

2010 National Park Service Internship Report

By: **Brianne Billups**

After discovering that I had been chosen as the recipient for the 2010 Our World Underwater Scholarship Society's National Park Service Internship, I knew that my life and career would be forever changed in the best possible way. I was in a state of disbelief when Dave Conlin from the Submerged Resources Center listed the possibilities this internship could bring. Since this would be the first time it would be done, I worked with Dave to find the best strategies to set up and execute my summer internship. I was given the contacts, support, funding, and freedom to make my internship whatever I wanted it to be and it was my responsibility to use those resources to set up all the logistics and travel. I took it as an opportunity to experience as much as I possibly could in 4 months, while staying within the \$10,000 spending budget. I wanted to see the wide variety of professional diving that the National Park Service does such as maintenance, law enforcement, biological and cultural resource diving. It was not easy to coordinate such a thing, but I found that once I hit the road and was off on my adventures, all arrangements fell into place.

I started off at my home park at the Channel Islands, which happens to boast the largest diving program in the National Park Service. While I was there, I participated in their two main diving programs, Kelp Forest Monitoring and Channel Islands Live. The Kelp Forest Monitoring Program is the longest established monitoring program in the National Park Service and has taken inventory of the kelp forests and Marine Protected Areas around the Channel Islands since 1982. I went out on a 4 day boat cruise with the crew to survey different sites at Santa Barbara and Anacapa Islands. We used several different research techniques to count "indicator species" or species that were abundant in healthy ecosystems. This trip gave me my first taste of research diving and insight into the experience required to identify species and tolerate difficult, cold and surgy diving conditions while conducting research simultaneously.

After I returned to land I prepared to go back out to Anacapa Island to participate in the Channel Islands Live underwater video program run by Pacific West Regional Dive Officer, Dave Stoltz. Although I only got to dive one day out of the three that were planned, I felt like I was at home at Anacapa Island. I was glad to once again be part of the program that sparked my

interest in scuba diving in the first place. The Live Dives are interactive and bring the beauty and diversity of the kelp forest to people on dry land in real time with the use of video cameras, full face masks, microphones and other technology. The first day we had two educational programs. One was a curriculum based program for two school groups in which I played the role of a research diver. The second program was an open informative program for the general public and I helped make sure that the video cable lines did not get tangled in the kelp as well as bring in live animals. I spent the next two days on the island in solitude until I caught a boat off to continue my adventures.

For my next stop I drove out to Nevada to have my first freshwater experience diving in Lake Mead. While I was there Biologist, Bryan Moore taught me about the invasive Quagga mussels that have taken over the lake. It has only been three years since the first mussel was discovered, but now every hard surface in the lake is completely covered with them. Since mussel eradication at this point is virtually impossible, their main goal is to research them and prevent the contamination of other fresh bodies of water. I dove there to download the temperature changes from data loggers and collect samples for research and educational purposes. Also, I got the chance to work in a lab at the University of Nevada, Las Vegas to experience hands on some actual studies that are being done with the mussels.

Next, I flew out to the Hawaiian island of Oahu to work at the World War II Valor in the Pacific USS *Arizona* Memorial. The dive program there is much different from other diving programs in the National Park Service because they work directly with the US Navy and they must be sensitive to the sacred sites they are diving on. While there, I did maintenance dives on the *USS Utah* and the *USS Arizona* with Park Dive Officer, Scott Pawlowski and volunteer diver, Mike Freeman. Diving on those memorials which are so significant to the history of the United States were definitely the most memorable and emotional dives I had all summer. Words cannot describe the feeling of diving on one of the most infamous war graves in the history of the United States in which so many died, leading us into World War II and eventually the victory and the freedom we have today. It was a moving experience I will never forget.

