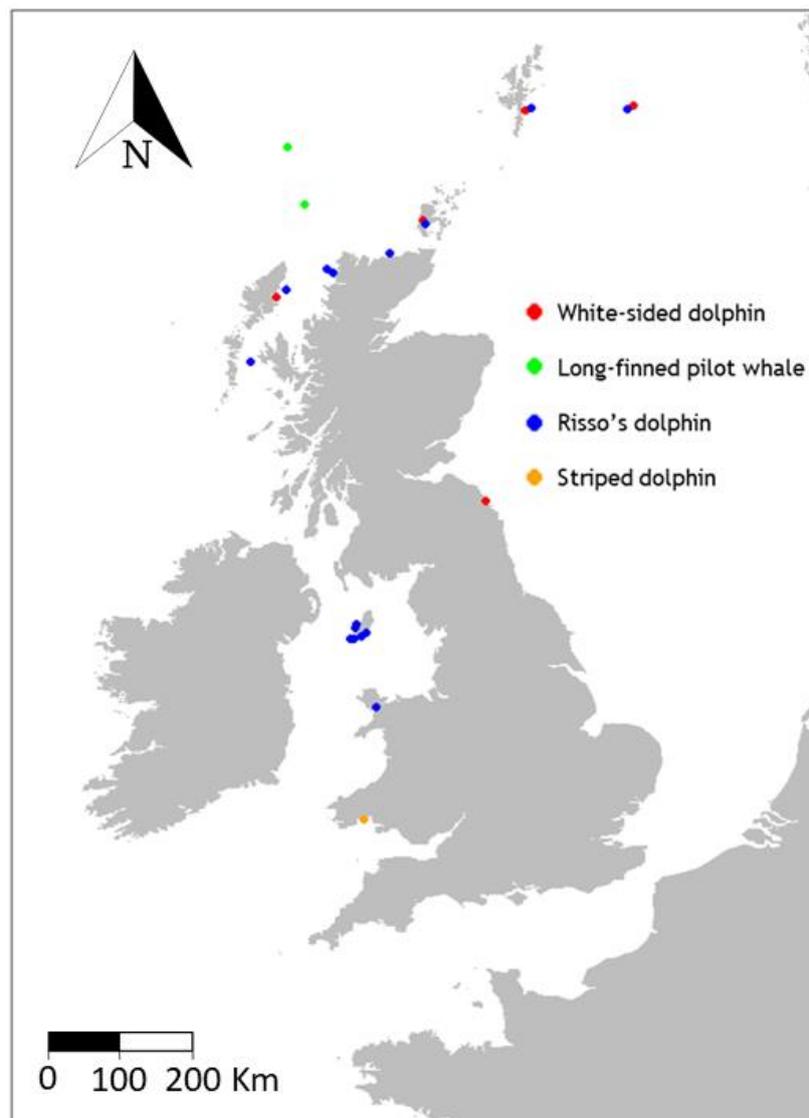


Figure 14. Distribution of white-sided dolphins (n=6; 0.4%), long-finned pilot whales, (n=2; 0.1%), Risso's dolphins (n=16; 1.0%), and striped dolphins (n=1; 0.1%) during NWDW 2018

