



HUXLEY

COLLEGE OF THE ENVIRONMENT

Internship Title Necropsy Technician Volunteer
US Fish & Wildlife Service
Region 7 (Anchorage, AK)

Student Name Dylan Peterson

Internship Dates June 24, 2013 - August 22, 2013

Ruth M. Seifeld
Signature

Ruth M. Seifeld
Advisor Name

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Student Signature Dylan Peterson **Date** 12/9/2013

INTERNSHIP REPORT

**Huxley College of the Environment
Western Washington University
Bellingham, WA 98225**

Acknowledgements

I would like to thank the Alaska Region 7 USFWS office and the Sea Otter Program for giving me this incredible opportunity. Specifically, I want to thank Verena Gill for being flexible and relaxed about my presence at USFWS which took away a lot of initial stress. She was also supportive of my academic requirements and was helpful with any questions I had along the way. Kristin Worman was awesome to work with day to day, and she was very thoughtful about how I spent my time. In addition, a big thank you to Dr. Kathy Burek for letting me assist during necropsies outside of the Sea Otter program, and for giving me an incredible employment opportunity. I want to thank the Huxley counseling office, the WWU career center's Susan Anderson, and Dr. Brad Smith. Finally, I want to thank my advisor Dr. Ruth Sofield for supporting in me in this adventure and for always being understanding.

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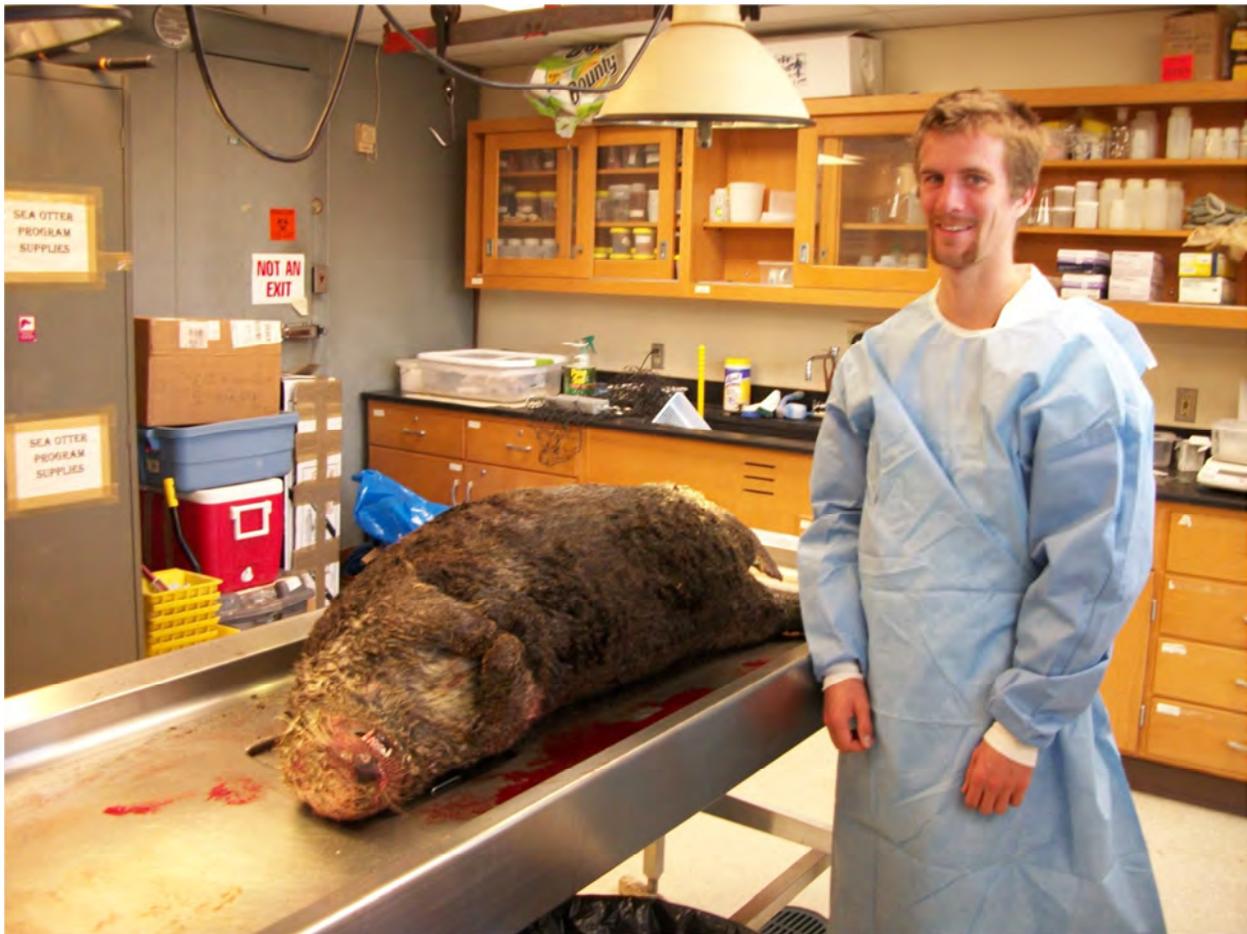
Necropsy Technician Volunteer Intern – U.S. Fish & Wildlife (Anchorage, AK)

