

JOINT MEETING  
THE ANNUAL MEETING OF THE ALASKA CHAPTER  
OF THE WILDLIFE SOCIETY and the  
ALASKA HERPETOLOGICAL SOCIETY



University of Alaska Fairbanks, Wood Center  
Fairbanks, Alaska

April 3 - 6, 2017



**Alaska Chapter of the Wildlife Society  
and Alaska Herpetological Society  
2017 Joint Annual Meeting  
“Cross Cultural Connections”**

**University of Alaska - Fairbanks, Wood Center**

*FAIRBANKS, ALASKA*

*April 3 - 6, 2017*

**CONFERENCE COMMITTEE**

**Organization:** Nathan Svoboda, Scott Brainerd, Grant Hilderbrand, Kerry Nicholson, Dan Thompson, Todd Brinkman, John Trent, Kevin White, Matt Sexson, and Jessica Herzog (Student Chapter).

**Program:** Nathan Svoboda, Scott Brainerd, Grant Hilderbrand, Todd Brinkman, and John Trent.

**Logistics:** Scott Brainerd, Kerry Nicholson, Todd Brinkman, Matt Sexson, and Jessica Herzog (Student Chapter).

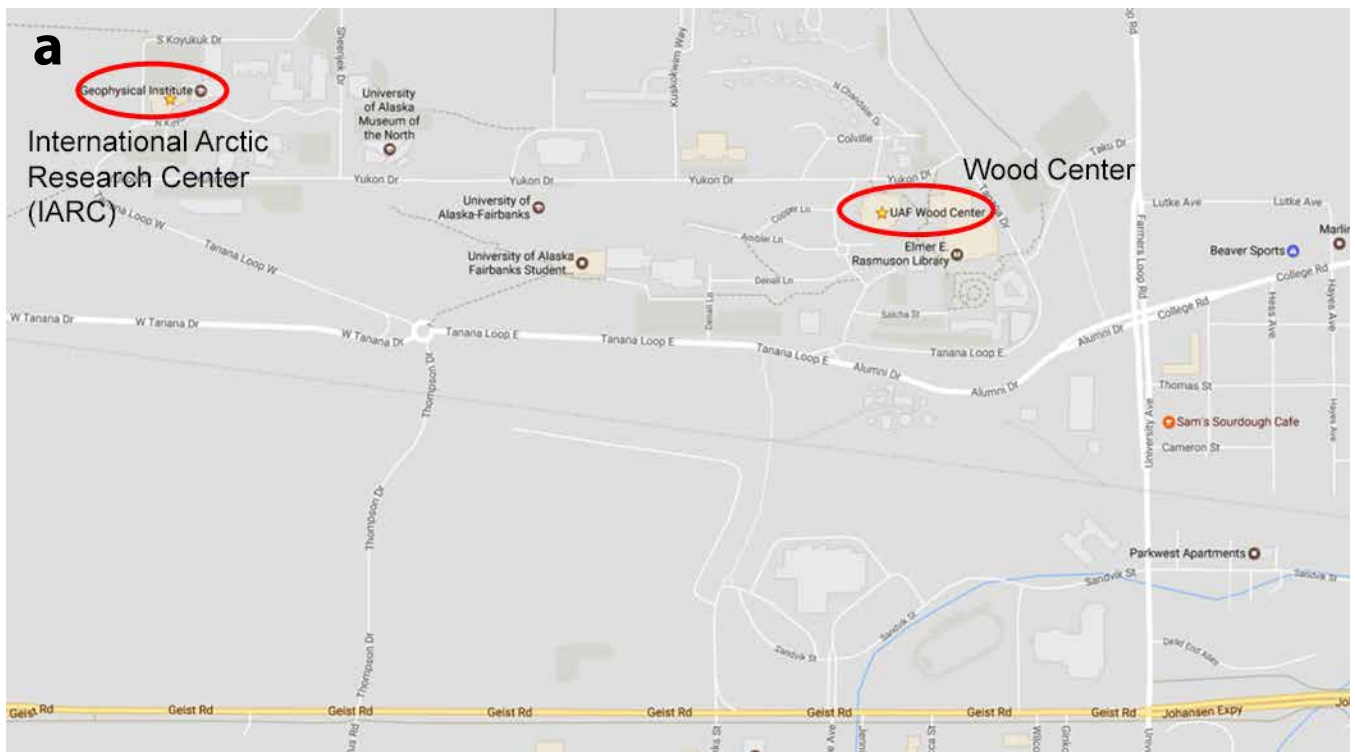
**Website and Registration:** Dan Thompson.

**Workshops:** Nathan Svoboda, Scott Brainerd, and Grant Hilderbrand.

**Awards Committee:** Tom Paragi (Chair), Layne Adams, Dan Thompson, Kevin White, and Dave Yokel.

**Cover and Program Design:** Mary Whalen.

**Cover Photos:** U.S. Fish and Wildlife Digital Library, Ryan Askren (USGS), Tony Fischbach (USGS), Joshua Ream (Alaska Herpetological Society web site), Steve Partridge (USGS) and Chris Zimmerman (USGS).



a) map to conference venues on University of Alaska Fairbanks campus;  
b) Wood Center, 505 S. Chandalar;  
c) International Arctic Research Center (IARC) - 930 N. Koyukuk Dr.

## Sponsors



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## Conference-at-a-Glance

Monday, April 3, 2017			2:30pm	<b>Break, Poster Session &amp; Judging</b>	
1:00pm	Workshop: Wildlife Service Dogs		3:40pm	Fine Scale Mammalian Complexities in a Low Resolution	Harry Reynolds
Tuesday, April 4, 2017			4:00pm		Matthew Cameron*
8:00am	What Indigenous People of Alaska Know and Why We Must Listen	<b>Opening Remarks</b>	4:20pm		Casey Brown
8:30am		Inu-Yupiaq Native Dance Group	4:40pm	Scott Yeats	
8:30am		Larry Mercurieff	5:00pm	<b>Wrap Up</b>	
10:15am		<b>Break</b>	6:00pm	<b>Banquet &amp; Business Meeting</b>	
10:30am		Round table Discussion	Thursday, April 6, 2017		
12:00pm		<b>Lunch</b>	8:00am	Alaska Herps and Other Non-Game Species	<b>Opening Remarks</b>
1:30pm		Workshop - Challenges & Opportunities	8:10am		Heidi Kristenson
3:30pm		<b>Break</b>	8:30am		Trey Simmons
4:00pm		Workshop - Challenges & Opportunities (cont.)	8:50am		Don Larson*
5:00pm		<b>Wrap Up</b>	9:10am		Falk Huettmann
5:15pm	<i>Student Meeting</i>	9:30am	Mark Spangler*		
Wednesday, April 5, 2017			9:50am		<b>Break</b>
8:00am	Humans and Wildlife: Lessons Learned to Inform Management for the Future	<b>Opening Remarks</b>	10:20am	Jesika Reimer	
8:10am		Roger Kaye	10:40am	David Safine	
8:30am		Danielle Gerik*	11:00am	Joseph Eisaguirre*	
8:50am		Katie Christie	11:20am	Nathan Jones	
9:10am		Helen Cold*	11:40am	Scott Brainerd	
9:30am		David Albert	12:00pm	<b>Lunch</b>	
9:50am		<b>Break - UAF Student Chapter</b>	1:30pm	George Esslinger	
10:20am		Jonathan Haufler	1:50pm	Kevin White	
10:40am		William Wall	2:10pm	Taylor Stinchcomb*	
11:00am		Karen Linnell	2:30pm	Amanda Droghini	
11:20am		Jennifer Reed	2:50pm	<b>Break</b>	
11:40am		Jacqueline Keating*	3:20pm	Joshua Miller	
12:00pm	<b>Lunch and Business Meeting</b>		3:40pm	Patricia Reynolds	
1:30pm	Fine Scale Mammalian Complexities in a Low Resolution Environment	Nils Pedersen*	4:00pm	C. Tom Seaton	
1:50pm		Grant Hilderbrand	4:20pm	Kimberlee Beckmen	
2:10pm		Yasaman Shakeri*	4:40pm	<b>Closing Remarks</b>	

## Tuesday, April 4

UAF - Wood Center Ballroom

### 8:00 am - 5:15 pm: Plenary session - What Indigenous People Know and Why We Must Listen

Nate Svoboda, moderator

- 8:00 WELCOME AND OPENING REMARKS  
Scott Brainerd, Alaska TWS President
- 8:30 INU-YUPIAQ NATIVE DANCE GROUP
- 9:15 WHAT INDIGENOUS PEOPLE KNOW AND WHY WE MUST LISTEN  
Larry Mercurieff - **Plenary Speaker**
- 10:15 BREAK
- 10:30 ROUND TABLE DISCUSSION: INDIGENOUS WILDLIFE MANAGEMENT IN ALASKA:  
LOOKING FORWARD  
Michael Koskey - Moderator
- 12:00 LUNCH
- 1:30 WORKSHOP - CHALLENGES AND OPPORTUNITIES IN PARTNERING WITH INDIGENOUS  
PEOPLE  
Larry Mercurieff  
Participants in the workshop will delve into Alaska Native ways, organizations, aspirations,  
and challenges to creating partnerships with Alaska Native peoples. This will be an interactive  
workshop where participants will discuss what they have learned and explore questions and  
issues about how to apply what they have learned.
- 3:30 BREAK
- 4:00 WORKSHOP - CHALLENGES AND OPPORTUNITIES IN PARTNERING WITH INDIGENOUS  
PEOPLE (CONTINUED)  
Larry Mercurieff
- 5:00 WRAP UP AND ANNOUNCEMENTS  
Scott Brainerd
- 5:15 STUDENT MEETING WITH ALASKA TWS BOARD



## Wednesday, April 5

UAF - Wood Center Ballroom

### 8:00 am - 12:00 pm: **Session A - Humans and Wildlife: Lessons Learned to Inform Management for the Future**

**Grant Hilderbrand**, moderator

- 8:00 WELCOME AND OPENING REMARKS  
Scott Brainerd
- 8:10 THE ANTHROPOCENE AND THE CONSERVATION PARADIGM OF THE FUTURE  
Roger Kaye
- 8:30 CHARACTERIZING ARCTIC SHOREBIRD CHICK DIETS: PROVIDING INSIGHTS INTO TROPHIC MISMATCH WITH DNA METABARCODING AND NEXT-GENERATION SEQUENCING  
Danielle Gerik\*, Richard Lanctot, Kirsty Gurney, Mark Spangler and Andrés López
- 8:50 INTEGRATING LOCAL KNOWLEDGE AND DECISION ANALYSIS TO STRENGTHEN SUBSISTENCE SYSTEMS IN A CHANGING ARCTIC  
Katie Christie, Tuula Hollmen, Henry Huntington and James Lovvorn
- 9:10 INFLUENCE OF A CHANGING CLIMATE ON ACCESS TO SUBSISTENCE RESOURCES FOR RURAL RESIDENTS OF INTERIOR ALASKA  
Helen Cold\*, Todd Brinkman, Teresa Hollingsworth, Caroline Brown and David Verbyla
- 9:30 A CASE STUDY OF REGIONAL PLANNING TO MITIGATE IMPACTS OF OIL DEVELOPMENT ON SUBSISTENCE ACTIVITIES BY INUPIAT PEOPLE IN THE NATIONAL PETROLEUM RESERVE IN ALASKA  
David Albert
- 9:50 BREAK - HOSTED BY UAF STUDENT CHAPTER OF THE WILDLIFE SOCIETY
- 10:20 AHTNA INTERTRIBAL RESOURCE COMMISSION AND AN MOA WITH DEPARTMENT OF INTERIOR  
Karen Linnell, Roy Ewan and Christopher Gene
- 10:40 DEVELOPMENT OF A WILDLIFE PROGRAM MANAGEMENT CAPACITY FOR CRITR/AITRC  
William Wall, Karen Linnell and Bruce Cain
- 11:00 DEVELOPMENT OF A RESOURCE PLAN FOR AHTNA LANDS AND SURROUNDING LANDSCAPE IN SOUTHCENTRAL ALASKA  
Jonathan Haufler, Scott Yeats, Carolyn Mehl, Bill Wall, Karen Linnell and Bruce Cain
- 11:20 THREATENED POLAR BEARS AND ENDANGERED OPPORTUNITIES: COLLABORATIVE MANAGEMENT OF RECREATIONAL VIEWING OF POLAR BEARS WITH RESIDENTS OF KAKTOVIK, ALASKA  
Jennifer Reed

\* - student

## Wednesday, April 5

11:40 UNDERSTANDING PEOPLE TO PROTECT BEARS: A COMPREHENSIVE APPROACH TO WILDLIFE AND VISITOR USE MANAGEMENT ON THE KODIAK NATIONAL WILDLIFE REFUGE  
Jacqueline Keating\*

12:00 LUNCH AND BUSINESS MEETING

### 1:30 pm - 5:00 pm: **SESSION B - Fine Scale Mammalian Complexities in a Low Resolution Environment**

**Jeff Mason**, moderator

- 1:30 CHARACTERISTICS OF GRIZZLY BEAR SIGHTINGS IN THE NORTH SLOPE OIL FIELDS OF ALASKA  
Nils Pedersen\*, Richard Shideler and Todd Brinkman
- 1:50 GROWTH PATTERNS AND PHENOTYPIC PLASTICITY ACROSS AND WITHIN FOUR ALASKAN BROWN BEAR STUDY AREAS  
Grant Hilderbrand, Dave Gustine, Buck Mangipane, Kyle Joly and William Leacock
- 2:10 EXTENSIVE RESOURCE SUBSIDIES FROM SALMON SUPPORTED BEARS TO GRANIVORES  
Yasaman Shakeri\* and Taal Levi

### 2:30 pm - 3:40 pm: **Poster session and Judging**

UAF - Wood Center

COMPARISON OF THE USE OF A CONDUCTED ELECTRICAL WEAPON TO CHEMICAL RESTRAINT FOR SHORT TERM CAPTURE AND RELEASE IN REINDEER (*RANGIFER TARANDUS TARANDUS*)

Kimberlee Beckmen, Camilla Lieske, and Larry Lewis

VARIATION IN WILLOW PTARMIGAN DETECTABILITY AND AVAILABILITY: RESEARCH AND MANAGEMENT IMPLICATIONS

Graham Frye, Mark Lindberg, and Richard Merizon

LANDSCAPE-SCALE CONSERVATION AND MANAGEMENT STRATEGIES FOR ALASKA'S NORTH SLOPE BASED ON WILDLAND VALUES AND CLIMATE CHANGE

Timothy Fullman, Jason Leppi, R. Travis Belote, Stu Smith, and Gregory Aplet

PATTERNS OF INFECTION OF AMERICAN MARTEN (*MARTES AMERICANA*) BY THE NEMATODE *SOBOLIPHYME BATURINI* FROM INTERIOR ALASKA

Steve Guerin, Elisa Gagliano, Emma Fries, Mariel Campbell, **Kerry Nicholson**, and Joseph Cook

## Wednesday, April 5

ACTIVE NEST SITES OF OLIVE-SIDED FLYCATCHERS (*CONTOPUS COOPERI*) IN CENTRAL ALASKA HAVE GREATER INSECT DIVERSITY THAN HISTORICAL SITES

Adam Haberski\*, Megan McHugh, Julie Hagelin, and Derek Sikes

COMMUNITY PARTNERSHIP FOR SELF RELIANCE: IMPACTS OF CLIMATE CHANGE ON MOOSE HARVEST OPPORTUNITIES

Tessa Hasbrouck\* and Todd Brinkman,

TROPHIC NICHE PARTITIONING BETWEEN MALE AND FEMALE GOLDEN EAGLES IN WESTERN ALASKA

Jessica Herzog\*, Joseph Eisaguirre, Brian Linkhart, and Travis Booms

FIRST STEPS TO UNDERSTANDING BAT ECOLOGY ON A U.S. ARMY INSTALLATION IN INTERIOR ALASKA

Kim Jochum and Garrett Savory

INCLUDING HUMAN DIMENSIONS IN BEAR CONSERVATION: A RECIPE FOR SUCCESSFUL BEAR VIEWING MANAGEMENT

Jacqueline Keating\* and Jennifer Reed

FEDERAL SUBSISTENCE MANAGEMENT PROGRAM

Lisa Maas

SHOREBIRD USE OF MILITARY LANDS IN INTERIOR ALASKA

Ellen Martin\*, Kim Jochum, Calvin Bagley, and Paul F. Doherty, Jr.

