Interview with Mark Vassallo

Zoology at School and in the Real World

DS: Dan Smith, Interviewer

MV: Mark Vassallo, subject

DS: Oral interview, October 19. The subject is Mark Vassallo. The topic is biology and zoology, both in college at NMU and as a career outside. Why don't you tell me a little bit about yourself Mark?

MV: Hi my name is Mark Vassallo, I was born and raised in the Metro Detroit area, in Allen Park Michigan, a downriver suburb. I went to high school at Allen Park High school, and played soccer, and basketball briefly freshman year. And I enjoy the arts, and the outdoors

DS: Okay and your subject here in college is zoology?

MV: That's right Dan. I became interested in animal science and zoology, and biology in general at a young age, maybe around twelve or thirteen years old I guess.I got heavily into herpetology, that's the study of reptiles and amphibians. I began collecting and learning about different species of reptiles and amphibians as a hobby. I began working at critters pet shop when I was about eighteen or nineteen, right when I graduated from high school, during my senior year in high school. From that point I enrolled in Henry Ford Community College, which is located in Dearborn Michigan. I spent two years there, and my major at the time was pre-professional biology. I then decided to transfer to Northern Michigan University, to pursue a degree in zoology, this is after I was also accepted to Michigan State, which I was too poor to attend. And my loans didn't carry me as far there as they would have at Northern's prices, so I came to Marquette when I was about twenty years old and started doing the program up here. I came into contact with several professors who were also interested in herpetology. One of these was Doctor Brent Graves, who is mainly a behavioral ecologist, but one of his specialties is rattlesnakes, and the behavioral ecology of rattlesnakes. At that point I was also a member of the Michigan society of herpetologist, well actually at that point I wasn't. For the two years before that I was, but at that point I wasn't due to lack of funds, couldn't pay the membership fees. I enjoy the coursework, it is difficult at times, with a lot of chemistry, and physics, but I enjoy learning. And hope to continue to learn well after college. The field where I hope to be involved in would be in the zoos, working in some sort of keeper position mainly in contact with animals. Keeping or research, one of the main goals of the zoos these days is to kind of transition into more conservation minded zoo approach to creating zoological institutions. The main things are emphasizing education and actual species propagation, being in which the species' survival plan was thought up as kind of a cross institution conservation plan which involves zoos breeding endangered species and being paired up with organizations like the U.S. fish and wildlife service to reintroduce the animals. I'm familiar with this because my senior year at NMU I did a three month internship at the Detroit zoo at the National Amphibian Conservation Center. There I was in charge of maintaining a breeding population of Atelopus Zeteki, which are Panamanian Golden Frogs which are actually instinct in the wild and are only found in zoos. They are from

central America, mainly around Panama. There aren't any left in the wild and we, the Detroit Zoo that is, are one of five or six institutions involved in breeding these animals. My main duties were maintenancing the terrarium, performing any minor medical procedures that the vets were unavailable to attend to. Water quality is a big issue with amphibians. I guess I should continue with what I was talking about, kind of lost track there. Oh yea the species. The different species were Atelopus Zeteki which I just mentioned. The Wyoming toad and we also worked with the Puerto Rican crested toad. So those are the three species that I'm referring to when I'm talking about my duties. I performed daily water changes, water quality tests. Different duties such as that, like I said. Helping out the veterinarians when they needed it. One procedure that I was allowed to perform in the presence of a veterinarian was inserting a fin tag which is kind of a small electronic sensor device. It's a small cylindrical radio transmitter of sorts, its placed directly under the epidermis so it's kind of half inch intrusion into the back of the toad, it's done with a pretty large gauge needle, and its pretty challenging to do, so that was definitely a new experience for me. But I was able to do that and learn about what was going on, with a lot of these different techniques on small animals. Another project I worked on a lot while I was there, I was allowed to conceive, design, and construct an actual exhibitfor the public, which was open for viewing to the public floor. A lot of the facility at the NACC is actually behind closed doors, but there is also a public area. The behind the scenes areas are mainly for the different rooms containing the other amphibians I mentioned earlier, it kind of takes up a lot of space, and a lot of the facilities there are behind the scenes. This particular exhibit was for the public, showing dart frogs, which I'd had some experience with before, in my earlier days of being a hobbyist, so I was able to talk with the associate curator about the problems they were having with the exhibit, and what could be fixed. One of the main issues was improper draining, it wasn't draining or circulating the water very well, so I had to kind of change the under level, there were kind of two levels, kind of a false bottom to the water system so we had to kind of direct the plumbing so that the water flow was more direct towards the drain. That was the big issue that she wanted solved and besides that, I got to do pretty much everything on my own. I learned a lot from that about plumbing, especially using the sieve. All the ins and outs of doing plumbing with pvc pipe, I made a lot of mistakes but I was able to correct them as I went. It involved a lot of cutting and reglueing but it eventually worked out. I ended up putting in a waterfall, which fell down to a graded area with an island, and that was kind of the skeletal structure. It then sifted through a layer of sand to a false bottom which filtered a lot out. It was graded downward into a collection system. The rest was filtered out by a pump with a reverse osmosis filter and then pumped back up to the top, where it recycled. I forgot how big the filter was but it was really really big. It had some protein skimmers, zoolite, and a couple of other chemicals in it. I had to add ammonia, and put into place proper dissolved minerals, stuff like that. From there it would be pumped to another pump, which would send it up to the waterfall, and the process would continue. And that was the main part, the bulk of the job was figuring out water levels, pressures, stuff like that. Making sure the water was flowing correctly, and making sure that the water quality was right, getting chemically treated properly, and as efficiently as possible. Also, I had

