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Internship Title: Future Leaders of Whatcom Waters Community Program Internship

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STUDENT SIGNATURE 

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FLOW Community Program Internship Reflection

Organization Background

The Nooksack Salmon Enhancement Association (NSEA) is a non-profit organization that aims to educate, inspire and engage the community to take action to keep wild salmon here in Whatcom County for future generations. NSEA sees salmon as a vital part of the local culture, economy, and environment, and therefore is working to engage the community to preserve, protect, and care for the wellbeing and stability of salmon runs. The work of the Nooksack Salmon Enhancement Association focuses on restoring riparian zones, local education of all ages, and community engagement and outreach. NSEA sees engaging in this work as a means to provide local salmon populations with their best prospect of success and survival.

Three main types of restoration are done by NSEA consisting of stream bank restoration, fish passage barrier removal, and stream transformation. One way that restoration is done is by organizing community work parties at which volunteers of any experience level can work alongside NSEA staff to restore stream banks and riparian zones. Work party restoration efforts include planting or live-staking native trees and shrubs, removal of non-native species, garbage removal, and tree cage assembly and removal. Stream bank restoration also takes place on Students For Salmon field trips, but mostly consists of non-native plant removal. Fish passage barrier removal is another restoration effort performed that involves fixing culverts that are not conducive to upstream migration or removing culverts to be replaced with bridges. This works to increase the usability of streams and allow for salmon to journey back upstream as easily as they came down. Another effort to improve habitat is stream transformation which involves in-stream restoration of important salmon habitat features such as gravel and large woody debris. By adding these elements, crucial salmon habitat has the potential to dramatically increase in productivity. These three efforts combined have already proven to improve local salmon habitat.

Alongside restoration, the Nooksack Salmon Enhancement Association places a heavy emphasis on the importance of environmental education and has several education programs to provide knowledge of the importance of salmon habitat and how to protect it to community members of all ages. One of these programs is Students For Salmon, a program that hosts hands-on field trips for local fourth and fifth-grade classrooms to inform students of threats and necessary attributes to salmon habitat. Students learn about macroinvertebrates, water quality, native plants, and how all of these play into the overall health and

productivity of salmon habitat. This learning is then connected to what efforts can be made to improve habitat health by engaging with students in an hour of restoration work. NSEA also offers an educational program to teachers called Climetime Teacher Training, a program that helps ease teaching outside of the classroom. The main focus of this program is getting students outside and engaged in environmental learning. The last educational program offered by NSEA is the Future Leaders of Whatcom Waters (FLOW) Community Program Internship, an internship that allows participants to explore many different career paths in the environmental field, develop important and marketable skills, as well as make valuable connections and network. This is the internship that I took part in and I will go into more detail about that position and my responsibilities in the next section. NSEA engages in educational programs because of the care for the environment and stewardship it can foster within the community.

The overarching focus of the work that NSEA does is community engagement and outreach. Restoration and education both play into connecting the community to the local environment in a way that will foster continued community support of these bodies of water, natural resources, and salmon for generations to come. NSEA makes restoration more accessible to community members by providing all materials and instruction necessary to support stream habitat. By engaging with volunteers at work parties and sparking interest in local students, NSEA sets itself and the community up for long-term success and large-scale positive impact.

My work with NSEA

From February to June of this year, my position with the Nooksack Salmon Enhancement Association was a FLOW (Future Leaders of Whatcom Waters) Community Program Intern. As an intern, I had two main roles including being a small group leader at community work parties and an instructor on Students For Salmon field trips. These responsibilities also included any preparation of materials to bring to the site, as well as the cleaning and organization of materials upon arrival back to the NSEA campus.

Community Work Party Responsibilities

Community work parties were conducted mostly on Saturdays at different worksites throughout Whatcom County. To prepare for the work party, interns were responsible for packing trucks with all of the necessary materials for the day including tents, tools, outreach materials, and snacks for volunteers among other things. Once the truck was packed, we drove to the site and began to set up a 3-tent spread having one for sign-in, one for snack, and one for outreach materials.

To be a successful small group leader I needed to be an outward leader to make sure that volunteers have all of the information they need for the day. I also needed to develop a specific

set of social skills to be able to engage with volunteers while working and establish a connection between them and the restoration work. As a small group leader at work parties, my responsibilities included providing an introduction talk, a tool safety talk, a demonstration for planting or removal, as well as general oversight of volunteer work and engaging with volunteers. As the only Spanish-speaking intern, it was also my responsibility to guide and work with any Spanish-speaking volunteers.

During an introduction talk, it was my responsibility to tell volunteers about NSEA's mission and provide a land acknowledgement to identify and offer respect to the indigenous groups that are the traditional stewards of the land we will be working on. This was also the time that any relevant work site history was provided. This sometimes pertained to the former, present, or ideal states of a given watershed as well as the importance of a specific stream or tributary to salmon run productivity.