Dylan Peterson

ESCI 498B Internship Report

Internship Dates: June 24, 2013 – August 22, 2013

Advisor: Ruth Sofield



Introduction

Over the summer of 2013 I worked on an internship through the US Fish & Wildlife Service (USFWS) located in the regional office in Anchorage, AK (Region 7). Specifically, I worked within the Sea Otter program under the Marine Mammals Management (MMM) office. The Sea Otter Program is currently working on re-defining the rights of Native Americans to alter and sell sea otter cultural items, as well as working to protect Sea Otter habitat and collect population data. Since the early 2000s the Sea Otter program has also included a necropsy program for stranded dead otters to study fatalities and the physiology of sea otters. My supervisor for the internship was Verena Gill, a wildlife biologist working in the Sea Otter program. Most of my day to day activities were under the supervision and guidance of the MMM biological technician Kristin Worman.

My goal throughout Winter and Spring quarters of 2013 was to find a relevant internship in the Anchorage area that would satisfy Huxley's ESCI 498 graduation requirement. Of the options available to me for the graduation requirement finding an internship was the most appealing. Through an internship I hoped to gain relevant experience and network with professionals and possibly improve my future opportunities. My desire to go to Anchorage stemmed from an opportunity to live with a friend and experience a new place. I compete for WWU's cross country and track & field teams and we have a number of current and alumni runners living in Anchorage, with whom I was hoping to train with throughout the summer.

This internship with USFWS was the fruition of just one of several different networking routes I undertook. Finding a relevant internship proved to be an arduous task without many immediate direct connections to Alaska. I initially pursued connections made through my friends in the Anchorage area. When those pursuits didn't come to anything after a time I began utilizing resources available to me at Huxley. I met with Huxley counselor Mary Moores to plan and

organize for graduation and to enlist her help searching for an internship. She mentioned that the previous Dean of Huxley, Dr. Brad Smith, was on the North Pacific Research Board (NPRB) as a Washington State representative. I then scheduled an interview with Brad Smith and met with him a couple weeks later. Dr. Smith gave me a number of contacts within the NPRB and other organizations he knew about. I then emailed all those connections and explored those possibilities. Eventually one of the members of NPRB, Thomas Van Pelt, got back to me and told me that there were not any opportunities available with their organization, but then gave me a short list of options to pursue. One of those options was a website linking to Volunteer Opportunities with USFWS¹. From this list I sent an email to Verena Gill detailing my desire and availability to work with them. Initially she responded stating that she had already found a volunteer intern and that there were no openings. A couple days after receiving this news she sent another email stating that after checking with her biological technician, she had determined that there was enough work to warrant another volunteer intern and that I could work with them. After talking to her over the phone we reached an agreement. I would assist the technician during sea otter necropsies and during down periods without otters I would work on a project helping to organize archived tissue samples in a USFWS warehouse.

