



Cornwall
Wildlife Trust



2022 Annual Report

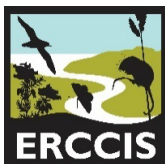
Marine Strandings in Cornwall and the Isles of Scilly

Report by
Cornwall Wildlife Trust
Marine Strandings Network

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Recording
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Photo 1: Atlantic grey seal at Jubilee Pool in Penzance, 1st December 2022. Photo by Lucy Luck

1. Executive Summary

Data on marine organisms that stranded on the shores of Cornwall in 2022 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 156 cetacean strandings were recorded in Cornwall during 2022. As in previous recent years, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings (57%, n= 89), followed by harbour porpoises (*Phocoena phocoena*) (14%, n=22) (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.

Of the 156 cetacean carcasses that stranded during 2022, 19% (n=30) 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 9 (30%) of the cetaceans examined, all being short-beaked common dolphins.

70 (45% of the 156 total) cetacean strandings were examined and recorded *in situ* (not by *post mortem*) by MSN volunteers using the Bycatch Evidence Evaluation Protocol (BEEP), 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 13% of the 70 (n=9) showed features consistent with definite or probable bycatch or entanglement in fishing gear. A further 16% of the 70 total (n=11) cases showed possible signs of bycatch. Combining PM and BEEP results, in 2022 the total proportion of assessed common dolphin and harbour porpoise strandings which were concluded to be bycatch or probable bycatch was 18%, which remains a concerning statistic. Our annual Cetacean Bycatch Report 2022 can be found in Appendix One of this report.

In 2022 192 seal strandings were reported which is lower than the previous year (2021, n = 293) but higher than all years prior to 2019. CWT MSN continues to work closely with the Seal Research Trust (SRT) to monitor strandings 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 these 192 seal strandings, 23% (n=45) were males, 18% (n=34) females and 59% (n=113) of unknown gender due to either limited or no supporting photos, or because the animal was too decomposed and/or had genital scavenging. In 2022, SRT assessed 101 sets of dead seal photos for identification purposes. Two adult females, named by SRT as Black Wall and Tulip, were both identified from their carcasses. In addition, two dead tagged ex-rescue, rehab and released seals were also identified. Of those examined at *post mortem*, trauma was the leading cause of death in nine of the seals. Infection was the second highest cause of death, impacting eight seals. The number of pups born in 2022 around Cornwall was almost equal to the number of dead seals recorded.

There was one turtle stranding in 2022. Other strandings of note include 419 birds due to the unprecedented outbreak of Highly Pathogenic Avian Influenza and the consequent public engagement and awareness around the issue.

In 2022, CWT MSN carried out a variety of outreach and engagement work including active social media, and our annual Callout Volunteer training.

2. Introduction

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 (2022), the Cornwall Wildlife Trust Marine Strandings Network (CWT MSN) database holds over 11,000 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).

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 29 years, in response to the increasing number of stranded cetaceans in Cornwall, more detailed data has been collected by the team in Cornwall. Building on over a decade of work by volunteer Strandings Coordinator Stella Turk MBE and other dedicated researchers, a more formal network of volunteer recorders was established by Cornwall Wildlife Trust in 2003. This network was led and developed further by MSN Coordinators Jan and Jeff Loveridge to provide a comprehensive reporting and recording system for strandings, in particular of marine mammals. Rigorous procedures for reporting and recording stranded marine animals were introduced, together with training for volunteers in investigating carcasses to ensure accuracy. In 2012, the co-ordination of the Marine Strandings Network was passed to the Marine Team of the Cornwall Wildlife Trust, with data management provided by the Environmental Records Centre for Cornwall and Isle of Scilly (ERCCIS).

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 201 2626), 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).

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

3. Strandings in 2022

3.1 Cetaceans

A total of 156 cetacean strandings were recorded in Cornwall during 2022. As in previous recent years, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings (57%, n= 89), followed by harbour porpoises (*Phocoena phocoena*) (14%, n=22) (Figure 1). Due to decomposition, 33 stranded cetaceans could not be identified to species level.

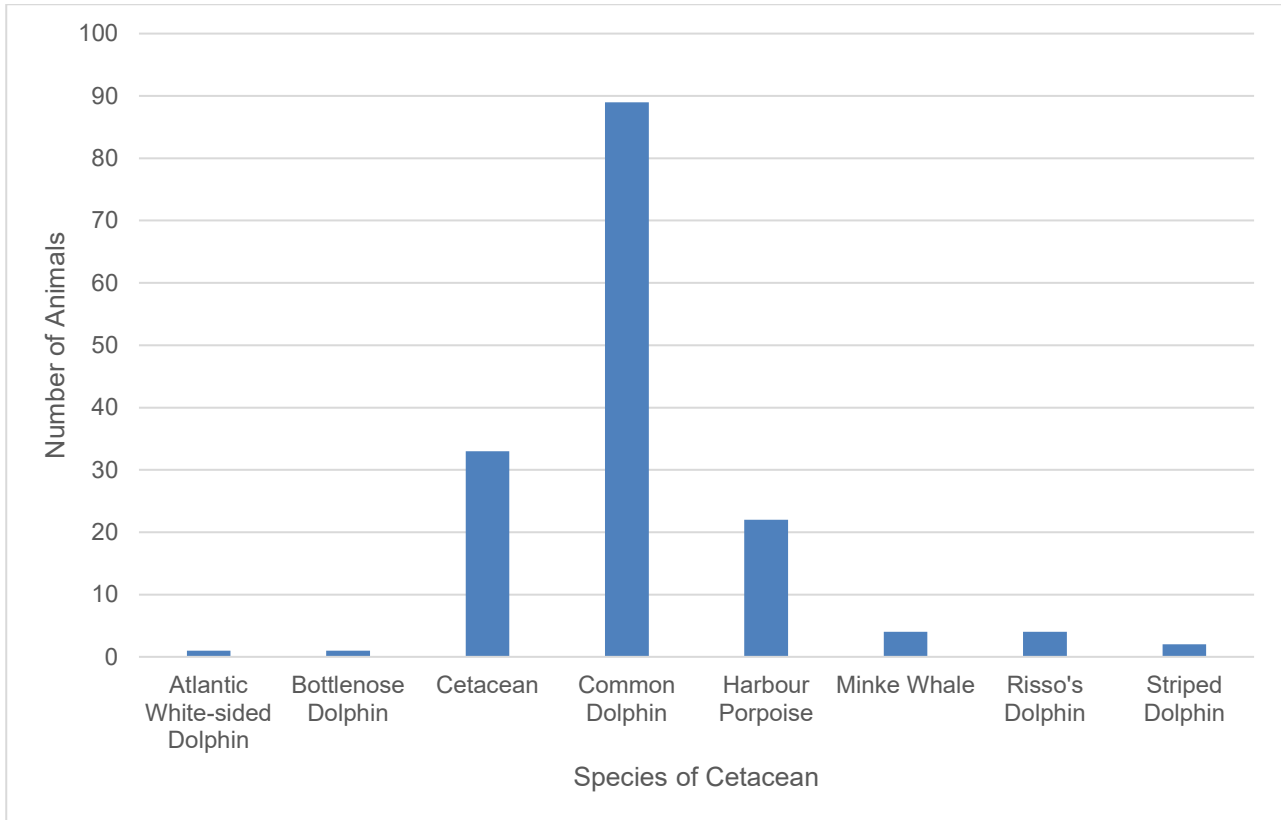


Figure 1: Number of cetacean strandings by species during 2022

There were a significantly lower number of strandings in May and October 2022, with only 6 carcasses recorded over the two calendar months. The highest numbers of strandings were recorded in December 2022 with 26 cetaceans (Figure 2).



Photo 2: Common dolphin with amputation on Mousehole Beach 16th March 2022, photo by Constance Morris

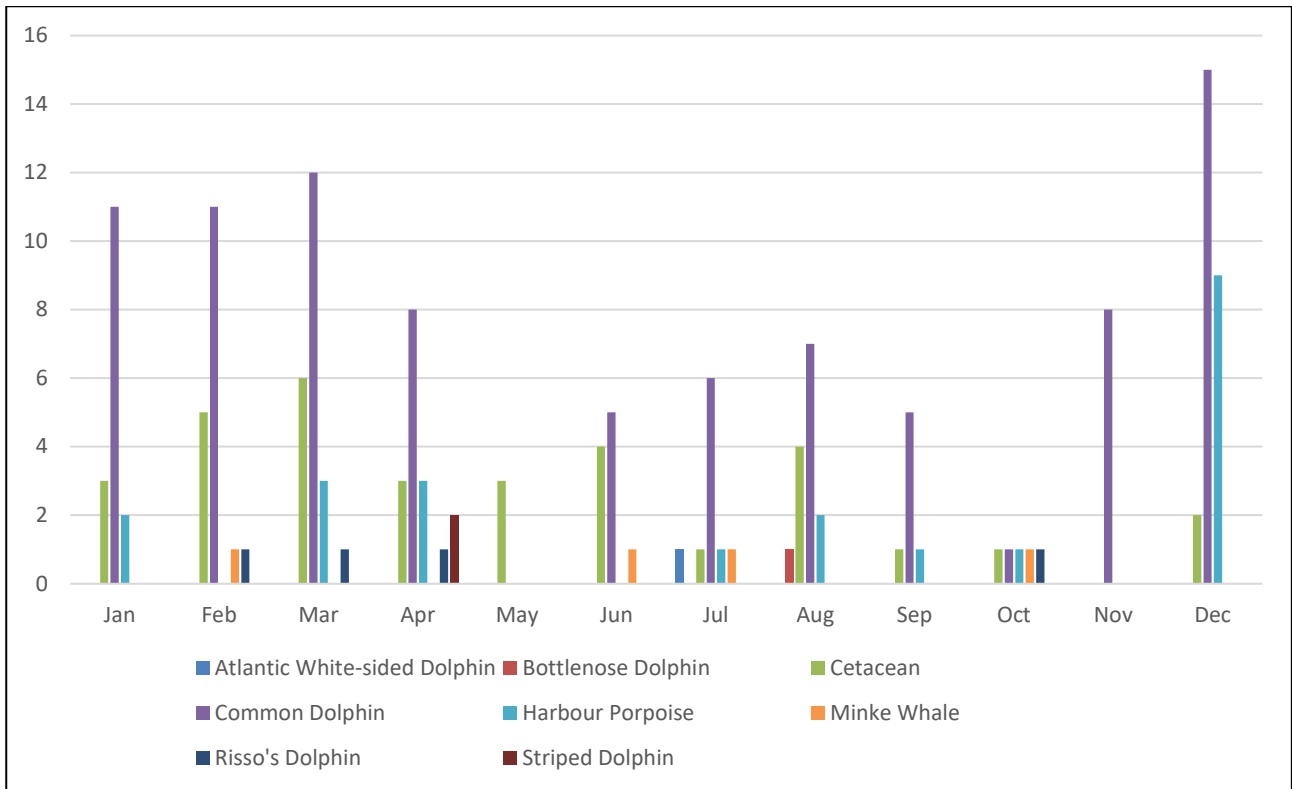


Figure 2: Cetacean strandings by species/month during 2022

Figure 3 shows the locations of all cetacean strandings in 2022 and highlights the geographical spread of cetacean strandings during this year.

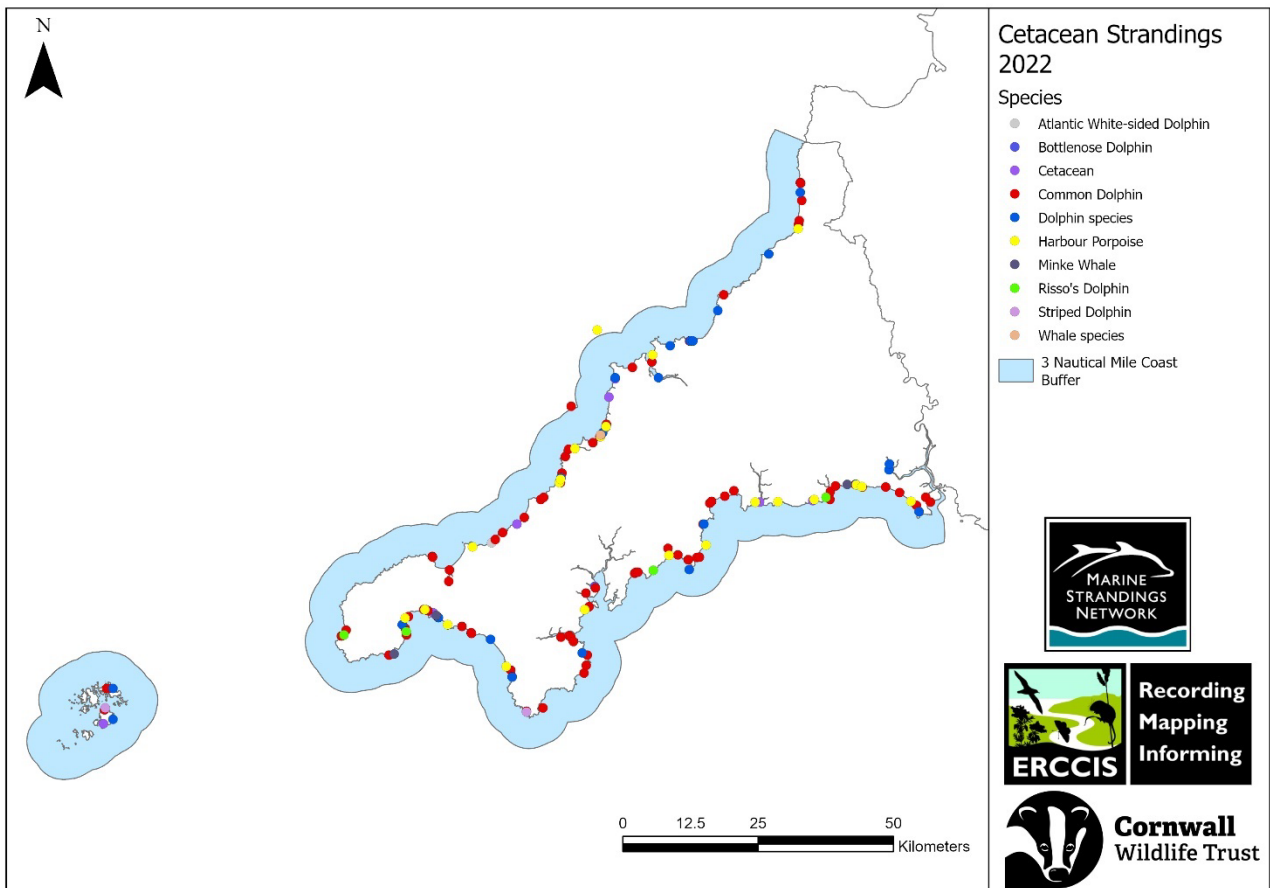


Figure 3: Locations of cetacean strandings in 2022 (n=156)



Photo 3: Common dolphin that died giving birth at sea, Cadgwith, August 2022. Photo by Sam James.



