

The Circumpolar Biodiversity Monitoring Program - Terrestrial Plan



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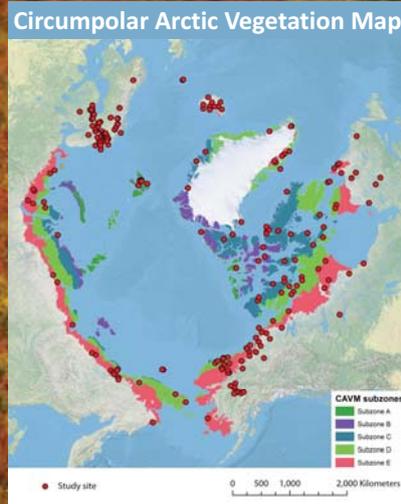
- ★ Despite their remoteness, Arctic ecosystems have a global influence and are under increasing pressure from threats within and outside northern latitudes.
- ★ Understanding Arctic ecosystem dynamics is complicated by a lack of coordinated long-term monitoring data from across the Arctic.
- ★ The CBMP-Terrestrial group is working to enhance long-term Arctic biodiversity monitoring to facilitate detection, interpretation and communication of significant ecological trends.
- ★ The CBMP-Terrestrial group includes experts from all Arctic countries who are designing an ecosystem-based monitoring program with optimal sampling schemes, focal ecosystem components and attributes, common parameters and monitoring protocols for application across the circumpolar Arctic.

Key management questions

- ★ What are the status, distribution, and condition of terrestrial focal species, populations, communities, landscapes/ecosystems and key processes/functions occurring in the Arctic?
- ★ How and where are these terrestrial focal species, populations, communities, landscapes/ecosystems and key processes/functions changing?
- ★ What are the primary environmental and anthropogenic drivers and how do they influence changes in biodiversity and ecosystem function?
- ★ Where are the areas of high ecological importance including, for example, resilient and vulnerable areas (related to the FECs) and where are drivers having the greatest impact?

What is the CBMP?

- ★ The Circumpolar Biodiversity Monitoring Program (CBMP) is an international network of scientists, government agencies, Indigenous organizations and conservation groups working together to harmonize and integrate efforts to monitor the Arctic's living resources. It is the cornerstone program of the Arctic Council's Conservation of Arctic Flora and Fauna (CAFF) working group.
- ★ The CBMP has been endorsed by the Arctic Council. It is the biodiversity monitoring component of the Sustaining Arctic Observing Networks (SAON), the official Arctic Biodiversity Observing Network (Arctic BON) of the Group on Earth Observations (GEO BON), and an information provider to the United Nations Convention on Biological Diversity (CBD).



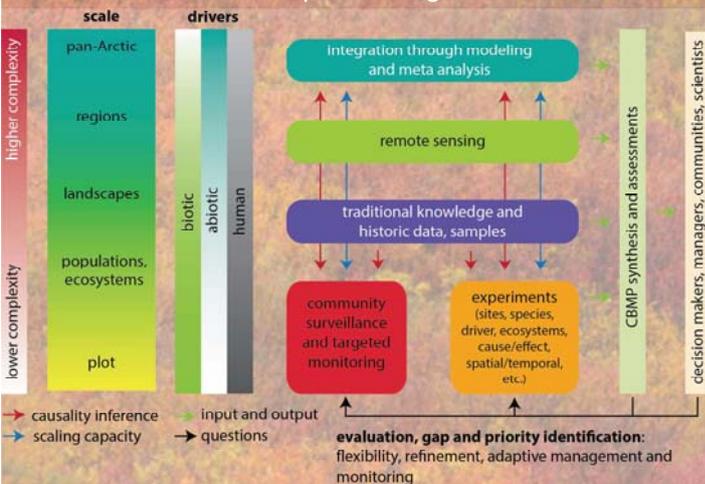
The Circumpolar Arctic Vegetation Map (CAVM) is a GIS map of the entire arctic for environmental assessment and land-use management (www.arcticatlas.org/). Arctic soil invertebrates are monitored only in Greenland.

Focal Ecosystem Components (FECs) of the soil decomposer system include the soil living invertebrates such as microarthropods, enchytraeids and earthworms and the functions performed by microorganisms such as nitrification, decomposition, and humification (moisture and nutrient retention). As monitoring capacity is limited, we recommend to monitor the mesofauna with collembolans at the species level, as this group hitherto is the most feasible concerning availability of expertise and equipment. DNA metabarcoding in conjunction with taxonomic studies are under development to become an invaluable tool in future monitoring efforts.

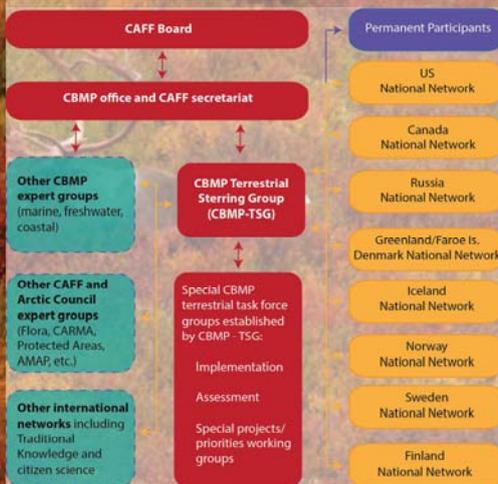
Focal Ecosystem Components (FECs)

- ★ FEC attributes are the targets of monitoring.
- ★ A common set of core attributes includes:
 - diversity
 - composition
 - phenology
 - demographics
 - spatial structure
 - temporal cycles
 - health
 - productivity
 - ecosystem functions and processes.
- ★ FECs and attributes were identified by:
 - determining critical information needs related to biodiversity and ecosystem function;
 - creating conceptual models to understand key ecological relationships, processes and drivers; and
 - evaluating current and potential capacity to conduct long-term monitoring and the relative feasibility of various approaches.
- ★ FECs were prioritized according to:
 - ecological importance in conceptual models;
 - relevance to ecosystem services;
 - importance to Arctic communities; and
 - importance for management and legislation needs.

Conceptual model of the Arctic terrestrial biodiversity monitoring scheme



Governing structure for the implementation and ongoing operation of the CBMP-Terrestrial Plan



More information:
www.caff.is/terrestrial

Christensen *et al.* 2013. Arctic Terrestrial Biodiversity Monitoring Plan, CAFF Monitoring Series Report. CAFF International Secretariat. Akureyri, Iceland, p. 163. Download from www.caff.is



A program of the Circumpolar Biodiversity Monitoring Program, the cornerstone program of the Arctic Council's Conservation of Arctic Flora and Fauna working group

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