2018 Annual Report

Marine Strandings in Cornwall and the Isles of Scilly

Report by
Cornwall Wildlife Trust
Marine Strandings Network

Authors: Niki Clear, Anthea Hawtrey-Collier and Ruth Williams

Cornwall Wildlife Trust
Protecting Cornwall's wildlife and wild places

ERCCIS Recording Mapping Informing

Contents

Photo 1: Leatherback turtle at Marazion August 2018, by Constance Morris

1. Executive Summary

Data on marine organisms that stranded on the shores of Cornwall in 2018 were collected by the Cornwall Wildlife Trust Marine Strandings Network (CWT MSN). All species were recorded in the database. However, when possible, the majority of cetaceans, seals, basking sharks and turtles were examined and recorded in detail by trained volunteers of the Network.

A total of 177 cetacean strandings were recorded in Cornwall during 2018. As in previous recent years, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings (53%, n=94), followed by harbour porpoises (*Phocoena phocoena*) (16%, n=29). We've seen a slight decline in the numbers of harbour porpoise strandings since the peak of 2016 (n=61). Due to decomposition, 47 stranded cetaceans could not be identified to species level.

As in 2017, 2018 was again a notable year for the high number of short beaked common dolphin strandings in Cornwall and the Isles of Scilly, which made up 53% of all cetacean strandings last year. Through both post mortem examinations and BEEP assessments 31% (n=34) of assessed cetacean strandings (n=113) were determined to be either definite bycatch (n=24) or probable bycatch (n=10). The majority of these were common dolphin (n=32), and the remaining cases involved one harbour porpoise and one bottlenose dolphin. Bycatch cases were relatively consistent throughout the year, with a slight peak in January and again in November and December, with none in June. This is a stark contrast to the pattern seen in 2017, where over half the bycatch cases were during January and February.

179 Atlantic grey seals (*Halichoerus grypus*) were reported and recorded through 2018. 19% (n=33) were males, 17% (n=31) females and 64% (n=115) of unknown gender due to either limited or no supporting photos, or because the animal was too decomposed and/or had genital scavenging. Seal strandings followed a similar seasonal pattern as in previous years, with peaks during the autumn and winter months. Generally, 2018 seal strandings were above the 6 years average (2010 to 2016) with over double the average numbers during January and February this year. 19 of the 179 seals reported were retrieved for post-mortem examination in 2018, representing 11% of seal strandings. Of those examined at post mortem, infection was the leading cause of death accounting for 68% (n=13), a further 16% (n=3) had succumbed to starvation, including an adult female secondary to severe oral trauma, and 16% (n=3) had a traumatic cause of death, including one case of net entanglement where the seal is suspected to have ultimately drowned. 64 seals were assessed using SEEP methods. The majority of these (97%, n=62) were inconclusive, one was found to have features consistent with bycatch or entanglement in fishing gear and one case was consistent with physical trauma.

There were five leatherback turtles and no other turtle species reported to CWT MSN in 2018. One animal was reported in January, two in August, one in October and another in December.

CWT MSN continues to monitor bird strandings reported to us, and to work in collaboration with partner organisations such as the RSPB and BDMLR to ensure quick reactions in response to any major incidences, such as storms or as a result of pollution. CWT MSN received 45 reports of dead seabirds, involving 66 individual birds around the Cornish coast. However, we emphasise that bird strandings are vastly under reported and therefore this is a gross underestimate of the true scale of bird strandings.

There were 35 reports of strandings of other species groups, comprising 19 different species and involving thousands of individual animals. As with birds, these species are very under reported in Cornwall, so these numbers are a significant underestimate of the true scale of these species and groups washing up around Cornwall.

In 2018, the CWT MSN ran three training sessions for new MSN Callout volunteers, training 52 new volunteers. For the first time since 2009, we ran a training session for new volunteers on the Isles of Scilly in partnership with the Isles of Scilly Wildlife Trust in April. Ruth Williams and Anthea Hawtrey-Collier travelled to the islands with Dan Jarvis from British Divers Marine Life Rescue.

The 2018 MSN Annual Forum took place in January 2019 and was well attended by volunteers, guests from scientific and educational institutions, NGOs and students. The event was once again kindly hosted by Truro College.

Sadly, in 2018 we lost a valued member of the CWT MSN family, Vic Simpson, who was a distinguished veterinary pathologist, integral to the development of the MSN Network.

2. Introduction

Records of stranded marine organisms have been collected in Cornwall and the Isles of Scilly for many years, the earliest record being logged from 1354. To date, the Cornwall Wildlife Trust Marine Strandings Network (CWT MSN) database holds over 8,500 records, comprising data relating to stranded cetaceans (whales, dolphins and porpoises), seals, turtles, birds, cephalopods, fish (including sharks), seeds, hydrozoa, molluscs, echinoderms and crustaceans.

The records are shared with a number of 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 Institute of Zoology 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 Natural England) for the possession and transportation of cetacean carcasses. Over the last 27 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, led by MSN Coordinators Jan and Jeff Loveridge, to provide a comprehensive reporting and recording system for strandings, in particular of marine mammals. Procedures for reporting and recording stranded marine animals were introduced, together with training for volunteers in investigating carcasses. In 2012, the co-ordination of the Marine Strandings Network was passed to the Living Seas 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 over 150 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 the CWT. Detailed reports and photographs are obtained where possible, as well as some tissue samples for analysis by various partner organisations. The data and photographs collected by MSN volunteers is then assessed by experienced experts following the Bycatch Evidence Evaluation Protocol and 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 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 affiliated to the University of Exeter (UofE) Cornwall Campus 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 2018

3.1 Cetaceans

A total of 177 cetacean strandings were recorded in Cornwall during 2018. As in previous recent years, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings (53%, n=94), followed by harbour porpoises (*Phocoena phocoena*) (16%, n=29). We've seen a slight decline in the numbers of harbour porpoise strandings since the peak of 2016 (n=61). Due to decomposition, 47 stranded cetaceans could not be identified to species level.

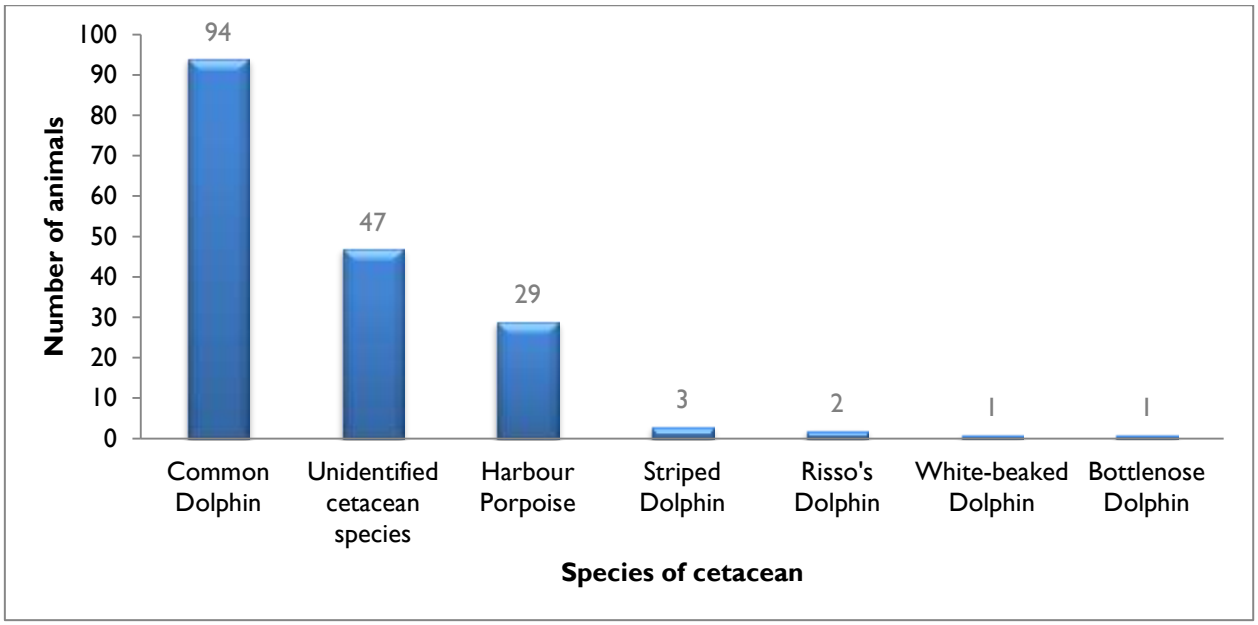


Figure 1: Number of cetacean strandings by species during 2018

The vast majority of cetacean strandings in 2018 occurred during January to March, during late summer and then another rise late in the year, predominantly of common dolphins. Harbour porpoise were recording mainly during the winter months.

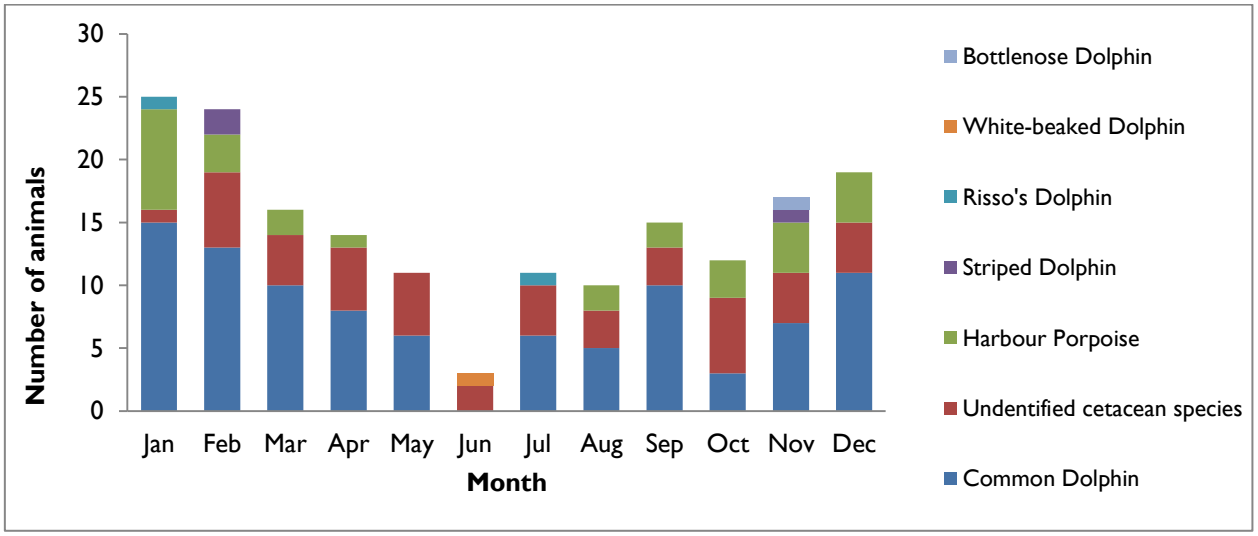


Figure 2: Cetacean strandings by species/month during 2018

During 2018 the location of cetacean strandings were spread all around the coast of Cornwall, with the exception of the north east of the county. Most species were found on both coasts throughout the year. For common dolphin, strandings were spread across the north and south coasts for most of the year. However, during November and December, with the exception of one, all common dolphin strandings were on the south coast.

Figure 3 shows the locations of all cetacean strandings in 2018, and highlights the wide geographical spread of cetacean strandings during this year.

Figure 3: Locations of cetacean strandings in 2018 (n=177)

Photo 2: Common dolphin at Chapel Porth, St Agnes, by Ronny Hawtrey-Eastwood

3.1.1 Comparison with previous years

In total, 177 cetaceans were reported to, and examined by, CWT MSN in 2018 , which is a significant drop from the numbers seen in 2016 and 2017, but the numbers remain higher than average. 2018 cetacean stranding numbers were double the monthly average from July through to December, mainly due to common dolphin strandings (*figure 5*). These numbers are a concern for Cornwall Wildlife Trust, and we continue to research causes as well as campaign for mitigation to reduce anthropogenic causes of cetacean deaths.

