

# UNGULATE MONITORING METHODS WORKSHOP



**WORKSHOP PROGRAM**



**Online June 4 – 6, 2024**



## Workshop Objectives

To collectively explore current and prospective monitoring methods for ungulates, considering opportunities, challenges, and barriers to implementation, and identify next steps towards application of best methods to improve ungulate population management.

---

**Workshop Website:** [https://ab-rcsc.github.io/GOA\\_Ungulate-monitoring-methods-workshop](https://ab-rcsc.github.io/GOA_Ungulate-monitoring-methods-workshop)

The website contains speakers' bios, select literature and much more!

---

## Time Zones

All times are Mountain Daylight Time (MDT) (e.g., Calgary, Alberta). Refer to <https://www.timeanddate.com/time/map/> for time zone conversions.

---

## Log-In Information

To participate in the workshop each day, click on the following link (or cut and paste into your browser): <https://goa.zoom.us/j/84761485631>. The link will be the same for each day. Please do NOT distribute the Zoom link to those who have not registered for the workshop. We are at maximum capacity.

You will be able to log-in starting at 8:30 AM MDT each day. We will let people in from the waiting room a few minutes before the workshop begins (9:00 AM MDT). If you are new to Zoom, allow an additional 5-10 min to download the program. Refer to the Zoom Instructions document for further details.

**If you have trouble logging in, please contact Cassie Stevenson ([cjsteven@ualberta.ca](mailto:cjsteven@ualberta.ca)) at least 15 minutes before the start of the workshop each day.**

---

## June 4 Day 1 - MORNING SESSIONS (9 AM – 12:20 PM MDT)

### SESSION: WORKSHOP WELCOME & MONITORING NEEDS

Session Moderator: Dave Roberts (Alberta Biodiversity Monitoring Institute)

9:00 – 9:10 Workshop welcome (Sue Cotterill, Executive Director, Fish and Wildlife Stewardship, Alberta Environment and Protected Areas (EPA))

9:10 – 9:20 Workshop introduction: Setting the stage (Mark Edwards, Office of the Chief Scientist, EPA)

9:20 – 9:35 Monitoring needs: Management agency perspectives (Dan Farr, Fish and Wildlife Stewardship, EPA)

9:35 – 9:55 Ungulate monitoring with boots on the ground: a researcher's perspectives (Mark Boyce, University of Alberta)

9:55 – 10:15 Panel – Q & A (20 min)

**10:15 – 10:30 COFFEE BREAK (15 min)**

### SESSION: UNGULATE MONITORING METHODS & MANNED AIRCRAFT

Session Moderator: Emily Herdman (Innotech Alberta)

10:30 – 10:50 Who's doing what where: North American Jurisdictional Survey Results (Anne Hubbs, Fish and Wildlife Stewardship, EPA)

10:50 – 11:10 Addressing sources of error in aerial data: what are common pitfalls and solutions (Kayla Davis, University of Saskatchewan)

11:10 – 11:30 Improving precision and bias in ungulate survey estimates using distance sampling methods in Alberta (Mike Russell, EPA)

11:30 – 11:50 Optimizing aerial survey frequency by assessing cost versus uncertainty (Pauline Priadka, B.C. Water Lands and Resource Stewardship)

11:50 – 12:20 Panel – Q & A (30 min)

**12:20 – 1:00 LUNCH BREAK (40 min)**

June 4 Day 1 - AFTERNOON SESSIONS (1:00 PM – 4:20 PM MDT)

SESSION: AERIAL INFRARED IMAGING & DRONES (Unmanned Aerial Vehicle / Remotely Piloted Airborne Systems)

Session Moderator: Hannah McKenzie (Alberta Agriculture and Irrigation)

- 1:00 – 1:20 Aerial infrared for monitoring ungulate populations at the landscape scale: Advantages and important considerations (Daniel Melody, Owyhee Air Research, Idaho)
- 1:20 – 1:40 Wildlife surveying using solar electric UAVs (Kanwar Johal, Superwake, Ontario)
- 1:40 – 2:00 Manitoba's modernization of big game aerial surveys (Todd Whiklo and Kirsten Solmundson, Manitoba Wildlife Branch)
- 2:00 – 2:20 Examining the current practicality and potential of Copter and Fixed Wing Drones for wildlife surveys. Initial Project Development and Plans (Nicholas Coops, University of British Columbia, Gordon Stenhouse, FRI Research, and Leonard Hambrecht, UBC)
- 2:20 – 2:50 Panel – Q & A (30 min)

2:50 – 3:10 COFFEE BREAK (20 min)

SESSION: BREAKOUTS

Session Moderator: Dan Farr (EPA)

- 3:10 – 3:15 Breakouts 101: Explaining the ins- and outs (Dan Farr, EPA)
- 3:15 – 4:10 Breakout Sessions (participants will select a room of their choosing)
  - Rooms 1 and 2 Information Needs  
(What information is actually required to inform management decisions?)
  - Rooms 3 and 4 Monitoring Frequency

*(When is monitoring not needed? How should the frequency of monitoring be determined?)*

Rooms 5 and 6

Error and Bias

*(What sources of error and bias are most likely to poor inference or management decisions? What are recommended approaches to address these issues?)*

Rooms 7 and 8

Selecting Monitoring Methods

*(What are key considerations when selecting a monitoring method? What methods should be used in certain scenarios?)*

4:10 – 4:20 Daily Wrap-Up (Dan Farr, EPA)

**4:20 PM END DAY 1**

---

## June 5 Day 2 – MORNING SESSIONS (9 AM – 12:20 PM MDT)

### SESSION: DAY 1 RECAP & BREAKOUT SESSION SUMMARIES

Session Moderator: Dan Farr (EPA)

