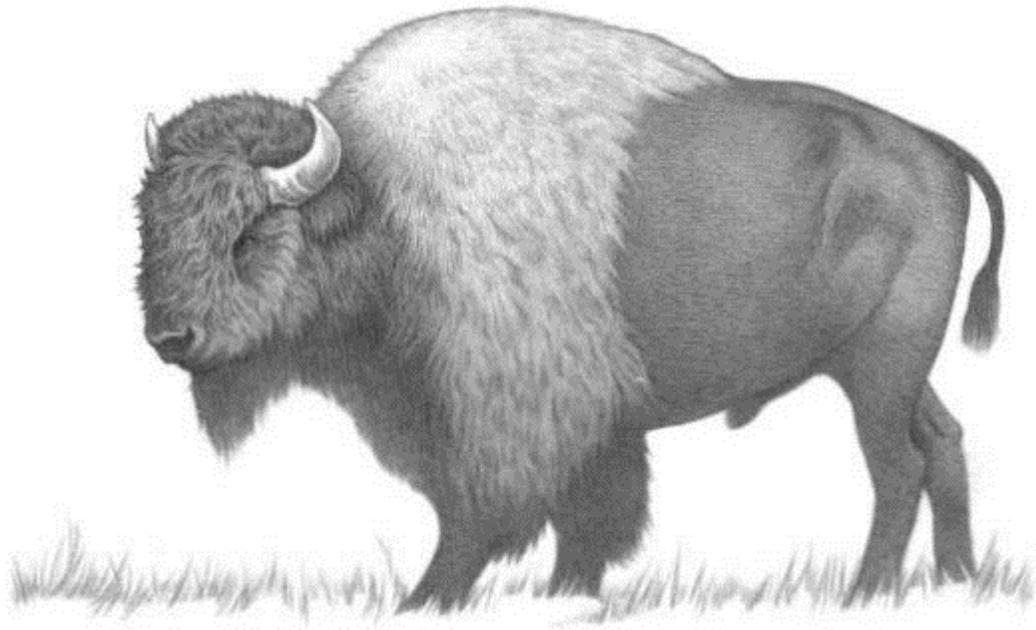


THE YUKON BIODIVERSITY WORKING GROUP

2010 ANNUAL FORUM



PROGRAM AND ABSTRACTS

YUKON COLLEGE
WHITEHORSE, YUKON
APRIL 10, 2010

http://www.yukoncollege.yk.ca/research/pages/faculty_research

THE YUKON BIODIVERSITY WORKING GROUP

2010 ANNUAL FORUM

April 10, Saturday

ORGANIZING COMMITTEE

Scott Gilbert
Dave Mossop

FOOD AND BEVERAGE

Alexa Gilbert

OUR VISION AND PURPOSE

The Biodiversity Working Group is a non-government open-membership group of those involved in ongoing biodiversity assessment and monitoring projects throughout the Yukon. It is hosted through the Northern Research Institute at Yukon College and meets informally during winter months. The vision is in four basic parts: a) To foster partnerships and networking, -- including coordinated contribution to national and local initiatives relative to the Canadian Biodiversity Strategy; b) to deliver public education on biodiversity issues; c) to provide coordination among field researchers promoting long term data bases on key focal species; d) to integrate local traditional knowledge into on-going field data gathering processes.

THE FORUM is designed as a Friday evening and full Saturday annual event, held this year April 9-10th. The purpose is to give an opportunity for a broad cross section of exposure to current field projects that relate to biodiversity assessment and monitoring in the Yukon. Posters, coffee and lunch breaks are normally provided in the hallway immediately outside the Lecture Theatre at Yukon College. *A day for community members and researchers to share information and foster partnerships, learn about Yukon plants, animals and special habitats as well as to identify knowledge gaps and species or habitats that need monitoring.*

REGISTRATION: The sessions are open to all with an interest in Yukon biodiversity, its assessment, monitoring and conservation. There has been no registration fee to date. We provide name tags and would like to keep a registry of all those attending. Thanks go to the Yukon Government, Dept. of Environment for sponsoring the coffee and to Ducks Unlimited for the lunch session.