Following the introduction talk, I would provide a tool safety talk displaying all of the tools that may be utilized at the work party, what they should be used for, and how to use them safely. Volunteers were shown how to use tools effectively during a demonstration of the restoration activity. These were either a planting demonstration showing step-by-step how to plant a native tree or shrub for the best chance of survival, or an invasive plant removal demonstration which showed which tools may be helpful in removal and how to remove the plant to reduce the probability of it returning. Each step to these demonstrations was elaborated upon to educate volunteers on why that step is important in the restoration process. For example, breaking up roots from potted plants to ensure they dont become root-bound, or fully removing all parts of invasive species to ensure they don't grow back. This shows volunteers how their work can effectively or ineffectively restore salmon habitat depending on their execution.

After the introduction talk, safety talk, and demonstration are completed, volunteers are shown where they can collect tools and begin working. At this point, it was my responsibility to perform quality assurance checks on volunteer work making sure that they are following instructions properly and that plants are getting planted or removed effectively. I would also perform restoration work alongside volunteers prioritizing having conversations and connecting with them. This is a part of the outreach goals of the Nooksack Salmon Enhancement Association and allows volunteers to have a sense of belonging and community at work parties which inspires further care for this habitat and NSEA's mission. Having conversations with volunteers is also a great opportunity for interns to network and meet like-minded locals who may be a valuable long term connection in the professional or social world.

At the end of the work party, interns would help tear down all of the materials and began packing all items back into the trucks. On invasive removal work parties, this included large garbage cans of invasive plant material which would be dumped and weighed at a disposal site to be composted.

Maximum Invasive Removal During a Community Work Party
1660 lbs. of chicory, teasel, tansy, thistle, emerging Himalayan blackberry, and bindweed

Upon returning to NSEA's campus, we would begin our post-work party responsibilities including unloading the trucks, washing any dirty tools and materials, starting a load of laundry to clean volunteer gloves, and organizing/restocking outreach materials and snack supplies. This was followed by a debriefing on what went well at that work party, what could be improved upon, which was followed by a brief overview of the next work party.

<u>Students For Salmon Field Trip Responsibilities</u>

Students For Salmon offers engaging outdoor learning opportunities where students become "salmon scientists" investigating if a local stream is a healthy habitat for salmon. These field trips were mostly conducted on Wednesdays and Fridays with occasional Thursdays depending on the season. Interns were instructors at native plants, macroinvertebrates, and water quality stations at different points in the field trip season. To be successful as an instructor on these field trips, I had to not only familiarize myself with the content of all of the stations but also develop an ability to educate and translate that information to younger students. As the only Spanish-speaking intern, it was also my responsibility to guide and work with any Spanish-speaking students.

Similar to work party days, we began the day with packing trucks with all of our necessary equipment to conduct the three field trip stations as well as a restoration project. Once everything is packed up, we would head to the site and get everything set up, each intern setting up the station that they are working for the day and helping other interns as necessary.

When students arrived, they were given and introduction talk by one the AmeriCorps Environmental Education Coordinators. At this time, one intern would give the chaperones an introduction talk telling them more about NSEA, why these field trips are important, and briefing them on the schedule of the day. During this briefing, it was my responsibility to have chaperones

sign-in, give them an filled out Students For Salmon journal so they may help students when necessary, and explain to them how they can be most helpful to NSEA instructors throughout the field trip.

The kids are then split up into three groups and move into their first station. Before this station begins, students conduct a habitat assessment. Students make note of the date, time, and weather to understand that results can change based on differences in these three factors. Time is then given for students to make observations about the stream, checking boxes on their Students For Salmon journal for habitat features like large woody debris, erosion, garbage, buildings, plants, gravel, shade, roads, and several others. After students have made observations, it was my responsibility to discuss those observations, if they are good or bad for salmon habitat, and explain why. For example, gravel is important to salmon habitat because it keeps the water clearer and provides habitat for salmon eggs and macroinvertebrates. This provides a foundation of information for the day that students will tie into what they learn at the three stations. It was then my job to guide students through their formation of a hypothesis for the day. This statement consisted of "I believe this creek is (excellent, fair or poor) because (provide 2 reasons based on observations)" and aims to make connections between observed stream features and overall health of habitat. Students then move into the content of the first station.

When teaching at the macroinvertebrates station, it was my responsibility to collect a sample of macroinvertebrates from the creek of our field trip location before the field trip began. This involved putting on hip waders then bringing a dip-net and bucket to the creek. To collect macroinvertebrates, I had to place the net downstream from myself and twist my feet back and forth to disturb the gravel, which macroinvertebrates are often living in. I then placed whatever I caught into the bucket full of water and return to my station's tent. I would then fill three shallow trays with water and scoop out the macroinvertebrates from the large tub to transfer them into each of the three trays. At this station, students learn about what macroinvertebrates are, why they are important, and how they can reflect habitat health. Students are then allowed to collect a macroinvertebrate from the tray, draw it, and determine its scientific name. They then figure out what pollution tollerance group it belongs to and what its presence means about stream health. Students then make a conclusion for that station determining if the macroinvertebrates at this creek are excellent, fair, or poor.