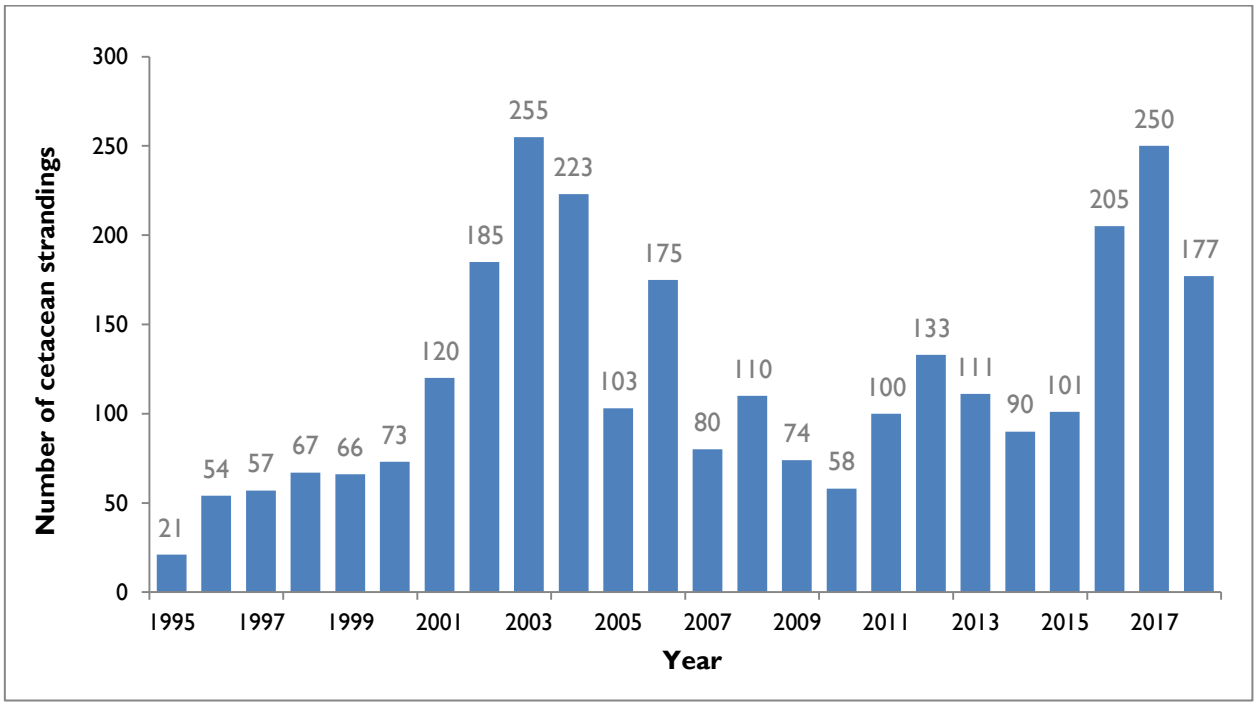


Figure 4: Comparison of cetacean strandings by year (1995 to 2018)

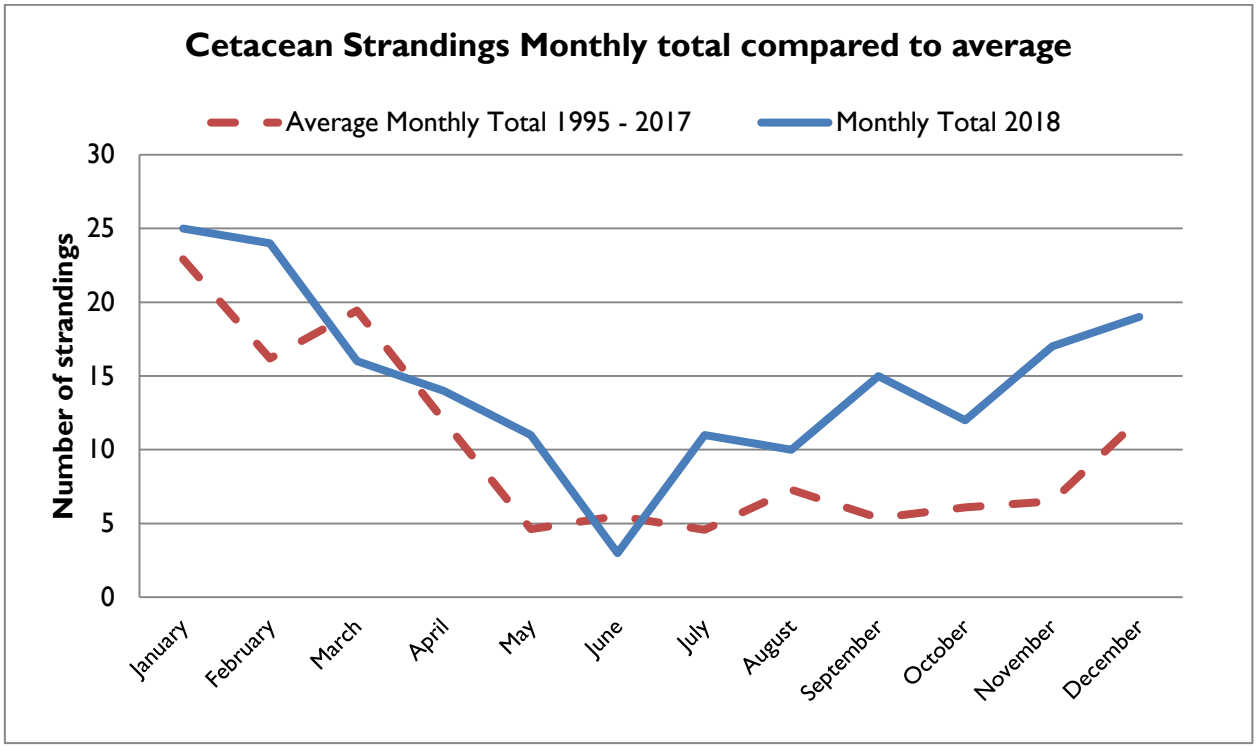


Figure 5: Seasonality of cetacean strandings for 2018, in comparison to average seasonality between 1995 and 2017

3.1.2 Cetacean post-mortem examinations

Of the 177 cetacean carcasses that stranded during 2018, 17% (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). Necropsies were mainly performed by James Barnett, the veterinary pathologist for the Marine Strandings Network at the University of Exeter Penryn campus, assisted by trained volunteers. (*Figure 6*)

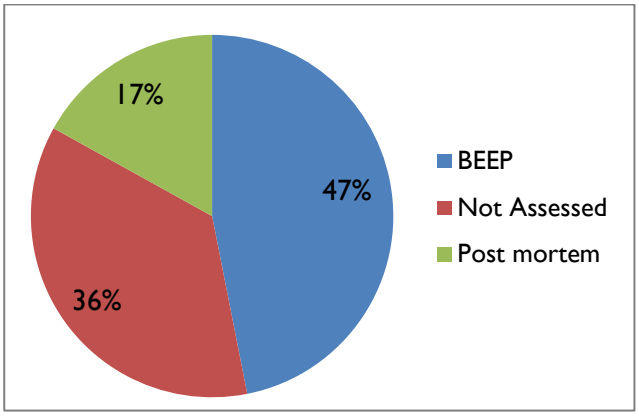


Figure 6: Percentage of stranded cetaceans retrieved for post-mortem examination (n=30), BEEP assessment using in-situ data (n=83) and the remaining 64 (36%) were reported but had insufficient data for more detailed assessment

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 of which were common dolphin. Starvation/hypothermia, bottlenose dolphin attack (one of which live stranded afterwards) and infectious disease each accounted for 17% (n=5) of cases and live stranding accounted for 13% (n=4) of cases. There were also single cases of acute trauma of unknown origin and gastric impaction. The majority of cetacean cases reported during 2018 were too decomposed for post mortem examination to be carried out or to be informative / conclusive.

Photo 3: Bycaught common dolphin Swanpool beach, Falmouth 13th December 2018, taken for post mortem. Photo by Gillian Burke

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, bacteriology that are pending.*

Date	Cornwall ID	Species	Location	Cause of Death
08/02/2018	C/2018/027	Harbour Porpoise	Towan beach, Newquay	physical trauma, bottlenose dolphin attack
16/02/2018	C/2018/033	Common Dolphin	Chapel Porth Beach. St Agnes	physical trauma, bottlenose dolphin attack
24/01/2018	C/2018/020	Harbour Porpoise	Mawgan Porth beach, Newquay	physical trauma, bottlenose dolphin attack
13/02/2018	C/2018/032	Harbour Porpoise	Porthmeor beach, St Ives	physical trauma, bottlenose dolphin attack
15/01/2018	C/2018/009	Common Dolphin	Duporth beach, St Austell.	physical trauma, by-catch
15/01/2018	C/2018/010	Common Dolphin	Duporth beach, St Austell.	physical trauma, by-catch
23/02/2018	C/2018/038	Common Dolphin	Polperro, Looe	physical trauma, by-catch
10/08/2018	C/2018/107	Common Dolphin	Seaton, Downderry	physical trauma, by-catch
03/09/2018	C/2018/115	Common Dolphin	Polriddmouth, Fowey	physical trauma, by-catch
13/12/2018	C/2018/166	Common Dolphin	Swanpool Beach, Falmouth	physical trauma, by-catch
13/12/2018	C/2018/167	Common Dolphin	Pentewan, Mevagissey	physical trauma, by-catch
05/05/2018	C/2018/080	Common Dolphin	Marazion, near slipway	physical trauma, by-catch
18/03/2018	C/2018/056	Common Dolphin	Sandy Cove, Newlyn	gastric impaction (fish bones)
17/09/2018	C/2018/122	Common Dolphin	Godrevy beach, Hayle	live stranding (mass)
17/09/2018	C/2018/121	Common Dolphin	Godrevy beach, Hayle	live stranding (mass)
17/09/2018	C/2018/120	Common Dolphin	Godrevy beach, Hayle	live stranding (mass)
03/02/2018	C/2018/025	Common Dolphin	Pendower beach, Gerrans Bay	Live stranding with possible net interaction prior
18/10/2018	C/2018/142	Harbour Porpoise	Newlyn Harbour, Penzance	live stranding following BND attack (pending bacteriology/histopathology)
24/08/2018	C/2018/112	Common Dolphin	Millook, Bude	gastric parasitism (heavy)
29/07/2018	C/2018/104	Common Dolphin	Watergate Bay, Newquay	gastric parasitism (heavy); generalised bacterial infection (E. tarda)
24/08/2018	C/2018/108	Common Dolphin	Perran Sands, Perranporth	lung and gastric parasitism (moderate-heavy)
15/01/2018	C/2018/012	Harbour Porpoise	Kingsand, Rame Peninsula	parasitism, generalised
29/01/2018	C/2018/021	Common Dolphin	Black Rock beach, Bude	mycotic tracheitis/bronchitis/lymphadenitis'
18/12/2018	C/2018/172	Common Dolphin	Girt Beach, Cawsand Bay	acute physical trauma (possible boat strike or BND attack?)
10/02/2018	C/2018/030	Common Dolphin	Carne beach, Gerrans Bay, Roseland	physical trauma-bycatch
18/03/2018	C/2018/055	Harbour Porpoise	Pentewan Beach, Mevagissey	starvation/hypothermia
20/01/2018	C/2018/017	Common Dolphin	Pentewen Sands, St Austell	starvation/hypothermia (neonate)
25/02/2018	C/2018/042	Common Dolphin	Kennack Sands, Lizard	starvation/hypothermia (neonate)
07/01/2018	C/2018/002	Common Dolphin	Gwithian beach, Hayle	starvation/hypothermia
26/03/2018	C/2018/060	Common Dolphin	Constantine beach near Padstow	starvation/hypothermia

Table 1: Cetacean post-mortem reports (2018) – 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 within the region. BEEP assessments are able to be done *in situ* on the beach and provide data on external injuries to help identify possible cases 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 *in situ* 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 4: Common dolphin live stranding entanglement Portheras Cove 8th September 2018. Photo by Carrie Bennett

Of the remaining 147 cetaceans which were not retrieved for post mortem examination, 64 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.

83 (47%) cetaceans strandings were examined and recorded *in situ* by MSN volunteers using the BEEP protocol, and photos examined in detail by experienced BEEP assessors. It was found that 31% (n=26) showed features consistent with bycatch or entanglement in fishing gear. These features are based on recognised net entanglement marks such as fin edge cuts/slices, encircling net marks and severed appendages.

66% (n=55) were cases where the cause of death was inconclusive based on the data available, although 11 (n=13%) of these showed possible signs of bycatch. There was also one case of boat strike involving a common dolphin and one case of physical trauma probably caused by boat strike.

BEEP Conclusion	Number of animals	% of BEEP assessed cases
Inconclusive	44	43%
Bycatch / Entanglement	26	31%
Possible Bycatch	11	13%
Physical trauma - Boat Strike	1	1%
Physical trauma	1	1%
Total	**83**	

Table 2: a summary of BEEP conclusions from cetacean cases assessed in 2018

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

Common Dolphin C/2018/031 *Examined by Paul Pocock*	Seaton Beach, Whitsand Bay SX304543	13/02/2018	Tail stock cleanly amputated. Clean edged chunks of flesh removed from tail stock. Fin edge slice to trailing edge LHS pectoral. RHS pectoral, fin edge slice to trailing edge with monofilament impression and corresponding notch to leading edge. Lip slice to RHS with associated missing teeth and slice to tongue. Partial encircling monofilament impression to upper beak.

Bottlenose dolphin C/2018/141 *Examined by Rob Wells*	Polridmouth, Fowey SX101501	05/11/2018	Missing entire rear half of torso - clean cut amputation. 2 x encircling monofilament impressions to RHS pectoral fin. Monofilament linear impression to LHS upper beak. Prior to samples taken - fin edge slice to trailing edge dorsal fin. Partial encircling impression to LHS torso in front of dorsal fin. Approx. 40cm long linear 'scrape' with blubber deep wound on LHS flank

Common dolphin C/2018/147 *Examined by Gillian Burke*	Maenporth Beach, Falmouth SW789296	18/11/2018	Flukes amputated. Large slice across torso behind dorsal fin - slightly curved, through spine, almost complete amputation. Large, flesh deep wound to RHS tail stock - straight edged with curved end, approx. 15x5cm. Linear, ridged impression to RHS torso. Lip cuts to tip of upper beak RHS. Linear impressions to leading edge LHS pectoral.

