

Our World-Underwater Scholarship Society® National Park Service Internship



Shaun Wolfe
2017



Our World-Underwater Scholarship Society® 2017 National Park Service Internship Final Report



24 flights, 99 dives, and 10 National Park Service (NPS) units. That was my summer. When I got an email from Stephanie Roach of Our World-Underwater Scholarship Society® (OWUSS) stating that I had been chosen for the internship, I was in disbelief. I also had no idea what the internship would be like. Kelly Moore, Park Diving Officer at Channel Islands National Park, told me to get ready for the summer of a lifetime. She couldn't have been any more correct.

As this year's Our World-Underwater Scholarship Society® National Park Service Intern I had the privilege of exploring the diverse submerged resources of NPS. The internship is an incredible and unique opportunity for a young scuba diver to explore a variety of underwater career paths in magnificent National Parks, while also contributing to NPS projects. The internship would not be possible without the generous funding provided by the Submerged Resources Center (SRC) and the administrative assistance from OWUSS. The SRC also provided me all of the scuba equipment I needed for summer, including a 65-pound Pelican case full of underwater camera equipment that allowed me to get images for the parks.

That Pelican case was particularly important for me. When Brett Seymour, SRC Deputy Chief, asked me if I'd be interested in lugging around a heavy camera case all summer full of advanced imaging equipment, I quickly told him yes before he could change his mind. I have always had a strong interest in photography (especially underwater), but the field is cost prohibitive. The Pelican case was my golden ticket- a chance for me to finally try my hand at underwater photography. Needless to say, I was speechless upon seeing the camera and scuba equipment that the SRC was sending me out with for summer. All of the SRC-provided gear was top of the line and being handed a wetsuit that said "National Park Service" down the sleeve admittedly made me feel *very* cool. I am eternally grateful for Brett Seymour, Dave Conlin (SRC Chief), and OWUSS for giving me the support I needed this summer to succeed.



Though imaging was what I focused on the most during summer, it was not my sole focus. I also had many opportunities to assist with biological, ecological, and archaeological research in both marine and terrestrial environments. However, the internship is inherently more than the experience within the park boundaries. Constantly arranging travel logistics with heavy and valuable equipment, meeting incredible people and joining new teams every week or two, and miscellaneous responsibilities like blogging and turning in expense reports all help make this internship unique. That being said, for the purpose of this report, I will be focusing on my experiences in the parks.

Our World-Underwater Scholarship Society® 2017 National Park Service Internship Final Report



After my brief stop at SRC headquarters in Denver, Colorado and finishing up my finals in school, I headed east to Biscayne National Park in southern Florida. At Biscayne, I worked with both the SRC and Biscayne natural resource team. With SRC, I helped them and their partners (Florida Public Archaeology Network, Southeastern Archaeology Network, and the Biscayne National Park cultural resources team) on their quest to find the *Guerrero*. The *Guerrero* was a Spanish pirate slave ship that forcibly took people from Africa and likely pillaged human cargo from other slave ships leaving Africa. As it was passing through the Florida Straits, it was spotted by the British navy



ship *Nimble*. The *Nimble* was looking for slave ships, since the slave trade was outlawed in both Britain and the US (though slavery was still legal in the US). As the *Nimble* fired warning shots ordering the *Guerrero* to stop for inspection, the *Guerrero* fired back. After a long cannon-filled fight, the *Guerrero* put up a lantern in the middle of the night (signaling surrender), knowing that the British navy would honor maritime law. The *Nimble* ceased firing that night and the *Guerrero* ran, beginning a five-hour chase in poor weather. The *Guerrero* was reckless in trying to escape and hit a reef at full speed. The collision tore the hull in half and toppled the masts, leaving the *Guerrero* to rest somewhere in or near Biscayne National Park.



The team finds a historic cannon. NPS photo by Susanna Pershern.