ROOSTING REQUIREMENTS OF LITTLE BROWN BAT (*MYOTIS LUCIFUGUS*) MATERNITY COLONIES IN INTERIOR ALASKA

Arielle Neithercoat\*

INCORPORATING FOREST-WILDLIFE INTERACTIONS INTO REFORESTATION GUIDELINES FOR BOREAL ALASKA

Thomas Paragi, Julie Hagelin, and Scott Brainerd

PROXIMATE LIVER ANALYSIS OF AMERICAN MARTEN IN INTERIOR ALASKA

Michaela Pye\*, Kerry L. Nicholson, and J. Margeret Castellini

EXPLORING THE POPULATION DYNAMICS OF AMERICAN MARTEN IN INTERIOR ALASKA

Elise Stacy\*, Kris Hundertmark, and Kerry Nicholson

ASSESSING DALL'S SHEEP HORN MORPHOMETRICS AS A MANAGEMENT TOOL

Brad Wendling and Joe Want

MANAGING LARGE ENVIRONMENTAL DATABASES, MOVING BEYOND JUST STORING DATA

Christopher Swingley, Alexander Prichard, and Joseph Welch

## Wednesday, April 5

### DESIGN AND OPERATION OF ARCTIC OILFIELDS TO REDUCE GRIZZLY BEAR ENCOUNTERS

Richard Shideler

### PREVENTING ENTRAPMENT OF CAVITY NESTING BIRDS IN ALASKA

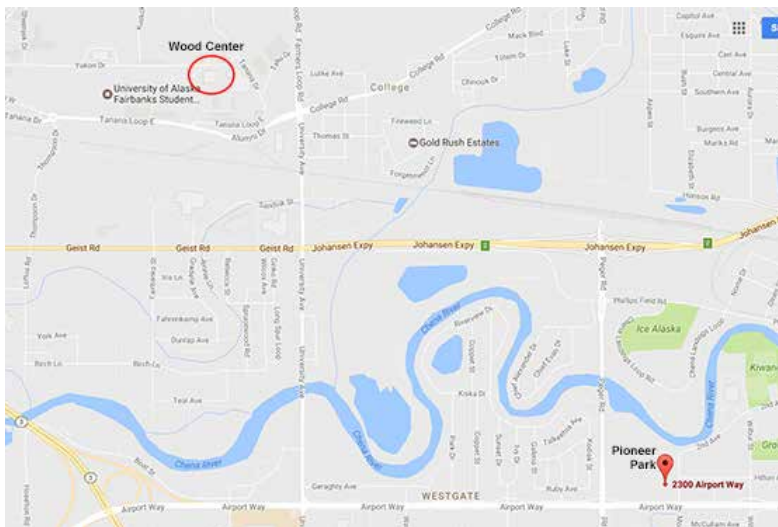
Jocelyn Brady\*, Jessica Herzog, Logan Bragdon, Elise Stacy, and Chris Barger

## 3:40 pm - 5:00 pm: SESSION B - Fine Scale Mammalian Complexities in a Low Resolution Environment (continued)

Jeff Mason, moderator

- 3:40 ACHIEVING RECOVERY OF THE CRITICALLY ENDANGERED GOBI BEAR (*URSUS ARCTOS GOBIENSIS*)  
Harry Reynolds, Amgalan Luvsamjamba, Odbayar Tumendemberel, Michael Proctor and Bayasgalan Amgalan
- 4:00 ESTIMATING PARTURITION RATES FOR AN ALASKAN MIGRATORY CARIBOU HERD USING MOVEMENT-BASED METHODS  
Matthew Cameron\*, Kyle Joly, Greg Breed, Lincoln Parrett and Knut Kielland
- 4:20 THE EFFECTS OF HUNTING ACTIVITY ON FINE-SCALE HABITAT SELECTION PATTERNS OF MOOSE  
Casey Brown, Todd Brinkman, Knut Kielland, Sophie Gilbert and Eugenie Euskirchen
- 4:40 MOOSE AND CARIBOU LANDSCAPE-SCALE HABITAT QUALITY ASSESSMENTS  
Scott Yeats and Jonathan Haufler
- 5:00 WRAP UP AND ANNOUNCEMENTS  
Scott Brainerd

## 6:00 pm - 10:00 pm: Banquet and Business Meeting



**Pioneer Park** - 2300 Airport Way - shuttle buses will be provided  
**Guest Speakers:** Taquilik Hepa and Craig George (see page 17 for bios)  
**Music:** Cotton Ginny

Map to Pioneer Park

## Thursday, April 6

UAF - Wood Center Ballroom

### 8:00 am - 9:30 pm: Session C: Alaska Herps and Other Non-game species

Mark Spangler, moderator

- 8:00 WELCOME AND OPENING REMARKS
- 8:10 MONITORING WOOD FROG PHENOLOGY IN INTERIOR ALASKA PARKLANDS  
Heidi Kristenson and Amy Larsen
- 8:30 AN INTRODUCTION TO THE SIBERIAN SALAMANDER (*SALAMANDRELLA KEYSERLINGII*)  
AND WHY IT SHOULD BE IN ALASKA  
Trey Simmons
- 8:50 PARASITE SURVIVAL IN FROZEN WOOD FROGS  
Don Larson\*
- 9:10 104 PUBLIC ENVIRONMENTAL GIS HABITAT LAYERS ON A 60M-2KM PIXEL RESOLUTION  
TO EXPLAIN FROG AND SPECIES DISTRIBUTIONS IN ALASKA AND BEYOND: USE,  
INTERPRETATION AND A DEBATE TOWARDS A GOVERNANCE STANDARD  
Falk Huettmann and Sumithra Sriram
- 9:30 REASSESSMENT OF WOOD FROG (*RANA SYLVATICA*) DISTRIBUTION IN ALASKA USING  
ENVIRONMENTAL DNA MONITORING  
Mark Spangler\*, J Andres Lopez and Falk Huettmann
- 9:50 BREAK

### 10:20 am - 12:00 pm: Session D: General session

Mark Spangler, moderator

- 10:20 FROSTBITE ON THE FRONTIER?  
Jesika Reimer, Laura Kaupas and Paul Schuette
- 10:40 ESTIMATING BREEDING SITE FIDELITY FOR ADULT FEMALE STELLER'S EIDERS NEAR  
BARROW, ALASKA  
David Safine, Kate Martin, Ted Swem, Neesha Stellrecht, John Pearce, Sandra Talbot, George  
Kevin Sage, Ann Riddle, Tuula Hollmen and Mark Lindberg
- 11:00 A MECHANISTIC MOVEMENT MODEL REVEALS MULTI-SCALE BEHAVIORAL PATTERNS  
IN A SOARING BIRD DURING MIGRATION  
Joseph Eisaguirre\*, Marie Auger-Méthé, Chris Barger, Stephen Lewis, Carol McIntyre, Travis  
Booms and Greg Breed
- 11:20 MONITORING WILDLIFE HABITAT USE AND DISTRIBUTION USING REMOTE CAMERAS  
ON THE KENAI PENINSULA  
Nathan Jones, Simon Wigren, William Gaines, Lowell Suring and James Begley

\* - student

## Thursday, April 6

11:40 METAL DEPOSITION OF COPPER AND LEAD BULLETS IN MOOSE HARVESTED IN FENNOSCANDIA  
Sigbjørn Stokke, **Scott Brainerd**, Jon Martin Arnemo

12:00 LUNCH ON YOUR OWN

### 1:30 pm - 5:00 pm: General Session

**Kim Jochum**, moderator

1:30 CONTRASTING DEMOGRAPHY AND BEHAVIOR AMONG SEA OTTER POPULATIONS IN THE NORTHERN GULF OF ALASKA  
George Esslinger, Heather Coletti, James Bodkin, Daniel Monson and Brenda Ballachey

1:50 MOUNTAIN GOAT RESOURCE SELECTION IN RELATION TO MINING-RELATED DISTURBANCE  
Kevin White and Dave Gregovich

2:10 APPLYING SOUNDSCAPE ECOLOGY TO QUANTIFY AIRCRAFT NOISE DISTURBANCE IN TRADITIONAL HUNTING AREAS FOR THE COMMUNITY OF NUIQSUT, ALASKA  
Taylor Stinchcomb\* and Todd Brinkman

2:30 THE CALM DURING THE STORM: LOCALIZED SNOWFALL EVENTS AFFECT THE MOVEMENT OF GREY WOLVES  
Amanda Droghini and Stan Boutin

2:50 BREAK

3:20 ANTLERS OF THE ARCTIC NATIONAL WILDLIFE REFUGE: BASELINES OF BIOLOGICAL VARIABILITY FROM BONES ON THE TUNDRA  
Joshua Miller and Eric Wald

3:40 DID DISPERSAL OF MIXED GROUPS CONTRIBUTE TO THE DECLINE OF MUSKOXEN IN NORTHEASTERN ALASKA?  
Patricia Reynolds and Elizabeth Lenart

4:00 ALASKA WOOD BISON RESTORATION UPDATE  
C. Tom Seaton

4:20 HEALTH IMPACTS OF NUTRITIONAL DEFICIENCIES IN WOOD BISON  
Kimberlee Beckmen, Robert Gerlach, Camilla Lieske and Tom Seaton

4:40 CLOSING REMARKS



## WILDLIFE SERVICE DOG WORKSHOP

**When:** Monday, April 3, 2017 from 1:00 – 5:00

**Where:** UAF - International Arctic Research Center IARC 501 and outside

**Cost:** FREE

If you would like to participate please notify:

Nate Svoboda at ([nathan.svoboda@alaska.gov](mailto:nathan.svoboda@alaska.gov)) or Nils Pedersen at ([njpedersen@alaska.edu](mailto:njpedersen@alaska.edu))

The Wildlife Service Dog (WSD) Workshop will provide an introduction to the ways in which working dogs are being used to help manage and conserve wildlife species with a focus on Karelain Bear Dogs and the ways that the Wind River Bear Institute has been working with this breed of dog to help conserve bear since 1995. We will discuss the history of the breed, their key uses for conservation, and the WSD programs that have been established throughout North America and Japan. We will also discuss the basic principles of scent-tracking with dog and how to conduct a dog-based search scenario. There will be an opportunity to meet and interact with two accomplished WSDs, Soledad and Rio, and a field component of the workshop in which participants will get to experience what it is like to conduct a search scenario with WSD.



The workshop will be conducted by Nils Pedersen: Wildlife Service Dog Program Coordinator for the Wind River Bear Institute and M.S. seeking graduate student at the University of Alaska Fairbanks. Pedersen's graduate research is on grizzly bear-human interactions in the North Slope oil fields of Alaska and methods for finding bear dens in the Arctic using Unmanned Aircraft Systems and Forward Looking Infrared technology. Pedersen has 5 years of experience training and handling WSD for bear-human conflict resolution



## Inu-Yupiaq Native Dance Group Tuesday, April 4th, 8:30am

Our group is a student led club that started in 1995 as a place for Iñupiaq and Yup'ik students attending the University of Alaska Fairbanks to continue celebrating traditional forms of cultural expression through motion dancing. Today, the tradition carries on as students from all over the state and world come and go, and our repertoire lives and breathes the songs shared of current and previous students. All are welcome to join our dance practices held at the Brooks Building in Rural Student Service's Gathering Room; Wednesdays 7-9pm and Saturdays 4-6pm.





**ILARION (LARRY) MERCULIEFF**  
**PLENARY SPEAKER**

GLOBAL CENTER FOR INDIGENOUS LEADERSHIP AND LIFEWAYS

Contact: lmerculieff@gmail.com

Ph: 907-223-5475

An Unangax (Aleut), Larry Mercurieff, was born and raised on St. Paul Island in the Bering Sea where he had a fully intact traditional upbringing. Larry has over 40 years experience serving his people, the Unangan of the Pribilof Islands and other indigenous peoples locally, nationally, and internationally in a number of leadership capacities. Larry was the first Alaska Native commissioner of the Alaska Department of Commerce and Economic Development, a state cabinet post. Larry also served as the chair of the Indigenous Knowledge sessions of the Global Summit of Indigenous Peoples on Climate Change, and he served as the chair of the scientific committee for Snowchange, a consortium of Indigenous leaders from 8 Arctic countries focused on climate change. He also engaged in a western states speaking tour on climate change and worked with the Great Lakes tribes to develop strategies for culturally based adaptation to climate changes.