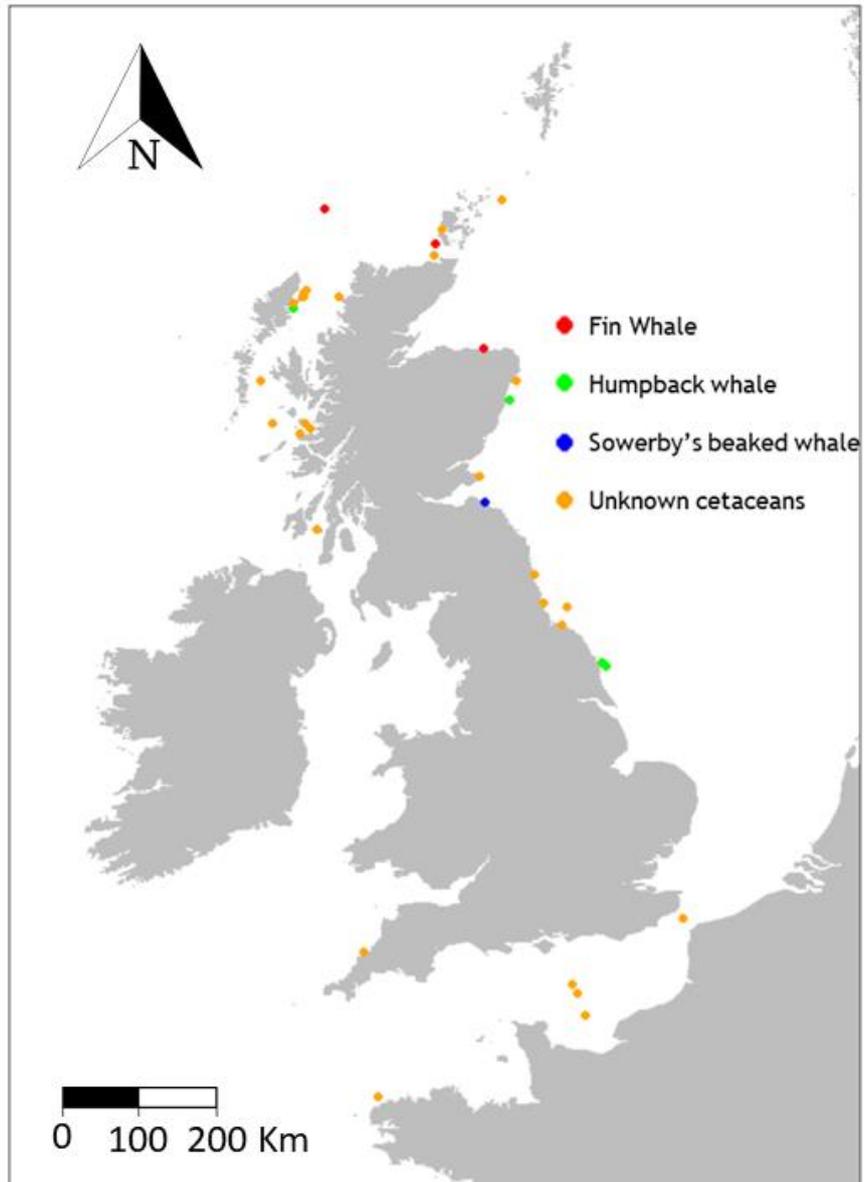


Figure 15. Distribution of fin whales (n=3; 0.2%), humpback whales (n=5; 0.3%), Sowerby's beaked whale (n=1; 0.1%), and unidentified cetaceans (n=41; 2.5%) during NWDW 2018

Table 1. Quantitative description of sightings per species during NWDW 2018

| Species | No. of sightings | % | No. of individuals | % | Av. Group Size |
|------------------------------|------------------|------------|--------------------|------------|----------------|
| Atlantic white-sided dolphin | 6 | 0.37 | 190 | 2.40 | 31.67 |
| Bottlenose dolphin | 317 | 19.50 | 1640 | 20.70 | 5.17 |
| Fin whale | 3 | 0.18 | 3 | 0.04 | 1.00 |
| Harbour porpoise | 795 | 48.89 | 2398 | 30.26 | 5.95 |
| Humpback whale | 5 | 0.31 | 6 | 0.08 | 1.2 |
| Long-finned pilot whale | 2 | 0.12 | 35 | 0.44 | 17.50 |
| Minke whale | 144 | 8.86 | 164 | 2.07 | 1.13 |
| Orca | 27 | 1.66 | 167 | 2.11 | 6.18 |
| Risso's dolphin | 16 | 0.98 | 152 | 1.92 | 9.50 |
| Short-beaked common dolphin | 244 | 15.01 | 2918 | 36.82 | 12.47 |
| Sowerby's beaked whale | 1 | 0.06 | 1 | 0.01 | 1.00 |
| Striped dolphin | 1 | 0.06 | 1 | 0.01 | 1.00 |
| White-beaked dolphin | 24 | 1.48 | 139 | 1.75 | 5.79 |
| Unidentified cetacean | 41 | 2.52 | 110 | 1.39 | 5.37 |
| Totals | 1626 | 100 | 7924 | 100 | 4.87 |

ACKNOWLEDGEMENTS

The Sea Watch Foundation staff would like to thank Rhiannon Nicholson, 2018 National Whale and Dolphin Watch Assistant, for her hard work, creativity and enthusiasm. They would also like to thank Lauren Fidler and Natasha Hunt for their dedication and commitment in organizing activities in New Quay during the NWDW event this year. Immense gratitude goes also to all volunteer observers who patiently spent their time collecting data from land and from the sea, and to the volunteer observers who are part of the Sea Watch Sightings Network and who report their sightings to the charity all year long. A special thanks is also due to all Regional Coordinators and Recommended Boat Operators who are the backbones of this event and who made it all possible. Thank you also to the following organizations that have greatly contributed to the success of this year's National Whale and Dolphin Watch: ORCA, HWDT, WDC, MARINELife, RSPB wardens at Marwick Head, Bempton cliffs and Mull of Galloway, and Wildlife Trust volunteers in Alderney, Cornwall Devon, Dorset, Cumbria, Yorkshire, Lincolnshire and Kent. Finally, thanks to all Cardigan Bay Monitoring volunteers and Work Experience students who helped making this event a great success.