3.1.4 Notable Cetacean Stranding Cases

On the 2nd April a dolphin was reported to the hotline as it had stranded on Portmellon beach, near Mevagissey. It was an adult female common dolphin in fresh condition and was recorded by MSN volunteer Rob Wells. This animal showed some inconclusive signs of entanglement in fishing gear, so it was concluded that it was a possible bycatch case. However, of note was that this female common dolphin had unusually dark colourations, and did not have the usual grey and buff patterns expected of the species, and was concluded to be melanistic. Common dolphins do vary greatly in their markings, but melanistic examples are rare.

Common Dolphin C/2018/061 *Examined by Rob Wells*	Portmellon, Mevagissey	02/04/2018	'V' shaped notch on the fluke, and partially encircling impressions over the head, jaw and eye. This was a case of possible bycatch. It was not possible to retrieve this animal for post mortem before it was washed back out by the tide.


On the 6th June, a dolphin was reported dead stranded on Carlyon Bay, near St Austell. It was in a state of advanced decomposition, but was confirmed by Jeff Taylor to be an adult male, however, the species was difficult to confirm. There was some discussion as to whether this was a juvenile bottlenose dolphin or white-beaked dolphin. Samples of the teeth and tissue were collected and are in storage for later analysis. We were then contacted by a member of the public who helped to put the story of this dolphin together. On the 1st May a father and son came across a live stranded white-beaked dolphin on Kiberick Cove, on the Roseland. The two managed to refloat the dolphin back into the water where it circled the two and then disappeared. It's highly likely that these incidences both involved this individual animal, which died shortly after the live stranding and was found dead and decomposed over a month later.

White-beaked dolphin C/2018/090 *Examined by Jeff Taylor*	Carlyon Beach, St Austell	06/06/2018	Live stranded dolphin, rescued by members of the public on the 1st May. Was reported dead and decomposed 35 days later.


On the morning of 17th September at Godrevy, 13 dolphins were involved in a mass stranding event, with an estimated additional 10 individuals that milled near shore but didn't strand. The members of public which initially discovered the mass stranded common dolphins managed to swiftly refloat 10 stranded individuals that were still alive on the beach. Three other individuals were found dead or died during the response, including a potential mother-calf pair. British Divers Marine Life Rescue volunteers and Dan Jaris were on the scene shortly after the initial call into the BDMLR and MSN hotlines.
The live individuals were monitored by BDMLR volunteers that arrived onsite shortly after the refloat by the members of public and there were no further stranding events. The remaining animals moved out of the area later that day and no subsequent reported re-strandings took place.

The bodies of the dead animals were recovered for post mortem which did not reveal any evidence of significant pathology that would have been a causal factor in the MSE. Subsequent bacterial culture and histopathological investigation also proved inconclusive and the investigation of this MSE continues.

Above text courtesy of Rob Deville CSIP, Photos by JP Castelein/Brock Larousso (left image) and CWTMSN/BDMLR (right image)

Common Dolphin C/2018/090	Godrevy beach, Hayle	17/09/2018	Mass stranding involving what believed to be 13 individuals, 10 of which were re-floated and 3 found dead or died on the beach during the rescue.

Photo 5: Harbour porpoise stranded on Pentwean beach on 18th March 2018, examined and photographed by Rob Wells.

3.2 Grey seals

Dead grey seal strandings have been recorded in detail on the CWT MSN database since 2000, in partnership with Cornwall Seal Group Research Trust. Numbers of seal strandings have been increasing year on year since MSN started recording. There were 179 seal strandings reported during 2018 which continues the annual increasing trend, with 16 more seal standings reported than in 2017 (n=163) (*Figure 7*).

CWT MSN continues to work closely with CSGRT and monitor this trend closely by improving data collection (using the new Seal Evidence Evaluation Protocol, SEEP), assessments of age class, gender and individual identification.

179 Atlantic grey seals (*Halichoerus grypus*) were reported and recorded through 2018. *Figure 8* shows the gender of these seal strandings, with 19% (n=33) males, 17% (n=31) females and 64% (n=115) of unknown gender due to either limited or no supporting photos, or because the animal was too decomposed and/or had genital scavenging.

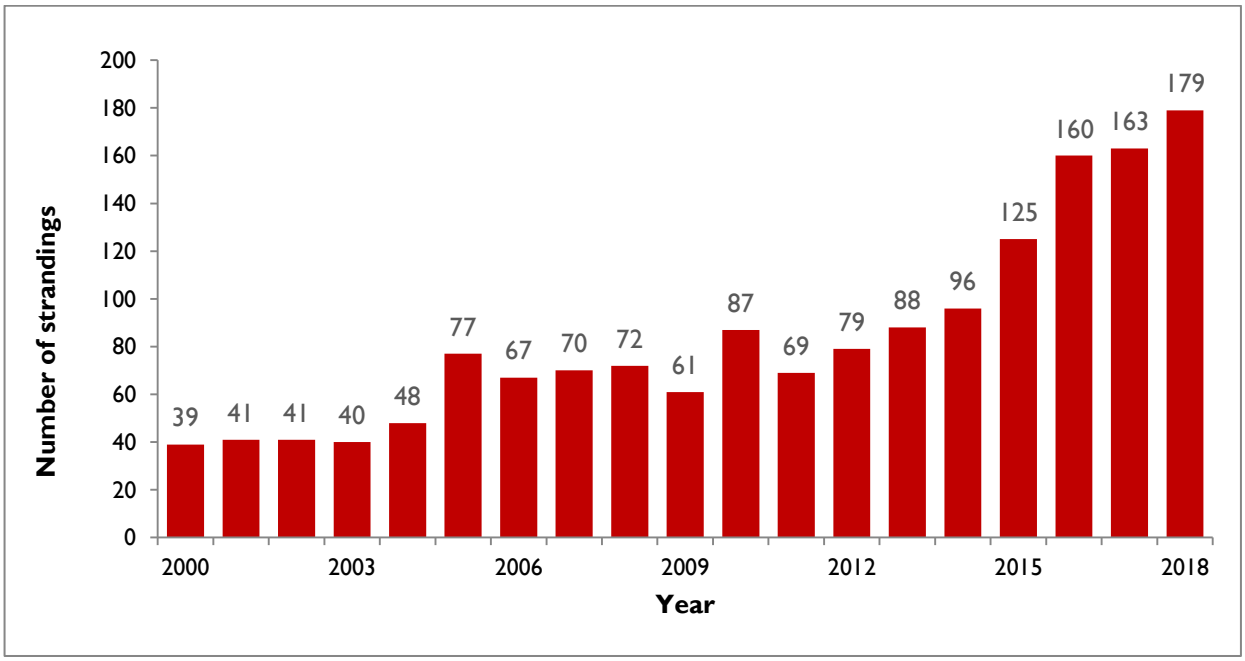


Figure 7: Comparison of grey seal strandings by year (2000 – 2018)

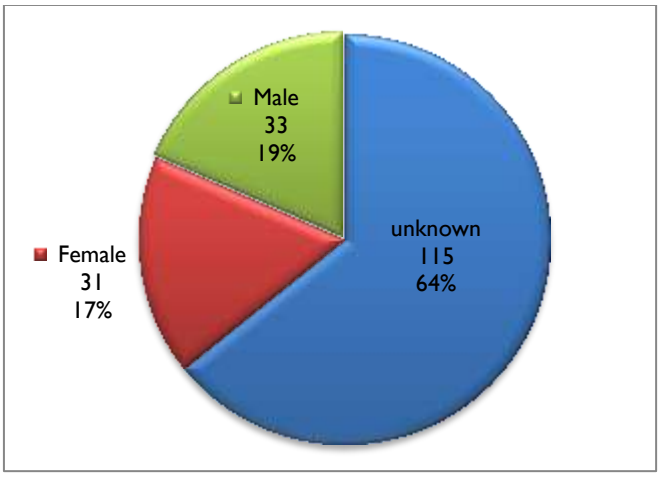


Figure 8: Grey Seal strandings gender classes (2018)

Of the 179 seal strandings, 42% (n= 76) were categorised as pups measuring less than 120cm, 21% (n=38) were juvenile (measuring between 120cm and 160cm), 19% (n=34) were adult and 17% (n=31) were unknown due to lack of data. *Figure 9* shows the proportion of pups (<1yr) and juvenile seal strandings compared to adult strandings during 2018, and shows the clear peaks in seal pup strandings from September to February, coinciding with the main pupping season (which peaks in October) and period during which weaned pups are teaching themselves to feed. Adult seal strandings were relatively consistent throughout the year, but with a slight increase during the winter and autumn months, coinciding with female seals being in poorest possible body condition following pregnancy and lactation, periods of rough weather, the annual moulting season and with usual seal stranding patterns.

* MSN is reviewing the age categories for grey seal pup based on totoal body length due to finding published in 2013. *Hauksson, Erlingur. (2013). Growth and reproduction in the Icelandic grey seal. NAMMCO Scientific Publications. 6. 153. 10.7557/3.2730.* This will affect future presentations of this data.

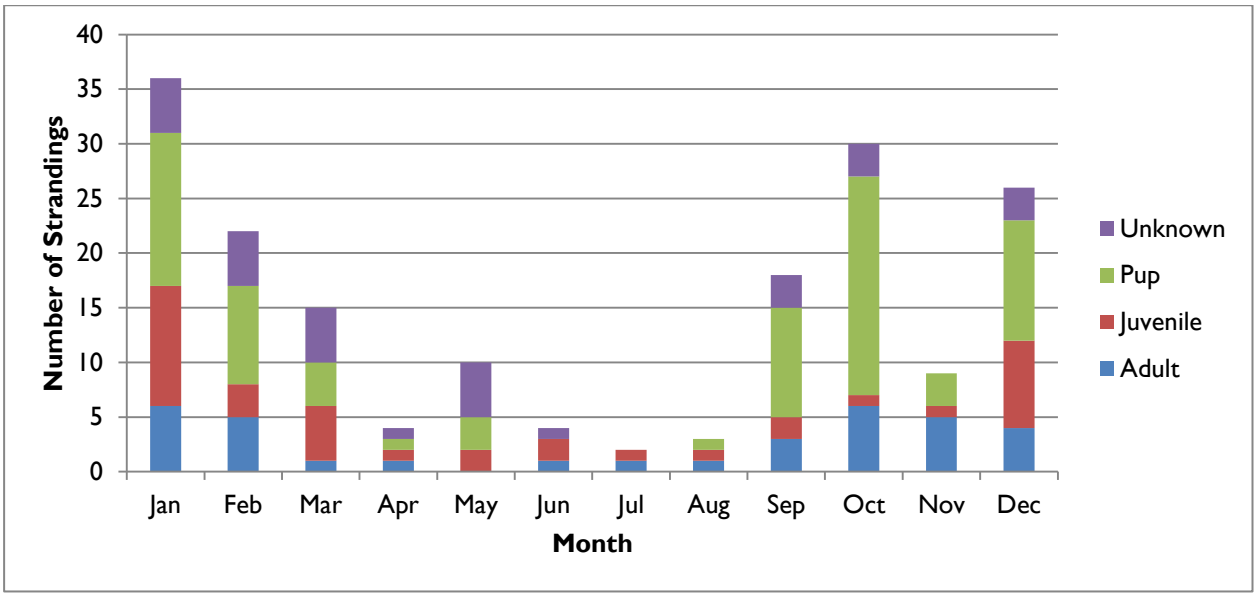


Figure 9: Age and sex of grey seal strandings per calendar month in 2018 (n=179)

Seal strandings followed a similar seasonal pattern as in previous years, with peaks during the autumn and winter months. Generally, 2018 seal strandings were above the 6 years average (2010 to 2016) with over double average numbers during January and February this year.

