Annual Business Report of the Tundra Ecosystem Research Station Daring Lake, NT Calendar Year 2008

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Abstract

The Tundra Ecosystem Research Station, located at Daring Lake, Northwest Territories was established in 1994. The surrounding pristine area is used as a control site for environmental monitoring studies that examine the effects of diamond mining in the Lac de Gras area. In addition to impact monitoring, the research station is a valuable asset for ecosystem research and monitoring, and educational programs. In 2008, the research station was operational for 137 days, with person days of use increasing by 9% from 2007, and averaging 11 people at camp per day (up 17% from the previous year). A total of 109 people used the facility in 2008, with 58% of those being university researchers. The government led 12 research and monitoring programs, while universities led 13 research studies. The peak year of funding for studies supported by the International polar Year (IPY) program was 2008. The increase in number of researchers using the Tundra Ecosystem Research Station was attributed to maximum levels of IPY funding. Several upgrades were made to the Daring Lake facilities in 2008, consisting of the construction of a helicopter pad, the purchase of an energy efficient freezer and heater for the kitchen / dining building, and a new field communication system. Indian and Northern Affairs Canada continued to be a major supporter of the research station by providing substantial funding towards operations, maintenance, and researcher costs.

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Introduction

In 1994, the Department of Environment and Natural Resources (ENR), Government of the Northwest Territories (GNWT), established the Tundra Ecosystem Research Station (TERS) at Daring Lake, NT. TERS was developed largely in response to impending diamond development on the central barrens (Figure 1). Over the past 15 years, ENR has worked with federal and territorial government departments, universities, industry, and communities to conduct a multidisciplinary program of environmental research and monitoring studies. Although university research is typically short-term in nature, many of the monitoring programs addressing such issues as climate change began when the research station was established, and are still on-going. The success of the TERS to facilitate research and monitoring activities and educational programs is due in part to its location, many partners, and the cooperative approach that has evolved to manage and operate the facility.

In the early years, many of the research and monitoring programs consisted of wildlife studies designed to address issues related to diamond mine developments in the Lac de Gras area. The Daring Lake area acts as a baseline and control area from which to compare the results of research and monitoring studies in affected or impacted areas, such as the diamond mines. Many of these studies were associated with the West Kitikmeot Slave Study, which was carried out from 1996 to 2001.

The number of people using the research station has increased steadily over the past three years and the research and monitoring program at Daring Lake has grown to become a multi-disciplinary program consisting of government and academic studies. ENR continues to solicit new partners for its research and monitoring program in this sub-arctic region of the Northwest

Territories. ENR and its partners also continue to support educational programs based at the research station (e.g. Tundra Science Camp) and use the facilities as a base for enforcement activities in the region.

Figure 1: Location of Daring Lake in relation to the Ekati Diamond Mine, Diavik Diamond Mine, and Snap Lake Diamond Mine in the Northwest Territories.

The purpose of this report is to provide a summary of activities and business aspects of the research station over the past calendar year. The reporting period of a calendar year allows for the capture of all field and business related activities that occur within a field season of station operation.

Photo 1: Tundra Ecosystem Research Station, 2008.

Mandate of the Station

The Department of Environment and Natural Resources is committed to:

1. Provide a quality field station and safe working environment for users.
2. Provide a state-of-the-art facility that demonstrates new technologies in camp design and operation.
3. Assist with logistic support and subsidize researchers' logistic costs.
4. Coordinate field activities and use of the facilities for all parties.
5. Provide overall camp management, including administration and maintenance, both on-site and in Yellowknife.
6. Make the research station available for environmental research and monitoring programs, education programs, inspection and enforcement activities, meetings and other appropriate uses.

Current Facilities

From its early beginnings of three Weatherhaven buildings, TERS has grown on an annual basis to accommodate an increasing number of researchers. Presently, the camp consists of 10 buildings, which include an office building, two accommodation buildings, cooking/dining hall, washhouse, two laboratories and several buildings for storage and maintenance of equipment. In 2006, the fenced-in compound was increased in size to accommodate the expanded facilities.

The camp can comfortably accommodate up to 15 persons during the winter months when heated buildings are required and up to 20 persons during the summer months. During ENR's annual cross-cultural environmental education camp, the Tundra Science Camp (operated for 10 days in late July to early August), approximately 35 to 40 individuals are accommodated through the use of bunk houses and small tents.

TERS provides a variety of laboratory and field equipment, including boats and motors, and snowmobiles for use by researchers. In July 2007, the power supply system for TERS was upgraded to address issues related to an aging power system and an increasing demand for electrical power in the camp. The renovations include the addition of four –100W solar panels, new inverter, monitors and controllers, new 24V battery bank and 1000W wind turbine. The power system now generates 1300W of solar power and 1000W of wind power for use in the camp. Other improvements included a new manager's office/accommodation building, an outhouse facility that uses a propane powered incinerating toilet, a Smart Ash© waste incinerator, and installation of high-speed wireless Internet.