To find the wreck, the SRC used a magnetometer (essentially a giant, high tech metal detector) to find metal pieces that may have been left behind. When the magnetometer got a reading of metal on the seafloor (called an anomaly), we logged a GPS point so that a dive team could investigate it. After checking out hundreds of these anomalies, we found nothing. The good news was that there were hundreds more being found every day and eventually, the SRC team did find a historic shipwreck. Whether or not it was the *Guerrero* is hard to say.

I also had the privilege of working with the natural resource team at Biscayne. The plan was to do some coral and fish surveys, but the weather did not cooperate. Instead, we worked on the biggest invasive species management issue in all of the region- lionfish. The team and I culled lionfish living on coral

Our World-Underwater Scholarship Society®

2017 National Park Service Internship

Final Report



reefs in the park. Lionfish throw local ecosystems into disorder as they don't have natural predators in the area and have ravenous appetites for native fish.

My time at Biscayne provided me an opportunity to try something I've never done (marine archaeology), get used to my new camera gear with the help of a professional SRC photographer (Susanna Pershern), reconnect with a fellow OWUSS Intern (Claire Mullaney), and live in the comforts of the natural resource management world of which I'm more familiar. After 10 days of hard work and getting used to the blistering pace of the internship, I set off with the South Florida Caribbean Network NPS monitoring team (SFCN) for Dry Tortugas National Park.



Dry Tortugas National Park is one of the most unique stops I went to all summer where I worked with an equally unique team. The park consists of two main islands, one of which (Garden Key) hosts the largest brick structure in the Americas- Fort Jefferson. Constructed near the time of the Civil War, it was deemed irrelevant before construction concluded due to advances in heavy artillery that could penetrate the fort's walls. However, it was occupied by American troops many times through the years. The other main island (Loggerhead Key) is home to a historic lighthouse and some of the most fertile turtle nesting grounds I've ever seen.

I was here working with the SFCN team on their annual benthic/coral surveys including some 3D photogrammetry surveys. SFCN was particularly interested in coral disease within the park as there had been disease outbreaks in the past. Another part of the survey process was measuring rugosity (the complexity of the reef structure) and downloading temperature data from small devices that stay subsurface all year. Unfortunately, disease and algal cover were prevalent throughout the park. Fortunately, SFCN's research is exactly what the park needs to make the proper management decisions to mitigate future challenges for their corals.

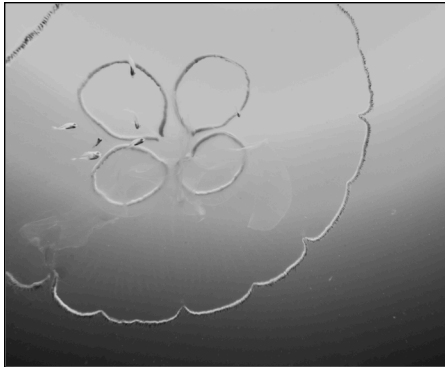


Dry Tortugas was a delightful visit as a photographer. Everywhere I looked, underwater and topside, there was something interesting to shoot. Some of my favorite images from summer came from this park and those images certainly helped Dry Tortugas become one of my favorite stops of summer. However, my favorite part of Dry Tortugas was working with SFCN. SFCN is a cast of characters that made me feel like part of their team.

Our World-Underwater Scholarship Society® 2017 National Park Service Internship Final Report



Moreover, they managed to walk the line between fun and efficiency as well as any group I worked with this summer.