2010 FORUM AGENDA

Plenary Guest Speaker: Friday evening, Yukon College Lecture Hall: 7 pm

In partnership with the Yukon Science Institute, John Acorn from University of Alberta gave a presentation titled *Counting Species: Not as Easy as It Seems*.

Saturday: Yukon College Lecture Hall ORAL PRESENTATIONS

- | | | |
|--------------|---|---|
| 9:00 | Grant Zazula
<i>Yukon Palaeontology Program</i> | Arctic ground squirrels of the ice age mammoth steppe |
| 9:20 | Maria Leung
<i>University of Alberta</i> | Butterflies of Herschel Island and Komakuk |
| 9:40 | Meghan Larivee
<i>University of Alberta</i> | Associations among overwinter survival metabolism and resources in Kluane red squirrels |
| 10:00 | Tami Hamilton
<i>Yukon College</i> | Diversity of life in the McIntyre Wetland system. |
| 10:20 | Coffee session - poster viewing | |
| 10:50 | Tyler Kuhn
<i>Simon Fraser University</i> | Volcanoes and the history of caribou: an ancient DNA perspective |
| 11:10 | Wayne Strong
<i>University of Calgary</i> | A comparison of mixedwood forest over and understory species composition in the central Yukon |
| 11:30 | Erin Spiewak
<i>Ducks Unlimited</i> | The milepost migration planner for ducks and swans: spring staging in the Yukon |
| 11:50 | 2010 Biodiversity Awareness Award Presentation | |
| 12:05 | LUNCH on site – Room 2103 plus poster viewing: hosted by Ducks Unlimited | |
| 1:00 | Syd Cannings
<i>Environment Canada</i> | Yukon's special dunes, and their special insects |
| 1:20 | Mike Gill
<i>Environment Canada</i> | Tracking trends in Arctic Wildlife: the arctic species trend index |
| 1:40 | Don Russell
<i>Yukon College, Northern Res. Institute</i> | Tracking caribou: recent global declines in migratory tundra caribou |

- 2:00** Yannick Neveux
Yukon College, Northern Res. Institute. Tracking woodland caribou: extension to the CARMA Network
- 2:20** Tom Jung, J.M. Talericao, C.L. Lausen, RMR Barclay, LA Randall and B. Slough
Environment Yukon Strange things done under the midnight sun: the life history strategy of the little brown bat at the northern edge of its range
- 2:40** Claire Eamer
Your Yukon, NRI Yukon Colege Communicating Science
- 2:50** **Coffee hosted by Yukon Environment**
- 3:10** Dave Mossop
Yukon College, Northern Res. Institute Gyrfalcons and ptarmigan: community stresses
- 3:30** Don Reid, C.Krebs, G.Gauthier, A. Kenney, S.Gilbert, E.Hoffer, D.Duchesne, M.Leung and F.Bilodeau Snow depth and small mammal winter habitat choice: a tundra fencing experiment
- 3:50** Fiona Schmiegelow
University of Alberta Benchmarking natural ecosystems: building a foundation for sustainability in times of rapid change

POSTERS:

Author(s)	Title
Sylvia Binette	Some like it hot: interactive interpretive multi-media exhibit
Syd Cannings, E. Pilgrim, R.Cannings and T.Vogt	Emeralds at the crossroads: dragonfly hybridization in Beringia
Clare Daitch	Jone's disease management at the Yukon Wildlife Preserve
Syd Cannings and Tom Jung	Vertebrates of conservation concern in the Yukon: the 2010 status ranks
LM Everatt-Andresen, KT Everatt, T.Jung and J.Watson	Monitoring collared pikas as an indicator species for climate change: modeling patch occupancy in central Yukon
D. Galland, B.Slough, D.Berteaux and D. Reid	Arctic fox versus red fox in the Canadian arctic: is there a clear winter after 39 years of monitoring in the warming

