# Diving Incident Report 2019

Compiled by
Clare Peddie & Jim Watson
BSAC Incidents Advisors

BSAC
Dive with us

The British Sub-Aqua Club

# BSAC Incident Report 2019

This year we revisit some long-term trends and give some messages about factors related to the incidence of decompression illness.

The majority of information contained within this report is also shown in graphical form. Please note that all data information is produced from UK data only and does not include overseas Incidents unless noted as 'all Incidents'.
The contents of this report are split into an overview of the year, and then the details of eight incident categories plus some historical analyses. Within each category the incidents are listed in the order of their occurrence, not necessarily that of Incident Reference.

They are laid out in the following form:

MONTH/YEAR OF INCIDENT INCIDENT REF.
Brief Narrative of Incident

The nature of many diving incidents is such that there is usually more than one cause or effect. Where this is the case the incident has been classified under the more significant cause or effect. For instance, an incident involving a fast ascent, causing decompression illness, will be classified under 'Decompression Incidents'.

Please browse through the details in this report and use the synopses to learn. The individuals who have provided this information have had the courage and generosity to record their experiences for publication so that we can use this information to avoid similar problems.

Finally, if you are unfortunate enough to have an incident please help us maintain the most comprehensive recreational diving incident reporting system in the world by reporting it using our Incident Report form, available via the BSAC website or from BSAC HQ. As always, your anonymity is assured, great care is taken to preserve the confidentiality of any personal information recorded in BSAC Incident Report database.

Clare Peddie, Jim Watson
BSAC Diving Safety and Incidents Advisors,

Ben Peddie
BSAC Data Analyst

October 2020

***Acknowledgements***

Data for this report are collected from many different sources. We would like to extend our thanks and appreciation to the following for their assistance in its production and in ensuring its completeness:

- Maritime & Coastguard Agency
- MOD Superintendent of Diving
- PADI Europe, Middle East and Africa
- Royal Society for the Prevention of Accidents
- Scottish Sub-Aqua Club
- Sub-Aqua Association
- CFT – Coomhairle Fo-Thuinn – Irish Underwater Council
- Lizzie Bird for data input
- Ron Evans for proofreading this report
- and, in particular, all of those divers and other sources who have taken the trouble to complete incident reports and share their learning experience with others

Cover photograph by Rohan Holt

# Table of Contents

*BSAC Incident Report 2019* ..... 1
*Table of Contents* ..... 2
*Analysis of the Incident Database* ..... 3
*Fatalities* ..... 11
*Decompression Incidents* ..... 15
*Boating and Surface Incidents* ..... 26
*Ascents* ..... 31
*Technique-related incidents* ..... 40
*Equipment-related incidents* ..... 42
*Illness or Injury-related incidents* ..... 49
*Miscellaneous incidents* ..... 59
*Overseas Incidents* ..... 61
*History of Previous UK Diving Fatalities* ..... 73
*List of abbreviations used in this and previous incident reports* ..... 74

# Analysis of the Incident Database

BSAC is National Governing Body for the sport in the UK. As such BSAC considers that an important part of our role is that we report annually on the diving incidents in the UK; we are one of very few NGBs in the UK to gather and analyse incident data in this way. BSAC has been assembling data on recreational diving incidents for over 50 years. The majority of the incidents are reported through the Incident Reporting forms which are supported by all the diving agencies in the UK and Eire and the form is now available online hosted by the BSAC website. We are also extremely grateful for the very valuable contributions to these data supplied by the Maritime & Coastguard Agency, the RNLI, MOD Superintendent of Defence Diving, PADI Europe, Middle East and Africa and Royal Society for the Prevention of Accidents. The BSAC incident report is intended to help support diving agencies and rescue services in providing information to help inform strategic decisions. In addition to reports, BSAC engages a media clippings service to gather incidents that are reported in the press and online media.

In the last few years, the CFT have been providing information on incidents in Eire which until now have not been reported in the BSAC incident database as they are classified as Overseas and normally have not involved BSAC members. This year, we received 19 reports of incidents in Eire and we have taken the decision to include the synopses of these incidents in the Overseas data so that readers can benefit from reading the reports. The database has been adjusted retrospectively to include all reports from Eire which have not involved BSAC members in the Overseas category. As the data analysis normally provided in this report is based on UK incidents only, the inclusion of the Eire data in the Overseas category means that our routine analysis and trend data is unaffected.

When interpreting the BSAC incident report it is important to understand the parameters under which the data are collected. BSAC does not report on incidents which are wholly commercial in nature such as incidents involving professional scallop fishermen or operational work dives in harbours. It does however include all recreational instruction dives even when commercial in nature.

In the process of closing the annual database the many reports we receive are carefully analysed to remove duplicated records. It is not unusual to have reports from two or three different sources about the same incident. This de-duplication process can often involve some interesting detective work to ascertain if, for example, a RNLI report is about the same or different incident described in a BSAC report. Therefore, details in the reports such as location, dates and times are all really helpful in this process. The data analysed to produce these graphs, involve all diving affiliations and not just BSAC.

The movement of the reporting year to 1st January to 31st December has enabled us to have greater confidence that the data set is complete for the reported year and has in some cases enabled the outcome of coroner's inquests to be relayed in this report.

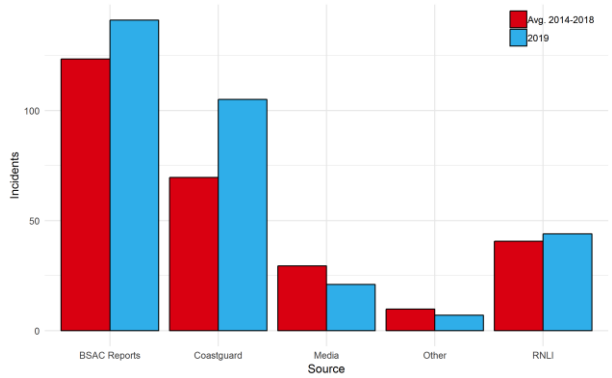


***Figure 1. The source of reports contributing to the BSAC Incident analysis***

The graph (Figure 1.) describing the origin of the reports shows that the number of report forms received by BSAC has increased slightly. In 2019, on the 16th December, the Incident report form, which can be completed by divers from all diving agencies, was made available online. The impact of making the report available online will be difficult to measure given the impact of Covid-19 on the diving activity in 2020; however, it is hoped that all members of the diving community will find it easier to report incidents going forward. The number of reports in 2019 provided by the Coastguard has also increased, we are extremely grateful for their continued support of the incident database.

In the calendar year of 2019, we have recorded 354 incidents including 83 classified as overseas (Figure 2).

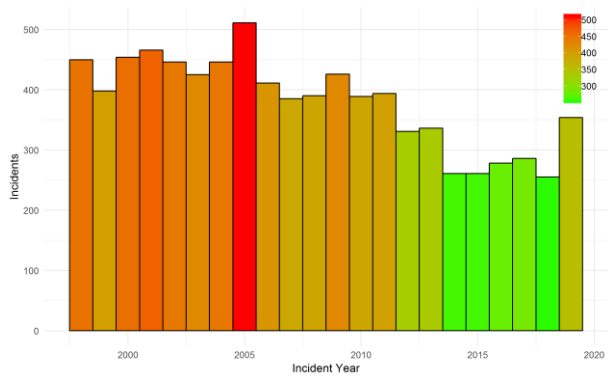


***Figure 2. Total number of UK and Overseas reported incidents***

### *Incidents by Month*

In the years previous to 2013, the Incident report consistently showed a peak of incidents the early spring consistent with the start of the diving season. In 2013, we first identified that the normal initial peak of incidents in these spring months was absent and this absence continued until 2017, in 2018 we did see indications of a return to an earlier spring peak. In 2019, we definitely see a return to an earlier start to the level of incident reporting. (Figure 3.) In May 2019, the UK experienced a steady high-pressure system in the run up to, and coincident with the late May bank holiday in England enabling the diving community to start diving in earnest during that month.

There were 41 incidents in total in May; 8 over the first bank holiday weekend and 12 over the second; with the remainder of the incidents occurring during the period between the bank holidays. It continues to be the view of the incident analysis team that the total number of incidents reported in any one period reflects the amount of diving occurring at that time.

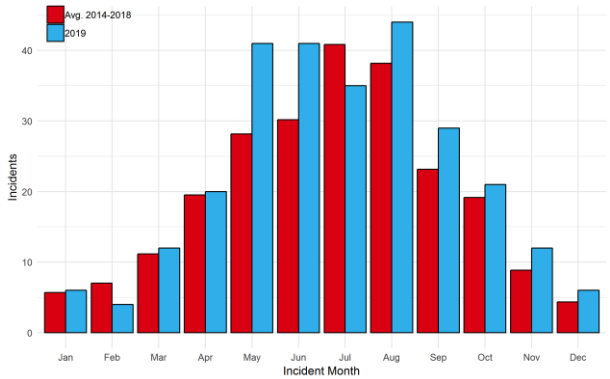


***Figure 3. Number of Incidents occurring in each month of the calendar year***

### *Incidents by Category*

The incident database assigns all incidents into one of eight major categories, and Figure 4 shows the allocation of the 2019 incidents into these categories. The incidents are classified by the most serious attributable factor; for example, if a fast ascent results in a DCI event then the incident is reported as a DCI; however if a fast ascent results in no serious ill effects then the incident is classed as an Ascent related event. Unfortunately, it is not always possible to allocate every incident to an accurate attributable factor due to insufficient information. The ascent category involves incidents where divers have made an abnormal ascent but avoided DCI or other injury. In 2019, despite the overall increase in the number of incidents, the number of boating, equipment-related and miscellaneous incidents remained static. However, it is important to note that the overall increase in the number of incidents is due to more instances of DCI, ascent-related and other injuries compared to the previous five years. The increase in the number of these type of events is given more focus later in the report

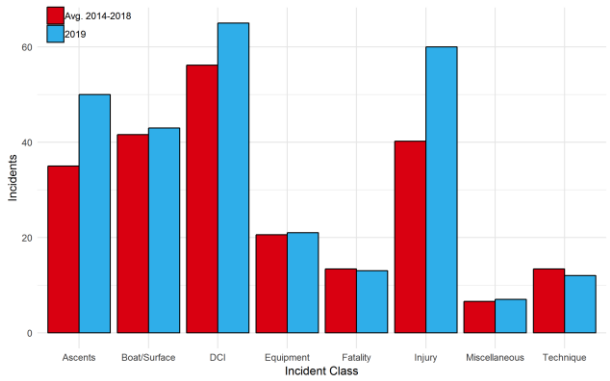


***Figure 4. Reported incidents by category***

The last category to be mentioned specifically is 'Fatalities' and although the numbers are relatively small it is, of course, the most serious. This year unfortunately saw 13 diver fatalities; more analysis on this incident category is also given later in the report.

### *Incident Depths*

The maximum depth of the dive during which incidents took place, categorised into depth range groupings, is shown in Figure 5.

The pattern of the maximum depth of a dive on which an incident was recorded or that gave rise to an incident is probably a reflection of the amount of diving that takes place in these depth ranges. (Figure 5).

The likelihood of an incident occurring as a result of diving to deeper depths is increased due to decompression illness, nitrogen narcosis, gas consumption and, in the UK, reduced temperature, light or visibility. In addition, incidents involving deeper dives are often more problematic due to the likelihood of serious DCI or unfortunately, unsuccessful rescue. The recommended limit for divers trained to Sports Diver standard is 35m and then only when they have received appropriate training for diving at this depth. Recent developments in our understanding on the effects of gas density on the respiratory function of divers has reinforced the position of the BSAC in that it recommends that helium mixtures should be carefully considered as an option for depths deeper than 40m and that mixed gas diving should be to a maximum depth of 100m. Mixed gas dives should only be conducted when the diver holds a recognised qualification to conduct such dives.

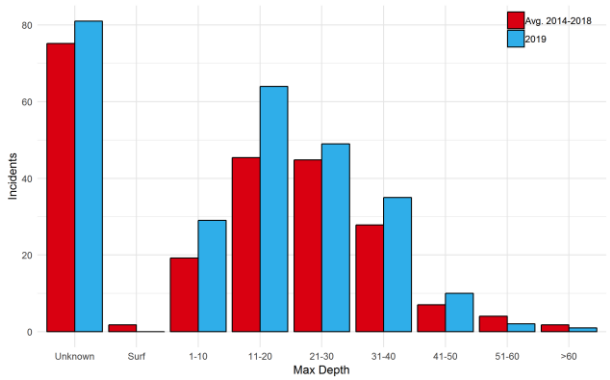


***Figure 5. Maximum dive depth (m) in which incident occurred***

Incidents do not always occur at the deepest point of the dive. Figure 6 shows the depths at which incidents started.

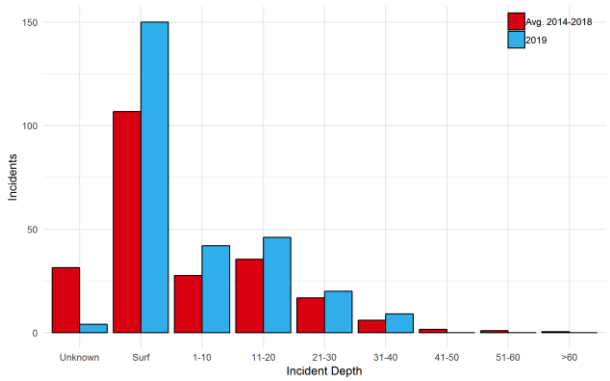


***Figure 6. Depth (m) at which incident started***

The consequences of a problematic dive or an unexplained incidence of DCI normally only become apparent on the surface. Other surface incidents involve

boats and boating incidents and divers who are lost but on the surface. The depth at which the in-water incidents began in 2019 is consistent with the average of the previous 5 years.

### *Diver Qualification*

Last year we highlighted that a limitation of the analysis with respect diver qualifications was constrained in that we included all divers involved in the incident whether rescuer, bystander or casualty. This year we have amended this analysis to restrict the data to the diving qualification of the casualty only. Figure 7 shows the diving qualification of those BSAC members who were the subject of reported incidents.

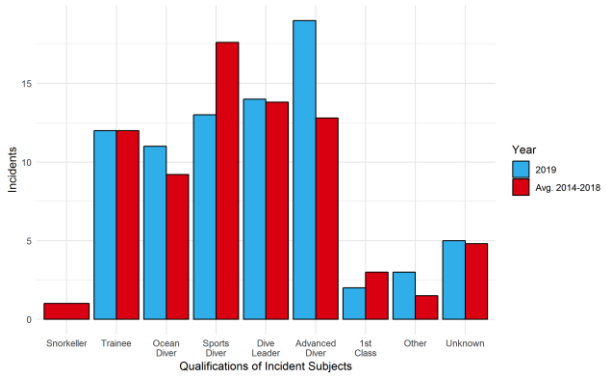


***Figure 7. Qualification of the casualty in the incident***

### *Divers' Use of Emergency Services*

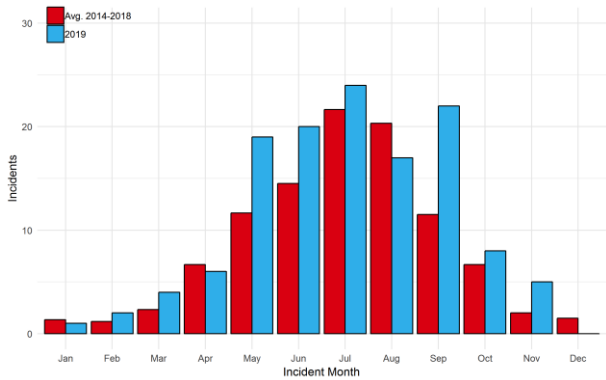


***Figure 8. Incidents involving the UK Coastguard Agency in each month of the incident year***

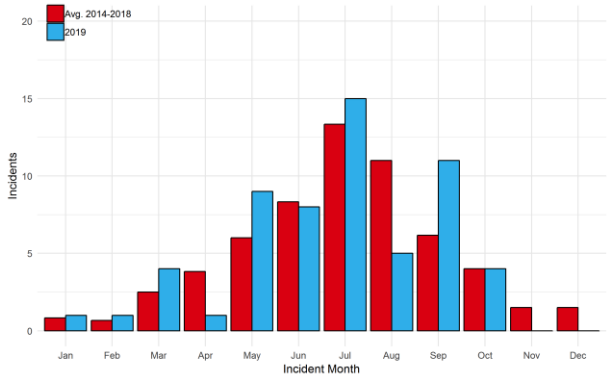


***Figure 9. Divers' Use of RNLI facilities in each month of the incident year***

In 2019, 38 incidents in the UK involved the use of helicopters, 44 used the support of the RNLI and 105 the support of the UK Coastguard Agency. Figures 8, 9 and 10 show the months in which the Coastguard, RNLI and SARS Helicopters supported the rescue of divers.

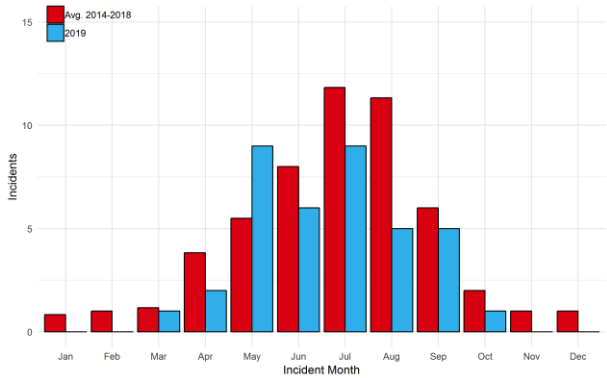


***Figure 10. Divers' Use of SAR Helicopters in each month of the incident year***

### *Fatalities*

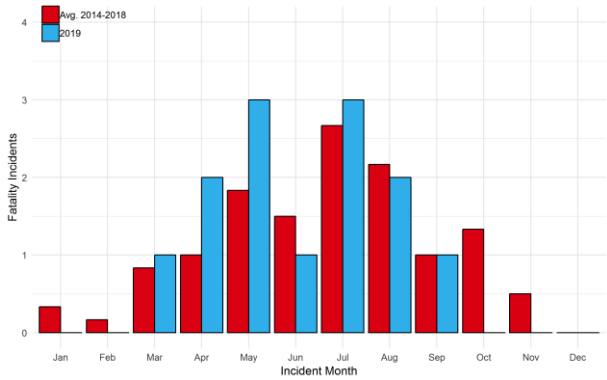


***Figure 11. Fatalities in 2019 by calendar month compared to previous 5 years***

Sadly, 13 fatal incidents occurred in the UK during the 2019 incident year. A feature of the fatalities in diving is that in a proportion of incidents the difference between an incident resulting in a fatality or a successful rescue is a consequence of a number of factors which come into play once an incident begins. On average there were 14.2 UK fatalities over the past 10 years.

Ten of the 2019 fatalities were BSAC members. The previous ten-year average for BSAC fatalities in the UK is 5.7 fatalities per year. Three of the 2019 fatalities were non-BSAC members. The previous ten-year average for this group is 8.4.

Key factors associated with the 2019 fatalities can be summarised as follows: -

- The fatalities in 2019 involved divers with an average age of 58.2; one of these divers was in their 70s. This represents an increase of 2.5 years on the 2018 average age and represents a continuation of the observation of fatalities occurring in an aging population of divers. The current average age of divers whether a casualty, rescuer or bystander recorded in the incident database for 2019 is 43.6; In 1998, the same figure was 35.8 indicating that in general the active diving population is getting older.
- Nine of these cases involved the casualty falling unconscious under or in the water.
- Two of these cases have been confirmed as having a significant pre-existing medical condition and in a further nine people there are indications that this is probably the case.
- Indications associated with immersion pulmonary oedema does feature in two of the fatalities.
- Six of the fatalities the divers either began their dive alone (2 cases) or became separated (4 cases).
- Three cases involved divers diving in a group of three or more.
- Diving alone or becoming separated reduces the chances of surviving either a medical or snagging incident underwater.

Often multiple causes are involved in an incident. Frequently, there is insufficient information available to be clear about the exact chain of events and specific root causes.

***Long term trends in the classes of incident***

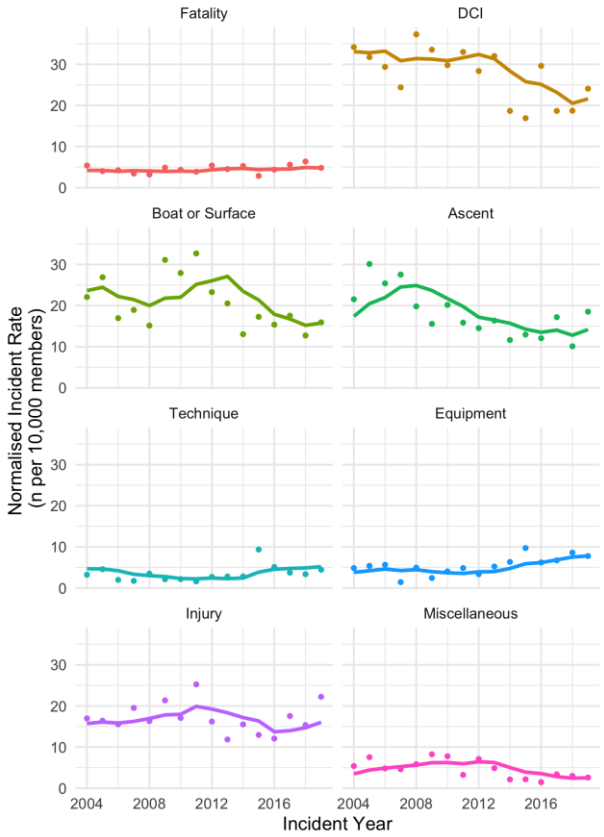


***Figure 12. Incident rates by incident class using BSAC membership as a proxy for estimated participation in the sport. Trendlines are a 5 year rolling average.***

This year we continue the analysis of the data using BSAC membership numbers as a proxy for the level of diving taking place in the UK and then present these data using a 5-year rolling average. Figure 12 shows that the incidence of fatalities has remained relatively stable over the analysis period. The graphs highlight the variability behind the data, however it can be concluded that there is a downward trend over time of the incidence of decompression illness and boating and surface incidents.

***Focus on Decompression Incidents***

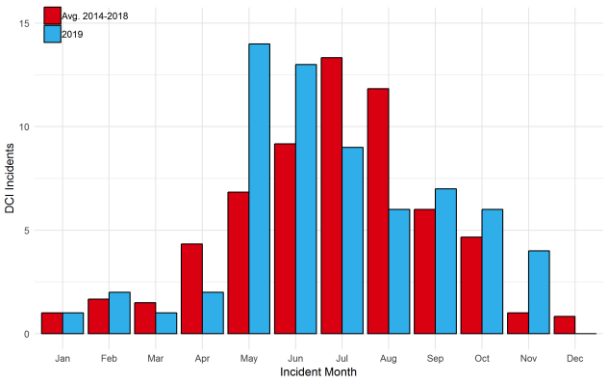


***Figure 13. Decompression incidents in each month***

In the months of May to August, we received in total between 35 and 45 incidents reports in each month

(Figure 3). In 2019, it is noticeable that the proportion of the incidents allocated to the DCI and Fatality class changes from May to August. In May 41% of the reported diving incidents result in the serious outcome of a DCI event or a fatality but in August similar numbers of incidents took place but here 18% of the incidents result in a serious outcome. This information helps to affirm the frequent advice to take especial care at the beginning of the diving season.

The large number of dives captured in the database is sufficient enough to develop a good understanding of the underlying causal factors of decompression illness and this year we have investigated the factors linked to the prevalence of DCI in our incident data. Figure 12 shows that over time the trend is that incidence of decompression illness is still falling, and Figure 14 shows the relative importance of some causal factors (where they are identified) as a proportion of the total DCI incidents.

Diving below thirty metres and repeat diving continue to be factors that are most frequently and increasingly frequently associated with instances of decompression illness. Perhaps surprisingly, only 15% of DCI events in the entire BSAC incident database are associated with a record of missing stops. Analysis of the 438 dives where an average of 12 minutes of compulsory decompression stops have been missed shows that only 9% of these result in DCI. Missing stops is a factor associated with DCI, but divers should be aware that diving below thirty metres, rapid ascents and repeat diving continue to be factors that are most often and increasingly frequently associated with instances of decompression illness.

The incident report this year has a number of incidents where evident symptoms of DCI are dismissed as allergic reactions or explained by tiredness or physical trauma as a first response and only when symptoms have persisted over an extended period was treatment in a recompression chamber sought. We know that the likelihood of complete recovery from the effects of DCI diminish with increased time to treatment and that ideally all instances of DCI would be treated within 2 hours of the development of symptoms.

The salutary lesson from this analysis is that, when experiencing symptoms following diving, having completed dives in which all decompression stops have been performed and the ascent was normal does not mean that DCI should be discounted as a possible diagnosis; especially when dives below 30 metres or repeat diving is involved.

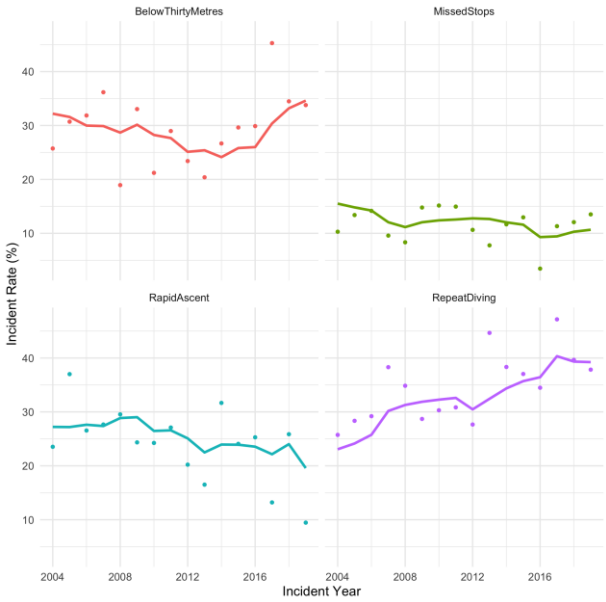


***Figure 14. Factors involved in incidents that have resulted in decompression illness. Trendlines are a 5 year rolling average.***

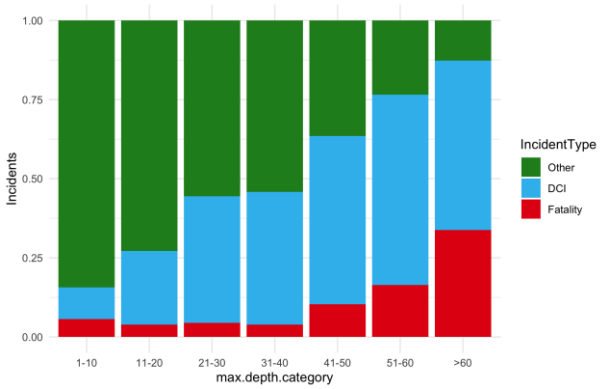


***Figure 15. The effect of the maximum depth of the dive on the proportion of diving incidents resulting in DCI or a fatality***

Figure 15 shows the analysis of over 5000 reported diving incidents. The proportion of diving incidents resulting in the serious outcome of either DCI or fatality increases with the depth of the dive. In addition, the proportion of fatalities increases with every 10 metres below 40 metres.

### *Ascent related incidents*

In this analysis (Figures 16a, 16b) the data includes all those in classified as ascent related as well as those which have resulted in a fatality or decompression illness where a fast ascent was recorded. After many years of recording a steady decline in ascent related incidents it is concerning to see that for 2017, 2018 and 2019 we are starting to see a trend of increasing ascent related events. Analysis of the factors associated with these ascent related events in Figure 16b show an increase in the last two years in incidents associated with equipment such as weights, dump valves, BCDs and dry suits. There is also an evident increase of fast ascents linked to the use of DSMBs. Divers need to practice their DSMB deployment skills frequently and ensure that dump valves, BCD dump valves and

drysuits are well maintained and replaced according with manufacture's recommendations.

***Fig 16a All ascent related incidents adjusted using membership as a proxy for diving activity in the UK. Trendlines are a 5 year rolling average.***

***Fig 16b Factors involved in ascent related incidents. Trendlines are a 5 year rolling average.***

### *Boating and Surface Incidents*

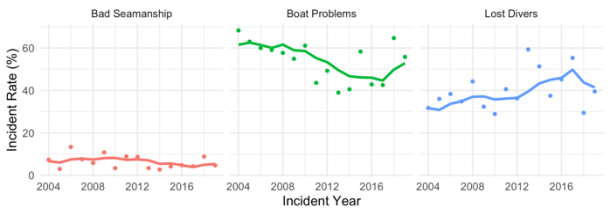


***Fig 17. Factors involved in boating incidents. Trendlines are a 5 year rolling average.***

The adjusted number of incidents involving boating and surface issues in the last seven years shows an improving picture (Figure 12). Figure 17 shows that these include small numbers of reports of bad seamanship. The number of lost divers in 2018 and 2019 has decreased a little over the previous five years. In the incident report synopses, it is noticeable that there is an increased use of electronic locator beacons (such as Personal Locator Beacons and VHF calling devices) and the rise in prevalence of these have resulted in both positive and negative outcomes. There were three cases of flooded Personal Locator Beacons (PLBs) in 2019 which, unbeknown to the divers, triggered a Coastguard response for an unneeded rescue operation. However, there was one case where a DSC device aided in the safe recovery of divers.

### *Immersion Pulmonary Oedema (IPO)*

We now record in the database when the description of the dive indicates that IPO is a possible factor in the incident, and we are continuing to consult with a medical expert for incidents where the description implies an IPO may have occurred. We are retrospectively reviewing all the reports in the database in the light of what we now understand to be the indicators of IPO. We record the incident as a confirmed IPO when we have medical confirmation of the cause. Figure 18 shows the initial results of this analysis.

Identifying factors include: -

- Divers with breathing difficulties when not exercising particularly strenuously. Breathing difficulties may be indicated by rapid, uneven or heavy breathing, or coughing uncontrollably.
- Confusion, swimming in the wrong or random directions.
- Inability to carry out normal functions, whilst appearing to have to concentrate on breathing.
- Belief that a regulator is not working properly.
- Indication of 'out of gas' when their regulator(s) are found to be working correctly and with adequate gas supplies.
- Divers refusing or rejecting an alternate source when 'out of gas'.
- Indication of difficulty of breathing when on the surface.

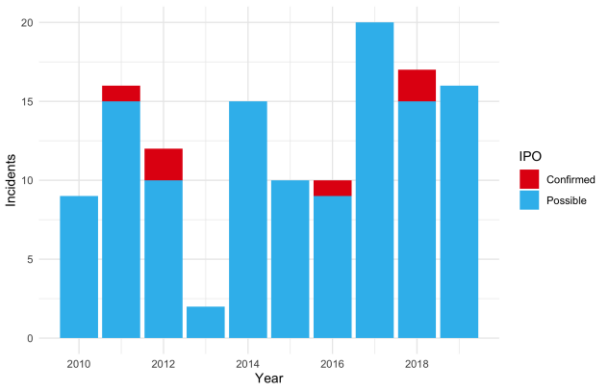


***Figure 18. The frequency of confirmed and possible cases of IPO 2010 to 2019.***

Advice from the medical experts is that if you experience breathing difficulties underwater you should terminate the dive and ascend safely and exit the water. If you recognise any of the above factors in a buddy, then assist them from the water as quickly as it is safe to do so. Once out of the water the casualty should sit, be given oxygen and medical advice sought.

***Location of incidents and use of the emergency services***

In order to be able to report on the location of accidents we conducted a retrospective activity of entering the latitude and longitude of the dive site where known into the database. This enables us to report on the location of the incident in a visual way. Figure 19a shows the location of the reported incidents since 2012.

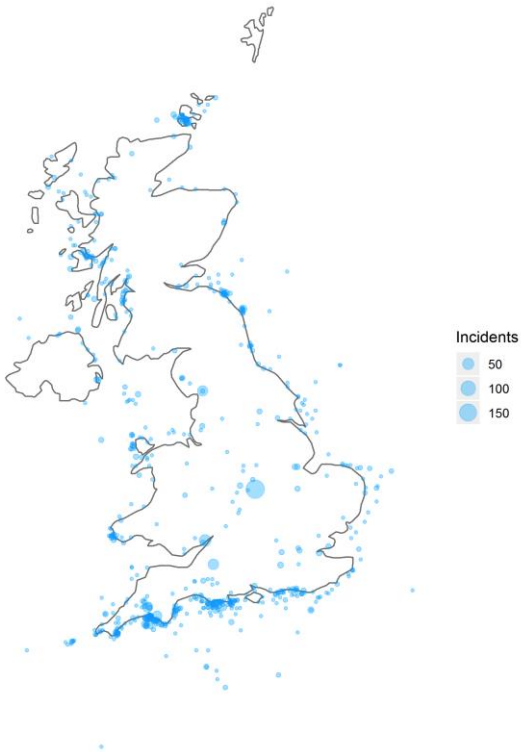


***Figure 19a The Location of Incidents in the UK since 2012***

Figure 19b shows where the decompression incidents were reported and 19c shows where divers are supported by the Coastguard, RNLI or helicopter services. Divers continue to be extremely grateful for the support provided by the rescue services. These maps show where the diving activity is taking place and where emergency services are most frequently utilised in the UK.

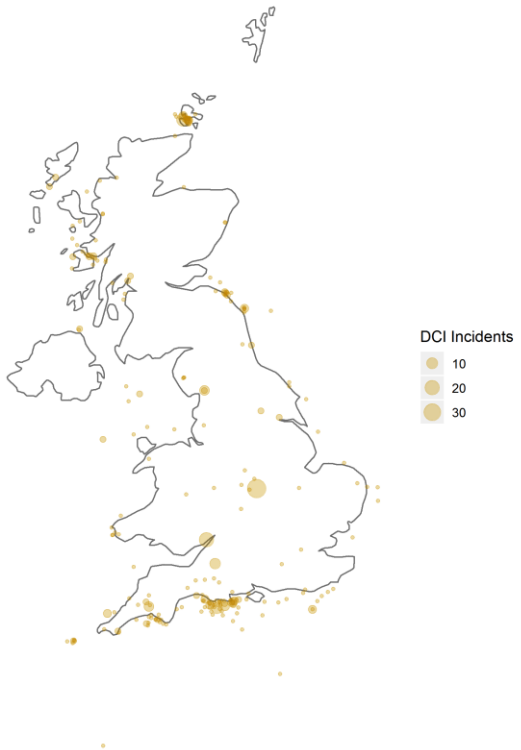


***Figure 19b The Location of Decompression Incidents in the UK since 2012***

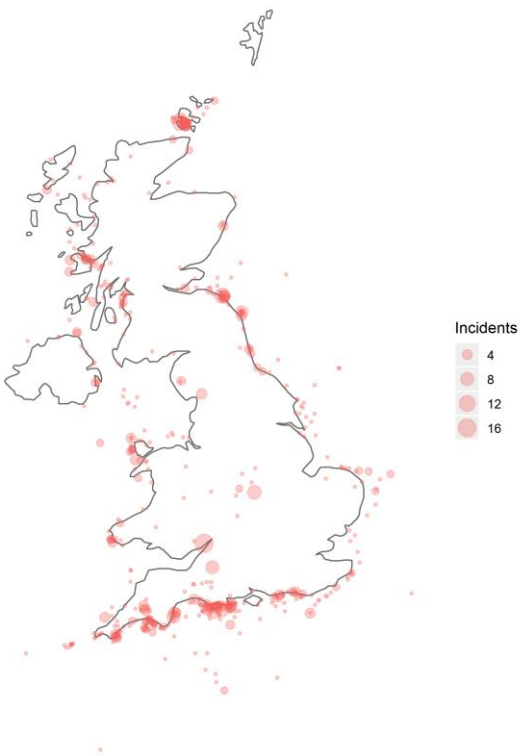


***Figure 19c The Location of Incidents where the Coastguard, RNLI or Helicopter services were in support in the UK since 2012***

***Conclusions***

Key conclusions are: -

- The number of incidents reported has slightly increased in 2019; we believe that this reflects an increase in diving activity in 2019.
- Some of the increase is due to the inclusion in the overseas section of incident reports covering Eire to reflect reporting from the Irish Underwater Council.
- The monthly reporting shows an early start to the diving season in 2019.
- The thirteen fatalities in the UK are unfortunately in line with the average (14.1) for the previous 10 years.
- There was one fatality over the age of seventy and the average age of the divers who died was 58.3.
- Diver age and potential related health and fitness issues are still featuring and may be critical factors in this and recent years' fatalities.
- There are still strong indications for likely pre-existing medical causes or immersion pulmonary oedema from the description of the incident in some of the fatalities. We will continue to use the BSAC database with the support of consultant and diving medical referee Peter Wilmshurst to try to understand more about IPO.
  There is an increase in the number of fast ascents, and the indications are that increase this is related either to the failed deployment of a DSMB or equipment malfunctions.
- Be aware that repeat diving and diving below 30m are factors that can contribute to the risk of DCI and that symptoms of DCI should not be dismissed even if missed stops or a fast ascent is not a factor. Any symptoms of DCI after a dive should be investigated and taken seriously.
- Finally, remember that you can never have too much ensuring your diving equipment is regularly serviced and replaced when beyond manufacture's recommended life span.

As has been stated for over fifty years in our annual report, most of the incidents reported within this document could have been avoided had those involved followed a few basic principles of safe diving practice. BSAC publishes online advice on 'Safe Diving' summarising all the key elements of safe diving practice.

# Fatalities

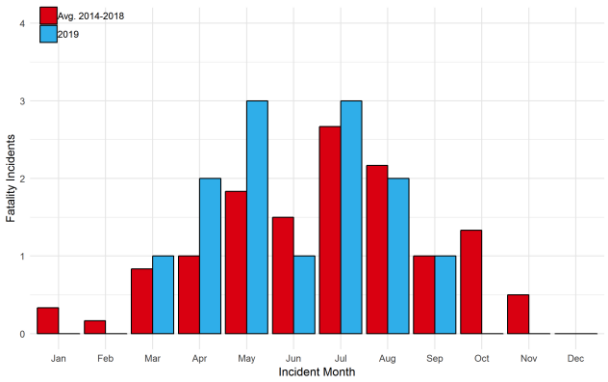


***Figure 20. The month of occurrence of fatalities***

***March 2019*** ***19/058***

A diver using nitrox 27 and his buddy using air carried out a shore dive which was a warm-up dive and the first of two planned dives that day. They entered the water, descended and carried out a check at 6m and then made a slow descent to a small wreck at around 21m. The visibility was reported as low with a water temperature of 6 deg C. The diver circumnavigated and went through the wreck at which point he noticed his buddy was missing. The diver conducted a 360 deg search around the wreck, rose to the top of the wreck and carried out another 360 deg search with a flashing torch. There was no sign of his buddy or bubbles, so the diver ascended as per the agreed separation procedure. He surfaced with a dive duration of 15 min, omitting a 3 min safety stop, and conducted another search for his buddy's bubbles. Seeing none the diver raised the alarm and remained in position until a rescue boat arrived and the dive site staff took over responsibility for the rescue. Other divers who were preparing to dive entered the water and located the buddy on the bottom without a regulator in his mouth and unresponsive. One of the rescuers lifted the buddy to the surface and administered rescue breaths. The buddy's equipment was removed and he was lifted aboard the rescue boat and given CPR until the emergency services arrived but he was pronounced dead at the scene.

***April 2019*** ***19/069***

It was reported that three divers, all using twin-sets and stage cylinders, were on a trimix training course and carried out a shore dive. They were heard to mention a depth of 40m and were seen descending the shallow edge of a 75m pit. It was suspected that an out of gas incident had occurred and one of the divers was recovered from the water. Ambulances and police attended but the diver was pronounced dead at the scene. (Media report).

***April 2019*** ***19/075***

A diver and his buddy, both using air, were on the third day of a dive trip aboard a dive charter boat. They carried out buddy checks, entered the water and began their descent on a shotline to a wreck. They checked each other several times during the descent and reached the bottom of the shotline in approximately 27m. They moved off the top of the wreck to around 31m when the buddy started to wave his arms in a motion the diver did not recognise. The diver took him to a piece of wreckage and got him to hold on to calm him down. The diver gave him the 'OK' signal, but the response was slow and halfway between 'OK' and 'something is wrong'. At this point the diver decided to abort the dive, led the buddy back to the shotline and they began to ascend. The diver signalled 'OK' several times on the ascent and got a response each time. At around 3m the buddy became inverted and went to the surface. The diver surfaced, with a dive duration of 17 min to a maximum depth of 32m. On surfacing he found his buddy unconscious lying on his back. The diver tried but got no response from his buddy and gave the emergency signal to the boat, which was already heading towards them. The buddy was recovered aboard the boat, three divers on the boat de-kitted him and one of them, who was a paramedic, took charge. CPR was commenced with an AED. The diver had been recovered using the boat's lift, was assisted with kit removal and given reassurance. The boat had contacted the Coastguard and headed to shore having called other boats in the vicinity to collect divers who were still in the water. CPR was continued between the paramedic, the two divers and a crew member. The boat reached a jetty and after a few minutes a doctor arrived followed by an ambulance. With heart activity found the buddy was taken to hospital but died some time later. A pathologist's report stated the cause of death was coronary artery atheroma.

***May 2019*** ***19/157***

A buddy pair commenced a 50m dive using a heliox blend in a rebreather. It was reported that they were on holiday and that this was his last dive of the trip. After approximately 10 min one diver signalled a problem to the other and they attempted to surface together after deploying a DSMB. They became separated on the ascent and one of the divers was recovered by the charter boat and found to be unresponsive. The skipper requested assistance from the Coastguard and began CPR. At this point the other divers, including the buddy, were still below the surface. A Coastguard rescue helicopter and a lifeboat were tasked to the scene and the diver was winched off the boat, whilst the dive boat and lifeboat recovered the other divers. A Coastguard rescue team met the dive boat when it returned to port to gather details and liaise with the police. The diver was later confirmed deceased at hospital.(Coastguard & RNLI reports).

***May 2019*** ***19/106***

On the second day of a diving trip a diver was recovered aboard a dive charter boat, collapsed, vomited and became unconscious and unresponsive. Another boat in the area passed across an AED and oxygen kit and the skipper of a third boat, who was a lifeboat crew member, transferred to the dive boat to perform CPR. The second boat picked up approximately 30 divers whilst the boat with the unconscious diver travelled to harbour where it was met by a lifeboat, a Coastguard helicopter and an air ambulance. The diver was confirmed deceased by the air ambulance doctor. No cause for the incident was identified. (Coastguard & RNLI reports).

