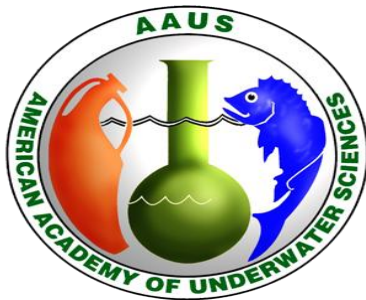


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Our World-Underwater Scholarship Society
Monterey Bay Aquarium Dive Safety Internship
Summary Report
2012



MONTEREY BAY AQUARIUM



I would like to begin by saying what a tremendous honor it was to be the recipient of the Our-World Underwater Internship at the Monterey Bay Aquarium. This summer was undoubtedly an experience that I will never forget. I learned so much during the brief few months of my summer internship by observing firsthand what it is like to work as a dive officer. I have no doubt that some of the experiences I gained as a result of this internship will help open doors for me that otherwise would not have been possible.

Let's start from the very beginning. I was on the downhill slide near the end of another busy semester here at the University of Hawaii at Hilo. My classes were going well, but I was starting to wonder where I was going to end up spending my summer. I had applied for several internship opportunities and I really was hoping that something would come through for me. I generally like to take summers off in order to work abroad doing something that gives me a break from classes but also relates to my field of study. As a marine biology undergraduate and avid scuba instructor, my summers usually involve marine conservation expeditions and teaching diving in remote locations.

This summer I was really hoping for an internship that would help me advance in my field. I have been applying for the Our-World Underwater Scholarship Society (OWUSS) scholarships and internships for the past three years and this would be the last year that I would be able to qualify. Each year that I have applied I have crossed my fingers and hoped for the best. This was the first year that the Our-World Underwater Scholarship Society was offering a Dive Operations internship at the Monterey Bay Aquarium and I knew that this would be particularly valuable for me since it was so closely in line with my career objectives.

Being both a recreational scuba dive instructor and scientific diver, I was looking for ways that I could use my marine science degree to work as a Dive Safety Officer (DSO) at an aquarium or on a future field project. I know that you can attend school to obtain a marine science degree or to become a scuba instructor, but there really is no formal degree program that you can enroll in to become a DSO. Those

opportunities are usually realized through years of experience teaching scientific diving and earning professional certifications. It is also important to work at an institution that is an organizational member of the American Academy of Underwater Sciences (AAUS). In order for me to acquire a better understanding of what a DSO does, I really needed an internship that would expose me to the daily tasks and responsibilities required to work in an occupational dive setting. I knew that this opportunity would afford me the best chance possible to see what I needed to do to get started on this track.

When I got the first email from George Wozencraft of the Our-World Underwater Scholarship Society, I was in my 'Writing for Science and Technology' class and I am pretty sure I gasped out loud! The e-mail said that I had been selected as one of the top finalists for the internship. It wasn't a done deal yet, but needless to say, I could not pay attention during the rest of the class. All I could think about was how this internship was the answer to everything that I had been hoping for. I had a good feeling inside about everything even though nothing was certain as of yet.

The following week I received word that I was going to have an interview for the internship. I sat down and tried to anticipate what was going to be asked and how I was going to respond. I also came up with some questions that I wanted to ask them about the Monterey Bay Aquarium Internship. The interview was a telephone conference call with George Peterson, who is the Senior Dive Safety Officer and the Dive Program Manager at the Monterey Bay Aquarium. I felt that the interview went well, but I still wouldn't know for another week whether I had been selected as the finalist.

When the good news finally came, I was thrilled and relieved, but now I had a lot of planning to do. I was going to have to move out of my apartment in Hawaii and find a new place to live in California. My internship was not scheduled to start until late May, but I wanted to get there about two weeks before then so that I could find a place to live and get settled into the area. I had never before been to California or any part of the West Coast, so this was an opportunity that I was really excited about in addition to receiving the internship.