APPENDIX 1.

General overview of the weather by country for the period of NWDW 2018 (*Met Office July-August Summaries - <https://www.metoffice.gov.uk/summaries/2018>*)

The weather was a little less settled in the second half of July compared to the first half, particularly in the north and west, but rainfall amounts remained small in many parts of the country until the last few days. The hottest spell of July was between the 23rd and 26th, followed by a thundery breakdown. The last few days were more changeable with rain at times and this ensured that while the month was dry overall, it was not exceptionally so. The provisional UK mean temperature was 17.3 °C, making this July the joint second warmest July in a series from 1910. The last few days of July saw much more unsettled weather for most areas.

The first week of August continued the warm and settled theme of the previous couple of months, especially in southern areas, but after that conditions were more unsettled and closer to the climatological average. The hottest spell of the month was between the 2nd and 7th. The provisional UK mean temperature was 15.3 °C, which is 0.3 °C above the 1981-2010 long-term average. Temperatures were generally highest relative to average in eastern counties of England, Rainfall was 95% of average, with a few places only having around half the average amount but parts of south-east England having over 150%. Sunshine was 90% of average, and it was broadly sunnier in eastern areas than further west, and Shetland had more than 150% of normal sunshine.

England

In July, on 28th the day was a much cooler and breezier with rain clearing northwards followed by sunshine and showers with some scattered thunderstorms, and Holne Priddons Farm (Devon) recorded 48.1 mm. Cloudy, wet and windy weather spread from the south-west on the 29th with gusts to 66 mph at Needles (Isle of Wight). The 30th had sunshine and showers for most, turning wet across the north and west from late afternoon, and the 31st was a mostly bright day with isolated showers after heavy rain and thunderstorms cleared the east Midlands, East Anglia and the south-east. In August, dry, warm or hot and predominantly sunny weather continued in the south, but it was less settled in the north at times. Some rain spread eastwards across the north late on the 1st and there was some patchy rain in parts of the north and west early on the 2nd. Rain, showers and thunderstorms spread eastwards across northern areas on the 3rd. Meanwhile it stayed mostly sunny and hot towards the south-east with a maximum of 33.2 °C, at Kew Gardens (London) on the 3rd. Dry, sunny and very warm weather spread to northern areas as well on the 4th and especially the 5th, while there was some mist and fog on south-western coasts on the 4th. East Malling (Kent) recorded 14.5 hours of sunshine on the 5th.

Wales

In July, it was windy with showers and longer spells of rain on 28th, and somewhat cooler than on recent days, with a high of only 14.5 °C at Lake Vyrnwy (Powys), 47.2 mm of rain at Tredegar (Gwent), and gusts of 68 mph at Aberdaron (Gwynedd). Cloudy but dry initially

on the 29th, turning wet from mid-morning, the rain persisting for most of the day. Rain in the west cleared away eastwards on the 30th followed by a brighter afternoon, and the 31st had a mix of sunshine and isolated showers. In August the weather was generally settled and warm during this period but with variable amounts of cloud. Isolated showers on the morning of the 1st died out leaving a bright and warm afternoon. The 2nd and 3rd were generally cloudy with some patchy rain, but the 4th and 5th were sunnier and were very warm in places; on the 5th 13.6 hours of sunshine was recorded at St Athan (Glamorgan), and there was a top temperature of 27.8 °C at Velindre (Powys).

