2019 Annual Report

Marine Strandings in Cornwall and the Isles of Scilly

Report by
Cornwall Wildlife Trust
Marine Strandings Network

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Cornwall Wildlife Trust
Protecting Cornwall's wildlife and wild places

ERCCIS Recording Mapping Informing

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Photo 1: Grey seal pup at Perranporth, September 2019, Natalie Waddington

1. Executive Summary

Data on marine organisms that stranded on the shores of Cornwall in 2019 were collected by the Cornwall Wildlife Trust Marine Strandings Network (CWT MSN). All species were recorded in the strandings database held at Environmental Records Centre for Cornwall and Isles of Scilly. However, 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 245 cetacean strandings were recorded in Cornwall during 2019. As in previous recent years, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings (52%, n=128), followed by harbour porpoises (*Phocoena phocoena*) (16%, n=40). There has been a slight decline in the number of harbour porpoise strandings since 2016 (n=61). Due to decomposition, 69 stranded cetaceans could not be identified to species level.

Through both post mortem examinations and BEEP assessments (n=143), 27% (n=38) of assessed cetacean strandings were determined to have died as a result of bycatch or probable bycatch. The majority of these were common dolphin (34%, n=32), and the remaining cases included; 2 harbour porpoise, 1 bottlenose dolphin, 1 risso's dolphin and 2 unidentified cetacean species (*Table 1).* 57% (n=22) of the confirmed bycatch cases were found during the months of April and December, with none in March, June or October. This is a stark contrast to the pattern seen in 2018, where bycatch cases were relatively consistent throughout the year.

246 stranded Atlantic grey seals (*Halichoerus grypus*) were reported and recorded through 2019. 16% (n=40) were males, 10% (n=24) females and 74% (n=182) 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. 2019 seal strandings were more than double the 8 years average (2010 to 2018) with nearly three times the average numbers during January, April and October this year. 20 of the 246 seals reported were retrieved for post mortem examination in 2019, representing 8% of seal strandings. Of those examined at post mortem, trauma and infection were the leading causes of death, accounting for 45% (n=9) and 30% (n=7) respectively. 15% (n=3) had succumbed to 'other' cause of death, including drowning, intestinal impaction, and acute renal tubular injury. The cause of death in one seal (5%) could not be identified.

One loggerhead turtle was reported to CWT MSN in January 2019 and three leatherback turtles, which were reported in March, September and December.

CWT MSN continues to monitor bird strandings reported to us, working in collaboration with partner organisations such as the RSPB (Royal Society for the Protection of Birds) and BDMLR (British Divers Marine Life Rescue) to ensure quick response to any major incidences such as storms or major pollution. CWT MSN received 90 reports of dead seabirds, involving 137 individual birds around the Cornish coast in 2019. However, we emphasise that bird strandings are vastly under reported and therefore this is a gross underestimate of the true scale of bird strandings.

10 shark species were reported to CWT MSN in 2019. These reports consisted of three starry smooth hounds, two small spotted catsharks and single reports of a nursehound, tope, blonde ray, sail ray and an unidentified shark species.

There were 51 reports of strandings of other species groups, comprising 15 different species and involving thousands of individual animals. As with birds, these species are known to be under reported in Cornwall, so these numbers are a significant underestimate of the true numbers of these species and groups washing up around Cornwall.

In 2019, the CWT MSN ran two training sessions for new MSN Callout volunteers, training 40 new volunteers.

The 2019 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 from 1354. To date, the Cornwall Wildlife Trust Marine Strandings Network (CWT MSN) database holds over 9,200 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 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 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. 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 nearly 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 is then verified and assessed by experienced experts following the Bycatch Evidence Evaluation Protocol 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 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 2019

3.1 Cetaceans

A total of 245 cetacean strandings were recorded in Cornwall during 2019. As in previous recent years, short-beaked common dolphins (*Delphinus delphis*) represented the majority of strandings (52%, n=128), followed by harbour porpoises (*Phocoena phocoena*) (16%, n=40). We've recently seen a slight decline in the number of harbour porpoise strandings since 2016 (n=61). Due to decomposition, 69 stranded cetaceans could not be identified to species level.

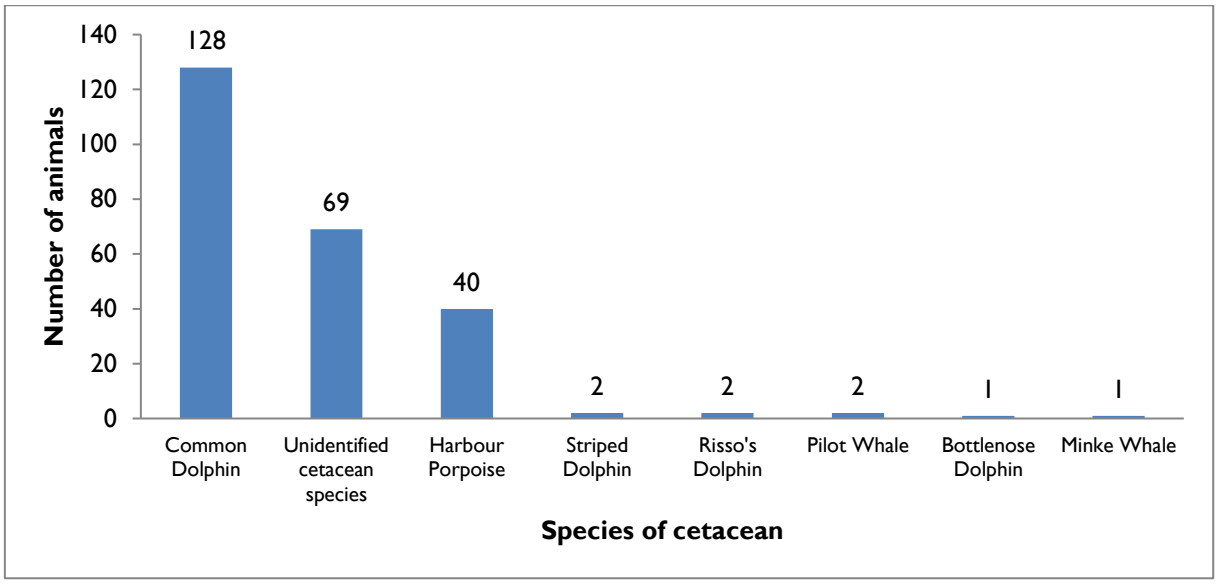


Figure 1: Number of cetacean strandings by species during 2019

The vast majority of cetacean strandings in 2019 occurred during January, February and December, with another peak in April, predominantly of common dolphins. Harbour porpoise were recorded mainly during the winter months.

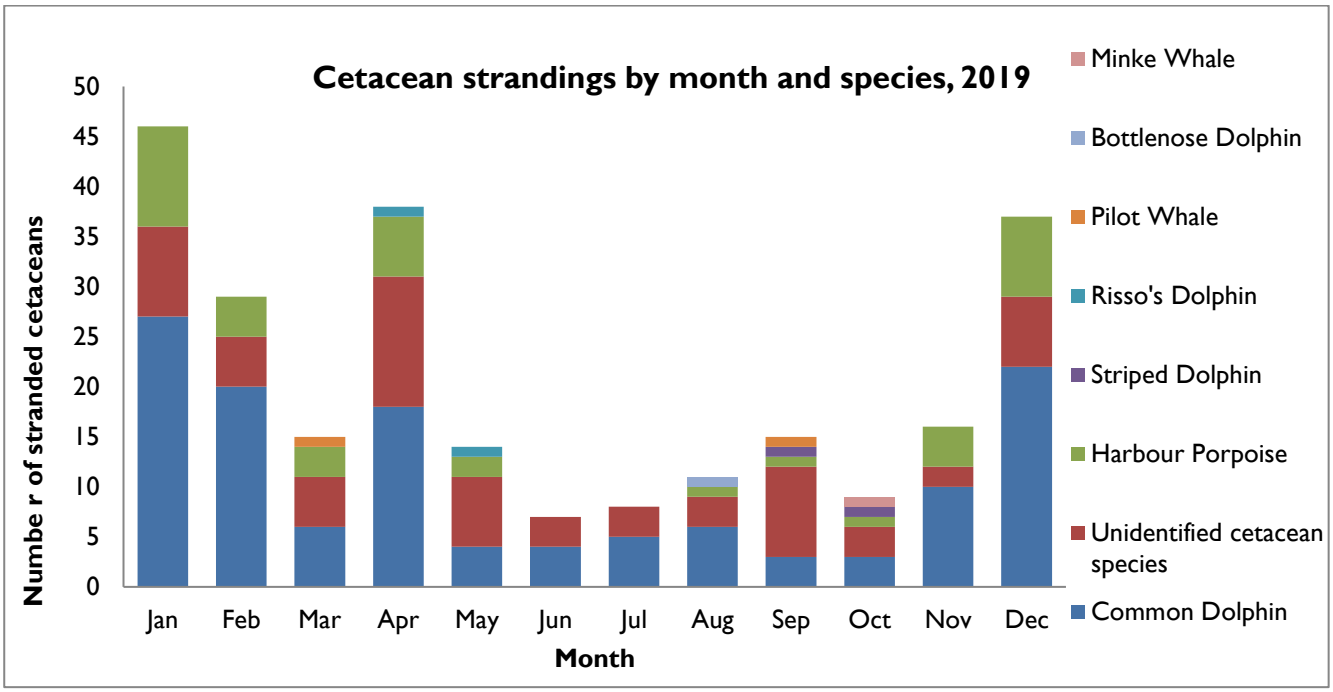


Figure 2: Cetacean strandings by species/month during 2019

During 2019 the location of cetacean strandings were spread all around the coast of Cornwall, with most species found on both coasts throughout the year.

Figure 3 shows the locations of all cetacean strandings in 2019 and highlights the wide geographical spread of cetacean strandings during this year.

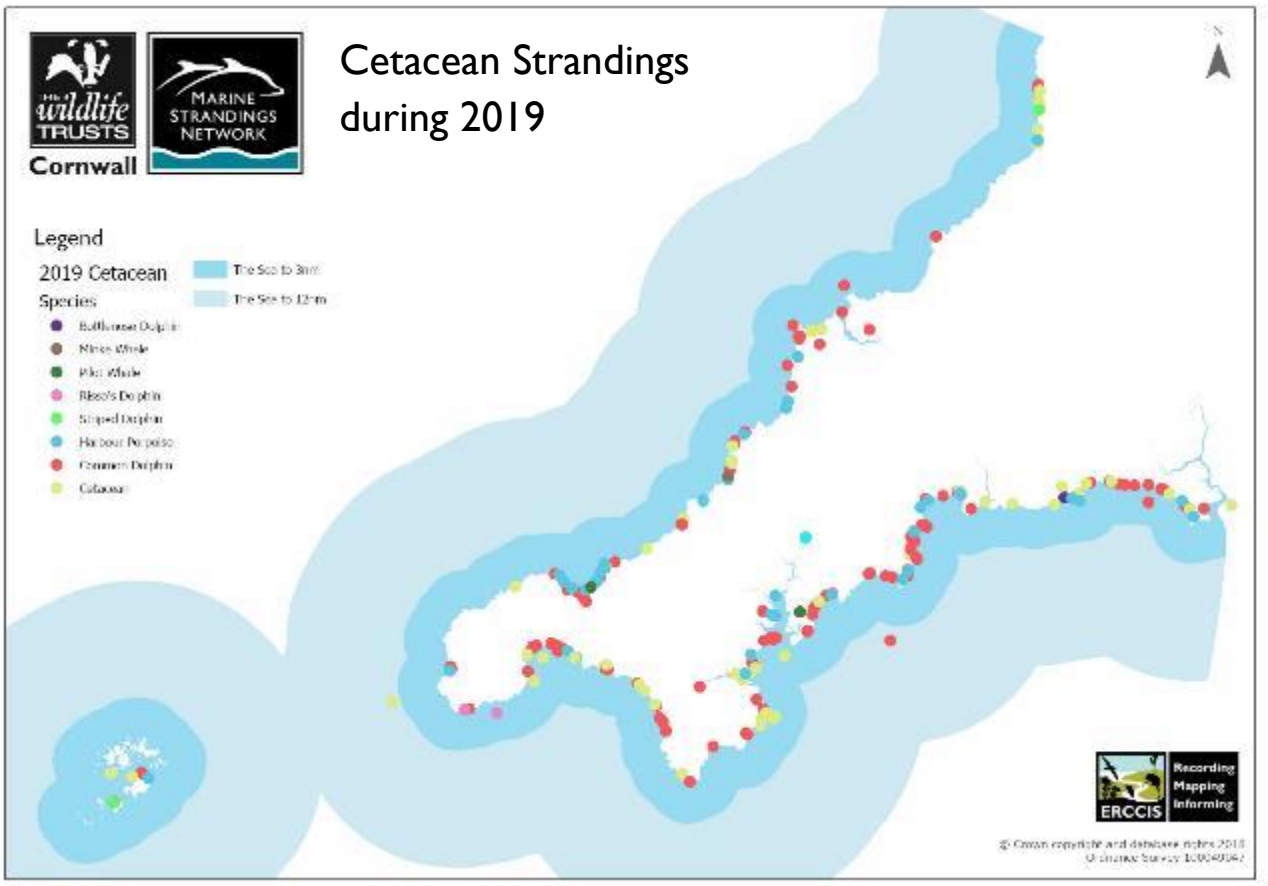


Figure 3: Locations of cetacean strandings in 2019 (n=245)

Photo 2: Common dolphin at Towan beach, Roseland Peninsula February 2019, by Rob Wells

3.1.1 Comparison with previous years

In total, 245 cetaceans were reported to, and examined by CWT MSN in 2019, which is an increase from the numbers seen in 2018, but similar to the numbers seen in 2016 and 2017. Overall, the numbers from 2019 remain higher than average from the last 24 years (n=130). 2019 cetacean stranding numbers were triple the monthly average in April 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.

