

Our World-Underwater Scholarship Society®

Divers Alert Network (DAN) Dive Safety
Education Internship 2019



Globalizing DAN First Aid Resources

Abbey Dias

When offered the opportunity to intern at Divers Alert Network with Patty Seery, I knew this could not be passed up. Patty is very influential in the fields of scuba and safety training, and I was excited at the chance to build on some skills that were new to me regarding teaching, editing, and filming.

At the annual event in New York City, I was overwhelmed with excitement and nervousness as I was surrounded by people highly regarded throughout the dive community. From the Scholars, to Patty Seery, Steve Barnett, Dr. Matias Nochetto, Dr. Jim Chimiak to Robin MacFadden Parish, and others with whom I was not yet familiar, I felt humbled being in their presence. It was exciting to stand alongside four other incredibly accomplished interns in front of numerous accomplished supporters at the Terrace Club as we were recognized for our promising future in studying underwater sciences.



2019 OWUSS Interns at the Terrace Club.

I remember meeting Patty for the first time as she embraced me in a huge, welcoming hug and began to introduce me to everyone as her intern. I was shocked to find out a few people already knew my name as the DAN intern and were excited to follow my work the following months.

At the Explorer's Club, I was blown away by the presentations from last year's interns and Scholars. The opportunities that each individual had to explore their interests through OWUSS only left me more excited for my upcoming time at DAN. There, we were awarded our Explorer's Club membership, and I am thankful to Jayne Jenkins for making that happen.

It was difficult to take everything in during those two days. I did my best to speak to as many people as possible, many of whom I have stayed in touch with through social media during my internship. Later that night at the awards ceremony, it was an honor to stand on stage to be photographed with people I only dream to be as successful as. What an inspiring way to begin my journey as this year's OWUSS/DAN Dive Safety Education Intern!





At the OWUSS Annual Awards Ceremony with (right to left) Jenna Walker, Emily Hellman (2018 OWUSS/DAN Intern), Patty Seery, me, Stephanie Roach; 2019 OWUSS Interns with Past OWUSS Interns.

On June 5th, I headed to Durham, North Carolina from my home in Seattle, Washington. Patty met me at the airport and again welcomed me with a comforting hug as I arrived at my home for the following nine weeks. I hit the ground running, because we drove to DAN that night so I could attend the Public Lecture Series held every two months There, I met the other interns with whom I would be living and other fellow coworkers. The lecture was on three common dive related injuries/illnesses, presented by Dr. Frauke Tillmans. I previously spoke with Neha AP, the 2019 North American Scholar about her time at DAN before I arrived, and she told me that I had to get to know Frauke because of her new and exciting research! I haven't stopped learning from her since that first day.

After the lecture I headed to my new home with medical and research interns Tess Helfrich and Hannah DeWitt. We had a lovely townhouse in Chapel Hill and I shared my room with Tess. The neighbors were not shy; I met all the waterfowl that night as they paraded in a single file across the street. At that time, I did not realize this was part of their daily routine. All 50+ of them!



Ducks crossing the road; Baking with Hannah DeWitt (DAN Research Intern) and Tess Helfrich (DAN Medical Intern)



The first two days of work mostly consisted of meeting with various people throughout the departments. It was a wonderful opportunity for me to begin to understand the full scope of DAN. I met with the head of each department including: Francois Burman in risk mitigation, Angela Williams in membership, Shelli Wright in professional liability, Rachelle Deal in marketing, Brian Harper in communications, Simon Morgan in IT, Ray Serrano in the warehouse, and Matias Nochetto in medical.

When it came time to meet with Patty and assistant director of training, Jim Gunderson, we discussed my goals for the internship which included:

- **Understand different standards for first aid training on a global scale**
- **Contribute to the diving community by assisting with making DAN resources more understandable, accessible, and inclusive of a diverse audience**
- **Learn effective education strategies**
- **Learn more about dive safety and DAN's role in the industry**

I will outline my experience based on how I fulfilled these goals throughout my time here at DAN.

To address the first three goals, my main project while here at DAN was to participate and contribute to the revision of DAN's Diving First Aid for Professional Divers course, or DFA Pro, for international utilization. DFA Pro is a comprehensive first aid course for diving and non-diving related injuries. It was developed in 2006 at the request of the local aquariums to have a training device for staff and volunteer divers in order to maintain accreditation. The course complies with OSHA regulations, current International Liaison Committee on Resuscitation (ILCOR) guidelines, and now with our revisions, will meet guidelines for resuscitation and first aid globally.

