ALASKA CHAPTER OF THE WILDLIFE SOCIETY
2025 ANNUAL MEETING
Voices of the Wild: Amplifying Science Through Communication

Elizabeth Peratrovich Hall, Juneau
In Person and Virtual

April 1 - 4, 2025

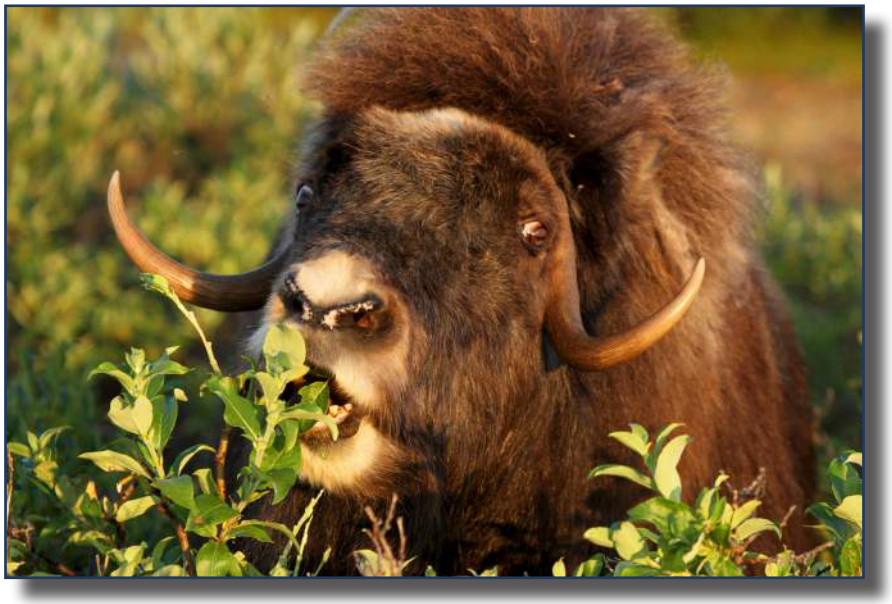
Alaska Chapter of the Wildlife Society
2025 Annual Meeting

Juneau, Alaska
April 1 – 4, 2025

MEETING PLANNING COMMITTEE

Alex Lewis, Jeff Wagner, Ryan Mollnow, Cyndi Wardlow, Dave Gregovich, Nate Svoboda, Sarah Rauchenstein, Tessa Hasbrouck, Anthony Crupi, Nick Fowler, Jeff Stetz, Shannon Finnegan, and Arin Underwood.

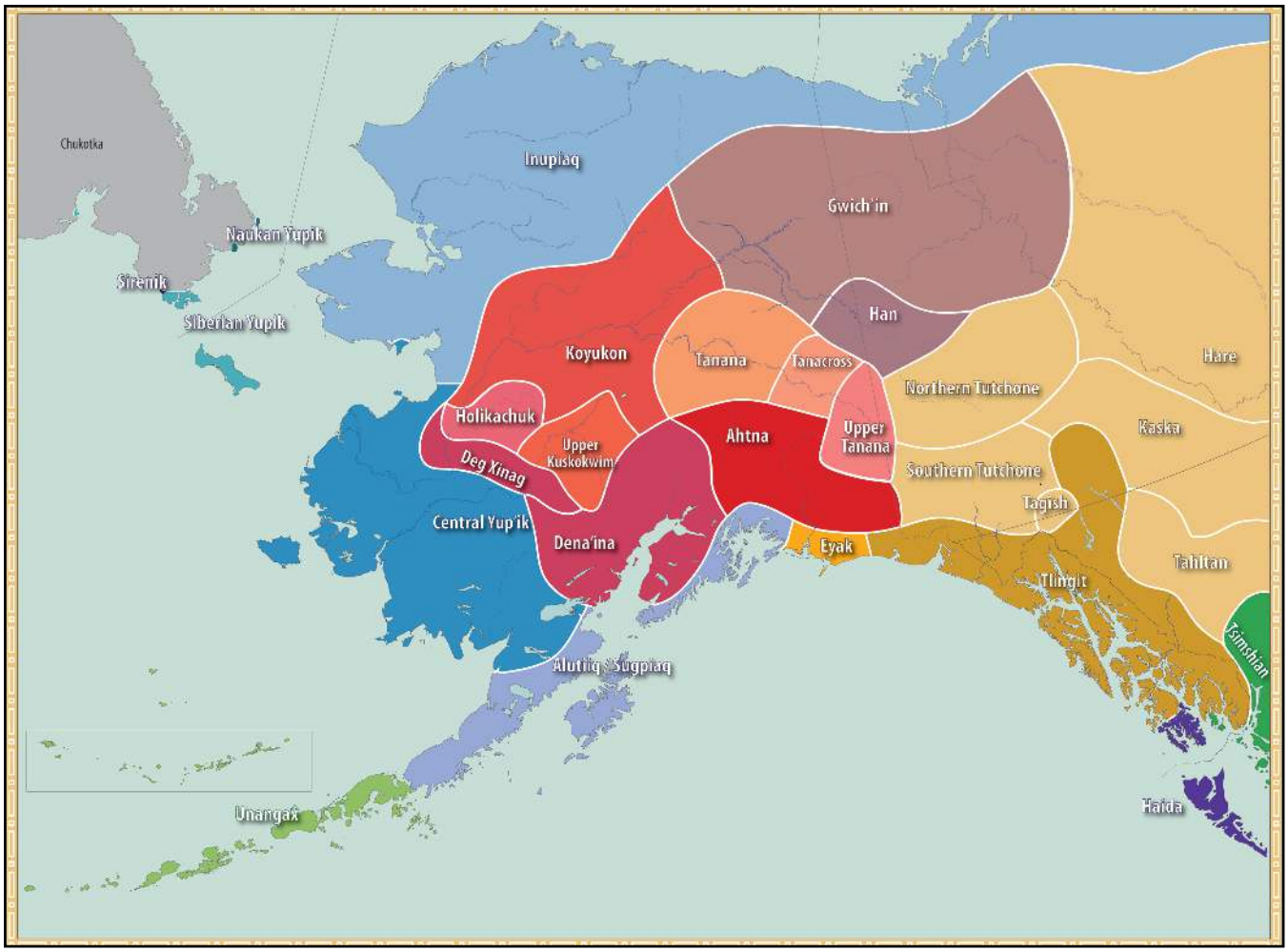
***Cover Photos*:** Black Bear and Black-capped Chickadee - Jeff Wagner; Collared Pika and Trumpeter Swans - Arin Underwood (ADFG), Caribou - Chelsea Arnold; Red Fox - Jared Hughey (NPS).



Muskox (Jared Hughey)

Land Acknowledgment

The Alaska Chapter of The Wildlife Society would like to acknowledge that we are gathered on traditional lands where indigenous peoples have cared for Alaska's land, water, and wildlife for over ten thousands years. Their intimate knowledge of, and connection to, the land and its animals continues to inspire us in our professional and personal lives. Please take a moment to acknowledge the Native tribes in your area.



Alaska Native Language Center and Institute of Social and Economic Research, based on maps by Micheal E. Krauss.

Denali Panorama (Jeff Wagner)

Code of Conduct

The Alaska Chapter of The Wildlife Society annual meeting provides opportunities for education, exchange of ideas, mentoring, networking with fellow wildlifers, and engagement with colleagues. Our hope is that each attendee will benefit from their participation during the conference. Even as we recognize the importance of and strive for diversity in our natural world, we acknowledge the contribution of individual diversity to our profession. As stated in TWS's long-standing Position Statement on Workforce Diversity in the Wildlife Profession, "The Wildlife Society recognizes the value of including the richness of human diversity in our efforts to discover, educate, inform policy, and involve the public in wildlife science and management."

In this light and with the goal of ensuring that our conference is welcoming and inclusive for all, we expect attendees to abide by the following code of conduct:

- All participants should be treated with respect and consideration, valuing the diversity of views and opinions that may be different than those you hold.
- Communicate with respect for others; critique ideas rather than individuals.
- Avoid personal attacks directed towards conference participants.
- Professionalism should be exercised at all times.

The following are examples of behavior that will not be tolerated at the annual conference, including oral and poster sessions and other organized meetings whether at the conference center or off-site:

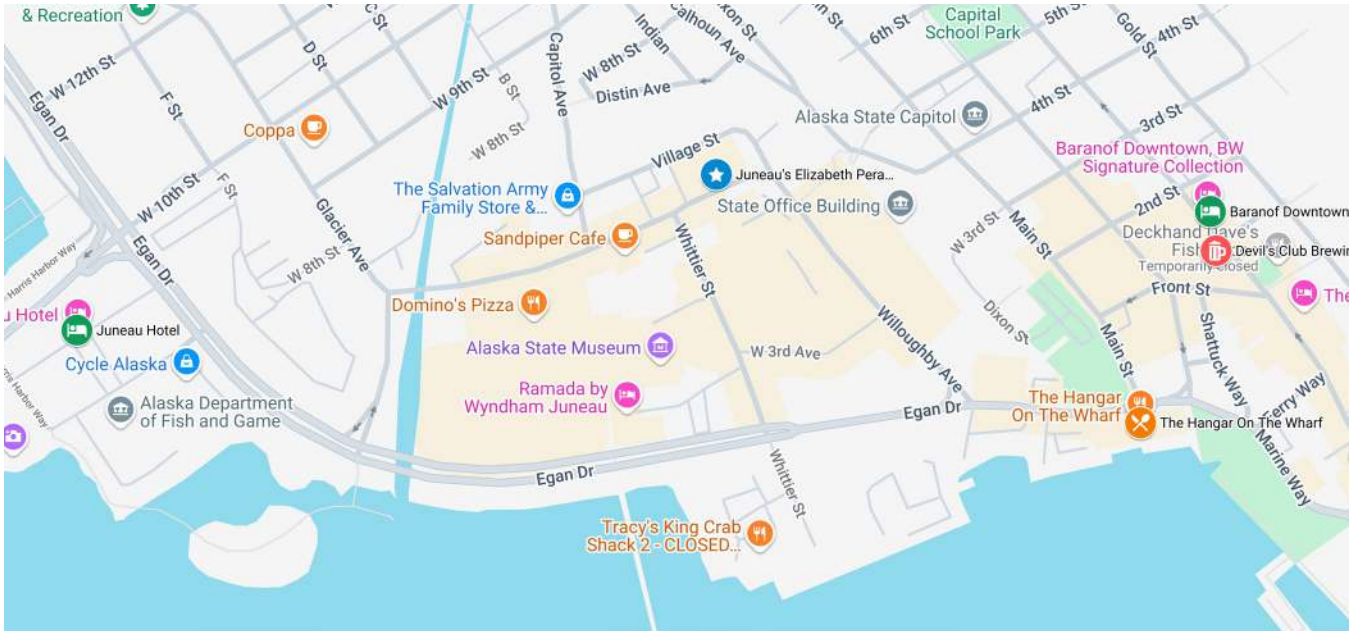
- Harassment, threats, intimidation, or discrimination of any kind or in any form, in-person or on social media platforms.
- Physical, verbal, or non-verbal abuse.
- Inappropriate comments related to gender, sexual orientation, disability, physical appearance, race, religion, or national origin.
- Conduct of a stalking or threatening nature.
- Disruption of talks, presentations, or other activities organized by AK-TWS.
- Unlawful conduct or activity of any kind.

If you are the subject of or witness conduct in violation of these guidelines, please notify an AK-TWS board member. Anyone experiencing or witnessing behavior that constitutes an immediate or serious threat to public safety during the meeting is advised to dial 911.

AK-TWS reserves the right, in their sole and reasonable discretion, to have individuals acting in anunprofessional manner or contrary to these guidelines removed from the conference or any meeting or event taking place at the conference and the right to prohibit attendance at any future meeting.

We appreciate your attention to these guidelines and wish you a productive and meaningful conference!

Venue Information



Juneau's Elizabeth Peratrovich Hall

Meeting Sessions
Wednesday & Thursday, April 2-3: 8:30am - 3:15pm
Friday, April 4: 8:30am - 4:15pm

The Hangar On The Wharf

Genetics 101 Workshop
Tuesday, April 1: 9am - 5pm

Opening Student/Professional Mixer
Tuesday, April 1: 6pm - 9pm

Banquet and Awards Ceremony
Thursday, April 3: 6pm - 10pm

Devil's Club Brewing Company

"Unofficial" Social Event
Wednesday, April 2: 6pm

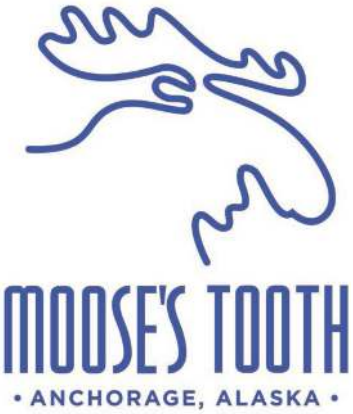
Lodging Options

Baranof Downtown

Juneau Hotel

We would like to thank the following organizations for their contributions. Your support ensures the continued success of the Alaska Chapter of The Wildlife Society and Annual Meeting.