The prospect of assisting during Sea Otter necropsies was very exciting to me. In addition to experiencing new science, there were toxicology aspects of the work being done within the Sea Otter Program. The process of searching for a relevant internship was hard work. I learned networking skills and discovered persistence would lead to more opportunities. I finished the academic school full of excitement and wonder as I headed to Anchorage for something that I had worked very hard for.

¹ <http://www.fws.gov/alaska/volunteer/needs.htm>

The Internship

The Sea Otter Program consists of four people; a program lead, two wildlife biologists, and a biological technician. The program has a difficult task of managing everything related to northern sea otters on a national and international basis. The project of collecting stranded sea otter carcasses and dissecting them for forensic study is carried out by the biological technician and a network of volunteers. My responsibilities as a volunteer were to assist the technician Kristin Worman at her office and the lab in Anchorage. Other volunteers in the state were involved in the stranding program of finding and responding to Sea Otter carcass sightings along the beaches of the Kenai Peninsula.

My work would usually vary between a necropsy day and a non-necropsy day. When there was a carcass to dissect my role was to assist in the lab; either recording observations and data into an electronic report or actually physically assisting with the necropsy. When there was no scheduled necropsy my tasks around the office were varied. Typically, I would drive out to USFWS' warehouse and sort through archived sea otter tissues. Other times I would help out with various tasks in the MMM that required my assistance.

My previous experience and knowledge regarding mammalian necropsies was limited. However, I had a lot of experience in laboratory settings and I felt I was prepared to know how to act and to learn quickly. Initially my role in assisting during necropsies was limited to data entry and retrieving the proper tools and receptacles for the technicians conducting the necropsy. As I participated in more necropsies my role and ability to contribute expanded and I began to be given basic necropsy tasks such as removing the femur, weighing organs, and cleaning the skull. By the end of my time working with USFW I felt confident undertaking most tasks during a necropsy. It was exciting to realize how much I was learning during every necropsy.

When conducting a necropsy I was certainly at the bottom of the hierarchy of qualified people in the room. The supervision of most necropsy cases carried out by USFWS are contracted out to a veterinary pathologist named Dr. Kathy Burek. Kathy is present during most fresh sea otter necropsies and compiles a report for each otter and establishes a likely cause of death. Kristin and Kathy are the primary professionals working together in the USFWS lab to study sea otter mortalities in Alaska. In addition to Kathy and Kristin there was another volunteer intern named Sarah Bosch who was a Veterinary grad student. Sarah was also responsible for assisting to instruct me on necropsy procedures.

When an otter carcass is first placed on the necropsy table there is a clear set order of procedures. First, initial observations are made such as sex, size, weight, and age estimation. Then a thorough external exam is conducted to report any anomalies and gauge the relative health of the otter prior to death. Next the pelt is removed and the internal examination begins. The process typically analyzes every major organ and system within the otter depending on the degree of decomposition. For each fresh otter, tissue samples (such as lung, heart, cerebrum, and lymph nodes) are taken for histology and are placed in formalin to be later analyzed for forensic findings. In addition, tissue samples are collected for numerous organs and are placed in small cryo-vials and whirl-paks to be frozen and archived for possible future research or further examination. With a team of four people in a lab the procedure takes about two hours to complete depending on the complexities of each case. Preparation and clean-up also require a significant amount of time to ensure the proper laboratory procedures. Reports made on each otter collectively make a database about the relative health and trends within the Alaskan sea otter population around the Kenai Peninsula. On a few occasions I was able to enter data into this database and to view its complexity to better understand the end result of all necropsies.

