Attachment C. Change in Distribution and abundance of aquatic/wetland habitats				
Gap	**Data or Modeling?**	**Approach to Address Gap**	**Species of Relevance**	**Likely Funding Source**
Ice Content - coupling of energy and soil moisture.	Both	1. Intensive, small-area ice mapping and monitoring (for use in developing models of thaw settlement and other potential microtopography changes, ultimately for up-scaling.	shorebirds and waterfowl	
Surface water distribution	Both	1. Measure surface-water distribution (remote sensing). 2. Model relationship between SWE and surface-water distribution.	shorebirds and waterfowl	
Paludification		1. Model carbon balance…. 2. Experimental manipulation (e.g. controlled introduction of sphagnum). 3. Comparative ecosystem analysis (NS vs. Seward Peninsula).	shorebirds and waterfowl	

Attachment C. Food Availability				
Gap	**Data or Modeling?**	**Approach to Address Gap**	**Species of Relevance**	**Likely Funding Source**
Climate and hydrology influence on aquatic inverts important to birds	data	experimental	Shorebirds and waterfowl	
Water temp influence on plant and invert community composition and timing of emergence?	data	experimental	Shorebirds and waterfowl	

Attachment C. Coastal Dynamics				
Gap	**Data or Modeling?**	**Approach to Address Gap**	**Species of Relevance**	**Likely Funding Source**
Climate influence on storm frequency, intensity and timing (need down-scaling)	both			
Mapping and spatial modeling of inundation patterns	both	Map inundation patterns; model realtionship between storm attributes and inundation extent and pattern.		
vegetative response to inundation/salinization	both	Measure veg response over time		
Barrier Island Impacts	data		COEI	
COEI response to loss or redistribution of nesting substrate (driftwood)	data		COEI	
Sediment transport	both	Collect sediment transport data		

Attachment C. Shrub Expansion				
Gap	**Data or Modeling?**	**Approach to Address Gap**	**Species of Relevance**	**Likely Funding Source**

Attachment C. Predator - Prey dynamics				
Gap	**Data or Modeling?**	**Approach to Address Gap**	**Species of Relevance**	**Likely Funding Source**

Attachment B. Worksheet for

Species or Species Group	Projected Change in Habitat Availability	Parameter (e.g., distribution, growth rate, etc)	Positive (+) or Negative (-) Effect	Rationale for Strong Response to Predicted Effect
Red Phalarope and Pectoral Sandpiper	Less wet sedge tundra due to summer drying regime	Distribution, breeding density, breeding success	negative	Breeding habitat association with wet sedge tundra. Loss of habitat would limit distribution & abundance; lowered invertebrate productivity could reduce breeding success
YBLO, PALO,	lake deepening (shallow to deep)	distribution	positive	fish survive over winter
Red and red-necked phalaropes and pectoral sandpiper	loss of shallow water habitat	population size; distribution	negative	prey availability and accessibility (substrate)
Geese	decrease in moisture	fledging success	negative	change in forage quality
Savannah Sparrow (and other sparrows), Smith's Longspur, ptarmigan	increased shrubbiness (shrubs replace herbaceous cover)		some positive, some negative	
	(?) loss of *Arctophila* - paludification			
Greater white-fronted geese	??	breeding success	positive	longer nesting season, improved forage
Red knots,	Tundra to Taiga conversion			
COEI	Loss or change in barrier islands	nesting success	negative	ice phenology during nesting season - loss of buffer/storm protection, increased flooding