Sponsors



Conference-at-a-Glance

Tuesday, April 1, 2025		
8:30 am - 4:00 pm	Alaska Ocean Boating for Novices Workshop Two sessions: Session 1 8:30am - 12pm, Session 2 12pm - 3:30/4pm	
9:00 am - 5:00 pm	Genetics 101 Workshop - The Hangar Ballroom	
6:00 pm - 9:00 pm	Opening Student-Professional Mixer - The Hangar Ballroom	
Wednesday, April 2, 2025		
9:00am	Welcome and Opening Remarks	
9:05 am	Keynote Session	Mike Taras (Alaska Department of Fish and Game)
9:50 am		Sarah Markegard (U.S. Fish and Wildlife Service)
10:25 am		Chuck Smythe (Sealaska Heritage Institute)
11:00 am	Break	
11:15 am	Member Listening Session	Open townhall-style forum beginning with updates from National TWS followed by questions from members.
12:15 pm	Lunch	
1:30 pm	Business Meeting	Updates from Executive Board, Active Committees, and Working Groups
3:00 pm	Wrap-up and Announcements	
6:00 pm	"Unofficial" Social Event at Devil's Club Brewing	
Thursday, April 3, 2025		
8:30 am	Welcome and Opening Remarks	
8:40 am	Session 1: Wildlife Disease and Health Impacts	K. Beckmen - Neosporosis, an emerging parasitic threat to free-ranging caribou?
9:00 am		G. Roffler - Switching to marine prey leads to unprecedented mercury concentrations in a population of coastal Alaska wolves
9:20 am		K. Denryter - Disentangling the roles of nutrition, brucellosis, and their interactions on reproductive performance and demography of the Mulchatna Caribou Herd
9:40 am		S. Crawford - Seabird mercury concentrations in context of large-scale mortality events during the breeding season within the Bering sea and Aleutian islands (2009-2023)
10:00 am		J. Cornish - Identifying Proximate and Ultimate Causes of Neonatal Mortality in Nelchina Caribou
10:20 am	Break	
10:40 am	Session 2: Human-Wildlife Interactions and Conservation	J. Keating - Elevating Traditional Knowledge in the Regulatory Process: A Case Study from the Copper River Basin
11:00 am		B. Wold - Juneau Cares About Bears: Trash, Conflict, and Community Solutions
11:20 am		J. Reimer - Population structure and geneflow of little brown bats throughout Alaska
11:40 am		K. Blejwas - Fall and Spring Roosting Ecology of Little Brown Bats
12:00 pm		E. Stacy - Trapper Knowledge Informs Wolverine Landscape Genetics

Thursday, April 3, 2025 (cont.)		
12:20 pm	Lunch	
1:30 pm	Quiz Bowl	Hosted by the UAF Student Chapter. Prizes for the winning team!
3:00 pm	Wrap-up and Announcements	
6:00 pm - 10:00 pm	Banquet and Awards Ceremony	Speaker: Riley Woodford, ADFG
Friday, April 4, 2025		
8:30 am	Welcome and Opening Remarks	
8:40 am	Session 3: Population Ecology and Movement	A. Prichard - Using Hidden Markov Models to Identify Caribou Behaviors from GPS Data Within a Northern Alaska Oilfield 2014–2024
9:00 am		B. Sullender - Temperatures drive mid-winter activity patterns and habitat trade-offs across moose latitudinal range
9:20 am		F. Rosenbower - Bull Moose Seasonal Distribution: Are hunters and biologists seeing the same moose?
9:40 am		B. Wendling - A Comparative Study of Dall's Sheep Ecology in Hunted and Unhunted Populations
10:00 am		T. Lewis - Wolves as Indicator Species in Rapidly Changing Glacier Bay
10:20 am	Break	
10:40 am	Session 4: Novel Monitoring Methods	A. Lewis - Validating wolf detection at hair traps using trail cameras
11:00 am		M. Connor - Exploring novel methodologies to study a highly sensitive species: Small drones and spotted seals
11:20 am		A. Crupi - Hair snares improve brown bear density and abundance estimation in Southeast Alaska
11:40 am		T. Hasbrouck - Integrated spatial capture-recapture approach to estimate abundance of Sitka black-tailed deer
12:00 pm		M. Plichta - Listening to the Arctic: A Four-Year Study of Soundscapes in Northern Alaska
12:20 pm	Lunch	
1:30 pm	Session 5: Habitats	T. Brinkman - Effects of Forest Thinning on Deer Abundance in Southeast Alaska
1:50 pm		T. Levi - Using DNA metabarcoding to explore the effects of precommercial thinning on deer forage in the Tongass National Forest
2:10 pm		K. Titus - Status Update – Tongass National Forest Plan Revision
2:30 pm		A. Reinking - Does Modeled Snow Data for Wildlife Applications Represent Reality?
2:50 pm		W. Hein - Improving predictions of insect harassment for barren-ground caribou in the Arctic
3:10 pm	Poster Session	
4:10 pm	Wrap-up, Presentation and Art Contest Awards, and Final Announcements	

AK-TWS Swag Alert!

Support the Chapter by visiting our Swag Booth. Take home one of these awesome hats (assorted colors) or a keychain!

Or, visit our Swag Swap Table!

Bring your old TWS Meeting coffee mugs, shirts, binders etc., and score vintage swag or send your old gear to a new home instead of the thrift store or landfill!

Also, stay tuned for some swag raffles throughout the week!

TWS Alaska Chapter Art Contest 2025

Categories:

- **Submit online at this link**
- **Submit in-person at the AK TWS Conference**

First prize in each category: $150 and a TWS hat

There will be separate voting and prizes for the online and in-person submissions

Tuesday, April 1

8:30 am - 4:00 pm **ALASKA OCEAN BOATING FOR NOVICES WORKSHOP**
Kim Titus (ADFG, ret.) - Two sessions: **Session 1** 8:30am - 12pm, **Session 2** 12pm - 3:30/4pm

9:00 am - 5:00 pm **GENETICS 101 WORKSHOP**
Elise Stacy (University of Idaho)

6:00 pm - 9:00 pm **OPENING STUDENT-PROFESSIONAL MIXER**
The Hangar Ballroom

Wednesday, April 2

Elizabeth Peratrovich Hall

8:30 am REGISTRATION AND CHECK-IN OPEN

9:00 am WELCOME AND OPENING REMARKS
R. Mollnow

9:05 am - 11:00 am **KEYNOTE SESSION: AMPLIFYING SCIENCE THROUGH COMMUNICATION**
R. Mollnow, Moderator

9:05 SILVER BULLETS AND CRAP! DESIGN PRINCIPLES AND MULTIPLE MEDIA STRATEGIES FOR SUCCESSFUL SCIENCE COMMUNICATION
Mike Taras (ADFG)

9:50 APPLICATION OF INDIGENOUS KNOWLEDGE FOR THE ALEXANDER ARCHIPELAGO WOLF SPECIES STATUS ASSESSMENT
Sarah Markegard (USFWS)

10:25 THE CULTURAL CONTEXT AND INDIGENOUS KNOWLEDGE ASSOCIATED WITH THE ALEXANDER ARCHIPELAGO WOLF
Chuck Smythe (Sealaska Heritage Institute)

11:00 BREAK

11:15 am - 12:15 pm **MEMBER LISTENING SESSION**

11:15 UPDATES FROM NATIONAL
Kelly O'Connor (TWS Conservation Policy Manager)

11:30 QUESTIONS AND DISCUSSION

12:15 LUNCH

1:30 pm - 3:00 pm **BUSINESS MEETING**

** denotes student*
+ denotes virtual presentation

Wednesday, April 2 (continued)

1:30 UPDATES FROM THE EXECUTIVE BOARD

2:00 UPDATES FROM THE CONSERVATION AFFAIRS COMMITTEE

2:30 MEMBER INPUT AND DISCUSSION

3:00 WRAP-UP AND ANNOUNCEMENTS
R. Mollnow

6:00 pm **"UNOFFICIAL" SOCIAL EVENT**
Devil's Club Brewing

Thursday, April 3
Elizabeth Peratrovich Hall

8:30 am WELCOME AND OPENING REMARKS
R. Mollnow

8:40 am - 10:20 am **SESSION 1: WILDLIFE DISEASE AND HEALTH IMPACTS**
A. Lewis, Moderator

8:40 NEOSPOROSIS, AN EMERGING PARASITIC THREAT TO FREE-RANGING CARIBOU?
K. Beckmen

9:00 SWITCHING TO MARINE PREY LEADS TO UNPRECEDENTED MERCURY CONCENTRATIONS IN A POPULATION OF COASTAL ALASKA WOLVES
G. Roffler

9:20 DISENTANGLING THE ROLES OF NUTRITION, BRUCELLOSIS, AND THEIR INTERACTIONS ON REPRODUCTIVE PERFORMANCE AND DEMOGRAPHY OF THE MULCHATNA CARIBOU HERD
K. Denryter

9:40 SEABIRD MERCURY CONCENTRATIONS IN CONTEXT OF LARGE-SCALE MORTALITY EVENTS DURING THE BREEDING SEASON WITHIN THE BERING SEA AND ALEUTIAN ISLANDS (2009-2023)
S. Crawford[+]

10:00 IDENTIFYING PROXIMATE AND ULTIMATE CAUSES OF NEONATAL MORTALITY IN NELCHINA CARIBOU
J. Cornish

10:20 BREAK

** denotes student*
[+] denotes virtual presentation

Thursday, April 3 (continued)

10:40 am - 12:20 pm **SESSION 2: HUMAN-WILDLIFE INTERACTIONS AND CONSERVATION**
G. Roffler, Moderator

10:40 ELEVATING TRADITIONAL KNOWLEDGE IN THE REGULATORY PROCESS: A CASE STUDY FROM THE COPPER RIVER BASIN
J. Keating

11:00 JUNEAU CARES ABOUT BEARS: TRASH, CONFLICT, AND COMMUNITY SOLUTIONS
B. Wold*

11:20 POPULATION STRUCTURE AND GENEFLOW OF LITTLE BROWN BATS THROUGHOUT ALASKA
J. Reimer

11:40 FALL AND SPRING ROOSTING ECOLOGY OF LITTLE BROWN BATS
K. Blejwas

12:00 TRAPPER KNOWLEDGE INFORMS WOLVERINE LANDSCAPE GENETICS
E. Stacy

12:20 LUNCH

1:30 pm - 3:00 pm **QUIZ BOWL**
Hosted by the UAF Student Chapter

3:00 WRAP-UP AND ANNOUNCEMENTS
R. Mollnow

6:00 pm - 10:00 pm **BANQUET AND AWARDS CEREMONY -** The Hangar Ballroom
Speaker: Riley Woodford (ADFG)

Friday, April 4

Elizabeth Peratrovich Hall

8:30 am WELCOME AND OPENING REMARKS
R. Mollnow

8:40 am - 10:20 am **SESSION 3: POPULATION AND MOVEMENT ECOLOGY**
A. Crupi, Moderator

8:40 USING HIDDEN MARKOV MODELS TO IDENTIFY CARIBOU BEHAVIORS FROM GPS DATA WITHIN A NORTHERN ALASKA OILFIELD 2014–2024
A. Prichard

** denotes student*
+ denotes virtual presentation

Friday, April 4 (continued)

9:00 TEMPERATURES DRIVE MID-WINTER ACTIVITY PATTERNS AND HABITAT TRADE-OFFS ACROSS MOOSE LATITUDINAL RANGE
B. Sullender*

9:20 BULL MOOSE SEASONAL DISTRIBUTION: ARE HUNTERS AND BIOLOGISTS SEEING THE SAME MOOSE?
F. Rosenbower*

9:40 A COMPARATIVE STUDY OF DALL'S SHEEP ECOLOGY IN HUNTED AND UNHUNTED POPULATIONS
B. Wendling

10:00 WOLVES AS INDICATOR SPECIES IN RAPIDLY CHANGING GLACIER BAY
T. Lewis

10:20 BREAK

10:40 am - 12:20 pm **SESSION 4: NOVEL MONITORING METHODS**
N. Svoboda, Moderator

10:40 VALIDATING WOLF DETECTION AT HAIR TRAPS USING TRAIL CAMERAS
A. Lewis

11:00 EXPLORING NOVEL METHODOLOGIES TO STUDY A HIGHLY SENSITIVE SPECIES: SMALL DRONES AND SPOTTED SEALS
M. Connor*

11:20 HAIR SNARES IMPROVE BROWN BEAR DENSITY AND ABUNDANCE ESTIMATION IN SOUTHEAST ALASKA
A. Crupi

11:40 INTEGRATED SPATIAL CAPTURE-RECAPTURE APPROACH TO ESTIMATE ABUNDANCE OF SITKA BLACK-TAILED DEER
T. Hasbrouck

12:00 LISTENING TO THE ARCTIC: A FOUR-YEAR STUDY OF SOUNDSCAPES IN NORTHERN ALASKA
M. Plichta*

12:20 LUNCH

** denotes student*
⁺ denotes virtual presentation

Friday, April 4 (continued)

1:30 pm - 3:10 pm **SESSION 5: HABITATS**
T. Hasbrouck, Moderator

1:30 EFFECTS OF FOREST THINNING ON DEER ABUNDANCE IN SOUTHEAST ALASKA
T. Brinkman

1:50 USING DNA METABARCODING TO EXPLORE THE EFFECTS OF PRECOMMERCIAL THINNING ON DEER FORAGE IN THE TONGASS NATIONAL FOREST
T. Levi*

