

Our World Underwater Internship Final Report

Aquarena Center

San Marcos, TX

Summer 2008

## Introduction

I am David Bone, a junior at Barry University majoring in sport management diving industry. This summer I was privileged enough to be awarded an Internship at Texas State's Aquarena Center through Our World Underwater. The summer's experience is one I will carry with me for the rest of my life. I arrived in Texas on a Sunday after traveling 2 days from Miami not knowing what to expect. I had never been to Texas before and was looking forward to start work on Monday. The only preconception I had about Aquarena was that the water is a chilly 72 degrees compared warm waters off the coast of Miami which I have grown accustomed.

Aquarena surprised me on Monday morning when I came in for the first day of work. The description of Aquarena on the Our World Underwater website does not do the park justice. I remember on the tour of the grounds, standing at the boat dock looking into the clearest water I have ever seen, an abundance of underwater flora was present as well as a few big lazy bass. At this point I said to myself "the time here is gonna go by real fast". Later that first day, I received my diving for science book and watched *The River of Innocence* a film by Ron Coley with underwater scenes from Aquarena.

The diving for Science book is important because everyone who wants to dive at Aquarena must pass a class room session (even Dr. Sylvia Earle) about the biology, archeology, and geology of the area. With the book came instructions to read it all that night so I could have a private lecture and take the tests the next day. On day Tuesday

I took the classroom session with Erica Meier and passed. Now all I had to do was pass the underwater buoyancy test, which was scheduled for Wednesday. I spent the rest of the afternoon diving in the training area (this is the only part of the lake that divers who have not passed the diving for science class can enter). Finally I had entered the water and experienced the real Aquarena. The two weeks before I went to Texas were spent diving in Bonaire for my summer class, tropical diving environments. Even after being in a pristine tropical paradise I thought diving at Aquarena was magical. Diving there is something everyone should try. This was the perfect setup for my third day at work.

One can hardly call working at Aquarena "work". First of all you are outside almost all of time. Yes Texas is hot in the summer but if your job is to dive and you dive almost every day, than entering the chilly water will resolve any heat issues. On my third day of work I went through the underwater obstacle course and passed. After which I did another three dives, first cleaning the glass of the glass bottom boats. The second dive involved cleaning a site called cream of wheat, a collection of low pressure springs and finally a leisure dive around the training area again. These first three days really put my mind in gear to perform a wide variety of tasks and numerous dives.

For my work I had a few duties which will be discussed in greater detail later. I usually worked alongside Ethan who is in charge of Aquatic Maintenance. We usually performed a variety of tasks from cleaning the lake to restoring parts of the park. Another job which I performed was giving glass bottom boat tours to the patrons of the park. Other things which I accomplished included feeding the fish as well as planting

aquatic vegetation in the 5400 gallon aquarium. I taught part of the diving for science class as well as guided divers during their first few dives. I learned how to work the compressor and air bank system to fill cylinders. These will be discussed in more detail later on.

### **All about Aquarena**

The Aquarena Center in San Marcos, Texas is a pleasant recreational and education center hidden between a golf course and the foot hills of Texas hill country. The park is run by Texas State University and has a past which dates as far back as 11,000 BC. Aquarena is a special place because it s home to the second largest spring system in Texas. The springs are located at the bottom of Spring Lake which was dammed during the 1840's by General Edward Burleson. If one were to visit Aquarena today they would see remnants from one of America's first amusement parks. One of the visible structures is the submarine theater which still sits in the water, no longer in use. Leftovers of the gondola ride appear on the grounds with the wires stretching to the hills on the opposite side of the lake. However in the 1990's Texas State University bought the property and tried to operate the Aquarena as an amusement park for two years. This did not work out well considering the competition of Sea World, Schlitterbahn (a huge water park) and Six Flags all within an hour's drive. Once the university closed Aquarena as an amusement park and opened it as ecological education center the Aquarena I know was born.

Aquarena is busy during the summer months many people from all over Texas, the country and world come to visit. While I was giving a boat tour I had a family from

India on vacation aboard. Besides the normal patrons who visit Aquarena there are school, church, camp and scout groups, not to mention just about any other type of group, which visits to learn about the aquarena's delicate ecosystem.

