NCDE Science Team
Fall 2022 Meeting Summary

Arthur Stephens

NCDE Science Team Members

Montana Fish, Wildlife & Parks
Cecily Costello (Chair)
Lori Roberts
Milan Vinks
Kim Annis
Jamie Jonkel
Wesley Sarmento
Justine Vallieres
Erik Wenum
Chad White

Blackfoot Fish & Wildlife
Jeff Horn

Confederated Salish & Kootenai Tribes
Payton Adams
Kari Kingeri

Glacier National Park
John Waller

US Fish & Wildlife Service
Hilary Cooley
Jennifer Fortin-Noreus
Wayne Kasworm (CYE)
Justin Teisberg (CYE)

US Forest Service
Kathy Ake, Flathead NF
Lydia Allen, Northern Regional Office
Bryson Bell, Lolo National Forest
Wendy Clark, Helena-Lewis & Clark NF
Scott Jackson, Northern Regional Office
Lauren Michelsen, Kootenai NF
Denise Pengeroth, Helena-Lewis & Clark NF
Mark Ruby, Flathead NF

US Geological Survey
Tabitha Graves
Mark Haroldson (GYE IGBST)
Frank van Manen (GYE IGBST)

✓ ***Invited 2 new members***

Montana Department of Transportation
Joe Wiegand

USDA Wildlife Services
Kraig Glazier

✓ *Reviewed 2 external study proposals*
✓ *Reviewed 6 studies currently in progress*
✓ *Reviewed 1 internal study proposal*
✓ *Reviewed work related to population monitoring / Conservation Strategy*

External Study Proposal

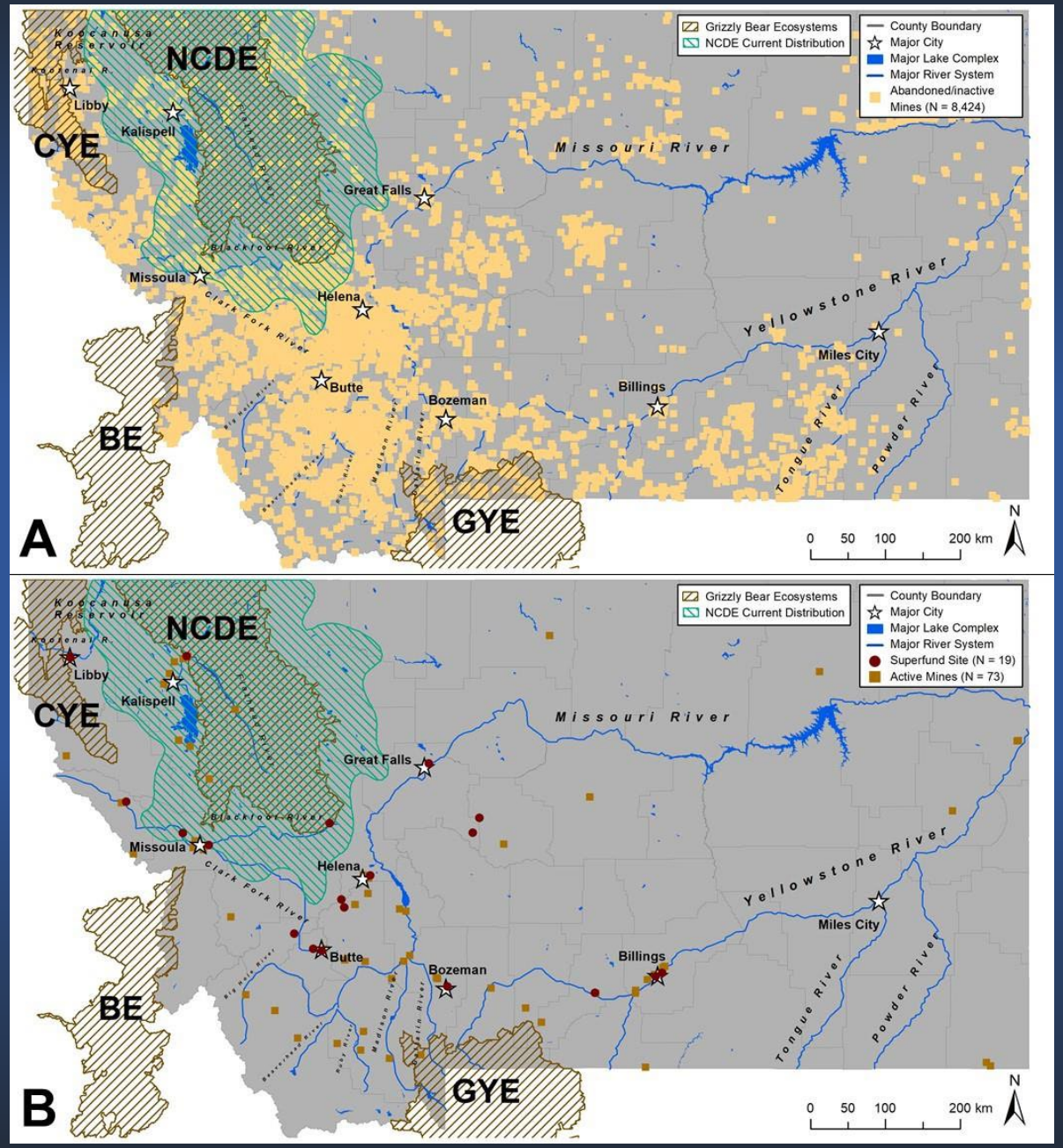
Identifying grizzly bear (*Ursus arctos horribilis*) contaminant profiles and exposure in Montana ecosystems (NCDE, CYE, and GYE)

