

TUNDRA SCIENCE CAMP

July 24 – August 2, 2010

DARING LAKE,
NORTHWEST TERRITORIES

ANNUAL REPORT



1.0 Background

Daring Lake and The Tundra Ecosystem Research Station are located 300km north of Yellowknife, in the Southern Arctic Ecozone 50 km north of the tree line. The Station was established in 1994 by the Department of Environment and Natural Resources (ENR) as a multi-purpose facility whose primary goal is to facilitate long-term research and monitoring of the tundra ecosystem.

The Station also supports conservation education programs including ENR's Tundra Science Camp (TSC). Initiated in 1995, the TSC provides students with a well-rounded exposure to arctic ecology, natural history, human history and Dene traditional knowledge. Participants work closely with scientists, environmental educators, on-site researchers and Dene elders. The focus is on learning about the land from both scientific and Dene perspectives in a cross-cultural setting. Students learn about wildlife ecology, ornithology, plant ecology, geology, archaeology and human history, Aboriginal culture and cultural practices, and get hands-on experience with field techniques in these disciplines. Elders teach traditional skills and their way of knowing the land.



In addition to classroom and field sessions, time is provided for students to conduct their own small-scale research project in an area of special interest. Participants also learn about decision-making, resource management and development issues in this diamond mining region of the Northwest Territories.



There is also lots of opportunity for recreational activities such as swimming, fishing, wildlife viewing, photography, storytelling and games.

2.0 Educational Philosophy

Since 1995, GNWT staff from ENR and Education, Culture and Employment (ECE) have organized the Tundra Science Camp, held each year over a 10-day period at the end of July. Offered in partnership with the Tłı̨chǫ Government, the camp attempts to blend the pedagogical methods, knowledge, and experience of traditional and Western sciences, providing an experiential on-the-land learning environment for students. In so doing, it conforms to the holistic educational philosophy of the Tłı̨chǫ Community Services Agency, best expressed in their mission statement “Strong Like Two People”.

In this model, “knowledge holders”, comprising both Tłı̨chǫ elders and Western-educated scientists and specialist, share their knowledge and experience with each other and with students in an on-the-land setting. According to “Strong Like Two People”, this structure best captures the ancient Tłı̨chǫ experiential pedagogy of educating and socializing youth while pursuing daily subsistence activities on the land, yet, recognizes the need to train students in a modern learning framework, allowing them to develop skills and knowledge necessary to achieve standing in the Canadian educational system. Thus, both Aboriginal and non-Aboriginal students learn to respect both learning traditions, taking the best from each and combining them into a holistic learning experience. This goal is at the heart of both “Strong like Two People” and GNWT’s “Traditional Knowledge Policy”, ensuring that balance and respect are brought into the learning experiences of NWT youth.

All programming at the Tundra Science Camp follows this model and Tłı̨chǫ elders and Western scientists regularly involve each other in subject modules, whether they are cultural programs, archaeology, or ornithology (among others). A mid-camp hike, allows students to explore their own newly acquired knowledge, while relying on the mentorship of Tłı̨chǫ elders and Western scientists who accompany them on the walk. More often than not, the hike allows students to help Tłı̨chǫ elders search for caribou, often culminating in a caribou hunt. In an ideal expression of the “Strong like Two People” philosophy, the hike and hunt provides a unique opportunity for Elders to teach the particular knowledge and skills necessary to respectfully kill and field dress a caribou in a barrenlands setting, while allowing other knowledge specialists to discuss aspects of caribou biology. In essence, the hike acts as a learning catalyst, allowing students to pursue their own interests in completing collections and a major project over the remaining days of the camp. Each year, school teachers attend the camp and, through their participation, the camp’s educational philosophy generates a legacy in the NWT school system.

3.0 Process

A total of fifteen students are selected annually from high schools in the North Slave, South Slave and Dehcho regions. Preference is given to students who have completed Science 10 or the equivalent. Up to three teachers from participating school boards are also given the opportunity to attend. By participating in the programming, teachers help maintain a legacy of the camp in the school system.



Student application forms are distributed to participating high schools in early April. Completed forms are submitted to the school and the school recommends applicants to the program coordinators by May 15. Accepted participants are notified by early June when more information on the camp program is provided.

