The Alberta Wildlifer

Official Newsletter of the Alberta Chapter, The Wildlife Society
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Editor: Kristie Derkson

President's Message

Greetings,

Things have been going full steam over the last few months in preparation for the Nineteenth Annual Meeting and Conference of the Alberta Chapter. We had an excellent turn out for presentation submissions. We received 53 submissions, 25 of which are student presentations. The submissions are distributed among two single sessions (Parks Canada, and Carnivores), six concurrent sessions (Ungulate Management, Ecological Monitoring, Aquatic & Wetland Wildlife, Ungulate Diseases, Foraging and Movement modeling, and Habitat and Population modeling), and a poster session.

Aside from the submitted presentations, we are also pleased to feature a plenary session on the Friday afternoon dedicated to exploring the Land Use Framework and the changing roles of fish and wildlife professionals with several key speakers. On Saturday evening, during the Awards Banquet, Dr. Ed Bangs will discuss the Future of Wolf Management in North America.

All of this information is provided in more detail in the newsletter as well as on the webpage (http://joomla.wildlife.org/alberta/).

We look forward to seeing you at the conference.

Brad Taylor

President

Alberta Chapter The Wildlife Society

Alberta Chapter Of The Wildlife Society
2009 ANNUAL CONFERENCE
6-8 March 2009 Edmonton, AB
See details below
If you haven't pre-registered yet- it's not too late!
Please do so on the website!

Photo: Kristie Derkson

Editors Note

As we all look forward to another spring season, I'd like to thank everyone who helped out on this, including Sarah Lord and Katie Pagnucco, who give us interesting previews of their talks at the upcoming conference, with some fantastic photos. The conference is days away and included is an updated program guide, as well as some more detailed information on the conference. There is still time to pre-register, find some auction items to donate, photos to contribute for the contest and apply for student scholarships! Childcare is being offered this year, as well as mentoring for students and juniors and a movie Friday night. There is a banquet with auction and a lively band to keep us all dancing well into the night!! The final components are being pieced together for the conference and everyone's hard work and enthusiasm for the event is so contagious!! Hope to see you there!

If anyone has interesting photos they'd like to share in future newsletters, please feel free to pass them on to me!! Please feel free to contact me with any questions, submissions, or requests for articles you'd like to see. Thank you and hope to hear from you soon!

Happy Conferencing!

Kristie Derkson

kjderkson@gmail.com

Upcoming Events

Nineteenth Annual Meeting and Conference

ALBERTA CHAPTER
OF THE WILDLIFE SOCIETY

Delta Edmonton Center Suite Hotel,
Edmonton, Alberta
March 6-8, 2009

If you haven't pre-registered yet- it's not too late!
Please do so on the website!

PROGRAM SCHEDULE

Friday, March 6

12:00-17:00 Registration & poster set up
13:00-17:00 Plenary Session "*Land Use Framework – Changing Roles for Fish and Wildlife Professionals***"**
18:30-21:30 Social, mentoring, photo contest, posters & movie: "*Being Caribou***"**

Saturday, March 7

8:10-10:00 ACTWS Business Meeting
10:00-10:20 BREAK & Poster Session
10:20-12:00 Concurrent sessions 1:
1a: Ungulate Management
1b: Ecological Monitoring
12:00-13:00 LUNCH – on your own
13:00-15:00 Session 2: Parks Canada Session
15:00-15:20 BREAK & Poster Session
15:20-17:00 Session 3: Carnivores Session
17:30-19:00 Cash Bar and awards banquet
19:00-19:45 Banquet presentation
19:45-23:30 Auction and entertainment

Sunday, March 8

8:20-10:00 Concurrent sessions 4:
4a: Aquatic & wetland wildlife
4b: Ungulate Disease
10:00-10:20 BREAK
10:20-12:00 Concurrent sessions 5:
5a: Foraging & movements modeling
5b: Habitat and population modeling
12:00 Wrap up – *Best Student Presentation Awards*

Banquet Talk: *The Future of Wolf Management In North America*
Dr. Ed Bangs, Wolf Recovery Coordinator U.S. Fish and Wildlife Service

→Speakers and Students
If you are speaking at the conference- please note the time of your session and guidelines on the website. Students are encouraged to still enter the student presentation/poster awards contest.

Wildlife Society AUCTION at the Conference
The annual Wildlife Society auction will be held yet again this year. All funds raised go towards scholarships for undergraduate and graduate student members of the Society. Some interesting highlights up for bid currently include Ken Crutchfield, Executive Director of Fisheries, offering a lunch as an auction item. We also have two pairs of tickets to Oilers games, game in row 3! We are also offering the opportunity to bid on the first dance with Society celebrities!

Last minute auction items will be graciously received as well. Soliciting items or encouraging your company, professor, father or local wildlife oriented business to donate an appropriate is heartily encouraged. Please advise Robin Gutsell robin.gutsell@gov.ab.ca or Hugh.wollis@gov.ab.ca of your donation.