USFWS has two large -80°C freezers in their warehouse located in an industrial area of Anchorage. These freezers store most of the archived sea otter tissue samples collected over the past decade. The archived tissues were stored in boxes according to their type. However, under the current organization scheme locating a specific sample was not a quick assignment. The samples were not organized chronologically and both freezers were completely full of boxes. When there was no necropsy on a given day my task was to chronologically order tissue samples into different bags to conserve space and to make finding a specific tissue sample easier. The process was tedious and daunting and I was only able to effectively sort one of the freezers by the end of my time in Anchorage since this project was secondary to my support role during necropsies.

During a stretch in early August I spent three days traveling to and from Homer, AK and experiencing the volunteer efforts being undertaken there by a stranding network (Figure 1). I met with volunteer Rachael Rooney who showed me the process taken when a sea otter carcass is observed. Rachael's primary duties include responding to stranding reports as well as walking beaches where carcasses are likely to wash up. She also spends a considerable amount of time working on community outreach and education regarding living and dead sea otters in Kachemak Bay. Through this trip I really felt I got to experience every aspect of the sea otter necropsy program; from discovery to the database each sea otter is important to have a greater understanding of these animals.

My time spent with USFWS was volunteered, but it provided me with a glimpse into what working for a federal agency is like. I was interacting with scientists in a professional environment on a day to day basis which required me to demonstrate and apply the knowledge I have gained while in school. This internship introduced me to Dr. Kathy Burek who has since offered me a job as a technician for her business Alaska Veterinary Pathology Services. I

accepted the offer and will begin work with her in early January after graduation. I could not be more excited to return to Alaska and continue to apply the knowledge I have learned over the summer. Kathy does not only work on sea otters, as she is contracted out to work on all kinds of marine mammals, bears, moose, caribou, and virtually any other species native to Alaska. To say the least, this internship has had a profound effect on my life and the direction I am headed.



Figure 1. Witnessing a seal pup release in Homer, AK. USFW volunteer Rachael Rooney is pictured in center holding red board.

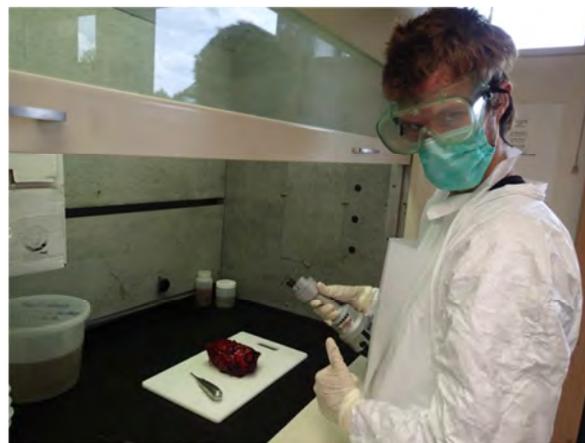


Figure 2. Using a surgical saw to open a sea otter skull to take cerebrum and cerebellum samples.

Reflections

For the most part I really enjoyed my time at USFWS. Every once in a while I took a step back to think about the fact I was dissecting sea otters in Alaska, and it was always an incredible feeling to know I was volunteering my time to help USFWS protect these animals. If you had told me in December 2012 that within the next year I would have spent a summer dissecting sea otters in Alaska and have a job lined up after graduation as a result, it would have seemed completely ridiculous to me. That being said I have no regrets about making the decisions I have, and I am excited to continue in the field of veterinary pathology.

I looked forward to necropsy days at USFWS. Every necropsy was different and a new experience that was really interesting to me. Initially some of the gore was a little intense for me, but it did not prevent me from being able to assist in the lab. After a few necropsies it was easy to view everything in a scientific light, and nothing came across as very unpleasant anymore. There were a few sea otters that were in an advanced stage of decomposition that everyone thought were disgusting including me, but they didn't bother me too much. I can definitely say I have a much stronger stomach than I did before the summer. I think this strong constitution will help me in the future working for Kathy, as I did get to hear some horror stories from her about her line of work. My confidence working with necropsies really didn't get very high until towards the end of my time at USFWS. It was unfortunate that as soon as I felt like I was capable of moving quickly and not hindering a necropsy process I had to leave Anchorage. Kristin and Kathy reinforced that it was a common theme that interns would really get the hang of necropsies right before they had to leave. It was a pleasant experience for me to realize how much I had learned and how much confidence I had gained over the summer. I was initially hesitant to handle a dead sea otter, but by the end I had to stop myself from getting too far ahead of myself. During one of the last necropsies I participated in I used a surgical saw on the

skull of an otter to gain access to cerebrum and cerebellum tissue samples (Figure 2), something I certainly did not feel confident doing in late June.