The program is subsidized by grants, contributions and in-kind support from the GNWT departments of Environment and Natural Resources (ENR), Education, Culture and Employment (ECE) and Industry, Tourism and Investment (ITI) along with Indian and Northern Affairs Canada and participating school boards. The cost to each participant is \$250. This includes return air transportation from Yellowknife to Daring Lake and all meals and accommodation at the Tundra Ecosystem Research Station.

4.0 Student Attendance

Applications for the 2010 camp were overwhelming. A total of 23 students and three teachers students from Tlicho communities applied to attend this year's camp. Students were screened using several methods:

1. With teacher's assistance;
2. Student's without Science 10 were ruled out;



3. Individuals who attended previously were put on a wait list; and
4. Student's in higher grades were given preference as they were much less likely to be able to apply in future years.

In the end, 15 students were chosen:

- 7 from Yellowknife
- 1 from Whati
- 7 from Behchoko

One individual from Behchoko did not show up on the day of departure

Two school teachers were also in attendance - one from Yellowknife and one from Fort Liard.



5.0 Camp Staff and Instructors

A total of 34 people were at the Daring Lake Research Station during the 2010 Science Camp. In addition to the 14 high school students there were:

- 2 teacher students from local school boards;
- 5 university researchers; and
- 13 camp staff/instructors.

Staff provided both formal and informal learning opportunities for the students. Teachers Debra Wotherspoon and Stephan Sevigny encouraged students in their endeavours, supervised and disciplined them during quiet time and role modelled by their full and active participation during sessions.



University students, using the facility as a research station, gave TSC students the opportunity to interact with these

students, participate in on-going monitoring programs and learn from these researchers about their studies. Many of the university students were focused on climate change research and TSC students were able to formally see research methods and sites, and talk informally with university students on a variety of such things as education, careers and climate change. As such, the university students provided important role models for our high school students.

Staff/instructors had varied backgrounds and provided a full spectrum of experiences to the students:

- Tom Andrews
(Archaeologist – Education, Culture and Employment)
- Diane Baldwin
(Geologist - NWT Geoscience Office)
- Jamie Bastedo
(Ecologist and Educator - Cygnus Consulting)
- Nimisha Bastedo
(Cook Assistant and former TSC participant)
- Karin Clark
(Biologist - Wek'eezhii Renewable Resources Board)
- Brenda Hans
(Biologist and Educator – Education, Culture and Employment)
- Steve Matthews
(Research Station Manager, Biologist – Environment and Natural Resources)
- Dora Nitsiza
(Tłıchǫ Elder)
- Michele Rabesca
(Tłıchǫ Elder)
- Bernadette Rabesca
(Tłıchǫ Elder)
- Rosanna Strong
(Camp Cook – Strong Interpretation)
- Chandra Venables
(On-site Research Station Manager, University Researcher)
- Stephanie Yuill
(Camp Coordinator – Environment and Natural Resources)

6.0 Schedule/Programming

Upon arrival, students' days and nights were filled with fun-filled learning, as well as interesting and challenging, activities. Students were divided into small groups that attended half-day instructional sessions. Time was spent in classrooms with experts in the fields of archaeology, ornithology, plant ecology, geology and wildlife biology. Each expert incorporated both hands-on and outdoor components to each session.

As in the past, three Tłı̨chǫ elders were involved in cultural programs. A nimba (tepee) was assembled by students under the watchful eye of Michel Rabesca and cultural activities and programs were held in the facility.



The detailed camp schedule appears in Appendix A. Below are highlights from selected activities.

- Doing headstands on the esker, seeing the land in different ways;
- Walking barefoot through a bog and feeling permafrost on their bare feet;
- Learning to use a spotting scope and viewing peregrine falcons;
- Visiting an abandoned wolf den;
- Using radio telemetry equipment to track a bear;
- Picking blueberries with elders on the all-day hike;
- Tasting moss and lichen;
- Throwing an atlatl, a reproduction of an ancient spearthrower;
- Checking traps as part of the small mammal monitoring program;
- Chipping a stone tool out of obsidian;
- Challenging other student's to rounds of Dene hand games;



- Erecting the nimba and experiencing cultural life inside;
- Scraping the fur and fat off a caribou hide; and
- Panning for indicators minerals on sandy beaches.