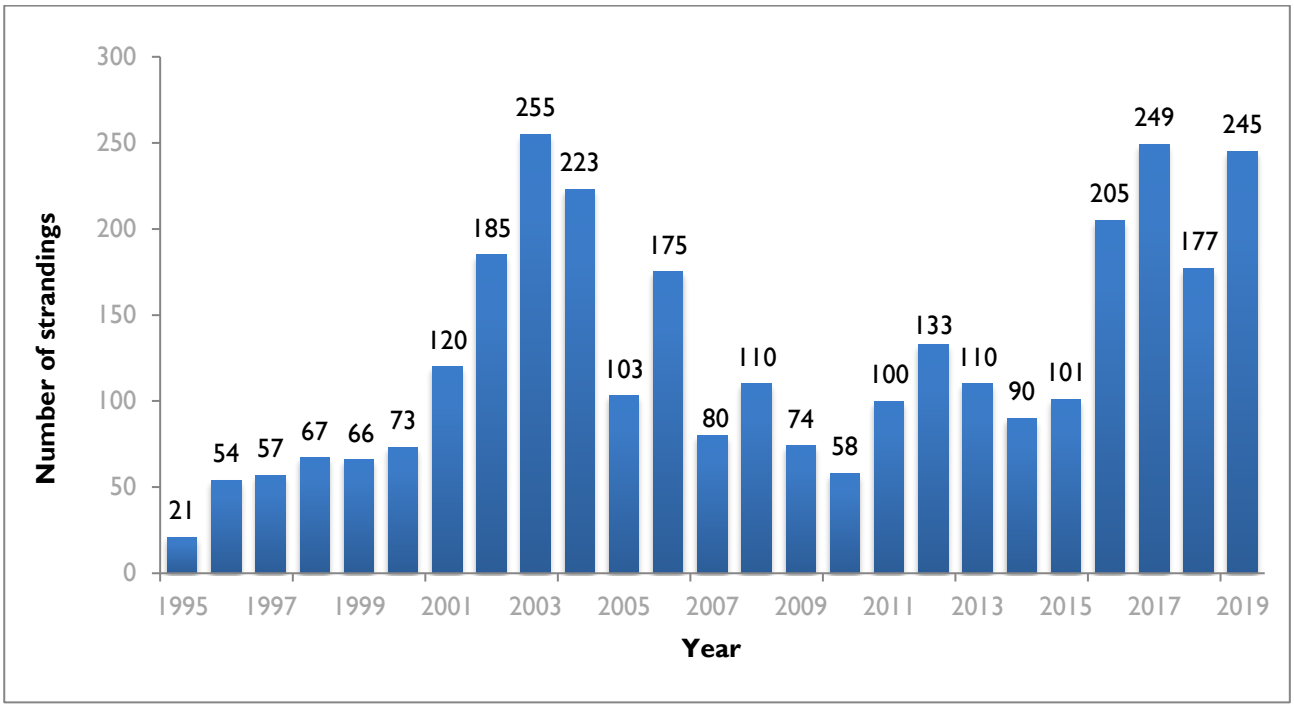


Figure 4: Comparison of cetacean strandings by year (1995 to 2019)

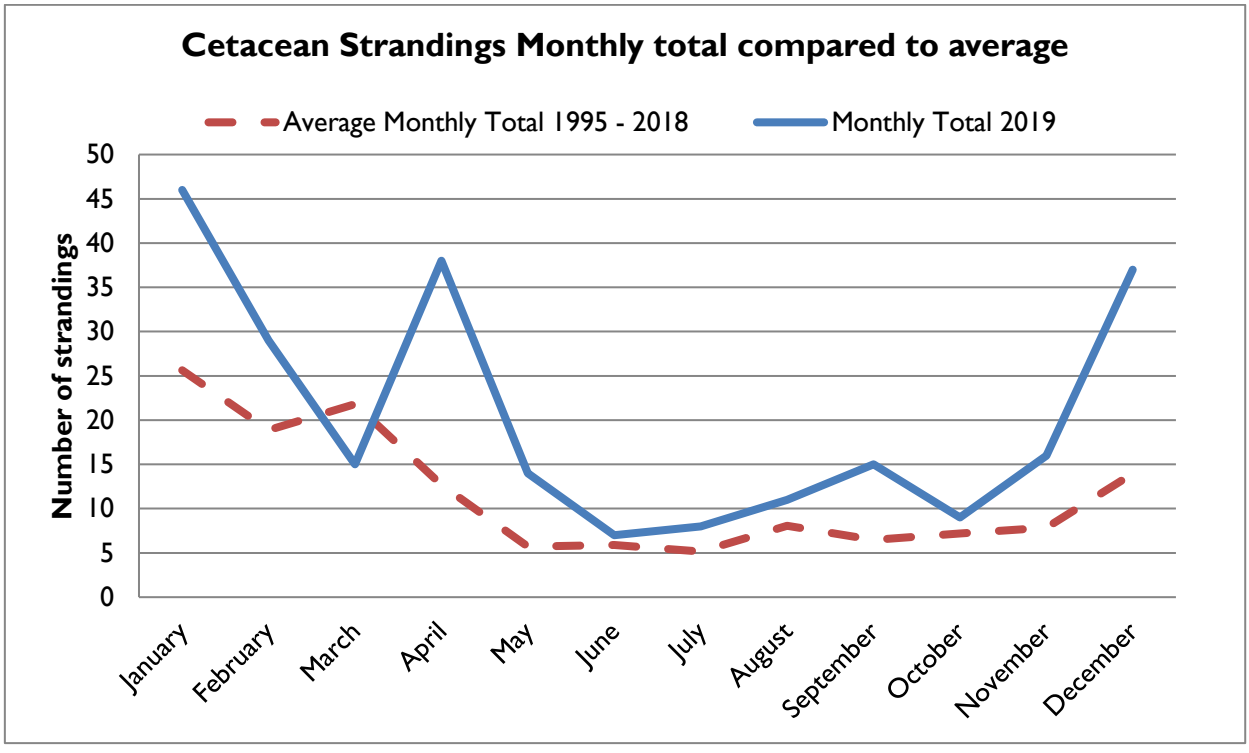


Figure 5: Seasonality of cetacean strandings for 2019, in comparison to average seasonality between 1995 and 2018

3.1.2 Cetacean post mortem examinations

Of the 245 cetacean carcasses that stranded during 2019, 14% (n=34) were suitable and accessible for retrieval by the CWT MSN team for post mortem examination, under licence and on behalf of the DEFRA-funded Cetacean Strandings Investigation Programme (CSIP). Necropsies were performed by James Barnett, the veterinary pathologist for the Marine Strandings Network at the University of Exeter Penryn campus, assisted by trained volunteers. (*Figure 6*)

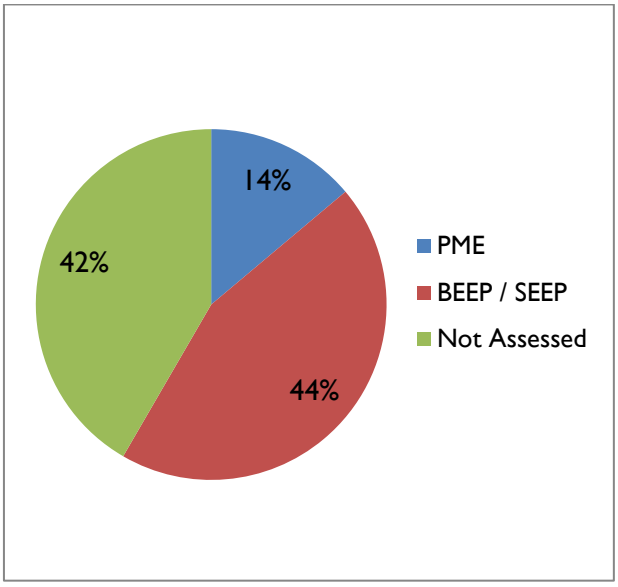


Figure 6: Percentage of stranded cetaceans retrieved for post mortem examination (n=34), BEEP assessment using in-situ data (n=109) and the remaining 102 were reported but had insufficient data for more detailed assessment

Post mortem examinations (PME) concluded that accidental entanglement in fishing gear, known as bycatch, was the cause of death for 12 (35%) of the cetaceans examined, all of which were common dolphin. Live stranding was the reported cause of death for a further five cases, bottlenose dolphin attack accounted for four cases. There were three cases of pneumonia (parasitic and/or bacterial), three cases of parasitism, two cases of infection (bacterial and fungal), one case of acute trauma, one case of myocardial necrosis and one case of peritonitis. In two cases the cause of death could not be established.

Photo 3: Bycaught juvenile common dolphin Mevagissey Harbour 9th January 2019, taken for post mortem. Photo by Rob Wells

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
04/01/2019	C/2019/002	Common Dolphin	Penzance harbour	peritonitis (fibrino-purulent)
09/01/2019	C/2019/005	Common Dolphin	Carbis Bay Hotel, St Ives	live stranding; gas embolism and gastric impaction
09/01/2019	C/2019/006	Common Dolphin	Mevagissey Harbour, Mevagissey	physical trauma, bycatch
09/01/2019	C/2019/007	Common Dolphin	Godrevy Beach, St Ives Bay	myocardial necrosis
17/01/2019	C/2019/022	Common Dolphin	Kingsand, Rame	physical trauma, bycatch
20/01/2019	C/2019/028	Common Dolphin	Porthtowan Beach, Porthtowan	Infectious disease, disseminated fungal infection; acute physical trauma
22/01/2019	C/2019/032	Common Dolphin	Fishing Cove, Gunwalloe	physical trauma, bottlenose dolphin attack
28/01/2019	C/2019/039	Common Dolphin	Porthmeor Beach, St Ives	physical trauma, bycatch with possible BND interaction
07/02/2019	C/2019/052	Harbour Porpoise	Godrevy Beach, St Ives Bay	parasitism, pulmonary and gastric
09/02/2019	C/2019/054	Common Dolphin	Par sands, St Austell	physical trauma, bycatch
23/02/2019	C/2019/066	Common Dolphin	Towan Beach, Roseland	physical trauma, bycatch
27/02/2019	C/2019/082	Common Dolphin	Mylor Creek, Falmouth	pneumonia, parasitic bronchitis/bronchiolitis
24/03/2019	C/2019/088	Harbour Porpoise	Porthminster Beach, St Ives	physical trauma, bottlenose dolphin attack
01/04/2019	C/2019/095	Common Dolphin	Coverack, The Lizard	physical trauma, bycatch
06/04/2019	C/2019/099	Common Dolphin	Pentewan Beach, St Austell Bay	physical trauma, bycatch
11/04/2019	C/2019/103	Common Dolphin	Towan Beach, Roseland Peninsula	physical trauma, bycatch
14/04/2019	C/2019/110	Common Dolphin	Gyllynvase beach, Falmouth	live stranding
20/04/2019	C/2019/126	Common Dolphin	Mount's Bay at sea	physical trauma
29/05/2019	C/2019/144	Common Dolphin	Rocky Beach, Trevone Bay	live stranding
30/06/2019	C/2019/152	Common Dolphin	Hannafore Point, Looe	Inconclusive
14/07/2019	C/2019/155	Common Dolphin	Marazion beach, Penzance	physical trauma, bycatch
28/07/2019	C/2019/158	Common Dolphin	Porthkidney Beach, St Ives	Infectious disease; generalised bacterial infection
01/09/2019	C/2019/174	Pilot Whale	Beachside Holiday Park, Hayle	live stranding
28/10/2019	C/2019/205	Common Dolphin	Newlyn, Penzance	parasitism, gastric
02/11/2019	C/2019/206	Common Dolphin	Praa Sands, Porthleven	live stranding
05/11/2019	C/2019/209	Harbour Porpoise	Crantock Beach, Newquay	pneumonia, parasitic and bacterial
11/11/2019	C/2019/213	Common Dolphin	Castle Beach, Falmouth	parasitism, pulmonary and gastric
13/11/2019	C/2019/215	Harbour Porpoise	Perranporth Beach	physical trauma, bottlenose dolphin attack
21/11/2019	C/2019/221	Common Dolphin	Seaton Beach, Looe	physical trauma, bycatch with possible BND interaction
04/12/2019	C/2019/228	Common Dolphin	Castle beach, Falmouth	physical trauma, bycatch
04/12/2019	C/2019/229	Common Dolphin	Castle beach, Falmouth	physical trauma, bycatch
12/12/2019	C/2019/235	Common Dolphin	Watergate Bay, Newquay	Inconclusive
14/12/2019	C/2019/237	Common Dolphin	Mawgan village, Helston	Infectious disease - pyogranulomatous pneumonia
28/12/2019	C/2019/260	Harbour Porpoise	Sennen, far end towards Gwynver	physical trauma, bottlenose dolphin attack

