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GENERAL CLIMATE CHANGE						
Monitoring	Climate Change Indicators	Develop a set of useful climate change indicators (including species); identify the most effective way to monitor them over the short-, mid- and long-term, and develop a report card for public use.				This item was added to initial CCS catalog during the TWG process in June-July
Monitoring	Ecosystem Vulnerability Assessment	Complete a vulnerability assessment to identify specific species, habitats, landscapes, ecosystem functions, and cultural resources that may be most sensitive to climate change, in order to prioritize allocation of scarce resources and improve management choice.				This item was added to initial CCS catalog during the TWG process in June-July
AGRICULTURE						

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	Any rseerch / monitoring to recommend re: Agriculture?					

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FORESTRY AND VEGETATION						
Monitoring	Periodic update of statewide vegetative classification	(1) Document changes in treeline (fire risk/policy), wildlife habitat) and supply of commercial timber (merge with fire history and insect outbreak mapping for age class); (2) Provide focus on areas of most rapid change.	Every 10-20 years, depending on rate of changes observed on ground, fires, etc.	USGS, NASA, DNR Division of Forestry	Moderate	LANDFIRE classification of 2001 LANDSAT TM data is being completed now, update with finer resolution and ground truthing of key communities is desirable (e.g., loss of alpine or low tundra)

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Monitoring	Effect of trends in moisture and temperature on growth and survival of commercial and subsistence species	(1) Convene working group of scientists and managers to identify key vegetation species (fiber and food) and determine status of info needed to predict "tipping points" of rapid change (e.g., growth rings in spruce and birch approaching zero increment); (2) for identified info needs, begin experimentation trials or monitoring protocols	1 year for working group, ongoing for monitoring	US Forest Service, DNR Forestry	High	Timely documentation of reduced survival or annual growth increment will provide time for adaptive strategies

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Monitoring	Response of vegetation after disturbance (fire, insects, flooding, disease, logging)	(1) Survival response and biological diversity (e.g., invasive species) may be changing with climate; (2) focus on veg types and areas of state where change is most rapid, or on commercial/subsistence species; 3) have scientists focus on identifying gaps in knowledge	1 year for working group, ongoing for monitoring	USGS, National Park Service inventory and monitoring program (http://science.nature.nps.gov/im/units/AKRO/index.cfm), university	Moderate	Related to or subset of previous topic
INVASIVE SPECIES						
Monitoring	Mapping of insect and disease outbreaks	Document forest and shrub health for ground truthing of areas with potential mortality	Annual	US Forest Service, DNR Forestry	High	Continue and if possible expland existing efforts

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Monitoring	Arctic Marine Monitoring baseline - in anticipation of invasive species	Establish Arctic baseline monitoring, particularly in the nearshore environment, to determine what organisms are currently present, in anticipation of future develop combined with climate change bringing potential invaders to the Arctic. (could combine with baseline monitoring for fisheries resources.)				
Research	Invasive marine species - forecasting	Develop a HAB, Vibrio and marine invasive species forecasting program for Alaskan waters.				

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Monitoring	Invasive marine species - monitoring	Develop statewide monitoring program for diseases and invasive species that affect fish and shellfish, including PSP, Vibrio and harmful algae				

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SEA AND RIVER ICE						
Monitoring	Sea- and river-ice monitoring & forecasting	Request that NOAA in partnership with ADOT&PF develop the capability for improved, higher temporal and spatial resolution sea and river ice forecasts to enhance safety of winter travel in roadless areas (especially relevent to hunter safety.)	US Coast Guard has given NOAA a new requirement for daily sea surface temperature charts and ice forecasts.	NOAA, ADOT&PF, USFWS	High	Forecasting is important to enhance safety of winter travel in roadless areas. Ongoing changes in freeze-up timing and conditions continue to affect subsistence harvest opportunities and uses through inaccessibility and/or increased access hazards. Coastal hunters are inherently flexible (where and when they hunt), but danger of open water travel in autumn makes this high priority for hunters forced to pursue species that are staying much farther offshore.

