Strategies for Ecology Education, Development and Sustainability
University of Calgary Kananaskis Field Stations Field Trip
June 5-11, 2004

Field Trip Overview

Student field trips are an important component of the Ecological Society of America's (ESA) Strategies for Ecology Education, Development and Sustainability (SEEDS) Program that foster greater student identification with ecology through field experiences. On June 5-11, 2004, SEEDS supported a student field trip to Calgary, Canada highlighting the University of Calgary Kananaskis Field Stations. The theme of the field trip was "Determining Global Change in Wildland Ecosystems." Attendees included twenty students from seventeen schools and two SEEDS faculty. A list of attendees can be found in Appendix A, presenters in Appendix C, and staff and facilitators in Appendix D. The trip was organized by Dr. Edward A. Johnson and Karen Yee of the University of Calgary.

The primary goals of the field trip were to further students' knowledge about the field of ecology; provide students with an overview of several interesting and ecologically important sites; enable students to build a network among professionals in the field of ecology and with a group of other students sharing the same interests; expose students to the practical application of ecology; and to build student awareness of various ecological internships, degrees, and career options. The first full day of the field trip was spent in Calgary where students learned about Calgary's water and the conservation biology program and animal health at the Calgary Zoo. The remainder of the field trip was spent at the Kananaskis Field Stations, meeting with a variety of researchers in the area. The final day of the field trip was spent at Kootenay National Park and the Athabasca Glacier and concluded with dinner and sightseeing in the town of Banff. A full itinerary of the field trip can be found in Appendix B. An on-line photo album of the field trip can be found at http://www.esa.org/seeds/albumPhotos/index.php?cat=2.

Students were asked to keep journals on carbonless paper. At the end of the trip, students kept the original copy of their notes and submitted the copy to ESA staff. In addition to individual notes, a rotating group of five students were responsible for writing up the complete notes for a particular day. Each group's notes are incorporated into this report.

Saturday, June 5, 2004

Participants arrived to the Calgary International Airport and were greeted by staff and facilitators. Kathy Wilkes, an undergraduate student, and Karen Yee, Biodiversity Inventory and Monitoring Coordinator, represented the University of Calgary as field trip facilitators. The field trip began with a dinner and orientation at the University of Calgary MacEwan Center. After dinner participants formally introduced themselves and Dr. Joseph Fail explained the journal requirement of the field trip. The orientation ended with a slide show presentation by Karen Yee to provide an informative overview of the Calgary area and the field trip itinerary ahead.

Sunday, June 6, 2004

(Jesssica Scott, Mona Urbina, Lucero Vasquez-Radonic, Lara Wells)

Sunday began with a short drive from the University of Calgary to the Glenmore Reservoir at the North Glenmore Park, part of the Elbow River watershed. Dr. Edward McCauley, University of Calgary Professor and Canada Research Chair in Population Ecology, and Dr. Susan B. Watson, a University of Calgary Adjunct Associate Professor and researcher for Environment Canada, described the geography of the watershed, public concerns, and research. Glenmore Reservoir is fed by glacial melt in the Canadian Rockies which runs down the Elbow River past golf courses, agricultural, and increasingly populated urban areas. After entering the reservoir, the water flows through the Weaselhead and into the head pond where the drinking water intake is. Approximately every ten years there are consumer complaints of a fishy odor and taste in the water. Since Glenmore supplies half of the water used by Calgary's nearly one million people, remedying taste and odor events is an essential public relations issue. The water department needed to know what was happening, why, and how to prevent or predict these events. The reservoir is typically oligotrophic or low in nutrient levels, which limits algal growth. However, increases of phosphorus, typically a limiting factor, were detected in the reservoir; this combined with increases in light and carbon material induces algal blooms. With elevated nutrients, the density of algae increases and often there is a change to groups such as diatoms and chrysophytes, which may cause fishy odors. The odor is caused when the membranes of the cells rupture, releasing polyunsaturated fatty acids. To compound the problem, chlorine treatment used by the water treatment plant, causes the cell membranes to rupture. In order to predict taste and odor events, phosphorus levels are monitored. Also, reservoir levels are lowered and raised in order to increase turbidity which decreases the amount of sunlight penetrating the water column. The city's water presentation ended at the Glenmore Dam with Dr. McCauley explaining the tertiary system of water treatment.