Aside from attending programs, students were responsible for various chores. On day one, they were divided into chore groups and rotated tasks throughout the week never repeating the same chore twice in a row. In the morning, groups washed breakfast dishes, took daily weather readings, cleaned latrines or assisted with the small mammal study by counting animals caught along a trap line (part of the NWT/Nunavut Small Mammal Monitoring Program). Groups were also responsible for washing lunch and dinner dishes.



Free time was largely spent swimming, fishing, reading, socialising or playing cards; however, in 2010 a number of students showed tremendous leadership by organising several activities on their own. This included a talent show, an ultimate Frisbee game and endless rounds of Dene hand games.

7.0 *Student Collections*

During the first seven days of the camp, students were exposed to a number of different Western sciences and a number of traditional practices. This exposure culminated with two student-lead activities: a collection fair and a student project presentation.



Students were informed of both activities at the beginning of camp. Information was reinforced throughout the week (particularly during the all-day, instructor-led hike) so students could take every opportunity to collect the necessary specimens/ samples. Students were expected to choose their own areas of interest for both activities in order for it be more interesting and relevant to them. To help them focus and prepare their

research and presentations, students were given hand-outs from previous years providing examples of what and how things were done in the past.

Appendices B, C and D contain detailed copies of each hand-out.

On the Friday evening, students set up displays to show off their collections as staff, instructors and other students circulated and asked questions.

Collections included:

- Flowering plants
- Mushrooms
- Clouds
- Rock
- Berries
- Lichen
- Animal scat
- Animal tracks
- Wind
- Feathers



8.0 Student Projects

The highlight of camp for many students was the special project. It enabled them to pursue something of interest to them and to present it in a manner they were comfortable with. They could work individually or as a team, depending on the depth of research (eight individuals chose to work alone, two groups were made of up pairs and one group consisted of four students).

To help them focus and prepare their research and presentation, students were given two project outlines from previous years and an outline sheet to fill out (Appendices B, C, D). Students were also assigned an instructor to mentor them throughout their projects. The mentor acted as a resource for the students, be it answering questions or providing direction to other resources. Mentors also ensured students were on track with timing and would encourage students to start work or accompany students in the field to collect the necessary samples or field data.

Students were made aware of the project early and had ample time to prepare. Aside from the all-day hike and time during other classroom activities, almost 3 full days were available for research and preparation. Final presentations were held the afternoon and early evening of the final full day.

In the end eleven projects were presented to the groups.

1. Erosion –student analysed grain size of samples taken from the beach and the esker in order to compare effects of erosion at two different sites.
2. Caribou hunt – by participating in a caribou hunt led by an elder, two students hoped to document a traditional hunt and asses the health of the caribou. Unfortunately, although we had a permit to harvest a bull caribou, Michele was unable to find a suitable animal to harvest.
3. Lithic scatters –by making an arrowhead/spear, the students compared debris found in a ‘recent’ lithic scatter (her own) to a ‘real’ lithic scatter on the esker.
4. Wind - by taking measurements on the esker and comparing it to that of the beach and the camp, the student hoped discover the where the wind blew the strongest.
5. Atlatl – teacher used various materials to create modern atlatl’s.
6. Tundra Spa – students investigated and tested ingredients for all-natural spa products.
7. Methane –an underwater trap was set up to catch gas bubbling from underneath the sand. The sample was then tested to determine whether it was methane.



8. Ground squirrel trapping – student made own snares and set traps, documenting locations and foods to see what areas/foods attracted the squirrels in order to determine if she was as good a trapper as her father.

9. Beading/sewing – student demonstrated traditional beading methods and researched materials used by her ancestors to decorate clothing.

10. Rocks – by experimenting with rocks exhibiting conchoidal fractures, student discovered the best locally-sourced rock-types for stone-tool making.

11. Fishing – two students researched a series of variables on fishing success (emotional intent, time of day, lure selection).



9.0 *Traditional Knowledge*

Traditional knowledge was incorporated throughout the camp in numerous ways. Firstly, three Tłıchǫ elders presented traditional programming in the forms of Dene games, drum making, beading, fire feeding and caribou hide scraping. Elders also acted as a resource for a number of students who used their knowledge for research into their projects. Seven students in turn interviewed Dora Nitsiza and Bernadette and Michele Rabesca.