	northern Yukon?
M.Gill, M.Svoboda, D.Irons, C.Zockler, C.Bochenek, R.Cottam, L. Gontard	A web-based biodiversity data portal: the CBMP data portal
Tami Hamilton	Diversity of life in the McIntyre wetland
Tom Jung	The relative importance and implications of snowshoe hare as primary winter food of wolverine
Tom Jung, S.Cannings	Vertebrates of conservation concern in the Yukon
Tom Jung, K.I.Clyde, M.Oakley, L.Workman and K.Egli	Seasonal movements and altitudinal migration of wood bison in southwestern Yukon
Tom Jung and Brian Slough	Are Fisher populations increasing and expanding in the Yukon
Tyler Kuhn	Late Quaternary extinctions and the shape of the mammalian tree of life
S. Pieper, j.Johnstone, V.Loewen and M.Gill	Alpine plant responses to natural temperature variation and experimental warming treatments over 10 years
P.Sinclair, J.Jantunen and J.Johnston	Age determination in rusty blackbirds

As in previous years this is an informal event and we encourage short talks (15 min) and in "plain language" The audience is a cross section of "regular" folks, naturalists and biologists - by appealing to the average citizen we hope to make it more accessible to everyone - we have had strong feedback from attendees in previous years who said they appreciated the efforts of presenters to make their work understandable.

ABSTRACTS

1. Arctic ground squirrels of the ice age mammoth steppe

Grant Zazula (*Yukon Palaeontology Program*)

Yukon is considered in an interglacial period of an ice age. More than 80% of the last 2.5 million years have been colder than the present. Arctic and subarctic species have evolved in glacial conditions which are considered 'normal' for them. The earliest record of arctic ground squirrels (*Spermophilus parryuia*) is from Fish Creek fauna about 2.5 m years ago. Interestingly the mass extinction at the end of the last ice advance had minimal effect on small mammals. In ice rich 'muck' deposits in the Yukon squirrel nests are being found. Nests and middens found in association with volcanic ash deposits date from 750,000 years bp. The middens are giving a good sampling of vegetation available then. Prairie sage is particularly prevalent. Currently squirrels are absent from the mid range across Alaska and Yukon. It appears that ground squirrels expand their range during glaciations and retract into steppe 'refugia' during interglacial periods like today. Their behavioral and dietary plasticity allows them to ride our interglacial periods in habitats that somewhat mirror the 'mammoth steppe' habitat.

Contact: grant.zazula@gov.yk.ca

2. Butterflies of Herschel Island and Komakuk

Maria Leung (*University of Alberta*)

Within Canada's arctic tundra, Herschel Island and Komakuk in northern Yukon lie within an area known to be particularly rich in butterfly fauna. As butterflies are short-lived, highly visible, and can respond rapidly to changes in habitat, they are good indicators of climate change. The main purpose of the butterfly work was to establish a data base for detecting future changes in butterfly species diversity. Butterflies were sampled along transects that traversed a variety of different habitat types. The main findings from the study were: (1) The relative abundance of adult butterflies was lower when spring/early summer temperatures were low and snow melt was late, as in 2009; (2) The timing of adult butterfly flight was notably more advanced in July 2008 than in the either 2007 or 2009. This can be attributed to the early snow melt and warm June and July temperatures of 2008; (3) A total of 21 species of butterflies have now been recorded for Herschel Island, including six newly detected ones during this project from 2007 to 2009; (4) Butterflies on Herschel Island were most commonly found in habitats with many flowers. These were the "Arctic Willow/Dryas-Vetch" and "Arctic Willow/Lupine/ Forget-me-not" vegetation types.