Larry is the co-founder of the Indigenous Peoples' Council for Marine Mammals, the Alaska Forum on the Environment, the International Bering Sea Forum, and the Alaska Oceans Network. He has received a number of awards including the Buffet Finalist Award for Indigenous Leadership, the Environmental Excellence Award for lifetime achievement from the Alaska Forum on the Environment, Rasmuson Foundation award for Creative Non-Fiction, the Wisdom Fellowship Award from the Sacred Fire Foundation, and the Alaska Native Writers on the Environment Award. Larry is featured as one of ten Native Americans in a book titled Native American Men of Courage by Second Story Press. Larry co-authored a book released three years ago by Les Intouchables titled: Aleut Wisdom: Stories of an Aleut Messenger published in the French language. He is co-author of a recently released book: Stop Talking: Indigenous Ways of Teaching and Learning, published by UAA

Larry is currently self employed and serves as a Senior Advisor to the World Wilderness Congress, trustee for the WILD Foundation, board member of the Circle of Ancestors, and advisor to the Native Lands Wilderness Council. Larry's passion is speaking of traditional Elder wisdom for modern challenges. He has completed his third book, WisdomKeeper: One Man's Journey to Honor the Untold Story of the Unangan People, which was published July 19, 2016 by North Atlantic Books. He speaks publicly on a wide variety of issues facing humans in the 21st century.



Larry Mercurieff



**JOINT MEETING**  
**ALASKA CHAPTER OF THE WILDLIFE SOCIETY**  
**& ALASKA HERPETOLOGICAL SOCIETY**

University of Alaska - Fairbanks Wood Center  
April 4<sup>th</sup> – 6<sup>th</sup>, 2017

**BANQUET**

April 5<sup>th</sup>, 6:00 p.m. – 10:00 p.m. Pioneer Park



The Alaska Chapter of the Wildlife Society welcomes Taquilik Hepa and Craig George as our guest speakers for the banquet. The banquet is included with full registration; additional tickets may be purchased for guests online or at the conference.

**Taquilik Hepa:** Ms. Taquilik Hepa is an Inupiaq. She was born and raised in Barrow, Alaska. She grew up living a subsistence based lifestyle and has great respect for her traditional and cultural way of life. Ms. Hepa serves as the Director for the Department of Wildlife Management for the North Slope Borough. In this capacity, she is in contact with many local people and outside agencies dealing with subsistence related issues.



She serves as one of two Project Coordinators who designed and implemented the North Slope Borough Subsistence Harvest Documentation Project.

She is a member of the Arctic Research Consortium of the U.S.; the Gates of the Arctic National Park and Preserve Subsistence Resource Commission; the Indigenous Peoples Council on Marine Mammals; the National Petroleum Reserve – Alaska Subsistence Advisory Panel; the Barrow Arctic Science

Consortium, the Rural Alaska Community Action Program, and is a former Board Member of the Alaska Native Science Commission. Taquilik cares deeply for the protection of her environment and subsistence resources and wishes to expand her opportunities to participate in the advancement of research programs in the Arctic.



**John C. “Craig” George**

Craig George has worked as a Wildlife Biologist with the North Slope Department of Wildlife Management in Barrow, Alaska since 1982. Craig earned a B.S. in Wildlife Biology from the Utah State University in 1976 and recently completed his Ph.D. at University of Alaska Fairbanks in bowhead whale energetics, age estimation and morphology. Beginning in 1982, Craig worked on and later coordinated the bowhead whale ice-based population abundance project (“whale census”) on the sea ice near Point Barrow for nearly two decades. He also has conducted hundreds of postmortem exams on bowheads harvested by Alaskan Eskimos. He has published a number of papers on this work ranging from evidence of killer whale predation to structural anatomy to population biology. Craig has attended IWC meetings since 1987 focusing mainly on aboriginal whaling management procedures, assessments and population estimation. He has also participated in studies of Eskimo traditional knowledge on the North Slope. Craig has lived in Barrow since 1977 and is married to Cyd Hanns, a veterinary/wildlife research technician. Together they enjoy community and outdoor activities with their two sons Luke and Sam.



## ABSTRACTS

Wednesday, April 5

### **SESSION A: HUMANS AND WILDLIFE: LESSONS LEARNED TO INFORM MANAGEMENT FOR THE FUTURE**

**(8:10 AM - 12:00 PM)**

Session Moderator: Grant Hilderbrand

*8:10 am*

#### **THE ANTHROPOCENE AND THE CONSERVATION PARADIGM OF THE FUTURE**

Roger Kaye

*U.S. Fish and Wildlife Service. Contact: Roger\_Kaye@fws.gov*

**Abstract:** The Anthropocene Era concept provides a better conceptual framework than climate change for communicating and addressing global-scale stressors and threats to wildlife and their habitats. Climate change is not the large-scale threat to us, ecosystems and our planet. There is also nitrogen deposition, air pollution, freshwater and ocean chemistry changes, and a host of other stressors that act in synergy with it. By contrast, the notion that we have entered the Anthropocene Era integrates global-scale threats. It captures their interrelatedness, the totality of their effects. The provocative Anthropocene Era concept is also vivid and meaning-laden, with an introspective, ethical dimension. It engenders questions about generational justice and the future we want for the planet. Increasingly, people are indifferent to climate change. At a time when many are suspicious of or baffled by its underlying science, the Anthropocene Era has greater potential to bring people to what needs to be the conservation paradigm of the future--Earth-System Stewardship.

8:30 am

## CHARACTERIZING ARCTIC SHOREBIRD CHICK DIETS: PROVIDING INSIGHTS INTO TROPHIC MISMATCH WITH DNA METABARCODING AND NEXT-GENERATION SEQUENCING

Danielle Gerik<sup>1\*</sup>, Richard Lanctot<sup>2</sup>, Kirsty Gurney<sup>3</sup>, Mark Spangler<sup>4</sup>, and Andrés López<sup>5</sup>

<sup>1</sup>College of Fisheries and Ocean Sciences, University of Alaska Fairbanks; <sup>2</sup>U.S. Fish and Wildlife Service; <sup>3</sup>Environment and Climate Change Canada; <sup>4</sup>Department of Biology and Wildlife, University of Alaska Fairbanks; <sup>5</sup>University of Alaska Museum, University of Alaska Fairbanks. Contact: [degerik@alaska.edu](mailto:degerik@alaska.edu)

**Abstract:** Climate change in the Arctic is affecting the timing of arthropod prey available for nesting shorebirds and their young. It is unclear whether shifts in arthropod availability may impact shorebird chick growth as a result of a trophic mismatch. Understanding the diet composition of shorebirds is crucial for evaluating whether a trophic mismatch exists, and to assess its potential impact on declining shorebird populations in the Arctic. In this study, DNA metabarcoding paired with next-generation sequencing was used to identify arthropod remains in the feces of shorebirds breeding in Utqiagvik, Alaska. Environmental DNA analysis of avian diets is a minimally invasive technique with the potential to provide finer scale and greater taxonomic coverage of diet components than traditional gut content diet analyses. A reference library was developed as a tool to identify prey in shorebird feces to supplement existing public databases coverage of arthropods inhabiting the Arctic Coastal Plain. We are evaluating potential biases in the recovery of prey DNA in avian feces by carrying out a diet study on captive shorebird chicks to determine how factors such as prey type (hard versus soft body), prey size, and time post consumption of prey affect the molecular detection of prey in feces. We present preliminary results of shorebird chick diets. The primary goals of this research are to test the efficacy of the fecal DNA metabarcoding technique and to produce valuable diet information for assessing climate impacts on shorebirds in the Arctic.

8:50 am

## INTEGRATING LOCAL KNOWLEDGE AND DECISION ANALYSIS TO STRENGTHEN SUBSISTENCE SYSTEMS IN A CHANGING ARCTIC

Katie Christie<sup>1</sup>, Tuula Hollmen<sup>2</sup>, Henry Huntington<sup>3</sup>, and James Lovvorn<sup>4</sup>

<sup>1</sup>Alaska Sea Life Center; <sup>2</sup>University of Alaska Fairbanks; <sup>3</sup>Huntington Consulting; <sup>4</sup>Southern Illinois University. Contact: [katiec@alaskasealife.org](mailto:katiec@alaskasealife.org)

**Abstract:** Climate change is impacting the subsistence livelihoods of many indigenous communities in the Arctic. Our objectives were to conduct a test case in the Iñupiat village of Wainwright, Alaska, to explore strategies to enhance adaptive capacity using Structured Decision Analysis (SDA) combined with local knowledge. SDA provides a framework by which vulnerabilities of subsistence systems can be identified, and climate change adaptations can be prioritized at the community level. Over the course of four workshops, participants identified key issues of concern, assessed the benefits and trade-offs of different strategies to enhance the safety of subsistence activities, identified factors influencing the abundance and accessibility of key subsistence species, and assessed the dependence of animals and their successful harvest on sea ice. Furthermore, we asked workshop participants to assess whether subsistence resources have increased, decreased, or remained stable over the past decade. Due to its coastal location on a lagoon at the mouth of a river, Wainwright has a highly diverse subsistence system that may in part buffer the negative effects of climate change. Furthermore, most species or groups harvested in Wainwright were assessed as stable or increasing. Nevertheless, of the five most important subsistence species in Wainwright, one has declined (caribou) and the harvest of three others depends on the presence of thick shorefast ice. We propose that SDA can be a useful tool to help understand the vulnerability of subsistence systems to climate change, and can be used to organize and prioritize strategies to adapt to future climate change.

9:10 am

## INFLUENCE OF A CHANGING CLIMATE ON ACCESS TO SUBSISTENCE RESOURCES FOR RURAL RESIDENTS OF INTERIOR ALASKA

Helen Cold<sup>1\*</sup>, Todd Brinkman<sup>1</sup>, Teresa Hollingsworth<sup>1</sup>, Caroline Brown, and David Verbyla<sup>1</sup>

<sup>1</sup>University of Alaska Fairbanks; <sup>2</sup>Alaska Department of Fish and Game. Contact: [hscold@alaska.edu](mailto:hscold@alaska.edu)

**Abstract:** Global climate change is significantly altering the structure and function of arctic ecosystems, necessitating adaptation by societies that depend on resources in these ecosystems for subsistence. Rural communities in Interior Alaska rely heavily on subsistence resources, and have reported challenges caused by contemporary environmental changes, including the influence of changing climatic conditions on travel networks. Environmental disturbances associated with climate change in northern latitudes, including changes in wildfires, hydrology, permafrost, weather patterns, and snow and ice conditions, have been qualitatively associated with changes in accessibility of subsistence resources. Our research is attempting to quantify the impact of disturbances driven by climate change on access to ecosystem services in Interior Alaska. The University of Alaska Fairbanks is collaborating with 9 rural Interior Alaskan communities to document disturbances directly impacting access to subsistence. Geotagged photos of disturbances encountered while community members are engaged in subsistence resource activities are being coupled with the photographer's interpretation of the impact of the disturbance on their travel, as well as traditional ecological knowledge on the history of identified disturbances in their subsistence harvest areas. This information will be combined with ecological assessments of disturbance sites to quantify the mechanisms behind changes in biophysical characteristics of disturbance locations. Concurrently, remote sensing using high-resolution NASA satellite imagery will help illustrate patterns of occurrence of environmental changes through time. Through combining traditional ecological knowledge and scientific analysis, we aim to better understand the impact of climate change on travel networks used for subsistence resource harvest and provide information that collaborating communities can use to optimize community resilience and self-reliance.

9:30 am

## MITIGATION IN LINKED SOCIAL-ECOLOGICAL SYSTEMS: A CASE STUDY OF REGIONAL PLANNING TO MITIGATE IMPACTS OF OIL DEVELOPMENT ON SUBSISTENCE ACTIVITIES BY INUPIAT PEOPLE IN THE NATIONAL PETROLEUM RESERVE IN ALASKA

David Albert

*The Nature Conservancy. Contact: dalbert@tnc.org*

**Abstract:** While the science and practice of mitigation has been well developed for ecological features such as wetlands, mitigating for aspects of human well-being and cultural values in the context of resource development is more complex. In 2015, the Bureau of Land Management initiated development of a Regional Mitigation Strategy (RMS) in the National Petroleum Reserve-Alaska (NPR-A) to inform planning for conservation and energy development, while seeking to maintain the cultural values and subsistence economy of indigenous communities in the region. This RMS effort represents a potent case study to explore a practical application of regional mitigation to reduce the impacts of energy development on the subsistence practices of indigenous communities in Arctic Alaska. We used available data on subsistence hunting and fishing by the community of Nuiqsut during the period 1995 – 2006 to develop a spatially explicit index to improve quantitative assessment in regional mitigation planning.

10:20 am

## AHTNA INTERTRIBAL RESOURCE COMMISSION AND AN MOA WITH DEPARTMENT OF INTERIOR

Karen Linnell, Roy Ewan, and Christopher Gene<sup>3</sup>

*<sup>1</sup>Ahtna Intertribal Resource Commission; <sup>2</sup>Ahtna Elder; <sup>3</sup>Ahtna Elder, Ahtna Intertribal Resource Commission. Contact: karen@ahtnatribal.org*

**Abstract:** A presentation of Ahtna history, the formation of AITRC, how it is structured. Subsistence and management goals of the organization; need for partnerships with agencies, internal partnerships between the corporations and tribes, the significance of the MOA with the Dept. of Interior; and the need for linking historical cultural, practices and knowledge with western science for integrative subsistence management programs.