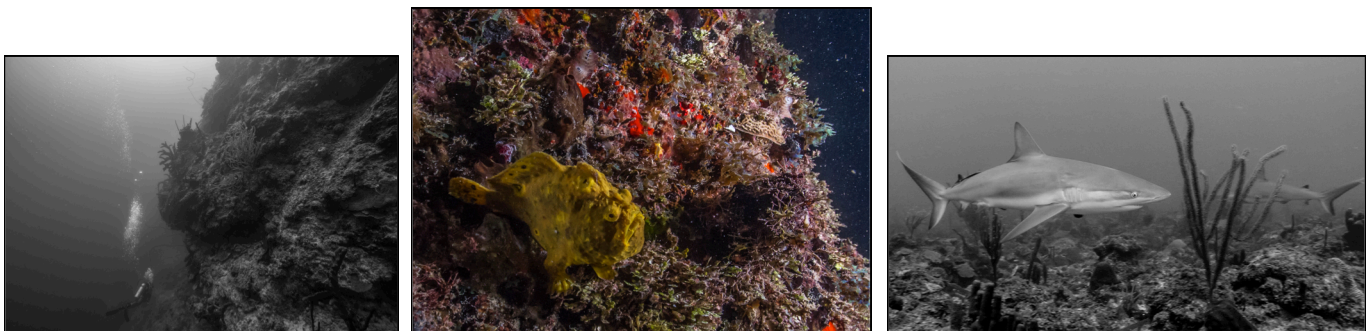
I wasn't ready to leave Dry Tortugas after 10 days, but my next stop was calling. After one night in Miami, I took off for St. Croix in the U.S. Virgin Islands where I would be working at Buck Island Reef National Monument and Salt River National Historic Park.

My work in St. Croix was incredibly diverse. The first project I worked on was with University of Florida doctoral student, Alexandra Gulick. Her dissertation is focused on the effects that turtle grazing has on seagrass communities. To study this, she monitors both grazed and un-grazed seagrass sites, as well as creating grazed sites by cutting seagrass to mimic turtle grazing. To account for variation between sites, Alex records temperature data and takes sediment cores, both of which may affect seagrass growth. Since I was only with Alex and her self-sufficient team for one day, my job was team photographer. Ultimately, Alex and the University of Florida were able to use these photos for press releases promoting Alex's work.

I then helped several master's students from the University of the Virgin Islands recover hydrophones from the south shore of the island. Hydrophones are the size of a 1-liter bottle and record the passing of tagged organisms. Fish, snails, and other organisms have been tagged with compatible tags all over the island by NPS, the National Oceanic and Atmospheric Administration (NOAA), US Geological Survey (USGS), and various universities. All of these organizations then share data to make/contribute to the most informed decision on how to best manage their fisheries on St. Croix. By retrieving the hydrophones, the university, NPS, and the other partners will have data on how many mutton snappers (targeted species in this case) are congregating where.



After spending one night with the Buck Island turtle team looking for nesting turtles, Zandy Hillis-Starr (Chief of Natural Resources) sent me out on a few photo assignments. She wanted me to get shots of divers at Salt River for the park to use as promotional material. Conditions that day were challenging, but I will never complain about being in the water with a camera.



During my second week, I worked with Jennifer Doerr and Ron Hill of NOAA Galveston on a conch tagging project. Conch are slow moving snails that are easy prey for many marine predators and even easier prey for

Our World-Underwater Scholarship Society®

2017 National Park Service Internship

Final Report



humans. On the human side of things, regulations have been put in place on St. Croix, but enforcement has proven difficult. The NOAA team is helping track the conch all over the island to find where they are aggregating. In doing so, they hope to protect those areas more and give the conch a brighter future.



During my second week, I also had a chance to explore Fort Christiansted- a historical fort that the Danes built when Denmark ruled the islands. NPS has installed excellent informational displays throughout its halls that informed my knowledge of the island's history. Starting in the 1700's, slave labor powered lucrative sugar cane and rum industries on St. Croix, helping Denmark out of a financial slump. The fort provided two services. First, it provided some security in case of a slave-led rebellion. Second, it protected the island/Denmark's financial assets from sea-faring attacks. As

time progressed and Denmark outlawed slavery, the island was less productive financially and sold to the US in 1916.

After St. Croix, I took the short trip over to St. John and Virgin Islands National Park. I was in St. John to help with the National Coral Reef Monitoring Program (NCRMP). NCRMP takes place in the US Virgin Islands every year. It is a big multi-year multi-agency project between NPS, Environmental Protection Agency (EPA), NOAA, and several universities. The NCRMP teams take data on the health of reef systems around the islands, including reef fish populations, coral growth and abundance, and water quality. By taking this data year after year, they can see whether the coral and fish populations are growing or shrinking and whether water quality is improving or not. When compared with weather and temperature records along with policy and management decisions, the NCRMP study can show managers and law enforcement how their decisions are impacting the health of the parks' natural resources (which in turn affects the entire region's natural resources).