After lunch at the University, the group traveled to the Calgary Zoo. Participants were first greeted by Diane Casimir, an endangered species researcher, who led us to the Gorilla Amphitheater. At the gorilla exhibit, Les Stegenga, a zoo keeper and biologist, shared information about the training and experience needed to be a zoo keeper. It is a highly competitive field; there are only seventy zoo keeper positions in all of Canada. Les Stegenga shared the evolution of zoos from showcases to educational and interactive places. He also explained the requirements for exhibit design: space, simulation of natural habitat, and enrichment items to stimulate as well as the four elements of zoo keeping: nutrition, good veterinary care, providing a good environment, and training for medical conditioning. Les Stegenga was also joined by Scott Jubinville, Sandra Ray, and Christine Nash, docents at the Zoo, who guided us through our day.

Diane Casimir then gave a presentation "Saving Biodiversity Today for the Generations of Tomorrow" at the Volunteer Resources Center. The presentation highlighted the mission of the center which is international training, reintroduction research, and conservation medicine. The presentation also showed different techniques used in the conservation of various species including the swift fox, whooping crane, and leopard frog. Diane talked more in-depth about her education and conservation research. She is currently conducting research for her Master's degree on the Vancouver Island Marmot, the most endangered species in North America. Vancouver Island marmots (*Marmota vancouverensis*) are among the world's most endangered mammals. Slightly over one-hundred individuals remain on the planet and less than thirty of those live in the wild. Research goals are twofold: increase knowledge of the behavior of Vancouver Island marmots and, on a broader scale, the world's fourteen marmot species, and increase understanding of how to care for marmots in the Conservation Breeding Program, to help ensure pairs are successful in reproduction. The research will help maximize reproduction in the Vancouver Island Marmot Conservation Breeding Program, thereby producing sufficient animals for reintroduction to the wild and helping to save the species from extinction. It will also provide a greater understanding of the behavior of the world's marmot species, helping to secure their future existence.

The next stop was to the Animal Health Center. Lynn Klassen, a veterinary technician, and Dr. Doug Whiteside, a zoo veterinarian, gave an informative tour of the facility. The tour highlighted some of the tools and equipment used to treat animals as well as x-ray, surgery, and necropsy rooms. They also talked about some of their most interesting patients, including Spike, a bull elephant, who had to have a toe amputated. During the surgery, a huge balloon used to lift trucks was used to support him so that his blood would not pool.

Years later Spike cracked his tusk. A stainless steel cap was made especially for him and 3M donated a lot of dental adhesive to attach it.

The afternoon at the zoo ended with a tour by the docents of the education building which was full of live animals in addition to animal artifacts. Docent training at the zoo lasts for fourteen weeks during which they are trained to handle education animals, some of which require a license. Docents travel with the education animals to give presentations at schools.

We returned to campus for dinner, after which a lively discussion ensued regarding the interface between science and politics. The evening concluded with two videos, "Where Terranes Collide: Geology in Western Canada" and "Birth of the Rockies" to give an understanding of the thrust fault formation of the Canadian Rockies for the next day's journey.

Monday, June 7, 2004
(Luis Aguirre, Noemi Baquera, Sophi Beym, Amber Finley)

The group packed up and left for the Barrier Lake Kananaskis Field Station in the morning. Dr. Ed Johnson, Director of the Kananaskis Field Stations and field trip facilitator, joined the group. He gave some background on the vegetation to observe during the travel. On the drive the landscape changed from urban to agricultural, wheat fields and ranches, and finally to mountain foothills.