George Peterson was extremely helpful with finding housing arrangements for me. I had been looking at several possible places online before I arrived, and he personally stopped by to investigate them and note their proximity to the Aquarium. This was important because I would not have a car during my summer stay. Luckily, George had a colleague in the Aquarium's Husbandry Division who happened to have a nice studio that was available for rent. It was reasonably priced and close to the Aquarium, so when I got there I was able to move right in.

Arriving In Monterey

I was greeted at the airport by Andy McLean, a longtime friend of mine whom I hadn't seen in quite a few years. Andy now resides in nearby Santa Cruz and was happy to see me and help me get settled into my new place. The real adventure began just a few days later for both of us as we were able to participate in an upcoming REEF survey dive trip. It was a busy next few days of studying to learn how to identify the species of the California region. The seminars that the REEF organization provided and the underwater ID cards that we received proved to be very helpful. Janna Nichols, who is one of the coordinators for REEF, was very enthusiastic and provided us with a warm and hearty welcome. Our first few dives were shakedown dives in order to get ourselves familiar with the cold water environment.



REEF Training Seminar At The Monterey Bay Aquarium

My first actual survey dive was conducted at what would become one of my favorite dive spots, Point Lobos Marine Reserve. I had a great time on my first REEF survey, and there I met a new friend named Pete Naylor. Pete is a seasoned diver for REEF and has been doing volunteer survey dives for many years. Pete gave me a ride out to our dive site and proved to be an exceptional dive buddy. Both of us are avid photographers, so we managed to get some pretty good shots while identifying and surveying many different species during our dive. This was the dive where I first got to see the beautiful white spotted anemones that are now one of my favorite subjects for underwater photography. Pete's favorite is the strawberry anemones, and today we were lucky enough to see both of them and count them on our survey dive.



White Spotted Anemone

Urticina lofotensis



Strawberry Anemone

Corynactis californica

REEF Surveys Onboard the Monterey Bay Express

REEF uses what is known as roving survey methodology. Now that I am trained in this, I can conduct REEF surveys anywhere I go in the world, as long as I am knowledgeable about the species that are present there. REEF has a wonderful program that recreational divers can participate in. They also offer free training online which helps you refresh and stay current with the latest field information. One thing that is noteworthy about this program is that it helps participants learn more about the species found in any region that they are diving in. Anyone can take this field knowledge and apply it to almost any area where one would go diving recreationally. Diving is so much more enjoyable when you know about what you are observing underwater. The surveys are a lot of fun and can be a great way to help you remember what you saw during your dives. . I had an amazing time conducting survey dives aboard the Monterey Bay Express and I met an extraordinary group of people in the process. One of the first people that I met

when we arrived on the boat was Dida Kutz who writes for Point Lobos Magazine and is a volunteer diver at the Monterey Bay Aquarium. . Little did I know at the time that Dida would turn out to be one of my good friends here in Monterey. Our team got to do some pretty amazing diving and REEF was one of the highlights of my summer internship experience.

One of my absolute favorite dive sites is a spot called the Carmel Pinnacles; it's absolutely breathtaking! The reef structure was beautiful and I definitely felt like I had just stepped into another world. Diving in the kelp forest for the first time was stunning as well. My friend Andy was my dive buddy during our week of boat diving aboard the Monterey Bay Express. We both loved the diving and braved the cold water in our wetsuits while we continued to don as many layers of neoprene as we could get our hands on. During the surface intervals we poured hot water into our dive booties to try to warm our feet back up. The diving was incredible and we saw lots of species that we were able to record on our surveys. We both invested in drysuits as soon as that week was over with due to the cold water. At a chilling water temperature of less than 50 degrees, it was too cold for us to continue to dive comfortably without the proper exposure protection that a drysuit provides. My adventure had started out with a bang and my internship had not even officially started yet. I had already gotten involved with something really fantastic that I had been referred to by the Aquarium. I could not wait to see what would come next.



