

Student Story - Kathryn Herold-Daniels  
Ecampus Student since Fall 2017

I live on Vashon Island in Puget Sound, Washington, with my wife and our tiny dog in a tiny house in the forest. In the summer of 2016, I attended an event sponsored by our local nature center that featured research projects by high school students and presentations by resident retirees who had long careers in conservation. The director of the nature center gave a presentation on the effects of shoreline armoring on sand-spawning forage fish. At that point, I was hooked! I started volunteering for the forage fish project and over time, my role expanded to other areas and I became a paid employee of the nature center as a research assistant. I gained a much better sense of what fieldwork entailed, how exciting science communication is with a curious audience, and how transferable many of these skills are even when the focal species or habitat changes. The work inspired me so much that I wanted to learn everything I could about marine biology, ecology, and conservation.

Growing up, I didn't have anyone in my family who went to college - certainly no one in my circle as an adult had any interest in the sciences - so I really had no one to ask about careers with animals. Although I wanted to be like Jane Goodall when I was a kid, I didn't really know what she did other than that she lived with chimpanzees. As I got older, I thought the only career a person could have with animals was as a zookeeper or a veterinarian and I wasn't interested in either of those. Nor was I interested in issuing hunting or fishing licenses which is what I thought "fish and wildlife" amounted to. Imagine my surprise when I found Oregon State's Ecampus and their Fisheries and Wildlife Sciences degree program!

I looked through the classes that were offered and nearly all of them sounded amazing. I also researched the jobs that a Fisheries and Wildlife Sciences degree would prepare me for and I realized it was exactly what I was looking for. I was ecstatic; not only could I finally go back to school and finish my

undergraduate degree, but I could do it from my living room while studying subjects that truly inspired me, something that my previous and somewhat random collection of college courses never did.

Marine mammals are wholly fascinating to me; there is so much we don't know! I love the process of asking questions, doing the research, and presenting the results. When I was looking for an intensive internship, I wanted it to have a research component with a marine mammal focus. I applied for a six-month Sea Otter Research and Conservation internship with Monterey Bay Aquarium. My wife and I talked about what we could do financially if I did get the internship. Because the Monterey area is so expensive, I would need to bring the more reliable of our two vehicles, and continue to take my online classes. All the struggles would be worth it was an opportunity of a lifetime and the experience would be invaluable. After a couple interviews, I found out I got the position. I was so excited!

The Sea Otter Research and Conservation team was made up of four paid employees, two interns, and a small army of volunteers who rotated through the days of the week. We covered an approximately 22-mile (35 km) stretch from Monterey Bay down to Point Lobos. A typical work day began by picking up a catadioptric scope and tripod, a telemetry radio and antenna, an iPod to record sightings, and a backpack with various necessities like a compass, anemometer, and a parking pass. Working in pairs, my colleagues and I would set out for a day of tracking wild, tagged otters along the coastline.

Some of the otters we observed were collected as abandoned pups or injured adults, rehabilitated at the aquarium, tagged, and released. Others were tagged as part of ecological research projects in collaboration with United States Geological Survey and University of California, Santa Cruz. The tag is small and positioned between either the first and second toes or the fourth and fifth toes, on either or both flippers. This positioning, in combination with unique tag colors, help to identify individuals so they can be tracked over time with their locations and other information recorded. Some

otters had radios surgically embedded in their abdomens during the tagging event, but the batteries die eventually so not all otters with tags have a working radio.

My favorite days began in the inner Monterey harbor. There was a resident otter the team affectionately named Tewks after one of their long-term volunteers, who had passed away. Tewks had a new pup we were keeping an eye on to make sure it was nursing successfully and gaining weight, but we also monitored the area for human disturbance. The area is popular with paddleboarders and kayakers, and as we are all aware, there is nothing cuter than a fluffy new otter baby. After covering this area and recording any resights of tagged otters and new pups, we would head south down Cannery Row towards the Aquarium and stopping at lookouts along the way.

Not all observations were of moms and pups lazily floating between boat docks, or resting in kelp beds in the calm, inner bay with it's great viewing conditions. Some days we would start at Point Lobos and hike with our heavy equipment out to the furthest points along the trails to look for otters while fielding questions from curious passersby. There are a lot of kelp beds amongst the rocky outcroppings for an otter to hang out in. It would take a while to visually search for otters with flippers tags, and several passes of the antennae and radio to hear their signals.

