



Cornwall
Wildlife Trust



2023 Annual Report

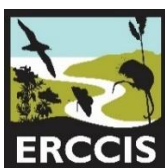
Marine Strandings in Cornwall and the Isles of Scilly

Report by
Cornwall Wildlife Trust
Marine Strandings Network

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Cornwall
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Recording
Mapping
Informing

2023 Annual Report: Marine Strandings in Cornwall and the Isles of Scilly



Photo 1: Pilot whale with Mount in the background, Marazion, 20th June 2023, Photo by Josh Symes

Executive Summary

2023 marked 20 years of the Marine Strandings Network being run within the Cornwall Wildlife Trust, although the network itself has been running since 1993.

Data on marine organisms that stranded on the shores of Cornwall in 2023 were collected by the Cornwall Wildlife Trust Marine Strandings Network (CWT MSN). All species were recorded in the strandings database held at the Environmental Records Centre for Cornwall and Isles of Scilly (ERCCIS). When possible, most cetaceans, seals, basking sharks and turtles were examined *in situ* and recorded in detail by trained volunteers of the Network.

A total of 234 cetaceans, 307 seals, 42 birds, 14 elasmobranchs and 5 turtles were reported to the network in 2023, and there was an additional 129 records for other marine species.

Of the 234 cetacean strandings were recorded in Cornwall during 2023, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings (66%, n= 155), followed by harbour porpoises (*Phocoena phocoena*) (10%, n=23) (Figure 1). Due to decomposition, 33 stranded cetaceans could not be identified to species level. We continue to see a marked difference between the number of common dolphin strandings and harbour porpoise strandings compared with the years before 2016 when the figures were proportionally more similar. Over the last eight years annual strandings have remained over 150 per year (\bar{x} =208), just over double the average for the preceding decade (\bar{x} =101).

Necropsies of 40 (17% of all cetaceans stranded in 2023) cetaceans were conducted by James Barnett, the veterinary pathologist for the Marine Strandings Network working within the Cornwall Marine Pathology Team on behalf of Cetacean Strandings Investigation Programme (CSIP). *Post mortem* examinations (PME) concluded that accidental entanglement in fishing gear, known as bycatch, was the cause of death for 13 (32.5%) of the cetaceans examined.

Of those not retrieved for PME 127 (54% of the 234 total) cetacean strandings were examined and recorded *in situ* by MSN volunteers using the Bycatch Evidence Evaluation Protocol (BEEP). It was found that 30% of the 127 (n=38) showed features consistent with definite or probable bycatch or entanglement in fishing gear and a further 17% of the 70 total (n=22) cases showed possible signs of bycatch.

Combining PM and BEEP results, in 2023 the total proportion of assessed cetacean strandings which were concluded to be bycatch or probable bycatch was 29%. The annual average is 26% which is a concerning level of mortality. Our annual Cetacean Bycatch Report 2023 can be found in Appendix B of this report.

2023 saw the highest total of seals reported (n = 308) on record. CWT MSN continues to work closely with the Seal Research Trust (SRT) to monitor this trend more effectively and analytically by improving data collection using the Seal Evidence Evaluation Protocol (SEEP) assessments of age class, gender, individual identification, and reporting. Of the 308 strandings the majority were this season's pups either whitecoat (n=34) or recently moulted (n=124), 22% (n=69) were males, 14% (n=44) females and 64% (n=195) unknown. SRT assessed suitable photos of dead seals and identified six individuals from their photo-identification catalogue, two of which had been identified by SRT volunteers for over 12 years.

Of 34 seals found and examined in 2023 at *post mortem* 13 (38%) died from chronic trauma with ensuing infection and 12 from infection, and three seals died from acute trauma (one of these was a known bycaught individual).

There were five turtle strandings in 2023, three loggerheads, a Kemp's ridley and one leatherback.

Bird strandings were much lower than in the previous year with only 42 reports comprising 66 individuals compared to 161 of an estimated 419 birds in 2022.

Fourteen reports of stranded sharks or rays were reported in 2023 and there were 150 reports of strandings of other species groups (other fish and invertebrates).

In 2023, CWT MSN continued to carry out a variety of outreach and engagement work including active social media, and our annual Callout Volunteer training and marine strandings forum.

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Introduction

Twenty years with Cornwall Wildlife Trust



Figure 1: Key people in the creation of the Cornwall Marine Strandings Network: Stella Turk MBE coordinated volunteer recorders and kept the marine strandings records from 1993. Volunteers Jan and Jeff Loveridge created the training and structure for the current network in 2003.

2023 was a special year for the Marine Strandings Network (MSN) as it marked the 20th anniversary of the MSN running within the Cornwall Wildlife Trust (CWT).

However the network really began nearly a decade before that when, in the winter of 1992/93, an alarming number of dolphins washed up dead around the Cornish coast (128 in three months). Spurred into action, a variety of individuals and groups met to discuss what could be done. Communicating their concerns to the Natural History Museum (who then held the national cetacean strandings database) it was agreed that more monitoring was needed in Cornwall.

Stella Turk MBE of the Cornwall Biological Records Unit (CBRU) agreed to take on this task. Taking phone calls about strandings from the public, Council and Coast Guard, Stella mobilised a small team of dedicated volunteers to attend and record what they found. She also managed the collection of carcasses for post-mortem examination and the resulting data was added to the Cornwall database, and subsequently integrated into the national strandings database, held at that time by the Natural History Museum. When CBRU closed in 1996 Stella continued to coordinate the strandings from her home, sharing the data with other organisations and interested parties over a period of 11 years

In 2002 Jan and Jeff Loveridge started to help Stella with the practicalities of running the network and managing the database, finally taking on the coordination role when Stella 'retired' to concentrate on her other research work. Deciding the network would benefit from becoming part of a recognised organisation, they approached Cornwall Wildlife Trust through marine officer Ruth Williams, and in 2003 it took on its current branding as the 'CWT Marine Strandings Network'. Jan and Jeff continued to run and develop the MSN on a voluntary basis, supported on the Hotline by dedicated volunteers and on the database by Debs Walls. They developed training for volunteers and instigated the annual Marine Strandings Forum, a pioneering event which communicated scientific findings back to the volunteers.

In 2007, they worked with Nick Tregenza to develop the Bycatch Evidence Evaluation project (BEEP), a guide to identifying signs of bycatch in stranded cetaceans that did not undergo post-mortem. Nick had been studying bycatch for many years, and this method became an invaluable tool in highlighting a more accurate level of incidence in bycaught animals.

Data from MSN makes a sizeable contribution to the Cetaceans Strandings Investigation Programme (CSIP), run by the Institute of Zoology, thus helping the ongoing monitoring of mortality of marine megafauna around the UK. By identifying fresh animals suitable for post-mortem examination (most conducted by local veterinarian superstar James Barnett, aided by his committed team of volunteers) the MSN facilitates research into causes of death and quantifying the pressures on these animals from bycatch, disease and pollution.

The data has already been instrumental in generating change by documenting a peak in strandings and contributing to the evidence of bycatch in 2003-4 which led to a ban on bass pair-trawling in UK inshore waters.

Obviously, it is impossible to do justice to all the volunteers who have contributed to this incredible network over the years. However, it could not have achieved anything without the dedication of so many people, from those who have given their time, trudging miles to record strandings in the rain, transporting animals for PME, coordinating the hotline, creating websites and databases, verifying records and entering the data. Our thanks go to all of you who have worked passionately to ensure that these beautiful animals are not dying undocumented and forgotten..

Operation of the Marine Strandings Network

The CWT MSN operates under the CSIP licence (granted by the Marine Management Organisation) for the possession and transportation of cetacean carcasses. Over the last 20 years, in response to the increasing number of stranded cetaceans in Cornwall, more detailed data has been collected by the team in Cornwall.

The Marine Strandings Network now consists of a team of approximately 200 trained volunteers throughout Cornwall and the Isles of Scilly who record all reported strandings of organic organisms from over 360 miles of coastline. All MSN volunteers are given detailed training to ensure accurate and consistent data collection and are continually supported by CWT staff. Detailed reports and photographs are obtained where possible, as well as some tissue samples on occasion for analysis by various partner organisations. The data and photographs collected by MSN volunteers are then verified and assessed by experienced experts following the Bycatch Evidence Evaluation Protocol (BEEP) methods developed by CWT MSN. Analysis of the data collected by the CWT MSN and partners is ongoing.

The CWT MSN has a dedicated Strandings Hotline telephone number (0345 2012626), for the reporting of dead stranded marine animals. The Hotline number operates year-round and is staffed

by a rota of dedicated volunteer Hotline Coordinators. Carcasses reported to CWT MSN are either examined *in-situ* by trained volunteers, or via *post mortem* examination by a veterinary pathologist under the *aegis* of the Defra-funded Cetacean Strandings Investigation Programme (CSIP).

Records of stranded marine organisms have been collected in Cornwall and the Isles of Scilly for many years, the earliest record being from 1354. To date (2023), the Cornwall Wildlife Trust Marine Strandings Network (CWT MSN) database holds over 11,500 records, comprising of data relating to stranded cetaceans (whales, dolphins, and porpoises), seals, turtles, birds, cephalopods, fish (including sharks), seeds, hydrozoan, molluscs, echinoderms, and crustaceans.

The records are shared with several other partner organisations including the Natural History Museum (NHM) which has collated records of all stranded cetaceans in the UK since 1913. In 1990, the NHM began working in collaboration with the Institute of Zoology (IoZ) to research the mortality, biology, and ecology of cetacean populations around the British Isles, under contract to Defra (Department for Environment Food and Rural Affairs). This project, now known as the UK Cetacean Strandings Investigation Programme (CSIP), is currently under the management of the IoZ, funded by Defra, and contributes to the UK's programme of research on cetaceans and its response to ASCOBANS (the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas).

For more information about the protocols and methods which are used for the Marine Strandings Network please contact strandings@cornwallwildlifetrust.org.uk.

Strandings in 2023

A total of 731 records were submitted to the network in 2023, this included 234 cetaceans, 307 seals, 42 birds, 14 elasmobranchs and 5 turtles with an additional 129 records for other marine species including other fish and invertebrates (this represents a much greater number of individual animals as particularly for birds, fish and invertebrates a single stranding event can encompass many individuals).

Cetaceans

A total of 234 cetacean strandings were recorded in Cornwall during 2023. As in previous recent years, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings of the cetacean records in 2023 (66%, n= 155), followed by harbour porpoises (*Phocoena phocoena*) (10%, n=23) (Figure 1). Due to decomposition, 44 stranded cetaceans could not be identified to species level.

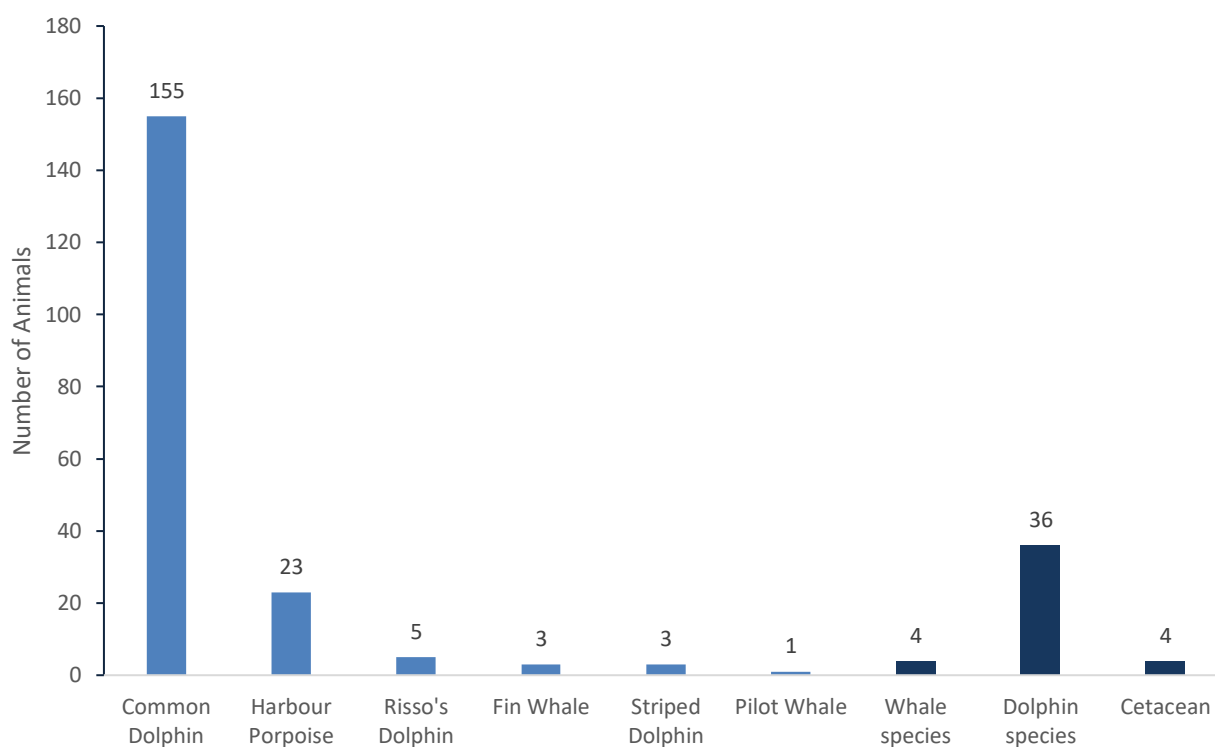


Figure 1: Number of cetacean strandings by species during 2023



Photo 2: Harbour porpoise calf, Daymer Bay, 2nd Aug 2023, photo by Jules Disbury

Following a similar pattern to last year the highest numbers of strandings were over the winter with a secondary peak in August. The highest number of strandings were in January and February (36 and 44 respectively, see figure 2). Figures 3: a, b & c show the locations of all cetacean strandings in 2023 and highlight the geographical spread of cetacean strandings during this year.

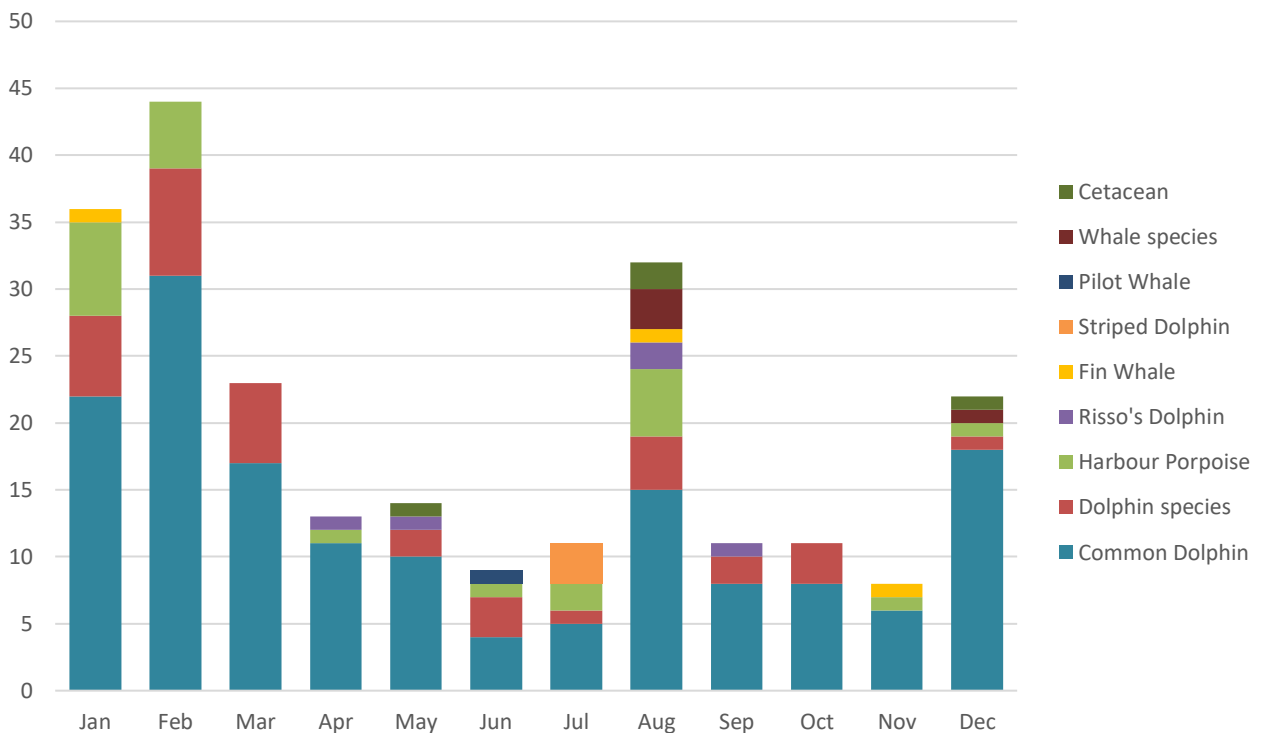


Figure 2: Cetacean strandings by species/month during 2023



Photo 3: Harbour porpoise, Chapel Rock Beach, Bude, 23rd July 2023, photo by Debbie De Ste Croix