REEF Monterey Express

Getting Started At the Aquarium

My first day at the Aquarium involved completing lots of new hire paperwork and learning general orientation procedures. I was then introduced to all of the Dive Operations staff. The staff includes George Peterson (DSO at the Monterey Bay Aquarium), Justin Kantor, Scott Chapman, James Bonovich and Patrick Wade. Justin is in charge of general dive gear maintenance and fill station operations and Scott supervises the Aquarium volunteer dive program. James is in charge of the Underwater Explorers Program (a scuba program for 8-13 year old children) and Patrick Wade assisted him with the program. I was very impressed with the Monterey Bay Aquarium staff that was all friendly and professional. I attended the orientation program at the Wave House where I met Miki Elizondo, who is in charge of conducting the orientation training for all of the Aquarium interns. Miki was very nice and she has been involved with the Aquarium since it first opened in 1984.

One of the things that I did every day as part of my internship was to serve as surface support for the divers who were conducting feeding presentations.. The Monterey Bay Aquarium conducts dive feeding

presentations in the Kelp Forest Exhibit twice daily at 11:30 a.m. and 4:00 p.m. Scott did an excellent job of training me how to set up the equipment in preparation for a dive show. I observed what the duties of the dive tender are during the show and what should be done to break down the equipment afterwards. The submerged diver is tethered and wears a Guardian full face mask that is fully equipped with communications so that he/she can talk to both the docent that is interpreting the dive and to the dive tender that is overseeing on the surface. It did not take long for me to become comfortable tending the dive shows on my own in this surface support capacity. This soon became a big part of my daily internship experience.



Tending the Dive Shows

Learning Fill Station Operations

The next task that I assumed during my internship was to begin working with Justin to learn about the fill station operations. There are special considerations involved when working with high

pressure scuba cylinders. The Monterey Bay Aquarium follows strict standards that require all people who fill scuba cylinders to complete proper OSHA required training in fill station operations. I reviewed my PowerPoint training material and passed a written exam that the Aquarium requires all of its scientific divers in the program to successfully complete. I knew that it was very important to familiarize myself with how the Aquarium fill station operates. Part of my duties as an intern would include assisting with the cylinder fills. Although I have prior experience filling scuba tanks, I have found that every fill station and compressor is different. In the past it has always taken me a little while to familiarize myself with a new system. By the end of my internship, filling cylinders had become like second nature to me.

Gaining Experience With the Under Water Explorers Program

Soon after my internship began, I became involved with the Underwater Explorers (UE) Program. This program was something that I enjoyed and found very rewarding right from the start. James Bonovich, who is in charge of running this program As a part of their training UE instructors are required to pass a swim test and complete a rescue skills circuit, which I got to participate in. I also participated in a DAN First Aid for Professional Divers course that covered oxygen administration, first aid, hazardous marine life, AED, and emergency procedures for diving related injuries. We practiced administering emergency oxygen and basic life support. This served as a refresher course for me and gave me the chance to practice and review my rescue and accident management skills. Our group had fun while role playing in various emergency action scenarios. I enjoy doing rescue drills because it is fun to practice handling all of these potential situations. This is good training practice for emergencies because, although they rarely happen, it is always best to be prepared for them when they do. Some of the skills we practiced were unconscious diver at the surface, egress, and gear removal for an unconscious victim.

The Aquarium provided excellent staff training for the Underwater Explorers Program (UE). During the initial training, I got to use my imagination and role played as an eight year old child going diving for the first time in the Aquarium's Great Tide Pool. I got to play the part of an excited youngster while the instructors fitted me with equipment and took me on a tour of the Great Tide Pool as part of an instructional exercise. I was able to simulate problems so that the instructors could respond to them in water. This experience gave me some insight as to what to expect from the UE Program. At first I was a little apprehensive about leading small children in the water. This would be my first experience working with small children in an 'in-water' environment and I was not quite sure what to expect and was eager to see how this program would run.