Contact: leungreid@northwestel.net

3. Associations among overwinter survival metabolism and resources in Kluane red squirrels

Meghan Larivee (*University of Alberta*)

Smaller mammals like squirrels have a lower resting metabolic rate than large mammals. The question arises whether within species if differences occur. Lower RMR would allow greater energy for survival strategy whereas higher would allow more energy for work. This work investigated whether RMR values influence winter survival in the Yukon tree squirrels. I measured RMR and compared to amount of fall food hoarding. It appears that higher RMR did not result in higher hoarding and lower RMR did. Normally for survivors the energetic savings that come from having a larger body mass but lower surface area to volume ratio would have been nullified by the positive relationship between mass and RMR, such that larger individuals have higher energy costs. However, survivors incurred no metabolic penalty to being larger and would. So overall survivors were more energetically conservative than non survivors. It's possible that the large mass and relatively low rmr o survivors may have stemmed from survivors having proportionally more metabolically inactive machinery associated with them, explaining their larger size. It is most likely that this metabolically inactive tissue would have been fat reserves. Now having more fat reserves would have increased the likelihood of overwinter survival as they act as an alternative source of energy.

Contact: larivee@ualberta.ca

4. Diversity of life in the McIntyre Wetland system

Tami Hamilton (*Yukon College*)

McIntyre is a melt water channel dating from the Wisconsinian glacier period. In recent history it has been altered and partially dammed for hydro power generation,. Its history includes extensive use by original people: (The Kwanlin Dun and Ta'an Dun First Nations currently partially occupy the area. It was used for passage to and from the uplands and fish lake hunting camps, connecting the Yukon valley. Whitehorse city now finds a large degree of education, research and recreational value in the drainage. Preliminary inventory results conclude an above average diversity of species. A wildlife movement corridor has been identified plus staging habitats, breeding habit and rearing areas for at least 54 species of birds, 17 species of mammal, one amphibian and many hundreds of plant species and invertebrates. While heavily impacted the watershed is still a well functioning system. Protection and monitoring of this valuable piece of local heritage will produce value literally forever.

Contact: yukonwandering_woman@yahoo.ca

5. Volcanoes and the history of caribou: an ancient DNA perspective

(No abstract submitted)

Tyler Kuhn (*Simon Fraser University*)

Contact: tyler.kuhn@gov.yk.ca

13. A comparison of mixed wood forest over and understory species composition in the central Yukon

Wayne Strong (*University of Calgary*)

Plant percent cover values were compared in an aspen (*Populus tremuloides*) development sequence to determine the ecological relationship between forest over- and understory species in the central Yukon. Among common vascular understory species (bearberry – *Arctostaphylos uva-ursi*, purple reedgrass – *Calamagrostis purpurascens*, fireweed – *Chamerion angustifolium*, and buffaloberry – *Shepherdia anadensis*) no correlation occurred with aspen percent canopy cover. However, a distinct and consistent maximum occurred for individual and total understory species cover, regardless of aspen abundance. The increasing abundance of white spruce (*Picea glauca*) during succession systematically reduced understory cover, but understory species were weakly correlated with tree cover within their immediate vicinity (<3 m radius). Stairstep moss (*Hylocomium splendens*), a common nonvascular understory species, decreased in abundance from its maximum when white spruce exceeded 80% cover. Total understory species cover was most strongly associated with white spruce canopy profile area and aspen stem densities, which in combination explained ~78% of the variance in total understory species cover. These variables are probably important determinants of understory vegetation abundance, because of their ability to block solar radiation that enters forest stands at a low and oblique angle during the growing season.

Contact strong@ucalgary.ca

13. The milepost migration planner for ducks and swans: spring staging in the Yukon

Erin Spiewak (*Ducks Unlimited*)

Ducks Unlimited Canada conducted waterfowl spring staging surveys at lake outlets and river deltas from Nisutlin River in the east to Kluane Lake in the west between April 2 and May 14, 2009 to determine the relative importance of each site to migrating waterfowl. Lewes Marsh was the most used spring staging site followed by Tagish Narrows, Teslin Lake, Nisutlin River delta, and Kluane Lake. Over 236,000 bird use days were estimated for the study area. Swans were the most abundant bird early during the migration period before ducks became the most abundant. More than 60 percent of all waterbirds using these spring staging sites were ducks. Peak migration happened in mid-May in 2009, however, past studies show this timing varies from year to year. Recommendations for Habitat Protection Area planning at Lewes Marsh and Tagish Narrows include limiting disturbance to birds during the migration period and managing food resources.