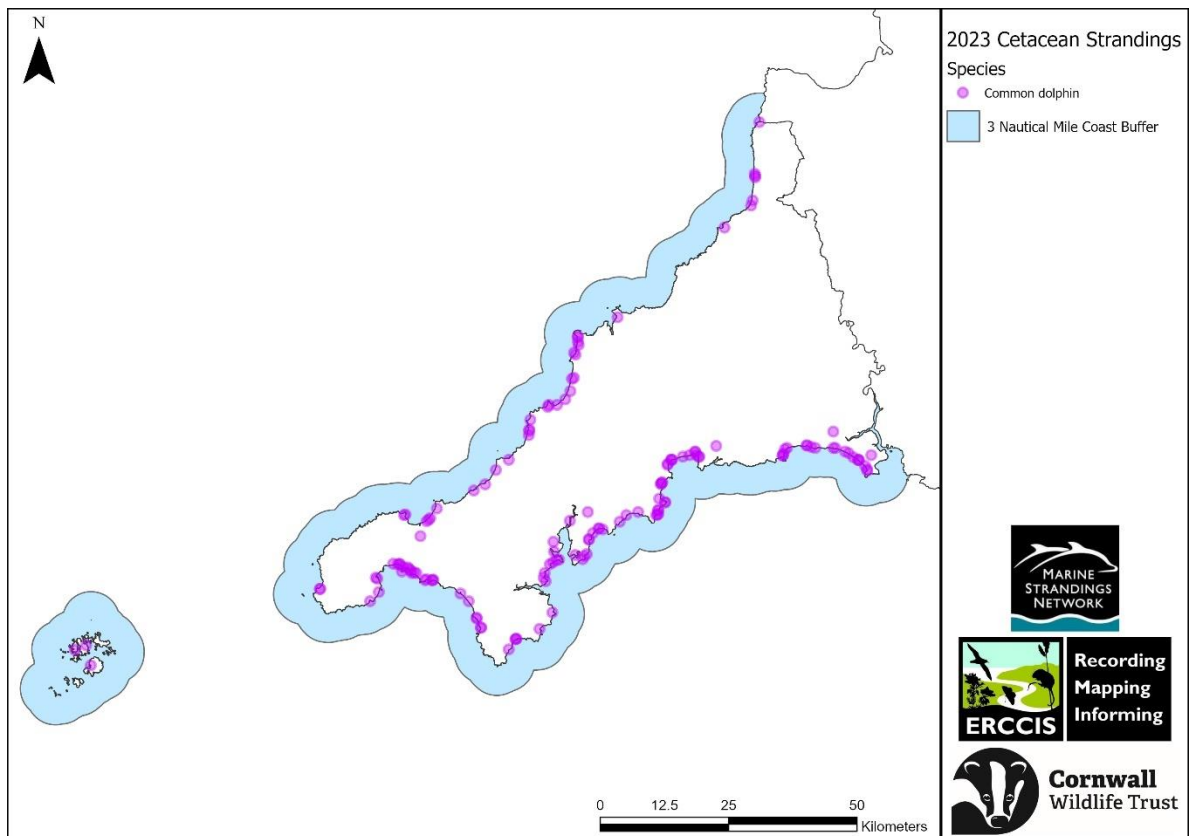


Figure 3a Locations of common dolphin strandings in 2023 (n=155)

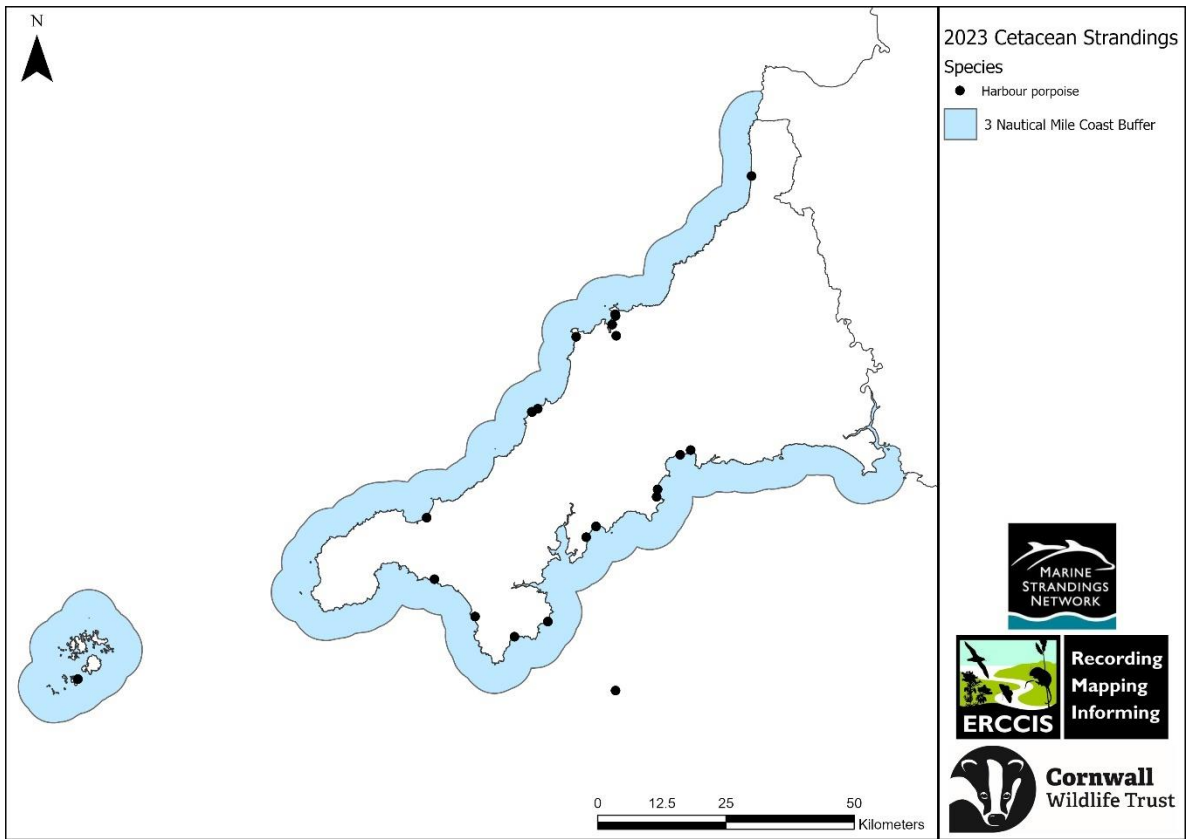


Figure 3b Locations of harbour porpoise strandings in 2023 (n=23)

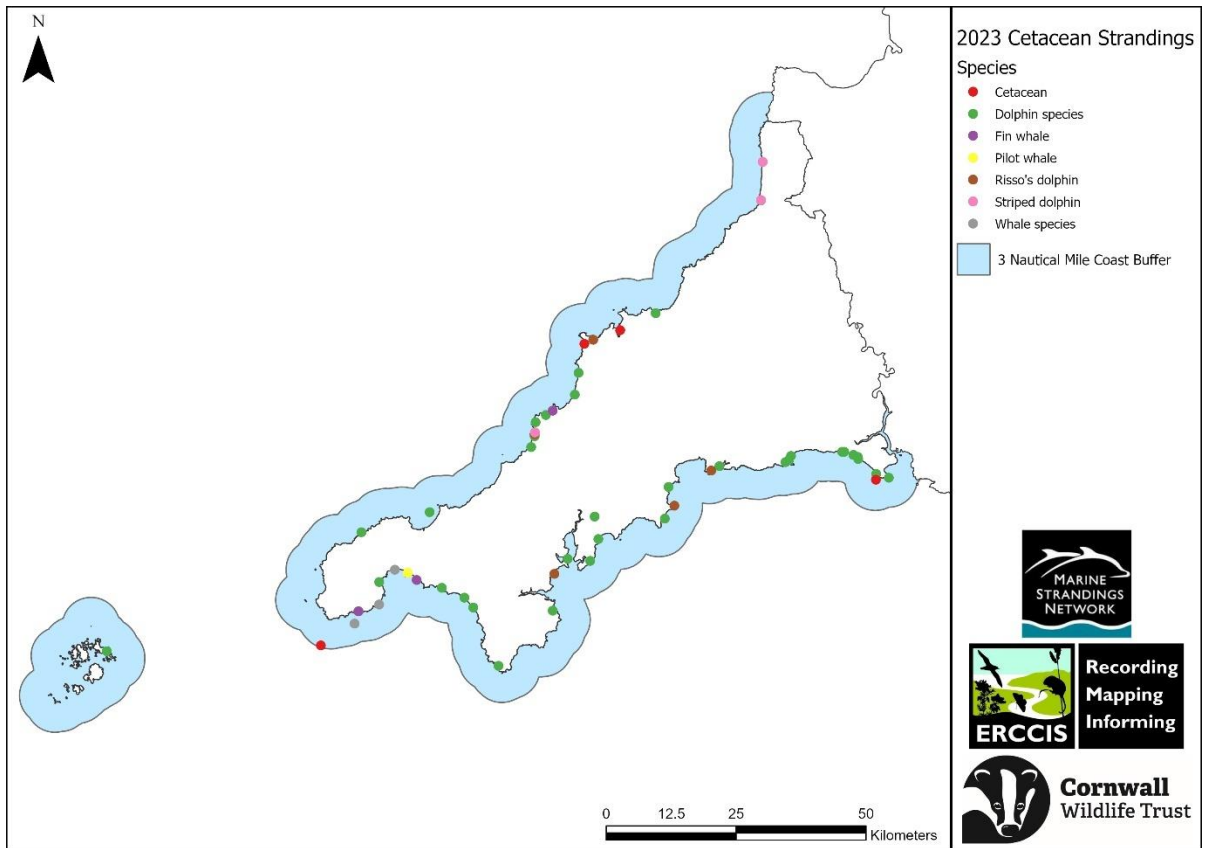


Figure 3c: Cetacean strandings (all other species) in 2023 (n=57)



Photo 4: Pilot whale and volunteers, Marazion, 20th June 2023, photo by Josh Symes.

Comparison with previous years

In total, 234 cetaceans were recorded by CWT MSN in 2023, which is an increase from the numbers seen in 2022 (n=157) and the fourth highest year since 1995 (see *figure 4*). Over the last eight years annual strandings have remained over 150 per year (\bar{x} =208), double the average for the preceding decade (\bar{x} =101). In 2023 cetacean stranding numbers were as usual higher in the winter and similarly to last year had a secondary peak in August. (*Figure 5*).

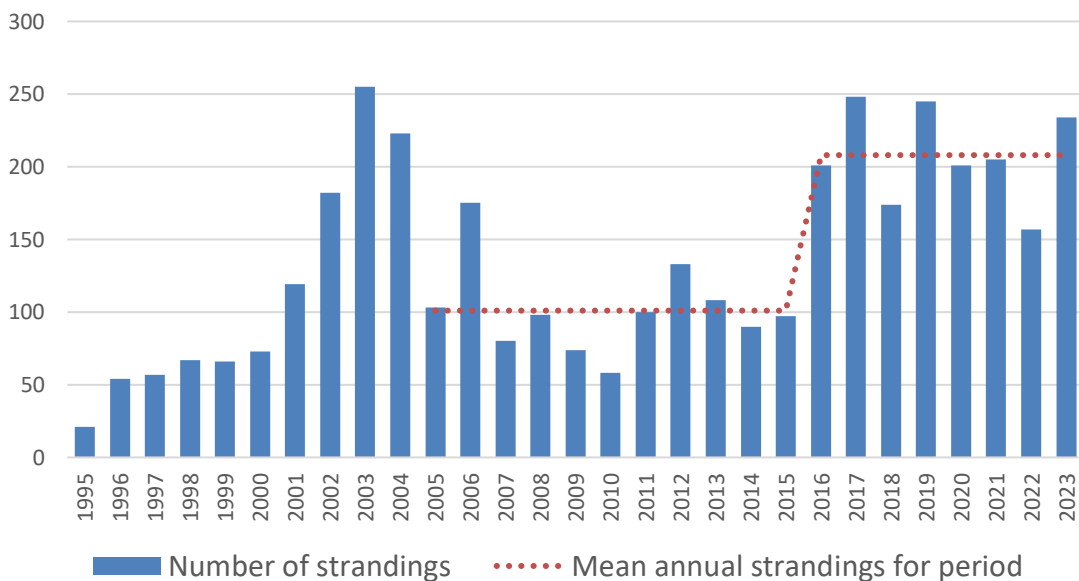


Figure 4: Comparison of cetacean strandings by year (1995 to 2023)

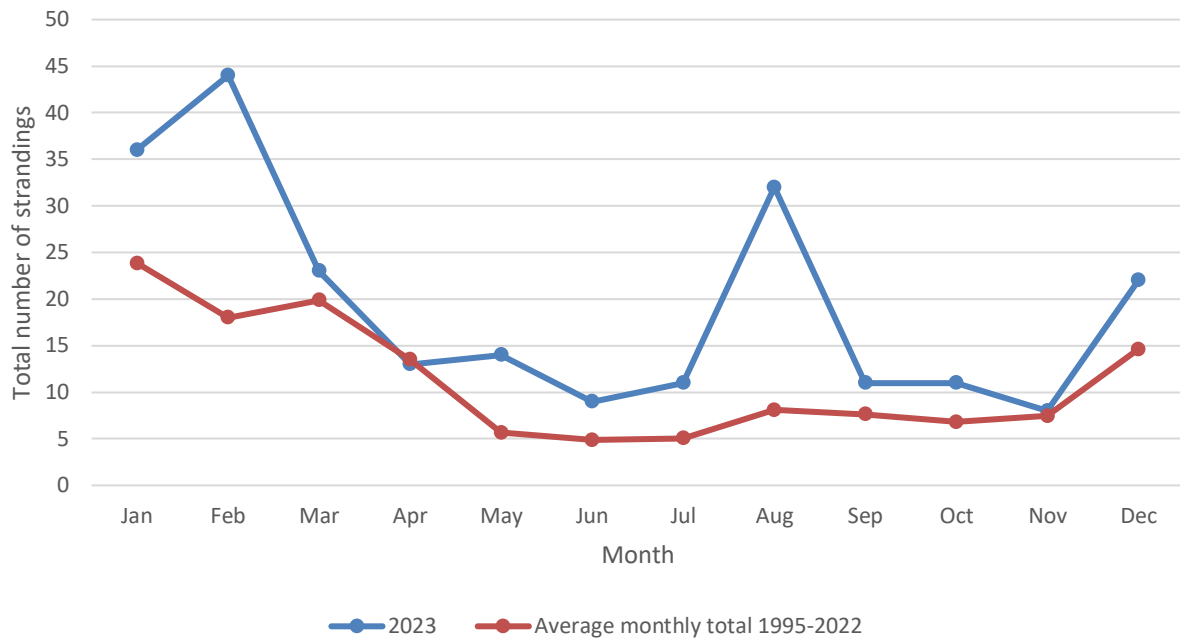


Figure 5: Seasonality of cetacean strandings for 2023, in comparison to average seasonality between 1995 and 2022

Common dolphins and harbour porpoise are the most reported cetacean species to MSN. 2023 was the highest year on record for the number of short beaked common dolphin strandings in Cornwall and the Isles of Scilly (Figure 6). Since 2016 there has been a marked increase of common dolphin strandings.

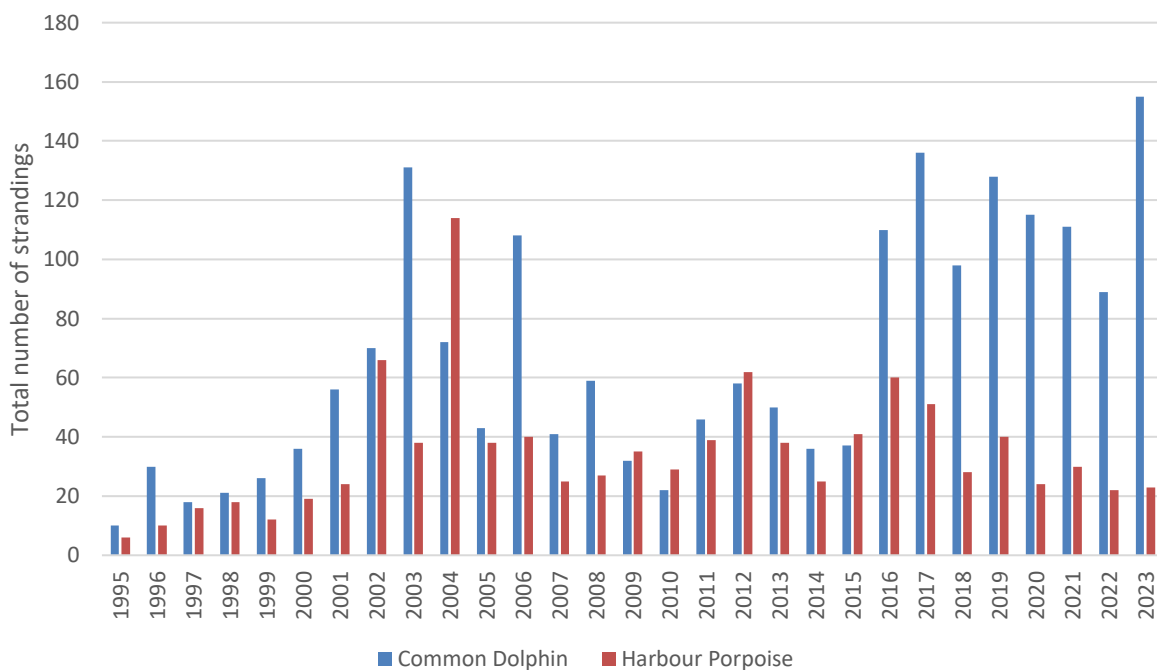


Figure 6: Numbers of common dolphin and harbour porpoise strandings from 1995 to 2023

Cetacean post mortem examinations

Of the 234 cetacean carcasses that stranded during 2023, 17% (n=40) were suitable and accessible for retrieval by the CWT MSN team for *post mortem* examination, under licence and on behalf of the Defra-funded Cetacean Strandings Investigation Programme (CSIP) (Figure 7). Necropsies were performed by James Barnett, the veterinary pathologist for the Marine Strandings Network working within the Cornwall Marine Pathology Team on behalf of CSIP.