***May 2019*** ***19/104***

A diver and his buddy carried out a boat dive. They were the first pair to enter the water leaving another buddy pair preparing to go in last. After 7 min the first pair surfaced with the buddy shouting and waving and the diver unconscious on the surface. It was reported that the diver had experienced breathing difficulties during the descent and stopped breathing on the bottom at 22m. His buddy brought him to the surface and a 'Mayday' call was made. The diver was recovered unresponsive aboard the boat where CPR, including oxygen and defibrillation, were administered for 45 min until a lifeboat arrived and told the rescuers to continue as they were doing the right thing. The Coastguard tasked a rescue helicopter and a lifeboat. The lifeboat crew and paramedic from the helicopter attempted resuscitation of the casualty on the way back to harbour where they were met by an ambulance and a Coastguard rescue team. The helicopter evacuated the diver to hospital where he was declared deceased. The buddy was taken by another helicopter to a recompression chamber for examination in view of the rapid ascent that followed the onset of the incident but was discharged later without treatment. (Coastguard & RNLI reports). .

***June 2019*** ***19/114***

A charter RHIB came across two divers in the water and one was unresponsive. They recovered the divers, commenced CPR and issued a 'Mayday' to the Coastguard who tasked a Coastguard rescue helicopter, a Coastguard rescue team and requested ambulance assistance, who sent multiple units including a HeliMed. The RHIB quickly returned to shore where CPR continued and an AED was used. The diver was taken to hospital but was pronounced deceased a short time later. The buddy reported that they had been shore diving to a maximum depth of 7 m for a dive duration of 40 min. (Coastguard report).

***July 2019*** ***19/141***

A group of five divers carried out a shore dive in one buddy pair and one group of three. The group of three entered the water after the buddy pair and conducted a buoyancy check but had to resurface to allow one diver to add additional weight. They descended and carried out a dive to a maximum depth of 8m. After 25 min the diver signalled to the dive leader that his gas contents were down to 50 bar remaining and the dive leader signalled to the diver to ascend and then turned to signal the same to the third diver in the group. When he turned around the diver was no longer in view and it was assumed that he had surfaced. The remaining two divers ascended to an ascent check depth at 6m but could still not see the diver. Following a dive without incident the buddy pair had surfaced and returned to shore and became concerned that the other group of three had not yet surfaced and there was no sign of their DSMB or any bubbles. The missing diver from the group of three was seen to surface approximately 80-100m from shore and was facing north rather than west towards where the shore party was located. The diver was seen to be swimming steadily on his front initially in a northerly direction and then turned and continued to swim on his back. After a few minutes of swimming on his back the diver came upright and was looking towards the north. He then raised his arms in a distress signal and then rolled on his back and his arm moved to across his chest. Shortly after this the diver sank from view and did not resurface. The diver's buddies surfaced shortly after and were directed by the shore party to descend to search for the diver, but they were unable to locate him. The Coastguard tasked search units to the scene. The Coastguard co-ordinated a large search, tasking three Coastguard rescue teams, a senior coastal operations officer, two lifeboats, a Coastguard rescue helicopter, support from police officers including a police dive team, a group of local divers and the ambulance service. Police divers located the diver's body on the seabed at 8m the next day. A coroner's inquest heard medical evidence from the post mortem that an underlying ischemic heart disease event was likely to have contributed to a loss of buoyancy at the surface resulting in death by drowning.

***July 2019*** ***19/312***

A lifeboat on exercise contacted the Coastguard reporting a dive boat had broken down with five divers in the water. The lifeboat and a local dive charter boat remained on the scene whilst the dive boat attempted to make their way back to harbour. Two lifeboats were tasked to assist, and one recovered aboard an unconscious diver and his buddy. The diver had surfaced with their buddy as planned but on seeing the dive boat was not in position the diver had panicked and the buddy saw him face down in the water. CPR was commenced once the diver was recovered aboard the lifeboat and an AED was attached to the diver. The three remaining divers were recovered from the water by the dive charter boat. The lifeboat proceeded to shore where it was met by an ambulance. A Coastguard rescue helicopter and two Coastguard rescue teams were tasked to assist along with a senior coastal operations officer and the police. An air ambulance arrived on the scene, so the Coastguard rescue helicopter was stood down. The diver was pronounced deceased by the crew of the air ambulance. The buddy later reported that their ascent had been uneventful however it was believed the diver had not dived for a couple of years.(Coastguard & RNLI reports).

***July 2019*** ***19/152***

The Coastguard received a 'Mayday' call from a dive boat. A diver had surfaced unconscious and not breathing from a dive to a maximum depth of 38m with a dive duration of 28 min and another diver was still in the water. A lifeboat was launched, a Coastguard helicopter tasked to the scene, assistance given by a nearby dive RHIB and a naval vessel was also alerted. During the ascent, the diver's buddy noticed that the diver was no longer ascending with him so went down, found him unconscious and carried out a controlled buoyant lift. The buddy was recovered by the assisting RHIB, whilst the diver was recovered aboard the dive boat. The diver was then transferred from the dive boat to the lifeboat where they continued with CPR which had been started aboard the dive boat. The diver's buddy was also receiving medical treatment. When the helicopter arrived the paramedic winchman was dropped onto the lifeboat to assess the diver's condition and it was decided that the lifeboat would return quickly to harbour with the diver still receiving first aid rather than transferring him to the helicopter. A Coastguard rescue team met the lifeboat alongside and prepared a landing site for the helicopter. An air ambulance team declared the diver deceased. (Coastguard & RNLI reports).

***August 2019*** ***19/186***

A diver was seen to complete his rebreather checks prior to entering the water for planned deep wreck dive from a RHIB at an offshore site with a planned bottom time of around 30 mins and a total dive time of approximately 90 min. The diver was paired with two other divers. The group of three entered the water and conducted a bubble check at 9m on the way down the shotline. As they approached the wreck there was a large trawl net snagged in the wreck and held proud by buoys. There was some current and one of the diver's buddies was washed into the net and became entangled. The diver disentangled his buddy. The group then descended onto the wreck and the buddy settled on an area out of the current to recover from the effects of his entanglement. The diver then indicated he had a problem with one of his computers and signalled that he was going to ascend, and the pair made their way back to the shotline. At the shotline they encountered another buddy pair who were about to commence their ascent. The diver indicated he would ascend with them and his buddy should wait for the third member of their group, who was practicing with a new DPV, and to disconnect the grapnel. The diver then ascended quickly up the shotline ahead of the other buddy pair and was quickly lost to their sight. It was later confirmed by his buddy that his tag had been removed from the transfer line. The diver was not seen again underwater by any of the group. The surface cover had noted that the diver's DSMB had surfaced and remained in close proximity to that of the second buddy pair. Once all other divers had completed their decompression and returned to the boat, the buddy expressed some concern and he donned mask, fins and snorkel and swam over to the diver's DSMB. He snorkelled down to around 6m, where he could see the divers reel but no sign of the diver. The buddy alerted the boat who made a 'Mayday' call and the buddy recovered the reel and DSMB. The Coastguard tasked three lifeboats, a Coastguard rescue helicopter and a Coastguard rescue team for a search. Several vessels responded to the 'Mayday' relay broadcast to assist. Despite an extensive search the diver was not found. In the following period another member of the same club organised extensive assistance from local companies and conducted searches using high tech sonar, DPV's etc. and they succeeded in locating the diver's body in proximity of the wreck at a depth of 67m and marking it with a shotline. Subsequently two divers descended the shotline, located the diver's body, took photographs and noted the diver's HUD was flashing. The divers then moved the body to the shotline and attached the diver to it for recovery by the police in a boat on the surface. They released a pellet buoy to indicate this had been done to the surface recovery team. The divers then completed their ascent after 25 min bottom time and surfaced around an hour later. The police had recovered the shotline and body and the divers handed over the camera memory card for evidence. Examination of the diver's equipment found that the computer controlling the rebreather had a crack in the screen and was flooded with water. A coroner's inquest determined that the cause of death was drowning as a result of the diver suffering hypoxia due to low O2 in the rebreather as a consequence of water ingress into the controlling computer. The coroner recorded a narrative verdict as a result of an accident.

***August 2019*** ***19/221***

A diver was on a week's hardboat diving trip. As preparation for the trip the diver, who was experienced but had not dived for some years, had carried out a pool refresher session the week before the trip. On the Monday, the diver carried out a wreck dive at approximately 30m. Some 20 min into the dive her BCD inflator stuck open. Her buddy helped to detach the hose and carried out a controlled buoyant lift to the surface including a 3 min safety stop. The diver was panicked and needed assistance to climb the boat ladder and de-kit. Back aboard there was little concern about any physical effects although she did appear to be in shock and had retreated to the wheelhouse for most of the rest of the day. However, her mood lifted by the end of the day and when socialising that evening she expressed she was keen to dive on the Wednesday having planned other activities on the Tuesday. The first dive on the Wednesday was on a wreck and the diver and her buddy were in the first group of divers to enter the water and were seen by other divers at around 20m. The buddy reported that the diver had signalled she was uncomfortable and they both immediately ascended, surfacing with a dive duration of 20 min where the buddy called for help as the diver had fallen unconscious. The skipper and crew initiated the diver's recovery and back aboard the boat, CPR was initiated with oxygen and a 'Mayday' issued. A Coastguard helicopter and lifeboat arrived on the scene 30 min later during which time CPR had continued. Two lifeboat crew members boarded the dive boat to give emergency care to a diver and she was airlifted to hospital but was shortly after confirmed deceased.

***September 2019*** ***19/229***

A diver carried out a hardboat dive. During the trip to the wreck site the diver explained to another diver aboard, who indented to dive solo, that this was the first time he was using his new 7 lt manifolded twin-set and asked if the solo diver could explain how the setup worked as he was unfamiliar with its operation, but it was similar to that which the solo diver used. The solo diver explained how the manifold valve worked but the diver decided to leave it closed as he wanted to dive the set as two separate cylinders, a system he was more used to. After the boat had anchored into the wreck the diver and his buddy were to be the first pair down and asked to tie the shotline into the wreck and then release the anchor. As they were not used to doing this they were shown how to do so whilst waiting for slack water. The solo diver was tasked to place a lift bag at a predetermined point on the shotline. The diver complained of feeling a little seasick but agreed to continue with the planned dive. The diver and his buddy kitted up, but the diver forgot his weightbelt, de-kitted and put his weightbelt on. As the pair entered the water the buddy had a free flow from his primary regulator and unable to stop it he signalled to the diver he had a problem before he climbed back aboard and began to de-kit. It was unclear as to whether the diver had seen his buddy's signal as he had continued to descend the shotline on his own. The solo diver entered the water approximately 5 min after the diver. He descended, connected and partly inflated a lift bag on the shotline and descended until he reached the top of the wreck in approximately 28m. At this point there was no sign of the diver, so he followed the shotline across the deck until he found the anchor at the end of the shotline in approximately 31m. As there was still no sign of the diver the solo diver tied the shotline to the wreck and released the anchor. He then connected a distance line and travelled away from the shotline. Visibility was between 5m and 7m and there was no need for a torch. After a couple of minutes the solo diver saw a light in the distance and as he approached it he found the diver inverted with his fins

pointing upwards and his weightbelt resting on the deck with the twin-set's right cylinder's regulator caught underneath it. The solo diver tried to find one of his spare clips to attach the weightbelt to the diver's harness but then realised the diver did not have his regulator in his mouth. He found the diver's second regulator on a necklace around his neck, checked the pressure gauge and purged the regulator. He tried to push it into the diver's mouth but was unsuccessful and realised there was little he could do underwater and needed to get the diver to the surface as quickly as possible. The solo diver added some air to the diver's drysuit to ensure he was buoyant, released the regulator caught under the weightbelt and pushed the diver up. The solo diver reeled back to the shotline, ascended and surfaced with a dive duration of 20 min to a maximum depth of 31m. He released the shotline which was still connected to the hardboat and climbed aboard. It had taken 20 min to recover the diver aboard where he was de-kitted and laid on the deck. The Coastguard were informed, who tasked a lifeboat and helicopter. Approximately 40 min after the diver had been recovered a Coastguard helicopter arrived, a paramedic was winched down, but the diver was pronounced dead at the scene. Subsequent examination of the diver's equipment found it to be operational. A coroner's inquest recorded a verdict of accidental death a result of drowning.

# Decompression Incidents

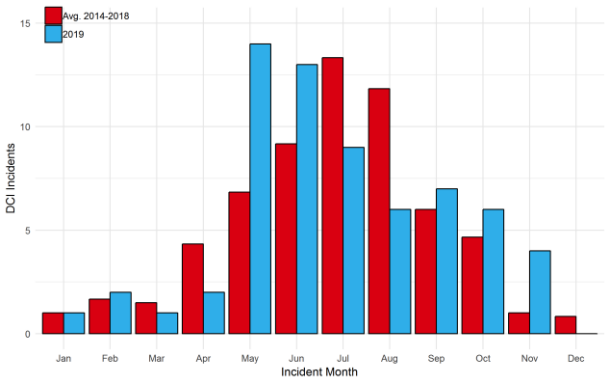


***Figure 21. The month of occurrence of decompression incidents***

***January 2019*** ***19/144***

A buddy pair had carried out two shore dives. The first dive was to a maximum depth of 35m with a dive duration of 47 min including a 3 min stop at 17m and a 1 min stop at 3m. After a 1 hour 56 min surface interval the second dive was to a maximum depth of 34m with a dive duration of 45 min including a 4 min stop at 5m. About 10 min after the dive one of the divers was vomiting. First aid was given including oxygen and the diver advised to go the local hyperbaric chamber.

***February 2019*** ***19/154***

A diver had been on a hardboat diving trip and was back in her car onshore when she reported to the boat that she had started to experience symptoms of DCI. The crew informed the Coastguard, who made the relevant arrangements with the local hyperbaric chamber, and transported her to the chamber. Dive details were not disclosed on this occasion. (Coastguard report).

***February 2019*** ***19/054***

A student attended a shore diving training weekend, all using air. She had carried out two dives on the Saturday and after a 2 hour 22 min surface interval a second dive was to a maximum depth of 17m with a dive duration of 23 min. On the Sunday she carried out a dive with two assistant instructors, all using air, and reached a maximum depth of 18m and ascended to a 10m platform to practise mask removal. One of the instructors demonstrated half and full mask clears, which the student achieved, and then he demonstrated mask removal and replace. The student removed her mask but when trying to re-fit it the skirt folded in on the left hand side compromising the seal. The student tried to re-seat the mask but began to panic and grabbed the instructor. He thought that she seemed to be breathing but swallowing water so performed a controlled buoyant lift to the surface where he inflated his own and the student's BCD to achieve positive buoyancy. The student ripped her mask off and was gasping for air but with the instructor's reassurance she began to calm down and breathe normally. The second instructor ascended and surfaced about 15 sec later. The group's dive duration was 22 min. The first instructor towed the student to shore where they exited the water without assistance. The group had a debrief and lunch and although the student was unsure about a second dive it was discussed it might be a good idea to regain her confidence. After a surface interval of 2 hours 54 min the group waded into standing depth where the student breathed through her regulator with her face in the water with and without her mask. They then descended to a 2m platform where they remained for around 3 min and then surfaced where the instructor asked if the student was happy to continue with the planned dive. The student confirmed she was, and they carried out a dive practicing the use of a distance line. They surfaced with a dive duration of 24 min, including a 3 min safety stop at 6m, to a maximum depth of 18m. The divers left the site 2 hours after the second dive and drove home which involved travelling over a hill pass at 453m. Around 7pm the student reported slight pain, 'tingling' and numbness in her arms and legs and felt dizzy and nauseous. She was given oxygen and a hyperbaric diver helpline called. It was advised after calls between the on duty doctor and a hyperbaric chamber that the student should attend the chamber. The student was diagnosed with DCI and received five hours of recompression treatment and another shorter session on the Monday afternoon. She was discharged and advised not to dive for a period of six weeks and to have a diving medical assessment before diving again.

***March 2019*** ***19/070***

A diver carried out a wreck dive using air to a maximum depth of 28m with a dive duration of 38 min. Back aboard the dive boat he experienced 'tingling' in his wrists which he initially attributed to his wrist seals. A second group of divers entered the water while the diver remained aboard with an inexperienced diver. The diver's condition did not improve, and he self-administered oxygen for 15 min. His symptoms improved and no call was made to the Coastguard. The second group of divers were recovered, and the boat returned to shore. The following morning the diver awoke with weakness down one side of his body and referred to himself to a hyperbaric chamber. He received two sessions of recompression treatment and was reported to have made a full recovery. The chamber advised the diver not to dive for one month.

***April 2019*** ***19/063***

After a dive to a maximum depth of 32m dive on air with a dive duration of 40 min, a diver was reported to have made a rapid ascent from 10m. He was recovered aboard a dive charter boat, was conscious and placed on oxygen and the Coastguard contacted. Radio medical advice was sought from the nearest hyperbaric chamber. The diver was reported to have some blood coming out of his mouth and the doctor requested he be brought to the chamber for assessment. A Coastguard rescue helicopter was tasked to recover the diver and transported him to the chamber where they were met by a Coastguard rescue team. Another rescue team met the dive boat back in port to gather details. The diver was reportedly solo diving and had conducted one previous dive that day to 12m. (Coastguard report).

***April 2019*** ***19/174***

A diver carried out three charter boat dives, using air, over a weekend. The first dive on the Saturday was planned in

a harbour as the weather was cold and too windy to put out to sea. The dive was to a maximum depth of 11m with a dive duration of 35 min including a 3 min safety stop at 6m. As the underwater visibility had been so poor the diver declined to do a second dive. She went to bed early that night as she was tired. On the Sunday morning the diver could not eat any breakfast due to feeling sick but carried out two dives that day and felt extremely seasick on the boat. She drove home, which took 4 hours 30 min, and went to bed at 8.30pm as she was tired. The diver felt ill on the Monday and on the Tuesday she rang a hyperbaric chamber who suggested she attend for a check-up. It was suspected she had vestibular DCI which was confirmed after her first recompression treatment and she received four more sessions. Her symptoms lasted for approximately four to five weeks, but she reported that now all was well.

***May 2019*** ***19/159***

A diver, at an inland dive site, reported 'tingling' in the left arm and hand after a rapid ascent following a 4 min dive to a maximum depth of 30m. The ambulance service requested assistance from the Aeronautical Rescue Coordination Centre who tasked a Coastguard rescue helicopter to the scene. The diver was airlifted to a hyperbaric chamber for treatment. (Coastguard report).

***May 2019*** ***19/162***

A diver and his buddy carried out a dive from a dive charter boat to a maximum depth of 45m with a 25 min bottom time using nitrox 26 and nitrox 50 for decompression. The diver followed his computer for the ascent and completed all required stops. On the boat, he was reported to be breathing heavily and was cold and clammy to the touch so was given oxygen. His buddy was not presenting any symptoms. The boat contacted the Coastguard for assistance who sought medical advice from the nearest recompression facility, and they requested the diver be brought to them for treatment. A Coastguard rescue helicopter was tasked to the scene and transferred the diver to the chamber where the helicopter landing site was manned by a Coastguard rescue team. Another rescue team met the boat when it returned to harbour to gather details. (Coastguard report).

***May 2019*** ***19/146***

A diver using air and his buddy had carried out two shore dives. The first dive was to a maximum depth of 22m with a dive duration of 31 min. The second dive was to a maximum depth of 23m with a dive duration of 41 min. The diver went to the dive centre shop complaining of cramp in his left hand and slight cramp in his right arm. The diver was put on oxygen and could not lift his right arm but after 12 min on oxygen his symptoms improved. Having suffered DCI thirteen years earlier, the diver was taken to a hyperbaric chamber by his buddy.

***May 2019*** ***19/100***

A diver aboard a dive boat was reported to be suffering DCI. The Coastguard was contacted, and a lifeboat launched and made contact with the vessel and the diver was transferred to the lifeboat and was cared for by the crew. The lifeboat returned to port, was met by paramedics and an ambulance transferred the diver to hospital. Her condition remained unknown. (Media report).

***May 2019*** ***19/163***

A diver on a dive charter boat had made a rapid ascent after reaching a maximum depth of 24m on his dive. Back aboard he had 'tingling' in his fingers and was initially assessed by a doctor from a nearby vessel. The Coastguard tasked a lifeboat to recover the diver and transport them to harbour. They were met by a Coastguard rescue team who assisted the ambulance service with transporting the diver to a hyperbaric chamber. (Coastguard & RNLI reports).

***May 2019*** ***19/132***

A diver using air carried out one dive a day over three days from a dive charter boat. The first day's dive was to a maximum depth of 26m with a dive duration of 45 min including a 1 min stop at 12m and a 3 min stop at 6m. The second day's dive was to a maximum depth of 36m with a dive duration of 56 min and his dive profile showed a fast ascent from 20m to 6m where a 1 min stop was followed by 6 min stop at 3m. The diver surfaced with a slight rash on his chest which quickly disappeared but had a dull ache in his left shoulder which he attributed to hanging on to his DSMB reel. He declined the second dive that day because of his niggling suspicion regarding the rash. The diver and his buddy, using nitrox 32 carried out the third day's dive to a maximum depth of 33m with a dive duration of 40 min including a 2 min stop at 12m and a 3 min stop at 6m. Back aboard the dive boat the diver experienced an itchy rash on his chest and a dull ache across both shoulders. He reported the symptoms to his buddy and the skipper who put the diver on oxygen and called the Coastguard. Although the diver reported an uneventful dive it was noticed his computer had locked out in error mode. The boat returned to shore and was met by an ambulance which transferred the diver to a hyperbaric chamber where he was given recompression treatment. The diver had a follow up appointment with the doctor the next day and was told not to dive for the next twenty-eight days. It was suggested that the diver be tested for a PFO as there is some evidence that skin DCI may be associated with this.

***May 2019*** ***19/164***

A diver carried out his first boat dive of the day using nitrox 30 to a maximum depth of 38m with a dive duration of 60 min. After completing all stops and being recovered back aboard, he began to experience shoulder pain and a rash, so was transported to harbour where he was met by a Coastguard rescue team and taken to the local hyperbaric chamber by ambulance. (Coastguard report).

***May 2019*** ***19/288***

An instructor using air and nitrox 50 decompression gas and two students using nitrox 32 carried out a training dive which included assisted ascents from 20m. The ascents were completed successfully with each ascent taking around 4 min and included required safety stops. At the end of the ascents all the divers had around 170 bar and had been in the water for approximately 15 min. With training over the divers decided to descend for a gentle swim around the site. The closest their computers came to the no decompression limit was approximately 20 min. They ascended taking 10 min from 20m to the surface including 4 min moving from 6m to 3m before surfacing with a dive duration of 54 min to a maximum depth of 22m. The following day one of the students began to feel unwell with 'pins and needles' in her skin. She attended a

local A&E department where she was put on oxygen and a decision was made to send her by ambulance to a hyperbaric chamber as a precaution. The diver was given a 5 hour session of recompression treatment and a second follow up session.

***May 2019*** ***19/222***

A diver had carried out a dive using nitrox 30 to a maximum depth of 34m in low visibility. He deployed his DSMB at 30m but at 28m found himself above his buddy, who was preparing his own DSMB. The diver started to ascend but could not control his buoyancy and his reel line got tangled on the reel which locked. The diver dropped the reel at 15m but held the line. He tried to dump more air and became tangled in the line. He missed his 4-5 min decompression stop and surfaced with a dive duration of 34 min. He was given oxygen from a CCR for 5 min but had some 'tingling' fingertips which he said was normal for him on recent dives. The following day the diver carried out a dive using nitrox 31 to a maximum depth of 33m and was able to carry out a 7 min decompression stop but unable to maintain buoyancy for the 3 min safety stop so gave up and surfaced with a dive time of 44 min. His second dive that day was aborted as he became separated from his buddy in low vis during the descent. He surfaced with a maximum depth of 8m and a dive duration of 3 min. Five days later the diver carried out a dive with his buddy at an inland site to check his buoyancy with additional weight but was unable to clear his right ear at around 19m. He ascended and re-descended to clear his ear but was unable to do so and aborted the dive. He slowly ascended to 12m where he and his buddy each deployed DSMBs. They then ascended to 6m where the diver had air in his drysuit feet, rose a couple of metres trying to sort it out, gave up and surfaced with a dive duration of 25 min to a maximum depth of 20 min. After surfacing and during his drive home the diver felt unwell, was nauseous, had a headache, chest pain and was short of breath. He contacted a diving doctor and was advised to go his local A&E department for an ECG and a chest x-ray to rule out any cardiac or barotrauma issues before going to the hyperbaric chamber. With his results clear and a more seriously injured diver arriving at the chamber that day, the diver attended the following day. His neurological assessment revealed he had altered sensation in his left hand confirming he had DCI. The doctor advised this was most likely due to his dive six days earlier with the accumulated nitrogen exposure manifesting itself a week later after the three subsequent dives. The diver received four sessions of recompression treatment which resolved his symptoms. He was discharged and later cleared to resume diving following a medical.

***May 2019*** ***19/107***

After a dive on air to a maximum depth of 24m, a diver found that she had exceeded the no decompression limit on her computer. She started the ascent with the intention of doing an extra stop. She missed the stop and surfaced. Once back ashore she began to experience 'pins and needles' below her knees so presented herself to the local lifeboat station. They administered oxygen and called the Coastguard. They tasked two Coastguard rescue teams to provide assistance and arranged a connect call with a dive doctor. The doctor recommended transfer to a hyperbaric chamber for treatment and a Coastguard rescue helicopter airlifted the diver to the chamber. (Coastguard report).

***May 2019*** ***19/120***

A diver using a twin-set with nitrox 31 and his buddy using air carried out a boat dive on a Monday. Their dive boat had deployed a shotline on a wreck and, with two other dive boats on the site, it was agreed their divers could use the shotline but ascend using DSMBs and the diver was asked to put air in the lift bag on the shot towards the end of his dive. It was the diver's first dive trip using a borrowed drysuit, using a twin-set in the sea as well as using a new setup on his camera making it a little more unwieldy than he was used to. He had dived this setup on the Saturday, adjusted his weighting on the first dive, and dived without the camera on both the Saturday and Sunday. For the Monday dive he set his computer to air so that he would have a similar no decompression limit to his buddy. The pair descended the shotline, explored the wreck and when they were getting close to their no decompression limit they returned to the shotline. The diver's computer had switched to 'time to ascend' but he was confident it would clear during the ascent. He had clipped his camera to a short lanyard, but it got in the way as he began to try and deploy the lift bag. Worried he would scratch the lens he changed the lanyard to a longer one and sat the camera on the deck. He struggled a bit with the lift bag's Velcro strap which was almost trapped in the shotline but managed to put enough gas in it to move the shot and ensure it would not snag in the wreck when recovered. The buddy had already started to ascend the shotline and the diver began his ascent holding the camera in one hand as he hadn't remembered to re-clip it onto the short lanyard. He began to feel light and as he only used his drysuit for buoyancy he tried to dump as much gas as possible. The diver began to panic and although not ascending that fast he did not feel in control. He was trying to keep his lungs as empty as possible whilst breathing hard due to the panic. At 15m the buddy signalled she needed to do a stop and the diver tried to stay with her by finning down a couple of times. As they ascended from 15m the diver tried to slow down by gripping the shotline but at 6m, when the buddy's computer showed a 3 min safety stop at 6m and a 1 min decompression stop at 3m, the diver signalled he was going up and for her to stay. At 5m he pulled his BCD's dump valve and a large amount of gas came out and as he surfaced he was no longer overly buoyant. His dive duration was 24 min to a maximum depth of 31m. The diver gave an emergency signal to the boat, was recovered and put on oxygen. When he checked his BCD later he found that after pressing and releasing the inflate button a trickle of air continued to flow. His buddy was 1 min into her safety stop at 6m when she felt a tug on the shotline and thought it was a signal for her to ascend, which she did, omitting 2 min of her safety stop and the 1 min stop. On the return to shore the diver stayed on oxygen for 25 min but showed no symptoms. The buddy felt a 'tingling' in her feet and went onto oxygen for around 20 min as a precaution but felt fine. Neither diver carried out the second dive of the day. The diver returned home by train during which he felt a 'tingling' in his legs, mostly in his left one. The 'tingling' was still there when he got home so he called a hyperbaric chamber. They referred the diver to a local chamber and a doctor called the diver to come in for an emergency appointment at midnight. After examination they found no evidence to suggest DCI and recommended the diver go home, rest and call them the following morning if the symptoms were still there. The diver felt fine the following morning, rang the chamber to report this and went to work but started to feel occasional symptoms again but they were not consistent, appearing and disappearing in different parts of his body. Speaking to the hyperbaric

chamber again they concluded it didn't sound like DCI but suggested calling back the following day if the symptoms were consistent. The buddy had returned home from the dive by car during which she had felt tired with intermittent 'tingling'. On the Tuesday morning she woke up with a headache, nausea and 'tingling' lips. She called a diving doctor and was sent to a hyperbaric chamber. They thought she could have DCI or the start of a migraine and decided to give her recompression treatment.

***May 2019*** ***19/124***

A diver using air and nitrox 50 decompression gas and her buddy using nitrox 70 decompression gas, carried out a planned decompression shore dive with another buddy pair to a maximum depth of 50m. The group descended to 50m and swam along a wall for about 5 min before making a slow ascent to 35m and then up to 21m where the diver switched to her decompression gas. They continued the ascent on a shotline to 6m for a 12 min decompression stop and 2 min safety stop. The diver surfaced with a dive duration of 52 min. After a 1 hour 44 min surface interval the diver, her buddy and one of the other pair carried out a second dive. They ascended to 10m from a maximum depth of 25m where the buddy ended his dive and surfaced. The diver and remaining diver buddied together and continued the dive by re-descending to 20m for a short time. They incurred a 3 min decompression stop, ascended to 6m where the diver switched to her nitrox 50 and carried out the 3 min stop and 3 min safety stop. The pair surfaced with a dive duration of 56 min. After a 1 hour 38 min surface interval the diver and her buddy carried out a third dive and surfaced with a dive duration of 35 min to a maximum depth of 25m. The last 5 min of this dive were at a depth of less than 6m, so a safety stop was included although not intentionally. The following day the diver had muscle and joint aches, nausea, stressed eyes, tunnel vision with aura and co-ordination disturbances. She contacted a hyperbaric chamber, was told to attend and given recompression treatment followed by another session the following day. A few days after this the diver was still feeling unwell and returned to the chamber where she had two more sessions of recompression treatment and all her symptoms resolved. The diver was awaiting evaluation by the diving doctor before diving again.

***May 2019*** ***19/126***

A diver had been on a weekend RHIB diving trip and carried out four dives over three days. On the first day she carried out a dive using air to a maximum depth of 24m with a dive duration of 43 min and after a 2 hour 58 min surface interval she carried out a second dive using nitrox 32 to a maximum depth of 14m with a dive duration of 36 min. On the second day she carried out one dive using nitrox 31 to a maximum depth of 22m with a dive duration of 42 min and on the third day a dive using nitrox 31 to a maximum depth of 14m with a dive duration of 50 min. All the dives included stops at 6m. The diver was cold on the last dive and later that day her fingers felt slightly swollen and tender but had resolved within 24 hours. The diver helped with sorting out the boat, packing up at a campsite and shared the drive on the way home. 3 days later the diver was acting as a 'casualty' for an evening pool training session and played around doing somersaults and swimming through hoops before starting alternate source ascents and controlled buoyant lifts from the pool's maximum depth of 3m. The diver descended and ascended between eight and twelve times and the session lasted 60 min. On getting out of the pool the diver felt fine but in the car noticed a 'tingling' in her left forearm. Over the next few days the diver had various symptoms including tiredness, heaviness in her arms and a headache. She thought it extraordinary that she could have DCI from a pool session so put it down to just being tired but on the fourth day after the pool session she felt so unwell that she rang a hyperbaric chamber. They saw her that day and gave her recompression treatment with shorter follow up sessions for the next four days. The diver felt much better after the first session and by the end of the week she felt more of less fully recovered. The doctor at the hyperbaric chamber theorised that after the dive trip the diver had reached her threshold and the swelling and tenderness in her fingers were suggestive of mild DCI and that her body had dealt with it. The session in the pool so shortly after this was enough to give her full DCI. The doctor felt that contributing factors were the cold, the physical effort of RHIB diving, packing up and the repeated ascents and descents of the pool training session.

***May 2019*** ***19/169***

A Coastguard rescue team were tasked to assist the ambulance service and the helicopter emergency medical service for a diver with dizziness, shortness of breath and vomiting after returning ashore from a dive charter boat. The diver had carried out a dive, using nitrox, to a maximum depth of 30m with a dive duration of 50 min. The diver reportedly had gone into mandatory decompression and completed all required stops on his ascent. It was later reported that he had been in a car accident earlier in the day and had initially felt uneasy about doing the dive but did it anyway. (Coastguard report).

***June 2019*** ***19/133***

A diver was buddied with a recently qualified diver who was diving with the club for the first time. The diver and others in the group made sure the buddy felt at ease and carried additional weights in the boat should they be needed. The pair, both using air, entered the water and additional weight was needed for the buddy to descend. They reached 6m, explored the area and exchanged signals but the buddy appeared to misunderstand the diver and returned to the surface. The diver followed her up, explained what had happened although he had not realised that she had ascended quickly. They re-descended and, with the buddy reasonably comfortable, the diver led her to deeper water, and they reached a maximum depth of 15m. The buddy signalled she was having some problems with her ear, so they ascended a couple of metres where the issue was resolved, and she signalled 'OK'. With considerable water movement the diver decided to return to a shallower depth by working their way up a sloping bank to gradually return to 6m where a safety stop could be carried out using the bank as a reference point. At around 12m the buddy began to ascend. The diver tried to catch her by grabbing hold of her fin but both their drysuits were becoming increasingly buoyant. With a camera in one hand and the buddy's fin in the other the diver was unable to reach his shoulder dump, they both made a buoyant ascent, omitted the safety stop and surfaced with a dive duration of 24 min. The divers were recovered aboard the boat and the buddy felt nauseous and had a headache. She was given oxygen but apart from the nausea and headache had no other symptoms. Back ashore a lifeboat station took her inside and she had a cup of tea. After a while she helped to gather up kit and helped with boat cleaning. On the

way home she seemed much better but was later taken by ambulance to hospital and then to a hyperbaric chamber where she was given recompression treatment.

***June 2019*** ***19/135***

A diver had carried out two shore dives using air. The first dive was to a maximum depth of 40m with a dive duration of 54 min including a 10 min decompression stop at 3m. After a 1 hour 55 min surface interval the second dive was to a maximum depth of 24m with a dive duration of 37 min. The diver had a different buddy for the second dive as her buddy from the first dive had decided not to dive again. Following the second dive, after de-kitting and packing equipment away, the diver sat in the sun and had a couple of beers. She remembered scratching her stomach at this point. Around 1 hour and 30 min after surfacing the diver suddenly felt extremely tired but attributed this to a long stressful day and probably being a little dehydrated so decided to lie down in a cool spot for a while. The diver dozed and woke up about 1 hour 30 min later but when she sat up she was extremely dizzy for a few minutes but again attributed this to dehydration and getting up too quickly. Her whole front torso was extremely itchy and when she lifted her top she saw a mottled red rash across her stomach. She still tried to tell herself there was no problem and she was just dehydrated. She went to the bathroom but was feeling increasingly unwell and was short of breath on the short walk to the bathroom. She looked at the rash again and coupled with the shortness of breath and a general feeling of 'not being right' she realised that she was probably suffering from DCI. She went to the dive centre shop, still short of breath when walking there, and told them she thought she had DCI. The staff looked at the rash and agreed with her. They told her later that the rash was extended around her sides and back and was more pronounced there with visible veins. The diver was put on oxygen, a hyperbaric chamber contacted and paramedics dispatched. When they arrived they inserted an IV, carried out a neurological examination and attached monitoring equipment. The hyperbaric chamber's doctor advised that the diver be airlifted to the chamber. An air ambulance arrived and the diver was taken to the chamber. After a full examination it was noted that the rash had abated to red stippling concentrated in the centre of the diver's stomach and down her sides. All the other symptoms had abated rapidly after the diver had started breathing oxygen. She was given recompression treatment at the conclusion of which she was released and asked to return for a follow-up examination twelve hours later with instructions not to be alone during this time in case of a relapse. The diver noted a stiff feeling in her throat and a dry cough after a few hours' sleep and when she called the doctor was advised she was probably suffering from slight oxygen toxicity due to the prolonged exposure. A couple of hours later the diver also experienced some shortness of breath which was again attributed to oxygen toxicity and expected to clear up over time. She returned to the chamber and was given the all clear with just a little residual bruising showing on one side. The diver was advised that the presentation of her symptoms was fairly classic for a PFO and she was advised that if she wanted to continue diving she should arrange to have a test to confirm or nullify this hypothesis.

***June 2019*** ***19/128***

A dive charter boat almost back to harbour reported that a diver had made a rapid ascent from 15m. A Coastguard rescue team were tasked to meet the boat and assisted the diver to the waiting ambulance for transfer to a recompression chamber. (Coastguard report).

***June 2019*** ***19/300***

A lifeboat informed the Coastguard that a diver had presented themselves to their shore station. The crew had called an ambulance to transport the diver to a recompression chamber. (Coastguard report).

***June 2019*** ***19/301***

A charter dive boat reported to the Coastguard that a diver had surfaced from their second dive of the day and presented with a rash. On the advice of a doctor the diver's buddy took him to a hyperbaric chamber. (Coastguard report).

***June 2019*** ***19/302***

The Coastguard received a VHF call from a dive charter boat that they had a diver aboard presenting with mild DCI symptoms. It was reported the dive had been to a maximum depth of 38m. A Coastguard rescue team met the boat back in harbour and assisted transferring the diver to an ambulance which took him to a local hyperbaric chamber. (Coastguard report).

***June 2019*** ***19/223***

A diver using air, and his buddy, carried out a shore based dive. The water was cold and the visibility poor. They reached a maximum depth of around 24m and towards the end of their dive they ascended to around 15m. At 11m they practised DSMB use and then ascended to 6m to carry out decompression stops. Once their computers were clear they surfaced with a dive duration of 58 min. Following the dive the diver had slight numbness in both feet. After a few days this got progressively worse and spread to his lower legs. He contacted a hyperbaric chamber who advised he attend. The diver was assessed, diagnosed with DCI and received a 5 hour session of recompression treatment. This was followed by four consecutive days of two hour sessions, the diver was discharged and told not to dive for a month. After a month he was assessed by the chamber's doctor and this was followed by a diving medical which the diver passed.

***June 2019*** ***19/305***

A diver conducted a series of dives over five days from a dive charter boat. On the fifth day, after the second dive of the day to a maximum depth of 30m with a dive duration of 28 min, he noticed skin DCI developing and shoulder pain. Oxygen and fluids were administered, and the Coastguard made arrangements with the local hyperbaric chamber and ambulance service. The boat made its way to shore where they were met by an ambulance which took the diver to the chamber. (Coastguard report).

***June 2019*** ***19/205***

A diver using air, and her buddy, were on a dive trip and carried out a Saturday morning RHIB dive and reached a maximum depth of 17m. The diver had some minor issues mid-dive and had to ascend a few metres because she felt unwell but not enough to abort the dive. The pair ascended and held a safety stop for approximately 40 sec because the buddy's drysuit was over-inflated but they did not make a fast ascent and surfaced with a dive duration

of 32 min. The diver did not do a second dive because she wasn't entirely happy with the first dive's ascent. Over the next few hours she began to develop 'tingling' at the top of her legs, aching in some joints and feeling 'lost for words' as if she had been drinking. Almost 10 hours after surfacing from the dive and back in their accommodation, the diver alerted the trip's organiser who began to administer oxygen as a precaution. A call was made to a diving doctor, who was the father of one the other divers on the trip, and he recommended contacting a hyperbaric chamber. Unsure where the nearest chamber was they contacted one they knew, where some of their group had carried out dry dives, and they gave details of the nearest chamber to the trip's dive site. Contact was made with the second chamber who wanted to admit the diver and she was taken by car on the 200 mile journey which took 3 hours 30 min. The diver was on oxygen throughout the journey but began to develop a burning ache in her right calf. They arrived at the chamber in the early hours of Sunday morning where the diver was examined, DCI confirmed and she was given recompression treatment for 5 hour 30 min. The nurse who was in the chamber with the diver recommended an extra 20 min because the diver was experiencing a new symptom of 'tingling' and numbness in her left hand. On the ascent at the end of the session the diver noticed her symptoms were improving but the hyperbaric team recommended she have another session of recompression treatment later that day followed by another on the Monday. After the Monday session the diver was discharged, collected by her parents, taken home and had no further symptoms.

***June 2019*** ***19/143***

On the second day of a charter boat dive trip a diver carried out two dives using air. The first dive was to a maximum depth of 6m with a dive duration of 32 min. After a 2 hour 23 min surface interval the diver and his buddy carried out the second dive. They descended and as they were crossing a gully at 12m air migrated in the diver's drysuit to his boots. The diver attempted a somersault to move the air back to his chest, but this did not work so he tried again but only got half-way round and made an inverted uncontrolled ascent. He surfaced with a dive duration of 11 min to a maximum depth of 12m. He was unable to swim to the boat as his feet had come out of his boots and fins but was recovered aboard where no ill-effects were noted. The buddy had continued down the gully when he noticed his buddy was not with him. He turned around and re-traced their route and carried out a zig-zag search. He deployed his DSMB and began a 360 deg search as he ascended, carried out a safety stop and surfaced. He saw the diver was back aboard and all was fine. During that evening the diver felt tired and slightly dizzy but this was put down to diving for two days and 'sea legs'. The following morning the diver felt sick and had discoloured faeces. A fellow diver was contacted and he advised speaking to a doctor at a hyperbaric chamber. The diver went to the chamber, was diagnosed with DCI and given recompression treatment that day and, as a precaution, the following morning. The diver was then discharged with a limitation on his diving.

***June 2019*** ***19/306***

After a dive to a maximum depth of approximately 36m a diver reported a rapid ascent missing 15 min of stops and he had a slight pain in his right wrist. The dive charter boat returned to harbour and the Coastguard arranged an ambulance to a hyperbaric chamber. A Coastguard rescue team met the boat alongside to assist with the transfer. (Coastguard report).

***June 2019*** ***19/307***

After a dive to a maximum depth of 36m for 60 min using air and a nitrox 50 decompression mix, a diver was recovered aboard their dive charter boat and reported pain in his shoulder and skin discolouration. The Coastguard arranged radio medical advice and the doctor advised the diver should be taken to the hyperbaric chamber. The boat returned to harbour to be met by an ambulance that transported the diver to the chamber. (Coastguard report).

***June 2019*** ***19/308***

A dive boat reported a diver suffering abdominal pains and nausea after a dive to a maximum depth of 42m. A Coastguard rescue helicopter and a lifeboat were tasked to the dive boat. The diver was put on oxygen, and the doctor advised transfer to a chamber. The rescue helicopter took the diver to a local landing site which was manned by Coastguard rescue teams who helped to transfer the diver to another helicopter.(Coastguard & RNLI reports).

