

Our World Underwater Scholarship Society
Divers Alert Network Internship
Report

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Abstract

The Divers Alert Network (DAN) has provided a hands on internship that allowed me to be involved in an exceptional learning experience. DAN sponsors a research study known as Project Dive Exploration (PDE) where data about recreational divers is collected and analyzed. Medical history, scuba diving history, and depth/time dive profile recorded by a dive computer are the focus points of PDE. Divers participate in the study voluntarily, donating data, which is used to plot scientific trends made available to the public. My task for the summer of 2005 was to collect cold water dive data for PDE in New England.

Introduction

The Divers Alert Network (DAN) is a non-profit organization associated with Duke University Medical Center (DUMC). DAN promotes dive safety through scientific research and educational courses to support recreational divers. Since 1980, DAN has played an integral part in the diving community and has expanded to an international organization helping divers around the world. Injured divers can

receive assistance from a 24-hour hotline allowing access to medical personal top in their field. Members of DAN allow the lifesaving practices of the organization to be possible through membership fees and generous donations. As could be imagined, advertisement for the organization is a necessity to achieve success (Figure 1). Some of the services provided by DAN are medical evacuation assistance, research and educational works, and

diver's accident insurance. DAN's goals and the above activities are set by a Mission Statement and Vision Statement.

DAN's Mission Statement:

DAN helps divers in need with medical emergency assistance and promotes diving safety through research, education, products and services.

DAN's Vision Statement:

Striving to make every dive, accident- and injury-free (About DAN).

What is PDE?

Project Dive Exploration is an extensive research project created by DAN to study the effects of diving on a wide range of individuals. Scientific trends in gender, age, types of diving, etc. can be plotted from the data collected and presented in a useful manner being made available to the public. The project was started in January of 1999 and has been constant since. Divers participate in the

study voluntarily donating medical and diving data to be added to pool of information already collected furthering research.

The main goals of PDE are as follows:

collect depth/time dive profiles, document the medical and diving history of divers, monitor the reaction a diver may have 48 hours after a dive, the effects of flying after diving, and plotting trends of a diver's depth/time profile against medical history.

The collection of data for PDE is facilitated by DAN employees and DAN Interns. Areas around the world are chosen based on a target rich environment of recreational divers, for example resorts, dive stores, and charters. Depending on arrangements, funding, and many other obstacles, DAN Interns are placed in a wide spectrum of diving havens across the world in a

attempt to collect as many dive profiles as possible (Current Projects).

Individuals chosen to be DAN Interns this summer were trained to collect data for PDE during May 23-27, 2005. Interns underwent a rigorous training session to learn the specifics of DAN and PDE from many of the top employees of the organization. Interacting with divers and presenting PDE to possible participants were some of the main focus points. Once training was complete interns were released into the wide world of recreational scuba diving in an attempt to collect data for DAN's PDE study.

Divers participate in the study on a voluntary basis filling out various forms pertinent to data collection. *Participant Enrollment* is the first form filled out consisting of contact information, a brief medical history, and diving history. Divers are then issued a

Reef Net Sensus Pro diving computer (Figure 2), which measures depth/time and temperature. The computer is pressure sensitive allowing for hands free activation and ease, turning on and off when entering or exiting the water automatically. The Sensus Pro computers have a memory bank that allows for multiple dives before data must be downloaded and recorded. Each computer is attached securely to a divers gear around the chest region with a cable tie (Figure 3).

After the participant has finished their dive a *Daily Dive Log* form is completed. This form allows divers to easily record specifics of their dive, for example levels of thermal comfort, type of workload, or if any problems occurred with equipment or physical health. Divers would then return the computers to the intern and be given a *48-Hour Report* to complete. This is the last step

of involvement for individuals participating in the study and records if additional dives were made, if flying after diving occurred, and if any medical problems resulted from diving.

The next step is for the collected PDE data to be sent to DAN for future analysis. Interns are equipped with computers and software designed to streamline this process. Information recorded on the *Participant Enrollment* form is entered into a program called DASIND. The data recorded by the dive computers is extracted very simply through a module connected to the USB port of a computer (Figure 4). Sensus Pro Manager software allows for the data to be uploaded from the dive computer and stored on the intern's computer in the form of a dive profile showing depth/time and temperature for each dive. The *Daily Dive Logs* that were completed are then entered into

DASIND for each dive completed specific to a certain dive profile. Once finished the PDE data is in a convenient, easy to access form that is emailed to DAN.