After arriving to the field station, Judy Buchanan-Mappin, Kananaskis Field Stations Research Service Coordinator, welcomed the group and reviewed some guidelines and safety protocol. After this welcome and lunch, Dr. Johnson gave a tour of the field station, highlighting the weather station and GIS lab, computer and drafting room, herbarium and zoological collections, growth chamber, and research labs. Dr. Johnson explained the self-contained nature of the field station including its own waste filtration system.

The group convened in the conference room to learn about small mammal studies being conducted from the field station. Dawn Weber, a first year graduate student at the University of Western Ontario, explained her research on the bushy-tailed wood rat (*Neotoma cinerea*) and female mate selection. Wood rats are promiscuous, nocturnal herbivores. Dawn Weber's research involves observing individuals in the field, experiments in the lab, and conducting DNA analysis. Her hypothesis is that females choose males in the best condition and that differ the most in major histocompatibility complex. Dawn demonstrated her trapping and measuring techniques. Dawn Weber and her undergraduate assistant, Sarah Gil, also showed their lab area and the Plexiglas Y maze they had built to determine which odor females choose. Alex Wu, an undergraduate at the University of Western Ontario, explained his research on deer mice. He is working on a twenty-year study to determine the effects of trapping mice in certain weather conditions. He analyzes hair samples for carbon to nitrogen ratios which indicate stress levels. Alex also showed his lab area, including recently born deer mice.

The group then traveled out to a site under a bridge on the Evan-Thomas Creek where wood rats nest; nesting material, droppings, and urine stains were abundant. The final stop was to a site where Alex Wu has traps set for deer mice.

After dinner, Peter Wesley, a Stoney Nakoda tribal member and spokesperson, shared some traditional knowledge about the Stoney Nakoda tribe. The tribe is comprised of three bands: Bearspaw, Chiniki, and Wesley. He spoke about some of their origin myths, the preservation of their language, and the wisdom he has learned from his elders. He was also joined by Morris Wesley, Clifford Powderface, and Charles Powderface.

Tuesday, June 8, 2004
(Christine George, Trisha Hermosilo, Diana Hernandez, Toni-Ann Hylton)

Tuesday began with a brief introduction to the day by Dr. Johnson using herbarium specimens to show the types of grasses found years ago, giving an ecological history of the field station area.

Participants took a short drive to meet with Dr. Andrew Paul, a University of Calgary Post-doctoral Fellow. He began with a brief geologic history of the area and how it resulted in low fish diversity in Alberta. He demonstrated the technique of electrofishing to sample fish in a stream. He used volunteers to help him shock up an unnamed tributary of the Kananaskis River. As each fish was stunned, it floated to the top, and could be caught in a net. Other volunteers helped process each fish, weighing and measuring the length. In total, twelve fish were sampled, ranging from 12.1 to 86.9 grams and all were Brook Trout (*Salvelinus fontinalis)*. Brook Trout are very close in appearance to Bull Trout (*Salvelinus confluentus*); however, Brook Trout were introduced by European colonists about one-hundred years ago whereas Bull Trout are a threatened native species.

At the second stop, Dr. Johnson talked about the distribution of tree species along the trip. At this stop, lodgepole pine and white spruce were found. Lodgepole pines have serotinous cones which open when heated and two needles per fascicle. There is evidence of coevolution between red squirrels and the cones. As red squirrels consume pine cones, the cones develop physical defenses such as thorns. The red squirrels then must build stronger muscles to open these cones. Dr. Johnson also noted how to distinguish two species, the fir and the white spruce, by needle structure and cone placement. The fir has flat needles and the white spruce has round needles that will roll between your fingers. Also, the fir has cones that face upward whereas the white spruce has cones that hang downward.