Being in St. John meant also meant that I was reunited with the SFCN team, which I was exuberant about. Our full NCRMP team consisted of EPA, NOAA, and NPS staff. It was the largest team I worked with all summer. Therefore, I wasn't needed for data purposes. My role on the team was the photographer. I followed the team around taking fish, coral, benthic, and water quality surveys throughout the week, documenting their research. The EPA team was working on a particularly interesting project. They were studying the presence of microplastics in coral tissue- are corals consuming these tiny plastics?

Our World-Underwater Scholarship Society® 2017 National Park Service Internship Final Report



However, working with so many agencies across a wide geographic spectrum (DC to New Orleans to St. John itself) on one project doesn't come without challenges. Every morning we would have to go over each agency's protocol before we started diving operations. On the boat, we would have to fill out different dive logs to make sure we were in compliance with three different standards. Fortunately, the NCRMP crew had the perfect mix of personalities to make this work efficiently while keeping the whole team happy.



I was also lucky enough to be able to explore the terrestrial side of the park with a local and SFCN team member, Lee Richter. The terrestrial portion of the park covers approximately 60% of St. John and contains Native American (South American) petroglyphs, old sugar and rum mill ruins, and lots of rarely-explored jungle. The terrestrial cultural and natural resources of the park were impressive. What was even more impressive was how well maintained the ruins were, due to the work of NPS.

Reflecting upon my time at Virgin Islands National Park, Buck Island, and Salt River is difficult because I know that much of what I saw there has changed. After a devastating series of hurricanes, many portions of the parks were severely damaged. One NCRMP team member mentioned that my photos were likely some of the last photos of the reefs in the parks before they were damaged by the hurricanes. I feel equally honored and shattered to say that. The parks and the islands as a whole are beginning to recover, but it's hard not to wonder if they will ever be the same. Luckily, all NPS staff on the islands were reported safe during the hurricane events and I wish them and the residents of St. Croix and St. John the best as they move forward in these challenging times.



Virgin Islands National Park was my last stop on the Floridian/Caribbean leg of my internship. After a boat ride and two flights, I landed in my hometown of Los Angeles to go to Channel Islands National Park the next



Our World-Underwater Scholarship Society®

2017 National Park Service Internship

Final Report



morning. Prior to my internship, I began volunteering with Channel Islands National Park. It is also where I earned my blue card certification. Needless to say, I knew many of the people I would be working with that week and it felt like a bit of a homecoming to be back in the islands. During my week at Channel Islands, I lived aboard the *Sea Ranger II* with the Kelp Forest Monitoring program (KFM) team. KFM is a long-term ecological monitoring project that began in the park in 1982. The operation on the *Sea Ranger II* was the most complex and impressive monitoring operation I saw all summer. This was the only park I visited that used a full-face mask surface-supply system. Using this system, the team can collect approximately 6 hours of underwater data in just one hour since the diver can communicate with a surface support data recorder rather than stopping every few seconds to write something down.



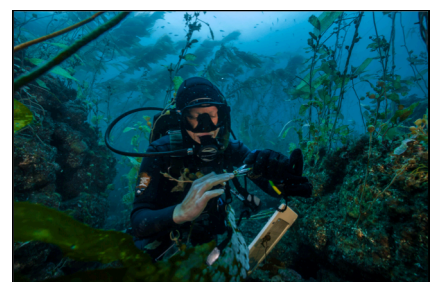
The full-face mask diver and several other divers on open circuit scuba gear (“normal” gear) conducted benthic (seafloor) surveys, taking data on sea urchins, algae, and anything else that composes the bottom using several different methods at each site. To survey portions of the seafloor that may be inaccessible, the team sets up artificial recruitment modules. Organisms that usually hide in cracks and crevices use these modules as habitat, giving the team a good idea of what organisms they are missing in other surveys. Urchins are particularly important in the Channel Islands. Over the past 50+ years, we have overfished many urchin predators. In turn, urchin populations have exploded. Urchins eat the kelp that are the foundation of kelp forest ecosystems and provide habitat and food for every other organism in the system. Too many urchins can spell bad news for a kelp forest.