The presence of the elders also provided informal yet invaluable bonding time. Students were often seen simply sitting with elders, chatting with them during meal times or pick blueberries during the all day-hike.

The Tłıchǫ language was front and centre as a word-of-the-day poster was kept in the dining tent. Each day, two relevant words were written up in both English and Tłıchǫ for

all to see and learn. Many instructors also incorporated traditional knowledge throughout their instructional sessions.

10.0 Budget

The table below details the cost of the 2010 Tundra Science Camp for the 14 students, two teachers and 12 staff in attendance.

Cost	Details	Cost
Air Charters	Twin Otter (Split) – Groceries	\$ 2,600.00
	Twin Otter - Groceries & Personnel	\$ 3,800.00
	Twin Otter - Staff & Participants (4 @ \$5,100)	\$ 20,400.00
Food	Groceries	\$ 6,300.00
Contracts	Cook	\$ 4,000.00
	Cook's Assistant	\$ 1,200.00
	Instructor	\$ 3,500.00
	Elders (3 @ \$3,000)	\$ 9,000.00
Total Cost		\$ 50,800.00

11.0 Evaluations

Both students and student teachers were asked to fill out evaluation forms on the last day of camp. Appendix E is a copy of the form and below is a selection of responses from camp participants.

- If anything, the camp was too short! Now that I'm here, I don't want to leave. The schedule was pretty intense, but it had to be to accommodate everything there was to do.



- The mix of groups was perfect. I had the chance to interact with mostly everyone. There was plenty of time to share and reflect. I felt very welcome by each staff member.
- I really like the sharing and reflection because it gave us an opportunity to see how others were feeling.
- I did a lot here also forgotten my hatred and now I'm a changed man thank you all for being my friends.
- There was just enough variety to get a taste of everything. I would have liked to do a bit more cultural activities.
- The groups worked well, and I got a chance to interact with everyone. There was enough time for group reflection, but my journal is pretty empty. A little time set aside for that would be nice or at least a reminder. I had no problem approaching a staff member if the was problem. I was happy with the staff except how I was asked to do latrines. Chandra was great.
- The last day was fun even though we bonded not enough time. More hanging out as a group.
- The programs were fantastic. I really enjoyed just learning all of it.
- I enjoyed the archaeology and stone tool making session. Hands on sessions were really fun.
- I enjoyed the variety of the program. It gave me a chance to explore different fields and interest.
- I think there was enough variation in the sessions. More is always good, but I had plenty of info to stuff my brain with.



Camp staff and instructors also evaluate the camp's program. While students are filling out evaluations, staff and instructors meet to debrief and assess the positive and negatives and provide comments on how to improve future year's programming.

12.0 Testimonials

Shortly after returning from camp, camp staff received an email from the parent of one participant, who wrote that he was,

... thrilled with how much [my daughter] enjoyed the camp at all levels: social, educational, cultural, physical, culinary (pastries galore, I hear), and just plain fun. I have heard about the camp for many years but didn't realize how thorough and profound an experience the participants were having -- on and in relation to the tundra. So... congratulations and thank you all for your effort in providing this wonderful opportunity for my daughter and other NWT youth.

The program also received glowing comments from the Northern News Service, who put an article on the front page of August 9th's News North (Appendix F).

13.0 Conclusion

The week concluded on an emotional but positive note. Students and staff gathered on top of the esker the last evening to participate in a final sharing circle. Each individual was given a chance to reflect on their experiences during the camp in front of the group.

Many of the comments resounded similar: it went by too quickly; they loved being there; it was nice to make new friends; exciting to have new experiences; they loved the land; they learned so much.

However, two individuals stood out. One young man began by speaking of coming to the camp with his grandparents. He ended that he was leaving with grandparents, new aunts, new uncles and most importantly, two brothers. The two brothers were young men from another community he had met and the three were inseparable the entire ten days.

A second highlight was a young man that stood before the group and spoke of how proud he felt to be a Dene after his time at camp; more confidently, articulately and with more pride certainly than when he arrived.