Post mortem examinations (PME) concluded that accidental entanglement in fishing gear, known as bycatch, was the cause of death for 13 (32.5%) of the cetaceans examined (12 short-beaked common dolphins and one Risso's dolphin see Table 1). Some unusual cases included two common dolphins which died from infections following probable seal bites (one found at Praa sands in February and one at Penhale in August), and three common dolphins with fish related obstructions – two with an impaction of the first stomach with fish bones, and one with a fish lodged in its nasal passage that resulted in asphyxia. Bottlenose dolphin attack was the cause of death of a harbour porpoise which stranded in Crantock on the 20th December 2023.

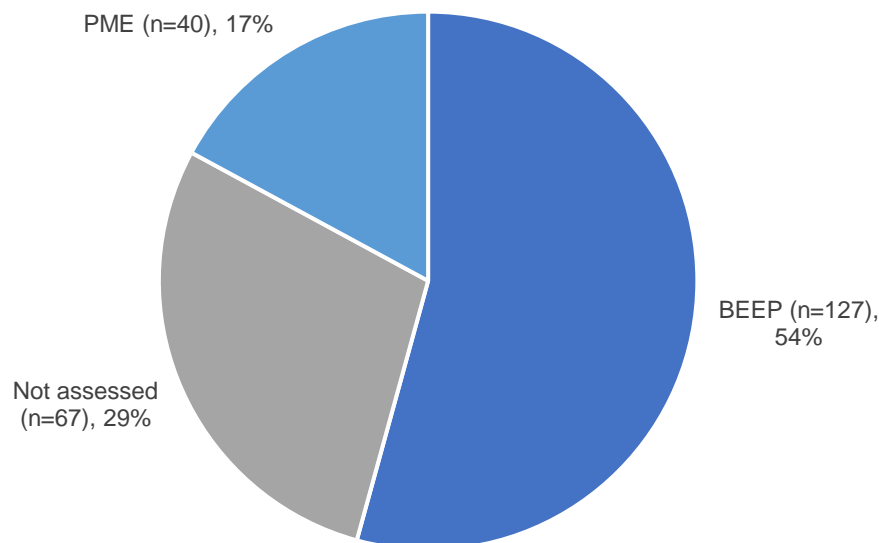


Figure 7: Stranded cetaceans retrieved for post mortem examination (n=40) and BEEP assessment using in-situ data (n=127) in 2023. The remaining 67 were reported but had insufficient data for more detailed assessment.

A summary of *post mortem* findings can be seen in Table 1. The findings of these examinations are published with kind permission of CSIP. Please note these may be amended subject to verification and the results from any tests, such as histopathology and bacteriology that are pending.

Table 1: Summary of cetacean post mortem reports (2023) – gross post mortem and bacteriology findings (source: CSIP)

Species	Bycatch	Infectious disease	Non bycatch trauma	Other
Short-beaked common dolphin	12	8	3	8
Harbour porpoise		1	1	1
Risso's dolphin	1			1
Striped dolphin		2		
Fin whale		1		
Long-finned pilot whale		1		
Total	13	13	4	10

Bycatch Evidence Evaluation Protocol (BEEP)

The MSN Bycatch Evidence Evaluation Protocol (BEEP) is an invaluable tool to assess bycatch on cetacean species, which has been developed by CWT MSN. BEEP assessments can be done *in situ* on the beach and provide data on external injuries to help identify possible causes of death from bycatch for all animals, not just those that undergo *post mortem* examination. The process involves cetacean strandings reported to CWT MSN undergoing rigorous external examination by trained volunteers on the beach. Detailed photographs of the carcasses are taken, and these are then assessed to identify, and record, signature injuries and features identified as being associated with bycatch and entanglement in fishing gear. This protocol has been developed from 30 years of experience and is continuously tested and developed to improve the accuracy of bycatch detection.



Photo 5: Bycaught common dolphin, Hannafore, Looe, 12th Oct 2023, photo by Holly Thorne

Of the remaining 194 cetaceans which were not retrieved for *post mortem* examination, 67 cases were reported to MSN but either a volunteer was not able to attend for a wide range of reasons or we had insufficient data to assess the animal through BEEP. Therefore, these cases have not been included in the BEEP and bycatch analysis for this report.

127 (54% of the 234 total) cetacean strandings were examined and recorded *in situ* by MSN volunteers using the BEEP protocol, and photos examined in detail by experienced BEEP assessors within the Environmental Records Centre for Cornwall and Isles of Scilly (ERCCIS). It was found that 30% of the 127 (n=38) showed features consistent with definite or probable bycatch or entanglement in fishing gear (*Table 2*). These features are based on recognised net entanglement marks such as fin edge cuts/slices, encircling net marks and severed appendages. A further 17% of the 70 total (n=22) cases showed possible signs of bycatch.

16.5% (n=21) were cases where BEEP assessment was inconclusive based on the data available. 3% of (n=2) deaths were found to show features consistent with trauma, one likely from boat strike and two likely bottlenose dolphin attack.

Table 2: A summary of BEEP conclusions from cetacean cases assessed in situ in 2023

BEEP Conclusion	Total Assessed	% BEEP Assessed Records
Bycatch	29	22.8
Probable bycatch	7	5.5
Possible bycatch	22	17.3
Entanglement	2	1.6
Trauma	1	0.8
Trauma - BND Attack	2	1.6
Trauma - Boat Strike	1	0.8
No features	42	33.1
Inconclusive	21	16.5
Grand Total	127	100%

Examples of BEEP assessed cetacean strandings are below in *3.1.4 Notable Cetacean Strandings*. For the full Bycatch analysis and report, please see *Appendix B*.



Photo 6: Live stranded common dolphin, Hayle, January 2023. Photo by Dan Jarvis

Bycatch overview 2023

Of the 234 cetacean carcasses that stranded during 2023, 167 were assessed either by PME (n=40) or BEEP (n=128). Of these animals 29% (n=49) showed signs of having been bycaught. Most of these stranded in winter months and along the south coast of Cornwall (figure 8). (For the full bycatch report for 2023 see Appendix B).

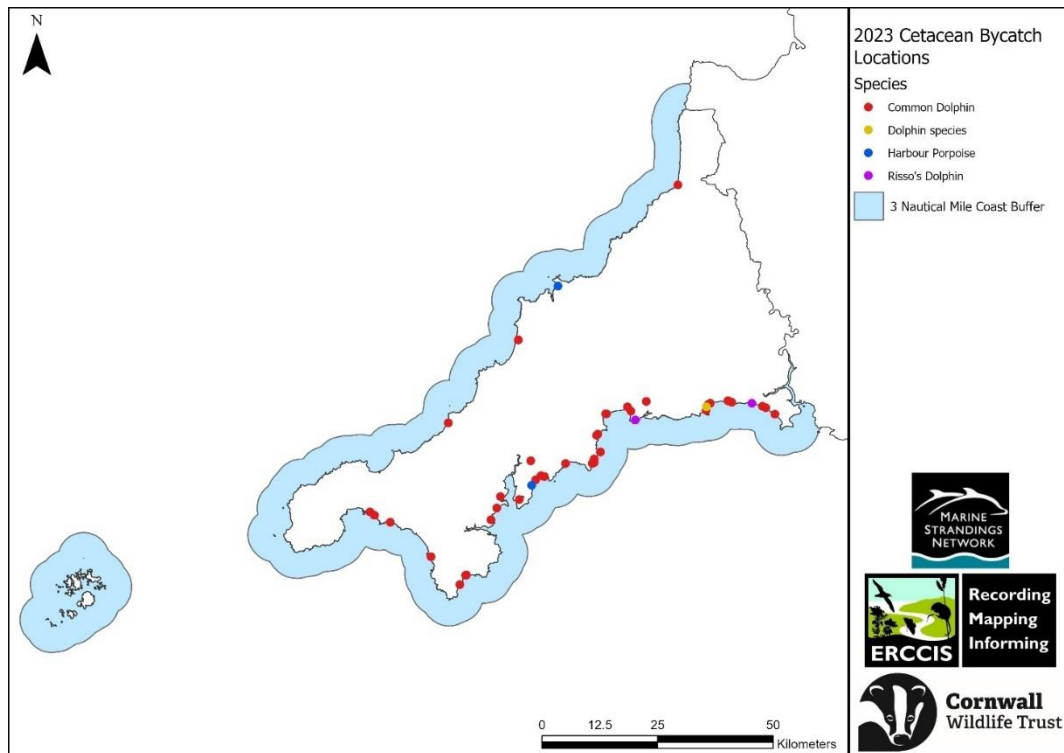


Figure 8: The location of 2023 stranded cetaceans with evidence of bycatch.

Notable Cetacean Stranding Cases

On the 23rd August in 2023 there was a mass strandings event at Mylor Creek involving eight common dolphins. Medics from British Divers Marine Life rescue responded and managed to save seven of the group but one female common dolphin calf died.

Other unusual strandings included and a female pilot whale found at Marazion bay on the 20th June a fin whale which stranded on the 15th Nov. Both of these strandings in particular involved a fantastic team effort from members of the Marine Strandings Network and the Cornwall Marine Pathology Team.

Details of these and other notable cetacean strandings are in Table 3.

Table 3 notable cetacean strandings cases. Photos by Cornwall Marine Pathology Team

<p>Common Dolphin C/2023/013 SW2023/20 CW/C03/23</p>	<p>Pentewan Sands SX021471</p>	<p>12/01/2023</p>	<p><i>This juvenile male common dolphin was in good body condition and there was evidence of recent feeding. The encircling linear marks/wounds on the rostrum, melon and tail stock, and fin slices and encircling wounds/marks on fins and flukes are, in my opinion, consistent with a diagnosis of bycatch. The large quantity of fluid found in the bronchi suggested this animal had drowned rather than suffocated in the net.</i></p> <p><i>Other findings, including the presence of parasitic bronchopneumonia, are considered to be incidental in nature.</i></p>
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<p>Common Dolphin C/2023/053 SW2023/181</p>	<p>Cellar Cove, Portholland SW951407</p>	<p>14/02/2023</p>	<p>Missing lower third of body photos sent by finder. Encircling marks to lower jaw and Rostrum. Thick linear multifilament impression around RHS pectoral fin with associated fin edge slice to leading edge.</p>
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Risso's Dolphin
C/2023/098
SW2023/231
CW/C15/23

Polridmouth,
Fowey
SX102502

01/04/2023

This juvenile male Risso's dolphin was in suboptimal body condition but did show evidence of recent feeding. Unfortunately, a significant amount of skin had been lost by the time of the examination, but linear black marks consistent with net entanglement were clearly visible in the exposed subcutis on the tail flukes and one pectoral fin. Although no pre-mortem changes were associated with these marks on histopathology, this may not have been the case if the overlying skin had been available to examine. Furthermore, the emphysematous change found on histopathology in some tissues also supported a diagnosis of bycatch.

Interestingly, the asymmetrical atelectasis and congestion of the lungs were more typical of live stranding. However, this has also been observed in bycaught animals, presumed to be due to the animal being compressed in a net prior to dying. It was also clear that the animal had been ingesting stones, consistent with aberrant feeding behaviour, and this may have contributed to its suboptimal nutritional state.



*Pilot Whale
Female juvenile 3.28m
C/2023/135
SW2023/409
CW/C19/23
Incredible team effort to
remove from the beach
for PME.*

*Marazion Beach,
Mount's Bay
SW518305*

*20/06/23
PME 21/06/23*

Gross post mortem examination of this juvenile female pilot whale found that the animal was in poor nutritive state and had not fed very recently. There was also evidence of hypostatic congestion, suggesting that the whale had originally live stranded either where it was found or elsewhere. Signs of relatively mild trauma to the head also may be consistent with live stranding. Unfortunately, a significant amount of skin loss occurred between the time the animal was found and post mortem examination. However, photographs taken on the beach do not indicate the presence of any significant external wounds or markings. The significance of more intensely reddened areas of exposed blubber in certain locations is difficult to interpret. There was a large amount of fluid in the peritoneal cavity (ascites) Other (probably incidental) findings include unilateral peribullar parasitism, gastric and bladder ulceration. There was also evidence of marked adrenal cortical hyperplasia consistent with chronic stress. Bacteriology has proved unrewarding, with the mixed growths being consistent with post mortem contamination.

Histopathology findings - it has been possible to determine on histopathology that bacterial bronchopneumonia was likely to have been a significant contributory factor to this animal's poor nutritive state and subsequent live stranding.



Photo by Josh Symes, 20/06/23



Photo by Constance Morris, 20/06/23



21 06 2023

<p>Common dolphin, female juvenile CW/C31/23</p> <p>Mass stranding event – seven animals were successfully refloated by BDMLR medics</p>	<p>Mylor creek</p>	<p>23/8/23</p>	<p><i>This female common dolphin calf died during the course of an attempted refloatation of six adults and two calves. The remaining animals were refloated.</i></p> <p><i>The calf was in reasonable nutritive state and its size, the prominent lingual papillae and the remnants of milk in the oesophagus and cardiac stomach were consistent with this being a maternally dependent animal. One small area of recent haemorrhage was found in the hypaxial muscles which is likely to have occurred during the stranding event and the haemorrhages seen on the corticomedullary junctions of the adrenals may be due to acute stress. The only other gross pathology of note were multifocal papules in the pharyngeal mucosa and abnormal colouration of part of the mesenteric lymph node, but these are likely to be incidental findings. Histopathology supported the suspicion that the calf died of an acute stress response</i></p>
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Fin Whale
Female juvenile 16.6m
C/2023/214
SW2023/788
CW/C40/23

In situ PME carried out, great collaboration between many different agencies to enable this to happen – police, coastguards, Cornwall council, MSN, BDMLR and CMPT. A lot of media interest in this stranding.

**Fistral Beach,
 Newquay
 SW797617**

15/11/23

This juvenile female fin whale was judged to be in poor body condition, although the quantity of material in her intestines suggested she had fed fairly recently. The extensive fresh abrasions on the head, one visible pectoral, flank and flukes were consistent with live stranding and I understand that a whale was seen/heard the evening before just off nearby Pentire. Due to the size of the animal, the fact that it was lying close to sternal recumbency and the restriction on access posed by the distended intestines, it was not possible to carry out a complete examination of all thoracic and abdominal viscera.

The clear fluid found in the cardiac stomach suggested the whale had ingested seawater presumably at the time of stranding. The intense congestion and oedema of the lungs was probably agonal in. The lesions associated with the light burden of the ectoparasite, Penella balaenoptera, were unlikely to be of clinical significance and most of the bacteria isolated on culture are suspected to be post mortem contaminants.

Histopathology of the brain revealed that the whale was suffering from encephalitis and the cause of this was confirmed as dolphin morbillivirus infection. There was no evidence of concurrent Toxoplasma gondii infection.



Photo by Anthea Hawtrey-Collier, 15/11/23



Photo by Terry Carne, 15/11/23



Photo by Debbie De Ste Croix, 15/11/23

<p>Striped Dolphin x 2 1. Male juvenile 1.71m C/2023/146 SW2023/486 CW/C22/23</p> <p>2. Male juvenile 1.48m C/2023/147 SW2023/487 CW/C23/23</p> <p>Both animals found a day apart 10 miles distance between them so believed to be from the same pod.</p>	<p>1. Sandymouth, Bude SS201096</p> <p>2. Widemouth Bay SS198023</p>	<p>1. 16/07/23 PME 16/07/23</p> <p>2. 17/07/23 PME 19/07/23</p>	<p>1. This juvenile/subadult male striped dolphin is reported to have live stranded but had died on the beach shortly after being found. The abrasions on the rostrum, beach material as far as the cardiac stomach and hypostatic congestion of the lungs are consistent with live stranding. The fractured maxillary and incisive bones and associated soft tissue trauma and haemorrhage are also likely to have occurred during stranding. The dolphin was in suboptimal body condition and there was little evidence of recent feeding. The other finding of note was a large quantity of blood stained cerebrospinal fluid which was suspicious of Brucella associated meningoencephalitis (neurobrucellosis). This was confirmed on histopathology, although Brucella could not be isolated on culture. Histopathology also indicated that trauma to the rostrum probably occurred a few hours before the animal stranded and this was probably predisposed to by the brain infection which would have affected the animal's behaviour.</p> <p>An interesting incidental finding was nephrolithiasis ('kidney stones') which has been seen grossly in some previous PMEs but was not visible on gross examination in this case.</p> <p>2. The second juvenile male striped dolphin live stranded the day after and less than 10 miles south of where the first striped dolphin live stranded at Sandymouth Bay (CW/C22/23) suggesting the animals probably originated from the same pod. Again, this dolphin died shortly after stranding. This dolphin was in suboptimal body condition although there was some evidence of relatively recent feeding. There were marks on the rostrum and melon that raised the possibility of previous contact with monofilament net, although any role that this possible interaction with nets may have played in the live stranding is unclear. Other lesions seen included lingual ulceration, a small abscess in the pelvic blubber and turbid joint fluid in the atlanto-occipital joint, although no pathogens were isolated from the abscess or joint. Histopathology findings strongly suggest that this juvenile male striped dolphin was again a case of neurobrucellosis.</p>
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1. Photo by Debbie De Ste Croix, 16/07/23



2. Photo by Debbie De Ste Croix, 17/07/23

Common Dolphin C/2023/194 SW2023/722	Sharrow Beach, Torpoint SX393520	12/09/23	Evidence of shark scavenging.
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Harbour Porpoise
Female adult 1.68m
C/2023/231
SW2023/847
CW/C41/23

Crantock Beach,
Newquay
SW783611

20/12/23
PME 21/12/23

This adult female harbour porpoise was in reasonable body condition, there was evidence of recent feeding and she was also pregnant.