The course is a compilation of all of DAN's first aid courses, and is geared towards those who use diving as part of their professional jobs or volunteer work. This includes divers that work in commercial, public safety, scientific, or aquarium settings. The course teaches emergency oxygen first aid, CPR with AED, hazardous marine life injuries (HMLI), and neurological assessment as well as responses to common medical emergencies. It is an important and relevant course for any diver to take, but especially the professional diver, because it provides the training and knowledge to handle injuries



even beyond the dive setting. Diving involves a unique set of risks, so when injuries happen, it is essential that they are addressed promptly and taken care of correctly. It is important to recognize potential organizational duties of care that a professional diver may have should an injury or illness occur.

The course also prepares participants to handle incidents that might be non-diving related, such as stroke or other neurological abnormalities, heart attacks, and allergies. Of course, all these scenarios are amplified in severity when they occur in a dive setting, but understanding how to handle them is important in any situation. This is particularly useful to people who may volunteer on the floor at an aquarium or people who own commercial boats. The course fulfills an industry prerequisite for becoming a dive leader with most agencies and is also Coast Guard approved as meeting the CPR and first aid training required for captain and mate licenses.

Since DAN is the world's leading dive safety association, we have a global presence. We exist to help divers worldwide and therefore our course materials need to meet the needs of our increasingly diverse audience.

My first goal that I outlined was to understand different standards for first aid training on a global scale. I was able to do this through analyzing three main first aid organizations under the International Liaison Committee on Resuscitation (ILCOR): the American Heart Association (AHA), the Australia and New Zealand Committee on Resuscitation (ANZCOR), and the European Resuscitation Council (ERC). ILCOR is the parent organization for national organizations (such as AHA, ANZCOR, and ERC) that create guidelines for first aid procedures in their region. It was created with the intent of standardizing first aid guidelines across countries; however, there are still differences that exist. Many of the other national organizations rely on the guidelines of either the AHA, ANZCOR, or ERC, and it was for this reason that we compared guidelines primarily from these three organizations for our DFA Pro course.

One example of how organizations differ can be seen in the guidelines for relieving foreign body airway obstructions (FBAO). The AHA says to use abdominal thrusts, the ANZCOR says to use back blows, and the ERC says using a combination of these 3 different techniques may be the most effective.



In order to address these differences, version 3.0 of DFA Pro will offer instructions on how to perform abdominal thrusts, back blows, and chest thrusts so instructors will have the ability to offer the skills that are recommended for their location.

Another example is in scene safety. There are numerous different acronyms that can be used to remember a checklist for ensuring safety of the rescuer, but they essentially all address the same points. ANZCOR uses the mnemonic “DRS ABCD” (Danger, Response, Send for help, Airway, Breathing, CPR, Defibrillator) which incorporates injured person safety as well. AHA does not have an acronym for scene assessment, but DFA Pro uses the mnemonic “SAFE” (Stop, Assess, Find first aid/AED/O₂, Exposure equipment). Version 3.0 will continue to use the “SAFE” acronym but “DRS ABCD” will also be mentioned.

Emergency oxygen also differs between countries because oxygen cylinders have different color markings. For example, the United States, Asia, and Latin America have green markings but Canada and Australia have white markings. In version 3.0 of DFA Pro, we plan to include photos of all the different oxygen cylinders, instead of just green.

My second goal was to contribute to the diving community by assisting in making DAN resources more understandable, accessible, and inclusive of an increasingly diverse audience. Patty, Jim, and I were able to accomplish this goal with our edits to the DFA Pro text. In version 3.0 we will be using more inclusive gender pronouns (changing he/him/his and she/her/hers to they/them/their), and I would like to see a more diverse cast used in the media for our course. This includes using people from different nationalities in our photos in the text and supplementary videos in elearning. Although our local diving community is not the most diverse group, diving is a global activity. It is important that our course includes diversity because 1) DAN/diving is global; 2) diversity in the course fosters acceptance by people of diverse backgrounds; 3) diversity of actors sends the message that all people can aid a person in need and that the safety of all people is a priority of DAN’s.