Table 1: Cetacean post mortem reports (2019) – 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 4: Pilot whale possible live stranding, Percuil river 1st March 2019. Photo by James Barnett

Of the remaining 211 cetaceans which were not retrieved for post mortem examination, 102 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.

109 (44% of the 245 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 24% of the 109 (n=26) showed features consistent with definite 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. A further 21 of the 109 total (n=19%) cases showed possible signs of bycatch.

52% (n=57) were cases where the cause of death was inconclusive based on the data available. 3% (n=3) deaths were found to show features consistent with bottlenose dolphin attack.

BEEP Conclusion	Number of animals	% of BEEP assessed cases
Inconclusive	57	52%
Bycatch / Entanglement	26	24%
Possible Bycatch	21	19%
BND attack	2	2%
BND attack – probable	1	1%
Physical trauma	1	1%
Physical trauma - probable	1	1%
Total	**109**	

Table 2: A summary of BEEP conclusions from cetacean cases assessed in 2019

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

Common Dolphin C/2019/063 *Examined by Dina Croft*	Pendower Beach, Veryan Bay SW896380	20/02/2019	2 x large clean edged 'v' shaped notches to tail stock dorsal side. Large notch/fin edge slice to trailing edge RHS fluke. Partially encircling linear impressions around LHS upper beak. Abrasions to tip of beak. Haemorrhage to LHS eye.

Risso's Dolphin C/2019/107 *Examined by Kay Cowie*	Porthchapel Beach, Land's End SW381218	13/04/2019	Fluke missing cleanly removed with associated scavenging. Linear impression running from LHS pectoral fin to dorsal fin. Linear impression to ventral side in front of pectoral fins. Extensive discolouration to upper half torso. Haemorrhage and bulging to LHS eye.

Common Dolphin C/2019/120 *Examined by Helen Chadwick*	Little Perhaver beach Gorran Haven, SX013417	18/04/2019	Tail flukes cleanly amputated. Encircling mark around tail stock. Deep linear impression. Large fin edge slice along trailing edge of RHS pectoral fin. Multiple fin edge notches to LHS pectoral fin

3.1.4 Notable Cetacean Stranding Cases

On 4th May, a harbour porpoise was reported to the MSN hotline that had stranded at Carbis Bay in St Ives. It was an adult female harbour porpoise in relatively fresh condition and was recorded by MSN volunteer Mick Dawton. This animal had quite worn teeth, suggesting an animal of advanced age and was in poor nutritional state, however, of note was the enlarged abdomen of this female, sadly suggesting that she may have been pregnant. Furthermore, this female had a large healed notch to her dorsal fin, which may be evidence of an historical interaction with fishing gear.

Harbour porpoise C/2019/129 *Examined by Mick Dawton*	Carbis Bay, St Ives	04/05/2019	Adult female harbour porpoise in poor nutritional state, however possibly pregnant. Large healed notch to dorsal fin. Worn teeth. Scavenging to blow hole and LHS eye and cheek.

On 28th January a harbour porpoise was reported to the hotline which had washed in at Trevaunance Cove, St Agnes. The sex of this adult animal was unknown due to the level of decomposition, and there were unusual 'scoop' marks across the body which may also have been due to decomposition. Of note was the severe trauma to this animal's head, along with missing dorsal fin and tail flukes. We cannot say for certain whether this animal lost its appendages in the decomposition process or whether this shows evidence of bycatch interaction.

Harbour porpoise C/2019/040 *Examined by Jenn Sandiford and Niki Clear*	Trevaunance Cove, St Agnes	28/01/2019	Adult harbour porpoise with severe trauma to head. Dorsal fin and tail flukes missing, possibly decomposition or possibly cut.
			

On 1st September British Divers Marine Life Rescue (BDMLR) were called to a neonate pilot whale which had live stranded on the Beachside Holiday Park beach in Hayle. The calf was in reasonable nutritive state, but died shortly after the medics arrived, after going into a period of apnoea (dive reflex). The body was recovered for post mortem examination where the presence of lungworm was found in the respiratory tract. This has been reported in other species, including white-beaked dolphins and orca. In the latter, *Halocercus* species were identified as the lungworm and transplacental or transmammary transmission from the mother was suspected (Reckendorf *et al*, 2018). Histopathology did confirm that there was a bronchopneumonia present and the inflammatory reaction around the lungworm suggested that they had been in the lungs for at least 7 days. Furthermore, the presence of larvae within the adult lungworm indicated that the lungworm had been present for several days. On balance, it is therefore likely that the lungworm infection was picked up from the calf's mother by transplacental spread. Bacteriology did not add any information.

Above text courtesy of James Barnett CSIP, Photos by Dan Jarvis BDMLR (left image) and James Barnett (right image)

Long-finned pilot whale C/2019/174 *Examined by Dan Jarvis and James Barnett*	Beachside Holiday Park, Hayle	01/09/2019	Neonate pilot whale live stranding. Foetal folds still visible
 			

Photo 5: Common dolphin stranded on Castle beach on 11th November 2019, examined and photographed by Helen Chadwick.

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 (CSGRT). Numbers of seal strandings have been increasing year on year since MSN started recording. There were 246 seal strandings reported during 2019 which continues the annual increasing trend, with 67 more seal standings reported than in 2018 (n=179) (*Figure 7*). CWT MSN continues to work closely with CSGRT and monitor this trend by improving data collection (using the new Seal Evidence Evaluation Protocol, SEEP), assessments of age class, gender and individual identification.

Figure 8 shows the gender of these 246 seal strandings, with 16% (n=40) males, 10% (n=24) females and 74% (n=182) of unknown gender due to either limited or no supporting photos, or because the animal was too decomposed and/or had genital scavenging.

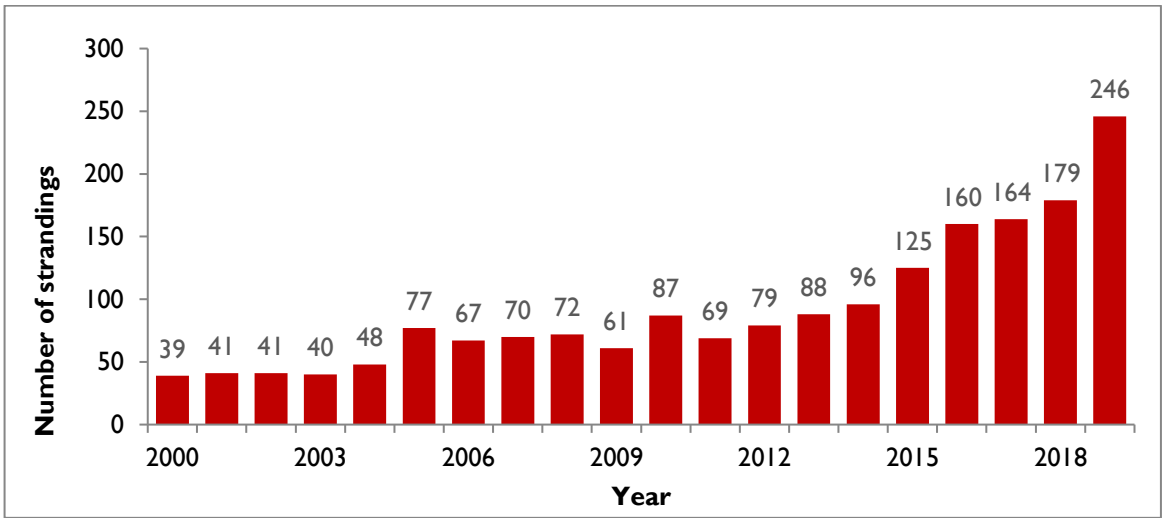


Figure 7: Comparison of grey seal strandings by year (2000 – 2019)

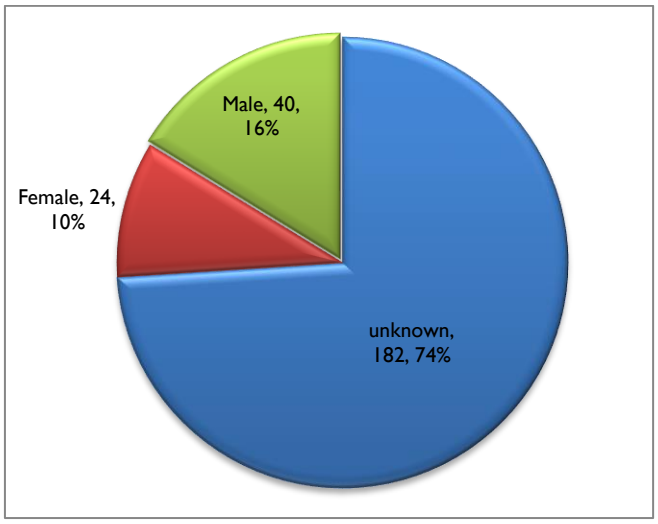


Figure 8: Grey Seal strandings gender classes (2019)

Adult	Juvenile	Pup	Whitecoat/new born	Unknown	TOTAL
57	46	71	36	36	246

Table 3: Seal Age Class for 2019

Of the 246 seal strandings, 14% (n=36) were categorised as whitecoat/new-born pups, 29% (n= 71) were categorised as moulted pups measuring less than 120cm nose to tail, 19% (n=46) were juvenile (measuring between 120cm and 160cm), 23% (n=57) were adult and 15% (n=36) were unknown due to lack of data (*Table 3*).

Figure 9 shows the proportion of pups (<1yr) and juvenile seal strandings compared to adult strandings during 2019, and illustrates the clear peaks in seal pup strandings in January, September, October, November, and December. These months coincide with the main pupping season (which peaks in October) and post weaning period when 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, and the annual moulting season. This is consistent with usual seal stranding seasonality patterns.

