

Tłıcho Student Research Assistant Program

Final Report - October 2014

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 high school students 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 second year of a project that will take place over a five-year period. Student Recruitment: Two Tłıcho high school students 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 • 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.
- Copy of Wek'èezhì Renewable Resources Board (WRRB) E-newsletter story publicizing the project. The story was distributed in the Summer 2014 issue and is posted on the WRRB website.

PROJECT PARTICIPANTS SUMMER 2013

For Year 2 of this project, Roman Lamouelle and Susan Machan were hired as Research Assistants for the months of July and August respectively. Roman Lamouelle was hired for a 28 day term, from July 3-August 4, 2014. Susan Machan was hired for a 28 day term, from July 27-August 25, 2014.

The Student Research Assistant employment opportunity was promoted on website and social media, as well as by poster distributed to schools. In addition, a Power Point presentation on the TSSRAP program was prepared and presented to high school students in Behchokò.

Twenty-one (21) 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

Roman and Susan worked with university researchers engaged in climate change studies at Daring Lake, and assisted them with field work and in the lab at the Research Station. They assisted university researchers including Claire Elliot, M.Sc. Candidate, Carleton University; LeGe, PhD candidate, Trent University; Sean Arruda, Honours Thesis, Trent University; Kristyn Foster, Trent University; Allice Wilson, Caspar Christiansen, Nishka Wright, and Emma Hill.

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, 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 2014 field season, core projects addressed some of the ongoing questions about tundra carbon cycling and the effects of climate change on the tundra ecosystem. For example, one project is studying the effects of climate on the growth, reproduction and timing of events in different tundra plant species. Other studies are investigating the relationship between permafrost and

climate change.

These projects focused on these areas of inquiry / investigation:

1. Whether there is any correlation between the normalized difference vegetation index and leaf area index, in order to reduce error in carbon exchange models.
2. The roles that Arctic ponds play in the Arctic carbon cycle, to better predict their contribution to the Arctic's overall response to a warming climate
3. Season and interannual variation in productivity over a series of Arctic tundra vegetation community types to better understand the effect of earlier snowmelt on growing season production.
4. The influence of increasing shrub coverage on the carbon cycle to improve understanding of the Arctic terrestrial carbon balance with current shrub expansion.

Summer students assisted researchers in the field by sampling vegetation and microbial communities and taking measurements of photosynthesis and respiration, and biomass. They also assisted in permafrost study fieldwork, measuring permafrost active layer depth; and in the lab by preparing samples for examination under microscopes and by drying plant samples for later analysis. They checked sensors, took water temperatures on tundra lakes, hauled equipment, recorded data, collected plant samples, assisted with vegetation point framing, and performed other field tasks. Roman and Susan also assisted with camp duties at the Research Station. Both students were commended for their hard work, and received references from the researchers they worked with.

Both were inspired by the researchers, their research, and their dedication. On his own initiative, Roman interviewed each of the researchers and made a video to show students at his high school. Roman interviewed each researcher about his or her area of investigation at Daring Lake, and also about the educational and life path that led them to study science. The video highlights messages such as one that researcher Claire Elliot told him: "Don't be afraid to explore science. Get out there and do it. It's an interesting world to be in." Susan gained valuable field experience and exposure to different areas of science. Going into her second year in the Geology program at the University of Calgary, Susan intends to add more environmental science courses into her university studies.

In addition to their work terms, both Roman and Susan signed on to the 10-day annual Tundra Science and Culture Camp (TSCC), July 26-August 4, also at Daring Lake. Coordinated by Environment & Natural Resources, GNWT, the camp provides intensive courses in multiple field sciences and cross-cultural outdoor environmental education. This opportunity further enriched their work experience by providing interdisciplinary learning about the tundra ecosystem and hands-on exposure in field techniques. Roman was particularly interested in the area's prehistory and archaeological sites, and during the camp, completed a project on traditional Tłı̄cho canoe routes from Great Slave Lake to the Barrenlands. Susan assisted a wildlife researcher on her small mammal live trapping project, caught her first fish, participated in drum-making, Dene hand games, caribou hide preparation and dry fish preparation, and learned how to bead, a traditional skill she had always wanted to learn.