***July 2019*** ***19/310***

After his third dive of the day a diver was recovered aboard his dive charter boat. He reported a normal ascent with no missed stops but began to experience nausea, pain in his arms and had a skin rash. He was placed on oxygen; the Coastguard was contacted, and they arranged radio medical advice from a diving doctor who advised that the diver attend the local recompression chamber. A Coastguard rescue helicopter and a lifeboat were tasked to the dive boat. The lifeboat reached the boat quickly and transported the diver to shore and an awaiting ambulance. A Coastguard rescue team met the lifeboat when it came alongside to assist with the transfer.(Coastguard & RNLI reports).

***July 2019*** ***19/311***

A charter dive boat contacted the Coastguard requesting assistance with a diver suffering from a rash on his shoulder. He had conducted one dive that day to maximum depth of 43m with a dive duration of 59 min using a CCR with a set point of 1.3 bar and air as a diluent. The dive boat made its own way to harbour due to its proximity, where it was met by a Coastguard rescue team who transferred the diver to an ambulance which took him to a hyperbaric chamber. (Coastguard report).

***July 2019*** ***19/317***

After a dive on air to a maximum depth of 36m with a dive duration of 40 min, a diver reported to the skipper of his dive charter boat that he had a rash and 'tingling' in his shoulder. He was placed on oxygen and assistance requested from Coastguard. A Coastguard rescue team met the vessel back in port and the diver was transferred to an ambulance which took him to a hyperbaric chamber. (Coastguard report).

***July 2019*** ***19/199***

A diver was on a week's hardboat diving trip and had carried out two wreck dives. The first was to a maximum depth of 33m with a dive duration of 50 min and, after a

surface interval of 4 hours 25 min, the second dive was to a maximum depth of 32m with a dive duration of 64 min. The following day, with a surface interval of 17 hours 33 min, the diver and his buddy carried out a wreck dive with the diver using air and nitrox 50 as decompression gas and his buddy using a CCR. They reached a maximum depth of 32m with a dive duration of 69 min including 10 min of decompression stops. Back aboard and 20 min after surfacing the diver had a dull ache in his left shoulder. He ignored it but after about 40 min felt he should mention it to someone, which he did. Just before lunch the diver's shoulder started to feel like a minor sunburn and then started to itch. The diver ignored it during lunch but then went to have a look in a mirror where he saw a red mottled rash on his shoulder. He reported this to the skipper who called the Coastguard and the diver was put on oxygen. After 15 min the diver's symptoms started to subside as the boat headed for shore. An ambulance met the boat and took the diver to a hyperbaric chamber where he received recompression treatment. The diver was discharged but saw a dive doctor the next morning who said that as the diver had a history of a PFO related DCI, which had been resolved, he should get his PFO checked and banned him from diving for 28 days. Later that week the diver managed to get hold of the cardiologist who had been his consultant when he had his PFO DCI ten years earlier. He said the diver could continue diving that week but with the strict limitations of doing no decompression dives, to use nitrox on air tables, to carry out only one dive a day with a safety stop and to restrict his maximum depth to between 20m and 30m. The diver managed a couple of dives with a self-imposed maximum depth of 22m.

***July 2019*** ***19/173***

A diver, using air and nitrox 50 decompression gas, carried out a wreck dive with two buddies. He reached a maximum depth of 35m and incurred mandatory decompression stops of 3 min at 27m and 2 min at 6m which he completed. During the 3m phase of stops the diver began to feel breathless and switched to his nitrox 50 gas for the remainder of his decompression schedule and all air stop times were completed. The diver surfaced with a dive duration of 64 min. Back aboard the dive boat the diver complained of feeling breathless, nauseous, with a 'tingling' sensation in his left foot and pain in his left leg. The diver was put on oxygen and given fluids until evacuated by a helicopter where oxygen administration continued. The diver was taken to a recompression chamber and diagnosed with suspected ear and type 2 DCI. The diver's symptoms worsened over the next two days and he required the use of a wheelchair. The diver was still undergoing recompression treatment on a day to day basis but was able to walk unaided again. The diver's treatment continued with the chamber staff now expecting slower progress.

***July 2019*** ***19/171***

A diver, using nitrox 29 with nitrox 64 decompression gas, and her buddy carried out the first dive of a weekend from a hardboat. The diver had been fully kitted up prior to arriving at a wreck site and once on site had to wait for approximately 15 min for slack water. The boat rocked during the wait due to the swell, but the diver did not feel unduly uncomfortable. The dive went according to plan using dual computers with decompression factors set to 40/80 GF. The diver surfaced with a dive duration of 45 min, including an 8 min decompression stop at 6m, having reached a maximum depth of 38m. Within 15 min of de-kitting the diver had itchy skin and at around 30 min noticed a skin rash. On arrival back in port approximately 1 hour after surfacing the diver had developed abdominal pain at which point the dive manager was notified. The diver was immediately put on oxygen and an assessment carried out. The skipper was instructed to contact the Coastguard but suggested contacting a recompression chamber directly, which was done. The diver was taken to the chamber, diagnosed with skin DCI and given recompression treatment during which her symptoms reduced. A final assessment declared the treatment successful and she was discharged. A fitness to dive certificate would be issued with a one month no symptom caveat.

***July 2019*** ***19/322***

A buddy pair descended to a maximum depth of 47m where one of the divers, believed to be using air, experienced issues with his mask flooding and a stuck inflator valve on his drysuit causing a buoyant ascent back up the shotline. Back aboard his dive boat the diver did not present any symptoms. The Coastguard tasked a lifeboat to escort the dive boat back to harbour and the diver was placed on oxygen. A Coastguard rescue team met the boat alongside and assisted with transferring the diver to a waiting ambulance for onward transport to a recompression chamber. (Coastguard report).

***July 2019*** ***19/183***

A diver on a hardboat wreck diving trip carried out a morning dive reaching a maximum depth of 41m with a dive duration of 25 min including a 3 min stop at 6m. After a 3 hour 50 min surface interval the diver carried out a second dive, using air, and reached a maximum depth of 26m with a dive duration of 38 min including a 4 min stop at 6m. Back aboard the dive boat the diver de-kitted and had a hot drink. A short while later he informed his buddy that he felt unwell. The dive manager was notified, and the diver was assessed but also mentioned he had a pain in his shoulder. The dive manager examined the diver's back, found an extensive red rash which was visibly moving, and the diver only felt pain in his shoulder when it was touched. There was no elevated pulse, breathlessness, weakness or immobility. The boat skipper was informed the diver had a possible DCI so she contacted a recompression chamber and a photograph of the diver's back was sent to the chamber via email. The diver was put on oxygen but was able to speak and had only minor pain. After around 12 min there was no change although the red rash had started to recede and about 6 min later was almost gone. Another photo was taken and sent to the chamber and the diver's computer was examined which showed no missed stops or fast ascent indicators. The hardboat arrived back in harbour to be met by an ambulance. The diver walked off the boat to the ambulance and was taken to a hyperbaric chamber along with an incident report form, dive logs and both the diver's and buddy's computers. At the chamber the diver received recompression treatment. The diver was discharged later that evening with the recommendation not to dive for four weeks, obtain a fitness to dive medical and to request a PFO check. The diver was fine for the rest of the week.

***July 2019*** ***19/185***

Two divers, both using air, carried out a wreck dive from a hardboat and reached a maximum depth of 31m. At 28m and around 30 min into the dive the pair had incurred

approximately 8 min of required decompression. One of the diver's deployed his DSMB mid-water around 2m above the wreck and, apparently without realising, began to ascend. His buddy noticed him going up, followed him and briefly grabbed hold of his fin to try and stop him but the diver continued to make a buoyant ascent. He realised what was happening and tried to dump as much air as he could but continued ascending and surfaced with a dive duration of 40 min and loose DSMB line. His buddy chose to follow him up in case he was in trouble so she could check him on the surface. Back aboard their dive boat and as both divers had missed 8 min of decompression stops they were put on oxygen and, with three doctors aboard, were closely monitored. A 'Pan Pan' call was made by the skipper and a hyperbaric chamber doctor contacted who requested a helicopter to take both divers to the chamber. No helicopter was available but one on exercise some considerable distance away was deployed. It had been told the incident was on a RHIB even though the Coastguard knew it was on a hardboat. After 15 min of circling the site with the skipper not keen on using a handheld flare, the helicopter located the hardboat. A paramedic was winched aboard and assessed the divers, but the helicopter had to leave to refuel. It returned and 2 hours 15 min since surfacing both divers, who remained asymptomatic, were winched aboard and taken to the hyperbaric chamber. At the chamber both were assessed, had recompression treatment for six hours and were then discharged.

***August 2019*** ***19/197***

A diver, using nitrox 22, and his buddy carried out a hardboat dive whilst on holiday. The sea conditions on a reef site were rough which made the diver feel slightly seasick whilst kitting up. The pair descended to 34m hoping to avoid the swell but this was still present at depth. However, the diver reported they had a relaxing dive although he continued to have a low level of seasickness. The pair returned to the top of a pinnacle at around 19m where the swell was moving the kelp around and the buddy asked the diver if he wanted to explore the kelp. The diver signalled to his buddy that he was feeling sick and to ascend. They carried out a normal ascent including safety stops of 1 min at 19m and 3 min at 5m and surfaced with a dive duration of 30 min to a maximum depth of 35m and were recovered aboard using the boat's lift. The diver de-kitted but with the rough surface conditions he still felt sick so sat amidships and focused on the horizon. The skipper asked the diver to pull in the shotline using the boat's winch, as he had done it before. The diver did so, which raised his heart rate, but he recovered quickly and then helped other divers aboard. He had a cup of black tea; the boat made its way to calmer waters and the diver re-focused on the horizon. All of a sudden and around 30 min since surfacing the diver felt a 'tingling' sensation in his hands which moved to his arms. He told his fellow divers he was not feeling well, and the diver was put on oxygen. He remained sitting whilst a hyperbaric chamber was called. The 'tingling' spread from his hands and arms across his chest, where he experienced a 'band like' tightness, and he was moved onto the boat's deck. The hyperbaric chamber were updated, and they arranged for a helicopter evacuation. The boat returned to harbour, was met by a Coastguard rescue team and the diver was taken to the local airport where a Coastguard helicopter met him, put him on oxygen and took him to the chamber. The diver was diagnosed with DCI and received recompression treatment which resolved at depth but when the diver was re-assessed the following day he still had weakness in his left wrist and fingers so received another session of treatment. He had no further symptoms but, as a precaution, he was given another session and then discharged with the recommendation that he have a PFO check before he returned to diving.

***August 2019*** ***19/250***

A diver using nitrox 28 and nitrox 50 decompression gas carried out a boat dive. Just before the dive the diver had jarred her back lifting twin 10 lt cylinders into the boot of her car. A shot had been deployed onto a wreck at around 40m but had been pulled off, so the diver and her buddy had to swim for 17 min against the current to reach the wreck. This was hard work and the diver breathed more gas than normal but still had a sufficient supply to carry out a short tour of the wreck before ascending. She usually deployed her DSMB after gas switching during the ascent on shallower dives but this time she deployed it from the wreck and found it was a long line to reel in. Her buddy chose to hold onto the line just above the reel which did not cause a problem, but the diver was more used to ascending next to but not linked to a buddy. The pair completed their gas switches and decompression as planned and surfaced with a maximum depth of 40m and a dive duration of 59 min with a 1 min stop at 18m, a 2 min stop at 12m, a 2 min stop at 9m and an 18 min stop at 6m. When the diver removed her drysuit back on shore she noticed itchy red blotches across her chest and back. These disappeared within an hour and the diver reported that she had experienced the same thing when diving on a hot day two weeks previously. She then noticed that her left upper arm was swollen and 'puffy' and this became worse during the evening with the skin very taut and tender to touch. The diver decided to contact a diving helpline for advice before going to bed. The doctor advised her to take pain killers, to try and sleep with her arm raised, check it again in the morning and seek further advice if it hadn't resolved. The diver did not have any pain killers but slept fairly well with her arm supported by an extra pillow, but it was no better in the morning. As the local hyperbaric chamber was closed the diver spoke with and had to take a ferry to the nearest open chamber. She received recompression treatment which improved the swelling but did not completely resolve it, so the diver was advised to seek medical advice before diving again. The next day the diver was reminded by a family member that they had suffered a DVT and urged the diver to get checked for that possibility. The diver attended an A&E department who ruled out a DVT and cellulitis with blood tests and decided that the diver was suffering from a non-specific soft tissue injury. The swelling decreased over the next couple of days with a small bruise appearing. The diver was able to dive again two days later but to a maximum depth of 20m as advised by a doctor at the hyperbaric chamber she had attended.

***August 2019*** ***19/331***

An experienced diver reported disorientation and vomiting after returning aboard his dive boat following a dive to a maximum depth of 28m with a dive duration of 1 hour 10 min. The boat returned to harbour where two Coastguard rescue teams were waiting and assisted in transferring him to an ambulance to go to the local recompression chamber. The diver's computer showed no errors or ascent rate warnings. The diver thought he may have picked up a stomach bug on a recent holiday and was taking medication to manage this. (Coastguard report).

***August 2019*** ***19/333***

A diver missed 3 decompression stops after a dive to a maximum depth of 36m with a dive duration of 45 min and back aboard the dive boat she found she had a rash on her shoulder. The boat was close to harbour, so the Coastguard arranged for an ambulance to transfer the diver to a recompression chamber and for a Coastguard rescue team to meet the boat when it came alongside. (Coastguard report).

***August 2019*** ***19/213***

A charter dive boat contacted the Coastguard reporting that they had a diver on board suffering from signs of DCI and five divers were still in the water. The diver had carried out a dive to a maximum depth of 31m with a dive duration of 35 min. Two lifeboats and a Coastguard rescue helicopter were tasked to the scene. The diver was airlifted by the helicopter and transferred to the nearest recompression chamber on the advice of the duty dive doctor. (Coastguard & RNLI reports).

***August 2019*** ***19/234***

A diver and her buddy carried out a boat dive and descended the shotline. There was a strong current and the diver, who had never done a drift dive before, found this a new experience. Her dive computer showed two rapid ascents although she brought her ascent under control at around 3m before surfacing with a dive duration of 45 min to a maximum depth of 13m. The diver was aware that she had lost buoyancy control at one point but did not know when the other occasion occurred. After a 1 hour 30 min surface interval the diver and her buddy, both using air, carried out a second dive. The plan was that they would follow closely behind another buddy pair on a route briefed by the skipper. Again there was a strong current, with the start of the route against it. There was some confusion as the diver's buddy thought she was in front of him as he could see her yellow fins, but they belonged to one of the buddy pair they were following. They and the diver's buddy were swimming hard against the current and the diver was struggling to keep up worried that she would be left behind. She finally managed to grab hold of her buddy, was very out of breath, quite panicky and concerned about losing her buddy. She felt she should have called an end to the dive but didn't want to for her buddy's sake but also, not having been down that long, she wanted to explore. Her dive computer showed a rapid ascent which she brought under control at around 3m which she believed happened when she and her buddy met another diver who had temporarily lost his buddy, so they changed from going with the current to against it. When they decided to surface the buddy deployed his DSMB. He handed the reel to the diver who was still a bit edgy and although having used a DSMB a number of times and feeling she should hand it back to her buddy, she began to wind the line in. On the ascent she lost control of her buoyancy as she did not dump air whilst using the DSMB reel. She managed to control her buoyancy to carry out a 3 min stop. The pair surfaced with a dive duration of 43 min to a maximum depth of 11m. The diver had symptoms of DCI and received recompression treatment.

***September 2019*** ***19/241***

A diver was on a diving trip and had carried out two dives. The first to a maximum depth of 11m with a dive duration of 8 min including a 4 min safety stop at 6m and after a 2 hour 6 min surface interval the second dive was to a maximum depth of 25m with a dive duration of 42 min including a 5 min safety stop at 6m. The next day, with a surface interval of 21 hours, the diver and his buddy, both using air, carried out a hardboat dive and surfaced with a dive duration of 51 min, including a 5 min safety stop at 6m, and a maximum depth of 29m. They were recovered aboard by the boat's lift, felt fine, de-kitted and the diver made tea for himself. Within 20 min of surfacing the diver felt a pain in his abdomen's right hand side which he thought may be a pulled muscle but asked the skipper to monitor him. 10 min later the diver felt 'pins and needles' in his right leg and requested oxygen. He was laid down on the deck and looked after by other divers on the boat. The skipper contacted the Coastguard and was advised to stand by. A lifeboat was launched which met the hardboat and took the diver, still on oxygen, and his buddy to a suitable site for their transfer to a helicopter. The helicopter arrived and the diver, his equipment and his buddy were taken to a recompression chamber with a paramedic continuing the oxygen administration and casualty assessment. On arrival at the chamber the diver was diagnosed with neurological DCI and recompression treatment was given and continued over the next four days. The diver was discharged but referred for a PFO check before applying for a diving medical.

***September 2019*** ***19/339***

The Ambulance Service requested the Coastguard to assist with a diver suffering from DCI in a property ashore. It was determined that an ambulance transfer to a hyperbaric chamber would be faster than a Coastguard helicopter or lifeboat, so no assistance was rendered. (Coastguard report).

***September 2019*** ***19/341***

A diver suffering from skin DCI was taken to the nearest hyperbaric chamber by the crew of his dive boat. The diver had reported a normal ascent within no stop limits on his seventh dive of the week. (Coastguard report).

***September 2019*** ***19/343***

After a boat dive using air to a maximum depth of 30m, a diver reported developing bruises all over his body in addition to 'tingling' and numbness. The boat skipper contacted the Coastguard who tasked a Coastguard rescue helicopter to the scene and transferred the diver to the nearest recompression chamber on the advice of the duty dive doctor. (Coastguard report).

***September 2019*** ***19/232***

A dive boat reported to the Coastguard that they were about to enter harbour with a diver aboard suffering nausea and dizziness. A Coastguard rescue team met the dive boat alongside and assisted the local dive doctor in transferring the diver into an ambulance for transport to a hyperbaric chamber. (Coastguard report).

***September 2019*** ***19/349***

A diver was taken to the nearest hyperbaric chamber by the crew of his dive boat after reporting to the Coastguard that he was suffering from shoulder pain which was suspected to be DCI related. A Coastguard rescue team were tasked to assist in transferring the diver. (Coastguard report).

***September 2019*** ***19/350***

A harbourmaster called the Coastguard reporting he had a diver on site suffering from nausea and dizziness. He reported that the diver had carried out a boat dive to a maximum depth of 27m with a dive duration of 46 min and he had followed a planned ascent. A dive doctor advised transporting the diver the local recompression chamber. A lifeboat transferred the diver to a marina nearer to the chamber and an ambulance completed the transfer. (Coastguard & RNLI reports).

***October 2019*** ***19/246***

A diver had carried out a dive at an inland site on a Saturday before a dive trip with a dive duration of 27 min to a maximum depth of 17m. He had then travelled on the Sunday and on the Monday carried out two boat dives, the first to a maximum depth of 13m with a dive duration of 60 min and the second to a maximum depth of 25m with a dive duration of 57 min. On the Tuesday he carried out two dives, the first to a maximum depth of 32m with a dive duration of 42 min including a 2 min decompression stop and 3 min safety stop and this was followed after a surface interval of 2 hours 30 min by a second dive to a maximum depth of 25m with a dive duration of 53 min including a 3 min stop. The diver carried out two dives on the Wednesday, the first to a maximum depth of 27m with a dive duration of 62 min including a 3 min stop and after a 3 hour 14 min surface interval he carried out a wreck dive to a maximum depth of 25m with a dive duration of 54 min including a 3 min stop. The diver was using air and his buddy was using nitrox 25. A short time after surfacing from the last dive the diver noticed itching on his right shoulder. Back on shore and around an hour since the dive he noticed a rash. He visited a local GP and called a diving doctor from there. The advice given was for the diver to be taken by ambulance, and stay on oxygen, to the nearest hospital for assessment by a diving doctor. The ambulance arrived an hour later and the journey to hospital took approximately 2 hours, but the diver was also accompanied by another diver who was on the dive trip and who was a cardiologist. At the hospital the diver was assessed and advised he needed recompression treatment. He attended the chamber, but recompression treatment was abandoned as the diver failed to clear one ear and the doctor felt the symptoms were not serious enough to warrant the risk of ear damage. The diver was taken back to hospital where he spent the night on oxygen for around 6 hours. The diver experienced no further problems and was discharged on the Thursday morning after consultation with the diving doctors.

***October 2019*** ***19/351***

After his second dive of the day from a dive boat, to a maximum depth of 29m with a dive duration of 39 min and a normal ascent, a diver reported paralysis down one side. The dive boat made its way to harbour where they were met by a Coastguard rescue team and an ambulance which took the diver to the nearest recompression chamber for treatment. (Coastguard report).

***October 2019*** ***19/352***

The Coastguard assisted the ambulance service with a diver suffering from DCI after she had completed a shore dive. They tasked a Coastguard rescue helicopter to transport her to the nearest hyperbaric chamber with the assistance of a Coastguard rescue team. (Coastguard report).

***October 2019*** ***19/248***

A diver had carried out three days of diving, using air, on a hardboat trip. Later in the afternoon following his last dive to a depth of around 30m with no problems and including a safety stop, the diver started to have a pain in his left shoulder. As time passed the shoulder pain became worse but, as he was a doctor, he felt the pain was joint related rather than muscular and he did not think it was DCI. He needed a few pain killers at around midnight as the pain was quite intense and did not ease by moving his shoulder in any direction. The next morning the diver reported the problem to his dive manager who diagnosed DCI. The diver went to a local hyperbaric chamber and, as a precautionary measure, they decided to give him recompression treatment. The diver did not notice much difference in the pain following treatment, but it resolved a couple of days later leaving no residual problems.

***October 2019*** ***19/354***

A diver reported ascending too quickly and missing his stop so re-descended to complete it. Back aboard the dive boat he began to experience shoulder pain so was put on oxygen as a precaution and the Coastguard was contacted. The dive boat made their own way to harbour where they were met by a Coastguard rescue team, an ambulance and transferred to a local recompression chamber. (Coastguard report).

***October 2019*** ***19/266***

A dive boat contacted their local hyperbaric chamber reporting a diver aboard with symptoms of DCI. The chamber sent an ambulance and the police to meet the vessel alongside in harbour, but the boat could not get in. The Coastguard was contacted who tasked a Coastguard rescue team and a lifeboat to assist in evacuating the diver. The diver was taken by ambulance to the chamber. The delay in contacting the Coastguard resulted in a delay to the response and treatment of the diver. (Coastguard & RNLI reports).

***November 2019*** ***19/355***

A dive boat reported they had a diver aboard with ashen skin and shallow breathing. He had carried out a dive to a maximum depth of 25m with a dive duration of approximately 20 min. The diver was reportedly unwell before his dive and felt even worse afterwards. The Coastguard tasked a Coastguard rescue team to meet the vessel in harbour and transfer the diver to an ambulance for onward transfer to a hyperbaric chamber. (Coastguard report).

***November 2019*** ***19/356***

A diver with skin DCI and shoulder pain was assisted ashore from his dive boat by a Coastguard rescue team and taken to a recompression chamber by an ambulance. (Coastguard report).

***November 2019*** ***19/359***

A diving instructor was conducting a shore training dive in a group of five to focus on buoyancy issues. This was the first dive of the day following a previous day's diving but during the dive at 10m her vision became blurry and the dive was aborted. All her dives had been well within limits and ascents were all at a slow rate. Later that evening, the instructor again experienced blurred vision, she felt

lethargic with a reduced level of responsiveness. Her partner called the Coastguard on 999 who set up a connect call with a dive doctor who arranged for her to be taken to a hyperbaric chamber by ambulance. The instructor's balance was affected, and she had developed a blotchy rash on her neck. She was taken to a local hyperbaric chamber and was treated for DCI. Following treatment, the instructor's balance improved with her vision and awareness back to normal.

***November 2019*** ***19/360***

A diver presented themself to a hyperbaric chamber with a numb shoulder but reported no issues during his ascents or dives. The Coastguard was only informed after the incident for awareness. (Coastguard report).

# Boating and Surface Incidents

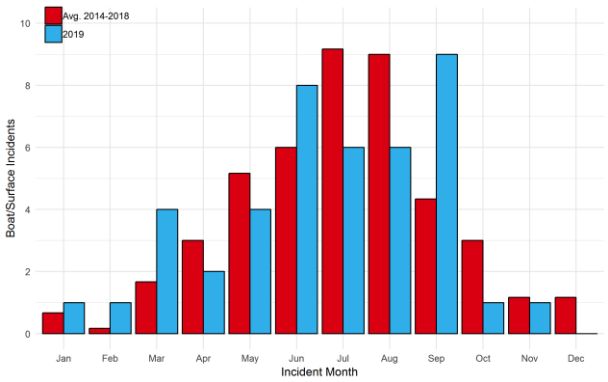


***Figure 22. The month of occurrence of boating and surface incidents***

***January 2019 19/153***

An undesignated DSC distress signal was received by the Coastguard who tasked two lifeboats to the scene and issued a 'Mayday' relay broadcast requesting vessels to proceed to the location to determine the source of the distress and what assistance was required. Database investigations determined the radio to be registered to a local diver. A responding vessel reported that there was a dive boat in the area of the distress call who, upon contact, reported that they had three overdue divers. The divers were located by one of the lifeboats and found to be fit and well. It was later found that the divers had surfaced and were unable to see their boat so attempted to contact it using a VHF radio. As there was no response they pressed their DSC distress button. As the divers were well equipped, including DSMBs, and took appropriate actions when they realised they were separated from their dive boat they were found quickly and within 370m of their initial DSC distress position. However, concern was raised over the dive boat who did not inform the Coastguard when they realised they had missing divers and did not respond to hails on channel 16 or the 'Mayday' relay broadcast. (Coastguard & RNLI reports).

***February 2019 19/361***

The Coastguard tasked a lifeboat to a dive hardboat with two persons aboard. The boat was experiencing problems with its engine overheating. A lifeboat crew member was put aboard the dive boat to assess the situation and it was established that a tow would be needed. Towlines were rigged to enable the lifeboat to tow the dive boat safely to harbour. (RNLI report).

***March 2019 19/060***

A RHIB, with three people aboard, called 999 to report that they had engine failure with two divers still in the water. They were due to surface shortly and their DSMB could be seen. The Coastguard tasked a lifeboat to recover the divers and assist the RHIB back to safety. The divers were recovered fit and well, the three people aboard the RHIB were transferred to the lifeboat and the RHIB taken under tow back to shore. A Coastguard rescue team met the divers to provide suitable safety advice. Concern was raised by the Coastguard rescue team, the lifeboat and the Coastguard operations room regarding the competency of the crew aboard the RHIB. (Coastguard and RNLI reports).

***March 2019 19/362***

A lifeboat crew were paged after reports were received of a small boat with four persons aboard waving towards the shore. The lifeboat was launched and made best speed towards the last known position of the boat. Due to the deteriorating sea conditions, SW Force 6-7 and 2-3m swell, the lifeboat had to reduce its speed and because of this the crew asked for another lifeboat to also be tasked as they were unsure of the severity of the call out and it would take slightly longer to get there than normal. After a further 10 min the boat was spotted and found to be a dive RHIB with four divers aboard stating they had launched from a harbour and their engine had failed along with all the electrics on the boat. The lifeboat crew set up an astern tow and initially decided to tow the vessel back to the harbour. However, due to the sea conditions, this was found to be unsafe as the RHIB was filling up with water. The crew decided the safest option was to tow the vessel to a nearby marina, the RHIB was moored alongside one of the pontoons and the Coastguard informed that that the second lifeboat was no longer required. Whilst the RHIB was being towed another smaller RHIB had approached who were friends of the divers. They followed into the marina, picked up one of the divers to take him back to the harbour where he could pick up his car, trailer and drive back to recover the RHIB. As the conditions had deteriorated further the lifeboat crew decided to escort the smaller RHIB to ensure their safe return to harbour. (RNLI report).

***March 2019 19/062***

Five divers had been diving near an island when their RHIB suffered a malfunction and began to drift away from the site. A lifeboat soon located the RHIB with one person aboard and towed it to shore. The lifeboat returned to the dive site, recovered the four remaining divers who were stranded on a rock and took them ashore. (Media report).

***March 2019 19/078***

A RHIB with seven divers aboard was travelling towards a dive site when the engine cut out. Several attempts were made to restart the engine with some preliminary checks being made. Nothing was seen initially but there was a smell of fuel. With the possibility that the engine had flooded and as the conditions were calm, it was agreed to wait for around ten minutes before trying to re-start the engine. It failed to start and a fuel sheen was seen on the sea surface. The Coastguard was called and as the RHIB was drifting slightly they advised to drop anchor and await rescue. A lifeboat arrived and towed the RHIB back to shore where a Coastguard rescue team met the divers.

***April 2019 19/081***

Four trimix divers carried out a RHIB dive. They reached a maximum depth of 55m on a wreck and had total run times of approximately 70 to 75 min with approximately 30 to 40 min of decompression stops all using individual DSMBs. The divers remained together for the decompression stop but as their computers cleared at

around 4m they ascended individually to the surface. As the last diver was completing his decompression it was noticed that a large trawler was heading directly towards the dive site. The RHIB was displaying an prominent 'A' flag and the crew tried to make the trawler aware that diving was in progress, but it did not alter course. The last diver surfaced with a dive duration of approximately 110 min and the RHIB was able to tow him out of the path of the trawler. As the trawler went past it was observed that both the bridge and deck were unmanned. Using the name of the vessel displayed on the stern the RHIB hailed them on channel 16 and a member of the crew acknowledged that they had been in the toilet during the incident and apologised. The incident was subsequently reported to the Coastguard and it was believed they passed the details to the Marine Accident Investigation Branch for further investigation.

***April 2019*** ***19/364***

A lifeboat assisted a drifting dive boat and escorted it to safety. (RNLI report).

***May 2019*** ***19/160***

A RHIB called 'Pan Pan' after suffering engine failure. No divers were in the water. The RHIB was towed in by a local port authority pilot vessel. (Coastguard report).

***May 2019*** ***19/167***

A dive RHIB contacted the Coastguard for assistance when they were unable to recover their anchor and had two divers adrift in the water. A lifeboat and Coastguard rescue team were tasked to assist. However, a passing vessel was able to help in recovering the divers and freeing the anchor, so all units stood down. (Coastguard report).

***May 2019*** ***19/148***

After a morning wreck dive four divers in two buddy pairs and a dedicated cox'n ventured out for a second dive. The weather had been changeable, and their plan was to carry out a drift dive, but they had decided to check on conditions first and, if necessary, head back to dive a wreck in a harbour. The conditions appeared to be all right and they decided to continue with the drift dive. The dive plan was agreed to be for 45 min maximum and the divers would deploy DSMBs immediately on reaching the seabed. The divers entered the water and deployed their DSMBs but the cox'n did not see them on the surface. After around 20 min and carrying out some search patterns the cox'n could still not locate any DSMBs. The sea swell and waves were increasing, and a fog was coming in. The cox'n called for assistance from two passing power boats but two other dive boats in the area answered the call with one of them suggesting the cox'n put out a 'Pan Pan' which he did. The divers had a slight current on their dive, and they surfaced in their pairs but close together. They could not see the boat and the conditions were a little worse than when they started the dive. With two DSMBs up and still no sign of the boat they decided to deploy other DSMBs they were carrying resulting in four marking their position. After 10 min they started to realise they may not be found quickly so kept close together. After around 30 min one of the dive boats that had communicated with the cox'n spotted the divers, recovered them aboard and called the Coastguard. The divers were reunited with their boat and after recovering for a short while they made their way back to port.

***May 2019*** ***19/365***

A lifeboat was tasked to assist a dive boat. (RNLI report).

***June 2019*** ***19/294***

A group of three divers became caught in a current whilst carrying out a shore dive and were pulled towards the exit of a bay. They managed to make it onto some rocks, where they were spotted by a jet skier who raised the alarm. The Coastguard tasked a Coastguard rescue team and a lifeboat who recovered the divers to shore. They were found to be safe and well and required no medical assistance. (Coastguard & RNLI reports).

***June 2019*** ***19/295***

A dive RHIB suffered engine failure with all divers safely on board. They deployed their anchor, however it did not appear to be holding, so they called the Coastguard who tasked a police boat to tow the RHIB to safety. Of the five people aboard only one was found to be wearing a lifejacket, the others only drysuits. (Coastguard report).

***June 2019*** ***19/297***

The Coastguard heard a broken message from a dive boat reporting an issue with a diver. A nearby fishing vessel was able to act as a relay for the communications and it was established that a diver had briefly been believed missing, but they had been located and recovered. It is believed the poor communications were a result of the dive boat being close in under a cliff which interrupted the line of sight required for VHF radio transmission. (Coastguard report).

***June 2019*** ***19/299***

A dive boat called 'Pan Pan' when they were unable to locate any of their ten divers, with no DSMBs being visible at the expected surfacing time. Before search and rescue units were tasked by the Coastguard, the boat reported seeing a dive light in the water and shortly after confirmed all divers had been safely located. (Coastguard report).

***June 2019*** ***19/304***

A dive RHIB contacted the Coastguard saying that they were at anchor with engine failure and that two of their divers were on a breakwater near the RHIB. A lifeboat was tasked to the scene, recovered the divers and towed the RHIB to safety. (Coastguard & RNLI reports).

***June 2019*** ***19/367***

A lifeboat was launched in order to assist a dive boat that had lost power. A second lifeboat was also launched and took the vessel under tow whilst the first lifeboat escorted them back to harbour. (RNLI report).

***June 2019*** ***19/368***

A lifeboat was contacted by a dive boat, but no assistance was required. (RNLI report).

***June 2019*** ***19/309***

A charter dive RHIB issued a 'Mayday' when they suffered engine failure with all divers safely aboard. The Coastguard requested they downgrade to a 'Pan Pan'. The position given was inland so the Coastguard

investigated, located the vessel and tasked a lifeboat to tow them to safety. A Coastguard rescue team were tasked to provide the RHIB with some safety advice when it returned to harbour. (Coastguard report).

***July 2019*** ***19/369***

A lifeboat was alerted to a problem with a dive boat. (RNLI report).

***July 2019*** ***19/370***

A lifeboat attended to a dive boat with engine failure and towed it to safety. (RNLI report).

***July 2019*** ***19/323***

A dive boat made a 'Mayday' call for an overdue diver. The Coastguard tasked a lifeboat to the scene, but the diver was located safe and well before the lifeboat launched. (Coastguard report).

***July 2019*** ***19/177***

A dive boat reported engine failure near a pier with two divers still underwater. The Coastguard tasked lifeguards, a lifeboat and a Coastguard rescue team to the location. The lifeguards were able to use their jet ski to recover the two divers and transferred them back to the dive boat. The lifeboat towed the vessel to a local marina where the Coastguard rescue team assisted them alongside and checked everyone aboard was alright. When engine power was lost, the dive boat lost power to their main VHF set but as they were carrying a handheld VHF they were able to call for assistance. (Coastguard report).

***July 2019*** ***19/181***

With four divers deployed and whilst recovering the shotline a RHIB's kill switch key was accidentally pulled out. Once it was replaced the RHIB's engine failed to restart. Two of the divers were visible on the surface with the other pair still underwater but marked by a DSMB. An anchor was deployed and a 'Pan Pan' call made to the Coastguard. A yacht and fishing vessel assisted with the safe recovery of all the divers and returned them to the RHIB. A lifeboat attended but was not required as the RHIB's engine was successfully restarted and the RHIB was able to return to port under its own power.

***July 2019*** ***19/251***

A group of four divers in two buddy pairs carried out a boat dive alternating diving, boat handling and dive managing. The second dive was on a wreck at a maximum depth of 20m with a shotline in place. There were only three divers this time but one was a CCR diver and he agreed to dive with one person first and then with the second. When the second pair surfaced with a DSMB they could see the boat, but it did not come to pick them up and attempts at attracting attention failed. The boat was seen making a search of the area directly around the shotline, but the divers had drifted downtide a considerable distance at this point as the tide was beginning to run. The planned dive time was for 30 min and after 45 min the boat handler called the Coastguard to alert that divers were lost. A 'Mayday' relay was broadcast by the Coastguard, a lifeboat tasked to assist as well as a local charter vessel and a helicopter put on standby. The divers stayed together and finned slowly towards the shore knowing that it might be possible to pull themselves out of the water onto some rocks. There were light winds and no swell, but a sea mist had begun to form so the divers took a compass bearing to the land and continued to fin slowly. The boat had started a search downstream of the dive site and located the divers relatively quickly before the lifeboat arrived on site. The lifeboat arrived, assessed the divers' condition and the search was stood down.

***August 2019*** ***19/326***

A diver went for a dive leaving his partner aboard a boat. When the engine cut out she called 999 and reported engine failure. Through questioning the Coastguard determined she had removed the kill cord and was unable to replace it. She was advised to put the engine into neutral and try again. With the engine now restarted she recovered her husband and they continued on their passage. (Coastguard report).

***August 2019*** ***19/327***

A dive boat reported sighting two divers adrift from another dive boat. The Coastguard established communications with the boat which confirmed they had safely recovered the divers and no assistance was required. The divers had reportedly been caught by the current. (Coastguard report).

***August 2019*** ***19/329***

An instructor and student were reported 40 min overdue by their dive boat and that their DSMB could not be seen. A passing boat reported to the Coastguard that they had located the divers safe and well and returned them to the dive boat. Their reported dive was to a maximum depth of 15m with a dive duration of 1 hour 40 min. (Coastguard report).

***August 2019*** ***19/335***

A dive RHIB had deployed two divers onto a shotline for a wreck dive. At the end of the dive the RHIB's cox'n was unable to locate the shot again but managed to get the attention of a passing boat which was being operated by an off duty lifeboat crewman. He informed the Coastguard who tasked a Coastguard rescue helicopter and two lifeboats to the area. The off duty crewman took his own boat to the location of the wreck as he was familiar with the area and found both divers on the shotline. They were recovered and did not require any medical assistance. The RHIB's cox'n reported that he had got confused with operating his GPS and was unable to locate the site again causing him to panic. (Coastguard & RNLI reports).

***August 2019*** ***19/224***

A boat with six divers and a non-diving cox'n travelled to a wreck site located on a sand bank. Conditions were relatively good with a slight swell and clear visibility. The wreck was located near the sand bank's marker buoy and a shot was deployed. The divers then noticed that a fog had come down leaving visibility of around fifty to a hundred metres. They started to hear loud engine noises which were not far away. The cox'n whilst travelling to the coast had heard on the radio that an offshore speedboat race was happening that day but assumed that it would be offshore and not over the sand bank. The divers started to worry fearing they might be in the way. Whilst deciding what to do they heard a Coastguard safety broadcast but

there was no warning about a boat race. They then saw one of the boats approximately fifty to seventy metres away and going at full speed in the fog. Next they saw a RHIB which appeared to be a safety boat with a single crew member and doing approximately thirty knots. It did not acknowledge the dive boat or try to contact it and they did not have the RHIB's working channel to contact them. The dive boat were worried and debated as to whether to call the Coastguard or not, but they were busy with some 'Pan Pan' calls and a 'Mayday'. Around fifteen minutes later the fog lifted and visibility improved to over a hundred metres, so the group decided to go diving with the proviso that divers had to use shotline for descents and ascents. Whilst the divers were underwater the cox'n saw several more racing boats travelling at high speed and clearly using the sandbank's buoy as a mark. The cox'n reported his concerns to the Coastguard given that the area of the sandbank was popular with small fishing craft as well as dive boats and that the deterioration in visibility with the fog should have meant the race was diverted or even abandoned and that radio warnings should have been issued.

***August 2019*** ***19/228***

A diver and his buddy diving from charter boat with two large groups of other divers aboard, totalling around thirty divers. The diver and his buddy were diving independently and not as part of either group. No boat brief had been given when they boarded the boat but the diver had identified the location of the life rafts and oxygen kit. The pair carried out their first dive and after a 1 hour 30 min surface interval they carried out their second dive, both using air, to a maximum depth of 12m with a dive duration of 60 min including a 3 min stop at 6m. They surfaced in the prescribed place as directed by the skipper, but the boat was not to be seen. A nearby RHIB with twelve divers aboard was about to depart the site but the divers called it over. The diver asked the cox'n where the charter boat was to be informed that it had already departed the site. The cox'n offered to take the diver and his buddy back to port and they were assisted aboard. The cox'n called the charter boat to inform them that they had two missing divers, but he had picked them up. The RHIB returned to port ahead of the charter boat which was halfway back. Back at the port the diver spoke to the skipper who stated that he had to go and pick up two other divers who had surfaced away from the dive site and that he had requested the cox'n of the RHIB to pick them up. At no time did the cox'n say that this was the case and his divers on the RHIB had not known they were waiting for the diver and his buddy and were shocked when they surfaced. The skipper had not briefed the diver and his buddy that recovery by another boat would occur and when he was asked if he had a logging system for divers in and out of the water, he stated he did but it only counted number of divers not names of individuals. At no time did the diver observe this logging system in use.

***September 2019*** ***19/374***

A lifeboat was tasked to a dive boat. (RNLI report).

***September 2019*** ***19/375***

A lifeboat was launched to assist a dive boat which had fouled its propeller. As the lifeboat made its way to the scene two other boats with off duty lifeboat crew, who were taking part in a fishing competition, spotted the dive boat's flare and also made their way to the scene where they spotted four divers in the water and each boat recovered two divers. When the lifeboat reached the site they were aware that there were another four divers and two crew members still aboard the dive boat which was aground on rocks but was not holed. The lifeboat launched their small rescue inflatable which made its way to the dive boat and attached a tow rope. The lifeboat was then successful in pulling the dive boat free of the rocks and secured it alongside before returning it safely to harbour. (RNLI report).

***September 2019*** ***19/338***

A dive RHIB suffered a gearbox failure with two divers still in the water. The Coastguard tasked a lifeboat who recovered the divers and towed the RHIB back to the harbour. No medical assistance was required. (Coastguard & RNLI reports).

***September 2019*** ***19/376***

A lifeboat went to the assistance of a dive boat with equipment failure. (RNLI report).

***September 2019*** ***19/233***

A fishing boat's crew issued a 'Mayday' when they lost sight of a diver's SMB and who was 20 min overdue. The Coastguard was able to calculate the likely drift from the diver's last known position and began a search operation involving a helicopter and a lifeboat. The diver was found by the lifeboat, recovered aboard, checked over and returned to the fishing boat. (RNLI report).

***September 2019*** ***19/344***

A dive boat called 999 to the Coastguard to report two of their divers were overdue. During the call the divers surfaced safe and well. (Coastguard report).