Contact: e_spiewak@ducks.ca

13. Yukon's special dunes, and their special insects

Syd Cannings (*Environment Canada*)

Yukon's dunes are small relicts of much larger dune fields that formed at the edge of the icefields at the end of the Pleistocene. The largest dunes are found at Carcross, along the Takhini River below Kusawa Lake, and in the Alsek and Slims drainages within Kluane National Park. However, a number of smaller dunes are scattered along the ancient shores of Glacial Lake Champagne and Glacial Lake Laberge in the Whitehorse and Champagne areas. Even though they are much smaller than they once were, these dunes still are home to an ecosystem that contains many 'special' species. As the dunes stabilized and became forested, the ranges of these species contracted with them; many of these species are found nowhere else in North America, and have strong links to the dunes of Eurasia. This ecosystem has been exemplified recently by the Baikal Sedge (*Carex sabulosa*), now listed as Threatened under the Species at Risk Act. Insect inventories in the 1980s by Monty Wood and Michal Polak revealed a number of species with similar distribution patterns to the Baikal Sedge, including 8 undescribed species of flies and moths. Additional inventory has revealed an undescribed species of cuckoo wasp (*Hedychridium* sp., Chrysididae). Following inventories in 2008-9, the dune tachinid fly (*Germaria angustata*) is now known from 11 sites in the region; another 18 species of tachinids have been recorded from the dunes, including 5 undescribed species. Work on the previously undescribed gelechiid moths (*Gnorimoschema* spp.) of the dunes have revealed 14 species, including one species as yet known only from Carcross in the world, and another apparent dune specialist that is more widespread. However, most of these species are not dune specialists. In other North American dune systems, tiger beetles (*Cicindela* spp., Carabidae), have shown endemism, but this is apparently not the case in Yukon's dune fields.

Contact: syd.cannings@ec.gc.ca

13. Tracking trends in Arctic Wildlife: the arctic species trend index

Mike Gill (*Environment Canada*)

For the first time, an index providing a pan-Arctic perspective on trends in the Arctic's living resources has been developed. The Arctic Species Trend Index (ASTI), like the global Living Planet Index (LPI), illustrates overall vertebrate population trends by integrating vertebrate population trend data of an appropriate standard from across the Arctic and over the last 34 years (1970 as the baseline). An increasing index indicates that, overall, more vertebrate populations in the Arctic are increasing than decreasing. Whereas a decreasing index, indicates the opposite situation. The ASTI not only allows for a composite measure of the overall trajectory of Arctic vertebrate populations, but can be disaggregated to investigate and display trends based on taxonomy, biome, region, time period and other categories. These disaggregations reveal underlying trends in abundance and can help identify groups of species and regions for which change has been most rapid. Over time, tracking this index will help reveal patterns in arctic wildlife response to growing pressures, thereby facilitating a better predictive ability on the trajectory of arctic ecosystems.

A total of 965 populations of 306 species (representing 35% of all known Arctic vertebrate species) were used to generate the ASTI. In contrast to the global LPI, whose overall decline is largely driven by declines in tropical vertebrate populations, the average population of arctic species rose by 16% between 1970 and 2004. This pattern is very similar to the temperate LPI and is consistent in both the North American and Eurasian Arctic. The overall increasing trend in the Arctic is thought to be partly driven by the recovery of some vertebrate populations (e.g. marine mammals) from historical overharvesting as well as from recent changes in environmental conditions both inside (e.g. Bering Sea Pollock) and outside of the Arctic (e.g. Lesser Snow Geese) resulting in dramatic increases in some species' populations. This increasing trend, however, is not consistent across biomes, regions or groups of species.

This presentation will present results of various analyses of trends in Arctic vertebrates and will highlight the need to expand the current extent of Arctic monitoring by targeted data collection to fill gaps in the data set and by engaging the network of Arctic nations to increase monitoring efforts.