10:40 am

## DEVELOPMENT OF A WILDLIFE PROGRAM MANAGEMENT CAPACITY FOR CRITR/AITRC

William Wall<sup>1</sup>, Karen Linnell<sup>2</sup> and Bruce Cain<sup>3</sup>

<sup>1</sup>*Sustainability, Inc.*; <sup>2</sup>*Ahtna Intertribal Resource Commission*; <sup>3</sup>*Ahtna, Inc. Contact: williamwall11@gmail.com*

**Abstract:** Ahtna, Inc. owns and manages 1.7 million acres of land in the Copper River Basin with 700,000 acres intermingled with the Wrangell St. Elias National Park and Preserve. The Ahtna people have been dealing with resource utilization competition from urban hunters for their subsistence use of various species. The Ahtna people decided to become proactive rather than reactive in court. The Copper River Ahtna Intertribal Resource Conservation District (CRITR), a unique tribal conservation district was formed composed of 8 Ahtna tribes, Ahtna, Inc. (AI) and Chitna Native Corporation, an Ahtna village corporation. CRITR is recognized by the Secretary of Agriculture through an MOU and has been charged by the Ahtna people with the development of wildlife management, forestry, and fisheries management capacity. Members from the AI and CRITR boards visited the Salish Kootenai Tribes to review their wildlife and fisheries programs in 2013. These programs link traditional knowledge, cultural ways and western science into a highly credible management program and was recognized as a program model of what CRITR wanted to develop. CRITR's management program and capacity are currently under development. This presentation will describe past, current and future management activities and objectives. CRITR evolved into an overall management body, Ahtna Intertribal Resource Commission (AITRC), which is discussed in detail elsewhere. This program is considered as a potential model for how Tribes and Native Corporations can cooperate among themselves and with respective agencies for integrated resource management. The presentation will briefly describe how other countries engage indigenous people in resource management, how other states engage private landowners in resource management and the opportunity for the State of Alaska to better engage Tribes and Tribal private landowners in management programs.

11:00 am

## DEVELOPMENT OF A RESOURCE PLAN FOR AHTNA LANDS AND SURROUNDING LANDSCAPE IN SOUTHCENTRAL ALASKA

Jonathan Haufler<sup>1</sup>, Scott Yeats<sup>1</sup>, Carolyn Mehl<sup>1</sup>, Bill Wall<sup>2</sup>, Karen Linnell<sup>3</sup>, and Bruce Cain<sup>4</sup>

<sup>1</sup>*Ecosystem Management Research Institute*; <sup>2</sup>*Sustainability Inc.*; <sup>3</sup>*Ahtna Intertribal Resource Commission, Ahtna, Inc.* <sup>4</sup> *Contact: Jon\_Haufler@emri.org*

**Abstract:** Ahtna, Inc. is a native corporation that owns and manages approximately 1.7 million acres of land for its 8 member tribes within an approximately 26 million acre traditional use area in southcentral Alaska. It has established several goals for its lands: producing financial returns for the corporation, providing its villages and members with wood, providing for berry production, increasing the numbers of moose as a subsistence food source, maintaining caribou as an additional food source, storing carbon, and protecting villages from risks of wildfire. As part of a project funded by NRCS through its Conservation Innovation Grant program, we characterized and mapped this landscape including its ecosystem diversity and associated resource values. Using tools such as moose and caribou models along with fuel assessments, we are preparing a resource management plan. This plan focuses directly on Ahtna lands, but also integrates with surrounding lands. Treatments are proposed that will help protect villages from wildfire, produce wood products, improve moose habitat at local scales, protect caribou habitat, and integrate a landscape level fire plan. We will discuss the planning process and present maps of the landscape and proposed treatments.

11:20 am

## THREATENED POLAR BEARS AND ENDANGERED OPPORTUNITIES: COLLABORATIVE MANAGEMENT OF RECREATIONAL VIEWING OF POLAR BEARS WITH RESIDENTS OF KAKTOVIK, ALASKA

Jennifer Reed

*U.S. Fish and Wildlife Service. Contact: jennifer\_reed@fws.gov*

**Abstract:** Polar bear viewing management at Arctic National Wildlife Refuge is an example of how to effectively manage complex issues relating species, communities, ecological processes, and conservation initiatives; and to build management capacity to achieve mutually agreed upon objectives with Alaska Native partners to protect resources. A longer open-water season and greater distance to sea ice accompany increasing numbers of bears onshore during late summer (mid Aug – mid Oct). Publicity about polar bears has resulted in a large increase in participation in bear viewing at Kaktovik, Alaska. Commercial polar bear viewing use trends shows this new activity more than doubles all other recreational uses of the Refuge since 2011. Arctic Refuge manages the water where viewing occurs but land areas are privately-owned. Concerns have been raised about safety, effects on bears, and conflicts with residents in this complicated management quilt work. In response, Arctic Refuge suspended new commercial guide permits for the activity and will renew only existing permits in 2017-18 to “freeze” the viewing management setting. Managers are responding to this immediate need to act by developing a strategy to protect the unique opportunity for rustic, remote viewing; minimize threats to public safety; minimize potential bear disturbance; and minimize conflicts with local residents. Formalizing management with a multidisciplinary team that will describe desired conditions for the opportunity, and continue collaboration with local residents, will prepare the Arctic Refuge for developing a Compatibility Determination and Environmental Assessment in 2018 and 2019.

11:40 am

## UNDERSTANDING PEOPLE TO PROTECT BEARS: A COMPREHENSIVE APPROACH TO WILDLIFE AND VISITOR USE MANAGEMENT ON THE KODIAK NATIONAL WILDLIFE REFUGE

Jacqueline Keating\*

*U.S. Fish and Wildlife Service and Utah State University. Contact: jackie.keating27@gmail.com*

**Abstract:** As the public demand for wildlife viewing increases across the state of Alaska, managers of the Kodiak National Wildlife Refuge are challenged to facilitate mixed use on a refuge with a historical focus on sustainable hunting. To support the founding mission of protecting bears and bear habitat, the Kodiak Refuge conducted social science research to assess the current nature of bear viewing opportunities, and factors that influence the quality of those opportunities. A comprehensive public use survey was created to address logistical aspects of bear viewing across the refuge, and to explore potential conservation benefits of bear viewing through attitudinal, behavioral, and knowledge outcomes in visitors. The two-phase survey was administered in 2016 to approximately 75% of bear viewers for the season, achieving a 43% response rate for the in-depth online portion. Results demonstrate that the number of bears seen, the composition of bears, and previous bear viewing experiences at specific locations outside of Kodiak have positive relationships with overall trip satisfaction, while closer proximity to bears is associated with specific learning outcomes. While results contribute to baseline standards for high quality bear viewing on the refuge, ongoing monitoring of the sociological aspects of bear viewing in conjunction with biological inventory and monitoring is critical to reach conservation objectives in a society with rapidly changing values.



## SESSION B: FINE SCALE MAMMALIAN COMPLEXITIES IN A LOW RESOLUTION ENVIRONMENT (1:30 PM - 5:00 PM)

Session Moderator: Jeff Mason

1:30 pm

### CHARACTERISTICS OF GRIZZLY BEAR SIGHTINGS IN THE NORTH SLOPE OIL FIELDS OF ALASKA

Nils Pedersen<sup>1\*</sup>, Richard Shideler<sup>2</sup>, and Todd Brinkman<sup>1</sup>

<sup>1</sup>University of Alaska Fairbanks; <sup>2</sup>Alaska Department of Fish and Game. Contact: [njpedersen@alaska.edu](mailto:njpedersen@alaska.edu)

**Abstract:** Minimizing unsafe bear-human interactions in the North Slope oil fields of Alaska (USA) requires an understanding of the characteristics of areas where interactions occur. Oil field security personnel have been responding to, and recording the characteristics of, grizzly bear (*Ursus arctos*) sightings on an Alaska Department of Fish and Game (ADFG) Grizzly Bear Sighting and Hazing Report (GBSHR) form since 1991. This ADFG grizzly bear study indicates that 47% of marked bears are food-conditioned (FC), and 53% feed on natural foods (NF). Pre-year 2000, food-garbage was common around facilities but post-2000, bear-resistant garbage containers were installed throughout the oil fields. By 2014, ADFG had collected 1,313 GBSHRs of marked bears. We performed an analysis of GBSHR FC and NF locations to identify characteristics that lead to bear-human interactions pre and post-2000. We used ArcGIS to generate FC and NF distance-to-landscape feature, pre and post-2000, and compared these to random points within study area. Using a Kernel Density analysis, we ascertained "hot-spots": areas with high frequency of bear sightings. Results indicated that NF sightings are more dispersed with focus around Ugnuravik Creek pre-2000, and Kuparuk River bridge post-2000. FC sightings focus around the landfill, Deadhorse, and Sagavanirktok River, increasingly so post-2000. Findings show that NF sightings are infrequent and habitat-based. FC sightings are more common and related to food-garbage access. To improve worker safety, reduce time spent monitoring bear, and to minimize impact on bear populations, future oil field activities should implement bear-resistant garbage systems and avoid quality bear habitat.

1:50 pm

### GROWTH PATTERNS AND PHENOTYPIC PLASTICITY ACROSS AND WITHIN FOUR ALASKAN BROWN BEAR STUDY AREAS

Grant Hilderbrand<sup>1</sup>, Dave Gustine<sup>2</sup>, Buck Mangipane<sup>2</sup>, Kyle Joly<sup>2</sup>, and William Leacock<sup>3</sup>

<sup>1</sup>U.S. Geological Survey; <sup>2</sup>National Park Service; <sup>3</sup>U.S. Fish and Wildlife Service. Contact: [ghilderbrand@usgs.gov](mailto:ghilderbrand@usgs.gov)

**Abstract:** In 2014, we initiated studies of brown bears in four regions of Alaska: Kodiak National Wildlife Refuge, Gates of the Arctic National Park, Lake Clark National Park, and Katmai National Park. These systems differ in the abundance and quality of nutritional resources available to brown bears. We assessed growth rates of male and female brown bears across systems and across sexes. Structural components such as skull size and body length generally reached asymptotes around 8-13 years of age across systems and sexes while lean body mass continued to increase in males across systems and in females when resources were relatively abundant. Within populations, there was a wide range in adult male and female body size and lean mass. Allocation of resources to fat versus lean mass also varied across populations suggesting both phenotypic plasticity and varying life history strategies within populations.

2:10 pm

## EXTENSIVE RESOURCE SUBSIDIES FROM SALMON SUPPORTED BEARS TO GRANIVORES

Yasaman Shakeri\* and Taal Levi

Oregon State University. Contact: [yasaman.shakeri@oregonstate.edu](mailto:yasaman.shakeri@oregonstate.edu)

**Abstract:** In salmon-rich, northern coastal environments brown bears can occur at high densities and exert wide-ranging effects on ecosystem processes. Bear consumption of seasonally available fruit may provide important seed dispersal services to plants, and by extension, the ecology of seed consumers such as small mammals. In this study, we investigate relationships between bears, fruit and small mammals in a coastal Alaskan ecosystem in order to understand the extent to which diplochory, two-phase seed dispersal, may influence the community ecology of this system. We collected field data to characterize patterns of bear frugivory and the extent that small mammals consumed and dispersed seeds deposited by bears. Our findings indicate that bears are an important initial dispersal agent for 12 species of fruit. Bear deposited seed piles were intensively utilized and dispersed by several different small mammal species, primarily northwestern deer mice (*Peromyscus keenii*) and red backed voles (*Myodes rutilus*). In addition to serving as secondary seed dispersers, small mammals likely incurred significant nutritional benefits from bear deposited seeds. Our results illustrate the important direct role that bears play in seed dispersal and indirectly on the community ecology of small mammals. We further highlight the prevalence of a two-phase mammalian seed dispersal mechanism by quantifying visitation rates and the energetic subsidies described in north coastal temperate rainforest ecosystems. Due to the presence of salmon, high density coastal bear populations play an important role in structuring the community ecology of temperate rainforest ecosystems; an important consideration for conservation.

3:40 pm

## ACHIEVING RECOVERY OF THE CRITICALLY ENDANGERED GOBI BEAR (*URSUS ARCTOS GOBIENSIS*)

Harry Reynolds<sup>1</sup>, Amgalan Luvsamjamba<sup>2</sup>, Odbayar Tumendemberel<sup>2</sup>, Michael Proctor<sup>3</sup>, and Odbayar Tumendemberel<sup>4</sup>

<sup>1</sup>Gobi Bear Project, Gobi Bear Fund; <sup>2</sup>Institute of General and Experimental Biology, Mongolian Academy of Sciences; <sup>3</sup>Birchdale Ecological; <sup>4</sup>IUCN Bear Specialist Group, North Asia Brown Bear Expert Team  
Contact: [hreynolds@reynoldsalaska.com](mailto:hreynolds@reynoldsalaska.com)

**Abstract:** The Gobi bear or mazaalai (*Ursus arctos gobiensis*) of Mongolia is unique among brown bears: it is capable of living in an extremely dry desert, its diet is primarily vegetation and insects; only rarely do they consume the remains of large mammals and there are no reports of livestock depredations. Based on 2 mark-recapture population estimates, less than 50 remain; reproduction continues, the population appears at least stable and there is no record of viable populations outside its present documented range. The population status is rated as Critically Endangered by IUCN. None of the 21 bears captured during 2005-2016 and fitted with satellite GPS collars have emigrated from the area, although a 3-year-old male traveled outside the area and returned. No hunting or illegal take is known to occur. Movement occurs by both males and females between 3 oasis complexes in the desert separated by 70-100 km--genetic diversity is similar to that of Kodiak Island bears. Presently the population ranges over an area of ~15,000 km<sup>2</sup>, but prior to 1970, its range included ~50,000 km<sup>2</sup>. Present strategy for population recovery includes providing small amounts of supplementary food near water sources once during spring and again during fall, improving water sources, identifying areas of critical habitat and increasing carrying capacity in areas presently and previously occupied.

4:00 pm

## ESTIMATING PARTURITION RATES FOR AN ALASKAN MIGRATORY CARIBOU HERD USING MOVEMENT-BASED METHODS

Matthew Cameron<sup>1\*</sup>, Kyle Joly<sup>2</sup>, Greg Breed<sup>1</sup>, Lincoln Parrett<sup>3</sup>, and Knut Kielland<sup>1</sup>

<sup>1</sup>*Institute of Arctic Biology, University of Alaska Fairbanks*; <sup>2</sup>*Gates of the Arctic National Park and Preserve, National Park Service*; <sup>3</sup>*Alaska Department of Fish and Game*. Contact: [mcamero6@alaska.edu](mailto:mcamero6@alaska.edu)

**Abstract:** Obtaining estimates of demographic parameters, such as parturition rates, is an important aspect of monitoring wildlife populations. However, the detection of birthing events from field observations is financially and logistically challenging when the study animals inhabit remote areas. Our objectives were to apply and assess the validity of quantitative methods designed to identify caribou (*Rangifer tarandus*) calving events based on movement patterns collected by GPS. These methods were designed and verified for woodland caribou, but have not been tested for barren-ground caribou. We applied this methodology to 6 years of GPS data from Western Arctic Herd caribou and results from our analysis were compared with aerial calving surveys. We found an overall accuracy of approximately 80% and annual variation for both quantitative methods. Our results suggest that these methods are promising for remote monitoring of barren-ground caribou parturition.