***September 2019*** ***19/345***

A fishing boat reported to the Coastguard that they had found a dive float and speargun adrift. A Coastguard rescue team and a lifeboat were tasked to search for any missing divers. A snorkeller was located safe and well who had not realised his float had drifted off. (Coastguard report).

***September 2019*** ***19/346***

A dive boat skipper called 999 to the Coastguard to report that three divers were overdue from a dive to a maximum depth of 18m. Three lifeboats and a Coastguard Rescue Team were tasked to search for them. The divers had made it ashore safe and well and were found by a member of the public. The divers were later reunited with their dive boat. (Coastguard report).

***September 2019*** ***19/378***

A lifeboat was called to assist a dive boat. (RNLI report).

***October 2019*** ***19/337***

Three divers were reported overdue whilst conducting a shore dive under a pier. The Coastguard tasked a lifeboat and a Coastguard rescue team to search for the divers. However, prior to their arrival the divers had returned safely to shore. It was later reported that there had been some confusion between the divers and their shore cover, with the dive starting later than planned. (Coastguard report).

***November 2019*** ***19/358***

A dive boat reported loss of steering with two divers still in the water. A local dive charter boat recovered both divers and towed the vessel to harbour where a Coastguard rescue team provided safety advice. (Coastguard report).

# Ascents

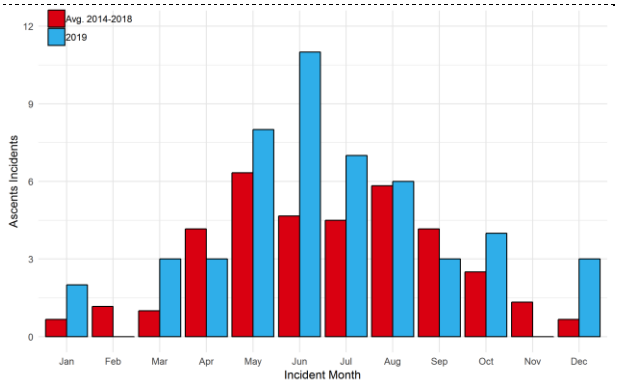


***Figure 23. Ascent related incidents in each month of the year***

***January 2019*** ***19/037***

A buddy pair carried out a shore dive. Their maximum depth was 35m and on the ascent at the 6m one of them made a buoyant ascent to the surface. The diver reported feeling sick but had felt sick the day before. The diver was put on oxygen.

***January 2019*** ***19/036***

A pair of divers carried out a shore dive. As they were ascending from a wreck one of them made a buoyant ascent from 17m and arrived inverted on the surface. His dive duration was 21 min to a maximum depth of 35m.

***March 2019*** ***19/061***

A senior diver, buddy and a recently qualified diver carried out a boat dive. They descended to a wreck and reached a maximum depth of 19m and at approximately 25 min the recently qualified diver became buoyant and indicated he had 100 bar of air left. As the senior diver and buddy prepared a DSMB in readiness to ascend, the recently qualified diver moved about 2 to 3m above them and then swam back down. On the ascent at approximately 15m he again moved above the other two but made no effort to swim back down or dump air. The buddy moved towards him to help and the senior diver, holding the DSMB, caught up with them at 14m but the diver, who did not seem able to dump enough air, moved out of reach and was lost in the visibility and the bubbles above. The senior diver and buddy surfaced with a dive duration of 28 min and saw the diver had been recovered aboard the boat and given oxygen as a precaution. The diver said he was fine, and his computer had not shown any warnings or alarms. A hyperbaric chamber was contacted for advice and the duty doctor, after being given all the dive details, was happy for the diver to come off the oxygen, return to shore and then go home. He was given all the relevant details to contact if his condition deteriorated. It was thought the diver had not adjusted his weighting from diving in fresh to seawater.

***March 2019*** ***19/065***

A diver had completed a shore dive to a maximum depth of 19m with a dive duration of 32 min. After a surface interval of 2 hours 30 min the diver, using air, and his buddy carried out a second dive with an instructor accompanying them who was checking the buddy's dive leading skills. The pair deployed a DSMB when the diver's alternate source regulator free flowed and he could not stop it. The diver was ascending slowly with the DSMB, the diver then accelerated to the surface. The diver surfaced with a dive duration of 17 min and maximum depth of 26m and a watching instructor swam out to check he was well. The buddy had initially tried to slow the diver's ascent but when it became apparent she could not, she stopped and waited at 15m. The instructor deployed his own DSMB and he and the buddy ascended together.

***March 2019*** ***19/155***

A diver carried out a charter boat dive to a maximum depth of 20m and 26 min into the dive had a rapid ascent from 14m. This was her second dive of the day, with the first being 2.5 hours earlier to a maximum depth of 32m. She was not presenting any symptoms but was put on oxygen and the skipper of the charter boat contacted the Coastguard who sought medical advice from a hyperbaric doctor. They recommended the diver be taken off the oxygen and monitored for any symptoms. None developed and the diver was left in the care of her family. (Coastguard report).

***April 2019*** ***19/067***

An instructor, using trimix 18/37 and nitrox 50, and two students were carrying out a shore based rebreather trimix course. On their ascent at the end of the 3 min stop at 9m one of the students, using a trimix 19/34 diluent in his CCR and carrying trimix 20/30 mixes and nitrox 50 bailout cylinders, deployed a DSMB and the group ascended slowly to 6m over a 15m shelf. The student with the DSMB stopped for a few seconds then slowly continued upwards. The instructor managed to grab hold of the student at around 4m and attempted to pull him down as the student tried to dump gas from his drysuit and counterlung. Their ascent rate slowed but the instructor could not prevent him reaching the surface with a dive duration of 46 min and missing 10 min of decompression at 6m. The instructor surfaced and decided he and the student should re-descend to carry out the mandatory stops. The instructor deployed a DSMB for the student to hang onto and instructed him to switch back to his rebreather loop for the stop. Although the plan was based on using nitrox 50 the instructor felt using a set point of 1.2 would give some extra decompression advantage. When the student carried out the switch his nitrox 50 regulator free flowed which the instructor turned off. Back ashore the student and instructor breathed a rich oxygen mix from their rebreather units, the student for 30 min and the instructor for 20 min. The second student had completed the dive plan although contact had been lost for about 5 min when the instructor and the other student surfaced before re-descending. The instructor had decided to re-descend because he thought it was the best solution decompression wise based on the dive having run smoothly to 6m, the short time on the surface but also so he could manage the second student who was still underwater. The instructor and student had no symptoms, but a second dive planned that day was abandoned.

***April 2019*** ***19/085***

An instructor and three students, all using air, carried out a shore dive, the aim of which was to carry out bottom line deployment and a simulated decompression stop. Buoyancy checks were carried out at 6m and 15m on the descent and approximately 18 min into the lesson the line deployment had been completed at a maximum depth of 17m. The group began to recover the line when at approximately 15m air migrated to the feet of one of the student's drysuit causing her to rise slightly. The instructor pulled her feet down but noticed panic in the student's eyes. She indicated she wanted to surface, and her regulator came out of her mouth. The instructor grabbed the regulator, replaced and purged it in the student's mouth whilst conducting a controlled buoyant lift and trying to slow the ascent as the student was swimming against him. They surfaced with a dive duration of 20 min and the instructor made himself and the student buoyant and called for help. The student was on her back exhausted but breathing normally and the instructor began to tow her to shore. The dive site's rescue boat came out, removed the student's kit and recovered her aboard. Having left the other two students underwater the instructor re-descended. He found that all the line laying equipment had been collected and the students were not in the training area. He returned to the shotline, ascended and completed a 4 min decompression stop indicated on his computer. When the instructor surfaced he saw the two students swimming to the shore. They had not followed the instructor up on the controlled buoyant lift but collected the line laying equipment and then ascended.

***April 2019*** ***19/076***

Eight divers were aboard a dive charter boat to carry out a late afternoon wreck dive. A diver, using nitrox 32 in a 12 lt cylinder with 7 lt side mounted stage cylinder of air, met his buddy for the first time aboard the boat. They had been paired together as they would be following a similar dive profile. The buddy was using a 7 lt twin-set of air and her dive objective was photography, so the diver agreed to lead the dive. It was his second dive on the wreck and his buddy's first and they planned a no stop dive estimated at 30 min with their ascent to start as they approached the no decompression limit or the diver reaching 80 bar in his main cylinder. They carried out buddy checks on route and at the site were dropped in on a shotline at low water slack. They descended the shotline to the seabed at 28m. The shot had missed the wreck, visibility was poor and it was dark. Both divers were equipped with torches and a spare but a search for the wreck seemed pointless in the poor visibility, so they explored ledges on the seabed. After 20 min the tide had increased so that finning against it was difficult and they turned and headed down tide. At 24 min and at 27m the buddy signalled to ascend as she was nearing her no decompression limit, so the diver prepared to deploy his DSMB. Inflation was successful but the reel jammed momentarily and this, combined with the running tide, lifted him a couple of metres. The diver felt his suit bulging and realised that his shoulder dump was not working. His ascent rate increased, and he had difficulty managing the DSMB, his drysuit and wing BCD dump. The buddy separated from the diver as he flared his fins, vented his suit using the neck seal and dumped all air from his BCD. He managed to arrest the ascent at 6m and dropped back to 9m before regaining control of his buoyancy. He still had hold of the DSMB with 60 bar left in his main cylinder, 220 bar in his pony cylinder and his computer now indicated a mandatory decompression stop of 2 min. Given his buoyant ascent from depth and having sufficient gas he decided to complete a 2 min decompression stop at 9m and a 6 min stop at 6m using his nitrox 32. The diver surfaced with a dive duration of 34 min to a maximum depth of 30m, activated the strobe on his torch and made visual contact with the boat. His buddy's DSMB was 20 yard away. The diver was recovered aboard the boat and his buddy was recovered 5 min later having carried out a 3 min decompression stop incurred during the incident. The divers experienced no symptoms.

***May 2019*** ***19/087***

An instructor and two students carried out a boat dive on a rebreather training course. One of the students deployed his DSMB at the end of the dive and practised a bailout ascent using nitrox 27. The ascent was fine up to 9m where he carried out a 1 min stop but on leaving the stop he was unable to control his buoyancy and ascended. The student surfaced with a dive duration of 53 min to a maximum depth of 23m. He signalled to the boat he was 'OK' and waited for the instructor and other student to surface.

***May 2019*** ***19/158***

During a training dive from a boat an instructor had a rapid ascent from 9 m after a dive to a maximum depth of 15m with a dive duration of 22 min. She had no symptoms, but assistance was sought from the Coastguard as a precaution and she was put on oxygen. The dive boat was initially assisted by a lifeboat and then met when it returned to shore by Coastguard rescue teams. After being assessed by the ambulance service the diver was discharged with no further need of assistance. She reportedly had a free flow resulting in the ascent. (Coastguard & RNLI reports).

***May 2019*** ***19/147***

A group of twelve divers were on a three day dive boat charter trip. On the first dive of the second day the divers had planned a reef dive to see seals. One of the divers and his buddy had planned to be the last pair to enter the water. As the other divers started entering the diver needed to use the toilet. He de-kitted but struggled to use the boat's toilet system. He returned slightly flustered and rushed when re-kitting in order to catch the slack water window for the dive. On entering the water the diver was concerned about his drysuit's neck seal and his buddy adjusted this at the surface. The buddy was leading the dive and gave the diver some time at the surface to recompose himself before starting their descent using the shotline. At 6m the diver indicated he thought he had a problem with his weightbelt. The buddy tightened the belt, although it was not actually loose, and after confirming the diver was 'OK' they started to descend again. At around 7m the diver's BCD became tangled in the shotline. The buddy indicated to the diver to stop and he untangled the rope. The diver descended about another metre into some kelp, put air into his drysuit but felt he was not getting adequate air from his regulator. He put more air in his drysuit and began to ascend, then made a buoyant ascent and surfaced with a dive duration of 4 min to a maximum depth of 8m. On the surface he removed his regulator but failed to inflate his BCD and started to swallow water. The buddy surfaced 1 min later and found the diver in a state of panic and not wanting to replace the regulator in his mouth. The buddy inflated the diver's BCD, signalled the dive boat there was a problem and began to tow the diver towards the boat. The boat's lift was lowered, and the skipper and the buddy manoeuvred

the diver onto it, and he was recovered aboard. The buddy explained what had happened and asked the skipper to administer oxygen. When the diver was stable the buddy was recovered aboard where he continued to administer the oxygen to the diver for 15 min. The diver had no symptoms but said he had swallowed three or four mouthfuls of water. The diver made a full recovery. He had only done a few open water dives in the drysuit and was found to be over-weighted so extra practise was recommended with the suit and buoyancy before further sea dives were undertaken.

***May 2019*** ***19/111***

An instructor and two students, all using air, carried out a boat dive. They descended to a wreck using a shotline having completed bubble checks at 6m. At 20m the instructor checked that both students were happy to continue with the dive but one of them signalled she had an ear problem so the instructor signalled to ascend to relieve the pressure and the student began to fin upwards. The instructor checked on the second student but when he looked back he found the first student was still finning up. The instructor started to ascend and managed to grab hold of her fins but had a fast ascent warning on his computer. The pair surfaced with a dive duration of 4 min to a maximum depth of 20m. They signalled 'OK' to the boat and were recovered aboard. The second student surfaced 3 min later. The first student and the instructor were put on oxygen after a call to a diving doctor and given neurological checks. The diving doctor then called back and, as neither diver were suffering any symptoms, advised they come off the oxygen and report to a medical centre when they returned to shore. The student with the ear problem reported that she had inflated her BCD and then added a bit more air whilst finning on the ascent. She felt she was sinking and her ears were still a problem, so she kept finning without looking at her dive computer, the other student or the instructor. The instructor and student attended the medical centre and were checked over, advised not to dive for the next 24 hours and to seek medical assistance should their condition change.

***May 2019*** ***19/098***

A newly qualified diver and her buddy carried out a RHIB dive and were underwater when the RHIB began to take on some water and the bilge pump did not appear to be working. One of the transom bungs had fallen out, a temporary repair was made, and the bilge pump fuse was found to have blown. The water was cleared by circling the RHIB with the elephant trunk down. About 30 min later the newly qualified diver surfaced alone and gave an 'OK' signal. Her buddy, who was also her father and an instructor, surfaced shortly after and they were recovered aboard the RHIB. The diver surfaced with a dive duration of 30 min to a maximum depth of 19m but reported that she had made a buoyant ascent from 7m omitting a safety stop but felt fine. Her buddy felt she should go onto oxygen and this was commenced. The cox'n asked if she had any symptoms and she said not. One of the other divers on the boat felt that they should contact the Coastguard to inform them that they had a diver who had missed a safety stop and was on oxygen and made a suggestion to this effect. The buddy said this was not necessary. It was suggested that the remaining divers prepare to dive but the other diver pointed out that with a diver on oxygen plus problems with the boat that, in her opinion, they were already on the edge of the incident pit. The RHIB returned to harbour and the oxygen treatment was stopped about half an hour later with the newly qualified diver feeling fine.

***May 2019*** ***19/165***

A trimix diver carried out a dive using trimix 19/40 to a maximum depth of 60m but missed one decompression stop on ascent. His dive duration was 63 min. No symptoms were present, but the diver was placed on oxygen by the skipper of the dive charter boat. The Coastguard was contacted and then a hyperbaric chamber. The doctor advised the boat to return to harbour and monitor the diver for symptoms, however, none presented. (Coastguard report).

***May 2019*** ***19/108***

An instructor and two students carried out their third shore training dive of the day. Their first dive was to a maximum depth of 17m with a dive duration of 34 min and, after a surface interval of 1 hour 23 min, their second dive was to a maximum depth of 17m for 40 min. After a surface interval of 2 hours 44 min they carried out their third dive. They descended to a 6m platform to carry out controlled buoyant lifts which the students successfully completed. They descended to the 12m platform to carry out alternate source ascents to 6m. One of the students had a slight issue ear clearing and the group ascended to the surface. After a couple of attempts between 2m and 3m the student was able to clear his ears and the group descended to the 12m platform. The instructor demonstrated, and the students copied, a partial and full mask clear. The instructor then demonstrated mask removal and when copied by the first student he replaced the mask on his face but caught his hood under the side of his mask. The student became uncomfortable and sensing his anxiety and as his eyes were closed the instructor put his hands on his shoulders to reassure him he was there. The student tried to readjust the mask but was unable to do so and the instructor believed he inhaled some water as he went into immediate panic. The instructor felt the student was about to bolt for the surface so increased his grip when the student snatched off his hood which knocked his regulator out. Unsure whether he or the student replaced the regulator the instructor shouted through his regulator telling him to calm down and breathe. The student appeared to calm down enough to give the 'Up' signal. The instructor spoke again through his regulator saying he was going to take him up and performed a controlled buoyant lift during which he kept repeating to the student to stay calm. The instructor and student surfaced with a dive duration of 39 min to a maximum depth of 11m. At the surface the student coughed and water came out of his nose, but he appeared to recover quickly. The second student surfaced, and the group returned to shore, with the instructor towing the first student. Back ashore the student was distressed by what had happened and said he had a bad headache and was put on oxygen. There were paramedics and an air ambulance on the site attending to another incident. The paramedics examined the student and said it would be advisable for him to go to A&E and possibly see an ENT doctor as they thought the student had water in his sinuses which could be the cause of his headache.

***May 2019*** ***19/115***

Three divers were on a hardboat diving trip. They carried out a wreck dive with one diver using independent twin 10 lt cylinders with nitrox 22 and carrying a 7 lt stage cylinder of nitrox 30. The second diver was using twin 12 lt cylinders

with nitrox 25 and carrying an 11 lt stage cylinder of nitrox 53. The third diver was using twin 12 lt cylinders with nitrox 25 but had no stage cylinder. The aim of the dive was as a workup to conduct deeper dives with longer run times later in the week and using a single gas throughout. The three divers as a team had conducted four dives all to a maximum depth of 30m on the previous two days. On the wreck the divers left the bottom at 27 min as the diver using the 10 lt twin-set had 70 bar in each cylinder and had accrued 2 min of decompression. They returned to the shotline where the third diver deployed a DSMB and the other two used the shotline as reference for their ascent. At approximately 10m the first diver attempted to practise switching to his stage cylinder. He switched regulators and turned on the stage cylinder at which point the first stage free flowed. The second diver immediately offered his alternate source and once settled the first diver replaced this with his own regulator. The second diver noticed that the first diver appeared to be finning with considerable effort to maintain positive momentum at approximately 10m. At the same time the third diver saw that the shotline appeared to be tangled with the two divers, so the second diver signalled to the first to leave the line and join the third diver with the DSMB. He was also concerned that the first diver was carrying a heavy reel whilst struggling to ascend, so he took the reel in an attempt to reduce the diver's weight, but this had no effect. The first diver then signalled he was 'out of air' and took the second diver's stage cylinder regulator by which time the group had re-descended to 15m. The first and second diver had a firm hold of each other but began an uncontrolled ascent and surfaced with a dive duration of 33 min to a maximum depth of 30m each missing a 1 min decompression stop. The third diver ascended with no decompression requirement. The group were recovered aboard their boat and on inspection it was found that the first diver had 70 bar in his right cylinder and 10 bar in his left. The first and second divers were put on oxygen and the third diver on nitrox 53 and then oxygen. A diving doctor was contacted and the boat skipper contacted the local recompression chamber. All the divers remained on oxygen during the boat's return to harbour and were taken to the chamber. Having spent between 2 hours and 2 hours 30 min on oxygen, the chamber doctor advised the divers that no further treatment was required but they should take a 24 hour break from diving.

***June 2019*** ***19/121***

A diver was at a shore diving site with two groups of divers on a training weekend. On the Saturday the diver was next to the jetty getting ready for a dive when he heard shouts from across the water and moments later a member of staff on the site arrived to start the rescue boat. He was on the radio asking for someone to help him but there seemed to be some delay so the diver asked if he could help. With his offer accepted they got into the boat and reached three divers on the surface within a few seconds and found one of the divers was clearly struggling to stay afloat. The diver was quickly recovered aboard, and the other divers were asked what had happened. The group were taking part in a drysuit orientation course and said they had been at 7m for only 2 min and the diver, who was a trainee, had panicked and made an uncontrolled ascent. When the divers were asked if they were 'OK' to swim to shore they said yes. The trainee was taken back ashore and appeared to be in shock, shivery, repeating she was sorry over and over again but was otherwise unharmed. The diver reassured her and when the rescue boat reached the jetty he and the staff member waited for her to get the strength back in her legs and helped her up the jetty's ladder to where two other staff members were waiting with first aid kits and took over at that point. They determined that she was just scared and shocked but otherwise fine.

***June 2019*** ***19/416***

A group of four divers in two buddy pairs carried out a shore dive. All used air and each pair consisted of an experienced diver leading a less experienced buddy. On the descent there were some issues with the two buddies with one of them re-surfacing from 1m but they then managed to descend to a 6m platform. From there the group gradually descended a cliff face to 17m where they travelled along it at that depth in their buddy pairs. One of the buddies was struggling with buoyancy, sinking below his dive leader, and then began to rise and ascended fairly quickly from 17m but halted at 7m and was followed by his dive leader. (Incident No. 19/113). The other pair had begun to follow them but realising the ascent was too rapid, the dive leader moved away from them to slow her and her buddy's ascent and dropped down slightly heading towards the wall. As she headed towards the wall her buddy tried to follow but became inverted. He conducted a roll manoeuvre and returned to a level position but during the roll his feet had come out of his drysuit boots, one fin came off and he continued to rise to 5m. He was unable to re-descend so surfaced with a dive duration of 11 min. He inflated his drysuit and BCD and waited for his dive leader. The dive leader had not seen his ascent and on looking around could not locate him. The other pair had dropped back to 15m and were seen by the lone dive leader who descended to see if her buddy was one of them. On confirming her buddy was not with them the lone dive leader continued looking for her buddy and with no sign of him she ascended looking around throughout. She carried out a 3 min safety stop at 6m and surfaced, with a dive duration of 15 min, to where her buddy was waiting.

***June 2019*** ***19/113***

A group of four divers in two buddy pairs carried out a shore dive. All used air and each pair consisted of an experienced diver leading a less experienced buddy. On the descent there were some issues with the two buddies with one of them re-surfacing from 1m but they then managed to descend to a 6m platform. From there the group gradually descended a cliff face to 17m where they travelled along it at that depth in their buddy pairs. One of the buddies was struggling with buoyancy and kept going beneath his dive leader who moved out from the wall so he could remain above but able to see him. The buddy then began to rise and ascended fairly quickly from 17m but halted at 7m and was followed by his dive leader. The less experienced diver then dropped rapidly from 7m to 15m followed by his dive leader. The diver calmed down and after his dive leader checked he was 'OK', they continued with their dive. They surfaced later with a dive duration of 28 min to a maximum depth of 19m. The inexperienced diver later said that he had lost sight of the wall and had panicked as he had no point of reference. (linked to Incident No. 19/416).

***June 2019*** ***19/125***

A diver and her buddy carried out a boat dive both using air. At 14m and the end of the dive the diver began to prepare to deploy her DSMB as agreed. She could not remove the buoy from her pocket as her hands were cold. She started to rise slightly but finned down, clung to a rock

to stabilize herself and signalled to her buddy to deploy his DSMB. The diver felt a little buoyant but was also beginning to have problems with her regulator and getting more and more water in her mouth with every breath. She switched to her octopus regulator but that didn't feel like a smooth breathe either. The diver was starting to feel anxious, switched back to her primary regulator and then went to take her buddy's octopus regulator. She was beginning to panic and did not purge it so took in another mouthful of water. She switched back to her primary regulator to allow her buddy to inflate his DSMB. They began the ascent and the diver thought she inflated her BCD a little but was getting more water in her mouth. The diver grabbed hold of her buddy's hand and he attempted to slow their ascent but at around 8m and in complete panic she decided she had to surface alone to avoid drowning. At 3m she let go of her buddy's hand and ascended to the surface and he went back down to 6m to do a safety stop for 3 min convinced she was close enough to the surface to be fine and safer for himself to go back down at that point. The diver had surfaced with a dive duration of 41 min to a maximum depth of 14m omitting the safety stop. She fully inflated her BCD and checked that she could see her buddy down the DSMB line. He completed his stop and surfaced. On the surface the diver belched loudly about eight times but felt no pain in her ears or lungs, only salt in her mouth. The divers were recovered by the boat and the diver, although showing no symptoms other than she was cold and upset, was put on oxygen for around 8 min. She was monitored during the journey back to harbour and for the next two hour ashore but showed no symptoms.

***June 2019*** ***19/182***

A diver using air carried out her first cold water sea dive using a second hand drysuit with boots that were slightly too big for her. She and her buddy, also using air, entered the water from a RHIB and she initially struggled on the descent using a shotline. They reached around 20m and with her buoyancy resolved they began their dive on and around a wreck. 16 min into the dive the diver experienced buoyancy issues with the undulating seabed and slight current. Over a 5 min period she ascended and descended a couple of times, over a range of 8m to 10m each time, and reached a maximum depth of 25m. At one point she became inverted with air in her drysuit boots pulling her upwards but her buddy was able to right her and she regained buoyancy control. At the start of the buoyancy issues the diver had 100 bar remaining from a 220 bar air fill but having regained her buoyancy she checked her air and found she now had 50 bar. She indicated this to her buddy who immediately deployed her DSMB and they began a steady ascent with the diver feeling slightly stressed but not panicking. At 18m she took the last breath from her cylinder and took her buddy's alternate source regulator. They continued with their steady ascent and surfaced with a dive duration of 26 min having omitted a safety stop at 6m. The diver was able to inflate her BCD on the surface and the pair were recovered aboard the RHIB. No ill effects were reported following the dive.

***June 2019*** ***19/296***

A group of three divers had a rapid ascent from a depth of 38m after a 29 min run time. They had ascended in approximately 1 min so the skipper of their dive boat placed them on oxygen and contacted the Coastguard for assistance. A connect call was established with a dive doctor who felt that as there were no symptoms and that they believed the dive was within no decompression limits that the divers should remain on oxygen and be monitored carefully. The dive boat returned to shore without further assistance required. (Coastguard report).

***June 2019*** ***19/402***

A student in a group of four carried out a training dive. At a depth of 5m he was having problems whilst trying to complete the removal and replacement of his mask due to the mask seal overlapping his hood. After several attempts the student panicked and started to surface. His instructor and an assistant diver helped him with a controlled ascent and on surfacing the student showed no symptoms apart from a headache. The diver was referred to a doctor as a precautionary measure.

***June 2019*** ***19/137***

An instructor trainer on an instructor training course carried out a boat dive with two students, one of whom was using a rebreather with nitrox 70 in a bailout cylinder. During the early part of the dive on a wreck one of the rebreather cylinders had come free of its mounting and was only being retained by regulator hoses. The instructor trainer positioned the student on a flat part of the wreck and the cylinder was re-secured. It was not clear what was retaining the cylinder even by comparison with the cylinder on the opposite side. Signals were exchanged and all were happy to continue with the dive. Approximately 26 min into the dive the instructor trainer turned to check on the rebreather student leading the other and saw that in his 'instructor' role he had bailed out from his rebreather. He had not signalled why or whether he had a problem but appeared comfortable on his bailout. The instructor trainer was concerned and saw the CCR cylinder had come adrift again, assuming this to be the main reason for the bailout. The student could not see the bailout cylinder's contents gauge and appeared unconcerned but the instructor trainer noted that he had around 120 bar in the 11 lt cylinder so signalled between the options of aborting the dive with an immediate ascent or abort the dive by an immediate return along a distance line of approximately fifteen metres back to the shot. The rebreather student wanted to return to the shot which the instructor trainer felt reasonable as he appeared comfortable on his bailout. On the ascent at 8m the student, without signalling, removed and discarded his bailout regulator and returned to the rebreather's loop. This appeared to be for around two breaths before he removed the mouthpiece and his eyes indicated a level of stress. When the instructor trainer saw him return to the loop he moved within arm's reach with the shotline between them, recovered the bailout regulator and held it at eye level whilst holding onto the student's upper arm with his other hand. The student took the regulator and went back onto his bailout but was getting buoyant. The instructor trainer slowed the ascent by dumping gas and he and the student made a controlled ascent omitting a safety stop. They surfaced with a dive duration of 32 min to a maximum depth of 12m where the student was buoyant but the instructor maintained his grip until the boat arrived. All the divers were recovered aboard and the student was quite relaxed about the occurrence quoting his previous experience as both a deep 100m plus diver and cave penetration instructor. He wanted to complete further dives and, given the ascent was normal, he had used nitrox 70 in his bailout cylinder, he was able to do so.

***June 2019*** ***19/139***

A diver and her buddy carried out a boat dive. On the ascent from a reef at a maximum depth of 21m the diver deployed a DSMB at 16m and made an uncontrolled ascent omitting a safety stop. The diver surfaced with a dive duration of 30 min. The diver was placed on oxygen for approximately 20 min, given fluids to sip and kept still. An assessment was carried out and observations made every 15 min until the boat returned to harbour. The diver had no symptoms of DCI and was instructed to rest, avoid strenuous activity and drink fluids. She was requested to update her condition during that evening and the following 48 hours.

***June 2019*** ***19/193***

A diver, who had mistakenly set his computer to nitrox 32, and his buddy both used air for a boat dive. They reached a maximum depth of 28m on a wreck and as they prepared to ascend they tried to co-operate to fill the DSMB. The diver struggled when inflating it, so they swapped roles and the buddy inflated the DSMB and the diver reeled in on the ascent, which was relatively slow. At 6m the diver was unable to control his buoyancy as he could not dump air from his drysuit and he made a buoyant ascent and surfaced with a dive duration of 34 min. His buddy had incurred a 7 min decompression stop at 6m which he completed and surfaced. The diver was recovered aboard the boat but his computer had locked out despite the nitrox setting. He was placed on oxygen and when this was exhausted nitrox was used. Due to miscommunication with the skipper, who believed the ascent had been from 28m, a helicopter and rescue boat were called but were stood down when the information was corrected. After speaking to a dive doctor the buddy was given an assessment when back on shore by an ambulance paramedic and it was agreed no further action was necessary.

***June 2019*** ***19/412***

A student and his buddy carried out their first training dive of the day in a group of five. During the dive to a maximum depth of 18m the student panicked and began to ascend rapidly. His buddy accompanied him and the instructor followed with the rest of the group. At the surface the student insisted he felt fine but oxygen was administered as a precaution.

***July 2019*** ***19/172***

An instructor carried out a training dive from a boat with two students. The instructor and one of the students were using nitrox 32 with the other student using air. A controlled buoyant lift exercise was carried out from 20m to 6m after which the group descended to the seabed to continue their dive. At the end of the dive the group ascended with both students using SMBs and they began a planned stop at 6m but the student using nitrox 32 was unable to maintain his buoyancy control and ascended to the surface. The instructor and other student surfaced together a few moments later with a dive duration of 23 min to a maximum depth of 21m. All divers reported they were well and no further dives were conducted that day.

***July 2019*** ***19/196***

A diver and his buddy, both using CCRs with air diluent, carried out a boat dive. The diver had recently completed a CCR course at an inland freshwater site and, having carried out a buoyancy check, this was his first dive with the CCR in the sea. The pair descended a shotline to 20m and then down a reef to a maximum depth of 40m where they spent 6 min checking the operation of bailout cylinders and returned onto their CCRs. They then gradually ascended up the reef to 19m. The diver decided to deploy his DSMB mid-water which took a little time and he put in more air than needed. During this he rose to 16m fairly quickly, breathed out through his mask to slow the ascent and found his drysuit exhaust valve was not dumping enough air even though it was on its lowest setting. The diver tried swimming back down but ended up with air trapped in his drysuit legs. During this he had ascended to 14m and then made a buoyant ascent to the surface missing a decompression stop. The diver surfaced with a dive duration of 39 min. He was quickly recovered by the boat and a doctor in his dive group monitored the diver whilst oxygen was administered whilst the buddy was recovered and during the 40 min journey back to shore. The doctor continued to monitor the diver for the next 4 hours 20 min but there were no signs or symptoms of DCI.

***July 2019*** ***19/282***

A diver walked into a diving centre shop and wanted to go onto oxygen as he had missed the last 2 min of a safety stop on a shore dive to a maximum depth of 20m with a dive duration of 27 min. The diver had no symptoms but for his own peace of mind was put on oxygen for 10 min.

***July 2019*** ***19/235***

A dive leader and two divers, all using air, carried out two boat dives. The first dive was to a maximum depth of 14m with a dive duration of 33 min. On the second dive, which had a planned maximum depth of 20m, one of the divers lost her buoyancy and dropped to 24m. The dive leader indicated for the other diver to remain at 20m whilst he descended and helped the diver regain her buoyancy. With all three back at 20m the dive leader checked air and the diver who had lost buoyancy had 30 bar, the other diver 100 bar. The dive leader opted to put the diver with 30 bar onto his alternate source regulator and they ascended together with the other diver. The trio surfaced with a maximum depth of 24m and a dive duration of 22 min including a 3 min safety stop. The diver who had carried out the alternate source ascent seldom used her drysuit for buoyancy and often changed parts of her equipment. The dive leader had encouraged her to keep her drysuit dump valve open but on this dive going deeper than planned caused undue loss of air very quickly as she struggled to gain buoyancy control by putting air in her drysuit for it to come straight back out.

***July 2019*** ***19/283***

An instructor and his student had carried out a shore dive on a Saturday to a maximum depth of 6m with a dive duration of 90 min. On the Sunday they carried out another shore dive and descended to a wreck with a maximum depth of 18m where the student appeared to be uncomfortable. The instructor decided to abort the dive and instructed the student to ascend using the shotline. The student inflated his BCD, eye contact was made at 11m when the student bolted to 5m and then to the surface. The student said he was having difficulty breathing, then dumped air from his BCD and re-descended to 5m before ascending again. He surfaced with a dive duration of 14 min. A rescue boat was called and oxygen given to the diver and a helicopter and

ambulance tasked to the scene. He was seen by a doctor and taken by ambulance to hospital. The diver was later discharged and able to collect his car from the dive site.

***July 2019*** ***19/325***

A charter dive boat reported a diver having had a rapid ascent from 10m after a no stop dive to 25m. The diver was asymptomatic so radio medical advice was sought. A diving doctor advised the diver be monitored in case symptoms developed. The dive boat returned to shore, where they were met by a Coastguard rescue team. The diver was given advice on calling if he began to feel unwell and he then took himself home. (Coastguard report).

***July 2019*** ***19/184***

A diver carried out two RHIB dives. The first dive was to a maximum depth of 30m with a dive duration of 32 min including a decompression stop. After a 3 hour surface interval the diver and his buddy, both using air, carried out a gentle drift dive. This was the diver's third dive using a new neoprene drysuit with a shoulder dump having previously used a membrane suit with a cuff dump. On the descent the diver was having difficulty maintaining a horizontal attitude so his buddy adjusted his weights, received an 'OK' from the diver so the pair continued their dive reaching a maximum depth of 16m. As they prepared for their ascent 39 min into the dive the diver attempted to dump all the air from his drysuit and BCD but became buoyant and was unable to control his ascent and surfaced with a dive duration of 42 min. His buddy was out of reach and unable to grab the diver but he made a controlled ascent and surfaced having omitted a 3 min safety stop at 6m. At the surface the buddy saw the diver being recovered aboard the RHIB and was then recovered himself. The diver was checked as were his computers which showed no fast ascent warnings.

***August 2019*** ***19/204***

A diver and his buddy, both using air, carried out a boat dive. The buddy lost control of her buoyancy at 11m and started to ascend but in the low underwater visibility became separated from the diver. She almost surfaced but re-descended to 5m where she regained her buoyancy and carried out a separation drill. The diver surfaced with a dive duration of 5 min to a maximum depth of 11m and was shortly followed by the diver who had also carried out a separation drill. They both gave 'OK' signals to the boat and were recovered aboard. The diver had a little blood in her mask but she had no other symptoms.

***August 2019*** ***19/252***

Three divers, all using air, carried out two shore dives the aim of which was for two of the divers to practise their skills whilst being watched by an instructor, in preparation for a practical diving exam. The first dive had been to a maximum depth of 41m with a dive duration of 47 min with a 1 min stop at 9m and 3 min stop at 6m. After a 2 hour 47 min surface interval the divers carried out their second dive reaching a maximum depth of 25m. During the dive it was noticed that one of the divers was struggling with his buoyancy with his drysuit venting at one point which was pointed out to him. The diver appeared to be fine and the pair continued with the plan to practise mid-water DSMB deployment. The diver appeared to have difficulty with this and made three attempts but the air from his octopus regulator was bypassing the DSMB's opening. He then moved towards his buddy and grabbed her octopus regulator with no clear signal of what his problem was. The buddy took hold of the diver and started to gradually ascend. The diver was not assisting with finning and was heavy and as he began to ascend he did not attempt to assist by using his drysuit. The buddy had 110 bar left so decided to take the diver to an area where she knew there was a shotline which she could use for a more secure controlled ascent and to carry out safety stops considering their previous dive's depth. The supervising instructor assisted in helping to take the diver towards the shotline when he realised the diver was not assisting in his rescue. At 7m on the shotline the buddy showed the diver her available air, took him to 6m where they carried out their 4 min stop and then surfaced with a dive duration of 36 min. The buddy maintained a secure hold on the diver but he had to be told twice to orally inflate his BCD. Once he had done so the group swam to the shore and exited the water.

***August 2019*** ***19/303***

A dive boat contacted the Coastguard to request assistance for a diver, using trimix 31/12, who had difficulty breathing whilst diving and then had made a rapid ascent from 6m missing 13 min of decompression stops and had surfaced with a dive duration of 33 min to a maximum depth of 34m. The diver was put on oxygen and medical advice sought from a hyperbaric chamber who advised that the diver be taken to a GP practice for assessment. (Coastguard report).

***August 2019*** ***19/218***

An instructor and his two students, all using air, carried out a boat dive. They reached a maximum depth of 18m on a wreck dive and as they ascended one of the students practised DSMB mid-water deployment at 7m. The student lost buoyancy control and before he could correct this he had surfaced with a dive duration of 30 min. He alerted the boat and was recovered aboard fit and well. The instructor and other student conducted a 3 min safety stop before surfacing 4 min later and were recovered by the boat. During the dive brief the divers had been instructed to omit safety stops in the event of separation.

***August 2019*** ***19/220***

Three divers, all using air, carried out a boat dive. During their ascent at 14m one of the divers used his drysuit inflation valve to fill his DSMB but the valve stuck in the open position. One of the other divers gave his alternate source regulator to the diver and they ascended. The plume of bubbles from the free flowing valve made it difficult to assess their ascent rate but it was fast. They surfaced with a dive duration of 28 min to a maximum depth of 22m. The third diver took hold of the DSMB and surfaced in a controlled manner. All the divers were recovered aboard their boat and the two that had made the alternate source ascent were put on oxygen for 43 min as a precaution. The divers returned to shore and were monitored for a further 2 hours before returning home. Follow up calls were made to check the divers but they had no signs or symptoms of DCI.

***August 2019*** ***19/243***

Three divers, all using air, carried out a sea dive and reached a maximum depth of 21m. One of the divers was unaware that he had lost a weight pouch from his harness

and began to ascend. He finned down hard to prevent ascending too fast but surfaced with a dive duration of 12 min unsure about what had happened. His dive computer did not record a fast ascent but a safety stop had been omitted. The diver was monitored, was asymptomatic but did not dive again that day.

***September 2019*** ***19/342***

A diver carried out a boat dive and after a rapid ascent from a 30m dive he contacted the Coastguard who arranged medical advice from a diving doctor. They advised the diver be taken to hospital by ambulance and monitored whilst on oxygen. The dive RHIB took the diver ashore where they were met by an ambulance. The diver reported he felt he had been incorrectly weighted. (Coastguard report).

***September 2019*** ***19/260***

A diver was on a weekend boat diving trip. She had carried out two dives on the Saturday with the first to a maximum depth of 25m with a dive duration of 48 min. After a surface interval of 3 hours, a second dive was to a maximum depth of 11m with a dive duration of 45 min. These were the first dives she had carried out since the previous year when she had experienced buoyancy issues, but these had been discussed ahead of the weekend including correct weighting and how to recover from an inversion. The diver had no buoyancy issues on these two dives. On the Sunday the diver was buddied with an experienced diver who was aware of her buoyancy issues. They carried out a dive, both using air, and reached a maximum depth of 24m. At around 33 min into the dive the diver felt she could not control buoyancy using her drysuit although the exhaust valve was fully open and, despite the techniques previously discussed, she had air in her drysuit legs. She made a buoyant ascent from 16m and her buddy also surfaced. They re-descended to around 16m and continued the dive but after a further 10 min the diver ran out of air. Her buddy performed an alternate source ascent including a safety stop and they surfaced with a dive duration of 53 min. The boat recovered the pair and the diver said she felt fine, if not a bit embarrassed, and showed no symptoms of DCI. The buddy had noticed the diver getting 'floaty' and thought she had probably focused on her camera too much. He had tried to prevent the first ascent but was unable to do so but he also admitted they both failed to carry out air checks.

***September 2019*** ***19/268***

A diver and his buddy carried out a shore dive. The pair ascended and at around 16m visual contact was made, seconds before the buddy made a buoyant ascent. The diver looked around for about 1 min and headed towards an exit point to conduct his safety stop. After completing this he surfaced, with a dive duration of 48 min to a maximum depth of 23m, and met up with his buddy. She explained that she had gone straight to the surface and omitted a safety stop. The diver and buddy re-descended to 6m for the buddy to complete the safety stop, remained for an extra couple of minutes and surfaced. After the dive, having made sure everything was alright and consulting with another diver, it was suggested the buddy did not carry out another dive. It was reported that the buddy's drysuit was not venting on the ascent. The buddy had tried to turn the dump valve both ways but nothing happened. The valve was open at the start of the dive and no previous issues noted.

***October 2019*** ***19/247***

A diver and his buddy, both using air, carried out a drift dive. As they neared the end of the dive the diver signalled to ascend and instructed the buddy to hold onto the SMB line in order to control his ascent and provide him with a datum. They began a slow ascent and reached 10m when a buoy line came into view and, with the limited visibility and speed of the current, there was little time to react. The SMB line drifted to the right whilst the divers were moving left and the buddy hit the buoy line and rolled off towards the diver. The diver took hold of the buddy to help him regain his attitude but noticed the SMB line had become taut so started to let out the line to prevent them being dragged to the surface. However, the pair continued to ascend and even though the diver dumped air from his wing BCD and drysuit he could not slow their ascent. Given that the buddy was relatively inexperienced, the diver decided to continue the ascent with him rather than risk him having an issue on the surface. The time from 10m to the surface was approximately 30 sec which resulted in an ascent rate alarm on the diver's computer. The divers surfaced with a dive duration of 30 min to a maximum depth of 20m and were recovered aboard their boat. Both divers were monitored but were asymptomatic. It was later discovered that when the buddy had hit the buoy line one of his weight pouches had been caught and fallen out.