Then, I headed for my next stop, Kalaupapa National Historical Park, which is a small community on the Hawaiian island of Molokai isolated below 1,600 foot cliffs. Due to its

seclusion, it is a place of pristine ecological beauty. However, it was also the setting of some darker historical events. In 1865, well established indigenous Hawaiian communities that were living there were displaced and people who had fallen victim to Hansen's disease, or leprosy, were forced to live there in exile. Today, although the patients have all been cured, they continue to live out their lives in the community under the protection of the National Park Service. First, I made a dive in Kalaupapa to launch some oceanographic equipment then I worked on several other resource management projects with Marine Ecologist, Eric Brown, for the next few days. Then, I hiked up the cliffs to the "topside" of the island. The following week I dove various sites on the south shore working on an inventory and monitoring project for the coral reefs there. I was amazed while exploring this new environment that I had never seen before and thrilled that I was spending at least 3 hours underwater each day.

Next, I flew to the Big Island of Hawaii to work at Kaloko Honokohau National Historical Park. During my two week stay I dove with the Kaloko-Honokohau resource management team Sallie Beavers and Lindsey Kramer to do coral reef surveys as well as work on other projects. Kaloko-Honokohau National Historical Park is on the Kona side and was established in 1978 and preserves the coastal sections of two *ahupu*'a or traditional land divisions of Kaloko and Honokohau. Most of our dive sites were located in Honokohau Bay or just outside of Kaloko fishpond. The diving I did here was very similar to the inventory and monitoring dives that I did at Kalaupapa, except I counted urchins as well. When I wasn't diving, I helped with water quality sampling, organizing photos in the database, and explored the island. Also, I got the chance to attend a State of Hawaii Land Use Commission meeting. There, I learned about the measures the park is taking to make sure that the developers and contractors are measuring how much water they are removing from the ground and properly treating their waste to make sure it does not flow directly into the ocean. Overall, while at Kaloko Honokohau I learned so much about how the watershed process affects the reef and how baseline data, obtained with the use of scuba, is necessary to support a legal case for responsible management of infringing development.

Then, I flew home for a two day stay back at in California. While I was there I made my first drysuit dive in the ocean to prepare me for Isle Royale and then gathered any remaining supplies and packed my bags for the East Coast. My first stop was in Dry Tortugas off of the

Florida Keys. I took the Yankee Freedom Ferry out to Fort Jefferson at Garden Key to meet up with the Submerged Resources Center (SRC) who had already been out there for a few weeks already. Although my stay there was short, I was lucky enough to spend most of my time in the warm water investigating anomalies. The low flat reefs around Dry Tortugas are the final resting place to many ships due to their location along major shipping lanes. From 1993 to 1995, the SRC conducted remote sensing at Dry Tortugas by towing a magnetometer behind a boat over the reef within the park boundary. A magnetometer measures the intensity and direction of a magnetic field. Since most ships have a significant amount of iron on them, they show magnetic variations, or anomalies, in the data collected. Our job was to dive anomaly locations to inspect the ocean floor for shipwrecks or other significant archaeological finds. Often times nothing was discovered, which could be due to the object causing the anomaly was buried in sand or the device picked up natural magnetic changes in the earth's field. However, that is why it is necessary to jump in the water and visually search the site. During the trip two shipwrecks, three cannons, and several anchors were discovered. I was fascinated by the search for long lost treasures under the sea and the surprise when something new was found.

Leaving Dry Tortugas, I headed for St. John to visit the United States Virgin Islands National Park. It was quite the culture shock when I arrived, but I had a great time while I was there. Natural Resource Manager and Southeast Regional Dive Officer, Thomas Kelley, taught me a great deal about the policies of the NPS diving program as well as the mooring buoy system they have established there. Also, I participated in several different types of biological surveys, including looking for hard corals in the mangroves, doing fish and habitat survey assessments, and counting juvenile fish. Additionally, I helped remove two invasive lionfish, which due to rapid reproduction, toxic spines, and no natural predators are a threat to the livelihood of the marine ecosystems in the Caribbean and Florida. The natural resources found at St. John are absolutely beautiful and I appreciated the diversity of species among the reefs as well as the fantastic white sand beaches and warm turquoise blue water.