4:20 pm

## THE EFFECTS OF HUNTING ACTIVITY ON FINE-SCALE HABITAT SELECTION PATTERNS OF MOOSE

Casey Brown<sup>1</sup>, Todd Brinkman<sup>2</sup>, Knut Kielland<sup>2</sup>, Sophie Gilbert<sup>2</sup>, and Eugenie Euskirchen<sup>2</sup>

<sup>1</sup>*Alaska Sea Life Center*; <sup>2</sup>*University of Alaska Fairbanks*. Contact: [caseylynnbrown@gmail.com](mailto:caseylynnbrown@gmail.com)

**Abstract:** Understanding the effects of hunting and motorized recreation on wildlife behavior is crucial to effective management and conservation. However, the timing and magnitude of disturbances across the landscape may impact the level of behavioral response. We used telemetry data from 26 adult male moose (*Alces alces*) monitored from 2012-2014 to create fine-scale step-selection models to test whether habitat selection and movement patterns were affected by spatiotemporal variation in risk from hunting activity. From August-October, we collected field data on human activity using a camera trap array (off-road vehicles, automobiles, 4x4 trucks, dirt bikes, and hunters afoot) which we coupled with pre-, during-, and post-hunting movement rates (m/hr) and 24-hour straight-line displacement among moose. We found that while moose selected habitat closer to trails and roads, they also avoided areas with more hunting activity and higher trail densities. Additionally, moose with more exposure to roads and trails chose habitat that offered high-quality cover during the hunting season. Our models provide an innovative approach to examining the spatial variation of risk across a landscape and may serve as a framework for managers to better understand the relationships between human disturbance and wildlife management and conservation.

4:40 pm

## MOOSE AND CARIBOU LANDSCAPE-SCALE HABITAT QUALITY ASSESSMENTS

Scott Yeats and Jonathan Hauffler

*Ecosystem Management Research Institute.*

**Abstract:** Moose and caribou are an important subsistence species throughout Alaska. Their management has become increasingly important as the demand for harvest opportunities increases. In conjunction with a landscape assessment for the 26 million acre Ahtna Traditional Use Territory, moose and caribou habitat suitability indexes were created to evaluate habitat quality under existing conditions. The Traditional Use Territory includes lands owned or managed by multiple groups and agencies in addition to Ahtna, Inc. The primary objective of this modeling effort is to identify areas for improving moose habitat while also maintaining caribou habitat. The ability to model habitat viability also allows land managers to estimate the impacts or improvements to moose and caribou that are likely to result from development, management activities, restoration, or climate changes.

Thursday, April 6

## **SESSION C: ALASKA HERPS AND OTHER NON-GAME SPECIES**

**(8:10 AM - 12:00 PM)**

Session Moderator: Mark Spangler

8:10 am

### **MONITORING WOOD FROG PHENOLOGY IN INTERIOR ALASKA PARKLANDS**

Heidi Kristenson and Amy Larsen

*National Park Service. Contact: heidi\_kristenson@nps.gov*

**Abstract:** Wood frogs (*Rana sylvatica*) are an important part of the aquatic food chain in Interior Alaska. Due to their unique overwintering strategy, they are very sensitive to changes in environmental conditions, particularly those that affect spring phenology. The Central Alaska Network (CAKN) Inventory and Monitoring Program of the National Park Service (NPS) began monitoring wood frogs in 2011 as part of the Alaska Shallow Lake Monitoring Program, which studies long-term trends in physical and biological characteristics of lakes in parklands across Alaska. Acoustic recorders are deployed annually at sites throughout the Interior, and the recordings are used to determine the timing and duration of the wood frog breeding season. In addition to frog call data, we collect measurements of temperature and water level, which are factors thought to influence wood frog breeding behavior. Our results show that the timing and duration of the wood frog breeding season was variable from year to year and from site to site, depending on the local environmental conditions impacting thaw. The relationship between air temperature and the onset of calling displayed patterns that differed from site to site, but once environmental conditions allowed for calling to commence, the frogs chorused fairly consistently at all sites regardless of subsequent fluctuations in temperature.

8:30 am

### **AN INTRODUCTION TO THE SIBERIAN SALAMANDER (SALAMANDRELLA KEYSERLINGII) AND WHY IT SHOULD BE IN ALASKA**

Trey Simmons

*Ecosystem Management Research Institute. Contact: trey\_simmons@nps.gov*

**Abstract:** At first blush, it seems highly unlikely that salamanders of any kind could exist in interior Alaska, given the long, extremely cold winters that the region experiences. However, in terms of habitat associations and physiological tolerance, the most likely candidate is the Siberian salamander, *Salamandrella keyserlingii* (Hodges 1976). This species, one of the most widespread amphibians in the world, with a known range of over 12 million km<sup>2</sup>, is found throughout northeast Asia from the Arctic Ocean to as far south as North Korea. It is unique among salamanders in being able to withstand freezing. Adults are able to survive temperatures as low as -40°C, and the animals remain active at temperatures near 0°C. The adults can survive for very long periods in the frozen state, and have been revived from as deep as 14 meters in permafrost. The preferred habitat for *S. keyserlingii* is taiga forest and riparian zones in tundra and forest steppe, all habitats that occur extensively throughout interior Alaska. Because Alaska and Siberia have been repeatedly connected by land bridges over the last several million years, the most recent of which remained intact until some 10,000 years ago, it is not unreasonable to expect that the species may have been able to migrate to Alaska, and that relict populations might remain.

8:50 am

## PARASITE SURVIVAL IN FROZEN WOOD FROGS

Don Larson\*

*University of Alaska Fairbanks and Alaska Herpetological Society. Contact: djl Larson@alaska.edu*

**Abstract:** I examined whether larval cysts of the trematode *Ribeiroia ondatrae* can survive within freeze-tolerant wood frogs (*Lithobates sylvaticus*) and whether survival was dependent on host adaptations to freezing. I exposed 107 tadpoles from Interior Alaska to 30 *R. ondatrae cercariae* each. Parasites were considered alive at experiment end if motility was observed either within cysts or after excystment. After metamorphosis, unfrozen frogs (n=22) were held for two weeks at 2°C. Frogs experiencing a single freeze (n=26) were cooled from 2°C to -6°C over 12 hours, nucleated with ice to initiate freezing at -1.5°C, and then held for two weeks at -6°C. Frogs experiencing an ecologically relevant repeated freeze-thaw (n=29) were cooled over 12 hours from 2°C to -6°C, nucleated at -1.5°C, and then warmed over 12 hours to 2°C; this cycle was repeated twice then frogs were held at -6°C for two weeks. Frogs (n=10 per group) averaged  $18.7 \pm 2.7$  motile metacercariae prior to freezing. There were no changes in abundance among unfrozen frogs after 2 weeks. Freezing significantly decreased parasite survival. No parasites survived in the single freeze group; however, parasite survival was 23% in the freeze-thaw group. Parasite survival in this group showed a positive linear relationship with cryoprotectant concentrations in the frog host. These results reveal how ecologically relevant conditions are necessary to evaluate parasite survival. This research also demonstrates how host overwintering physiology can detrimentally affect parasite survival. Additionally, these results indicate parasites may use host cryoprotectants to survive freezing.

9:10 am

## 104 PUBLIC ENVIRONMENTAL GIS HABITAT LAYERS ON A 60M-2KM PIXEL RESOLUTION TO EXPLAIN FROG AND SPECIES DISTRIBUTIONS IN ALASKA AND BEYOND: USE, INTERPRETATION AND A DEBATE TOWARDS A GOVERNANCE STANDARD

Falk Huettmann<sup>1</sup> and Sumithra Sriram<sup>2</sup>

*<sup>1</sup>EWHALE lab - University of Alaska Fairbanks; <sup>2</sup>College of Computing, Georgia Institute of Technology. Contact: fhuettmann@alaska.edu*

**Abstract:** Habitat associations make for the 'bread and butter' in science-based wildlife management. Research techniques like Habitat Suitability Indices (HSIs), Resource Selection Functions (RSFs), Species Distribution Models (SDMs), Species Abundance Models (SAMs) and spatial Population Viability Analysis (sPVA) all require those layers, for instance. However, nobody has ever made use of, and associated inference from, all the 104+ freely available layers now being available for such work in synergy. Our conservation management policy is still not requiring to employ such data, rather vice versa (parsimony is still pursued in governance of wildlife). Based on Sriram and Huettmann (in review) here we show an example using frogs in Alaska, and what the advantage is to use such a vast, 'complete' set of environmental layers in order to describe and predict species distributions in a data mining framework. Based on various and latest research we show what the cost-benefit is for using such an approach and for OneHealth initiatives focusing on issues way beyond 'just' frogs and wildlife: human health and sustainable wildlife and earth management! We will conclude with a discussion on 'certainty', and how to use and to proceed next, now that we have such data and tools readily available at our fingertips online for all citizens anywhere.

9:30 am

## A REASSESSMENT OF WOOD FROG (*RANA SYLVATICA*) DISTRIBUTION IN ALASKA USING ENVIRONMENTAL DNA MONITORING

Mark Spangler<sup>1\*</sup>, J. Andres Lopez<sup>2</sup>, and Falk Huettmann<sup>1</sup>

<sup>1</sup>Institute of Arctic Biology, University of Alaska Fairbanks; <sup>2</sup>College of Fisheries and Ocean Sciences, University of Alaska Fairbanks. Contact: : [maspangler@alaska.edu](mailto:maspangler@alaska.edu)

**Abstract:** The state of Alaska has designated the wood frog (*Rana sylvatica*) as a species of greatest conservation need, in part due to the absence of consistent and spatially extensive monitoring efforts. We aim to bring consistency to wood frog monitoring efforts in Alaska by providing a fast, inexpensive, and highly sensitive method of detection using environmental DNA (eDNA), a tool increasingly applied in conservation biology. We demonstrate the first implementation of eDNA monitoring for wood frogs in Alaska along the Dalton Highway corridor, which represents an under-sampled latitudinal gradient in the North Slope of Alaska. We collected water samples from 171 wetland sites between Fairbanks and Deadhorse, Alaska and performed an assay designed to detect the presence of wood frog DNA from the filtered samples. We performed four replicate assays on each water sample and recorded the number of replicates that successfully detected target DNA (0-4). Species distribution models were built and assessed using these data in combination with open-access wood frog occurrences and environmental and climate GIS layers for Alaska. Our eDNA surveys revealed trace amounts (qPCR score  $\geq 1$ ) of wood frog DNA in 47 wetland sites along the Dalton Highway corridor, including 14 sites north of the Brooks Range, where anecdotal reports comprise the only documented wood frog occurrence records. These results suggest that wood frogs are more widely distributed in northern Alaska than previously supposed reported or that DNA can travel in the environment further than previously documented.

10:20 am

## FROSTBITE ON THE FRONTIER?

Jesika Reimer, Laura Kaupas, and Paul Schuette

Alaska Center for Conservation Science, University of Alaska Anchorage. Contact: [jpreimer@alaska.edu](mailto:jpreimer@alaska.edu)

**Abstract:** Little brown *myotis* are widespread across North America, however, little is known about their wintering behavior at the northern extent of their range. Large *hibernacula* have been discovered in the Northwest Territories, however, where bats hibernate in interior Alaska and Yukon, in the absence of large cave sites, is still relatively unknown. During a recent summer survey of maternity colonies along the Copper River, Alaska, a large proportion of the populations exhibited signs of mild to severe tissue damage of the ears, similar to that caused by frostbite. We mist-netted little brown *myotis* at six known maternity roosts during July 2016, with colony sizes ranging from approximately 50 to 470 adults. Of the total number of captures (n=140), 12% had damaged ear tissue, and ear damage at each colony ranged from 0% to 24% of each population. Over the past few years, residents from interior Alaska have reported bats in human dwellings during the winter, and a recent study in southeast Alaska observed a small number of bats roosting in small cracks and crevices of scree fields and root wads. If the high frequency of ear tissue damage is related to frostbite, it may indicate that bats throughout interior Alaska are spending the winter in hibernation sites where temperatures fluctuate and drop to very low figures, rather than migrating to more stable *hibernacula* farther south.

10:40 am

## ESTIMATING BREEDING SITE FIDELITY FOR ADULT FEMALE STELLER'S EIDERS NEAR BARROW, ALASKA

David Safine, Kate Martin, Ted Swem, Neesha Stellrecht, John Pearce, Sandra Talbot, George Kevin Sage, Ann Riddle, Tuula Hollman, and Mark Lindberg

*U.S. Fish and Wildlife Service, U.S. Geological Survey, Alaska Science Center; University of Alaska Fairbanks*

Contact: [tjbrinkman@alaska.edu](mailto:tjbrinkman@alaska.edu)

**Abstract:** Pacific Steller's eiders (*Polysticta stelleri*) primarily nest in Arctic Russia with a small proportion nesting in Alaska (~1%). Only the Alaska-breeding population of Steller's eiders was listed as Threatened under the US Endangered Species Act and our understanding of the connectivity between Russian and Alaskan breeding populations is limited. Previous genetic studies uncovered low levels of population differentiation between the two breeding populations, leading to questions about the level of site fidelity in females. To estimate breeding site fidelity of adult female Steller's eiders near Barrow, Alaska we used genetic analyses to identify individuals from nest feathers and a Cormack-Jolly-Seber analysis to estimate apparent survival, a product of true survival and fidelity (or 1-permanent emigration). We identified 17 birds that nested at least twice near Barrow (n=214 nests; 1995-2014). Apparent survival was 0.81 (SE = 0.06) and apparent capture probability was 0.07 (SE = 0.02). Using true survival estimates of 0.86, we estimated breeding site fidelity to be 0.94 (0.81/0.86). However, we estimated low rates (0.11-0.21) of breeding probability (1- temporary emigration) using several different estimators. This study suggests that female Steller's eiders nesting near Barrow have a high probability of returning to nest over the long-term, however, females are often absent from the study area in a given year. These results show some level of separation between the Alaskan and Russian breeding populations, but highlight the need for estimates of natal site fidelity and a more complete understanding of the consequences of temporary emigration for population dynamics.