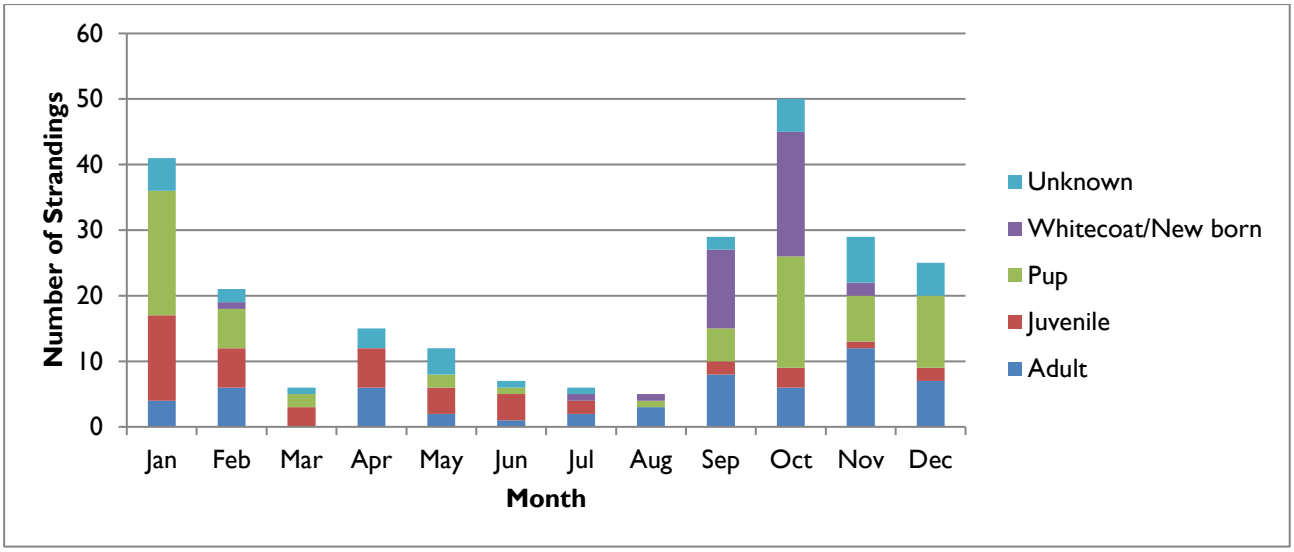


Figure 9: Age and sex of grey seal strandings per calendar month in 2019 (n=246)

Seal strandings followed a similar seasonal pattern as in previous years, with peaks during the autumn and winter months. Generally, 2019 seal strandings were above the 8 years average (2010 to 2018) with significantly higher numbers in January and more than three times the average numbers during October *(Figure 10)*.

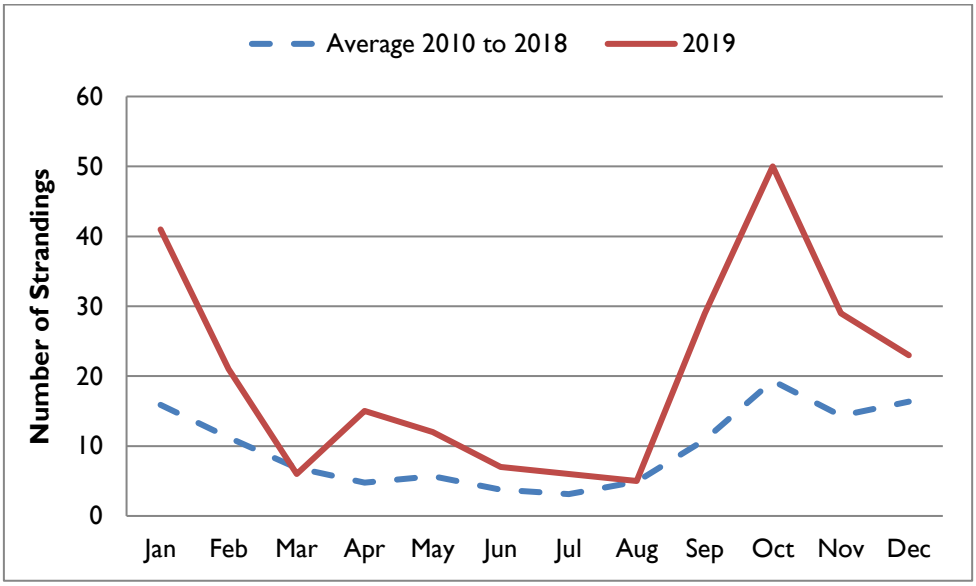


Figure 10: Grey seal strandings per calendar month in 2019 (n=246) compared to average monthly totals for 2010 – 2018

As in previous years, the majority of seal strandings occurred on the north coast (*Figure 11*). 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.

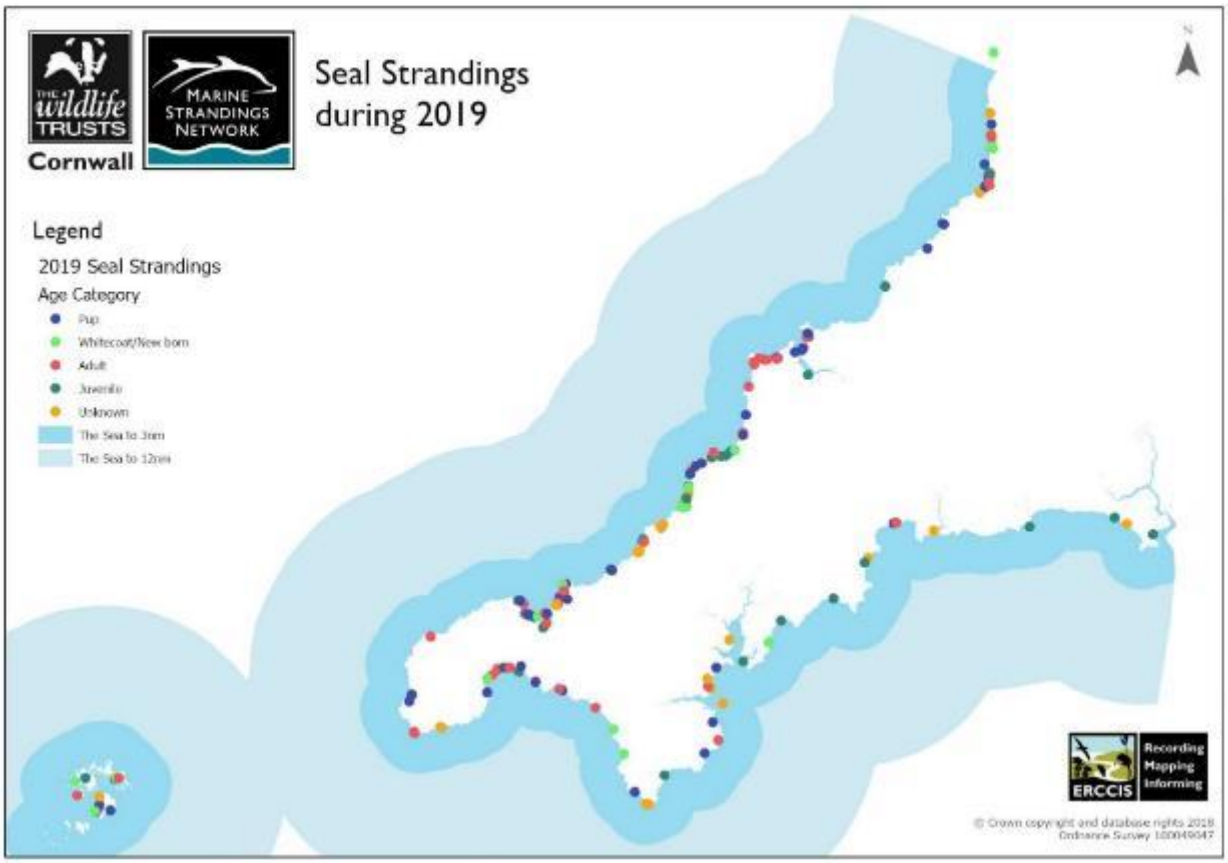


Figure 11: Locations of grey seal strandings (2019) (n=264)

Photo 6: Adult male grey seal 'Arc dot' stranded in poor nutritional state at Widemouth bay, on 12th December 2019. Photo by Dave & Mary Groves

Thanks to collaborative work with Cornwall Seal Group Research Trust (CSGRT), seal strandings are checked against individual identification of seals in Cornwall. In 2019 there were six matches with known seals to CSGRT that were reported to CWT MSN.

On 26th January an adult male grey seal was reported dead on Mexico Towans beach in Hayle with no obvious signs of injury. Dave Jarvis of BDMLR went out to record the animal and take photographs which later confirmed this animal to be DP1277 'Lobster Tagine' who was last seen alive on 3rd January 2019. He was first identified by CSGRT in 2015 and was sighted regularly at the West Cornwall site. He was estimated to be seven years old when he died.

An adult female grey seal was reported on Porthmear beach, Porthcothan on 5th September. Unfortunately, no volunteer was able to attend, but photographs were taken when she was found which confirmed her to be LP105 NSS 1001 'Boo'. Boo was the first pup of the year to arrive at Cornwall Seal Sanctuary on 15th September 2010 after being found on St Mary's, Isles of Scilly. In January 2011 Boo was released back into the wild with seven other animals at Gwithian, and was then regularly sighted by CSGRT on their surveys from 2013 onwards. The sightings gap between January 2011 and 2013 is important as it is probably the time when she undertook her 'post weaning dispersal' phase. In 2018, aged 8, she had successfully pupped and was seen nursing her own young at the West Cornwall site. Following her stranding on 5th September 2019, she was seen again over the following few weeks and timespan photos of her decomposition sadly revealed that she had died whilst pregnant with another pup.

On 13th September an adult male grey seal was seen at Watergate Bay in Newquay. Photographs taken by MSN volunteer Liz Clark three days later confirmed that he was known to CSGRT as DP1015 'Fright night' and was estimated to be around 8 years old. He was found to be in poor nutritional state and had a large indentation on the top of his head, broken skull and bulging eyes suggesting possible head trauma. He had been known to CSGRT since 2014 and was regularly sighted on their surveys at the West Cornwall site.

On 12th December an adult male grey seal was reported at Black Rock beach, Widemouth Bay (see photo 6). This animal was recorded by an MSN volunteer and was found to be in poor nutritional state with abrasions to front and rear flippers and possible broken pelvis. This individual was identified as DP582 'Arc dot' by CSGRT. This 12-year-old male had been known to CSGRT between 2012 and 2019. Interestingly he had only been identified nine times in seven years and never between the months of May and October inclusively.

On the 19th May 2019 a juvenile grey seal stranded dead on Portreath beach in north Cornwall. It was identified as Duran Duran, who was rehabilitated at the Cornish Seal Sanctuary in November 2018 after being found entangled in netting and was subsequently released in December 2018 at Porthtowan Beach. The stranded dead pup was found entangled in net once again with a large mesh size, identified as tangle net used for catching monkfish. It was submitted for post mortem, which highlighted that although many of the gross lesions that may be seen in a bycaught seal were absent, the trauma to one eye was consistent with an animal struggling in a net. Furthermore, the histopathological lesions in lung and lymph node, potentially consistent with disseminated intravascular coagulation and shock, would also be consistent with bycatch as the cause of death. This animal presumably was cut free from the main part of the net after being found bycaught.

29th May 2019, a tagged juvenile grey seal stranded dead on Lusty Glaze in Newquay, north Cornwall. CSGRT identified her as Koala, a seal who had been previously rescued alive by BDMLR in December 2018, and after rehabilitation at RSPCA West Hatch was released at Combe Martin in north Devon on 18th March 2019.

For more information about grey seal photo identification work in Cornwall, please contact CSGRT www.cornwallsealgroup.co.uk. Please email live seal records and photos to sightings@cornwallsealgroup.co.uk.

Date	Cornwall ID	Species	Location	Cause of Death
11/01/2019	S/2019/020	Grey Seal	Fistral Beach, Newquay.	Infectious: Suppurative meningoencephalitis
18/02/2019	S/2019/060	Grey Seal	Trevone Bay, Padstow	Trauma: Mandibular fracture
05/03/2019	S/2019/063	Grey Seal	Carbis Bay, St Ives	Infectious: parasitic bronchopneumonia
06/03/2019	S/2019/067	Grey Seal	Carbis Bay, St Ives	Trauma: Mandibular osteomyelitis secondary to oral trauma, terminal septicaemia
19/05/2019	S/2019/087	Grey Seal	Portreath Beach, Portreath	Trauma: Bycatch
27/05/2019	S/2019/092	Grey Seal	Trebarwith Strand, Boscastle	Trauma: Entanglement
13/07/2019	S/2019/110	Grey Seal	Little Fistral, Newquay	Infectious: Lymphadenitis
31/08/2019	S/2019/118	Grey Seal	Marazion, Mount's Bay	Other: acute renal tubular injury
12/09/2019	S/2019/126	Grey Seal	Perranporth Beach, Perranporth	Trauma: Skull fracture
05/10/2019	S/2019/152	Grey Seal	Wherrytown, Penzance	Infectious: Pyothorax
10/10/2019	S/2019/260	Grey Seal	Portreath	Infectious: Gastric Ulceration
15/10/2019	S/2019/261	Grey Seal	Porthtowan Beach, Porthtowan	Other: Intestinal impaction
24/10/2019	s/2019/192	Grey Seal	Trevone Bay, Padstow	Trauma: Bacterial glossitis
29/10/2019	S/2019/196	Grey Seal	Porthallow Beach	Trauma: Maxillary bone fractures
28/11/2019	S/2019/258	Grey Seal	Mexico Towans, Hayle	COD not established. Large pale kidneys
05/12/2019	S/2019/262	Grey Seal	Feock	Infectious: Bacterial bronchopneumonia
08/12/2019	S/2019/263	Grey Seal	Pendennis Point	Trauma: Intercranial bleed
18/12/2019	S/2019/245	Grey Seal	Holywell Bay, Newquay	Other: Drowning
18/12/2019	S/2019/257	Grey Seal	Kynance Cove, The Lizard	Trauma: Purulent arthritis and tenosynovitis
30/12/2019	S/2019/253	Grey Seal	Porthmeor Beach, St Ives	Infectious: Parasitic bronchopneumonia

Table 4: Seal postmortem findings 2019

3.2.1 Seal post mortem examinations

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

20 of the 246 seals reported were retrieved for *post mortem* examination in 2019, representing 8% of seal strandings. *Post mortem* examination was carried out by veterinary pathologist James Barnett at University of Exeter Cornwall Campus.