PRIMARY CONTACTS
ENR, GNWT: Karin Clark, Cumulative Effects Biologist (Karin_Clark@gov.nt.ca) (867-920-3014)
WRRB: Jody Snortland-Pellissey, Executive Director, (jnortland@wrrb.ca) (867-873-5740)

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.
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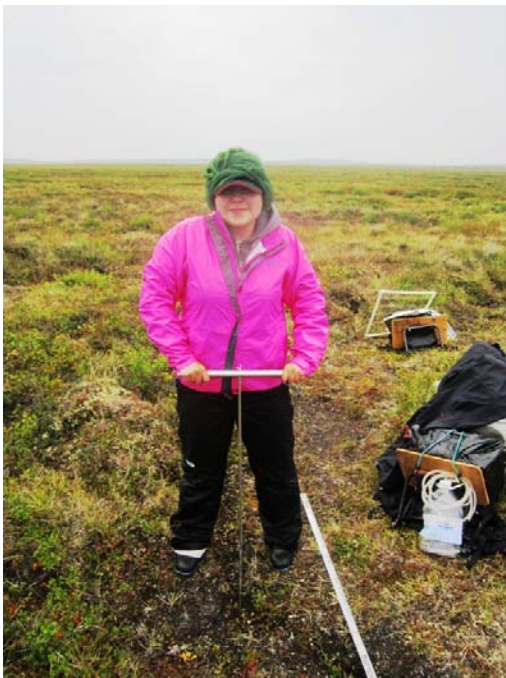
Attachment 1 - Digital photographs of students engaged in program activities

Susan Machan

Camp chores include doing personal laundry (Photo: Susan Machan)



Susan Machan assisting with field work





Susan Machan catching her first fish

The following photos were taken at the Tundra Science and Culture Camp at Daring Lake. Both Susan and Roman participated in the camp during their employment at the Tundra Ecosystem Research Station. Photo credit : GNWT



Susan Machan throwing an atlatl, traditional Dene spear-thrower. GNWT Photos



Susan Machan on a hike during Tundra Science and Culture Camp



Susan Machan learning how to bead during camp and below, learning how to make a traditional Dene drum





Susan Machan (far right) in a caribou migration simulation game (at a water crossing)



Susan Machan (closest in foreground) feeling ice in the permafrost layer



Susan Machan in red top at the right – archaeologist Tom Andrews explores with the group whether this rock might be an errant rock or a child's grave marker



Susan Machan (at right) learning about micro-habitats. Birds and other wildlife tend to perch on this rock; their waste has fertilized the ground and produced luxurious plant growth.



Susan Machan (at the back right) and group examine a rare (and stunted) spruce tree on the tundra



Susan's team in caribou migration simulation game



Susan learning how to use a beach seine fish net



Susan learning about fish trap



Susan (middle) working with team on a group project



Susan's (second from right) winning team - above and below





Susan describing her collection project to Karin Clark, one of the camp instructors



Susan presenting on the small mammal live-trapping project she assisted with



Roman Lamouelle



Roman in the water with beach seine net and learning about fish traps



Roman (second from right, holding the tracked “caribou”, in a radio tracking exercise. Note the collar held by the person in the green jacket – the collar sends out signals and teams compete to locate their “caribou”.



A look of disappointment on Roman’s face as they lost to another tracking team.



Roman Lamouelle (middle, in camouflaged jacket) learning about archaeological sites on the tundra from archaeologist Tom Andrews



Roman Lamouelle with researchers at Tundra Ecosystem Research Station, Daring Lake



Roman (second from right) in caribou obstacle course game



Susan (middle) and Roman (far right) in caribou obstacle course game



Roman's team in caribou migration game (simulating a water crossing) Roman is pictured at the back.



Roman Lamouelle (second from left) taking part in caribou photo survey exercise during Tundra Science and Culture Camp – GNWT photo



Roman examining the rare spruce tree on the tundra



Roman on the tundra

Roman Lamouelle and atlatl throwing – GNWT photos



Roman learning how to make a Dene drum and below





Roman drumming (second from left)



Roman (third from left) playing Dene hand games



Roman learning beading (note Susan in back table on left)



Roman working with instructors on his traditional trails project



Roman presenting his research on traditional trails (also in photo following)



Roman describing his collection at the collection fair to Tasha Stephenson. The collection project teaches students to look at things in the environment closely to see that there are differences among mushrooms, for example. Students identify the items in their collections using identification guides and keys and learn how to label using correct scientific technique.



Roman learning about fish and the aquatic ecosystem



Roman (leading the pack) on a 10-km hike over the tundra



Roman and his group project team (and below)





Roman and Susan (standing directly behind) enjoying each group's skits



Roman videotaping some of the crew at camp for his video on the researchers and their research projects at Daring Lake (and in photo following)



Group photo of students and instructors at the Tundra Science and Culture Camp

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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Attachment 4 - Copy of Wek'èezhì Renewable Resources Board (WRRB) E-newsletter story publicizing the Tłı̨cho Student Research Assistant project.

The story was distributed in the Summer 2014 issue and is posted on the WRRB website.