Photo 4: Minke Whale on Marazion 13th February 2022 after the foetus appeared as animal decomposed, photo by Constance Morris.

3.1.1 Comparison with previous years

In total, 156 cetaceans were reported to and examined by CWT MSN in 2022, which is a decrease from the numbers seen in 2021 (n=207) (Figure 4). Overall, the number of cetacean strandings in 2022 is slightly above average when comparing to the number of cetacean strandings from the last 28 years (n=132). In 2022 cetacean stranding numbers were higher than the monthly average in the summer months, from June through to August. (Figure 5).

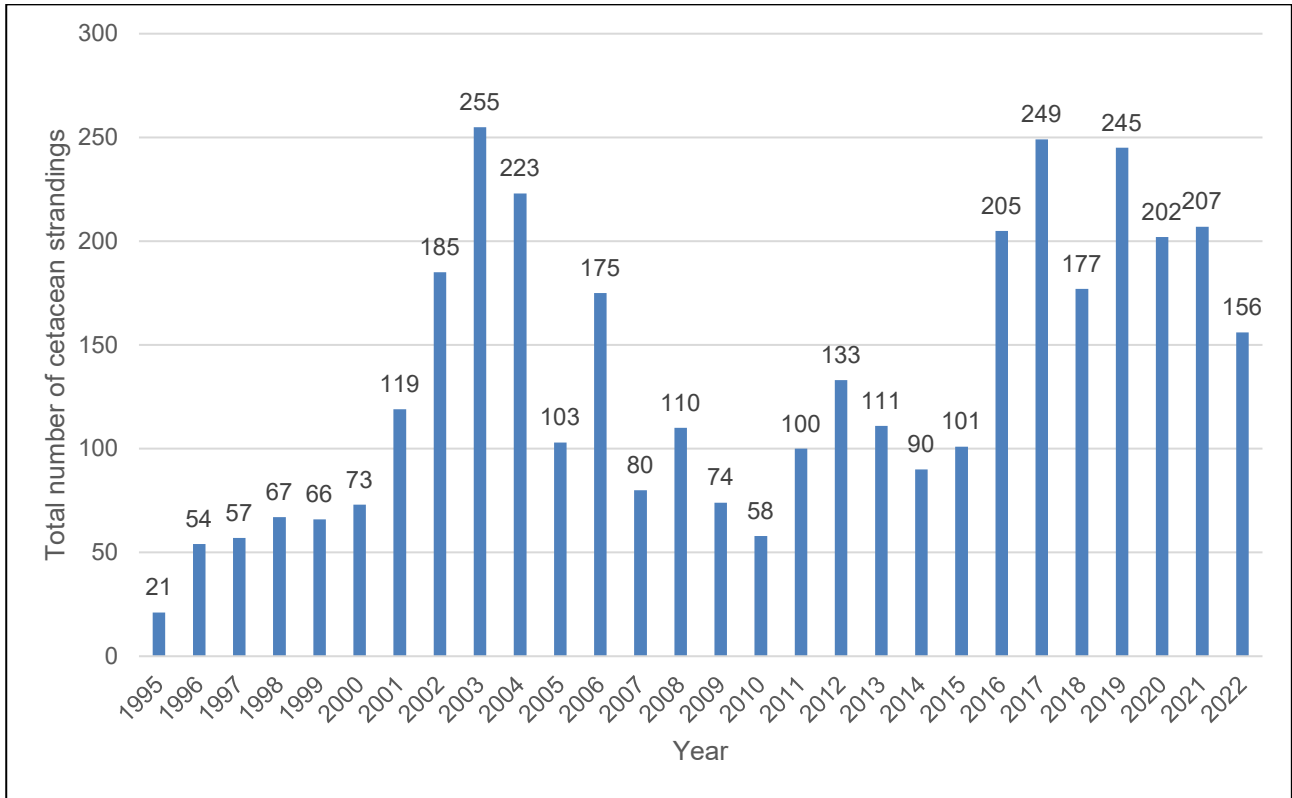


Figure 4: Comparison of cetacean strandings by year (1995 to 2022)

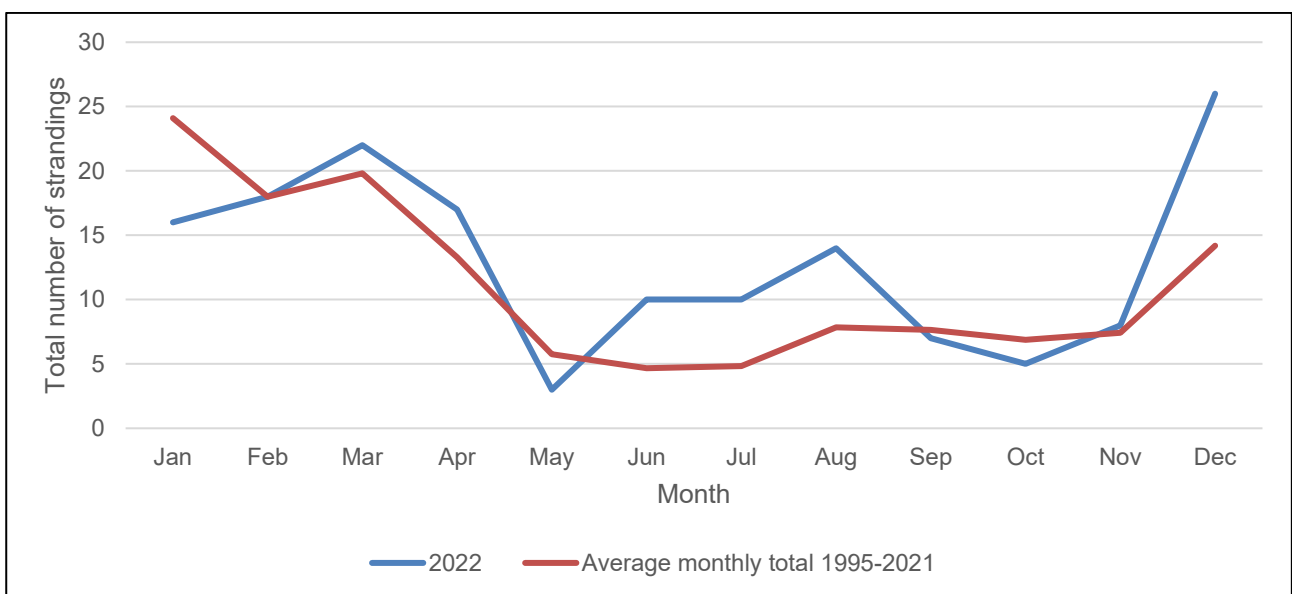


Figure 5: Seasonality of cetacean strandings for 2022, in comparison to average seasonality between 1995 and 2022

Common dolphins and harbour porpoise are the most reported cetacean species to MSN. 2022 was again a notable year for a high number of short beaked common dolphin strandings in Cornwall and the Isles of Scilly (*Figure 6*). Since 2016 common dolphin strandings numbers have been more than double that of harbour porpoise.

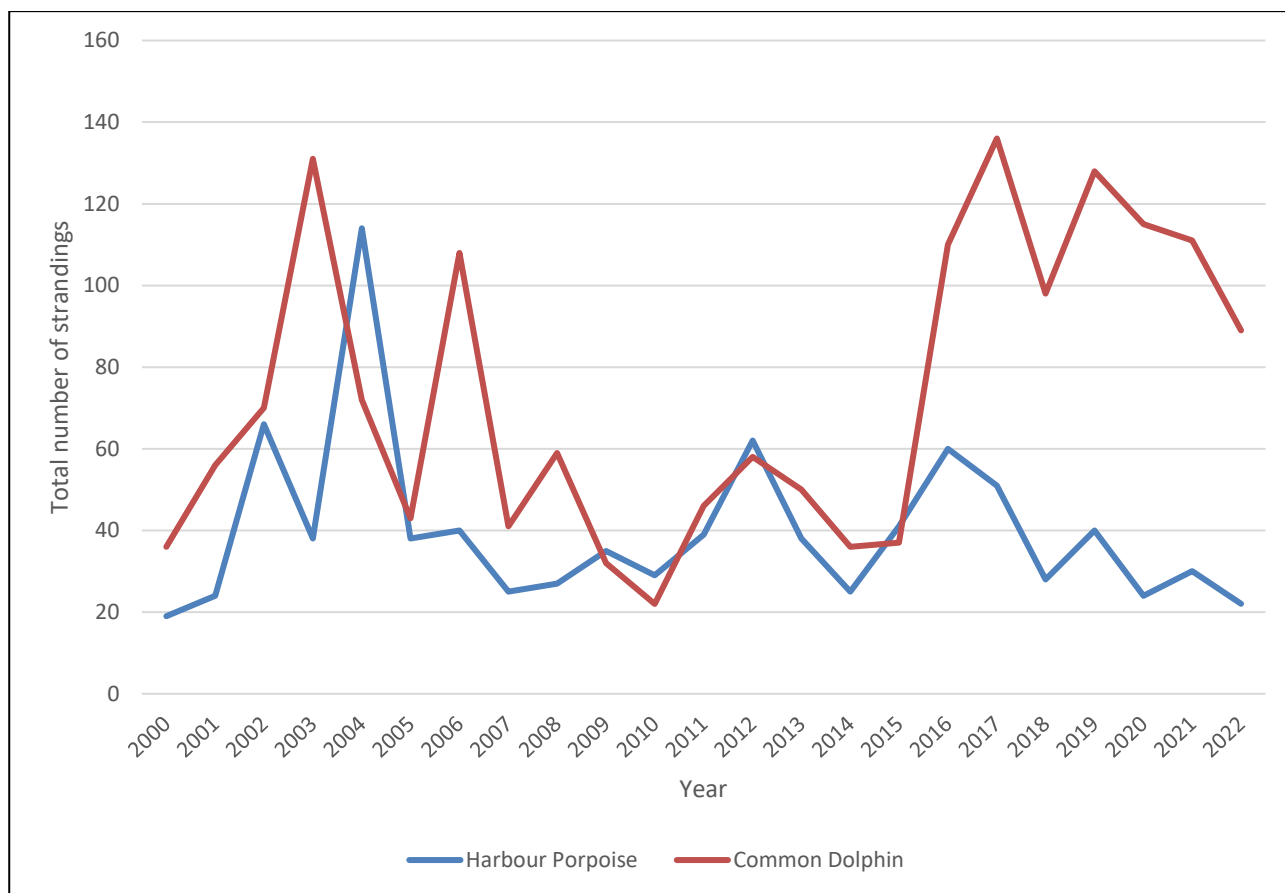


Figure 6: Numbers of common dolphin and harbour porpoise strandings from 2000 to 2022

3.1.2 Cetacean post mortem examinations

Of the 156 cetacean carcasses that stranded during 2022, 19% (n=30) 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 9 (30%) of the cetaceans examined, all being short-beaked common dolphins (*Table 1*). Of note, boat strike was the cause of death in one common dolphin which stranded on Porthpean beach near St Austell on the 12th April 2022, and bottlenose dolphin attack was the cause of death of a harbour porpoise which stranded in Marazion on Christmas Day, 25th December 2022.