Of those examined at *post mortem*, trauma and infection were the leading causes of death, each accounting for 45% (n=9) and 30% (n=7) respectively. 15% (n=3) had succumbed to 'other' cause of death, including drowning, intetestinal impaction, and acute renal tubular injury. Finally, the cause of death in one seal (5%) could not be identified.

A summary of the *post mortem* examination and bacteriology findings are outlined in *Table 4*.

Examples of *post mortem* assessed seal strandings are below;

Atlantic Grey Seal S/2019/092 EX/S08/19	Trebarwith Strand, Boscastle	25/05/2019	Animal was a known heavily entangled animal, seen alive 2 weeks prior to death at Boscastle. A rescue was attempted but unsuccessful. Found entangled in 35kg of rope and netting. The net had caused extensive trauma to the neck of the seal, with loss of skin, subcutis and muscle, and exposure of the trachea, oesophagus, cervical spine and sternum, although some of thise will have occurred *post mortem*. The sand/silt in the trachea and frothy fluid in the airways may be consistent with terminal drowning. **Conclusion: Net entanglement, suspect trauma and drowning**
			

Atlantic Grey Seal S/2019/126 EX/S11/19	Perranporth	12/09/2019	This male grey seal pup was estimated to be around two weeks of age, judging from the amount of lanugo coat present, and was in excellent body condition. The cause of death was blunt trauma to the head resulting in a compound skull fracture, intracranial and soft tissue haemorrhage. The presence of sand in the stomach and throughout the length of the intestines was consistent with active ingestion and may well have occurred while the pup was in the surf, perhaps for up to 24 hours prior to the traumatic injury.

Atlantic Grey Seal S/2019/087	Portreath	19/05/2019	This juvenile grey seal was rehabilitated after being found entangled in netting in November 2018 and was subsequently released in December 2018. The pup was again entangled in net with a large mesh size and it has been suggested by IFCA that this is a tangle net used for catching monkfish. Although many of the gross lesions that may be seen in a bycaught seal were absent, the trauma to one eye was not inconsistent with an animal struggling in a net. Furthermore, the histopathological lesions in lung and lymph node, potentially consistent with disseminated intravascular coagulation and shock, also would be consistent with bycatch as the cause of death. This animal presumably was cut free from the main part of the net after being found bycaught.

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 2019, 91 seals were assessed using SEEP methods. The majority of these (88%, n=80) were inconclusive, six (7%) were found to have features consistent with bycatch or entanglement in fishing gear, and 5 cases (5%) were consistent with physical trauma (*Table 5*).

SEEP Conclusion	Number of animals	% of SEEP assessed cases
Inconclusive	80	88%
Trauma	3	3%
Possible bycatch	2	2%
possible ring neck	1	1%
Entanglement - Ring neck	1	1%
Trauma - child birth	1	1%
Bycatch	1	1%
Entanglement	1	1%
Probable bycatch	1	1%
TOTAL	91	100%

Table 5: a summary of SEEP conclusions from seal cases assessed in 2019

3.2.3 Notable Seal Stranding Cases

Atlantic Grey Seal S/2019/109	Perranporth	12/07/2019	On the 12th July a new-born, whitecoat seal pup was reported to CWT MSN to have stranded on Perranporth beach. This case was especially unusual due to how early it was for a seal pup to have been born.

Atlantic Grey Seal S/2019/098	Lusty Glaze beach, Newquay	29/05/2019	This female was identified as Koala, a pup rescued from Trevone, Padstow which was admitted to RSPCA West Hatch on 13/12/18 after being found by BDMLR to be underweight and dehydrated. Following rehabilitation, she was released at Combe Martin, N. Devon on 18/03/19 weighing 37kg and with the red identification tag seen here.
			

Photo 7: Juvenile grey seal at Towan beach, Newquay 11th January 2019. Photo by Em Gallagher

3.3 Marine Turtles

There were three leatherback turtles and one loggerhead turtle species reported to CWT MSN in 2019. One leatherback turtle was found in March, one in September and one in December. The one loggerhead turtle was found in January.

On 23rd January 2019 a juvenile loggerhead turtle washed into Crooklett's beach in Bude, with no obvious signs of injury.

Photo 8: Juvenile loggerhead turtle found on 23rd January 2019 on Crooklett's beach, Bude. Photo by Wendy Hartwell.

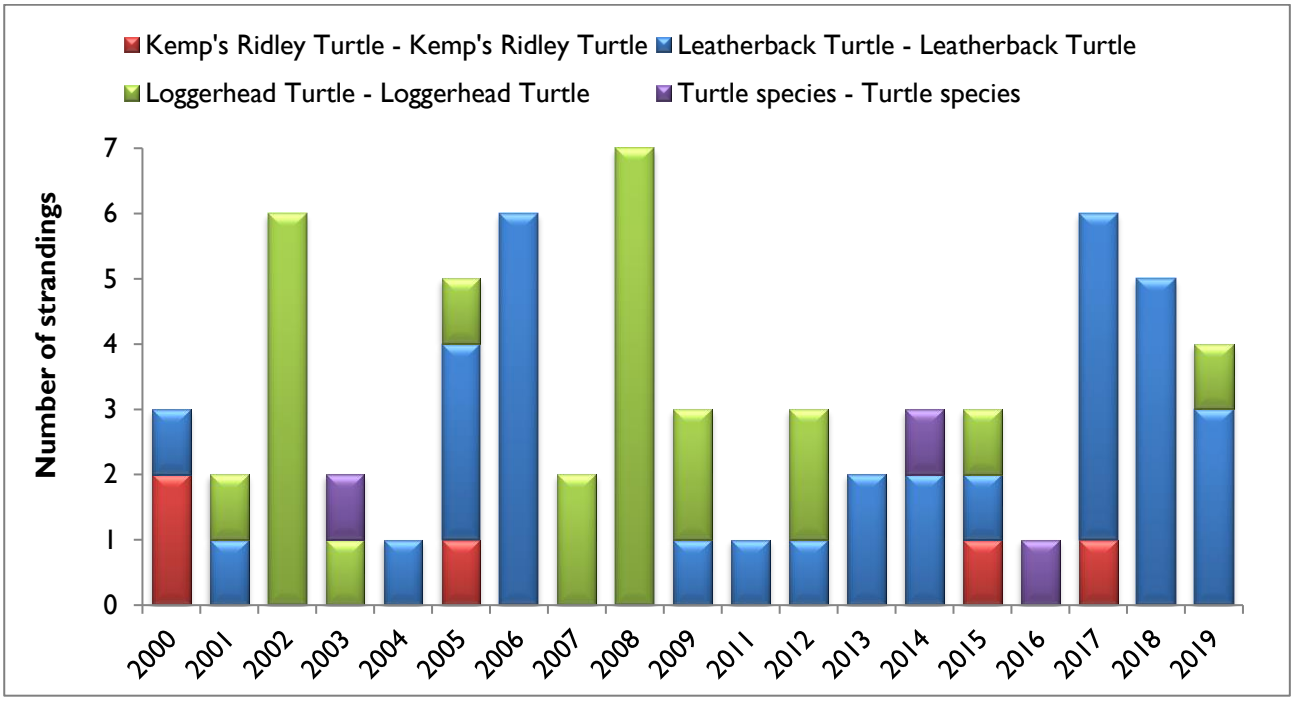


Figure 12: Marine turtle strandings 2000 – 2019

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 storm wrecks or as a result of pollution. CWT MSN received 90 reports of dead seabirds, involving 137 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	34	76
Guillemot	9	9
Gull species agg.	3	3
Great black-backed gull	2	2
Herring Gull	12	15
Cormorant	1	2
Razorbill	3	3
Shag	11	12
Puffin	2	2
Fulmar	2	2
Black Throated Diver	1	1
Little Egret	1	1
Manx Shearwater	2	3
Great Skua	2	2
Bird spp.	3	3
Grand Total	**90**	**137**

Table 6: Total numbers of each sea bird species reported to CWT MSN in 2019

There were 7 cases of bird entanglement reported to CWT MSN during 2019, consisting of 3 gannets, 2 guillemots, 1 Manx shearwater and 1 shag.

Guillemot DBID 14089	Perranporth beach, Perranporth	29/04/2019	Entangled in green trawl net

3.5 Sharks

There were 11 reports of stranded sharks reported to the CWT MSN in Cornwall in 2019, consisting of 7 different species (*Table 7*).

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 7: Total numbers of shark and ray (elasmobranch) species reported to CWT MSN in 2019

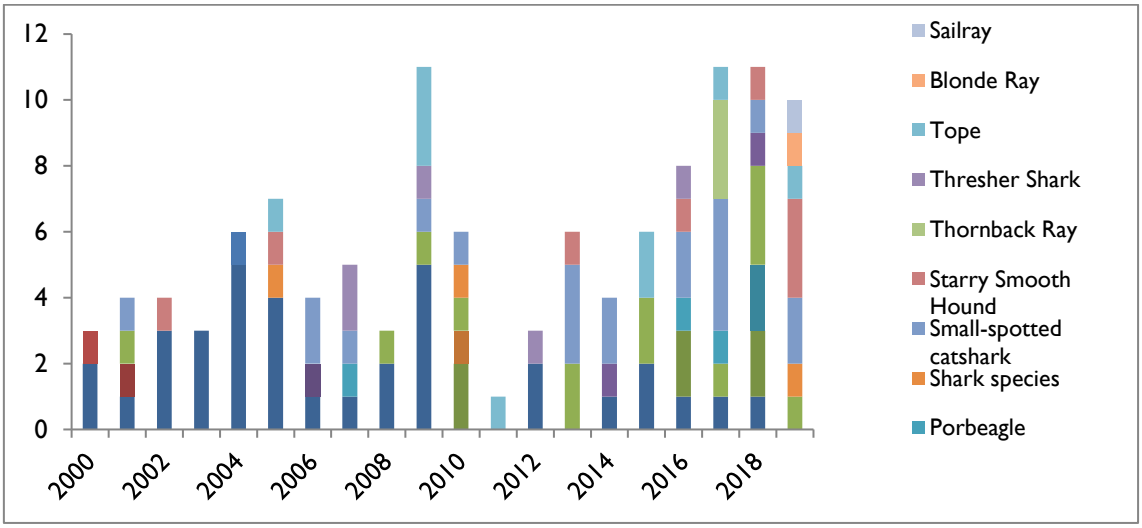


Figure 13: Elasmobranch (shark and ray) strandings 2000 – 2019

3.6 Other strandings

There were 170 reports of strandings of other species groups, comprising 27 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 washing up around Cornwall.