Principal Investigators

Dr. Brian Balmer, Environmental Contaminant Specialist, USFWS Montana Ecological Services

Dr. Dan Walsh, Unit Leader, Montana Cooperative Wildlife Research Unit

Dr. Ben Colman, Associate Professor, University of Montana

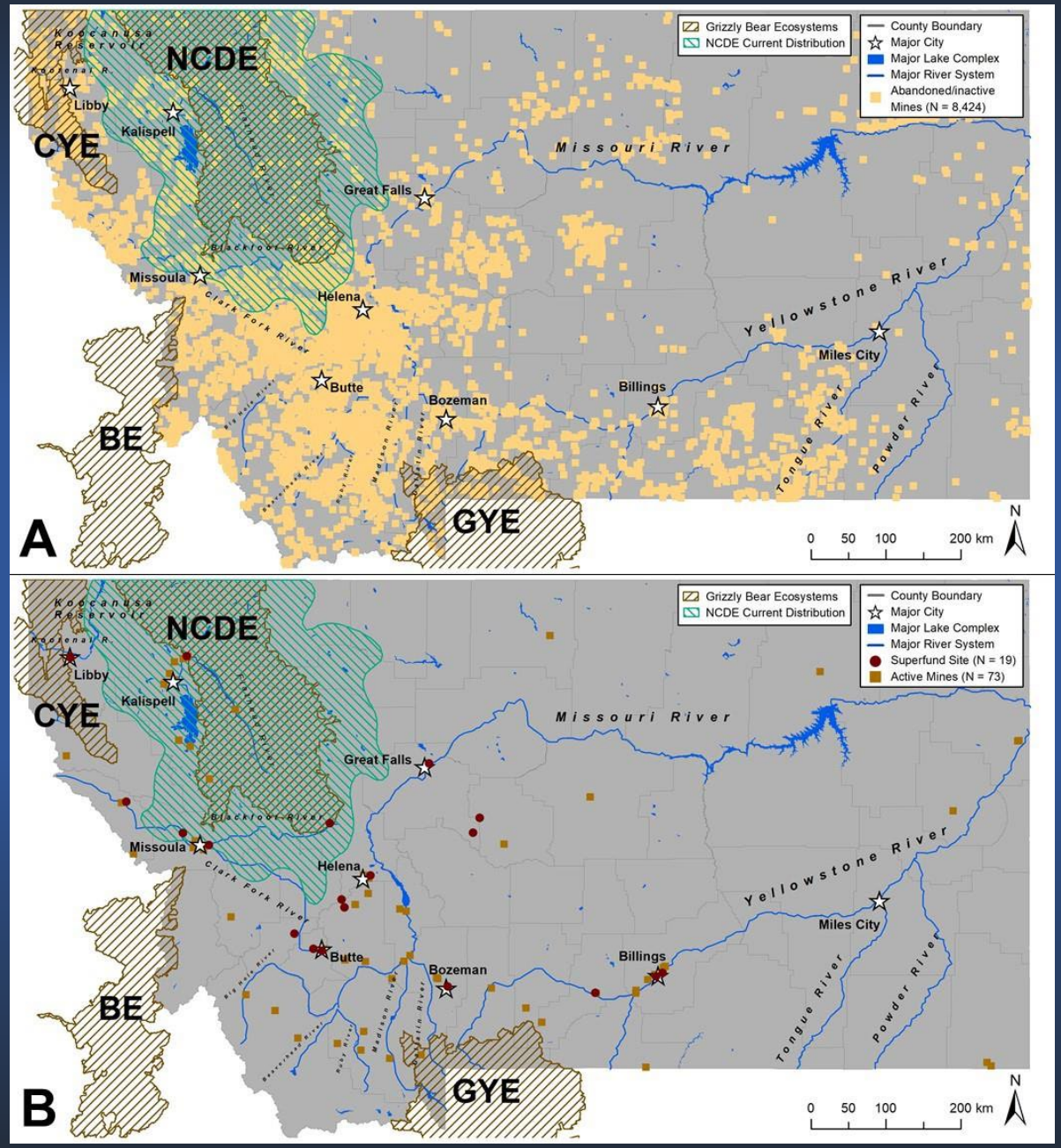


In Montana

- Active (*n* = 73) and inactive (*n* = 8,424) mines
- Superfund sites (*n* = 19)

Contaminants of Concern

- Heavy metals (cadmium, copper, lead, mercury)
- Metalloids (arsenic, selenium)
- Persistent organic pollutants (PCBs, DDTs, PFAS)