In 2008, improvements included the construction of a heli-pad, the purchase of two snowmobiles and a Sunfrost freezer, the installation of a Toyo energy efficient heater for the

kitchen/dining hall, and the acquisition of a new field communications system. A greywater system was also purchased for installation in 2009.

Photo 2: The new heli-pad built in 2008.

Camp Management and Administration

Administration, management, operations and coordination of field activities at the camp is the responsibility of the Environmental Assessment (EA) Biologist, Wildlife Division, ENR.

Since 2000, the Department has hired a full-time seasonal Camp Manager, who resides at the camp from May to September. In addition to carrying out the administrative and managerial responsibilities of the position, the on-site Camp Manager, usually a biology summer student, conducts fieldwork for a number of on-going research and monitoring programs for the Department.

TERS is a partial service facility and operates on a partial cost recovery basis. Researchers staying at the Station are required to assist in a variety of camp duties such as building maintenance, cooking, and cleaning. These various volunteer activities ensure daily user fees are kept to a minimum. Currently, the per diem charged to users ($30.00) is subsidized by ENR at more than 60 percent. Monies collected through per diems cover expenses such as annual improvements, fuel oil and propane, consumable materials and supplies, and air charters to transport materials and supplies, including groceries, to the facility. Users are also required to pay for groceries and air charter costs invoiced to them at the end of the field season.

In addition to overall management of TERS, the EA Biologist is responsible for supervising the on-site Camp Manager. Administrative duties are shared between the EA Biologist in Yellowknife and the Camp Manager. Such duties include arranging logistic support for researchers (e.g. air charters and ground transportation), shipping and handling of equipment, supplies and samples to and from the camp, tracking camp costs (including payables and receivables), and arranging other user requirements such as first-aid and bear safety courses.

Since 2007, ENR has used a centralized system of scheduling air charters (for all users) and purchasing food and supplies for the camp. This administrative system has proven to be the most cost effective and efficient way to operate for all parties. The EA Biologist also makes decisions with respect to infrastructure needs, major purchases, and maintenance requirements. In some cases, contract services are procured for some aspects of station maintenance.

To address safety and liability issues, ENR requires that all users sign a “Waiver of Liability” form, and comply with a “Conditions of Use” document that addresses issues and requirements

pertaining to firearm safety and use, bear safety and first-aid training, emergency response preparedness, research permits, etc.

Photo 3: Weatherhaven buildings and solar panels at Daring Lake.

Photo 4: Logistic support by Twin Otter.

Partnerships

As stated earlier, the operational model at TERS depends on participation, cooperation and cost sharing by all of its partners, including users and stakeholders. Contributions to TERS include in-kind support, cost sharing of air charters, direct financial contributions (both operations and maintenance, and capital dollars), donations of equipment, supplies and fuel, plus a variety of other goods and services. A list of partners in TERS is provided in Table 1.

Table 1: Partners in the Tundra Ecosystem Research Station

Government of the Northwest Territories	**Government of Canada**
Wildlife Division, ENR	Indian and Northern Affairs Canada (INAC)
North Slave Region, ENR	Environment Canada (EC)
Environment Division, ENR	Meteorological Service of Canada (MSC)
Policy and Strategic Services Division, ENR	Department of Fisheries and Oceans (DFO)
Shared Services, Informatics Division, ENR	
Prince of Wales Northern Heritage Centre, ECE	
Universities	**Other Agencies**
Queens University (QU)	Arctic Ecology and Development Consulting
University of British Columbia (UBC)	Tlicho Community Services Agency
Trent University (TU)	Yellowknife Education District #1
Wilfrid Laurier University (WLU)	Yellowknife Catholic School Board
University of Calgary (U of C)	
Carleton University (CU)	
University of Northern British Columbia (UNBC)	
University of Saskatchewan (U of S)	
University of Waterloo (UW)	

Station Use

During 2008, TERS was operated for a total of 137 days between March 5th and September 14th. The number of person days of use at the Station was 1492 compared to 1370 in 2007. This represents a 9% increase in the total number of person days over the past year. The average number of people in camp increased by 20% from 9.1 per day in 2007 to 10.9 per day in 2008. Figure 2 illustrates seasonal use of the research station over the full year of operation. The peak of 40 people using TERS on July 26 and subsequent 10 days is due to the Tundra Science Camp.

University researchers continue to be the primary user group at Daring Lake with a combined total use of 58.0% (Figure 3), an increase of 8% from 2007. The groups that made up

the second and third most person days in 2008 were the Tundra Science Camp (TSC) with 19% total person days and ENR with 16% total person days. The three top users (University Researchers, TSC, and ENR) made up approximately 93% total person days. The number of individuals that used the facilities in 2008 was 109, an increase of 21% relative to 2007.