The widespread 10 – 12mm spaced rake marks, soft tissue haemorrhages and free blood in the cranium and peritoneal cavity were consistent with bottlenose dolphin attack as the cause of death.



Photo by Mick Dawton, 20/12/2023



Photo by James Barnett



Photo by James Barnett



Photo by James Barnett

Seals

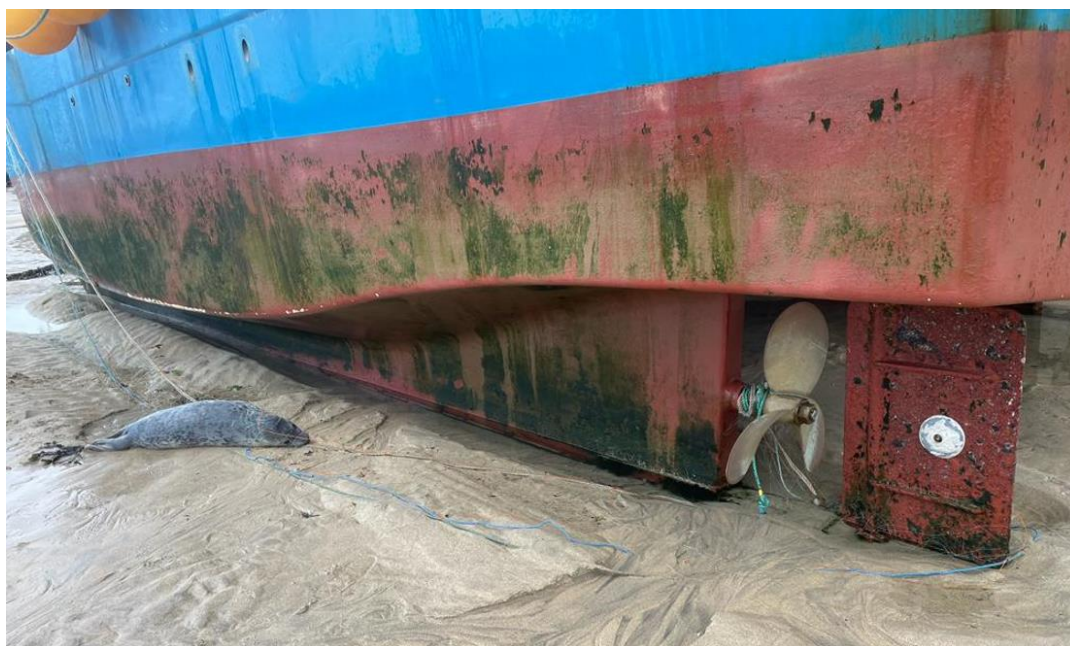


Photo 7: Bycaught juvenile grey seal, St Ives Harbour, 13th Oct 2023 photo by Ben Lawlor

Dead grey seal strandings have been recorded in detail on the CWT MSN database since 2000. Although numbers of seal strandings have been increasing year on year since MSN started recording. This year saw the highest total of seals reported ($n = 308$) on record (see figure 9). CWT MSN continues to work closely with the Seal Research Trust (SRT) to monitor this trend more effectively and analytically by improving data collection using the Seal Evidence Evaluation Protocol (SEEP) assessments of age class, gender, individual identification, and reporting.

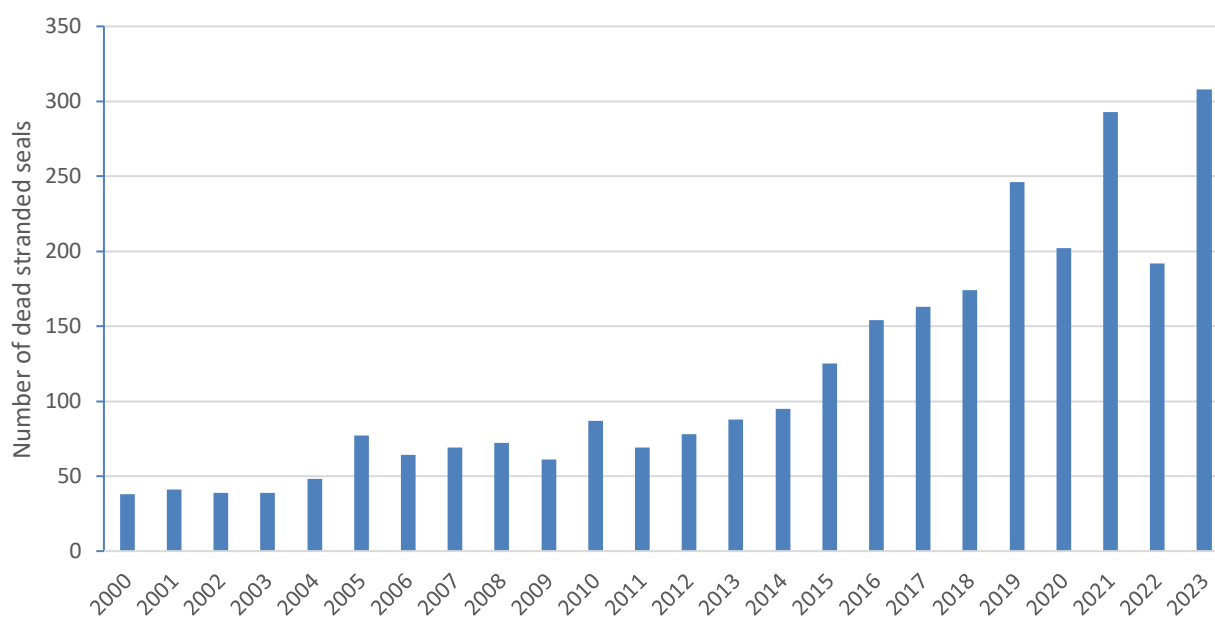


Figure 9: Comparison of grey seal strandings by year (2000 – 2023)

Of the 308 seal strandings, 34 were categorised as whitecoat/maternally dependent pups under three weeks old, 124 were categorised as moulted pups measuring less than 120cm nose to tail, 22 were juvenile (measuring between 120cm and 160cm), 56 were adult, and 72 were unknown due to lack of data (see *Table 3*).

Table 3: Seal Age Class for 2023

Age Category	Number of reports
Adult	56
Juvenile	22
Moulted Pup	124
Whitecoat	34
Unknown	72
Total	308

The gender breakdown (see *figure 9*) of the 2023 seal strandings is 22% (n=69) males, 14% (n=44) females and 64% (n=195) unknown (due to either limited or no supporting photos, or because the animal was too decomposed and/or had genital scavenging).

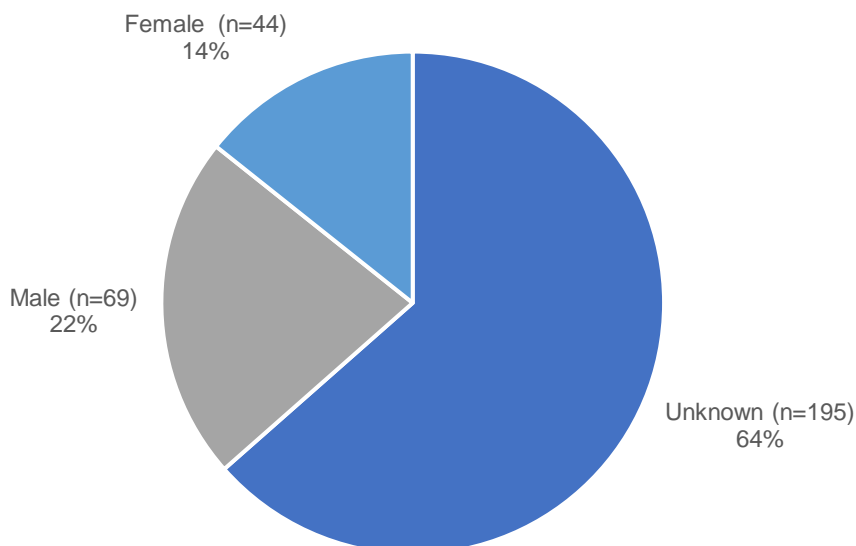


Figure 10: Grey seal strandings gender classes (2023)

Figure 11 shows the age category proportions each month to identify seasonal patterns. July was the quietest month for seal strandings in 2023, with only four stranded seals recorded. In January there two whitecoat pup recorded from the previous breeding season, however strandings from the 2023 pupping season started in August and continued through to November 2023. Data by SRT shows that peak pupping has moved from October followed by November (2010 to 2016) to September followed by August (2022 and 2023). SRT recorded just four pups were born in November 2023 (two on the south coast).

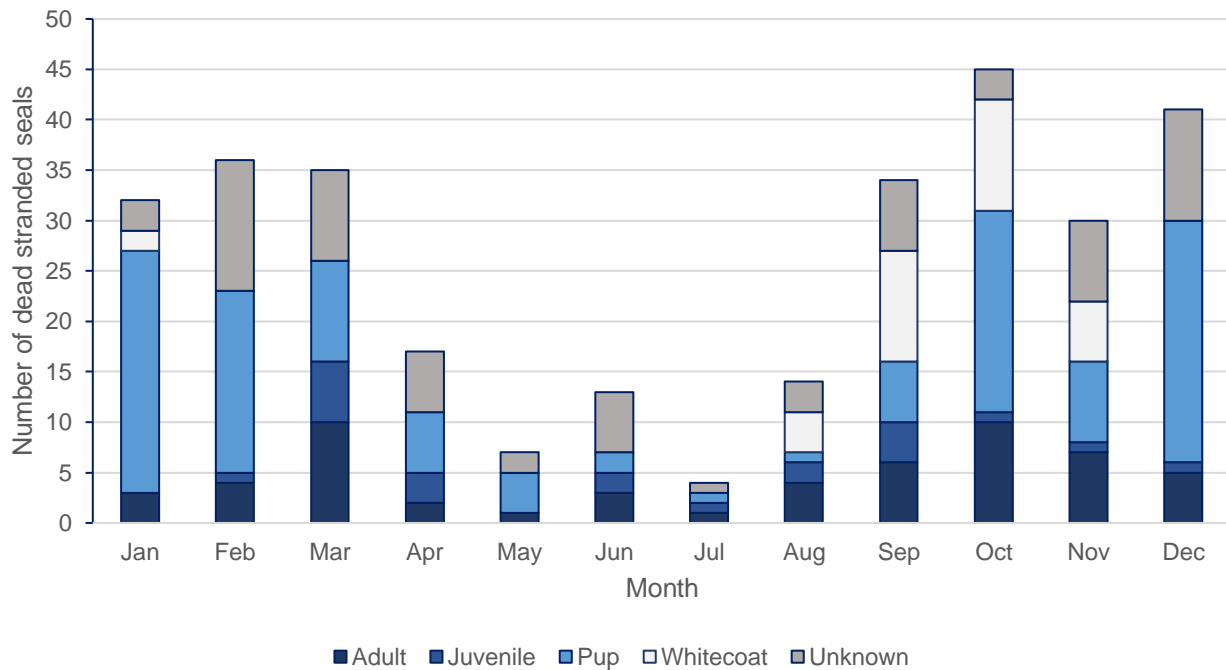


Figure 11: Age and sex of Atlantic grey seal strandings per calendar month in 2023 (n=308)

According to SRT, peak seal strandings usually coincide with key seal life cycle activities when energy reserves may be at their lowest for different demographics: moulting season for adults (winter/spring); post weaning dispersal for moulted pups with their fat reserves at their lowest ebb (spring); juvenile moulting season (spring/summer) and post the peak pupping months for whitecoats, mums and beachmasters (August and September). SRT's records showed the pup births started in August (n=70), peaked in September (n=116) followed by October (n=24) with outlier pups born in November. The seasonality of whitecoat pup deaths was consistent with SRT birth data. The majority of moulted pup deaths occurred by the end of February when fat reserves were presumed to have run out in pups that were unsuccessful in their learning attempts to feed. Juvenile deaths occurred in small numbers in all months (apart from June) with no anticipated moulting season peak. Adult deaths appeared to peak in the pupping and moulting seasons.

This year the number of observed pups from SRT data (n=191) was much less than the number of deals recorded dead (n=308).

Seal strandings considerably exceeded the previous twelve-year average in all months apart from May and July, and it is notable that seven months (February, March, April, June, August, September and December) were more than double the mean monthly strandings for those reported between 2010-2022 (Figure 12). However, the seasonal pattern of strandings is very similar to those seen in previous years. As usual the lowest strandings were recorded in the summer suggesting that the increased number of seal deaths was unlikely to be an artefact of increased awareness and reporting as more people were accessing Cornish coast during the summer months.

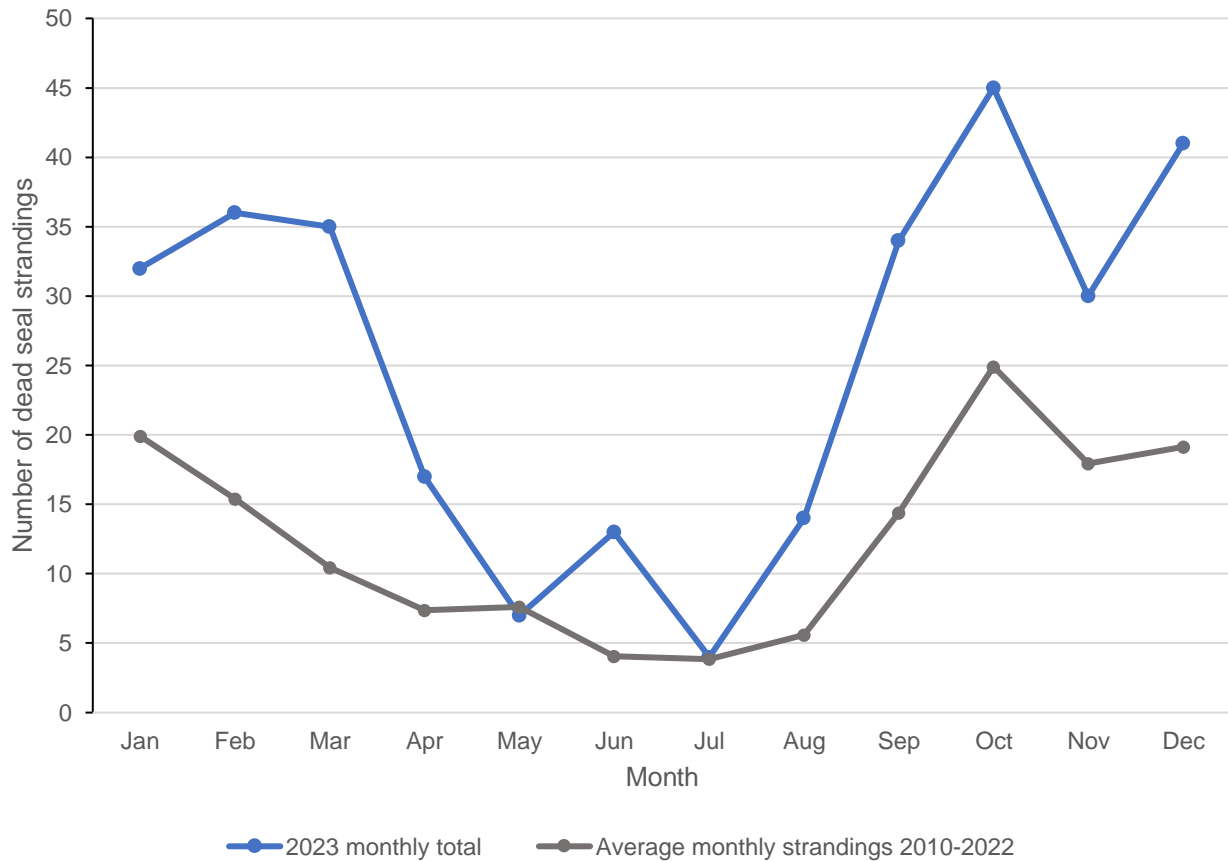


Figure 12: Atlantic grey seal strandings per calendar month in 2023 (n=308) compared to average monthly totals for 2010 – 2022

Due to the number of strandings the maps showing geographical location of strandings have been split into age classes for clarity (figures 13:a & b). Nearly all whitecoat strandings continue to occur on the north coast reflecting the locations of major pupping sites. Moulded pups are more evenly distributed around the coast reflecting the post-weaning exploratory behaviour exhibited by grey seals (Sayer et al., 2022).

