

ENS Justin Rusch
JRCOSTEP Summer 2017
California State University Northridge
Tucson Area Office
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My name is Justin Rusch. I am a senior at California State University, Northridge (CSUN), where I am pursuing a Bachelor of Science in Environmental and Occupational Health. After hearing about the JRCOSTEP from a CSUN alumnus who worked for the U.S Public Health Service, I knew I had to apply. My duty station was the Tucson Area Office, Indian Health Service, and my preceptor was LT Chris Caler.

I spent most of my time either working with LT Caler, or doing independent work on various projects provided by him such as updating educational brochures, revising training materials, or writing reports. I also worked closely with CDR Martin Smith, Director, Environmental Health Services Branch, Tucson Area Office, and Feliciano Cruz Jr., Public Health Emergency Preparedness and Injury Prevention Coordinator, Pascua Yaqui Tribe (PYT).

Mr. Cruz, a Pascua Yaqui tribal member himself, introduced me to the process of conducting seatbelt observations and how that data was used to assess legal compliance and community awareness. He described how his program oversaw the distribution of child safety seats and he even allowed me to assist him with some child safety seat installations. I also had the opportunity to review and analyze five years of data from the fire and police departments which gave me even more insight on injury prevention.

The biggest project I worked on was monitoring mosquito populations on the Pascua Yaqui Reservation. In essence, I was responsible for collecting weekly data to build the first comprehensive baseline mosquito population. The goals were to identify all mosquito species present, assess their population densities over time, map their geographic distributions, and test them for diseases. The information would then be used to help the PYT plan for potential future outbreaks, determine if immediate mitigations were justified, and educate the community on the importance of reducing mosquito breeding grounds and preventing bites.

During the first couple weeks, LT Caler and I would drive around the reservation deploying mosquito traps and collecting them the next morning. Once I knew my way around the reservation well enough not get lost, I began doing this on my own every week. During the first half of summer, most of the traps remained empty, except for one that was near standing water. Combined, all the traps were collecting about 100-200 mosquitos a week. After the monsoon season started in mid-July, the mosquito population exploded. One week, I caught almost 1,500 mosquitos, with 1,112 in a single trap. Interestingly, I trapped and identified several *Psorophora howardii* (mosquitoes). It was a species known to inhabit Arizona, but one that had not yet been seen on the reservation before.

After I got the mosquitoes back to my office, I began sorting them by species and gender. Once sorted, I'd run a RAMP test on each location's sample(s) to check for the presence of West Nile virus (WNV). I wrote and delivered a public service announcement on the Tribe's radio station to warn people about the presence of WNV and how to protect themselves.



I assisted LT Caler with numerous facility and home inspections. The largest facility I inspected was the wellness center. In one day we managed to inspect three pools, a playground, a kitchen, and all of the other internal spaces. We inspected the kitchen at the local Head Start Center, a behavioral health building, a dental clinic, and some off-reservation homes. We conducted radon testing and sampled drinking water.

In mid-July, I attended the Arizona Infectious Disease Training conference in Phoenix. The first day, the attendees were split into groups and given a scenario packet. Each group was made of professionals from various fields of public health, including environmental health, epidemiology, nursing, and infection control. As a group, we worked through the scenario, which ended up being a hepatitis A outbreak,

and we made decisions on what we would do if this were a real outbreak. The remaining two days were spent viewing presentations on research done by professionals in their respective fields. During the three day conference, I was able to meet other environmental health officers, county health personnel, and tribal health officials.

I received hands on experience with soil testing, which I knew very little about before. After borrowing a portable x-ray florescence machine (XRF) from the local Air Force base, we tested the soil at various gardens around the reservation. While we didn't test all the gardens in the time I was there, of those we did test, none had elevated levels of lead, arsenic, or mercury.

Overall, I thoroughly enjoyed my time as a JRCOSTEP. One thing I've learned is that communication is key. Being an environmental health major, I know and understand the basics of the health issues we face. Whether it is vector-borne disease or food safety, many people have some knowledge about these topics, but it often falls upon us professionals to describe these concepts in greater detail. I liked being able to relate what I learned in class to the real world. I highly recommend this externship to anyone looking into a career in environmental health.