Photography Contest
ACTWS is seeking photo entries from amateur photographers. Any registered delegate of the 2009 annual conference can submit one photo per category (Wildlife and Alberta Landscapes). Prizes will be awarded for best photograph in each category. To submit photos download and fill out the photo submission form from the ACTWS website and email it to Barry Robinson: bgrobins@ualberta.ca by Thursday March 5th. Then bring an 8×10 print of your photograph(s) to the conference registration desk on Friday March 6th. For further details see the ACTWS website or email Barry.

Delta Edmonton Centre Suite Hotel, 10222-102nd Street, Edmonton, AB

The Alberta Chapter of The Wildlife Society 2009 conference will be held at the Delta Edmonton Centre Suite Hotel in Edmonton, Alberta from March 6-8, 2009. The Delta Edmonton Centre Suite Hotel is located in downtown Edmonton and is connected to over 100 stores and services via indoor walkways. Edmonton's Light Rail Transit system (LRT) has a stop (Central Station) 1 block from the Delta, which allows convenient access to the hotel if you are coming from south (U of A) or northeast Edmonton. There are also several parkades in the downtown area that are either attached to this hotel or are within walking distance of the hotel.

Hotel website:
http://www.deltahotels.com/hotels/hotels.php?hotelId=11

Childcare Option for ACTWS Conference Attendees

A room separate from the conference facility will be available for Alberta Chapter of The Wildlife Society conference attendees to use as an on-site childcare option. The plan is to have anyone that will be using this option for their childcare to volunteer a portion of time to helping out with childcare. We plan to create a schedule of parent volunteers so that everyone that is using this childcare option is helping out with this service and this rotating schedule will permit everyone to get a chance to participate in the conference. We will be setting a reasonable adult to children ratio. Please contact Tammy McLash (phone: 780-492-2842, email: tmclash@ualberta.ca) if you are planning on bringing your children and would like to participate in this childcare option.

Friday Night Social

The fun begins at 18:30 on March 6th. Entries into the photo contest will be on display and mentors and protégés will be matched-up for our wacky and weird wildlife identification quiz! All that excitement will be followed by a showing of the movie "*Being Caribou*". Come-on out and help start the conference with a bang!

Saturday Night Entertainment

Come prepared to rock out on Saturday Night with The Old Hippies following the Banquet and concurrent with the lively auction!

For more detailed information on speaking times see the website after 24 February 2009.

Delta Edmonton Centre Suite Hotel 10222-102nd St

CONFERENCE SPONSORS

The Alberta Chapter of The Wildlife Society gratefully acknowledges the following sponsors of the 2009 Annual Meeting and Conference:

Alberta-Pacific Forest Industries Inc.

Alberta Research Council

Alberta Sustainable Resource Development - Fish and Wildlife Division

Bighorn Wildlife Technologies Ltd.

Fiera Biological Consulting Ltd.

Forem Consulting Ltd

HAB-TECH Environmental

Land Stewardship Centre of Canada

Lotek Wireless Inc.

Parks Canada

TERA Environmental Consultants

University of Alberta, Biological Sciences Department

Westworth Associates Environmental Ltd.

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A SINCERE THANK YOU ALSO GOES OUT TO ALL OUR VOLUNTEERS

PLENARY SESSION

Friday, 6 March 2009

The Alberta Chapter of The Wildlife Society Plenary Session

Land Use Framework: Changing roles for fish and wildlife professionals

All involved in Alberta's natural resources sectors are familiar with the pressures that economic growth is placing on Alberta's landscapes. There are more and more demands from resource extraction (oil and gas, forestry, mining, agriculture, recreation) and the infrastructure (housing and transportation) associated with this growth on the land base. Despite the recent global economic slowdown, Alberta's growth continues to be fueled by a large infusion of risk capital and increasing global demand for our products (hydrocarbons, wood fiber, water, crops, livestock, and electricity). All indicators point to a continued trajectory of rapid development in Alberta during the next several decades. But how does this growth really translate into the quality of life for Albertans now and in the future? There is an emerging sentiment that economic growth needs to be balanced with social and environmental goals. The newly proposed Land-use Framework (http://www.landuse.alberta.ca/) has the potential to guide our future decisions to this end.

During the past several decades, wildlife biologists have played a minor to modest role in planning for Alberta's future landscapes. Despite working to the best of their abilities, wildlife and fisheries managers have had to manage the fish and wildlife resources largely as "derived products" of a landscape shaped by other landuse interests or more powerful governmental agencies (forestry, oil and gas, agriculture, municipalities). The purpose of the Plenary Session at the annual meeting of The Alberta Chapter of The Wildlife Society is to

promote a conversation among wildlife biologists about what role our profession can play to promote and implement the goals of the Land-use Framework.