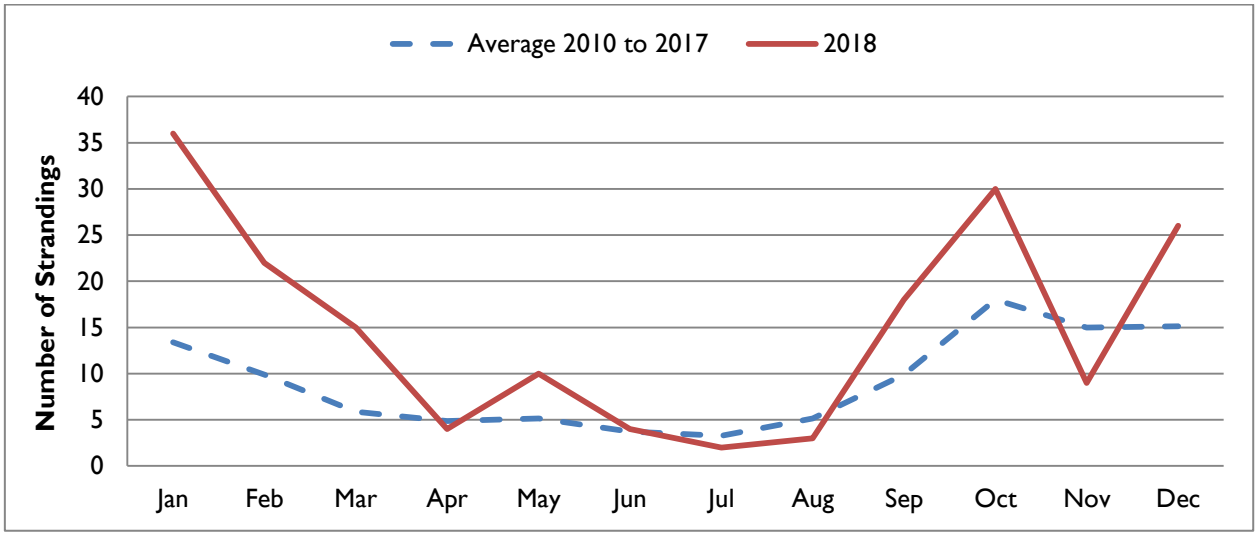


Figure 10: Grey seal strandings per calendar month in 2018 (n=179) compared to average monthly totals for 2010 – 2018

As in previous years, the majority of strandings occurred on the north coast. Clear hotspots are St Ives bay and mid-north coast in the Newquay area which is likely to be related to the important seal sites in these localities visited by many seals as they move around the Celtic Sea. Interestingly there were 15 seal strandings reported along the Falmouth coast, between Fal Estuary and the Helford, compared to five in the same area in 2017.

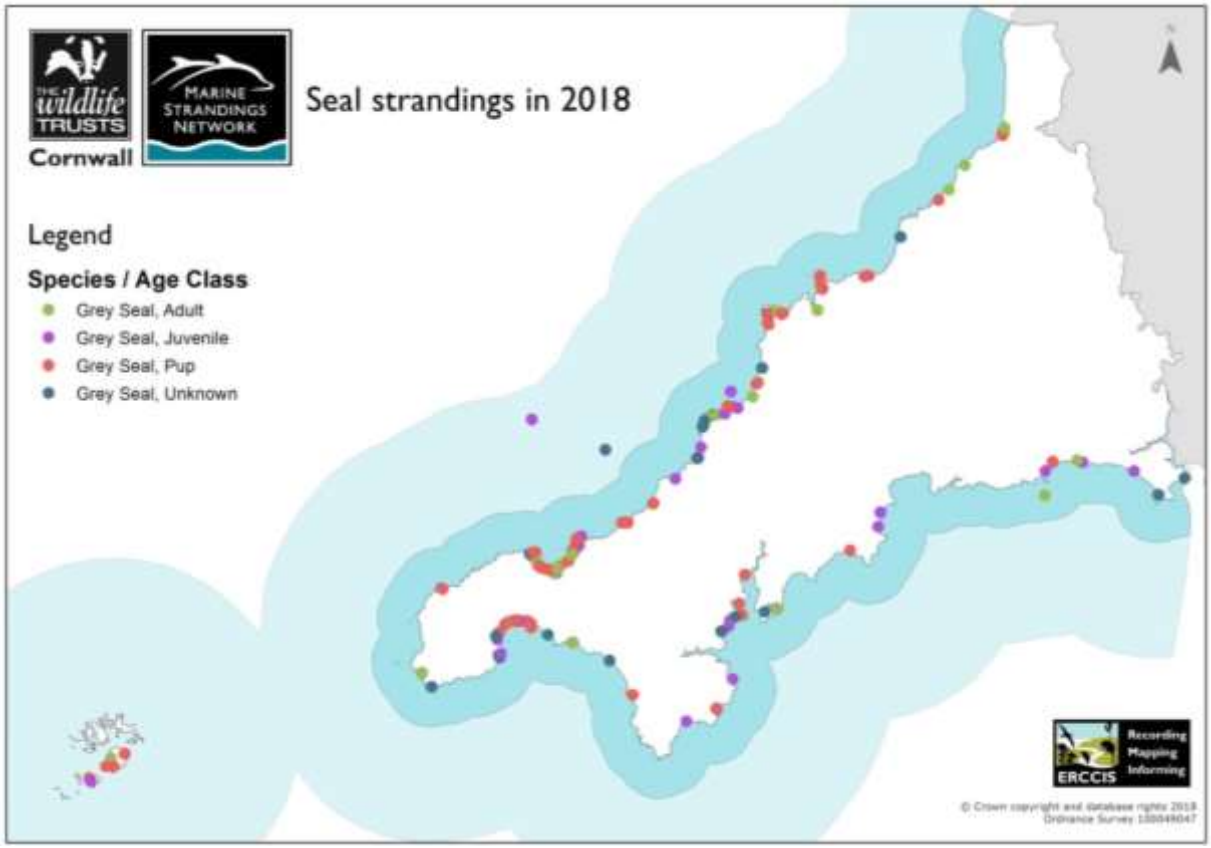


Figure 11: Locations of grey seal mortalities (2018) (n=179)

Photo 6: Female juvenile grey seal stranded in poor nutritional state on Portheras code, Pendeen on 27th January 2018. Photo by Jeff Loveridge

Thanks to collaborative work with Cornwall Seal Group Research Trust (CSGRT), seal strandings are checked against individual identification of seals in Cornwall. In 2018 there were four matches with known seals to CSGRT that were reported to CWT MSN.

On the 24th September an adult male grey seal was recorded dead on Mutton Cove by the CSGRT volunteers. Due to the location and sensitivity of the site, no MSN volunteers were sent out to record the animal but photographs were taken when it was found which confirmed this male as DP1324 'Back Scar Octopus'.

An adult male grey seal was reported on Carbis Bay, St Ives on the 22nd October which was retrieved for post mortem. This male was known by CSGRT as DP662 'TR' and had been identified 41 times between 2013 and 2018 at two sites in West Cornwall and was at least 12 years old when he died. He was identified at one of the offshore islands in West Cornwall 11 days before being found on Carbis Bay. Through post mortem exanimation, this male seal was found to have died from a bacterial infection for which the the source of which remains unclear, but the left eye socket and neighbouring soft tissue could be a possible source.

Also on the 22nd October an adult female grey seal was reported on Porth Kidney Sands, Hayle in fresh condition. The seal was pregnant and it was apparent that she got into difficulties while giving birth which was fatal to both the mother and pup. This seal was known to CSGRT as S1019 'Sea horse head', and was originally identified in September 2014, and had been re-identified 19 times between 2014 and 2018, mainly during the autumn and early winter months. She had been last identified on the 28th December 2017 in West Cornwall, 10 months before being found dead on Porth Kidney Sands.

On the 24th November an adult male grey seal was reported on Towan Beach, on the Roseland peninsula on the south Cornish coast. This animal was reported and recorded by a MSN callout volunteer, and was in poor nutritional state. This individual was identified as ROM438 'Horns Freckles' by CSGRT, he was last sighted alive on the Lizard on 6th November 2018 and was in reasonable condition at the time, 18 days before washing up dead on the Roseland. This adult male had been known to CSGRT since 2014 and was regularly sighted along the south coast commuting between Roseland and Lizard.

For more information about grey seal photo identification work in Cornwall, please contact CSGRT www.cornwallsealgroup.co.uk

Photo 7: Adult male grey seal 'Horns Freckles' stranded on 24th November 2018 at Towan Beach, Roseland. Photo by Kath Wherry

3.2.1 Seal post-mortem examinations

Seals which were found dead on the beach as well as those which were euthanased or died at the beach or within a 7 day window after being rescued, were used for this report following national standard criteria. It is accepted that seals which have been taken to rehabilitation and died or are euthanased within their first week of rehab are most likely to have died from conditions picked up in the wild.

19 of the 179 seals reported were retrieved for post-mortem examination in 2018, representing 11% of seal strandings. Post-mortem examination was carried out by veterinary pathologist James Barnett at University of Exeter Cornwall Campus.

Of those examined post mortem, infection was the leading cause of death accounting for 68% (n=13) of seals examined, 16% (n=3) had succumbed to starvation, including an adult female secondary to severe oral trauma, and 16% (n=3) had a traumatic cause of death, including one case of net entanglement where the seal is suspected to have ultimately drowned.

A summary of the post mortem examination and bacteriology findings are outlined in *Table 3*.

Date	Cornwall ID	Species	Location	Cause of Death
04/01/2018	S/2018/092	Grey Seal	Newquay Harbour	Pulmonary thromboembolism (euthanased)
05/01/2018	S/2018/093	Grey Seal	Pelistry Beach, St Mary's, Isles of Scilly	Infected hock joint, septicaemia
12/01/2018	S/2018/035	Grey Seal	Treyarnon Bay, Padstow	Pulmonary vasculitis, parasitic bronchopneumonia, hypoglycaemia (euthanased)
13/01/2018	S/2018/036	Grey Seal	Porthgwidden, St Ives	Bacterial pneumonia (E. coli), hypoglycaemia (euthanased)
16/01/2018	S/2018/037	Grey Seal	Holywell Bay, Newquay	Pulmonary vasculitis, hypoglycaemia (euthanased)
21/01/2018	S/2018/038	Grey Seal	Porthgwidden, St Ives	Meningeal and pulmonary thromboembolism, hypoglycaemia (euthanased)
22/01/2018	S/2018/017	Grey Seal	Long Rock, Penzance	Net entanglement, suspect drowned
24/01/2018	S/2018/094	Grey Seal	Penzance	Fractured mandible with osteomyelitis (euthanased)
25/01/2018	S/2018/095	Grey Seal	St Michael's Mount, Marazion	Peritonitis due to perforated gastric ulcer associated with ascarids
21/02/2018	S/2018/043	Grey Seal	Porthgwidden, St Ives	Purulent arthritis and cellulitis
05/04/2018	S/2018/065	Grey Seal	Marazion, in front of station house.	Parasitic bronchopneumonia
03/10/2018	S/2018/171	Grey Seal	Portreath	Starvation, hepatic lipidosis
22/10/2018	S/2018/124	Grey Seal	Carbis Bay, St Ives	bacterial septicaemia/endotoxaemia
24/10/2018	S/2018/134	Grey Seal	Carbis Bay, St Ives	Trauma, spinal cord compression (euthanased)
14/11/2018	S/2018/141	Grey Seal	Nanjizal Beach, Land's End	Septicaemia with blubber abscessation (euthanased)
01/12/2018	S/2018/145	Grey Seal	Widemouth Bay, Bude	Starvation secondary to severe oral trauma, amyloidosis
04/12/2018	S/2018/144	Grey Seal	Watergate Bay, Newquay	Starvation/Hypothermia
08/12/2018	S/2018/147	Grey Seal	Porthminster Beach, St Ives	Bacterial pneumonia (euthanased)
09/12/2018	S/2018/158	Grey Seal	Hayle Beach, Hayle	Pyelonephritis (E.coli) and amyloidosis

Table 3: Seal post mortem findings 2018

Examples of post mortem assessed seal strandings are below;

Atlantic Grey Seal S/2018/035 EX/S04/18	Treyarnon Bay, Padstow	12/01/2018	This seal pup was euthanased after being found in an unresponsive state and exhibiting rhythmic swaying of the hind flippers. There is no evidence of brain pathology, grossly or histopathologically, to explain the neurological signs seen. This is probably due to subcellular change that has not resulted in identifiable lesions histologically, most likely associated with hypoglycaemia **Conclusion: Pulmonary vasculitis, parasitic bronchopneumonia, hypoglycaemia (euthanased)**
			

Atlantic Grey Seal S/2018/017 EX/S15/18	Long Rock, Penzance	22/01/2018	Male grey seal pup was entangled in a large quantity of net, rope and floats, which appeared to be part of a gillnet. The presence of a large skin deep wound underlying the net on the neck was consistent with this being a case of entanglement rather than bycatch as it is very unlikely such a wound would have been created in a bycaught animal. The large quantity of ice in the airways of this frozen pup and the presence of shingle in the glottis suggested the pup may have drowned terminally **Conclusion: Net entanglement, suspect drowned.**
			

Atlantic Grey Seal S/2018/094 EX/S09/18	Penzance	24/01/2018	A male pup was euthanased after being found with a badly broken, infected jaw. In addition, there was evidence of trauma to both fore flippers and the excessive wear and damage to the claws was suggestive of an animal that had been scrambling to maintain its purchase on the shore. It's suspected the pup may well have sustained its broken jaw in rough seas. **Conclusion: Fractured mandible with osteomyelitis (euthanased)**
			

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. 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 in cetacean species.

During 2018, 64 seals were assessed using SEEP methods. The majority of these (97%, n=62) were inconclusive, one was found to have features consistent with bycatch or entanglement in fishing gear and one case was consistent with physical trauma (*Table 4*).

SEEP Conclusion	Number of animals	% of SEEP assessed cases
Inconclusive	62	97%
Bycatch / Entanglement	1	2%
Trauma	1	2%
Total	**64**	

Table 4: a summary of SEEP conclusions from seal cases assessed in 2018

3.2.3 Notable Seal Stranding Cases

On the 15th March a female grey seal pup was reported dead on Longrock beach, Penzance and was attended by Mick Dawton. The seal had recently died and was in poor nutritional state. Through SEEP assessment, there were some signs of encircling marks and sloughed skin on the rear flippers, as well as abrasions to the eyes and tip of the muzzle. These features suggested that this seal was potentially a case of bycatch. Interestingly, there were strange patterns seen on the fur across the back for which could be caused by desiccation, but this pattern has not been observed before by MSN.