2:10 STATUS UPDATE – TONGASS NATIONAL FOREST PLAN REVISION
K. Titus

2:30 DOES MODELED SNOW DATA FOR WILDLIFE APPLICATIONS REPRESENT REALITY?
A. Reinking

2:50 IMPROVING PREDICTIONS OF INSECT HARASSMENT FOR BARREN-GROUND CARIBOU IN THE ARCTIC
W. Hein*+

3:10 pm - 4:10 pm **POSTER SESSION**
E. Candler, Moderator

POSTERS

PASSIVE SURVEILLANCE FOR HPAI AMONG FREE-RANGING ALASKA WILD MAMMALS 2022-JANUARY 2025
K. Beckmen

PHYSIOLOGICAL INDICATORS OF CARIBOU CALF HEALTH AND COMPENSATORY RESPONSES TO PHYSIOLOGICAL PERTURBATIONS
J. Pryor

EXTRACTING ANCIENT DNA FROM THE NORTH SLOPE
B. Smith*

UNDERSTANDING SPILLOVER OF SARS-COV-2 AND H5N1 BETWEEN HUMAN AND WILDLIFE POPULATIONS
S. George-Nichol*

WILDLIFE STUDIES ON THE TONGASS NATIONAL FOREST CHALLENGE ESSENTIAL ASSUMPTIONS OF ITS WILDLIFE CONSERVATION STRATEGY
W. Smith

TIMING OF MOOSE ANTLER CASTING IN INTERIOR ALASKA
G. Frye

** denotes student*
+ denotes virtual presentation

Friday, April 4 (continued)

POSTERS

ASSESSING THE INFLUENCE OF ANTHROPOGENIC DISTURBANCE ON CARIBOU RESPONSES TO CAMERA TRAPS IN ALASKA'S ARCTIC COASTAL PLAIN
L. Vann*

VULNERABILITY OF DALL SHEEP TO AVALANCHES IN SOUTHCENTRAL, ALASKA
H. Thamm*

DNA SEQUENCING OF HOARY MARMOT (MARMOTA CALIGATA) STOMACH CONTENTS THROUGH METABARCODING
M. Casner* and D. Casner*

ENHANCED RABIES SURVEILLANCE OF WILDLIFE: INSIGHTS INTO RESERVOIR DYNAMICS, OUTBREAKS AND SPILL OVER EVENTS IN ALASKA
C. Duncan

SPY IN THE SKY: APPLICATION OF THERMAL DRONES TO ASSIST WITH GROUND DARTING WILDLIFE
S. Rauchenstein

TEAMING UP: WILDLIFE AND EDUCATION PROFESSIONALS CAN WORK TOGETHER TO BE MORE EFFECTIVE COMMUNICATORS
A. McAllister

PACIFIC BLACK BRANT GOOSE GRAZING LAWNS AND THEIR TAXONOMIC AFFINITY
D. Wolf

EXPLORING HOW CHANGING SALMON AVAILABILITY IS AFFECTING FOOD SECURITY IN UPPER COPPER RIVER COMMUNITIES
S. Iverson*

4:10 WRAP-UP, PRESENTATION AND ART CONTEST AWARDS, AND ANNOUNCEMENTS
R. Mollnow

ALASKA CHAPTER OF THE WILDLIFE SOCIETY
2025 ANNUAL MEETING
WORKSHOPS

Genetics 101: Conservation Genetics Methods and Applications
April 1st 9 am - 5 pm
The Hangar Ballroom
Instructor: Elise Stacy, Ph.D. (University of Idaho)

This full-day workshop will introduce participants to methods applied in conservation genetics, covering introductory topics in the morning session followed by analysis in R in the afternoon. Participants have the option to attend the morning only; however, afternoon attendees must attend the morning session. Selected topics include*:

- Population genetics theory
- Types of genetic markers and their uses
- DNA Barcoding
- Analyses of population structure
- Metrics of genetic diversity
- Genetic differentiation, genetic distance, and isolation by distance

* The material in this workshop will be geared toward undergraduate and graduate students, as well as professionals, who have limited exposure to population genetics and want to learn about common methods used in conservation genetics. Participants should have prior coursework in statistics and some experience using R.

Alaska Ocean Boating for Novices – Big Tides, Cold Water and Be Aware
April 1st, 8:30am - 3:30/4pm
Two sessions: **Session 1** 8:30am - 12pm, **Session 2** 12pm - 3:30/4pm
Statter Harbor, Auke Bay
Instructor: Kim Titus (ADFG, Ret.)

This half-day hands-on workshop will cover the fundamentals of boating in Alaska from cold-water safety to boat trailering/launching to operation and navigation. Participants will learn the basics of safe boating and assisting with boat launching and preparation at Statter Harbor (Auke Bay), followed by 3-4 hours on the water. This workshop is weather dependent and limited to 10 participants due to space limitations. There will be two sessions: Morning (8:30am - 12pm) and Afternoon (12pm - 3:30/4pm). Pre-registration required.

KEYNOTE SPEAKERS

MIKE TARAS

Silver Bullets And Crap! Design Principles And Multiple Media Strategies For Successful Science Communication

Mike Taras is a wildlife education and outreach specialist with the Alaska Department of Fish and Game in the Interior and Northeast Alaska region. He has over 20 years of experience communicating natural history, wildlife research, wildlife management, and other complex issues to the public. Mike's presentation on design as a critical factor in communication, as well as the importance of using multiple media for successful communication of wildlife management and research (science).

SARAH MARKEGARD

Application of Indigenous Knowledge for the Alexander Archipelago Wolf Species Status Assessment

Sarah Markegard is a Biologist with the U.S. Fish and Wildlife Service based out of Anchorage. In her work, she provides technical assistance on projects that impact wildlife and their habitats and she also works with partners to develop and implement proactive conservation projects across southern Alaska. Sarah holds a B.S. degree in Ecology, Evolution, and Behavior from the University of Minnesota and a M.S. degree in Resource Conservation from the University of Montana. When she isn't at work protecting nature, you can find her exploring it with her husband and 11 month old son.

CHUCK SMYTHE, Ph.D.

The Cultural Context And Indigenous Knowledge Associated With The Alexander Archipelago Wolf

Dr. Chuck Smythe is the Senior Ethnologist at Sealaska Heritage Institute in Juneau. He develops and manages research projects related to Tlingit, Haida and Tsimshian culture, history, Indigenous knowledge, and cultural landscapes in Southeast Alaska. Current projects include a study of Alaska Native sea otter harvesting in Sitka Sound and the Tlingit history of Sitka up to 1867 from an Indigenous perspective. He has served as an anthropologist for the National Park Service and the Smithsonian Institution, and as an independent research anthropologist for state and federal agencies in Alaska.

RILEY WOODFORD

Sounds Wild! Science, Wildlife And Nature On The Air In Alaska: Connecting With People

Riley Woodford produces the Sounds Wild! radio program and the Alaska Fish and Wildlife News online magazine for the Alaska Department of Fish and Game. Drawing on decades of experience as a biologist, teacher, reporter and producer, he's gained insights into connecting with listeners and readers. "People love wildlife and we have their natural curiosity on our side. But we can lose that engagement through common missteps and oversights. I'll share some things I've learned that can help."

ABSTRACTS

Wednesday, April 2

KEYNOTE SESSION: AMPLIFYING SCIENCE THROUGH COMMUNICATION (9:05 AM - 11:00 AM)

Session Moderator: Ryan Mollnow

9:05 am

SILVER BULLETS AND CRAP! DESIGN PRINCIPLES AND MULTIPLE MEDIA STRATEGIES FOR SUCCESSFUL SCIENCE COMMUNICATION

Mike Taras

Alaska Department of Fish and Game, Fairbanks, AK. Contact: mike.taras@alaska.gov

Abstract: Design is about making communication as clear and effortless as possible for the viewer. By understanding and applying basic design principles, you can effectively convey information across various media to diverse audiences. However, successful design is only part of the communication challenge. With people's time in high demand and multiple platforms competing for attention, reaching your audience requires strategic choices. Depending on the audience, your communication may need to balance both print and digital formats. To maximize your impact, explore available communication tools, identify the most suitable media for your needs, and integrate different strategies to convey scientific information effectively.

9:50 am

APPLICATION OF INDIGENOUS KNOWLEDGE FOR THE ALEXANDER ARCHIPELAGO WOLF SPECIES STATUS ASSESSMENT

Sarah Markegard

U.S. Fish and Wildlife Service, Ecological Services, Anchorage, AK. Contact: sarah_markegard@fws.gov

Abstract: This presentation will provide an overview of the purposeful effort taken to gather and apply Indigenous Knowledge (IK) for the Alexander Archipelago Wolf (Canis lupus ligoni) Species Status Assessment (SSA), in response to a petition submitted to the U.S. Fish and Wildlife Service to list the subspecies under the Endangered Species Act. In this presentation, I hope to convey: 1) the importance of considering IK alongside Western science when conducting environmental assessments and making regulatory decisions, 2) how to meaningfully design and carry out an IK study in the context of an SSA (understanding the various constraints that may occur), and 3) the challenges, successes, and lessons learned throughout the process.

Red-necked phalarope (Jeff Wagner)

** denotes student*
⁺ denotes virtual presentation

10:25 am

THE CULTURAL CONTEXT AND INDIGENOUS KNOWLEDGE ASSOCIATED WITH THE ALEXANDER ARCHIPELAGO WOLF

Chuck Smythe

Sealaska Heritage Institute, Juneau, AK . Contact: chuck.smythe@sealaska.com

Abstract: This presentation will discuss certain aspects of the role of Sealaska Heritage Institute in producing and protecting the traditional ecological knowledge of Southeast Alaska Natives about the Alexander Archipelago Wolf. After discussing the deep cultural significance of Wolf in Tlingit culture and practice, the presenation will describe some of the salient findings of the community-based ethnographic research relating to wolf packs and pack size in various zones of Southeast; pack movements and circuits; denning behavior; interactions with the Yukon wolf; and quantitative information that was integrated into the population models used in the SSA. It will also discuss the key cultural orientation and value revealed through the co-existence of wolves, deer and humans known as Wooch Yáx̲ (Balance).

Thursday, April 3

SESSION 1: WILDLIFE DISEASE AND HEALTH IMPACTS (8:40 AM - 10:20 AM)

Session Moderator: Alex Lewis

8:40 am

NEOSPOROSIS, AN EMERGING PARASITIC THREAT TO FREE-RANGING CARIBOU?

Kimberlee Beckman[1], Camilla Lieska[1]

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

Abstract: Neospora caninum is the major cause of reproductive loss in cattle and has been shown to cause clinical disease in cervids. The importance of Neospora caninum-associated disease in wildlife (such as caribou) has not been determined, but it is a potential concern as a source of reproductive failure. ADF&G surveillance data (samples collected 1994-2007) found low seropositivity (10-20% seropositive with no difference in age groups) in the Western Arctic (WAH) and Porcupine herds and 0-30% seropositivity in all Alaska caribou herds. However, during the June 2024 routine health assessment of blood sampled from the Central Arctic caribou herd (CAH) a much higher than expected percentage caribou >2 years old were found to have antibody titers against Neospora caninum. Due to the potential for negative effects on reproductive success and population recruitment in caribou, and to help assess if this potential change in exposure to Neospora contributed to the decline in the CAH population that started in 2010, we analyzed archived serum from 2008 and 2017 (when the population was at its lowest point). We found that for both years 80-90% of the caribou over 1 year-old had titers to Neospora, while only 16-22% of the caribou under a year had titers for Neospora. The significantly higher seropositivity in the older animals is consistent with a horizontal exposure (ingestion of oocytes from contaminated forage/water). The number of detections in adults in 2024 was lower than in 2008 and 2017, but the difference was not significant (p=0.22). We did not identify a time period for the CAH when exposure to Neospora was closer to historic levels in other arctic caribou herds (0-20%). We are continuing to analyze archived and current caribou sera from both arctic and interior caribou herds to better understand the potential impacts of Neospora on caribou.

** denotes student*
+ denotes virtual presentation

9:00 am

SWITCHING TO MARINE PREY LEADS TO UNPRECEDENTED MERCURY CONCENTRATIONS IN A POPULATION OF COASTAL ALASKA WOLVES

Gretchen H. Roffler[1], Angela Gastaldi[2], Camilla Lieske[3], Kimberlee Beckmen[3], J. Margaret Castellini[2], Benjamin D. Barst[4]

[1]*Alaska Department of Fish and Game, Division of Wildlife Conservation, Douglas, AK 99824, USA*
[2]*Water and Environmental Research Center, University of Alaska Fairbanks, Fairbanks, AK, 99775, USA*
[3]*Alaska Department of Fish and Game, Division of Wildlife Conservation, Fairbanks, AK 99701, USA*
[4]*Department of Earth, Energy, and Environment and Department of Biological Sciences, University of Calgary, Calgary, Alberta*
Contact: gretchen.roffler@alaska.gov

Abstract: Methylmercury (MeHg) bioaccumulates in organisms and biomagnifies in food webs, resulting in elevated concentrations in tissues of apex predators that may negatively impact health. As MeHg is mainly produced by aquatic microbes, predators feeding in aquatic food webs tend to have higher mercury (Hg) concentrations in their tissues than those feeding in terrestrial food webs. In a region of coastal Southeast Alaska, wolves switched from a terrestrial to marine-based diet specializing on recently recovered sea otters. We hypothesized that this prey switch would lead to higher Hg concentrations in wolf tissues. Therefore, we quantified total Hg (THg) concentrations in wolf hair (n = 25) and THg and MeHg in wolf liver (n = 7), muscle (n = 3), kidney (n = 2), and brain (n = 2) tissues from two wolf packs – a marine foraging island pack (located on Pleasant Island), and an adjacent mainland pack (located on the Gustavus Forelands) with a predominantly terrestrial diet. We paired this information with carbon (δ13C) and nitrogen (δ15N) stable isotope analyses of wolves (n = 65) collected from 2000–2023 to determine the proportional contribution of marine subsidies and infer trophic positions of wolves in the two packs. For comparison to wolves with a completely terrestrial prey diet, we quantified THg and MeHg in tissues from Interior Alaska wolves. Liver THg concentrations in the Pleasant Island wolves (mean = 17.59 ppm; range = 0.63–64.30) categorized individuals at 'high risk' and 'severe risk' and were 7 and 278 times higher than other coastal and Interior Alaska wolves, respectively, and 11 to >2,000 times higher than concentrations reported in wolves globally. THg concentrations in wolf hair increased with both δ13C and δ15N indicating that foraging for marine and higher trophic position species exposes wolves to a level of Hg which may have health consequences.