After flying out of the USVI, I drove from Miami to Biscayne National Park in Florida. Within 24 hours of arriving there, I had seen thunderstorms, an alligator, sea turtles, a manatee, frogs, blue crabs and the biggest spider I had ever seen in my life! Needless to say I was impressed by the landscape and amount of biodiversity I found in one small area. When we went

out on the water, I was amazed by how shallow it was. It made me understand why there were so many shipwrecks there when we had to slow down in our little boat in certain areas so we didn't hit the bottom. Also, I was amazed at how shallow it stayed for miles offshore. The first week I was there I worked with Chuck Lawson, Archaeologist and Cultural Resources Manager, to survey the shipwrecks that were scattered about the park. Chuck checks on the wrecks annually to look for any changes such as natural degradation or signs of looting as well as making notes of portable artifacts or any other significant details. I had never before in my life seen so many wrecks and structures at the bottom of the sea and looked at them with awe and wonder. There is something magical and mysterious about shipwrecks and it made me understand the thrill of those who are a fanatic about diving on them. The next week I took the National Park Service "Blue Card" Diver Annual Refresher Course in which certified NPS divers have to run through a series of drills to keep their skills sharp and maintain their certification.

Then, I headed off to my next stop, the St. Croix Riverway. I really had no idea what to expect as it was my first time visiting the Midwest, but I received a warm greeting from Bob Whaley, Chief Ranger, and his wife Barb Griffin, Superintendent's Secretary, who were both park divers. The woods and corn fields were certainly different from the warm tropical environments I had gotten used to and for the first time in months I was back in my 7mm wetsuit. Diving in a river was an unusual experience; it's much like an ocean surge that only pushes one way. Luckily, we had a "creeper" which is a heavy steel contraption Barb welded that we used to crawl along the bottom of the river as we looked for mussels. We looked for invasive Zebra mussels as well as endangered Winged Mapleleaf mussels. Although the visibility in the river was extremely limited I was impressed by the abundance of various types of freshwater mussels found there.

Next, I got to tag along with the Submerged Resources Center again, this time in Isle Royale as they filmed shipwrecks in the park using special cameras that enable the production of 3-D videos. They picked me up in Minnesota on their way from Denver, Colorado to Houghton, Michigan where the boat was docked in Lake Superior. One thing I learned during my experience with them was the amount of equipment it takes to run a complex operation such as filming something underwater. And, it only gets more complicated when it is in a remote location such as an island like Isle Royale. Added to the dive and camera equipment were

personal belongings and 3 weeks of food for 8 people, as well as extra backup supplies that must also be brought along. The day after we arrived we loaded up all of the gear and food into carts to be put on the boat. We ended up staying in Houghton a day later than planned because the boat had been postponed due to bad weather and rough “seas.” Even though the water is fresh, it can be just as perilous as the salty seas and heavy fog can make navigation difficult, especially with the lake’s unexpected shallows and pinnacles. This is why there are so many wrecks to be found in the lake. Once we arrived at Mott Island, we unloaded the gear from the carts and put it on three other boats to take us to our final destination, Windigo. The next day started with a discussion of the safety and emergency management plan for diving incidents in the park as well as the use of Nitrox. Given the conditions of the lake and the remoteness of the island, caution and safe decision making were of utmost importance.

For our first dive, we did a “shake down” dive at the dock, where everyone got into the shallow water to make sure all of their gear functioned properly. I spent time getting familiar with my drysuit because I hadn’t any experience using it outside of the initial training I received. Also, Dave and Brett made sure their rebreathers were working as well. The water was about 46 degrees Fahrenheit and hurt my hands and face until they went numb. The drysuit took some getting used to, but it was comfortable. Next, we did a “condition assessment” dive on the *SS America*. The purpose of a condition assessment is to go down and visually inspect an archaeological site to note any changes that may have occurred since the previous assessment. Even though there was no loss of life when this vessel sank in 1928, there is something incredibly eerie about seeing a ship underwater that is still intact with remnants of familiar things such as sinks and stairs.

