

North Slope Science Initiative Emerging Issue Summaries

State of the Arctic Conference



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North Slope Science Initiative (NSSI)

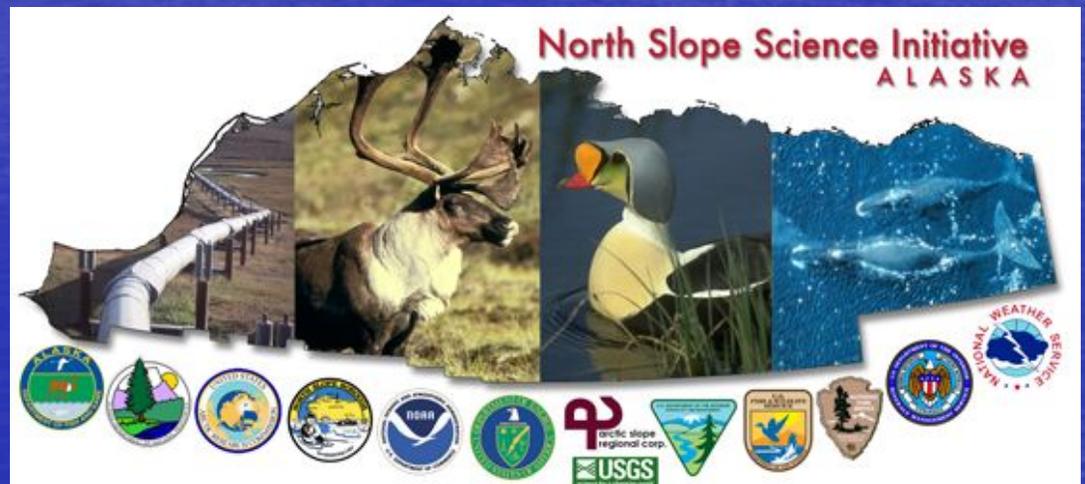
- An intergovernmental effort to increase collaboration at the local, state, and federal levels to address the research, inventory, and monitoring needs as they relate to development activities on the North Slope of Alaska
- Mission – to improve scientific and regulatory understanding of terrestrial, aquatic and marine ecosystems for consideration in the context of resource development activities and climate change
- Vision – Identify those data and information needs, management agencies and governments will need in the future to develop management scenarios using the best information and mitigation to conserve the environments of the North Slope

- NSSI Member Agencies (voting privileges):

- Bureau of Land Management
- Fish and Wildlife Service
- National Park Service
- National Marine Fisheries Service
- Minerals Management Service
- Alaska Department of Natural Resources
- Alaska Department of Fish and Game
- Arctic Slope Regional Corporation
- North Slope Borough

- NSSI Advisory Agencies (no voting privileges):

- U.S. Geological Society
- Department of Energy
- U.S. Arctic Research Commission
- National Weather Service



Geopolitical Issues:

