CAFF Circumpolar Biodiversity Monitoring Programme

Monitoring Biodiversity Across the Arctic

Becci Anderson, U.S. Geological Survey

EA International Conference
Fairbanks, AK
25 Aug 2016
Conservation of Arctic Flora and Fauna

- Biodiversity Working Group of the Arctic Council
- Board members from eight Arctic countries six Indigenous organizations
- Observers from non Arctic countries, international organizations

Mandate:
- to address the conservation of Arctic biodiversity, and to communicate its findings to the governments and residents of the Arctic, helping to promote practices which ensure the sustainability of the Arctic’s living resources
CAFF Area

32 million km²
- 6% of earth’s surface
- 57% marine/43% terrestrial
- Over 21,000 species
- Key global role
CAFF Activities

- Assessment
- Monitoring
- Data management
- Conservation strategies & Action plans
- International cooperation
- Education and outreach
Arctic Biodiversity Assessment

• Approved Ministerial May 2013
• Scientific assessment of Arctic biodiversity with Indigenous perspectives of biodiversity change included
• Summary for Policy Makers
• Actions for Arctic Biodiversity 2013-2021; Implementing the ABA recommendations and Inform and guide Arctic Council actions on biodiversity

www.arcticbiodiversity.is
Previous Arctic Biodiversity Monitoring Efforts

Limitations

– Uncoordinated efforts operating in isolation
– Lack long term commitment and funding
– Inaccessible information
– Lack of local involvement

Shortcomings lead to

– Lack of circumpolar perspective
– Incomplete coverage
– Limited ability to detect change
– Reduced ability to inform policy makers

The Challenge

– How do we **better harness our knowledge and capacity** to help make **informed, timely and effective decisions** in the face of **cumulative** and **accelerating change**?
Circumpolar Biodiversity Monitoring Programme (CBMP)

- International monitoring network of existing networks improving detection, understanding and reporting of Arctic biodiversity trends
- Focal point for current and credible Arctic biodiversity information
- Bridging the information-policy gap

www.cbmp.is
CBMP Characteristics

- A long term and adaptive ecosystem-based monitoring program
- Builds on existing monitoring efforts
- **Network-of-networks** = international network of scientists and community experts (more than 250 experts involved)
- **Coordinate, standardize and harmonize** existing monitoring activities and data = cost savings and value-added for current investment
- Up- and downscaling = Bring ground monitoring up on a **regional** and **international** scale
- Delivers faster and more targeted assessments: Detect and report on change within a **management “time frame”**
CBMP – Four Year Strategic Plan

• CBMP currently led by Greenland / Denmark and US
• Four year Strategic Plan approved in 2013
• Guides the CBMP until 2017, focus on:
  – CBMP/ CAFF as international Focal Point for data on Arctic Biodiversity
  – CBMP as a tool for ABA implementation
  – Harmonization and standardization of monitoring within CAFF
  – Development of first State of the Arctic Biodiversity reports

Next CBMP Strategic Plan 2017 – 2021 is under development: Published in 2017
CAFF and CBMP
International Linkages

Continued implementation of the CBMP

• Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) – and input to assessments
• Arctic BON of GEOBON
• Global Biodiversity Information Facility (GBIF)
• UNEP Biodiversity Indicator Partnership (BIP)

CAFF Resolutions of Cooperation with

• CBD, Ramsar (incl. NorBalWet), CMS, AEWA, EAAFP
Structure of CBMP, March 2016

CAFF Management Board

CBMP Coordination Committee & Technical Team. (DK / GL, US, CAFF sec).

Marine SG (Norway / Russia)

Terrestrial-SG (Sweden/Iceland)

Freshwater-SG (Canada / Sweden)

Coastal Expert Monitoring Group (US / Canada)

Implementation projects.

Implementation projects

National Networks

TBD

Expert Networks:
- Plankton
- Benthos
- Fish
- Seabird
- Marine Mammal
- Sea Ice

National Networks

Expert Networks:
- Vegetation
- Avian
- Mammal
- Invertebrate

+ Headline Indicators
Headline Indicators

- Suite of indices and indicators
- Species, habitats to ecosystem processes including
  - Arctic Species Trend Index
  - Migratory birds Index
  - Protected Areas
  - Land cover change (based on remote sensing)
Headline Indicator: Land Cover Change Index

A framework to harness the potential of remote sensing for use in Arctic biodiversity monitoring and assessment activities.

Data have been made available through initial holdings of MODIS satellite standard products from 2002-2012 including data on:

- Vegetation Indices (incl. NDVI)
- Land Cover Type
- Snow Covered Area
- Sea Surface Temperature (SST)
- Marine Chlorophyll-a

Next step to use for more advanced analysis including the development and use of satellite-based indices and indicators.
Headline Indicator:
Arctic Species Trend Index (ASTI)

- Tracks over 900 Arctic vertebrate population datasets
- 37% of Arctic vertebrate species
- 323 species
- Trends in vertebrate populations - fish, birds, mammals
- The most representative regional index of the global Living Planet Index

www.asti.is
Headline Indicator: Protected Areas Index

- 11% protected
- Primarily terrestrial

[Map showing protected areas in the Arctic]

[Bar chart showing protected area increments from 1900 to 2009]
CBMP Reporting

Regular assessments: State of Arctic Biodiversity report, including status reports (Scientific and TK information)

Outputs as scientific publications, either by discipline or multidisciplinary

Various summaries and other communications material

Input to the ABDS (www.abds.is) that will be an important tool for faster and timely reporting

Continued updates and development of Headline Indicators

Coming soon...