In other areas, like Carmel Beach, the otters would be several hundred meters out in the swells, and it would make me a bit seasick to look for tiny colored tags in rafts of dozens of otters. I would only have a second to glimpse a tag before the whole raft would disappear on the back side of the next swell. The wind was also a factor because it was constant and usually freezing so I would have to brace myself and the scope to keep from swaying during that split second of viewing a raft. Looking for tags has a steep learning curve; the catadioptric scope was very powerful, but it also flipped the image so if you thought the tag you saw was on the right side, it was actually on the left.

Once a tagged otter was identified, it's location and behavior was recorded as well as the condition of the otter, number of otters in the raft if it was in one, and the presence of any pups.

Environmental factors such as wind direction and speed, ambient temperature, and ocean conditions were also documented. Some days I would collect a long list of resights; other days I would set out to look for a particular otter, if it hadn't been spotted for a while. No two days were ever the same. Even though the conditions were unpredictable, and included blinding sun, freezing wind, or both, and carrying heavy equipment was awkward, it was a really great experience to be able to contribute to the body of research that helps to conserve this charismatic and threatened marine mammal.

A requirement and benefit of the internship was an independent research project of my choosing. My supervisor was terrific; she gave me ideas of what had been done by previous interns and what might be of interest to me. Once I decided what I wanted to do, we collected and reviewed several years' worth of data and explored the programs I wanted to use, like R Studio for graphs and ArcGIS for mapping. Then, the coronavirus closures swept the country and the team was informed we could no longer engage in the field component of our work. I continued the office-based portion of my internship from home with the intention of going back to Monterey when tracking resumed. I was in frequent online contact with my supervisor and she helped immensely with R Studio coding as well as learning my way around a mini version of ArcGIS in order to get my maps to look the way I envisioned and illustrate the patterns I wanted to show.

I was not able to return to Monterey to track more otters before my internship ended in June. I was, however, able to present my research project via Zoom to the otter team and it was a resounding success! I will also have a poster of my research presented to the generous donors of the internship support scholarship I received, which is an important engagement to continue since they help so many students complete valuable internships that would otherwise be cost-prohibitive. To make the most of this internship, I will put these experiences on my resume, curriculum vitae, and Linked In account, as well as my personal website and social media pages. This will ensure I have a professional online presence that matches the documents I submit for future employment or volunteer opportunities. I also

took lots of pictures while I was in Monterey, which add depth to the research poster I made to share during a future presentation with members of my community who donated to the crowdfunding campaign my wife had set up for me while I was gone. The citizen scientists who volunteer their time with our nature center will enjoy learning about my research project and it will give me a chance to practice my science communication skills with a receptive audience.

In my spare time, and to take advantage of society's adaptations to the pandemic, I have signed up for and attended various webinars and conferences that have all moved online. I have learned about research being conducted all over the world in many different fields and I have been able to ask experts questions about their projects which also enables me to network while stuck at home. Since I am a registered participant, I can go back and watch any recorded presentations I might miss. I keep track of what I have seen and who I have interacted with in case I need to bring it up in future correspondence. Competition for opportunities in this field is intense so I hope to forge and maintain as many relationships and connections as possible so that when I graduate, I can use that network to better position myself in the pool of candidates for jobs.

Having to abruptly end the fieldwork portion of my internship was bittersweet. However, I am dedicated to making the most of my experience which is what I would recommend to anyone setting out to find their own internship. If I have any advice to give it would be to start your internship search early so you can find one that is a good fit for your interests and is long enough for you to make a lasting impression of your work ethic and goals since that is what could lead you to your next opportunity. Be flexible, reliable, and enthusiastic in your work, even if you don't land the internship of your dreams. I would also encourage creativity because even pulling weeds is habitat restoration; there are opportunities anywhere you choose to look. If you can't spend a lot of time away from home, look for something that spans a significant length of time but only requires a few hours every month, bird surveys are great for that and Audubon chapters are everywhere. Science communication comes in all

forms, is eternally useful and sparkly on a resume, and it is easy to find people to practice on. It's worth it to give your internship some thought since you are the one primarily benefitting from it so don't wait till the last minute or treat it like just another requirement. If you have any questions or would just like to reach out, my non-school email is [seakatdoscience@gmail.com](mailto:seakatdoscience@gmail.com) and I hope you have a great internship 😊.