

## **Introduction**

This summer I spent thirty-five days working as a research assistant at Cetacealab, a non-profit research lab based on the southern tip of Gil Island on the northwestern coast of British Columbia. Cetacealab and its research outcamp were both constructed by the North Coast Cetacean Society, an organization dedicated to the research and protection of whales in the coastal waters of British Columbia. For twenty-two of my days with Cetacealab I lived and worked at the lab on the southern tip of Gil Island. The lab was constructed in 2001 and housed cooking supplies, a camp stove, books on cetaceans, a laptop computer, a camera, and recording equipment for whale vocal research. For the remaining thirteen days of my internship I was working at Cetacealab's remote research outcamp with one other researcher who has been doing seasonal research in the area for four years. Cetacealab's outcamp is currently located on a neighboring island, Aristazabal Island, about seventeen nautical miles from the main lab. The outcamp consists of a small impermanent shelter perched on top of some flat rocks at the storm tide line that overlook the convergence of three main channels. The outcamp shelter is constructed in the spring of each year and removed before the first winter storm of each year. Both the lab and its outcamp are powered only by sun, wind, and water, and were built using mainly driftwood logs from the beach.

### *Purpose of the Lab*

The purpose of Cetacealab is to research and understand whales and other marine mammals, and to use this information to help protect whales and crucial whale habitat along the coast of British Columbia. The waters surrounding Cetacealab are extremely remote and pristine habitat for both orca and humpback whale populations. At least one hundred and sixty humpback whales, fifty resident orca, countless Dall's porpoise, and many other cetaceans on the coast near Gil Island rely on the pristine, protected channels around Cetacealab as an annual summer home and feeding ground. Quiet waters are especially important for the

location of food by individual whales and communication between whales. The waters around Gil Island are currently being threatened by Enbridge, the largest oil pipeline company in Canada, which has submitted a proposal to the Canadian government that may establish a twin pipeline from the Albertan tar sands to Kitimat, at which point supertankers will load the petroleum cargo and transport it through the dangerously winding channels around Gil Island and onward to clients overseas. This supertanker highway would endanger the safety and food security of resident whales. The dangers of deadly ship strikes, a potential oil spill, and noise pollution are immediate to populations in this area that are only now beginning to rebound from half a century of whaling.

### *Lab Projects*

Because the waters near Cetacealab and its outcamp are so pristine, behavioral and acoustic whale research is able to be carried out with great success. Since 2001, the lab has been developing a Humpback Whale Photo ID Catalogue for humpback whales resident to the waters around Gil Island, has been studying social and feeding bonds between humpback whales, and has been creating an acoustic library and photographic catalogue of orca. At Cetacealab, data on the abundance of orca and humpback populations are collected year-round. The lab has an extensive network of underwater hydrophones that have collected hundreds of hours of humpback whale song which the lab is in the process of analyzing. Data and photographs are often presented at local fishing lodges to raise awareness about the potentially detrimental ecologic impacts of the Enbridge tanker route. Data the lab has collected is also being used to try and establish a protected area along the coast of British Columbia near Gil Island.

### **My Internship at Cetacealab**

The opportunity to work with other students and scientists from around the world, research whales, learn more about sustainable building and living, and conduct studies to

help protect the northwest coast all drew me to Cetacealab. During my time at Cetacealab I was one of four research assistants helping conduct research there. All the research assistants were guided by the co-founders of the North Coast Cetacean Society, Hermann Muter and Janie Wray, who spend most of the year on Gil Island. The first couple of days we were on the island together were spent creating an experimental protocol that would allow us to effectively quantify marine mammal activity in the waters we could see from the lab. We created a protocol which consisted of five minute scans with binoculars of all visible water conducted every twenty minutes. During each scan we recorded any marine mammals spotted and their approximate location. During the fifteen-minute intervals we were not scanning with binoculars we watched the water and recorded any marine mammals sighted. If whales were sighted, we took photographs of their dorsal fins and/or flukes so that we could compare the photographs to Cetacealab's photo database and identify the individuals we had seen. We also used photographs we took to expand the Humpback Whale Photo ID Catalogue and Photographic Catalogue of Orca. We recorded the total time each whale sighted spent in our view. If whale vocalizations picked up by any of the hydrophones placed in nearby waters were heard over the speaker in the lab, even at night, the recorder inside the lab would be turned on and a recording taken until thirty minutes after the last vocalization was heard. Each of the volunteers at Cetacealab spent eight hours a day each day on the deck of the lab doing binocular scans in groups of two. Scans were conducted from 6:00 a.m. until 10:00 p.m. each day. Boat surveys were also conducted occasionally in which a volunteer and one of the co-founders of the lab would go out in the small research boat owned by the lab and patrol the water looking for whales, make recordings if vocal whales were encountered, and observe the behavior of whales encountered. In addition to data collection responsibilities, volunteers at Cetacealab were expected to cook dinner for everyone at the lab

at least one night a week, keep the lab clean, input data into Cetacealab's electronic database, and chop wood for the wood stove in the lab.

During my shifts at the lab I got to observe humpback whales every day. Often multiple humpback whales at one time would be feeding or sleeping in the bay in front of the lab. I learned to identify humpback feeding calls, social calls, and the famous humpback song as well as specific behaviors such as pectoral feeding, cooperative group feeding, lunge feeding, pectoral slapping, breaching, sleeping, rubbing, and tail lobbing. I observed orca about every three days while at the lab on Gil Island. I also had the opportunity to observe a few fin whales, a pod of Pacific white-sided dolphins, and countless Dall's porpoises, harbor porpoises, Stellar's sea lions, and harbor seals. While on Gil Island I participated in another project designed to help protect the northwestern coast: a water bird survey. About every four days a partner and I would spend twenty minutes in the morning scanning the water with binoculars and recording each individual bird spotted and its species.

When I wasn't at the lab conducting scans, doing bird surveys, or just watching whales I was working on a gardening project for the lab – restarting Cetacealab's organic garden. I have been gardening since I was very young and was ecstatic to help Cetacealab produce some of its own food and become an even more sustainable place. While on Gil Island I planted carrots, lettuce, spinach, chard, and kale. By the end of my internship some of the vegetables were already ready to be harvested and were being enjoyed by everyone on the island.

On Cetacealab's outcamp on Aristazabal Island my days were structured slightly differently. The protocol for the project that was being conducted there consisted of hour-long scans with both binoculars and a large spotting scope separated by thirty-minute breaks. Weather was described in detail three times per scan. Scans were conducted from sunrise to sunset as weather permitted. In addition to the marine mammals I got to observe on Gil Island

I also had the opportunity to see several river otters and a sea otter while on Aristazabal Island. During one of the thirty-minute breaks I got to go snorkeling off the rocks and look at all the amazing marine life below the low tide line.

### **What I Learned from my Internship**

I am considering a career in research and conservation and my internship with Cetacealab helped prepare me for a career after Sewanee. I had the chance to immerse myself in and learn about an amazing marine and coastal rainforest habitat and built my skill set as an investigative scientist. I learned new methods of data collection, small boat operation skills, how to understand and analyze whale vocalizations, how to use and understand hydrophone recording equipment and high-powered spotting scopes, how to identify individual humpback and orca in resident populations, how to identify cetacean behavioral patterns, how to identify whale species and pods from their vocalizations, and how to live with minimum environmental impact at a very remote field station. I am very grateful for the opportunity to learn about marine mammal conservation and sustainable living.