One of the most valuable parts of my internship was working in collaboration with Patty and Jim as we made edits to the text. I enjoyed seeing how they analyzed changes that needed to be made. In the



beginning, I was unsure of how I would have anything to contribute to the edits of the text, since I am not a healthcare professional and am relatively inexperienced in the field. However, Patty and Jim saw that I could use that to my advantage as I was a “fresh set of eyes” to the program. I was able to question things that had been in the text for a while, but might have been overlooked. It can be difficult to make edits on a text that you have worked on for years! In the end, I think I made significant contributions to editing the text and offering input.



Me with bosses Patty Seery and Jim Gunderson.

The course is currently in translation for offering in 4 different languages (English, Spanish, Québécois French, Portuguese) in order to make this resource more accessible and understandable to our current audiences.

As part of the text and media edits, I drew a diagram to assist in explaining how emergency oxygen treatment helps to aid in ridding the body of excess nitrogen.



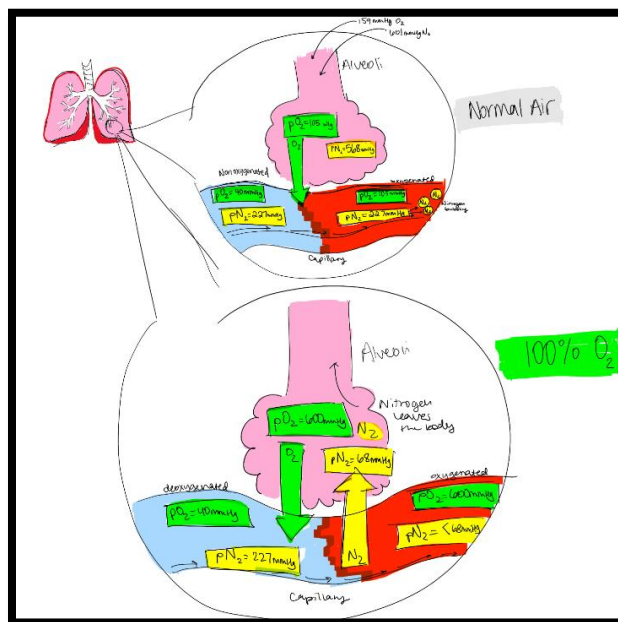


Diagram about gas exchange.

Of course, this is just a sketch of what a real graphic might look like, and the partial pressures are not necessarily accurate yet. Something I enjoyed while here at DAN was learning about the anatomy and physics behind common dive injuries. I gained this knowledge through taking courses such as DFA Pro, Prepared Diver, and through speaking with the medical department. For me, understanding why a certain treatment works is essential to my training, and it is for this reason that I wanted to include the above diagram. As someone who has taken advanced classes in chemistry and physiology, I understand these advanced concepts best through visualization. I thought by providing a visual for how gas exchange works with emergency oxygen, the DFA Pro audience may better understand the importance of emergency oxygen treatment.

In order to fully implement the changes to the DFA Pro course, our work needed to be carried throughout the text and photo/video media. Originally, my summer project was going to involve stronger focus on media elements but plans changed based on the expanding needs of DAN and of the training department. The media elements were delayed until the assimilation of the various regional impacts could be reviewed and integrated. Towards the end of my time, I did get to work on a bit of storyboarding, which is the art of outlining a video to illustrate the main highlights of the scene, emotions, and messages achieved within a scene.



Storyboard for foreign body airway obstruction.

I had very little experience storyboarding, so the opportunity to develop my skills in this area was something I was really looking forward to. I studied how Walt Disney developed storyboarding and how it is still used today! Walt Disney said something along the lines of not needing to be a great artist to be a great storyboarder, but just needing to get a point across. I think I really took that to heart when creating my storyboards for DFA Pro 3.0. The storyboard above shows the film for relieving a foreign body airway obstruction in an adult. As mentioned previously in the description of combining global guidelines in first aid, version 3.0 of DFA Pro will include skills on how to perform three different methods for relieving severe choking: abdominal thrusts, chest thrusts, and back blows, shown in the last four panels. I plan to continue my work on DFA Pro remotely to see version 3.0 go into action. I look forward to continuing to be involved with the project!

To further achieve my goal of globalizing DAN resources, I took the initiative to create a pamphlet that provides directions on how to access various DAN health and training resources. I was amazed at all the DAN information available to everyone, so I wanted to help guide people to these resources to promote safe diving.

This pamphlet highlights DAN health

resources. It is still under review, and I am not sure if it will ever get published, but it was fun to make and helped me learn more about health and diving!