The session will include oral presentations by 5 speakers and a formatted discussion. Invited speakers include:

The Alberta Land-use Framework Blueprint - An overview of the Alberta Land-use Framework. **Morris Seiferling, Assistant Deputy Minister, Sustainable Resource and Environmental Management**

The Scope of the Task at Hand: Where is Alberta Heading - A synoptic overview of what may happened if we do not make tough decisions now, what are the likely ecological trade-offs in the face of rapidly growing industries (agriculture, forestry, energy, residential, and tourism) in Alberta during the next 5 decades, and what is needed to turn this to our advantage using the Land-use Framework. **Brad Stelfox, Forem Consulting Ltd.**

Finding the Right Perspectives - Historical views and previous types of participation by wildlife managers and researchers in Alberta may not serve us well during the upcoming decades. What are creative new approaches that must be developed and implemented if society is going to achieve a better comprehension and integration of ecological integrity? What are the challenges to the wildlife profession in managing this key resource in this new framework? **Lorne Fitch, Retired Biologist**

Implementing Programs within a Climate Change World - Our natural landscapes are not only being shaped by industrial landuses, but are also being transformed by a climate in flux. What likely directions in landscape conversions will we observe in the upcoming decades? How might these influence key drivers like water availability and distribution of wildlife habitat and what role might they play in long-term planning? Dr. **Dave Sauchyn, Prairie Adaptation Research Collaborative, University of Regina**

Managing Cynicism - How will the Alberta Land-use Framework differ from previous stakeholder initiatives like the "Alberta Forest Conservation Strategy", where efforts from the environmental and professional biologist communities were exhausted and trust was eroded. Can the Land-use Framework sufficiently integrate wildlife interests across municipal, provincial, and private entities to be successful? Does Alberta have the legislative support to promote the success of this initiative? How can we tap the current enthusiasm to promote the program in the long-term? **Glen Semenchuk, Federation of Alberta Naturalists**

Photo courtesy of Bill Samuel

Preliminary Presentation Schedule

Saturday, 7 March 2009

Session 1a: Ungulate Management

10:20-10:40 Harvest modeling of Moose (*Alces alces*) in Alberta ~ M. Boyce

10:40-11:00 Reducing error in deer aerial surveys in the aspen parkland of east-central Alberta~T. Habib*

11:00-11:20 Confirmation and management of valley-dwelling goats along the banks of the Narraway River, Alberta ~ D. Stepnisky

11:20-11:40 Distance sampling for Pronghorn Antelope in Alberta ~ N. Webb

11:40-12:00 Bighorn Sheep survival and demography in the Yarrow-Castle Region of Alberta, Canada ~ M. Jokinen

Session 1b: Ecological Monitoring

10:20-10:40 A fish-based index of biological integrity for assessing river condition in central ~ C. Stevens

10:40-11:00 Indicators of wetland health in constructed wetlands: Wetland birds and vegetation as measures of natural ecological functioning ~ A. Forrest*

11:00-11:20 Microbial communities as indicators of aquatic ecosystem health ~B. Eaton

11:20-11:40 The West Central Alberta Woodland Caribou Landscape Plan: Using a Modeling Approach to Develop Alternative Scenarios ~ K. Smith

11:40-12:00 Unintended outcomes? Examining the impacts of wetland policy on biodiversity in Central Alberta ~ S. Clare*

Session 2: Parks Canada Session

13:00- 13:20 Conserving amphibians using under-road tunnels in Waterton Lakes National ~K. Pagnucco*

13:20-13:40 Exposure of migrant and resident elk to forage and wolf predation risk on the Ya Ha Tinda Winter ~ B. Robinson*

13:40-14:00 Use of herding techniques to encourage migration in sedentary elk ~ H. Spaedtke*

14:00-14:20 Application of nest and brood habitat models to identify critical habitat for Greater Sage Grouse ~ D. Gummer

14:20-14:40 The effects of high ungulate densities on foraging choices by beaver (*Castor canadensis*) in the mixed-wood boreal forest~ G. Hood

14:40-15:00 Managing trophic interactions in Jasper National Park for the protection of caribou populations ~ J. Wilmshurst

Session 3: Carnivores

15:20-15:40 From absence of proof, to proof of absence: Wolverines in the foothills and mountains of Alberta ~ J. Fisher

15:40-16:00 Cougars in the backyard: value, risk perception, and tolerance for cougars in the Clearwater County, Alberta~ A. Knopf*

16:00-16:20 Cougar kill rate and prey composition in Western Alberta: Influence of season, sex, age and reproductive ~K. Knopf*

16:20-16:40 Spatial and Temporal Patterns of Wolf Harvest on Registered Traplines in Alberta~ C. Robichaud*

16:40-17:00 Dynamics of a harvested wolf population in West-Central Alberta ~N. Webb

Sunday, 8 March 2009

Session 4a: Aquatic & wetland wildlife

8:20-8:40 Riparian zones of small streams in boreal Alberta: are they important for amphibians? ~ B. Eaton

8:40-9:00 Distribution and abundance estimates of the Western Grebe corrected for detectability ~ M. Erickson*

9:00-9:20 The use of small ephemeral wetlands by amphibians in the Boreal mixedwood forest of Alberta ~ G. Okonkwo*

9:20-9:40 Western Grebes in Alberta: Distribution and Population Trends ~ H. Wollis

9:40-10:00 Patterns of mercury accumulation in Common Loons in Western Alberta ~ S. Lord*

Session 4b: Ungulate Disease

8:20-8:40 Managing the Hay Zama wood bison population: Implications for disease surveillance and control ~ M. Ball