Atlantic Grey Seal S/2018/058	Longrock, Penzance	15/03/2018	Encircling impression around both rear flippers with associated sloughing on the left rear flipper. Abrasions to both eyes and tip of muzzle. Strange markings to the fur across the back of the animal, cause unknown **SEEP Conclusion – Probable bycatch / entanglement**
 			

An adult female seal was reported on Porth Kidney beach, Hayle on the 22nd October by a concerned member of the public. It was examined by Dan Jarvis, Katie Bellman and Marion Beaulieu who reported that the seal had obviously died as a result of complications whilst giving birth.

Atlantic Grey Seal S/2018/123	Porth Kidney Sands/Lelant beach, St Ives	22/10/2018	Adult female in fresh condition. Good nutritional state and was pregnant. Obvious difficulties while giving birth **SEEP Conclusion – Trauma, birthing complications**
			

Photo 8: Juvenile grey seal at St Warnas Cove, St Agnes, Isles of Scilly 13th December 2018. Photo by Nikki Banfield

3.3 Marine Turtles

There were five leatherback turtles and no other turtle species reported to CWT MSN in 2018. One animal was reported in January, two in August, one in October and another in December.

On the 12th August 2018, a leatherback turtle stranded on Marazion beach, Penzance. The carapace had seven wounds characteristic of injuries caused by a propeller, suggesting that at some stage this animal was hit by a boat, however it was not possible to determine whether this happened post or pre-mortem. Students from University of Exeter attended the stranding and carried out a post mortem examination on the beach.

Photo 9: Adult male leatherback turtle found on 12th August 2018 at Marazion Beach, Penzance. Photo by Beverly Brown

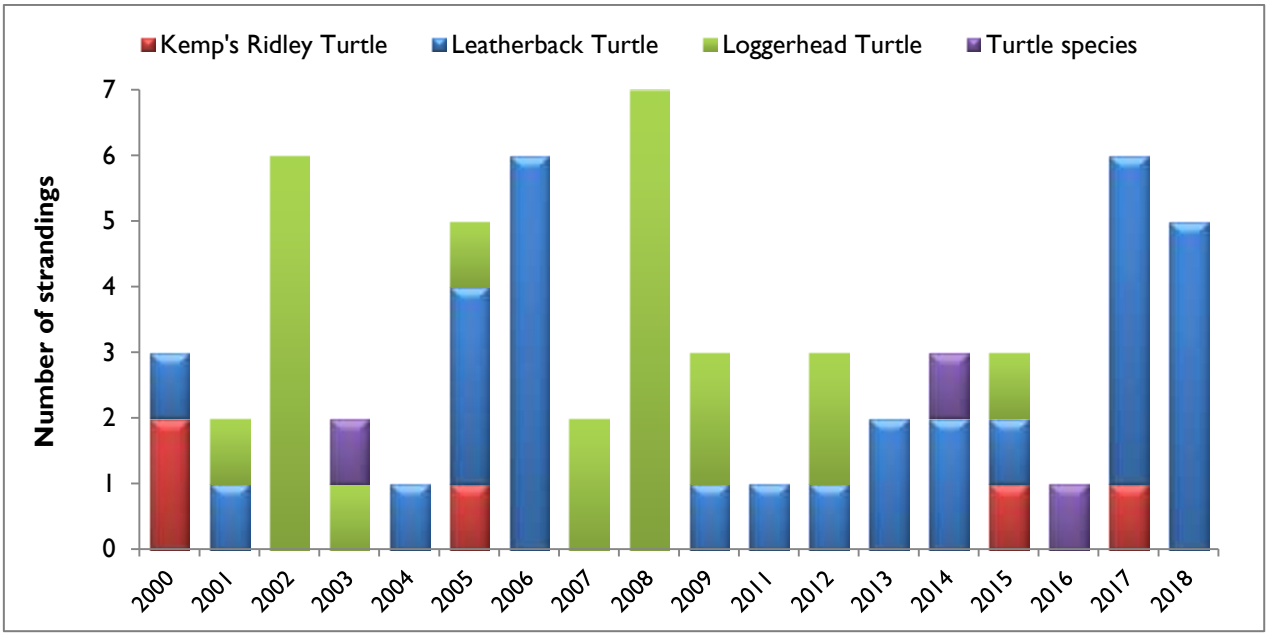


Figure 12: Marine turtle strandings 2000 – 2018

3.4 Birds

CWT MSN continues to monitor bird strandings reported to us, and to work in collaboration with partner organisations such as the RSPB and BDMLR to ensure quick reactions in response to any major incidents, such as storms or as a result of pollution. CWT MSN received 45 reports of dead seabirds, involving 66 individual birds around the Cornish coast. But we emphasise that bird strandings are vastly under reported and therefore this is a gross underestimate of the true scale of bird strandings.

Species	Number of reports	Est. number of animals
Gannet	13	13
Guillemot	5	7
Gull species agg.	4	19
Great black-backed gull	4	5
Herring Gull	4	5
Cormorant	3	4
Oystercatcher	2	3
Razorbill	2	2
Shag	2	2
Puffin	1	1
Fulmar	1	1
Kittiwake	1	1
Muscovy Duck	1	1
Black Throated Diver	1	1
Little Egret	1	1
Grand Total	**45**	**66**

Table 5: Total numbers of each sea bird species reported to CWT MSN in 2018

There were no definitive cases of bird entanglement reported to CWT MSN during 2018. One gannet was reported in the Gazzle, Newquay on 12th May which appeared to be tangled in seaweed, but it was not possible to confirm whether this material included any litter or netting or whether this material was incidental or related to the cause of death for this bird.

Northern Gannet DBID 13512	Northcott beach, Bude	12/05/2018	Fresh, but had blood and evidence of a linear injury to the throat. Possibly caused by entanglement?

3.5 Sharks

There were 11 reports of stranded sharks reported to the CWT MSN in Cornwall in 2018, consisting of 18 individual sharks which included basking shark and blue shark, and several of the smaller species of shark. There were no ray species reported in 2018 (*Table 6*)

Species	Number of reports	Est. number of animals
Nursehound	3	10
Blue shark	2	2
Common Smoothhound	2	2
Small-spotted catshark	1	1
Basking Shark	1	1
Shark species	1	1
Starry Smooth Hound	1	1
Grand Total	11	18

Table 6: Total numbers of shark and ray (elasmobranch) species reported to CWT MSN in 2018

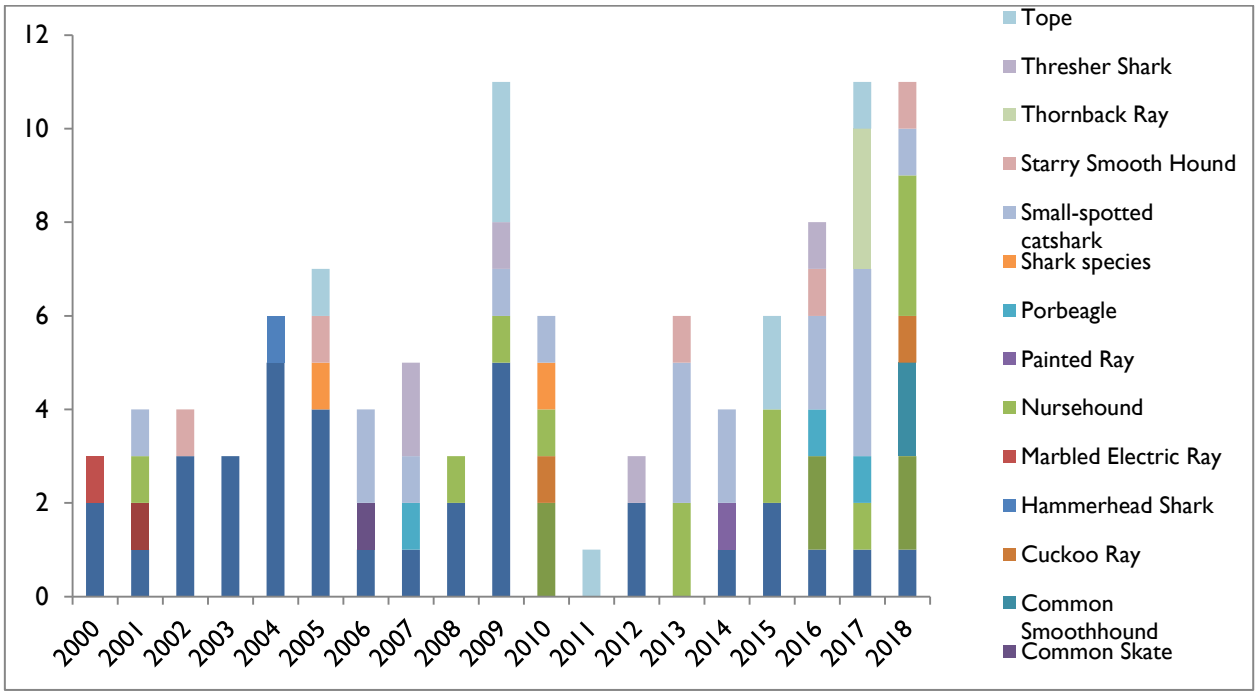


Figure 13: Elasmobranch (shark and ray) strandings 2000 – 2018

3.6 Other strandings

There were 35 reports of strandings of other species groups, comprising 19 different species and involving thousands of individual animals. As with birds, these species are very under reported in Cornwall, so these numbers are a significant underestimate of the true scale of these species and groups washing up around Cornwall.

Species	Number of reports	Est. number of animals
Cephalopods	**3**	**2**
Common Cuttlefish	1	0
Octopus species	1	1
Curled Octopus	1	1
Crustaceans	**5**	**1251**
Common Goose-barnacle	1	100+
Goose-neck Barnacle	4	1151+
Echinoderms	1	200+
Sea Potato Urchin	1	200+
Fish	**10**	**10**
Blue-Fin Tuna	1	1
Boar-fish or Zulu	1	1
Conger Eel	2	2
Grey Triggerfish	3	3
Ocean Sunfish	1	1
Garfish	1	1
Lesser Weever Fish	1	1
Jellyfish	**14**	**296**
Barrel Jellyfish	6	7
Blue Jellyfish	4	38+
Moon Jellyfish	4	251+
Mollusca	**1**	**1000**
Thin Tellin	1	1000+
Tunicate	**1**	**100**
Salp	1	100+
Grand Total	**35**	**2859**

Table 7: Other stranded species reported to CWT MSN in 2018

** numbers of individuals are estimates for some species (indicated with '+')*

On the 27th November a mass stranding of salps was reported on St Mary's, Isles of Scilly. These animals are colonial tunicates and form long chains that are seen free-floating in the water column. This is the first record of stranded salps recorded by CWT MSN.

4. Events

4.1 New volunteer training

In 2018, the CWT MSN ran three training sessions for new MSN Callout volunteers, training 52 new volunteers. For the first time since 2009, we ran a training session for new volunteers on the Isles of Scilly in partnership with the Isles of Scilly Wildlife Trust in April. Ruth Williams and Anthea Hawtrey-Collier travelled to the islands with Dan Jarvis from British Divers Marine Life Rescue. The new volunteers completed both their BDMLR Marine Mammal Medic training on the Saturday and the MSN Callout Volunteer training on the Sunday and we now have a strong team of volunteers covering the Islands for both live and dead stranded animals.

Training in Cornwall took place at CWT HQ, Allet in February and Looe in September for new Callout Volunteers from across Cornwall and some from Devon.

Photo 10: New Callout volunteers training on St Mary's, Isles of Scilly during the April MSN Training Day 2018. Photo by Ruth Williams

4.2 Marine Recorders Evening 2018

The Marine Recorders Evening is a series of short talks showcasing research and citizen science work from around Cornwall with new findings and annual updates from all CWT recording projects. Abby Crosby spoke at the 2018 Marine Recorders Evening on 15th March at The Rockpool, Godrevy about strandings, as well as sightings, from the previous year.

The event also had speakers from ERCCIS summarising sightings and strandings from 2018, MSN volunteer Rob Wells about his monitoring of a basking shark decomposition and gull recording, students from University of Exeter talking about their shark environmental DNA research, the Cornwall Seal Group Research Trust and Natasha Philips talking about her ocean sunfish research for which CWT MSN provided samples and records.

4.3 MSN Forum 2018

The 2018 MSN Annual Forum took place in January 2019 and was well attended by volunteers, guests from scientific and educational institutions, NGOs and students. The event was once again kindly hosted by Truro College.

Sadly, in 2018 we lost an incredible part of the CWT MSN family, Vic Simpson, who was a distinguished veterinary pathologist integral to the development of the Network. He was one of the first to conduct post mortems here in Cornwall and made major contributions to determining causes of death for marine mammals, including identification of signs of bycatch in cetaceans as well as many other key findings from marine strandings in Cornwall and across the UK. James Barnett gave a moving tribute to Vic during the Forum, and he is very fondly remembered across the CWT MSN team as an international expert and as a very kind, giving person who was an inspiration to so many.