9:20 am

DISENTANGLING THE ROLES OF NUTRITION, BRUCELLOSIS, AND THEIR INTERACTIONS ON REPRODUCTIVE PERFORMANCE AND DEMOGRAPHY OF THE MULCHATNA CARIBOU HERD

Kristin Denryter[1], John Crouse[1], John Landsiedel[1]

[1]*Alaska Department of Fish and Game. Contact: kristin.denryter@alaska.gov*

Abstract: Nutrition, disease (brucellosis), and predation all have been hypothesized as reasons the Mulchatna Caribou Herd (MCH) has not recovered following a precipitous decline. We instituted a longitudinal study on the MCH beginning in 2023, to test hypotheses that nutrition and disease are limiting the recovery of the MCH. We captured Mulchatna caribou in autumn and late winter and estimated their body mass, body fat, and body protein; determined lactation status in autumn and pregnancy status in late winter; collected blood samples for disease surveillance; and fitted pregnant females with vaginal implant transmitters and tracked their calves during parturition. Adult female survival was >90%, with all mortality occurring during summer, and all known mortality due to predation. Caribou maintained or gained body mass, body fat, and body protein overwinter, contrary to our expectations. Caribou had high pregnancy rates (96%), which did not appear to be influenced by nutritional condition or Brucella seropositivity (exposure). All calves (cont.)

that we observed born alive in the spring appeared healthy (i.e., we did not detect any abortions or observe any weak calves) and maternal nutrition influenced calf birthdate and probability that the calf would survive the first two days of life. Maternal seropositivity for brucellosis did not influence probability of: giving birth to a live calf, calf survival during the first two days of life, or recruitment to autumn. Calves in the west had higher survival and recruitment to autumn than calves in the east. Collectively, these results reveal a complex nutritional picture, and suggest that there is little or no association between positive titers for Brucella and concomitant negative effects on pregnancy, fertility, or live birth in Mulchatna caribou.

9:40 am

SEABIRD MERCURY CONCENTRATIONS IN CONTEXT OF LARGE-SCALE MORTALITY EVENTS DURING THE BREEDING SEASON WITHIN THE BERING SEA AND ALEUTIAN ISLANDS (2009-2023)

Stephanie Crawford[+1], Veronica Padula[2], Ben Barst[3], Kristen Gorman[1], Douglas Causey[4]

[1]University of Alaska Faribanks, [2]Aleut Community of St. Paul Tribal Government / Bering Sea Research Center, [3]University of Calgary, and [4]University of Alaska Anchorage. Contact: sgcrawford@alaska.edu

Abstract: In 2015, a large-scale seabird mortality event (SME) occurred during the breeding season, concurrent to a dramatic North Pacific marine heatwave event; this novelly-timed SME has continued annually. As a neurotoxin and endocrine disruptor, mercury has well-documented negative effects upon individual survival and reproduction, motor skills, body condition, and hormones related to migration timing. We describe spatiotemporal variability of total mercury concentration [THg] of 17 seabird species representing ~700 individuals, collected across the Aleutian Archipelago and central Bering Sea between 2009–2023 using achival, non-SME breast muscle. Seabird muscle [THg] observations ranged between 0.02–23.28 PPM dry weight. The highest median [THg] observed were in Pelagic and Red-Faced Cormorants, pelagic piscivores foraging to depths of 100 m (2.23–2.73 PPM). Pigeon Guillemots and Black-legged Kittiwakes, species that are shallow divers or surface feeders, respectively, and consume significant proportions of invertebrates, had the next highest [THg] medians (1.24–1.41 PPM). Interestingly, Ancient Murrelets (0.97 PPM; plantivorous crustaceans/larval fish diet) and Northern Fulmars (0.91 PPM; fish/squid/zooplankton/offal diet) had similar median [THg]. Planktivorous auklets had the lowest median [THg] (0.13–0.21 PPM). The Near and Rat Aleutian Island groups had the highest median [THg] in 12 of 17 study species, spatially consistent with findings for sympatric pinniped and fish species. Temporal comparisons at the Rat Islands demonstrated that Common Murres, Thick-billed Murres, Black-legged Kittiwake, Crested Auklets, and Least Auklets had higher median [THg] post-SME onset (doubling in some cases), also consistent with patterns observed in Steller sea lion pups over the same time period. Evaluating spatiotemporal differences in seabird mercury concentrations is important to our understanding of the variability in trophic transfer of mercury as species respond to prey distribution/type changes. Further, as some seabird populations have significantly declined and experienced subsequent poor reproductive success, monitoring mercury concentrations remains of utmost importance to seabird conservation.

American Robin (Jared Hughey/NPS)

** denotes student*
[+] denotes virtual presentation

10:00 am

IDENTIFYING PROXIMATE AND ULTIMATE CAUSES OF NEONATAL MORTALITY IN NELCHINA CARIBOU

Jack Cornish[1], Heidi Hatcher[1]

[1]Alaska Department of Fish and Game, Glennallen, AK. Contact: jack.cornish@alaska.gov

Abstract: The Nelchina caribou herd *(Rangifer tarandus granti)* in southcentral Alaska experienced two calving seasons with high neonatal calf mortality in 2022 and 2023, resulting in record low summer calf-cow ratios. To investigate underlying causes of neonatal mortality, we captured and weighed neonatal calves (n = 31) from May 20–31, 2024. To assess specific causes of neonatal mortality, we deployed very high frequency radio collars on the captured calves (n = 32) during this period. We tracked calf survival with daily flights in fixed-wing aircraft through June 10, investigated mortality events as soon as possible after mortality, and collected carcasses for necropsy when available. For each instance of predation, the most likely predator was assessed based on available evidence. We ran a multivariate Cox regression model on the survival data, with weight and sex of calves as covariates, and set $\alpha = 0.10$ for all tests of significance. The average body masses of neonatal male and female calves were 8.4 ± 0.4 kg (mean ± SE) and 7.6 ± 0.2 kg, respectively. In total, 12 of 32 of collared calves (38%) died between May 22 and June 26, and 6 (19%) of these occurred inside the neonatal period of 15 days after birth. We assigned half of mortalities to winged predators (e.g., golden eagles (Aquila chrysaetos) and half to toothed predators (e.g., brown bears (Ursus arctos) and wolves (Canis lupus)). The Cox regression indicated that males were less likely to survive than females ($P = 0.005$) and lighter calves had a higher risk of mortality ($P = 0.073$). While predation was the primary proximate cause of mortality, nutritional state (as indicated by body mass) predisposed calves to mortality. To better understand the consequences of predation and nutrition to calf mortality, continued investigations into calf mortality are warranted.

SESSION 2: HUMAN-WILDLIFE INTERACTIONS AND CONSERVATION (10:40 AM - 12:20 AM)

Session Moderator: Gretchen Roffler

10:40 am

ELEVATING TRADITIONAL KNOWLEDGE IN THE REGULATORY PROCESS: A CASE STUDY FROM THE COPPER RIVER BASIN

Jacqueline Keating[1], Christian Woodard[1], Barbara Cellarius[2], Amber Cohen[2], David Hooper[3]

[1]ADF&G Division of Subsistence, [2]Wrangell St.-Elias National Park and Preserve, [3]Ahtna Intertribal Resource Commission. Contact: jacqueline.keating@alaska.gov

Abstract: The Copper River Basin is home to the Ahtna Athabascan people who have lived off moose, caribou, salmon, freshwater fish and other wild resources for centuries. As a road connected region, the area has also been heavily utilized by Alaska residents who travel from larger population centers to fish for salmon and hunt moose, caribou, and sheep. To document changes in access to wild foods among Copper Basin communities since the last study over 10 years ago, the Alaska Department of Fish and Game partnered with Wrangell-St. Elias National Park and Preserve and the Ahtna Intertribal Resource Commission from 2022 – 2024. The research team updated comprehensive subsistence harvest surveys in Mentasta Lake and Pass, Chistochina, and Slana/Nabesna, and documented Traditional Knowledge (TK) through ethnographic key respondent interviews. A total of 93 households participated in the survey with an average survey time of 55 minutes, and 15 residents participated in TK interviews. Survey results showed that overall per capita harvests declined significantly since the last study in two of the four communities, while resources substitution between salmon and moose appear to account for the relatively stable per capita harvests in the other two communities. Emergent interview themes included the ongoing importance of sharing wild (cont.)

** denotes student*
+ denotes virtual presentation

foods, effects of environmental conditions on access to salmon, changes in wildlife populations due to increased hunting pressure and access, and local challenges with food security. ADF&G presented TK methods and results at the Alaska Board of Fisheries meeting in December 2024, and the Board of Game meeting in January 2025. This presentation will highlight study findings and discuss processes for elevating TK into the regulatory arena.

11:00 am

JUNEAU CARES ABOUT BEARS: TRASH, CONFLICT, AND COMMUNITY SOLUTIONS

Binta Wold*

University of Alaska Fairbanks. Contact: eawold@alaska.edu

Abstract: A majority of residents report that there are problems between people and bears in Juneau, Alaska. However: There is also broad agreement (86% agree, n=750) that the benefits of living alongside bears in Juneau outweigh the challenges.The biggest problem, according to Juneau residents, is bears getting into trash, with 98% of residents in agreement that this is a problem and 61% agreeing that it is a serious problem. 92% of residents also agree that people getting too close to bears is a problem in Juneau. Other problems identified by a majority of Juneau residents include: Bears getting into compost, bird seed, pet food, or other food attractants in yards; bears acting bold and unafraid of people; people bothering or harassing bears, bears causing property damage, and bears killing poultry. Why are residents concerned about these problems? Many residents are concerned about people's safety around bears (38% concerned for their own safety, 53% concerned for other residents' safety, 64% concerned for tourists' safety), but residents are even more concerned about the wellbeing of bears: 79% of residents are concerned about bears being bothered or harassed, 79% of residents are concerned about bears being killed because of conflicts with people. Conflicts are happening to most people: 59% of Juneau residents have had a bear get into their garbage in Juneau, and 28% of residents have had their property damaged by a bear in Juneau. Factors that are correlated with the likelihood of a bear accessing garbage at someone's' residence in 2023 included: 1). Amount of time that trash was kept outside (or in outdoor trash containers) during the week, 2). Garbage container type, and 3). Housing type. We will explore the relationships between these and other predictive variables, as well as touch on Juneau residents preferences on bear management and solutions.

11:20 am

POPULATION STRUCTURE AND GENEFLOW OF LITTLE BROWN BATS THROUGHOUT ALASKA

Jesika Reimer[1], Sophie Preckler-Quisquater[1], Sarah Markegard[2], Benjamin N. Sacks[1]

[1]University of California Davis, [2] U.S. Fish and Wildlife Service. Contact: jpreimer@ucdavis.edu

Abstract: Little is known about the population structure or connectivity of little brown myotis *(Myotis lucifugus)* across major bioregions in Alaska. In addition, no winter hibernacula have been identified outside of Southeast Alaska, leaving us to question whether bats remain local year-round, or undergo seasonal migration to hibernacula farther south. Despite the large geographic area of Alaska, previous continental-wide genetic studies have typically represented Alaska bats as a single data point limited to Juneau or Anchorage. Therefore, to better understand the fine-scale population structure within Alaska, we used genotyping by sequencing to investigate geneflow across the state. To ensure a wide geographic representation, we analyzed 249 tissue samples collected from 38 maternity colonies and an additional 57 samples archived in the UAF Museum of the North collection. We identified strong population structure within the state consisting of up to five distinct populations corresponding with three geographic regions - Southeast Alaska, Interior Alaska, and Southcentral/Southwest Alaska. Since little brown myotis (cont.)

** denotes student*
⁺ denotes virtual presentation

typically swarm and mate during autumn at their hibernation sites and show high sight fidelity to summer and winter regions, these results suggest that each identified population swarms and hibernates in separate regions and may support the idea that populations are hibernating locally. This new characterization of little brown myotis population structure within Alaska will help inform species management and may provide insight into the potential arrival and spread of white-nose syndrome when it arrives in the state.

11:40 am

FALL AND SPRING ROOSTING ECOLOGY OF LITTLE BROWN BATS

Karen Blejwas[1], Grey Pendleton[1]

[1]*Alaska Department of Fish and Game. Contact: karen.blejwas@alaska.gov*

Abstract: Roosts are a fundamental resource for bats. Most research on roosting ecology has been conducted during summer or winter and very little is known about roosting requirements and behavior during the fall and spring, when bats are transitioning into and out of hibernation. We radiotagged adult little brown myotis during spring (2012-2013) and fall (2011-2014) near Juneau, Alaska to examine roosting behavior and roost selection by sex and season. Bats of both sexes roosted in both buildings and tree roosts; most tree roosts were in snags, but some were in live trees. Bats used almost twice as many natural roosts as building roosts. Spring females used larger diameter trees that were further from neighboring trees than males. In addition, trees in a 20-m radius circular plot surrounding the roost tree were larger diameter and less decayed and the canopy height was higher. Characteristics of fall female roosts were generally intermediate between those of spring females and males. Spring females roosted exclusively in productive forest, whereas fall female and male roosts were more evenly distributed among forest types. Roost fidelity and number of roosts used was similar for males and females during both seasons, but females used a higher proportion of building roosts than males. Bats left their roosts for longer periods of time in spring than fall, but tended to remain in their roosts during severe weather in both seasons. Bats that switched roosts in spring left later in the night than bats that returned to the same roost, but the opposite pattern was observed in the fall. Our results suggest that many aspects of the roosting ecology of little brown myotis differ by season and sex and research on little brown myotis should not be focused solely on females during the maternity season.

