BEING AN AQUARIST

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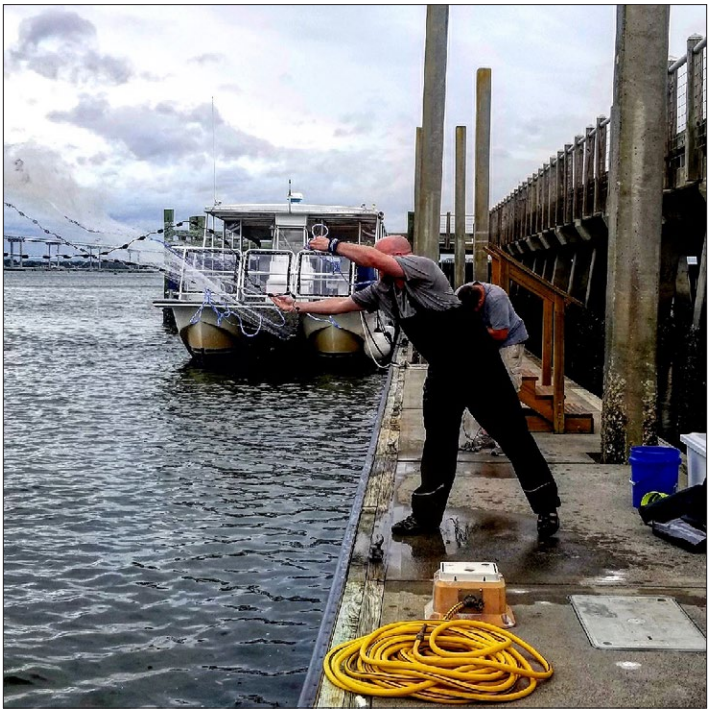
Charleston, South Carolina

My job requires quick critical thinking and problem solving. It's challenging and it's dirty, but most of all, it's fun. My job title is aquarist. Being an aquarist requires you to become a biologist, SCUBA diver, plumber, electrician, woodworker, nutritionist, vet tech, designer, and so much more. You'll learn how strong your back is, how flexible you are, how good you are at fitting into (and out of) tiny spaces, and you'll have an endless supply of cuts and scrapes on your hands and legs. You become a master multitasker by draining one tank, filling another, all the while trying to fix a leak on another system. Your uniform clothes become covered in spots of bleach. You're wet, dirty, and smell like fish the entire day. You become immune to the smells of fish and PVC glue. You learn what fish waste-filled tank water tastes like when you have no other option than to start a siphon with your mouth. You have to know mathematical conversions, water chemistry components, parasites, viruses, bacteria, and other diseases. You have to know the biology of animals and learn to stomach the blood and guts when you are required to do a necropsy or even prep food. You learn to be exceptionally clean and aware of any sort of cross contamination between tanks, yet you maintain your own sense of organized chaos in backup areas. After all that I know what you're thinking – that sounds like way too much, why would I ever want to do that? Because there are so many fun things about this job that outweigh any negative aspect.

My job at the South Carolina Aquarium located in Charleston is to collect, transport, quarantine, and keep healthy native freshwater fishes of South Carolina. I also maintain the life support systems that run the freshwater backup tanks and exhibits. Though I specialize in freshwater fishes, I am cross-trained in working with saltwater animals, mammals, birds (including raptors), amphibians, and reptiles (including venomous snakes). I get to help care for endangered sea turtles, and I get to help feed sharks. We collect almost everything ourselves here at the aquarium so I get to go seining in the rivers and streams and I get to go deep sea fishing. I feel like I get to do everything I've ever wanted to do as a kid working with all these different species.

My works hours are 7 am until 4 pm Monday through Friday. On top of that, I'm also on call 24 hours a day, 7 days a week, 365 days a year. If there is ever any kind of emergency with my systems, I can get called in. There is some occasional weekend and holiday work. I also volunteer on the aquarium hurricane ride-out team so whenever there is a threat of a hurricane (or the rare snowstorm), I volunteer to stay at the aquarium for the duration of the storm to make sure everything is safe and operational. After all, animals need care every single day. When I started this job in 2014, I told myself early on I'd make a plan and schedule which days I was going to clean each tank and I told myself I would stick to that plan. That plan lasted maybe a week. There is no such thing as a typical day as an aquarist. You can walk into work at 7 am with the best laid-out plan on what you're going to do that day and by 9 am that plan is out the window and the next thing you know you're in a wetsuit trying to catch a 4-foot wide stingray that's splashing fishy saltwater all over your face. An aquarium is an extremely dynamic place. I am in charge of 23 different tanks at the South Carolina Aquarium, 7 of which are exhibits and 16 are backup tanks. The freshwater exhibits range from 200 gallons

Completing a water change and cleaning of our Reservoir exhibit.



Cast netting to collect shrimp for an exhibit.

Assisting with sea turtle removal for medical checkup.

Feeding the birds in the saltmarsh exhibit.

Catching a Horseshoe Crab while collecting in Charleston Harbor for saltmarsh fishes.

Setup of our husbandry transport van.

all the way up to 4,000 gallons. The freshwater backup tanks range from 50 gallons to 2,000 gallons.

