

# Fauna & Ecosystem Services

## COMMON THEMES

- **Movements:** of animals or people, important corridors, critical habitat
- **Distribution and abundance** of fauna (both for fauna's sake and as subsistence purposes)
  - In at least Todd's study region the most important resources are moose, caribou, salmon, waterfowl

## COMPLIMENTARY THEMES

- **Extreme events & Disturbances:** influence on wildlife habitat selection and movements; access to resources by people
  - **Local Community access to resources:** Natalie & Laura's projects will work with Todd's Access to Ecosystems services project to contribute to understanding of nutritional resources focus (was noted that food security is big issue that the Arctic Council must address, Conservation of Arctic Flora and Fauna, CAFF)
- Adding to Animals on the Move:** sheep (Laura's project) and geese (JJ's project, but need GPS data) to Natalie's analysis.

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## DATA

- **Coordinate use of land cover datasets:** use same format/projection (fire severity, veg cover/classification/snow etc.) according to what Env-Data currently has and can use.
- **Coordination temporal resolution and spatial scales:** daily, seasonal, annual time steps, importance of shoulder seasons for harvest and animal survival, movements, productivity
- **Identify traditional and customary use areas:** Todd could help to identify traditional and customary use areas in regions we have collared datasets for in Animals On the Move so that they can be integrated with human footprint map.
- **Compare and/or combine proposed modeling approaches:** the modelers on Laura/Natalie's projects will talk (Mark Hebblewhite & Janet Rachlow) to determine most informative way to proceed given common interests. I.e. use same datasets but different models – compare and contrast results.

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## DATA

### Field measurements (sites, mmts, protocols)

No overlap among our 4 projects!

### Satellite Remote Sensing

Lots of overlap in variable needs (veg structure and phenology/snow/shrub dominance/surface water extent and phenology/time since fire and fire severity, etc.)

### Airborne Remote Sensing dreams

Variables of common interest:

LiDAR

[snow product for alpine areas in Wrangells \(Frequency Modulated Continuous Radar \(FMCW\)??\)](#)

more G-LiGT like fusion products

Geographic needs: We need to identify areas of common focus once respective study area boundaries are available to ST, or once existing animal location data is fully determined (next few months), and then based on overlap, we will identify high priority areas per RS product of interest.

### Identifying primary data gaps & needs

Data Gaps:

Rain on Snow Events (!!!)

Maps of insect outbreaks

Downscaled climate data for mountainous regions

Knowledge gap: identifying if variability/extreme events are increasing (ie. More than means), especially during shoulder seasons

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## MODELING

Common driver datasets/covariates\*:

fire severity, time since fire (all but sheep)

- veg cover/classification/structure, phenology, productivity\*
- snow extent (spatial and temporal dynamics)\*
- ROS/icing events and timing, depth(would be nice)\*
- land ownership or hunting regs (Dall sheep and Animals)
- met data\*
- human footprint (Animals)
- insect outbreaks (animals project)
- freeze up and thaw timing (shoulder seasons and winter)\*
- surface water extent/seasonality (using Mark Carol's products for Animals) of rivers and lakes
- sea ice concentration (JJ)

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## SYNERGISTIC OUTCOMES & COMPARISONS

- **Model comparison:** Compare different resource selection modeling approaches (Hebblewhite and Rachlow's models)
- **Inter-specific responses:** Compare importance of different covariates across ungulates
- **Regional differences** in importance of drivers
- **Maps of probability of habitat use** for each species (selection/avoidance)
- **Assessment of geese as agents of disturbance**
- **SnowModel** work (Laura) may be applicable to other animals that use alpine areas

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## Other thoughts/ideas

- Include decadal climate oscillations
- Atlas of community-based monitoring: portal to indicate what different communities are monitoring
- Porcupine caribou herd: arctic borderlands ecological knowledge coop, focuses on understanding whether people are meeting needs—gave up on berries, harvesters interviewed every year, harvest rate set based on interviews