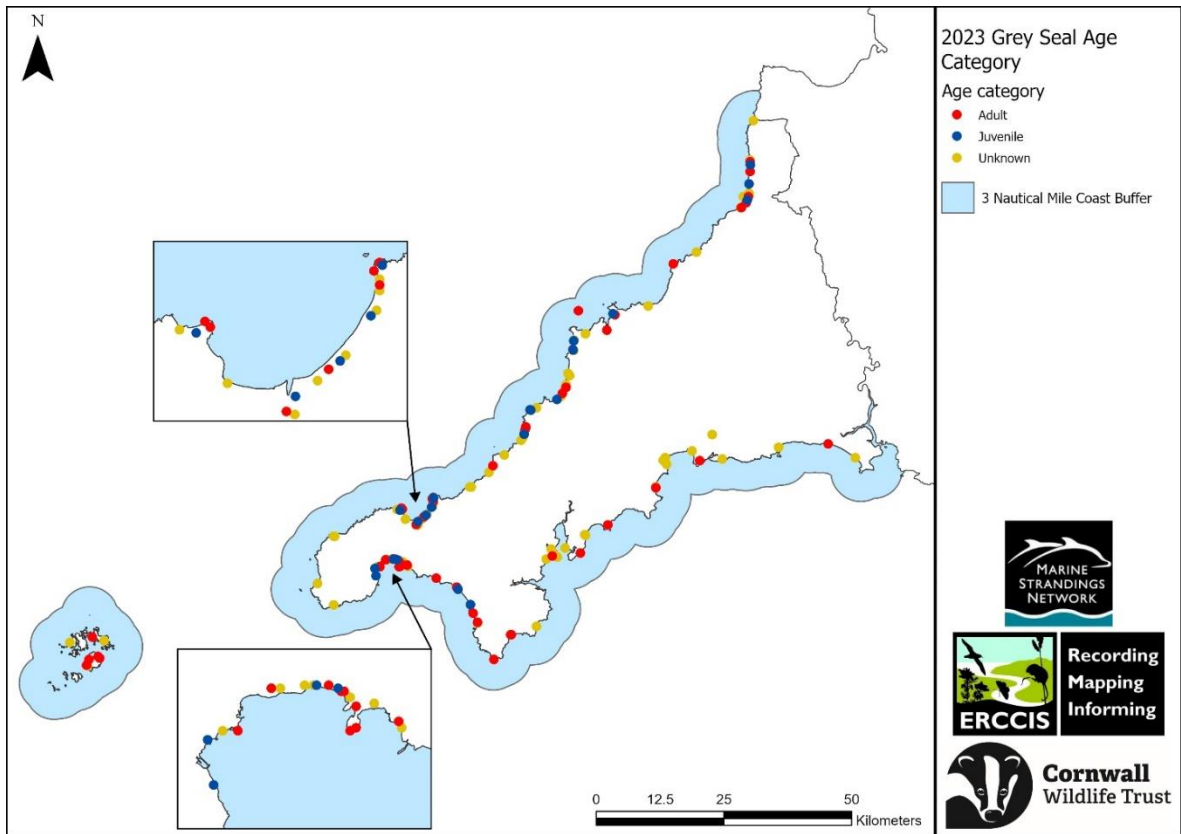


Figure 13a: Locations of adult (n=56), juvenile (n=22) and 'age unknown' (n=72) Atlantic grey seal strandings in 2023

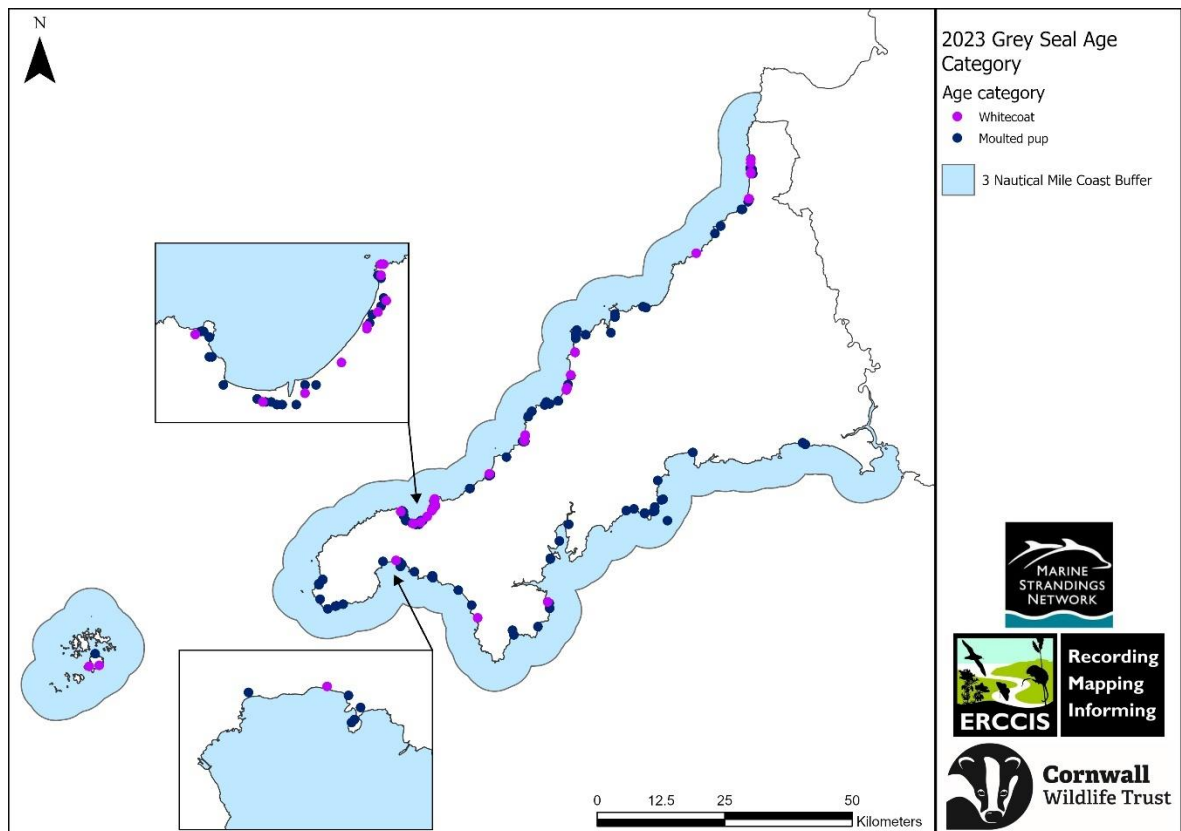


Figure 13b: Locations of moulded pup (n=124) and whitecoat pup (n=34) Atlantic grey seal strandings in 2023



Photo 8: Grey seal 'enshrined' by unknown members of the public, Kennack Sands, The Lizard, 8th Feb 2023, Photo by Malcolm McKenzie

Known grey seals

Thanks to collaborative work with SRT, seal strandings, where time permitted, were checked against individual photo identification catalogues of seals in Cornwall. Three dead adult females, one adult male, one sub adult male and one juvenile male were identified from markings the latter two were dead tagged ex-rescue, rehab and released seals. Two seals: S340 Swims and ROF124 Tulip placeholder were especially notable for the length of time they have been seen over and number of live sightings recorded by SRT volunteers.

S340 Swims was an adult female first added to the sightings catalogue in November 2007 and had been identified 111 times across 6 north coast sites by 42 different SRT volunteers. Her last live sighting was the 31st Aug 2023 and she was found dead at Perranporth on the 19th of November. Swims had a tracking infection across her back and right flank behind her fore flippers. This was first spotted in January 2014 and then appeared healed. A second lesion appeared 28/11/19 a year after after she weaned the only pup she was seen with in Oct 2018. The second lesion was much deeper than the first and was alternately pussy and clear until her death. At death her open infected wounds were scavenged first.

ROF124 Tulip placeholder (figure 17) was first seen in August 2012 and had been identified 102 times at three locations around the South and East coast before being recorded dead in Mount's Bay (see figure). DP2004 Watermark alien an adult male (figure 14) was first seen on the 28th dec 2017 and recorded 71 times at the same west Cornwall location by 17 different volunteers before being recorded dead in February in Mounts Bay. More recently added to the catalogue in February 2021, adult female S2931 Three bars (see figure 16) had been sighted twice in the St Ives bay area before being recorded dead in Carbis bay in March 2023.

The two ex-rescued and release seals were juvenile male ROS1547 Wasabi (figure 15) and LP534 Jonesy (figure 18). Wasabi had been rescued from Kennack sands in October 2022, was last sighted alive on the 15th April 2023 and was found dead 15 days later at Porthoustock. Jonesy had a longer history having been rescued at St Agnes in September 2018, was last seen alive in October 2022 at West Cornwall and recorded dead at Perran sands a year later on the 3rd of October.

MSN continues to work in partnership with SRT for seal identification work in 2023. For more information about grey seal photo identification work in Cornwall, please contact SRT www.cornwallsealgroup.co.uk. Please email live seal records and photos to sightings@cornwallsealgroup.co.uk.



Figure 14: Alien Watermark, Male adult Atlantic grey seal, 8th February 2023. Photo by Constance Morris. ID confirmation by SRT



Figure 15: Wasabi, male juvenile Atlantic grey seal, 29th April 2023. Released from Cornwall Seal Sanctuary – Tag SL154. Photo by Ann Van Damburg



Figure 16: Three Bars, female adult Atlantic grey seal, 04th March 2023. Identified by Seal Research Trust (SRT). Photo by SRT



Figure 17 Tulip Placeholder, female Atlantic grey seal, 14th June 2023. Identified by Seal Research Trust (SRT). Sightings calendar by SRT Photo by Mick Dawton



Figure 18: Jonesy, male adult Atlantic grey seal, 3rd October 2023. Identified by Seal Research Trust (SRT). Photo by Nathaniel Barry – Cornish Seal Sanctuary rehab seal released in 2018

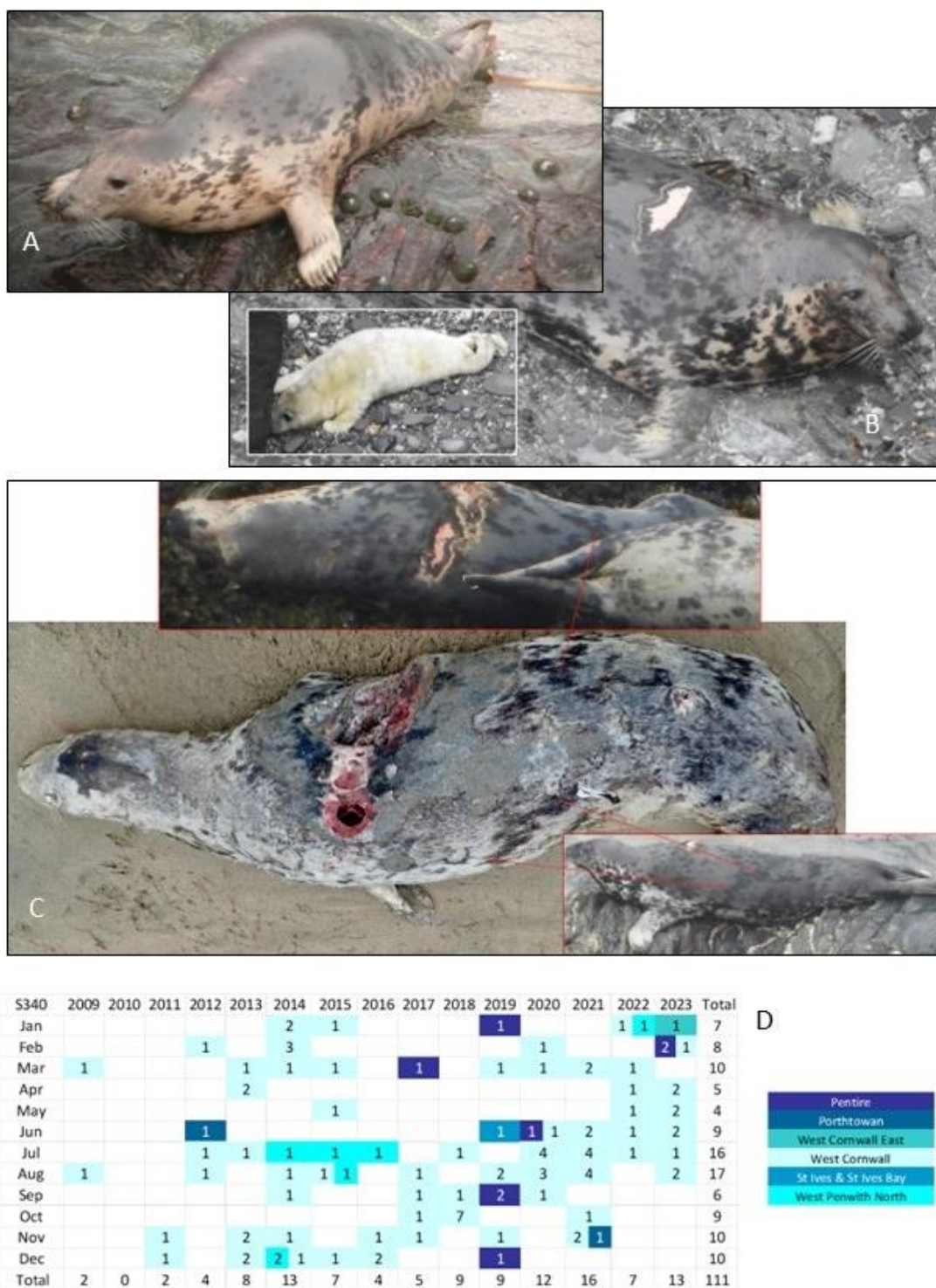


Figure 19 Life of S340 Swims: A) first seen 25/11/07 West Cornwall photo: Sue Sayer, B) with only recorded pup at West Cornwall on 04/10/18 photo Sue sayer. C) ID features photos: SRT/MSN. D) Sightings calendar by SRT

Seal post mortem examinations

Seals that were found dead on the coast, as well as those which were euthanised or died in the wild or within a 7-day window after being rescued, were considered for *post mortem* examination and inclusion in this report. Seals that were taken to rehabilitation and died or were euthanised within their first week of rehab were most likely to have died from conditions they picked up in the wild.

Table 4 Summary of PME results

PME findings	Adult	Juvenile	Moulted pup	Whitecoat pup	Total
Trauma – chronic with secondary infection	1		12		13
Infection			9	3	12
Trauma - acute			2		2
Trauma - known bycatch			1		1
Other			2		2
Not established	1	1	2		4

Of the 308 dead seals reported 34 were retrieved for *post mortem* examination in 2023, representing 11% of seal strandings. *Post mortem* examination was carried out by veterinary pathologist James Barnett on behalf of the Cornwall Marine Pathology Team.

Of those examined at *post mortem*, trauma was the leading cause of death in 16 of the seals. Infection was the second highest cause of death, impacting 12 seals (see table 4). Full post mortem cases can be found in Appendix A.

Notable cases are detailed below in table 5.

Notable seal strandings case

Table 5: Notable seal strandings cases

<p>Grey Seal pup - female S2023/117 SS2023/171 CW/S14/23</p>	<p>Porthkidney Beach SW844383</p>	<p>14/05/2023</p>	<p><i>This seal was in good nutritional state, although it had not fed recently. From data collected from previous post mortem examinations, the animal's length suggests it is a pup born early in the autumn of 2022, putting it at around 8 months of age.</i></p> <p><i>The extensive haemorrhages over the head, neck and thorax were consistent with a traumatic cause of death. The unusual, near symmetrical marks and wounds on the 5th digits of both hind flippers appeared anthropogenic in origin but the precise cause is unknown.</i></p> <p><i>The extensive haemorrhages over the head and neck were consistent with a traumatic cause of death and bycatch cannot be completely discounted. The unusual, near symmetrical marks and wounds on the 5th digits of both hind flippers appeared anthropogenic in origin but the precise cause is unknown and histopathology indicated that they occurred post mortem.</i></p>
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<p>Grey Seal pup S2023/204 SS2023/568 CW/S23/23</p>	<p>St Ives Harbour SW520407</p>	<p>13/10/2023</p>	<p><i>I understand that this pup was found freshly dead within a net hanging over the side of a fishing boat in St Ives harbour. The net submitted with the pup was monofilament netting with a mesh size of 31cm (bottom line and other rope also submitted). Gross post mortem examination found sand in the trachea and bronchi which would support the suspicion that the pup had drowned in the net. There were also fresh wounds to the head and gums, and two fractured teeth that were also potentially consistent with net entanglement. The wound on one hind flipper and pelvic abscess were not such recent lesions. Histopathology findings also supported the conclusion that bycatch was the cause of death..</i></p>
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Seal Evidence Evaluation Protocol (SEEP)

Cornwall Wildlife Trust produced a new Seal Evidence Evaluation Protocol (SEEP) in 2016 to further the development of seal strandings photo collection and analysis, following similar protocols already established with the Bycatch Evidence Evaluation Protocol used for cetaceans. The protocol for assessing cause of death for seals is still in development, and there are additional difficulties in this type of assessment due to the pelt and skin structure of seals, which means external marks aren't as clear as they are in cetacean species. During 2023, 147 seals were assessed using SEEP methods. The majority of these (79%, n=116) had no features of note, 22 (15%) were inconclusive, and one had features associated with definite trauma. Six seals (4%) had definite or probable bycatch or entanglement features (see table 6).

Table 6: a summary of SEEP conclusions from seal cases assessed in 2023.

SEEP Conclusion	Number of animals	% of SEEP assessed cases
Bycatch	1	0.7%
Probable bycatch	2	1.4%
Trauma	1	0.7%
Entanglement	1	0.7%
Possible entanglement	1	0.7%
Entanglement - Ring neck	2	1.4%
Possible ring neck	1	0.7%
Inconclusive	22	14.9%
No features	116	78.8%
Total	147	100%



Photo 9: Long term entanglement, adult female Atlantic grey seal 9th October 2023, Square Cut Bay, Godrevy. Photo by Seal Research Trust.

Marine Turtles

There were five marine turtles reported to the Marine Strandings Network in 2023, three loggerheads, a Kemp’s ridley and one leatherback (see figure 20).

One turtle, a juvenile female was examined by postmortem and found to most likely have died from cold stunning. Further details can be found in table 6.

