Shell Conservation Internship Experience

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My summer as a Shell Conservation Intern

This summer I had the opportunity to work in my home province of Nova Scotia as a Shell Conservation Intern. I started my summer in the Cape Mabou highlands of Cape Breton, where I camped for 2 weeks with one of NCC's volunteer stewards. I had the opportunity to work alongside local volunteers and stewards maintaining trails at our Mackinnon's Brook site. MacKinnon's Brook was the first property to be protected by the Nature Conservancy of Canada in Nova Scotia, being secured in 1971. My work there involved moving trees that had fallen down in the winter and keeping the trails clear of brush, young saplings and rocks. The trail systems include some amazing views of the Cape Breton highlands. Early settlers lived in these mountains and a few older trails, homestead foundations and remembered stories hold a sense of history to for the locals. The trails are also all named in Gaelic and each name has a special meaning to community members there.

Figure 1. Mackinnon's Brook, Cape Breton NS

Figure 2. Caitlin Porter in Briar Island NS

I spent most of my summer monitoring at different sites around the province and working with NCC volunteers and supporters. Environmental Monitoring is required on NCC land and is how we keep track of protected land and ensure that there is compliance with any conservation easements. A conservation easement is a legal agreement between landowner and NCC that certain environmental standards will be met, even if the land changes ownership. Monitoring involves visiting the land on a regular basis by a volunteer steward, NCC stewardship staff, or by an intern. Local people who use the land can act as volunteer stewards and landowners are involved in the process. These people can notify NCC of changes to the land

(e.g. presence of an invasive species) or any concerns they might have (e.g. people using ATVs on their land).

On Cape Breton Island I also monitored Dunakym Woods, as we have an easement with the owners there. The Dunakym Woods Preserve contains deciduous old growth forest and a few rare plants. I visited the NCC buffer alongside McFarlane woods, a provincially protected area which contains old growth forest.

Later on in the summer I had the opportunity to visit the Pugwash Estuary. I canoed out to Victoria Island for monitoring, and I explored the salt water pond, marshes, and lake at Mackinnon's Brook, properties which are a part of a larger land assembly in the Estuary. I visited a mature hemlock forest in New Glasgow where I came across rare plants and a Barred Owl. I started a biological inventory at Twin Lakes, which is close to my hometown. I also had the chance to do monitoring at NCC sites at Prospect High Head and I wrapped up the summer with a visit to a prospective NCC property that is home to some endangered lichen species.

Tidney River Baseline Report

I spent a large part of my summer working on a baseline report for Tidney River. A baseline report must be prepared for all properties NCC owns or manages. The baseline will include which species live there, land features like topography and soils, climatic information, existing uses of the land and current or potential threats such as encroachment of nearby development. The baseline gives involved parties a foundation for monitoring and contains the environmental and species data for a region which is useful in future study. It essentially functions as a record for the property.

Tidney River Wilderness Area is located in Southern Nova Scotia and is a provincially owned wilderness area. At 17,800 hectares, it is the largest undisturbed tract of imperfectly to poorly drained conifer forest in Nova Scotia. Its forest and wetlands are home to a variety of waterfowl and big game species as well as rare and endangered Atlantic coastal plains flora including Yellow Screwstem, Brookside Alder, Long's Bulrush, and Golden Crest.

A 955 Hectare inholding exists within the center of the wilderness area which is owned by a logging company in Nova Scotia. An inholding is a privately owned property within the boundaries of a protected area. This inholding effectively made the northern half of the wilderness area a bit of a donut, with potential for forestry related use in the center, and its associated disturbances. This was a primary motivation for NCC and the landowners to collaborate in protecting the land.

The landowners and NCC agreed upon a Conservation Easement to ensure the land will be preserved for future generations. The easement in the Tidney River inholding has secured a large contiguous tract of land and protected its ecological integrity by preventing disturbance to the inner core of wilderness area and associated problems such

as edge effects and habitat fragmentation. It has also eliminated the need for logging access roads to be built through provincial wilderness area.

The Tidney River Wilderness area inholding previously had nothing but superficial stand information, and so my supervisor Paula Noel and I went into the field to collect data on environmental features and record which species were in the area.

There was a lot of preparation involved for our Tidney River Trip. We spent time planning logistics and the methods behind our work. I had to delineate air photos, read stand maps and plan routes of access using various types of maps. I helped plan how we would go about doing the inventory and figure out how much time things would take in terms of travel and getting work done. I reviewed existing information on the Tidney River Wilderness Area and got familiar with local species including threatened and endangered species we might encounter so that I knew how to identify them.

In early July we set out and backpacked several kilometers from the edge of a logging road into the site. We navigated using a GPS, compass, maps, and aerial photos. Although I'm a very experienced camper, I've never backpacked before and this was a huge adventure for me.

It felt like we were pioneers at this site and this work was important and worthwhile. We tracked our route and put together a species inventory for the site. The inventory involved identifying and recording species of birds, mammals, amphibians, mosses, liverworts, lichens and vascular plants we came across. We recorded the abundance of species and mapped out their habitats. GPS was a key tool, we used it not only to navigate, but to record photopoints we took, habitats of significant species, or other features we encountered such as some glacial erratics. We documented the relatively flat terrain, habitat boundaries, soil and geological features we noted, as well as signs of anthropogenic and natural disturbances.

The most exciting part of the trip for me was finding the moss *Splachnum*. I've studied bryophytes (mosses and liverworts) for the past two years at the University of New Brunswick as a field assistant and honours student and I have been one of the lucky few to have come across this genus once before, so was able to recognize it right away. This genus of moss is very unique because it grows only on moose scat. I took a small sample back to the lab where I worked before and we identified it as *ampullaceum*, a species listed as a rare by the Atlantic Canada Conservation Data Centre.

Figure 3. ***Splachnum ampullaceum***

S2 is the second most at risk category, meaning only between 6 and 20 occurrences of the plant have been documented in the entire province. The moss may also be vulnerable to extirpation. Finding *Splachnum* also confirmed that there are moose in the area, which was not previously known. We found tracks of moose as well, but finding Splachnum growing on the scat made our evidence conclusive. This was exciting not only because we didn't know there were moose in the area but also because moose are endangered in mainland Nova Scotia. There are only about 1000 individuals and all of them are in isolated subpopulations, most of these in Cape Breton. The moose are not threatened on Cape Breton Island since they were re-introduced in the 1940s. The decline is actually not completely understood but threats such as over harvesting, illegal poaching, disease and parasites, increased road access to moose habitat and heavy metal contamination are possible causes.

Finding these species at Tidney River was really exciting, and reiterates why it is so important we protect this land, and land like it elsewhere. I'm excited to have been a part of that this summer.

Figure 3. Caitlin Porter using GPS to record location of endangered species

I also had the opportunity to learn about how NCC chooses sites to conserve land, and the science behind land conservation and site selection. I got to work with landowners and community members at places I visited, and I learned about stewardship and the teamwork involved in this.I got to meet some really amazing people, and learned a lot through their stories while I was visiting properties. I got to improve my report writing and public relations skills, and I learned more about identifying species in the field. The experiences I have had as a Shell Conservation Intern will help me with my future career aspirations and in pursuing a masters in an ecological field.

At the end of August I spent several days in Calgary at the Shell Intern wrap up event. The wrap up event was a great opportunity for me to share some of my experiences from throughout the summer with Shell staff and the other NCC interns and to learn about what the other interns had been doing throughout the summer. It was interesting to see the variety of different things that the other interns had been working on across the country. We also had the opportunity to discuss upcoming environmental issues with shell executives and the other interns. We discussed among other things the issues of offsetting environmental damage and the feasibility of alternative energy sources such as biofuels. We also had the opportunity to visit one of Shell's sour gas extracting sites, and a sour gas processing plant where we learned about what processes were involved, including environmental management strategy.