***October 2019*** ***19/353***

A diver made a rapid ascent from 40m and missed 8 min of mandatory decompression. The dive boat skipper called the Coastguard who accepted the offer of assistance from a local pilot boat to transfer the diver back to shore where they were met by a Coastguard rescue team and an ambulance. The ambulance took the diver to a hyperbaric chamber where the doctor assessed the diver and placed them on oxygen for 6 hours as a precaution. (Coastguard report).

***October 2019*** ***19/409***

A student in a group of nine carried out a shore training dive. During the dive, to a maximum depth of 12m, the visibility suddenly deteriorated as silt was kicked up, the student panicked and started a rapid ascent. His buddy held on to him to slow the ascent, and the instructor ascended with the remaining students to re-join them on the surface. On shore the student was given oxygen but showed no ill effects after he had calmed down.

***October 2019*** ***19/274***

An instructor and two students, all using air, carried out a boat dive to practice SMB use. The dive on a wreck went well until the ascent to 6m where the student in charge of the SMB was unable to maintain his buoyancy, omitted a safety stop and drifted up to surface with a dive duration of 23 min to a maximum depth of 19m. The instructor and other student exchanged 'OK' signals and ascended to surface approximately 1 min afterwards. All divers were fine on the surface and were recovered by their boat.

***December 2019*** ***19/414***

A diver and his buddy completed a dive without incident to a maximum depth of 22m with a total duration of 34 min. After a surface interval they undertook a second dive to a maximum depth of 21m. Towards the end of the dive the pair started their ascent but the diver lost his sense of

the area and made a rapid ascent to the surface. The diver was very pale and shocked and received first aid treatment from the on-site safety team including administering oxygen. The diver received oxygen for 20 min, had a three minute break, then remained on oxygen for a further 12 min.

***December 2019*** ***19/411***

A diver and her buddy carried out a shore dive to a maximum depth of 15m. Approximately 35 min into the dive the diver signalled to her buddy that she was cold and they began to ascend. Between 15m and 12m the diver switched from her primary regulator to her octopus, but seemed calm and there was no evidence of a free flow. Shortly afterwards as the ascent continued she then dropped the octopus regulator, refused her buddy's alternate source regulator and surfaced. On the surface the diver was gasping for breath and was taken ashore by a rescue boat. As she changed into dry clothes the diver noticed squeeze marks on her upper body. She said that she had not added air to her drysuit as she had not felt the squeeze underwater.

***December 2019*** ***19/290***

A trainee had carried out two shore dives. The first was on a Saturday to a maximum depth of 16m with a dive duration of 44 min including a 3 min safety stop at 6m. The second dive was on the Sunday to a maximum depth of 20m with a dive duration of 40 min including a 3 min safety stop at 6m. After a surface interval of 1 hour 58 min the diver, using nitrox 32, carried out his third dive the main element of which was to act as the dive leader and to a maximum depth of 17m. The trainee and his instructor, using air, descended to 16m when the instructor noticed the trainee appeared a little more nervous than on the previous dives, was breathing rapidly and obviously not happy. At this point the trainee's regulator went into free flow so the instructor donated his octopus regulator which the trainee took. The instructor decided to abort the dive as the student was still breathing rapidly and they made a faster than normal but not rapid alternate source ascent. They surfaced with a dive duration of 4 min and the instructor fully inflated the trainee's BCD, alerted the shore cover and towed the trainee about ten metres to the shore. The trainee was de-kitted in the water, assisted on shore and laid down on a bench. Once out of the water the trainee's overall condition improved but he complained about not being able to feel his thighs. After a couple more minutes the feeling returned and he was able to walk unaided and reported feeling better. After approximately 15 min the trainee was feeling a lot better, had warmed up and got changed. Discussing the event the trainee reported that he had been quite nervous about the weekend and all the unknowns he would be encountering including having to lead the dive. This, with a water temperature of 9 deg and his regulator free flow did not help. The trainee was taken home by his partner with the advice to contact a hyperbaric chamber should he not feel well. The instructor was updated about 3 hours later saying all was well.

# Technique-related incidents

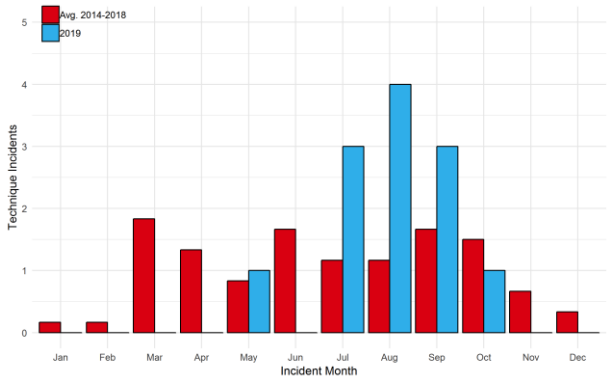


***Figure 24. Technique-related incidents in each month of the year.***

***May 2019*** ***19/103***

An instructor and two students had carried out a simulated decompression dive from the shore to a maximum depth of 17m with a dive duration of 35 min. Their second dive was to carry out compass navigation and DSMB deployment. As one of the students was performing the reciprocal course during the navigation exercise the other student appeared to act slightly erratically which was confirmed by her giving a 'something wrong' signal. The instructor responded with a signal to abort the dive and deployed his DSMB. The first student appeared to be alright and attempted to get out his DSMB but the instructor stopped them. The student who had given the 'something wrong' signal was reluctant to ascend so the instructor took them to a nearby shotline. The other student now appeared to be having difficulties and was heading towards them and when he made contact he took the instructor's alternate source regulator. He put it in upside down and the instructor had to remove it and replace the correct way which seemed to calm down the situation. The student on the shotline began to make a steady ascent while the instructor carried out an alternate source lift on the other student from approximately 15m. They took just under a minute to reach 6m where an attempt at a safety stop was made but they dropped back to around 10m. The instructor continued with the lift taking over a minute to reach the surface. The dive duration was 40 min to a maximum depth of 17m. The student was having difficulty breathing due to his BCD being tight when fully inflated on the surface so was partially deflated with the instructor providing support and he summoned emergency assistance. The site's safety boat arrived, the student was de-kitted and recovered aboard. The other student had ascended the shotline, carried out a safety stop and had surfaced close by. She and the instructor swam back to shore towing the rescued student's BCD and cylinder. The rescued student was sitting on a bench at the water's edge and appeared slightly blue in the face but was showing no other obvious ill effects. The rescue boat crew informed the instructor that the student's drysuit zip was open by approximately 15cm and he had a large quantity of water in his drysuit. The student was taken to the dive shop on site and allowed to warm up. The instructor was also advised that the student's cylinder was empty.

***July 2019*** ***19/313***

Three divers carried out a shore dive. Two of the divers had surfaced with a dive duration of 50 min to a maximum depth of 18m and were concerned that the third diver was overdue. They called the Coastguard on 999, who tasked a lifeboat. One of the divers from the pair re-descended to locate the diver and his DSMB was seen shortly after. Both divers surfaced safe and well so the lifeboat was stood down. No medical assistance was required. (Coastguard report).

***July 2019*** ***19/188***

Two buddy pairs, using air, carried out a boat dive reaching a maximum depth of 31m. They had been briefed to follow a designated compass course but one pair did not to do this and became separated from the other pair over a distance that prevented their dive boat being able to monitor both pairs. The divers were successfully recalled.

***July 2019*** ***19/189***

A buddy pair, both using air, carried out a boat dive and had been briefed to follow a wall and swim in a north east direction. Instead the divers swam south east into a shipping channel and were recalled.

***August 2019*** ***19/190***

A diver using nitrox 23 with oxygen 100 decompression gas and his buddy using nitrox 23 with nitrox 54 decompression gas, carried out a boat dive and descended the shotline onto a reef. A current made their progress slower than expected but on reaching the bottom of the shotline gas was put in the lift bag as planned. The pair then descended following small gullies which protected them from some of the current. The buddy indicated that they were headed in the wrong direction so they changed with the current now behind them and finned up and over a pinnacle. Once clear of the pinnacle they descended again following the terrain towards their planned depth of between 45m to 50m. At approximately 35m the visibility improved and a patch of sand came into view at the bottom of a drop off at the end of a small gulley. The diver descended to the sand patch and turned to check on his buddy but could not see him. The diver conducted a 360 deg visual check including looking up in the clear visibility but there was no sign of the buddy. The diver deployed his DSMB and ascended to 6m. He had acquired a mandatory 2 min decompression stop which he carried out plus a 3 min safety stop. The boat cover could see the diver and monitored him during the stops. The diver surfaced with a dive duration of 33 min to a maximum depth of 45m. The buddy had checked the diver was 'OK' at 35m and headed between a rock and the pinnacle but once he passed through the gap, drifting with the current, he turned to check on his buddy at 40m but found he was not there. The buddy looked around in all directions before deploying his DSMB and ascended with no mandatory decompression stops and surfaced. The divers were recovered aboard their boat with no ill effects.

***August 2019*** ***19/192***

A diver using nitrox 28 and his buddy using a CCR carried out a boat dive. They descended the shotline to a wreck and the diver sent the shot to the surface before they continued their dive. A few minutes into the dive and at a depth of 30m the diver was distracted by a fish along the port side of the wreck and suddenly realised he had become separated from his buddy. He carried out a 360 deg visual search as well as looking up and down and then deployed his DSMB. The diver ascended, omitting a safety stop and surfaced with a dive duration of 17 min to a maximum depth of 30m. Upon their separation the buddy carried out a 360 deg visual search as well as looking up and down and then deployed his DSMB. He ascended, omitted a safety stop and surfaced shortly after the diver. The dive boat had recovered the shot and it was shortly after that the pair's DSMBs had appeared a few metres apart. The pair were recovered aboard the boat.

***August 2019*** ***19/206***

A diver using air and his buddy using nitrox 34 entered the water to carry out a drift dive as the second pair from a boat. The first pair were believed to have had trouble with their SMB and the shotline so the diver had briefed that he would ensure he kept his SMB clear of the shotline on the down current side. The diver and buddy began their descent and found that the current was slightly stronger than expected and contact with the shotline was essential. The buddy maintained a hold on the shotline whilst the diver held onto the buddy to ensure the separation between his SMB and shotline. At approximately 15m the diver lost contact with the buddy but managed to fin against the current to remain in visual contact with her coloured fins. The buddy realised the loss of contact, signalled with her torch to show her position and the diver attempted to respond. Unfortunately, due to fighting the current and the drag of the SMB, he struggled to remove his torch in time and they became separated. Both divers spent around 30 sec looking for each other and then made controlled ascents. The diver surfaced with a dive duration of 6 min to a maximum depth of 20m and the buddy surfaced shortly afterwards. Both were recovered by the boat and were fit and well. After discussing the plan with the dive manager, they re-entered the water and conducted a successful dive.

***August 2019*** ***19/216***

An instructor and his student, both using air, and a safety diver carried out a shore based training dive. They descended to their maximum depth of 11m where they carried out mask removal exercises. After removing and while replacing his mask the student inhaled, swallowed water and panicked. After trying to calm down and finish clearing his mask he felt sick at the back of his throat which he could not clear. He did not feel comfortable enough to continue the dive, signalled this to his instructor and the dive was aborted. The trio made a normal ascent, omitted a safety stop and surfaced with a dive duration of 7 min. The student felt fine after surfacing although was coughing slightly and the dive manager contacted a diving doctor. The student was monitored but showed no signs or symptoms and the diving doctor was content that he did not require medical evacuation but should be monitored for the next 24 hours.

***September 2019*** ***19/236***

A diver and his buddy, both using air, carried out a boat dive. The diver was using a 12 lt cylinder with 230 bar instead of his usual 15 lt cylinder as the dive was relatively shallow with good conditions and underwater visibility. The pair descended and explored a wreck. The diver checked and let his buddy know he had 120 bar fairly early into the dive. He did not look at his contents gauge for some time but when he checked he had 50 bar so immediately signalled his buddy. He gave a second signal when he was on 30 bar which the buddy mistook as the diver wanting to ascend in no more than 3 min. The buddy led the way back to the shotline and they ascended with the buddy unaware how low the diver's air was. Towards the end of a 3 min safety stop at 4m the diver signalled 'out of air', 'up' and made a controlled ascent. He had felt that as they were just below the surface he did not think it was necessary to take his buddy's alternate source. He surfaced with a dive duration of 44 min to a maximum depth of 17m. His buddy surfaced almost straight after and, with a fully inflated his wing BCD which the diver held onto, he orally inflated the diver's BCD.

***September 2019*** ***19/347***

Three divers carried out a shore dive to a maximum depth of 4m with a dive duration of approximately 45 min. They became separated during the dive and one of the divers made it ashore and called 999 to the Coastguard reporting his overdue friends. The divers surfaced safe and well during the call. (Coastguard report).

***September 2019*** ***19/255***

A diver and his buddy, both using air, carried out a boat dive and were using an SMB. They descended a wall to 40m and began their ascent to 30m, where they remained for a short time in low visibility but at around 16 min the diver lost sight of his buddy. The diver carried out a separation drill, ascended his SMB line and carried out a 4 min decompression stop at 6m. Meanwhile, the buddy had also carried out a separation drill, deployed his DSMB, ascended and carried out a 1 min decompression stop at 6m. He surfaced with a dive duration of 21 min and was about eight metres away from the diver's SMB. The boat cover could see bubbles by the SMB and instructed the buddy to move across to it and standby. The diver surfaced approximately 2 min later having carried out his decompression stops.

***October 2019*** ***19/275***

A diver and his buddy, both using CCRs, carried out a RHIB boat dive as a training dive in preparation for a mixed gas CCR course a month later. At the end of the training scenarios the diver indicated to his buddy that they should return to the shot. Both divers moved towards it but in the poor visibility the buddy lost sight of the diver, conducted a separated diver drill, ascended and surfaced with a dive duration of 26 min to a maximum depth of 9m. The buddy was re-united with the diver and both were recovered by the RHIB.

# Equipment-related incidents

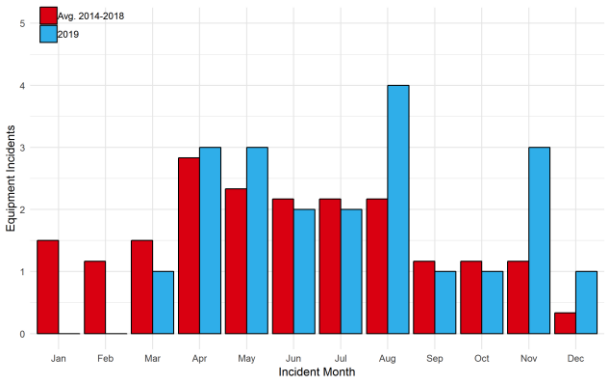


***Figure 25. Equipment related incidents in each month of the year.***

***March 2019*** ***19/056***

Three divers carried out a boat dive. They descended the shotline to a wreck and as they were attaching a strobe light and distance line to the shotline at 30m one of the divers signalled he was ascending. There was no sign of a problem other than the diver wanted to ascend and he began to do so but stopped at 20m to allow his buddies to catch up. The diver was holding onto the shotline and he again signalled 'up', started ascending and surfaced with a dive duration of 10 min to a maximum depth of 30m. He was recovered by the boat and later explained that he had experienced a mild regulator free flow, his air check at the bottom revealed that he had used 100 bar on the descent and thus his desire to ascend. He had not given any signals indicating the problem to his buddies. His computer showed no errors or ascent warnings but he was placed on oxygen as a precaution, monitored and stopped from diving for 24 hours.

***April 2019*** ***19/091***

A diver, using a rented drysuit, and her buddy using air carried out a boat dive. During the wreck dive her drysuit inflator valve stuck open which resulted in a buoyant ascent from approximately 7m. The diver surfaced near rocks in a heavy swell and as her suit was still inflating her fins fell off and she was unable to move. The boat had to recover the diver by towing her whilst she held onto the front of the boat as it reversed away from the rocks. Once clear the diver was recovered aboard. The buddy surfaced shortly after and was also recovered.

***April 2019*** ***19/084***

An instructor, a trainee and safety diver, all using air, carried out a boat dive. The instructor entered the water using a stride entry but the alternate source regulator on his pony cylinder began to free flow. The instructor turned the cylinder off and back on and the free flow ceased. The pony cylinder contents had dropped to 100 bar. The instructor signalled 'OK' to the boat and decided to continue with the dive and there were no further problems. The group surfaced with a dive duration of 38 min to a maximum depth of 10m.

***April 2019*** ***19/080***

A diver using nitrox 28 and her buddy using air carried out a charter boat dive. They descended to a wreck reaching a maximum depth of 18m when 9 min into their dive and at 16m the diver experienced an unexplained free flow of her alternate source regulator. It was believed that her first stage also free flowed but was difficult to ascertain due to the amount of bubbles. The failure caused a massive loss of gas from 190 bar to 0 bar and propelled the diver towards the surface. The buddy held on to the diver to try and slow the ascent and they surfaced with a dive duration of 9 min 30 sec. The divers were recovered aboard the boat and showed no signs of DCI but were put on oxygen as a precaution. The Coastguard was contacted and advice sought but no recompression treatment was required and the divers were monitored for the rest of the day. They were advised to contact a hyperbaric chamber or call 999 if any symptoms developed.

***May 2019*** ***19/088***

An instructor and two students carried out a boat dive on a rebreather course. They descended the shotline to 6m, carried out a bubble check at 6m and descended to the deck of a wreck at 13m to begin training skills. One of the students had switched to the high set point and commenced the linearity check when the display screen went into error and flicked between the PO2 readings and both battery readings were blank. The student switched to his bailout but was unable to change the unit handset as the screen was now blank. He changed his computer settings and started a bailout ascent. The student surfaced with a dive duration of 9 min to a maximum depth of 13m. He was recovered aboard the boat; the unit was isolated and later sent to the manufacturers for analysis.

***May 2019*** ***19/180***

A diver using air had carried out a boat dive and reached a maximum depth of 18m with a dive duration of 39 min including a 3 min stop at 3m. After a surface interval of 2 hours 33 min the diver carried out his second boat dive, still using air, on a wreck. He reached a maximum depth of 31m but during the dive at around 23m air was leaking into his BCD affecting his buoyancy. The diver tried to disconnect the BCD's direct feed and found this difficult but eventually tore off the direct feed and part of the auto air. With a free flowing auto air regulator he began a controlled ascent whilst breathing normally from his primary regulator but was nearly out of air at 3m and omitted a 3 min safety stop. The diver surfaced with a dive duration of 12 min and was picked up by the dive boat. He was put on oxygen for an hour but had no symptoms of DCI.

***May 2019*** ***19/123***

After a 2 hour 20 min surface interval from their first dive an instructor and student carried out a second boat dive using air. Part way through the training dive at 11m it was noticed that the student's backup computer was not in dive mode and was only displaying the time. The dive was aborted, they ascended, carried out a safety stop using the student's primary computer and surfaced with a dive

duration of 25 min to a maximum depth of 11m. On inspection it was believed that the pressure sensor had failed as the computer powered on as the dive planning function was working. The computer was sent back to the manufacturer and the student given an alternative.

***June 2019*** ***19/134***

A diver carried out a shore dive using a full face mask. Although fairly new it was a piece of equipment the diver was familiar with, having used it before, and was comfortable with the training he had done. The diver was in a kneeling position at 15m when the regulator came away from the mask which then flooded. The diver quickly switched to his alternate air source but put it in his mouth upside down and inhaled water. At this point the diver made a free ascent and suffered no ill effects other than water filled sinuses. Following the incident the diver found that the regulator had not been properly attached when the mask was assembled. The diver reported that he felt some of his diving skills had become rusty and accepted he had become complacent. He planned to spend more time in very shallow water practising bailout drills.

***June 2019*** ***19/244***

A diver agreed to dive lead his two buddies on a wreck dive from a boat. The diver was using a 10 lt twin-set of air and carried a 7 lt cylinder with nitrox 45 decompression gas. His buddies were also carrying stage cylinders with nitrox. The group descended the anchor line in good visibility but this reduced to around two metres and no ambient light by the time they reached the wreck. The diver attached a lift bag to the anchor line and sent it up as the dive plan was to ascend using DSMBs. The group explored the wreck but did not enter the large holds as the wreck was heavily silted and the visibility was poor. They descended from the bow to the seabed at 45m and swam back along the side of the wreck. The diver noted their decompression time was 18 min and signalled to his buddies to follow him up onto a flat area on the deck in 39m to deploy their DSMBs. The diver ascended to the deck but did not notice that his buddies had not understood his signal and remained behind. As he swam onto the deck he felt caught by something and realised he had swum up into a large trawl net. The diver attempted to turn which tightened the net around his twin-set's manifold. He straightened up, attempted to reverse away but was still caught in the net. He twisted around to signal his buddies to come and assist rather than tangling himself up even more. He could see the torches although the poor visibility had been made worse by him stirring up the mud on the net. He frantically waved his torch for several minutes and at one point the buddies appeared to signal back but the diver realised they were not coming. He reached down for his large dive knife but was unable to reach the netting behind him. He could not see his content gauge, which was trapped in the netting, but was very aware of his decreasing air and increasing decompression requirement. The diver slackened the straps on his wing BCD, unclipped one completely which enabled him to lift his set up and half pull it over his shoulder. This allowed him to grab the netting, hold it compressed in a five inch mass in one hand and start sawing with his knife. After a minute of two he became more concerned as he didn't seem to be making any progress. He had dropped his torch although it was still attached to a lanyard but was in complete darkness. After around half a minute he felt some of the net part and realised he was making good progress. In another minute he had cut through the remaining netting and fell forward realising he was free. He checked his air and computer and swam to his buddies who were waiting with their DSMBs already deployed. They signalled to ascend, the diver deployed his DSMB and they left the bottom with 42 min of decompression. The diver switched to his nitrox 45 mix and carried out a total of 28 min decompression , with the richer gas mix. He surfaced with 65 bar in his twin-set and 150 bar in his stage cylinder. When the group discussed the incident back aboard the boat the buddies had thought the diver was exploring the area while they wanted to ascend. One of the buddies, who was the diver's regular buddy, said he was about to come over as he wondered what the diver was playing at. The diver said the lesson learnt was better communication particularly when diving as a three, to remain calm and carry a good knife. He also thought that in hindsight he should have swum away from the wreck to deploy his DSMB in such poor visibility but his logic at the time was to deploy it from the highest part of the wreck which had normally worked well.

***July 2019*** ***19/314***

A 406 MHz distress alert was received by the UK Mission Control Centre for a PLB registered to a diver. The encoded position was passed to the Coastguard for co-ordination. A lifeboat and Coastguard rescue team were tasked and the Coastguard carried out investigations. It was confirmed it was a false alarm after the canister the diver was carrying their PLB in had flooded and the PLB malfunctioned. (Coastguard report).

***July 2019*** ***19/198***

A group of divers had carried out a hardboat dive to a maximum depth of 15 m with a dive duration of around 40 min. After a 1 hour 30 min surface interval they prepared for a drift dive. The skipper wanted to get all the divers in the water as close together as possible as the current was picking up and asked that they all be ready together and to enter the water in buddy pairs as a group of four and for each buddy pair to have a DSMB inflated on the surface. A diver and her buddy entered the water in the second group of four but it became immediately apparent that the diver was in difficulty. She was on the surface with no regulator in her mouth and clearly struggling to stay afloat. Her buddy had not seen her predicament but a diver still aboard and waiting to enter had. He notified the skipper who shouted to the diver's buddy to help but he initially didn't hear as he was dealing with his flooded mask. The diver struggled to stay afloat and went under several times. The buddy became aware of the diver's problem when he was about three metres away from her and needed to swim against the current to reach her. He grabbed her, tried to inflate her BCD and put her regulator in her mouth pressing the purge button, both to little or no effect. He then managed to turn the diver's air on and made her buoyant. The skipper steered the boat close to the pair and asked the diver who had originally seen the problem and who was fully kitted up, to get in the water and assist. He and the buddy managed to get the diver to the swim line along the side of the boat which she grabbed but was clearly stressed and panicking. The skipper threw a rope with a clip on the end which was attached to the diver's BCD and ensured her head was kept above the surface while he towed her to the boat's stern lift. The diver grabbed the lift posts rather than the safety rails and her buddy tried to get her to reposition her hands. He eventually had to use considerable force to move one of them but her other hand was caught in part of the lift mechanism when it was

raised causing a minor cut to a finger. Back aboard the diver was put in the recovery position as the skipper went to call the Coastguard but another diver aboard was a paramedic and advised the skipper there was no need to call the emergency services as the diver was alert, talking and already recovering from her ordeal. The skipper asked the paramedic if she would take responsibility for that decision because if left to him he would call the Coastguard and she said she would. The paramedic tended to the diver, who showed further signs of recovery, and cleaned and bandaged the superficial cut to her finger. During a debrief the diver said she had thought about ditching her weights but did not, due to being focused on staying afloat and swimming towards the boat. The diver recovered quickly and joined the group of divers for dinner that evening but did not dive the following day. Her buddy, shaken by the experience, also recovered and dived the following day.

***August 2019*** ***19/191***

A diver and his buddy carried out a boat dive. The diver was using nitrox 28 with a stage cylinder of nitrox 50 decompression gas and two computers and the buddy was using nitrox 28 with a stage cylinder of nitrox 49 decompression gas. The pair descended to their planned maximum depth of 40m and then ascended with the diver following his main computer's display and ascent information and checking his backup computer. At 16m the pair deployed a DSMB, the pair switched to their decompression gas and they ascended to 6m where the diver's main computer indicated a 3 min stop which he carried out. However, his backup computer, which did not have multi-gas capability, was giving an ascent time of 13 min. As his main computer had cleared the diver assumed his backup computer was in error as he had dived the same profile as his buddy. The pair surfaced with a dive duration of 49 min but the diver's backup computer displayed an alarm and a missed decompression warning. On inspection the diver's profile on his main and correctly set computer was fine, as was his buddy's. The diver was suspended from a second planned dive until his backup computer had reset.

***August 2019*** ***19/195***

An instructor and his student carried out a shore dive. The aim of the dive was to carry out alternate source ascents from 10m to 6m. When the instructor used the student's alternate source regulator the air tasted oily but the student appeared unperturbed so the instructor assumed this was normal for her equipment. They completed the dive and surfaced with a dive duration of 26 min and a maximum depth of 16m. The instructor checked some of the other equipment within his dive group and several seemed oily with the common denominator being that they had been filled from the same compressor. Subsequently, five sets of equipment, an integrated diving mask and nine cylinders smelling of oily air were taken for servicing and cleaning. The outcome of investigating the compressor was still awaited.

***August 2019*** ***19/200***

An instructor and his trainee carried out a boat dive by a harbour fortification. They reached a maximum depth of 12m with a dive duration of 16 min but when recovered back aboard the boat it was noticed that the trainee's cylinder strap had come loose. It had not completely unthreaded itself but the Velcro strap was unsecured. The trainee mentioned that it may have come loose whilst on the surface prior to the descent as the swell had pushed him against the fort a few times.

***August 2019*** ***19/208***

A diver using air in twin 12 lt cylinders and carrying an SMB and his buddy using nitrox 32 carried out a hardboat dive as part of an underwater survey project for a diving exam. The divers descended a shotline but found it was too short and drifting fairly rapidly over the dive site. After a short written conversation it was decided to lengthen the shotline. First of all a buddy line was used which was not effective so a net bag's drawstring was added and this too was ineffective. Eventually an SMB reel was added and the shot weight was secured on the seabed. The effort to carry this out was enormous and the diver's gas consumption had considerably increased. Approximately 20 min into the survey the diver saw he was low on gas and decided to end the dive 10 min earlier than planned. The surfacing procedure for the project required the buddy pair to send a second DSMB up their SMB line to indicate the end of their part of the survey and to remain on the seabed for 5 min to give the hardboat time to come in and mark the position. Maintaining a static position with the SMB dragging in the current was difficult but once the DSMB had been deployed up the SMB line it became almost impossible. The diver was lying prone on the seabed and the extra effort had increased his gas consumption. The buddy gave an 'OK' signal to the diver who responded with a slow shake of the head so the buddy took control of the SMB. They ascended but the buddy was concerned that the diver could be out of gas at any point as his contents gauge was reading approximately 10 bar. The pair surfaced, omitting a safety stop, with a dive duration of 30 min to a maximum depth of 21m. The diver had sufficient air to make himself buoyant and still breathe from his regulator, the buddy gave the distress signal to the boat and they were recovered aboard using the boat's lift. During their debrief the diver informed his buddy that he used a computer transmitter for air contents, which had read 30 bar remaining, but this had not been discussed during the pre-dive brief.

***September 2019*** ***19/225***

A diver was preparing to enter the water from a charter boat whilst on a CCR training course. He had positioned himself at the starboard gate to make a stride entry but upon entering the water his bailout cylinder's regulator hose got caught on the boat's railings and left him hanging from the boat by the hose. This then pulled the automatic diluent valve t-piece out of his inhalation counterlung causing the loop to flood. Now on the surface and with a substantial loss of buoyancy the diver had to fin to stay above water while the boat manoeuvred back round to pick him up. Upon reaching him it was found that his bailout cylinder was not turned on so the diver could not breathe from it or inflate his drysuit. The diver's weights were removed, his wing BCD inflated, his bailout cylinder turned on and the diver was recovered aboard by boat's lift. He did not report any injuries and did not dive again that day.

***October 2019*** ***19/265***

A CCR diver using air diluent carried out a shore dive, with his buddy using open circuit air. The aim of the dive was depth progression to a maximum depth of 25m. The night before the diver had swapped an oxygen cell as it was at the end of its use cycle. As part of the cell swap the diver

calibrated his computer and head-up display to the new cell. He set up his CCR as usual following his check list at home and also on the dive site when he arrived the following morning. This included a pre-breathe to check the PO2 was stable which it was. The divers entered the water and descended a cliff wall and at 6m the diver started to inject oxygen to spike his CCR cells to ensure they would read over 1.6 PO2. He noticed that it was taking more oxygen than expected to bring the cells up whilst descending to below 10m. The cells read 1.4 PO2 but when checking the millivolt, he saw it was 35-40 mv which he expected to give a much higher cell reading. Checking his heads up display he could see it was flashing to give him a PO2 of at least 1.9. The diver performed a diluent flush to bring the PO2 down and to check the cells were reading the correct PO2. At this point the PO2 dipped but his computer was not displaying the correct PO2 for the air diluent he was using. As his head-up display and computer were showing different PO2 readings and both were calibrated at the same time the diver bailed out onto his open circuit cylinder. Once he had done this he signalled to his buddy to abort the dive and they ascended to surface with a dive duration of 10 min to a maximum depth of 15m. They made their way to shore and the diver flushed the loop three times and re-calibrated his computer. The computer PO2 reading and the heads up display now matched. The pair re-descended to 6m where the diver carried out a diluent flush and with the correct PO2 displayed on his heads up display and computer, the pair continued the planned dive.

***November 2019*** ***19/277***

A diver using air and his buddy prepared to carry out a second shore dive. The diver was using a 7 lt 300 bar twin-set but had around a 230 bar fill. The divers were kitted up except for mask, gloves and fins in the dive site's car park. The buddy uncrossed the diver's two regulator hoses at which point there was a catastrophic failure of one of the first stages. The cylinder lost approximately 100 bar in around 3 sec before the buddy was able to turn the cylinder valve off. The first stage had failed in the DIN fitting attaching it to the cylinder and what looked like a brass pipe had sheared in two. The diver suffered no injuries.

***November 2019*** ***19/286***

A dive RHIB had deployed two pairs of divers in the water. Their boat cover was two divers acting as the cox'n and dive manager and a crew member who was the first aid cover. During a training drill extra gas was called for and a cylinder was deployed on a buoy down the divers' SMB line. This was let go by the divers during the drill and drifted away from the dive site in the current. The cox'n moved the boat for the crew member to recover it aboard but during this the cylinder line wrapped around the engine leg. The current and wind were pushing the RHIB very quickly away from the dive site so the cox'n deployed the anchor, switched off the engine and raised it to allow the crew member to enter the water and free the line. The cylinder and buoy were recovered but the line had to be cut. The divers surfaced and were able to make their way to the RHIB which was down current about fifty metres away.

***November 2019*** ***19/287***

A diver and his buddy, both using air, carried out a shore training dive and 4 min into the dive they carried out mid-water deployment of a DSMB at a depth of 13m. The diver used his alternate source regulator which went into free flow and would not stop. The buddy swam over to assist and released the diver's pony cylinder regulator for him to switch onto. When the switch was completed the divers signalled to each other to abort the dive and ascended. They surfaced with a maximum depth of 14m and a dive duration of 4 min.

***March 2019*** ***19/056***

Three divers carried out a boat dive. They descended the shotline to a wreck and as they were attaching a strobe light and distance line to the shotline at 30m one of the divers signalled he was ascending. There was no sign of a problem other than the diver wanted to ascend and he began to do so but stopped at 20m to allow his buddies to catch up. The diver was holding onto the shotline and he again signalled 'up', started ascending and surfaced with a dive duration of 10 min to a maximum depth of 30m. He was recovered by the boat and later explained that he had experienced a mild regulator free flow, his air check at the bottom revealed that he had used 100 bar on the descent and thus his desire to ascend. He had not given any signals indicating the problem to his buddies. His computer showed no errors or ascent warnings but he was placed on oxygen as a precaution, monitored and stopped from diving for 24 hours.

***April 2019*** ***19/091***

A diver, using a rented drysuit, and her buddy using air carried out a boat dive. During the wreck dive her drysuit inflator valve stuck open which resulted in a buoyant ascent from approximately 7m. The diver surfaced near rocks in a heavy swell and as her suit was still inflating her fins fell off and she was unable to move. The boat had to recover the diver by towing her whilst she held onto the front of the boat as it reversed away from the rocks. Once clear the diver was recovered aboard. The buddy surfaced shortly after and was also recovered.

***April 2019*** ***19/084***

An instructor, a trainee and safety diver, all using air, carried out a boat dive. The instructor entered the water using a stride entry and his alternate source regulator on his pony cylinder began to free flow. The instructor turned the cylinder off and back on and the free flow ceased. The pony cylinder contents had dropped to 100 bar. The instructor signalled 'OK' to the boat and decided to continue with the dive and there were no further problems. The group surfaced with a dive duration of 38 min to a maximum depth of 10m.

***April 2019*** ***19/080***

A diver using nitrox 28 and her buddy using air carried out a charter boat dive. They descended to a wreck reaching a maximum depth of 18m when 9 min into their dive and at 16m the diver experienced an unexplained free flow of her alternate source regulator. It was believed that her first stage also free flowed but was difficult to ascertain due to the amount of bubbles. The failure caused a massive loss of gas from 190 bar to 0 bar and propelled the diver towards the surface. The buddy held on to the diver to try and slow the ascent and they surfaced with a dive duration of 9 min 30 sec. The divers were recovered aboard the boat and showed no signs of DCI but were put on oxygen as a precaution. The Coastguard was contacted and advice sought but no recompression treatment was required and the divers were monitored for

the rest of the day. They were advised to contact a hyperbaric chamber or call 999 if any symptoms developed.

***May 2019*** ***19/088***

An instructor and two students carried out a boat dive on a rebreather course. They descended the shotline to 6m, carried out a bubble check at 6m and descended to the deck of a wreck at 13m to begin training skills. One of the students had switched to the high set point and commenced the linearity check when the display screen went into error and flicked between the PO2 readings and both battery readings were blank. The student switched to his bailout but was unable to change the unit handset as the screen was now blank. He changed his computer settings and started a bailout ascent. The student surfaced with a dive duration of 9 min to a maximum depth of 13m. He was recovered aboard the boat, the unit was isolated and later sent to the manufacturers for analysis.

***May 2019*** ***19/180***

A diver using air had carried out a boat dive and reached a maximum depth of 18m with a dive duration of 39 min including a 3 min stop at 3m. After a surface interval of 2 hours 33 min the diver carried out his second boat dive, still using air, on a wreck. He reached a maximum depth of 31m but during the dive at around 23m air was leaking into his BCD affecting his buoyancy. The diver tried to disconnect the BCD's direct feed and found this difficult but eventually tore off the direct feed and part of the auto air. With a free flowing auto air regulator he began a controlled ascent whilst breathing normally from his primary regulator but was nearly out of air at 3m and omitted a 3 min safety stop. The diver surfaced with a dive duration of 12 min and was picked up by the dive boat. He was put on oxygen for an hour but had no symptoms of DCI.

***May 2019*** ***19/123***

After a 2 hour 20 min surface interval from their first dive an instructor and student carried out a second boat dive using air. Part way through the training dive at 11m it was noticed that the student's backup computer was not in dive mode and was only displaying the time. The dive was aborted, they ascended, carried out a safety stop using the student's primary computer and surfaced with a dive duration of 25 min to a maximum depth of 11m. On inspection it was believed that the pressure sensor had failed as the computer powered on as the dive planning function was working. The computer was sent back to the manufacturer and the student given an alternative.

***June 2019*** ***19/134***

A diver carried out a shore dive using a full face mask. Although fairly new it was a piece of equipment the diver was familiar with having used it before and was comfortable with the training he had done. The diver was in a kneeling position at 15m when the regulator came away from the mask which then flooded. The diver quickly switched to his alternate air source but put it in his mouth upside down and inhaled water. At this point the diver made a free ascent and suffered no ill effects other than water filled sinuses. Following the incident the diver found that the regulator had not been properly attached when the mask was assembled. The diver reported that he felt some of his diving skills had become rusty and accepted he had become complacent. He planned to spend more time in very shallow water practising bailout drills.

***June 2019*** ***19/244***

A diver agreed to dive lead his two buddies on a wreck dive from a boat. The diver was using a 10 lt twin-set of air and carried a 7 lt cylinder with nitrox 45 decompression gas. His buddies were also carrying stage cylinders with nitrox. The group descended the anchor line in good visibility but this reduced to around two metres and no ambient light by the time they reached the wreck. The diver attached a lift bag to the anchor line and sent it up as the dive plan was to ascend using DSMBs. The group explored the wreck but did not enter the large holds as the wreck was heavily silted and the visibility was poor. They descended from the bow to the seabed at 45m and swam back along the side of the wreck. The diver noted their decompression time was 18 min and signalled to his buddies to follow him up onto a flat area on the deck in 39m to deploy their DSMBs. The diver ascended to the deck but did not notice that his buddies had not understood his signal and remained behind. As he swam onto the deck he felt caught by something and realised he had swum up into a large trawl net. The diver attempted to turn which tightened the net around his twin-set's manifold. He straightened up, attempted to reverse away but was still caught in the net. He twisted around to signal his buddies to come and assist rather than tangling himself up even more. He could see the torches although the poor visibility had been made worse by him stirring up the mud on the net. He frantically waved his torch for several minutes and at one point the buddies appeared to signal back but the diver realised they were not coming. He reached down for his large dive knife but was unable to reach the netting behind him. He could not see his content gauge, which was trapped in the netting, but was very aware of his decreasing air and increasing decompression requirement. The diver slackened the straps on his wing BCD, unclipped one completely which enabled him to lift his set up and half pull it over his shoulder. This allowed him to grab the netting, hold it compressed in a five inch mass in one hand and start sawing with his knife. After a minute of two he became more concerned as he didn't seem to be making any progress. He had dropped his torch although it was still attached to a lanyard but was in complete darkness. After around half a minute he felt some of the net part and realised he was making good progress. In another minute he had cut through the remaining netting and fell forward realising he was free. He checked his air and computer and swam to his buddies who were waiting with their DSMBs already deployed. They signalled to ascend, the diver deployed his DSMB and they left the bottom with 42 min of decompression. The diver switched to his nitrox 45 mix and carried out a total of 28 min decompression. He surfaced with 65 bar in his twin-set and 150 bar in his stage cylinder. When the group discussed the incident back aboard the boat the buddies had thought the diver was exploring the area while they wanted to ascend. One of the buddies, who was the diver's regular buddy, said he was about to come over as he wondered what the diver was playing at. The diver said the lesson learnt was better communication particularly when diving as a three, to remain calm and carry a good knife. He also thought that in hindsight he should have swum away from the wreck to deploy his DSMB in such poor visibility but his logic at the time was to deploy it from the highest part of the wreck which had normally worked well.

***July 2019*** ***19/314***

A 406 MHz distress alert was received by the UK Mission Control Centre for a PLB registered to a diver. The encoded position was passed to the Coastguard for co-ordination. A lifeboat and Coastguard rescue team were tasked and the Coastguard carried out investigations. It was confirmed it was a false alarm after the canister the diver was carrying their PLB in had flooded and the PLB malfunctioned. (Coastguard report).

***July 2019*** ***19/198***

A group of divers had carried out a hardboat dive to a maximum depth of 15 m with a dive duration of around 40 min. After a 1 hour 30 min surface interval they prepared for a drift dive. The skipper wanted to get all the divers in the water as close together as possible as the current was picking up and asked that they all be ready together and to enter the water in buddy pairs as a group of four and for each buddy pair to have a DSMB inflated on the surface. A diver and her buddy entered the water in the second group of four but it became immediately apparent that the diver was in difficulty. She was on the surface with no regulator in her mouth and clearly struggling to stay afloat. Her buddy had not seen her predicament but a diver still aboard and waiting to enter had. He notified the skipper who shouted to the diver's buddy to help but he initially didn't hear as he was dealing with his flooded mask. The diver struggled to stay afloat and went under several times. The buddy became aware of the diver's problem when he was about three metres away from her and needed to swim against the current to reach her. He grabbed her, tried to inflate her BCD and put her regulator in her mouth pressing the purge button both to little or no effect. He then managed to turn the diver's air on and made her buoyant. The skipper steered the boat close to the pair and asked the diver, who had originally seen the problem and who was fully kitted up, to get in the water and assist. He and the buddy managed to get the diver to the swim line along the side of the boat which she grabbed but was clearly stressed and panicking. The skipper threw a rope with a clip on the end which was attached to the diver's BCD and ensured her head was kept above the surface while he towed her to the boat's stern lift. The diver grabbed the lift posts rather than the safety rails and her buddy tried to get her to reposition her hands. He eventually had to use considerable force to move one of them but her other hand was caught in part of the lift mechanism when it was raised causing a minor cut to a finger. Back aboard the diver was put in the recovery position as the skipper went to call the Coastguard but another diver aboard was a paramedic and advised the Skipper there was no need to call the emergency services as the diver was alert, talking and already recovering from her ordeal. The skipper asked the paramedic if she would take responsibility for that decision because if left to him he would call the Coastguard and she said she would. The paramedic tended to the diver, who showed further signs of recovery, and cleaned and bandaged the superficial cut to her finger. During a debrief the diver said she had thought about ditching her weights but did not due to being focused on staying afloat and swimming towards the boat. The diver recovered quickly and joined the group of divers for dinner that evening but did not dive the following day. Her buddy, shaken by the experience, also recovered and dived the following day,

***August 2019*** ***19/191***

A diver and his buddy carried out a boat dive. The diver was using nitrox 28 with a stage cylinder of nitrox 50 decompression gas and two computers and the buddy was using nitrox 28 with a stage cylinder of nitrox 49 decompression gas. The pair descended to their planned maximum depth of 40m and then ascended with the diver following his main computer's display and ascent information and checking his backup computer. At 16m the pair deployed a DSMB, the pair switched to their decompression gas and they ascended to 6m where the diver's main computer indicated a 3 min stop which he carried out. However, his backup computer, which did not have multi-gas capability, was giving an ascent time of 13 min. As his main computer had cleared the diver assumed his backup computer was in error as he had dived the same profile as his buddy. The pair surfaced with a dive duration of 49 min but the diver's backup computer displayed an alarm and a missed decompression warning. On inspection the diver's profile on his main and correctly set computer was fine as was his buddy's. The diver was suspended from a second planned dive until his backup computer had reset.