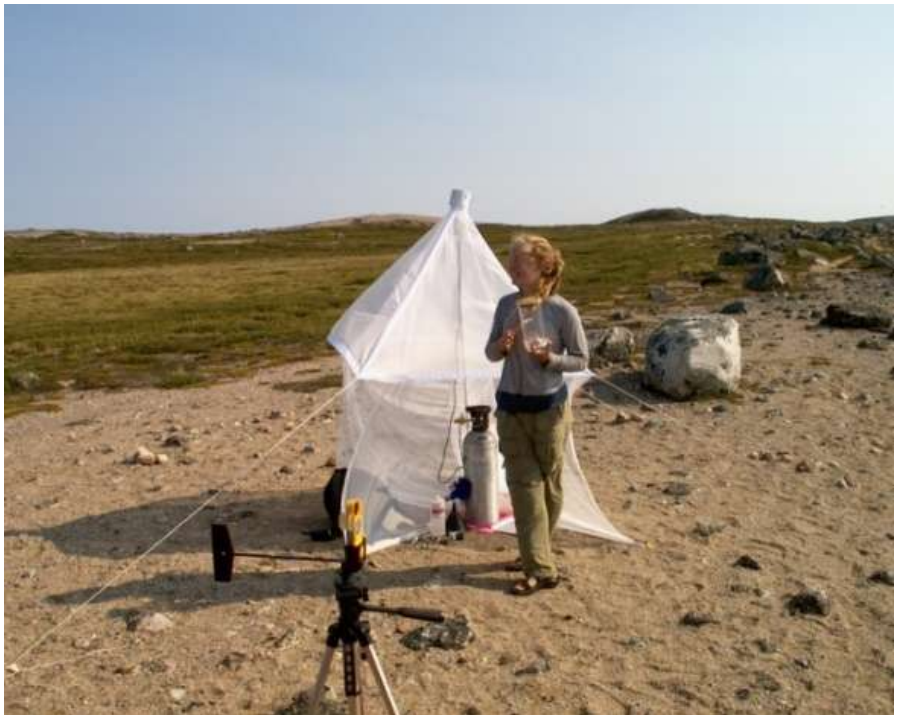

Photo 5: UNBC student Leslie Witter collecting insects for research on insect harassment of caribou.

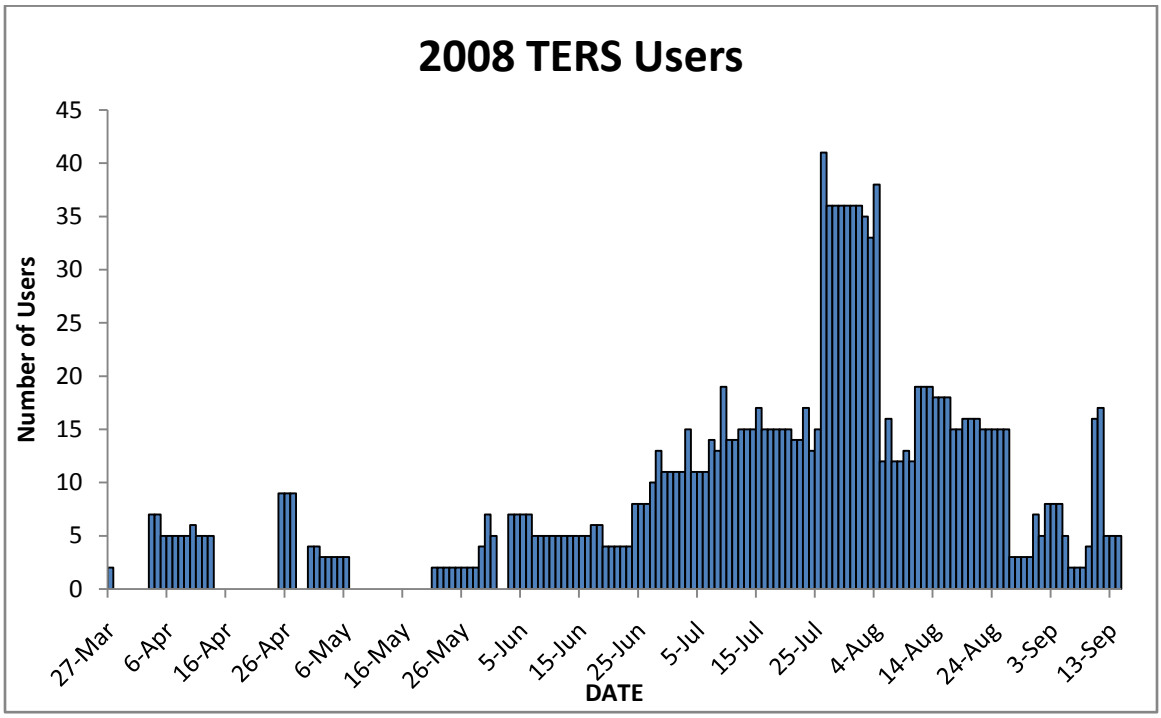

Figure 2: Graph illustrating the number of users of the TERS facility from March 27 to September 14, 2008.