12:00 pm

TRAPPER KNOWLEDGE INFORMS WOLVERINE LANDSCAPE GENETICS

Elise Stacy[1]**,** Thomas Jung[2], Martin Robards[3], Lisette Waits[1], Paul Hohenlohe[4]

[1]*University of Idaho Department of Fish and Wildlife Sciences, Moscow, Idaho,* [2]*Yukon Government Department of Environment, Whitehorse, Yukon, Canada,* [3]*Wildlife Conservation Society Arctic Beringia, Fairbanks, Alaska,* [4]*University of Idaho Department of Biological Sciences, Moscow, Idaho. Contact: estacy@uidaho.edu*

Abstract: North American wolverines *(Gulo gulo)* are widely distributed across their northern range and are an important harvested furbearer for artic and subarctic communities. Across their range, wolverines have strong associations with cold, rugged environments and low anthropogenic disturbance. Landscape-genetic relationships have been investigated in the wolverine's southern range and found that higher connectivity is associated with snowy landscapes, rugged terrain, and forested areas, and lower connectivity associated with human disturbance. We are investigating landscape-genetic relationships in the wolverine's northwestern range, where levels of human disturbance are much lower and there is a greater availability of rugged and snowy terrain. We interviewed trappers in interior and northwestern Alaska to better understand the landscape factors influencing wolverine movement and presence and to guide landscape layer selection. Across trapper interviews, drainages, ridgelines, and timberline were discussed as features were wolverine movement and presence were often observed. We genotyped 201 wolverine samples largely collected (cont.)

from harvested individuals across Alaska and the Yukon with restriction-site associated DNA sequencing. We are comparing individual pairwise genetic distance with natural and anthropogenic landscape features in an isolation by resistance framework. We are testing topographic, vegetation, snow, and anthropogenic landscape layers to build a conductance surface for modeling gene flow. Preliminary results show differing connectivity relationships to the southern range, such as terrain ruggedness being negatively associated with gene flow. Determining the current landscape features associated with connectivity in the wolverine's northwestern range can inform on wolverine population vulnerability to ongoing human development and climate change.

Friday, April 4

SESSION 3: POPULATION AND MOVEMENT ECOLOGY (8:40 AM - 10:20 AM)

Session Moderator: Anthony Crupi

8:40 am

USING HIDDEN MARKOV MODELS TO IDENTIFY CARIBOU BEHAVIORS FROM GPS DATA WITHIN A NORTHERN ALASKA OILFIELD 2014–2024

Alex Prichard[1], Joe Welch[1], Matt Macander[1]

[1]ABR Inc.— Environmental Research & Services. Contact: aprichard@abrinc.com

Abstract: Caribou of the Central Arctic Herd have interacted with oil development on their summer range for over 50 years, therefore research on this herd has provided an unprecedented opportunity to examine how human infrastructure may impact caribou distribution and movements as well as the effectiveness of proper oilfield design and mitigation measures. During 2014–2024, GPS collars that recorded locations every 15 minutes while caribou were within 8 km of oilfield roads were deployed on female caribou. These data provided an opportunity to examine caribou movements around infrastructure at a high spatial and temporal resolution. We used Hidden Markov Models to categorize each location into one of three behaviors—resting, feeding/walking, or moving—based on the pattern of step lengths and turn angles. We then examined the distribution of these behaviors relative to landcover class, vegetative biomass (NDVI), topographic position index (TPI), and distance to roads using a multinomial regression. There were large seasonal differences in the results. Caribou rested about 25% of the time during all seasons, but the proportion of time spent moving versus feeding/walking increased dramatically during mid-summer. There was some indication that caribou rested less and for a shorter duration near roads during some seasons, but the changes were generally limited to areas within 500 m of roads. During most seasons, caribou were more likely to rest in areas with high TPI and feed in areas with high NDVI. Caribou exhibited different movement patterns in different landcover classes, but the results varied by season.

Collared pika (Jeff Wagner)

** denotes student*
[+] denotes virtual presentation

9:00 am

TEMPERATURES DRIVE MID-WINTER ACTIVITY PATTERNS AND HABITAT TRADE-OFFS ACROSS MOOSE LATITUDINAL RANGE

Benjamin Sullender*[1], Calum Cunningham[2], Laura Prugh[1]

[1]University of Washington, Seattle, WA, [2]University of Tasmania, Hobart, Australia. Contact: ben.sullender@gmail.com

Abstract: Moose *(Alces alces)* are an exceptionally cold-adapted species and may be vulnerable to overheating at relatively cool temperatures. Moose have two main behavioral strategies for thermal regulation: shifting activity patterns and selecting for habitat that provides thermal refuge. In this study, we tracked these two strategies in relation to temperature for five populations of GPS-collared moose across their latitudinal range. Our objectives were to 1) determine whether elevated winter temperatures alter moose activity patterns; and 2) quantify how temperature shifts moose winter habitat selection. We hypothesized that, at elevated temperatures, moose at the southern edge of their range would become more sedentary and would select more for thermal refuge than foraging habitat, whereas these trends would be imperceptible for northern moose populations. First, we used hidden Markov Models to delineate encamped and exploratory movement stages in relation to time of day and temperature. Next, we used resource selection functions to determine key covariates of encamped locations. Although we cannot use GPS data alone to infer specific moose behaviors such as foraging or bedding down, we can determine how moose respond to changing temperatures by comparing relative selection across a temperature gradient. We found that as air temperatures increased, all moose populations were more likely to abandon directed movements. In addition, the two southernmost moose populations (WY and CO) were more likely to remain relatively stationary as temperatures increased. Habitat selection for these encamped locations was weakly influenced by temperature for the three northern moose populations (Alaska-Old Crow, northern Alberta, and Alberta-British Columbia) and, in line with our predictions, exhibited a tradeoff between foraging and shade at temperatures above -5C. Our results indicate that moose at their southern range edge are likely already responding to mid-winter heat stress by becoming more sedentary and shifting away from high-quality forage towards thermal refugia.

9:20 am

BULL MOOSE SEASONAL DISTRIBUTION: ARE HUNTERS AND BIOLOGISTS SEEING THE SAME MOOSE?

Forrest Rosenbower[1,2], Todd Brinkman[1], Graham Frye[2], Shawn Crimmins[3]

[1]University of Alaska Fairbanks, [2]Alaska Department of Fish and Game, [3]Purdue University, West Lafayette, IN. Contact: farosenbower@alaska.edu

Abstract: Moose *(Alces alces)* play a crucial role in Interior Alaska's cultural, nutritional, economic, and ecological landscape. While much research has focused on female moose ecology, there is a notable gap in our understanding of adult male (bull) moose behavior and distribution. This lack of knowledge weakens our ability to manage these populations with in the principle of sustained yield. Our study seeks to explore this gap by investigating bull moose space use when population surveys are conducted (Nov) by the Alaska Department of Fish and Game (ADF&G) and how it relates to space use during the hunting season (Sept). Specifically, we aimed to address ongoing concerns over perceived discrepancies in distribution between hunting seasons and survey seasons. To achieve our objectives, we are creating one of the largest GPS collar databases to track bull moose (n = 78) locations and movements across three game management units in Interior Alaska. Using traditional Kernel density estimators, we quantified similarity in space use between seasons on an individual and "herd" level. We also explored the extent of space use overlap with areas accessible (near navigable roads and rivers) to hunters. Our findings provide insights for wildlife management by illuminating the seasonal differences in space use of one of the most important species to Alaskans.

9:40 am

A COMPARATIVE STUDY OF DALL'S SHEEP ECOLOGY IN HUNTED AND UNHUNTED POPULATIONS

Brad Wendling[1], Bridget Borg[2], Zackary Delisle[3]

[1]Alaska Department of Fish and Game, Fairbanks, AK, [2]Denali National Park and Preserve, Denali Park, AK, [3]Arctic Inventory and Monitoring Network, Fairbanks, AK. Contact: brad.wendling@alaska.gov

Abstract: Dall's sheep *(Ovis dalli)* are a coveted species that are predominately managed under a full-curl harvest strategy. Recent population declines throughout the state have heightened concerns for long-term conservation of sheep, including: 1) the effectiveness of the full-curl harvest strategy during population lows, and 2) the potential impact of climate change on population dynamics. In 2023, we initiated a landscape-scale comparative study on the population dynamics and demographics of sheep in the Alaska and Brooks Mountain ranges. The experimental design uses National Park Service lands (Gates of the Arctic and Denali National Parks) as unhunted control study areas, and adjacent state managed treatment lands open to the general season hunting (game management units 20A, 24A, 25A). To date, we have deployed 125 GPS collars on rams (~30 each treatment and control areas), and GPS collars on 60 ewes (30 per study area), the latter of which were only deployed in March, 2024 in the Brooks Range. An additional 60 ewes will be collared in the Alaska range in the spring of 2025. During collaring, blood was collected for serology, a comprehensive metabolic panel, and disease screening. GPS collars were programmed to collect hourly locations during the lambing, hunting, and rutting seasons. Although this project is in the initial stages of data collection, we will present preliminary results on survival, health assessment, and pregnancy rates to date.

10:00 am

WOLVES AS INDICATOR SPECIES IN RAPIDLY CHANGING GLACIER BAY

Tania Lewis[1]**,** Ellen Dymit[2], Gretchen Roffler[3]

[1]Glacier Bay National Park and Preserve, Gustavus, AK, [2]Oregon State University, Corvalis, OR, [3]Alaska Department of Fish and Game, Douglas, AK. Contact: tania_lewis@nps.gov

Abstract: Glacier Bay fjord was covered in ice less than 300 years ago and retreating glaciers have since exposed new shoreline habitats that has been colonized by many terrestrial mammals, including wolves. Potential prey species for wolves varies widely across Glacier Bay National Park and Preserve and has changed rapidly over time with habitat succession and recolonization. Sea otters first colonized Glacier Bay in the late 1980's and now 8000 sea otters are found throughout the bay. Sea otter hair was first observed in wolf scat in northern Glacier Bay in 2019 leading to the first comprehensive examination of wolf diet in the park using non-invasive scat sampling and genetic bar coding to identify prey species. From 2022-2024, field crews collected wolf scats from nine shoreline areas of Glacier Bay, Icy Strait and the outer coast representing at least six wolf packs. 213 wolf scats were successfully processed with fecal DNA metabarcoding of the 12S mitochondrial region, which identifies vertebrate prey. We have identified 51 unique vertebrate prey taxa in wolf diet so far. The most frequently detected prey items were sea otter (34.7% of scats), mountain goat (23.9%), moose (23%), tundra vole (13.6%), pink salmon (9.9%), and crescent gunnelfish (6.1%). We have genotyped 59 unique individual wolves including 30 males and 29 females using a panel with 32 SNPs, giving individual and pack-specific diet results. Implications of wolves consuming sea otters, a top marine predator, include bioaccumulation and biomagnification of toxins such as Paralytic Shellfish Toxins (PST) and mercury. Preliminary results of 22 wolf scats show PSTs are present at detectable levels approaching the threshold of human safety. Through analysis of wolf diet via scat, wolves serve as an indicator of available prey species as well as toxins present in a rapidly changing environment.

** denotes student*
⁺ denotes virtual presentation

SESSION 4: NOVEL MONITORING METHODS (10:40 AM - 12:20 AM)

Session Moderator: Nate Svoboda

10:40 am

VALIDATING WOLF DETECTION AT HAIR TRAPS USING TRAIL CAMERAS

Alex Lewis[1,3], Tessa Hasbrouck[2], Megan Ahern[2], Gretchen Roffler[3], Jason Waite[3], Michael Kampnich[4], Ross Dorendorf[2]

[1]Alaska Wildlife Conservation Center, Alaska Department of Fish and Game ([2]Ketchikan, AK, [3]Douglas, AK, [4]Craig, AK). Contact: alex@alaskawildlife.org

Abstract: Estimating wolf *(Canis lupus)* population abundances is an arduous task. The Alaska Department of Fish and Game (ADFG) began a project in 2012 to use non-invasive hair sampling and a spatially-explicit capture-recapture (SECR) model to estimate wolf abundance on northern Prince of Wales Island. From 2021 to 2023, we deployed 60 trail cameras at 30 non-invasive hair sampling sites to monitor the hair traps during the sampling season (September to December). Our objective was to validate the detection probability of wolves at these hair traps and to better inform the management of these wolves. Cameras were set to collect images every 5 minutes and to collect motion-triggered videos. In these videos, we documented wolf behavior, potential pack dynamics, and rough age class estimates. Among all data collection seasons, we recorded 1631 videos of wolves, 981 of those videos documented wolves engaging with the hair traps in some way (e.g. sniffing, rolling, urinating). Of all behaviors, the count of videos that involved wolves rolling on hair traps averaged 8.97%. Through these videos, we observed when several wolves roll in succession, leading to single hair DNA extractions, which are typically less successful in identifying individuals. We also observed exclusion behaviors when a more dominant wolf was protecting a hair trap from a less dominant wolf. Our expectation is to use these videos to gain insight into how biases related to how the nature of a social species can affect the abundance estimate of that species. Specifically, we suspect that the assumption that all wolves are equally likely to roll on a hair trap may not be true, and with these videos, we can gain insight into potential bias.

