

Cetacealab, Gil Island (British Columbia)

This summer I spent eight weeks working as a research assistant at Cetacealab, a non-profit marine mammal research lab based on the southern tip of Gil Island on the northwestern coast of British Columbia. Cetacealab and its research outcamp at Ulric Point on neighboring Aristazabal Island were both constructed by the North Coast Cetacean Society, an organization dedicated to the research and protection of marine mammals, especially whales, in the coastal waters of British Columbia. For about half of my time as a research assistant in Canada 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 part of my internship I operated as lead researcher at Cetacealab's remote research out camp. 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. This small shelter and viewing platform are the only structures on this 160 square mile island. Both the lab and its out camp are powered only by sun, wind, and water, and were built using mainly driftwood logs from the beach.

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.

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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.

Because the waters near Cetacealab and its out camp 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 and was recently used in two reports to the Canadian government addressing the damage that the proposed oil tanker route could cause to the coastal ecosystem.

Last summer I spent fifty-two days working as a research assistant at Cetacealab. In addition to assisting with live recordings of killer whale pods and humpback whales and conducting land based observation of whales from the lab, I also had the opportunity to perform boat surveys to collect digital photographs to add to the photo identification catalogue of orca, humpback, and fin whales. During my internship I helped start an organic garden on the island, learned how to identify west coast cetacean and bird species, collected countless hours of important data, made new friends from around the world, and acquired new skills including how to conduct acoustic whale research, operate small boats, understand and analyze whale vocalizations, identify individual humpback and orca in resident populations, and take whale ID photographs. I had a wonderful summer, and at the end of my internship the directors of the North Coast Cetacean Society and co-founders of Cetacealab asked me to come back for another season. This summer they needed a volunteer to operate the remote out camp at Ulric Point on Aristazabal Island

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that I was able to visit for two weeks last summer. The waterway surrounding Aristazabal Island is a candidate for Critical Habitat for Northern Resident Killer Whales, a title that would protect these now quiet and pristine waters from oil tanker traffic if the Enbridge Pipeline is built. The data collected at Ulric Point is being used to back the proposal for designation as Critical Habitat for Northern Resident Killer Whales.

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 volunteer as a research assistant with the North Coast Cetacean Society. Research was conducted using similar protocols at Cetacealab on Gil Island and at the out camp on Aristazabal Island.

At Cetacealab, all research was guided by the co-founders of the North Coast Cetacean Society, Hermann Muter and Janie Wray, who live and work on Gil Island year-round. Currently, data is being taken during all daylight hours in a way that is designed to effectively quantify marine mammal activity in the waters visible from the lab. Research assistants conduct five minute scans with binoculars of all visible water every twenty minutes. During each scan any marine mammals spotted, the behavior of any marine mammals sighted, the location of any marine mammal sighted, the direction of travel of any marine mammal sighted, any visible boats, type of any visible boat, and the direction of travel of any sighted boats are recorded. During the fifteen-minute intervals between scans research assistants watched the water and recorded any marine mammals sighted as well as a detailed description of each whale encounter including the total time it spent in our view and its behavior during that time. If whales were sighted, ID photographs were taken of their dorsal fins and/or flukes so that we could compare the photographs to Cetacealab's photo database and identify the individual whales we had seen. We also used photographs taken to expand the Humpback Whale Photo ID Catalogue and Photographic Catalogue of Orca. If whale vocalizations were 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

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switched 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 while I was on Gil Island. 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 vessel owned by the lab and patrol the water searching for whales, making recordings if vocal whales were encountered, and observing the behavior of whales encountered. In addition to data collection responsibilities, volunteers at Cetacealab were expected to cook dinner for everyone on the island at least one night a week, keep the lab clean, help unload food shipments when they arrived, input data into Cetacealab's electronic database, and chop wood for the wood stove in the lab which provided all of our heat.

During my shifts at the lab I got to observe humpback whales nearly 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, bubble net feeding, lunge feeding, pectoral slapping, breaching, sleeping, rubbing, and tail lobbing. I observed orca several days while at the lab on Gil Island. I also had the opportunity to observe a few fin whales 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 – working in 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 lettuce, spinach, beets, chives, basil, thyme, and parsley and also helped care for the tomato plants that had been planted earlier

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in the season. 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 thirty-minute long scans with both binoculars and a large spotting scope separated by fifteen-minute breaks. The type and format of data recorded was similar to that taken on Gil Island. Scans were conducted from sunrise to sunset as weather permitted by two researchers. Because I spent time at Cetacealab's out camp last summer and was experienced in data collection there and using the available tools there, I was able to serve as the lead researcher at the out camp and train other research assistants in addition to data collecting.

I am dedicated to the mission of Cetacealab – to research and protect whales – and also had a wonderful time there collecting data that will likely help protect an area that is not only beautiful, but also a very important habitat for many species. This summer I had a focused research project that I was responsible for and I had the opportunity to direct and teach new volunteers the skills that I acquired last summer. I had the chance to immerse myself in and learn about an amazing marine and coastal rainforest habitat, built my skill set as an investigative scientist, and further my experience in field research. I was also able to gain more experience in new methods of data collection, small boat operation, understanding and analyzing whale vocalizations, using and understanding hydrophone recording equipment and high-powered spotting scopes, identifying individual humpback and orca in resident populations, identifying cetacean behavioral patterns, identifying whale species and pods from their vocalizations, using standard cetacean cataloging software, and living with minimum environmental impact at a very remote field station. I am very grateful for the opportunity to learn more about marine mammal conservation and sustainable living. I am considering continuing conservation and ecological research and my internship with Cetacealab helped prepare me for a career after Sewanee.