Species	Number of reports	Est. number of animals
Cephalopods	**4**	**100+**
Common cuttlefish	2	100+
Curled octopus	2	2
Crustaceans	**13**	**2613+**
Goose-neck barnacle	9	2500+
Buoy barnacle	1	10+
Columbus crab	1	2
Masked crab	1	1
Spiny spider crab	1	100+
Echinoderms	**4**	**6**
Spiny starfish	2	3
Bloody Henry	2	3
Fish	**23**	**124+**
Horse mackerel	1	1
Sea bass	1	1
Conger eel	6	8
Grey triggerfish	7	7
Whitebait	1	100+
Monkfish	1	1
Garfish	3	3
Grey mullet	1	1
Ocean sunfish	1	1
Skipjack tuna	1	1
Jellyfish	**60**	**298+**
Barrel jellyfish	48	85
Blue jellyfish	6	90+
Compass jellyfish	1	1
Crystal jellyfish	2	2
Moon jellyfish	3	120+
Hydrozoa	**64**	**100**
Portuguese man-of-war	54	400+
By-the-wind-sailor	10	1165+
Tunicate	**2**	**101+**
Salp	2	101+
Grand Total	**170**	**3342+**

Table 8: Other stranded species reported to CWT MSN in 2019

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

4. Events

4.1 New volunteer training

In 2019, the CWT MSN ran two training sessions for new MSN Callout volunteers, training 40 new volunteers. Training in Cornwall took place at CWT HQ, Allet in February and Porthleven in November for new Callout Volunteers from across Cornwall.

Photo 9: New Callout volunteers training in Porthleven during the November MSN Training Day 2019. Photo by Abby Crosby

4.2 Marine Recorders Evening 2019

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 marine recording projects. Abby Crosby, Marine Conservation Officer and Strandings Co-ordinator spoke at the 2019 Marine Recorders Evening on 28th November at Upper Deck in Falmouth about strandings, as well as sightings, from the previous year.

The event also had speakers from ERCCIS summarising sightings and strandings from 2019, Mark Grantham of Cornwall Bird Watching and Preservation Society, covering seabird sighting highlights from the year and recording scheme; Tom Horton, Thunnus UK Project Officer and University of Exeter affiliate spoke on the UK Bluefin Research Programme and Nick Tregenza, Director of Chelonia, gave a talk on acoustic monitoring device development and cetacean research.

4.3 MSN Forum 2019

The 2019 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. This event offers a unique opportunity to hear about the work being carried out by the Marine Strandings Network in Cornwall and the Isles of Scilly, as well as UK-wide by the Cetacean Strandings Investigation Programme and by colleagues working in similar fields. Among the presentations were 'Microplastics in marine mammals stranded around the British coast', Sarah Nelms - University of Exeter; 'The life and death of Septimus White', Rob Wells and Sue Sayer - Cornwall Seal Group Research Trust and 'Jellyfish strandings in the UK', Victoria Hobson - University of Exeter

Photo 10: Risso's calf found floating in Mounts Bay, 5th May 2019. Photo thanks to Marine Discovery - www.marinediscovery.co.uk

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 (2019): Joyce Edmonds, Liz Clarke, Meg Hayward-Smith, Gill Peters, Anthea Hawtrey-Collier, Nigel Boddington, Paul Wraight, Sarah Redfern, Emma Holland, Richard Weeks.
- Anthea Hawtrey-Collier, Niki Clear, and Helen Chadwick for all their hard work on collating, assessing and entering records into the database.
- James Barnett, veterinary pathologist and advisor to the CWT MSN.
- University of Exeter, Cornwall campus for collaboration on post mortem examinations.
- Sue Sayer and Katie Bellman for seal ID, and the support of the Cornwall Seal Group Research Trust team and volunteers.
- 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, Institute of Zoology and CSIP.
- Dan Jarvis from British Divers Marine Life Rescue for his help with MSN training days.
- Dan Jarvis and all Marine Mammal Medics, BDMLR, Cornwall.
- 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.

APPENDIX 1:

2019

Cetacean Bycatch Report

Appendix photo 1: Common Dolphin Pentewan 6th April Rob Wells C-2019-099

Introduction

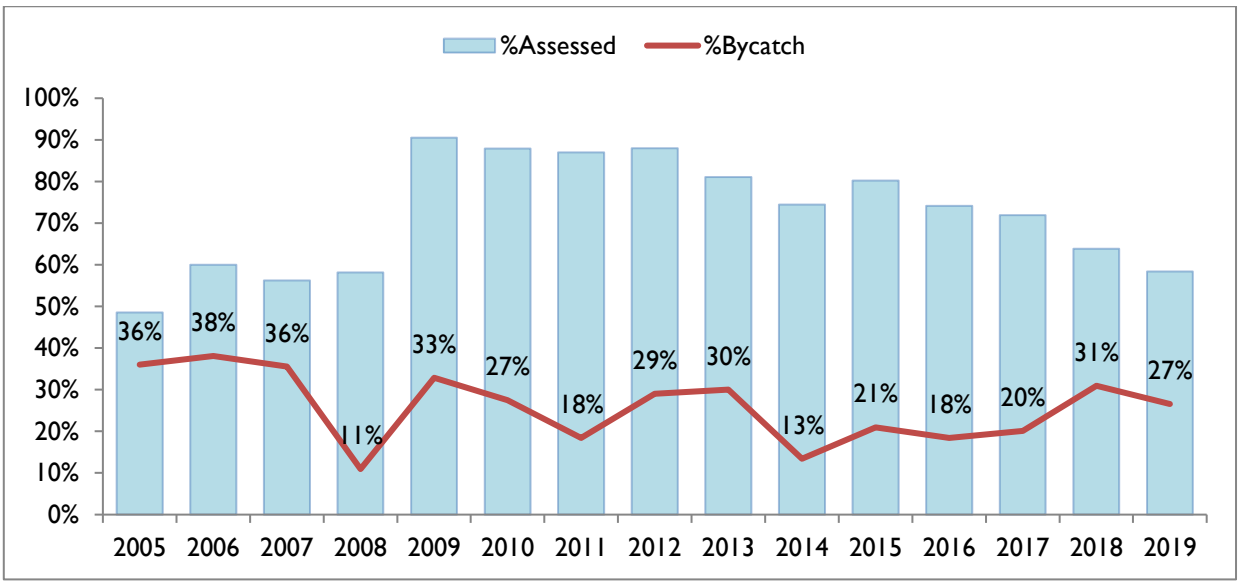
The Cornwall Wildlife Trust Marine Strandings Network (CWT MSN) has been collecting valuable data on stranded marine life around Cornwall for over 27 years and holds over 9,200 records. The Network is an invaluable tool to monitor the impact of bycatch on cetacean species within the region. To that end, 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 recorded cetacean species in Cornwall. We have only included cases which have been assessed through post mortem examination or BEEP (Bycatch Evidence Evaluation Protocol).

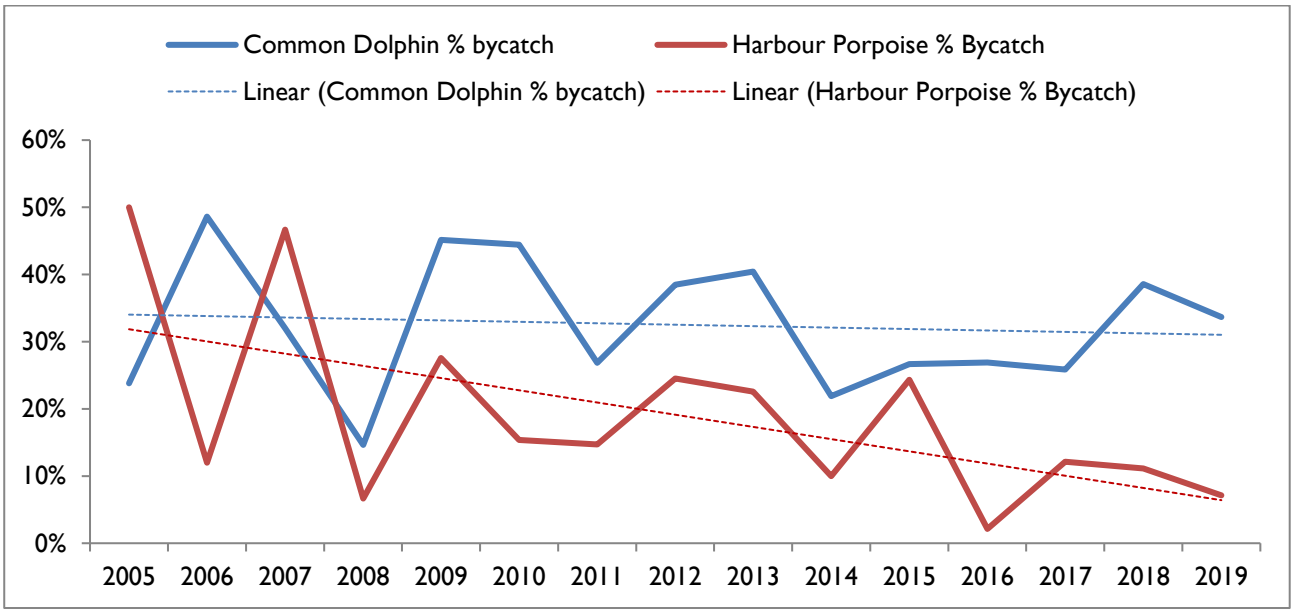
Since 2005 the proportion of assessed common dolphin and harbour porpoise strandings which were concluded to be bycatch or probable bycatch has been, on average, 26% and ranges between 11% and 38%. Bycatch in fisheries continues to be recognised as a significant conservation threat to Cornwall's cetaceans.

There has been an increase in the total number of strandings for both common dolphin and harbour porpoise in 2019 (n=245 compared with n=177 in 2018), with 27% of those assessed were from bycatch, slightly above the 14 year average. Although we have observed a small decline in confirmed bycatch events since 2018, this figure is still higher than the previous four years.



Appendix figure 1: The percentage of bycaught common dolphin and harbour porpoise against those assessed through post mortem examination or BEEP assessment from 2005 to 2019. The blue bars illustrate the proportion of all cetacean strandings which were assessed. The red line illustrates the proportion of those which were bycatch.

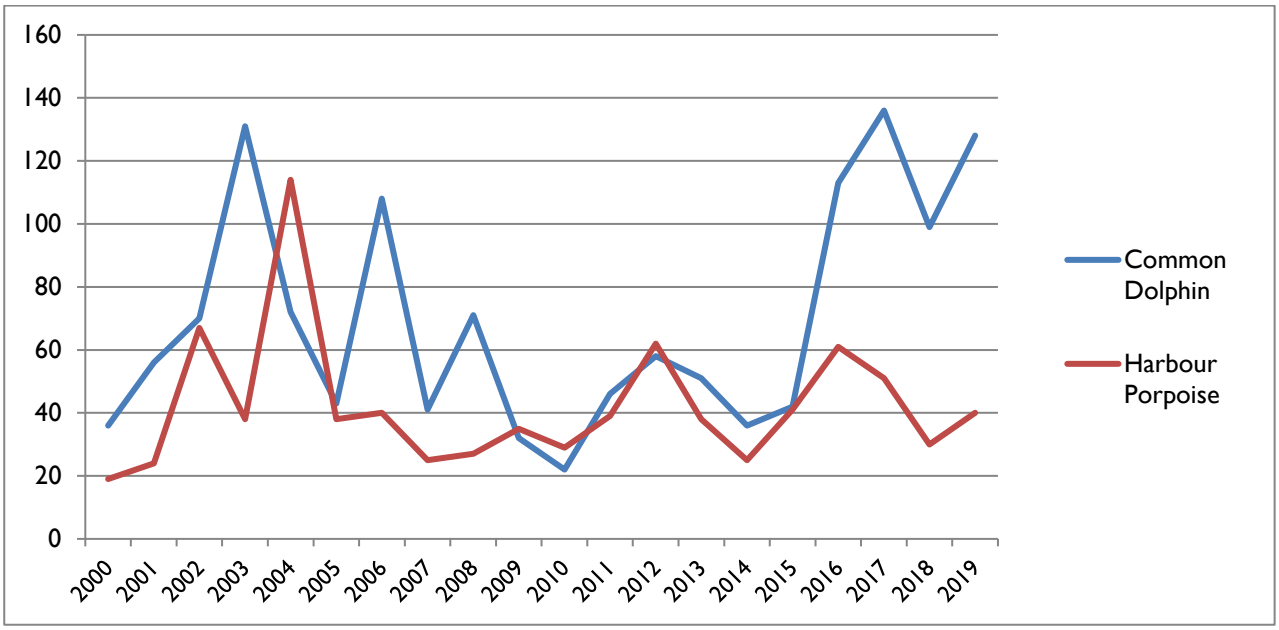
When we compare the percentage bycatch for common dolphin and harbour porpoise seperately, we can see a clear reduction of the proportion of harbour porpoise killed as bycatch, whereas bycatch continues to be a significant cause of death for common dolphin.



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 2019.