Scotland

In July, the night of the 27th/28th was warm with Kinloss (Morayshire) not falling below 18.0 °C, and it was wet on the 28th, the rain heaviest and most persistent in the south. Sunshine and heavy blustery showers on the 29th, and winds gusted to 58 mph at Stornoway (Western Isles). Sunshine and showers again for the 30th, the showers heaviest in the west, and turning wet from the south from late afternoon. Cloudy and wet in the west on the 31st, drier and brighter in the east. The month of August had high pressure often close to the south and east. The 1st started dry and bright but cloud and heavy rain spread from the west to all parts, with 34.0 mm at Kirriereoch (Kirkcudbrightshire). Sunny and warm or very warm in the north and east on the 2nd, with a maximum temperature of 26.9°C, at Lossiemouth (Morayshire), cloudier to the south and west with rain, which became widespread and heavy during the afternoon, with 26.2 mm at Braemar (Aberdeenshire). Dull and misty in the south on the 3rd, with rain passing through from late morning, brighter with showers in the north. The 4th was generally cloudy with scattered showers. Morning rain cleared the south-east on the 5th, then rain moved into the west by noon and it turned very wet in the west and north by evening.

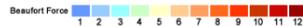
Northern Ireland

In July, there was a brief warm sunny interlude on the 25th and 26th, with temperatures into the mid-20s Celsius on both days, although the 26th had a few afternoon showers in the west. The rest of the month was somewhat more unsettled. The 27th was a cloudy and wet day, and the 28th was very windy with showers, longer spells of rain and some thunderstorms, giving 89.8 mm of rainfall at Aldergrove (County Antrim) and gusts to 49 mph recorded at Orlock Head (County Down.) The 29th and 30th were brighter, with relatively few showers on the 29th but some scattered heavy showers on the 30th. The 31st was dull and wet but became more showery during the afternoon. In August the weather was generally unsettled with south-westerly winds, but high pressure was often close by to the south-east. Rain spread to all parts by midday on the 1st, clearing away eastwards towards evening. It was generally cloudy between the 2nd and 4th, with another belt of rain spreading to all parts by mid-afternoon on the 2nd, and the 3rd had some patchy rain but the 4th was mostly dry. The 5th was a brighter day, but rain reached the far north in the evening. Some patchy light rain cleared on the 6th followed by sunshine and showers, and it was warm with a maximum of 24.4 °C, at Helens Bay (County Down).

APPENDIX 2 - Weather

General overview of the weather by day during the period of NWDW 2018 using pressure maps and SST maps from Magic Seaweed.

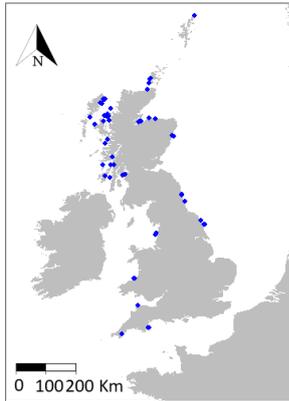
Key for Wind force maps:



Key of SST force maps:



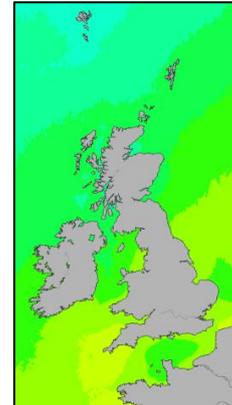
Saturday, 28th July



Cetacean sightings on day 1 of NWDW 2018 (28th July)

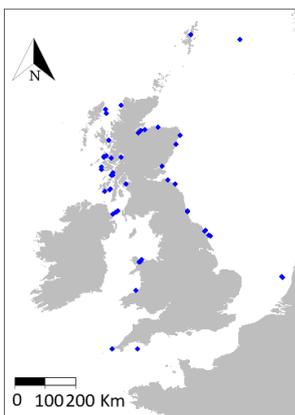


Wind map on day 1 of NWDW 2018 (28th July)

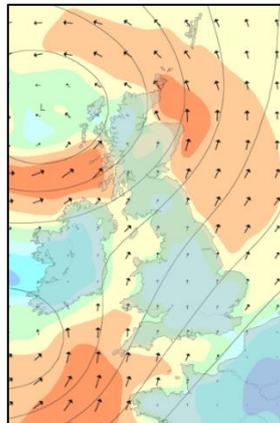


SST map on day 1 of NWDW 2018 (28th July)

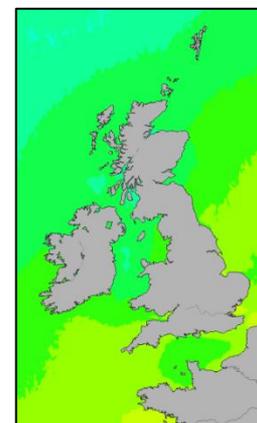
Sunday, 29th July



Cetacean sightings on day 2 of NWDW 2018 (29th July)