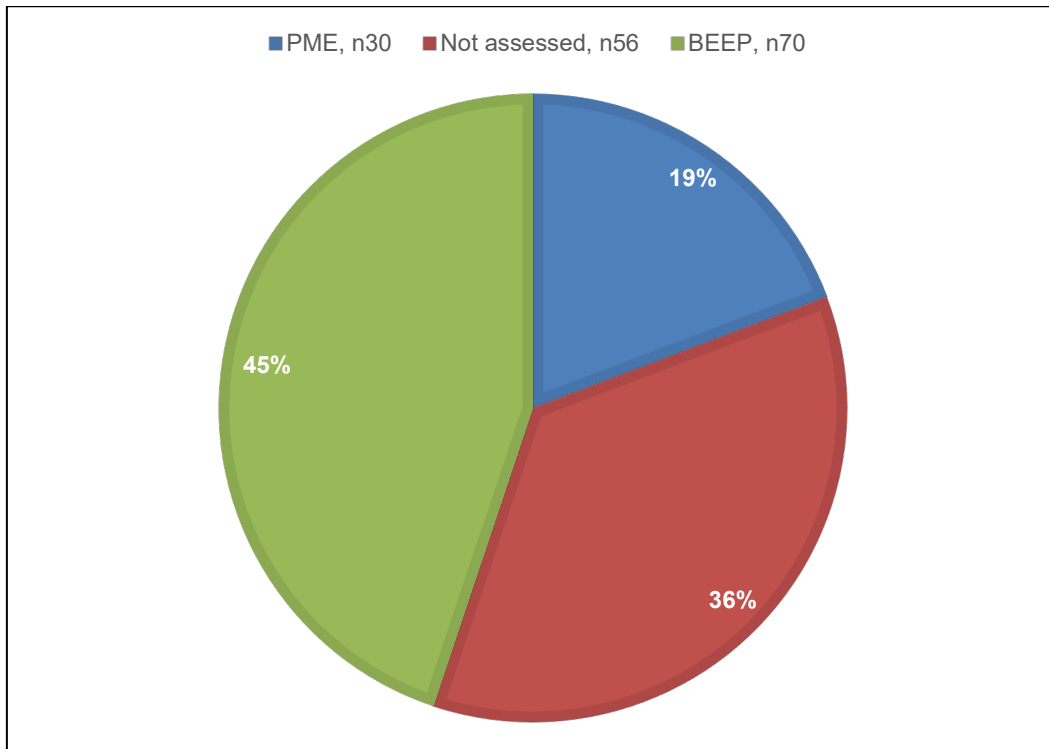


Figure 7: Percentage of stranded cetaceans retrieved for post mortem examination (n=30) and BEEP assessment using in-situ data (n=70) in 2022. The remaining 56 were reported but had insufficient data for more detailed assessment.



Photo 5: Bottlenose dolphin which was found in Mylor Harbour on the 18th August 2022, taken for post mortem examination. Photo by Mick Dawton.

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.*

Date	PM number	Species	Location	Cause of death
05/01/2022	CW/C01/22	Short-beaked common dolphin	Trevaunance Cove, St Agnes	Starvation
20/01/2022	CW/C02/22	Harbour porpoise	Porth beach, Newquay	Infectious disease
31/01/2022	CW/C03/22	Short-beaked common dolphin	Portreath beach	Bycatch
01/02/2022	CW/C04/22	Short-beaked common dolphin	Porthtowan beach	Live stranding
07/02/2022	CW/C05/22	Short-beaked common dolphin	Bluff Cove, Hayle	Bycatch
12/02/2022	CW/C06/22	Short-beaked common dolphin	Vault beach Gorran Haven	Bycatch
07/02/2022	CW/C08/22	Short-beaked common dolphin	Polly Joke, Newquay	Gastric impaction
09/02/2022	CW/C09/22	Short-beaked common dolphin	Widemouth beach, Bude	Intestinal impaction
09/03/2022	CW/C10/22	Short-beaked common dolphin	Long Rock, Marazion	Live stranding
13/03/2022	CW/C11/22	Harbour porpoise	Wherry Town, Penzance	Infectious disease
14/03/2022	CW/C12/22	Short-beaked common dolphin	Sandways beach, Kingsands	Starvation
22/03/2022	CW/C13/22	Short-beaked common dolphin	Helford Creek, Helford	Bycatch
05/04/2022	CW/C14/22	Short-beaked common dolphin	Perranporth beach	Intestinal impaction
12/04/2022	CW/C15/22	Short-beaked common dolphin	Porthpean beach	Boat/ship strike
17/04/2022	CW/C16/22	Short-beaked common dolphin	Mousehole	Bycatch
18/04/2022	CW/C17/22	Short-beaked common dolphin	Pendower beach, the Roseland	Bycatch
29/04/2022	CW/C18/22	Striped dolphin	Caerthillian Cove, Lizard	Infectious disease
28/04/2022	CW/C19/22	Striped dolphin	Bar Point, St Mary's, Isles of Scilly	Infectious disease
04/06/2022	CW/C20/22	Short-beaked common dolphin	Bosahan Cove, Helford	Bycatch
10/06/2022	EX/C21/22	Minke whale	Millendreath, nr. Looe	Not established
03/07/2022	CW/C22/22	Atlantic white-sided dolphin	Greenbank Cove, Portreath	Infectious disease
08/07/2022	CW/C23/22	Short-beaked common dolphin	Porthgwidden, St Ives	Infectious disease
01/08/2022	CW/C24/22	Short-beaked common dolphin	Mullion Harbour, Lizard	Infectious disease
18/08/2022	CW/C25/22	Bottlenose dolphin	Mylor Harbour, Falmouth	Infectious disease
24/09/2022	CW/C27/22	Short-beaked common dolphin	Port Gaverne, nr. Port Isaac	Not established
19/10/2022	CW/C28/22	Short-beaked common dolphin	Hayle	Infectious disease
16/11/2022	CW/C29/22	Short-beaked common dolphin	Flushing, Falmouth	Bycatch
18/11/2022	CW/C30/22	Short-beaked common dolphin	Trevellas Cove, St Agnes	Bycatch
08/12/2022	CW/C31/22	Short-beaked common dolphin	Millbrook, Rame	Infectious disease
25/12/2022	CW/C32/22	Harbour porpoise	Marazion	Bottlenose dolphin attack

Table 1: Cetacean post mortem reports (2022) – gross post mortem and bacteriology findings (source: CSIP)

3.1.3 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 25 years of experience and is continuously tested and developed to improve the accuracy of bycatch detection.



Photo 6: Bycaught female common dolphin calf, Trevellas Cove near St Agnes, 18th November 2022. Photo by Abby Crosby

Of the remaining 126 cetaceans which were not retrieved for *post mortem* examination, 56 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.

70 (45% of the 156 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 13% of the 70 (n=9) 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 16% of the 70 total (n=11) cases showed possible signs of bycatch.

37% (n=26) 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 and likely bottlenose dolphin attack.

BEEP Conclusion	Total Assessed	% BEEP Assessed Records
Definite bycatch	7	10
Inconclusive	26	37.1
No features	21	30
Possible bycatch	11	15.7
Probable bycatch	2	2.9
Trauma	1	1.4
Trauma - BND Attack	2	2.9
Grand Total	70	100

Table 2: A summary of BEEP conclusions from cetacean cases assessed in situ in 2022

Examples of BEEP assessed cetacean strandings are below in *3.1.4 Notable Cetacean Strandings*. For the full BEEP analysis and report, please see *Appendix 1*.



Photo 7: Live stranded common dolphin, Hayle, January 2023. Photo by Dan Jarvis

3.1.4 Notable Cetacean Stranding Cases

<p>Common Dolphin C/2022/059 SW2022/311 CW/C16/22</p>	<p>Mousehole Beach, Mousehole SW473265</p>	<p>16/04/2022</p>	<p>This young adult male common dolphin was in reasonable body condition and there was evidence of recent feeding. The amputation of the tail stock and the faint linear lines on the right side of the head are, in my opinion, consistent with bycatch as the cause of death. Furthermore, the missing tips to the dorsal fin and right pectoral fin, the intramuscular haemorrhages under the tongue and over the left scapula, and the matching pairs of broken teeth in the caudal left arcades may also be sequelae of bycatch.</p>
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<p>Common Dolphin C/2022/063</p>	<p>At Sea off Tater Du, Lamorna SW440228</p>	<p>21/04/22</p>	<p>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)</p>
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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.
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Photo 8: Risso's dolphin, scavenged by a shark, Samphire Beach near Looe, 20th January 2022. Photo by Jason Higley



Photo 9: White-sided dolphin which stranded on Greenbank Cove, near Portreath, and which died of infectious disease. Photo by Dan Jarvis.

3.2 Grey seals

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, in 2022 192 seal strandings were reported which is lower than the previous year (2021, n = 293) (Figure 8). 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 shows the gender of these 192 seal strandings, with 23% (n=45) males, 18% (n=34) females and 59% (n=113) of unknown gender due to either limited or no supporting photos, or because the animal was too decomposed and/or had genital scavenging.

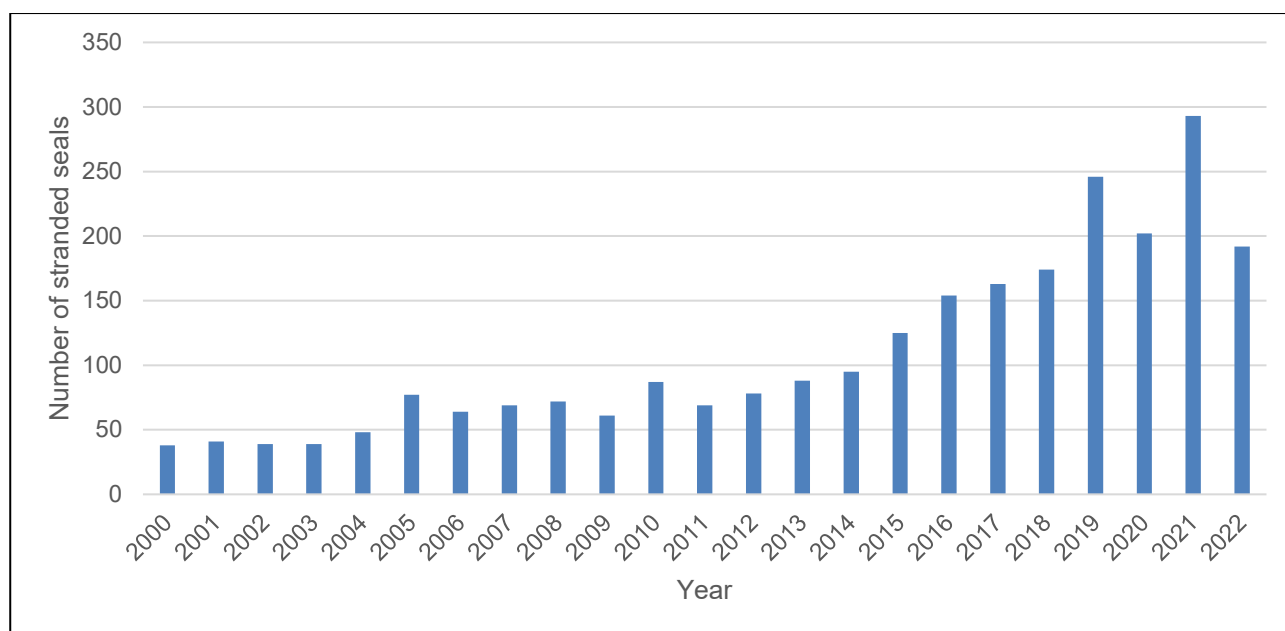


Figure 8: Comparison of grey seal strandings by year (2000 – 2022)

Of the 192 seal strandings, 19 were categorised as whitecoat/maternally dependent pups under three weeks old, 79 were categorised as moulted pups measuring less than 120cm nose to tail, 25 were juvenile (measuring between 120cm and 160cm), 29 were adult, and 40 were unknown due to lack of data (Table 3).

Age Category	Count
Adult	29
Juvenile	25
Moulted Pup	79
Whitecoat Pup	19
Unknown	40
Total	192

Table 3: Seal Age Class for 2022

Figure 10 shows the age category proportions each month to identify seasonal patterns. June was the quietest month for seal strandings in 2022, with only four stranded seals recorded. Whitecoat pup strandings start in August 2022 and continue through to November 2022. Data by SRT shows that peak pupping has moved from October followed by November (2010 to 2016) to September followed by August (2022). SRT noted just five pups were born in November 2022 (three on the south coast).