* Law of the Seas

* International Boundaries

295,000 km²

Chukchi Sea

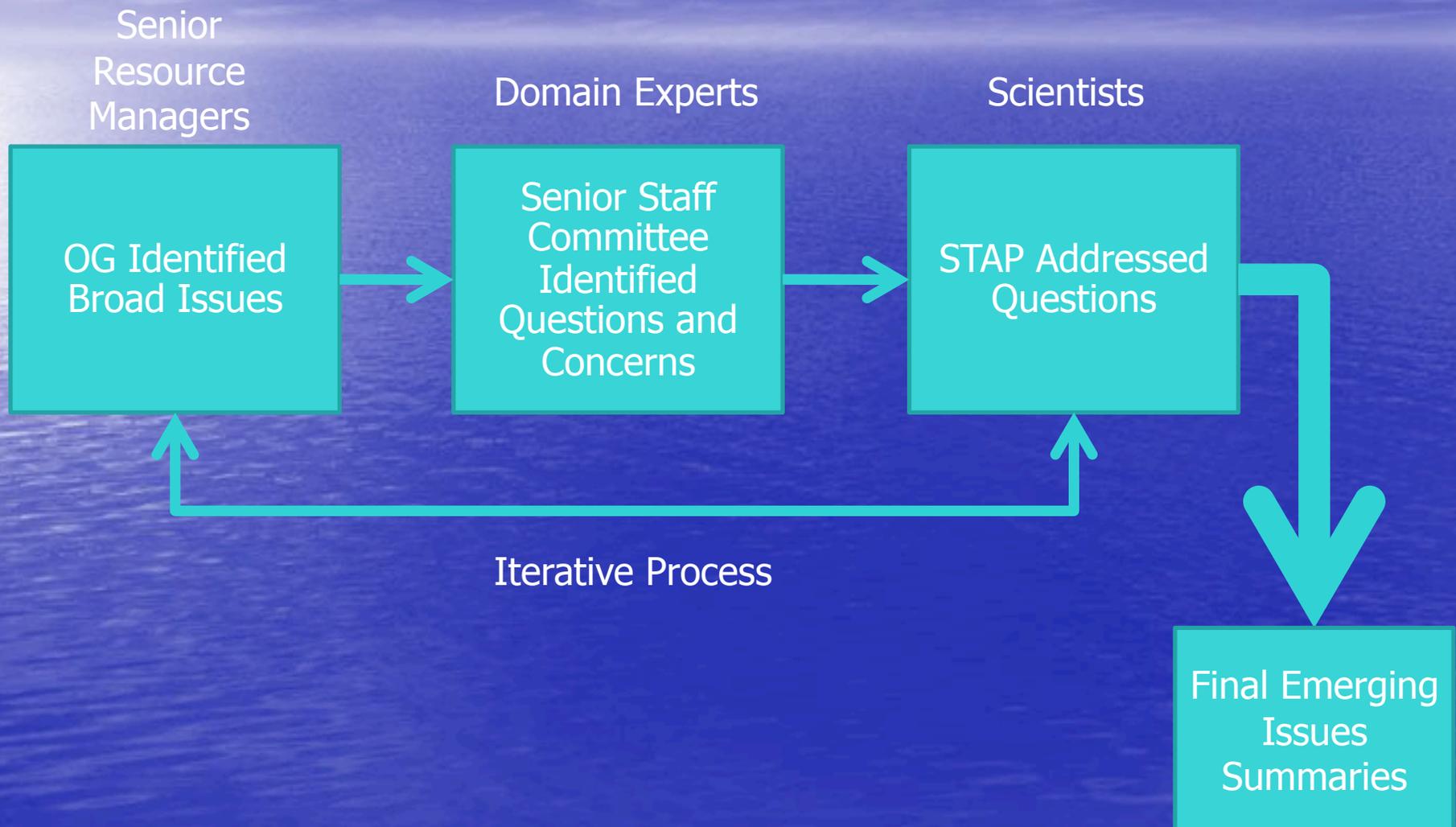
Beaufort Sea

231,000 km²

NSSI Organizational Structure

- The NSSI has two advisory groups: the Oversight Group (OG) and the Science Technical Advisory Panel (STAP).
- Activities of the NSSI are directed by the OG which is composed of Federal, State, and Borough land managers.
- The STAP advises the OG on science issues such as identifying and prioritizing inventory, monitoring and research needs, and providing other scientific information as requested by the OG

Emerging Issues: The Process



Additional Emerging Issues

- Arctic fish and fisheries
- Socioeconomics
- Suggestion: Rehabilitation/restoration



Emerging Issues: Weather and Climate



- Current data collection ad hoc
- Inventory existing stations
- Canvas user needs
- Pool resources to systematically improve network
- Make data accessible

Emerging Issues: Increasing Marine Activities



- Identify the range of likely future scenarios
- Develop potential environmental effects modeling methods that can inform management decisions
- Baseline information needed! (species, sound, water quality, sediment, currents, etc.)
- Short- and long-term monitoring

Emerging Issues: Changing Sea Ice/Ocean Conditions



- Need access to high quality, user-friendly data and model projections at appropriate scale
- Incorporate historical data (remote sensing and LEC)
- Identify models that can be scaled to regional and local resolution on 2, 5, 10, and 20 year time frames
- Synthesis workshop needed
- Work needed on fate and effects of spills on ice

Emerging Issues: Permafrost



- Main issue is active layer, NOT permafrost
- Recognize heterogeneity of soil (especially ice content)
- Existing data insufficient
- Data need to be centralized
- Combining ground and remote sensing data may be promising but needs work
- Start work on threshold conditions at which thawing accelerates

Emerging Issues: Coastal and Riverine Erosion

- High & increasing rate
- Sea level rise, increased fetch, thicker active layer, tougher storms contribute
- Inventory of shoreline data needed
- Need an accurate coastline and river corridor map and program to remap
- Coast should be instrumented for waves and wind
- Improved risk assessment



Emerging Issues: Hydrology and Lake Drying



- Critical need for hydrological networks
- Remote sensing technologies maturing but need further support
- Status and trends poorly understood
- Workshop to identify data needs

Emerging Issues: Coastal Salinization



- May change vegetation and reduce water availability for ice roads
- Need better understanding of vegetation tolerances
- Not known to have impacted large area
- Do not accept use of saline waters for onshore ice roads

Emerging Issues: Contaminants



- Atmosphere is most significant transport route
- Continued vigilance needed
- Dose-response data needed
- Subsistence diet should be monitored

Emerging Issues: Fire Regime



- Despite Anaktuvuk River fire in 2007, we cannot say that fire regime on North Slope is changing
- Fire management addressed by Alaska Wildland Fire Coordinating Group
- Should continue monitoring fire recovery at Anaktuvuk River