There were also at least four divers that are completing a fish survey. These surveys were challenging. The divers surveyed 2000 square meters, from the bottom to the surface in just 30 minutes while writing down every fish they see. It was particularly hard when there were 500+ fish above me. How sure was I that my estimate was accurate? What does 500 fish *really* look like?



All of these measurements give a complete picture of how healthy an ecosystem is, what processes are occurring in that system, and why it might be that way. Over long periods of time, the KFM team can develop performance metrics for the submerged portion of the park and identify patterns in ecosystem deterioration and recovery. Because they have data from a few decades now in what is the largest dataset in the National Park Service, they can quickly determine whether something is an anomaly (a big deal) or just

part of the natural cycle of that site. If there is an anomaly, the park can look at old data to figure out why and what can be done about it. Ultimately, this project informs management decisions made by the park and helps them reassess old decisions to create the healthiest park possible.



Our World-Underwater Scholarship Society®

2017 National Park Service Internship

Final Report

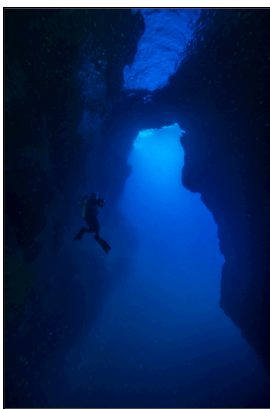


The KFM team lives together in close quarters on the *Sea Ranger II* for 5 months out of the year. Eating, sleeping, and diving together on a small ship for this amount of time creates a camaraderie that can't be replicated elsewhere. This was one of the most tight-knit crews I worked with all summer. It was also a team that manages fun and productivity as well as any. I was truly disappointed to leave Channel Islands National Park after one short week, but I was excited to shed 9mm of neoprene going to Hawai'i.



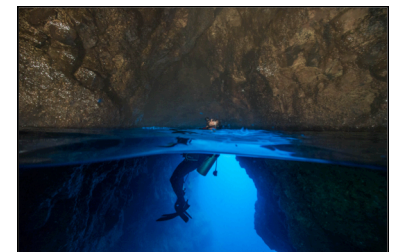
My first stop in Hawai'i was the beautiful and haunting Kalaupapa National Historic Park. Kalaupapa was founded as a place to send Hansen's Disease (leprosy) patients to die in the 1800s. Many of these patients were children who were ripped away from their families and then often disowned, as the disease was thought to be genetic and it was taboo to associate with the afflicted. Ultimately, over 8,000 people died at Kalaupapa. Today, there are 10 patients (that have been cured) that still reside in the settlement along with 80 state and federal employees.

The settlement is very small and difficult to get to. It is not connected via road to the rest of the island and is guarded by 3,000 foot high majestic sea cliffs. To visit, you must be sponsored in by one of the residents. I was at Kalaupapa helping Dr. Eric Brown (NPS Marine Ecologist) on a long-term inventory and monitoring project in the park. My responsibility was conducting benthic surveys using a camera at each site, while Eric worked on fish surveys. Once those tasks were complete, we measured rugosity of the site (how complex the sea floor structure is). Topside, we took water samples and used mechanical equipment to measure specific water quality parameters. These samples were sent to USGS, who analyzed them in a lab. All of these measurements give a complete picture of how healthy a site is and why it might be that way. More rugose sites (more complex structure) tend to have more fish. Sites with worse water quality usually have less coral.



I was also fortunate enough to dive a giant tunnel that goes through an entire offshore island just east of Kalaupapa. This was my favorite dive of summer and one that allowed me to produce some of my favorite images.

My second week at Kalaupapa was the only week of my entire summer that I did not spend in the ocean. I went with Eric and a few others into the backcountry of Waikolu Valley, on the far eastern edge of the park boundary. We were there to monitor Waikolu Stream. Specifically, we were looking at stream flow, water quality, stream bed composition, fish presence, and snail presence. Like many of the long-term monitoring projects of NPS, this monitoring project is done every year and enables the park to make the best decisions when it comes to managing their resources.