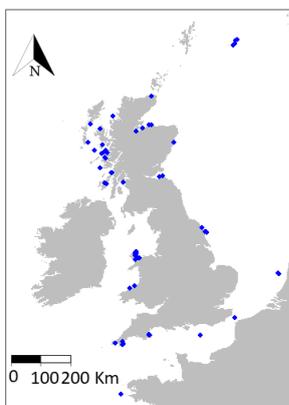


Wind map on day 2 of NWDW 2018 (29th July)



SST map on day 2 of NWDW 2018 (29th July)

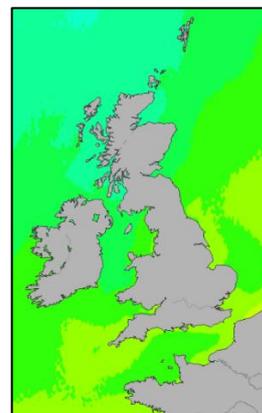
Monday, 30th July



Cetacean sightings on day 3 of NWDW 2018 (30th July)

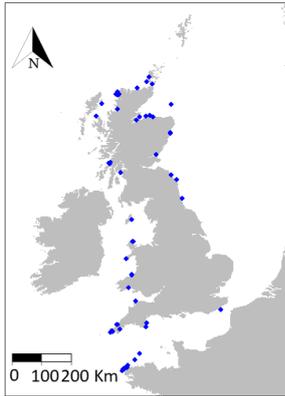


Wind map on day 3 of NWDW 2018 (30th July)

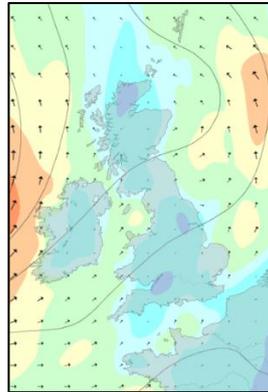


SST map on day 3 of NWDW 2018 (30th July)

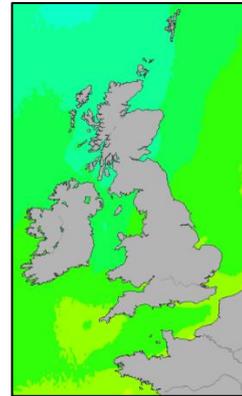
Tuesday, 31st July



Cetacean sightings on day 4 of NWDW 2018 (1st July)

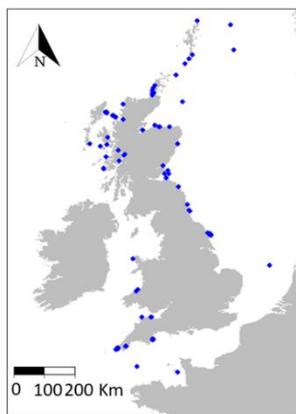


Wind map on day 4 of NWDW 2018 (1st July)

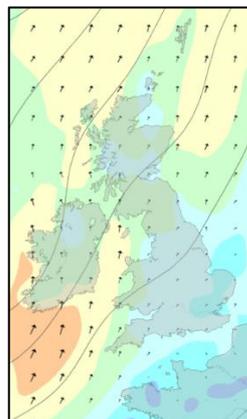


SST map on day 4 of NWDW 2018 (1st July)

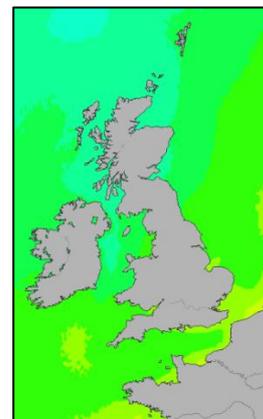
Wednesday, 1st August



Cetacean sightings on day 5 of NWDW 2018 (1st August)

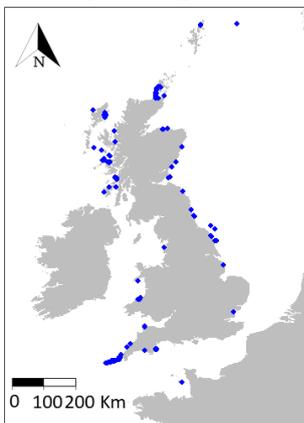


Wind map on day 5 of NWDW 2018 (1st August)

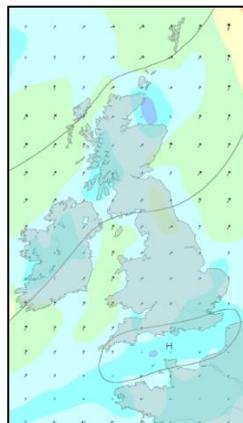


SST map on day 5 of NWDW 2018 (1st August)