8:40-9:00 Assessing the relative risk of chronic wasting disease spread in Mule and White-Tailed Deer populations using genetics ~ C. Cullingham

9:00-9:20 Analysis of Saskatchewan and Alberta hunter-harvest data to predict chronic-wasting disease spread ~ E. Rees

9:20-9:40 Chronic wasting disease in wild deer: Wildlife agency responses across North America ~M. Pybus

9:40-10:00 Chronic Wasting Disease in wild deer in Alberta ~ M. Pybus

Session 5a: Foraging and Movement modeling

10:20-10:40 Foraging Activity and Movements of GPS-collared Cattle, Elk, Bison and Deer in the Aspen Parkland of Alberta, Canada~ P. Jones*

10:40-11:00 Movement ecology and road mortality risk of prairie rattlesnakes (*Crotalus viridis viridis*) and bullsnakes (*Pituophis catenifer sayi*) on the Alberta prairies ~ A. Martinson*

11:00-11:20 The role of tadpoles in temporary pond food webs within the Aspen Parkland of Alberta ~ A. Whiting*

11:20-11:40 Caribou-primary prey-wolf relationships in northeastern Alberta ~ D. Latham

11:40-12:00 Survival of a unique and sensitive type of caribou in the Canadian Rockies ~ A. McDevitt

Session 5b: Habitat and Population modeling

10:20-10:40 Factors limiting our understanding of ecological scale in wildlife research ~ M. Wheatley

10:40-11:00 Estimating abundance of the elusive Long-tailed Weasel, *Mustela frenata longicauda*, in southwestern Alberta ~ G. Hornbeck

11:00-11:20 Predicting habitat value for elk in the central east slopes of Alberta ~ S. Webb

11:20-11:40 Avoidance of Crested Wheatgrass by three grassland songbirds in CFB Suffield, Alberta ~ L. Hamilton*

11:40-12:00 Multi-scale movement choices of grizzly bears in the Central foothills of Alberta ~J. Northrup*

*** indicates Student Presentation**

Articles

Impacts of mercury contamination from industrial point sources on Common Loons in western Alberta

Sarah Lord, Department of Biological Sciences, University of Alberta

silord@ualberta.ca

More than half of electrical power in Alberta is produced in coal-burning facilities. High-temperature combustion of coal releases mercury in a stable gaseous state that can be transported from its source through the atmosphere. Once deposited on the landscape, this inorganic form of mercury can be biologically converted into methylmercury—a vertebrate neurotoxin—by bacteria present in lake sediments and wetlands.

Methylmercury is easily absorbed into the tissues of animals, but is only slowly excreted. The difference between the absorption and excretion rate causes bioaccumulation, where the concentration of a contaminant in an animal's tissue increases over time. Slow excretion rates can also lead to biomagnification, a process through which the concentration of a contaminant increases at each step of the food chain. Predators consume not only the carbon and nitrogen in their prey, but also the methylmercury that has bioaccumulated over the prey's lifetime.

In aquatic ecosystems, the plankton at the base of the food chain tend to have the lowest methylmercury concentrations, small fishes that eat plankton have higher concentrations, the predatory fishes that eat small fishes have even more methylmercury in their tissues, and so on. This explains why species at the top of the aquatic food chain—bald eagles, ospreys, mink, and loons—can have such high concentrations of contaminants, sometimes high enough to cause reproductive failure and death even when other species appear unaffected. These 'top predators' are exposed to higher concentrations of contaminants than any other species in the ecosystem, so they are the species we expect to suffer the most impacts from mercury pollution. Monitoring these 'sentinel' species, such as loons, is a canary-in-the-coal-mine approach to indicate when ecosystems are in trouble from contaminants.

The Common Loon (*Gavia immer*) is a symbol of the Canadian wilderness. Their image is on our one-dollar coin, and their haunting call is familiar to those who spend their summer weekends at a lakeside cabin. Common Loons have a breeding distribution that covers most of Canada and parts of northern USA. They return to the same lake every spring to breed, and spend their winters on the Pacific or Atlantic coasts. Loons are large, long-lived birds with complex social, breeding, and parenting behaviours. Because loons are top predators that primarily eat fish, they are at high risk for bioaccumulation and biomagnification of methylmercury.

Studies in the laboratory and in the wild have confirmed that methylmercury has significant negative effects on loons. Loons with high concentrations of methylmercury in their blood lay smaller eggs, spend less time incubating their eggs, spend less time allowing their young chicks to ride on their backs (a behaviour that keeps still-downy chicks warm and dry), and feed their chicks less food, less often. These behavioural changes lead to reduced reproductive success and eventual population decline, as was documented near the industrial centers of Maine, New Hampshire, Michigan, and New York state in the 1970s.

The effects of industrial mercury pollution on loons have been well-studied in the northeastern USA and eastern Canada, and the resulting data has supported tighter pollution regulations and ongoing loon conservation programs. However, very little loon research has been done in Canada west of Ontario, despite the high concentrations of mercury in fish from some lakes in Alberta – high enough to require fish consumption advisories for humans, as listed in the 2008 Alberta Guide to Sportfishing Regulations.