Photo 6: Hiking along the esker.

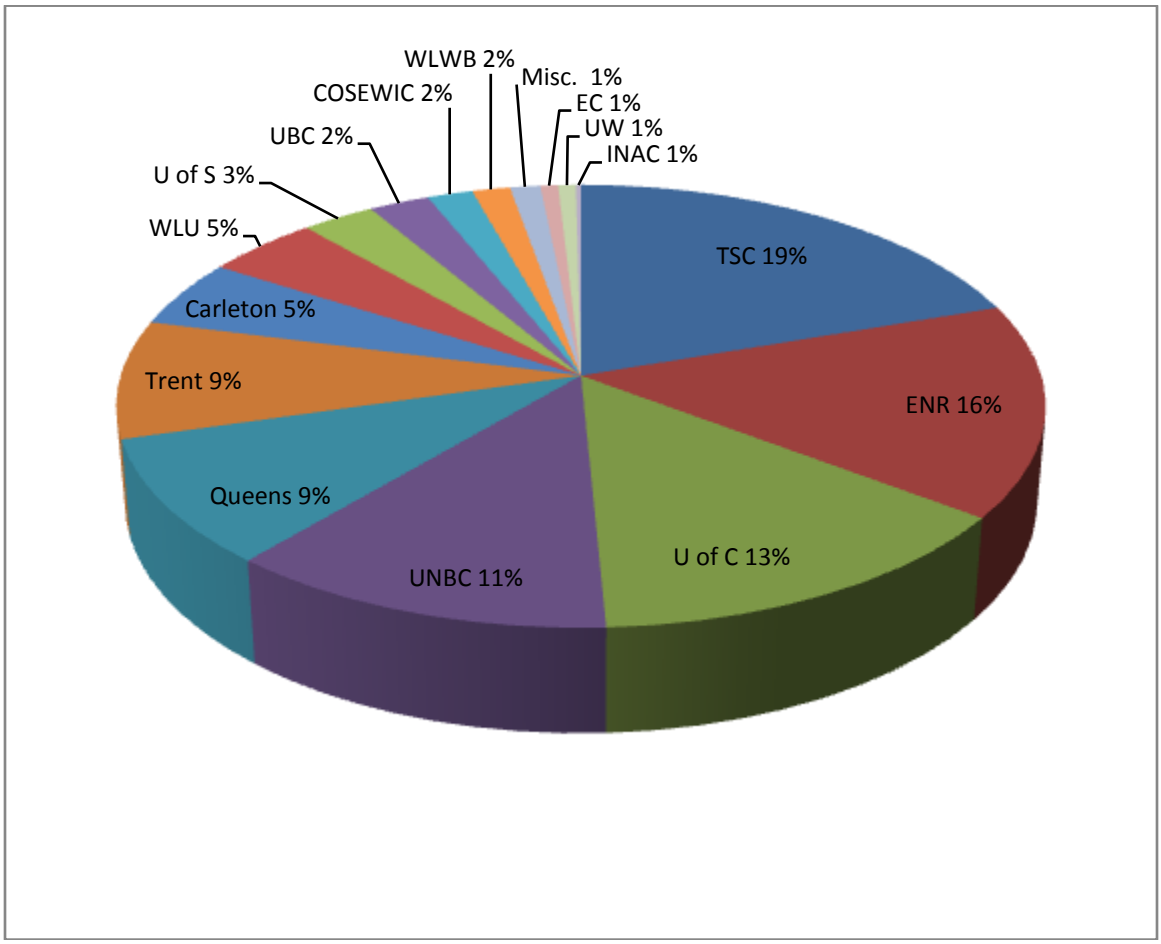

Figure 3: Station Use - 2008 (Use based on percentage of total person days) **Nb**: TSC – Tundra Science Camp, ENR – Environment and Natural Resources, U of C – University of Calgary, UNBC – University of Northern British Columbia, WLU – Wilfrid Laurier University, U of S – University of Saskatchewan, UBC – University of British Columbia, COSEWIC – Committee on the Status of Endangered Wildlife in Canada, WLWB – Wek'eezhii Land and Water Board, EC – Environment Canada, UW – University of Waterloo, INAC – Indian and Northern Affairs Canada.

Currently, TERS operates as a seasonal facility, although if the need arises, it can be operated year-round.

