

NSSI STAP Long-Term Monitoring Subcommittee Progress Report

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Outline

- Committee members
- Committee assignment
- Long-term monitoring data summary
- Data discovery observations
- Preliminary gap analysis
- Next steps

Committee Members and Assignment

- Subgroup Chair: Robert Shuchman
- STAP Members: Robert Suydam, Doug Kane, Philip Martin, Jerry Brown, Bill Streever, Brian Person, Jess Grunblatt (GINA), and possibly others
- Tasks:
 - Inventory existing long-term monitoring programs
 - Circulate draft inventory to NSSI stakeholders for feedback on format and gaps in reporting
 - Identify gaps in ongoing monitoring and generate recommendations to the OG for additional monitoring efforts

Sources Searched in Building the Long-Term Monitoring Database:

- NSSI Project Catalog 
- North Slope Borough 
- Arctic LTER 
- Alaska Department of Fish and Game 
- USGS Alaska Science Center 
- National Science Foundation (NSF)
- Alaska Ocean Observing System (AOOS)
- Bureau of Land Management 
- Bureau of Ocean Energy Management
- CircumArctic Rangifer Monitoring and Assessment Network 
- Databases of Arctic Research Projects: SNAP, ARCUS, SEARCH
- Environmental consulting companies, University-based research, other single-entry sources 

 Symbol denotes sources that contributed entries to the database

Data Mining Procedure

- Looked at data records with 10+ years
- Cataloged by:
 - Title
 - Dates Active
 - Duration (Ongoing vs. Complete)
 - Organization, Secondary Organizations
 - Topic of Study, Subtopic, Terrestrial vs. Marine
 - Location
 - Contact Information
 - Link
 - Source
 - Description
 - Remarks

Long-Term Monitoring Data Summary

- 91 total records
- Terrestrial versus Marine
 - 52 Terrestrial
 - 17 Marine
 - 22 Both
- Topic of study (some overlap)
 - 56 Animal Studies
 - 35 Physical Studies

Animal Studies	Count
Birds	16
Fish	5
Caribou	16
Whales (all)	12
Polar Bears	10
Walrus	7
Wolf	5
Total	56

Physical Studies	Count
Active Layer	5
Climate	9
Permafrost	3
Soil	5
Water	10
Total	35

Long-Term Monitoring Data Summary

- Duration:
 - 74 Ongoing
 - 16 Completed
 - 1 Unknown
- Data Record Sources (with sources > 4 records):
 - 66 NSSI Catalog
 - 5 North Slope Borough
 - 4 Alaska Department of Fish and Game
 - 4 Arctic LTER
 - 4 USGS Alaska Science Center
 - 4 Bureau of Land Management