Days where all I had to do was sort through tissue samples at the warehouse were pretty tedious and I did not have the same enthusiasm for them as I did for necropsies. However, those days went by quickly and I was providing a necessary service that other people in the program never had time for. Kristin, who typically oversaw what I was doing day to day, made many efforts to find other opportunities for me work on in between necropsies and for that I was grateful. She scheduled and allowed for me to travel to Homer to work with the stranding network there. In addition she made efforts to get me out into the field on a small seaplane and a helicopter. Unfortunately, I did not have the proper training in time to make those trips work but it makes me excited about possibly doing so in the future. While working at the warehouse was rather dull since I was often there alone, it did not detract so much from the overall experience that I regret anything. I recognize my primary duty was to support necropsies, and working out in the warehouse was USFWS' effort to accommodate my need to work at least 300 hours for Huxley's internship requirement while at the same time utilizing my time in a useful manner for the agency.

Heading into the internship I expected there to be more of a toxicology element within the program. I knew that part of the necropsy process was to take tissue samples for possible toxicological studies, of which I thought I might be more involved in. I think this belief was more of a reflection of my misunderstanding of the necropsy program. All of the tissue samples taken for the archive out in the warehouse are not necessarily destined for any immediate purpose. They are there for future studies. For example, Verena and Kristin both encouraged me to perhaps seek funding for toxicology studies through Western and they would be happy to support such a study with access to those archived samples. Unfortunately, my time at Western

is coming to a close so I cannot pursue that kind of a study at this time. Upon discussing the internship with my advisor Dr. Ruth Sofield after I had returned to Bellingham, she mentioned the possibility of perhaps combining my toxicology background with the experience I've gained in marine mammal pathology in graduate work. The idea excites me, and I think someday I may try to pursue this avenue. If I were to undertake graduate studies in Marine Mammal Toxicology I know I could have the support of USFWS for potential studies with sea otter tissues.

Overall, the experience I had over the summer provided me immense satisfaction and I would not change anything about it. It was very rewarding to put my mind towards finding a relevant internship in a specific location and succeeding. Assisting the necropsy program was very educational and I feel honored and privileged to have been able to have some of the experiences I had this past summer. I enjoyed it so much I am returning to Anchorage and will be continuing this line of work. I am excited about the future, and I feel this internship has helped prepare me for what lies ahead.

Appendices

Huxley College Internship Contract

Learning Objectives What do you intend to learn through this experience and how does it contribute to your overall educational goals? Describe your role and responsibilities listing duties, projects to be completed, reports, research, required for this position. Attach additional pages if necessary.

6/14/13

This summer I will be conducting a 300 hour internship with USFW in their Marine Mammal division located in Anchorage, AK. My main duty and responsibility is to assist veterinarians and lab techs when conducting sea otter necropsies. The lab on Tudor road compiles ~~the~~ and manages a tissue registry to catalog a history of contaminants in sea otter fat and other tissues. Currently the lab just got additional funding from the NPRB for their proposal *Coxiella burnetii* in Northern Sea Otters. I will be a contributing member to this study as well as a support volunteer for regular tastes in the lab.

When there are no necropsies being conducted I will assist around the office, work with veterinarian pathologists, and fulfill any tasks asked of me.