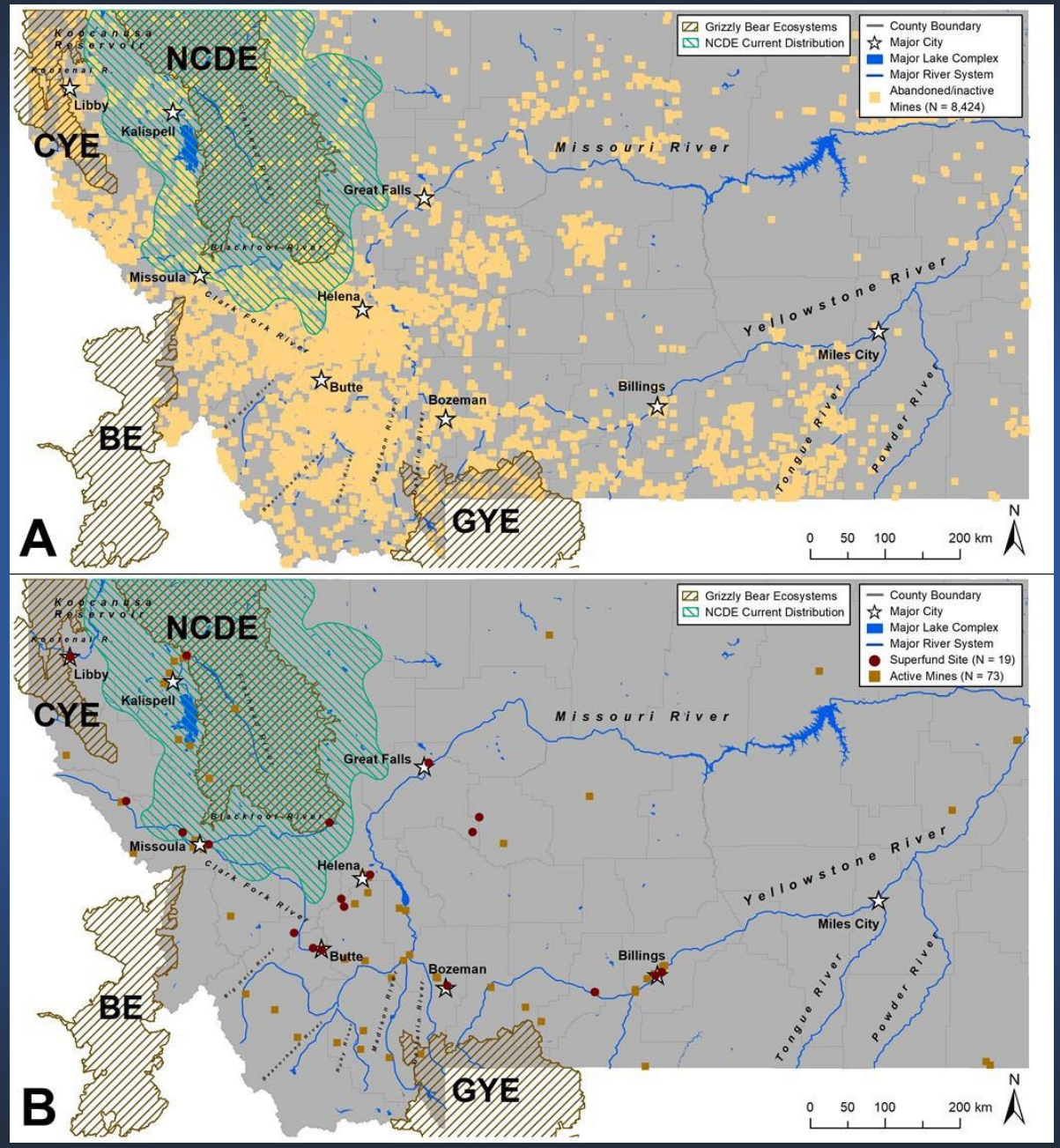
Objective

Collect first comprehensive baseline contaminant exposure data (NCDE, CYE, and GYE)

