EXPERT NETWORK MONITORING PLAN

RANGIFERS

SUPPORTING PUBLICATION TO THE
CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM
FRAMEWORK DOCUMENT

CARMA
CircumArctic Rangifer
Monitoring & Assessment

CAFF
Conservation of Arctic Flora and Fauna

Cover photo:

Nenets Autonomus Okrug, Russia. Photo courtesy of Association of Nenets people of "Yasavey"

CAFF
Area

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Circumpolar Biodiversity Monitoring Program
Framework Document

Don Russell
Environment Canada

and

Gary Kofinas
Institutes of Arctic Biology, University of Alaska, Fairbanks

CARMA Network Coordinators

CAFF CBMP Report No. 5

November 2004

Conservation of Arctic Flora and Fauna

II Congress of Reindeer Herders of Russia, Salekhard, Yamalo-Netes Autonomus Okrug, Russia. Photo courtesy of RAPION

Acknowledgements

NOTE: *The following network mission, principles, etc. should be considered a draft. This report is being written one week before the workshop to officially launch the CARMA network. The organization and scope of the network will be finalized at that workshop.*

Nenets Autonomus Okrug, Russia. Photo courtesy of Association of the Nenets people of Yasavey

Background

In February 2000, the Conservation of Arctic Flora and Fauna Working Group of the Arctic Council (CAFF) met in Iceland to respond to an Arctic Council recommendation that a circumpolar monitoring network be established. CAFF proposed that one of the networks monitor Rangifer populations and the human interactions with this important resource.

In cooperation with the International Arctic Science Committee (IASC), the selected network coordinator for Rangifers, Don Russell, and the IASC Project Leader, Dr. Gary Kofinas organized an international meeting in Minary, New Hampshire. The purpose of this meeting was to discuss, among other topics, the value and structure of a Rangifer monitoring and assessment network. At the Minary meeting, 62 potential indicators of a Human/Rangifer system were identified. Interim country representatives were also identified as contacts for a developing network.

During the following two years, a number of initiatives have been undertaken to:

- Secure funding for the network

- Build an initial GIS project that spatially represents all Rangifer populations

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- Develop web-based communication tools

- Present the network concept and solicit feedback at regional, national and international fora

- Refine the principles of a network

- Scope out the feasibility of monitoring specific circumpolar indicators

- Assemble retrospective data, and

- Assess trends of change in a number of the indicators

Figure 1 illustrates the circumpolar distribution of *Rangifer* species.

Nenets reindeer herders from Kanin Peninsula in the forest of the Mesen Region in the "Kanin"community, Kuloy River Onset, Mezen Region, Archangelsk Oblast.
Photo courtesy of Association of the Nenets people of Yasavey