Research and Monitoring Priorities

ENR has identified a number of research and monitoring priorities for the Daring Lake area. These include:

- Environmental impact assessment;
- Climate change;
- Biodiversity and protected areas;
- Species at risk;
- Disease and contaminants; and,
- Air quality

These priority areas provide a coarse filter for ENR to screen potential researchers wishing to conduct research and monitoring activities in the Daring Lake area using TERS. The Department encourages cooperative research and monitoring work, integrated, multi-disciplinary programs, studies that involve northerners (including northern students) and the use of traditional knowledge.

In addition to providing logistic support and subsidizing researchers' daily costs, the Department sponsors several researchers by providing in-kind support and financial assistance for students who receive scholarships through the Natural Sciences and Engineering Council of Canada's (NSERC) Northern Intern Program and the Association of Canadian University for Northern Studies (ACUNS). The Department encourages researchers (government and university) to hire northern summer students to assist with their studies at Daring Lake.

Communication and dissemination of study results to communities, northerners and the general public is an important component of every study. Researchers are encouraged to

prepare research papers, posters and lay person summaries for a variety of audiences. Copies of publications and posters are sent to the EA Biologist (Wildlife Division, ENR) and added to ENR's library of Daring Lake studies. Northern forums such as the Science in the Changing North Conference and the Geoscience Forum, annual events held in Yellowknife, are used to present research findings in addition to publishing in journals or other media.

Research and Monitoring Programs

The TERS supports a wide range of short and long-term research and monitoring programs. Short-term research, such as Masters level projects, is generally completed after one to two years of data collection. Many of the long-term research and monitoring programs are on-going and some have been in existence for more than ten years.

Many of the monitoring studies conducted at Daring Lake are "control" studies contributing to the assessment of the effects of mining developments in the region, including the Ekati and Diavik diamond mines. Two examples of these studies are the Raptor Monitoring Program being conducted in cooperation with BHP Billiton and Diavik Diamond mines and a study examining the effects of diamond mining on wolverine populations.

TERS also supports activities such as environmental educational programs (e.g. Tundra Science Camp) and enforcement work conducted by Renewable Resource Officers (ENR), Fisheries Officers (DFO), and Land Use Inspectors (INAC).

Table 2 provides a list of the current research and monitoring programs being conducted by government agencies in the Daring Lake area. Government programs include local studies (e.g. vegetation inventory and classification), regional programs (assessing development impacts) and

national and international programs related to climate change (e.g. International Tundra Experiment).

Table 3 is a list of university research programs. Many of the university led research programs focus on issues related to climate change and ecosystem processes.

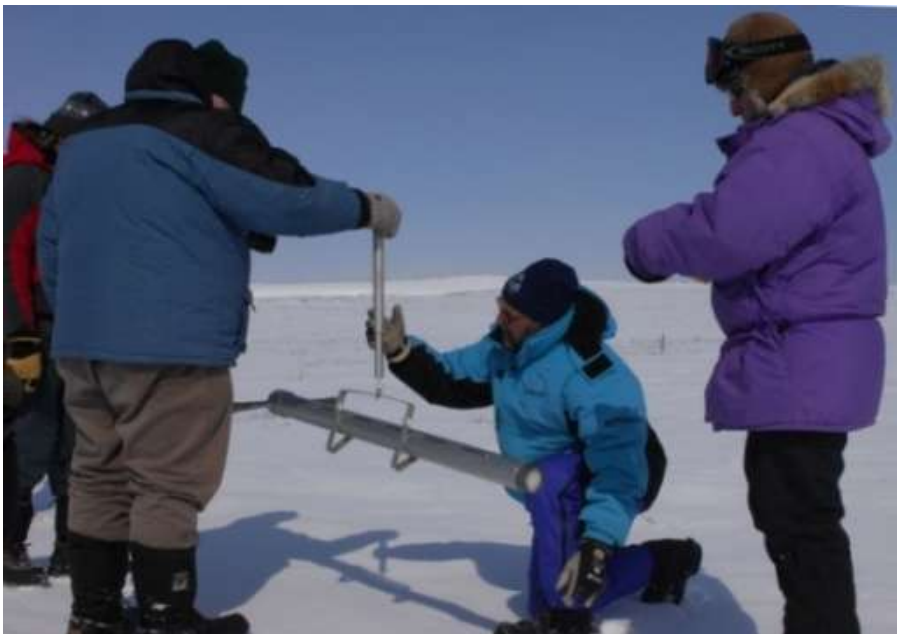

Photo 7: Snow sampling.