9:00 – 9:05 Day 1 Recap (Dan Farr, EPA)

9:05 – 10:00 Breakout session summaries and general discussion (workshop participants) (55 min)

### SESSION: REMOTE CAMERAS & TELEMETRY

Session Moderator: Cassie Stevenson (Alberta Biodiversity Monitoring Institute)

10:00 – 10:20 Camera traps for density estimation: an eye to improving the science that guides game species management (Jamie Clarke, University of Victoria, British Columbia)

10:20 – 10:40 Comparisons between moose densities with aerial surveys and integrated camera projects (Marcus Becker, Alberta Biodiversity Monitoring Institute)

10:40 – 11:00 Remote cameras sample mountain ungulate population demography as compared to aerial surveys in an Indigenous-led community-based monitoring program (Sydney Gowan (University of Victoria, B.C.) and Steve Anderson (Gwich'in Renewable Resources Board, Inuvik, NWT))

11:00 – 11:20 Using remote cameras to inform Idaho's wildlife management program (Jon Horne, Idaho Fish and Game)

11:20 – 11:40 How telemetry can meet the multiple needs of wildlife agencies (Randy Larsen, Brigham Young University, Utah)

11:40 – 12:20 Panel – Q & A (40 min)

**12:20 – 1:00 LUNCH BREAK (40 min)**

## June 5 Day 2 – AFTERNOON SESSIONS (1:00 PM – 3:00 PM MDT)

### SESSION: BREAKOUTS

Session Moderator: Justin Gilligan (Alberta Forestry and Parks)

1:00 – 2:00 Breakout Sessions (participants will select a room of their choosing)

Rooms 1,2 and 3      Comparing Monitoring Methods  
*(Should we be comparing the results from different methods? If so, what approaches are recommended in certain situations?)*

Rooms 4 and 5                      Big Data  
*(What approaches and tools are available to address common big data issues? What is needed to move forward and how might workshop agencies help?)*

Rooms 6, 7 and 8      Precision and Accuracy  
*(What levels of precision and accuracy are needed? What are the consequences of not having precise and accurate information?)*

2:00 – 2:50 Breakout session summaries and general discussion (workshop participants) (50 min)

2:50 – 3:00 Daily Wrap-Up (Justin Gilligan, Alberta Forestry and Parks)

**3:00 PM    END DAY 2**

## June 6 Day 3 - MORNING SESSIONS (9 AM – 12:10 PM MDT)

9:00 – 9:10 Day 2 Recap and what to expect on Day 3 (Paul Jones, ACA)

### SESSION: GENETICS / DNA

Session Moderator: Paul Jones (Alberta Conservation Association)

9:10 – 9:30 Long-term fecal DNA informs details of a local caribou population (Lalenia Neufeld, Jasper National Park, Alberta)

9:30 – 9:50 Using DNA and citizen science to estimate goat and bighorn populations in Glacier and other U.S. National Parks (Tabitha Graves, United States Geological Survey, Montana; Mark Biel and Jami Belt, National Park Service)

9:50– 10:10 Panel – Q & A (20 min)

### 10:10 – 10:30 COFFEE BREAK (20 min)

### SESSION: BRINGING IT ALL TOGETHER: USING INTEGRATED POPULATION MODELS AND MULTIPLE MONITORING METHODS

Session Moderator: Mark Edwards (EPA)

10:30 – 10:50 Beyond descriptions: Leveraging disparate data sources with Integrated Population Models (Josh Nowak, SpeedGoat Wildlife Solutions, Montana)

10:50 – 11:10 Various tools to confront challenging ungulate survey data: A barren-ground caribou case study (John Boulanger, Integrated Ecological Research, B.C)

11:10 – 11:30 Using multiple methods to estimate population size and composition of mule deer (Brett Furnas, California Dept. of Fish and Wildlife)

11:30 – 12:10 Panel – Q & A (40 min)

### 12:10 – 1:00 LUNCH BREAK (50 min)



## June 6 Day 3 - AFTERNOON SESSIONS (1:00 PM – 3:00 PM MDT)

### SESSION: BREAKOUTS

Session Moderator: Brian Joubert (Alberta Forestry and Parks)

1:00 – 2:00 Breakout Sessions (participants will select a room of their choosing)

Rooms 1,2 and 3      Key Data and Knowledge Gaps  
*(What are the most important gaps to address? What actions and resources are required?)*

Rooms 4 and 5      Collaborative Opportunities  
*(How can researchers, wildlife managers and others (e.g., Indigenous Peoples, citizens) align data collection for multiple purposes and benefits?)*

Rooms 6, 7 and 8      Adaptive Management and Other Project Possibilities  
*(Are there opportunities to work together on adaptive management / other projects? If so, what would these projects look like?)*

2:00 – 3:00 Breakout session summaries and general discussion (workshop participants) (60 min)

3:00 – 3:30 Next Steps and Workshop Wrap-Up (Dan Farr and Mark Edwards, EPA)

**3:30 PM    WORKSHOP ENDS**

---

## SPECIAL THANKS TO

### The Organizing Committee

Dan Farr	Cassie Stevenson
Mark Edwards	Monica Kohler
Marcus Becker	Anne Hubbs

### The Moderators

Dave Roberts	Emily Herdman
Hannah McKenzie	Justin Gilligan
Paul Jones	Brian Joubert
Delaney Frame	Fauve Blanchard
Christa MacNevin	Stephen Sucharzewski
Peter White	Courtney Hughes



M. Grue