The group continued on to Porcupine Creek, an alluvial river. Dr. Johnson talked about tree health and how narrow rings indicate poor health while wide rings indicate good health. This area, more barren, had smaller trees. Despite the size, the trees were old. Tree mortality was also noted, having increased since the highway was built. Dr. Johnson passed around several samples of tree cross-cuts where the rings were visible. Moving closer to the creek, Dr. Paul talked about the energy of the creek. As the energy of the creek erodes, the bed shifts, forming unstable canals. This part of the creek has a lower number of brook trout because of its unstable valley.

At the next site, a helispot overlooking Kananaskis Village, Dr. Johnson gave more information about fire ecology. This system, like the Pacific Northwest, has age determined by forest fires. The fire intervals are a little longer and depend mostly on weather, chemistry, and the amount of fuel. Some fire characteristics are intensity, velocity, and location (crown versus surface). Dr. Johnson gave the history of the Galatea Fire which occurred in August 1936. Ignited by lightning, dry summer weather and a high pressure system led to a high rate of spread, with a heat output around 60,000 kilowatts. Above 3,000 kilowatts, a fire cannot be contained.

The group stopped for a picnic lunch at Opal, a site that once was a logging camp. Logged trees would be sent down the Kananaskis River to reach Calgary in two months time. Drs. Paul and Johnson talked about the effects of dams on ecosystems.

Two more stops compared two forests. The first forest was not typical of an old growth forest as the trees were small and thin, indicating a nutrient poor area and the influences of canopy cover. Following forest fires, the organic layer is largely removed leaving the mineral soils exposed for trees to begin to grow. The trees that grow first and most quickly are most successful and the undergrowth trees most likely will never make it to the canopy. Dr. Johnson discussed the best way to measure tree age – taking a sample from the base - and showed a core tool for this use. He also talked about the vortex structure of fire. Fire scars are formed by two very close vortices as the fire moves through the forest.

The final stop was at the lower Kananaskis Lake where Dr. Paul talked about more sampling techniques. They set traps across the Smith-Dorrien Creek, where the Bull Trout recovery program began, to catch and tag fish to determine which ones return each year.

After dinner at the Field Station, Dr. Robert Barclay, a Professor at the University of Calgary, gave a presentation on bats. Highlights included the two major groups, their possible evolutionary history, echolocation techniques, and environmental impacts. He loaned the group some bat detectors to locate bats later that night. A group went out later than night and the following night and detected several bats.

Wednesday, June 9, 2004
(Edith Jaurrieta, Donna King, Loralee Larios, Noyle McPherson)

The day began with a drive to the R.B. Miller Field Station. There the group met Dr. Kathreen Ruckstuhl, a Cambridge University Postdoctoral Research Fellow, and her family. She then traveled with the group a short distance to an overlook in the Sheep River Wildlife Sanctuary. Dr. Ruckstuhl gave a background on bighorn sheep (*Ovis Canadensis*) herd dynamics and her research. Her research has focused on ungulate social systems and identifying the factors lead to sexual segregation which are key to understanding the evolution of social systems and group-decision making processes. Dr. Ruckstuhl also talked about the sexual dimorphism in the sheep and the different mating techniques that non-dominant males will employ to mate with females.

The group then traveled to Nash Meadow, a meadow below where sheep were bedding. Slowly as the group sat and watched, sheep came down to the meadow and approached the group in curiosity. The herd was mostly males as females retreat to the mountains to give birth at this time of year. This particular herd has declined from 140 to 40 individuals. Dr. Ruckstuhl plans to conduct research on the impacts of other grazing ungulates on bighorn sheep.

The group returned to the R.B. Miller Station for lunch. After lunch, participants went to a meadow on Gorge Creek Trail. Anya Vlasak, a PhD student from the University of Pennsylvania, was there to talk about her research on ground squirrels. She is researching the use of global and local spatial landmarks in navigation by Columbian ground squirrels (*Spermophilus columbianus)*. Participants helped trap and process a few squirrels. Participants also helped set up a parachute to block local landmarks that the squirrels may use. At this point, Anya Vlasak is trying to habituate the squirrels to the parachute so that its novelty is not a factor in the research. Anya has also created artificial burrows and is habituating squirrels to those too.