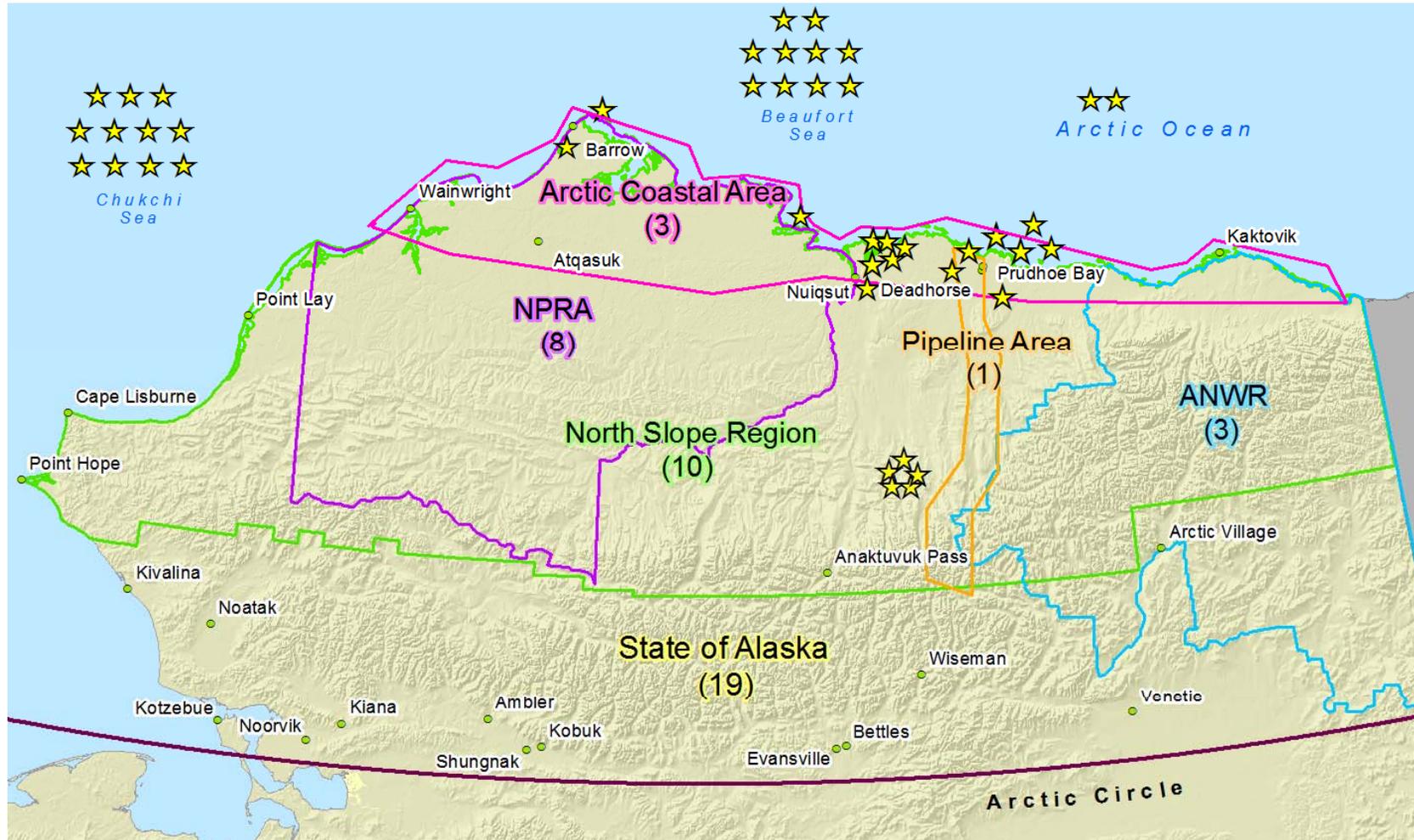
Long-Term Monitoring Data Summary

- Break down of represented organizations conducting monitoring studies:
 - Federal: 40
 - State: 11
 - Local: 11
 - INGO: 4
 - Academic: 8
 - Industry: 15
 - Multi-institutional: many
 - Individual: 1

Long-Term Monitoring Data Summary

- Further breakdown by organization type
- 40 Federal Studies:
 - 22 USGS
 - 5 U.S. FWS
 - 4 NOAA
 - 4 National Center for Atmospheric Research
 - 1 NSF
- 11 State Studies:
 - 10 Alaska Department of Fish and Game
 - 1 Alaska Department of Natural Resources
- 11 Local Studies: all through the North Slope Borough

Data Locations Summary



★ = Project Point Locations

Better geospatial metadata is needed to determine project locations. Some projects are not represented on this map due to lack of location information.

Long-Term Monitoring Internet-based Data Mining Summary

- **USGS:** thorough documentation of most projects with summaries, dates active, contact information and links to data and results 
- **North Slope Borough:** lots of information, although the criteria searched for are not in an immediately available form, like with the USGS project information pages. Metadata and other documentation is occasionally lacking. 
- **CircumArctic Rangifer Monitoring and Assessment Network:** CARMA has comprehensive information available regarding caribou herd monitoring.

Long-Term Monitoring Internet-based Data Mining Summary

- **ConocoPhillips and BP:** Both companies are engaged in long-term monitoring activities, but their respective webpage do not provide any information on these efforts.
- **AOOS:** Two of the three data portals for this site are not functional, and the active data portal does not have information for any long-term projects. If it were updated and more comprehensive, it could be a better resource.
- **Alaska Department of Fish and Game:** Information about long-term monitoring projects is not accessible and metadata is lacking.
- **Bureau of Land Management:** This source is currently under construction. While there are some long-term monitoring projects, this site does not provide an easy access path to information about the dates or metadata for the work they do.

Long-Term Monitoring Internet-based Data Mining Summary

- **NSSI Data Catalog and Project Tracking:** While this database is comprehensive, and is being updated, the database needs further refinement (QA/QC). There are several duplicate entries, entries that need to be updated, and entries that are missing essential information. In summary, many entries are incomplete and not thoroughly developed, and most importantly, lacking links to the actual studies that would help locate metadata and results. ***Although not ideal, this resource was the main source of information for this summary, and contains the best available monitoring information.***

Long-Term Monitoring Internet-based Data Mining Summary

- **Bureau of Ocean Energy Management:** Most of the studies in the database are 2-6 years long, but otherwise, the documentation is comprehensive. This source was not used due to project duration constraints.
- **National Science Foundation:** NSF contributes to some long-term monitoring projects, but mostly funds 2-5 year projects. The NSF associated site concerning Arctic research, SEARCH, has excellent documentation.
- **Scenarios Network for Alaska and Arctic Planning:** The SNAP website is outdated with numerous broken links. This website is mostly an intermediary between other organizations, with little or no information about specific research projects, dates, or links to other websites.

Preliminary Gap Analysis

- What is missing? Examples include:
 - Arctic foxes, NSB has started satellite tracking, but this project is only a couple of years old
 - Seals of all varieties seem under-represented, given their place in subsistence harvests and the current unknown disease that has been affecting them since about 2010
 - Oceanographic studies
 - Vegetation studies
 - Due to the lack of long-term studies documented on AOOS, and other sites, there does not appear to be long-term sea-ice observations taking place
 - Remote sensing observations
 - Hydrology
 - Others
- Prioritize

Preliminary Gap Analysis (cont.)

- NPS has many ongoing monitoring programs but do these do not fit the 10 year criteria
- Alaska state agencies carry out extensive monitoring programs that are reflected in database
- UAA and UAF have many long-term monitoring activities not reflected in the presently-configured database
- TEK, social and economic monitoring activities are not yet part of the summary

What do we need to move forward?

- Other database sources? What are we missing?
 - AOOS, ARCUS, SNAP, SEARCH, the UAF Institute of Arctic Biology could be useful if they were updated, more comprehensive and were inclined to include long-term studies
 - NSF AON, CALM, CAFF, others
 - Summary of remote sensing-derived time series monitoring programs
- Is our definition of long term correct?
- Feedback on data mining methods?

Next Steps

- Share inventory of long-term monitoring programs with stakeholders
 - Identify missing programs
 - Correct metadata/entries
 - Align summary of monitoring efforts with emerging issue topics
- Produce 1-2 page monitoring summaries by emerging issue topic for the OG
- Identify GAPS of needed North Slope monitoring for scenario development
- Provide to the OG a prioritized list of suggested additional monitoring activities that will support scenario development

Draft Outline for 1-2 pg Long-term Monitoring Summaries

- Emerging issue topic:
- Short issue description:
- Summary of current long-term monitoring activities:
- Lead institutions:
- GAPS in monitoring activities:
- Recommendations: