

Tłıcho Student Research Assistant Program

Final Report - September 2017

PROJECT TITLE:
Tłıcho Student Research Assistant Program
NAME OF SPONSORING ORGANIZATION:
Environment & Natural Resources, Government of the Northwest Territories Wek'èezhìi Renewable Resources Board
PROJECT DESCRIPTION:
Tłıcho youth from the North Slave Region were hired as research assistants to work alongside university researchers at the Tundra Ecosystem Research Station at Daring Lake, Northwest Territories. Students assisted researchers with fieldwork and in the laboratory at the research station. The Tundra Ecosystem Research Station is located 300 km north of Yellowknife. The Research Station facilitates long-term research and monitoring of the tundra ecosystem and supports conservation education programs and training opportunities for northern students. This is the final year of a project that took place over a five-year period. Student Recruitment: Two Tłıcho students / youth will be hired each year for a total of 10 students participating in the program over a 5-year period. Each student will be hired for one month; one in July and one in August. Participants should have a minimum of Science 10. Recruitment targets students who have previously attended the Tundra Science and Culture Camp at Daring Lake and are familiar with the Research Station and its operations. The Student Research Assistant Program opportunity is advertised and applicants are required to submit a resume. Students are selected through a screening and interview process. a) Objectives: • To provide education and training experiences for Tłıcho students / youth • To provide valuable work experience for students • To introduce students to careers in science, particularly those related to the environment • To create awareness and interest in scientific research and fieldwork that may encourage future participation in initiatives such as community-based monitoring programs • To support efforts to engage Tłıcho citizens in the stewardship of land, wildlife and resources on Tłıcho lands and in co-management in Wek'èezhìi • To provide a mutually beneficial opportunity for students and researchers. Researchers will benefit from additional field and laboratory assistance, and students will benefit from the mentoring they receive b) Deliverables:

- Annual Final Report to summarize program activities
- Digital photographs of students engaged in program activities
- Signed photo release forms for each student
- Copy of poster advertising the program and employment opportunity. Posters were sent to Tłıcho community schools. They were also posted on the Wek'èezhì Renewable Resources Board Facebook page and website, as well as on the Tłıcho Government's Facebook page and website. The Tłıcho Government also included the poster and program information in its newsletter.

PROJECT PARTICIPANTS SUMMER 2016

For Year 5 of this project, three youth were hired as Research Assistants for the months of July and August. All three candidates were strong candidates and to provide each with an opportunity to work as a research assistant in this unique tundra setting, the hiring team proposed a plan to hire all three. Each candidate was hired for a slightly shorter work term at a higher rate of pay (\$16.50 /hr rather than \$14.00 / hr.), and the summer students' work terms overlapped. Janelle Nitsiza's work term began on July 13, 2017 and ended on August 4, 2017. Zhalanni Drygeese's work term ran from July 21, 2017 to August 11, 2017, and Jody Zoe was hired from July 26, 2017 to August 20, 2017. Janelle, Zhalanni, and Jody each completed her complete full term. Each was paid for 23 days.

The Student Research Assistant employment opportunity was promoted on website and social media, as well as by letter and poster distributed to schools and to Tłıcho Government offices in each of the four Tłıcho communities.

Four (4) applications were received and screened and interviews were held by telephone. Job duties and supervision were overseen by Environment & Natural Resources, Government of the Northwest Territories (GNWT).

WORK ACTIVITIES

TSSRAP students assist researchers who are studying aspects of climate change, and impacts on the tundra environment, vegetation growth and carbon exchange. They also assist with camp maintenance and chores.

Daring Lake is one location in a global network of research sites that scientists are monitoring to better understand any impacts climate changes might have on carbon cycle processes. Ultimately, the research is aimed at contributing to a greater understanding of the Arctic's overall response to a changing climate.

As part of a long-term study of tundra-atmosphere interactions at Daring Lake and ongoing research programs, university researchers are studying the exchange of important greenhouse gases (carbon dioxide and methane) between tundra surfaces and the atmosphere. They are measuring these exchanges over various tundra types (upland tundra, wet sedge fen, and shrub sites) and assessing carbon sink/source strength of the Daring Lake region. For the 2017 field season, core projects addressed whether soil depth influences photosynthesis/respiration rates of tundra plants, in particular on crowberry, bearberry and cranberry –and whether soil depth makes certain species more or less productive; some of the ongoing questions about tundra carbon cycling

between ecosystems and the atmosphere; and the effects of climate change on the tundra ecosystem.