My Ph.D. project will investigate the extent of mercury contamination in Common Loons in western Alberta, comparing methylmercury in loons breeding on lakes close to and distant from a major industrial source of atmospheric mercury pollution. If loons close to point sources have significantly more methylmercury than loons distant from point sources, we will know that regulations on point source mercury emissions need to be tightened to reduce negative wildlife effects. Documenting the patterns of mercury pollution in Alberta will provide critical data to inform future legislation.

How you can help loons:

1. *Reduce your electricity usage.* Turn off lights in empty rooms. Turn down the thermostat. Switch to fluorescent light bulbs. Using less electricity burns less coal and results in less atmospheric mercury pollution.

2. *Use non-lead sinkers and jigs.* Poisoning from ingestion of lead sinkers and jigs is a frequent cause of mortality in loons. Anglers can use inexpensive, ecologically sound replacements made from nonpoisonous material such as tin, steel, bismuth, and recycled glass.

3. *Respect loon habitat.* Human disturbance frightens loons from their nests, leaving their eggs vulnerable to predation and cold. Young chicks can drown in the wakes of motorboats and personal watercraft. Discarded fishing line becomes impossibly tangled around loon wings, legs, and beaks, causing injury and death by starvation.

4. *Report banded loons.* Part of our monitoring effort involves banding loons with unique combinations of coloured plastic bands. This helps us identify individuals year-to-year and track which lakes they return to and where they spend the winter. If you have a banded loon on your lake, let us know!

Western Alberta is just one region of a new national wildlife mercury monitoring network funded by the CARA Mercury Science Program and Environment Canada. Methylmercury concentrations in loons and fishes on lakes close to and distant from industrial point sources of mercury are also being compared in Manitoba, Ontario, Quebec, and the Maritimes. This will allow us to assess the differences among regions, determine regional and national trends, and suggest environmental protection strategies suitable for each region and the country as a whole.

If you would like more information about this project, feel free to contact me by email at silord@ualberta.ca. We are fortunate to receive logistical and financial support from many agencies: the Alberta Conservation Association; Alberta Sport, Recreation, Parks & Wildlife Foundation; Alberta SRD; Alberta TPRC; Biodiversity Research Inc.; Canadian Circumpolar Institute; Parks Canada; NSERC; and the University of Alberta.

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All photos taken by Virginia Gumm and Daniel Poleschook, Jr. Used with permission.

Photo #1: Male and female loons are both devoted parents, and share egg incubation and chick-feeding duties equally.

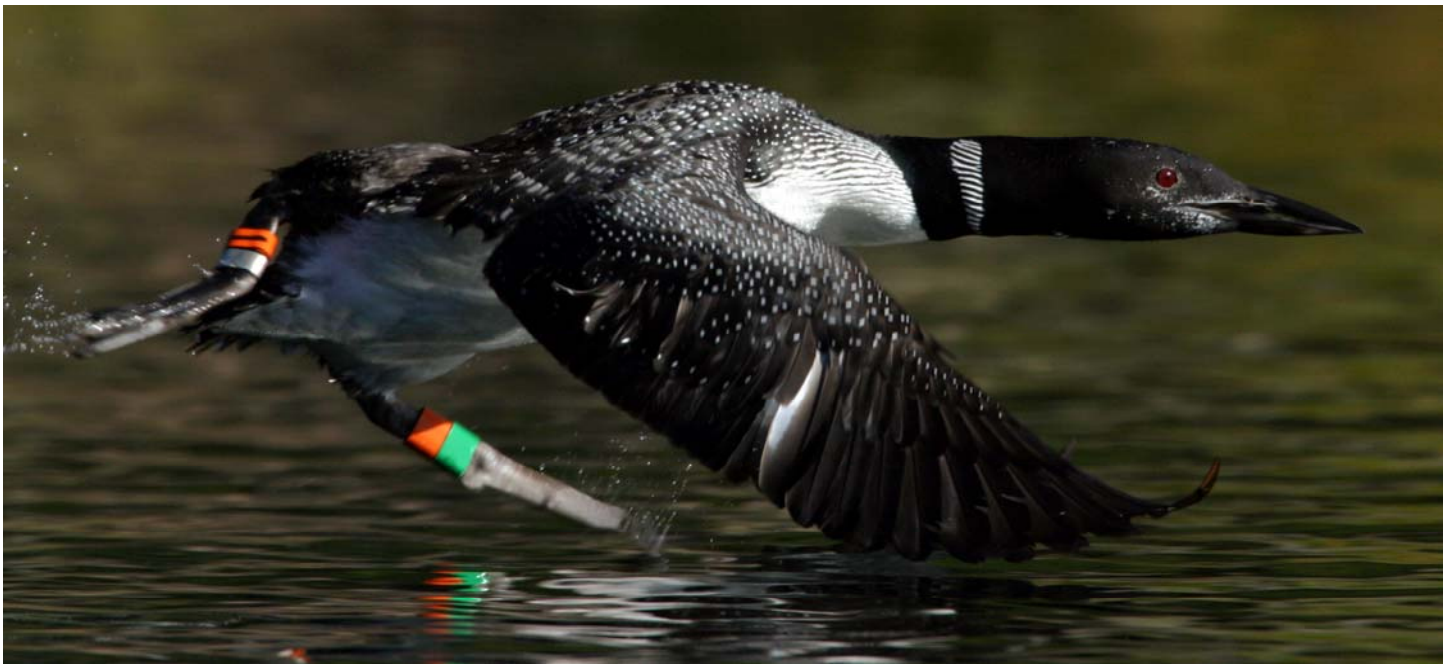

Photo #2: Loons are heavy birds that need a long 'runway' to get into the air. The colour bands on this adult (in breeding plumage) are clearly visible.