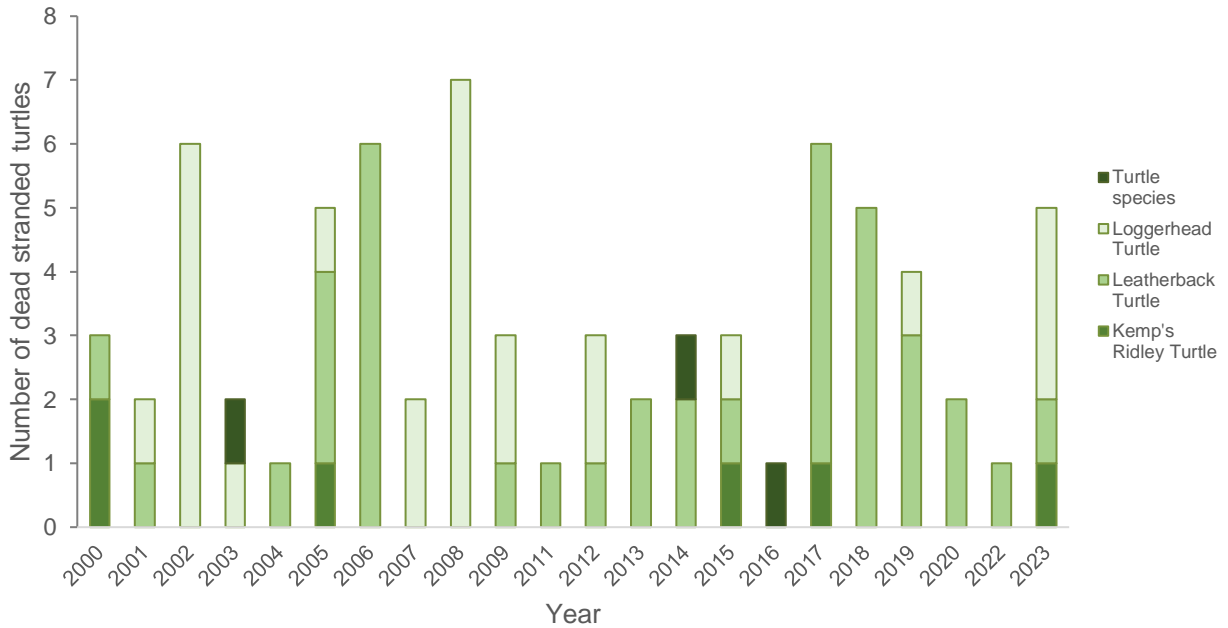


Figure 20: Marine turtle strandings 2000 – 2023



Photo 10: Loggerhead turtle Blackrock, 21st Jan 2023 photo by Claire Thorne

Table 6: PME reports for turtles.

<p>Juvenile loggerhead turtle (female) CW/T2/23</p>	<p>Daymer Bay, Padstow (SW928774)</p>	<p>27/11/23</p>	<p><i>This juvenile female loggerhead turtle was found dead on a beach in north Cornwall but its well-preserved condition suggested it may have originally live stranded. From the curved carapace length, it was estimated to be around one year old (Casale et al., 2011), it was in poor body condition and is likely to have succumbed to cold stunning. Its poor nutritional state may have been exacerbated by having one shortened hind flipper, which appeared to be a congenital abnormality, there being no evidence of scarring and a claw present on the distal tip. There was also evidence of a possible enteritis and localised peritonitis. Histopathology found evidence of fatty change in the liver consistent with the turtle's poor nutritional state and diagnosis of cold stunning. There was also evidence of acute myodegeneration, although the cause and significance of this was unclear.</i></p>
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Birds

CWT MSN continue to monitor bird strandings reported to us, and to work in collaboration with partner organisations such as the RSPB and BDMLR (British Divers Marine Life Rescue) to ensure quick reactions in response to any major incidents, such as storm wrecks or as a result of pollution.

The previous year of 2022 saw a larger than usual number of bird records (n=161) due to the Avian Influenza pandemic which impacted different seabird species around the UK in 2021 and 2022, devastating some populations. Less seabirds reports were received in 2023 (n=42) possibly reflecting the decrease nationally in affected animals (see table 7). The proportion of gannets in 2023 (n = 11, 26% of bird records) was less than it has been for several years preceding the avian flu outbreak (average percentage of all bird records from 2015 to 2021 is 35%, see figure 21). This may reflect the fact that gannet populations were one of the worst-hit species in the 2022 breeding season (Royal Society for the Protection of Birds, 2024). However it is important to note that bird strandings are vastly under reported compared to marine mammal species and that therefore this leads to a lack of confidence in trends in the dataset.

The Cornwall Wildlife Trust continues to collect data on behalf of Natural England via their Epicollect scheme, providing seabird mortality data so that government can continue to review the impact of Avian flu on wild bird populations.

Table 7: Total numbers of each sea bird species reported to CWT MSN in 2023

Species of Bird	Number of reports	Estimated number of animals
Gannet	11	11
Guillemot	6	6
Herring Gull	4	4
Puffin	4	4
Gull species agg.	3	11
Cormorant	3	3
Fulmar	2	2
Oystercatcher	2	2
Razorbill	2	2
Cormorant/Shag	1	11
Bird species	1	7
Leach's Storm Petrel	1	1
Long Tailed Duck	1	1
Mediterranean Gull	1	1
Total	42	66



Photo 11: Leach's Storm Petrel, Penzance Harbour, 31st Oct 2023 photo by Constance Morris

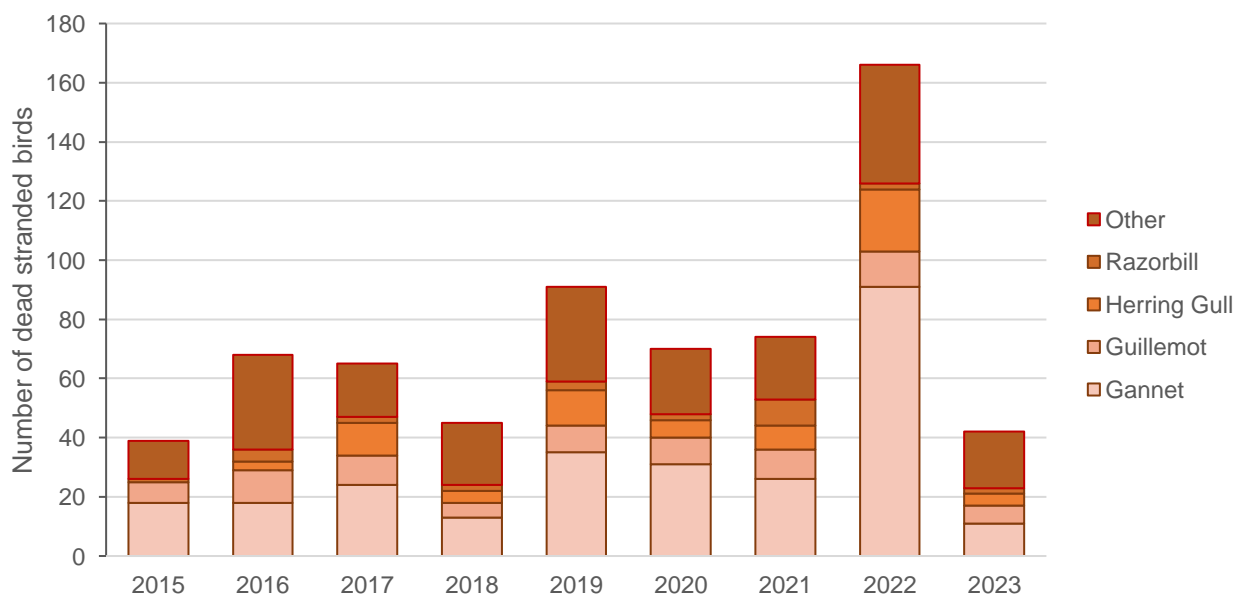


Figure 21: Birds reported to MSN from 2015 - 2023

Sharks



Photo 12: Tope, Towan Beach, 24 Oct 2023, Ivan Sunderwood

There were 14 reports of stranded sharks or rays reported to the CWT MSN in Cornwall in 2023, consisting of 7 different known species (Table 8). Elasmobranchs are highly under reported in Cornwall, so these numbers are a significant underestimate of the true scale of these species washing up around the coast (figure 22).

Table 8: Total numbers of shark and ray (elasmobranch) species reported to CWT MSN in 2023

Species of Shark	Number of Reports	Estimated number of animals
Small-spotted catshark	5	5
Nursehound	2	2
Starry Smooth Hound	2	2
Thornback Ray	2	2
Basking Shark	1	1
Tope	1	1
Shark species	1	1
Total	14	14



Photo 13: Nursehound, Porthminster Beach, St Ives, 15th Oct 2023, photo by Dan Jarvis

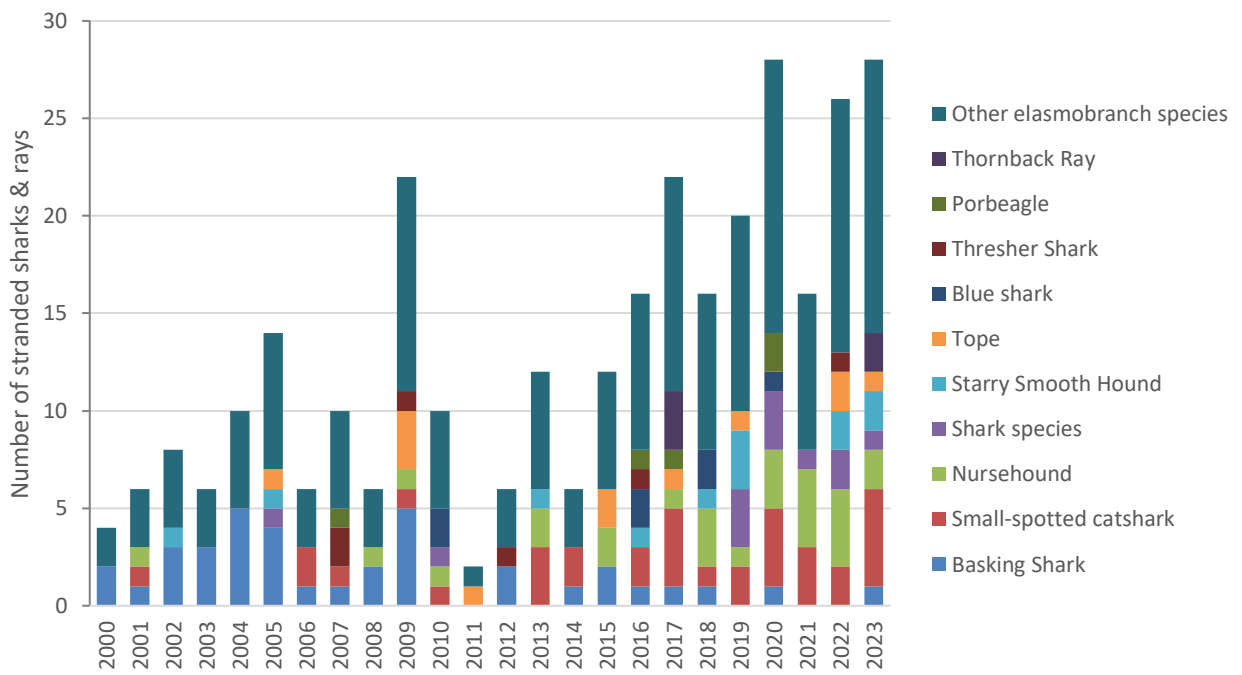


Figure 22: Elasmobranch (shark and ray) strandings 2000 – 2023

Other strandings



Photo 14: Boar fish found at Hell's Mouth, Godrevy, 17th Aug 2023, photo by Anette Rossiter

There were 150 reports of strandings of other species groups, comprising 25 different species and involving thousands of individual animals (see table 9). These species are highly under reported in Cornwall, so these numbers are a significant underestimate of the true scale of these species washing up around Cornwall.

Table 9: Other stranded species reported to CWT MSN in 2023 * numbers of individuals are estimates for some species (indicated with '+')

Group	Species	Number of records	Estimated number of individuals
Cephalopods			
	Common Cuttlefish	1	1
	European squid	1	3
Crustaceans			
	Buoy Barnacle	1	2
	Goose-neck Barnacle	5	3500+
	Masked Crab	1	1
	Velvet swimming Crab	1	1
Echinoderms			
	Spiny Starfish	1	1
Fish			
	Boar-fish or Zulu	3	3
	Conger Eel	5	5
	Garfish	1	1
	Grey Triggerfish	5	5
	Horse Mackerel/Scad	1	200+
	Lesser Sand Eel	1	5000+
	Ocean Sunfish	1	1
	Sardine	1	100+
	unidentified	7	806+
	Whitebait	1	1000+
Hydrozoa			
	By-the-Wind Sailor	8	23707
	Portuguese Man-of-War	59	521
Jellyfish			
	Barrel Jellyfish	12	17
	Blue Jellyfish	2	2
	Compass Jellyfish	3	118+
	Crystal Jellyfish	1	100+
	Moon Jellyfish	3	1101+
Mollusca			
	Violet Sea-snail	2	2
Other			
	unidentified	1	1
Seeds			
	Red Hamburger Bean	1	1
Tunicate			
	Salp	2	220+
Total	26 different species	131	36420

Engagement and Events



Photo 19: 2023 cohort of MSN Callout Volunteers during the 17th September training day at CWT offices. Photo by Abby Crosby.

The Marine Strandings Network (MSN) facilitates a selection of outreach and engagement throughout the year, ranging from our annual conference to active social media. The events are designed to allow the Trust to train and support our volunteers and engage the wider public in the work of the Network.

Social media

The Trust supports active social media platforms, including Facebook, Instagram, WhatsApp and Mailchimp. In 2023, MSN had;

- MSN Facebook: 5200 followers
- MSN Instagram: 3456 followers

Mailchimp: MSN produces seasonal newsletters for our trained volunteers to update the Network on stranding records plus highlight key events and opportunities arising and share related strandings information. In 2023 MSN Mailchimp had 238 subscribers which is associated with the number of trained volunteers.

WhatsApp: MSN Hotline Coordinators use WhatsApp to manage and communicate with the MSN Callout Volunteers. Alerts about a stranding are sent out to the relevant regional MSN WhatsApp group to enable an available volunteer to respond. Regional groups include;

- North East Cornwall - Heartland Point to the Camel Estuary (Polzeath/Rock side)
- North Cornwall - Camel (Padstow side) to Godrevy
- West Cornwall - Godrevy to Porthleven
- South West Cornwall - Porthleven to Fal River (Falmouth side)
- South Cornwall - Fal river (Roseland side) to Fowey (Fowey side)
- South East Cornwall - Fowey (Polruan side) to the Tamar
- Isles of Scilly

This method of communication has been hugely beneficial to the Network, reducing time and effort from our Hotline Coordinators and increasing response opportunities for our Callout Volunteers. All trained MSN Callout Volunteers are within at least one (some are on multiple) regional WhatsApp Group.

MSN Callout Volunteer Training Day

The MSN has nearly 200 volunteers countywide. Volunteers living in close proximity to each stranding are used wherever possible, as their knowledge of local terrain increases speed of response and enhances safety.

All MSN volunteers complete a full training session before they can be called out to record a stranding. In addition to the theory sessions, life-sized inflatable models of a whale, dolphin and seal are used during training which includes the methods for recording morphometrics and bycatch evidence.

On the 12th October 2023, CWT coordinated the annual MSN Callout volunteer training day. It was attended by 39 members of the public.

MSN Forum 2023

An annual Forum is organised each autumn by the MSN. Its purpose is to celebrate the success of MSN and the work of the volunteer network, share research and information, and provide an opportunity for dedicated volunteers to network. There is also the opportunity to train new volunteers, distribute equipment, ensure quality and consistency of reporting, and introduce new protocols. Presentations on strandings-related subjects are also given by guest speakers, for example from the Institute of Zoology and Natural History Museum.

The 2023 MSN Forum was special in that it celebrated 20 years of work in its current form within Cornwall Wildlife Trust. It was a hybrid event held on the 11th March 2023 at The Alverton Hotel, Truro. The programme of speakers can be viewed in Table 10 below.

Table 10: MSN Forum programme March 2023

Arrival and registration	
FIRST SESSION – HISTORY of MSN	
MSN over time – the development and evolution of our county network	Ruth Williams, Cornwall Wildlife Trust
The day in the life of a MSN volunteer	Jane Darke, MSN Volunteer
20 years of stranding trends in Cornwall	Anthea Hawtrey-Collier, Cornwall Wildlife Trust/ ERCCIS
Two decades of data - marine animal pathology in Cornwall	James Barnett
QUESTIONS	ALL
BREAK	
SECOND SESSION – NATIONAL STRANDINGS WORK	
Twenty years later- Cornwall's national and international role in strandings investigation	Rob Deaville, Institute of Zoology
Seal Research Trust: Sharing strandings stories to inform conservation	Sue Sayer MBE, Seal Research Trust
Irish Whale and Dolphin Group Cetacean Stranding Scheme	Stephanie Levesque, Irish Whale and Dolphin Group
QUESTIONS	ALL
LUNCH	
THIRD SESSION – CETACEAN STRANDINGS RESEARCH	
The impact of persistent organic pollutants on UK cetaceans	Rosie Williams, Institute of Zoology
The role of the histopathologists in investigating marine mammal strandings	Mark Wessels, Finn Pathologists, Norfolk, UK
Dolphin Bycatch Project- Putting the Bycatch Evidence Evaluation Protocol to the test	Niki Clear, Joint Nature Conservation Committee (JNCC)
Plastic Pollution and Marine Mammals	Sarah Nelms, University of Exeter
I'm forever blowing bubbles- decompression sickness like condition in a Risso's dolphin	Rob Deaville, Institute of Zoology
QUESTIONS	ALL
BREAK	
FOURTH SESSION – PARTNERSHIPS AND OTHER SPECIES	
Sea turtle strandings from the south west	Matt Witt, University of Exeter
20 years of marine mammal rescue and response in Cornwall and the Isles of Scilly	Dan Jarvis, Cornwall and the Isles of Scilly, BDMLR
The UK's first Greenland shark post-mortem examination – what did we learn?	James Barnett
On the shoulders of Giants...	Ruth Williams, Cornwall Wildlife Trust Rob Deaville, Institute of Zoology
QUESTIONS	ALL
CLOSE	
Bar open for post event drinks	

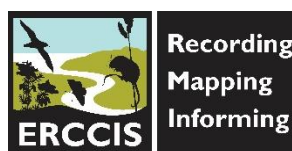
Acknowledgements

We would like to acknowledge the help of the general public in sending in their reports, and the following partners for their support;

- Ruth Williams and Abby Crosby for overseeing and organising the MSN within the CWT.
- CWT Marine Strandings Network volunteers, who continue to enthusiastically collect vital data and retrieve carcasses, often under difficult and challenging conditions.
- Dedicated Hotline Coordinators (2023): Sharon Trew, Joyce Edmonds, Alyson Devonshire, Nigel Boddington, Jen King, Sue King, Richard Weeks, Connie Morris, and Debbie De Ste Croix.
- Anthea Hawtrey-Collier, Sharon Trew, and Jon Pearson, from the Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS) for all their hard work on collating, assessing, and entering records into the database.
- Gemma Newman for assisting with and coordinating the MSN and the forum.
- James Barnett, veterinary pathologist, Cornwall Marine Pathology Team (CMPT) and CSIP, and advisor to the CWT MSN, plus the entire team of volunteers who support CMPT and James with this work.
- Rob Deaville, Institute of Zoology, and the team of CSIP partners including the Natural History Museum, Marine Environmental Monitoring Wales, and the Scottish Marine Animal Scheme (SMASS).
- Sue Sayer MBE for seal ID report input, and the support of Seal Research Trust team and volunteers.
- Dan Jarvis and all Marine Mammal Medics, BDMLR, Cornwall.
- Dr Nick Tregenza, cetacean expert and advisor to Cornwall Wildlife Trust and the MSN.
- Isles of Scilly Wildlife Trust and the island strandings volunteers.
- Cornwall Council and Biffa officers and beach management teams for their assistance.
- All Cornwall's private landowners who assist in reporting and removing carcasses.
- Brendan Godley and Vicky Hobson from the University of Exeter.
- Chelonia Limited.
- The National Trust Rangers.