11:00 am

## A MECHANISTIC MOVEMENT MODEL REVEALS MULTI-SCALE BEHAVIORAL PATTERNS IN A SOARING BIRD DURING MIGRATION

Joseph Eisaguirre<sup>1\*</sup>, Marie Auer-Méthé<sup>2</sup>, Chris Barger<sup>3</sup>, Stephen Lewis<sup>4</sup>, Carol McIntyre<sup>5</sup>, Travis Booms<sup>3</sup>, and Greg Breed<sup>6</sup>

<sup>1</sup>Department of Biology and Wildlife, University of Alaska Fairbanks; <sup>2</sup>Ocean Tracking Network, Dalhousie University; <sup>3</sup>Alaska Department of Fish and Game; <sup>4</sup>U.S. Fish and Wildlife Service; <sup>5</sup>National Park Service; <sup>6</sup>Institute of Arctic Biology, University of Alaska Fairbanks<sup>6</sup>. Contact: [jmeisaguirre@alaska.edu](mailto:jmeisaguirre@alaska.edu)

**Abstract:** Migration is a costly phenological period for many taxa. Often, birds stopover to minimize the cost of migration, but soaring birds also minimize cost by utilizing meteorological phenomena as direct flight subsidies. Golden eagles are large soaring birds. Migratory individuals from Alaska often travel thousands of kilometers annually during migration. Uplift influences flight parameters and behavior of Golden eagles on short temporal scales; however, we have little insight into how these micro-scale patterns translate to form an eagle's behavioral budget across an entire migration. We developed a correlated random walk movement model (CRW) with time-varying parameters to infer behavior and the effects of environmental covariates on behavior of migrating golden eagles that summer in Alaska. Eagles were equipped with solar powered GPS transmitters during spring migration in Alaska, 2014-2016. We annotated fall and spring migration tracks of eagles with thermal and orographic uplift and used Bayesian Hamiltonian Monte Carlo to fit the model to each track. Model results showed a clear daily rhythm in behavior across tracks, which is consistent with diurnality and was strongly tied to the development of thermal uplift each day; however, this effect decayed notably with increasing latitude. Large scale behavioral patterns also emerged, which reflected unpredictable behavioral budgets that could be attributed to golden eagles' highly opportunistic foraging behavior. That is, rather than stop in predictable time intervals or habitats to deposit fuel during migration, eagles take advantage of prey across habitats and time.

11:20 am

## MONITORING WILDLIFE HABITAT USE AND DISTRIBUTION USING REMOTE CAMERAS ON THE KENAI PENINSULA

Nathan Jones<sup>1</sup>, Simon Wigren<sup>1</sup>, William Gaines<sup>2</sup>, Lowell Suring<sup>3</sup>, and James Begley<sup>2</sup>

<sup>1</sup>HDR Alaska, Inc.; <sup>2</sup>Washington Conservation Science Institute; Northern Ecologic, LLC.<sup>3</sup> Contact: [nathan.jones@hdrinc.com](mailto:nathan.jones@hdrinc.com)

**Abstract:** Highway realignment planning near Cooper Landing, Alaska, has included measures to assess existing habitat use and wildlife movement corridors in proximity to the Sterling Highway. Data from VHF- and GPS-collared wildlife were combined with geospatial datasets to model the quality of wildlife habitat and movement corridors across the entirety of the Kenai Peninsula for six focal wildlife species. In order to validate a localized subset of the models, we deployed 43 Reconyx Hyperfire digital cameras along the Sterling Highway between Quartz Creek and Jean Lake from October 2015 to November 2016. The sampling locations were distributed within and outside of modeled wildlife movement corridors with half on each side of the existing highway. Fine scale-siting of cameras focused on existing wildlife trails or other areas with signs of wildlife activity. Approximately 25,500 photographs were taken over a total of 16,306 camera days. Cameras were operable from 278 to 394 days depending on the date of deployment/retrieval and periods of inoperability. A total of 17 mammal species were recorded. The most common species was humans, followed by moose and brown bear. Moose were the most widely dispersed species; recorded at all 43 cameras. We identified trends in circadian and seasonal activity, distribution, habitat use, and behavior. This is one of the largest remote wildlife camera-trap studies in Alaska, to date, and will be an important dataset for validating the associated wildlife habitat and movement models.

11:40 am

## METAL DEPOSITION OF COPPER AND LEAD BULLETS IN MOOSE HARVESTED IN FENNOSCANDIA

Scott Brainerd<sup>1</sup>, Sigbjørn Stokke<sup>2</sup>, and Jon Martin Arnemo<sup>3</sup>

<sup>1</sup>Alaska Department of Fish and Game; <sup>2</sup>Norwegian Institute for Nature Research; <sup>3</sup>Department of Forestry and Wildlife Management, Hedmark University of Applied Sciences, Campus Evenstad  
Contact: [scott.brainerd@alaska.gov](mailto:scott.brainerd@alaska.gov)

**Abstract:** Fragments from bullets used for moose (*Alces alces*) hunting contaminate meat, gut piles, and offal and expose humans and scavengers to lead and copper. We sampled bullets ( $n = 1652$ ) retrieved from harvested moose in Fennoscandia (Finland, Sweden, and Norway) to measure loss of lead and copper. Hunters preferred lead-based bullets (90%) to homogeneous copper bullets (10%). Three caliber classes were preferred: 7.62 mm (69%), 9.3 mm (12%), and 6.5 mm (12%). Bullets passed completely through calves (76%) more frequently compared to yearlings (63%) or adults (47%). Metal deposition per bullet type (bonded lead core, lead core, and homogeneous copper) did not vary among moose age classes (calves, yearlings, and adults). Average metal loss per bullet type was 3.0 g, 2.6 g, and 0.5 g for lead core, bonded lead core, and copper bullets, respectively. This corresponded to 18–26, 10–25, and 0–15% metal loss for lead core, bonded lead core, and homogeneous copper bullets, respectively. Based on the harvest of 166,000 moose in Fennoscandia during the 2013–2014 hunting season, we estimated that lead-based bullets deposited 690 kg of lead in moose carcasses, compared to 21 kg of copper from homogeneous copper bullets. Bone impact increased whereas longer shooting distances decreased lead loss from lead-based bullets. These factors did not influence loss of copper from homogeneous copper bullets. In conclusion, a significant amount of toxic lead from lead-based bullets is deposited in the tissue of harvested moose, which may affect the health of humans and scavengers that ingest it.

## SESSION D: ALASKA HERPS AND OTHER NON-GAME SPECIES

(1:30 PM - 4:40 PM)

Session Moderator: Kim Jochum

1:30 pm

### CONTRASTING DEMOGRAPHY AND BEHAVIOR AMONG SEA OTTER POPULATIONS IN THE NORTHERN GULF OF ALASKA

George Esslinger<sup>1</sup>, Heather Coletti<sup>2</sup>, James Bodkin<sup>1</sup>, Daniel Monson<sup>1</sup>, and Brenda Ballachey<sup>1</sup>

<sup>1</sup>U.S. Geological Survey, Alaska Science Center; <sup>2</sup>National Park Service. Contact: [gesslinger@usgs.gov](mailto:gesslinger@usgs.gov)

**Abstract:** Sea otter population status is of high management interest due to conservation concern for the threatened stock in SW Alaska, recognition of sea otters as keystone species with strong effects on nearshore ecosystems, and issues related to effects of otters on commercial and recreational fisheries. We present long-term demographic and behavioral data from three areas with very different habitats and historical backgrounds to understand causes of population change and limits on population densities. We found that abundance increased in Prince William Sound and Katmai National Park during our studies, although likely for very different reasons, i.e., recovery from the Exxon Valdez oil spill and recovery from historical fur harvest, respectively. Our third area, Kenai Fjords National Park, has shown stable and low abundance through time. Based on measures of energy intake, otters in all three areas are at or approaching a prey-driven carrying capacity, although abundance varies dramatically among areas. We attribute differences in abundance to highly variable habitat among areas with correspondingly different food-dictated equilibrium densities. Finally, the independent trends, equilibrium densities, and drivers of trends indicate that these three areas represent discrete populations with their own inherent ecological and demographic properties.

1:50 pm

### MOUNTAIN GOAT RESOURCE SELECTION IN RELATION TO MINING-RELATED DISTURBANCE

Kevin White and Dave Gregovich

Alaska Department of Fish and Game. Contact: [kevin.white@alaska.gov](mailto:kevin.white@alaska.gov)

**Abstract:** Industrial development can have important direct and indirect effects on wildlife populations. In this study mountain goat seasonal resource selection patterns were examined using GPS radio collar (n = 79 individuals) and remote sensing data in a GIS framework across a 491 km<sup>2</sup> regional mountain range in southeast Alaska, 2005–2015. The resulting global RSF model was then applied across a limited spatial extent centered on an industrial mining site in order to assess whether mining activity altered expected spatial use patterns at different distances from the mine. Using a quasi treatment–control experimental framework we examined the occurrence of spatially explicit mine disturbance thresholds. In general, resource selection modeling indicated that mountain goats selected for steep, rugged terrain in close proximity to cliffs in areas with high solar exposure; and they selected for lower elevations in winter than in summer. Mountain goat selection for rugged terrain and proximity to cliffs was stronger in winter than summer. RSF model applications indicated that mountain goat use of predicted habitat in close proximity to the mine was lower than expected at distances up to 1800 m in winter and 1000 m in summer. Because lower elevation winter habitat is closer to mining activity than summer habitat, a greater percentage (42%) of winter habitat within the analysis area was affected by mining activity. The resulting net loss of functional winter habitat carrying capacity is likely to have long-term negative implications for the local mountain goat population. In places where mining is proposed, development should avoid areas within 1800 m of mountain goat winter habitat.

2:10 pm

## APPLYING SOUNDSCAPE ECOLOGY TO QUANTIFY AIRCRAFT NOISE DISTURBANCE IN TRADITIONAL HUNTING AREAS FOR THE COMMUNITY OF NUIQSUT, ALASKA

Taylor Stinchcomb\* and Todd Brinkman

*Department of Biology and Wildlife, University of Alaska Fairbanks. Contact: trstinchcomb@alaska.edu*

**Abstract:** Aircraft activity is expanding across the North Slope of Alaska and changing remote Arctic soundscapes. Alaska Native hunters frequently report that aircraft fly-overs impact their hunting success by diverting and startling caribou. A scarcity of data limits our knowledge on the volume of aircraft traffic flying over traditional hunting lands during peak caribou seasons. Here, we employ soundscape ecology methods to fill this gap and quantify aircraft noise disturbance for the community of Nuiqsut, AK. We deployed 20 acoustical monitoring systems in summer (June-Aug) 2016 at sites identified by Nuiqsut residents as important caribou hunting locations along the Colville River corridor and the Fish Creek tributary. Preliminary results support our hypotheses that aircraft activity is highest around the Colville River Delta, proximal to the village and surrounding infrastructure. Over 900 aircraft signatures were captured at each Delta site that recorded throughout the entire study period. The average number of aircraft fly-overs at Delta sites ranged from 7 to 15 events/day and 204-394 events/mo. Aircraft flyovers decrease dramatically at sites ~30 km upriver, falling to 1-2 events/day and 13-57 events/mo. Along Fish Creek, aircraft flyovers ranged from 3 to 6 events/day and 93-198/mo., but these data were limited by logistical constraints. We are conducting further analyses to describe the degree to which these aircraft constitute a disturbance in the local soundscape. Following soundscape analysis, we plan to map the spatial distribution of aircraft activity and determine where it overlaps with hunter and caribou GPS tracks to potentially impact Nuiqsut's hunting success.

2:30 pm

## THE CALM DURING THE STORM: LOCALIZED SNOWFALL EVENTS AFFECT THE MOVEMENT OF GREY WOLVES

Amanda Droghini<sup>1</sup> and Stan Boutin<sup>2</sup>

*<sup>1</sup>University of Alaska Anchorage; <sup>2</sup>University of Alberta. Contact: adroghini@alaska.edu*

**Abstract:** The winter season presents an important challenge to large mammals. Snow conditions in particular can have detrimental effects on food availability, body condition, and predation risk. However, surprisingly little is known about how wildlife responds to weather events such as heavy snowfall. We conducted an exploratory analysis to begin understanding how snowfall events affect grey wolves in Canada's northern boreal forest. We identified snowfall events using daily pictures from remote cameras, and combined this information with telemetry data on 10 radio-collared wolves. We calculated 4 movement metrics: travel speed, maximum speed, proportion of travel behaviour, and daily distance traveled, and compared these metrics before, during, and after snowfall events. We found a clear effect on wolves' movements: on the night of a snowfall, wolves decreased the proportion of time spent traveling by 30%, and decreased their travel speed from 28.1 m/min to 20.7 m/min, when compared to days without snowfalls. These behaviours translated into a 3.5 kilometer decrease in daily distance traveled. Interestingly, we did not observe any persistent movements effects (i.e., one to three days after a snowfall), suggesting that wolves' response to snowfall events may be driven by factors other than energetic considerations. Wolves' immediate, but short-term response to snowfall events may be influenced by prey behaviour, or by a decrease in hunting efficiency as a result of snowfall's effect on olfaction. Investigating how prey are behaving in similar conditions would further our understanding of predator-prey interactions in northern regions.

3:20 pm

## ANTLERS OF THE ARCTIC NATIONAL WILDLIFE REFUGE: BASELINES OF BIOLOGICAL VARIABILITY FROM BONES ON THE TUNDRA

Joshua Miller<sup>1</sup> and Eric Wald<sup>2</sup>

<sup>1</sup>University of Cincinnati; <sup>2</sup>National Park Service. Contact: [josh.miller@uc.edu](mailto:josh.miller@uc.edu)

**Abstract:** Quantifying natural variability in geographic range (including seasonal landscape use and migration) is a primary concern for evaluating animal populations and establishing management and conservation goals. Unfortunately, this variability is often modeled using datasets with limited temporal perspectives. This predicament is exacerbated in arctic settings, where logistical complexities frequently interfere with biological surveys and further complicate available data; including on economically and culturally keystone species, such as caribou (*Rangifer tarandus*). Antlers of caribou accumulating on landscape surfaces have exceptional potential to provide historical data on seasonal landscape use because they are annually grown and shed by males and females. Male antlers are shed post-mating, while pregnant females shed antlers in conjunction with giving birth. Antlers can survive on arctic landscapes for centuries or more. Thus, the geographic distributions of male and female antlers offer data on historical migration and calving areas (birthing grounds). We use antler surveys to quantify historical variability of landscape use and calving ground distributions in the Arctic National Wildlife Refuge (ANWR). We then evaluate recent landscape use (based on aerial survey data initiated in the 1980s) against historical (antler) patterns. On the ANWR calving grounds, accumulations of shed female antlers can be large (> 1,000 antlers/km<sup>2</sup>). Furthermore, relative to expectations from aerial surveys, many regions have higher-than-expected antler concentrations. Additionally, rank-order correlation between modern and pre-1980 antler records is low, indicating a lack of congruence between modern and historical calving geography. Changes in the geographic distribution of antlers through time also suggest links between calving geography and climate (Arctic Oscillation) on decadal time-scales.