***August 2019*** ***19/195***

An instructor and his student carried out a shore dive. The aim of the dive was to carry out alternate source ascents from 10m to 6m. When the instructor used the student's alternate source regulator the air tasted oily but the student appeared unperturbed so the instructor assumed this was normal for her equipment. They completed the dive and surfaced with a dive duration of 26 min and a maximum depth of 16m. The instructor checked some of the other equipment within his dive group and several seemed oily with the common denominator being that they had been filled from the same compressor. Subsequently, five sets of equipment, an integrated diving mask and nine cylinders smelling of oily air were taken for servicing and cleaning. The outcome of investigating the compressor was still awaited.

***August 2019*** ***19/200***

An instructor and his trainee carried out a boat dive by a harbour fortification. They reached a maximum depth of 12m with a dive duration of 16 min but when recovered back aboard the boat it was noticed that the trainee's cylinder strap had come loose. It had not completely unthreaded itself but the velcro strap was unsecured. The trainee mentioned that it may have come loose whilst on the surface prior to the descent as the swell had pushed him against the fort a few times.

***August 2019*** ***19/208***

A diver using air in twin 12 lt cylinders and carrying an SMB and his buddy using nitrox 32 carried out a hardboat dive as part of an underwater survey project for a diving exam. The divers descended a shotline but found it was too short and drifting fairly rapidly over the dive site. After a short written conversation it was decided to lengthen the shotline. First of all a buddy line was used which was not effective so a net bag's drawstring was added and this too was ineffective. Eventually an SMB reel was added and the shot weight was secured on the seabed. The effort to carry this out was enormous and the diver's gas consumption had considerably increased. Approximately 20 min into the survey the diver saw he was low on gas and decided to end the dive 10 min earlier than planned.

The surfacing procedure for the project required the buddy pair to send a second DSMB up their SMB line to indicate the end of their part of the survey and to remain on the seabed for 5 min to give the hardboat time to come in and mark the position. Maintaining a static position with the SMB dragging in the current was difficult but once the DSMB had been deployed up the SMB line it became almost impossible. The diver was lying prone on the seabed and the extra effort had increased his gas consumption. The buddy gave an 'OK' signal to the diver who responded with a slow shake of the head so the buddy took control of the SMB. They ascended but the buddy was concerned that the diver could be out of gas at any point as his contents gauge was reading approximately 10 bar. The pair surfaced, omitting a safety stop, with a dive duration of 30 min to a maximum depth of 21m. The diver had sufficient air to make himself buoyant and still breathe from his regulator, the buddy gave the distress signal to the boat and they were recovered aboard using the boat's lift. During their debrief the diver informed his buddy that he used a computer transmitter for air contents, which had read 30 bar remaining, but this had not been discussed during the pre-dive brief.

***September 2019*** ***19/225***

A diver was preparing to enter the water from a charter boat whilst on a CCR training course. He had positioned himself at the starboard gate to make a stride entry but upon entering the water his bailout cylinder's regulator hose got caught on the boat's railings and left him hanging from the boat by the hose. This then pulled the automatic diluent valve t-piece out of his inhalation counterlung causing the loop to flood. Now on the surface and with a substantial loss of buoyancy the diver had to fin to stay above water while the boat manoeuvred back round to pick him up. Upon reaching him it was found that his bailout cylinder was not turned on so the diver could not breathe from it or inflate his drysuit. The diver's weights were removed, his wing BCD inflated, his bailout cylinder turned on and the diver was recovered aboard by boat's lift. He did not report any injuries and did not dive again that day.

***October 2019*** ***19/265***

A CCR diver using air diluent carried out a shore dive with his buddy using open circuit air. The aim of the dive was depth progression to a maximum depth of 25m. The night before the diver had swapped an oxygen cell as it was at the end of its use cycle. As part of the cell swap the diver calibrated his computer and head-up display to the new cell. He set up his CCR as usual following his check list at home and also on the dive site when he arrived the following morning. This included a pre-breathe to check the PO2 was stable which it was. The divers entered the water and descended a cliff wall and at 6m the diver started to inject oxygen to spike his CCR cells to ensure they would read over 1.6 PO2. He noticed that it was taking more oxygen than expected to bring the cells up whilst descending to below 10m. The cells read 1.4 PO2 but when checking the millivolt, he saw it was 35-40 mv which he expected to give a much higher cell reading. Checking his heads up display he could see it was flashing to give him a PO2 of at least 1.9. The diver performed a diluent flush to bring the PO2 down and to check the cells were reading the correct PO2. At this point the PO2 dipped but his computer was not displaying the correct PO2 for the air diluent he was using. As his head-up display and computer were showing different PO2 readings and both were calibrated at the same time the diver bailed out onto his open circuit cylinder. Once he had done this he signalled to his buddy to abort the dive and they ascended to surface with a dive duration of 10 min to a maximum depth of 15m. They made their way to shore and the diver flushed the loop three times and re-calibrated his computer. The computer PO2 reading and the heads up display now matched. The pair re-descended to 6m where the diver carried out a diluent flush and with the correct PO2 displayed on his heads up display and computer, the pair continued the planned dive.

***November 2019*** ***19/277***

A diver using air and his buddy prepared to carry out a second shore dive. The diver was using a 7 lt 300 bar twin-set but had around a 230 bar fill. The divers were kitted up except for mask, gloves and fins in the dive site's car park. The buddy uncrossed the diver's two regulator hoses at which point there was a catastrophic failure on one of the first stages where the pressure release was approximately 100 bar in around 3 sec before the buddy was able to turn the cylinder valve off. The first stage had failed in the DIN fitting attaching it to the cylinder and what looked like a brass pipe had sheared in two. The diver suffered no injuries.

***November 2019*** ***19/286***

A dive RHIB had deployed two pairs of divers in the water. Their boat cover was two divers acting as the cox'n and dive manager and a crew member who was the first aid cover. During a training drill extra gas was called for and a cylinder was deployed on a buoy down the divers' SMB line. This was let go by the divers during the drill and drifted away from the dive site in the current. The cox'n moved the boat for the crew member to recover it aboard but during this the cylinder line wrapped around the engine leg. The current and wind were pushing the RHIB very quickly away from the dive site so the cox'n deployed the anchor, switched off the engine and raised it to allow the crew member to enter the water and free the line. The cylinder and buoy were recovered but the line had to be cut. The divers surfaced and were able to make their way to the RHIB which was down current about fifty metres away.

***November 2019*** ***19/287***

A diver and his buddy, both using air, carried out a shore training dive and 4 min into the dive they carried out mid-water deployment of a DSMB at a depth of 13m. The diver used his alternate source regulator which went into free flow and would not stop. The buddy swam over to assist and released the diver's pony cylinder regulator for him to switch onto. When the switch was completed the divers signalled to each other to abort the dive and ascended. They surfaced with a maximum depth of 14m and a dive duration of 4 min.

***December 2019*** ***19/413***

A diver and his buddy were about to start a dive. At the surface the diver dumped air and descended to a depth of 4m where he hit the bottom. He tried to inflate his BCD but it did not inflate and so he panicked and went to the surface. He was given oxygen by the on-site safety team.

# Illness or Injury-related incidents

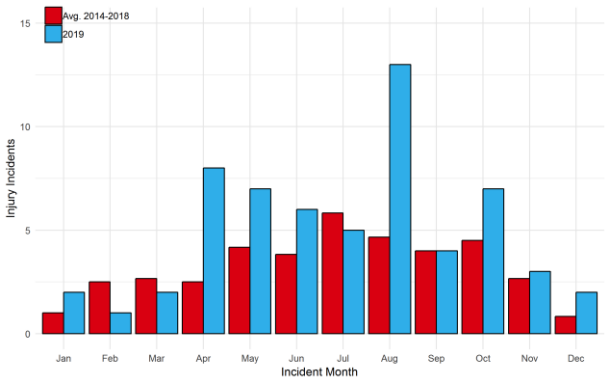


***Figure 26. Illness or injury related incidents in each month of the year***

***January 2019 19/030***

A diver had surfaced from a shore dive and was exiting the water using one of the spine ladders attached to a floating pontoon. This was instead of the dive site's more usual beach exit which was closed. The diver lost her footing and fell backwards. Her fin was caught in-between the blocks of the floating pontoon and her legs were wedged in the ladder rungs. At this point the diver's head was underwater, she was unable to communicate but still had her regulator in her mouth. The diver's buddy quickly jumped back into the water to assist. The diver was recovered ashore but had damaged her knee and ankle. Other divers who have used the site have reported similar issues due to the beach being closed and having to use the ladders, which were reported to be in poor condition and badly positioned.

***January 2019 19/031***

An instructor and his trainee carried out a shore dive which was the last of her training course. As the trainee lacked a bit of self-confidence with her mask clearing she carried out successful mask clearing at kneeling depth followed by another mask clear at 3m. The pair then descended to 6m but after removing and replacing her mask the trainee failed to clear it completely, panicked and went to the surface with the instructor maintaining contact but letting her ascend. On the surface, the trainee seemed fine and with her mask sorted she appeared to be calm so the instructor, wanting to end the dive on a positive note, suggested they re-descend and just do a gentle dive back to the shore with no drills. Just after leaving the surface the trainee went back up with the instructor beside her. She was struggling to keep her head totally out of the water so the instructor moved behind her and helped to support her head. The trainee was also spitting out her regulator saying she was not getting any air but the instructor kept replacing it as he knew it was working. He called for assistance from the shore cover and towed the panicking trainee for a short distance during which she calmed down a little so the instructor felt he could move away from her head and drop her weightbelt to give her more buoyancy. He then went back to supporting the trainee's head, towed her to the shore where the shore cover removed her scuba kit and fins and the trainee was recovered ashore. When the trainee's scuba kit was checked it was found that the BCD hose, which had worked on the buddy check and at the start of the dive, had become disconnected but her regulator was found to be working perfectly.

***February 2019 19/055***

A diver and his buddy, both using air, carried out a charter boat dive. They descended to the deck of a wreck but with low visibility they stayed around the deck until they reached 100 bar. They deployed a DSMB and ascended to 6m but a rough sea was moving them 1m up and down. The buddy lost control of his buoyancy and ascended to the surface. The diver ascended to 5m and completed his safety stop allowing for the underwater movement and then ascended. He surfaced with a dive duration of 23 min to a maximum depth of 17m. At the surface the diver began to feel unwell but put this down to the choppy sea state. The buddy had been recovered aboard the boat and once he was seated the dive boat approached to recover the diver. It took two attempts for him to get hold of the boat's line but when he reached the boat's lift and it took his weight, he experienced bad vertigo like symptoms. He had to be helped to a seat and de-kitted and was then sick which was put down to seasickness. The boat recovered the remaining divers and then moved to sheltered water. The diver was still feeling unwell and the skipper offered to take him ashore. The diver and two others from the dive party got off the boat leaving the buddy aboard so as not to miss the second dive. The diver continued to feel unwell for over an hour before his symptoms abated.

***March 2019 19/227***

On the last day of a five day liveaboard trip a diver and his buddy, both using CCRs with a single stage cylinder, prepared to carry out one final dive. The diver had used the boat many times before, was familiar with the deck layout and how the boat moved in various sea conditions including the rough water experienced that day. As he stood up to move to the entry point he caught his left fin under his right fin just as the boat rolled and he toppled over sideways onto the deck. He landed on his left side which is where he carried his stage cylinder. The deckhand immediately removed his fins, unclipped his stage cylinder and CCR so the diver could sit up. When asked if he wanted to continue with the dive the diver declined as he had hurt his ankle and ribs in the fall. His buddy went ahead and did the dive by himself. The diver removed his drysuit and his ankle was examined by a doctor and a surgeon who were in the group of divers. They agreed the diver's ankle was sprained but not broken. After unloading the boat and driving home, which was difficult, the diver attended his local A&E department The diagnosis was a badly sprained ankle and x-rays revealed a small avulsion fracture in his knee which required him to wear a knee brace for several weeks, after which he was able to dive again.

***March 2019 19/059***

An instructor and two students were on a rebreather training course in March at an inland dive site. They had prepared equipment and carried out pre-dive checks for the first dive on the third day of the course. One of the student's had flooded his drysuit on a previous dive so was

using a 7mm wetsuit. The divers descended, carried out a bubble check and at 18m switched to the high set point and performed a linearity check. They descended to 22m and at around 23 min into the dive the diver wearing the wetsuit indicated he was cold. The instructor signalled 'OK' and the student replied with a double 'OK'. At 25 min the group crossed over a pit and both students lost buoyancy control and descended about 4m. The instructor signalled for them to ascend to their previous depth but whilst finning on his side and watching the students the instructor was aware that his rear mounted counter lung was bleeding off and his automatic diluent valve was firing on each inspiration. The time the group took to swim over the pit was about 8 min and when the instructor checked his diluent contents gauge he realised it had reduced from 100 bar to 40 bar. As the wetsuited student was cold and with his diluent gas contents low the instructor decided to terminate the dive as soon as practicable. On reaching an underwater shelf at 20m and facing both students, the instructor signalled to deploy DSMBs. The instructor thought the wetsuited student looked a bit stressed and watched him closely. The student deployed his DSMB but then let go of the reel and started finning up. The instructor bailed out onto open circuit, partly on instinct and because of his low diluent, grabbed hold of the student and gave the other student the 'Up' signal. Visibility was dropping rapidly and the instructor's open circuit regulator started to free flow and then its mouthpiece came off, possibly caused by the student's arm knocking it from the instructor's mouth. The instructor maintained his hold and went onto the student's open circuit bailout and continued to slow their rapid ascent to the surface. They surfaced, on the opposite side of the site to their entry point, with a dive duration of 36 min to a maximum depth of 26m. On the surface the student immediately came off his loop and was gasping for breath. He managed to say 'breathing' and 'chest straps' and the instructor released the straps, turned to the shore, shouted for help and began to tow the student to the entry point. The instructor shouted again and a rescue boat arrived after the instructor had towed the student, who was still making gasping noises, about 150m. The instructor de-kitted the student who was recovered aboard the boat, where the student was sick twice and said he had a headache. The boat retrieved the student's unit, and made its way to shore. The instructor finned back on the surface towards the second student's DSMB who surfaced after a 3 min safety stop when the instructor was about 50m away. The pair finned back to shore and de-kitted. The rescued student had been taken to a first aid room and put on oxygen. A hyperbaric chamber was contacted who advised calling 999 for an ambulance to take the student to hospital and to check his chest noises. The student was shaking uncontrollably with laboured breathing and the instructor took his blood pressure, pulse and respiratory rate, which were all high. He listened to his chest and heard fine basal crepitations in the student's right lower lung. An ambulance arrived, the paramedic checked the student's saturation level which was low so kept him on the oxygen and checked his blood glucose. A second ambulance arrived and was given a copy of the dive site's incident report including contact details for the hyperbaric chamber if necessary. The student was taken to hospital where he was kept on oxygen. When the instructor visited a little later a doctor reported that all of the student's blood tests, ECG and chest x-ray were normal. Early that evening the oxygen was stopped and, after thirty minute's observation, the student was discharged. The student's rebreather unit was checked and had 130 bar of oxygen, 160 bar diluent, the scrubber was correctly packed and all 'o' rings were in place. The student reported that he had experienced a period of breathlessness when he was approaching the shelf at 20m. He was concentrating on relaxing and slowing his breathing when the instructor had given the signal to deploy the DSMBs. He was aware of the instructor's free flow, felt that his breathlessness became worse on the ascent and that he could not breathe on the surface when he came off the loop. The student was seen by his GP and checked in hospital where all investigations came back as normal.

***April 2019*** ***19/073***

A diver disembarked from a dive boat and was carrying her twin-set on her back. As the diver stepped off the boat the left shoulder clip on her wing BCD failed and with all the weight now carried on her right shoulder, that clip also failed. The twin-set fell to the ground hitting the diver's left calf causing grazing and bruising.

***April 2019*** ***19/097***

An instructor and two students carried out a shore based twin-set training dive on a Saturday. They were accompanied by another diver who was observing and using a single cylinder. The group descended, carried out buoyancy skills at 6m, then descended to 10m and followed a line to an underwater feature during which visibility became very poor. When they reached the feature at 18m and at around 25 min into the dive one of the students indicated he was cold. The instructor decided to retrace their route back to the entry point. At around 42 min the group ascended to 6m to attempt shut down drills and mid-water DSMB deployment. The instructor lost some finger dexterity due to the cold whilst using his reel but managed to release it but had to help one of the students deploy his DSMB when the reel stuck. The divers carried out a 3 min safety stop and surfaced with a dive duration of 54 min to a maximum depth of 19m. On the car journey home one of the students, despite the car being warm, said he still felt cold and appeared to be suffering from mild hypothermia. At home the student went to bed after taking a bath and was feeling extremely tired but on the Sunday he felt unwell and rested. On the Monday a doctor's appointment was made and the diagnosis was suspected Weil's disease and mild hypothermia. A course of medication was prescribed and follow-up appointments made. Subsequent chest X-rays were taken together with blood tests. Pneumonia was confirmed and the student was still very tired and unwell which continued for a couple of weeks. It could not be stated with any confidence that Weil's disease had been contracted at the dive site and after being contacted they stated that the water was regularly tested and found to be in perfect condition. Nor was it positively confirmed that the student had Weil's disease but possibly a pre-existing condition contracted prior to the dive. The student made a full recovery but was still subject to observation and medical supervision.

***April 2019*** ***19/082***

Following their first shore dive and a 1 hour 30 min surface interval an instructor using nitrox 22 and two trainees using air carried out their second dive. On the descent one of the students was very slow as he had trouble clearing his ears, felt a slight pain so ascended before continuing the descent. On reaching their maximum depth of 6m the students practised alternate source lifts. The descents after each lift were slow and impacted on the dive time and to keep within the table limits one of the trainees did not complete all the skill elements of the lesson. The group

surfaced with a dive duration of 40 min and the trainees were all well following the dive but the trainee who had trouble clearing his ears went to a doctor to get them checked. The doctor found no visible problems but advised the trainee not to dive the following day.

***April 2019*** ***19/083***

An instructor, a qualified diver and a trainee, all using air, conducted a boat dive to carry out training which included controlled buoyant lifts. Following a lift and re-descending the shotline to a maximum depth of 6m to carry out further skills, the trainee had a problem clearing his left ear. He returned to the surface and tried to re-descend once more but his ear failed to clear so his dive was aborted. The trainee was recovered aboard the boat and the instructor and the qualified diver re-descended to complete their dive. Back on shore the trainee was taken to a doctor where redness and inflammation in his ear was found with the small possibility of barotrauma. The trainee was advised not to dive for the rest of the training course.

***April 2019*** ***19/156***

A dive charter boat requested assistance from the Coastguard after they recovered an unconscious diver from the water, with other divers still down. An offshore industry rescue helicopter and a Coastguard rescue helicopter were tasked to the scene. The diver's buddies were too shaken to explain the circumstances but the skipper believed she had made a rapid ascent. Once both helicopters were proceeding it emerged that the two buddies had missed approximately 25 min of decompression stops and, on the advice of the duty dive doctor, they were also evacuated to hospital for assessment. (Coastguard report)

***April 2019*** ***19/170***

An instructor and her trainee, both using air, carried out a boat dive the aim of which was SMB practise in a current, although there was very little current on the site. The pair descended and it was apparent on the bottom that the trainee was over-weighted. The trainee's buoyancy was resolved and the pair continued the dive with the trainee's buoyancy a little erratic but improved. The trainee's SMB reel was difficult to use and failed to reel in the line during the ascent from the seabed at 17m. The pair re-descended twice to the seabed due to the trainee's weighting issues. The instructor inflated her DSMB and the pair ascended normally to 6m with the trainee holding the safety line attached to the instructor's DSMB reel. They stopped at 6m but sank back down to 8m. The instructor carried out a controlled buoyant lift on the trainee up to 5m but when dumping air from her own BCD she inflated it instead and made a buoyant ascent to the surface with the trainee following. They surfaced with a dive duration of 28 min to a maximum depth of 22m. After collecting the excess SMB line, where some entanglement occurred, both divers were recovered aboard their boat with no problems present other than the instructor feeling a bit shocked and the trainee, who was wearing a wetsuit, a little cold. On their return journey to shore the instructor had a biscuit, a drink of water and breathed nitrox 27 for a while. Back ashore the instructor helped to unload the boat, debriefed the trainee and had started to drive home when she felt a sharp back pain between her shoulder blades and thought it was indigestion. At home she began to unpack her car but started to cough and brought up small spots of pink froth. She called a recompression chamber who advised that the instructor call 999 for an ambulance to take her to hospital for an initial check and then for her to transfer to the recompression chamber. In A&E, following an ECG and blood tests, the diver was found to have troponin levels which indicated a heart attack. A further ECG, CT, chest x-ray and blood tests were carried out. A doctor from the recompression chamber attended, carried out all neurological tests and cleared the instructor of any dive related injury. The instructor was admitted to a ward and the now elevated troponin levels indicated she had suffered a heart attack. She remained in hospital for two days where further ultrasounds and an angiogram showed no signs of damage to the instructor's heart or arteries. The conclusion from the hospital was that the heart attack had been caused by the buoyant ascent when a bubble may have caught in the coronary artery for a millisecond and made the heart 'blip'. The instructor was discharged with medication, a follow-up MRI scan at the hospital and an appointment with the recompression chamber. The trainee had been contacted throughout and double checked but suffered no ill effects following the dive.

***April 2019*** ***19/079***

A diver and her buddy, both using air, had carried out a boat dive to a maximum depth of 14m with a dive duration of 17 min. Following an evening meal out, the diver went to bed with a headache but the following day, despite eating, drinking fluids and taking pain relief medicine, the diver still had a headache. When this became worse a diving doctor was called and advised that the diver contact a hyperbaric chamber. The chamber advised the diver to attend and following an examination it was thought best to give her recompression treatment. The diver's headache worsened during and after treatment and with DCI ruled out at this point she was sent to hospital for a CT scan to see whether she had suffered a stroke. Following the scan and consultation, the diver was released with no outcome other than to monitor her condition for the next forty-eight hours and to return to hospital should it not improve. The diver's condition improved so no further action was required.

***April 2019*** ***19/318***

A diver sustained injuries to their face and neck following a large release of pressure whilst working with a compressor in an air filling station. He was taken to hospital and reported to be in a stable condition following surgery.

***May 2019*** ***19/086***

A diver using air carried out two boat dives. The first was a wreck dive to a maximum depth of 29m with a dive duration of 34 min. After a surface interval of 4 hours 45 min the second dive was also on a wreck to a maximum depth of 10m with a dive duration of 34 min. Both dives were completed without incident and within computer limits, but the water was cold which affected the diver's hands. The diver had a hot shower after the second dive and warmed her very cold hands in the hot water. That evening the diver developed pain and slight swelling in his wrist and hand which gradually worsened over a couple of hours. The diver contacted a hyperbaric chamber who advised careful monitoring. The symptoms had improved the following day and resolved without the need for treatment.

***May 2019*** ***19/095***

A diver carried out two boat dives using air. The first dive was to a maximum depth of 5m with a dive duration of 50 min. On the second dive during the ascent at 7m the diver felt pressure on his right ear and became a little dizzy. He surfaced with a dive duration of 35 min to a maximum depth of 12m and felt fine when back aboard the boat. Back on shore and about an hour later the diver felt dizzy again and this continued to the following day. The diver went to hospital for a check-up and no damage was found to his ear. He was told that if the situation did not improve to return to the hospital a week later. The dizziness resolved four days later and the diver had no further problems.

***May 2019*** ***19/089***

A dive boat issued a 'Mayday' after a diver had been brought to the surface unconscious. The Coastguard tasked a rescue helicopter and two lifeboats to proceed and assist. The dive boat used a pre-agreed diver recall signal to recover the divers still in the water. The diver was transferred to a lifeboat and treated by one of the crew who was a paramedic. Other boats in the area had responded to the call for help including one with two doctors aboard who offered medical advice over the radio. The diver was airlifted to hospital for further assessment and treatment and the dive boat was met back in port by a Coastguard rescue team. The diver had reportedly been diving in a three and became separated. He was found on his back at 31m without a regulator in his mouth. At the hospital the ITU doctor reportedly thought that equipment failure may have been a factor. It was also reported that the diver was recovering and doing well. (Coastguard & RNLI report).

***May 2019*** ***19/319***

A student in a group of three had some problems equalising on descent whilst shore diving but successfully completed the day's three training dives reaching a maximum depth of 21m. Later that evening he mentioned that his ears felt blocked and he sought medical attention the following day. A few days later the student reported that he had perforated both eardrums and had been instructed that he should wait for them to heal before continuing with the diving course.

***May 2019*** ***19/099***

A group of divers had completed a boat dive and returned to harbour to refill cylinders before their second dive. It was low water and the journey to re-fill cylinders was along a floating pontoon to the start of three flights of steps connected by two landings to the top of the harbour wall. The steps did not have a hand rail against the wall and, due to the tidal range, the first flight, unlike the other two, did not have a hand rail on the seaward side to ensure access to pontoons at all states of the tide. The first diver off the boat was carrying a 12 lt 300 bar cylinder and climbed the first flight of steps, crossed the landing towards the second flight and reached for its handrail. He apparently misjudged the distance and did not grip the rail, overbalanced, released his cylinder and both he and the cylinder fell down the steps coming to rest against the harbour wall at the bottom of the steps. The diver was conscious although bleeding severely from his nose, forehead, right hand and complaining of pain in his right knee. Assistance was sought from the harbourmaster and members of the public, including an off-duty intensive care unit nurse. The diver's hand was bandaged, the cut to his forehead staunched with direct pressure and his nosebleed reduced significantly. The nurse carried out a neurological check which was fine and an ambulance called. With a rising tide and heavy rain the diver was taken to the harbourmaster's office. When the paramedics arrived around 3 hours later they suspected the diver had fractured his right kneecap which was later confirmed by x-ray in hospital. Entonox was suggested for pain relief, but the divers informed the medical team that such was contra-indicated, so oral morphine was administered One of the divers in the group intervened to remind them that Entonox should not be given due to the risk of triggering DCI so the diver was given oral morphine instead.

***May 2019*** ***19/112***

Divers were launching their RHIB and when they turned the electric isolator key the radio came on but following this there was no power. The divers concluded that the boat battery had gone flat so they pulled the boat back to the top of the slip and went to look for a battery. A local boat maintenance engineer came to help and brought a battery that was used to charge up his company's own boat batteries. One of the divers connected the jump leads to the two batteries but nothing happened. The diver then changed the connection over, there was a spark, then a flash and a loud bang as the borrowed battery exploded. At the time of the explosion the diver was in the boat and was struck in the face by the battery debris which broke one of his front teeth, bruised and cut his lips and cut his forehead. The maintenance engineer and another diver who were standing by the boat were not injured by the debris but the diver got acid on her face. The diver who was in the boat went to wash his face and the other diver identified that a jump lead attached to the boat battery was on fire. She removed the boat extinguisher from under the seat, pulled out the pin, pushed down the lever but it did not work. The engineer got a powder extinguisher from boxes at the top of the slip and he and the diver used this to extinguish the fire. The fire only seemed to have affected the jump lead however it was difficult to see through the powder. The diver went to wash her face and the two divers monitored each other for shock. They phoned a fellow diver who was a dentist and NHS 24 to get advice on how to treat the diver who had been hit with the battery debris. He treated his swelling lips with ice and went to A&E to get his injuries assessed. He was treated that evening by an emergency dentist. The boat was washed down, (the engine was raised with the help of the engineer) and taken to a secure compound.

***May 2019*** ***19/166***

After a diver suffered a rapid ascent from 30m, he was recovered aboard his dive boat. A nearby charter boat went to assist and provided oxygen. The dive boat returned to harbour where a Coastguard rescue team and ambulance were waiting. The diver was taken to hospital. The only reported symptom was shortness of breath. (Coastguard report)

***June 2019*** ***19/122***

A diver was at a shore diving site with two groups of divers on a training weekend. On the Sunday he had finished a shore based training dive and was returning to collect his kit from the slipway. He saw two or three divers holding a very ill looking diver in shallow water on the slipway. Another diver was being asked to assemble an oxygen kit.

There had been no shouting or alarms but the diver asked whether it was a drill. When told it was not, the diver asked one of his own group to use the nearby emergency phone. Whether it was this or site staff monitoring the CCTV, or someone else reporting the incident, it wasn't long before the site staff arrived. The diver helped to de-kit the diver as well as one of the divers supporting her and they carried her out of the water and she was put on oxygen. The diver was conscious but looked very blue, was shivery and repeating she was sorry over and over again. At this point the diver realised it was the same trainee on a drysuit orientation course that he had helped rescue after a fast ascent the previous day. The diver asked for information and was told they had been at 7m for about 20 min doing controlled emergency swimming ascent drills when the trainee had panicked. She looked worse than the day before with rapid breathing, shocked and very blue around the lips. The trainee had complained on the swim to shore that she was having trouble breathing. She began coughing after breathing the oxygen so the diver sat her up a little but this did not make her more comfortable. The trainee vomited and one of the members of the site staff recognised it was not food but from the trainee's lungs due to water ingress. Emergency services were contacted and the trainee put in the recovery position, oxygen was resumed and she was helped out of her suit. The trainee was still talking but clearly getting worse and when a member of the staff checked her lungs with a stethoscope he confirmed the initial suspicion of fluid on the lungs. Two paramedic cars arrived as well as an ambulance and an air ambulance. The diver, with the first aid now under control of the site staff, had been managing crowd control, answering questions from the trainee's group and keeping them busy by monitoring their other divers in the water as well as helping the trainee's husband de-kit so he could be ready to accompany her. He saw the trainee put in the ambulance but was unsure whether she was put in the air ambulance as it was some time before it took off after he had checked he wasn't needed anymore and had returned to his own diving group. He checked later at the site shop but they had not heard from the hospital but it was later reported that the trainee had suspected immersion pulmonary oedema.

***June 2019*** ***19/127***

A rebreather diver joined a group aboard a charter boat and was paired with another rebreather diver who was known to some of the group but unknown to him. After a discussion the diver established that his buddy had been qualified as a rebreather diver for four years and had completed his last dive two weeks earlier. The buddy mentioned he had had time off from diving due to a throat operation but was now fit to dive. The first dive was a shakedown dive to a maximum depth of 20m with a dive duration of 36 min. The diver carried out regular checks on his buddy throughout the dive and it was without incident. After a 1 hour 30 min surface interval the diver and his buddy entered the water to carry out a wreck dive and the diver descended the shotline behind his buddy. There were two open circuit divers immediately ahead of them which made a bubble check difficult. The divers left the shotline once the wreck came into view and there was a slight current which made finning around slightly difficult. After signalling to each other the diver led them across the wreck. He turned and signalled to the buddy to check if he was 'OK' before heading towards the stern. On reaching the propeller at 30m and 11 min into the dive the diver turned to check if the buddy was 'OK' but he signalled to go up and was pointing at his rebreather's computer. He was clearly agitated and the diver signalled for him to calm down so they could assess the situation and pointed to his bailout. After looking at his computer again the buddy signalled the diver to deploy the DSMB, which he did. The pair ascended together reaching 23m. The buddy was finning hard and attempted to inflate his wing BCD without success. He appeared heavy, was getting no buoyancy and eventually gave up and dropped back down onto the wreck at 29m. The diver was confused but followed the buddy and remained in constant contact. Their dive time was now 15 min but the buddy was shaking his head, pointing to his computer, was agitated and breathing hard. The diver noticed a flashing red light on the buddy's mouthpiece so signalled the buddy again to bailout onto his 11 lt open circuit cylinder. The buddy ignored this and the diver moved closer in an attempt to give reassurance and offer assistance when the buddy grabbed his hand then released it as he pushed off from the bottom again in an attempt to ascend. Again, the buddy was finning hard and breathing heavily whilst trying to inflate his wing BCD which was unsuccessful. As the pair ascended the diver once again signalled for him to bailout, which he did at around 24m. On his bailout the buddy was still agitated, breathing heavily and turning the cylinder on and off in a panicked state. The diver could see bubbles from the regulator's exhaust so was confident the buddy was getting gas. The buddy continued to try and inflate his wing BCD whilst finning hard and the pair reached 22m before the buddy started to drop back down again. As they descended the buddy gave the 'out of gas' signal and the diver immediately offered his bailout putting the regulator in front of the buddy's face. The diver was confused as the buddy had only been on his bailout for a few minutes and he could see that the buddy's eyes were fixed on the regulator but he did not take it. As they landed on the bottom again, now away from the wreck, the buddy's arms dropped and his head went back. He was now unconscious and on his back on the seabed. The diver attempted to inflate the buddy's wing BCD but there was no air so he inflated his suit but air came immediately out of the shoulder dump valve. The diver closed the valve, achieved positive buoyancy and started a controlled buoyant lift. The buddy's bailout regulator was still in his mouth but the diver was unsure if he was breathing from it. On the ascent the diver glanced at the buddy's bailout contents gauge which showed 170 bar. The diver did not have any decompression requirements on his computer but it did warn him to slow the ascent on two occasions. They reached 7m at around 19 min where the diver was struggling to keep the ascent under reasonable control with his computer warning to slow the ascent for the third time. The pair were now accelerating to the surface and at 7m the diver made the decision to let his buddy go to the surface to avoid becoming a casualty himself. Free of his buddy the diver arrested his ascent. As soon as the buddy surfaced the diver heard the boat's engines which gave him some confidence and reassurance that they were in the process of recovering him from the water. After releasing the buddy the diver inadvertently descended to 15m before ascending and surfacing with a dive duration of 22 min to a maximum depth of 31m. On the surface the diver recovered his DSMB which was nearby and used it as a flotation aid whilst attempting to get his own breathing under control. The diver could see that his buddy had been recovered onto the boat's stern lift and the crew signalled him to swim to the boat. The Coastguard had been contacted and the diver was recovered via the stern lift and could see his buddy sitting up, responsive and breathing oxygen. He had blood on his face which appeared to be from his

eyes and nose area. The diver was also put on oxygen and stayed on it for twenty minutes. A paramedic aboard another boat nearby transferred to the dive boat and provided assistance before the lifeboat arrived and took the buddy and his equipment aboard in readiness to be evacuated by helicopter. The buddy was airlifted to hospital but did not require recompression treatment and was observed for twenty-four hours for secondary drowning before being discharged. The diver remained under observation for the next few hours but suffered no ill effects.

***June 2019*** ***19/400***

A student on a diving course reported having ear equalisation problems on the first shore dive of the day but had no subsequent pain or dizziness. She successfully completed the final dive of the course and made a subsequent dive to a maximum depth of 12m. The student later reported that she had seen a doctor for ongoing ear problems.

***June 2019*** ***19/401***

A student had carried out a shore training dive in a group of four to a maximum depth of 10m. After exiting the water and having removed his fins the student fell to his knees. He immediately stood up and stated that all was well but later complained of wrist pain which was too severe to continue diving. After visiting A&E he was advised that he had sustained a wrist fracture during the fall.

***June 2019*** ***19/403***

A fully kitted student in a group of five prepared to enter the water on a shore training dive using a giant stride entry but tripped on her fins and fell forwards onto her hands and knees. The surface support helped to remove the student's equipment and applied a cold compress. After thirty minutes there was no apparent swelling just minimal bruising.

***June 2019*** ***19/404***

A student in a group of eleven completed the first shore training dive of the day to a maximum depth of 6m without any problems. Upon exiting the water a small amount of blood was noticed coming from the student's right ear. His descent had been controlled and the student said he had felt no pain or discomfort. The student's instructor referred him to A&E where no damage was found. However, a later specialist appointment confirmed a tear in the student's ear drum. After a six week check-up the student was given the all clear to dive again by the specialist.

***July 2019*** ***19/315***

A dive charter boat contacted the Coastguard reporting that a diver had slipped on deck and hit his head. They were assessed by a doctor who was aboard the boat and it was met when it returned to harbour by an ambulance. (Coastguard report).

***July 2019*** ***19/320***

Once back on the dive lift of a dive charter boat a diver realised he could not move his leg. It was felt that it was medical and not diving related. As it was a short transit to shore Coastguard rescue team were tasked to meet the boat alongside where an ambulance was waiting. By the time the boat reached the shore the diver was able to walk off the boat unaided and was passed to the ambulance service for assessment. (Coastguard report).

***July 2019*** ***19/405***

A diver in a group of three experienced ear problems during a drysuit specialty dive to a maximum depth of 3m. She later attended A&E where she was diagnosed with perforated eardrums and advised not to dive or swim for four to six weeks until they had healed.

***July 2019*** ***19/175***

A diver had carried out a dive to a maximum depth of 25m and at 25 min had made a rapid ascent. Back aboard his RHIB he began to experience chest pains and started vomiting. The Coastguard tasked a Coastguard rescue helicopter and a lifeboat to the dive boat. After radio medical advice it was agreed that the diver should be airlifted to A&E. The lifeboat took the diver aboard from which the diver was winched to the helicopter. The lifeboat then escorted the RHIB back to harbour where it was met by a Coastguard rescue team. Another team manned the hospital landing site for the helicopter. (Coastguard report).

***July 2019*** ***19/324***

A buddy pair were diving for crabs at approximately 25m when one of them suddenly rolled onto his back and made an uncontrolled ascent without his second stage in. He surfaced, with a dive duration of 24 min, unresponsive and not breathing. CPR was commenced aboard the dive charter boat and a 'Mayday' call made. The Coastguard tasked a lifeboat and a Coastguard rescue helicopter. During CPR the diver regurgitated a large quantity of water, started breathing again and was put on oxygen. The diver was airlifted to hospital for treatment. He had been using nitrox 32 and was later reported to have been late when he first arrived aboard the boat, had split a neck seal and was described as stressed before the dive. (Coastguard & RNLI reports).

***August 2019*** ***19/194***

Two buddy pairs carried out a shore dive as a group of four. The aim of the dive was depth progression to 40m and the group descended to 18m. They swam to the edge of the 18m shelf when one of the group indicated they were not happy and might have a problem. Her buddy turned to face her whilst she got the attention of the other pair. The buddy checked the diver again asking if she was 'OK' but she indicated 'No'. The buddy signalled to surface to which the diver agreed but then became unresponsive. The buddy took a hold of the diver's BCD and carried out a controlled buoyant lift to the surface. The pair were using air and no stops were carried out as the diver was still unresponsive, had a vacant look in her eyes but breathed through her regulator throughout the ascent. They surfaced with a dive duration of 8 min and the buddy called for help at which point the diver became responsive, was able to swim to an exit point and was assisted out of the water. The second buddy pair surfaced having completed safety stops and assisted on the surface. Oxygen was administered to the diver as medical assistance was requested by the dive site management. A first responder arrived, took over the oxygen administration and monitoring the diver. A hyperbaric chamber was contacted and the first responder talked to the diving doctor. It was agreed that it was unlikely to be a diving

related incident as the diver had recently suffered a number of fainting episodes three weeks prior to this dive. The diver was taken to hospital by ambulance for further observation.

***August 2019*** ***19/328***

After a 30 min shore dive to a maximum depth of 5m a diver began to vomit. She was known to have an ongoing medical condition. The Coastguard tasked a Coastguard rescue team and an ambulance to the scene who assessed the diver but allowed her to return home. It was thought that it could have been seasickness caused by the swell at the dive site. (Coastguard report).

***August 2019*** ***19/330***

A diver was sighted sitting on some rocks close to shore and waving for help. The Coastguard tasked a lifeboat and a Coastguard rescue team to recover the diver. He was found to have been carrying out a shore dive in a three, became separated from the other two divers and was swept onto the rocks injuring his leg. The diver was assisted to shore and transported himself to hospital for assessment. (Coastguard & RNLI reports).

***August 2019*** ***19/202***

An instructor and a trainee had carried out a dive to a maximum depth of 9m with a dive duration of 37 min including a 3 min safety stop at 6m. They carried out a second dive, both using air, on a wreck by a breakwater and surfaced with a dive duration of 26 min to a maximum depth of 14m. The instructor suggested that the trainee switch to his snorkel to swim away from the breakwater to be recovered by their boat. When doing so a wave went over the trainee and he inhaled a large volume of seawater. Both divers were recovered aboard where the trainee began to cough up seawater and after a few minutes this included blood. The coughing subsided but medical advice was sought and it was suggested the trainee be put on oxygen as a precaution and report to a medical centre on his return to shore. At the medical centre the doctor was confident the coughing of blood was solely due to the seawater inhalation. An ECG, respiratory and alertness tests were carried out and all results were normal but the trainee was referred to hospital for a chest x-ray. This came back as normal and the trainee was discharged.

***August 2019*** ***19/203***

A buddy pair, both using air, carried out a boat dive. During their descent on the shotline to a wreck the buddy had problems equalizing her ears and the pair ascended a few metres to try and resolve. Once the buddy's ears had cleared they re-descended but she had trouble equalizing again so the dive was aborted. The divers surfaced with a dive duration of 8 min to a maximum depth of 9m and were recovered aboard their boat. The buddy had no other problems and was not in pain but was advised to seek medical help if she had any further ear problems.

***August 2019*** ***19/406***

A student in a group of 8 carried out a shore dive. She appeared comfortable during the descent but once on the bottom at 6m signalled that she wanted to go up. The instructor accompanied her to the surface where she began screaming which alerted the shore cover. The student told the instructor that her tooth had started to hurt when she knelt down on the bottom and was still hurting. It is not known whether a dentist was subsequently contacted.