Our World-Underwater Scholarship Society®

2017 National Park Service Internship

Final Report



Camping under the stars of Waikolu was breathtaking and something that very few people get to experience. The stream surveys were often deep into the valley, which was incredible in its own right. We were very lucky to experience one evening where the entire Milky Way came out. I was even luckier that one team member, Anne Farahi, was interested in helping me create the photographs I wanted with the stars. This was a night of little sleep, yet simultaneously one of my most fond memories from the internship.



Kalaupapa was one of the most unique places I went this summer. With that, Eric and his team face unique challenges that don't exist at other parks- including simple things like getting groceries. I left Kalaupapa with the utmost respect for the entire team and how well they are able to function with such limited access to resources.



My next stop was Kaloko-Honokohau National Historic Park on the big island of Hawai'i. At Kaloko-Honokohau, I was helping survey sections of coral reef within the park that Sallie Beavers (Natural Resource Chief and Marine Ecologist) and Kaile'a Carlson (Biotech) have been monitoring for an extended period. The benefits of these long-term monitoring projects are numerous, as I have discussed throughout this report.

I also assisted Kaile'a with her 3D photogrammetry surveys. She is pushing the use of these surveys in the park, as they are much more robust, have a higher resolution, and provide more data than traditional benthic surveys. After a few days of surveys, I had the opportunity to explore the near-shore portion of the park that most visitors experience. The aiopio (traditional fish ponds) in the park were impressive. However, I was most interested in the abundance of green turtles in the park that spend their day grazing on sea grass in about one foot of water. These turtles were magnificent. I was lucky to be able to photograph them as they swam by my lens, paying no attention to me.

Near the end of my stay, I participated in an oil boom deployment training provided by the Coast Guard to NPS, the Coast Guard Auxiliary, and the Division of Boating and Ocean Recreation. It was a worthwhile training and a fascinating look into how the Coast Guard responds to an oil spill.



Our World-Underwater Scholarship Society®

2017 National Park Service Internship

Final Report



I spent my last day on the Big Island at Volcanoes National Park looking for live lava flow. I visited Volcanoes National Park a year and a half prior to this summer. It is one of my favorite National Parks. The one thing I didn't get to do my first time in the park was see live flowing lava. After 7 hours of hiking in the northern part of the park, I found it. I also got to witness live lava flowing into the ocean, which is one of the most spectacular sites I've ever seen.



Kaloko-Honokohau energized me in a way few places have. Maybe it was Sallie and Kaile'a. Maybe it was the Big Island of Hawai'i. Whatever it was, I am extremely grateful for it. It was also great to feel like I immediately contributed something to a park. Kaile'a and Sallie let me know many times over that they could not have done their fieldwork without me there. As much as I loved Kaloko-Honokohau, I was soon in-transit to Valor in the Pacific National Historic Monument on the island of O'ahu.



When most Americans think of the National Park system, they likely think of the grand valleys of Yosemite, the swamps of Everglades, or the bison of Yellowstone. Valor in the Pacific is a departure from this. The reason why visitors come to Valor in the Pacific is the cultural resources of the park. The park is home to several World War II memorials and historic sites, the most famous of which is the USS *Arizona* Memorial. The memorial is a white rectangular structure that sits above the submerged hull of the USS *Arizona*. The USS *Arizona* is not only a shipwreck and a memorial to the dead soldiers, but it is a

gravesite. 1,177 men died on board when the ship was attacked and remain within the *Arizona's* submerged hull.

The memorial is a place of quite reflection, learning, and mourning. In the back of the memorial lies a separate room with all of the names of those who died on the ship engraved into a marble wall. The sheer amount of soldiers that died in the attack on the ship was shocking. What struck me most about that room though was the list of veterans who survived and have chosen to be buried in the ship. Park Diving Officer, Scott Palowski, and his dive team help run a program in conjunction with the military to put the ashes of USS *Arizona* survivors in the hull of the ship to rest with their fallen comrades. This was the most unique program within NPS that I was exposed to all summer and one that NPS should be very proud of.