My general day consists of getting in early and beginning my husbandry duties. I maintain a 4,000-gallon outdoor mountain forest stream exhibit that requires me to do daily cleaning. Because it is outdoors and in the public area, I have to have it cleaned and opened by the time the aquarium opens at 9 am. Cleaning this consists of vacuuming the gravel to get as much dirt and detritus out that I can, scrubbing rocks, cleaning out leaves that fall from the trees above, and cleaning the acrylic windows to provide a quality viewing experience. After that, I make sure all of the acrylic windows of my other exhibits are clean and in great shape for the guests that day. I'll then move on to other husbandry and tank maintenance duties. I'll do water changes, gravel vacuum, scrub and clean the rest of the tanks that I see need to be cleaned that day. Every tank gets cleaned at least once a week, sometimes more. At some point during the day, I will move on to feeding the fish. This requires me to prep the food first. I feed mysis shrimp to my smaller fish (shiners, darters, etc.). My larger fish (bass, gar, sunfish, trout) get whole or cut smelt most days and krill other days. I cut the smelt into quarter to half-inch sized pieces. I'm extremely lucky, as are most of us at the aquarium, because I have volunteers several days of the week that will come in and feed the fish and do some maintenance. Feeding the fish may be one of my favorite tasks of the job, but I am still extremely grateful when I have a volunteer come in and help out by feeding. This allows me to get other tank maintenance needs or other projects done. This also allows someone who has always had a passion for animals, but who may have taken a different career path, a chance at helping just a little bit with what we do here at the South Carolina Aquarium.

On the medical side of things, there is always a medical procedure occurring at the aquarium. Whether it's the rehabilitation of a sea turtle or a surgery of a Golden Topminnow *Fundulus chrysotus*, we are always doing some type of medical work. We work on small shiners, large sharks, sea turtles, venomous snakes, Bald Eagles, River Otters and everything else in between. Medical emergencies can pop up at any time. I can walk in one day and notice a fish acting out of the ordinary. I'll notify our vet staff, which consists of a senior vet, associate vet, and vet assistant. We'll then schedule a time to check out the fish or check it out immediately. Our vet staff are some of the most dedicated people I've ever

Stephen and colleague seining for blackwater swamp fishes.

Robust Redhorse collected in the Pee Dee River near Rockingham, North Carolina.

worked with. They will do anything to help an animal.

Another part of my job allows me to do field work. I get to go out and travel the state of South Carolina to collect fishes to bring back and put on display for educational purposes for the public. I also get to travel to other various places for conferences, meetings, and other conservation field work. I participate in the Robust Redhorse *Moxostoma robustum* conservation project on the Pee Dee River in Rockingham, North Carolina, each year. My job as an aquarist allows me to be indoors and view the amazing fishes on a daily basis but also allows for time to get out in the field to see the fishes in their native habitat. The day-to-day cleaning of the tanks can get very monotonous, but every once in a while things come up to throw some spontaneity in there like shark moves, turtle releases, exhibit construction and repair, among other various projects.

I love my job. I get to live in the amazing city of Charleston, South Carolina, and work with some of the best people. My coworkers are some of the most dedicated, creative, and innovative people around, and are extremely passionate about what they do. Not a lot of people these days can say those four words: I love my job. I can and I am so lucky to be able to. My days can be filled with ups and downs, life and death, desk work, and field work, and I usually never know what any one day will throw at me, but I wouldn't have it any other way.

NANFA News (continued from page 2)

2019 CONSERVATION RESEARCH GRANT AWARDED

This year's Conservation Research Grant committee (Bruce Lilyea, Derek Wheaton, and Michael Wolfe) reviewed six proposals that addressed important issues in ways consistent with the aims of the grant and selected the two that they felt would have the most immediate impact and best represented NANFA's mission.

The Conservation Research Grant was awarded to Austin Hannah from Austin Peay State University and Pamela Hart from Louisiana State University.

Hannah's study asks "What is the mechanistic relationship between decreased Blackside Dace (*Chrosomus cumberlandensis*) occurrence and elevated water conductivity caused by surface mining?" The species has been extirpated from 31 streams since its 1978 description. Though conductivity is known to be a main factor, a better "understanding of the relationship between the impacts of elevated water conductivity and reduced survival/fitness of Blackside Dace at early life history stages is necessary for future conservation efforts and development of species-specific" protections. Results will help identify impaired streams that may impede movement of wild Blackside Dace populations and assist Kentucky, Tennessee, and Virginia in developing stricter water quality standards for mining operations. Laboratory experiments will be conducted using the Southern Redbelly Dace (*C. erythrogaster*) as a surrogate for the federally threatened Blackside Dace because of the two species' ecological overlap and close phylogenetic relationship.

Hart's study, "Environmental DNA detection of the Southern Cavefish species complex: Implications for conservation and aquifer connectivity," will use eDNA (collected in Alabama, Tennessee, Georgia, and Kentucky) to determine the presence and abundance of *Typhlichthys subterraneus* in places that are difficult or impossible to survey using traditional methods. It will create an eDNA protocol for the Southern Cavefish, allow evaluation of distribution and movement among cave and aquifer systems and apply the technique to assess the conservation needs of these vulnerable species. Though eDNA is used in fisheries biology, it has not been used to study cavefishes. "By using this contemporary technique...we can protect these North American endemic cavefishes, determine the applicability of this technique to aquatic cave-obligate species complexes, and increase resolution of aquifer and cave connectivity to an unparalleled level." In addition to helping these species, the work will improve research methods and lead to better policies for conservation of cave-obligate species.

The committee wishes to thank all who participated in this year's Conservation Research Grant process.