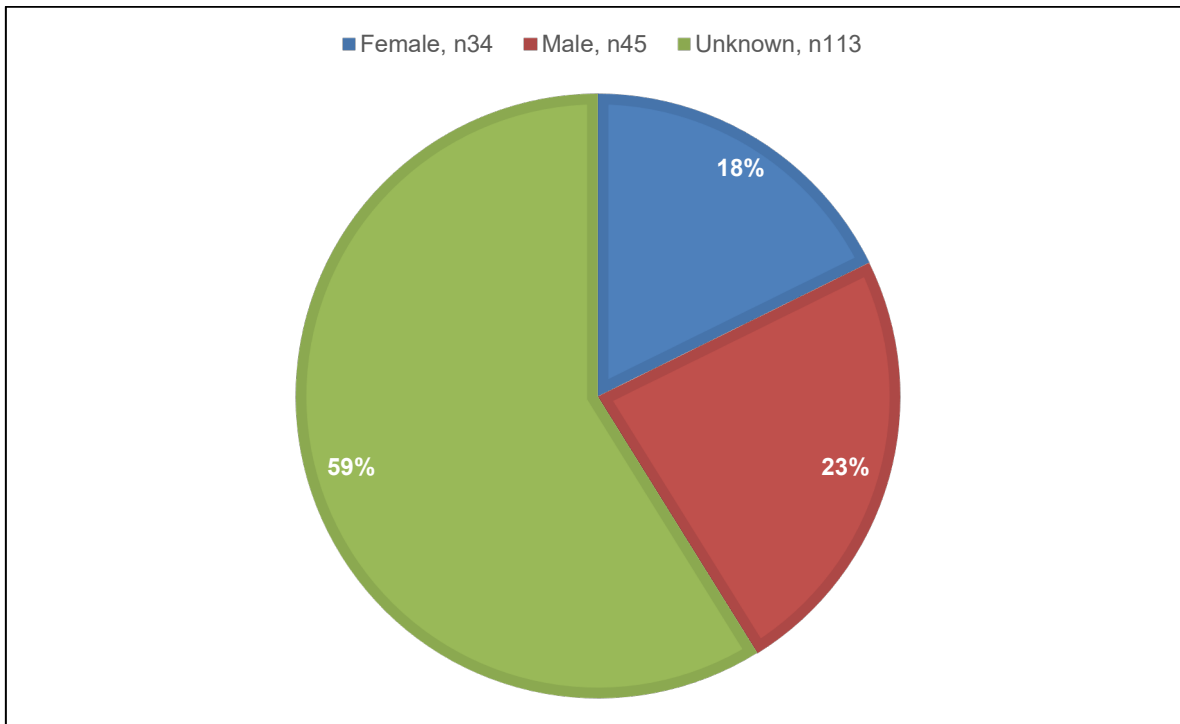


Figure 9: Grey seal strandings gender classes (2022)

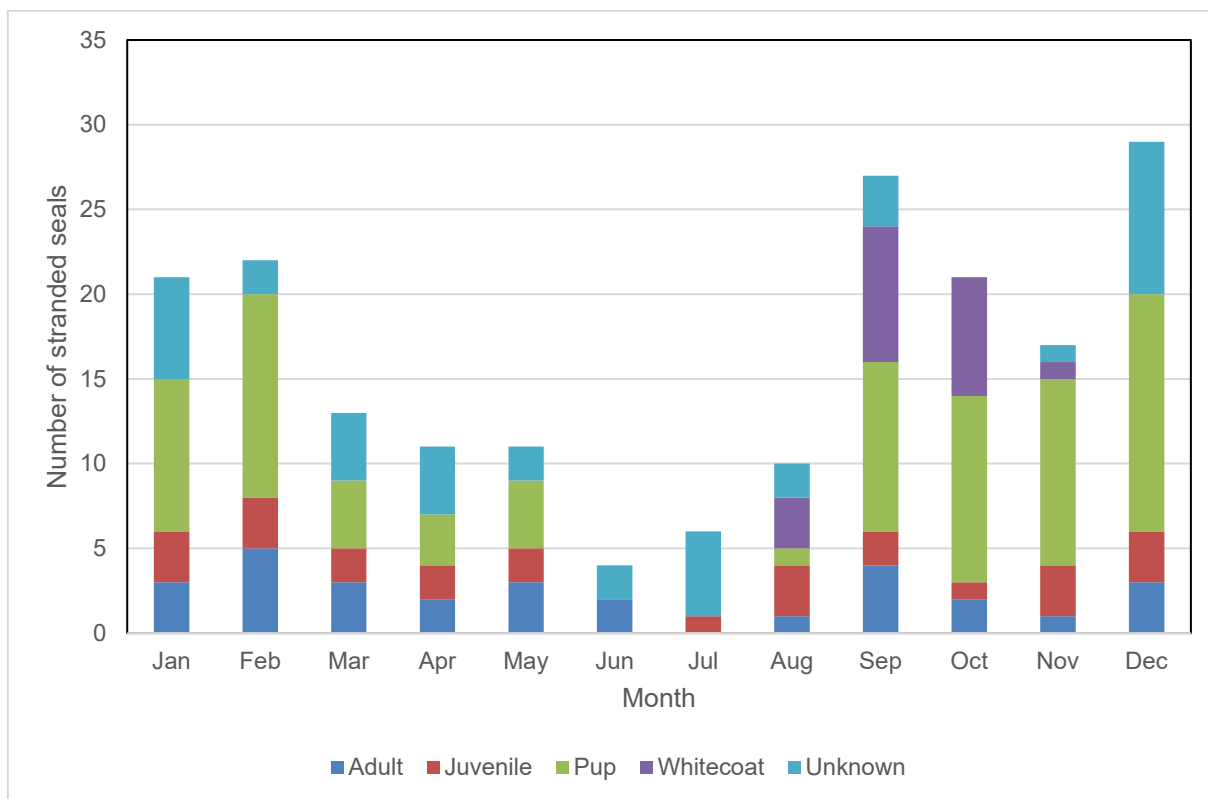


Figure 10: Age and sex of Atlantic grey seal strandings per calendar month in 2022 (n=192)

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 peak pupping months for whitecoats, mums and beachmasters (August and September). SRT's data showed the pup births started in August (n=40), peaked in September (n=112) followed by October (n=36) with outlier pups born in July and 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. Interestingly the number of pups born was almost equal to the number of seals recorded dead in Cornwall during 2022 (CSRT data)

Seal strandings slightly exceeded the ten-year average in all months apart from January, June, October, and November. (Figure 11). Seal deaths appeared to peak a month early in 2022 (September and December) compared to October and January in previous years. The December peak looked slightly unusual compared to previous data. Once again, the lowest strandings were recorded in August 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.

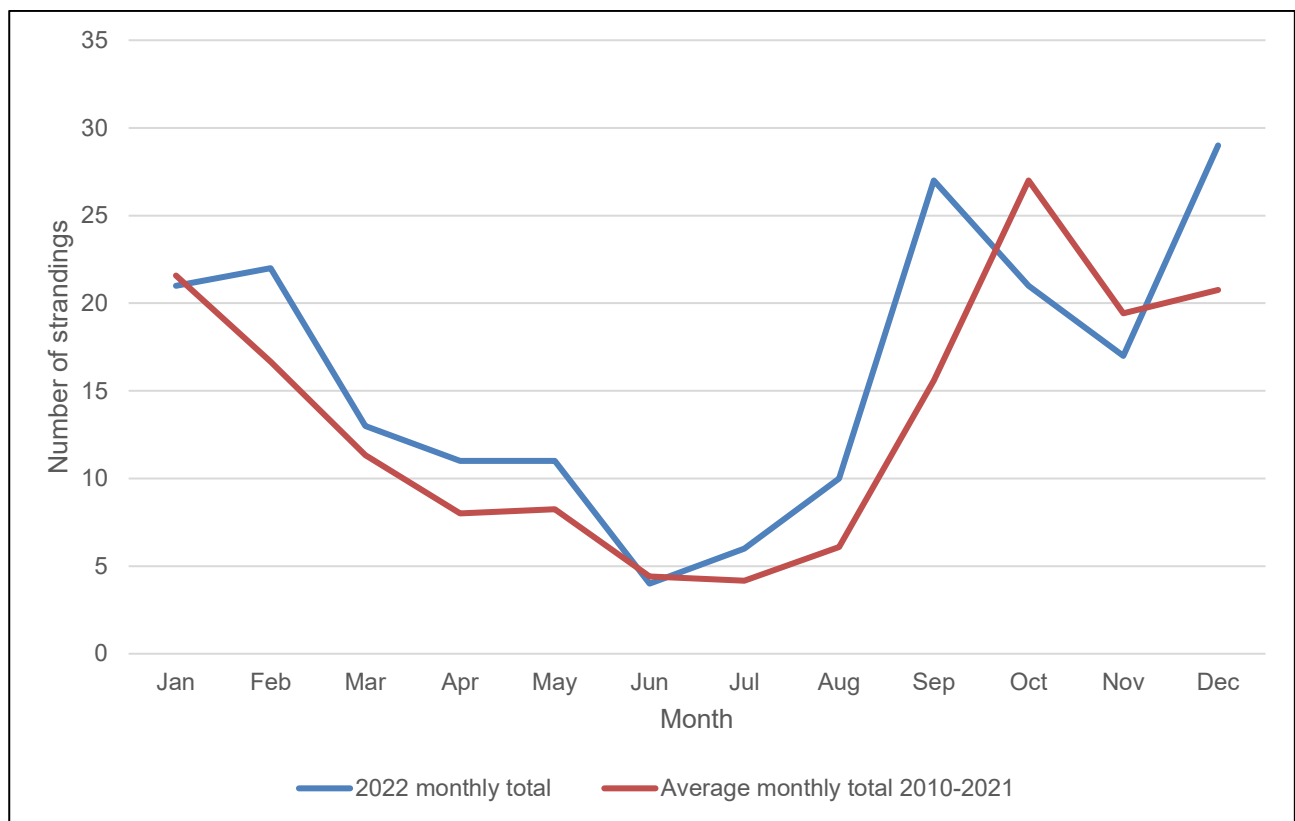


Figure 11: Atlantic grey seal strandings per calendar month in 2022 (n=192) compared to average monthly totals for 2010 – 2021

Figure 12 shows the locations of all seal strandings in 2022 and highlights the geographical spread during the year. All whitecoat strandings were located along the north coast of the county, likely linked to the major pupping sites, although SRT data shows 19 pups were born on the south coast

in 2022. The dead moulted pups on the south coast would have occurred during their post weaning dispersal period.

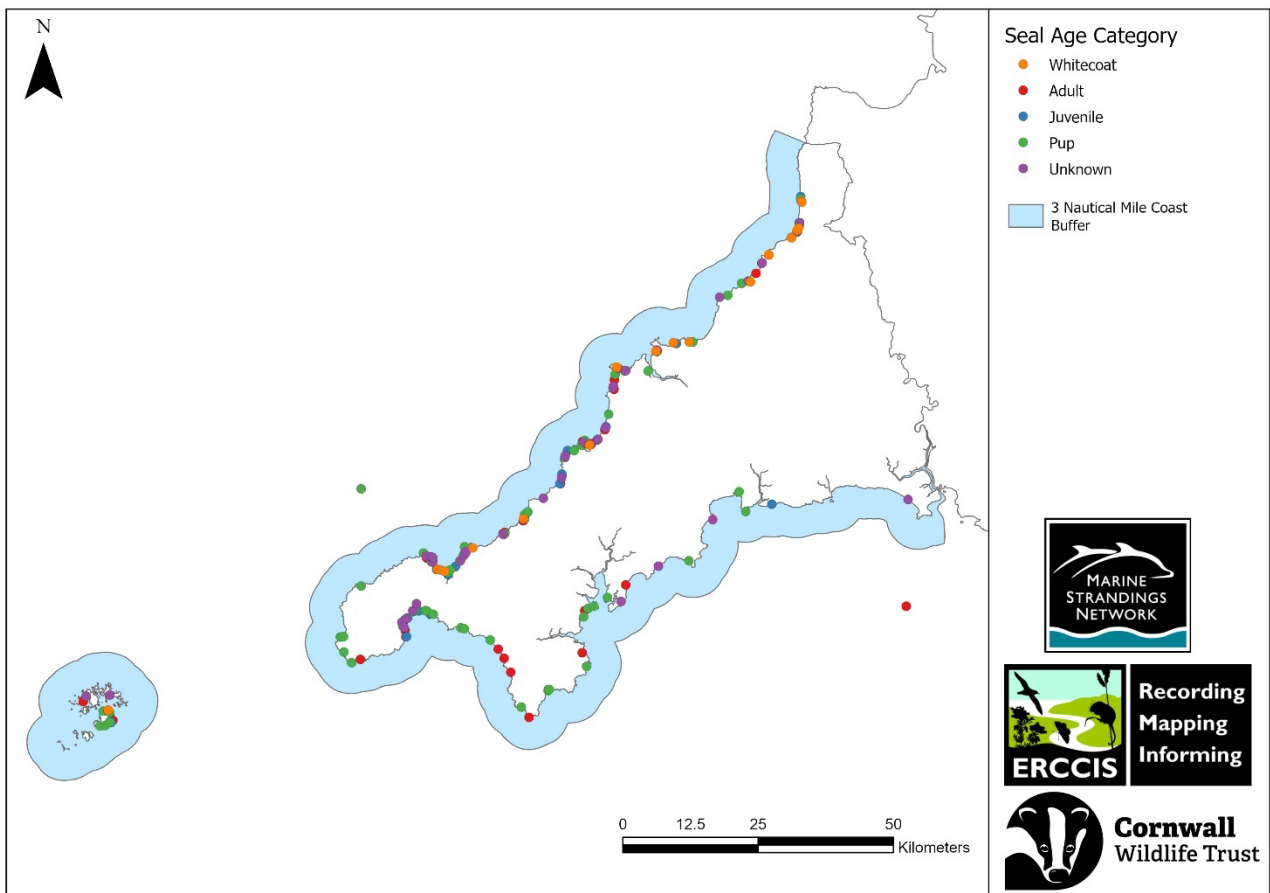


Figure 12: Locations of Atlantic grey seal strandings in 2022 (n=192)



Photo 10: Grey seal pup found on Hemmick Beach 5th October 2022. Photo by Joshua Trew

Thanks to collaborative work with SRT, seal strandings, where time permitted, were checked against individual photo identification catalogues of seals in Cornwall. In 2022, SRT volunteer Photo ID Catalogue holders assessed 101 sets of dead seals photos for identification purposes. Two adult females, named by SRT as Black Wall and Tulip, were both identified from their carcasses. In addition, two dead tagged ex-rescue, rehab and released seals were also identified, as detailed below in this report.