The group returned to the Barrier Lake Field Station for dinner. After dinner there was a career panel presentation. Participants included Salman Rasheed, David de Wit, Tanya Latty, Kiyoko Miyanishi, and Caterina Valeo. Panelists talked about their career paths and then responded to questions from the group about mentors, challenges, balancing career and family, and a variety of other topics.

Thursday, June 10, 2004
(Raynelle Rino, Mina Schultz, Thalia Tooke)

The final day of the field trip began with a drive through Banff National Park to Kootenay National Park in British Columbia where an intense fire had swept though in the summer of 2003. The area burned was quite large and almost reached the Bow Valley. The forest floor was abundant with morel mushrooms and some scattered sprouting vegetation. Participants met two researchers, Jen Anthony and Joan Gallaway, a MSc. Candidate from the University of Calgary, who split the group and explained their research on soil erosion after a burn. They are measuring the amount of sediment that runs off slopes at differing grades. Silt fences are located on the slope and the ground is sprayed with blue powder. After a rain, the amount of silt deposited on top of the colored powder is measured. All the standing trees and woody debris are also measured. The creek is fed by a glacier further upstream; as a second order stream they are looking at the effects of stream flow by toppled trees after a fire. They measure all woody debris longer than a meter in the stream and also what formation these pieces make such as bridges, pools, etc. They hope to learn if there is a relationship between the distance sediment travels and the amount of rainfall.

After lunch at the foot of Castle Mountain, the next stop was a long drive to the Columbia Ice Fields. Here participants were able to see a large scale glacier, Athabasca Glacier. Shawn Marshall, Assistant Professor at the University of Calgary, gave the group some background on the glacier. Currently the glacier is 325 square meters and melts at a faster rate than it can accumulate during winter months, about twenty meters per year. Dr. Marshall's research focuses on ice-sheet and climate system dynamics, with a particular emphasis on the development of a large-scale mathematical/numerical model of ice sheet thermomechanics.

Thursday ended with a drive to the town of Banff for dinner and shopping.

Field Trip Evaluations Summary

Field trip evaluations indicated that the experience was an incredibly valuable opportunity for participants. When asked to describe the overall experience, participants expressed, "awesome; once in a lifetime experience; had the time of my life; has given me great ideas for future research projects and studies; rewarding; enlightening; heart-warming; breath-taking; one of the best experiences I've ever had; informative; motivating; and an intrinsic part of my career."

When asked about what they accomplished on a personal or professional level, participants responded with "affirming my choice to be an environmental scientist; discovering I like plants; becoming a better writer and observer; gaining confidence to keep trying and pursuing my goals; learning that there are organizations out there to help you; experiencing a glacier; making new friends all over the country to support me in my endeavors; being exposed to minorities with the same understanding and drive; learning about a variety of concentrations within ecology; making contacts with ecologists who are committed to their field; learning about field procedures; gaining a higher degree of respect for natural resources; confirming my interest in animal behavior; being able to make a more informed decision about my career choice; exchanging ideas and information with other students about careers, school, and research projects; gaining a better understanding of presentations via note-taking and sketching observations; and, gaining more confidence about doing field research.

Suggestion for improvement included "allowing students time after field presentations to hike and explore the surroundings independently; explaining the journal requirements more clearly; providing more free time to walk, sleep, shop, journal-write; including aviary studies; including more hands-on field presentations; having more group discussions; finishing earlier in the evening; warning future participants of physical endurance requirements; giving each participant a map; having the coordinators more actively participate in the education and learning experience of the trip; organizing more hikes; scheduling less activities in the day; having more enthusiastic staff; and, not requiring journal-writing every day.