Table 2: Government Research and Monitoring Programs in the Daring Lake Area - 2008

Project	Researcher Affiliation
Water quality monitoring of the Coppermine River Basin	Robin Staples, Bob Reid, Indian and Northern Affairs Canada
Hydrology and climate monitoring	Bob Reid, Indian and Northern Affairs Canada
Snow studies at Daring Lake	Dr. Chris Derksen, Meteorological Service of Canada, Environment Canada
Air quality monitoring	John McKay, Environment and Natural Resources, Government of the Northwest Territories
International Tundra Experiment – monitoring the effects of climate change on plant phenology	Steven Matthews, Andrew Krisch, Environment and Natural Resources, Government of the Northwest Territories
Vegetation classification of the Daring Lake area	Joachim Obst, Arctic Ecology
Breeding bird surveys at Daring Lake	Joachim Obst, Arctic Ecology
Small mammal monitoring – population trends	Steven Matthews, Suzanne Carrière, Environment and Natural Resources, Government of the Northwest Territories
Raptor monitoring in the Daring Lake area	Steven Matthews, Environment and Natural Resources, Government of the Northwest Territories
Denning ecology of tundra wolves	Dean Cluff, Environment and Natural Resources, Government of the Northwest Territories
Abundance and population trends of wolverines	Robert Mulders, Environment and Natural Resources, Government of the Northwest Territories
Archaeological assessment and inventory of the Daring Lake area	Tom Andrews, Prince of Wales Northern Heritage Centre, Education, Culture and Employment, Government of the Northwest Territories

Table 3: University Research Projects in the Daring Lake Area - 2008.

Project	Principle Researcher, Supervisor Affiliation
Carbon flux, nutrient cycling and respiration of arctic plants	Dr. Paul Grogan, Mat Vankoughnett, John Xu and Haiyan Chu, Queens University
Near-surface thermal regime of permafrost terrain in the Slave Province	Dr. Elyn Humphreys, Kumari Karunaratne, Dr. Chris Burn, Carleton University
Nitrogen cycling in low arctic tundra	Kate Buckeridge, Dr. Paul Grogan, Queen's University
Interaction of biting insects and forage availability for caribou of the Bathurst herd	Leslie Witter, Dr. Chris Johnson University of Northern British Columbia
Variation in CO_2 exchange on the tundra	Dr. Peter Lafleur, Trent University, and Dr. Elyn Humphreys, Carleton University
Remote sensing and isotopic tools for discerning multi-scale data issues in arctic hydrology	Andrew Rees, Dr. Michael English, Wilfrid Laurier University, and Dr. Chris Derksen, Meteorological Service of Canada, EC
The relationship of soil nematode communities and nitrogen cycling in the arctic tundra	Meghan Laidlaw, Dr. Paul Grogan, Queens University
Monitoring changes in vegetation at ITEX plots	Laura Machial, Robyn Hooper, Dr. Greg Henry, University of British Columbia
Greenhouse gas flux and carbon balance at mud boils	Kaitlin Wilson, Shari Hayne, Dr. Elyn Humphreys, Carleton University
Nitrogen fixation by free-living cyanobacteria in the arctic tundra	Katherine Stewart, Dr. Darwyn Coxson, University of Northern British Columbia, and Dr. Steven Siciliano, University of Saskatchewan
Carbon dioxide and nitrogen flux in tundra environments	Shari Hayne, Dr. Elyn Humphreys, Carleton University
Development and survival of the parasite *Ostertagia gruehneri* in barren-ground caribou with respect to climate change	Bryanne Hoar, Dr. Susan Kutz, University of Calgary
The influence of sub-surface water flow on nutrient dynamics in a tall birch tundra ecosystem	Ian McCormack, Dr. Paul Grogan, Queens University

The International Polar Year (IPY) program began in 2007 and will continue for three years. This program created new opportunities for research and monitoring activities being conducted at Daring Lake. Researchers such as Dr. Paul Grogan (Queen's University) and Dr. Darwyn Coxson (UNBC), working on IPY projects with international collaboration, expanded their studies

and field personnel in 2008. It is expected that additional IPY projects will be carried out at TERS in 2009, as the program becomes fully implemented.

Photo 8: "Peregrine Valley" with Daring Lake in the distance.

Station Improvements and Costs

Photo 9: Construction of new boardwalks was completed in 2008.

Several improvements were made to the facilities at TERS in 2008. A helicopter pad was constructed to provide a safe landing site for helicopters supporting research, and inspection and enforcement activities (e.g. by land use inspectors and conservation officers from a variety of government departments). A new field communication system, consisting of a base radio and six hand-held VHF radios, was purchased to improve communication and safety of people working in the field.

In an attempt to lower heating costs at TERS, an energy efficient Toyo oil heater (Model Laser 56) was installed in the cook/dining building to assess its performance and applicability for future use in all of the buildings at the Station. Although the Laser 56 heaters are 87% efficient, they also require a 120 volt power supply, which puts an extra demand on the camp's alternate energy system. A 24 volt double Sunfrost freezer was purchased and installed to meet the need

for additional freezer space and allow one of the existing freezers to be dedicated to biological samples. Two snowmobiles were purchased and improvements were made to the floating dock.