Recorded by MSN on 11th May 2022 at Porthtowan, Black Wall had been identified 104 times by SRT volunteers since 2006 at six sites within two north coast areas. Her last live sighting was approximately six weeks before her stranding record. It had been interesting to see from her ID photographs how the wound she developed on her back had progressed over time, before healing. She was examined by *post mortem* by the Cornwall Marine Pathology Team, with findings that suggested she could potentially have been live bycaught. She was also pregnant with a developing foetus present.



Photo 11: Black Wall's foetus during post mortem examination, photo by Cornwall Marine Pathology Team

Tulip was a celebrity seal having been first identified back in 2002 and recorded 114 times by SRT volunteers. She was likely nearly 30 years old, which is the average life expectancy for a female grey seal. She contributed to informing knowledge of grey seal behavioural science thanks to ID work by the South and West Wales Wildlife Trust. Having lost her own pup (on Ramsey Island or somewhere nearby), Tulip had the instinct to nurse and wean another pup separated from its mother in a storm on the island of Skomer (having never been identified there before). Interestingly the last live sighting of Tulip was on 22nd January 2022 when she looked fit and healthy, although by 9th February 2022 she was found stranded dead at a site close to her last live sighting.

Two additional dead tagged ex-rescue, rehab and released seals were also identified as Whipcord, released from RSPCA West Hatch in north Devon in December 2021, and Jurgen found dead on

the north coast but released from the Cornish Seal Sanctuary in September 2021 from the south coast. Whipcord had been identified by SRT twice in March 2022 on the north coast but was subsequently stranded on the south coast a month later. SRT had no live sightings of Jurgen.

The photo ID tag (blue 060) of ex-rescue, rehab and released seal Scabbers washed ashore in April. It is not known when Scabbers died or in fact if he is still alive and had just lost his tag.

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.



Photo 12: Old male Atlantic grey seal found on Polpeor Cove 16th January 2022. Photo by Alec & Enid Farr.

3.2.1 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.

A summary of the *post mortem* examination results is outlined in *Table 4*.

28 of the 192 dead seals reported were retrieved for *post mortem* examination in 2022, representing 15% 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 nine of the seals. Infection was the second highest cause of death, impacting eight seals. Six further seals cause of death was 'Other'.

Regarding notable cases, three cases of unexplained emphysema were seen in adult grey seals. In each case, there was extensive pulmonary and mediastinal emphysema which could not be explained by any underlying infectious cause, and which could not be attributed to, for example, agonal changes or acute heart failure. Two animals were found alive but moribund and the third had only very recently died before being found.

One adult male, found alive but moribund and subsequently euthanised, had been captured by the Seal Mammal Research Unit on Ramsey Island, south Wales, in April 2019, when it weighed 139kg. It had since lost 40kg. It had excessive tooth wear, an infected oronasal fistula and encephalitis which would have explained the animal's moribund state on the beach.



Photo 13: Female grey seal pup at Watergate Bay, Newquay on 22nd November 2022. Photo by Emma Louise Gallagher.

Date found	Number	Stranding location	Age	Sex	COD category
04/01/2022	CW/S01/22	Sennen Cove	Moulter	M	Physical trauma, chronic with secondary infection
08/01/2022	CW/S03/22	Kynance Cove	Moulter	M	Infectious, respiratory
08/01/2022	CW/S02/22	Gwithian Towans	Moulter	M	Other - Starvation/hypothermia
31/01/2022	CW/S05/22	Godrevy	Moulter	M	Other - Anaesthetic death (mandibular fracture)
03/02/2022	CW/S11/22	Porthoustock	Moulter	M	Physical trauma, chronic with secondary infection
05/02/2022	CW/S06/22	Newquay	Moulter	M	Other - Intestinal impaction and perforation
10/02/2022	CW/S07/22	Perran Sands	Juvenile	M	Infectious, respiratory
01/03/2022	CW/S08/22	Carbis Bay	Moulter	M	Infectious, respiratory
07/04/2022	CW/S12/22	Portreath	Adult	M	Not established
16/04/2022	CW/S13/22	Long Rock	Moulter	M	Physical trauma - acute
11/05/2022	CW/S14/22	Porthtowan	Adult	F	Not established
17/05/2022	CW/S31/22	Portreath	Moulter	M	Physical trauma, chronic with secondary infection
16/09/2022	CW/S15/22	Port Isaac	Moulter	F	Infectious - Peritonitis
20/09/2022	CW/S16/22	Padstow	Moulter	M	Physical trauma, chronic with secondary infection
26/09/2022	CW/S17/22	Newquay	Adult	F	Other - Starvation/hypothermia
27/09/2022	CW/S18/22	Porthtowan	Moulter	F	Not established
05/10/2022	CW/S20/22	Portheras Cove	Moulter	F	Infectious, encephalitis
08/10/2022	CW/S19/22	Constantine Bay	Moulter	M	Physical trauma, chronic with secondary infection
16/10/2022	CW/S21/22	Roseland	Adult	M	Not established
27/10/2022	CW/S22/22	Crackington Haven	Adult	M	Infectious, encephalitis
28/10/2022	CW/S23/22	Widemouth Bay	Moulter	F	Other - Starvation/hypothermia
06/11/2022	CW/S24/22	St Ives	Moulter	M	Physical trauma, chronic with secondary infection
09/11/2022	CW/S25/22	St Ives	Moulter	F	Other - Starvation/hypothermia
20/11/2022	CW/S26/22	Marazion	Moulter	M	Physical trauma, chronic with secondary infection
24/11/2022	CW/S28/22	Porthgwarra	Moulter	F	Physical trauma, chronic with secondary infection
15/12/2022	CW/S29/23	Millook Haven	Moulter	M	Not established
21/12/2022	CW/S30/22	Godrevy	Moulter	F	Infectious, gastrointestinal
23/12/2022	CW/S32/22	Portheras Cove	Moulter	M	Infectious, gastrointestinal

Table 4: Seal post mortem examination findings 2022

3.2.2 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 2022, 87 seals were assessed using SEEP methods. The majority of these (74%, n=64) had no features of note, 10 (11%) were inconclusive, and four had features associated with definite trauma. 4 seals (5%) had definite entanglement around their necks.

SEEP Conclusion	Number of animals	% of SEEP assessed cases
Entanglement	2	2.30%
Entanglement - Ring neck	2	2.30%
Possible Entanglement - Ring neck	3	3.45%
Probable bycatch	1	1.15%
Possible trauma	2	2.30%
Trauma	3	3.45%
Inconclusive	10	11.49%
No features	64	73.56%
Total	87	100%

Table 5: a summary of SEEP conclusions from seal cases assessed in 2022.



Photo14: Juvenile female Atlantic grey seal 5th January 2022, Lusty Glaze. Record and photo by Mick Dawton.

3.3 Marine Turtles

There was one turtle reported to the Marine Strandings Network in 2022, a leatherback turtle found on Portmellon beach, Mevagissey in April 2022 (Photo 15).

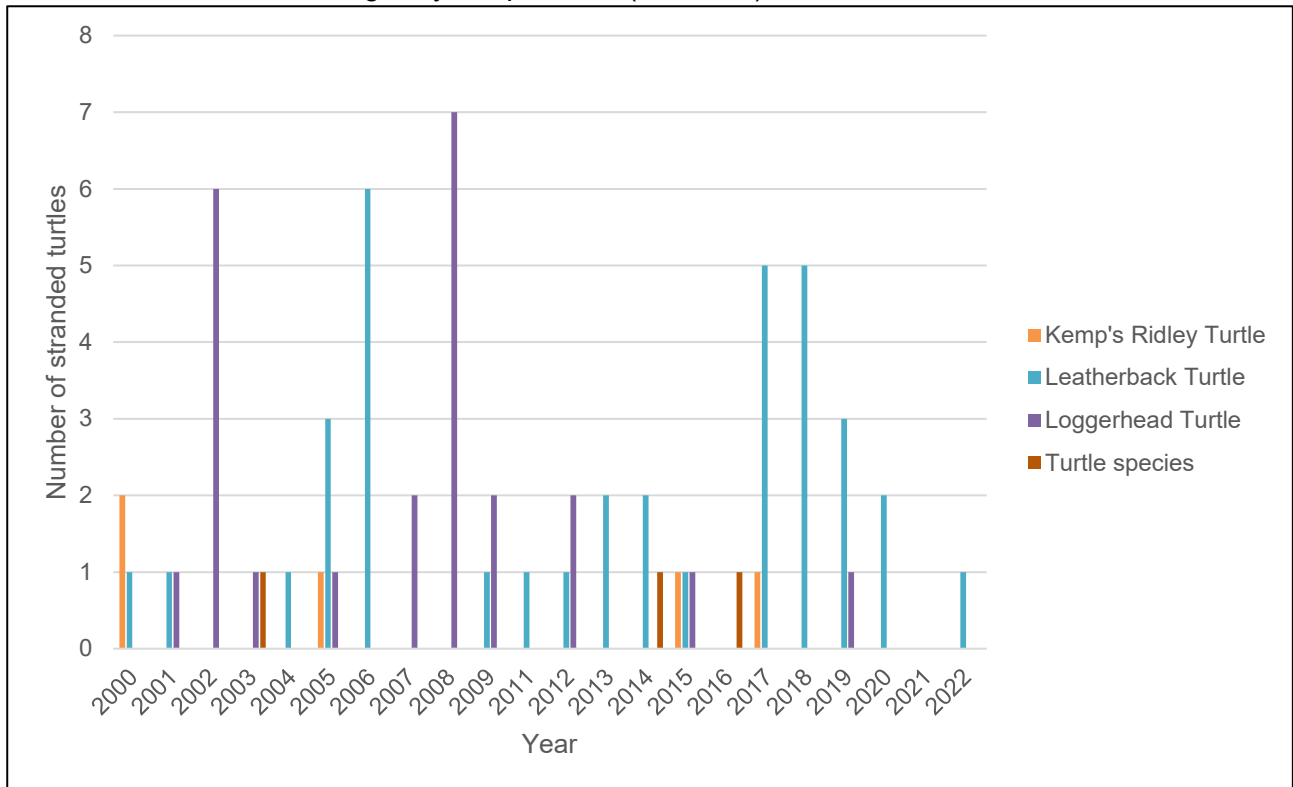


Figure 13: Marine turtle strandings 2000 – 2022



Photo 15: Leatherback turtle, Portmellon beach in Mevagissey on the 2nd April 2022. Photo credit MSN

3.4 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. CWT MSN received 161 reports of dead seabirds in 2022, involving 419 individual birds around the Cornish coast (Table 6).

Usually MSN emphasises that bird strandings are vastly under reported and that therefore this would be a gross underestimate of the true scale of bird strandings. In 2022, however, reports of stranded birds around Cornwall's coastline increased due to the unprecedented outbreak of Highly Pathogenic Avian Influenza and the consequent public engagement and awareness around the issue.



Photo 16 : Dead gannet, one of the key species effected by avian flu, on Portheras , Pendeen. Photo credit Delia Webb

Highly Pathogenic Avian Influenza (HPAI), sometimes referred to as 'avian flu' or 'bird flu', is a disease caused by influenza viruses adapted to birds, although these can also infect other species, including mammals. The winter 2021/2022 outbreak hit multiple species and sites across the UK with a devastating number of seabirds dying due to this virus, in some areas the numbers collating to tens of thousands of birds. The South West of the UK, including Cornwall, saw a significant number of sea bird carcasses strand around our coastline, particularly gannets and gulls as seen in Table 4.

In response to the issue, the Trust liaised with relevant stakeholders nationally and regionally to ensure messaging was accurate and effective. The public and MSN volunteers were asked to avoid, and not handle, sick and injured birds. We recommended that the public reported all dead birds to the Defra hotline as requested by the organisation via their information poster (Image 1).

As taken from the government website, <https://www.gov.uk/government/news/bird-flu-avian-influenza-latest-situation-in-england>, 'Defra has set out practical information to support land managers, the public and ornithological and environmental organisations in their response to the growing threat of bird flu.' Aside from the carcasses which were removed by Defra officers for testing, Cornwall's landowners were seen to be proactive in removing the birds and disposing of them safely.

The mitigation strategy for avian influenza in wild birds in England and Wales, available here <https://www.gov.uk/government/news/new-guidance-on-mitigating-the-impact-of-avian-influenza-in-wild-birds> , also 'explains how these groups, together with the government and its delivery partners, can reduce the impact on wild bird populations whilst protecting public health, the wider environment and the rural economy' (<https://www.gov.uk/government/news/bird-flu-avian-influenza-latest-situation-in-england>). The Trust welcomes the strategy as a step in the right direction by Government to taking the issue of Avian flu in wild populations seriously.

At the time of writing (September 2023), the 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.

Species of Bird	Number of reports	Estimated number of animals
Arctic skua	1	1
Bird species	3	3
Black-headed gull	2	2
Brown booby	1	1
Common gull	1	1
Cormorant/shag	1	1
Gannet	87	289
Great black-backed gull	4	5
Great northern diver	1	1
Guillemot	13	14
Gull species	10	19
Herring gull	19	63
Kittiwake	5	6
Little egret	1	1
Manx shearwater	1	1
Mediterranean gull	1	1
Puffin	5	5
Razorbill	2	2
Shag	2	2
White stork	1	1
Total	161	419

Table 6: Total numbers of each sea bird species reported to CWT MSN in 2022

BIRD FLU HAS BEEN DETECTED IN THIS AREA DON'T RISK SPREADING IT!