Photo #3: The gray-brown plumage of juvenile loons is similar to the winter (non-breeding) plumage of adult loons. Loons migrate to the Atlantic and Pacific coasts, and colour-banding data helps determine where particular populations of loons reside in the winter.

Under-road tunnels as a means of conserving amphibians in Waterton Lakes National Park

Katie Pagnucco, Department of Biological Sciences, University of Alberta

kpagnucc@ualberta.ca

Urbanization and the construction of roads is one way that humans are drastically changing the natural landscape. The construction of roads in protected areas introduces perils to animals in areas thought to be pristine, such as national parks. Preservation of biological integrity is one of the mandates for national parks in Canada, and as such, they must address the issue of habitat loss caused by road construction within parks.

Global amphibian declines have alarmed conservation biologists in recent decades. Amphibians worldwide face greater threats than those faced by mammals or birds, with a third of all amphibian species considered to be 'threatened' according to the IUCN Red List. Habitat fragmentation caused by roads can ultimately result in reduced gene flow, which can affect the size, health, and persistence of populations. Roads and vehicular traffic pose a physical barrier to amphibians that are susceptible to death, dehydration, and predation while crossing roads, especially when travelling to and from breeding ponds. The purpose of my study is to determine amphibian movement patterns with respect to roads and associated mortality, and to assess the

potential of amphibian tunnels as a means of increasing survivorship and recruitment. Specifically, I am working under the supervision of Dr. Cindy Paszkowski and Dr. Garry Scrimgeour (Parks Canada), and in collaboration with Waterton Lakes National Park (WLNP) on an initiative where four tunnels were installed in May 2008 to help protect a population of long-toed salamanders (*Ambystoma macrodactylum*), which are listed as a "species of special concern" in Alberta. Long-toed salamanders at Linnet Lake in WLNP are especially susceptible to road mortality because of their annual migrations to and from this breeding site during which they cross the heavily used Park Entrance road.

The objectives of my study are to work with Parks biologists to: 1) mitigate road mortalities at Linnet Lake; 2) estimate the adult long-toed salamander population size at Linnet Lake; 3) document use of tunnels by long-toed salamanders and other amphibians; 4) document movement patterns and habitat use of long-toed salamanders at WLNP, and; 5) experimentally determine the effects of native fish on the behaviour and survival of long-toed salamander larvae.

In order to mitigate road mortalities, I have installed drift fencing and pitfall traps on each side of the Entrance Road that runs parallel to Linnet Lake. The road drift fence and pitfall trap system is designed to intercept long-toed salamanders migrating to and from Linnet Lake, who are then directed into a pitfall trap, which I check daily from April to October. Captured salamanders are measured and marked with Visible Implant Elastomer (VIE) prior to being released on the opposite side of the road. From April 30th to June 9th 2008, I caught a total of 445 adult long-toed salamanders heading to Linnet Lake to breed in the spring, and another 172 heading back from Linnet Lake to their overwintering habitat (102 of these individuals were marked). The fence and trap system was successful at reducing salamander mortalities: we only found 10 road-killed salamanders in 2008. I have used the Schnabel method to estimate the current Linnet Lake long-toed salamander population to be comprised of 1492 individuals. This came as a surprise, given the 2001 population estimate of 289 adult long-toed salamanders breeding at Linnet Lake. I will continue to monitor the adult population in 2009 and 2010 to if and to what degree the population size fluctuates from year to year.

In August 2008, I installed a Reconyx PC85 camera at each tunnel entrance on both sides of the road (8 cameras) to monitor use. I am using both motion-trigger and timed interval photographs to document tunnel use. A wide variety of small vertebrates have been photographed using the tunnels to safely travel between habitats, including the following species (scientific name): snowshoe hares (*Lepus americanus*), red squirrels (*Tamiasciurus hudsonicus*), least chipmunks (*Tamias minimus*), mice (*Muss* spp.), voles (*Microtus* spp.), raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), common garter snakes (*Thamnophis sirtalis*), and both long-toed and tiger salamanders (*A. tigrinum*). I will be using camera data to determine the effects of climate/season/time on crossing frequency, species-specific tunnel effectiveness, and differences in effectiveness amongst tunnels.