This position is very relevant to my toxicology emphasis. The necropsies take place in order to assess ~~my~~ toxicants in the environment. Through this I hope to gain experience applying my education to the real world. Obviously I will learn a lot about marine mammals that I did not know previously. Additionally, I hope to learn how to conduct myself in a professional lab with superiors in my field. I also would like to come away from this experience with a great reference from a professional in my field.

Dylan Peterson

Daily Log – Synopsis of daily activities throughout summerSummer 2013

- 6/24 – Introductions, tour, lab safety training, archive sorting instruction
- 6/25 – Instructed on how to prepare necropsy kits, Introduction to warehouse, archives in warehouse
- 6/26 – Inventoried and cleaned warehouse
- 6/27 – Prepared necropsy kits, sorted archive samples in warehouse freezers
- 7/1 – Sorted archive samples at warehouse
- 7/2 – Sorted archive samples at warehouse
- 7/3 – Sorted archive samples at warehouse
- 7/4 – Holiday
- 7/8 – Introduced to Lab tech that was gone in the field, inventoried lab, reviewed safety instructions, sorted archived samples at warehouse
- 7/9 – Prepared necropsy kits, Picked up fresh Sea Otter from Airport
- 7/10 – Designed new stranded Otter form for National Park Service. Assisted with necropsy of fresh Sea Otter.
- 7/11 – Assisted with necropsy of two fresh Sea Otters, two advanced decomp Sea Otters, drove pelts to Tannery.
- 7/15 – Drove to Cooper's Landing to pick up shipment of Otters from Homer.
- 7/16 – Assisted with necropsy of young female porpoise.
- 7/17 – Assisted with 5 necropsies of advanced decomp Sea Otters.
- 7/18 – Prepared necropsy kits, sorted archive samples at warehouse
- 7/22 – Assisted with fresh sea otter necropsy
- 7/23 – Prepared necropsy kits, sorted archive samples at warehouse
- 7/24 – Assisted with female seal pup necropsy
- 7/25 – Sorted archived samples at warehouse
- 7/29 – Assisted with fresh Sea Otter necropsy
- 7/30 – Removed Sea Otters from walk-in freezer, cleaned lab, prepared necropsy kits
- 7/31 – Sorted archive samples at warehouse
- 8/1 – Assisted with medium decomp Sea Otter necropsies
- 8/5 – Drove to Homer, met USFW volunteers who pick up sea otters, helped with 3 seal pup releases
- 8/6 – Walked beaches, introduced to stranding network and the sea life center, toured Homer
- 8/7 – Walked beaches looking for Sea Otters, returned to Anchorage from Homer
- 8/8 – Sorted archive samples at warehouse
- 8/12 – Assisted with fresh Sea Otter necropsy
- 8/13 – Prepared necropsy kits, sorted archived samples at warehouse
- 8/14 – Prepared necropsy kits, sorted archived samples at warehouse
- 8/15 – Assisted with two fresh Sea Otter necropsies
- 8/19 – Prepared necropsy kits, sorted archived samples at warehouse
- 8/20 – Discussed career goals with Verena, sorted archived samples at the warehouse, picked up Sea Otter from airport
- 8/21 – Completed sorting objective at warehouse
- 8/22 – Assisted with necropsy of medium decomp Sea Otter, lunch with Sea Otter program staff, final farewells



IN REPLY REFER TO:

AFES/MMM

United States Department of the Interior

FISH AND WILDLIFE SERVICE

1011 E. Tudor Road
Anchorage, Alaska 99503-6199



NOV 18 2013

Dean
Huxley College of the Environment
Western Washington University
516 High Street
Bellingham, Washington 98225

Regarding: Dylan Peterson's Internship with the U.S. Fish and Wildlife Service, Region 7

Dear Sir or Madam:

During the summer of 2013 I supervised Dylan Peterson while he was a volunteer intern for the Marine Mammals Management Office (MMM) at the U.S. Fish & Wildlife Service in Region 7 (Alaska). Specifically, Dylan worked within the sea otter program of MMM. Dylan volunteered on a variety of projects for over 300 hours from the end of June through the end of August 2013.