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Appendix A: Post mortem case summaries

Table A1 Cetaceans

Species (common)	Date Found	PM Number	Location	Cause of Death
Short-beaked common dolphin	04/01/2023	CW/C01/23	Penpol Creek, Fowey	physical trauma, by-catch
Short-beaked common dolphin	08/01/2023	CW/C02/23	Pentewan	physical trauma, by-catch
Short-beaked common dolphin	12/01/2023	CW/C03/23	Pentewan	physical trauma, by-catch
Short-beaked common dolphin	18/01/2023	CW/C13/23	Gorran Haven	physical trauma, by-catch
Short-beaked common dolphin	19/01/2023	CW/C04/23	Sennen	gastric impaction (fish bones) and peritonitis
Short-beaked common dolphin	20/01/2023	CW/C14/23	Fistral	not established (pending histopathology)
Short-beaked common dolphin	23/01/2023	CW/C05/23	Hayle	parasitism, gastric
Short-beaked common dolphin	23/01/2023	CW/C06/23	Praa Sands	physical trauma, brain haemorrhage
Short-beaked common dolphin	01/02/2023	CW/C07/23	Tolcarne beach	necrotic mass, gastric and peritonitis
Short-beaked common dolphin	10/02/2023	CW/C08/23	Praa Sands	generalised bacterial infection (<i>Streptococcus phocae</i>) and necrotising dermatitis; sequel to seal bite wounds
Short-beaked common dolphin	13/02/2023	CW/C09/23	Portloe	asphyxia (fish blocking larynx/nasal passage)
Short-beaked common dolphin	22/02/2023	CW/C10/23	Perranuthnoe	parasitism, gastric and pneumonia
Short-beaked common dolphin	22/02/2023	CW/C11/23	Mawgan Porth	physical trauma, by-catch
Short-beaked common dolphin	04/03/2023	CW/C12/23	Cows Beach, Rosemullion Head	gastric and oesophageal impaction (fish bones)
Risso's dolphin	01/04/2023	CW/C15/23	Polridmouth Cove	Physical trauma, bycatch
Short-beaked common dolphin	09/04/2023	CW/C16/23	Seaton	Parasitic bronchopneumonia
Short-beaked common dolphin	26/04/2023	CW/C17/23	Cadgwith	Physical trauma, bycatch
Short-beaked common dolphin	03/05/2023	CW/C18/23	Swanpool beach	Physical trauma, bycatch
Long-finned pilot whale	20/06/2023	CW/C19/23	Marazion	Bronchopneumonia, bacterial
Short-beaked common dolphin	26/06/2023	CW/C20/23	Trevose Head	Live stranding, acute stress response
Short-beaked common dolphin	09/07/2023	CW/C21/23	Carne beach	Pleuritis and pericarditis, <i>Pasteurella</i> sp.
Striped dolphin	16/07/2023	CW/C22/23	Sandymouth	Meningitis, periventriculitis, choroiditis
Striped dolphin	17/07/2023	CW/C23/23	Widemouth Bay	Meningitis, non suppurative
Short-beaked common dolphin	20/07/2023	CW/C24/23	Tregantle	Physical trauma, bycatch
Harbour porpoise	25/07/2023	CW/C25/23	Chapel Rock beach	Pneumonia, <i>Aspergillus fumigatus</i>
Harbour porpoise	02/08/2023	CW/C26/23	Daymer Bay	Malnutrition, hepatic and renal lipidosis
Short-beaked common dolphin	07/08/2023	CW/C28/23	Penhale	generalised bacterial infection (<i>Streptococcus phocae</i>) and necrotising dermatitis, panniculitis and myositis; sequel to seal bite wounds
Short-beaked common dolphin	08/08/2023	CW/C29/23	St Ives	Malnutrition, hepatic lipidosis
Short-beaked common dolphin	14/08/2023	CW/C30/23	Godrevy	Fundic and pyloric stomachs, severe ascarid parasitism
Short-beaked common dolphin	23/08/2023	CW/C31/23	Mylor Creek	Live stranding, acute stress response
Short-beaked common dolphin	25/08/2023	CW/C32/23	St Agnes	Parasitic bronchopneumonia, pneumothorax
Short-beaked common dolphin	27/08/2023	CW/C33/23	River Lynher	Live stranding

Risso's dolphin	29/08/2023	CW/C34/23	Harlyn Bay	Malnutrition, hepatic lipidosis
Short-beaked common dolphin	18/09/2023	CW/C35/23	Millbrook	parasitism, gastric and pneumonia
Short-beaked common dolphin	12/10/2023	CW/C36/23	Hannafore, Looe	Physical trauma, bycatch
Short-beaked common dolphin	21/10/2023	CW/C37/23	Pentewan	Physical trauma, bycatch
Short-beaked common dolphin	30/10/2023	CW/C38/23	Seaton	Physical trauma, bycatch
Short-beaked common dolphin	12/11/2023	CW/C39/23	Charlestown	Physical trauma, bycatch
Fin whale	15/11/2023	CW/C40/23	Fistral	Dolphin morbillivirus encephalitis
Harbour porpoise	20/12/2023	CW/C41/23	Crantock	Bottlenose dolphin attack

Table A2 Grey Seals

Date found	Number	Stranding location	Age	Sex	COD category
04/01/2023	CW/S03/23	Lusty Glaze, Newquay	Moulted pup	M	Physical trauma, chronic with secondary infection
12/01/2023	CW/S05/23	Pentewan	Moulted pup	M	Not established
14/01/2023	CW/S06/23	Gwynver	Moulted pup	M	Infectious, respiratory
19/01/2023	CW/S08/23	Carbis Bay	Moulted pup	M	Infectious, respiratory
22/01/2023	CW/S07/23	Porthmeor, St Ives	Moulted pup	M	Physical trauma, chronic with secondary infection
19/02/2023	CW/S09/23	St Michael's Mount	Moulted pup	M	Physical trauma, chronic with secondary infection
26/02/2023	CW/S10/23	Godrevy	Moulted pup	F	Infectious, respiratory
16/03/2023	CW/S15/23	Fistral, Newquay	Moulted pup	F	Infectious, respiratory
06/05/2023	CW/S13/23	Portreath	Moulted pup	M	Infectious, respiratory
14/05/2023	CW/S14/23	Porthkidney	Moulted pup	F	Trauma - acute
27/08/2023	CW/S16/23	Millook	Adult	M	Physical trauma, chronic with secondary infection
12/09/2023	CW/S17/23	Pine Haven, Port Isaac	Whitecoat pup	F	Infectious - other
25/09/2023	CW/S18/23	Marazion	Adult	M	Not established
26/09/2023	CW/S19/23	Gwithian	Moulted pup	F	Physical trauma, chronic with secondary infection
01/10/2023	CW/S21/23	Godrevy	Whitecoat pup	M	Infectious - other
01/10/2023	CW/S20/23	Millook	Moulted pup	F	Infectious, respiratory
05/10/2023	CW/S22/23	Maer beach, Bude	Moulted pup	F	Physical trauma, chronic with secondary infection
12/10/2023	CW/S24/23	Porthkerris	Whitecoat pup	M	Infectious - other
13/10/2023	CW/S23/23	St Ives Harbour	Moulted pup	F	Trauma - known bycatch
21/10/2023	CW/S26/23	Coverack	Moulted pup	M	Physical trauma, chronic with secondary infection
22/10/2023	CW/S25/23	Polzeath	Juvenile	M	Not established
27/10/2023	CW/S27/23	Carbis Bay	Moulted pup	M	Physical trauma, chronic with secondary infection
28/10/2023	CW/S28/23	Penberth Cove	Moulted pup	M	Physical trauma, chronic with secondary infection
04/11/2023	CW/S29/23	Mother Ivy's Bay	Moulted pup	M	Physical trauma, chronic with secondary infection
11/11/2023	CW/S30/23	Sennen	Moulted pup	F	Trauma - acute
19/11/2023	CW/S31/23	Portheor beach, St Ives	Moulted pup	M	Infectious - Other
23/11/2023	CW/S32/23	Porthgwarra	Moulted pup	F	Physical trauma, chronic with secondary infection
04/12/2023	CW/S33/23	Port Isaac	Moulted pup	F	Physical trauma, chronic with secondary infection
05/12/2023	CW/S34/23	Hayle	Moulted pup	M	Infectious, respiratory
09/12/2023	CW/S36/23	Perranporth	Moulted pup	M	Other - not established
12/12/2023	CW/S35/23	Porthcurno	Moulted pup	F	Other
23/12/2023	CW/S38/23	Perranporth	Moulted pup	M	Infectious, respiratory
28/12/2023	CW/S39/23	Penberth Cove	Moulted pup	M	Physical trauma, chronic with secondary infection
23/12/2023	CW/S37/23	Porthminster beach, St Ives	Moulted pup	F	Other - starvation

Appendix B: Cetacean Bycatch Report



Photo B1: Common dolphin, off Gorran Haven, 02/01/23. Photo by Frank van Veen

Introduction

The Cornwall Wildlife Trust Marine Strandings Network (CWT MSN) has been collecting valuable data on stranded marine life around Cornwall for over 20 years and holds over 10,000 records. The Network is an invaluable tool to monitor the impact of bycatch on cetacean species within the region. To that end, cetacean species reported to CWT MSN undergo rigorous examinations to identify and record signature features identified as being caused during a bycatch event.

Bycatch analysis, 2023 - *Post Mortem* Examinations

Of the 234 cetacean carcasses that stranded during 2023, 17% (n=40) were suitable and accessible for retrieval by the CWT MSN team for *post mortem* examination, under licence and on behalf of the Defra-funded Cetacean Strandings Investigation Programme (CSIP). Necropsies were performed by James Barnett, the veterinary pathologist for the Marine Strandings Network working within the Cornwall Marine Pathology Team on behalf of CSIP.

Post mortem examinations (PME) concluded that accidental entanglement in fishing gear, known as bycatch, was the cause of death for 13 (32.5%) of the cetaceans examined (12 short-beaked common dolphins and one Risso's dolphin, see Appendix Table B1).

Table B1: Cetacean post mortem reports (2023) – Bycatch (source: CSIP)

Species (common)	Date Found	PM Number	Location	Cause of Death
Risso's dolphin	01/04/2023	CW/C15/23	Polridmouth Cove	Physical trauma, bycatch
Short-beaked common dolphin	04/01/2023	CW/C01/23	Penpol Creek, Fowey	Physical trauma, bycatch
Short-beaked common dolphin	08/01/2023	CW/C02/23	Pentewan	Physical trauma, bycatch
Short-beaked common dolphin	12/01/2023	CW/C03/23	Pentewan	Physical trauma, bycatch
Short-beaked common dolphin	18/01/2023	CW/C13/23	Gorran Haven	Physical trauma, bycatch
Short-beaked common dolphin	22/02/2023	CW/C11/23	Mawgan Porth	Physical trauma, bycatch
Short-beaked common dolphin	26/04/2023	CW/C17/23	Cadgwith	Physical trauma, bycatch
Short-beaked common dolphin	03/05/2023	CW/C18/23	Swanpool beach	Physical trauma, bycatch
Short-beaked common dolphin	20/07/2023	CW/C24/23	Tregantle	Physical trauma, bycatch
Short-beaked common dolphin	12/10/2023	CW/C36/23	Hannafore, Looe	Physical trauma, bycatch
Short-beaked common dolphin	21/10/2023	CW/C37/23	Pentewan	Physical trauma, bycatch
Short-beaked common dolphin	30/10/2023	CW/C38/23	Seaton	Physical trauma, bycatch
Short-beaked common dolphin	12/11/2023	CW/C39/23	Charlestown	Physical trauma, bycatch

Bycatch analysis, 2023 - Bycatch Evidence Evaluation Protocol (BEEP) Assessments

The MSN Bycatch Evidence Evaluation Protocol (BEEP) is an invaluable tool to assess bycatch on cetacean species, which has been developed by CWT MSN. BEEP assessments can be done *in situ* on the beach and provide data on external injuries to help identify possible causes of death from bycatch for all animals, not just those that undergo *post mortem* examination. The process involves cetacean strandings reported to CWT MSN undergoing rigorous external examination by trained volunteers on the beach. Detailed photographs of the carcasses are taken, and these are then assessed to identify, and record, signature injuries and features identified as being associated with bycatch and entanglement in fishing gear. This protocol has been developed from 30 years of experience and is continuously tested and developed to improve the accuracy of bycatch detection.

Of the remaining 194 cetaceans which were not retrieved for *post mortem* examination, 67 cases were reported to MSN but either a volunteer was not able to attend for a wide range of reasons or we had insufficient data to assess the animal through BEEP. Therefore, these cases have not been included in the BEEP and bycatch analysis for this report.

127 (54% of the 234 total) cetacean strandings were examined and recorded *in situ* by MSN volunteers using the BEEP protocol, and photos examined in detail by experienced BEEP assessors within the Environmental Records Centre for Cornwall and Isles of Scilly (ERCCIS). It was found that 30% of the 127 (n=38) showed features consistent with definite or probable bycatch or entanglement in fishing gear (Table 2). These features are based on recognised net entanglement marks such as fin edge cuts/slices, encircling net marks and severed appendages. A further 17% of the 70 total (n=22) cases showed possible signs of bycatch.

Table B2: A summary of BEEP conclusions from cetacean cases assessed in situ in 2023

BEEP Conclusion	Total Assessed	% BEEP Assessed Records
Bycatch	29	22.8
Probable bycatch	7	5.5
Possible bycatch	22	17.3
Entanglement	2	1.6
Trauma	1	0.8
Trauma - BND Attack	2	1.6
Trauma - Boat Strike	1	0.8
No features	42	33.1
Inconclusive	21	16.5
Grand Total	127	100%

Table 3 Number of PME and BEEP assessed cetaceans showing signs or symptoms of bycatch. (*BEEP numbers are those for which bycatch was determined as definite or probable)

Species	Total number of reported strandings	Number of carcasses assessed through BEEP or PME	Identified as bycaught through PME and BEEP*	% bycatch of assessed carcasses
Common Dolphin	155	132	44	33%
Dolphin species	36	5	2	40%
Harbour Porpoise	23	19	2	11%
Risso's Dolphin	5	4	1	25%
Cetacean	4	1	0	0%
Whale species	4	0	0	0%
Fin Whale	3	2	0	0%
Striped Dolphin	3	3	0	0%
Pilot Whale	1	1	0	0%
Grand Total	234	167	49	29%

Cetacean bycatch in 2023

Of the 167 cetacean strandings for which PME or BEEP analysis was possible 29% (n=49) showed signs of having been bycaught. Most of these occurred in winter months (Figure B1) and along the south coast of Cornwall .

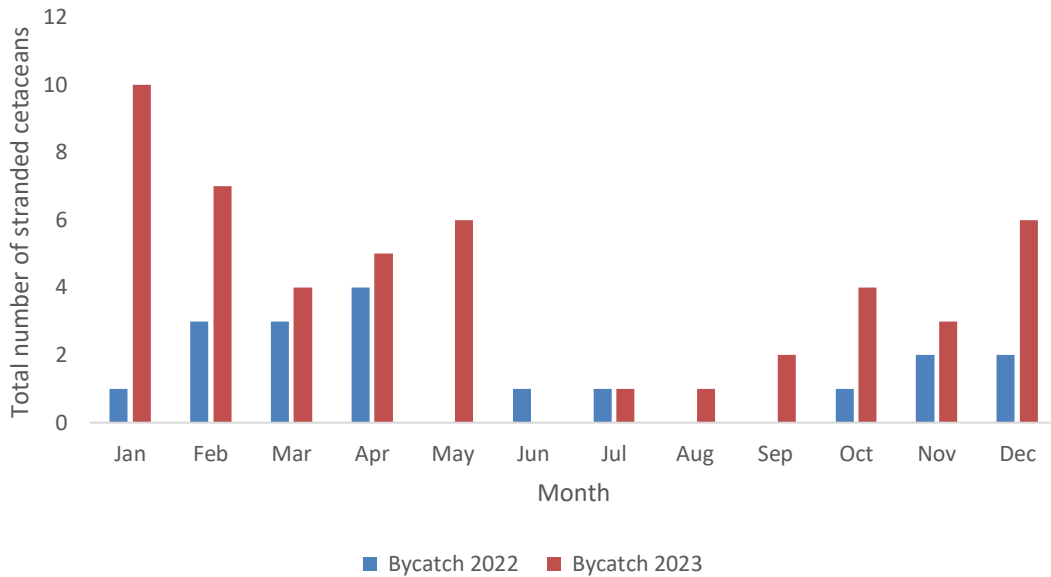


Figure B1: Number of bycaught stranded cetaceans per month in 2022 and 2023, identified by both postmortem and BEEP.