Contact: mike.gill@ec.gc.ca

13. Tracking caribou: recent global declines in migratory tundra caribou

Don Russell (*Yukon College, Northern Res. Institute*)

This is an update of the results of CARMA (CircumArctic Rangifer Monitoring and Assessment Network) a multi national effort to track the trends in caribou populations around the circumpolar world. The author has proposed and organized the effort. All caribou basically declined in the 1970's rose to record numbers in the 1990's and are now basically in decline. 18 wild herds are involved; not all are changing size in synchrony. 3 are increasing and all others are in various degrees of decline. Relatively the Bathurst herd is the largest and as it declines a very large number of animals disappear. 4 hypotheses are being pursued as to reasons for decline: Predator harvest, climate feedback, forage feedback, pathogens. The project tries to track the rate of increase, peak populations, rate of declines and predicts recovery or extirpation.

Contact: don.russell@ec.gc.ca

13. Tracking woodland caribou: extension to the CARMA Network

Yannick Neveux (*Yukon College, Northern Res. Institute*)

In Canada, there are also Grant's caribou at the border with Alaska, Peary caribou, North of the Barren-ground caribou, on the Arctic Islands, and Woodland caribou, scientifically named "Rangifer tarandus caribou" South of the Barren-ground caribou. If the Barren-ground caribou situation is not particularly good, it's not really better for the Woodland caribou. All but the Newfoundland population are listed as somehow at risk. Endangered for the small Atlantic population in Gaspésie, Quebec, Special concern for the Northern Mountain

population in Yukon and North of Bc, and threatened for the Southern Mountain population in Bc and west Alberta, as well as the Boreal population. The CARMA website will soon, hopefully in one or two months, have data on Woodland caribou herds. Status, trends, habitat and threats will be searchable. It will allow a cross section of chance to share ideas and expertise on the management and survival of the herds. There is a real opportunity and need for those managing northern mountain caribou herds in the Yukon to capitalize on this resource.

Contact: yannickneveux@hotmail.com

13. Strange things done under the midnight sun: the life history strategy of the little brown bat at the northern edge of its range

Tom Jung, J.M. Talerico, C.L. Lausen, RMR Barclay, LA Randall and B. Slough
(Environment Yukon)

There are interesting unknowns about why little brown bats occur in the Yukon summers: it is bright light all night, summers are cool and short, and they don't winter here. We have been looking at chronology, general activity patterns, foraging behaviour, diet, ear morphology (echo location adaptation), and thermal ecology. Bats arrive in late April and leave with flying pups in late September. They seem to track civil twilight emerging and returning to roost. We are measuring 'bat passes' electronically to judge habitat use. It appears that ear size in Yukon bats is significantly larger than more southern populations. They may also be using a slightly different sonar frequency for echo location. Their day time sun basking behaviour is also interesting and may be an important survival strategy for northern life. Bat ecology continues to spawn research questions and will fuel field work for some time. The uniqueness of Yukon bats will make an interesting contribution to understanding evolving adaptations to new habitats in mammals.

Contact: Thomas.jung@gov.yk.ca

13. Communicating Science

Claire Eamer *(Your Yukon, NRI Yukon College)*

This is the second iteration of the column called 'Your Yukon' appearing regularly in the Yukon News. The column is a product of the Northern Research Institute at Yukon College and a great opportunity for researchers to get their results into the general public in easy to understand prose. Principal writers are Claire Eamer, Patricia Robertson and Erling Friis-Baastad. Sponsors: Yukon College, Yukon Environment, Yukon News, CARMA, Yukon Science Institute, AINA -- so far...almost 500 columns are now in the collection and all are searchable on the web <http://www.taiga.net/yourYukon/archives.html>. The goal is to talk about science behind the headlines. The organizations involved to date are: The Biodiversity Working Group, Northern Research Institute, Yukon College, Yukon Environment, CircumArctic Rangifer Monitoring and

Assessment Network (CARMA), Arctic Institute of North America, Yukon Science Institute. All Yukon researchers are encouraged to make use of the resource. The working group is ready to receive ideas.