Appendix A
Field Trip Attendees

Students

Luis Aguirre	University of Texas, El Paso	luismag@utep.edu
Noemi Baquera	University of Texas, El Paso	nbaquera2@utep.edu
Sophia Beym	Arizona State University	sophi.beym@asu.edu
Amber Finley	University of North Dakota	amber.finley@und.nodak.edu
Christine George	Stanford University	hikachic@stanford.edu
Trisha Hermosilo	San Diego City College	isaactrisha@cs.com
Diana Hernandez	Tomball College	Viny_17@hotmail.com
Toni-Ann Hylton	Florida A&M University	hylton03@yahoo.com
Edith Jaurrieta	University of Texas, El Paso	ejaurrieta@utep.edu
Donna King	University of Arizona	donnak@email.arizona.edu
Loralee Larios	California State University, Fullerton	Ll070276@student.fullerton.edu
Noyle McPherson	Oakwood College	ndmcpherson@oakwood.edu
Daberat Perez-Rivera	Universidad Metropolitana	daberat@umet.universia.pr
Raynelle Rino	Humboldt State University	rmr14@humboldt.edu
Mina Schultz	College of Menominee Nation	mschultz@menominee.edu
Jessica Scott	Tuskegee University	jrs1982@hotmail.com
Thalia Tooke	University of Kansas	tooke@ku.edu
Mona Urbina	College of San Mateo	ravenhairedmona@yahoo.com
Lucero Vasquez-Radonic	University of Texas, El Paso	lu_radonic@hotmail.com
Lara Wells	Skyline College	Lara.Wells@ptk.org

Faculty

Joseph Fail, Jr.	Johnson C. Smith University	jfail@jcsu.edu
Sashi Sabaratnam	Livingstone College	ssabara@livingstone.edu

Appendix B
Field Trip Itinerary

Saturday, June 5

12:20-2:35 pm	arrive at Calgary International Airport, claim baggage, and go through Canadian customs meet Katherine Hoffman (SEEDS Coordinator) and SEEDS participants at "Meeting Place C" for an airport map visit http://www.calgaryairport.com/maps/dsp_arrivalsmap.cfm shuttles to the University residence; settle-in at Cascade Hall dorms
6:00 pm	dinner at University MacEwan Student Centre second floor (MSC Conference and Event Centre, Escalus Room 234)
7:00-8:00 pm	field trip orientation and background for wildland theme (MSC Conference and Event Centre, Escalus Room 234)

Sunday, June 6

7:30 am	breakfast at University MacEwan Student Centre second floor (MSC Conference and Event Centre, Escalus Room 234)
9:00 am	Aquatic Ecology and the cities water
12 noon	lunch at University MacEwan Student Centre second floor (MSC Conference and Event Centre, Escalus Room 234)
2 pm	tour of Calgary Zoo and Conservation Biology Program for more information on the Calgary Zoo visit http://www.calgaryzoo.org
6:00 pm	dinner at University MacEwan Student Centre second floor (MSC Conference and Event Centre, Escalus Room 234)
7:00 pm	Videos "Where Terrains Collide: Geology in Western Canada": Birth of the Rockies"

Monday, June 7

17:30 am	breakfast at University MacEwan Student Centre second floor (MSC Conference and Event Centre) pack for relocation to Kananaskis Field Stations for more information on the Field Stations visit http://www.ucalgary.ca/UofC/research/KFS/
9:00 am	travel to Barrier Lake Field Station, discussion of environmental history of area: "First Nations to Present" on van trip to station
10:00 am	settle-in and station orientation
11:30 am	lunch at Barrier Lake Field Station
1:30 pm	Small mammals - population studies
5:30 pm	dinner at Barrier Lake Field Station
7:00 pm	Greeting from Nakoda First Nation; "Field Stations: the history of an idea"