11:00 am

EXPLORING NOVEL METHODOLOGIES TO STUDY A HIGHLY SENSITIVE SPECIES: SMALL DRONES AND SPOTTED SEALS

Maeghan Connor*[1], Donna Hauser[2], Todd J. Brinkman[1], Andrew Von Duyke[3]

[1]Alaska Human Dimensions of Wildlife Lab, University of Alaska Fairbanks, [2]International Arctic Research Center, University of Alaska Fairbanks, [3]North Slope Borough Department of Wildlife Management Contact: mrconnor@alaska.edu

Abstract: Small, uncrewed aircraft systems (commonly referred to as drones) are becoming an increasingly popular wildlife survey tool. However, reactions to drones vary by species. In this study, we tested the feasibility of using small drones to minimize disturbance to spotted seals *(Phoca largha)* during surveys by quantifying the behavioral response of seals to the presence of a drone at different altitudes. During the summer of 2024, we conducted 45 flights over spotted seal terrestrial haul outs in Dease Inlet, a brackish inlet ~30 miles southeast of Utqiaġvik, Alaska. The average flying altitude that resulted in group flushing (i.e. multiple seals rushing into the water) was 33.9 m (SD=21.1 m), and our predictive models indicated that previous exposure to drone flights best explained variation in flushing altitude, with altitude of flushing decreasing if seals in the same area had been previously sampled. Our findings suggest that drones operated at higher altitudes may be an effective tool for surveying spotted seals with a low probability of disturbance.

11:20 am

HAIR SNARES IMPROVE BROWN BEAR DENSITY AND ABUNDANCE ESTIMATION IN SOUTHEAST ALASKA

Anthony Crupi[1], Jason N. Waite[1], Stephanie K. Sell[1], LaVern R. Beier[1,2], Rod W. Flynn[1,2]

[1]Alaska Department of Fish and Game, Douglas, AK, [2]Retired.
Contact: anthony.crupi@alaska.gov

Abstract: "Estimating brown bear *(Ursus arctos)* population abundance in forested ecosystems presents challenges due to detection difficulties and extensive animal movement. DNA-based mark-recapture, specifically spatially-explicit capture-recapture (SECR), has emerged as the standard for estimating bear population abundance and density, leveraging spatially dependent detection parameters that account for animal movements and imperfect detection. We estimated brown bear density and abundance in two Southeast Alaska study areas: Yakutat (2013) and Northern Lynn Canal (2021). Non-invasive sampling using scent-baited barbed wire corrals, single-catch hair snares, and bear rub trees yielded DNA for individual identification and capture encounter histories. In Yakutat, 849 hair samples identified 152 bears from 389 successful genotypes, with 1-10 recaptures. In Northern Lynn Canal, 1267 samples identified 148 bears from 434 genotypes, with 1-27 repeated detections per individual. SECR models, incorporating GPS radio-collar data as auxiliary information, were developed to estimate density and abundance. Models assessed heterogeneity in trap type, sex, elevation, time, and site-specific behavior, with and without telemetry. Brown bear density was estimated at 98.8 ± 8.2 bears/1,000 km2 in Yakutat (95% CI [84.1–116.2]) and 108.2 ± 10.9 bears/1,000 km2 in Northern Lynn Canal (95% CI [91.0–128.7]). Both populations showed female bias and abundance was estimated at 353.8 ± 29.2 bears in Yakutat (95% CI [300.9–415.8]) and 307.3 bears in Northern Lynn Canal (95% CI [258.4–365.5]). This study demonstrates the effectiveness of integrating hair snare detectors with systematic sampling and enhancing SECR models with telemetry data for precise brown bear population estimates. These results provide vital data for informed management decisions in Southeast Alaska."

11:40 am

INTEGRATED SPATIAL CAPTURE-RECAPTURE APPROACH TO ESTIMATE ABUNDANCE OF SITKA BLACK-TAILED DEER

Tessa Hasbrouck

Alaska Department of Fish and Game, Ketchikan, AK. Contact: tessa.hasbrouck@alaska.gov

Abstract: Sitka black-tailed deer *(Odocoileus hemionus sitkensis)* are one of the most harvested ungulate species in Alaska. Given their importance as a resource, an approach that can estimate composition and population trend would be highly valuable for sustainably managing and monitoring deer. Monitoring deer in Southeast Alaska 's temperate rainforest ecosystem is challenging, and wildlife managers have relied on coarse indices (e.g. hunter harvest, pellet counts, aerial alpine surveys) to track population trends but these methods do not provide information on herd composition, habitat use, or other population dynamics. Researchers have found that noninvasive genetic sampling techniques (fecal DNA; fDNA) are effective at monitoring deer populations in SE. Following an integrated modeling approach established by Furnas et al. 2018, we developed a robust deer assessment project on Mitkof Island. From 2018-present, we collared 52 deer, maintained 88 trail cameras, and collected 1,119 fDNA samples. This data will be used to assess deer density, age and sex composition, habitat use, home range size, and annual survival. Additionally, it will be used to corroborate a simultaneous camera-based project. Results from this research will provide deer managers with deer abundance and trend estimates at an island-wide scale, support future deer abundance estimation in other key areas, and may provide insights into how deer density varies in response to winter weather, changes in hunting season length, and past timber harvest.

** denotes student*
+ denotes virtual presentation

12:00 pm

LISTENING TO THE ARCTIC: A FOUR-YEAR STUDY OF SOUNDSCAPES IN NORTHERN ALASKA

Maxwell Plichta*[1], Todd Brinkman[1], Meghan Perra[2], Enis Çoban[3], Sean Crimmins[4], Alex Prichard[5]

[1]University of Alaska Fairbanks, [2]State University of New York, and [3]City University of New York, [4]Purdue University, [5]ABR, Inc - Environmental Services. Contact: mcplichta@alaska.edu

Abstract: Anthropogenic noise is a pervasive pollutant with well-documented effects on human health, recreation experiences, and wildlife behavior. However, research on Arctic terrestrial soundscapes remains limited. To address this gap, we leveraged four years (2019, 2021–2023) of summer acoustic data collected across ~8000 km^2 of the Arctic Coastal Plain (ACP) in Northern Alaska to establish a baseline of ambient sound conditions in two distinct regions: the Prudhoe Bay Oilfield Complex (PBOC) and the Arctic National Wildlife Refuge (ANWR). Using autonomous recording units and a novel classification model, we analyzed more than 36,000 hours of acoustic data to characterize spatial and temporal soundscape patterns. We found that PBOC exhibited significantly higher ambient sound pressure levels than ANWR (mean hourly SPL: 33.7 dBA vs. 30.4 dBA), with anthropogenic noise present in 13.8% of PBOC recordings compared to only 1.78% in ANWR. ANWR also experienced more periods of silence (56.8% vs. 40.6% at PBOC). Site-level analysis revealed additional dissimilarities between the regions but also highlighted the heterogeneity of the ACP soundscape. Songbird presence, wind speed, anthropogenic noise, and diurnal cyclicity were all highly preserved predictors in our best performing models of amplitude across ANWR and PBOC. Establishing this baseline is critical for assessing future impacts of climate change and industrial expansion on Arctic soundscapes, wildlife, and subsistence users.

SESSION 5: HABITATS
(1:30 PM - 3:10 PM)

Session Moderator: Tessa Hasbrouck

1:30 pm

EFFECTS OF FOREST THINNING ON DEER ABUNDANCE IN SOUTHEAST ALASKA

Todd Brinkman[1], Cade Kellam[1], Tessa Hasbrouck[2], Jason Waite[2], Gwen Quigley[1], Jennifer Adams[3], Lisette Waits[3], Samia Savell[4]

[1]University of Alaska Fairbanks, [2]Alaska Department of Fish and Game, [3]University of Idaho, [4]USDA Natural Resources Conservation Service. Contact: tjbrinkman@alaska.edu

Abstract: Most clearcut logged areas in Southeast Alaska have transitioned into older (>25 years since timber harvest) young-growth forest that is poor habitat for Sitka black-tailed deer *(Odocoileus hemionus sitkensis)*. To promote a future commercial harvest of timber and stimulate growth of understory vegetation, land managers have thinned many young-growth forest stands. How deer respond to forest thinning is unknown. Our goal was to estimate the immediate effects of thinning on abundance of the deer population within a watershed. We conducted our study within the Sulzer Portage area (1,070 acres) on Prince of Wales Island, Alaska. Sulzer was clearcut logged in 1997 and scheduled for thinning during summer of 2019. During spring 2019 (pre-thinning), 2021 (post thinning), and 2023, we sampled deer pellets along transects within Sulzer to extract DNA to identify individual deer. We used DNA-based mark-recapture techniques to estimate deer abundance. We found that deer abundance remained largely unchanged during each sampling occasion post thinning. Our findings suggested that thinning may not displace or have a significant effect on localized deer numbers. However, a spatial analysis of individual deer locations indicated that thinning, and the associated timer slash that was generated from thinning, may alter distribution of deer within the area. Our research provided quantitative estimate on the immediate effects of thinning on deer population dynamics and offers insights on the consequences of availability of deer for hunters.

** denotes student*
+ denotes virtual presentation

1:50 pm

USING DNA METABARCODING TO EXPLORE THE EFFECTS OF PRECOMMERCIAL THINNING ON DEER FORAGE IN THE TONGASS NATIONAL FOREST

Claire Goodfellow[1], Philip Manlick[2], Kristin Denryter[3], **Taal Levi[1]**

[1]Oregon State University, [2]Pacific Northwest Research Station, USDA Forest Service, [3]Alaska Department of Fish and Game. Contact: goodfelc@oregonstate.edu

Abstract: Sitka black-tailed deer *(Odocoileus hemionus sitkensis)* provide a critical food resource for both the local communities and endemic wildlife of Southeast Alaska. However, legacies of commercial logging and subsequent forest succession throughout the region can limit deer forage, and further work is needed to understand the relationship between these habitat changes and the nutritional ecology of Sitka black-tailed deer. Here, we leverage molecular metabarcoding of plant DNA in deer feces to non-invasively characterize seasonal variation in Sitka black-tailed deer diet across Southeast Alaska's Tongass National Forest. We identify 70 unique taxa (per sample mean: 9.01 taxa; range: 1-18 taxa), including 16 species and 10 genera which have not previously been documented in the diets of these animals. We then use paired vegetation data from a 16-year adaptive management experiment, the Tongass-Wide Young Growth Studies (TWYGS) program, to 1) identify the plant species that deer are selecting for and against at these sites, and 2) assess the effects of various precommercial thinning treatments on forage biomass. We find that stands thinned within 35 years of initiation experienced significant increases in the biomass of Sitka black-tailed deer's preferred forage species; in contrast, those thinned >35 years after stand initiation did not show these same gains and instead favored understory communities dominated by plant species that were avoided by deer (i.e., Athyrium filix-femina, Gymnocarpium spp.). By integrating molecular approaches with experimental forest management data, this work advances our understanding of how to effectively manage young-growth forests to support Sitka black-tailed deer populations across Southeast Alaska.

2:10 pm

STATUS UPDATE – TONGASS NATIONAL FOREST PLAN REVISION

Kim Titus

Retired. Contact: ktitus54@gmail.com

Abstract: In 2023 the Tongass National Forest began a lengthy forest plan revision process for the USA's largest national forest. The current Tongass forest plan was finalized in 2016. The current (2016) forest plan relies extensively on the old-growth, riparian, beach buffers and reserve system standards and guidelines (i.e., land use rules) from 1997 to maintain sustainable fish and wildlife habitats. The 1997 forest plan developed a comprehensive conservation strategy that relied on the best available science at the time. That strategy included a significant inter-agency process and a number of on-the-ground data collecting wildlife studies. Extensive work on wolves, deer, brown bears, goshawks, marbled murrelets, flying squirrels and small mammals informed the conservation strategy. Other reviews of the conservation strategy since 1997 have aided the forest planning process but large on-the-ground research has not taken place. Intertwined in the Tongass forest planning process over the past decade is the Roadless Rule that continues to be litigated. In 2024 there was also national old growth planning draft rule to protect all old growth across every national forest. In January 2025 the Forest Service proposed to withdraw the rule. The current Tongass plan revision process is scheduled to take until 2028. I expect big changes to the Tongass forest plan and how the scheduled planning process will move forward.

** denotes student*
⁺ denotes virtual presentation

2:30 pm

DOES MODELED SNOW DATA FOR WILDLIFE APPLICATIONS REPRESENT REALITY?