In both instances, there was not a dry eye in the sharing circle. That speaks volumes of the power of the camp. That adults and teens, both male and female, were able to voice such powerful emotions and openly cry in front of their peers with no shame. That night, participants witnessed all the lessons learned on the land be it scientific, traditional and emotional.

Appendix A – Tundra Science Camp Schedule 2010

July 24	July 25	July 26	July 27
Orientation Day/ Flights to Daring Lake	8:00 am. Breakfast & Chores	8:00 am. Breakfast & Chores	8:00 am. Breakfast & Chores
9:00 am. - 12:00 pm. *Meet at NUP, 2nd floor classroom (205)	9:30 am. Reflection	9:30 am. Group 1 Cultural Activities	9:30 am. Group 1 Plants
-meet & greet -bear safety (in)	10:00 am. Group 1 Human History	Group 2 Caribou Ecology	Group 2 Geology
1:30 and 2:00 pm. Flights to Daring Lake	Group 2 Birds	12:30 pm. Lunch	12:30 pm. Lunch
4:00 pm. Paying the Water Camp Orientation Bear Safety (out)	1:00 pm. Lunch	1:30 pm. Group 2 Cultural Activities	1:30 pm. Group 2 Plants
6:00 pm. Supper	2:00 pm. Group 2 Human History	Group 1 Caribou Ecology	Group 1 Geology
7:30 pm. Evening activity: Opening Circle	Group 1 Birds	6:00 pm. Supper	6:00 Supper
Staff Meeting	6:00 pm. Supper	7:30 pm. Introduction to Collections and Projects	7:30 pm. Time Travel
	7:30 pm. Presentation	Co-management	
		Sharing Circle	

July 28

**8:00 am. Breakfast &
Chores**

9:30 am.

All Day Hike

- den ecology
- wildlife viewing
- geology
- human history
- Dene perspective
- birds
- plants

6:00 pm. Supper

7:30 pm.
Staff Meeting

July 29

**8:00 am. Breakfast &
Chores**

9:30 am.
Tool Making (All)

11:00 am.
Cultural Program

12:30 pm. Lunch

1:30 pm.
Group 1
Wildlife Techniques

Group 2
Projects-Introduction &
Mentor

6:00 pm. Supper

7:30 pm.
Sharing Circle

July 30

**8:00 am. Breakfast &
Chores**

9:30 am.
Group 2
Wildlife Techniques

Group 1
Projects-Introduction &
Mentor

12:30 pm. Lunch

1:30 pm.
Projects

6:00 pm. Supper

7:30 pm.
Collections Fair

July 31

**8:00 am. Breakfast &
Chores**

9:30 am.
Projects

12:30 pm. Lunch

1:30 pm.
Projects

6:00 pm. Supper

7:30 pm.
Tundra Challenge
2010 !!!

August 1

**8:00 am. Breakfast &
Chores**

9:30 am.
Reflection

10:00 am.
Projects

12:30 pm. Lunch

1:30 pm.
Projects

3:00 pm.
Project Presentations

6:00 pm. Supper

7:30 pm.
Cultural Program
-Michel and others

Closing Circle

August 2

**Say Goodbye to Daring
Lake!**

9:00 am. Breakfast

10:00 am.
-pack up camp
-closing ceremony
-evaluations
-staff meeting

1:00 & 3:00 pm.
Departures to YK

Appendix B - Tundra Science Camp Student Collections

Objective:

1. Collect 8-10 items/ species/ examples,
2. Learn the classification system for those items
3. Become familiar with the field guides, manuals and other resources available for identifying these items.
4. Display and present your collection at an informal collections fair.

Past Collections, for example:

1. Rock types/minerals/potential for tool-making
2. Plants – common/medicinal/traditional uses/traditional teas/flowers
3. Aquatic invertebrates.
4. Mushrooms
5. Soil samples.
6. Animal sign/remains (not bones).
7. Sunspots.
8. Lichens.
9. Tracks.
10. Terrestrial insects
11. Hair
12. Indicator minerals
13. Berries
14. Original poetry/art
15. Habitats
16. Traditional stories
17. Sounds
18. Fish prey
19. Mosses
20. Scents
21. Feathers
22. Archaeological sites (using photos)