***August 2019*** ***19/214***

Following a previous cutaneous DCI and subsequent diagnosis of a PFO, a diver had been cleared to dive with the restrictions of only doing one dive a day to a maximum depth of 15m with an extended safety stop of 5 min. The diver had also been advised not to strain herself in any way following a dive. The diver, using air, carried out a shallow shore dive, her second in the UK following the DCI and the first time since her PFO had been confirmed. The site was unknown to her and her buddy was a relatively inexperienced diver. These factors meant she was a little anxious in advance of the dive but confident this would abate once she was in the water. The dive was completed and she surfaced with a dive duration of 49 min to a maximum depth of 9m. Other divers helped her to de-kit and carried it out of the water but the diver became very hot so stripped her drysuit down to her waist and removed her thermal top. Not wanting to cause any physical strain by climbing back up a shingle bank and a steep rocky slope to the car park, the diver stayed sitting on rocks on the beach. She developed a headache within 15 min of surfacing, advised the other divers and they moved her to some shade where she drank some water. The headache did not recede and the diver began to feel extremely tired. She and those who were monitoring her decided around 35 min since surfacing that she go on oxygen as a precaution. Her condition did not deteriorate but the headache remained and the diver made her way to a dive centre where staff conducted a neurological examination and checked for a rash. No symptoms were found but as the headache persisted a call was made to a hyperbaric chamber. The diving doctor advised that, given the profile of the dive and that a headache on its own was rarely an indication of DCI, the diver was highly unlikely to be suffering from DCI. He advised that diving on nitrox 32 within her existing restriction would add another protective factor. In retrospect the diver thought the headache was probably caused by stress.

***August 2019*** ***19/407***

Following a successful training ascent skill one of the students in a group of six felt sick and dizzy which did not resolve within a few minutes. The student commented that he had felt a little congested that morning. He did not dive again that day.

***August 2019*** ***19/217***

A diver was loading equipment onto a RHIB when she noticed she was bleeding from a small cut on her thumb. She initially ignored it but realising that the cut was still bleeding and spreading blood around. The diver was given a plaster and the bleeding stopped shortly after.

***August 2019*** ***19/332***

A diver missed 16 min of stops after a dive to a maximum depth of 45m using nitrox 28. He began to cough up pink froth and was placed on oxygen. The Coastguard was contacted and they arranged for the local hyperbaric chamber to be activated and tasked a Coastguard rescue team to meet the boat when it returned to shore. The team assisted the diver into the awaiting ambulance.

The diver was known to have a history of IPO two years previously. (Coastguard report).

***August 2019*** ***19/334***

A diver collapsed with suspected DCI when his dive boat was alongside in a harbour. The Coastguard tasked a Coastguard rescue team, requested an ambulance and a local diving doctor to attend. The diver was taken into the care of the ambulance service. (Coastguard report).

***August 2019*** ***19/336***

A charter dive boat informed the Coastguard that they had a CCR diver on board suffering from 'tingling' in his fingers and feet. The diver had carried out a dive to a maximum depth of 33m with a dive duration of 56 min. On the advice of a hyperbaric chamber's doctor the diver was taken to the chamber by ambulance for oxygen administration and monitoring. It was later determined that the diver's symptoms may have been caused by a jellyfish sting. (Coastguard report).

***August 2019*** ***19/276***

A senior diver and two divers, all using air, carried out a boat dive. They descended a wall to a maximum depth of 20m when it became clear that one of the divers was not maintaining his buoyancy and appeared uncomfortable in the water. The senior diver signalled 'OK' to the other diver and turned his attention to helping the diver who was having an issue which turned out to be an ill-fitting right fin. This was quickly rectified and the senior diver turned back to the other diver but could no longer see him. He and the diver did a 360 deg search, ascended to 6m where they carried out another 360 deg search before they surfaced with a dive duration of 7 min omitting a safety stop. The pair made contact with the boat and found that the other diver was already on the surface. He had experienced ear pain at 20m so ascended slightly to try and equalise. He was unable to get the attention of the senior diver who was occupied with the diver with the fin problem so decided to slightly ascend again to try and clear his ears. At this stage he had lost sight of the other two but his ear pain indicated that he should keep ascending. The pain did not stop and between 10m to 5m the pain became a lot worse. The diver eventually surfaced and was recovered aboard the boat. He was deaf in one ear with blood coming from it but was no longer in pain and was happy to remain aboard until all divers had been recovered. The diver made an emergency appointment with a local GP later that day who said to keep the ear dry and report to his own GP. The resulting audiogram showed a loss of hearing and the diver waited for a referral to an ENT department. It was later reported that the diver had suffered a burst eardrum as a result of a middle ear barotrauma on the ascent.

***September 2019*** ***19/231***

A diver got into trouble after suffering an injury in a dive boat. A Coastguard rescue team were called to assist when the boat returned to harbour. An ambulance was already at the scene and the diver, who was suffering the effects of a childhood injury, required assistance from the dive boat back to a car park. She was assisted to the ambulance. (Media report).

***September 2019*** ***19/249***

A diver and his buddy, both using air, carried out a shore dive with around 2m underwater visibility. They maintained close contact with each other and both had torches. At around 18m during an air check the buddy started to ascend, lost visual reference and went into an uncontrolled ascent. The diver started to follow to maintain contact and also made an uncontrolled ascent. The buddy recovered his buoyancy at around 3m and started to re-descend and passed the diver who was on the way up. As he tried to keep his buddy in sight the diver re-descended quite rapidly but did not equalise properly which resulted in some ear pain. Both divers settled and composed themselves at approximately 17m, decided to abort the dive and after 5 min began a normal ascent. They surfaced with a dive duration of 28 min, including a 5 min safety stop at 6m, to a maximum depth of 21m. As the diver had some ear discomfort he called a local recompression chamber. They advised that ear problems were not really within their remit but asked questions to ensure there was no concern regarding DCI and advised the diver to see his GP if he was still concerned. The diver attended a walk in medical centre who confirmed that he had a slightly perforated ear drum which should heal within one to two weeks but to see his GP if he had any further concerns.

***September 2019*** ***19/348***

A diver panicked after entering the water from a dive charter boat and inhaled water. She was recovered aboard the vessel where she collapsed. The diver was placed on oxygen and the Coastguard was contacted. Due to the proximity to the harbour, the decision was made for assistance to meet the dive boat in port. The diver was assisted ashore by a Coastguard rescue team and a local doctor administered first aid before an ambulance took her to hospital. (Coastguard report).

***September 2019*** ***19/408***

A student in a group of five carried out a shore training dive to a maximum depth of 6m. When the group surfaced the instructor noticed that the student had a small amount of blood in his mask. Back on shore the student reported feeling dizzy and faint. As his equipment was being removed he fainted and was unconscious for about 10 sec before recovering. The student was given oxygen for around 30 min and he rested for a few hours before leaving the dive site for his local accommodation.

***October 2019*** ***19/270***

An instructor and two trainees, all using air, carried out a boat dive, the aim of which was to include alternate source practise ascents. They initially dived to a maximum depth of 6m and a practice ascent was made. The instructor had to dump air at 2m from one of the trainee's BCD while he was acting as the 'recipient' to slow the ascent. The group surfaced and carried out surface rescue skills and then re-descended. The trainee who had been the 'donor' struggled to clear his ears at around 2m as the group re-descended. Two further attempts were made to re-descend before the instructor decided to abort the dive. The group surfaced with a dive duration of 20 min and were recovered aboard the boat. The trainee was taken to a medical centre and a doctor confirmed bruising and redness to his left ear. He recommended no diving for the rest of the week and until the trainee's congestion had cleared up.

***October 2019*** ***19/271***

An instructor and two trainees, all using air, carried out a boat training dive. One of the trainees had difficulty clearing his ears during the dive but was able to reach the planned maximum depth of 6m. He had indicated his problem to the instructor but was happy to continue the dive at a very slow pace and clearing his ears every 1m or so until he reached 6m. The instructor reported the problem to the dive manager and the trainee later attended a medical centre where the doctor found he had red eardrums but no damage. The trainee was advised not to dive as it was suspected a had a cold developing.

***October 2019*** ***19/272***

A diver and his buddy, both using air, carried out a shore dive. On the descent and at around 12m the diver experienced a problem clearing his right ear. The pair ascended a few metres and the diver indicated his ear had cleared. The pair re-descended but the same problem arose and they aborted the dive. When he surfaced with a dive duration of 18 min to a maximum depth of 14m, the diver had traces of blood in his nose. The diver's ears felt blocked although he was not in pain but he did not dive again that week.

***October 2019*** ***19/281***

The trainee had kitted up and walked to an entry point to carry out a shore dive. He stood on the top of some steps, slipped and fell. His instructor removed his kit and advised that the trainee speak to a doctor as he had a swollen left knee.

***October 2019*** ***19/258***

An instructor and his trainee, both using air, carried out a shore dive. They descended a shotline when the trainee started to get breathless and aborted the dive at 1m. On reaching the surface she spat out her regulator, could not find the inflation hose for her BCD and lost a fin. The trainee struggled to stay on the surface and swallowed some water. The instructor surfaced and located the trainee's inflation hose behind her left arm and inflated her BCD. The surface cover deployed a safety diver to help the trainee to shore. The trainee wanted to continue diving after a short break but, as a precaution, did not dive again that day but suffered no after effects.

***October 2019*** ***19/264***

A dive boat contacted the Coastguard and reported that they had a diver aboard who had made a rapid ascent from 30m after a 42m dive with a dive duration of 35 min. The diver was suffering from chest pains so radio medical advice was arranged and a lifeboat was tasked to recover the diver to harbour where they were met by an ambulance and a Coastguard rescue team. (Coastguard & RNLI reports).

***October 2019*** ***19/273***

A diver and his buddy, both using air, carried out a boat dive. The pair were to enter the water together but the buddy slightly delayed, rolled backward, landed on top of the diver and struck his head on the diver's cylinder. The boat cover noticed the buddy holding his head and checked if he was 'OK'. With an affirmative response the divers re-grouped at the shotline and the dive went ahead as planned to a maximum depth of 20m with a dive duration of 26 min.

***November 2019*** ***19/284***

After a pool training session, with a maximum depth of 4m and duration of 30 min, a diver started to get a headache and felt cold. An instructor put the diver on oxygen and gave her a pint of water and a pint of orange juice. After 40 min on the oxygen the diver felt a lot better and confirmed that she had not eaten since the late afternoon of the day before and had only drunk one cup of coffee. It was noted she had skin dehydration and was advised to drink plenty of fluids.

***November 2019*** ***19/280***

A diver using air and nitrox 50 had carried out a boat dive to a maximum depth of 40m with a dive duration of 47 min including a 1 min stop at 9m and a 9 min stop at 6m. That evening the diver stood for an extended period of time and fainted. The diver recovered and contacted a diving doctor as a precaution. The doctor was certain it was not diving related and advised the diver to see a GP. The GP gave the all clear and that the faint had been caused by low blood sugar levels.

***November 2019*** ***19/278***

An instructor and two trainees were on a shore based diver training weekend. The instructor checked whether his trainees had colds with one saying he had the beginning of a potential cold. The instructor checked to see if he could clear his ears and the trainee confirmed he could. The instructor warned him that he should not dive with a cold and that the planned dive later that day and on the Sunday could be compromised. The Saturday morning was spent with the trainees getting used to hired drysuits and weighting in more or less standing depth. That afternoon the group dived to a maximum depth of 3m with a dive duration of 38 min and the instructor had again checked before the dive that the trainee who thought he may be starting a cold could clear their ears and he confirmed his ears were fine. After the dive and later that day the trainee confessed that he could not clear his ears during the brief but had subsequently done so. The instructor advised against diving on the Sunday saying there would be another opportunity to progress at another time. During the instructor debrief that evening the instructor highlighted the possible cold issues with the trainee and him not being honest with regard to his ability to equalise. On the Sunday the instructor woke with sinus congestion and provided shore cover while another instructor dived with the trainee. Some minutes into the dive, to a maximum depth of around 6m, the trainee ascended to the surface with his instructor because of ear problems. The instructor on shore cover assisted the trainee to de-kit and asked what had happened. The trainee reported significant pain on each descent during the lesson to the point where the pain obscured everything else but did not report vertigo, a cold rush of water or loss of hearing. He was directed not to dive again that day and to speak to his GP if he experienced persistent discomfort or any dullness in hearing. The instructor attempted to check that the trainee had recovered during the following week but had no response.

***December 2019*** ***19/410***

A group of five carried out the first shore training dive of the day to a maximum depth of 6m. After the dive one of

the students in the group was cold, shaking and short of breath. She was wrapped in blankets, given hot drinks and put on oxygen to help with the shortness of breath. She felt better when warmed up but did not dive again that day.

***December 2019*** ***19/415***

After a surface interval of 1 hour 50 min from a previous dive, a diver and her buddy completed a dive to a maximum depth of 32m. The first 16 min was spent at a depth of approximately 20m, the pair then dropped to 32m for 3 mins, then ascended to 20m where they spent the rest of the dive. They ascended to 5m and completed a safety stop for 3 mins and surfaced without incident. Sometime after surfacing the diver reported to the on-site safety team that she had a mild rash on her back but no rash on her arms. She believed the rash was due to a reaction to a new short sleeved vest. The diver was given oxygen as a precaution.

# Miscellaneous incidents

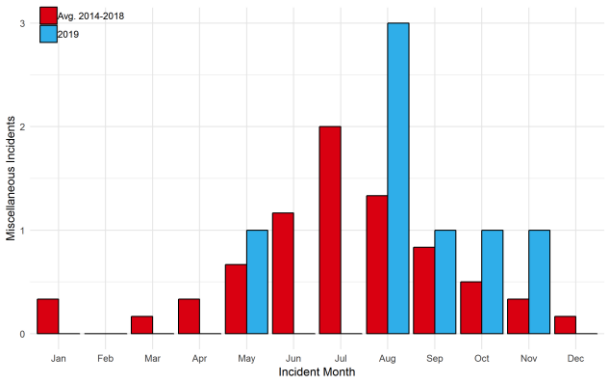


***Figure 27. Miscellaneous incidents in each month of the year.***

***May 2019*** ***19/096***

Having completed diving for the day a group of divers returned to a beach with their two RHIBs. With a flooding tide and around two hours to go before there would be enough water to recover the RHIBs using a concrete slip, the decision was made to recover the boats from the beach using one of the diver's 4x4 vehicle, which was not unusual practice at this location. The first boat was winched onto the trailer without any issues but despite the sand feeling very firm underfoot it was immediately obvious that recovery would not be possible. The boat was pushed off the trailer which was unhitched from the vehicle. When an attempt was made to drive away the 4x4 became stuck in the sand and a local tractor operator was brought in to help with its recovery. Initial attempts to tow the vehicle using ropes failed and with the rising water level the vehicle's electrics cut out and it was thought this put the automatic transmission into 'park' mode. A passer-by provided a nylon strop which was attached between the tractor and the vehicle's towing eye but it snapped despite a reported safe working load of approximately 20 tonnes. At this point all that could be done was to recover personal belongings and watch as the incoming tide completely covered the vehicle. Nobody was injured and the vehicle was recovered on the second low tide of the following day by a specialist recovery team to a flat-bed vehicle transporter using a tracked JCB style excavator.

***August 2019*** ***19/201***

An instructor was demonstrating a backward roll entry into a pool when his trainee slipped over on the pool side. The trainee was helped back up but had suffered no injuries.

***August 2019*** ***19/215***

A diver had carried out a dive reaching a maximum depth of 19m with a dive duration of 34 min. After a surface interval of 1 hour 18 min the diver, using air, carried out a drift dive from a boat. He and his buddy and another pair of divers had been briefed to drift with the current moving in a south westerly direction. The diver and his buddy complied with the brief, but the second pair of divers went in the opposite direction. As the pairs of divers were drifting apart the boat cover used a recall signal on the diver's SMB and a recall tag deployed down the SMB line asking them to head east. The diver and his buddy tried to do this but the current was too strong and with the pairs now too far apart the boat cover decided to recall the diver and his buddy by deploying a second recall tag which arrived as they were carrying out their safety stop. All the divers were recovered aboard the boat.

***August 2019*** ***19/219***

After a 1 hour 13 min surface interval following a wreck dive to a maximum depth of 18m with a dive duration of 34 min, a pair of divers carried out a boat dive. They and another pair had been briefed that for their drift dive they go with the current in a south westerly direction. The other pair entered the water first and drifted south west but the second pair drifted south east. The boat cover, concerned by the distance between the two pairs, used SMB recall signals to the second pair but they did not respond. The SMB recall signal was then used on the other pair's SMB and a recall tag deployed down their SMB line asking them to swim east. They tried to respond but it proved difficult as the current was moving in the opposite direction. The SMB recall signal was again used on the second pair's DSMB but they did not respond so a recall tag was sent down their DSMB line to which they responded several minutes later. They had thought the recall pulls on the SMB line were from the surface swell but surfaced, omitting a safety stop, with a maximum depth of 14m and a dive duration of 38 min. All divers were recovered aboard the boat fit and well.

***September 2019*** ***19/340***

A member of the public called the Coastguard to report safety concerns regarding an irate solo diver on a beach who had been swearing at and hitting his kit before entering the water. A Coastguard rescue team were tasked and they located the diver and confirmed he was safe and well. (Coastguard report).

***October 2019*** ***19/382***

Two lifeboats were launched due to a diver's SMB being found at sea. The lifeboats conducted search patterns and once sufficiently confident there was no one to be found and with reports coming in of a diver having lost their SMB, the lifeboats stood down. (RNLI report).

***November 2019*** ***19/279***

An instructor and two students, all using air, were taking part on a training weekend and had carried out three shore dives on the Saturday. The first shore dive on the Sunday included a mask clearing exercise and then an exploratory dive. The mask clearing was completed successfully and the instructor led the two students in a buddy pair towards an underwater feature. The instructor felt a tug on his fin with one of the students signalling she was not 'OK' and was showing signs of discomfort and distress. She rested on the bottom at 17m and the instructor prepared to carry out a controlled buoyant lift however the student's breathing slowed down, she became calmer and signalled she was 'OK'. The instructor pointed towards a slope going back up to the shore, the student again signalled 'OK' and the instructor led the way back towards their exit point. As they progressed up the slope to 12m a similar thing happened with the student

becoming uneasy. Her buddy moved in close to assist and re-assure her and the instructor prepared to carry out a controlled buoyant lift again. The student calmed down and signalled she was 'OK' to continue, so rather than carrying out a lift and due to the close proximity of the wall near their exit point, the instructor decided to swim the short distance to 6m so they could carry out a safety stop while resting on the bottom. At the stop the student struggled with her buoyancy, thought to be due to her increased breathing rate and the other student helped to get her upright and dump air as the safety stop was completed. The three divers surfaced with a dive duration of 25 min to a maximum depth of 17m. The student was unsure what had caused her panic despite the conditions being better than on other dives she had done and knowing she had plenty of air. One supposition was that it was due to a combination of factors including tiredness from the previous day's three dives, the cold and some frustration during the Saturday's skills training.

# Overseas Incidents

## *Fatality*

***May 2019*** ***19/090***

A 'Mayday' was issued by a dive boat that was performing CPR on an unresponsive diver. A Coastguard helicopter and a lifeboat were tasked to assist. The diver was airlifted to hospital but pronounced dead on arrival. (Coastguard report). (Eire).

***May 2019*** ***19/105***

A diver had carried out a wreck dive and was reported to have surfaced with DCI. He was immediately assisted by divers on the dive boat and a Coastguard helicopter diverted from a search for a missing boat skipper to the scene along with a naval vessel and a lifeboat. Despite attempts to stabilise the diver's condition he was pronounced dead before he could be transferred to hospital and a recompression chamber. (Eire).

***September 2019*** ***19/238***

A diving fatality was reported. Although unconfirmed, the diver using a CCR and trimix, was believed to have been carrying out a shakedown wreck dive, with an average maximum depth of 75m, in preparation for a much deeper wreck dive. (Media report)

***September 2019*** ***19/239***

A diving fatality was reported. Although unconfirmed the diver, using a CCR and trimix, and was believed to have been carrying out a deep wreck dive and was at a depth of 115m. (Media report).

***December 2019*** ***19/292***

Three divers were diving in a river about half a mile upstream from a harbour. They were thought to have been laying or repairing a mooring at around 4m when the one of the divers surfaced and waited for his buddy. When he did not see any bubbles they went looking for him and found him unresponsive. The diver was brought to the surface by the other divers. The diver was unconscious and an emergency call made. The divers called for assistance and the Coastguard, Lifeboat, Police, a Rescue Helicopter and ambulances attended the scene. The crew of the lifeboat immediately began emergency care until a rapid responder and a critical care doctor arrived and took over. The diver was taken by ambulance to hospital where he was pronounced deceased. (RNLI report). (Eire).

## *DCI*

***April 2019*** ***19/074***

A diver had completed a week long diving holiday on a liveaboard. She was feeling exhausted following at least 3 and sometimes 4 dives a day over the seven day period, all of which were no stop dives and using nitrox 32. She reported that her lower legs and ankles were swollen but put this down to sunburn and that her knees can be painful sometimes. She also noticed red patches on her legs but again put this down to sunburn. After she had flown home her condition appeared to get worse so she carried out web searches and decided to contact a hyperbaric chamber for advice. The diver was asked to attend and with her balance now affected, she was given recompression treatment followed by further treatments over the next two days.

***May 2019*** ***19/101***

A diver using nitrox 25 carried out a solo dive from shore. The aim of the dive was to film octopus seen on a previous dive in the hope they might be mating. The diver entered the water and made his way to the site which was around 15m from the shore and at a depth of around 10m. Having located the site the diver did some filming but the octopus were not mating and with nothing else worth filming he finned to some sunken barges which were devoid of life. The diver continued to another barge at 20m where he noticed the current was flowing north so decided to drift with it, tour the remaining barges and end up in a small bay near his entry point. After passing one of the wrecks the diver noticed the current had changed direction and was now flowing steadily to the south. The diver was left with the predicament of turning back towards his entry point or continuing north, which was the shorter route to shore. The diver was also low on gas but could save on this by using the laid guide ropes from the shore to the wrecks and tow himself towards the shore. He became buoyant as he was about to enter the small bay to exit the water and was finding it difficult to maintain his depth. He could not see any rocks to hold onto and with a depth of between 7m to 8m he decided to float to the surface and then swim for the remaining twenty metres towards the shore. The diver surfaced with a dive duration of 47 min to a maximum depth of 27m but had missed a decompression stop. When he exited the water his left leg felt slightly 'heavy' but he thought nothing more of it and made his way to his clubhouse, rinsed his gear, showered and went home. The diver felt fine, went out for a few hours and returned home where at about 11pm he felt his left leg was 'restless'. He went to bed but had to get up a number of times and walk around to see if the 'restlessness' would go away. It did not and the diver was taken to an A&E department where doctors suspected the cause might be diving related and he was transferred to a hospital with a recompression chamber. Following tests the diver was given recompression treatment that afternoon and over the next two days.

***May 2019*** ***19/092***

A diver carried out a boat dive reaching a maximum depth of 45m. On the ascent he failed to control his buoyancy, missed decompression stops and surfaced with a dive duration of 25 min. The diver was unable to re-descend to carry out his decompression stops and was recovered by the boat. He went onto oxygen until he arrived back on shore. The diver felt fine with no symptoms but at around 2am the following morning he awoke with sore shoulders, elbow and a sore neck. He took a couple of pain killers and went back to bed. In the morning the rest of his dive team decided he should seek help and the Coastguard was contacted. The diver was taken by ambulance to hospital and a hyperbaric chamber where he was given recompression treatment. The diver was kept in overnight as a precaution and discharged the following day with his symptoms resolved. (Eire).

***May 2019*** ***19/161***

The Irish Coastguard requested assistance from the Belfast Coastguard with a diver that was being transferred by an Irish Coastguard helicopter to a hyperbaric chamber in Northern Ireland. The diver had missed some decompression stops after a dive to a maximum depth of 45m and was reporting a sore neck, shoulders and upper arm. (Coastguard report). (Eire).

***May 2019*** ***19/140***

A diver on holiday carried out a shore dive using air with a group of other divers from a dive centre. His dive duration was 40 min to a maximum depth of 12m. When the diver surfaced he experienced vertigo, some apparent circulatory issues and strong tinnitus mainly in his left ear. He also had a skin rash in the upper part of his abdominal region. The diver continued to feel dizzy when he arrived back at the dive centre where his symptoms were checked and it was decided to put him on oxygen. His symptoms slightly improved but the dizziness was still present. It was decided to send the diver to a nearby diving medical centre where the doctor confirmed possible DCI, re-hydrated the diver and gave him corticosteroids and then recompression treatment in a hyperbaric chamber. The diver's symptoms improved significantly although the tinnitus was still present. He was sent back to his hotel that evening and two follow-up checks were carried out during the week. The diver was advised not to dive and he recovered completely from the vertigo symptoms but the tinnitus, which he had suffered from previously, remained. The diver was to have a further check up when he returned home.

***August 2019*** ***19/237***

A diver in a group of eight carried out a deep wreck dive with an average maximum depth of 93m. It was understood that the diver took ill whilst ascending and divers in the group brought him to the surface and the alarm was raised. A lifeboat was launched and a naval vessel on patrol in the area arrived on the scene. They collected the diver from his boat, took him aboard and a Coastguard helicopter flew the diver to hospital's recompression chamber. The diver was in a coma with partial heart failure and was recompressed. The following day he had fluid on the brain which needed emergency surgery. About a week later the diver opened and eyes and began to respond after his sedation was lifted. Seven weeks later and following a tracheostomy to help him speak the diver was conscious but still on life support with a serious spinal cord injury. (Media report). (Eire).

***August 2019*** ***19/245***

A diver on holiday had completed his second dive from a liveaboard. The diver had been in a group and not having a depth gauge on borrowed kit he returned to the boat earlier than the rest, de-kitted and went to sit in the boat's front lounge area. One of his dive buddies returned to the boat, came into the lounge area, immediately complained of having a severe headache and also said he felt extremely hot. The diver offered to get him oxygen but the buddy refused. As the boat made way to a third dive site the buddy remained in the lounge with a wall mounted fan positioned to cool the back of his head. The diver asked how he felt but the buddy remained somewhat muted. On the site of the third dive site the diver did not dive and found that the buddy was very confused and complaining of numbness, 'pins and needles', apparent visual disturbance, a shortness of breath, pale face and what appeared to be a developing red rash around his navel. The diver liaised with the crew and the buddy was put on oxygen. Another diver sat with the buddy and helped him to drink fluids and keep the oxygen's direct feed mask in place. The buddy also appeared not to recognise another diver who asked how he was. The diver provided information about the buddy to the dive charter's office ashore and checked the buddy's pulse which was normal. Back in port paramedics boarded the boat, assessed the buddy and transferred him to a waiting ambulance for transfer to hospital. The buddy was given three recompression treatments over a period of two days. He was not allowed to travel home with his dive group but did so three days later and had made a full recovery. The buddy later reported that while filming lion fish on a dive he thought he may have inadvertently settled on one of the fish and come into contact with it with his stomach.

***September 2019*** ***19/242***

A diver had carried out two dives using air on a dive boat trip. The first was to a maximum depth of 27m with a dive duration of 40 min and the second to a maximum depth of 20m with a dive duration of 44 min. A couple of hours after the second dive the diver noticed some red patches in the small of her back, her right shoulder blade and on her stomach. The diver spoke to another diver on the trip and said she had not violated her computer profile and also had the Hives skin condition. Due to the previous dive's considerable swell, her marks matching the position of her weightbelt and BCD straps with the possibility of suit squeeze, the diver suggested that she speak to a dive centre owner as he would have seen more examples of skin DCI. The dive centre owner thought the marks were due to suit squeeze. The diver went for a lie down and the red marks eased but the areas were still hot, itchy and tender to touch. The diver asked the trip organiser later that evening about the marks, which had disappeared, although she was still in pain. He felt it did not sound like suit squeeze but after talking to the first diver who was consulted and the dive centre manager he advised the diver to take the next day off and contact a medical centre for advice as he felt it was skin DCI. The diver took the next day off but on the following day said she felt fine, wanted to dive and carried out two boat dives using air. The first was to a maximum depth of 27m with a dive duration of 41 min and the second dive to a maximum depth of 25m with a dive duration of 42 min. The diver had checked for any rash after each dive but some time later following a warm shower the diver noticed the red patch again on her stomach that, as before, was hot, itchy and tender to touch. The diver showed this to the trip organiser who felt it was skin DCI. The red rash eased after a couple of hours but the diver took the rest of the trip easy and did not dive again. When she returned home she contacted a hyperbaric chamber who advised that she contact her GP for a PFO test. The diver was advised that she could dive to a maximum depth of 20m and only carry out one dive a day. (Eire).

***October 2019*** ***19/397***

A diver had DCI symptoms on a return flight from a week's dive trip abroad. The diver had carried out no stop dives with a 3 min safety stop at 3m on all dives and had not experienced any other dive related issues during the week. The surface interval from the last dive, to a maximum depth of 20m with a dive duration of 30 min, and boarding the flight was 26 hours. The diver had slight

numbness in the tip of a small finger, was feeling tired and a bit flu like when he returned home that evening. The following day the diver had a minor 'crick' in the neck mostly at shoulder level. They rang a hyperbaric chamber the next day and was told to attend as soon as possible as he had DCI. The diver was treated and the chamber recommended that for the future the diver should take a day off every third day, ideally have a surface interval of 36 hours before flying, to remember that snorkelling counts as dives and to stay hydrated and minimise drinking alcohol. (Eire).

## *Boat/Surface*

***March 2019*** ***19/363***

A lifeboat was called out to assist a dive boat with engine failure and towed it to safety. (RNLI report). (Eire).

***June 2019*** ***19/394***

A cox'n under assessment was driving a dive boat. An experienced diver kitted up as he normally did by lifting his gear over his head but he lost his balance and fell overboard while the boat was in gear but moving slowly. The diver was almost fully kitted. The diver and buddy completed their buddy checks and continued their dive. The cox'n under assessment did everything required but the diver was spoken to later and asked not to kit up in the way he did as it was unsafe. (Eire).

***June 2019*** ***19/366***

A lifeboat assisted a dive boat. (RNLI report). (Eire).

***August 2019*** ***19/371***

A lifeboat was asked to attend to a dive boat. (RNLI report). (Eire).

***August 2019*** ***19/372***

A lifeboat was tasked to a dive boat on a wreck diving site but no assistance was required. (RNLI report). (Eire).

***August 2019*** ***19/207***

A diver was on a liveaboard holiday overseas when early one morning the boat hit an unknown submerged object which breached the hull. The boat began to rapidly take on water and began to sink with an extremely steep list. The diver and twenty other passengers aboard were told by a crew member to remove all items from the cabins and then the lights went out. The diver's cabin and corridor were full of water so the diver immediately made his way to a higher deck as no further instructions had been given by the crew. When he put on a life jacket he found that some of the clips were broken and when other passengers discovered they had no clips on their life jackets they had to use cable ties to secure them. It was also found that some of the life jackets did not have whistles or lights. As the boat continued to list the diver suggested that everyone went onto the gangway to ensure they were in the safest position should the boat capsize. The passengers received no instruction from the crew regarding their safety or evacuation into the life rafts. Everyone remained on the boat in the sun and heat for over three hours with limited communication from the crew. No roll call had been taken and responsibility fell to the passengers to organise themselves, source their own water and give first aid to those passengers who had incurred minor injuries. During this time the crew began to cover up the vessel's identification details and operator's branding. Even though the passengers could see other vessels close enough to help this did not happen and it transpired that no distress signals had been given. Approximately 4 hours since the accident a rescue vessel from the operator's own fleet arrived and moored close by. A RHIB was used to transfer the passengers' dive kit and luggage to the rescue vessel before transferring the passengers to safety.

***August 2019*** ***19/373***

A dive boat with eight divers in four pairs aboard travelled for an evening dive across a sound to a site near a small uninhabited island. On the site each pair carried out a dive but while the third pair were still underwater and approximately 10 min into the fourth pair's dive the engine died. Several attempts were made at restarting it but there was complete power failure to the ignition, throttle, console side engine tilt switch and lights on the console. The navigation lights and all-round light were operational as was the tilt switch at the rear at the engine, the bilge pump and GPS. The cox'n requested the divers aboard to enter the water with basic equipment and they successfully swam the boat to steps and a wall on the island. Shortly after the third pair surfaced and were shouted at to swim back to shore which they did. After a few minutes of attempts to restart the engine the decision was made to call the Coastguard using a mobile phone as the VHF radio had previously been removed from the boat for repair or replacement. The Coastguard wanted an update when the fourth pair surfaced and placed the lifeboat on standby until all divers were out of the water. The fourth pair surfaced at approximately 21:00, an update was made with the Coastguard by phone who tasked the lifeboat to the scene. The lifeboat maintained contact by phone and asked if it were possible to move the boat out from the island to the middle of the sound with the second option being for the lifeboat to launch an inflatable. As the cox'n stayed aboard to maintain contact with the lifeboat seven divers finned the boat out into the sound Once clear of the island all the divers were recovered and the lifeboat threw a line. The line was used to position the boat in the deepest possible water and the lifeboat then provided a stronger tow line which was secured to the boat. The engine was lowered to help with some steering and the lifeboat towed the boat back to harbour. Equipment was unloaded and having ensured everyone was alright all the divers re-entered the water to fin the boat back to its permanent mooring in the harbour. (Eire).

***September 2019*** ***19/226***

A diver using a full technical rig with twin 13 lt cylinders of air, which had added lead keel weights, prepared to carry out a boat dive. He entered the water using a backward roll and surfaced about three metres downstream of the boat which was tied at the bow to a permanent mooring line to a wreck 30m below. The diver had to swim very hard against a current to reach the boat's ladder and then another two metres to reach a grab line. There he waited for his buddy who entered the water and swam to the front of the boat and the mooring line. The diver swam another two metres to the next grab line and after resting for a moment he swam to the mooring line. The weight of his equipment, the strength of the current and the length of swim meant that the diver was badly out of breath when he reached the mooring line. He held onto the line hoping to regain his breath but the state of the sea and

the strength of current made the diver feel more and more distressed. As he had experienced hypercapnia before, he recognised the symptoms and aborted the dive. He passed his equipment up to the boat's tender and climbed back aboard the boat followed by his buddy. The diver felt that the dive could have been saved if there had been a 'Jesus' line from the back of the boat and a continuous grab line along the boat at water level which would have removed the need for the strenuous swim. The diver also felt that he could have been a little fitter.

***October 2019*** ***19/263***

A dive manager reported missing divers to the Coastguard. The conditions at the time included a difficult swell as a result of wind over tide. A lifeboat and Coastguard rescue helicopter were tasked to the scene. Fifteen minutes after launching the lifeboat located the divers who had been in the water for more than an hour and had drifted approximately three quarters of a nautical mile from their dive site. They had remained calm and linked themselves together to ensure they could be spotted. The divers were recovered aboard the lifeboat and taken back to shore where a waiting ambulance carried out precautionary checks. (Media report). (Eire).

***October 2019*** ***19/379***

The Coastguard tasked a lifeboat to a dive boat, with two divers aboard, which had broken down and was unable to recover six divers who were in the water. To assist with the operation a Coastguard boat and a rescue helicopter were tasked to the scene. Four divers were recovered aboard the lifeboat, the remaining two recovered aboard the Coastguard boat and then transferred to a passing fishing boat that had responded to the Coastguard's initial call for assistance. The dive boat was towed to safety and all divers safely transported back to harbour. (RNLI report). (Eire).

***October 2019*** ***19/380***

The Coastguard received a 'Pan Pan' from a dive boat reporting two divers were overdue. A lifeboat was tasked to launch immediately along with a Coastguard helicopter and a pilot boat also responded to the call to join in the search. A second lifeboat also prepared to launch. The first lifeboat located the divers who had drifted approximately three-quarters of a nautical mile from their dive site. Conditions on the scene included a difficult swell as a result of the tide flowing against a fresh northerly wind. The divers were recovered aboard the lifeboat and taken back to harbour to a waiting ambulance for precautionary checks. The divers had been in the water for more than an hour when rescued but had remained calm, followed procedure and linked themselves together to ensure they could be spotted. (Eire).

## *Ascents*

***January 2019*** ***19/032***

Two divers, both using air in twin-sets, carried out a boat dive. The aim of the dive was a planned decompression wreck dive to a depth of 40m. The descent and bottom phases of the dive were conducted without incident. During the ascent the plan was to deploy mid-water DSMBs. At the agreed depth prior to decompression stops one of the divers deployed his DSMB but his buddy had problems getting air from his alternate source regulator into his DSMB and became task fixated. At this point the diver took control of his buddy's DSMB and handed him his deployed DSMB. They recommenced their ascent and at 6m they both stopped to carry out their 3 min decompression stop. The diver looked up at the boat to maintain position and visual contact, saw his buddy slowly ascending and signalled him to re-descend. The buddy was focused on a tangled DSMB line, lost buoyancy control and ascended from 5m to the surface missing 1 min of the decompression stop. The buddy surfaced with a dive duration of 33 min to a maximum depth of 38m and informed the dive manager. The diver surfaced 1 min later. Back aboard the boat the buddy showed no symptoms of DCI but the dive manager administered oxygen as a precaution and contacted a diving doctor. The doctor's advice was to stop oxygen administration and send the buddy for a medical examination as soon as he was back on shore. The buddy was examined by the doctor 30 min later and pronounced fit to conduct further diving.

***February 2019*** ***19/053***

A training dive, the aim of which was for a student to lead two other divers, was carried out from a moored boat. At around 30 min into the dive and at 10m the student dropped the weight which he had removed from his weightbelt before the dive and put it in his BCD's pocket to counterbalance the weight of his pony cylinder. One of the divers collected the weight but had not realised it was the student's. The student successfully carried out mid-water DSMB deployment and all three made their way back to the moored boat with the intention of looking inside a 5m deep cavern. At 4m the student lost control of his buoyancy and attempted a drysuit roll to dump air but was unsuccessful and, although one of the divers tried to slow his ascent by grabbing hold of him, he made a buoyant ascent. The group surfaced with a dive duration of 42 min to a maximum depth of 26m, were recovered aboard the boat and no further problems were reported.

***April 2019*** ***19/386***

An instructor and a trainee carried out a boat dive the aim of which was an assessment and then a pleasure dive. The assessment was completed and the pair continued with their dive. After a few minutes when the instructor signalled 'OK' to the trainee she responded with the 'Up' signal. The pair ascended omitting their safety stop. On the surface the trainee told the instructor that she had felt she was breathing in water. The trainee was recovered aboard the boat, made comfortable, warm and re-assured. She dived the next day, completed and passed her assessment. (Eire).

***July 2019*** ***19/391***

Two divers carried out a boat dive to a maximum depth of 36m. They spent the majority of the dive at 25m and after 15 min one of the divers switched to their octopus regulator as there was a problem with the primary regulator. After 23 min and about to deploy a DSMB a free flow occurred which caused a loss of buoyancy dropping the divers back down to 19m. Both divers made an uncontrolled ascent to the surface with ascent warnings on their computers. They were spotted by the dive boat, recovered aboard and monitored for 24 hours. (Eire).

***July 2019*** ***19/395***

A diver and her buddy carried out a dive and reached a maximum depth of 15m. At the end of dive in

approximately 8m the diver attempted to deploy her DSMB but lost buoyancy and her buddy pulled her back down. On her second attempt the DSMB line got tangled on the handle of reel and she was pulled to the surface, omitting a safety stop, with a dive duration 37 min. As a precaution the diver was put on oxygen for 30 min until it ran out but she showed no symptoms. As agreed, the diver contacted one of her dive group the following morning to confirm that she was alright. (Eire).

***August 2019*** ***19/209***

An instructor and two recently qualified divers, all using air, carried out a training dive from a boat and reached a maximum depth of 20m. One of the divers had previously removed weight from his weightbelt believing he was too heavy on previous dives. On the ascent and having dumped all the air from his BCD he was unable to control his buoyancy at the 6m safety stop and continued to ascend. The ascent was within computer limits and he surfaced with a dive duration of 22 min. The instructor surfaced, confirmed the diver was fit and well and re-descended to 6m to collect the other diver who had stayed alone to complete the 3 min safety stop at 6m.

***September 2019*** ***19/396***

A group of divers carried out a wreck dive. One of the divers descended on the shotline and became entangled by their leg in another old shotline on the wreck. The diver attempted to cut the line using a knife but it fell out of their hands and they were unable to find the knife in the low visibility. The diver panicked and decided to head for the surface despite being entangled in the shotline. The diver surfaced and indicated a problem to the dive boat. The boat approached quickly and two divers jumped into the water to recover the diver. One removed the rope and the second pulled the diver towards the boat and they were recovered aboard. The diver's buddy surfaced and asked if the diver was 'OK'. The diver was put on oxygen as they were in shock due to the incident and barely able to explain how the incident happened. At the same time, the rest of the divers surfaced, a roll call was made and the dive boat left for harbour during which the diver was kept on oxygen and continuously monitored. By the time the dive boat reached the harbour the diver had recovered from shock and was able to talk and felt better. The diver was also checked for any signs of DCI and kept on oxygen. After an hour the diver felt fine, wanted to get out of their thermals and to get some food. The diver was monitored for another few hours, had a meal and was well enough be allowed home. (Eire).

***September 2019*** ***19/398***

An instructor and his student were at 18m during an assessment. As part of the assessment the student removed his mask but swallowed a little water, panicked and began an uncontrolled ascent. The instructor tried to slow the ascent but it was still fast. Both the instructor and student were put on oxygen for 20 min and the emergency services contacted. An ambulance arrived and the student was taken to hospital for a check up due to swallowing water. (Eire).

## *Technique*

***July 2019*** ***19/178***

On an overseas expedition an instructor and two students, all using air, carried out a shore dive. The aim of the dive was an assessment of one of the student's dive leading skills. The group entered the water and swam to a buoy marking a wreck, descended and carried out their dive to a maximum depth of 30m. After a short time the student who was being led, indicated 150 bar in his15 lt cylinder. The group left the wreck and swam mid-water at an average depth of 20m towards the exit point approximately 200m away. During the swim it proved difficult for him to maintain a constant depth and the student incurred a mandatory decompression stop. When he reached 70 bar he indicated this to the instructor who tried to catch the student who was leading the dive. By the time this happened the student had reached 50 bar so the instructor deployed his DSMB and indicated for the group to ascend. Due to the low pressure in the student's cylinder he struggled to maintain buoyancy and required assistance from the other student. On the stop and with his cylinder down to 30 bar he switched to the student dive leader's alternate source. The group surfaced with a dive duration of 29 min and were some distance from the exit point and had to clamber over rocks to reach it. After a debrief no further diving was conducted by the divers that day.