Adele K. Reinking[1,2], Glen E. Liston[1], Katherine B. Gura[1], Stine Højlund Pedersen[1,3], Kelly Elder[5], Banning Starr[5], Dan McGrath[4], George Wittemyer[2]

Colorado State University, Fort Collins, CO ([1]Cooperative Institute for Research in the Atmosphere, [2]Department of Fish, Wildlife, and Conservation Biology, [4]Department of Geosciences,), [3]Department of Biological Sciences, University of Alaska Anchorage, Anchorage, AK, [5]U.S. Forest Service, Rocky Mountain Research Station, Fort Collins, CO. Contact: adele.reinking@colostate.edu

Abstract: At middle- and high-latitudes, wildlife distribution, behavior, and fitness are closely tied to cold-season conditions. Therefore, it is critical for wildlife researchers and managers to obtain data that properly characterize weather and snow properties across space and time. However, readily available datasets often fail to represent wildlife-relevant variables at appropriate spatiotemporal resolutions. Moreover, such datasets are frequently limited to the conterminous United States and unavailable for the state of Alaska. By merging field-collected and remotely sensed observations with numerical models, we can generate germane cold-season information with the SnowModel suite of modeling tools. SnowModel has been applied across Alaska to address nuanced snow-wildlife interaction questions for caribou, moose, polar bear, bison, ruffed grouse, and multiple species of songbirds and waterfowl. However, there has been no systematic assessment of uncertainty in its outputs. We evaluated SnowModel performance by comparing model outputs with snow observations under different model configurations. Further, we quantified the benefit of integrating ground-based weather and snow measurements to improve model outputs. We used the Fraser Experimental Forest of Colorado as a model system, because of its uniquely high density of weather and snow observations across space and time, allowing an evaluation of model performance relative to measurements. Over this area, we produced SnowModel data at 30-m × 30-m spatial resolutions for 2019–2023, comparing model outputs with observations of five snow variables that are frequently desirable for wildlife projects: (1) snow-onset date, (2) snow depth, (3) snow water equivalent, (4) snow density, and (5) snow-free date. We quantified SnowModel uncertainty, and we offer insight into a gold-standard configuration approach to guide the future implementation of SnowModel in ecology, with relevance for its use in Alaskan snow-wildlife research. Further, we detail preliminary efforts to continue this evaluation in the tundra and boreal snowscapes of Arctic Alaska.

2:50 pm

IMPROVING PREDICTIONS OF INSECT HARASSMENT FOR BARREN-GROUND CARIBOU IN THE ARCTIC

Will Hein*[1], Murray M. Humphries[1], Heather E. Johnson[2], Gabrielle L. Coulombe[3], and Michael J. Suitor[4]

[1]Natural Resource Sciences, Macdonald Campus, McGill University, Ste-Anne-de-Bellevue, QC, Canada, [2]U.S. Geological Survey, Alaska Science Center, Anchorage, AK, [3]Ecosystem and Conservation Sciences, University of Montana, Missoula, MT, [4]Fish and Wildlife, Environment, Yukon Government, Whitehorse, YT, Canada. Contact: william.hein@mail.mcgill.ca

Abstract: Insect harassment is a known driver of recently declining Arctic caribou *(Rangifer tarandus)* behavior and energetics, yet our ability to accurately predict harassment is limited. We investigated the primary insect groups harassing barren-ground caribou, mosquitoes (Diptera: Culicidae) and oestrid flies (Diptera: Oestridae), with the aim of improving predictive capabilities and gaining insight into the response of insect harassment to changing climate conditions. We developed predictive models based on field observations of mosquito harassment across the summer range of the Porcupine Caribou Herd and from detections of oestrid fly presence in videos collected from caribou video collars. We modeled mosquito and oestrid fly harassment relative to a suite of open-access remotely sensed weather, habitat, and (cont.)

** denotes student*
+ denotes virtual presentation

topography-based variables relevant to the insects' biology using a non-linear multivariate modeling approach. Additionally, we hindcasted insect harassment using the top mosquito and oestrid fly harassment from 1950-2024 to investigate how the severity and phenology of insect harassment has changed over time. The top model of mosquito harassment included wind speed, temperature, days since snow melt, precipitation, topographic position, and soil moisture, and the top model of oestrid fly harassment included temperature, cumulative growing degree days, and time of day. Results from hindcasting analysis indicates no significant change in mosquito harassment while oestrid fly harassment intensified and advanced in phenology over the past 75 years. Our modeling results show that the addition of taxon-relevant variables and the use of a non-linear multivariate modeling approach improves predictions of Arctic insect harassment. Our hindcasting results indicate taxon-specific changes in severity and phenology over time. The insect models developed here allow future studies to better predict insect harassment and assess its impact on Arctic ungulates.

Black bear (Jeff Wagner)

Poster Session (Friday, 3:10 pm - 4:10 pm)

PASSIVE SURVEILLANCE FOR HPAI AMONG FREE-RANGING ALASKA WILD MAMMALS 2022- JANUARY 2025

Kimberlee Beckmen

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

Abstract: Passive surveillance by ADF&G detected the first mortalities from Highly Pathogenic Avian Influenza in a black bear in the USA and the first cases in the world in brown bear, arctic fox, polar bear and ermine. Over 400 tissues or swabs from >200 mammals and screened for HPAI via PCR. The detections were 6/173 brain, 6/51 lung, 4/168 nasal swabs, 2/69 rectal swabs, 1/1 liver and 0/26 oral swabs. All detections were in found dead, euthanized with neurologic signs, or presented with encephalitis on histopathology. When multiple samples were tested from a mortality, brain and/or lung was most often positive. H5 was not detected by nasal swabs on 3 of 4 samples or by rectal swabs on 2 of 3 samples that found detections in other tissues. Cervidae were the most live animals tested (143, mainly by nasal swabs) and all non-detects. A state-wide serologic survey conducted separately on 124 sera from bearded seal, black bear, brown bear, Canada lynx, coyote, red fox wolf and wolverine, detected antibodies to HPAI in 33 mammals including 38% (17/45) brown bear, 67% (14/21) red fox and 1 each in lynx and wolf. Our results show that nasal and rectal swabs are of low value in detecting HPAI infections even in infected mammals and thus of no use in screening captured or harvested mammals. Brain and lung should be sampled on post mortem samples from the most susceptible taxa: canids, ursids, mustelids and felids as well as any animal with neurologic or respiratory pathology. Serology demonstrated there is widespread exposure and immune response with surveillance in brown bears, red fox and potentially lynx and wolf but more testing is necessary to understand the distribution and potential threats to wildlife (mammalian and avian), domestic animals and human populations.

** denotes student*
⁺ denotes virtual presentation

PHYSIOLOGICAL INDICATORS OF CARIBOU CALF HEALTH AND COMPENSATORY RESPONSES TO PHYSIOLOGICAL PERTURBATIONS

Jacob Pryor[1], Kristin Denryter[1], Amanda Puype[1]

[1]*Alaska Department of Fish and Game. Contact: jacob.pryor@alaska.gov*

Abstract: Captive husbandry is a cornerstone of modern caribou *(Rangifer tarandus spp.)* conservation (e.g., captive rearing) and research in North America. Husbandry protocols have long emphasized feeding and nutrition programs, but information on health metrics—such as vital signs essential for evaluating animal health—is lacking, especially for young caribou. We recorded vital signs (i.e., body temperature, heart rate, and respiratory rate) of n = 8 hand-reared caribou calves, each day, from 0–23 weeks of age. We used multilevel, mixed-effects regression models to evaluate: (1) how vital signs changed as calves grew and (2) whether calves compensated (as indicated by changes in vital signs) for physiological perturbations (e.g., elevated body temperature). Mean (± SE) heart rate for juvenile caribou in our study was 93 ± 0.7 beats/min, respiratory rate was 22 ± 0.3 breaths/min, and body temperature was 39.0 ± 0.01 °C. Heart rate, respiratory rate, and body temperature decreased as calf age and body mass increased; increasing calf age was a better predictor of decreases in heart rate and respiratory rate, whereas body mass was a better predictor of decreases in body temperature. Caribou calves exhibited partial physiological compensation for increasing body temperature by increasing heart rate and respiratory rate. Additionally, respiratory rate increased as a function of increasing heart rate. Our findings for age-specific vital signs in caribou calves may serve as baselines for comparison in future captive-rearing efforts that may enhance early detection and treatment of illness in captive caribou.

EXTRACTING ANCIENT DNA FROM THE NORTH SLOPE

BreAnna Smith*[1], Diana Wolf[1], Go Iwahana[1]

[1]*University of Alaska Fairbanks. Contact: bmsmith18@alaska.edu*

Abstract: Ancient DNA offers a unique window into past ecosystems, revealing insights into genetic diversity, adaptation, and evolutionary history over millennia. In this study, we report what we believe is the first successful DNA extraction from wood that grew during the last interglacial period. Wood from 5 trees was discovered thawing out of the permafrost near Toolik Field Station on the North Slope of Alaska. A microscopic observation of the tissue-thin sections indicates that the wood is spruce. Although radiocarbon dating suggests an age of older than 50,000 years, regional paleoclimate data indicate that the North Slope was glaciated at that time—these samples date to at the earliest the warmer interglacial period (80,000–130,000 years ago) when spruce trees could thrive. To address the challenges of working with such old material, we developed a specialized extraction protocol: samples were maintained at -17.8°C, decontaminated by surface scraping, and ground using a SPEX Freezer/Mill prior to DNA extraction in an ancient DNA facility at the Museum of the North (UAF). DNA quantification and quality assessments performed at the Institute of Arctic Biology Genomics Core Lab yielded concentrations between 0 and 0.62 ng/µL. Our ultimate goal is to identify the spruce species using DNA sequencing, thereby enriching our understanding of North Slope vegetation dynamics during a critical climatic epoch.

Moose (Jeff Wagner)

** denotes student*
+ denotes virtual presentation

UNDERSTANDING SPILLOVER OF SARS-COV-2 AND H5N1 BETWEEN HUMAN AND WILDLIFE POPULATIONS

Soren George-Nichol*[1], Bryce Inman[2], Jeremy Buttler[2], Michelle Johannsen[3], Kimberlee Beckmen[4], Christina Hansen[1], Joe Taylor[1], Eric Bortz[2]

[1]University of Alaska Fairbanks, [2]University of Alaska Anchorage, [3]Wildlife Conservation Society, [4]Alaska Department of Fish and Game. Contact: sgeorgenichol@alaska.edu

Abstract: In light of the Covid-19 pandemic there has been growing concern over the potential for pathogens to spillover both between human and wildlife populations, and the threats this poses to human and wildlife health. SARS-CoV-2 (Covid19) and highly pathogenic avian influenza (H5N1) in particular have been of interest for human populations recently. Covid-19 originated in wildlife populations, and since becoming a global pandemic has also been shown to be capable of spreading from human to wildlife populations. Avian flu has been implicated in several mass die off events of marine mammals globally, and has been impacting dairy cows in the United States. There have now been several human cases in the United States. Because of the potential for either of these viruses to infect a diverse number of mammalian hosts and humans we are collaborating with sustainable harvesters, researchers, and ADF&G to obtain samples to test a wide variety of mammalian species (including cetaceans, pinnipeds, mustelids, rodents, and canids). This study will also test domestic dogs for both pathogens because of the potential for domestic dogs to act as reservoirs. This study is using samples collected from throughout Alaska to test wild and domestic mammals for H5N1 and SARS-CoV-2 to determine the prevalence of these pathogens in mammal populations in Alaska. In instances where either pathogen is detected the viral RNA will be sequenced and the strain will be identified. We will also use metagenomic analysis to detect other pathogens present to analyze the potential for co-infections with these two viruses. This poster will present preliminary results of our findings, including the presence/absence of SARS-CoV-2 and H5N1 in mammals in Alaska. Our results will help to inform where spillover is occurring and how viral pathogens are evolving in mammals.

WILDLIFE STUDIES ON THE TONGASS NATIONAL FOREST CHALLENGE ESSENTIAL ASSUMPTIONS OF ITS WILDLIFE CONSERVATION STRATEGY

Winston Smith[1], Elizabeth A. Flaherty[2]

[1]Retired, [2]Department of Forestry and Natural Resources, Purdue University, West Lafayette, IN. Contact: winstonpaulsmith@gmail.com

Abstract: The Tongass National Forest in southeast Alaska includes one of the largest remaining coastal temperate rainforests in the world. Management of the Tongass has become increasingly challenging because of expectations of a conservation framework designed to maintain viable populations of native wildlife species while decades of clearcut logging of old-growth forests has continued. We used findings of multiple published studies conducted on the Tongass to examine 4 assumptions of its wildlife conservation strategy (WCS): forest planning assessments of wildlife viability were realistic; forest management policies are implemented at appropriate ecological scales; old-growth reserves are effective habitat conservation areas and ensure functional connectivity; and forest-wide standards and guidelines ensure sufficient habitat for sensitive species. Several ecological field studies with spatial and statistical analyses revealed that viability assessments to evaluate forest plan alternatives underestimated the risk of extinction by only examining vulnerable species rather than considering joint probabilities across multiple species; the ecological scale of management policies do not adequately consider area-sensitive vulnerabilities of island communities as evidenced by the increasing risk of extirpation of island endemics whose populations have become isolated and reduced; old-growth reserves are unlikely to maintain viable populations of endemic small mammals in isolation or as functionally connected metapopulations; and a spatially explicit analysis of home ranges demonstrated that forest-wide standards and guidelines provide about half the breeding habitat needed by a federally listed endemic raptor, the Queen Charlotte goshawk (Accipiter gentilis laingi), of which only half of that is secure. Thus, assertions that the WCS is functioning as designed are dubious because a comprehensive monitoring plan has not been implemented and vital underlying assumptions are not supported by (cont.)

** denotes student*
+ denotes virtual presentation

available science. We recommend 3 policy adjustments: discontinue logging of old-growth forest, restore forests through management of second growth, and conduct a formal review of WCS elements and assumptions.