Keep to the footpath

Keep dogs on leads

Do not feed wild waterfowl

Do not pick up or touch dead or sick wild birds

Do not touch wild bird feathers or surfaces contaminated
with wild bird droppings

If you keep poultry or other birds, wash your hands and clean
and disinfect your footwear before tending to your birds

Please report dead wild waterfowl (swans, geese, or ducks) or
other dead wild birds, such as gulls or birds of prey to Defra's
GB helpline: 03459 335577

Find out more at:

- [GOV.UK/Bird-Flu](https://www.gov.uk/bird-flu)
- [GOV.SCOT/avianinfluenza](https://www.gov.scot/avianinfluenza)
- [GOV.WALES/avian-influenza-bird-flu](https://www.gov.wales/avian-influenza-bird-flu)



Animal &
Plant Health
Agency



Image 1: Defra's Avian flu public information poster 2022.

3.5 Sharks



Photo 17: Thresher shark, Perranporth Beach 7th December 2022.. Photo credit October Hamlyn-Wright

There were 16 reports of stranded sharks reported to the CWT MSN in Cornwall in 2022, consisting of 7 different known species plus one unidentified carcass (Table 7). Of particular note was the Greenland shark (*Somniosus microcephalus*), which stranded initially on the 13th March 2022 but was retrieved and sent to post mortem after it washed out to sea on 15th March 2022. A *post mortem* was conducted by the Cornwall Marine Pathology Team, part of ZSL's Cetacean Stranding Investigate Programme (CSIP). Pathologists found evidence of meningitis, the first report of meningitis in a Greenland shark. A paper has since been published, Barnett et al (2023). Journal of Comparative Pathology 203, 31-35.

Species of Shark	Number of Reports	Estimated number of animals
Greenland Shark	1	1
Nursehound	4	4
Shark species	2	2
Small-spotted catshark	2	2
Spurdog	2	7
Starry Smooth Hound	2	2
Thresher Shark	1	1
Tope	2	2
Grand Total	16	21

Table 7: Total numbers of shark and ray (elasmobranch) species reported to CWT MSN in 2022



Photo 18: Greenland shark landed in Newlyn on 15th March 2022. Photo by Laurence Hartwell

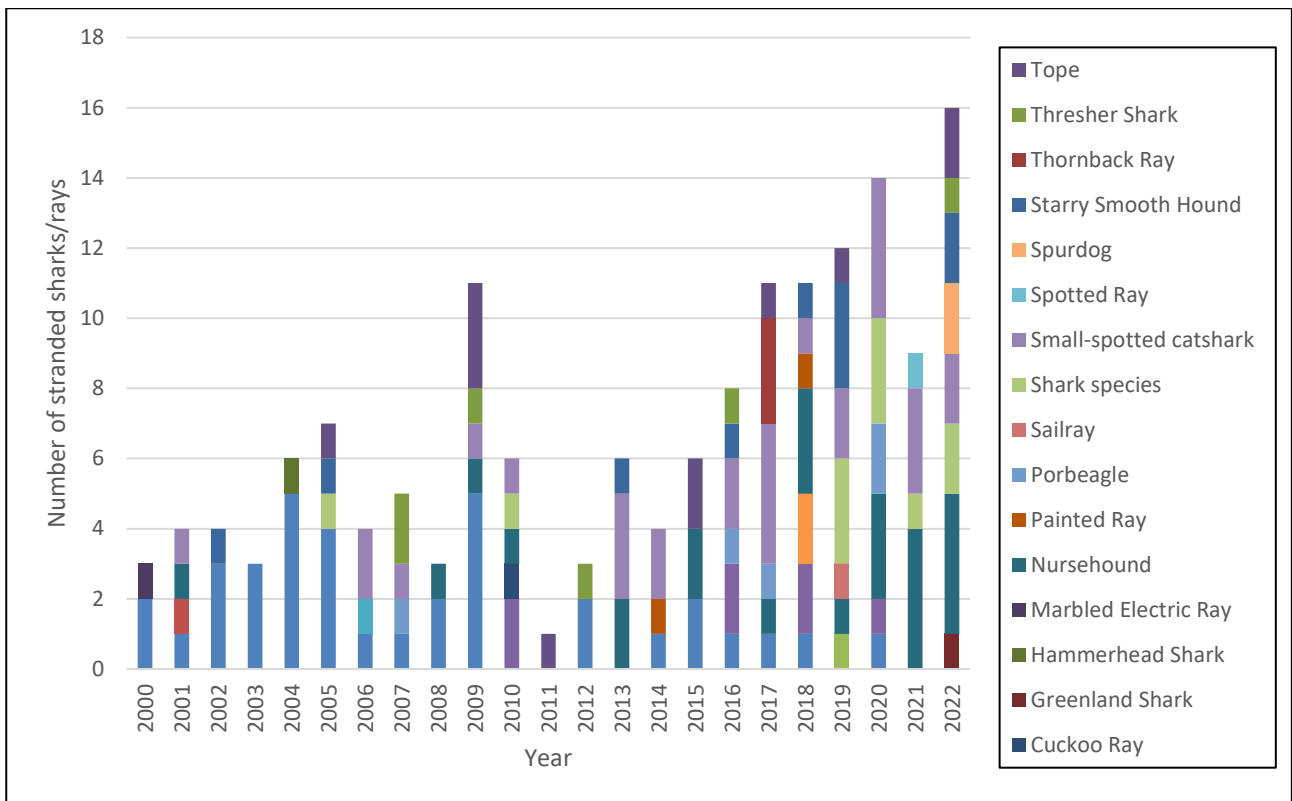


Figure 14: Elasmobranch (shark and ray) strandings 2000 – 2022

3.6 Other strandings

There were 146 reports of strandings of other species groups, comprising 25 different species and involving thousands of individual animals. 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.

Group	Species	Number of records	Estimated number of individuals
Cephalopods		3	3
	Common Cuttlefish	1	1
	Octopus species	1	1
	Orbigny's Cuttlefish	1	1
Crustaceans		6	367
	Goose-neck Barnacle	4	365
	Spiny Spider Crab	2	2
Echinoderms		1	1
	Spiny Starfish	1	1
Fish		22	1122
	Ballan Wrasse	1	1
	Boar-fish or Zulu	2	2
	Conger Eel	6	7
	Garfish	1	1
	Grey Triggerfish	7	8
	Ocean Sunfish	1	1
	Oceanic Puffer	1	1
	Short snouted seahorse	1	1
	unidentified	2	1100
Hydrozoa		26	318
	By-the-Wind Sailor	3	57
	Portuguese Man-of-War	23	261
Jellyfish		11	316
	Barrel Jellyfish	6	9
	Compass Jellyfish	1	1
	Crystal Jellyfish	1	1
	Moon Jellyfish	2	300
	Sea Gooseberry	1	5
Other		3	3
	A Sea Squirt	1	1
	unidentified	2	2
Seeds		1	1
	Grey Nickar Nut	1	1
TOTAL		25	4262

Table 8: Other stranded species reported to CWT MSN in 2022 * numbers of individuals are estimates for some species (indicated with '+')

4. Engagement and Events

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.

4.1 Social media

The Trust supports active social media platforms, including Facebook, Instagram, WhatsApp and Mailchimp. In 2022, MSN had;

- MSN Facebook: 5200 followers
- MSN Instagram: 2963 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 2022 MSN Mailchimp had 198 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

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 198 trained MSN Callout Volunteers are within at least one (some are on multiple) regional WhatsApp Group.

4.2 MSN Forum 2022

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 2022 MSN Forum was held on the 12th March 2022 at Truro College. The programme of speakers can be viewed in Image 2.

Marine Strandings Network Annual Forum 2022



CWT Marine Strandings Network Forum - 12 th March 2022	Presenters	Start	Mins
REGISTRATION (in person and online. Please note - in person there will be no tea and coffee available so come prepared)		9:30	30
Welcome	Abby Crosby , Cornwall Wildlife Trust (CWT)	10:00	10
CSI of the Sea- What's been happening within the UK strandings network over the last two years?	Rob Deaville , Cetacean Strandings Investigation Programme (CSIP) and Institute of Zoology	10:10	30
Notable Strandings in Cornwall and the Isles of Scilly 2021	Anthea Hawtrey-Collier , CWT MSN Strandings Data Officer	10:40	30
Associated Causes of Mortality as Found on Post-mortem Examinations: A review of notable cases from Cornwall in 2021	James Barnett , Cornwall Marine Pathology Team, Veterinary Consultant to MSN, CSIP Pathologist, Honorary Lecturer University of Exeter Affiliate	11:10	30
Summary of Live Seal and Cetacean Strandings in Cornwall in 2021	Dan Jarvis , British Divers Marine Life Rescue (BDMLR)	11:40	20
BREAK (Refreshments will be provided)		12:00	30
Cetaceans as Sentinels for Informing Climate Change Policy in UK Waters	Michael Williamson , Institute of Zoology	12:30	20
Seven Years of Seal PMs at the ESI: what have we learnt?	James Barnett , Cornwall Marine Pathology Team, Veterinary Consultant to MSN, CSIP Pathologist, Honorary Lecturer University of Exeter Affiliate	12:50	20
The Dolphin Bycatch Project: Using BEEP to investigate cetacean bycatch	Niki Clear , University of Exeter	13:10	15
CWT MSN and Research Update	Ruth Williams , Cornwall Wildlife Trust (CWT)	13:25	10
LUNCH (Lunch will be provided) Opportunity for volunteers to collect Strandings equipment.		13.35	60
Why Do We Necropsy Stranded Marine Mammals?	James Barnett , Cornwall Marine Pathology Team, Veterinary Consultant to MSN, CSIP Pathologist, Honorary Lecturer University of Exeter Affiliate	14:35	20
Examining the Bizarre: Ocean sunfish dissection & protection	Natasha Philips , Marine Biologist and film maker at Swimming Head Productions	14:55	20
Fish Out of Water: How do fish come to be stranded and what can we learn from them?	Doug Herdson , Fish and Fisheries Biologist	15:15	20
MSN Volunteer Update	Abby Crosby , Cornwall Wildlife Trust (CWT)	15:35	10
Thanks and Close	Ruth Williams	15:45	5

Image 2: MSN Forum programme March 2022

4.3 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 17th September 2022, MSN coordinated the annual MSN Callout volunteer training day. It was attended by 39 members of the public.



Photo 19: 2022 cohort of MSN Callout Volunteers during the 17th September training day at CWT offices. Photo credit Abby Crosby.



Photo 20: MSN Callout Volunteers during practical training exercise September 2022. Photo credit Abby Crosby.

5. Acknowledgements

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

- CWT Marine Strandings Network volunteers, who continue to enthusiastically collect vital data and retrieve carcasses, often under difficult and challenging conditions.
- Dedicated Hotline Coordinators (2022): Gill Peters, Sharon Trew, Anthea Hawtrey-Collier, Joyce Edmonds, Meg Hayward-Smith, Liz Clarke, Vicki Hall, Kate Bailey, Alyson Devonshire, Lauren Oliver-Friendship, Nigel Boddington, Emma Holland, Jen King, Sue King, Richard Weeks, Tom Blay, Connie Morris, Steve Cavell 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.
- 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, Annette Broderick and Matthew Witt from Exeter Marine and Marine Turtle Research Group.
- Chelonia Limited.
- The National Trust Rangers.



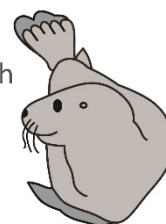
**Cornwall
Wildlife Trust**



Cornwall



Seal
Research
Trust



2022

Appendix 1: Cetacean Bycatch Report



Appendix Photo 1: Common dolphin, Portreath, 31/01/22. Photo by Rebecca Fone

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, 2022 - *Post Mortem* Examinatons

Of the 156 cetacean carcasses that stranded during 2022, 19% (n=30) 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.

Post mortem examinations (PME) concluded that accidental entanglement in fishing gear, known as bycatch, was the cause of death for 9 (30%) of the cetaceans examined, all being short-beaked common dolphins (*Appendix Table 1*).

Date	PM number	Species	Location	Cause of death
31/01/2022	CW/C03/22	Short-beaked common dolphin	Portreath beach	Bycatch
07/02/2022	CW/C05/22	Short-beaked common dolphin	Bluff Cove, Hayle	Bycatch
12/02/2022	CW/C06/22	Short-beaked common dolphin	Vault beach Gorran Haven	Bycatch
22/03/2022	CW/C13/22	Short-beaked common dolphin	Helford Creek, Helford	Bycatch
17/04/2022	CW/C16/22	Short-beaked common dolphin	Mousehole	Bycatch
18/04/2022	CW/C17/22	Short-beaked common dolphin	Pendower beach, the Roseland	Bycatch
04/06/2022	CW/C20/22	Short-beaked common dolphin	Bosahan Cove, Helford	Bycatch
16/11/2022	CW/C29/22	Short-beaked common dolphin	Flushing, Falmouth	Bycatch
18/11/2022	CW/C30/22	Short-beaked common dolphin	Trevellas Cove, St Agnes	Bycatch

Appendix Table 1: Cetacean post mortem reports (2022) – Bycatch (source: CSIP)

Bycatch analysis, 2022 - 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 126 cetaceans which were not retrieved for *post mortem* examination, 56 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.