Bycatch analysis 2019

As we have seen in the previous three years, 2019 was again a notable year for high numbers of short beaked common dolphin strandings in Cornwall and the Isles of Scilly, accounting for 52% of all cetacean strandings. Common dolphin and harbour porpoise have always been the most reported cetacean species for MSN but, in recent years, we have been seeing many more common dolphin strandings than harbour porpoise (*Fig. 3*). In 2019 we again had very high numbers of common dolphins recorded, more than three times those of harbour porpoise (*Table 1*).



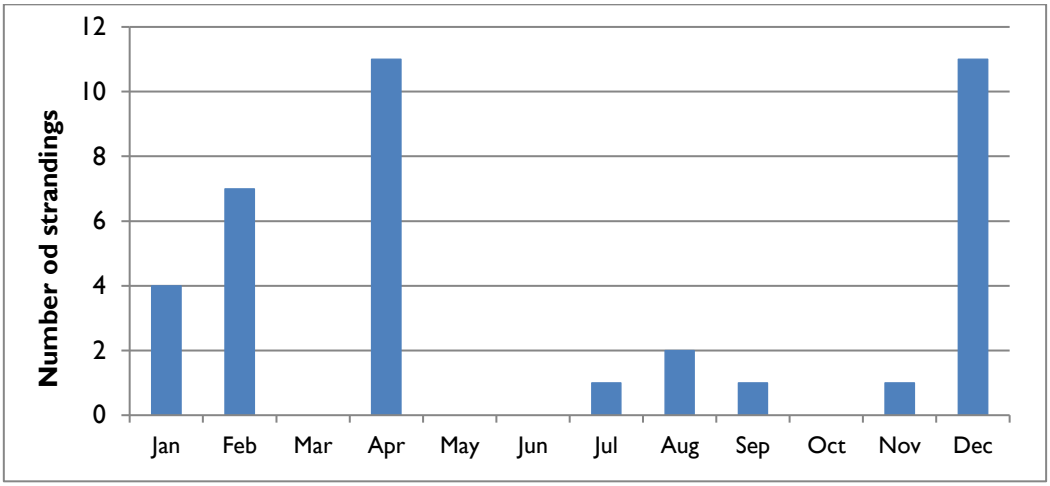
Appendix figure 3: Numbers of common dolphin and harbour porpoise strandings from 2000 to 2019

Through both post mortem examinations and BEEP assessments (n=143), 27% (n=38) of assessed cetacean strandings were determined to be bycatch or probable bycatch. The majority of these were common dolphin (34%, n=32), and the remaining cases involved involved; 2 harbour porpoise, 1 bottlenose dolphin, 1 risso's dolphin and 2 unidentified cetacean species (*Table 1*).

Species	Total number of strandings	Number of cases assessed	Bycatch cases (PME and BEEP)	% of bycatch (against assessed)
Common Dolphin	128	95	32	34%
Unidentified cetcaean species	69	15	2	13%
Harbour Porpoise	40	28	2	7%
Bottlenose Dolphin	1	1	1	100%
Risso's Dolphin	2	2	1	50%
Pilot Whale	2	2	0	0%
Striped Dolphin	2	0	0	0%
Minke Whale	1	0	0	0%
Grand Total	**245**	**143**	**38**	**27%**

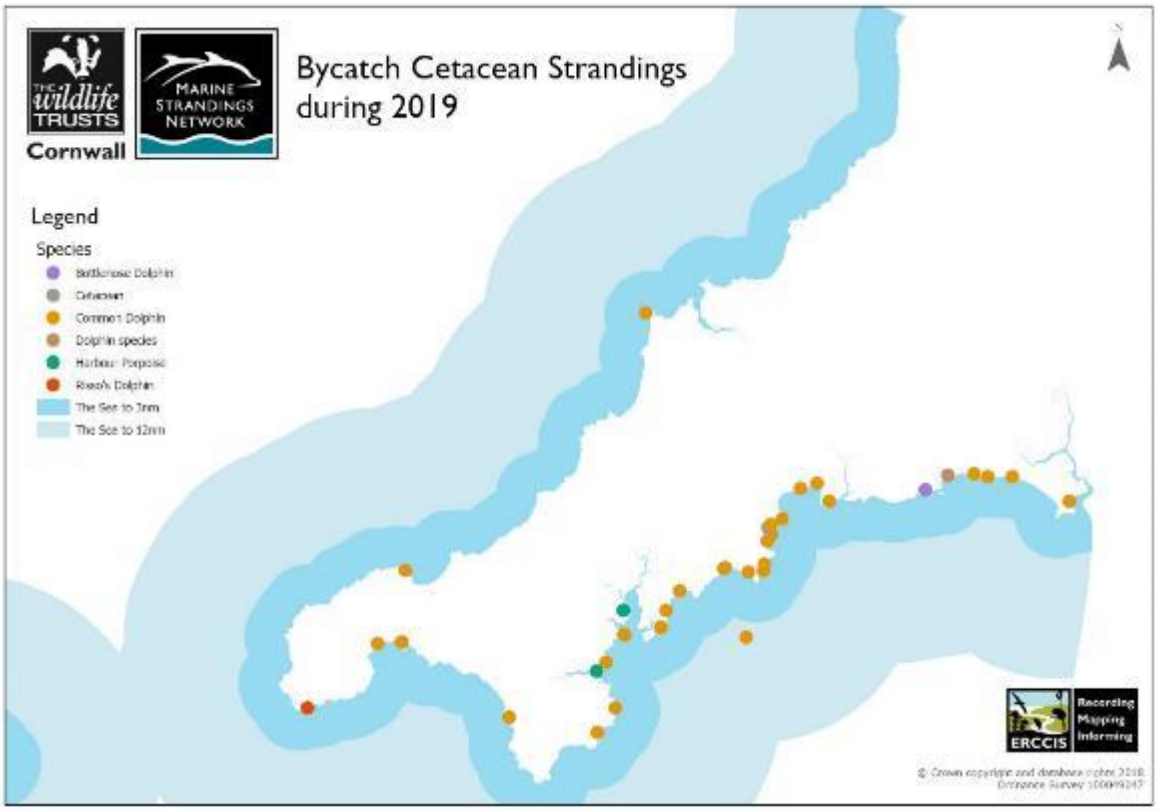
Appendix table 1: Summary of bycatch related causes of death from post mortem and BEEP assessments from cetacean cases assessed in 2019

Bycatch cases were inconsistent throughout the year, with a large peak in April and again in December, with none in March, May, June or October. This is a stark contrast to the pattern seen in 2018, where bycatch cases were relatively consistent throughout the year.



Appendix figure 4: Number of stranded cetaceans per month which exhibited features of bycatch in 2019

The geographical spread of cetacean bycatch cases through 2019 are shown in Figure 5 and shows that whilst there were a few bycatch cases around the whole coast of Cornwall, they were predominantly recorded on the south coast.



Appendix figure 5 : The location of 2019 stranded cetaceans with bycatch features; orange indicates common dolphin; green indicates harbour porpoise red indicates Risso's dolphin and purple indicates bottlenose dolphin.

Summary of all animals which exhibited signs of bycatch in 2019

Blue highlights the cases which went for post mortem examination. White highlights the cases which were assessed by BEEP in situ. 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.

Reference	Location	Date	Gross post mortem examination findings / observations
Common Dolphin C/2019/006	Mevagissey Harbour, Mevagissey SX023458	09/01/2019	*Rob Deaville reports that most lesions seen were consistent with bycatch as the cause of death. The only finding not typical of bycatch was the large quantity of clear fluid in the airways, which is typical of live stranding rather than bycatch. One possible explanation worthy of further investigation is the possibility that the animal drowned in a ring net. The clear fluid is thought to be consistent with an animal that had aspirated seawater while at the surface in the net.*
  			
Common Dolphin C/2019/020	Hemmick Beach, The Roseland SW991406	16/01/2019	Linear monofilament impression to base of melon near joint with beak. Linear impressions across upper beak. All fin tips missing with associated scavenging. Damage to tip of beak. Broken lower jaw. Haemorrhage to RHS eye. Multiple linear monofilament notches to leading edge fluke. Small linear impression to base of trailing edge dorsal fin. Multiple linear impressions to leading edge base of dorsal fin.
  			

Common Dolphin C/2019/022 SW2019/19	Kingsand, Rame SX435504	17/01/2019	*I report the findings of my colleague, Padraig Queally. The encircling wounds/marks on the rostrum and right pectoral and the fin edge cuts on the dorsal fin and flukes are consistent with bycatch as the cause of death in this juvenile male common dolphin.*

Common Dolphin C/2019/039 SW2019/25	Porthmeor Beach, St Ives SW517509	28/01/2019	*This adult male common dolphin was in moderate body condition. Although there was no ingesta in the stomach consistent with feeding immediately prior to death, there was evidence of feeding recently judging by the contents of the intestines. The cause of death was severe trauma, which was primarily focused on the head, neck and thorax. With the fin slices present in the pectorals and flukes, it is most likely that the cause of death was bycatch but the fracture and dislocation of the axis, with extensive tearing and haemorrhage of the surrounding musculature, was not a feature I have seen before. The fractures to the rostrum are traumatic lesions I have seen in bycaught animals but, unlike the cervical spine fracture and dislocation, there was no evidence of associated haemorrhage consistent with pre-mortem trauma. How this trauma could have occurred when the animal was bycaught is unclear; but it may have been consistent with the dolphin passing over a net hauler while still alive. The pre-mortem fracture to the left pectoral also may have been consistent with this. There was one set of rake marks on the tail stock with spacing strongly suggestive of bottlenose dolphin interaction, so this cannot be entirely ruled out as the cause of the severe trauma observed. However, in my opinion, the evidence for bycatch as the cause of the combination of traumatic lesions seen was more compelling.*

Common Dolphin C/2019/054 SW2019/35	Par Sands, St Austell SX086529	09/02/2019	*This adult male common dolphin was in moderate body condition and had fed recently. In my opinion, the clean amputation of the dorsal fin, the fin slice in the left pectoral and the encircling marks on the melon and right fluke are consistent with bycatch. It is also possible that the extensive trauma to the rear of the right pectoral and the partial amputations of the left pectoral and left fluke also were secondary to bycatch, although it was clear that scavenging of the amputated stumps had taken place. The width of the linear mark over the melon at least was not consistent with monofilament netting.*

Common Dolphin C/2019/060	At Sea - Penzance Pumping Station, Penzance SW478307	15/02/2019	Fluke missing, probable bycatch. Fin edge slice to trailing edge RHS pectoral with digit bones exposed.

Common Dolphin C/2019/063	Pendower Beach, Veryan Bay SW896380	20/02/2019	2 x large clean edged 'v' shaped notches to tail stock dorsal side. Large notch/fin edge slice to trailing edge RHS fluke. Partially encircling linear impressions around LHS upper beak. Abrasions to tip of beak. Haemorrhage to LHS eye.


Common Dolphin C/2019/066 SW2019/55	Towan Beach, The Roseland SW870330	23/02/2019	*The postmortem examination of this adult male common dolphin was compromised by the degree of skin loss and scavenger damage present. Nonetheless, the encircling wounds on the left pectoral and flukes, the skin tags on the right pectoral and dorsal fin and the evidence of recent feeding were, in my opinion, very suspicious of bycatch.*



Common Dolphin C/2019/074	Polridmouth Beach, Fowey SX103504	25/02/2019	Bottom jaw broken and missing. Flukes clean cut off. Fin edge slice to trailing edge LHS pectoral fin. Linear impression behind LHS eye. Long linear 'scrape' mark with multiple parallel line to LHS torso below dorsal fin.



Common Dolphin C/2019/071	Millendreath Beach, Looe SW785173	22/02/2019	Fluke clean cut off with 'v' shaped notch to tailstock.
			

Cetacean C/2019/072	Pentewan Beach, Mevagissey Bay SX018467	25/02/2019	Fluke missing - clean cut, head missing.
 			