Our World-Underwater Scholarship Society® 2017 National Park Service Internship Final Report



The rest of the park seeks to put visitors in the shoes of those that were there on December 7th, 1944. The interpretation work at Valor in the Pacific was some of the best that I saw this summer. They utilize the park viewshed, 3D signage, and weaponry displays to show visitors what that day was like in all of Hawai'i.



During my time at Valor in the Pacific, I had the privilege of diving both the USS *Arizona* and the USS *Utah*. It was an incredible and sobering experience to dive each. The USS *Arizona* was particularly awe-inspiring. Due to the orientation of the ship on the sea floor and the still waters of Pearl Harbor, many historical items sit on the deck of the ship (the mason jar pictured above is an example). Furthermore, some of the open portholes in the hull allowed me to get a glimpse into what life was like on the ship on December 7th. Seeing those rooms was one of the most powerful experiences I had during my internship.



The guest experience at Valor in the Pacific is augmented by the neighboring USS *Missouri*. The USS *Missouri* is one of the most decorated battleships in American history and its main deck is where the Japanese surrendered at the end of WWII. As such, it is a beautiful compliment to the USS *Arizona*- the two represent the beginning and end of WWII. There is so much history on the *Missouri* and the ship brings the USS *Arizona*, USS *Utah*, USS *Oklahoma*, and other sunken WWII ships to life for park visitors. None of the visitors will get to dive these ships to see what they look like. The *Missouri* helps fill that gap.

My experience in O'ahu was the most emotional of the summer. I was 7 years old on the shores of Waikiki watching the USS *Missouri* make it's final return to Pearl Harbor. I hadn't seen the ship since. Both of my deceased grandfathers fought in the Pacific during WWII. Visiting Valor in the Pacific helped me understand their lives, and my history, better than I ever have. As much as I loved Valor in the Pacific National Historic Monument, my next stop at the National Park of American Samoa was my most anticipated stop of the summer.



I was exceedingly lucky to be invited to the island of Ofu with NPS in American Samoa. Ofu is 75 miles away from the main island of Tutuila. It is home to about 100 people and there is only one flight a week to/from the island on a 12-passenger plane. NPS and several research institutions

Our World-Underwater Scholarship Society® 2017 National Park Service Internship Final Report



are interested in Ofu because of what happens in its nearshore “pools,” where seawater gets held up at low tide and the interaction with the open ocean is limited. These pools heat up to above 90°F, which is much hotter than corals should be able to withstand. Yet, the corals in the pools are thriving. They want to know why the corals on Ofu are flourishing in these conditions and if they provide a glimmer of hope for corals facing a warmer ocean in the future.

Throughout my week in Ofu, I assisted the NPS team take water quality samples, tag and retag corals that are currently being studied, and take video of certain plots of reef for research purposes. The coral studies being done in Ofu are collaborative efforts between NPS and their university partners, so the data collected by NPS is shared with all partners.

Our secondary mission in Ofu was crown of thorns removal. Crown of thorns sea stars are native to American Samoa, but if their population is too big in any one area, they can eat/kill all of the coral reef in that location. Crown of thorns management and removal has been the primary objective of the NPS team in American Samoa (on Tutuila) for several years. After culling over 26,500 crown of thorns sea stars, they are considered effectively managed. However, the NPS team will still cull them if they are present in high numbers. At a few of our research sites, we spotted several crown of thorns stars and culled them. It was rewarding for me to see how this process works, since I have been following the culling effort in the park for several years.



The last thing that we did before leaving Ofu was a bit of marine debris removal. We spotted a large fishing net at one point in the week. This net had killed the coral that it was wrapped around and likely countless other coral heads and marine animals.

The team in American Samoa was one of the most enjoyable I worked with. They were consummate professionals but made me laugh at every turn. The park is one of the most remote and unique places in all of the National Park system. It was the perfect end to my summer tour- a beautiful landscape and equally beautiful seascapes with the best crew I could ever ask for. However, I wasn't done. In less than 36 hours, I would land in Washington D.C.