Appendix C - Tundra Science Camp Student Projects

Past Projects

1. Permafrost - comparison of permafrost depth at various locations with different plant coverage and different degrees of human disturbance.
2. Daring Lake Ecology – construction of a food web based on evidence of species in the lake.
3. Tool making – collection of rocks that have conchoidal fracture and attempt to make tools from them.
4. Tool-making – construction of various tools using wood, obsidian, stone, hide including bow drill, arrows, bow, knife, model dead-fall and fish traps, snares and willow fishnet.
5. Tool-making – construction of caribou fence and description of traditional caribou hunt.
6. Late evening wildlife observation – planning a walking route for observing and recording evidence of wildlife.
7. Habitat comparison for plants – measurement of plant height and leaf size of dwarf birch in a variety of habitats.
8. Medicinal uses of tundra plants – collection and pressing of plants with traditional medicinal uses.
9. Ecology of peregrine falcons – observation of peregrine nest sites, response to disturbance, collection of prey remains and if possible, banding of chicks.
10. Comparison of food bait preferences of insects.
11. Pictorial description of process for tanning hides.
12. Mapping of archaeological sites.

13. Recording of traditional place names.
14. Mapping and description of wildlife use of bear rocks.
15. Mapping of rock outcrops.
16. Pictorial dictionary of Dogrib.
17. Mushroom collection and spore printing.
18. Plant collection and taxonomy.
19. Description of caribou hunting and meat and hide processing.
20. Comparison of aquatic invertebrates in fast-moving water, lake and pond habitats.
21. Comparison of plant phenology on island and mainland.
22. Comparison of phenology and size of blueberry plants in different habitats and preparation of pemmican and blueberry squares.
23. Mapping of “spoon” glacial feature and construction of a model.
24. Stream dynamics.

Project Team: Kay and Curly

Title of Project: Tracking Wildlife Life of the Narrows Beach

Purpose: To see what animals hang out around the Narrows when people are not hanging out there.

Methods of Study:

Monitor animal tracks/footprints in the sand at different times of the day and night. Rake the sand clean of tracks and return to check for tracks first thing in the morning; in the afternoon; late evening. Identify and document the tracks; measure size of track for comparison of individuals; record direction of movements. Record human activity during intervals between sampling, to see if that influences number of tracks. Photograph or make plaster cast for sample tracks.

Equipment:

Garden rake	Camera	Watch/clock
Notebook and pencil	Plaster and mold form	Each other, buddies to leave camp

Expected Results/Product:

We think we will find tracks of some small animals, and maybe caribou and wolf and maybe even a Big Animal. During the day, we expect some human tracks. Probably there will be more animal tracks overnight, when people aren't moving around.

Presentation:

We can do a bar graph of the number of each species that we found there. We can do another graph to show the activity at different times of the day. We may have some plaster casts to show different animal tracks. If we get a 'mystery' track we can make up a story about it!

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**Project Team:** Lina and Jake

**Title of Project:** Traditional Uses of Caribou

**Purpose:** To see how our grandparents used parts of the caribou.

**Methods of Study:**

We will talk to elders at the camp, research and read books and other materials,

**Equipment:**

|                            |                   |                   |         |
|----------------------------|-------------------|-------------------|---------|
| Notebooks and pencils      | Camera            | Caribou hide      | Caribou |
| Scarf/traditional clothing | Thread and needle | Birch bark basket | Buttons |

**Expected Results/Product:**

We think that our grandparents used each and every part of the caribou and did not waste anything.

**Presentation:**

We would like to present it as a play. One of us will be the interviewer and one of us will be the elder being interviewed. We would like to use various props to demonstrate the different uses of different parts of the caribou. For example, how the sinew was used for sewing clothes and stitching together baskets.

## ***Appendix D - Tundra Science Camp Project Outline***

Project Team  
(Who's doing it? 1,2,or 3 people max.)

Title of Project  
(What it's about?)

Purpose  
(What questions are you trying to answer?)

Methods of Study  
(How are you going to find your answer?)

Equipment  
(What will you need?)

Expected Results/Product  
(What do you think you will find?)

Presentation  
(How will you "show and tell" your project?)