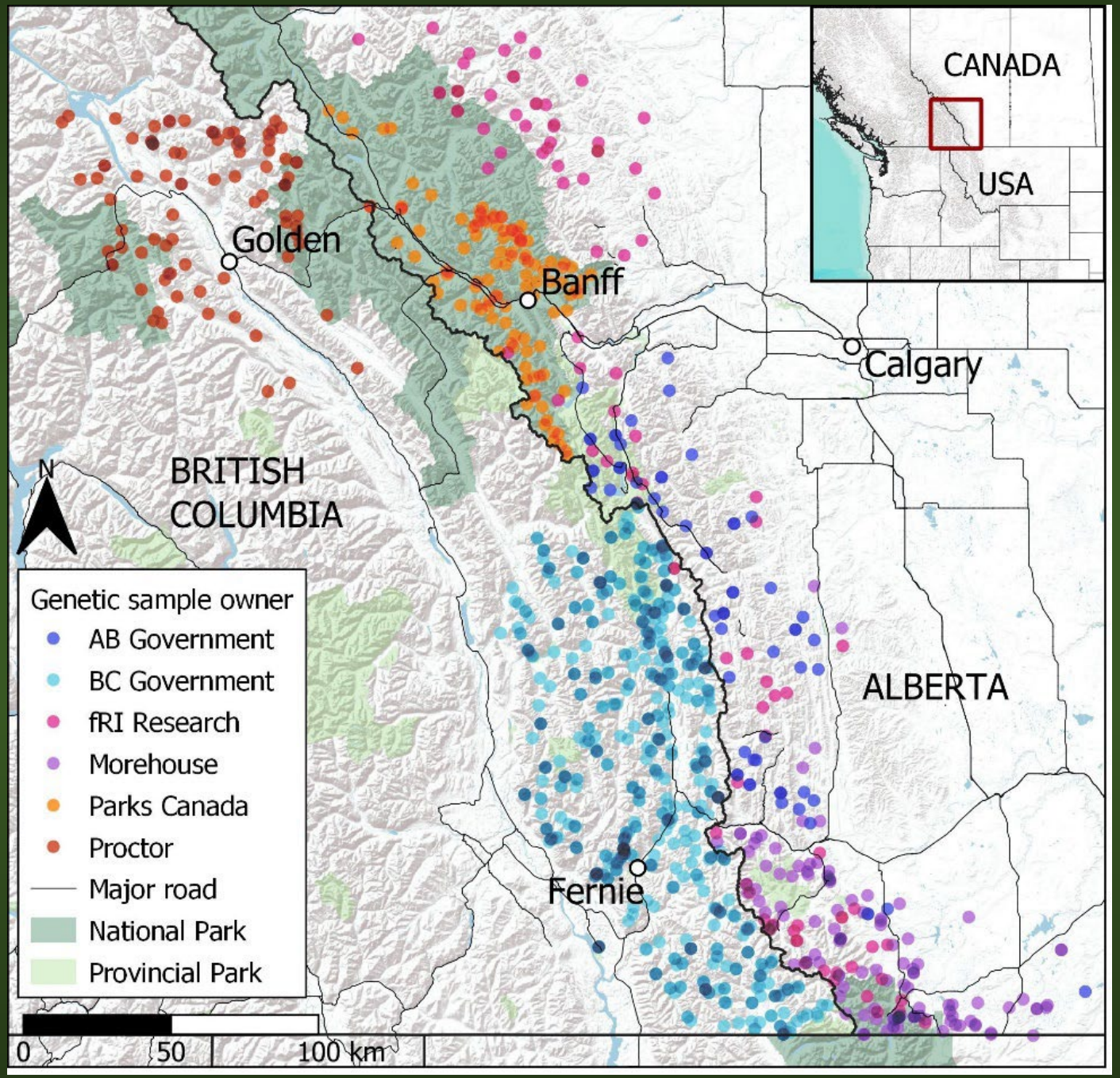
- Retrospective metal analysis using existing blood and hair samples
- Metal and organic analysis using blood and hair samples from captures
- Metal and organic analysis using hair, blood, fat, and tissue samples from mortalities

Funding

- Applying for USFWS Ecological Services Grant



External Study Proposal



Grizzly Bear Landscape Genetics Connectivity in the Crown of the Continent Ecosystem