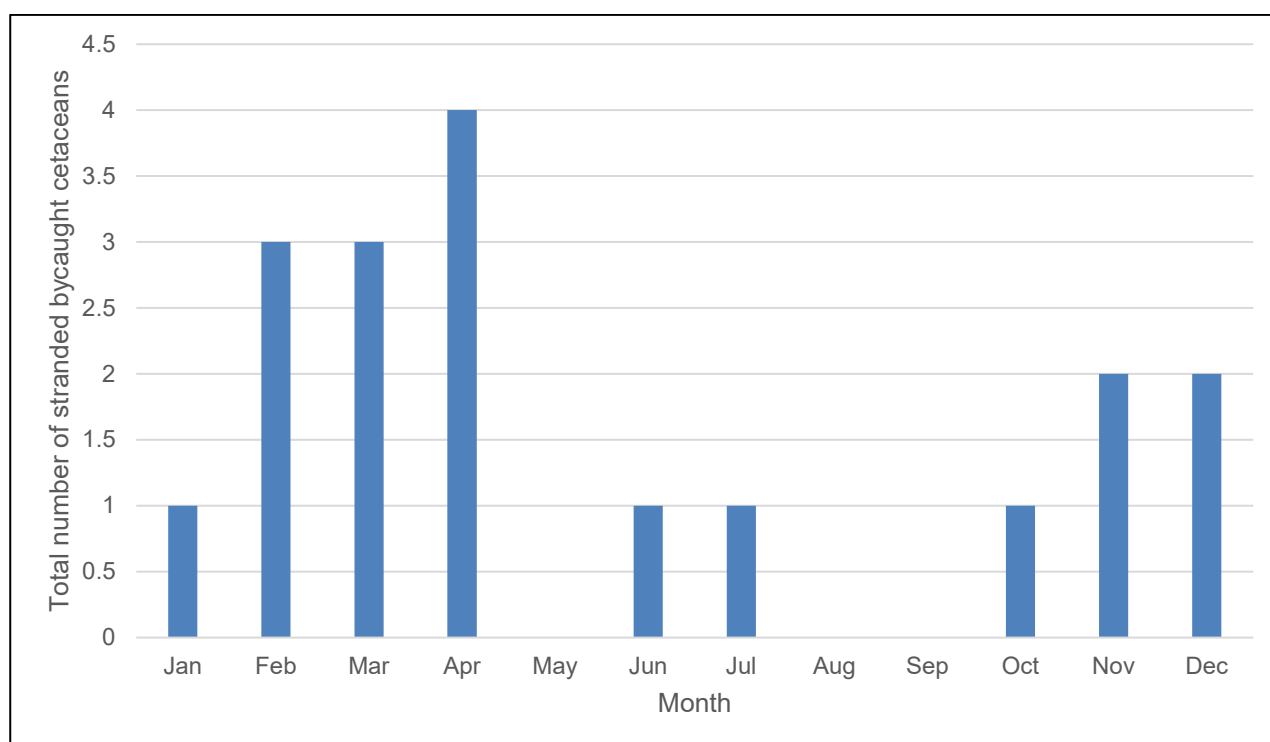
70 (45% of the 156 total) cetacean strandings were examined and recorded *in situ* by MSN volunteers using the BEEP protocol, and photos examined in detail by experienced BEEP assessors within the Environmental Records Centre for Cornwall and Isles of Scilly (ERCCIS) (*Appendix Table 2*). It was found that 13% of the 70 (n=9) showed features consistent with definite or probable bycatch or entanglement in fishing gear (*Appendix 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 16% of the 70 total (n=11) cases showed possible signs of bycatch.

37% (n=26) were cases where BEEP assessment was inconclusive based on the data available. 3% (n=2) deaths were found to show features consistent with trauma and likely bottlenose dolphin attack.

BEEP Conclusion	Total Assessed	% BEEP Assessed Records
Definite bycatch	7	10
Inconclusive	26	37.1
No features	21	30
Possible bycatch	11	15.7
Probable bycatch	2	2.9
Trauma	1	1.4
Trauma - BND Attack	2	2.9
Grand Total	70	100

Appendix Table 2: A summary of BEEP conclusions from cetacean cases assessed in situ in 2022.

Bycatch cases. Identified by demonstrated a significant peak in the months of February, March and April (Appendix Figure 3).

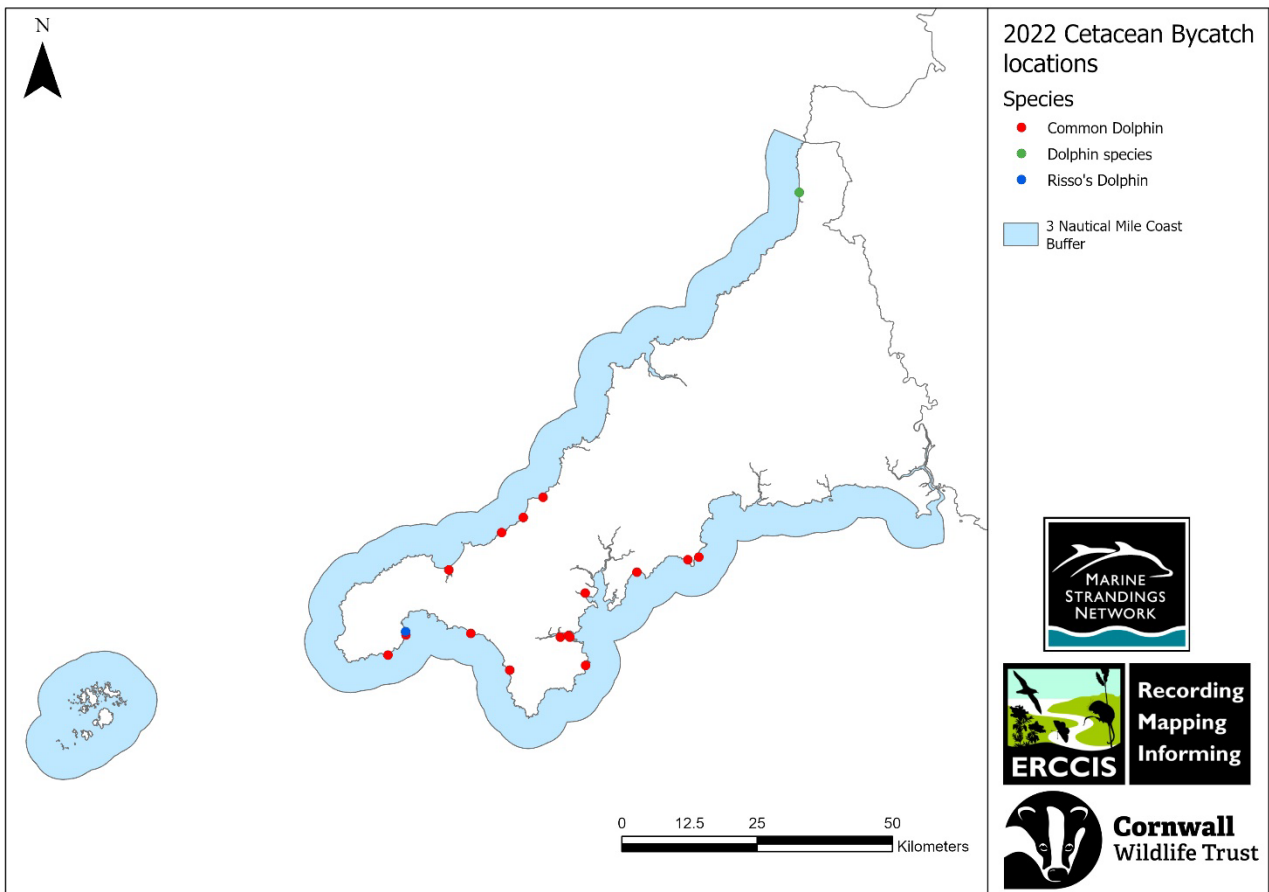


Appendix Figure 1: Number of bycaught stranded cetaceans per month in 2022, identified by both postmortem and BEEP.

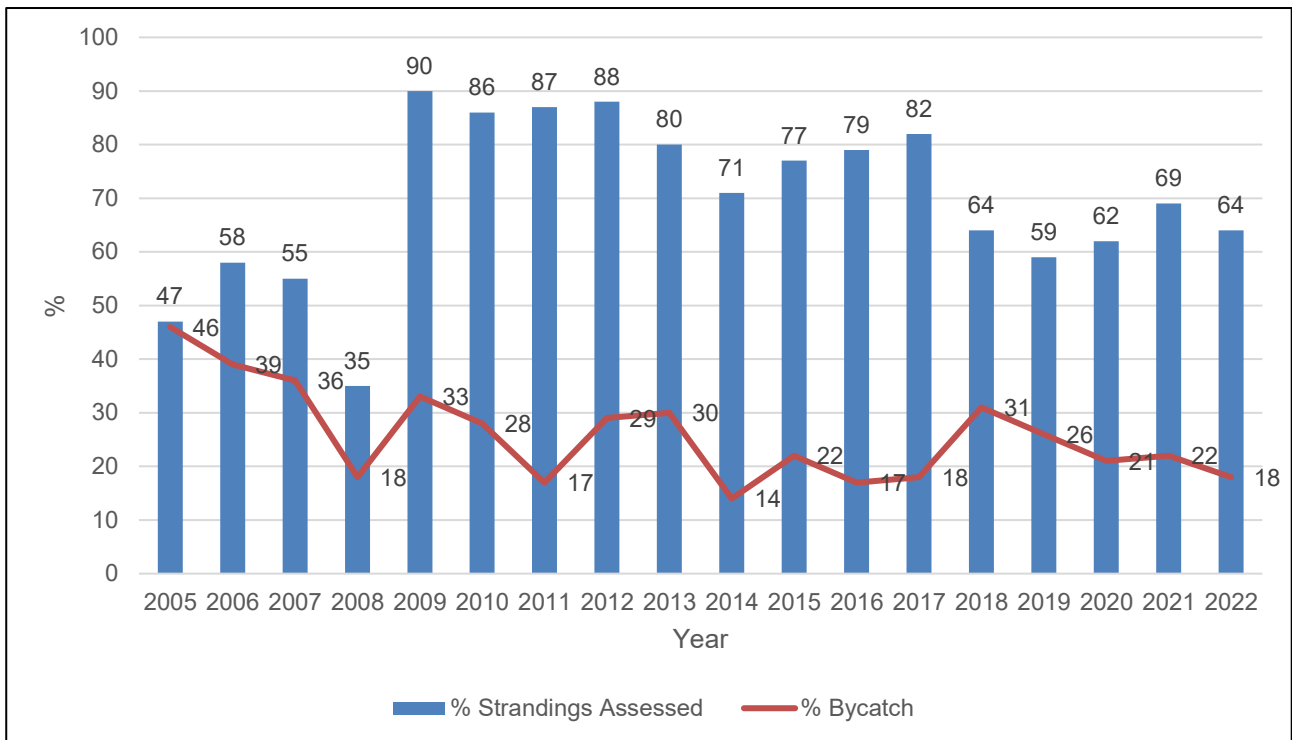
The geographical spread of cetacean bycatch cases through 2022 shows that bycatch cases were spread around the coast of Cornwall, with a high proportion reported on the south coast (Appendix Figure 3).

Bycatch Analysis, comparison with previous years

For a bycatch comparison over years, we limit the analysis to common dolphin and harbour porpoise as these are the two most recorded cetacean species in Cornwall. We have only included cases which have been assessed through *post mortem* examination and/or BEEP. Since 2005 the proportion of assessed common dolphin and harbour porpoise strandings which were concluded to be bycatch or probable bycatch has ranged between 14% and 46% (Appendix Figure 3). In 2022, the figure sits at 18%, which remains a concerning statistic.



Appendix Figure 2: The location of 2022 *stranded* cetaceans with bycatch features; blue markers indicate *Risso's dolphin*, red markers common dolphin, and green dolphin sp.



Appendix Figure 3: The percentage of bycaught common dolphin and harbour porpoise against the percentage of those assessed through post mortem examination or BEEP assessment combined, from 2005 to 2022.