My trip to DC was a quick turnaround from American Samoa. That being said, it was truly an honor to be hosted by NPS in Washington. Cliff McCreedy, Marine Resource Management Specialist, set up two different

Our World-Underwater Scholarship Society®

2017 National Park Service Internship

Final Report



meetings for me to present at. It was the who's who of NPS employees and it was wonderful to be able to share the stories I experienced in the parks through my images. It was also great to see a different side of the Park Service and meet with Louis Rowe and Brian Carlstrom, who are in charge of diving and natural resources for NPS. Another bonus of D.C. was that I got to meet Stephanie Roach of Our World-Underwater Scholarship Society®.

My stop in DC was one of the most important ones for me. Without the support of the National Park Service, none of what I have done would be possible. In D.C., I was given the chance to show the NPS staff the result of what they had funded. It's impossible to explain the level of gratitude that I feel towards NPS and OWUSS for taking a chance on me and giving me this opportunity.

Now that my internship has ended, I am back in school finishing my master's degree at the Bren School of Environmental Science and Management at the University of California, Santa Barbara. A small part of me is happy to be settled in one place for a few months again. The bigger part of me can't wait to get back on the road.

This internship is unparalleled in the world of diving and aquatic science. There is no other way to have so many immersive experiences with so many teams in so many places in a few short months. The results speak for themselves. The past Our-World Underwater Scholarship Society® National Park Service Interns have accomplished incredible feats in ocean stewardship, research, and communication. I hope to live up to that standard as well and can't wait to pass on the tradition to the next generation.

To me, the value of the experiences I had with the internship is astronomically high. I made new friends and professional contacts all over the world, learned new skills and sharpened old ones, and gained clarity in my life and career. As I look to the future, I now know what I want to do. Photography and videography has always felt just out reach for me. It's always been cost-prohibitive. After the generous support I received this summer, I got to try it with some professional gear. I've spent my adult life educating myself in the fields of marine and environmental science. I've continued to learn about science in graduate school, but I'm now focusing on how I can best communicate the science to various audiences and tell a captivating story. I am currently producing a short documentary on my thesis project, putting some of the skills I gained during this internship to immediate use. With the contacts I've made through this internship, the portfolio I've put together, and the confidence I have in myself going forward, I'm excited to enter the professional world next year.

ACKNOWLEDGEMENTS

First and foremost, I owe infinite thanks to Brett Seymour, Dave Conlin, the entire Submerged Resources Center, and the support team at Our World-Underwater Scholarship Society®. Brett and Dave were my two mentors this summer and I couldn't have done any of this without their support and equipment. Naomi Blinick, Jenna Walker, Roberta Flanders, Stephanie Roach, Martha Sanders, Steve Barnett, and Chris Millbern of Our World-Underwater Scholarship Society® were instrumental for my success over summer. I also want to thank the prior interns- Bri Billups, Naomi Blinick, Tim White, Pike Spector, Julia Mason, and Garrett Fundakowski. They made me feel like part of the family from day one and their advice was vital for me

Our World-Underwater Scholarship Society®
2017 National Park Service Internship
Final Report



throughout the summer. I'd like to thank the following NPS teams for their dedication, generosity, patience, and willingness to bring me on board: Biscayne, Dry Tortugas, Virgin Islands, and Channel Islands National Parks as well as those at the National Park of American Samoa, Kalaupapa National Historical Park, Buck Island Reef National Monument, Kaloko-Honokohau National Historical Park, and Valor in the Pacific National Monument. I'd also like to thank Kelly Moore, Dave Chan and the Pennington Marine Science Center, John George and Camp Emerald Bay, Jose Bacallao, Sean Hastings, and Allison Horst for helping me get to this point. Extra thanks goes to all those that offered meals or their homes to me throughout summer. Last but not least, thank you to my family and friends for everything they've given me over the course of my life to enable me to take this opportunity.

