

Will Watson

Internship Report

Summer 2013

Mountains and Sea: A Summer in the Great Bear

Upon reflection, this past summer seems unreal, a fact of which I'm reminded each time I explain my summer to a friend and they respond incredulously, "You did what!?" Even though I was graduating, Sewanee graciously awarded me internship funding after my senior year to spend the summer on a sailboat in the Great Bear Fjordlands of British Columbia, looking for whales and sampling the marine ecosystem. I worked with my good friend and fellow Sewanee alumni, Eric Keen (Class of '07), who started his PhD research this past summer in the Great Bear. Technically, I was an intern for Scripps Institute of Oceanography and the North Coast Cetacean Society, with whom Eric was working to conduct his survey of the Great Bear ecosystem and the whales therein. Intern seems a misnomer, however, as I look back at the summer. In reality, I helped to design a dissertation level study, became a diesel mechanic, dreamt up place-specific ecological survey methods for zooplankton studies and seabird surveys, and created archival methods for photo-identification of whales, all the while sleeping and eating on a 37-foot sailboat where the mountains of British Columbia tumble through glacier-carved fjordlands to the Pacific Ocean.

The setting for the study was a pristine intracoastal zone of protected inland waterways which links the Gulf of Alaska with British Columbia. The Great Bear Fjordland itself represents a 20,000 mile-long single ecosystem that is

connected through oceanographic processes utilizing nutrients and productivity from the North Pacific (Thomson 1981). The region supports an important fishing and ecotourism industry, and First Nations societies rely on the fjordlands for subsistence. These waterways are critical habitat for substantial Northern Pacific cetacean populations, including fin whales, orcas, and humpback whales (Gregg and Trites 2001, Ford 2006, Ford et al. 2009). Because of incoming development, including increased vessel traffic and oil pipelines through the region, a study determining the distribution, ecology, and habitat preferences of cetacean populations is critical for ecosystem-scale conservation in regions with intensive resource management (Harwood 2001).

Eric set out to create that study, and this past summer was his first attempt at a comprehensive survey to model the ecosystem, focusing specifically on the spatial and temporal dynamics of the major trophic groups that govern the ecology of the Great Bear, especially in relation to large whales. The study included cyclic sampling centered around the acoustic survey area of NCCS and the planned routes of several natural gas and crude oil pipelines. We collected data with a towed hydrophone array and CTD scanner (Conductivity, Temperature, Depth). We used cyclical visual scans, photo-identification, and acoustic monitoring, in addition to routine zooplankton tows, active acoustics prey imaging, and water column profiling. Thus, the summer was a whirlwind of learning how to use scientific survey equipment, and troubleshoot these machines with no access to internet or spare parts.

One of the most valuable elements of the summer on a personal level was my observation of the development of a scientific dissertation. I saw the process from

the beginning as I watched Eric take journal articles for oceanographic research and attempt to adapt their methods to a different context in an intracoastal zone.

Through this process, I helped to design a rope measurement system off the back of the sailboat for paying out the zooplankton net, and helped Eric and his other research volunteer to develop a rangefinder system for seabird and salmon surveys along our transects. In doing so, I used trigonometry I had not thought of since high school geometry.

I was particularly excited about two unexpected parts of the internship: the photography and the need to learn everything I could about diesel engine maintenance. As a Sewanee student, I took multiple photography classes, and was able to put that training to good use as the research photographer on board. It is essential to capture high-quality images of different features of the whales for photo-identification purposes, and one must do so in a stressful and fast-paced environment. You have a second to capture a clear, stable, high-resolution image before the whale dives again. My prior photographic training was in the fine art and documentary realm, and this experience helped to broaden and complement my pre-existing skills. Furthermore, in living aboard a 30-year-old motor sailer, something was always broken, and I was always working on the diesel engine, doing routine and preventative maintenance. I knew little about engines before the summer, and am thankful for the experience of learning all I could about diesels in order to keep the boat moving. In addition to the photography and the diesel maintenance, I learned much about weather patterns, sailing, oceanography,

northern coastal forestry, Canadian politics, and patience with breakdowns, weather, and tides.

In summary, the summer does seem to be unreal, and was a foundational experience in both my personal development and career goals. I found I was well-suited to field research in a way that was unexpected, and I greatly enjoyed being able to combine my photographic interests with scientific work and being outside in a rugged, beautiful environment. I hope to go back to the Great Bear to continue working with Eric on his dissertation, and am considering pursuing further that sort of life as a field researcher for the government. This internship provided me with an opportunity to develop as a scientist, a photographer, and an outdoorsman. I cannot express my gratitude to the Environmental Studies Internship committee and Career and Leadership Development for this opportunity—I feel I am much better positioned to apply for graduate school and pursue my academic and career goals as a result of this internship and appreciate the opportunity granted to a senior to do this.

Literature Cited

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