Summary of all animals which exhibited signs of bycatch in 2022

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/2022/013 SW2022/66 CW/C03/22	Portreath Beach, SW650454	31/01/2022	<p>The haemorrhage at the corticomedullary junctions with corticomedullary separation on the left side is suspicious of acute stress/ terminal events- for example death by live stranding or bycatch. The haemorrhage and congestion of the lungs and liver as well as evidence of recent feeding would support either of these theories. The animal also had a chronic mild lungworm burden with associated interstitial pneumonia and bronchiolitis. A concurrent mild hepatitis suggests possible mild systemic infection however I would not expect this to be the cause of death of this animal.</p> <p>The irregular laceration of the dorsal fin and the area of bruising and abrasion to the R flank supports the most likely theory that this animal was killed by bycatch however this is by no means conclusive.</p> <p>Felicity Whitehouse BVSc (hons) MRCVS</p>



Common dolphin
C/2022/019
SW2022/148
CW/C05/22

Bluff Cove,
Hayle
SW779559

06/02/2022

This adult male common dolphin was in moderate nutritional state but had not fed that recently. Unfortunately, there was extensive scavenging and skin loss which reduced the value of the external examination. The linear marks around the maxilla, recent loss of teeth close to these marks and the presence of bruising deep to the corresponding lines on the mandible were, in my opinion, very suspicious of bycatch. The fact that the linear marks sampled for histopathology appeared to have occurred post mortem makes this diagnosis less clear cut, although it is conceivable that the animal may have died in the net before the marks were made. Further confounding the diagnosis is the asymmetry of the lungs, which is more typically seen in live stranded animals. However, this has also been reported before in bycatch cases and it is conceivable this may have occurred if the animal died as the net was hauled, i.e. when it was no longer neutrally buoyant. Furthermore, the albeit irregular fin slices in the dorsal fin and the emphysema within the kidneys are still potentially consistent with bycatch. On balance, therefore, I am still of the opinion that bycatch was the likely cause of death, although the findings are not entirely supportive of this.

The myocardial fibrosis observed at post mortem examination appears to have been an incidental finding.

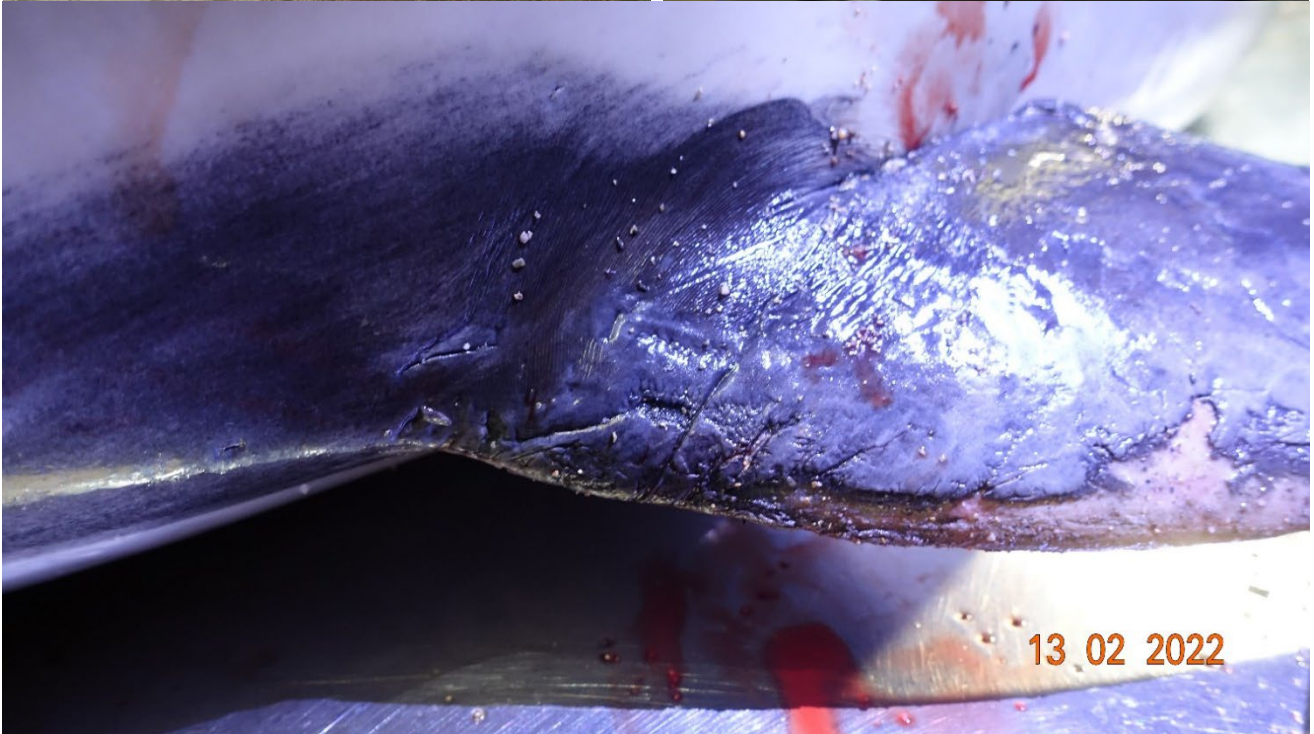


Common Dolphin
C/2022/025
SW2022/151
CW/C06/22

Vault Beach,
Gorran Haven
SX014409

12/02/2022

This adult female common dolphin was in good body condition and there was evidence of recent feeding. The linear wounds on the maxilla, mandible, pectorals, dorsal fin and flukes were, in my opinion, consistent with bycatch as the cause of death. In addition, a large neoplastic mass was found in the caudal abdominal cavity that extended along the retroperitoneum and appeared to infiltrate the right kidney. Histopathologically, it appeared to be endocrine in origin and Mark suspects it may be adrenal in origin. The mass contained large numbers of gas filled cavities, raising the possibility that the tumour had increased susceptibility to nitrogen coming out of solution as bubbles from supersaturated tissue, as has been seen in cases of chronic 'gas bubble disease'. This mass, however, does not appear to have had a notable effect on the animal's health as it was clearly in good nutritional state when it died and had fed recently. A further incidental finding was the presence of three vaginal calculi. The origin of these calculi is not clear but they may form around aborted foetal material or secondary to urinary tract infection.



Common Dolphin C/2022/022	Porthtowan Beach, SW690482	28/02/2022	Straight edged cuts to tip of dorsal fin and pectoral fins. RHS fluke missing with straight edged wound and associated fin edge slice to trailing edge LHS fluke. Tip of beak broken.
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Common Dolphin C/2022/046	Godrevy Cove, St Keverne, The Lizard SW805209	22/03/2022	Thick linear impression under chest behind pectoral fins crossing the torso towards the front of dorsal fin. Thick multifilament linear impression around base of dorsal fin across leading edge. Fin edge slice to trailing edge RHS pectoral fin. Multiple thin linear impressions to RHS beak around maxilla and mandible with small associated abrasion to melon crease.
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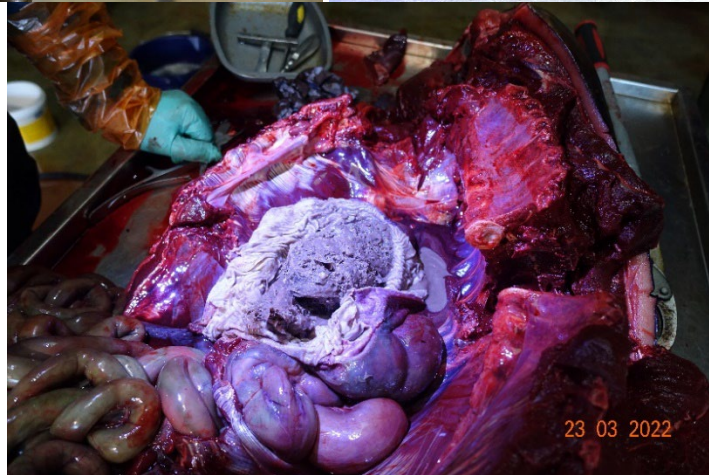


Common Dolphin
C/2022/047
SW2022/219
CW/C13/22

Helford Creek
SW758261

22/03/2022

This subadult male common dolphin was in reasonable nutritive state and there was evidence of recent feeding, the cardiac stomach containing a large number of fish. Although there was a lack of convincing net wounds on the animal, the full stomach coupled with the fractured maxilla were very suggestive of bycatch, whether the latter occurred pre or post mortem. Indeed, it is known that bycaught dolphins that are surrounded by fish in the end of a trawl may have few, if any net lesions. Having said that, the two linear black wounds in the exposed subcutaneous tissue on the maxilla may have been caused by a net. The other possible cause of death is live stranding, the location in which this animal stranded being within the Helford River ria system where several live strandings have occurred. However, the degree of autolysis and extent of scavenger damage was not typical of a live stranding.



Common Dolphin C/2022/052	Ponsence Cove, Helford SW776261	29/03/2022	Large abrasion across melon crease. Thick partial encircling linear impression going across mandible and maxilla on RHS. 2 x linear impressions to RHS tip maxilla in the gum. Multiple linear impressions under chin.
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Common Dolphin
C/2022/059
SW2022/311
CW/C16/22

Mousehole Beach,
Mousehole
SW473265

16/04/2022

This young adult male common dolphin was in reasonable body condition and there was evidence of recent feeding. The amputation of the tail stock and the faint linear lines on the right side of the head are, in my opinion, consistent with bycatch as the cause of death. Furthermore, the missing tips to the dorsal fin and right pectoral fin, the intramuscular haemorrhages under the tongue and over the left scapula, and the matching pairs of broken teeth in the caudal left arcades may also be sequelae of bycatch.



Common Dolphin
C/2022/060
SW2022/312
CW/C17/22

Carne Beach,
The Roseland
SW900381

18/04/2022

This young adult male common dolphin was in reasonable nutritive state and there was evidence of recent feeding. The amputation of the tail flukes is, in my opinion, consistent with the animal having been bycaught and cut free from the net, although no net marks were visible on the carcass. The asymmetrical congestion of the lungs suggested that the animal had died while it was not negatively buoyant which conceivably may have occurred when the animal was hauled in the net. It has been postulated that this may occur in ring net fisheries.



<p>Common Dolphin C/2022/063</p>	<p>At Sea off Tater Du, Lamorna SW440228</p>	<p>21/04/22</p>	<p>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)</p>
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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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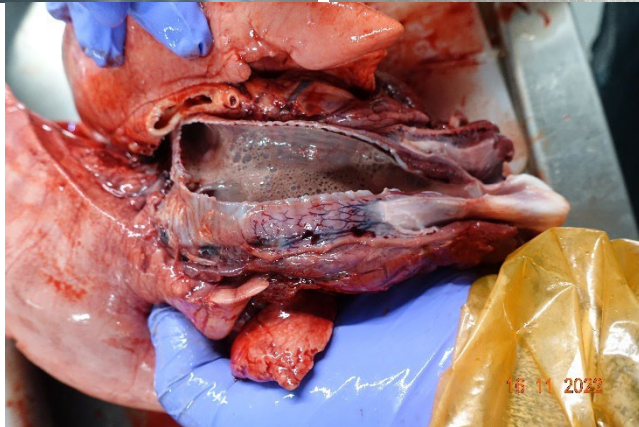
Common Dolphin C/2022/090	Rinsey Cove, Porthleven SW593268	10/07/2022	Linear impression behind dorsal fin. 2 x linear impressions to leading edge flukes. Lip cut to RHS upper lip with corresponding lip cut LHS. Lip cut LHS upper beak near tip. Diagonal linear impression from above LHS pectoral tracking 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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<p>Common Dolphin C/2022/123 SW2022/687 CW/C29/22</p>	<p>Little Falmouth, Flushing SW804342</p>	<p>16/11/2022</p>	<p><i>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 standing, in my opinion is consistent with this being a case of bycatch.</i></p>
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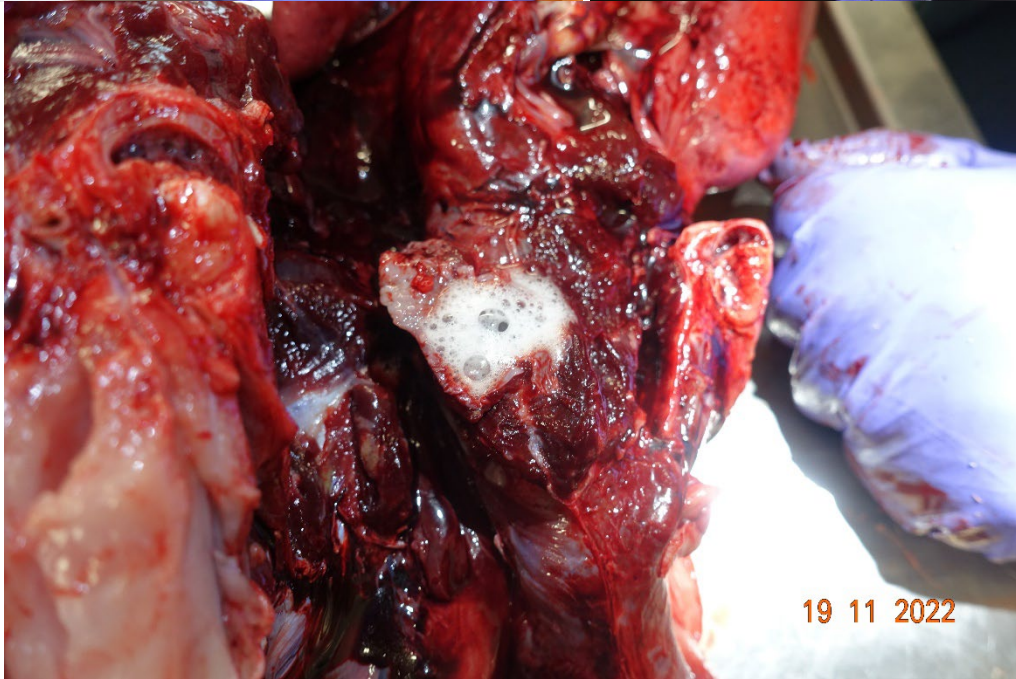


Common Dolphin
C/2022/124
SW2022/688
CW/C30/22

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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The MSN was funded by the



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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.