On a rainy morning in December 2019, I was riding in a F-350 with five other people along the Strait of Juan de Fuca Hwy, watching the windshield wipers try desperately to keep the raindrops at bay and the turbid, muddy waters of the Pysht River rise closer to the road edge. Glad for the long commute in a warm, dry truck, I was also ready to hop out and meet the group of people waiting for us when we turned on a gravel road and emerged in an open grassy field. A volunteer planting hosted by the Lower Elwha Tribe was our destination. My Washington Conservation Corps (WCC) crew geared up quickly in our heavy rain gear – bibs and baggy coats – and began grabbing our tools from the back of the truck.

The next three hours were spent pawing up mud and jamming conifers in the ground; sticking gloved hands in the planting holes as far as possible to ensure the roots were angled downward; brush cutting the grass down to the ground in small circular areas to make earth augering easier (a process we called 'scalping'); and wiping the water from our eyes as much as possible without smearing mud on our faces. We were next to a tributary of the Pysht and could see the water rising by the hour. After 3 ½ hours of hard, wet work, the tribe released everyone, concerned about rising waters. On my crew's way out, we towed a volunteer's vehicle out of a massive puddle where it had sunk up to its front doors.

It was a memorable day. While tough, it was characteristic of the work my crew completed throughout our term, and we ended the day satisfied. We knew what we were signing on for when we applied, though we all applied for slightly different reasons. For me, it was a calling, and I could trace that calling back to a single moment:

The moment I decided to write my thesis about southern resident orcas.

My years in college were spent learning about the multitude of issues our planet faces. Light pollution, the sixth mass extinction, ocean level rise, migratory bird decline, cancer rates, sound pollution, ocean acidification, socioeconomic and environmental inequality, mosaic habitats unable to fulfill the needs of sensitive, disappearing species, urban sprawl, the need for greener infrastructure, fossil fuel systems as hard to combat as the corporations that run them, pervasive microplastics and plasticizing chemicals, and water quality – these are just a few of the issues we face.

At the end of my junior year, I was asked to choose a thesis topic. Taking a marine mammal biology course at the time, I had just completed a project on whales and started reading about the southern resident orcas. The topic seemed perfect, and my next ten months were spent researching, recording, and synthesizing information about the southern residents. During that time, I started to feel like a pot boiling over with frustration about all of these environmental issues. I learned about the emotional intelligence of resident orcas, their dialects, greeting ceremonies and familial structures – watched the black and white footage of young calves hauled

away from their pods into isolated captivity, never to return. During my thesis year, headlines appeared in the news: “Grieving Mother Orca Carries Dead Calf For More Than A Week, Over Hundreds of Miles.” For 17 days in 2018, a mother orca from the J pod carried her calf, who had died shortly after birth.

It was difficult not to feel emotional about these charismatic, endangered animals. Their story engendered a curiosity and drive in me that influenced the next six years of my life. Salmon habitat restoration seemed to be the key to making a difference in the fate of these orcas, and despite growing up in Washington, I knew very little about salmon, and even less about how to restore their habitat. As a WCC member, the people around me helped further my knowledge on the topics I was curious about. I learned about salmonid identification and monitoring, habitat restoration techniques, and Evolutionarily Significant Units (ESUs) near the Hood Canal and Olympic Peninsula. I learned how to use a chainsaw, earth auger, and brush cutter. I learned about lotic ecosystems, riparian plant identification, nutrient cycles, forest resilience, and different salmonid preferences.

I now manage the Stewardship Department for the Hood Canal Salmon Enhancement Group (HCSEG), which is one of fourteen salmon enhancement groups in Washington State. We are a legacy of the 1990 Washington Way – an effort to unite communities and scientists to restore salmon populations. One of HCSEG’s primary target species, Hood Canal summer chum salmon, are on the rebound (Dunagan 2024). Chum supplement southern resident orca diets, and juvenile chum also act as fuel for resident orcas’ primary food source, Chinook salmon.

With every tree I plant, I feel I am answering the calling I felt six years ago. But while an estimated $1.6 billion has been invested in Washington state’s salmon recovery efforts, five salmonid species – steelhead trout, and Chinook, coho, chum, and sockeye – remain listed under the Endangered Species Act (ESA), according to the 2022 State of Salmon in Watersheds report. At the same time, habitat restoration practices grow more urgent and precarious: scientists, practitioners and public fret about ecosystems’ response to climate change. Diebacks and pest outbreaks in forests are noted with worry. Can trees adapt to a temperature shift of 1.4 to 4.4℃ by 2100 (IPCC 2023)?

How can ecosystems adapt to climate change? Can we help by facilitating genetic diversity? By adding seedlings from more southern populations? How can we prevent these forests, which sequester and store carbon, from being diminished? What role do mycorrhizae play in forests’ response to stress? More answers need to be found. It is these types of questions I hope to investigate further by pursuing a Master’s of Environmental Science degree at Evergreen.