My Experience with PDE in the Field

During the months of June, July, and August 2005 I was tasked as a DAN Intern to collect data for Project Dive Exploration from recreational divers. DAN organized my host site and living arrangements for the summer. My host site was the NOAA Stellwagen Bank National Marine Sanctuary in Situate, Massachusetts. My contact was Ben Cowie-Haskell, the Operations and Program Director for the Sanctuary. My housing was to be on Cape Cod in Dennis, Massachusetts.

My task was to collect data from cold water dives. A large portion of the data collected for PDE in the past is from warmer waters since such areas are

more attractive to recreational divers. There is a need to fill the gap of cold water recreational dive data, making New England an excellent choice for this endeavor. As the first DAN Intern to be stationed in New England I was placed with a challenging task of reconnaissance in an attempt to find the best areas to search for recreational divers that would be willing to participate in PDE.

I used the first part of June to scout out the best areas for PDE data collection in much of New England. I first focused my attention on southeastern Connecticut since this is the area I have lived all my life. I started by going to my local dive shop in Westerly, Rhode Island called Avie's Ski/Sports, owned by Ted Avedesian. Mr. Avedesian was a tremendous help by contacting local dive charter boats, instructors, and recreational divers.

Through these contacts I made great progress collecting PDE data. DAN provided me with an PDE advertisement poster, which I attached to my car when visiting popular dive sites (Figure 5). I found this to be a useful way to attract attention to the study.

On June 6, 2005 I traveled from southeastern, Connecticut to Situate, Massachusetts to meet Ben Cowie-Haskell at the NOAA Stellwagen Bank National Marine Sanctuary to become acquainted with the facility. Mr. Cowie-Haskell gave me a tour and after deliberation we both came to the conclusion that it would be only necessary for me to be present at the facility if PDE data collection opportunities arose.

I spent the end of June searching Cape Cod for dive shops and opportunities to meet up with recreational divers to expand my PDE

undertaking. I visited the following dive centers and shops on Cape Cod: Aqua Center in Sandwich, Buzzards Bay Dive Center in Onset, the Dive Locker in Hyannis, and Sea Sports in Hyannis. After investigating each location and speaking at depth with each owner a trend began to form. Each dive shop sponsored dive charters, events, or competitions which in majority took place on weekends, but were often cancelled for lack of interest or due to poor weather conditions. I was told by many dive shop owners and I learned very quickly that Cape Cod in general is a difficult place for recreational divers to practice their sport. The main reasons for this are a short summer season and poor weather conditions due to high winds, current, and fog. The result is a lack of interest by the common recreational diver.

Due to my discoveries about the recreational dive community on Cape Cod I focused my attention to Rhode Island and southeastern Connecticut for the duration of the summer working out of my house. Atlantis Dive Charters based out of New London, Connecticut became another great source for collecting PDE data from divers. Captain Gary Chellis, the owner of the charter boat, was very courteous and went of his way to help me with data collection. Atlantis Dive Charters is well organized bringing divers to thirty different dive sites up to five times a week in Long Island and Block Island Sound at a wide range of depths (Chellis). Unfortunately, for part of the summer Captain Chellis was not able to run some of his charters due to a personal diving accident. Once recovered more bad luck followed when a head gasket blew on the charter boat

engine, bringing charters to halt for a couple more weeks. Atlantis Dive Charters has a structured program that could be tailored very efficiently to PDE data collection.

On July 16, 2005 I collected PDE data during the Great Annual Fish Count sponsored by Reef Environmental Education Foundation (REEF) in Rockport, Massachusetts at Pebble Beach. This particular site was sponsored by The United Divers of Central Massachusetts (Figure 6). This proved to be the greatest participation in the PDE study in a single day for the summer (Figures 7 and 8). The only downfall was that the data collected was of shallow dives, but is still highly useful in the study.

Conclusion

After spending nearly three months this past summer collecting data for DAN'S PDE I learned a number of valuable

lessons that I can utilize well into the future. At first I struggled with the balance of time spent and the amount of data collected. I found that it was far more efficient to collect data in Rhode Island and southeastern Connecticut due to a greater number of recreational divers and more favorable dive conditions.

The Divers Alert Network should be commended for their formation of the intern based research program. Involvement in Project Dive Exploration is an excellent way for hands on undergraduates and graduates to pursue a career in the scuba diving industry.