Emerging Issues: Vegetation Change



- Although much of North Slope has been mapped, maps are of limited value
- No formal change detection plan is in place
 - Need to inventory vegetation change sites
 - Implications of vegetation change are complex and interwoven with other issues
 - Need a reduced list of pressing management needs

Emerging Issues: Migratory Birds



- Basic information on habitat use needed
- Population status and trends monitoring needed
- Offshore spill in open leads could be devastating
- Understanding of impacts in wintering grounds needed
- Site-specific monitoring should occur well in advance of development and be followed by impact monitoring
- Need improved understanding of climate change impacts on birds

Emerging Issues: Caribou



- Many concerns require management actions rather than research
- Mini-conference needed to identify and prioritize data needs and suggest studies
- Some applied (directed) research still needed
- Need to understand historic extent and variability in range use and harvest

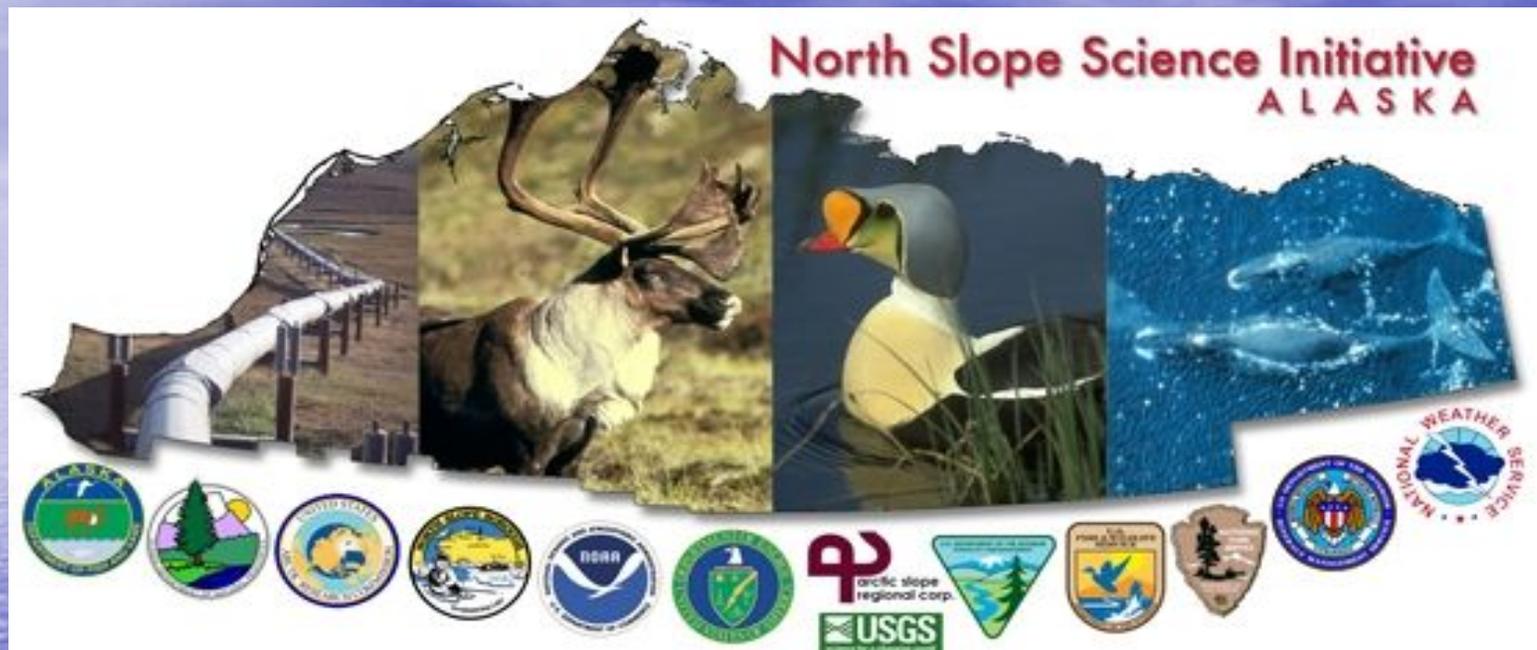
Emerging Issues: Marine mammals and their prey

- Baseline and monitoring needed with at-risk species prioritized
 - Assessment of walrus and polar bear shifts to land needed
 - More prey studies needed
 - Acoustic work
 - LEC and hunter harvest patterns
- Integrated marine ecosystem studies (oceanographic, prey, predators)
- Northward shift in prey species should be assessed
- Incorporate TEK as a priority



Emerging Issues: What's Next?

- Arctic Fish and Fisheries
- Traditional Ecological Knowledge
- Resident Health
- Restoration and Reclamation
- Black Carbon
- Connecting the Dots: How Do These Relate to Each Other?



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