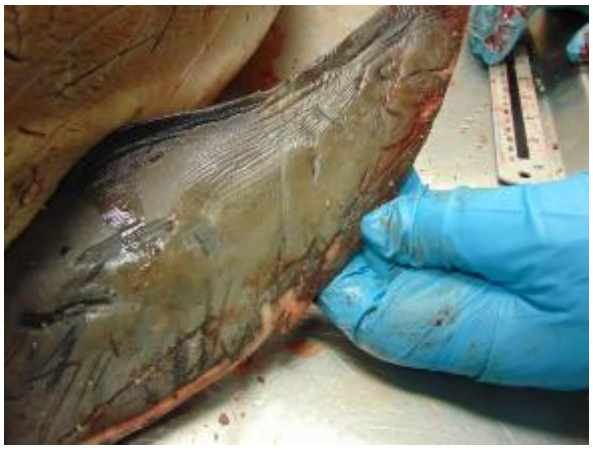
Common Dolphin C/2019/095 SW2019/161	Coverack Beach, The Lizard SW782184	01/04/2019	*This adult male common dolphin was in reasonable body condition and had fed recently. The clean amputation of the tail flukes, linear marks/wounds over the thorax and maxilla, and multiple fractures to the maxilla and mandible are, in my opinion, consistent with bycatch, the tail fluke amputations being consistent with the animal being cut out of the net. The presence of haemorrhage associated with some of the rostral fractures suggests these may have occurred pre-mortem. The right lung was noticeably more congested than the left, consistent with hypostatic congestion and suggesting the animal may have died after lying on its right side, possibly while the net was being hauled, or possibly while on deck, because presumably this would not have occurred while the animal was neutrally buoyant in the water. It is even conceivable that the animal live stranded after being cut out of the net, but I cannot be confident that the tail fluke amputations were carried out pre-mortem. An incidental finding were the haemorrhages and ulceration in the oropharynx and on the tongue, and samples have been collected for possible histopathology.*

Common Dolphin C/2019/097	Polgwyn Beach, St Austell SX038480	06/04/2019	Deep (3.2cm) linear slice to ventral side tailstock. Multiple teeth missing. Linear impression encircling tip of upper beak. 2 x Linear impression encircling tailstock >2mm thick. Fin edge notches to leading edge fluke.

Common dolphin C/2019/098	Mevagissey Harbour, Mevagissey SX017449	06/04/2019	Broken upper beak at tip. Notches and fin edge slice to leading edge fluke both sides. Fin Edge slice to trailing edge fluke. Semi-encircling impressions from leading edge fluke >2mm width. Impression with associated notch around base of fluke. Linear impression x 2 to LHS upper beak with associated lip cut. Linear slice with clean edges across genital slit. Linear impression x 2 to LHS lower beak.



Common Dolphin C/2019/099	Pentewan Beach, St Austell Bay SX022472	06/04/2019	*The amputation of the tail, encircling linear mark on the left pectoral and evidence of recent feeding in this common dolphin were consistent with the animal being bycaught. However, there was a lack of persistent froth in the upper respiratory tract, a common feature of bycaught animals, and also noticeable disparity in the size of the lungs, raising the possibility that the animal may have died after lying on one side, e.g. when hauled, on deck or on the shore. The multiple wounds on the dolphin's skin are presumably consistent with the animal stranding on a rocky shore.*

Common dolphin C/2019/102	Porthoustack, St Keverne SW807218	09/04/2019	Tip of dorsal fin clean cut. LHS fluke clean cut. RHS fluke tip missing. LHS pectoral fin missing with associated scavenging. Fin edge slice to trailing edge tip RHS pectoral fin.


Common dolphin C/2019/103 SW2019/197	Towan Beach, The Roseland SW869329	11/04/2019	*This subadult female common dolphin was in good body condition. The linear impression marks over the thorax and rostrum, skin tags (fin slices) in the right pectoral and flukes, linear encircling wounds over the leading edges of the flukes and evidence of recent feeding were consistent with bycatch. However, this animal was very fresh for a bycaught animal, suggesting it must have been caught in nets close to shore and there was no evidence of present froth in the upper respiratory tract typically seen in bycaught animals. Furthermore, the markedly asymmetrical congestion and size of the lungs suggested the animal had died while lying on one side, e.g. when hauled, on deck or on the shore.* *This is the third apparently bycaught common dolphin I have examined with asymmetrical pulmonary congestion this month and it raises the question as to whether this is associated with a particular fishery. However, the mix of monofilament net marks and rope marks in this animal was different to the two previous animals examined.*

Risso's Dolphin C/2019/107	Porthchapel Beach, Land's End SW381218	13/04/2019	Fluke missing cleanly removed with associated scavenging. Linear impression running from LHS pectoral fin to dorsal fin. Linear impression to ventral side in front of pectoral fins. Extensive discolouration to upper half torso. Haemorrhage and bulging to LHS eye.

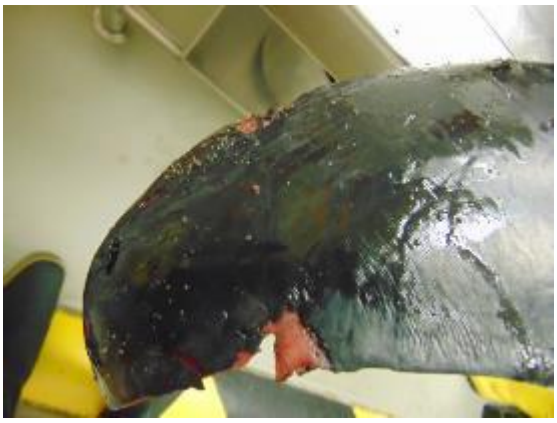


Common Dolphin C/2019/120	Little Perhaver beach Gorran Haven, SX013417	18/04/2019	Tail flukes cleanly amputated. Encircling mark around tail stock. Deep linear impression. Large fin edge slice along trailing edge of RHS pectoral fin. Multiple fin edge notches to LHS pectoral fin


Bottlenose dolphin C/2019/167	Hendersick Point, Looe SX236520	15/08/2019	Large 'v' shaped cut to RHS fluke. Large part of dorsal fin missing

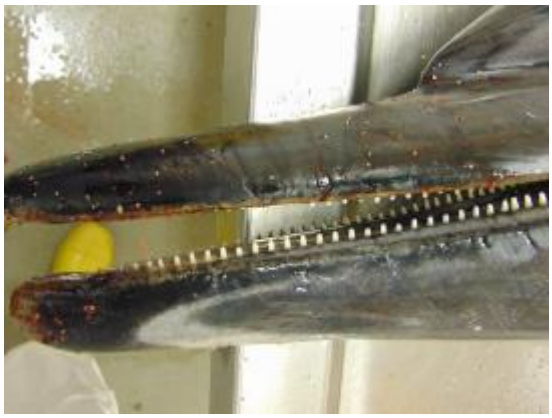

Common dolphin C/2019/177	Downderry Beach, Whitsand Bay SX322538	04/09/2019	Flukes clean cut off. Clean 'V' shaped notch to ventral side tailstock. Encircling monofilament impression behind eyes.



Common dolphin C/2019/221 SW2019/655	Seaton Beach, Looe SX303542	21/11/2019	*This sub adult male common dolphin was in moderate body condition and there was evidence of recent feeding. The linear impressions and marks on the rostrum and the linear mark and notch in one fluke are, in my opinion, consistent with bycatch most likely in a trawl net. The skin loss along the trailing edges of both pectorals, linear mark over one pectoral, wound in the ventral midline of the flukes, tearing of muscle off the left scapula and haemorrhage around the proximal spinal cord also may be due to bycatch. The 9-10mm spaced rake marks on the right flank are consistent with recent bottlenose dolphin interaction; it may be interesting to try and age these and the bycatch marks to try and establish a timeline of events, if this is possible. Histopathology of the tear in the left lung also would be interesting as it is not clear if this happened ante mortem or postmortem*
 			

Common dolphin C/2019/224	Vault Beach, Gorran Haven SW012408	01/12/2019	Broken jaw. Notch to trailing edge LHS pectoral. Teeth missing to upper jaw. Notch to trailing edge dorsal fin. Fin edge slice with notch to trailing edge fluke. Linear impression across base leading-edge dorsal fin.
  			

Common dolphin C/2019/228 SW2019/672.1 Found with C/2019/229	Castle Beach, Falmouth SW819320	04/12/2019	*This adult female common dolphin was in good body condition. The linear encircling marks on the rostrum and the encircling wounds and fresh fin slices on the fins and flukes were, in my opinion, consistent with bycatch in a monofilament net. The mark crossing the base of the ventral left fluke is likely to be a rope mark caused by the fishing gear and the presence of recent feeding was also consistent with an acute death such as bycatch. What was less typical was the presence of watery fluid in the bronchi. This appeared to be too large in volume to be due to pulmonary oedema and increased surfactant associated with dry downing and more likely to be consistent with an animal that had aspirated seawater while in the net. There was also evidence of localised pleurisy in the left lung. On histopathology there was evidence of terminal aspiration of foreign body material and this supported the hypothesis that this animal drowned rather than suffocated (dry drowned) in the net.*



Common dolphin C/2019/229 SW2019/672.2 Found with C/2019/228	Castle Beach, Falmouth SW819320	04/12/2019	*This juvenile female common dolphin was in reasonable body condition and had evidence of recent feeding. The linear marks and wounds on the rostrum, melon, fins and flukes, and fin slice on the right fluke are consistent with bycatch. The asymmetry of the lungs was an unusual finding in a bycaught animal and may have been due to the animal lying on one side in the hauled net or on deck before dying. The presence of precocial secretion from the mammary gland was also a notable finding in this juvenile animal.*

Common Dolphin C/2019/230	East of St Mawes, At Sea, SW988316	04/12/2019	Severe trauma to tailstock, almost entirely severed with associated scavenging. Fluke cleanly removed. Clean edged slice across genitals. Abrasion to chest.
			

Common dolphin C/2019/233	Mawgan Porth, Newquay SW849765	09/12/2019	Tip of upper jaw broken. RHS pectoral fin has a notch on leading edge and on corresponding trailing edge with slight linear impression between. Large fin edge slice to trailing edge RHS pectoral fin. Notch on trailing edge of dorsal fin with a linear impression running along to slight notch on leading edge. Left side of fluke has a large notch with a corresponding notch and linear impression between. Linear semi encircling impression on lower jaw. Multiple teeth missing.
			

Common dolphin C/2019/244	Carlyon Bay Beach, St Austell SX063522	19/12/2019	Notches and small slices to trailing edge of fluke. Notches with linear impressions to leading edge of fluke. Encircling impression LHS tip of fluke Linear wound on LHS tail stock. Notches with linear impressions to leading edge RHS pectoral fin with corresponding notches to trailing edge. Notches to leading edge LHS pectoral fin with corresponding notches and slice to trailing edge. Multiple notches to leading edge dorsal fin with corresponding notches to trailing edge. Linear scratch on abdomen. Broken lower jaw.
  			

Common dolphin C/2019/245	Sandymouth Beach, Bude SS199101	14/12/2019	Green rope around tail. Linear partially encircling mark around tail stock. Notch to trailing edge dorsal fin.
			

Common dolphin C/2019/248	Portwrinkle Beach, Downderry SX356538	20/12/2019	Thick encircling impression around the beak, some teeth missing and damage to lower jaw. Small notch to trailing edge LHS fluke. Partial encircling impressions to RHS tailstock.
 			

Common dolphin C/2019/250	West Portholland, Veryan Bay SW959412	20/12/2019	Deep slice on leading edge of LHS pectoral fin - clean edged. Small notch to leading edge RHS pectoral fin at shoulder. Lip edge cuts and linear impressions on beak. Deep linear fin edge slice to trailing edge of fluke LHS with small notch with partial encircling impressions. Notches on RHS of trailing edge of fluke. Dent/impression on leading edge of fluke RHS. Multiple fin edge slices to trailing edge dorsal fin with linear, partially encircling impressions.
 			

Common dolphin C/2019/254	Church Cove, Gunwalloe, SW660205	21/12/2019	RHS of tail fluke missing, very fresh, with associated scavenging. Small notch at base of leading-edge dorsal fin. Multiple notches to leading edge LHS pectoral fin with corresponding notch to trailing edge. Lip cuts with linear impressions to LHS upper jaw. Lower jaw RHS fractured.

Harbour porpoise C/2019/255	Churchtown, Mylor, SW818353	22/12/2019	Encircling multifilament impression encompassing body in front of dorsal and pectoral fins. RHS pectoral tip missing. LHS pectoral fin has fin edge slices on leading edge. Notch with linear impression to leading edge dorsal fin. Notch to leading edge LHS pectoral fin at shoulder. Fluke missing, but still apparent in earlier photos. Half torso missing. Lower jaw broken.

Common dolphin C/2019/259	Mawnan, Helford SW781269	27/12/2019	Partial encircling impression to RHS tailstock with 'v' shaped notch to dorsal side. Head missing, fluke missing.
			

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

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