Research field work also focused on interactions between climate change and peatland ecosystems, specifically the Daring Lake Fen –an arctic wet sedge meadow with permafrost and vegetation characterized by sedges, dwarf birch and sphagnum cover. Researchers and summer students measured methane gas, for example, believed to be an important contributor to greenhouse gases. Methane (CH₄), locked in permafrost, is escaping as ice thaws. Subarctic and arctic ecosystems store vast amounts of carbon (C) within soils that are frozen and/or saturated for the majority of the year; however, the response of C cycling in these environments to current and future climate change is uncertain. One research project was investigating spatial and temporal patterns of methane emissions from the Daring lake fen.

This year's researchers were Quan Gu, a Ph.D. student at Queen's University; Shannon Petrie, a student assistant, also at Queen's University, and working mainly with Qian Gu at Daring Lake; and Emma Riley, whose program is MSc Physical Geography at Carleton University, studying under Dr. Elyn Humphreys.

This summer, in addition to taking methane measurements, TSSRAP students helped take various measurements including the depth of the soil's active layer, soil moisture, soil temperature and other variables that characterize the microclimate of several tundra surfaces. The summer students also assisted researchers with soil coring and vegetation clipping for a researcher's undergraduate thesis, as well as monitoring vegetation sample plots. They also helped the camp manager with maintenance projects around the Research Station.

University researcher Emma Riley expressed her gratitude for the TSSRAP. She wrote, "A few weeks into my fieldwork, my field assistant had to be sent home to Ottawa from Daring as she had a severe kidney infection. I was worried at this point about how to carry on with three projects without someone else to help me. Janelle was very enthusiastic and eager to learn about all the different measurements I was taking. I seriously could not have completed all the work I had without her help and company."

While the TSSRAP is a unique opportunity for youth to learn about science first-hand out in the field, it can also be an opportunity to exchange knowledge and for researchers to learn from the summer students. "During the many long days out in the field, Janelle also shared a lot of knowledge regarding Tłıcho culture and history. It was really cool for me and for that I'm super thankful that these positions are organized," Emma said.

In addition to their work terms, the summer students participated in GNWT's 10-day annual Tundra Science and Culture Camp (TSCC), July 26-August 4, also at Daring Lake. TSCC students work closely with scientists, environmental educators, on-site researchers and Dene elders to learn about the land from both scientific and Dene perspectives. This opportunity further enriched their work experience by providing interdisciplinary learning about the tundra ecosystem and hands-on exposure in field techniques. Janelle instructed one of the culture courses and can be seen in the attached photos assisting TSCC students with scraping hides, drum-making, and beading. Participating at TSCC had special significance for Janelle. As the granddaughter of the late Dora Nitsiza, an elder who spent many summers as a cultural instructor at the camp, Janelle wanted to be able to experience what her grandmother had. Often referred to as "an elder in training",

Janelle spent the last year living a traditional life, practicing traditional skills which she shared this summer at Daring Lake. Jody was especially interested in the geology of the area, learning about the different kinds of rocks on the tundra and their textures. “If you really look,” she said, “you can see crystals in the rock.” A fun activity involved walking a geological timeline –where a rope was set out on an esker and students had to match slips of paper describing geological events to when they occurred in history. All the summer students were interested in the area’s prehistory and archaeological sites such as “litter scatters” where the remnants of tool making activities could be viewed. They enjoyed hearing traditional stories, playing hand games, making dry meat, and being in a unique geographical setting where they were able to walk on eskers and see caribou and other wildlife such as peregrine falcons and grizzly bears –at a distance! Learning about caribou ecology was particularly rewarding and the summer students learned many new things including the fact that caribou leave a scent so other caribou know if a potential threat was present.