## ***Appendix E – Tundra Science Camp Student Evaluation***

Please give us your comments and suggestions for these areas:

### **1. The Program**

- a. Orientation – Did you feel well prepared for camp? In which ways was the orientation day in Ye3llwknife most valuable to you? What recommendations do you have for changes?
- b. Schedule – Was the length of the camp suitable? Was the daily schedule suitable? Were the instructional sessions an appropriate length? Was there enough time to pursue your own interests? What recommendations do you have for improvements?
- c. Content – Was there enough variety in the program? Too much? Which sessions were most valuable to you? Are there other topics you would have liked to have covered? Was there enough of a balance between student-directed and instructor-led sessions?
- d. Group dynamics – Did the mix of small and large group activities work? Did you get enough opportunity to interact with everyone at camp? Was there enough time for group reflection and sharing? Did you feel you could approach staff members if you were concerned about something?

### **2. The Facility**

- a. Accommodations – Were you satisfied with the sleeping arrangements? Do you have any suggestions for improvements?
- b. Meals – Were you satisfied with the food? Did you enjoy your involvement in kitchen duty? Do you have any suggestions to improve the menu or the ways meals are prepared?
- c. Other facilities – Any suggestions for improvements to other facilities (wash house, lab tent, outhouses, docks, dining tent, etc.) and how they are used?

### **3. Other areas?**

Feel free to comment on other aspects of the program, too.

***Appendix F – August 9, 2010 News/North Article***

## More bison found dead

Carcasses to be tested for anthrax



Record numbers attend Paddlefest



Northerners eating too much salt



Cougar sighted near Fort Smith

# Science camp on the tundra



**Students at the Tundra Science Camp**, about 300 km northeast of Yellowknife, learn how biologists estimate caribou populations through aerial surveys over a specified area. Pictured are instructor Jamie Bastedo, Zach Sullivan, Emily Smith, Quinton Sputeck, Stephane Sevigny and Hannah Clark.

## Students learn about Barren Lands and culture over 10 days

by Adrian Lysenko  
 Northern News Services

Science classrooms with textbooks, beakers and chemistry charts can't stack up to time on the land, according to one biologist.

"Kids going to these (on-the-land) camps tell me frequently they learn more in 10 days on the land than they've learned the whole year in a science class," said Steve Matthews, one of the founders of the Tundra Science Camp.

Fourteen students and two teachers from Behchoko and Yellowknife participated in this summer's camp from July 24 to Aug. 1, which included some cross-cultural lessons.

The students and teachers travelled to the Department of Environment and Natural Resources' (ENR) Tundra Ecosystem Research Station at Daring Lake, approximately 300 km northeast of Yellowknife.

Instructors included scientists, environ-

mental educators, on-site researchers and Dene elders.

"The real teacher is the land," said Jamie Bastedo, environmental educator and instructor at the camp. "It has this magic effect on the kids."

The goal of the trip is learning about the land from both scientific and Dene perspectives.

"We wanted to run a camp but instead of offering it to university students ... why not offer it to high school students," Matthews said.

Some of the topics studied were geology, archeology, birds, plants, grizzly bears, caribou and traditional knowledge. The students learned how these different subjects are connected in the tundra environment.

Tom Andrews, archeologist with the Prince of Wales Northern Heritage Centre, has been teaching at the camp since it started in 1995.

"Basically (the students) get to work with all the 'ologists,'" said Andrews, who takes the students to study the various archeology sites around the area.

He said the sites offer the students an amazing perspective of the area.

"There's a massive transformation that happens," said Andrews. "They really gain a deep understanding for Barren Land ecology but also the human connection to that as well."

Zack Sullivan, 15, a student of Sir John Franklin High School, chose to be involved because he wants to be a guide in the future.

"I really wanted to get to know the tundra and experience that," said Sullivan, who was impressed when he first saw the geography.

"It was pretty unbelievable," he said. "The landscape was surreal, I just loved it."

His favourite part of the trip was working with the elders, he added.

For the cross-cultural aspect of the program, students learned places names, stories about the area, how to tan hides and make babiche – a thread or lacing made from rawhide or gut – work with beads and craft traditional tools.

"Kids are getting their hands dirty," said ENR's Stephanie Yuill, who worked as the co-ordinator at the camp. "They are literally scooping sands into their hands."

Matthews said the camp can inspire students to pursue future careers in science and further their education.

*"The real teacher is the land."*



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