Aquarena has a few parts to the park. First there is the glass bottom boat rides. There are five boats in the Aquarena fleet; each boat can hold twenty passengers. Every half hour between 10 and 50 passengers will show up for boat ride. The boats leave every thirty minutes so depending on the crowd at least one boat is giving a tour. The tours last a half hour and consist of a driver maneuvering around the lake trying to show the crowd Aquarena's best features which may include turtles in the water, a great blue heron stalking lunch on the bank or some divers below cleaning a spring. The driver has to do more than drive; he is also responsible for a thirty minute spiel. This spiel must contain facts about the park history, flora, fauna, archeology, along with anything else the driver has learned about; it is not a memorized speech but a dynamic conversation. The last part of my tour consisted of directing the clients to other parts of the park

Upon one of the hills is the Texas river center which houses the river system institute, the part of Texas State University which contains Aquarena. On the first floor are exhibits which tell about the Edwards Aquifer long with other water issues. Water from the springs along with drinking water for over two million Texans comes from the Edwards Aquifer. Another attraction is the aquarium. The aquarium house four of the eight endangered species found at Aquarena along with a 5400 gallon tank which houses many of the commonly found fish from Spring Lake. The last part of Aquarena

besides the gift shop is the wetland board walk. The boardwalk floats in shallows of the spring lake where many fish, birds and reptiles can be seen (I even saw a beaver at



dusk).

Sunset

On

The

wetlands

board walk

Aquarena is one of those places which are touched by magic. At any time during the day one can see an abundance of wildlife. The water of Spring Lake can calm a person down and slow the pace of life. The shade provided by the Bald cypress trees on the shore offer refuge from the hot sun.



Red Eared Slider hiding in the Cambomba plant off the boardwalk

### **My eclectic Experience**

During my stay at Aquarena I had the chance to participate in a vast array of experiences. Ron Coley as well as Ethan did an excellent job of providing me many opportunities both inside and outside the park. I had the chance to meet and work with some great people like Eric Peterson and Marcus Gary. On the average day, if there was one, I would work with Ethan during the morning then spend the afternoon diving. However, if we had a dry day or I had to work on the boats I tried to schedule a dive before work because I loved to dive in Spring Lake so much. Throughout my

stay I had the chance to partake in quite a few different experiences which proved to be extremely entertaining.



Above: Ethan rooting the pipe. Below: myself in stagnant water



First we had to run a pipe up the drain and into the top pond for a supply to the pump. Again this sounds easy but it took us two days with a rented roter to clear a path for the pipe. Once we were able to feed the pipe into the top pond, our next step was to connect it to the preexisting pump and pipe, requiring a lot of work in the stagnant

One of the projects which I worked on with Ethan during the part of the summer was Uncle Buck's Pond. This pond system consisted of a top pond and lower pond about 100 yards away from the shore that was filled with stagnant water. Our job was to pump water from the lake into the top pond, have the top pond cascade into the lower pond then drain into the lake. Although this process sounds easy it provided a few headaches for Ethan and me.



water. Once we had everything hooked up, things became easier. Another two days cleaning the muck from the pond and rearranging some plants water started to flow through the whole pond, waterfall down to the lower pond then drain into the lake. The



Top pond flowing into the lower pond (Finished)

importance of this project was more than aesthetic. In the pond were wetland plants whose seeds are critical to plant new wetland plants in the shallows. By growing the plants in a controlled environment then flushing the seeds into the lake, we were able to start program which has a high potential for success.

A more exciting opportunity I had this summer was to meet and work with Marcus Gary a renowned cave diver who is a past dive safety officer for the USGS. Marcus is working on his PhD in hydrogeology and has been conducting experiment throughout the Edwards Aquifer to trace how the water moves underground. Luckily for me working with Marcus involved diving in the springs to remove "bugs" (packets of charcoal which pick up dye) and replace the bugs with new ones. While conducting these dives I was truly diving for science.



Another experience I had with Marcus was a cavern dive to Jacob's Well in Wimberley, Texas. Marcus

had to dive with one of his coworkers to set traps for the Texas Blind Salamander, one of the eight endangered species at Aquarena and the first species on the endangered species list. Ethan along with me were able to accompany them on the dive. Marcus's coworker was going to do a 140 ft cave dive while the rest of us stayed at 70 ft and within sight of the opening. This dive ended up one of the most memorable dives of my career.