The UE kids were between the ages of 8 to 13 years old. I received training so that I would be able to fill in as needed should we be short an instructor at any time. The UE program involves taking children on surface scuba swims in the Great Tide Pool. The UE kids are fitted in child sized DUI drysuits and they do not wear any weights. This keeps them warm and allows them to breathe on scuba equipment with their faces in the water while floating on the surface. The Underwater Explorers Program allows for a great experience where kids get to try scuba out in the Great Tide Pool exhibit. This program allows them to observe intertidal marine organisms in a safe, controlled environment while under the direct supervision of dive staff members.

As my internship progressed, I got to see what working as an UE Instructor was all about and I enjoyed working alongside all of the other instructors in this unique program. I found the UE staff to be a fun and dynamic team of dedicated professionals who also understood how to safely show the kids a great time in the water. I also gained a broader positive perspective regarding working with smaller children. I found that it was easier to hold onto the child's hands and tow them around while they put their face in the water as opposed to holding onto their tank and guiding them as I am accustomed to doing with adults. With the smaller kids, you can hold them in your arms while they swim. Some of the kids were

so tiny and were absolutely adorable in their drysuits and little sets of child sized scuba gear as they were ready to go exploring. I know that many of these children really enjoyed this experience and had fun even if they were a little apprehensive of the water at first. I loved taking the kids for a tour around the Great Tide Pool and teaching them about the marine organisms. Some of the creatures we looked at were bat stars, long spine stars, giant green anemones, gumbo chitons, and hermit crabs to name a few. After assisting with the Underwater Explorers Program, I feel that I am now better prepared to teach and work with children by getting them engaged in learning about marine life at an early age.



Underwater Explorers Program

Cold Water Dive Training and Reef Check California (RCCA)

One of the greatest overall personal achievements that I gained this summer was getting the exposure to diving in a cold water environment. I acquired the experience I needed to become proficient while using a drysuit, and I got to see firsthand all of the challenges and beauty that diving in the

Monterey Bay has to offer. The Kelp Forest ecosystem was a brand new environment unlike anything I have ever been in before. The beauty of the Kelp Forest, along with the richness and diversity of species found here, left pictures that will forever remain in my imagination. I learned about dozens of new fish and invertebrate species during my survey dives that were conducted over the summer. I truly value the training that I received with both the REEF and Reef Check organizations. Getting to work with both of these entities separately while learning how to conduct surveys using both protocols was very rewarding to me.

In June I received further training with Reef Check California, which is another fantastic non-profit organization. RCCA uses an entirely different method of conducting surveys using buddy teams and transect lines than I was used to. At the Aquarium, I received further training to enhance some of my skills as a scientific diver through RCCA. This component of my internship was very helpful towards furthering my skills as a scientific diver. I greatly enjoyed the training sessions and getting to participate in the survey dives. I learned about RCCA protocols and the history of RCCA itself. I am finding that some of the California protocols differ from Reef Check Tropical, which I am familiar with. One of the biggest contrasts is that the target fish and invertebrate species are completely different in the California region. It is not necessary to wait 15 minutes after you lay out the transect line to begin monitoring fish, as opposed to Reef Check Tropical. Reef Check California allows for the fish survey to begin while the surveyor is laying out the transect line. I enjoyed learning how to identify all of the fish and invertebrates prior to our survey dives. There were a lot of rock fish species to learn. I was pleased that I got some prior exposure to this by participating in the training sessions and diving for REEF using the roving diver methodology. I appreciated the fact that I will get to build upon my experience as a result of learning something new on every dive. I suspected that the abalone were going to be some of the hardest invertebrates to survey because you really have to know what to look for to be able to properly ID them. Most of the other survey methods are similar to Reef Check Tropical, with the exception of the substrate types, and learning how to distinguish the different types of seaweeds from varieties of algae. All in all, I

could hardly wait to start surveying. I felt that doing the REEF Roving Diver surveys and training for RCCA were some of the highlights of my summer internship.