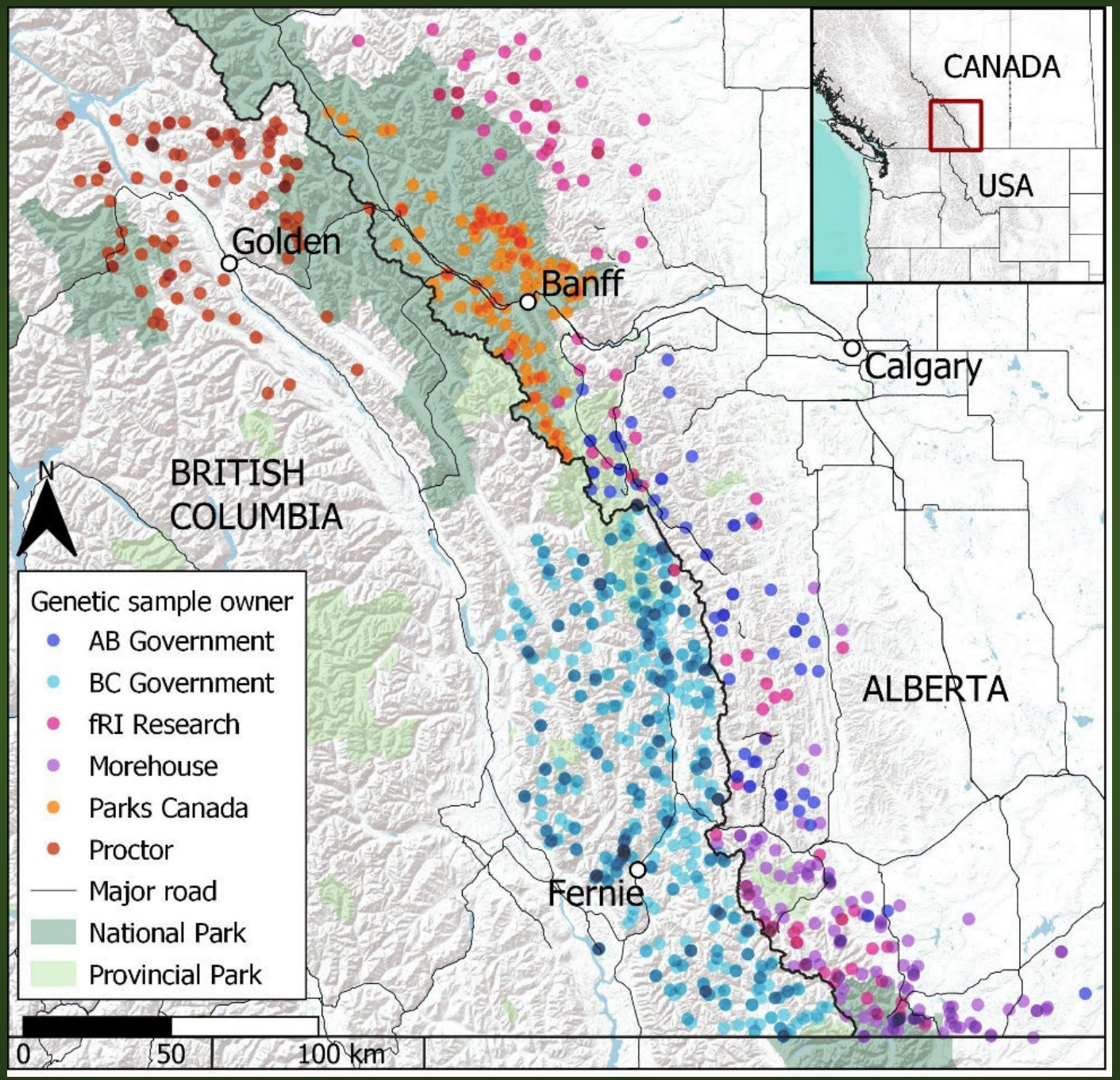
Principal Investigators

Eric Palm, Erin Landguth, Zachary Holden, Casey Day, Clayton Lamb, Katherine Zeller

Collaborators

Paul Frame, Karen Graham, Andrea Moorehouse, Garth Mowat, John Paczkowski, Michael Proctor, Laura Smit, Gordon Stenhouse, Jesse Whittington

*University of Montana, Aldo Leopold Wilderness Research Institute, USDA Forest Service Region, University of British Columbia, Government of AB, fRI Research, Winisk Research, Government of BC, Birchdale Ecological Ltd., Parks Canada



Objective

- Use individual-based genetic relatedness and least-cost path analyses to model connectivity among populations
- Identify important dispersal corridors

NCDE science team interest

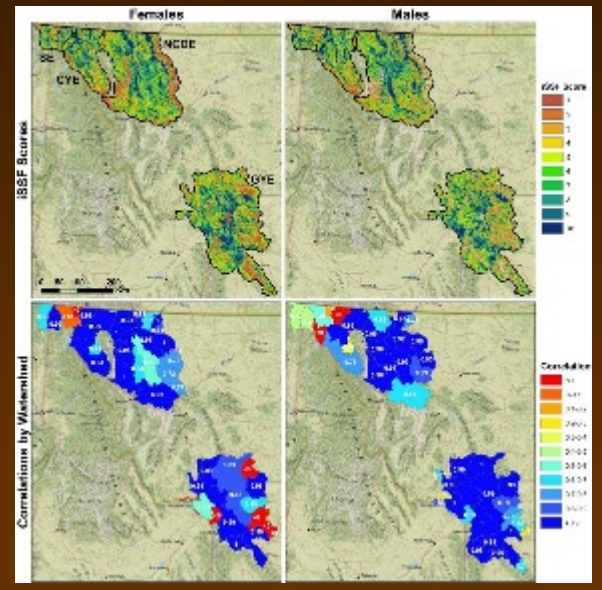
- To update monitoring of NCDE connectivity with populations in Canada (last analysis was Proctor et al. 2012).

Study in Progress

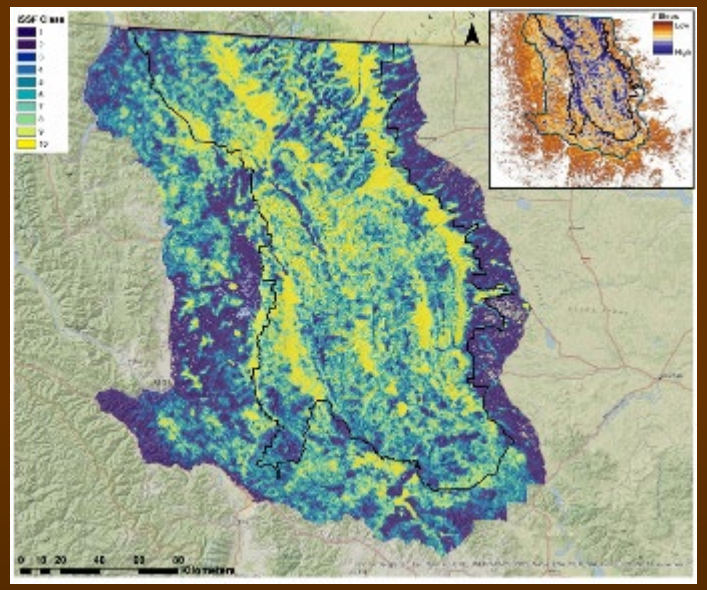
<u>Principal Investigator</u>

Dr. Sarah Sells, University of Montana

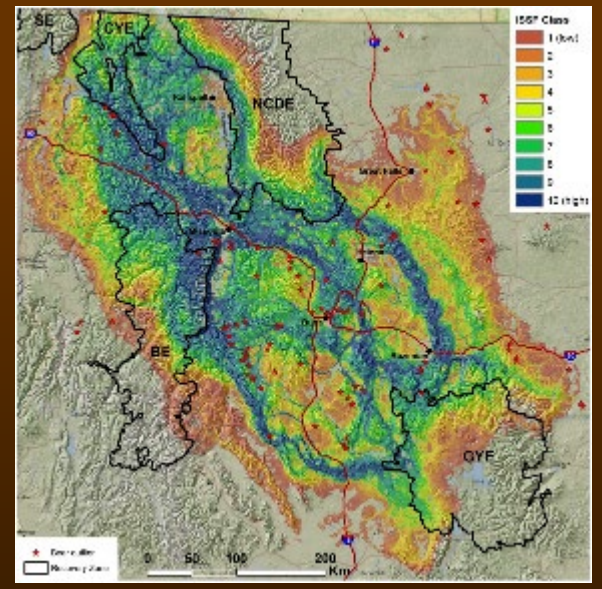
Grizzly bear movement models predict habitat use for external populations – in review