Contact: ceamer@gmail.com

14. Gyrfalcons and ptarmigan: community stresses

Dave Mossop (*Yukon College, Northern Res. Institute*)

From the late 1950's to the present, two to seven study plots across the Yukon have been variously searched annually for territorial willow ptarmigan (*Lagopus lagopus*). Beginning in the mid 1970's gyrfalcon (*Falco rusticolus*) breeding numbers in the same tundra systems have been monitored annually. These data are held in a long-term data base maintained at Yukon College through the Northern Research Institute. Monitoring has supported studies of winter survival strategies, tests of population change theory, and reproductive strategy. Willow ptarmigan are seen as a 'keystone' in the tundra community. Understanding and tracking Interrelation with gyrfalcon the top predator, has been a major effort at community study. Stable, regular synchronous 10-year cycles have been demonstrated in both species. However, beginning in 2000, monitoring surveys have been suggesting the regular cycling of ptarmigan abundance may be faltering: the population peaks seem to be disappearing. The potential consequence to the tundra ecosystem is suggested in disruption at the top of the food chain: gyrfalcon are breeding much later, may be producing fewer young and seem to be declining in abundance. Simple modeling suggests gyrfalcon productivity at the top of the ptarmigan productivity cycle may be critical. It is going to be important to maintain longer monitoring to demonstrate conclusively this change as well as causes.

Contact: dmosso@yukoncollege.yk.ca

15. Snow depth and small mammal winter habitat choice: a tundra fencing experiment

Don Reid, C.Krebs, G.Gauthier, A. Kenney, S.Gilbert, E.Hoffer, D.Duchesne, M.Leung and F.Bilodeau

Snow depth is a strong correlate of the locations that tundra small mammals (lemmings and voles) choose for winter habitat, so the IPY Arctic WOLVES (Wildlife Observatories Linking Vulnerable EcoSystems) project chose to investigate this relationship. Tundra snow fall is often low, and accumulation strongly affected by wind re-distribution and topographic relief. We hypothesized that spatial extent and intensity of use of winter habitat could be increased by more widespread snow accumulation. Lemmings frequently reproduce in winter, so probably choose warmer subnivean environments to minimize cold stress. We hypothesized that the association of winter habitat with deeper snow results from lemmings choosing a better thermal environment under deeper snow. To test hypotheses, we erected snow fencing to enhance snow accumulation on summer habitats with high winter wind exposure. The experiment was replicated, with

unfenced control areas, at three sites: Bylot Island, NU (collared and brown lemming); Herschel Island, YT (collared and brown lemming), and Komakuk Beach, YT (tundra vole and brown lemming). Fencing increased local snow accumulations and reduced cold stress under the deeper snow. Lemmings and voles chose preferentially to occupy the areas with enhanced snow judging by distribution of winter nests and foraging sign. By enhancing snow accumulation we increased the spatial extent and intensity of use of treated habitats in winter in some year-by-site situations. The results indicate that at a landscape scale a model and map of snow accumulation would be a strong indicator of winter habitat distribution.

Contact: dreid@wcs.org

16. Benchmarking natural ecosystems: building a foundation for sustainability in times of rapid change

(No abstract submitted)

Fiona Schmiegelow (*University of Alberta*)

Contact: fiona.schmiegelow@ales.ualberta.ca

BIODIVERSITY AWARENESS AWARD PRESENTATIONS

Jim Hawkings

An avid birder and photographer, James (Jim) Hawkings is recognized for his contributions to our knowledge of Yukon birds and conservation efforts throughout the territory.

Having worked for the Canadian Wildlife Service for over 25 years, Jim is well-known in Yukon communities from Old Crow to Watson Lake for his passionate swan presentations. Hawkings has long been a supporter of the Yukon Bird Club, leading numerous field trips and volunteering with the Trumpeter Swan Society for more than 10 years. In 1986 he started the Yukon Bird-a-thon, an ongoing annual fundraising event for the club.

Jim has also been instrumental in several conservation initiatives, working behind the scenes as the initial manager of the Nisutlin Delta National Wildlife Area, providing background information toward planning Vuntut National Park, Old Crow Flats Habitat Protection Area, and the Tagish River Habitat Protection Area. He has promoted conservation measures for M'Clintock Bay and has long been a supporter of interpretive programs there.