Reef Check Transect Line

One thing that proved to be challenging for me was learning how to dive in a new drysuit and working with new equipment while mastering new skills. Even as a dive instructor who has logged many dives, I struggled with this in the beginning. I was used to diving in tropical water with less weight and a minimal amount of dive gear on. Thick gloves, hoods, undergarments and drysuits are not needed in the tropics. At first, all of this proved to be quite a challenge for me. It was difficult because everything I had on, including my fins and BCD, were brand new to me. When on dives, I have always been the first one in the water and ready to go, so my new gear frustrations proved to be a little problematic initially. Learning to use a drysuit was almost like starting back at square one. Instead of filling the instructor role, I felt like I was once again a student diver learning new skills. The buoyancy felt different and I needed more weight to descend properly, and everything else seemed unfamiliar as well. As such, I was very

grateful for this training and still had an amazing time being underwater despite my frustrations with using new gear that I wasn't yet proficient with.

Understandably, I was eager to overcome this challenge. I opted to dive as much as I could in order to get more comfortable with my new gear while in this cold water environment. I would go diving almost every weekend with friends during my time off. I always managed to have a lot of fun during these events and I equally enjoyed the experience doing RCCA dives.



REEF CHECK CALIFORNIA

Maintenance Diving at the Monterey Bay Aquarium

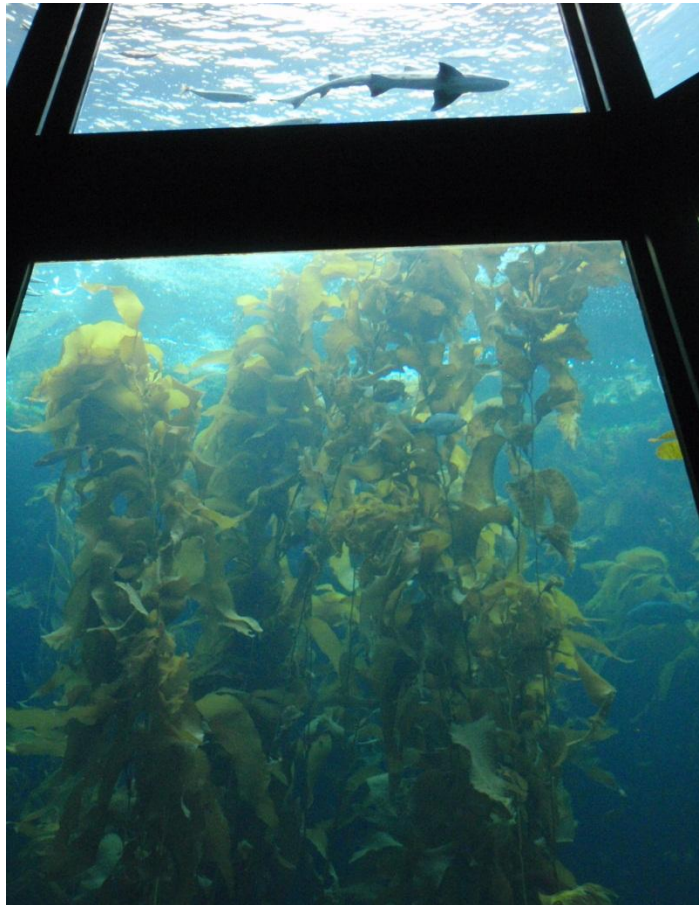
During my time at the Aquarium, I had the pleasure of diving every Tuesday and Thursday evening doing maintenance dives along with the volunteer divers. This gave me the chance to meet some really great people while working with the volunteer dive teams. Every week this was something I always looked forward to doing. Throughout my internship, I got the opportunity to dive in all of the main exhibits at the Aquarium. One very important duty was keeping the windows clean underwater. Now this might seem like a daunting task, but when you use a suction cup and float around in an exhibit while guests wave to you and take your picture, it is actually great fun. I also learned how to use the siphon, which is similar to an underwater vacuum cleaner. The siphon is also equally important in helping to keep the exhibit floor nice and clean. Housekeeping underwater is so much more interesting than cleaning your room!