That night, I packed my bags because I was leaving Windigo the next day to go to Mott Island, where I would be taking the boat back the following day. However, I did get the chance to squeeze in one more dive before I left. After we docked at Mott Island and refueled the boat, we headed over to the wreck, *Algoma*, to do another condition assessment. However, diving *Algoma* was not as spooky as diving *America* because it does not resemble a ship whatsoever, but rather consists of torn fragments of what used to be a ship. There were lots of interesting artifacts such as pieces of china that usually are not found on most wrecks because they typically have been picked clean by divers looking for souvenirs to take home. During this dive even in

the drysuit I was extremely cold. I didn't know if I spent too much time in tropical waters and had lost my cold tolerance or I had been too spoiled, but I must say that those who decide to jump in and submerge themselves in Lake Superior for more than 10 minutes are a tough breed of truly dedicated divers. After our dive, we went back to the dock at Mott Island to greet the boat, and the crew from Woods Hole Oceanographic Institute who would be helping with the filming. While they took the ride back to Windigo I stayed at Mott Island to catch the boat out the next day to be off to my next destination, the Delaware Water Gap.

While visiting the Delaware Water Gap National Recreation Area I learned about law enforcement diving in the National Park Service from Ranger, Mike Croll. The Law Enforcement division at Delaware Water Gap differs from other parks I've been to this summer because some of their rangers also work as park divers. These rangers are trained to retrieve lost bodies with the use of scuba. Some parks rely on external agencies for this, however, at Delaware Water Gap the logistical circumstances and response times of other agencies make it a necessary responsibility of the Delaware Water Gap dive team. Since it is not the most pleasant job, the dive team members cope by focusing on the most important reason why they are doing it: returning the missing person is essential for family and friends to have closure and start the process of grieving a death. While not everyone is suited for this job, it must be done for the sake of those who care about the person. The first few dives I made were to familiarize myself with the conditions there, as well as navigating in the current. Then, I participated in a training that was held for the divers to refresh their search and recovery skills. Mike created a mock drowning scenario by dropping a dummy body in the river and acted as a witness. It was my job to interview the witness and get a "point last seen" in order to mark a place to begin searching. After we marked the point with a buoy, the divers swam to it and performed a search by drifting in the current while feeling along the bottom. The divers found the dummy body on the third drift near the buoy, and brought it to the boat where we pulled it out of the water. If they had not found it after a few drift dives, then systematic search patterns involving ropes would be used to comb the bottom of the river until it was found. Although I learned that it is not necessarily something that I am cut out to do, I appreciate the courage of those who perform this service for the benefit of the people who need it most-the families who are mourning the loss of a loved one.

At the end my short stay at the Delaware Water Gap, I packed my bags and drove from Milford, Pennsylvania to Washington, DC. After everything I had seen, it was hard to wrap my mind around the fact that I was actually there, at my last stop, to visit the national headquarters where all of the important decisions are made that affect National Parks. While I was there, I worked with Cliff McCreedy, Marine Resource Management Specialist, to learn about his role in the Washington Office. Also, I gave speeches about my summer experiences at the National Oceanographic and Atmospheric Administration Headquarters, the National Park Service Headquarters, and the National Park Service Director's Office. Additionally, I got to sit in on two conference calls and learn about risk management and education in the Park Service.

Ending my internship in Washington, DC was very beneficial to my understanding of the system in which all of the National Parks I visited operate under. Because of those who navigate the legal and political field of resource management and funding here in Washington, all of the world can enjoy the pristine natural beauty found in North America in areas that have been designated as National Parks. This internship as a whole has been so incredibly valuable to me and I feel tremendously fortunate to have experienced America's underwater National Parks from the inside, by working and diving with the key experts in the fields of biological and cultural resources, maintenance, and law enforcement. Having seen all that I have, I feel proud to be an American and appreciate what our country has done to preserve our wild lands, lakes, rivers, and oceans to keep them intact for future generations.

I would like to thank the Our World Underwater Scholarship Society and the National Park Service's Submerged Resources Center for making this amazing opportunity possible for me. This internship has surpassed even my highest hopes and expectations, and I feel so lucky to have been given the chance, funding, and support to make it all happen. You have given me the blessing of widening my perception of the United States, the National Park Service, and professional scuba diving. Also, I would like to thank all of those who I worked with along the way. The remarkable kindness and generosity of the members of the National Park Service family will be held in my fondest regards for the rest of my life. Thank you!