***July 2019*** ***19/392***

A diver and two buddies, all using air, carried out a wreck dive. During the buddy check the first buddy, carrying out his first dive to the planned maximum depth of 25m, indicated that his BCD had a small leak but having already dived with it said it was not a concern. Also during the buddy check it was agreed that the second buddy would practise DSMB deployment. The group descended a shotline to 25m and buoyancy seemed fine for all divers during this time. At 7 min the diver checked the first buddy's air gauge to find it was reading 100 bar having started the dive with 200 bar. Due to the rate he was using air the diver immediately communicated this to the second buddy and indicated for him to put up his DSMB as agreed. The diver kept an eye on the first buddy to monitor his air consumption and 2 min later checked with the second buddy who had not yet deployed his DSMB. The diver prompted him again to do so and using a spool the buddy deployed his DSMB from 25m but had to let it go because it was tangled. The diver decided that as they could see the spool falling back down towards them they would let the second buddy grab the spool before they started the ascent. 1 min later they lost sight of the spool, possibly due to the DSMB being taken by the current on the surface. The diver then deployed their own DSMB at 12 min into the dive and all three started the ascent. The diver checked the first buddy's air again at the beginning of the ascent which was now 40 bar. The diver linked arms with the first buddy during a normal ascent to have him close in case of an out of air situation. 'OK' signals were given during the ascent although the first buddy was breathing heavily with a constant bubble flow from his regulator. The group reached 6m and the first buddy had 20 bar of air. The diver decided to omit the safety stop to avoid an out of air situation. The group surfaced with a dive duration of 15 min and were recovered by their boat. The first diver finished the dive with approximately 15 bar. During the dive debrief the first buddy said he felt he had struggled to stay buoyant and that his leaking BCD was the cause of his high air consumption. The second buddy complained that

he should not have been asked to deploy his DSMB as he did not have sufficient line on his spool. Although he had agreed to deploy the DSMB knowing the dive was to a maximum depth of 25m he had not confirmed the length of line during the buddy check. (Eire).

***November 2019*** ***19/293***

Three divers, all using nitrox 28, were on holiday and carried out a night dive. They carried out a buddy check and one of the divers decided to take his camera rig with torches and suggested that the other two dive as a buddy pair. The divers entered the water from their boat and descended to a wreck, which was directly beneath an adjacent dive boat. There were quite a few divers on the wreck but the trio came to a substantial wall to the side of the wreck. They found a large moray eel below the superstructure and then the buddy pair swam back over the edge of the wreck and at 12m realised the photographer wasn't behind them. The buddy pair saw someone in the distance with two torch lights but it was not the photographer. They looked around for 1 min and decided to abort the dive and return to the boat. They surfaced with a dive duration of 28 min to a maximum depth of 15m. They and the other diver were recovered aboard their boat.

## *Equipment*

***January 2019*** ***19/038***

A diver and his buddy were on a holiday charter boat and joined a group of divers to carry out a wreck dive. The diver used manifolded twin 12 lt cylinders with nitrox 32. The divers descended the shotline and reached the wreck at 30m when the diver thought he could hear a steady stream of bubbles coming from behind his head. The diver had checked his contents gauge before the descent which had shown 150 bar but after the 2 to 3 min taken to descend it now showed 60 bar. The diver closed the isolator and asked his buddy to check where the gas leak was coming from. The buddy confirmed it was from the manifold's right valve so the diver closed it and switched to his alternate source regulator running from the left valve. He told his buddy to continue his dive with the rest of the group and he aborted the dive. He surfaced with a dive duration of 8 min, including a 3 min safety stop, to a maximum depth of 30m.

***February 2019*** ***19/046***

A diver and his buddy, both using air, carried out a boat dive the aim of which was to conduct controlled buoyant lifts from 20m. The diver completed the first lift with no problems to 6m and then both divers re-descended and the buddy commenced his lift on the diver. During the ascent and at around 11m the diver's auto dump valve on his drysuit did not dump air at a sufficient rate causing both divers to continue to the surface. The pair surfaced with a dive duration of 14 min to a maximum depth of 25m. Both divers were fine and showed no symptoms. After the dive the dump valve was found to be damaged with the auto and manual override mechanism not operating correctly. The valve was replaced and tested for correct operation.

***February 2019*** ***19/048***

A diver and his buddy, both using air, carried out a boat dive. As a training dive it was to include two alternate source ascents. As they completed the second ascent and stopped just before 6m the buddy's left fin came off but both divers were unable to reach it so the diver conducted a controlled buoyant lift on the buddy to get him safely to the surface. The pair omitted safety stops and surfaced with a dive duration of 13 min to a maximum depth of 20m.

***February 2019*** ***19/049***

A diver using a rebreather and his buddy using nitrox 25 were about to carry out a boat dive. They entered the water and during the leak check at 8m it was noticed that a significant amount of bubbles were coming from the diluent cylinder's valve. At this point the dive was aborted and the divers surfaced with a dive duration of 1 min. Back aboard the boat the rebreather was inspected. The diluent cylinder had lost 30 bar and the cylinder's valve spindle was found to be damaged. It was assumed that the damage had been caused when the diver had been kitting up and carrying out a buddy check on the boat's seating area. The seating area had a raised angle bracket to prevent cylinders moving about when the boat was in transit. It was thought the bracket had contacted the cylinder's valve with some force, either when the diver moved position or when sitting down heavily with the boat's movement. The diluent cylinder was drained, a replacement spindle fitted, the cylinder refilled and was fully functional.

***February 2019*** ***19/050***

A diver and his two buddies, all using air, entered the water from a dive boat. The diver immediately realised that his drysuit had a significant leak so held onto the side of the boat whilst the ladder was lowered and he exited the water. The two buddies continued the dive. Once out of the water it was found that the diver's drysuit zip had not been closed.

***February 2019*** ***19/051***

A diver using air had completed a wreck dive from a boat reaching a maximum depth of 41m with dive duration of 32 min including a 5 min stop at 6m. Upon surfacing and inflating his wing BCD he heard a 'pumping' noise coming from somewhere on his twin-set. Back aboard the boat it was found to be a faulty kidney dump valve on his BCD where the spring that tensioned the valve plate had broken in two leaving the valve inoperative.

***February 2019*** ***19/052***

A diver and his buddy carried out a training dive from a boat. The diver was using air in a twin-set with a decompression stage cylinder of nitrox 50 and his buddy was using a rebreather and also carried a spare stage cylinder with nitrox 50. On their ascent from the wreck and at 18m the diver switched to his stage cylinder but experienced an intake of water so went back onto his twin-set and checked the stage cylinder's regulator. He made another couple of attempts to switch to the stage cylinder without success and indicated the problem to his buddy. The buddy handed the diver his stage cylinder with nitrox 50 and they ascended completing a 1 min stop at 9m, a 3 min stop at 6m and a 5 min stop at 3m. Whilst at 6m the buddy had bailed off his rebreather and tried to breathe from the diver's stage cylinder but its regulator gave a very wet breathe so he returned to his rebreather. The divers surfaced with a dive duration of 50 min to a maximum depth of 45m. When they returned to shore the

stage cylinder's regulator was inspected but no cause of the malfunction was found.

***March 2019*** ***19/066***

A diver carried out a boat dive using trimix 22/22 with nitrox 50 decompression gas. The diver reached a maximum depth of 40m on a wreck but on ascent at 25m, prior to the start of the decompression phase of the dive, the diver encountered continuous inflation from his drysuit valve. He disconnected the valve, made a normal ascent and carried out 14 min of decompression at 6m during which he became wet due to water ingress through the faulty valve. He surfaced with a dive duration of 60 min. His drysuit was less than twelve month's old and had been fully serviced.

***March 2019*** ***19/068***

A diver using nitrox 28 in a twin-set had carried out a boat dive to a maximum depth of 39m with a dive duration of 24 min. After a surface interval of 2 hours 16 min he was about to carry out his second dive with two buddies. As they were slow in kitting up and it was a hot day it was agreed that the diver could enter the water and wait for them on the surface by the descent line tethering the boat to a wreck. The diver inflated his wing BCD, gave his name to the dive master and entered the water using a giant stride entry. He gave an 'OK' to the dive master and swam towards the descent line approximately 5m away. As he swam the diver felt a little low in the water so added some more gas to his BCD but still felt low. He continued to add gas but nothing happened and he was now just below the surface. He could clearly see the descent line a few metres away so swam towards it and took a firm hold at 2m. He tried again to fill his BCD but all he could hear was a stream of bubbles coming from behind him. He pulled himself up the descent line and swam to the boat's stern platform and ladders. He shouted to the crew and climbed back aboard but when he looked over his left shoulder he saw the BCD's corrugated hose flapping around. He removed his kit and found the corrugated hose, normally held in place by a cable tie, had come apart from the plastic elbow. The hose was refitted with a new cable tie, the valve checked and satisfied all was well, the diver joined his two buddies who were now waiting for him at the top of the descent line. They carried out their dive without any further incident.

***May 2019*** ***19/116***

Whilst preparing for a wreck dive aboard a dive boat a diver conducted buddy checks and realised his BCD was continuing to inflate. Upon inspection it was found that the inflator button was loose. All other BCD's from the equipment store were checked to ensure they were operating correctly prior to a second dive that day.

***May 2019*** ***19/117***

A diver and his buddy using air carried out a boat dive. As the diver exited a swim through in a wreck his integrated weight pouch toggle became tangled in part of the structure. When he removed himself from the tangle his weight pouch was pulled out of its housing clip and fell to 40m below. Both divers aborted their dive, carried out a normal ascent with all stops completed and surfaced with a dive duration of 40 min to a maximum depth of 35m. They reported the loss of the 2 kg weight and its location and it was retrieved the following day.

***June 2019*** ***19/130***

A diver and his buddy, both using air, planned a depth progression dive on a wreck. They descended the shotline and swam to an entry hatch into the bridge and entered the wreck at 26m. They descended to 35m and made a slow ascent to around 30m where they entered the wreck's day cabin area. The diver did not want to explore further due to his buddy's air consumption concerns so they carried out an air check and made their way back to their entry point. The diver felt a tightness in his regulator as they exited the wreck and it then failed. He switched to his pony cylinder regulator but not wanting to deplete this air supply he switched back onto the octopus regulator run from his main cylinder. This was set up on a short hose to be donated to a buddy and the diver had to breathe from the upturned regulator which allowed water ingress. The buddy offered assistance and was ready to donate his own octopus. The diver indicated he was 'OK' but decided to abort the dive and the pair swam to the shotline, ascended and carried out a 3 min safety stop at 6m. They surfaced with a dive duration of 17 min to a maximum depth of 35m. Back aboard their dive boat the diver realised that his pony cylinder was empty and his main cylinder still had 170 bar. The diver had started the dive using the pony cylinder's regulator rather than his primary one. The setup of his kit was that the primary regulator from his main 15 lt cylinder and the pony cylinder regulator came from his right side, one under his arm and the other over. Both hoses and regulators were black and no differentiation could be made. The diver remembered that as they were getting ready for the dive the surface cover aboard had been distracted dealing with an air leak from the buddy's equipment and he had not been checked before entering the water.

***June 2019*** ***19/142***

Pre-dive equipment checks were being carried out when it was noticed that a BCD was inflating. Initially it would thought to be a loose inflator valve plastic button but on checking this appeared to be tight. It was then assumed that it was the inside of the button inflator and when it was dismantled it was found that it wasn't the valve but all the working parts which were heavily encrusted. Following ultra-sonic cleaning the parts were replaced and operated perfectly.

***July 2019*** ***19/151***

Six hours after completing their training course, with a shore dive to a maximum depth of 20m and a dive duration of 30 min, a senior diver on his third dive of the day was leading two divers on their first post qualification dive. They reached a maximum depth of 15m and as they started the safety stop one of the diver's computers showed an error code. The senior diver checked the other computers, which were a similar make and model, to ensure there were no mandatory decompression stops required. He led the divers back to their shore entry point during which the working computers cleared the safety stop and all surfaced with a dive duration of 50 min with no issues. The computer's error was a battery failure but no warning had been seen during the buddy check and computer run plan.

***July 2019*** ***19/187***

A group of divers were on holiday and had spent a week diving wrecks from a liveaboard boat. The weather was hot and sunny for the last dive of the holiday and there

was a considerable swell over and around the wreck site. The group had been briefed for a wreck penetration dive around the wreck's engine room and the liveaboard's RHIB deployed the divers who used negative buoyancy entries to start their dives. One senior diver had spent the week diving either as a pair or in a three with less experienced divers and he started this dive, using nitrox 31, with the two divers. During the dive the senior diver noticed another buddy pair from the group and apparent confusion between them as the dive leader was signalling to ascend but neither her or her buddy appeared to be doing so. When the senior diver intervened the dive leader, who was also using nitrox 31, was neutrally buoyant in 15m but clearly having an issue with missing weights. The liveaboard's dive guide reached the dive leader at the same time and offered his 4 kg weightbelt which the dive leader appeared to refuse. The dive leader had her mask in place but the strap was off the back of her head. She was clearly stressed and in tears and the senior diver signalled her to replace the mask strap which she quickly did. Unsure as to whether she had lost her weights or hadn't started the dive with them, the senior diver did not want to start an ascent until he was able to secure the dive guide's weightbelt to the dive leader. As the dive leader was still refusing to accept the weightbelt the only option appeared to be to attach it to her kit. As they were still mid-water over coral and the dive leader had calmed down the senior diver guided her to a sandy seabed at 20m. There he was able to feed and secure the weightbelt through the dive leader's BCD waist and chest straps and made sure she held the buckle securely. The dive leader's buddy was close by and was prepared to ascend with them but knowing what the surface conditions were like the senior diver was reluctant as he didn't want an additional diver to deal with when they surfaced. He signalled for the buddy to pair up with the dive guide and for the two divers he had started the dive with to stay together and, confident in their abilities, to continue their dive with the group. The senior diver and dive leader made a controlled ascent but with the senior diver maintaining a hold. The senior diver was prepared to omit the 3 min safety stop at 6m but the dive leader insisted so they carried out the stop and surfaced with a dive duration of 19 min to a maximum depth of 20m. There were a number of other liveaboards on the site and their RHIBs had been roped together which caused confusion as to which RHIB the pair should board. They began to de-kit by one of the RHIBs but after the dive leader had removed her BCD it was decided by the crew that the divers should go to their own RHIB. The dive leader got back into her BCD, was reminded to keep her regulator in and made the linked rope transfer to their liveaboard's RHIB but then had difficulty getting out of the water. Back aboard the dive leader was extremely stressed and was sitting curled up in the bottom of the RHIB. She did help in de-kitting the senior diver but returned to her curled up position as soon as she could. With a considerable wait before the rest of the group surfaced and given the dive leader's distressed state it was decided to take the pair back to the more stable platform of their liveaboard. Back aboard the dive leader found her integrated weights which the crew had identified before the dive and had gone round the group asking who was missing them. In conversation with the senior diver she said she had been unsure if she had lost her weights on the dive or even had them at the start of the dive and started blaming the crew for removing them. She was conscious of messing up everyone else's dive. In the water she felt she needed to ascend to tell the dive guide she didn't have her weights and needed to abort the dive but when the guide handed over his weightbelt she felt convinced that she was going to be forced to complete the planned wreck penetration. Despite the senior diver's efforts to the contrary she still felt this when recovered aboard the RHIB and back on the liveaboard.

***August 2019*** ***19/211***

A diver and his buddy, both using air, carried out a boat dive. They descended to a wreck but experienced a stronger that expected current. The buckle on one of the diver's fins broke causing it to become loose and limited his ability to fin. Unable to fin into the current the pair drifted away from the wreck and decided to abort the dive. The diver deployed his DSMB and the pair ascended to 6m to carry out a 3 min safety stop. They surfaced with a dive duration of 10 min to a maximum depth of 18m and were recovered aboard the boat.

***August 2019*** ***19/212***

Three divers, all using air, carried out a boat dive. The shot had been deployed on a wreck and the divers descended to find it floating mid-water. The line had been too short which caused the shot to bounce off the wreck and drift with the current. The dive was aborted, the divers ascended and surfaced with a dive duration of 7 min to a maximum depth of 17m. They were all recovered aboard their boat.

***August 2019*** ***19/285***

A diver on holiday entered the water to carry out a night dive using air when her high pressure hose burst. A replacement regulator set was provided by the dive operator and the diver completed her dive. Examination of the hose showed a 3mm hole halfway along the length of the hose. Further examination showed a significant bulge in the first stage end of the alternate source low pressure hose and this was large enough to prevent the protective sleeve from sliding over the hose. It was revealed that the diver had borrowed the regulator set from another diver who happened to be on the same holiday. She had frequently borrowed the set for extended periods of time over several years prior to this trip as she did not have her own regulator. The diver said that she understood that the regulator had been serviced by the owner about two years beforehand but he stated that he had not said that and that the regulator had not been serviced for at least five to six years.

## *Injury*

***January 2019*** ***19/028***

A diver had carried out two RHIB dives. The first dive was to a maximum depth of 12m with a dive duration of 42 min and the second dive to a maximum depth of 12m with a dive duration of 37 min. Having returned to the RHIB after the second dive, and while preparing to return to shore, it was found that the anchor was caught on the seabed at 8m. As the diver was the last one out of the water and his kit easily accessible, the dive manager asked him to dive and free the anchor. As the diver could see the seabed from the surface he decided to snorkel down. On his return to the surface 1 min later the diver was coughing, vomiting and seemed distressed. He was helped out of the water back aboard the RHIB and during its return to shore the diver was able to talk but was coughing intermittently and looked slightly hypoxic. He was not given oxygen until he returned to shore around 30 min later when his condition had not improved. Whilst on oxygen the diver was taken to a medical centre and they suspected that he had water

in his lungs but had no x-ray machine to confirm this. The medical centre contacted the Coastguard and an ambulance transferred the diver to a local hospital where an x-ray confirmed he did have water in his lungs. He was put on antibiotics to counteract any infection and kept in hospital for observation over the next three nights. During this time the diver had been transferred to a larger hospital as the local hospital had a shortage of beds. The diver was discharged having made a full recovery.

***January 2019*** ***19/384***

A diver slipped on route from his car to a shore dive site. He had on a full set of gear and was walking over wet grass when his right foot slipped and went from under him. The diver heard a crack sound and fell backwards. While on the ground he felt pain in his right foot and was unable to stand up without any help. Other divers helped him back to the car and provided first aid. A doctor was contacted and advised the diver go straight to A&E where and x-rays showed a fracture in the diver's right ankle and he was advised he would be off work for nine weeks. (Eire).

***February 2019*** ***19/047***

A diver and his buddy, both using air, carried out a boat dive the aim of which was a training drill which included two controlled buoyant lifts from 20m. After the first lift the diver had trouble equalising at 8m on the re-descent to carry out the second lift and the dive was aborted. The divers surfaced with a dive duration of 16 min to a maximum depth of 22m. The diver felt no pain or other effects after surfacing.

***March 2019*** ***19/057***

After training in swimming pool a student using air carried out a shore dive in the sea in a designated sheltered water site with pool like conditions. Following skills in standing depth the student descended to 2m and at around 13 min signalled 'Up'. Upon surfacing the student informed his instructor that he felt a little faint and was unable to clear his ears. The dive was aborted, the student later examined by a hospital doctor and passed fit for further diving.

***March 2019*** ***19/385***

Whilst carrying out a shore dive to practise rescue lifts a student had vertigo and had to abandon the lifts. The student carried out a controlled unassisted ascent to the surface but was put on oxygen as a precaution. No further issues were reported. (Eire).

***April 2019*** ***19/072***

A student had completed training dives in a swimming pool with a maximum depth of 3m and was carrying out his first sea dive the following day with an instructor in a designated sheltered water training area. The student entered from the shore and, after carrying out skills in standing depth, he moved to a maximum depth of 4m. At a depth of approximately 3m the student signalled 'Up' and surfaced with a dive duration of 36 min. The student informed his instructor that he felt a little discomfort and was unable to clear his ears. The dive was aborted and the student was later examined by a doctor and told he was unable to dive further on the course.

***April 2019*** ***19/387***

As a dive boat approached a slipway a diver stood up with the bow line in readiness to jump off and secure the bow of the boat to a pontoon. Before they had a chance to do so, they slipped, fell backwards and landed on the cox'n's right hand while it was on the throttle resulting in a cut. The cox'n was treated by a fellow diver who was also a qualified paramedic. They were treated for shock and put on oxygen for 20 min while the cut was cleaned, the hand examined for movement restriction and any broken bones. The movement in the cox'n's fingers came back and the paramedic's view was that nothing was broken but that it should be x-rayed. The cut was treated with medial glue, as it was in an awkward location for a stitch, and then dressed. The cox'n was able to drive to hospital and an x-ray revealed that nothing was broken and the hand was just bruised and sore. (Eire).

***May 2019*** ***19/389***

An instructor and two students carried out a nitrox qualifying dive from a boat. The group descended and at around 20m the instructor made a forceful Valsalva manoeuvre which resulted in slight pain in their left ear but the pain and discomfort went away as they continued the descent. Their total descent time was 4 min and they stayed for 13 min at a maximum depth of 40m, returned to the shot and completed their planned mandatory decompression on a decompression station. Back aboard the boat and until he arrived home the diver had no pain, no loss of hearing nor did he feel dizzy or unbalanced. After he cleaned his ears with a cotton bud he noticed blood in his left ear. The diver consulted their GP two days later who confirmed the diver had a hairline crack on the eardrum. The diver was awaiting a specialist appointment. (Eire).

***May 2019*** ***19/093***

An instructor and trainees were carrying out a shore dive in sheltered water. Whilst carrying out alternate source ascents one of the trainees was unable to clear his ears on a descent. The instructor aborted the dive, the group surfaced with a dive duration of 31 min to a maximum depth of 4m and exited the water. The trainee was seen at a medical centre and pronounced fit for further diving.

***May 2019*** ***19/094***

An instructor and trainee carried out a shore dive but the trainee was unable to equalize his ears during the descent. The instructor aborted the dive and they surfaced with a dive duration of 9 min to a maximum depth of 4m. The trainee was seen at a medical centre and diagnosed with inflamed eardrums and unable to dive for the next ten days.

***May 2019*** ***19/388***

A diver was helping to load a dive boat on a slip which had been treated two weeks earlier and was still very slippery. The diver fell and twisted his knee. He carried out a dive but didn't fin much and afterwards his knee had become swollen. The diver went to hospital and had an x-ray which showed that nothing was broken but he was given a knee brace, crutches and an appointment for re-assessment at the hospital the following week. (Eire).

***May 2019*** ***19/118***

An instructor, two students and another diver assisting with the training carried out a shore dive the aim of which was depth progression. Whilst conducting a narcosis check at 25m one of the students was seen to be confused and not believing his air gauge reading. The diver's buddy, instructor and assistant diver all spotted the symptoms and the group ascended to 20m where another air check was carried out without any of the earlier issues. The group surfaced with a dive duration of 40 min to a maximum depth of 25m. During the debrief the diver explained that he thought his gauge must be broken due to how much air he had used at that stage of dive. His cylinder had been filled to 210 bar and he had used 40 bar. The instructor asked if he felt this could be a sign of anything that he should be aware of or if he felt slightly confused at 25m. After several prompts from his buddy, the diver said he did feel a little unsure but didn't relate this to narcosis. That evening a review of the theory covering narcosis and symptoms was given and the diver agreed that he was probably denying that he was suffering from narcosis at the time and afterwards. The diver successfully completed his depth progression training with no further symptoms. It was the first time the buddy or the assistant diver had witnessed someone suffering the effects of narcosis and found it very useful training.

***June 2019*** ***19/129***

An instructor and a trainee carried out a shore dive in sheltered water. The trainee was descending to 4m but at 3m he signalled to the instructor that he was unable to equalize his ears. After several attempts the divers surfaced with a dive duration of 15 min. The trainee was later examined by a doctor and found to be fit to continue dive training.

***June 2019*** ***19/131***

An instructor and trainee carried out a shelving shore dive. During the descent the trainee indicated to the instructor that he was having difficulty clearing his ears. After a few attempts to equalize, the dive was aborted and they both surfaced with a dive duration of 10 min to a maximum depth of 6m. The trainee was seen at a medical centre and diagnosed as having partially blocked Eustachian tubes.

***June 2019*** ***19/393***

A diver and one buddy were on the surface at a wreck marker buoy. A second buddy was unable to fin to the marker buoy due of the current and asked to be recovered back aboard the dive boat. The cox'n then drove the boat to the diver and his buddy at the marker buoy to check if they were alright. They both took the boat's grab lines and assured the cox'n that they were good to dive but by now the boat had drifted away from the marker buoy and they were towed back towards it. At this point another diver joined them to lead the dive. The cox'n put the engine in neutral with the intention of it drifting away from the marker buoy. Somebody shouted that the diver in the first pair was close to the back of the boat and there was a danger he would come into contact with the propeller. The diver asked to be recovered aboard the boat as he felt his suit was taking in water. He was recovered and it was discovered that he had a perforation in his suit. On further examination it was found that he had a leg injury. He was given first aid by divers on the boat while the cox'n recovered the buddy and other diver aboard the boat. The cox'n immediately headed straight for harbour where the injured diver was taken ashore and received further first aid treatment at a nearby Coastguard station. The diver was then taken to hospital by ambulance. (Eire).

***July 2019*** ***19/390***

A diver and his two buddies carried out a wreck dive to a maximum depth of around 27m. This was the diver's first square profile dive and he descended rapidly and faster than his buddies and arrived on the bottom with visibility around 3m to 4m. The buddies realised the diver was suffering from narcosis so calmed and settled him down and he was able to complete the dive. (Eire).

***July 2019*** ***19/149***

A diver on a three day diving trip had carried out two shore dives using air on the last day. The first dive was to a maximum depth of 18m with a dive duration of 37 min. After a 3 hour 36 min surface interval she carried out a second shore dive. She and her buddy dived with another buddy pair on a wreck. Back on shore the diver complained of being weak and that her legs felt 'funny' and numb. She sat down and after a couple of minutes was put on oxygen. A medic was called and it was explained that she had been out in the sun for a period of time and then went diving. The medic was content with the precaution of putting the diver on oxygen but wanted her to see a doctor. Oxygen was stopped after 30 min and she was taken to A&E. The medic requested to be called so he could find out the result of the A&E examination but did not expect it to be anything serious.

***July 2019*** ***19/179***

On an overseas expedition a senior diver and his buddy, both using nitrox 25, carried out a pleasure dive on a wreck. They reached a maximum depth of 29m but spent the majority of the dive at 25m, swam to the aft section of the wreck to see the propeller and ascended to approximately 19m. At this point with both divers on 100 bar they began to fin moderately hard back towards the shotline on the bow. The senior diver reported that the buddy seemed a little anxious about her remaining gas, around 90 bar to 80 bar, and appeared breathless. The senior diver felt they had enough gas and time to reach the shotline but deployed his DSMB. The pair reached the shotline having gradually ascended from 19m to 6m where they carried out a 3 min safety stop, ascended and surfaced with a dive duration of 38 min. Back aboard their dive boat the buddy mentioned she had a slight headache to one of the other divers aboard. Back on shore the deputy dive manager took the buddy to one side concerned that she appeared quiet and withdrawn. She mentioned that she felt lightheaded and then fainted but did not lose consciousness. The buddy was put on oxygen, given sips of water and checked over. After 15 min the buddy spoke to a diver medic and it was felt that she may have skip-breathed during the dive causing hypercapnia coupled with dehydration. After 20 min on oxygen the buddy reported her headache had subsided. The diver medic advised the buddy be taken to a medical centre where she had a full neurological examination. The doctor at the centre concurred with the diver medic's diagnosis and the buddy was kept at the medical centre for 2 hours and was monitored and re-hydrated prior to being discharged.

***September 2019*** ***19/240***

A trainee using air carried out a second shore dive. The dive consisted a series of mini rescue lifts from 1.2m, 2.7m and 4m which was the maximum depth attained for the dive. His dive duration was 70 min but he did not spend this entirely underwater as there were multiple occasions where instruction was given on the surface. At one point the diver ingested a small amount of water but spat it out immediately and insisted he was fit to continue. After the dive the diver reported that he felt slight nausea due to the minimal swell. The diver than attended a theory lesson and when this had finished he reported he didn't feel right and that the screen during the lesson was going 'blurry'. An appointment was made to see a diving doctor but during the journey the diver reported 'tingling' in his wrist which moved to his forearm and then his tongue. The diving doctor referred the diver to a recompression chamber where he was treated that day and the following day. He was diagnosed with an ear barotrauma but no DCI was present and the treatment was deemed precautionary.

***September 2019*** ***19/253***

A trainee was conducting a descent on a shore dive and signalled to her instructor that she had difficulty equalizing her ears. The instructor aborted the dive after the trainee tried to equalize again but was unsuccessful. They surfaced with a dive duration of 10 min to a maximum depth of 5m. The trainee was seen at a medical centre and advised not to dive for two days.

***September 2019*** ***19/254***

A trainee carried out a shore dive reaching a maximum depth of 4m. A series of mini rescue lifts were conducted during the dive and at around 26 min the trainee signalled to his instructor that he had sinus pain and was unable to continue. The dive was aborted and the trainee was seen at a medical centre where the doctor explained that he could not pinpoint the reason for the sinus pain but was told not to dive for the next 48 hours and be re-assessed before diving again.

***October 2019*** ***19/256***

A diver had carried out a total of 12 dives over a 5 day period on an overseas island diving expedition. The maximum depth had been 34m on two occasions with all other dives being less that 30m. He had used mixes of between nitrox 25 and nitrox 29 for 4 of his dives with all the others being carried out on air. His computer was kept set on air for all dives, no decompression diving was done and a safety stop of 3 min at 6m had been carried out at the end of each dive. The expedition team had a 'surf and turf' meal on the last night which included mussels and beer. The diver had a 27 hour surface interval before a 45 min flight to another part of the island the next day. Upon landing the diver reported feeling cold, shivery and had diarrhoea. Together with his fellow expedition members he stayed overnight in a hotel. That night and all the following day the diver had severe diarrhoea and was taken to a local hospital the following morning where he was prescribed medication to alleviate a suspected slight fever and for his diarrhoea. He was kept hydrated throughout. Two days later a diving doctor back in the UK was contacted as the diver's condition did not appear to be improving. He was feeling extremely tired, weak and unable to eat. He also complained of headache, pain behind his eyes, blurry vision and a stiff neck. The diver was given oxygen from the expedition kit as a precaution the following day but no improvement in his condition was seen. A second diving doctor in the UK was contacted and updated on the diver's condition but both diving doctors were content it was not diving related nor was DCI suspected. The expedition leader briefed the second diving doctor that the travel plan was to take the short 45 min flight back to where the expedition was originally based and connect with a long haul flight back to the UK. He was concerned that the diver should be re-assessed before making the decision to allow him to board the long haul flight. The second diving doctor advised that the diver should return to hospital and have comprehensive blood tests and stool sample analysis. This was done the day before the long haul flight, the first diving doctor contacted and updated and he confirmed that he did not suspect the diver was suffering from a diving related incident and was content he could return to the UK. However, during the late evening before and during the day before the planned flight back to the UK, the diver felt slight 'tingling' and 'twitching' in his right arm and lower left leg as well as experiencing 'pins and needles' on four occasions in his right arm. The first diving doctor was contacted again and he instructed that, as a precaution, the diver was not to be allowed to fly until he had been examined by a local specialist diving doctor and the results passed on to him. As no local specialist doctor was available until three days later the expedition leader remained behind with the diver whilst the remainder of the team returned home.

***October 2019*** ***19/257***

A group of three divers, all using air, carried out a boat dive to a maximum depth of 13m with a dive duration of 34 min. After a surface interval of 2 hours 38 min they carried out their second dive but 7 min into the dive one of the divers cut his arm on a swim through adjacent to a wreck. The dive was aborted and with no other divers in the water the skipper opted to cancel the second wave of divers to take the diver ashore so he could attend a medical centre. The diver said this was not necessary, that the second wave should dive as planned and a diver recall could be given if required but was extremely unlikely. Whilst the second wave of divers were in the water the skipper washed and dressed the diver's wound. When the diver returned to shore he went to a medical centre where his wound was glued and he was told he could continue diving.

***November 2019*** ***19/291***

A diver was on holiday on a liveaboard and had carried out five dives over two days. Following the last dive to a maximum depth of 36m with a dive duration of 38 min and a surface interval of 2 hours 20 min, he was preparing to carry out his sixth dive. He was wearing full diving kit, except his fins, with a 15 lt and 4 lt cylinders, 7 kg of lead, a wetsuit, torches and DSMB. He entered the liveaboard's RHIB dropping from the dive deck onto the top of the RHIB's tube, assisted by the RHIB's cox'n and then, again with assistance, from the tube to the RHIB's deck, a procedure he had undertaken twice that day and numerous times on previous trips. As he stepped down from the tube his left knee collapsed, the pain was extreme and the diver fell down onto the deck. His dive kit was removed and he was assisted back aboard the liveaboard where he was helped in removing his boots and wetsuit. The diver kept his leg elevated on a bench whilst ice was applied for around 4 hours and he took painkillers. One of the dive party aboard was a GP who made an initial diagnosis of a torn quadriceps tendon

above the diver's patella. Another diver aboard had a hinged knee brace which he lent to the diver to provide some support for the rest of the holiday during which he continued to take pain killers and elevate his leg whenever possible. The diver returned home with great assistance from his diving buddies through the airport, during the flight and driving his car home. He attended an A&E department the day after returning home, was referred for an ultrasound three day's later which confirmed he had torn off two of his four quadriceps tendons taking some of his patella away with them as well as a third tendon only having a few intact fibres. The tendons had retracted 36mm up the diver's thigh and there was extensive haematoma around the tears and up the leg muscle. The diver underwent surgery the following day and was discharged home in a full rigid leg brace and crutches for 4 weeks which was followed by a hinged leg brace for 5 weeks and physiotherapy. It was estimated it would be between 6 months to 9 months before full recovery although there may be a permanent impairment in strength or knee flexibility.

***November 2019*** ***19/399***

An Instructor and trainee carried out a pool training session. They descended to the bottom of the deep end to conduct a mask clearing exercise. Following this the trainee became buoyant, began to ascend and appeared to be struggling with his equipment. The instructor ascended with him to see if the trainee was alright, whether he needed guidance in controlling his buoyancy and then return to the bottom of the pool to continue. At this point the trainee gave the signal to ascend and pointed to his shoulder. When they surfaced the trainee told the instructor that his shoulder had 'popped', which was now evident, and this had happened as a result of his shoulder hitting the pool wall. The instructor had not seen the impact but helped the trainee to de-kit and exit the pool where pool lifeguards and other divers took over. The trainee was taken to a doctor who referred the trainee to hospital. The next day the trainee was contacted and reported he was feeling a lot better and hoped to return to training in a month or so. (Eire).

## *Miscellaneous*

***May 2019*** ***19/119***

A military dive manager on an expedition followed procedure and called the military operations control room to book in his diving group and received confirmation that the local recompression chamber was online. The dive group carried out two boat dives, the second of which was to a maximum depth of 40m on a wreck with a dive duration of 40 min. The dive manager called the operations room to confirm all diving was complete, all divers fit and to check back in. The person on duty asked if the group came under the same rules as the local services training centre. On explaining that they did, the dive manager was informed that the chamber went offline as there were no doctors available to run it. When asked what time this had happened the person on duty was a little vague stating he wasn't sure, who he was required to contact or where the next nearest available chamber was and additionally, with it being a Friday, no other person was able to assist him. The dive manager requested all timings and further details to forward a complaint to highlight the break down in communications between the operations room and military diving expeditions run in conjunction with the local services diving centre. The operations room should have contacted all service divers booked in with them to inform them the chamber was offline which would have allowed a recall of divers if in the water or for them to adjust their dive plans.

***June 2019*** ***19/138***

An expedition group arrived at an overseas location and carried out a test on a dive centres air supply prior to the start of diving. The test showed an extremely high level of CO2 and subsequent tests produced the same results. In order to check the equipment, tests were carried out at another dive centre with similar results. Further checks showed that the testing equipment was faulty and there was no problem with the air and the expedition continued without further problems.

***July 2019*** ***19/150***

An instructor was taking a trainee for her final qualifying dive. On entering the water from the shore and in standing depth, the trainee said she was unhappy to do the dive as she didn't enjoy diving, felt nervous and didn't want to carry on. The instructor reassured the trainee and took her back to the shore where she de-kitted and was checked that she was alright. The trainee took no more part in diving activities.

***August 2019*** ***19/210***

Two divers, both using air, carried out a boat dive. They descended to a wreck but the current was stronger than predicted and they drifted off the wreck. They deployed DSMBs and drifted along a harbour wall but were starting to enter the shipping channel. The boat cover deployed a diver recall just as the divers were completing a 3 min safety stop at 6m. The divers surfaced with a dive duration of 20 min and a maximum depth of 19m and were recovered aboard the boat.

# History of Previous UK Diving Fatalities

| Year | Membership | BSAC | Non-BSAC | Year | Membership | BSAC | Non-BSAC |
|---|---|---|---|---|---|---|---|
| 1965 | 6,813 | 3 | - | 1998 | 46,712 | 5 | 14 |
| 1966 | 7,979 | 1 | 4 | 1999 | 46,682 | 9 | 9* |
| 1967 | 8,350 | 1 | 6 | 2000 | 41,692 | 7 | 10 |
| 1968 | 9,241 | 2 | 1 | 2001 | 41,272 | 10 | 14 |
| 1969 | 11,299 | 2 | 8 | 2002 | 39,960 | 3 | 7 |
| 1970 | 13,721 | 4 | 4 | 2003 | 38,340 | 6 | 9 |
| 1971 | 14,898 | 0 | 4 | 2004 | 37,153 | 4 | 18 |
| 1972 | 17,041 | 10 | 31 | 2005 | 37,185 | 5 | 11 |
| 1973 | 19,332 | 9 | 20 | 2006 | 35,422 | 4 | 11 |
| 1974 | 22,150 | 3 | 11 | 2007 | 34,857 | 8 | 5 |
| 1975 | 23,204 | 2 | - | 2008 | 34,325 | 6 | 5 |
| 1976 | 25,310 | 4 | - | 2009 | 32,790 | 8 | 9 |
| 1977 | 25,342 | 3 | - | 2010 | 32,229 | 7 | 7 |
| 1978 | 27,510 | 8 | 4 | 2011 | 30,909 | 5 | 7 |
| 1979 | 30,579 | 5 | 8 | 2012 | 29,632 | 9 | 7 |
| 1980 | 24,900 | 6 | 7 | 2013 | 28,728 | 5 | 9 |
| 1981 | 27,834 | 5 | 7 | 2014 | 28,375 | 5 | 11 |
| 1982 | 29,590 | 6 | 3 | 2015 | 27,803 | 3 | 5 |
| 1983 | 32,177 | 7 | 2 | 2016 | 27,346 | 5 | 7 |
| 1984 | 32,950 | 8 | 5 | 2017 | 26,774 | 2 | 13 |
| 1985 | 34,861 | 8 | 6 | 2018 | 26.717 | 8 | 9 |
| 1986 | 34,210 | 6 | 9 | 2019 | 27,000 | 10 | 3 |
| 1987 | 34,500 | 6 | 2 | | | | |
| 1988 | 32,960 | 10 | 6 | | | | |
| 1989 | 34,422 | 4 | 8 | | | | |
| 1990 | 36,434 | 3 | 6 | | | | |
| 1991 | 43,475 | 8 | 9 | | | | |
| 1992 | 45,626 | 9 | 8 | | | | |
| 1993 | 50,722 | 3 | 6 | | | | |
| 1994 | 50,505 | 6 | 6 | | | | |
| 1995 | 52,364 | 9 | 9 | | | | |
| 1996 | 48,920 | 7 | 9 | | | | |
| 1997 | 48,412 | 4 | 12 | | | | |
| | | | | | | | |

*1999 figure corrected from 9 to 8 due to a double count discovered in 2010
1998 figures onwards are calendar year figures; 1965 to 1998 are October 1st to September 31st figures.

# List of abbreviations used in this and previous incident reports

| | |
|---|---|
| AIS | Automatic identification system (location beacon) |
| AS | Alternative source (gas or air) |
| A&E | Accident and emergency department |
| AED | Automated external defibrillator |
| ARCC(K) | Aeronautical rescue coordination centre (Kinloss) |
| ARI | Aberdeen Royal Infirmary (Scotland, UK) |
| AWLB | All weather lifeboat |
| BCD | Buoyancy compensation device |
| BOV | Bailout valve |
| CAGE | Cerebral arterial gas embolism |
| CG | Coastguard |
| CCR | Closed circuit rebreather |
| CNS | Central nervous system |
| CPR | Cardiopulmonary resuscitation |
| CRT | Coastguard rescue team |
| DCI | Decompression illness |
| DDMO | Duty diving medical officer |
| DDRC | Diving Diseases Research Centre (Plymouth, UK) |
| DSC | Digital selective calling (emergency radio signal) |
| DSMB | Delayed surface marker buoy |
| DPV | Diver propulsion vehicle |
| ECG | Electrocardiogram |
| ENT | Ear, nose and throat |
| EPIRB | Emergency position indicating radio beacon |
| FAWGI | False alarm with good intent |
| FRS | Fire and rescue service |
| GP | General Practitioner (doctor) |
| GPS | Global positioning system |
| Helo | Helicopter |
| HEMS | Helicopter emergency medical service |
| HLS | Helicopter landing site |
| HSE | Health and Safety Executive |
| HUD | Head up display |
| ILB | Inshore lifeboat |
| INM | Institute of Naval Medicine |
| IPO | Immersion pulmonary oedema |
| IV | Intravenous |
| kg | Kilogramme |
| LB | Lifeboat |
| MCA | Maritime & Coastguard Agency |
| m | Metre |
| min | Minute(s) |
| MOD | Maximum operating depth |
| MOP | Member of the public |
| MRCC | Maritime rescue coordination centre |
| MRSC | Maritime rescue sub centre |
| MV | Motor vessel |
| NCI | National Coastwatch Institute |
| PFO | Patent foramen ovale |
| PLB | Personal locator beacon |
| POB | Persons on board |
| QAH | Queen Alexandra Hospital (Portsmouth, UK) |
| QAB | Queen Anne Battery (Plymouth, UK) |
| RAF | Royal Air Force |
| RHIB | Rigid hull inflatable boat |
| RMB | Royal Marines base |
| RN | Royal Navy |
| RNLI | Royal National Lifeboat Institution |
| ROV | Remotely operated vehicle |
| SAR | Search and rescue |
| SARIS/SARSYS | Search and rescue information system |
| SMB | Surface marker buoy |
| SRR | Search and rescue region |
| SRU | Search and rescue unit |
| UK SDMC | UK Sports Diving Medical Committee |
| UTC | Coordinated universal time |
| VLB | Volunteer life brigade |
| 999 | UK emergency phone number |