My third goal was to develop effective education skills. Working in the training department was a privilege because I was mentored by Patty Seery, who is an incredibly experienced healthcare provider/educator, a PADI Course Director, and also developed the current DAN first aid courses, and Jim Gunderson, who also is a very experienced healthcare provider/educator, a NAUI Course Director Trainer, and has written teaching materials for the NAUI training agency. I still have lots to learn from Patty and Jim, but so far, they have taught me how to gear education materials to an objective and how to create assessments through analyzing the alignment of questions to learning objectives and assess learning outcomes in relation to Bloom's Taxonomy. Since I've been a student my whole life, it was fun to help create and revise assessment questions!

This goal was also fulfilled when I had the chance to attend the World Scout Jamboree (WSJ) in Beckley, West Virginia, to coach CPR. I wrote about that experience extensively in a blog post, but to summarize, the WSJ draws scouts from all over the world to promote peace and foster an atmosphere of leadership and learning life skills. The scouts had the opportunity to participate in a discover scuba diving



DAN resources pamphlet.

activity, so DAN supported the event by promoting dive safety with a “CPR challenge” at an adjacent booth. This involved watching a demonstration that either myself or one of the other DAN staff performed on manikins, and then allowing the scouts the opportunity to try CPR for two minutes while we coached their form. There were a few scout troops from Spanish-speaking countries, and I was able to use my Spanish skills to coach them in CPR in their language. This was a great opportunity for not only myself, but for DAN and the scouts because it allowed us to open up our tent to a larger audience. Since part of the mission for my work this summer was to globalize DAN training resources, I feel that this contributed to achieving that goal. There were over 44,000 scouts from more than 165 countries that attended, and I had the opportunity to meet people from all over the world!



Demonstrating CPR to scouts from Chile; Posing with a Scout Leader from Peru; Coaching a young boy from Taiwan.

Finally, my biggest goal was to learn more about diving safety and DAN’s role in the industry. This happens to encompass my entire experience at DAN. I was constantly learning new things, even when I didn’t want to — that’s what happens when you work next to all the medics on the phones! For starters, the medics were all wonderful people and always willing to chat or answer my questions. I especially became close with Dr. Camilo Saraiva, he became a good friend and always took care of me. Of course, there was Dr. Matias Nochetto who was working with the medical intern, Tess, on a children and diving project. I got to eat lunch a few times at the medical meetings where I learned from Dr. Jim Chimiak about important weekly cases. I learned a lot simply listening to these case discussions, and it was great to understand exactly what goes on behind the phone lines and the dedication that everyone has to their work!

I was very fortunate to be close with the other DAN interns and mentors because they included me in all of the research workshops, too. I had the chance to develop my research skills by increasing my understanding of statistics as well as how to be a more effective speaker. I also was excited to learn about the research projects studying topics such as post-dive circulatory bubbling from inert gases. I had the chance to meet the very accomplished Virginie Papadopoulou and learn about bubble counting from her; she developed a new computer application to automatically count bubbles! I now have a better understanding of how ultrasounds work, and how it's a bad idea to read ultrasounds on a moving boat due to sea sickness...

When I think about the most eye-opening experience in my understanding of dive safety, it was learning about risk mitigation from Francois Burman. Before speaking with him, I did not know much about what went in to running a hyperbaric chamber. He shared with me a slideshow presentation of what we have learned from hyperbaric chamber accidents. It was tragic to see this, but very important to my understanding of the importance of Hazard Identification and Risk Assessment (HIRA). On a similar



One of my PSI training certificates.

note, I was very grateful for the opportunity to receive training in visual cylinder inspection, oxygen cleaning, and valve repair from Mark Gresham of PSI-PCI. He provided many of us at DAN courses on these valuable skills and I am so thankful to now have those tools under my belt! I learned how to better care for my equipment and how to take responsibility for my own safety.



Along with the PSI-PCI courses, I attended a field trip to Luxfer cylinder manufacturing facility and learned how aluminum cylinders are created and tested for safety! It was neat to walk through the facility because it was just like an episode of “How It’s Made” and it gave me a new appreciation for scuba cylinders. The other field trip I attended was to the Duke Hyperbaric Chamber facility, which was incredibly impressive! Eric Schinazi gave us a very detailed tour of the facility including the history of the chambers, how they were built, how gas is compressed, and how the chambers are controlled. We also got to see a research project being conducted in the research chamber!