3:40 pm

## DID DISPERSAL OF MIXED GROUPS CONTRIBUTE TO THE DECLINE OF MUSKOXEN IN NORTHEASTERN ALASKA?

Patricia Reynolds<sup>1</sup> and Elizabeth Lenart<sup>2</sup>

<sup>1</sup>None <sup>2</sup>Alaska Department of Fish and Game. Contact: [patricia@reynoldsalaska.com](mailto:patricia@reynoldsalaska.com)

**Abstract:** Muskoxen were reestablished in northeastern Alaska in 1969 and 1970. As part of a larger analysis of this population, we examined shifts in distribution that occurred during the decades after muskoxen were released. We used mixed groups of muskoxen to define the boundaries of population distribution. We mapped locations from early surveys in the 1970's and annual late winter surveys from 1983 through 2012. We relocated 33 adult radio-collared females for 5-15 consecutive years (CY) during late-winter surveys from 1983 through 2005 and measured distances (km) between CY locations. During the first decade after their release, the population occupied three areas between the two release sites as numbers of muskoxen rapidly increased. During the next decade, the population expanded into new areas and the rate of growth slowed. Between 1996 and 2006, mixed groups vacated areas first occupied and the population declined. We located 19 of 33 marked females in consecutive years at distances of >60 km. Eight marked muskoxen in mixed groups occupied new areas for at least 2 years during the period of population decline. Between 1998 and 2005, trappers, biologists and others observed mixed groups of muskoxen south of the study area on the southern slopes of the Brooks Range. Although decreases in recruitment and adult survival were major factors, dispersal of mixed groups played a role in the decline in abundance of muskoxen in northeastern Alaska.

4:00 pm

## ALASKA WOOD BISON RESTORATION UPDATE

C. Tom Seaton

*Alaska Department of Fish and Game. Contact: tom.seaton@alaska.gov*

**Abstract:** Wood bison are an extirpated, endemic species in Alaska. In spring and summer of 2015, 130 wood bison were transported to west central Alaska and released into the wild from captivity. Twenty four months post release, the wild population of wood bison in Alaska is growing in number and distribution. Transition to the wild was difficult, with 25 mortalities observed in the first year after release. The wood bison stock used for restoration in Alaska has been in captivity since 1957, and natural selection was the only way to sort out which of the animals had the mental and physical aptitude to prosper in the wild. The cleansing result of natural selection will provide the best and most adapted wood bison for future generations in Alaska. No evidence of predation or infectious disease was observed. One bison was illegally killed. Very little mortality was observed in the second year. Body condition and pregnancy rates in 2017 suggest a promising future for the lower Innoko\Yukon rivers herd. Public participation in wood bison restoration is essential and has been significant. Many communities in the Yukon and Kuskokwim drainages have expressed a desire to have bison restored in their area for several reasons including food security, economics, and conservation. Satisfying the informational and participatory needs of these communities presents significant challenges.

4:20 pm

## HEALTH IMPACTS OF NUTRITIONAL DEFICIENCIES IN WOOD BISON

Kimberlee Beckmen<sup>1</sup>, Robert Gerlach<sup>2</sup>, Camilla Lieske<sup>1</sup>, and Tom Seaton<sup>1</sup>

*<sup>1</sup>Alaska Department of Fish and Game; <sup>2</sup>Alaska Department of Environmental Conservation. Contact: kimberlee.beckmen@alaska.gov*

**Abstract:** The Alaska Department of Fish and Game maintained an increasing herd of wood bison (*Bison bison athabasca*) captive for 4 years longer than the anticipated 2 year quarantine after importation of 53 juveniles from Canada. Although the animals were obtained from a specific pathogen-free herd, the initial quarantine testing and pathogen screening focused on regulatory diseases and known pathogens. Parasitic treatments were comprehensive. However, during the prolonged confinement, unanticipated husbandry, medical, nutritional, trace mineral deficiencies and parasitic disease issues arose. Adaptive management strategies were tested and instituted to successfully resolve each issue identified. Successes included a treatment of anemic calves and yearlings (n=19) in poor body condition to improve health especially vitamin and trace mineral balance. Prior to treatment the mean blood selenium (0.122 ppm) was at the lower limits of the normal range for cattle. After treatment blood selenium, serum iron and copper increased significantly. Most importantly, mean body condition scores increased by 4% in this cohort indicating a positive response to the treatment regime. Herd health continued to improve over 12 months and blood cell indices were within the normal range prior to release. Cohorts of bison including adults were successfully treated for vitamin, selenium and copper deficiencies, grain overload, verminous gastritis, weak calf syndrome and low pregnancy rates. In March 2015, 100 healthy bison of all age classes with high body condition scores were transported via cargo air craft for a soft release/reintroduction to Alaska.

## Poster Session (2:30 pm - 3:50 pm)

Wood Center, University of Alaska Fairbanks

### COMPARISON OF THE USE OF A CONDUCTED ELECTRICAL WEAPON TO CHEMICAL RESTRAINT FOR SHORT TERM CAPTURE AND RELEASE IN REINDEER (*RANGIFER TARANDUS TARANDUS*)

Kimberlee Beckmen, Camilla Lieske and Larry Lewis

*Alaska Department of Fish and Game. Contact: kimberlee.beckmen@alaska.gov*

**Abstract:** To assess physiologic effects of chemical restraint (carfentanil/xylazine (CX)), and exposure to a Conducted Electrical Weapon (CEW), 15 captive reindeer were assigned to one of three groups: anesthetized with CX, exposure to the CEW, or exposure to the CEW while anesthetized with CX (CEW+CX). Blood samples were collected pre-treatment (T0), immediately post-intervention (Tc), 10 min (T1), 20 min (T2), 4 hours (T3) and 24 hours (T4) post-intervention. Physiologic effects were evaluated by analysis of blood, clinical observation, and vital signs. For many parameters, values remained within expected ranges with little change. Parameters that did change post-exposure (e.g. glucose, temperature, blood oxygen, cardiac troponin I (cTnI), cortisol, catecholamines) returned to within baseline by 24 hours. The decrease in blood oxygen found with chemical restraint was not present in the CEW exposed individuals. Temperature increased from baseline at T1 and T2 in all groups, but didn't vary significantly by group at any time point. Glucose and cortisol increased in all animals at T1 and T2, decreasing towards baseline by T3. Increases in cortisol and glucose were greatest for the CX and CEW+CX groups. Epinephrine and norepinephrine increased at Tc in the CEW and CEW+CX groups, but decreased slightly in the CX group; catecholamine levels returned to baseline by T3. A slight increase in cTnI was detected in some individuals (especially in the CEW+CX group), but the levels were below what is associated with myocardial necrosis, and returned to baseline by T4. No long term health effects were detected from either restraint method.

## VARIATION IN WILLOW PTARMIGAN DETECTABILITY AND AVAILABILITY: RESEARCH AND MANAGEMENT IMPLICATIONS

Graham Frye<sup>1</sup>, Mark Lindberg<sup>2</sup>, and Richard Merizon<sup>3</sup>

<sup>1</sup>University of Alaska Fairbanks and Alaska Department of Fish and Game; <sup>2</sup>University of Alaska Fairbanks; <sup>3</sup>Alaska Department of Fish and Game. Contact: [graham.frye@alaska.gov](mailto:graham.frye@alaska.gov)

**Abstract:** Ptarmigan (*Lagopus* spp.) are ecologically and culturally important species throughout their circumpolar ranges. As such, rigorous monitoring strategies are needed to ensure proper management of ptarmigan populations. A fundamental component of monitoring efforts is the ability to obtain reliable estimates of population states and vital rates. A variety of survey techniques have been used to estimate and index ptarmigan abundance, but the accuracy of the data produced by many of these techniques is unknown. An unavoidable complication shared by most of these survey techniques is an imperfect detection process, which has the potential to induce bias in estimators. We examined the role of imperfect detection in playback surveys for Willow Ptarmigan (*Lagopus lagopus*) in Interior Alaska. We used temporally and spatially replicated counts with independent observers to model the detection process. We fit multinomial mixture models in a Bayesian framework to estimate the probability of detecting Willow Ptarmigan as a function of (1) time of season, (2) time of day, and (3) individual observer. Our results indicate that substantial heterogeneity in detection is induced by all three of these factors. These results suggest that raw counts from ptarmigan playback surveys should be interpreted cautiously. Similarly, simulations suggest that using playback-based population indices to infer trends can be misleading, given the diel, seasonal, and observer-specific variation in detection probability. To avoid inaccurate inferences about population states and trends, we recommend that Willow Ptarmigan monitoring efforts employ careful standardization of survey design and/or explicitly account for heterogeneity in the detection process.

## LANDSCAPE-SCALE CONSERVATION AND MANAGEMENT STRATEGIES FOR ALASKA'S NORTH SLOPE BASED ON WILDLAND VALUES AND CLIMATE CHANGE

Timothy Fullman<sup>1</sup>, Jason Leppi<sup>1</sup>, R. Travis Belote<sup>1</sup>, R. Travis Belote<sup>1</sup>, Stu Smith<sup>2</sup>, and Gregory Aplet<sup>1</sup>

<sup>1</sup>The Wilderness Society, True North GIS. Contact: [tim\\_fullman@twos.org](mailto:tim_fullman@twos.org)

**Abstract:** Arctic Alaska contains vast relatively untrammelled areas, but also is experiencing accelerated pressure from expanding development and climate change impacts. Knowing where key wildland values occur across regions is a first step in developing effective strategies for landscape-scale management and conservation. Mapping wildland values can help create strategies that balance natural resource protection and new development. Complicating this goal, however, are the uncertain but imminent impacts of climate change that may alter current values and strategies. We spatially overlay available data for the North Slope of Alaska and create a quantitative index to prioritize areas for future conservation and management action based on five wildland values: wildness, ecosystem representation, wildlife biodiversity, subsistence use, and connectivity. We then use the relationship between these wildland values and climate change to propose future management strategies that help manage risk due to climate change uncertainty. While priority locations for each wildland value vary across the study area, the combined index indicates areas of highest priority for future conservation and management action mostly lie in the northwestern portions of the North Slope. This is, in part, a reflection of the current high level of protection of lands in the eastern part of the North Slope. Incorporating climate change data suggests locations where different management approaches may be most appropriate (e.g., hands-off preservation, restoration, innovation). Compiling spatial data on wildland values and climate change offers a tool to defensibly prioritize future conservation actions and management strategies in light of current impacts and future climate uncertainty.



## PATTERNS OF INFECTION OF AMERICAN MARTEN (*MARTES AMERICANA*) BY THE NEMATODE *SOBOLIPHYPHE BATURINI* FROM INTERIOR ALASKA

Steve Guerin<sup>1</sup>, Elisa Gagliano<sup>1</sup>, Emma Fries<sup>1</sup>, Mariel Campbell<sup>1</sup>, **Kerry Nicholson**<sup>2</sup>, and Joseph Cook<sup>1</sup>

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**Abstract:** American marten (*Martes americana*) are small mustelid carnivores and a commercially important fur-bearer widely distributed in boreal forests of North America. Marten are predators of small mammals and birds, and populations demonstrate regional and historical fluctuations which may be related to variability in prey abundance or other factors such as disease or parasitism. One of the most common parasites of marten is the stomach nematode, *Soboliphyme baturini*, which reaches high intensities of infection. As part of a larger study investigating marten population health, 300 marten stomachs collected in 2015/16 trapping season throughout Interior Alaska were examined to determine prevalence and intensity of *Soboliphyme baturini* infection. Infection rate was 38%, with individual infection rates varying significantly across the geographic region. These results will be compared with data on host sex, age, abdominal fat, diet, and reproductive status to understand the influence of *Soboliphyme* parasitism on American marten.

## ACTIVE NEST SITES OF OLIVE-SIDED FLYCATCHERS (*CONTOPUS COOPERI*) IN CENTRAL ALASKA HAVE GREATER INSECT DIVERSITY THAN HISTORICAL SITES

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**Abstract:** The Olive-sided Flycatcher (*Contopus cooperi*) is a highly-specialized insectivore which nests in the boreal forest of Alaska, and has experienced a steep population decline in recent decades. The cause of this decline is unknown, but arthropod prey and/or prey availability has been linked to nest success. The Alaska Department of Fish and Game studied *C. cooperi* in the 1990s, and surveys 25 years later found that past sites no longer support breeding pairs, but other locations do. Habitat changes altering local arthropod communities could make sites unsuitable for breeding. To test this hypothesis, we compared arthropod abundance and diversity between presently "active" nest sites and "historical" sites which no longer support breeding pairs. We found greater ordinal diversity of arthropods at active sites and no difference in arthropod biomass.

## COMMUNITY PARTNERSHIP FOR SELF RELIANCE: IMPACTS OF CLIMATE CHANGE ON MOOSE HARVEST OPPORTUNITIES

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**Abstract:** Climate change is altering many ecosystem services which are essential for Alaskan Native communities in Interior Alaska. In order to address challenges that threaten their livelihoods, communities are partnering with agencies to help form research projects. This type of collaborative research creates usable science that will aid communities in forming local adaptation strategies to help continue to access key subsistence resources such as moose (*Alces alces*). Rural communities in Interior Alaska consume more moose meat than any other food source, however, accessibility to this food resource may be declining due to changing climatic conditions during hunting season (September). Therefore, the Village Council of Nulato partnered with UAF to address the impacts of climate change on moose harvest opportunities. Warming temperatures may alter moose behavior and fall phenology. Moose may respond to warmer temperatures by decreasing activity and selecting for shrubby habitat, therefore decreasing their sight-ability. Sight-ability may also decrease if the growing season is lengthening, causing a change in leaf drop date. Increased evapotranspiration rates cause reduced water levels, therefore decreasing access to high-quality hunting grounds. The relationships between (i) daily temperature and harvest opportunities, (ii) leaf-drop and harvest opportunities, and (iii) precipitation rates and harvest opportunities are not well known. I will examine these relationships using historic temperature, water level, leaf drop, and moose harvest data for the past 30 years. This data may help inform sustainable management decisions.