Maintenance Diving

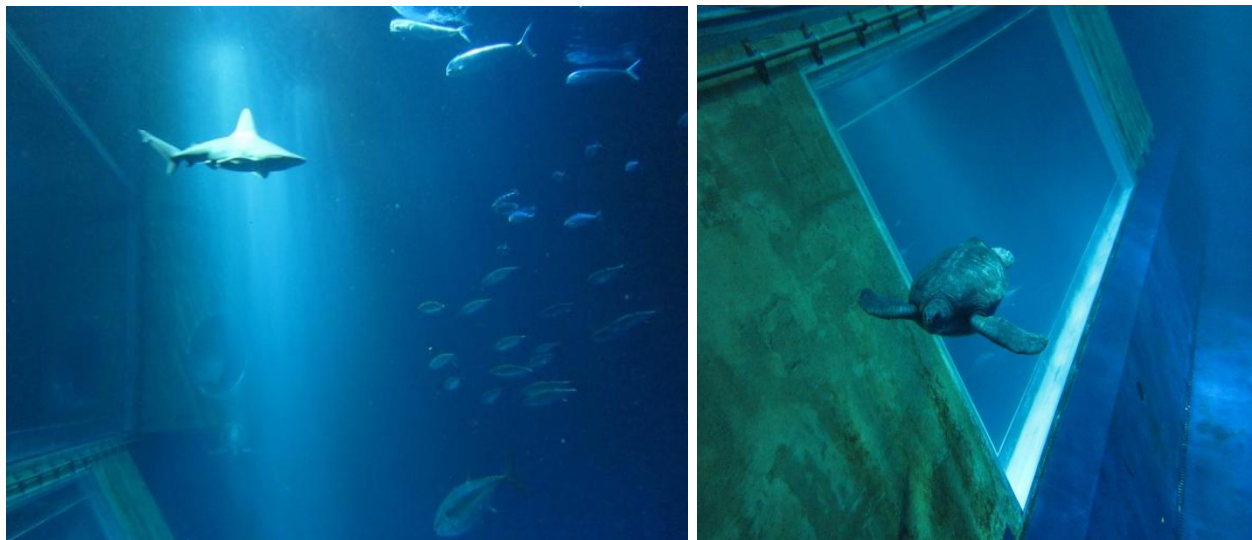
Diving Inside the Aquarium Exhibits

One of my favorite exhibits here is the Kelp Forest Exhibit. The Kelp Forest Exhibit represents an example of what you would see while diving in Monterey Bay. This exhibit is usually our primary focus during our maintenance dives as the Kelp Forest Exhibit receives a lot of sunlight and consequently it experiences the greatest amount of algae growth. The windows quickly become dirty so we always give them the utmost attention. We always made an effort to concentrate heavily on this exhibit during the maintenance dives because it is one of the most popular exhibits here at the Aquarium.



The Kelp Forest Exhibit

The Open Seas Exhibit is another place that I really appreciated diving in. It was designed to represent the pelagic realm of the open sea off of the coast of Monterey. Being inside this exhibit really does make you feel like you are transcending into another dimension. I was always eager to dive this exhibit because the water is warmer and I really enjoyed diving with the hammerhead sharks and schools of tuna and Mahi mahi. I have never before had the opportunity to dive in the ocean with tuna or hammerheads, so it was a real treat being inside the exhibit with them at the Aquarium. It is interesting doing maintenance in this exhibit because the resident green sea turtle often loves to get very up close and personal with the divers. That's why it always paid to have a really good dive buddy to keep the sea turtle off the other diver who was polishing the windows. We also had a *Mola mola* in this exhibit, also known as an ocean sunfish. This was another creature that I had always wanted to see in the water. This exhibit was really fascinating and the best thing about it was, with a water temperature of around 70 degrees, you didn't need to wear your drysuit because you stayed nice and warm in just a neoprene wetsuit.



