Alaska Small Mammal Group

Annual Meeting 2023

Friday, April 28th, 2023, 12-2pm

Announcements

We have a Google group! alaska-small-mammal-group (at) googlegroups.com

We have a website! https://accs.uaa.alaska.edu/wildlife/small-mammal-ecology/

Anyone can send an email to the Google Group, so feel free to share anything that is relevant to small mammals in the north.

If you know of anyone who would like to be part of the mailing list, email the co-chairs and they can add them.

Conference Reminder

The 13th International Mammalogical Congress (IMC-13) will be held in Anchorage from July 14-20, 2023. Jointly hosted by the American Society of Mammalogists and the International Federation of Mammalogists.

Upcoming Thesis Defense

Sarah Swanson will be defending her M.S. thesis, *Seasonal drivers of amplitude patterns in a variably cyclic population of northern red-backed voles*, on Wednesday, May 3rd at 10am in Murie 104 (UAF) or on Zoom. Sarah is advised by Dr. Knut Kielland.

Welcome & Introductions

Introductions by the 24 participants on the call, including folks from NPS, BLM, USFWS, ADF&G, and several universities across the U.S.

Research Updates

Carbon Credits Proposal

Tom Paragi and Julie Hagelin reported on a proposal before the Alaska State Legislature for carbon capturing contracts (carbon credits) in the boreal forest. ADFG provided a presentation to Society of American Foresters AK Chapter meeting on how to maintain boreal forest-wildlife relationships. Small mammals, in particular, are key to boreal forest regeneration via soil inoculation of mycorrhizal fungi and provide a prey base to predators.

12:20-12:30: Models vs. Reality: A small mammal diversity transect along the Colville River, AK.

Presented by: Jesika Reimer, U.C. Davis.

Conducted river-based transects targeting different habitats from floodplain to terrace. Goal was to describe small mammal community along the Colville River and ground-truth species distribution models developed by Baltensperger and Huettmann (2015). Found a west-east gradient that was largely driven by changes in site moisture and structural complexity.

Although distribution models predicted a low relative index of occurrence for the northern red-backed vole, these voles were caught in large numbers at some of the transects. At the time of the study, there was only one historical record of northern red-backed voles north of the Brooks Range (though there are now several other records north of the Brooks Range that weren't detected/digitally available at the time of the study). Lack of occurrence records from non-forested areas may have trained the model to expect that red-backed voles did not occur outside of forests.

Did not catch any shrews, probably because survey was not designed for them. Brought acoustic detectors, but did not record any bat calls.

Relevant Resources

Final report available from the ACCS Catalog.

Occurrence records are available in Arctos.

Baltensperger, A. P., and F. Huettmann. 2015. Predictive spatial niche and biodiversity hotspot models for small mammal communities in Alaska: Applying machine-learning to conservation planning. Landscape Ecology 30(4):681–697.

12:40-12:50: Genetic Consequences in Alaskan Small Mammals Impacted by Climate Change and Road Development.

Presented by: Shawn Crimmins, UAF Cooperative Wildlife Unit.

Proposed project in partnership with NPS, USGS, Project in Motion, others… looking at the potential impacts of the Ambler Road. For example, could the Ambler Road be a barrier to movement and genetic connectivity for small mammal populations?

Genotyping of samples from the long-term, small mammal monitoring project in Denali National Park could be used to inform genetic structuring, population connectivity of small mammal species. Information from Denali could be used as a control of what we would expect to see in an undisturbed system.

Timeline: Genetic analyses would be conducted in 2024-2025 in partnership with University of Nebraska. Estimated project completion date of 2026.

Results from this study could be used to leverage funding for continued monitoring in Denali, expand monitoring in Gates of the Arctic and Kobuk Valley to get a 'before/after' picture of small mammal abundance and diversity in areas where development is slated to occur.

Relevant Resources

Cook, J. A., and S. A. MacDonald. 2006. Mammal inventory of Alaska's National Parks and Preserves, Arctic Network. NPS/AKRARCN/NRTR-2004/01, Arctic Network Inventory & Monitoring Program, National Park Service, Alaska Region, Fairbanks, AK, USA.

Discussion

Melanie Flamme: We are also currently working on a small mammal contaminants analysis project (prior to road development) using the same samples from along the Ambler Road corridor and Denali. These samples from the Kobuk River were collected by Andrew Hope in 2014. Samples were collected from Walker Lake in Gates of the Arctic NPP all the way to Kiana.