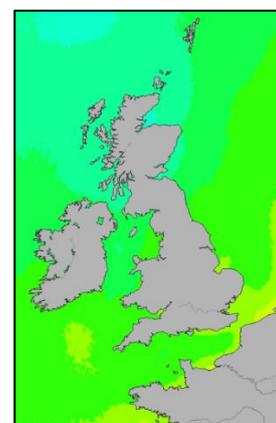
Thursday, 2nd August



Cetacean sightings on day 6 of NWDW 2018 (2nd August)

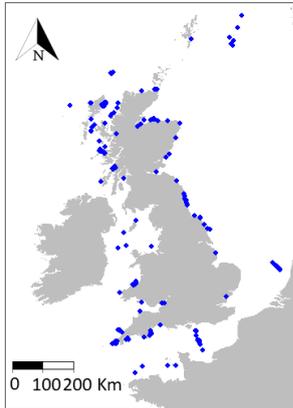


Wind map on day 6 of NWDW 2018 (2nd August)

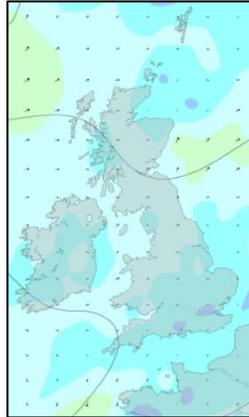


SST map on day 6 of NWDW 2018 (2nd August)

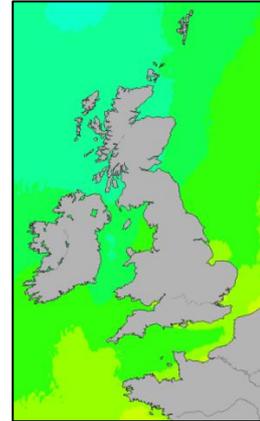
Friday, 3rd August



Cetacean sightings on day 7 of NWDW 2018 (3rd August)

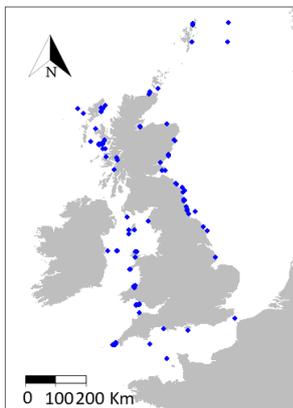


Wind map on day 7 of NWDW 2018 (3rd August)

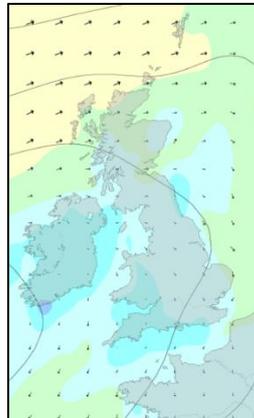


SST map on day 7 of NWDW 2018 (3rd August)

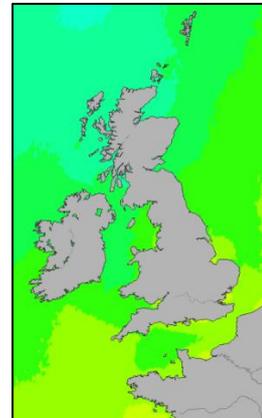
Saturday, 4th August



Cetacean sightings on day 8 of NWDW 2018 (4th August)

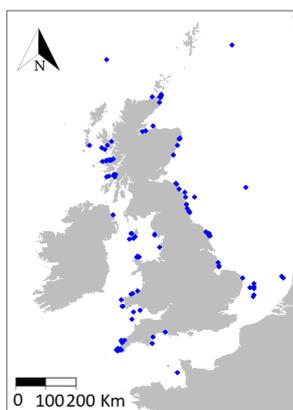


Wind map on day 8 of NWDW 2018 (4th August)

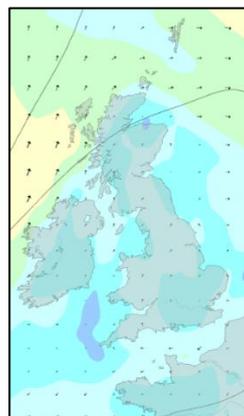


Satellite map on day 8 of NWDW 2018 (4th August)

Sunday, 5th August



Cetacean sightings on day 9 of NWDW 2018 (5th August)



Wind map on day 9 of NWDW 2018 (5th August)



Satellite map on day 9 of NWDW 2018 (5th August)