I would like to thank Our World Under Scholarship Society for their sponsorship of my internship with the Divers Alert Network and George Wozencraft who helped streamline my internship responsibilities. Without this support my experience through DAN

would not have been possible. I would also like to thank Donna Uguccione, Jeanette Moore, and the entire staff from DAN who helped guide me through the internship process. Lastly, I owe a great deal of thanks to all the dive shop owners and divers who participated in the study.

Appendix A



Figure 1 – Divers Alert Network logo on scuba diving tanks. Photo by Henry Maxwell.



Figure 2 – Reef Net Sensus Pro Dive Computer. Photo by Henry Maxwell.



Figure 3 – Sensus dive computer attached to Buoyancy Compensator. Photo by Henry Maxwell.

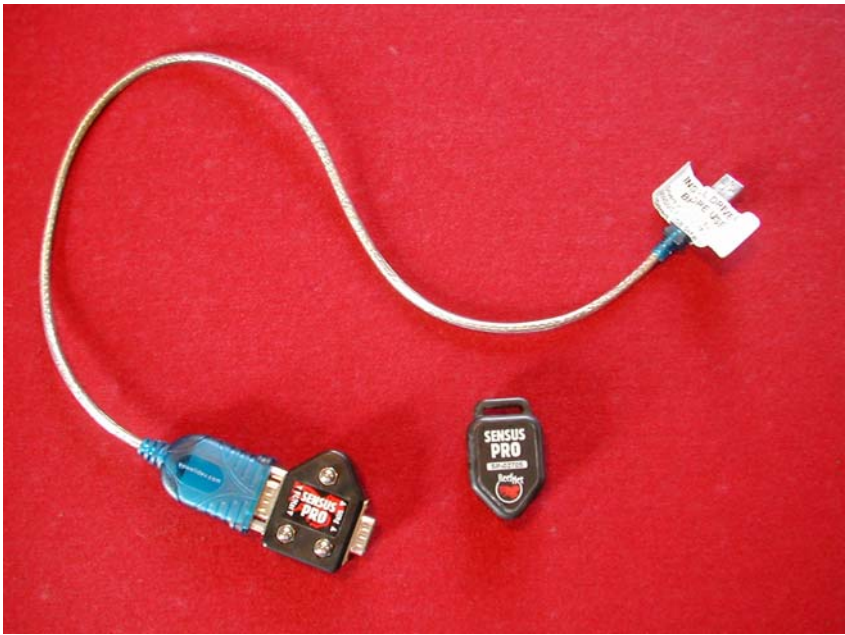


Figure 4 – Sensus Module, USB connector, and dive computer. Photo by Henry Maxwell.



Figure 5 – Project Dive Exploration poster used as advertisement at popular dive sites. Photo by fellow diver.



Figure 6 – United Divers of Central Massachusetts at Pebble Beach in Rockport, Massachusetts during the Great Annual Fish Count. Photo by Henry Maxwell.



Figure 7 – Divers participating in PDE at Great Annual Fish Count in Rockport, Massachusetts. Photo by Henry Maxwell.

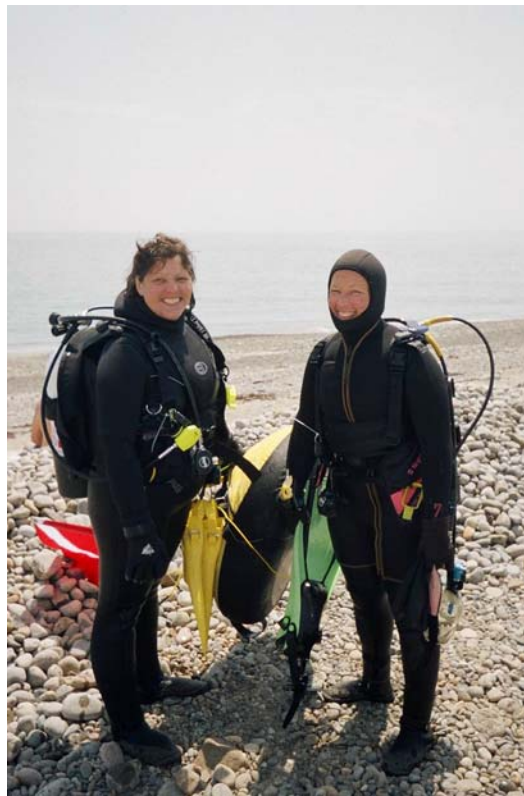


Figure 8 – Divers participating in PDE at Great Annual Fish Count in Rockport, Massachusetts. Photo by Henry Maxwell.

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