Photo11: Vic Simpson

5. Acknowledgements

We would like to acknowledge the help and support of the general public in sending in their reports and the following:

- CWT Marine Strandings Network volunteers, who continue to enthusiastically collect vital data and retrieve carcasses, often under difficult and challenging conditions.
- Dedicated Hotline Coordinators (2018): Alison Forward, Joyce Edmonds, Liz Clarke, Meg Hayward-Smith, Gill Peters, Anthea Hawtrey-Collier, Mike Lord, Rick Payne and Paul Wright.
- Cheryl Yarham for all her work on collating, assessing and entering records into the database.
- University of Exeter, Cornwall campus for collaboration on post mortem examinations.
- James Barnett, veterinary pathologist and advisor to the CWT MSN.
- Frugi Ltd, for their financial support to CWT Living Seas programme.
- Nick Davison, Scottish Marine Animal Stranding Scheme for his advice on bacteriology.
- Dr Nick Tregenza, cetacean expert and advisor to Cornwall Wildlife Trust and the MSN.
- Rob Deaville and Dr Paul Jepson, Institute of Zoology and CSIP.
- Dan Jarvis from British Divers Marine Life Rescue for his help with MSN training days.
- Dave, Lesley and Dan Jarvis and the Marine Mammal Medics, BDMLR, Cornwall.
- Sue Sayer for seal ID and support of the Cornwall Seal Group Research Trust team and volunteers.
- Isles of Scilly Wildlife Trust and the island strandings volunteers.
- Truro College for hosting the annual Marine Strandings Network Forum.
- Cornwall County Council and BIFFA officers and beach management teams for their assistance.
- Rod Penrose and Lin Gander, Marine Environmental Monitoring (Wales).
- Richard Sabin, Brian Smith, Kate Swindells, Louise Allan, Rebecca Lyal and Scott Wilson from the Natural History Museum Strandings team.
- Brendan Godley, Annette Broderick and Matthew Witt from Exeter Marine and Marine Turtle Research Group.
- Chelonia Limited.
- The National Trust Rangers
- Tesco Bags For Life for funds awarded to the Marine Strandings Network.
- Thank you to everyone who supported the work of the Marine Strandings Network for your kind donations to the CWT Strandings Appeal.

APPENDIX 1:

2018

Cetacean Bycatch Report

Introduction

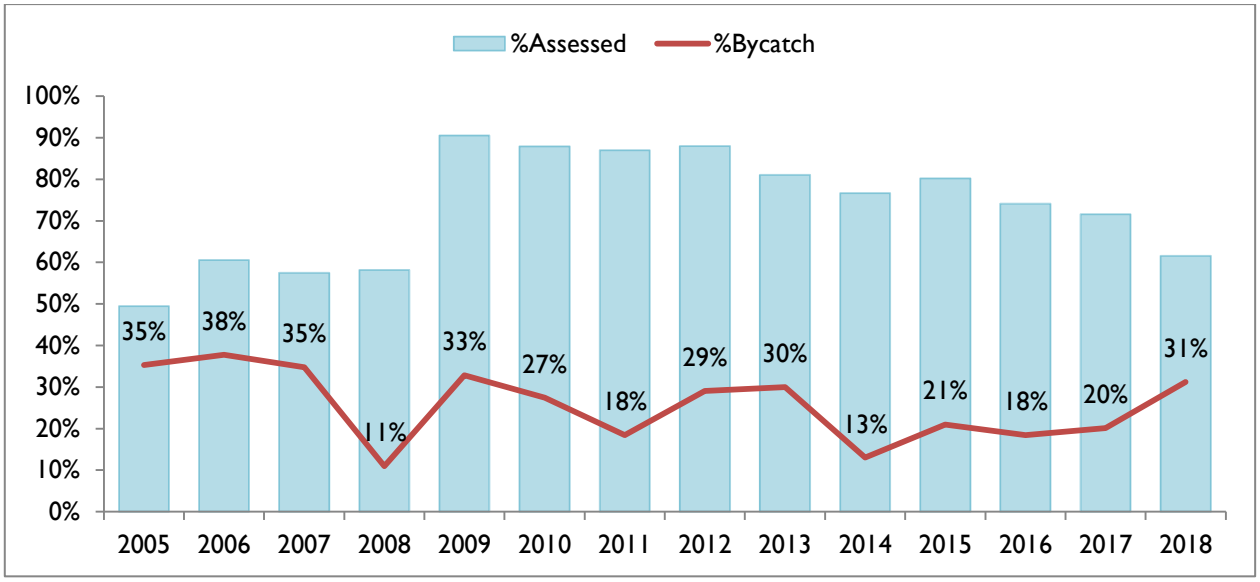
The Cornwall Wildlife Trust Marine Strandings Network (CWT MSN) has been collecting valuable data on stranded marine life around Cornwall for over 25 years, and holds over 8,500 records. The Network is an invaluable tool to monitor the impact of bycatch on cetacean species within the region. To that 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 - comparison with previous years

For a comparison over years, we limit the analysis to common dolphin and harbour porpoise as these are the two most commonly recorded cetacean species in Cornwall. We have only included cases which have been assessed through post mortem examination or BEEP.

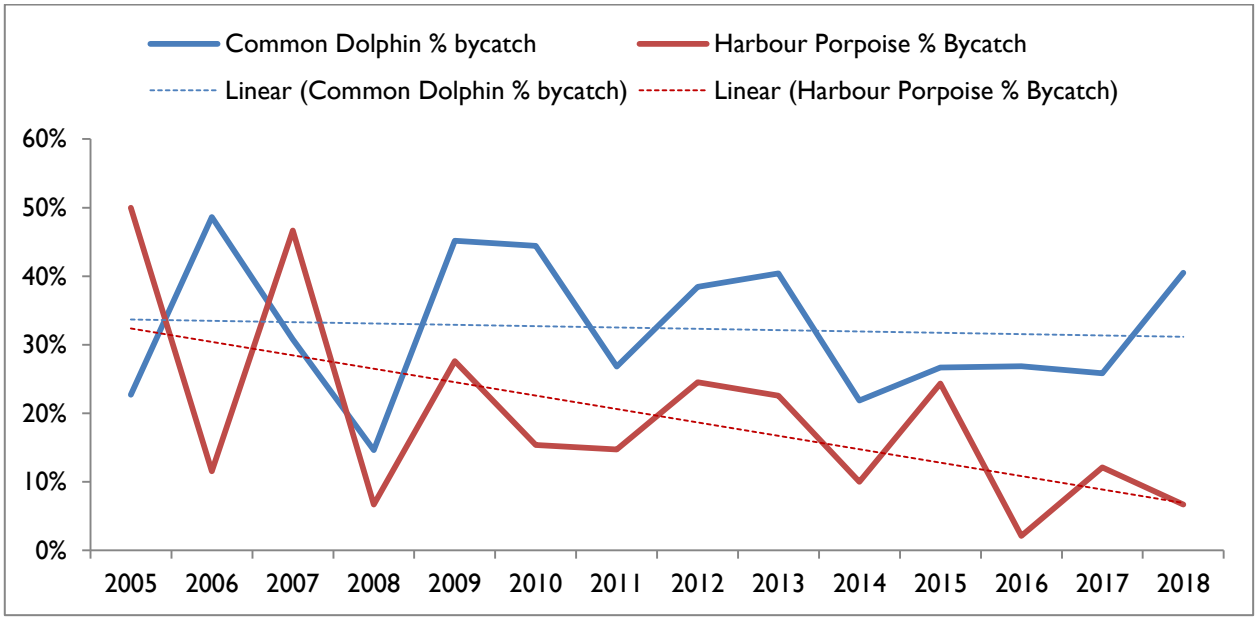
Since 2005, the proportion of assessed cetacean strandings for which cause of death has been concluded to be from bycatch or probable bycatch has been an average of 26% (between 2005 and 2018), with a range between 11% and 38%. Over recent years the proportion of cetacean strandings found to be bycaught in Cornwall has been rising, and this is something that Cornwall Wildlife Trust continues to monitor (*Appendix Figure 1*)

Although there has been an overall decrease in the total number of strandings for both common dolphin and harbour porpoise, in 2018 we've seen a sharp increase in the proportion of those which were bycaught. 2018 was above the yearly average of 26%, with 31% of assessed cetacean strandings in 2018 being concluded as bycatch or probable bycatch as the cause of death, the hightest percentage recorded since 2009 by MSN, and mainly involving common dolphin.



Appendix Figure 1: The percentage of bycaught cetacean species against those assessed through post mortem examination or BEEP assessment from 2005 to 2018. The blue bars illustrate the proportion of all cetacean strandings which were assessed.

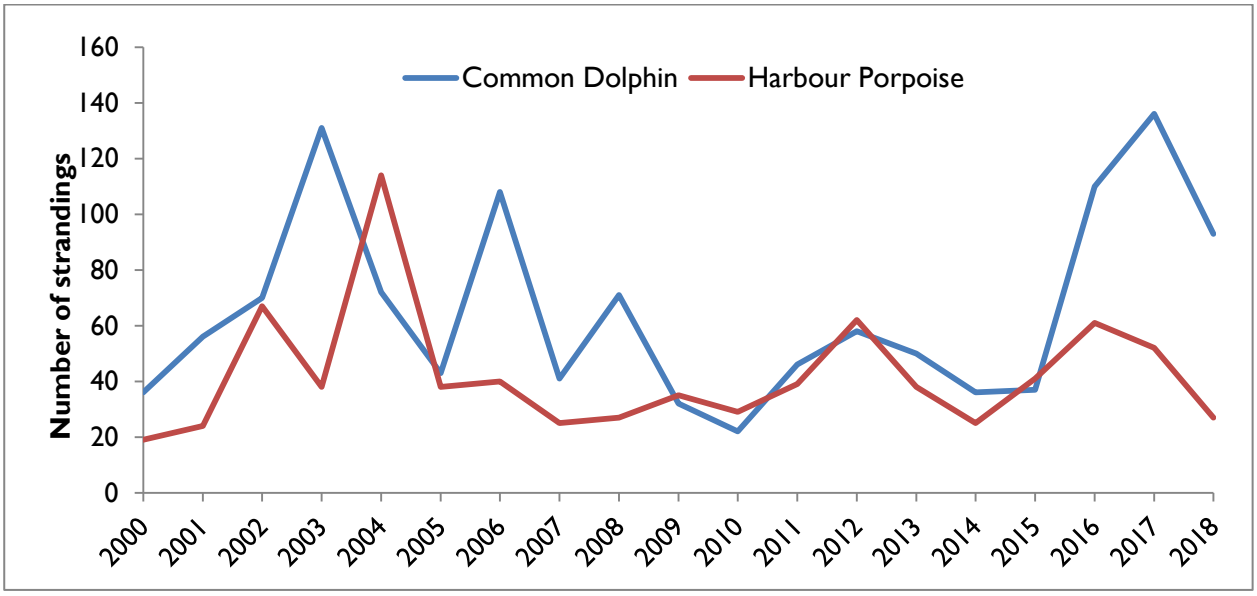
When we compare the percentage bycatch for common dolphin and harbour porpoise separately, we can see a reduction of the proportion of harbour porpoise killed as bycatch, whereas bycatch continues to be a leading cause of death for common dolphin.



Appendix Figure 2: A comparison of percentage of bycaught common dolphin and harbour porpoise strandings examined through post mortem or BEEP assessment from 2005 to 2018.

Bycatch analysis - 2018

Though overall numbers are lower than 2016 and 2017, 2018 was another notable year with high number of common dolphin strandings in Cornwall and the Isles of Scilly, representing 53% (n=94) of all cetacean strandings. Common dolphin and harbour porpoise have always been the most commonly reported cetacean species for MSN in Cornwall. Unusually, in recent years, common dolphin stranding numbers have been over double that of harbour porpoise (*Appendix Figure 3*).



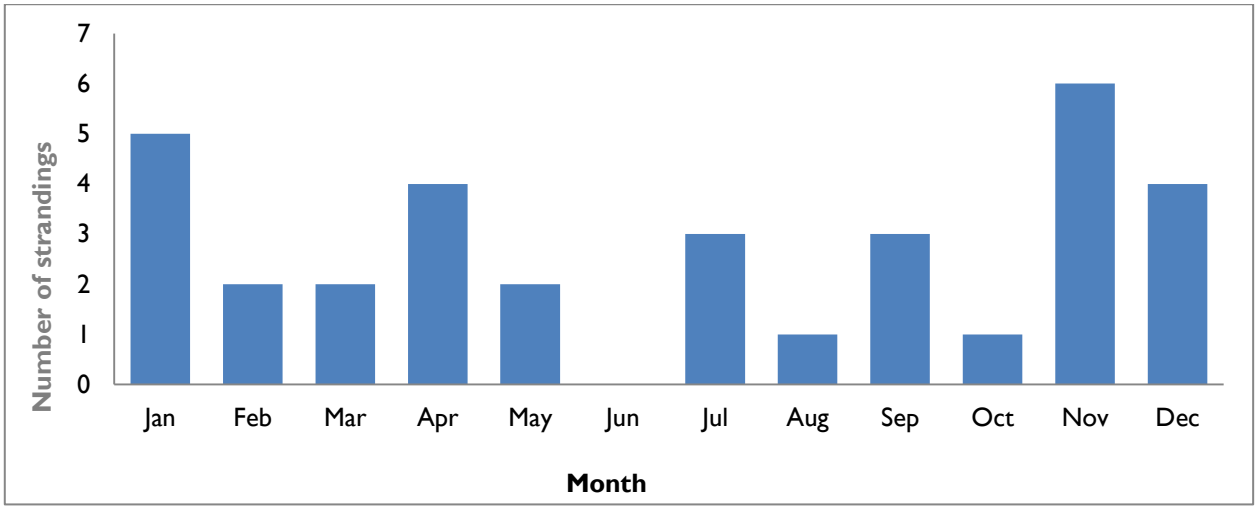
Appendix Figure 3: numbers of common dolphin and harbour porpoise strandings from 2000 to 2018

Of the cetacean species which were assessed through either post mortem examinations or BEEP assessments, 30% (n=34) of all assessed cetacean strandings (n=113) were determined to be either definite bycatch (n=24) or probable bycatch (n=10). The majority of these were common dolphin (n=32), and the remaining cases involved one harbour porpoise and one bottlenose dolphin. (*Table 1*).