The total cost for the improvements was $34,000. Table 4 provides a summary of the operating expenditures incurred by TERS for the 2008 calendar year. Some operational costs such as satellite phone charges, groceries and air charters for personnel were charged back to individual users as part of TERS' user pay system. The cost of shipping groceries and other supplies to the camp is not reflected in this table since these goods were transported on charters paid for by the different research groups.

From May to September, ENR hired a summer student to be the on-site Camp Manager. The salary paid to this individual is included in the total operating cost. Approximately 35 %of the Department's EA Biologist's time is also spent managing the facility. Currently, this is an in-kind contribution from ENR.

The total operating cost for operating the research station in 2008 was $118,566.

Table 5 lists the funding sources and financial contributions made to cover the costs of operating the facility. ENR contributed 48% towards the operating costs, INAC contributed 29% and user fees contributed 23%. Based on total expenditures for 2008 and the number of person days that the station was in operation, the cost per day per person was $79.47, up from $71.30 in 2007. At the current daily charge rate of $30.00 per person, user costs are subsidized by nearly 63 %.

Indian and Northern Affairs Canada (INAC) continues to be a major partner in TERS providing financial and logistic support to facility operations, researcher support and educational programs.

Photo 10: A new energy efficient Toyo heater was installed in the cook tent.

Table 4: Operating Expenditures.

Station Improvements		**Operations & Maintenance**		**Communications Services**		**Fuel**		**Salaries**	
Heli-pad	$5,193.93	General Operations	$13,275.76	Satellite Phone - Annual Service Fee	$479.50	Heating Oil	$1,500.00	Camp Manager	$28,647.69
Heater	$2,000.00	Maintenance Contract	$3,300.00	Satellite Phone - Charges	$1,032.15	Propane	$511.42	(Summer Student)	
Commuication System (Radios)	$4,486.94	Air charters	$32,130.26	Internet Service - Annual Charges	$649.70				
Freezer	$4,375.00								
Snowmobiles (2)	$16,939.76								
Dock Parts	$1,510.72								
Greywater tank	$2,533.11								
TOTALS	$37,039.46		$48,706.02		$2,161.35		$2,011.42		$28,647.69
GRAND TOTAL	**$118,565.94**								
Notes: The above table does not include monies spent by the federal or territorial government to support research, monitoring, or educational programs at TERS.									
Salary figures for the Environmental Assessment Biologist as the Manager of TERS are also not included.									

Table 5: Funding Sources to Cover Operating Costs.

Funding Source	**Operating Cost**	**Contribution**
ENR, GNWT	$56,916.53	48%
INAC	$34,199.42	29%
Accommodation Fees/Offsets	$27,450.00	23%
TOTAL FUNDS	**$118,565.94**	

Successes

1) Research and Monitoring

TERS and the Daring Lake area continue to be a focal point for environmental research and monitoring in the Lac de Gras area of the Slave Geological Province. Much of the scientific data being obtained is contributing to the collection of baseline data by filling information gaps, helping to better understand ecological processes, and monitoring the impacts of climate change and industrial development on species at risk and biodiversity. Through TERS and its partnership approach, ENR has fostered cooperative relationships with a number of government departments, universities, mining companies and aboriginal communities. This model has led to a diverse program of 25 short and long-term environmental research and monitoring programs addressing many of the priority environmental issues for the region.

The Daring Lake area is also home to several national and international environmental studies such as the International Tundra Experiment, examining the effects of climate change on plant phenology and productivity. Through the IPY Program, increased funding to university researchers resulted in more researchers using the research station and an expanded scope of the research program at Daring Lake. Results from studies being conducted under the IPY Program are presented annually at conferences in southern Canada. Arctic Change 2008 was a conference held in Quebec City that featured a number of studies being conducted at Daring Lake.

Photo 11: Jennifer Dagg from Trent University talking to Tundra Science Camp students about her carbon research.

2) Tundra Science Camp

The Tundra Science Camp (TSC) is an important component of the activities that take place at TERS. TSC is an opportunity for high school students and teachers in the Northwest Territories to work closely with environmental educators, on-site scientists and Dene elders to learn about field and laboratory techniques in wildlife ecology, ornithology, plant ecology, geology, archaeology, and human history. It also provides an opportunity for all participants to understand different cultures and approaches to western science and traditional knowledge.

ENR coordinates the TSC and provides core staff. Other resource people include the Territorial Archaeologist from the Prince of Wales Northern Heritage Centre, Dogrib elders and other environmental education specialists. INAC assists with logistic support and local Boards of Education assist with student recruitment and financial support.

The cross-cultural environmental education program took place from July 26 to August 4, 2008. Seventeen students and one teacher from the communities of Behchoko, Fort Providence, Whati, and Yellowknife attended the Tundra Science Camp.

Photo 12: Tundra Science Camp, 2008.