There is currently very little information in the literature on the terrestrial habitat preferences of long-toed salamanders. It is not known whether the majority of the Linnet Lake long-toed salamander population cross the Entrance Road in pursuit of suitable over-wintering habitat, or if there is a subset of the population that over-winter on the other side of the lake. To address these questions, I installed a series of drift fences and pitfall traps around the entire circumference of Linnet Lake. At each trap location, I measured an array of habitat variables at all trap locations, including % canopy cover, soil moisture content, organic litter depth, and ground cover. Transmitters can provide vital information regarding terrestrial habitat selection patterns of long-toed salamanders at Linnet Lake. To study microhabitat use, we are using A2414 radio transmitters from Advanced Telemetry Systems that only weigh 0.3g each (~5% adult salamander body weight). I am the first to use radio telemetry to study long-toed salamanders, as previous transmitters were too heavy to be used on this species. I am currently experimenting with various methods of attaching the transmitters to the

salamanders, and plan on employing this new technology in the 2009 field season. By characterizing habitat use by long-toed salamanders, I hope to define the landscape conditions needed to sustain amphibian populations in the Canadian Rockies.

The lack of salamander egg masses and larvae found in Linnet Lake in 2008 caused concern regarding the potential effect that thousands of lake chub (*Couesius plumbeus*) present in the lake may be having on the long-toed salamander population. Although the tunnel installations will likely reduce adult salamander road mortalities, if an expanding fish population is reducing larval numbers, the population may still be at risk of extirpation. As a result, I designed a series of survival and behavioural experiments to test the potential effect of lake chub on long-toed salamander larvae, which I conducted in July 2008. Preliminary results show that salamander larvae do alter their behaviour in the presence of lake chub: larvae spent more time in refugia and near the edge of aquaria in the presence of a minnow than when they were in the aquaria alone. I will repeat these experiments in 2009 using larvae at different stages of development.

At present, tunnel installation is an uncommon and expensive proposition, thus the opportunity to assess this technology at WLNP (the first amphibian tunnels to be installed in a Canadian National Park) is of broad interest. By studying patterns of tunnel use by the flagship long-toed salamander population at Linnet Lake, I will determine factors that promote tunnel use by other amphibian species and other small vertebrates for whom roads also pose a threat. As the demands of forestry, energy, urbanization and agriculture result in continued road building throughout Canada, the need for measures to protect amphibians from road mortalities will continue to grow. Biodiversity loss is an ongoing global catastrophe primarily attributable to human actions, and must be addressed in both protected and unprotected areas.

Photo 1: Adult long-toed salamander. Linnet Lake, WLNP

Photo 2: One of the four under-road tunnels installed to allow small vertebrates to safely travel through their habitat. Entrance Road, WLNP

Photo 3: Author with a long-toed salamander in front of the Entrance Road and installed drift fences. Linnet Lake, WLNP.

Photo 4: Photo of long-toed salamander using one of the under-road tunnels captured using Reconyx PC85 camera. Linnet Lake, WLNP.

We acknowledge the financial and logistical support from all of our partners in this project: Alberta Conservation Association, Canadian Circumpolar Institute, Alberta Sports and Recreation Parks and Wildlife Foundation, NSERC, the University of Alberta, and Parks Canada. Our 2008 field season would not have been as successful as it was without the help and support of several volunteers from Waterton Park and Parks Canada staff.

Selected References:

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2. Fukumoto, J.M. (1995) Long-toed Salamander (*Ambystoma macrodactylum*) ecology and management in the Waterton Lakes National Park. M.E.D. thesis, University of Calgary, Calgary, AB. 108 pp.

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6. Trenham, P.C. & Shaffer, H.B. (2005) Amphibian upland habitat use and its consequences for population viability. *Ecological Applications*, **15**, 1158-1168.

Please feel free to pass on this information to anyone eligible:

2009 Alberta Chapter of The Wildlife Society Student Awards

The Alberta Chapter annually presents academic student awards to promote interest and reward excellence in the field of wildlife conservation. Applicants must have a demonstrated interest in wildlife management. ACTWS member committees review student submissions for each award category and successful candidates will be notified in March 2009.

Robert (Bob) K. Goddard Memorial Scholarship

Amount- $1,500

Eligibility

This award is open to students that are presently enrolled in a technical program in the Province of Alberta, focusing on wildlife biology or management, and will be enrolled fulltime in September 2009 (participating on a co-op work term is also eligible). Program examples include, but are not limited to: Renewable Resource Option (NAIT), Fish and Wildlife Major (Lakeland), Renewable Resource Management Diploma or Fish and Wildlife Technology Certificate (LCC). Please note that programs in conservation enforcement are not eligible for this award.

Submission Requirements

Transcript of marks for courses taken and a list of courses planned for remainder of

program, if any.

Summary of volunteer or work experience in the wildlife field.

Summary of involvement or experience with the Alberta Chapter of The Wildlife Society.

Letter of reference from a faculty member or other professional biologist.

Typed essay (300 words or fewer) outlining career goals and relevance to this award.

Ian Ross Memorial Scholarship

Amount- $1,500

Eligibility

This award is open to students planning a career in wildlife management and preparing to enter the final year of a 4-year Alberta university program in Biological Sciences, Forest Science, Animal Sciences, Zoology, or related field of study, in September 2009. The award funds will be disbursed upon confirmation of registration for the next year of full-time enrollment.