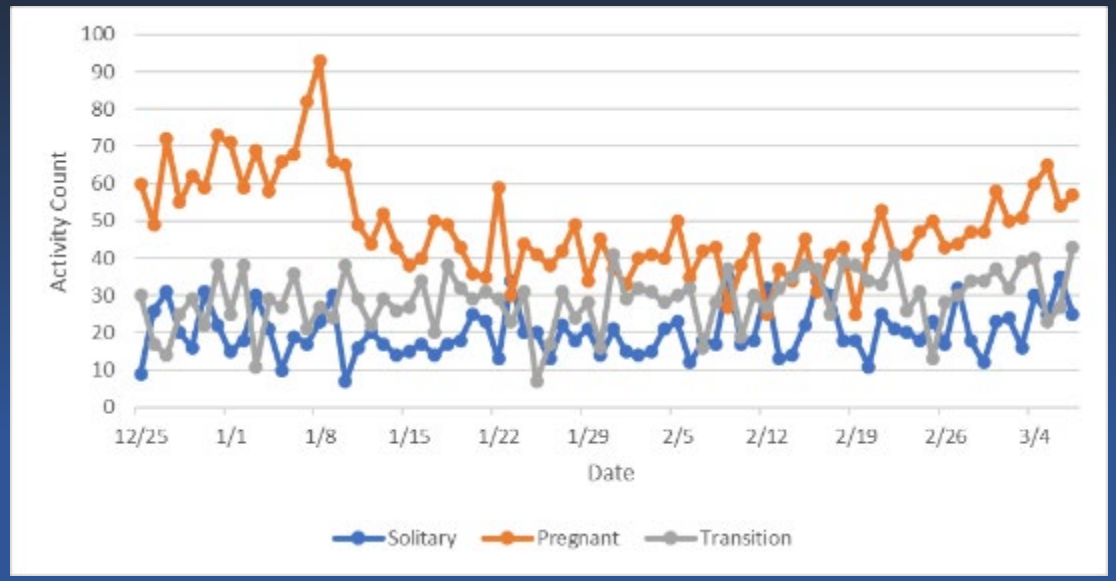
Grizzly bear habitat selection across the Northern Continental Divide Ecosystem – Published in Biological Conservation, Sells et al. 2022

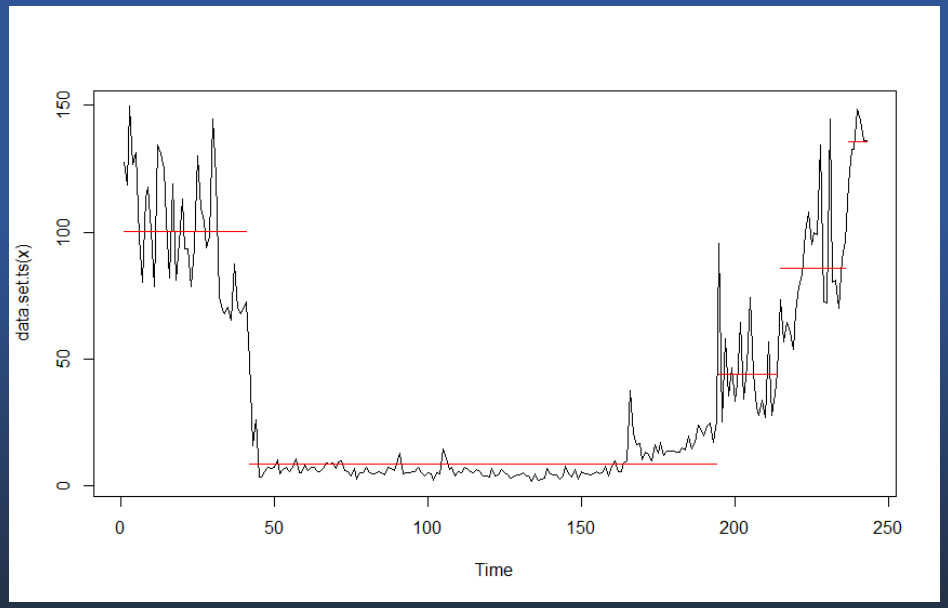


Predicted male and female movement corridors between grizzly bear ecosystems in western Montana – in review



Study in Progress





Using collar activity data to identify den parturition events and determine denning chronology in grizzly bears (NCDE, CYE, GYE, Gates of the Arctic)

