

# Webinar: Comparing Methods

## Speaker Abstracts

*Estimating density of wildlife with camera traps – spatially explicit capture-recapture and time in front of the camera*

**Camille Warbington**, Megan Brownlee, and Mark Boyce

In recent years, camera traps have become ubiquitous for estimating density of wildlife populations. Researchers frequently use spatially explicit capture-recapture (SECR) models of density, whether in a maximum likelihood (ML) or Bayesian framework. However, not all wildlife populations “fit” SECR assumptions and model requirements. Time in front of the camera (TIFC) is another method for density estimation that does not have the same limitations and assumptions as SECR. While SECR density estimates are widely published, we are unaware of any that compare SECR results to TIFC estimates. Sitatunga, a wetland specialist African antelope, has ecological requirements and behaviour that do not align with SECR assumptions. We present results on density estimates from ML and Bayesian SECR models, as well as TIFC methods. Our results show that sitatunga density estimates from TIFC are comparable to SECR estimates, without the same model limitations. We suggest TIFC as an alternative to SECR when the species in question violates assumptions or is otherwise unsuited to density estimation with SECR.

**Biosketch:** Camille has a BS in Forest Resources from the University of Georgia and an MS in Wildlife Ecology from the University of Wisconsin - Madison. Her PhD research focuses on the ecology of sitatunga, an understudied and economically valuable wetland-specialist African antelope species.

*Do you only get what you pay for? Comparing low-cost recording units to the field standard.*

**Tyne Baker**

Digital bioacoustical surveys have been on a slow rise as the devices get technologically better, user-friendly, more portable, and more affordable. Bioacoustical research papers with a focus on audible-range species (birds, frogs) have been rife with the “Song Meter” brand from Wildlife Acoustics (WA) for a decade now. In recent years, more affordable units have burst on to the market. I put the new AudioMoth, a low-cost open-source contender from Open Acoustic Devices, head-to-head against the industry standard Song Meter from Wildlife Acoustics in a playback study under real-world field conditions. Pulling from these data, experience with these models, and other literature, I will discuss the differences, strengths, and relative performance of these units. My goal with this talk is to provide specifics and realities of these devices for those looking to wisely allocate their funds, while still acquiring the appropriate tool for their own unique survey plan.

**Biosketch:** Tyne has been digitally eavesdropping on animals for over a decade. She holds a MSc from the University of Windsor focused on Animal Communication and Ecology. As the owner of

A/Vian Eco her goal is to help organizations implement remote audio/visual detection technology in a scientifically rigorous and practical way.

*Five years of monitoring mammals in Alberta by remote camera: current applications and future directions*

**Marcus Becker**, Shannon White, Stan Boutin, Jim Schieck, David Huggard, and Robert Serrouya

The Alberta Biodiversity Monitoring Institute (ABMI) tracks changes in Alberta's wildlife populations and their habitats in order to provide ongoing, relevant, and scientifically credible data and information. Beginning in 2015, the ABMI began monitoring mammals throughout the province using remotely deployed cameras. Since then, over 3,000 individual ABMI camera deployments have captured nearly 20 million images, which includes data on 42 native mammal species.

In this talk, an overview of the ABMI's remote camera data collection efforts to date will be provided, including a description of a new environmental sensor platform, Wildtrax, which is now used to process, tag, and organize the images that are collected. We will then walk through how these images are used to calculate animal density as an index of relative abundance, which provides the basis for the development of models of habitat association for each species and spatial predictions of relative abundance throughout the province. These scientific products help to quantify the impact of human land use on mammal populations. Using the example of moose, we demonstrate how density estimates derived from cameras compare to traditional aerial survey estimates.

This comprehensive dataset represents a valuable resource for ecological research and management of wildlife in the province. We will conclude the talk with a demonstration of new open-source tools currently under development to allow for increased interaction and use of the data by external groups, including the estimation of mammal density for user-derived areas of interest.

**Biosketch:** Marcus Becker is an applied data scientist with the ABMI and handles a wide array of mapping and statistical analyses related to biodiversity in the province. He graduated from the University of Alberta in 2016 and has been plying his trade at the ABMI ever since.