One of the activities at TSCC involves monitoring small mammal population trends using a new live trapping method. Students tagged red-backed voles and other animals, ran the trap line, and checked the traps. Population indices are calculated by collecting and monitoring species each year, information that is collected and monitored by circumpolar agencies.

The unique landscape with its eskers and the vast, open tundra with its seemingly unending views where one can see so far in the distance, and “where places look really close but take a long time to get to” left strong impressions. Jody, for example, would like to return to Daring Lake, this time as a camp manager.

PRIMARY CONTACTS

ENR, GNWT: Karin Clark, Cumulative Effects Biologist (Karin_Clark@gov.nt.ca) (867-767-9237 ext. 53225)

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List of Attachments

- Digital photographs of students engaged in program activities
- Signed photo release forms for each student
- Copy of poster advertising the program and employment opportunity. Posters were sent to Tłı̄cho community schools. They were also posted on the Wek’èezhì Renewable Resources Board Facebook page and website, as well as on the Tłı̄cho Government’s Facebook page and website.

Attachment 1 - Digital photographs of students engaged in program activities

Janelle Nitsiza



Janelle Nitsiza giving tips for scraping hides to one of the TSCC students. Photo: GNWT / S.Yuill, ENR



Janelle Nitsiza providing instruction on preparing a hide. Photo: GNWT / S.Yuill, ENR



Janelle Nitsiza helped the elders and cooks prepare delicious traditional foods. Photo: GNWT / S.Yuill, ENR



Janelle Nitsiza assisted elder Louis Zoe in his workshop on drum making. Photo: GNWT / S.Yuill, ENR



The Dene Drum is typically made from caribou skin a circle wooden frame. The handle in the back is made of sinew. Drums are used by the Tłı̨cho and other Northern peoples for hand games, drum dance or tea dances. Photo: GNWT / S.Yuill, ENR



Janelle Nitsiza participating in a course on aquatics where students learned about fish anatomy and ecology. Photo: GNWT / S.Yuill, ENR



Janelle Nitsiza also assisted elders in instructing TSCC students on how to prepare dry meat.
Photo: GNWT / S.Yuill, ENR



Janelle Nitsiza at centre having fun in a hand game. Photo: GNWT / S.Yuill, ENR

Zhalaani Drygeese



Zhalaani Drygeese, pictured at right, taking part in a learning activity on the tundra. Photo: GNWT / S.Yuill, ENR



Zhalaani Drygeese learning how to prepare dry meat using reindeer meat. Photo: GNWT / S. Yuill, ENR

Jody Zoe



Photo: Susan Beaumont, WRRB



Jody Zoe working with researcher and instructor. Photo: GNWT / S.Yuill, ENR



Jody Zoe is examining the texture and structure of various rocks on the tundra.
Photo: GNWT / S.Yuill, ENR



Jody Zoe learning how to prepare dry meat. Elder Therese Zoe is to her left.
Photo: GNWT / S.Yuill, ENR



Jody Zoe practicing how to scrape hides with instruction by TSSRAP summer student Janelle Nitsiza, pictured at bottom right. Photo: GNWT / S.Yuill, ENR



Jody Zoe picking cloudberries on a trek through the tundra. Blueberries were also ripening on the Barren lands. Photo: GNWT / S.Yuill, ENR



Group project work during the Tundra Science and Culture Camp. TSSRAP summer student Jody Zoe is pictured at right. Photo: GNWT / S.Yuill, ENR



Bug jackets are an essential part of one's gear out in the field. The weather was often windy, Jody said, depending on where you are –on the eskers, for example. Her favourite weather was when there were no bugs! Photo: GNWT / S.Yuill, ENR



Jody Zoe caught her first fish up at Daring Lake, NWT.



Sunset viewed from an esker. Photo: Jody Zoe



When the weather warmed up, Jody Zoe swam in a stream near a tiny waterfall.



TSSRAP summer students joined TSCC students on two tundra treks, one to the North Esker.
Photo: GNWT / S.Yuill, ENR



Double rainbow from atop an esker in an “extraordinary” landscape, in Jody’s words.
Photo: Jody Zoe

Attachment 2 – Signed photo release forms

Attachment 3 - Copy of poster advertising the Tłıcho Student Research Assistant program and employment opportunity.

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