When teaching at the water quality station, my job was to walk students through three experiments to learn about the turbidity, dissolved oxygen, and temperature of the creek they are researching. Before collecting data about their creek, I explained how each of these three things are important for salmon habitat. Students then learn about how each factor is measured and what

measurements indicate healthy habitat. At this point I performed a temperature experiment using creek water and a thermometer, a turbidity experiment using a turbidity tube (draining water until a symbol can be seen at the bottom to document how clear the water is/how much sediment is suspended in the water), and then a dissolved oxygen experiment using a HACH dissolved oxygen measurement kit. Students then recorded their findings. Temperature was recorded in degrees celsius, turbidity in NTU's, and dissolved oxygen in parts per million. After this, students form a conclusion stating whether the water quality is exellent, fair, or poor.

To be a successful teacher at the native plants station, I needed to become familiar with Pacific Northwest native/invasive plants and be able to identify several of them. This station also took a specific teaching ability seeing as there was no tent or tables at this station. This station was also the most one on one, so it took developing a social skill set allowing me to successfully engage with students about what they are learning about their plant and how that may play into the health of the ecosystem. When teaching at the native plants station, it was my responsibility to set up cards around the site attatched to their respective plants before the students arrived. These plant cards have the name of the plant, whether the plant is native or invasive, as well as interesting information about the plant for students to note in their journals. Before students are assigned to a plant to study, it was my job to give them an introduction to native and invasive plants, as well as how they can help or hurt a riparian zone. This was the time to connect this station to prior learning at the habitat assessment or at prior stations. Once each had been assigned a plant to study, students make observations about their plants drawing it, using their senses to learn more, as well as noting some interesting facts about the plant and its traditional usage by indigenous groups. After obsevations have been made, each student takes a turn teaching their classmates about the plant they studied. Afterwards, I lead the making of a conclusion for this station, determing if this riparian zone is exellent, fair, or poor based on the presence of native and non-native plants.

After students have completed all stations, they revisit their hypotheis and form an overall conclusion stating "This creek is (exellent, fair, or poor) because (2 reasons for their thinking based on what was learned at the stations)". This allows students to tie together all of their knowledge from the three stations and make connections to the overall health of the habitat. Students then discuss how the health of the creek could be made better and what could be done to help. These ideas are then put into action with a restoration activity.

Students recieve a restoration introduction talk and tool safety talk similar to those given at work parties. Once students are given this information, they can collect tools and begin working. During this time, it was my job to oversee work to ensure that plants are being removed

effectively and that tools are being handled safely. This was another time interract with the students, making a personal connection to the work being done and its importance, as well as making the restoration work as fun as possible to inspire interest in it. After the restoration effort is completed, we would take the invasive material to a disposal site to be composted and weighed, just like on work party days with invasive removal.

Maximum Invasive Removal During a Students For Salmon Field Trip
320 lbs. of creeping buttercup, emerging Himalayan blackberry, and thistle

Upon returning to the NSEA campus, we would perform post-field trip responsibilities almost identical to those of work parties. The one difference is that macroinvertebrate and water quality data findings of the day were input into a system called “Earth Echo” which collects data about the health of streams in various locations.

Other Responsibilities

Occasionally, interns were asked to perform other tasks to help on work days without field trips and work parties. These included going on site visits to make sure that nothing has changed durastically/there are no new site hazards, testing of potential new educational materials, cleaning or organizing around NSEA’s campus, and performing outreach efforts such as attending fish trivia night and hanging up flyers around Whatcom County.

Intersections with Coursework

This internship has connected to my coursework and field of study in many ways, as well as contributing to my personal, educational, and professional goals. The FLOW Community Program Internship is designed to provide very valuable footing for those interested in pursuing a career in the environmental field, and it provided just that for me.

This internship was very timely in its professional development work as I was contemporaneously enrolled in ENVS 302. Both of these opportinities offered very valuable insights into professionalism, interviewing, resumes, and networking. Each of these are massively important in my future success and were things I was very nervous about until taking part in this internship and class. By gaining a more developed skill set in this area from both an educators and an employers standpoint, I now have a much more rounded understanding of how to set myself up for success professionally. While an

intern at NSEA, I conducted an informational interview with the AmeriCorps Environmental Stewardship Coordinators, attended a resume workshop, and networked with volunteers and NSEA staff. All of this provided real-life experience to back up my learning in ENVS 302.

Another way that this internship was particularly helpful was in providing experience in a former area of interest, which I now understand may not be the career path for me. Recently, I was looking into adding another minor field of study and had been considering Environmental Education. However, my work at NSEA provided crucial real-world experience in this field that helped me realize that this field may not be the exact fit for me. Throughout this internship I have found that my passion in environmental work lies more heavily in stewardship, restoration, and outreach, rather than in youth education. I am now able to select another minor with this experience in mind and I will be able to make a better informed decision in a way that would not be possible without this internship.

Furthermore, this internship has provided me with general knowledge about riparian zones, restoration, salmon ecology, and plant identification which are all areas of interest that I was wanting to learn more about. The foundation that this learning has provided will prove helpful in any classes of this subject matter in the future and has made me excited to dive into that content at Western.

Overall, this internship has provided much needed guidance that will ease the rest of my years at Western alongside my years in the professional world after. Through the experiences and responsibilities in my time at the Nooksack Salmon Enhancement Association, I feel more prepared and excited for the opportunities to come.