Species	Total number of strandings	Number of cases assessed	Bycatch cases (PME and BEEP)	% of bycatch (against assessed)
Common Dolphin	94	83	32	39%
Unidentified cetacean species	47	11	0	0%
Harbour Porpoise	29	15	1	7%
Striped Dolphin	3	1	0	0%
Risso's Dolphin	2	2	0	0%
White-beaked Dolphin	1	0	0	0%
Bottlenose Dolphin	1	1	1	100%
Grand Total	**177**	**113**	**34**	**30%**

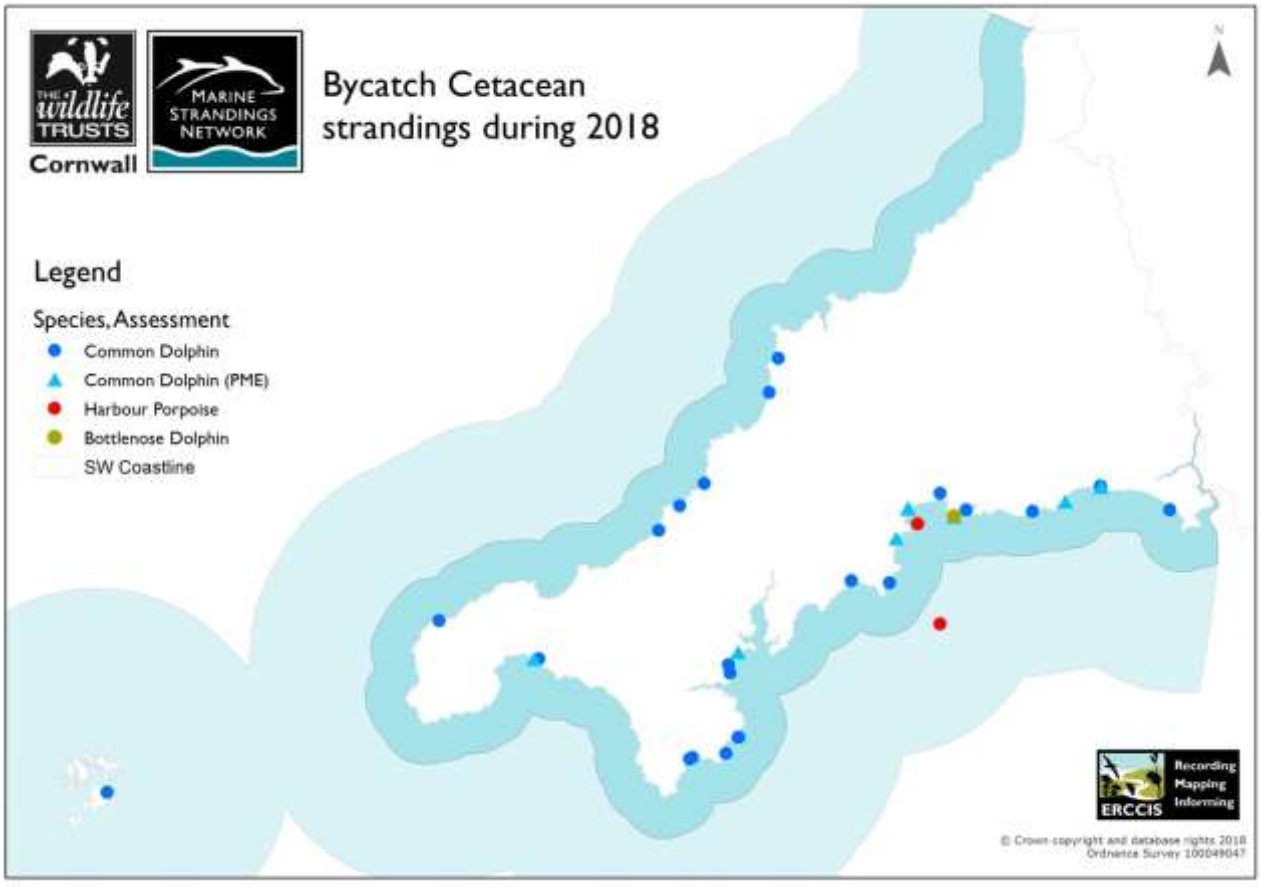
Appendix Table 1: Summary of bycatch related causes of death from post mortem and BEEP assessments from cetacean cases assessed in 2018

Bycatch cases were relatively consistent throughout the year, with a slight peak in January and again in November and December, with none in June. This is in stark contrast to the pattern seen in 2017, where over half the bycatch cases were during January and February.



Appendix Figure 4: Number of stranded cetaceans per month which exhibited features of bycatch 2018

The geographical spread of cetacean bycatch cases through 2018 shows that bycatch cases were spread around the coast of Cornwall, with a high proportion reported on the south coast.



Appendix Figure 5: The location of 2018 stranded cetaceans with bycatch features; blue indicate common dolphin with the triangles indicating those examined through post mortem examinations

Post Mortem Examinatons

Of the 177 cetacean carcasses that stranded during 2018, 17% (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). Necropsies were mainly performed by James Barnett, the veterinary pathologist for the Marine Strandings Network and performed at the University of Exeter Penryn campus, on behalf of CSIP and assisted by trained volunteers.

Post mortem examinations concluded that bycatch was the cause of death for 9 (30%) of the cetaceans examined though PME, all of which were common dolphin. Starvation/hypothermia, bottlenose dolphin attack (one of which live stranded afterwards) and infectious disease each accounted for 17% (n=5) of cases and live stranding accounted for 13% (n=4) of cases. There were also single cases of acute trauma of unknown origin and gastric impaction. The majority of cetacean cases reported during 2018 were too decomposed for post mortem examination to be carried out or to be informative / conclusive. The majority of cetacean cases reported during 2018 were too decomposed for post mortem examination to be carried out or to be informative.

Bycatch Evidence Evaluation Protocol Assessments

The Bycatch Evidence Evaluation Protocol (BEEP) has been developed by MSN over the 26 years the project has been running. It involves training MSN volunteers to take detailed photographs of the stranded animal carcass, which are examined by highly experienced members of the MSN team to identify and log external marks and injuries known to be associated with bycatch and entanglement. These features are then weighted and each case is concluded to be associated with bycatch, or other forms of physical trauma such as bottlenose dolphin attack. When required stranding cases are referred to James Barnett, vet pathologist for MSN and CSIP, for confirmation and expert opinion before being included in the analysis. CWT MSN are continuously testing and developing the BEEP assessments against the findings from post mortem examinations to improve accuracy of detecting bycatch.

Of the remaining 147 cetaceans which were not retrieved for post mortem examination, 64 cases were reported to MSN but a volunteer was not able to attend for a wide range of reasons or we had insufficient data to assess through BEEP. Therefore, these cases have not been included in the BEEP and bycatch analysis for this report.

83 (47%) of cetacean strandings were examined and recorded in situ by MSN volunteers and photos examined in detail by experienced BEEP assessors. It was found that 31% (n=26) showed features consistent with bycatch or entanglement in fishing gear. These features are based on recognised net entanglement marks such as fin edge cuts/slices, encircling net marks and severed appendages.

66% (n=55) were cases where the cause of death was inconclusive based on the data available, though 10 (13%) of these showed inconclusive signs of bycatch. There was also one case of boat strike involving a common dolphin and 1% (n=1) case of physical trauma probably caused by boat strike.

BEEP Conclusion	Number of animals	% of BEEP assessed cases
Inconclusive	45	54%
Bycatch / Entanglement	25	30%
Possible Bycatch	11	13%
Physical trauma - Boat Strike	1	1%
Physical trauma	1	1%
Total	**83**	

Appendix Table 2: Summary of BEEP conclusions from cetacean cases assessed in 2018

Appendix Photo 1: Common dolphin at Readymoney Cove, Fowey on 17th April 2018. Photo by Pauline McKeogh

Summary of all animals which exhibited signs of bycatch in 2018

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 Strandings Data Officer.

All photos courtesy of the MSN team and James Barnett, veterinary pathologist and affiliate of University of Exeter, Tremough.

Reference	Location	Date	Gross post-mortem examination findings / observations
Common Dolphin C/2018/005	Kennack Sands, Lizard Peninsula SW739167	09/01/2018	Multiple partial encircling monofilament impressions across the top of the beak and melon. Monofilament impressions on all leading edges of fins and fluke. Top side of peduncle has skin sliced off. Large slice to trailing edge fluke & RHS pectoral. LHS pectoral fin linear impressions encircling, slice marks. Lip cuts.
			
Common Dolphin C/2018/006	Maenporth Beach, Falmouth SW789296	10/01/2018	Notch and fin edge slice to trailing edge RHS fluke with associated scavenging. Notch to trailing edge RHS pectoral fin. Notch with monofilament impression to leading edge, base of dorsal fin. Large clean edged 'v' shaped notch to base of trailing edge dorsal fin, with second large notch behind it. Large fin edge slice to tip of trailing edge dorsal fin with associated scavenging.
			

Common Dolphin C/2018/008	Polperro Beach, Fowey SX210508	13/01/2018	2 x lip cut to midway upper LHS jaw with small notch to lower lip below. Haemorrhage to RHS eye. Mono and multifilament impressions partially encircling top beak and front of melon. Possible fin edge slice to trailing edge fluke. Large 'scuff' mark above RHS eye. Fin edge slice to trailing edge RHS pectoral fin.



Common Dolphin C/2018/010 SW2018/19.1	Duporth Beach, St Austell SX037513	15/01/2018	*This subadult male was in good body condition. The evidence of recent feeding, amputation of the tail stock, fin slice and encircling linear wound on the pectorals and probably also the faint linear marks running over the right caudal mandible are, in my opinion, consistent with bycatch. The parallel marks on the right thorax did not look typical of net marks and their origin is less clear. The presence of shingle as far distal in the gastrointestinal tract as the fundic stomach is unusual in a bycaught animal and I only recall seeing this before in live stranded animals.*

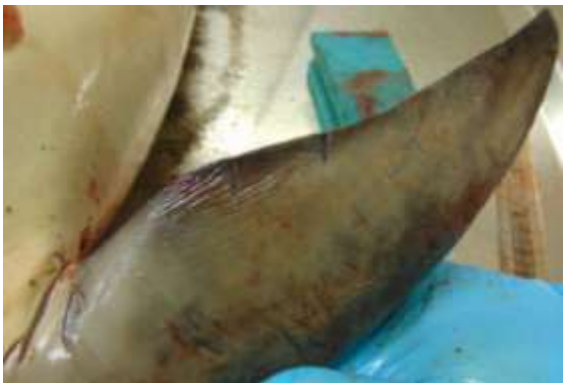

Common Dolphin C/2018/009	Duporth Beach, St Austell SX037513	15/01/2018	*This subadult male was in good body condition. The evidence of recent feeding, amputation of the tail stock and encircling linear marks on the maxilla and mandible are, in my opinion, consistent with bycatch. The irregularly shaped, up to 2cm long tapeworm cysts in the caudal abdominal cavity were not consistent with other species of tapeworm that I have seen in this dolphin species before and samples have been collected for potential identification.*


Common Dolphin C/2018/018	Perranporth Beach, Perranporth SW755547	19/01/2018	Fin edge slice to trailing edge RHS pectoral fin. Linear impression to leading edge RHS fluke. Large fin edge slice to trailing edge LHS pectoral fin. Partially encircling monofilament impression with notch into melon crease, around upper beak. Multifilament impression under chin. 7 parallel linear impressions under chin. Maxilla broken with flesh desleeved from tip. Fin edge slice along leading edge dorsal fin.



Common Dolphin C/2018/031	Seaton Beach, Whitsand Bay SX304543	13/02/2018	Tail stock cleanly amputated. Clean edged chunks of flesh removed from tail stock. Fin edge slice to trailing edge LHS pectoral. RHS pectoral, fin edge slice to trailing edge with monofilament impression and corresponding notch to leading edge. Lip slice to RHS with associated missing teeth and slice to tongue. Partial encircling monofilament impression to upper beak.