Figure 1: Circumpolar distribution of Rangifer herds

Rangifer

Herds of the Circumpolar North
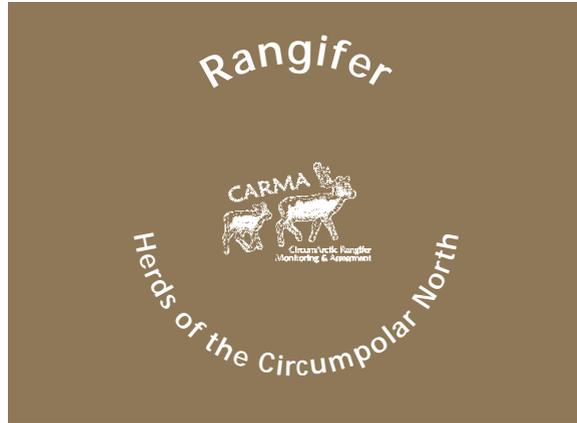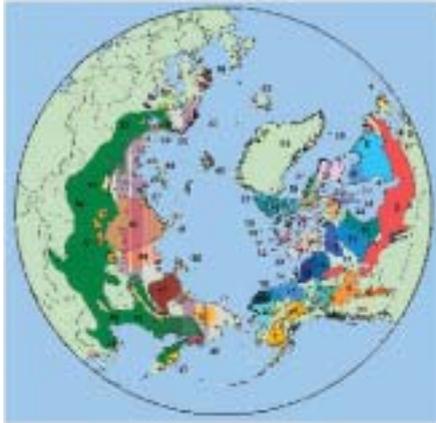
1	Newfoundland	32	Banks Island
2	Boreal	33	Northwest Victoria
3	Atlantic	34	Dolphin-Union
4	Southern Mountain	35	Chukotka
5	Northern Mountain	36	Sudrunskaya
6	Yukon	37	Yana-Indigirka
7	Alaska	38	Novosibiriski Ostrova
8	George River	39	Lena-Olenek
9	Leaf River	40	Taimyr
10	Qamanirjuaq	41	Severnaia Zemlia
11	Beverly	42	Gydan
12	Ahiak	43	Belyi
13	Bathurst	44	Novaya Zemlia
14	Bluenose East	45	Svalbard
15	Bluenose West	46	Parapolskii
16	Cape Bathurst	47	Kamchatka
17	Porcupine	48	Amur
18	Central Arctic	49	Okhotsk
19	Teshekpuk	50	Yakutsk
20	Western Arctic	51	Evenkiya
21	South Baffin Island	52	Nadym-Pur (Yamal)
22	Coats Island	53	Arkhangelsk Oblast
23	South	54	Terskiill Bereg (Kola)
24	Lorillard	55	Laplandskii Zapowednik (Kola)
25	Wager Bay	56	Range of Forest Reindeer
26	North Baffin Island	57	Finland
27	Northeast Baffin Island	58	Norway
28	Eastern Queen Elisabeth Island	59	Iceland
29	Bathurst Island	60	Greenland
30	Prince Of Wales-Somerset-Boothia	61	Greenland Feral Reindeer
31	Western Queen Elisabeth Island	62	Range of Domestic Reindeer

Mission

Through cooperation, both geographically and across disciplines, monitor and assess the impacts of global change on the human/Rangifer system across the Circum-Arctic.

Principles and Scope of the Network

Be simple and relevant. There is tremendous depth and breadth of activities in managing and assessing the status of Rangifer populations in the Circumpolar North. It is impossible for any network to try to include all these activities. The success of the network will depend on the ability to identify the common, relevant indicators that, when examined on a circumpolar basis, help our partners better understand their herds and the factors that impact their well-being.

Focus on wild Rangifer populations. The network is initially concerned with large migratory Rangifer herds and their user communities; thus less emphasis is placed on woodland/forest and Peary/marine Rangifer populations. As well, particularly in Russia and Alaska, there are issues related to wild populations impacting domestic reindeer enterprises. The network will consider the magnitude and trends of that interaction, but not other indicators of domestic reindeer husbandry. The network will explore opportunities for broadening the scope of the network to consider domestic reindeer in the future.

Be dynamic; herd-specific data can be added at any time. We propose an open network where new herds and/or regions, new indicators and new partners can be added on an ongoing basis.

Be a central depository for historical and current information on Rangifer indicators. The communication tools will be web-based and will serve as a site that researchers, managers, and co-management groups can visit to obtain up-to-date information on Rangifer herds.

Include community, industry, university, and agency-based monitoring information. The network will access existing information from a number of sources and integrate them where feasible. Local knowledge, field-based biological monitoring, and remote sensing are all considered critical elements in the CARMA Network, and provide an important means for

Nenets Autonomus Okrug, Russia. Photo courtesy of Association of the Nenets people of Yasavey

linking scales of analyses to arrive at a complete picture of regional and circumpolar perspectives. As funding for a comprehensive CARMA Network is at present very limited, activities will initially focus on using existing monitoring activities rather than initiating new data-collection initiatives.