to make sure the artificial environment stayed in place. In this case I used sphagnum moss, and those small terrarium grasses and some metal, for the substrate and that was used for the body of the tank. There was a large pool at the front of the exhibit. The waterfall flowed down a pretty large rock pile, I used big slabs of slate which had water cascading off of them, gave it a sort of pleasing image of a torrential stream of sorts. I propped it mainly with tropical plants, some vermilliads, creeping ivy and a couple of different types of water plants, I put some water lilies in there, some Olympiad, and also a couple different species of fern were put in there as well. After several weeks I had to start testing the water to make sure it was safe to put the animals in. As soon as that was done, the animals that had previously been living in the tank before I ripped it apart to use it were put in the back, called warm holding which is where a lot of the animals were held during their, or animals that aren't out front on exhibit or they just don't have space for are normally put in the warm holding area. There were three species of the dart frogs in there. The most poisonous one was poison golden frogs, which is normally referenced by natives as being the most toxic and the reason they call it the poison dart frog is because I forgot what tribe it was, but in south central America they used darts that had been rubbed on the back of these frogs in order to toxicly paralyze prey items, which is where they get there name. There were some other species in there as well. Dendrobates minutes, which is a smaller species from the northern tip of South America. So before we were actually able to put that in, we had to swap it with a kitchit which is a parasitic fungus which is actually becoming a huge problem ecologically right now for the entire globe. It's a parasitic fungus that causes death in amphibians by infiltrating the skin. Amphibians respirate largely through their skin, cutaneous respiration, is what its called, and this fungus actually gets in there and clogs up their pores so that effectively it suffocates the amphibian. This has been a real big problem, not only in small populations of amphibians but also in large, previously robust and healthy populations of amphibians. They're having problems with entire populations getting wiped out, so, pretty big deal. So if it gets into an institution like the Detroit Zoo it could cause a lot of problems, particularly with us being involved in the species survival program, and those animals I previously mentioned, the frogs and toads. Being involved in conservation, it is very important that they keep their eyes opened for diseases and parasites such as kitchit. And that's about it.

DS: So right now, the stuff that you're doing, that's basically what you want to be doing for your professional career, and the stuff you were doing with that internship. Do you feel like your experience with the program at northern prepared you for that, or was it more your experience working at the petshop, your time as a hobbyist or a combination of them all?

MV: I would say it would definitely be a combination of both. You can't really replace actual experience with booklearning, that's for sure. When an animal is biting you or wrapping around you, your reflex is the most important thing in that situation to know what to do, and actually working with the animals is really important, and also to really understand what snake you're working with, and what species – is it venomous or not, you know, a lot of that stuff's important too so paying attention in school, making sure you know your information about the animal

involving its ecology and behavior and stuff like that so it's definitely a combination of both, both spheres of experience. But a lot of that did come into play while working in the zoo definitely. I think having the instincts was the most important thing and was the thing that they were most impressed with, with myself is that I was able to jump in quickly and know what to do with the filters and a lot of that, which was because of working at the petshop when I was younger and just being a hobbyist in my basement, that type of practical experience is really important. And also, you know, a lot of the water chemistry was really basic chemistry. I'm in organic chemistry as part of my curriculum, but its not so much of that going on, its more basic water chemistry involving acids and bases and different neutralizations, a lot of the stuff you learn in basic chemistry. But nonetheless, having the knowledge from those classes was definitely helpful in mixing different animals with different chemical signatures from their water, so that was important.

DS: You went to Henry Ford and Northern, so did you make that transfer out of necessity or did you do it just because.

MV: It was partly that Northern Michigan and Michigan State, and I think probably Western were probably some of the few colleges in Michigan to offer a zoology degree, and Northern was I think actually one of the better ones next to Michigan State. Michigan State is definitely the foremost Veterinary and Animal Science school in Michigan, maybe even the Midwest. It was more of a decision to head up to the Upper Peninsula really, because I had travelled up there and really enjoyed it. I had seen it, seen the campus and it seemed to be more my style and that being in the natural environment, and having more opportunities to go camping and hiking and doing other outdoor activities was something that was really important to me, so that definitely weighed heavily in the decision. But yeah that and the degree, it offered the degree through a respectable program and I knew that Doctor Graves was up here. Another favorite professor of mine was Doctor Alec Lindsay, he's into genetics, and he's a bird guy, he's an ornithologist, so one of his research areas is he's studying the phenology, the genetic code, and the descendants of loons, so there's all these different species of loons, the common loon, the Canadian loon and he's trying to find a link, a common ancestor. That's the main blunt, or brunt rather of his research, and I had him for evolution which was a really enjoyable class. And when I was in it I actually got the opportunity to sit in a question and interview section with Dr. Shaun Carrol, who is actually right now one of the big evolutionary development scientists and he's actually kind of a new wave thinker in what he's proposing. With development, evolution and genetics: he's kind of fusing them all together. He was actually the author of my genetics textbook so it was really cool to be able to talk to him, and he gave a really good presentation about Henry Bates. So it was really cool to be able to meet him and shake his hand and know kind of what he's working on and he's actually a personal friend of Dr. Lindsay, so it was really cool to be able to sit in and talk to him about really really pressing issues in the field of evolution and development.

DS: And what other factors led to you coming to NMU?

MV: So basically it was the whole thing: the environment, the degree, met some great friends along the way and its worked out in the end. I enjoy being up in Marquette as opposed to being downriver in the Detroit area, at times its just better, you can see all the stars at night, stuff like that's really important to me. Henry Ford was more of just a jumping off point for me to see what I was capable of. I was paying for college at that time and had to prove to my parents that I was sort of worth the investment. High School was an interesting time for me so they weren't sure. But I finished up at Henry for with like a 3.4 or so and it worked out.

DS: well that should wrap it up thanks for your time Mark

MV: No problem Dan