Tuesday, June 8

7:30 am	breakfast at Barrier Lake Field Station; pack lunch
8:00 am	Forest Ecology - Forestry Fish Ecology - Conservation Biology
5:30 pm	BBQ dinner hosted by Ed Johnson and Kiyoko Miyanishi at Barrier Lake Field Station
7:00 pm	Bats - locating and radio-telemetry

Wednesday, June 9

7:30 am	breakfast at Barrier Lake Field Station; pack lunch

8:00 am leave for R.B. Miller Station, "Changes in landscape caused by European settlement" discussion on van trip to the station with various stops along the way
10:00 am large mammals - Bighorn Sheep behavior
5:30 pm dinner at Barrier Lake Field Station
7:00 pm panel discussion

David de Wit - undergraduate environmental science, University of Calgary
Caterina Valeo – associate professor, geomatics and hydrology, University of Calgary
Salman Rasheed - ecosystem conservation specialist, Parks Canada
Kiyoko Miyanishi - plant ecologist, University of Guelph
Tanya Latty - graduate student, insect ecology, University of Calgary

Thursday, June 10

7:30 am breakfast at Barrier Lake Field Station; pack lunch
8:30 am trip to Kootenay National Park, Wildfire Behavior and Ecology
12:00 pm Icefields Parkway, Banff National Park, Climate Change
5:30 pm dinner and sightseeing in Banff

Friday, June 11

3:30 am breakfast/packed breakfast at Barrier Lake Field Staion; final check-out at Field Station prior to departure for airport
4:00 am leave for airport

Appendix C
Field Trip Presenters

Sunday, June 6, 2004

Aquatic Ecology and the City's Water

Edward McCauley, PhD
Professor & Canada Research Chair in Population Ecology
University of Calgary
Department of Biological Sciences 256A
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-5583
mccauley@ucalgary.ca

Susan Watson, PhD
Adjunct Associate Professor
Environment Canada, National Water Research Institute
University of Calgary
Department of Biological Sciences 395
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-2469
swatson@ucalgary.ca

Calgary Zoo

Diane Casimir
Endangered Species Researcher
Calgary Zoo Centre for Conservation Research
1300 Zoo Road NE
Calgary, Alberta, Canada T2E 7V6
403-232-9348
dianec@calgaryzoo.ab.ca

Les Stegenga
Zoo Keeper and Biologist
Calgary Zoo
1300 Zoo Road NE
Calgary, Alberta, Canada T2E 7V6

Scott Jubinville
Docent
Calgary Zoo
1300 Zoo Road NE
Calgary, Alberta, Canada T2E 7V6

Sandra Ray
Docent
Calgary Zoo
1300 Zoo Road NE
Calgary, Alberta, Canada T2E 7V6

Christine Nash
Docent
Calgary Zoo
1300 Zoo Road NE
Calgary, Alberta, Canada T2E 7V6

Lynn Klassen
Veterinary Technician
Calgary Zoo
1300 Zoo Road NE
Calgary, Alberta, Canada T2E 7V6

Doug Whiteside, DVM
Veterinarian
Calgary Zoo
1300 Zoo Road NE
Calgary, Alberta, Canada T2E 7V6

Monday, June 7, 2004

Barrier Lake Field Station

Ed Johnson
Director
Kananaskis Field Stations
University of Calgary
Department of Biological Sciences 332
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-3570
johnsone@ucalgary.ca

Judy Buchanan-Mappin
Research Services Coordinator
Kananaskis Field Stations
University of Calgary
Department of Biological Sciences 186
2500 University Dr. N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-5355
jmbuchan@ucalgary.ca

Dawn Weber
MSc. Candidate
University of Western Ontario
Faculty of Graduate Studies

Stevenson-Lawson Building
London, Ontario, Canada N6A 5B8
Dweber0@uwo.ca

Alex Wu
Undergraduate Student
University of Western Ontario
1151 Richmond Street
London, Ontario, Canada N6A 5B8