Provide annual analyses of Rangifer-relevant indicators across the Circumpolar North.
On an annual basis, the network will provide a Circum-Arctic summary of the status of indicators of the human/Rangifer system.

Provide a forum for standardized protocols in collecting, documenting, and assembling indicators. Although not requiring standardized protocols, the network will provide re-commended protocols that are available to monitoring pro-grams. Providing standard protocols will gradually allow participants to modify existing or initiate new monitoring programs whenever feasible.

Provide annual "value-added" indicators that all regions can share. A major value-added benefit of the network will be the provision of a circumpolar compilation of annual climatic and habitat conditions. Indicators such as snow conditions (depth, water equivalent), snow melt and green-up can be provided utilizing existing projects that provide this information on a periodic basis. We will use these existing projects and target specific ranges of specific herds.

Provide a forum for the exchange of ideas.
Using the web-based communication tools, we are able to provide a site for an informal exchange of ideas, observations and activities.

Network Organization

The coordination of the CARMA Network will rely on information from partner countries regarding their wild herds and observations from their communities. As well, Circum-Arctic monitoring data from existing remote sensing platforms (i.e. satellite, weather stations) will be obtained. All of these data will be integrated and periodic reports and assessments produced. Figure 2 summarizes the flow of information and products produced by the CARMA Network. The Canadian Wildlife Service of Environment

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Canada and the Institute of Arctic Biology of the University of Alaska are prepared to serve as interim coordinating organizations for the CARMA Network during its start-up phase.

Figure 2: Flow of information and products produced by CARMA
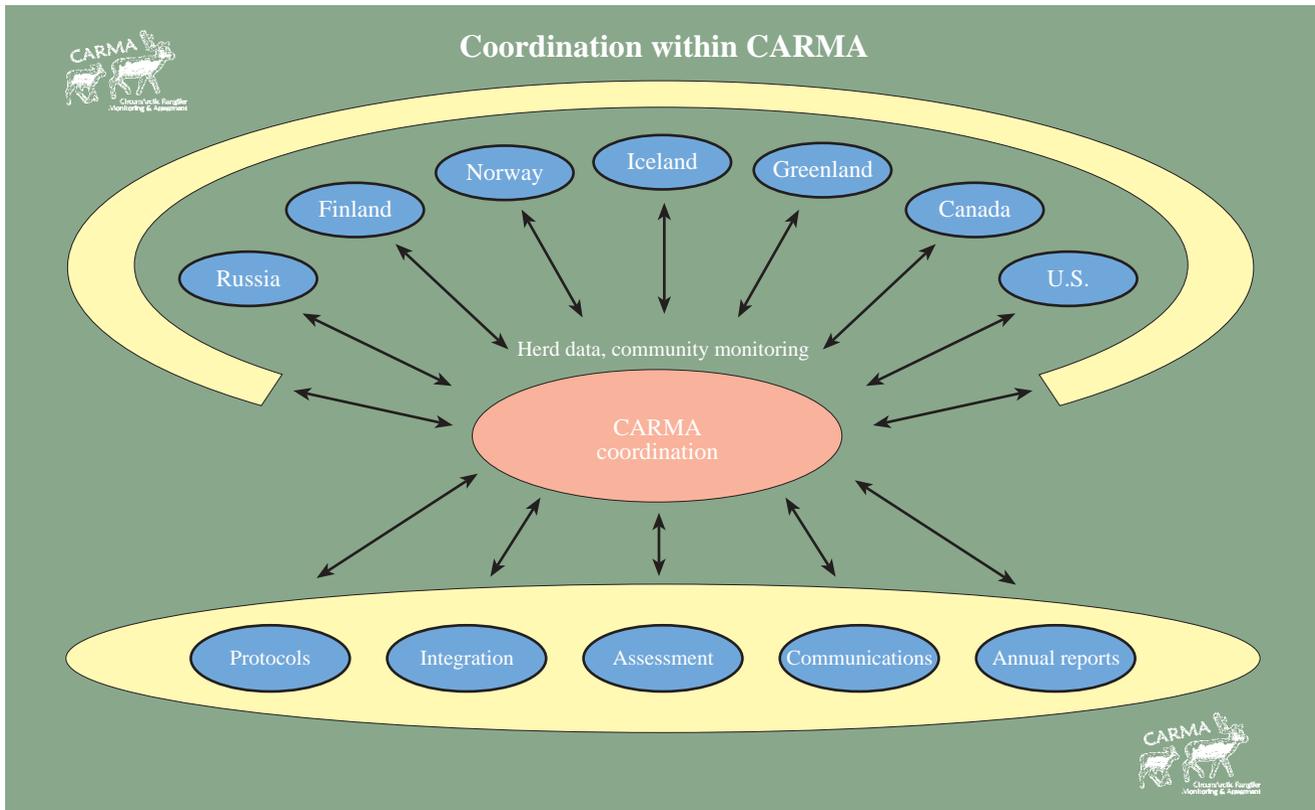
Network Activities to Date

