	Attachment C. Worksheet for Breakout Session III (Tuesday afternoon)				
	Gap	**Data or Modeling?**	**Approach (to address gap?)**	**Species of Relevance**	**Likely Funding Source**
Climatic vars	Lack of standardization, in each of various climatic parameters		top-down regulation		
	snowpack characteristics (SWE, depth, density) -- at large spatial extent, smaller the resolution the better	both (measure what we can, infer what we can't) -- need to be strategic in how we site our monitoring locations, to achieve greatest precision in our estimates;	use observed relationships in easily measured vars to other parameters, to infer levels of vars that are measured only at intensive-monitoring sites; COCORAHS volunteer networks (they provide training; existing effort already in place in ANC, Bethel; citizen science is attractive to USFWS; DOT stations (Sagwon) and oil co.'s)	all	ideally, we'd like to have integration and standardized approaches, protocols,
	coastal fog ??	system of weather stations along the Haul Rd. has been highly valuable; need to span important axes (Brooks Range to coastal gradient)	need to measure incident radiation & outgoing radiation (timing), condensation rate (implications for lichens), and vapor-pressure deficit		
	fine-temporal-scale understanding of snow cover (persistence), esp. at beginning and end of snow-covered season		1) rapid-response team, to quantify effects of extreme events; 2) periodic verification of weather events (e.g., pilots stopping the plane during distance sampling to assess whether there has been icing; NPRA measurements)		
	sea-ice extent				
Mammal & other predictor vars	how climate may induce subtle changes in plant-community composition (e.g., in C:N ratios, palatability, veg. structure), trace minerals (Cu), etc.)	primarily modeling, supplemented with empirical data (on both fine-temporal-scale weather metrics, as well as nutrient availability for animals, and *in vivo* digestibility)	permafrost and hydrology need to be coupled, veg & soil moisture can also be coupled (bring together experts from diverse disciplines), as can storage capacity of the soil and ET (which is usu. estimated, as the difference in water balance; require BOTH measurements and modeling); collect data in integrative teams; co-location of various types of sampling sites; model validation, verification, and updating; assume biomass that caribou eats is correlated with total biomass (Brad G.), which may be a dangerous assumption, because the relationship is 'noisily positive'	know that strongly needed for large-bodied herbivores, secondarily for predators	
	poor ability to connect between collected veg and climatic data		hyp-driven research that solidifies mechanistic relationships between climate and vegetation (as well as between climate and mammals)		
	phenology		existing networks (Nat'l Phenological Network, BudBurst); citizen-science initiatives; BBS data early in the season		
	small-mammal abundance and distribution		are they still cycling?		
	experimental studies that illuminate the relationships between species fitness and various types of climatic stress	primarily data	laboratory, manipulative experiments that clarify TNZ, upper lethal temperatures {ethical constraints for IACUC process}; correlative approaches between mass-mortality events and high-resolution climatic anomalies		
	poor understanding on effects of increasing variability and increasing frequency of extreme events	primarily data			
	collect information on pathways by which mammals may be proximately affected, due to climatic stress	primarily data, but also modeling: caribou, muskox, moose, arctic ground squirrels	collect information on body-mass (or body-fat) indices, amount of ecto- and endoparasites, levels of competitors, altered vegetation composition		
	AGS distribution and abundance		permit persistence of grizzly bears on the N. Slope, are broadly distributed elevationally; but are pretty catholic in their habitat preferences; 'floodplains are like AGS factories'; ecotypic variation in body size (to 2 kg in fall); poorly understood life history; prey base for numerous spp.; tend to inhabit Pleistocene steppe tundra (may be reduced, in the future)		