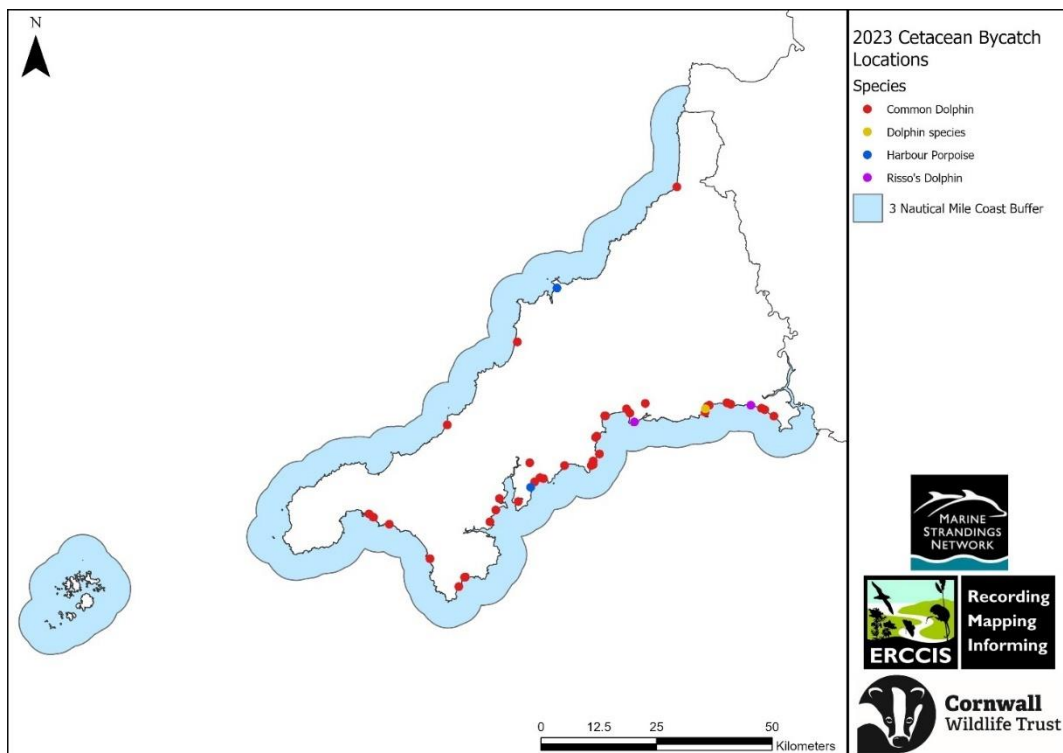


Figure B2: The location of 2023 stranded cetaceans with evidence of bycatch.

Bycatch Analysis, comparison with previous years

For a bycatch comparison over years, we have only included cases which have been assessed through *post mortem* examination and/or BEEP. Since 2005 the proportion of assessed cetacean strandings which were concluded to be bycatch or probable bycatch has averaged just over a quarter of all animals ($\bar{x} = 26\%$, range = 14% to 46%, see *Figure B3*). Of the 167 cetacean strandings for which PME or BEEP analysis was possible 29% (n=49) showed signs of having been bycaught.

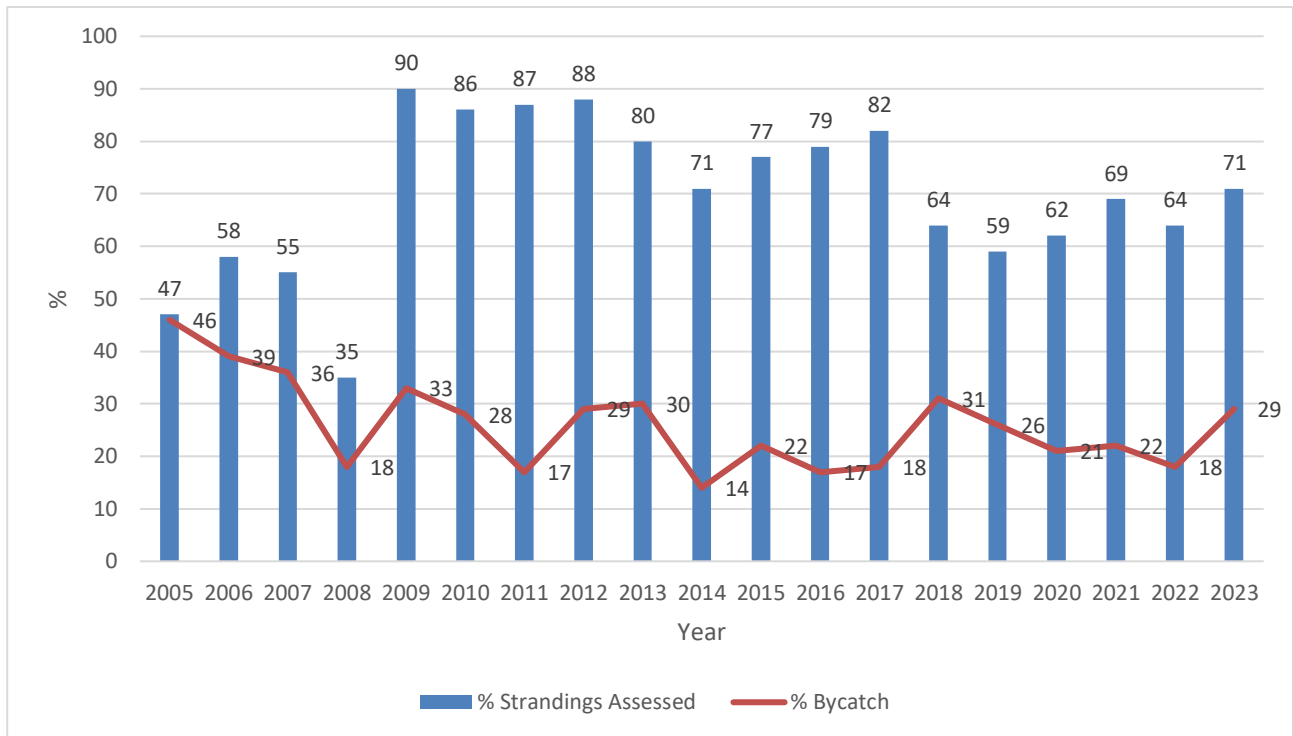


Figure B3: The percentage of bycaught assessed cetaceans against the percentage of those assessed through post mortem examination or BEEP assessment combined, from 2005 to 2023.

Summary of all animals which exhibited signs of bycatch in 2023

Blue highlights the cases which went for post mortem examination. Photos included are a small selection that show some of the features identified during analysis, if you would like further information, please contact the MSN Strandings Data Officer.

Reference	Location	Date	Gross post-mortem examination findings / observations
Common Dolphin C/2023/003 SW2023/4 CW/C01/23	First spotted at sea off Gorran Haven then stranded in Fowey estuary, SX126542	First seen 02/01/2023 Stranded 04/01/23	<i>This subadult male common dolphin was in moderate body condition and showed evidence of recent feeding. The linear marks running over the rostrum and melon and the linear encircling wounds and fin slices/skin tags on fins and flukes are, in my opinion, consistent with a diagnosis of bycatch and histopathology has indicated that these occurred ante mortem. There were also two long, deep wounds on the right flank and histopathology of the edges of one of these suggests it is more likely that these occurred post mortem. Additionally, there was evidence of a mild to moderate bronchopneumonia, although no lungworm were observed grossly or on histopathology in association with this and it is unlikely that it was having a significant effect on lung function.</i>



Common dolphin C/2023/006 SW2023/142	Vault Beach, Gorran Haven SX009407	04/01/2023	Large clean edged slice to leading edge LHS fluke. Large clean edged slice across LHS melon. Clean edged wound to leading edge dorsal fin.
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<p>Common Dolphin C/2023/009 SW2023/145</p>	<p>Polkerris Beach, St Austell SX092521</p>	<p>08/01/2023</p>	<p>Broken Beak, Linear marks on the leading edge and across pectoral fins. Linear marks in crease of pectoral fin RT side. Large slice to trailing edge of LT pectoral fin with associated linear impressions across pectoral fin. Long skin deep linear mark across thorax under LT pectoral fin. Linear impressions to leading edge Flukes. Notches to leading edge RHS pectoral fin with associated linear impressions to trailing edge and associated fin edge slice.</p>
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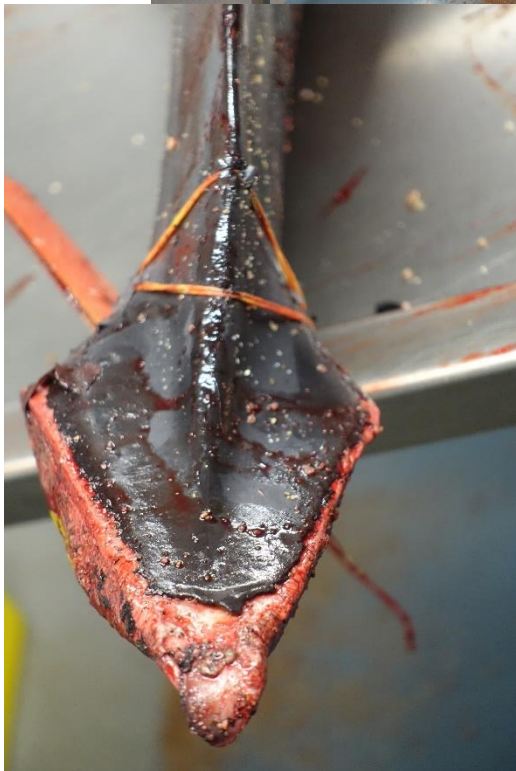


Common Dolphin
C/2023/010
SW2023/8
CW/C02/23

Pentewan Sands,
SX020470

08/01/2024

This adult male common dolphin was in reasonable body condition and had fed recently. The clean amputation of both tail flukes, encircling linear marks on the rostrum and melon, and the encircling wounds on right pectoral are, in my opinion, consistent with a diagnosis of bycatch. In addition, there was evidence of a clinically insignificant bacterial bronchopneumonia which was probably secondary to an earlier lungworm infection although no lungworm were seen grossly or histopathologically. The material found in the larynx is likely to have been aspirated stomach contents.



Common Dolphin
C/2023/013
SW2023/20
CW/C03/23

Pentewan Sands
SX021471

12/01/2023

This juvenile male common dolphin was in good body condition and there was evidence of recent feeding. The encircling linear marks/wounds on the rostrum, melon and tail stock, and fin slices and encircling wounds/marks on fins and flukes are, in my opinion, consistent with a diagnosis of bycatch. The large quantity of fluid found in the bronchi suggested this animal had drowned rather than suffocated in the net.



Common Dolphin
C/2023/031
SW2023/149

Vault Beach,
Gorran Haven
SX013409

13/01/2023

Flukes amputated
Linear impression under chin, across melon. Linear wounds and
slices to leading edge of LT pectoral fin. Haemorrhage to LHS eye.
Multiple linear impressions around bottom jaw through teeth.



<p>Common Dolphin C/2023/021 SW2023/44</p>	<p>Gorran Haven SX013416</p>	<p>18/01/2023</p>	<p>Rob Deaville (CSIP) reports that this was a juvenile female common dolphin in good to moderate body condition and with evidence of maternal dependency. The cause of death was determined to be bycatch</p>
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Common Dolphin C/2023/030 SW2023/155	Banjo Pier, Looe SX256530	22/01/2023	Head only - clean edge to wound
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<p>Common Dolphin C/2023/025 SW2023/157</p>	<p>Pendower Beach, The Roseland SW898381</p>	<p>23/01/2023</p>	<p>Tail amputated. Notch with associated linear impression to leading edge RHS pectoral fin. Abrasions to leading edge RHS pectoral fin.</p>
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Common Dolphin C/2022/063	At Sea off Tater Du, Lamorna SW440228	21/04/22	Fin edge sliced to leading edge both pectoral fins. Encircling impressions to beak, behind eyes and fully encircling impression round head and under throat. Damage to tongue. Linear notches to leading edge flukes. (Video evidence submitted)
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(still taken from video)

Risso's Dolphin
C/2022/064

Roskilly,
Newlyn
SW472271

26/04/2022

Tail amputated.
Multiple notches to tip dorsal fin.



<p>Common Dolphin C/2022/077 SW2022/379 CCW/C20/22</p>	<p>Bosahan Cove, Helford SW773264</p>	<p>04/06/2022</p>	<p><i>This young adult female common dolphin was in moderate body condition and there was evidence of recent feeding. The linear marks fanning out from the tip of the melon over the maxilla and the amputation of the distal tail stock and flukes are, in my opinion, consistent with bycatch as the cause of death.</i></p> <p><i>Other findings on post mortem examination appear to be largely incidental. Specifically, the relatively localised parasitic bronchopneumonia is unlikely to have had a significant impact on the animal's health.</i></p>
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Common Dolphin C/2022/090	Rinsey Cove, Porthleven SW593268	10/07/2022	Linear impression behind dorsal fin. 2 x linear impressions to leading edge flukes. Lip cut to RHS upper lip with corresponding lip cut LHS. Lip cut LHS upper beak near tip. Diagonal linear impression from above LHS pectoral tracking towards dorsal fin. Linear impression to leading edge LHS pectoral fin
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Dolphin Species C/2022/117	Northcott Beach, Bude SS200082	09/10/2022	Tail amputated. Dorsal fin amputated. Beak broken.
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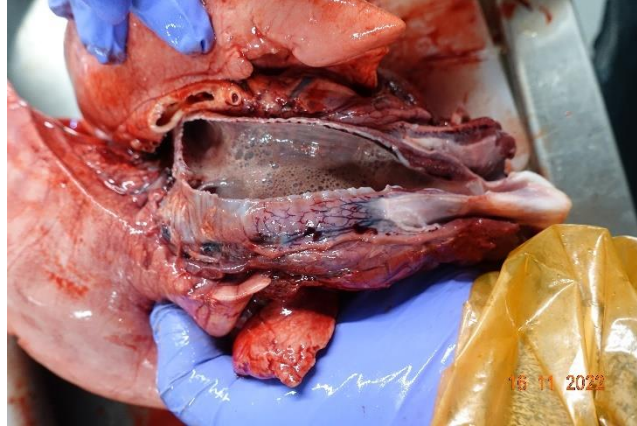


Common Dolphin
C/2022/123
SW2022/687
CW/C29/22

Little Falmouth,
Flushing
SW804342

16/11/2022

This female common dolphin calf was still nutritionally dependent, having suckled recently, was in good body condition and appeared to have suffered an acute death. The asymmetrical congestion of the lungs does raise the possibility of live stranding. However, this has also been observed in some cases of bycatch and, on balance, the two encircling wounds, on one lip and one tail fluke, coupled with the persistent froth in the lungs and the lack of other signs suggestive of live stranding, in my opinion is consistent with this being a case of bycatch.



Common Dolphin
C/2022/124
SW2022/688
CW/C30/22

Trevellas Porth,
St Agnes
SW726519

18/11/2022

This female common dolphin calf had not eaten recently and was in suboptimal body condition, with evidence of fat mobilisation due to negative energy balance. It is possible that premature maternal separation had led to this calf's poor nutritive state. However, this was not the cause of death as the presence of two linear encircling impressions on one pectoral, a series of three notches in the right upper lip and corresponding linear marks on the right mandible and persistent froth in the airways were, in my opinion, consistent with bycatch.

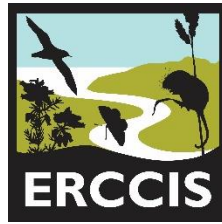


Common Dolphin C/2022/134	Hemmick Beach, Gorran Haven SW994404	19/12/2022	Flukes amputated - clean cut. Thick linear impression to RHS torso. Mandible broken, maxilla broken. Dorsal fin missing - clean cut.
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Common Dolphin C/2022/144	Poldhu Beach, The Lizard SW665200	25/12/2022	Large slice to trailing edge LHS Pectoral fin with associated notch to leading edge. Deep slice and notch to trailing edge dorsal fin with skin loss to the tip. Linear marks across the melon. Skin loss to the tip of the beak. Broken teeth to lower right side of jaw with wound on lip beneath. Clean slice along half of trailing edge of RHS pectoral fin. Thick linear impression under chin.
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**Recording
Mapping
Informing**

Marine Strandings Network

Cornwall Wildlife Trust
Five Acres
Allet
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Cornwall TR4 9DJ

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The MSN was funded by the



Cetacean Strandings
Investigation Project (CSIP)

Publication Policy

This report should be accredited to Cornwall Wildlife Trust Marine Strandings Network in all publicity and wherever referred to. Use of these data, by prior agreement with Cornwall Wildlife Trust and the Environmental Records Centre for Cornwall and the Isles of Scilly (ERCCIS), is welcomed. We would be pleased to receive copies of any publications that have used these data.