Sarah Gil
Undergraduate Student
University of Western Ontario
1151 Richmond Street
London, Ontario, Canada N5A 5B8

Peter Wesley
Stoney Nakoda Nation member
Morley, Alberta, Canada T0L 1N0

Tuesday, June 8, 2004

Barrier Lake Field Station

Andrew J. Paul, PhD
Post-doctoral Fellow
University of Calgary
Department of Biological Sciences
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-5263
ajpaul@ucalgary.ca

Robert Barclay, PhD
Professor
University of Calgary
Department of Biological Sciences 330
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-3564
Barclay@ucalgary.ca

Wednesday, June 9, 2004

R.B. Miller Field Station

Kathreen Ruckstuhl, PhD
Postdoctoral Research Fellow
Cambridge University
Department of Zoology
Downing Street
Cambridge, CB2 3EJ, UK

+44 1223 336643
ker29@cus.cam.ac.uk

Anya Vlasak
PhD Candidate
University of Pennsylvania
Department of Biology, Leidy Labs 330
Philadelphia, PA 19104-6018
215-898-1843
avlasak@sas.upenn.edu

Career Panel

Salman Rasheed
Ecosystem Monitoring Specialist
Parks Canada Western Canada Service Center
220 – 4th Avenue SE, Room 550
Calgary, Alberta, Canada T2G 4X3
403-292-4748
Sal_rasheed@pch.gc.ca

David de Wit
Undergraduate Student
University of Calgary
spreading_wings@hotmail.com

Tanya Latty
MSc. Candidate
c/o Dr. May Reid
University of Calgary
Department of Biological Sciences
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
tmlatty@ucalgary.ca

Kiyoko Miyanishi, PhD
Professor
University of Guelph
Department of Geography, HUTT Room 346
Guelph, Ontario, Canada N1G 2W1
519-824-4120 x52177
kmiyanis@uoguelph.ca

Caterina Valeo, PhD
Associate Professor
University of Calgary
Department of Geomatics Engineering 228G
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-4112
valeo@geomatics.ucalgary.ca

Thursday, June 10, 2004

Kootenay National Park

Jen Anthony
c/o Dr. Yvonne Martin
University of Calgary
Department of Geography
Calgary, Alberta, Canada T2N 1N4

Joan Gallaway
MSc. Candidate
c/o Dr. Yvonne Martin
University of Calgary
Department of Geography
Calgary, Alberta, Canada T2N 1N4
jmgallaw@ucalgary.ca

Athabasca Glacier

Shawn Marshall
Assistant Professor
University of Calgary
Department of Geography, Earth Science 404
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-4884
marshals@ucalgary.ca

Appendix D
Field Trip Staff & Facilitators

Ecological Society of America

Katherine Hoffman
Education Coordinator
1400 Spring Street, Suite 330
Silver Spring, MD 20910
301-588-3873 ext. 312
katherine@esa.org

Melissa Jurgensen-Armstrong
SEEDS Coordinator
553 E. Cherokee Street
Flagstaff, AZ 86001
928-214-7301
melissa@esa.org

Jason Taylor
Education Director
1400 Spring Street, Suite 330
Silver Spring, MD 20910
301-588-3873 ext. 311
jason@esa.org

University of Calgary

Ed Johnson
Director
Kananaskis Field Stations
University of Calgary
Department of Biological Sciences 332
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-3570
johnsone@ucalgary.ca

Kathy Wilkes
c/o Dr. Ed Johnson
University of Calgary
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
kmwilkes@ucalgary.ca

Karen Yee
Biodiversity Inventory and Monitoring Coordinator
Kananaskis Field Stations
University of Calgary
Department of Biological Sciences 356
2500 University Drive N.W.
Calgary, Alberta, Canada T2N 1N4
403-220-5264
yeeka@ucalgary.ca