– State of Arctic Marine Biodiversity (2017)
– Arctic Coastal Biodiversity Monitoring Plan (2017)
– State of Arctic Terrestrial Biodiversity (2019)
– State of Arctic Freshwater Biodiversity (2019)
State of The Arctic Marine Biodiversity Report (SAMBR)

SAMBR will be published in 2017 and will be ~120 pages describing:

- The baseline conditions for Focal Ecosystem Components (FECs: Indicators), if possible
- The status of the monitoring and advise for future ecosystem based monitoring
- Spatial comparisons, where possible, within the region

Will include:

- Key findings on status (and trends) on FECs and status on monitoring on these FECs
- Key findings and advice related to monitoring priorities
CBMP Output: Arctic Biodiversity Data Service

www.abds.is
CBMP Output: Communications

The Arctic Freshwater Biodiversity Monitoring Plan

The Arctic Marine Biodiversity Monitoring Plan 2008-2012 Implementation

Arctic Freshwater Biodiversity Monitoring Plan

Introduction

- Arctic freshwater biodiversity is under growing pressure from climate change and anthropogenic development, yet established monitoring programs remain largely underutilized, lacking the capacity to detect changes in biodiversity across the region.

- It is time to implement the Freshwater Expert Monitoring Group (FIMG) of the Circumpolar Biodiversity Monitoring Program (CBMP), working to harmonize and enhance long-term Arctic freshwater biodiversity monitoring efforts to facilitate the detection of significant ecological trends and protect the services that freshwater biodiversity provides.

- The FIMG, under the leadership of the Arctic Council, is responsible for the establishment of a network of freshwater monitoring stations across the Arctic.

What is the CBMP?

- The CBMP is an international network of scientists, government agencies, indigenous organizations, and non-governmental organizations working to develop, implement, and report on a comprehensive and coordinated monitoring program for the Arctic.

- The CBMP aims to provide a framework for monitoring the effects of climate change and other human activities on the Arctic ecosystem, facilitating the development of effective policies and management strategies to protect the region.

Key Questions

- How can we develop a comprehensive and coordinated monitoring program for the Arctic?

- What data are needed to support decision-making in the Arctic?

- How can we ensure that monitoring efforts are effectively integrated into policy and management decisions?

Workshop Approach

- Identify key focal ecosystem components (FECS) of importance for monitoring.

- Identify focal ecosystem components (FECS) and develop impact hypotheses.

- Determine key variables that should be monitored for detection of biological responses.

- Develop short-term indicators and metrics for detecting changes in focal ecosystem components (FECS) and focal ecosystem components (FECS).

- Develop and implement monitoring protocols for focal ecosystem components (FECS) and focal ecosystem components (FECS).

More information:

- CBMP freshwater monitoring:
  - www.cbmp.is/freshwater
  - www.fimg.is

Arctic Freshwater Biodiversity Monitoring Plan

Integrated circumpolar monitoring to improve detection, understanding, and response to changes in Arctic river and lake ecosystems

Benefits

- Early warning of changes in freshwater biodiversity

- Enhanced capacity for effective management and monitoring

- Improved understanding of freshwater biodiversity

- Improved decision-making for sustainable management of freshwater biodiversity

Impact Hypotheses

- The potential effects of environmental alterations on Arctic freshwater biodiversity are complex and require a multifaceted approach to understanding

- The development of impact hypotheses that describe the expected responses to changes in freshwater biodiversity

- The development of an impact assessment tool for monitoring of freshwater biodiversity
Coastal Plan Approach

• Ecosystem-based approach
• Existing monitoring capacity and information
• Include multiple types of knowledge systems and information sources – TK, science, local ecological knowledge – at all stages of plan development
• Identify a suite of coastal biodiversity indicators linked to key drivers and stressors - ecosystematic
• Identify gaps in existing monitoring programs
Coastal Expert Workshop
Ottawa, CAN

• March 1-3, 2016 with a TK-focused community member meeting Feb 29 (Thank you ICC!)
• Background of key issues, questions and focal ecosystem components to monitor
• Science and TK exchange moments
6 Main EA Elements

- Identify the ecosystem
- Describe the ecosystem
- Set ecological objectives
- Assess the ecosystem
- Value the ecosystem
- Manage human activities

CBMP Components

- CBMP plan areas
- Develop FECs
- Develop monitoring plans
- State of the Arctic Reports
  (not formalized)
Thank you!

For more information please visit: www.caff.is

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