On track with diving, I was able to receive exposure to using lift bags while at Aquarena. Again Ethan and I were involved along with two diving for science volunteers. Our goal was to move 3 one ton pieces of oddly shaped concrete within the day. Ethan and a volunteer were topside support while I accompanied another volunteer in the water. The job took all day and provided some great education on proper techniques as well as teamwork and communication. I wish there were additional jobs similar in nature during my stay at Aquarena.

Another line of work which seemed all too short was working with Eric Peterson. Eric is the Marketing director for the diving programs at Aquarena and has a long career in diving. I had the pleasure to work with Eric during the diving for science classes. During the classroom session I would teach the aquifer section of the diving for science while Ron taught the rest. Then during the afternoon session I filled the tanks for the potential volunteers after their buoyancy assessment. On the dusk dive I usually led one group of divers while Eric led another. These dives were orientation dives. On the following morning I would again lead another dive this time to demonstrate how to properly clean a spring. All of my experiences with Eric and the diving for science class

were outstanding. I was able to learn some skill which should come in handy for my future as a dive professional.

The last memorable experience I am going to write about is the night dive at Spring Lake. This dive again was one of the best dives of my life. During the full moon myself, Ethan along with some volunteers

On Friday the 18<sup>th</sup> of July there a full moon filled the sky. A full moon at Aquarena means one thing, night dives. A few creates come out at night while the rest sleep but. These include the catfish, the American Eel and the Freshwater Prawn. The eel's are born in the ocean, the females travel upstream to find a home, once sexually mature they travel downstream, into the ocean and mate. I was lucky enough to see one during a night dive then again a few weeks later during dusk. Although it is in the shrimp family, freshwater prawn can become about a foot long. They truly are jumbo shrimp. These creatures are nocturnal and are quite spectacular. We were lucky enough to observe one of these during the night dive. the dive was a huge success, our the three of us that went had a great time, spent more than hour underwater and turned off our lights for the majority of the time.

### **The educational aspects**

There is much to learn when spending the summer at place like Aquarena while working with people like Ron Coley, Ethan Chappell. I could write another ten pages on the endangered species along with the karst formations of the aquifer but I feel this is not needed. If one visits Aquarena he will learn these things. Ron did give me many

opportunities to expand on my knowledge, by taking an underwater naturalist course to signing me up at water conference in San Antonio. However I do want to point a few special things I did learn. First, I learnt that a smart man learns from his mistakes while an intelligent man learns from the mistakes of others. I had to repair boat number seven, for some reason the prop was not engaging. After a quick dive the problem was diagnosed, the sheer pin was missing. After finding a spare sheer and cotter pin, the next step was to suit up for diving so I thought. However Ron wanted to teach me a lesson on packaging. Before I entered the water I had everything I needed the two small pins along with a pair pliers neatly tied or strapped to me. The way in which they were attached prevented me from losing them because I could unattach myself after I put the parts in place. The repair was seamless and took only a few quick moments. Lessons like these are usually not free but are very helpful for the rest of one's life.

While at Aquarena I absorbed plenty of knowledge on how fragile the ecosystem there really was. If the springs dried up or became polluted or some non native invasive species like hydrilla or Cryptocoryne were introduced the whole ecosystem could be destroyed. Most importantly I learnt that knowing facts about an ecosystem is not nearly as important as what one does with the ecosystem. At Aquarena the most important message being taught is quite broad. The goal of the park is to educate the visitors about how special Aquarena really is and that by making a few small lifestyle changes like using less water they can preserve places like Aquarena for their kids. In the end, if the Texas blind salamander dies many people will not have a clue, but if that animal dies it means trouble for humans because something has gone terribly wrong.

## **Afterthoughts**

Unfortunately I could not write about everything from my summer. I did too many different things from visiting wineries in the Texas hill country to visiting the Alamo and San Antonio zoo. I also logged over 100 dives, more than one per day. I tried to make the best of my visit by not confining myself to my apartment. I also tried to learn as much as I could during my stay. This worked out really well, I found myself at the park during my days off so I could dive with the volunteers. It seemed like every week there was some new huge project that had to be accomplished whether restoring a pond or photographing newly found arrowheads. My summer in Texas was truly amazing. I will cherish the memories for the rest of my life.

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