## TROPHIC NICHE PARTITIONING BETWEEN MALE AND FEMALE GOLDEN EAGLES IN WESTERN ALASKA

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**Abstract:** Climate-related changes in the Arctic are influencing populations of prey utilized by top predators, potentially leading to alterations in predator-prey dynamics and intra-specific competition. We investigated how male and female Golden Eagles (*Aquila chrysaetos*) on the Seward Peninsula, AK, may use niche partitioning to avoid competing and compared diet between two breeding seasons to detect potential interannual variability in diet. We collected whole and partial regurgitated pellets and uneaten prey remains from nests and presumed perches at 32 occupied eagle sites in July 2014 and 2015. Using comparison to museum specimens and microscopic techniques, we identified and sorted prey remains and pellet contents including bones, fur, and feathers, to categories of either avian order or mammalian family. We used Pianka's Index and measures of diversity to better understand niche partitioning and variability in diet between years. We found that Golden Eagles mainly consume Arctic ground squirrel (*Urocitellus parryii*) and ptarmigan (*Lagopus* spp.), yet suspect males to frequently utilize smaller prey than females due to sexual size dimorphism. National Golden Eagle management plans do not include data from Alaska's Golden Eagles. However, our research provides baseline data on how Golden Eagles use resources and interact with each other, which can contribute to developing more complete management plans and improving our understanding of the Arctic's complex, fragile ecosystems.

## FIRST STEPS TO UNDERSTANDING BAT ECOLOGY ON A U.S. ARMY INSTALLATION IN INTERIOR ALASKA

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**Abstract:** In northern Alaska, not much is known about bat ecology. In the near future, little brown bats (*Myotis lucifugus*), which are thought to be the most common species in northern Alaska, could become listed by the Endangered Species Act (ESA) because populations are being killed off in the eastern United States and eastern Canada by white nose syndrome. If little brown bats were listed by the ESA, then their habitat will likely be designated as critical habitat. As a proactive measure, Fort Wainwright intends to develop a bat conservation plan. Our primary goals are to investigate bat ecology on Fort Wainwright to determine where bats are found, which habitats they use throughout the season, and which bat species occur. Studies were initiated in 2015 and are ongoing using ultrasonic recording devices and visual observations. Varying methodologies were applied in various stages of the project. Non-random approaches were used to increase detection likelihood initially, and stratified random approaches are currently used to determine specific seasonal habitat use. We have found bats in multiple locations throughout Fort Wainwright. Bats were active from April through October with the highest activity in May, August, and September. Edge habitat with mature forests and open water appeared to have high use by bats. Only few locations showed consistent high bat activity between May and September. Our future research efforts will continue to monitor bat activity, include capturing bats to identify species by DNA testing, and use telemetry to locate daytime roosts and possibly hibernaculum.

## INCLUDING HUMAN DIMENSIONS IN BEAR CONSERVATION: A RECIPE FOR SUCCESSFUL BEAR VIEWING MANAGEMENT

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**Abstract:** Arctic and Kodiak National Wildlife Refuges are the frontier destinations for experiencing polar bears and brown bears. Both refuges developed bear viewing programs incorporating social science to optimize management outcomes and contribute to the greater conservation mission of the U.S. Fish and Wildlife Service. Arctic Refuge hosts polar bear viewing dependent on an isolated, subsistence-based Alaska Native community, where large numbers of polar bears congregate seasonally. The combination of setting and stakeholder involvement necessitates relationship-based collaborative management. The refuge addresses gateway community issues while insuring that professional standards for polar bear viewing are sustained to engage residents that are directly affected by refuge management actions. Kodiak Refuge achieves its bear viewing conservation goals through rigorous social science using interviews and public use surveys. The refuge also uses other standard practices such as monitoring bear densities and human-bear interactions to implement conservation measures in areas of high bear use and of special management concern. Managing successful bear viewing opportunities to deliver conservation benefits requires addressing ecological processes, but also human social processes and their consequences. By engaging stakeholders that are affected by bear viewing, providing public input, and including theory-based social science in management decision-making, the US. Fish and Wildlife Service provides the best future for recreationally-viewed bear populations and the best opportunities for the people who cherish them.

## FEDERAL SUBSISTENCE MANAGEMENT PROGRAM

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**Abstract:** Fish and wildlife harvest regulations in Alaska are complicated by dual management on Federal public lands. The State of Alaska administers harvest regulations for all Alaska residents and non-residents while the Federal Subsistence Management Program administers the subsistence harvest of fish and wildlife on Federal public lands by rural Alaskan residents. Understanding the differences and overlap between these two sets of harvest regulations can be confusing and even frustrating. This poster provides an overview of the Federal Subsistence Management Program (FSMP), including the history of the program and the roles of the Federal Subsistence Board, the 10 Regional Advisory Councils, and the Office of Subsistence Management. The poster also covers the Federal regulatory process, including Tribal consultations; customary and traditional use determinations; which species are under the purview of the FSMP; website links to additional information; and useful definitions such as 'subsistence use' and 'Federally qualified subsistence users'.

## SHOREBIRD USE OF MILITARY LANDS IN INTERIOR ALASKA

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**Abstract:** Shorebird populations are declining globally and little is known about the distribution of breeding species in interior Alaska. The Program for Regional and International Shorebird Monitoring (PRISM) has developed shorebird survey methodology, with most effort in the Arctic and less effort in the boreal forest region. We fill this information void by using PRISM methods to estimate shorebird use of military lands on Tanana Flats Training Area and Donnelly Training Areas (Fairbanks and Delta Junction, Alaska). We conducted surveys to (1) identify shorebird species using military lands, and (2) create occupancy/use models for these species and determine associated habitat covariates. We predicted species-specific covariate relationships (e.g., elevation, shrub height, distance to water). In general, we predict that shorebirds would more likely use open shrub and wet grassland Viereck habitat classifications. Using a stratified random sampling design, we surveyed 78 plots (400x400 m) twice. We found 6 shorebird species of moderate to high conservation concern as listed by the Alaska Shorebird Conservation Plan and 4 species of conservation concern as listed by the USFWS. For Lesser Yellowlegs, Wilson's Snipe, and Spotted Sandpiper we will present correlations of use with variables of interest derived from occupancy/use models.

## ROOSTING REQUIREMENTS OF LITTLE BROWN BAT (*MYOTIS LUCIFUGUS*) MATERNITY COLONIES IN INTERIOR ALASKA

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**Abstract:** Little is known regarding the roosting habits, and characteristics, of little brown bats (*Myotis lucifugus*) in Alaska. Reproduction is an energetically costly process that balances different trade-offs between energy expense and energy savings. Studies outside of Alaska note that female little brown *myotis* form large maternity colonies that roost in both buildings and trees. Roosting in large colonies may help offset the cost of reproduction by providing females with warmer roosts, thereby decreasing the energy needed to maintain an active body temperature. Bats also use torpor to save energy. The trade-off for torpor-use in reproductive females is prolonged gestation, resulting in reduced juvenile survival, and lower long-term reproductive success. Since average ambient temperatures tend to be cooler in Alaska than other parts of North America, I asked the question, will reproductive rates be similar? To address this question, I looked at roost temperatures and colony reproductive success at five little brown *myotis* colonies along the Copper River, AK. Since little brown *myotis* tend to be generalists, and are adjustable to many different types of environments, I hypothesize that roost temperatures and reproductive rates will be within the same average range as other colonies in North America. In particular, I predicted that if variation was seen among the colonies, we would see colder roosts correlated with lower reproduction rates, and warmer roosts correlated with higher reproduction rates. My results are expected to indicate a direct relationship between internal roost temperatures and reproduction rates of little brown bats in Alaska.

## INCORPORATING FOREST-WILDLIFE INTERACTIONS INTO REFORESTATION GUIDELINES FOR BOREAL ALASKA

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**Abstract:** Wildlife recommendations to facilitate reforestation will be part of an Alaska Division of Forestry best practices manual for state, municipal, and private lands in the boreal region. There are substantial mutual benefits in coordinated implementation of forest practices and wildlife habitat conservation in managed forests.

## PROXIMATE LIVER ANALYSIS OF AMERICAN MARTEN IN INTERIOR ALASKA

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**Abstract:** American marten are an important furbearer species in North America and have long been a part of the fur trapping industry in Interior Alaska. American marten are in many parts of their range, associated with old growth forests and are often viewed as an indicator of forest health. In 2012, Alaskan trappers noticed an overall decrease in marten numbers. In response to this, marten nutritional health and reproductive performance is being investigated through several separate studies. Most females mate at 15 months, but up to 78% in some studies fail to produce ova. Even with maturation, females older than 2 years also may not ovulate, with pregnancy rates as low as 50% in years of environmental stress. Through this study, we examined the proximate composition 150 adult female marten livers from the 2014-2015 trapping season to understand how nutritional health may influence reproductive performance. Pregnancy rates for 2014/15 season decreased from an average of 70% (for the previous 7 seasons) to 43%. Analyses are ongoing and examine the protein, lipid and ash contents of the livers in order to better understand potential environmental stress from diet and overall population fitness. Marten populations can be easily over-harvested and can cause reduced numbers the following year leading to slower population recovery. Understanding how nutrition may influence reproductive success is beneficial for management of the American marten as well as important to the people who use these animals as a cultural and economic resource.

## EXPLORING THE POPULATION DYNAMICS OF AMERICAN MARTEN IN INTERIOR ALASKA

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**Abstract:** In this research project we are expanding the number of samples, study regions and number of microsatellite markers previously used to quantify the structure, diversity and overall relatedness of the American marten (*Martes americana*) in Interior Alaska. Although marten have been widely studied throughout their range in North America, knowledge of their genetic structure in the interior is lacking. Information on the nature of a region's population structure can lead to more informed management decisions, which is especially important for heavily harvested species like marten. From the previously analyzed results of 120 marten samples, differences in the Minchumina and Central regions were detected but require further investigation for conclusive results. We have now extracted DNA from 240 marten samples from twelve study regions in the Interior, designated from an ongoing study conducted by Alaska Department of Fish and Game. Using additional DNA primers developed for use on American marten and previous results we will gain a more comprehensive view on inter- and intra-region population structure using GeneMapper and STRUCTURE. Due to homogeneity in landscape and habitat in these interior regions it is surprising to see differences between regions and would instead expect high diversity of alleles in all regions.

## ASSESSING DALL'S SHEEP HORN MORPHOMETRICS AS A MANAGEMENT TOOL

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**Abstract:** Since 2004, hunters have been required to present Dall's sheep horns for sealing at ADF&G regional and area offices. When horns have been sealed, total length, base circumference and age have been recorded. In 2016 we began quantifying: 1) distance between annuli, and 2) degree of curl for most horns presented to the Anchorage, Fairbanks, and Palmer offices. Sheep horns grow incrementally on an annual basis; segments between annuli effectively log growing conditions during the life of a ram. We examined the relationship between age, horn length, and degree of curl, and compared those data to a data set collected by ADF&G during 1968-1970. Lastly, we quantified the number of rams that would have been legal for harvest the previous hunting season based on age, or degree of curl. In 2016, 783 rams were harvested statewide; we collected detailed measurements on 470 (60%) of them. The age structure of our measured sheep was approximately normally distributed with a range 4-13 yr, and an average of 8.5 yr (SD = 1.5). Horn length ranged from 461-1150 mm with an average of 900 mm (SD = 73). Degree of curl ranged 169 – 498 degrees with an average of 380° (SD = 31). Data presented are preliminary analyses from the first season of a 3 year study. The results of this study, in conjunction with survey data, may be used to assess and possibly predict the future production of legal rams ( $\geq 8$  yr, or  $\geq 360^\circ$  of curl) in a specific area.

## MANAGING LARGE ENVIRONMENTAL DATABASES, MOVING BEYOND JUST STORING DATA

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**Abstract:** Many wildlife management and research techniques produce large volumes of data, often continuously, and require increasingly large data-management efforts. Data need to be ingested, screened for errors, organized, and disseminated in a timely manner. Fortunately, the technology available to manage data has also progressed and database platforms can now incorporate spatial, analytical, and website capabilities. ABR has developed database systems for telemetry data and other large databases that automate data processing and provide accurate, mapped data over a secure web site on a daily basis. The next step in data management is to use the powerful tools available on modern database platforms to increase the data-analysis capabilities beyond just storing and displaying the data. Database systems that incorporate spatial layers and R code can automate routine tasks and calculations, create interactive maps and animations to visualize data, and incorporate results of sophisticated real-time analyses such as kernel-density estimation, mortality estimation, and habitat associations. We show examples incorporating these new methods to increase the functionality, ease of use, and analysis capabilities of data management systems.

## DESIGN AND OPERATION OF ARCTIC OILFIELDS TO REDUCE GRIZZLY BEAR ENCOUNTERS

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**Abstract:** Grizzly bears inhabit all of Alaska's North Slope and the western portion of Canada's Arctic coast, a region where oil and gas exploration and production are ongoing. Since 1991 the Alaska Department of Fish & Game (ADFG) has studied the interactions of grizzly bears with North Slope oil development. Sixty two individual bears (29 females and 33 males) inhabited home ranges that overlapped the developed fields and/or Deadhorse (the support industry enclave adjacent to the Prudhoe Bay oilfield). Twenty-four bears became conditioned to search out human sources of food ("food-conditioned"), primarily garbage, and 20 of these have been killed in human conflict situations, all outside the oilfield proper but several in Deadhorse. However, the majority of bears inhabiting the oilfields have not been in conflicts with humans. Of the 38 bears that fed on natural foods and were observed at least once within the oilfield perimeter, >15 spent considerable time there but never approached facilities.

## PREVENTING ENTRAPMENT OF CAVITY NESTING BIRDS IN ALASKA

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**Abstract:** Many bird species rely on small holes in trees and other hollow areas for nesting, protecting their developing young, and roosting. Outhouse vent pipes attract cavity nesting birds including owls, kestrels, bluebirds, and flickers. These birds can become trapped in the vents or fall into the vault toilets below and die. As a club conservation project, we installed vent screens on outhouses in the Chena Recreation Area and Tanana Lakes Area to alleviate potential entrapment of local birds. An incidence of a merganser trapped in an outhouse at Granite Tors happened in 2013, yet this simple project prevents additional needless death of cavity nesting birds. Future research includes quantifying the number of birds saved in the Fairbanks Area.



# NOTES