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FRESHWATER ENVIRONMENT						
Research	Stream/lake biochemistry research	Increase research on stream/lake biochemistry impacts due to land cover conversion, permafrost degradation, and changing precipitation regimes within watersheds. Contact Bruce Peterson, Woods Hole Marine Biological Lab, htt;://ecosystems.mbl.edu/Tide/contact/peterson.htm				This item was added to initial CCS catalog during the TWG process in June-July
Research	Research impacts of freshwater from glacial melt on marine ecosystem	Research impacts on marine habitats and dependent species of increasing freshwater from glacial melt.				This item was added to initial CCS catalog during the TWG process in June-July
MARINE & COASTAL ENVIRONMENTS						
Monitoring	Sea level rise monitoring	Increase monitoring of sea level rise.				This item was added to initial CCS catalog during the TWG process in June-July

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Baseline/ Census	Coastal Shoreline Impact Assessment	Conduct an Alaska Shoreline Impact Assessment Project to establish a baseline of data on the existing coastal resources and the projected impacts of sea level rise (including effects of tides, weather and short-term [El Nino-type] components).				This item was added to initial CCS catalog during the TWG process in June-July
Monitoring	Monitor and forecast ocean conditions	Increase monitoring for real time and forecasts of ocean conditions (winds, waves, currents, temperature, salinity, pH, etc.)				This item was added to initial CCS catalog during the TWG process in June-July
FISH AND WILDLIFE						

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Monitoring	Monitor trends in fish species abundance and distribution	Establish long-term monitoring to document changes and trends in fish species abundance and distribution.				This item was added to initial CCS catalog during the TWG process in June-July Note that EA TWG also mentioned issue regarding potential effects changing in shipping in the Arctic on fish distribution and species

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Monitoring	Monitor trends in wildlife species abundance and distribution	1) prioritize subsistence and rare species based on current assessment (ADF&G plan); 2) continue community/guild surveys (breeding bird, Christmas bird count) and available game surveys; 3) integrate High Latititude Ecological Survey (www.HLEO.org) with citizen reporting network (e.g., CARMA http://www.rangifer.net/carma/)	ongoing (focus on area of state with greatest change)	government, tribal, NGO	High	

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Baseline/ Census	Evaluate reliability of conducting post-calving photocensus of caribou herds and alternate methods for assessing population abundance or trend in abundance.	International conference on census, herd composition, and trend methods is warranted to define scope problems and evaluate alternative methods (e.g., mark-recapture for population estimate, sampling effort and statistical power needed for detection of trend).	1-2 years	ADF&G, Canadian provinicial agencies, universities, Scandinavians, Russians	Moderate	Some herds have not been photographed because of poor weather, poor grouping, or smoke for several years (e.g., Porcupine herd since 2001). Development of digital photograpy methods is underway to allow more aircraft platforms for greater flexibility instead of one platform statewide.

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Baseline/ Census	Evaluate reliability of conducting population estimates or age-sex composition surveys for moose in autumn (before antler drop) compared with surveys in late winter	Scientific conference to review trends in failure to achieve survey conditions	1-2 years	ADF&G, USGS, universities, Yukon Govt	Moderate	Hunter concern with frequency of data collection (e.g., missed surveys) is heighted in areas where management is intensive, such as producing high yield through cow and calf hunts. Failure of hunt advisory committees to reauthorize cow or calf hunts allows populations to grow to point of range impact.

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FISH AND WILDLIFE HARVEST						
Research	Evaluate potential effect of allowing moose hunting during the rut on moose productivity	Review data or model the potential effect of shifting moose hunting seasons into early October on the disruption of breeding success, particularly in low-density populations typical of many rural areas of Interior.	Adpative management could potentially begin soon in some areas of state, but general tendency to not have cow hunts in low density herds (or low sample size where it does occur)	ADF&G, USGS, university	Moderate	No major changes obvious in peak date of calving observed so far in high density populations where objective is to limit or reduce growth in moose population, but effect in low density herds unknown

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Monitoring	Monitor effect of temperature and rainfall patterns on river level for motor boat access in autumn	Review patterns of rainfall and trends in permafrost melt with river gauge levels in selected areas of the state to understand which indicators may be useful in predicting hunter access. Concurrent interviews of hunters in the study sites to correlate firsthand observations in river travel difficulty would be instructive in understanding what proportion of a study area has access restricted by low water level for specific types of motor boats (forecast future magnitude).	Retrospective analysis correlating recent trends in weather to river levels may already be done, but independent (blind) interviews with hunters and game managers could determine correspondence to weather and water level in specific areas	ADF&G, USGS, university, NOAA	Moderate	Annual variation in river levels and access are a common facet of hunting by boats. A trend of decreasing boat access would require consideration of alternative access means or timing seasons (if feasible) to when water levels are conducive to boat travel.