TIMING OF MOOSE ANTLER CASTING IN INTERIOR ALASKA

Graham Frye

[1]*Alaska Department of Fish and Game. Contact: graham.frye@alaska.gov*

Abstract: Ungulate management and research commonly rely on the ability to visually distinguish between sexes at a distance. For example, the ratio of males to females in a population is a widely used metric that informs management decisions (e.g., harvest regulations). To estimate male:female ratios, and other metrics dependent on sex determination, biologists typically use count data from visual surveys (most often conducted from aerial platforms). In Interior Alaska, biologists rely on fall aerial surveys to estimate composition metrics for moose populations. The timing of these surveys is chosen to ensure that males have not yet shed antlers, so they can confidently be distinguished from females. However, detailed information on timing of antler casting in wild moose populations is limited. Suggestions that antler casting doesn't begin until early–mid December are widespread in the literature and general guidance for timing fall moose surveys is typically to finish surveys prior to early–mid December to minimize sex discrimination error. The reliability of these guidelines is unknown, so to better inform survey timing, we are studying the timing of antler casting in radio-collared male moose from three study areas in Interior Alaska. Preliminary data suggest that a substantial number of males begin shedding antlers earlier than previously assumed. In 2023 and 2024, the earliest antlers were shed prior to 14 November, with 35-50% shed prior to 15 Dec. We examined the change in annual bull:cow ratios at two sites and found negative trends in estimated bull:cow ratios as a function of survey completion date. These preliminary results suggest that large proportions of male moose may be shedding antlers earlier than expected and, consequently, surveys conducted too late in the fall may not yield reliable estimates of metrics that depend on antler-based sex discrimination.

ASSESSING THE INFLUENCE OF ANTHROPOGENIC DISTURBANCE ON CARIBOU RESPONSES TO CAMERA TRAPS IN ALASKA'S ARCTIC COASTAL PLAIN

Lydia Vann*[1], Maxwell Plichta[1], Todd Brinkman[1]

[1]*University of Alaska Fairbaks. Contact: lydiarachel.vann@icloud.com*

Abstract: Camera traps are widely used in wildlife research. While often considered non-intrusive, camera traps and their associated infrastructure can influence animal behavior, potentially impacting study results. This could be especially true in open habitats like Alaska's Arctic Coastal Plain (ACP) where barren-ground caribou *(Rangifer tarandus granti)* inhabit areas with varying levels of human infrastructure and activity, from the relatively undisturbed Arctic National Wildlife Refuge (ANWR) to the heavily industrialized Prudhoe Bay Oilfield Complex (PBOC). Understanding how caribou react to camera traps in these different environments is critical for interpreting behavioral data in camera trap studies. This study examines the frequency of 'camera effect' behaviors, such as caribou investigating, sniffing, or physically interacting with camera traps and mounting infrastructure, across sites with differing levels of anthropogenic disturbance. We analyzed motion-triggered images collected from 40 camera traps deployed across the ACP during the 2019 and 2021 summer seasons. Preliminary findings will help determine whether caribou exposure to human infrastructure influences their responses to camera traps. If no significant differences are found, it may suggest that camera traps do not differentially affect caribou across regions. However, if caribou near industrialized sites exhibit a lower frequency of camera effect behaviors, this could indicate habituation to human-made structures. These results will provide important context for interpreting behavioral data collected through remote camera monitoring and could inform future study designs aiming to assess anthropogenic impacts on caribou behavior.

** denotes student*
[+] denotes virtual presentation

VULNERABILITY OF DALL SHEEP TO AVALANCHES IN SOUTHCENTRAL, ALASKA

Heather Thamm*[1], Thomas Lohuis[2], Gabriel Wolken[3], Todd Brinkman[1]

[1]University of Alaska Fairbanks, [2]Alaska Department of Fish and Game, [3]Alaska Division of Geological & Geophysical Survey. Contact: hthamm@alaska.edu

Abstract: Dall sheep *(Ovis dalli)* populations in Southcentral, Alaska have experienced sharp declines over the past 25 years, raising concerns about winter habitat limitations. The Alaska Department of Fish and Game launched a study in the Chugach Mountains, later expanding it to the Talkeetna Mountains, to investigate causes of these declines. Between 2009 and 2024, 200 Dall sheep were fitted with VHF and GPS collars to monitor movement and survival. Preliminary findings indicate that avalanche-related mortality is a significant contributor to adult deaths. In collaboration with the Alaska Department of Fish and Game and the Division of Geological and Geophysical Surveys, this research will investigate avalanche impacts on three Dall sheep populations in Southcentral Alaska. The study will quantify avalanche mortality and assess sheep movement patterns in avalanche-prone terrain. A known fate analysis will be conducted to evaluate the significance of avalanche mortality on overall population level dynamics. Automated avalanche hazard maps will be developed using a terrain analysis approach and downscaled climate reanalysis data to simulate potential release areas, avalanche paths, and return periods. Dall sheep movement patterns will be evaluated using a step selection function to estimate the amount of time individual Dall sheep expose themselves to avalanche release areas. Since Dall sheep rely on steep terrain to avoid predation, this research aims to provide critical insights into the complex interactions between sheep survival, habitat use, and snow conditions.

DNA SEQUENCING OF HOARY MARMOT (MARMOTA CALIGATA) STOMACH CONTENTS THROUGH METABARCODING

Monica Casner*[1], Daniel Casner*[1], Diana Wolf[1], Link E. Olson[2]

[1]University of Alaska Fairbanks and [2]University of Alaska Fairbanks Museum of the North. Contact: mdcasner@alaska.edu

Abstract: Hoary marmots *(Marmota caligata)* are herbivores distributed widely throughout alpine habitats from southern Washington, Idaho, and Montana north to the Yukon River in Central Alaska. In Southeast Alaska, however, they are also found at sea level. As the tree line rises in elevation in response to climate change, alpine habitats are expected to shrink. Most hoary marmots occupy alpine tundra and rocky talus. There is an ecological knowledge gap on the diet of M. caligata, including comparing diet at sea level with alpine forage. Determining diet is key to understanding hoary marmots' ability to thrive on a changing landscape. Alpine-dwelling marmots are thought to feed on grasses, flowering plants, mosses, roots, and lichen. As of yet, we know nothing about the diet of beach-dwelling marmots. We used DNA sequencing (metabarcoding) of M. caligata stomach contents to identify and compare their diets in alpine and sea-level habitats. Our results will help to fill in critical knowledge gaps in hoary marmot ecology and address hoary marmots' potential resilience to changing climate.

Savannah Sparrow (Arin Underwood)

** denotes student*
⁺ denotes virtual presentation

ENHANCED RABIES SURVEILLANCE OF WILDLIFE: INSIGHTS INTO RESERVOIR DYNAMICS, OUTBREAKS AND SPILL OVER EVENTS IN ALASKA

Cassandra Duncan[1], Kimberlee Beckmen[1]

[1]*Alaska Department of Fish and Game. Contact: cassie.duncan@alaska.gov*

Abstract: Rabies cases in Alaska foxes have demonstrated seasonal fluctuations with peaks occurring during winter months and epizootic cycles every 3-5 years. The effects of climate change may alter the timing of these trends, as well as prevalence level within arctic fox *(Vulpes lagopus)* and red fox *(Vulpes vulpes)* populations. Rabies surveillance in Alaska has historically focused on diagnostic testing after an animal bite to determine post-exposure treatment course. In 2010 federal and state public health and veterinary authorities provided the Department of Fish and Game with the resources to institute enhanced wildlife rabies surveillance in order to better understand trends and to aid in predicting rabies activity. Funding and benchtop rapid testing supplies from the USDA and CDC facilitated the screening of over 3000 brainstem specimens from 30 species of susceptible wild mammals from across the state from 2010 to present. The sample collection and testing were conducted on mammals presented for necropsy which more than doubled the number of tests conducted per year. Specimens were obtained from animals found dead, trapper surveys, scientific collections, culling, capture mortalities, injured/euthanized, vehicle collisions, and killed for aggressive behavior suspect of rabies. Preliminary results suggest shifts in seasonality, epizootic cycles increasing in frequency, and rabies is becoming more prevalent in red foxes than arctic foxes. Additionally, we found increased spill-over events to new wildlife species – including moose and wolverine, first detections of co-infections of rabies with other viral encephalitis (e.g. highly pathogenic avian influenza and distemper), and normally behaving red foxes with evidence of rabies exposure and antibody development without symptoms. Our findings support the importance of continued enhanced rabies surveillance in Alaska.

EXPLORING HOW CHANGING SALMON AVAILABILITY IS AFFECTING FOOD SECURITY IN UPPER COPPER RIVER COMMUNITIES

Sarah Iverson*

University of Alaska Fairbanks. Contact: sbiverson@alaska.edu

Abstract: This project investigates changes in salmon availability and implications to subsistence use of salmon in the Upper Copper River region of Alaska. Local subsistence users have reported a decline in salmon availability over the last decade, threatening food security, cultural traditions, and social bonds. Biological salmon escapement data collected by the Alaska Department of Fish and game(ADF&G) is only available from Miles Lake's sonar 30 miles north of the river's mouth. These biological data indicate that salmon escapement goals are being met, highlighting a critical gap in current management practices. To bridge this gap, this study integrates long-term harvest survey data, qualitative insights from transcripts of the Wrangell St. Elias National Park Subsistence Resource Commission (SRC) and Eastern Interior and South Central Regional Advisory Council (RAC) meetings, as well as biological monitoring insights from the Miles Lake sonar. We will apply a multivariate analytical framework to examine trends in harvest levels, participation, and distribution over the last four decades, while also assessing potential causal factors including annual variations in salmon run strength and the timing as well as magnitude of commercial and personal harvests. By synthesizing these diverse data sources, this project aims to provide a comprehensive context for understanding how changing salmon populations are experienced by local communities and how those changes in harvest are affecting sharing, and receiving networks within the Upper Copper River region. We aim to apprise more responsive and inclusive fisheries management strategies that effectively integrate biological evidence and community observations, thereby safeguarding both the resource and salmon-dependent communities' culture and food security.

SPY IN THE SKY: APPLICATION OF THERMAL DRONES TO ASSIST WITH GROUND DARTING WILDLIFE

Sarah Rauchenstein[1], Shannon P. Finnegan[2], William Dunker[1], Nathan J. Svoboda[1]

[1]Alaska Department of Fish and Game, [2]Koniag Incorporated. Contact: sarah.rauchenstein@alaska.gov

Abstract: Telemetry studies allow scientists to track animal movements and study species ecology without direct visual observation. Fitting telemetry devices requires physical or chemical capture and restraint of animals. Ground darting is a commonly used technique to capture cervids but locating animals to dart and finding individuals post induction remains a challenge. Here we present an application of using thermal imaging drones to help locate, ground dart, and monitor target animals to ensure safe immobilization. We immobilized 10 free-ranging Sitka black-tailed deer *(Odocoileus hemionus sitkensis)*, 8 of which were captured with the assistance of the thermal drone. The utilization of drones in wildlife ground darting operations can increase safety and efficiency, and reduce risk to researchers and study subjects.

TEAMING UP: WILDLIFE AND EDUCATION PROFESSIONALS CAN WORK TOGETHER TO BE MORE EFFECTIVE COMMUNICATORS

Abby McAllister[1], Alexandra Lewis[2]

[1]Alaska Department of Fish and Game, [2]Alaska Wildlife Conservation Center. Contact: abby.mcallister@alaska.gov

Abstract: Biologists, technicians, managers as well as all other sorts of wildlife professionals use posters and flyers to communicate their messages to a broader audience. These visual aids are often considered "enough" if they contain the information needed. However, the audience may process this information differently or less effectively depending on the presentation – the way elements are organized. While some wildlife professionals have taken it upon themselves to create more effective visual aids, they are not always trained to the same caliber or have the same natural skills as an education professional. The Wildlife Education team at the Alaska Department of Fish and Game, for example, takes on the task of creating more effective science and policy communication. In this set of posters, Abby McAllister, an education and outreach specialist, shows how a redesign of a biologist's scientific poster and flyer not only more engaging for a public audience, but also more effective. Alex Lewis, a wildlife biologist with technical writing training and a sense of effective visual communication, submitted two of her projects — a scientific poster presented at a conference and a flyer asking for samples from the public. Abby demonstrates that even when a biologist is trying their very best, their visual aids can always be more effective with the help of an education professional.

PACIFIC BLACK BRANT GOOSE GRAZING LAWNS AND THEIR TAXONOMIC AFFINITY

Diana Wolf[1,2], I. A. Cato[1], N. Takebayashi[1,2], P. L. Flint[3], R. W. Ruess[1,2]

University of Alaska Fairbanks ([1]Department of Biology and Wildlife, [2]Institute of Arctic Biology), [3]USGS Alaska Science Center. Contact: dewolf@alaska.edu

Abstract: Arctic and subarctic ecosystems provide important breeding grounds for many migratory bird species, but they are highly susceptible to climate change. Pacific Black Brant geese *(Branta bernicla nigricans)* breed in regions of the subarctic Yukon-Kuskokwim River Delta (YKD), and the Arctic Coastal Plain (ACP). Brant populations in the YKD are declining, and they are losing their grazing lawns of short-statured (10cm), less nutritious meadows. Since the maintenance of these short grazing lawns is thought to be crucial in the survival of chicks, it is important to understand the mechanisms of conversion into taller meadows. Do individual plants convert into the tall morph when they are not grazed, or does a taller species invade and replace the shorter species? Previous researchers considered these two growth forms to be separate species; short grazing lawns were thought to be Carex subspathacea whereas the taller, ungrazed meadows were thought to be C. ramenskii. Our population genomic study found that the short lawns and tall meadows in the YKD were genetically indistinguishable from each other, and clustered with C. subspathacea. (cont.)

Although Brant are declining in subarctic YKD, they are increasing in the Arctic Coastal Plain (ACP), where lawns remain short even when ungrazed. ACP lawns also clustered with C. subspathacea. Since YKD and ACP lawns consist of the same species, gene flow between arctic and subarctic populations is possible. If climate change facilitates gene flow from the south into northern sedge populations, genotypes that grow tall when ungrazed may be introduced to the ACP, potentially stalling the growth of arctic Brant populations.

NOTES