Dylan's main task involved assisting the MMM biological technician with sea otter necropsies. This entailed dissecting numerous sea otter carcasses and assisting professionals with their forensic investigations. His specific duties during a necropsy included filling in electronic datasheets, bringing technicians the appropriate tools and receptacles for tissue collection, using a scalpel and forceps to take tissue samples, and taking measurements.

Dylan also spent a considerable amount of time organizing archived sea otter tissues in our freezers which has enabled us to access these samples readily for various research projects. Some of his other work included maintaining the laboratory, entering data into Access databases and Excel Spreadsheets, and preparing necropsy kits.

If you have any questions or need more information, please feel free to contact me at (907) 786-3584, or via email at verena_gill@fws.gov.

Sincerely,

A handwritten signature in black ink that reads "Verena A. Gill".

Verena Gill
Wildlife Biologist
U.S. Fish and Wildlife Service



DYLAN PETERSON

206.399.0757 • dylanpete@gmail.com • 1639 King St., Bellingham, WA 98225

HIGHLIGHT OF QUALIFICATIONS

- Experience in environmental science field work, research, and regulations
- Demonstrated communication skills in professional and diverse environments
- Proven leadership abilities in a team environment
- Proficient with Microsoft Word, Excel, and PowerPoint
- Familiar with conversational Spanish
- Capable of manual labor or physical job requirement

EDUCATION

Bachelor of Science (in progress), Major: **Environmental Science**, Emphasis: **Toxicology**, Minor: **Chemistry**, Huxley College of the Environment, Western Washington University (WWU), Bellingham, WA, Anticipated: December 2013

RELEVANT COURSES

Environmental Toxicology	Water Quality	Organic Chemistry
Biostatistics	Geology	General Chemistry
Ecology	Environmental Policy	Biochemistry
General Biology	Environmental History	Physics
Science & Management of Contaminated Sites		Calculus

FIELD, RESEARCH, AND COMMUNICATION EXPERIENCE

Cherry Point Monitoring Program for WWU Environmental Toxicology Course, 2013

- Designed and presented a monitoring program for point source discharges into the Cherry Point Aquatic Reserve, WA
- Researched the Mussel Watch Program of NOAA to implement correct field monitoring techniques to establish chemical gradients in the environment

Toxicology Labs for WWU Environmental Toxicology Courses, 2012-2013

- Conducted acute and chronic toxicity tests using a variety of chemicals on organisms including *V. radiata*, *E. fetida*, *P. subcapitata*, and *D. Magna*
- Researched estrogenic effects of the pesticide Atrazine on the fecundity of *D. magna* using chronic toxicity testing following standardized ASTM methods

Environmental Impact Statement for WWU Environmental Science Course, 2013

- Prepared an Environmental Impact Statement with a team following SEPA and NEPA regulations for the re-route of Squalicum Creek, Bellingham, WA

Science and Management of Contaminated Sites for WWU Environmental Science Course, 2013

- Studied the cleanup process of contaminated sites under the MTCA process in WA through class funded by the WA State Department of Ecology.

Captain of Cross Country and Track & Field Varsity Athletic Teams, WWU, Since Fall 2011

- Participated in year round collegiate varsity sports since entry into WWU Fall 2009
- Ran for WWU's Cross Country 2011 10th place DII national championship team
- Earned 2012 All West Region Athlete Honors in NCAA DII Cross Country

PROFESSIONAL EXPERIENCE

Lab Technician Intern, U.S. Fish & Wildlife (6/2013-8/2013) – Anchorage, AK

- Assisted Wildlife Biologists and Veterinary Pathologists with the Marine Mammals Sea Otter necropsy program.
- Organized and maintained database of archived tissue samples.

Outreach Associate – North Puget Sound, 3 Degrees (6/2011-11/2012) – Bellingham, WA

Field Technician, Apex Facility Resources (6/2010-8/2010) – Seattle, WA

Coach, Skyhawks (6/2009-8/2009) – Seattle, WA