Principal Investigators

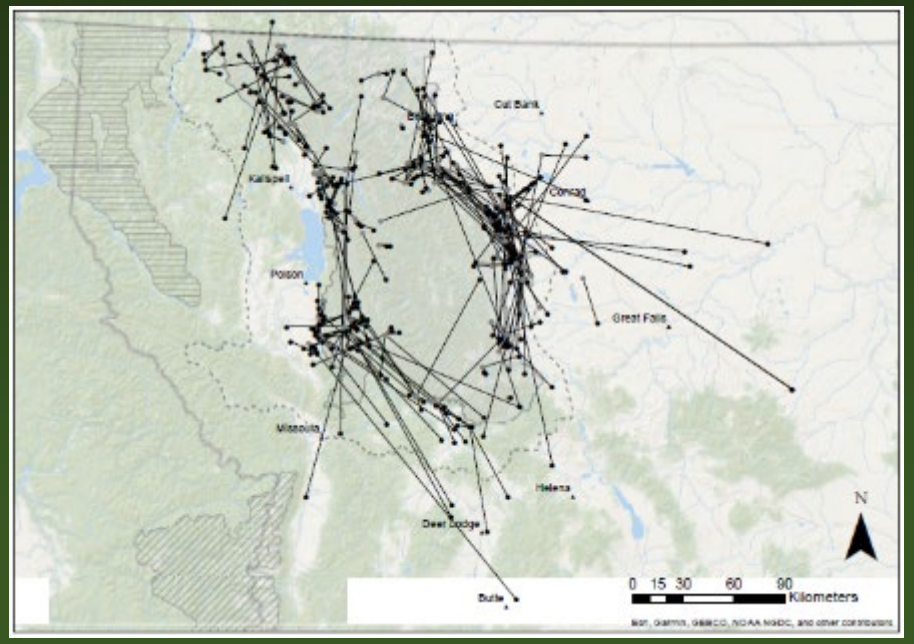
Lori Roberts, Dr. Cecily Costello

Objectives

- Develop a method for detecting birth events from activity data and test with blind data
- Develop a method for detecting dates of winter dormancy and compare to field observations
- Test hypotheses about ecological drivers of behaviors