A photo of me standing in a hyperbaric chamber at Duke.

Something that I did not accomplish during my time at DAN but hope to later have the opportunity to do so is write for *Alert Diver*. I met with Brian Harper, one of the directors of the magazine, to discuss the magazine, my interests and strengths, and I even attended one of the meetings held at DAN to assign different sections to the in-house writers! It was fascinating to see how much goes into producing the magazine, and I can’t wait to be part of that in the future.

My experience at DAN would not have been the same without the many incredible people who were dedicated to my learning and seeing me succeed. I am especially thankful to Patty and Jim, as well as the medical department, Allan Uribe, PhD., Frauke Tillmans, PhD., Francois Burman, Panchabi Vaithyanathan, and Jeanette Moore. I am incredibly grateful to OWUSS for seeing my potential and passion for learning and offering me this opportunity, especially to Jenna Walker, Melissa Smith, Martha Sanders, Ellie Roberts, Roberta Flanders, Stephanie Tate, and Steve Barnett.

As every good story ends, mine closes with a full circle. I presented my work from this summer at the Public Lecture Series along with the other interns on August 7th. It was great to see so many people attend my presentation the next day, too, and the support and praise I received after giving my presentation! They also sent me off with ice cream, which makes me think that maybe it isn’t actually the



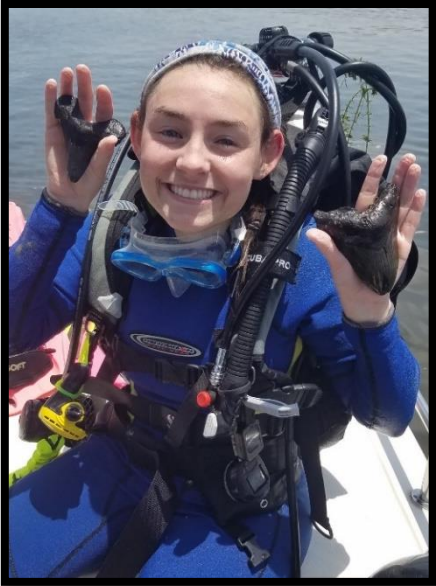
end of my story. As someone who came here relatively new to diving, and someone who doesn't have a family that dives back at home, I feel that I found a family here at DAN that will support me throughout my endeavors, and even a few new dive buddies! I also am very grateful to feel that this opportunity has allowed me to begin establishing myself within the diving community.



Research diving with DAN staff at Blanch Quarry, NC. Featured: (right to left) Hannah DeWitt, Tess Helfrich, Caitlyn Ruskell, Jim Gunderson, Andrea Filozof, Frauke Tillmans, Alex Romfoe, Chloe Strauss, George Anderson, Abbey Dias (me), Shelli Wright.

There is no better way to learn about safety and science than to be immersed in it. Spending the last three months at DAN was, by far, the most transformative experience in my diving career so far. I gained skills here that I might never have received anywhere else, and I feel that I was able to contribute significantly to the global diving world through my work. This experience has encouraged me to continue towards pursuing my diving instructor certificate and to use my position as an educator and ocean enthusiast to teach people how to enjoy the ocean safely. Practicing safe diving is the gateway to many amazing opportunities diving can provide. Whether it's scientific diving, underwater photography, or commercial diving—safety comes before any of that can happen. Learning about diving safety here at DAN has been a gateway for me to continue on with my diving career.





Me with two large megalodon teeth I found!

Since diving was not actually part of my internship, I did my best to keep up my skills and take advantage of the amazing diving off the coast of North Carolina by diving every weekend. I logged over 20 dives in North and South Carolina, including three from blackwater diving in the Cooper River, SC, for megalodon shark teeth! Even though my internship work was in an office, I feel that the skills I learned in first aid, safety, and understanding diving physiology better have made me a more skillful, prepared, and safe diver in the water.