Common Dolphin C/2018/038	Polperro Beach, Looe SX255522	23/02/2018	*This juvenile female common dolphin was in reasonable nutritive state and had evidence of recent feeding. In my opinion, the encircling linear marks/wounds on the maxilla, mandible, some fins and flukes, the fin slices/skin tags on the flukes and the persistent froth in the upper respiratory tract were consistent with bycatch as the cause of death.*




Common Dolphin C/2018/049	Nansidwell Beach, Falmouth SW791284	12/03/2018	Tip of upper beak missing. Lower jaw broken, multiple teeth disturbed at the front. Top of dorsal fin missing with associated scavenging. RHS part of fluke missing, angular cuts with associated scavenging. LHS fluke amputated. Linear impressions to leading edge, underside LHS pectoral fin. Linear impression to flank behind LHS pectoral fin.



Common Dolphin C/2018/053	Porthbeer Beach, Coverack SW785173	16/03/2018	RHS tip of fluke missing, LHS end of fluke missing with associated scavenging. Fin edge slice to trailing edge RHS fluke. Thick linear partially encircling impression around RHS of torso running from behind RHS pectoral up in front of dorsal. Damage to LHS pectoral joint. Thick, linear partially encircling impression around RHS tail stock. 2 x deep notches to ventral side fluke ridge. Thick linear impression behind eye/in front of pectoral fin on RHS. 3 partially encircling linear multifilament impressions around lower beak with broken teeth to lower RHS jaw.



Harbour Porpoise C/2018/069	Par Beach, St Austell SX082352	05/04/2018	Partial encircling linear impressions to dorsal side of tail stock. Notches, slices and linear impressions to pectoral fins. LHS tip of tail fluke is absent, a very straight and clean cut to it. Fin edge notch to leading edge LHS fluke. Jaw broken. Encircling impression around RHS lower jaw leading up over upper jaw.



Common Dolphin C/2018/066	Pelistry Beach, St Mary's, Isles of Scilly SV928119	15/04/2018	Fluke missing, clean edges to wound, associated scavenging. Partial encircling linear impression behind LHS eye. Encircling impression on torso towards tail. Two encircling impressions on LH pectoral fin on leading edge, with matching notches.

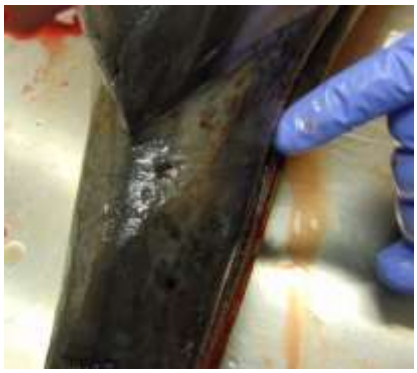

Common Dolphin C/2018/070	Readymoney Cove, Fowey SX118510	17/04/2018	Tail sliced off. Encircling marks on RHS pectoral fin. Fin edge notches to both pectoral fins. Cuts on leading edge of dorsal fin. Deep scratches on torso. Scrape marks around RHS eye. Monofilament impression to lower lip RHS. 2 x encircling monofilament impressions around torso at pectoral fins.

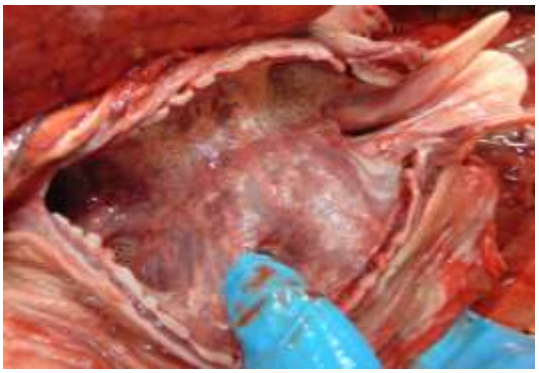

Common dolphin C/2018/073	West Portholland, Veryan Bay SW959412	24/04/2018	Missing fluke, clean edge to wound with associated scavenging. Fin edge slice to trailing edge of dorsal fin. Suspect pre-mortem bruising in front of blowhole. Several broken teeth.


Common Dolphin C/2018/078	Vault Beach, Gorran Haven SX012409	02/05/2018	RHS pectoral fin missing. Partial encircling monofilament impression across LHS eye over melon. Semi encircling multifilament impression to LHS tailstock. Fin edge cuts and slices to dorsal fin. Linear impression to tail stock. LHS pectoral fin partial encircling linear impressions to leading and trailing edge at joint. 3 x encircling, linear multifilament impressions on torso. Long horizontal scratch along upper LHS of torso.



Common dolphin C/2018/080	Marazion Beach, Mount's Bay SW519304	05/05/2018	*The inactive ovaries and involuted uterus suggested this was a relatively young adult female common dolphin. The faint linear encircling wounds on the maxilla and right side of the head, the presence of recently ingested fish in the oesophagus and the persistent froth in the airways were, in my opinion, consistent with bycatch as the cause of death. The plaque-like lesions on the ulcerated tongue looked potentially viral in origin and sections have been fixed in formol saline and frozen for further investigation.*





Common dolphin C/2018/098	Porthcothan, Padstow SW858720	18/07/2019	Rope was around tail when found. Removed by lifeguards. Fin edge slice to trailing edge LHS pectoral fin. Fin edge slice to trailing edge RHS pectoral. 2 x bold Linear impressions across leading edge LHS pectoral fin3 x irregular spaced linear, horizontal impressions behind LHS eye approx. 20cm long. 'V' shaped lip cut to LHS upper beak. 2 x linear impressions to LHS upper beak. Thick linear impression to underside tip of lower beak.


Common Dolphin C/2018/099	Mawgan Porth Beach, Newquay SW845673	19/07/2018	Large 'v' shaped notch to trailing edge dorsal fin. Large fin edge slice to trailing edge RHS pectoral fin with tag hanging off. Broken teeth to tip lower jaw. Tip upper beak broken. Lower LHS jaw broken. Haemorrhage to RHS eye with extensive bruising around. Large notches from trailing edge fluke - LHS. Thick linear impression across upper beak just touching melon, extending under LHS chin.



Common dolphin C/2018/101	Marazion Beach, Mount's Bay SW526304	28/07/2018	Tail amputated. Thick linear semi encircling impression behind RHS eye and over RHS torso.


Common dolphin C/2018/107	Seaton, Downderry, Rame Peninsular SX305542	10/08/2018	*This subadult male common dolphin was clearly bycaught, with monofilament net present around the mandible and pectoral fins. The amputated right tail fluke and partially amputated left fluke were likely to be consistent with fishermen cutting the animal free from their nets. The evidence of recent feeding and the persistent froth in the airways also were findings commonly seen in bycaught cetaceans.*


Common dolphin C/2018/115	Polriddmouth, Fowey SX101501	03/09/2018	*This subadult female common dolphin was in less than optimal body condition, with significant autolysis and skin loss by the time of retrieval and post mortem examination. However, there were sufficient external lesions present to be confident that the animal had been bycaught, notably the amputation/near amputation of the tail flukes, the deep encircling wounds on the right pectoral fin and the linear marks on the left pectoral fin. Furthermore, when the photographs taken by Rob Wells on the beach the day before retrieval were scrutinised, further linear wounds likely to be consistent with bycatch could be seen on the dorsal fin and thorax.* *Other findings often seen in cases of bycatch were largely not present; the animal was in poor body condition and had not fed recently. There was some persistent froth in one bronchus, but it is likely that the lack of it elsewhere in the upper respiratory tract was probably due to the autolysed nature of the carcass.*

Common dolphin C/2018/179	Portheras Cove, Pendeen SW388357	08/09/2018	Live stranding – rescued. Green trawl type net entangled tightly around its beak. Was removed by rescuers. Note from James Barnett: clear net marks on the side of the animal's head not being associated with any visible bit of this net, this would suggest the animal was originally caught in a larger bit of net and was presumably cut out of it by someone.

Common dolphin C/2018/124	Par Beach, St Austell SX082533	18/09/2018	Missing tip of LHS pectoral fin, LHS & RHS fluke and dorsal fin with associated scavenging. Very ragged trailing edge dorsal fin with multiple notches and large slices. 'v' shaped notch to LHS leading edge tip of dorsal fin. Linear impressions to leading edge dorsal fin. Large fin slice from trailing edge RHS pectoral fin. Fin edge slice to trailing edge LHS pectoral fin. Impressions to LHS upper beak. 6 x deep lesions over dorsal side tailstock.



Common dolphin C/2018/136	Trevaunance Cove, Saint Agnes SW721516	23/10/2018	RHS lower jaw - multiple broken teeth. Tip broken off from lower and upper jaw. RHS pectoral fin half missing - edge scavenged. Fully encircling monofilament impression around head, behind blowhole and eyes. Bruising behind blowhole. Monofilament impressions x 2 to base leading edge dorsal fin. Fin edge slice to LHS leading edge pectoral fin, underside. Small 'V' shaped notch to trailing edge LHS pectoral. Partial encircling linear impression - multifilament - tailstock LHS.


Common dolphin C/2018/140	Sharrow Beach, Whitsand Bay SX400510	04/11/2018	Rope tied around tail. Thick impression under chin.


Bottlenose dolphin C/2018/141	Polridmouth, Fowey SX101501	05/11/2018	Missing entire rear half of torso - clean cut amputation. 2 x encircling monofilament impressions to RHS pectoral fin. Monofilament linear impression to LHS upper beak. Prior to samples taken - fin edge slice to trailing edge dorsal fin. Partial encircling impression to LHS torso in front of dorsal fin. Approx. 40cm long linear 'scrape' with blubber deep wound on LHS flank.



Common dolphin C/2018/147	Maenporth Beach, Falmouth SW789296	18/11/2018	Fluke amputated. Large slice across torso behind dorsal fin - slightly curved, through spine, almost complete amputation. Large, flesh deep wound to RHS tail stock - straight edged with curved end, approx. 15x5cm. Linear, ridged impression to RHS torso. Lip cuts to tip of upper beak RHS. Linear impressions to leading edge LHS pectoral.


Common dolphin C/2018/152 Found with animal C/2018/151	Lowland Point, St Keverne, The Lizard SW802195	22/11/2018	Amputated tail stock. Large slice to abdomen up into dorsal fin with associated scavenging. RHS pectoral fin half missing with associated scavenging. 2 x thick linear impressions made up of narrow diagonal lines to thorax. Top of dorsal fin missing.



Common dolphin C/2018/151 Found with animal C/2018/152	Lowland Point, St Keverne, The Lizard SW803195	22/11/2018	3/4 encircling linear impression around head in front of blowhole travelling around LHS head and under chin. Semi-encircling multifilament rope impression around LHS torso in front of dorsal fin. Linear impression to leading edge and corresponding trailing edge LHS pectoral fin.



Common Dolphin C/2018/154	Kennack Sands, The Lizard SW735165	27/11/2018	Partial encircling impression to LHS beak with shorter impression behind. Fin edge cuts to leading and trailing edge LHS pectoral fin with damage to fin tip. Multiple semi encircling impressions crossing from in front of dorsal fin to LHS pectoral fin. Lip cut to tip of LHS upper beak. Thick linear wound around melon crease. Multiple linear impressions to LHS leading edge fluke with impressions to trailing edge.

Harbour Porpoise C/2018/158 Eye witness account	At Sea – off Trenarren Head, St Austell SX051491	02/12/2018	Eyewitness account - Neil Best, from the Sea Watch team, was surveying for SeaQuest Foundation from Trenarren Head near St Austell and witnessed a HP being pulled onto a fishing trawler (gill netter), dead in the nets. The time was 11.45am 02/12/18. We have the trawler details.

Common dolphin C/2018/162	Porthtowan Beach, Porthtowan SW692482	08/12/2018	Large fin edge slice on RHS of fluke. Monofilament impression leading from LHS upper lip over melon approx. 5cm. Lip cut LHS upper lip. Monofilament impression to trailing edge base of dorsal fin, with 2 x linear impressions above. 'V' shaped notches along dorsal side tailstock.



Common dolphin C/2018/167 SW2018/825	Pentewan Beach, Mevagissey SX021471	13/12/2018	*This juvenile male common dolphin was in good body condition and had fed fairly recently. The linear encircling wounds and marks around the rostrum, fins and flukes and the fin slices in one fluke were, in my opinion, consistent with bycatch.*


Common dolphin C/2018/166 SW2018/824	Swanpool Beach, Falmouth SW802313	13/12/2018	*This subadult male common dolphin was in good body condition and had fed recently. The linear encircling wounds around the head, fins and flukes, clean V-shaped wound in the tail stock and fin slice in one fluke were, in my opinion, consistent with bycatch.*



Marine Strandings Network
Cornwall Wildlife Trust
Five Acres
Allet
Truro
Cornwall TR4 9DJ

www.cwtstrandings.org.uk
strandings@cornwallwildlifetrust.org.uk

MSN Hotline: 0345 201 2626

A huge thank you in particular to Anthea Hawtrey-Collier, Niki Clear and James Barnett in the compiling of this report.

The MSN was part-funded by the

children's organic clothing company Frugi

Cetacean Strandings Investigation Project (CSIP)

Publication Policy