Diving In the Open Sea Exhibit

Wrapping It All Up

On the last day of diving here at the Aquarium, I got to do something new that I had always wanted to do - which was to dive inside the Sardine Exhibit. The Sardine Exhibit is small but mesmerizing because the whole thing consists of a giant school of sardines. Brianne Fitzgerald is one of the Aquarists at the Aquarium and needed a dive buddy to help clean this exhibit so she asked me if I would go. One thing that is different about diving in the Sardine Exhibit is that you are on a hookah system while doing so. Also, you dive without your fins on when you are inside the Sardine Exhibit, which can be quite awkward the first time you try it. Because the water here is so shallow and there is a lot of current flowing through it, extra weight is needed to stay down. I found that it was quite important to use ankle weights to keep your feet from floating around during this dive. The trick was to dive properly weighted. The suction cups also help you to stay in place while moving around. Brianne cleaned the top part of the windows and I stayed below her while cleaning the bottom sections and the floor. It is quite important when cleaning the windows in the Sardine Exhibit to wipe the glass before placing the suction cup down, otherwise you will leave smears. I found the Sardine Exhibit to be very slippery inside the enclosure and I enjoyed the challenges of my first dive inside the Sardine Exhibit. She told me that I did a good job cleaning it with her and she was happy to have had my assistance.



Sardine Exhibit

Reflection and Acknowledgements

This summer was an experience that I will never forget. I have met so many new people during this adventure and made some lasting impressionable memories. Sometimes I wish that I could go back and do it all over again because there are so many things that I have learned as a result of this internship that have helped me grow both personally and professionally. This summer went by faster than I could have ever imagined. I learned so much during my time spent at the Aquarium and I left feeling like there was still much more left for me to learn. Three months of diving in an unfamiliar environment and experiencing a new place for the first time barely scratches the surface of everything that there was to do. All of the experience that I received should prove to be very valuable down the road.

The last day of my summer internship at the Monterey Bay Aquarium felt very strange. It was sad to be leaving the place where I had spent such a memorable summer. I knew how much I was going to miss being there and interacting with all of the people I had met along the way. I will never forget the Aquarium or the people that I have come to know there during my summer internship. I will be eager to come back to visit and I am certainly going to miss the cold water diving in the Kelp Forest ecosystem. Everything associated with this internship has been an incredible experience that I feel will be so beneficial to me in the future. I would like to thank all of the Dive Operations staff at the Monterey Bay Aquarium for providing such a rewarding opportunity for me to work with them throughout the duration of my summer internship. Each of them provided me with a valuable perspective about the duties and tasks associated with running an occupational diving program that would otherwise not have been possible. I learned so much every day from interacting with each of them. My experience here at the Aquarium has been far more than just an internship. I have built a valuable network of friends in a new

and different place. I am very thankful for my friend, Dida Kutz. We had some great times diving together both at the Aquarium and for fun on the weekends. I have learned a lot from Dida. She is an inspiration to me as an active diver with years of experience doing field surveys. I got to hear her life stories and she shared with me lessons from her personal perspective that I will be able to learn from. I am also thankful for my good friend Christopher Chin from the non-profit COARE organization, whom I reconnected with during my summer internship. We shared some pretty amazing diving adventures together and had a lot of laughs both above and below the surface. Christopher is certainly one of the most positive people I have ever met and I enjoyed spending time with him and gaining some further insight into what it takes to run a non-profit organization. I also am grateful for my connections with the Our-World-Underwater Scholarship Society. I can't wait to come back to California for another visit, but first it's back to Hilo for another semester of school. I am thankful for the personal lessons that I have learned over this summer. The take home message that I have gotten from this experience is that no matter what may happen, I must finish my degree and continue on my path of higher education. I feel that I have grown substantially inside as a person over this past summer and as such, I will maintain a positive outlook as I return to Hawaii to dedicate the next year and a half to achieving the goals I have set for myself as a marine science major.



Sunset Over Monterey Bay