Acknowledgements:

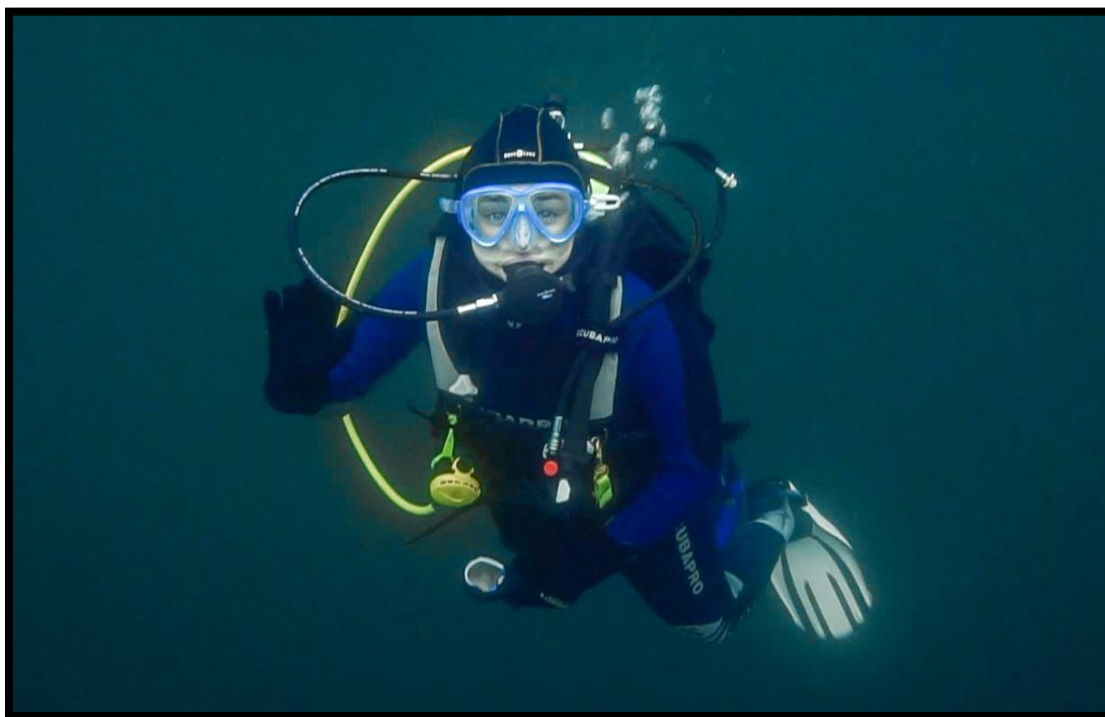
I am incredibly grateful to the many people who helped make this internship experience as valuable and memorable as it was. I have two large groups to thank, first, the Our World-Underwater Scholarship Society® for providing the opportunity to be an intern and for selecting me for the position while providing me with endless support and guidance. I would like to thank those who worked with OWUSS to make the experience happen, including Jenna Walker, Stephanie Tate, my internship coordinator Melissa Smith, Martha Sanders, Roberta Flanders, Ellie Roberts, and of course Steve Barnett. Thank you also to The Explorers Club and Jayne Jenkins for pushing my Explorers' application through. I would like to thank the other 2019 interns for their support as well towards all of our projects.

Secondly, I owe a huge thank you to the Divers Alert Network. I am incredibly grateful to Patty Seery for being a wonderful role model and boss, as she offered me guidance and supported my project ideas. I am grateful to Patty for inviting me over to cook dinner and play with her dog, Scuba, and for being my family away from home. Thank you to Jim Gunderson who was also a wonderful boss and always had something to teach me. I am grateful to Dr. Frauke Tillmans and Dr. Allan Uribe for including me in their research intern workshops, as well as to the other interns at DAN who will be lifelong friends and dive buddies of mine. This includes Tess Helfrich, Hannah DeWitt, Andrea Filozof, and the "Intern



Allies”: Alex Romfoe, Chloe Strauss, George Anderson, Caitlyn Ruskell, and Asienne Moore. I would like to thank the DAN medics, especially Dr. Matias Nochetto and Dr. Camilo Saraiva, for teaching me about diving physiology and answering all of my medical questions. Thank you to Jeanette Moore for coordinating the interns and housing arrangements, as well as Bill Ziefle, and Panchabi Vaithiyanathan (“PV”) for their support of the DAN Internships.

There were also many people and organizations I had the chance to visit with whom allowed me to grow my diving knowledge and add new tools to my kit. This includes Mark Gresham with PSI-PCI, Luxfer Cylinders, and Eric Schinazi and the Duke Hyperbaric Chamber Medical Facility. Finally, I would like to thank Annie Crawley and my home institution, Whitman College, for supporting my endeavors to learn more about diving safety.



Dive Safely!