Joe Cook: Emphasized importance of collecting specimens as a way of understanding change over time e.g., using specimens collected across National Parks in the early 2000s by Cook & Macdonald as a baseline. Removal sampling does not affect overall population health, though this could be tested by comparing removal vs live-sampling grids. Many benefits to removal sampling that cannot be achieved through a mark-recapture framework.

Andrew Hope: Doing side by side trapping efforts for removal versus release here in Kansas as part of our efforts to collect diverse materials. Seems like Toolik would be a great cross-site platform for furthering this line of inquiry.

Group Business

We have a website and mission statement! Amanda gave a short tour of the website, highlighting recent edits.

Discussion (12:50-13:00)

The following were proposed as potential items to add to the small mammal webpage:

- Section on future research needs, whether specific to a single, understudied species or a broader need like a statewide monitoring program
    - Could consult Droghini et al. (2022) and the ADF&G State Wildlife Action Plan.

    - Folks mentioned that the SWAP as it currently stands is heavily focused on birds and marine mammals.
    - Once SWAP Coordinator is hired, would be good for them to meet with the Small Mammal Group to discuss how the SWAP can better speak to conservation needs for small mammals in Alaska.
- Recording of this meeting [completed 2023-05-07]
- List of ongoing research projects
- Contact information of co-chairs so people can get involved [completed 2023-04-28]
- New link for the Northern Bat Working Group & map of maternity colonies [completed 2023-04-28]

Relevant Resources

Alaska Department of Fish & Game's State Wildlife Action Plan.

Droghini, A., K. S. Christie, R. R. Kelty, P. A. Schuette, and T. Gotthardt. 2022. Conservation status, threats, and information needs of small mammals in Alaska. Conservation Science and Practice.

Nomination of Co-chair (13:00-13:05)

Julie is stepping down and passing on the torch to Shawn Crimmins. Shawn (overwhelmingly!) voted in.

Future Directions

Small Mammal Monitoring Network (13:10-13:30)

Andy has been working on a NSF proposal to start small mammal monitoring in areas where historical data are available. Decided to focus on collared lemmings in Arctic Alaska using a combination of removal and live captured.

Contacted members from several northern communities to develop local partnerships. Was initially successful in one community, but with staff turnover he has lost those initial connections. Limitations of building community relationships without being there in person.

Interest in developing a database that would track species richness and abundance indices. Several datasets that have been collected on small mammals in Alaska are not publicly available, which limits how we can use those data for meta-analyses or historical comparisons. How much information could we gather by digging through old literature and digitizing their data?

Discussion (13:30-14:00)

Andrew: St. Paul is a really vibrant, engaged community that has a strong STEM program. Not a lot of small mammal richness. Kobuk would be an interesting center especially from the standpoint of human impacts/road development. In addition to looking at cyclical changes in population abundance, could be interesting to conduct 5- or 10-year sampling looking at directional change (e.g., northward expansion). NSF increasingly interested in making use of existing/historical specimens, databases, etc.

Aren: What about re-surveying sites like Toolik, Kanuti, Mouse Lake, Denali, NPS inventories? Might be easier to justify sites that were previously surveyed >10 years ago.

Funding landscape: Updates from NPS and USFWS on their Inventory & Monitoring programs, current priorities, and funding status. NPS is not conducting small mammal monitoring outside of Denali. USFWS is deploying downward-facing camera traps to detect small mammal species/genera. Any opportunities from DoD? Agency support seems important if the goal is to have a long-term monitoring project i.e., longer than the 3-5 year funding cycle.

Andrew: Focus on indicator species, like northern red-backed voles and collared lemmings?

Casey Burns: For an inventory, we could follow the model we've built for the Alaska Bee Atlas. We've been very successful filling data gaps opportunistically in remote parts of the state with field-going agency staff. We provide materials and training every year.

Casey: Is there an acceptable non-lethal way to ID specimens? Non-lethal sampling would be easier because folks would not have to bring samples back. Focus sampling on high-priority sites.

Andy: Often, lethal sampling is the only way to confidently identify to species. Collecting fecal samples can be a promising avenue if paired with DNA metabarcoding.

Andy: If goal is to monitor population trends, then it seems like continuous, annual sampling would be better than sampling once every decade.

Andrew: Yes, but it might be worth checking in on old sites e.g., if the focus is on directional change, like identifying expansion of boreal species into the tundra.

Andy: Working with Link on extra-limital records i.e., records beyond known range extent.

Julie: How can we determine priority locations – Where are there gaps in sampling? Maps of species richness?

Action Items

1. Pull together historic trapping records into database – Tom, Aren, Andy
2. Identify resample sites or new monitoring sites – Andrew, Andy
3. Identify understudied or vulnerable species for the SWAP revision – Amanda, Andy