Submission Requirements

Transcript of marks for courses taken, and a list of courses planned for their final year.

Summary of involvement or experience with the Alberta Chapter of The Wildlife Society.

Summary of volunteer or work experience in the wildlife field.

Letter of reference from a faculty member or other professional biologist.

Typed essay (300 words or fewer) outlining career goals and relevance to this award.

Alberta Chapter of The Wildlife Society Post-Graduate Award

Amount- $1,500

Eligibility

This award is open to students planning a career in wildlife management and accepted into a full-time post-graduate degree program at an Alberta university in Biological Sciences, Forest Science, Animal Sciences, Zoology, or related field of study (must be enrolled full time in September 2009).

Submission Requirements

Transcript of marks for undergraduate and graduate courses.

Outline of proposed thesis work.

Summary of involvement with the Alberta Chapter of The Wildlife Society.

Summary of volunteer or work experience in the wildlife field.

Letter of reference from a faculty member or other professional biologist.

Typed essay (300 words or fewer) outlining career goals and relevance to this award.

All Applications must be received by March 1, 2009.

For further information, contact Tammy MacMillan, Awards Committee Chair at **tmacmillan@teraenv.com** or visit the Alberta Chapter of the Wildlife Society Website at http://www.albertadirectory.net/actws.

Send applications electronically to Tammy MacMillan at:

tmacmillan@teraenv.com

Transcripts can be mailed to:

PO Box 451

Hanna, Alberta

TOJ 1P0

Attn: Scholarship Committee

Dates of Interest

1 March 2009: Alberta Chapter of the Wildlife Society Student Awards Deadline

6-8 March 2009 ACTWS Conference in Edmonton

ANYTIME: Donations accepted for Auction

Edmonton Boat and Sportmen's Show
Agricom, Northlands Park
March 12-15, 2009

74th North American Wildlife and Natural Resource Conference
Marriott Cyrstal Gateway, Arlington, Virginia
March 16-21, 2009
http://www.wildlifemanagementinstitute.org/?option=com_content&view=article&id=126&Itemid=61

Conserving Wetlands in British Columbia

Revelstoke Community Centre, Revelstoke British Columbia

May 28-29, 2009 http://www.cmiae.org/conferences.htm#Conserving_Wetlands

Strengthening Stewardship – Investing at Every Step

4th National Stewardship & Conservation Conference

Strengthening Stewardship – Investing at Every Step, the 4th National Stewardship and Conservation Conference will be held on July 8-11, 2009, at the MacEwan Conference & Event Centre at the University of Calgary, in Calgary, Alberta.

The 2009 International Academic and Community Conference on Animals and Society Minding Animals

Newcastle, Australia

July 13-18, 2009
http://www.mindinganimals.com//index.php?option=com_content&task=view&id=27&Itemid=44

Wildlife Disease Association Annual Conference

Semiahmoo Resort and Spa -sea-side resort, located about half way between Seattle, Washington and Vancouver, British Columbia.

August 2-6, 2009

139th Meeting of the American Fisheries Society (AFS): "Diversity, the Foundation of Fisheries and of AFS; are we gaining ground?"

Nashville, Tennessee, USA

August 30-September 3, 2009

The Wildlife Society 16th Annual Conference

Monterey, California

September 20-24, 2009

Carnivore Conference 2009

Denver, CO

Join researchers, educators, wildlife managers and activists for Defenders' seventh Carnivore Conference, "**Carnivore Conservation in a Changing World**", as we discuss the latest developments in the science and conservation of wolves, bears, marine mammals and other carnivores.**Questions?** Contact Kati Dancy at kati.dancy@defenders.org.

November 14-19, 2009
http://www.defenders.org/programs_and_policy/wildlife_conservation/imperiled_species/wolves/conferences_and_seminars/index.php

Please see http://www.srd.gov.ab.ca/library/conferencelist.aspx for more conferences and continuous updates.

ACTWS Executive Contact List - 2008/9

Title	Name	Work Phone	Email
President	Brad Taylor	403.562.3288	brad.taylor@ab-conservation.com
President-Elect	Dr. Evelyn Merrill		emerrill@ualberta.ca
Past-President	Anne Hubbs	403.845.8235	anne.hubbs@gov.ab.ca
Secretary-Treasurer	Karl Zimmer		Kzimm14@yahoo.com
Director	Robin Gutsell	780.644.1154	robin.gutsell@gov.ab.ca
Director	Tammy MacMillan	403.265.2885	tmacmillan@teraenv.com
Director	Joe Litke		jlitke@fieraconsulting.com
Director	Jason Young		jason.young@gov.ab.ca
Student Director (UofA)	Carmen von Conrad		carmenv@ualberta.ca
Student Director (LCC)	Vincent Herron		vincent.herron@lethbridgecollege.ab.ca
Newsletter	Kristie Derkson		kjderkson@gmail.com
Conservation Committee	Blair Rippin		rippin@shaw.ca
Website	Layla Neufeld		layla.neufeld@pc.gc.ca