3) Student Opportunities

Research and monitoring studies, along with environmental education programs at Daring Lake, provide unique opportunities for students to work and learn about the low arctic tundra environment. ENR has encouraged researchers to hire local people and involve northern students in their programs. These opportunities provide northern students with field experience and information necessary to make future education and career choices. Many of the students that have been to Daring Lake have pursued post-secondary education at southern educational institutions and returned to the North to be employed in both the private and public sectors.

In 2008, four students were hired to work at TERS. One student was hired by ENR as the Station Manager, one student was hired by Queen's University, one by the University of Calgary, and one by the University of Northern British Columbia. Two of the students were aboriginal and two were Métis. ENR continues to support northern students working at TERS by providing

funds via scholarship programs, subsidizing university hired students, and through direct employment. The employment of northern students at Daring Lake in 2008 was very successful.

Challenges and Future Activities

1) Facilities

TERS currently operates at near capacity during the late winter, spring and summer months. Additional space, including a new, larger laboratory, would be an asset to accommodate a limited number of new researchers. This would be especially useful given the steady increase in numbers of researchers TERS has experienced over the past five years. There are plans to expand the laboratory facilities in 2009, to include a new 16' by 20' Weatherhaven lab building. This will make the old lab facility available for use as a dormitory, providing additional accommodation space at TERS. The final decision to build a new laboratory will be dependent upon available funding.

As TERS expands, there are opportunities to change the operational model for the facility. It could move from a cooperative, partial service facility to a full service facility including a full-time cook and maintenance staff. Such changes would have financial implications for researchers using the facilities. For example, the employment of a full-time cook would increase the daily user fees from $50.00 per day (for food and lodging) to approximately $100.00 per day. Year-round operation of TERS is also possible but would have financial implications for users given the cost of heating the facility during the winter.

2) Station Promotion

ENR will continue to promote the use of TERS for priority research and monitoring programs in a partnership approach. As a partner and participant in various workshops and conferences, the Department will continue to assist researchers in effectively communicating their work to a variety of audiences. In 2008, a web page was developed for the Canadian Polar Commission that features TERS in its directory of northern research facilities. A web page was also developed on the ENR website to feature TERS at Daring Lake. (http://www.enr.gov.nt.ca/_live/pages/wpPages/Tundra_Ecosystem_Research_Station.aspx).

Other activities that took place at TERS to promote the facilities and its use included a visit by the national Committee on the Status of Endangered Wildlife in Canada (COSEWIC) in May and a visit by the Wek'eezhii Land and Water Board in September, 2008.

Photo 13: COSEWIC members learning about archaeological sites at Daring Lake from Glen MacKay.

3) Research Agenda

As demand for use of TERS increases, ENR will consider developing a research and monitoring agenda for the Daring Lake area. A research agenda would provide a mechanism to ensure that future research and monitoring is strategically focused to address issues of major importance to its partners and stakeholders. It would also provide a mechanism to screen research proposals to ensure that research and monitoring being conducted at Daring Lake meets established priorities and is relevant and important to the NWT.

4) Daring Lake Protected Area

For several years, the Department and several of its partners have expressed interest in establishing the Daring Lake area as a protected area. A presentation on the Daring Lake area was made at a mapping workshop of the Tlicho Land Use Planning Working Group in October 2008, where several boundary options were considered. Working with the Protected Areas Secretariat, plans evolved to a point where alternative areas proposed for protection were outlined and were informally presented to GNWT Senior Management. Future work is needed to assess the area and continue discussions with the Tlicho Government on developing a proposal to establish the Daring Lake/Yamba Lake area as a protected area. The GNWT also needs to assess legislative options that would provide long-term protection for the area.

Photo 14: The narrows between Yamba Lake and Daring Lake.

Conclusion

TERS, located at Daring Lake, NT, represents the only new research facility to be opened north of 60° latitude in the past 35 years. It continues to play an important role in promoting and providing opportunities for environmental research, monitoring, and education programs in the low arctic tundra. Strategically located, TERS is part of a network of research stations that conducts regional, national and international research and monitoring programs.

With diamond mining taking place in the region, TERS plays an important role in contributing baseline information and for studying project specific and cumulative environmental effects of diamond mining in the Lac de Gras area. Research and monitoring studies at Daring Lake provide “control” data to a number of these impact studies. Other scientific information is also being gathered through short and long-term research and monitoring studies, addressing priority issues such as climate change, contaminants and

parasites, species at risk, biodiversity and protected areas. The current research and monitoring program at Daring Lake consists of 25 short and long-term studies.

TERS is a model research station, in terms of providing high quality facilities and service to researchers while minimizing environmental impacts of human habitation. Current and ongoing upgrades are designed to continue the use of the latest technologies, improving the efficiency and safety of its operations while decreasing the carbon footprint of the research station and its associated activities.

The ongoing cooperation and contributions of all partners continues to make the Tundra Ecosystem Research Station and its programs very successful.

Photo 15: Learning how to make dry meat at Tundra Science Camp.