You may see some of Mr. Hawking's photographs in publications such as *Birds of the Yukon Territory* (2003) and *Ecoregions of the Yukon*. He has donated amazing swan footage for the Celebration of Swans information film that plays at the Whitehorse Airport.

Joe Johnson

Joseph (Joe) Johnson was a Southern Tutchone leader who advocated not only for First Nation people and their rights but for the environment and its importance to all Yukoners. Joe grew up

living a traditional way of life, travelling seasonally throughout Yukon, hunting and fishing. During this time he developed a special bond with the land, animals, and his people.

Joe was instrumental in initiatives such as the protection of the Ruby Range Sheep area and the Kluane Caribou herd. Using both traditional and scientific knowledge he sought ways to balance First Nation rights and environmental protection when making management decisions.

In the early 1970's Joe entered politics seeking to improve the lives of Yukon First Nations People. He served many terms as Chief of Kluane First Nation and supported aboriginal and environmental issues during the land claim process. After retiring Joe served on several committees including Yukon Fish and Wildlife Board, Yukon Heritage Resources Board, Kluane National Park Management Board, and Northern Native Broadcasting. He also worked as a wildlife monitor for KFN and was meticulous in recording changes on the land.

His Southern Tutchone name, Mats'an Nats'ats'ulia, means "You expect something from him"; Joe always delivered with a huge smile.

APPENDIX 1:

Audience for 2010 Biodiversity Forum

**Aaron Unger
Adam Skrutkowski
Al von Finster
Amber Church
Andrea Altherr
Brian Charles
Brian Slough
Charlie Roots
Chris Wilkinson
Daniel Jolkowski
David Blakeburn
David Jennings
Dawn Hansen
Detlev Schwartz
Doug Knutson
Duncan Chataway
Emily Jackson
Erling Friis-Baastad
Frank Dalley
Gerry Whitley
Gillian Towell
Greg Finnegan
Helmut Grünberg
Ian Church
Ian Smith
Jackson Mercer
Jean Kapala
Jim Boyde
Joel MacFabe
Kaitlyn James**

Presenters for 2010 Biodiversity Forum

**Bruce Bennett
Claire Eamer
Dave Mossop
Don Reid
Don Russell
Erin Spiewak
Fiona Schmiegelow
Grant Zazula
Kate Swales
Maria Leung
Mike Gill
Pam Sinclair
Syd Cannings
Sylvie Binnete
Tami Hamilton
Tom Jung
Tyler Kuhn
Wayne Strong
Yannick Neveux**

Kate Alexander
Katelyn Ott
Katie Aitken
Kym Rempel
Laragh Taylor
Lea Menzies
Lessia Szulga
Linda Cameron
Louis Schilder
Manon Fontaine
Mariange Bédard
Marie Boucher
Marie Pier Robert
Mary Whitley
Maxine Kehoe
Norm Easton
Pat Kehoe
Patricia Robertson
Renate Raudaschl
Scott Gilbert
Shirley Hill
Sylvie Anne Williams
Todd Pilgrim
Tonya Makletzoff
Val Loewen
Véronique Hamelin
Wendy Nixon

APPENDIX 2:

PAST YEARS

This is the sixth Biodiversity Forum held at Yukon College. The initial meet was held in 1998 and was designed to gather consensus among field people about the nature of Yukon needs for tracking the fortunes of wild species. One of the outcomes of that discussion was the development of the “Biodiversity Working Group” and the idea of an annual forum to allow updates of ongoing biodiversity work. The first in the current series was held in 2004. We also held a less formal ‘roundup’ of current field work two falls. (That effort has morphed into an on-line compendium of researchers, their on-going work descriptions and contact information. This initiative is designed to facilitate interested field workers’ efforts at networking and inter-connecting related data bases.)

Copies of the proceeding of the initial Forum (1998) and abstracts of all subsequent meeting can be found on our web:

http://www.yukoncollege.yk.ca/research/pages/faculty_research