Study in Progress

Analyses of natal dispersal in the NCDE grizzly bear population

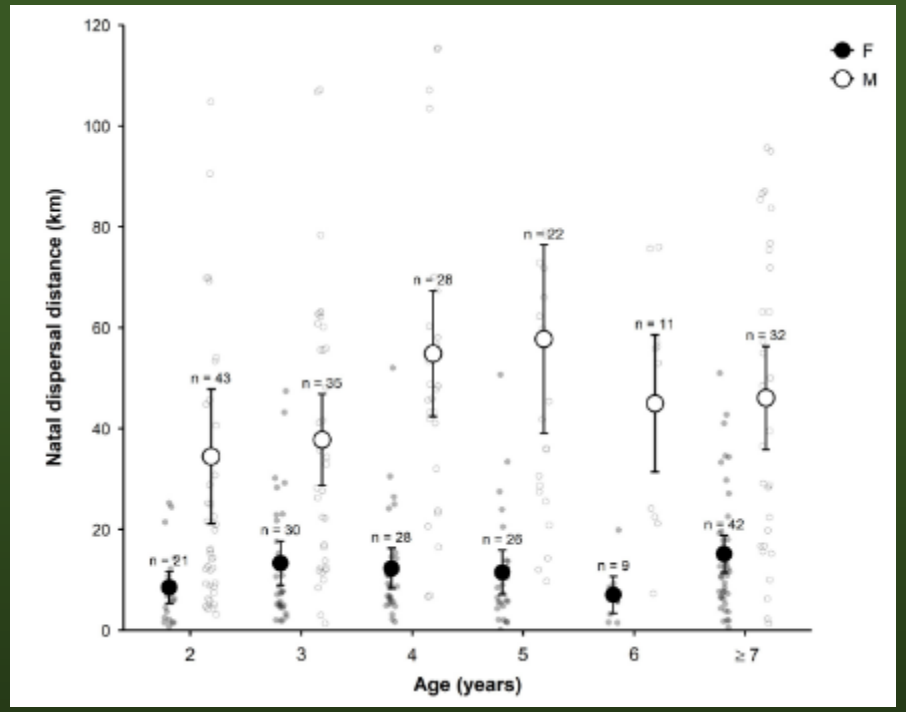


Principal Investigators

Cecily Costello, Lori Roberts, Milan Vinks

Objectives

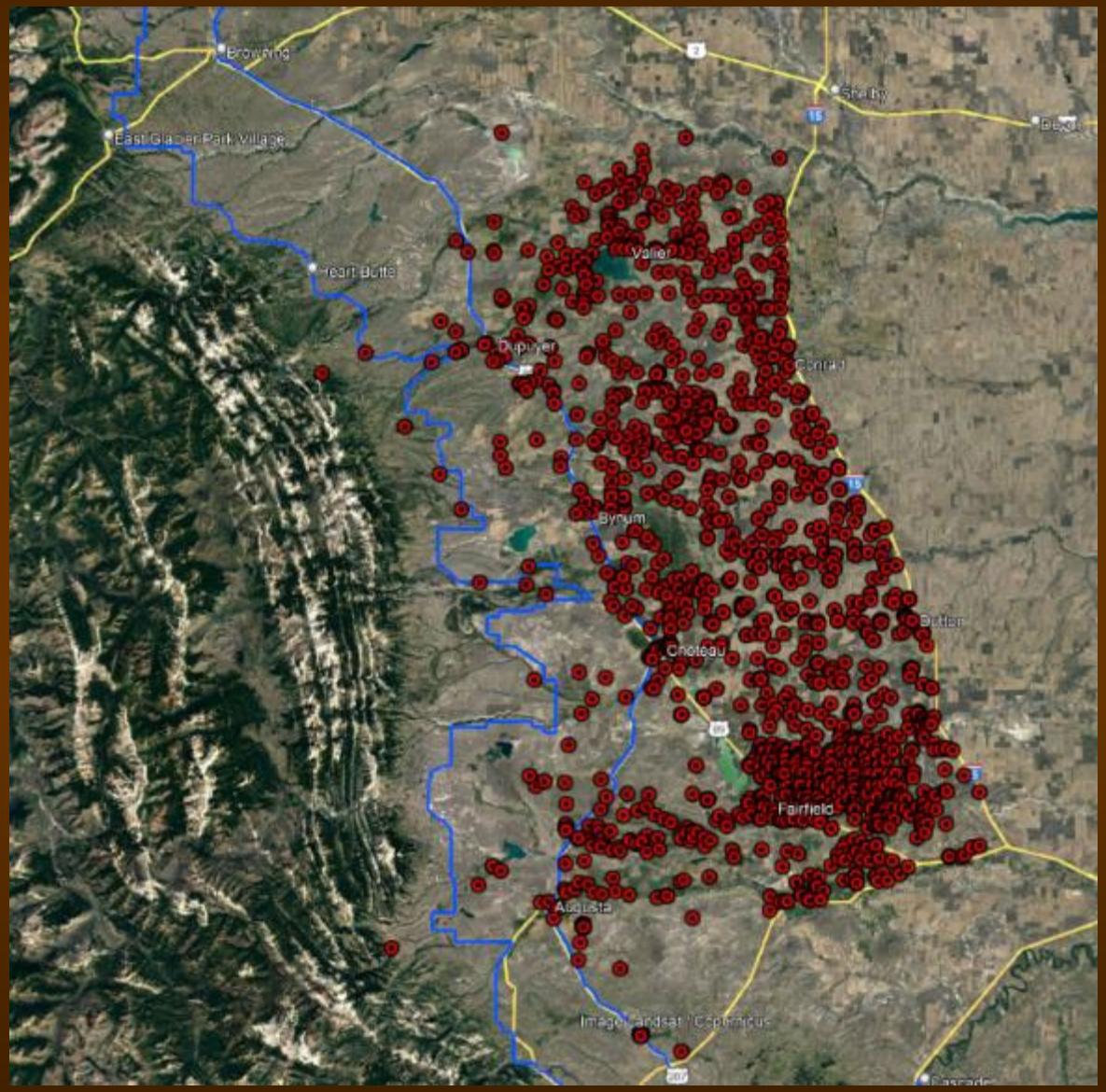
- Document female and male dispersal distances.
- Identify factors influencing dispersal and direction, including sex, age, relative density, distance to edge of population distribution, and habitat.



Application

- Will allow us to account for dispersal outside of the DMA in our estimation of NCDE population size

Study in Progress



Use of grain bins by prairie grizzly bear on the Rocky Mountain Front, Montana

Principal Investigators

Dr. Cecily Costello, Lori Roberts, Wesley Sarmento, Chad White

Objectives

- Determine frequency and duration of grizzly bear visits by time of day and season
- Evaluate if use is primarily opportunistic or if bears are seeking out this food resource.
- Identify characteristics of grain bins associated with higher use by bears.

Study in Progress

Grizzlies and Grain Spills: Exploring the Use of Guard Dogs for Grizzly Bear Deterrence

Principal Investigators:

- Wesley Sarmento
- Dr. Julie Young, USDA Wildlife Services, National Wildlife Research Center, Utah State University
- Dr. Jenny Sherry, Natural Resources Defense Council

Objectives:

- Test the efficacy of livestock guard dogs at deterring grizzly bear activity near residential grain attractants.
- Document the interactions between a specialized LGD breed and grizzly bears.

Study in Progress

Grizzly Bear Genomics in North America

Principal Investigators
Dr. Ellie Armstrong, Washington State University
Dr. Joanna Kelley, Washington State University

Objectives

- Create a high-quality reference genome
- Whole-genome sequencing on individuals from across the species range in North America
- Design a single nucleotide polymorphisms (SNPs) panel useful for distinguishing individuals and populations of origin

Internal Study Proposal

Habitat selection response of grizzly bears to forest management practices and wildfire disturbance in the NCDE

Principal Investigators

Milan Vinks, Dr. Cecily Costello

Dr. Sarah Sells, Assistant Unit Leader, Montana Cooperative Wildlife Research Unit, University of Montana

- Develop and evaluate habitat selection, movement models, and home ranges using active season (May – Nov) GPS data from grizzly bears from the last ~20 years.
- Evaluate effect of forest management practices on individual grizzly bear habitat selection, movement, and home range composition.
- Evaluate effect of wildfire disturbance on individual grizzly bear habitat selection, movement, and home range composition.

Population monitoring / Conservation Strategy Work

IPM update

- Josh Nowak, Paul Lukacs, Hans Martin (UM Speedgoat), IGBST collaborators
- Yellowstone model primary effort

Remote camera/ hair corral work

- To monitor females with young in wilderness BMUs
- To supplement detections to add to IPM

Stable isotope analyses

- Justin Tiesberg
- Lab at Washington State University up and running again

Body condition and composition