Since CAFF directed the creation of this network in Reykjavik, Iceland in February 2000, a number of activities have been conducted:

1. Meeting in Minary, New Hampshire. An international team identified the value and the elements of a monitoring program, listed key indicators that could be included in the monitoring project, and identified interim country contacts that could provide input once the network is under way.

2. A monitoring web site was developed under the Human Role in Reindeer/Caribou Systems portal at www.rangifer.net/carma/

3. The monitoring program was "showcased" in a number of workshops and fora over the last 2 years. A poster was created and presented at symposiums.

4. Russell participated in the second meeting of CAFF in Akureyri, Iceland in March 2003 to provide an update and assist in the development of a proposal for the EU. The proposal was subsequently turned down.

5. Kofinas and Russell attended meetings to develop a new NSF program (SEARCH) and highlighted the need to fund monitoring programs.

6. Kofinas and Russell submitted a funding proposal to NSF, examining the human role in reindeer/caribou systems. The monitoring program was a component of the proposal.

7. A significant component of the CARMA Network will be community-based monitoring. Major progress has been made on developing the protocols for community-based monitoring, with sites established and in development in the Yukon, Northwest Territories, Nunavut, and Alaska.

8. Kofinas and Russell participated in an international workshop in Yakutsk, Siberia, where number of researchers, academics, managers, and community representatives discussed the present state of Human Rangifer Systems. The elements of a monitoring program were discussed and the Russian contacts that are willing to participate were identified. Initial retrospective data for selected Russian wild herds is being supplied.

9. A database of North American caribou herds has been developed and a retrospective analysis of a number of indicators is complete.

10. Russell attended the annual meeting of IASC in Reykjavik, Iceland in April 2004 to outline the plans for an international project, including monitoring, focusing on wild reindeer/caribou and how global change will impact northern peoples.

11. In preparation for the launch of the network, two workshops have been held in North America – one on the development of protocols for community-based monitoring of caribou body condition and a second on the characteristics and status of North American calving grounds (proceedings available).

12. An informal one-day workshop was held in Girdwood, Alaska in May 2004 in conjunction with the North American Caribou Workshop to discuss the principles and organization of the network.

Indicators

The following is a minimum list of indicators that will be tracked by the CARMA Network.

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Habitat Indicators

Snow Water Equivalent - maps are produced and are available through the Snow and Ice Data Center at the University of Colorado. These maps provide circumpolar monitoring of snow conditions on a 2-week basis.

Data from Weather Stations - CARMA will have access to weather station data through Environment Canada partners.

Normalized Difference Vegetative Index (NDVI) – CARMA will make use of NOAA products that track green-up across the circumpolar north.

International Tundra Experiment (ITEX) – CARMA will link into this existing network which monitors climate impacts on tundra vegetation.

Biological Field Study Indicators

A number of indicators commonly monitored across herds will be tracked. The frequency of monitoring and the specific set of indicators actually monitored vary from herd to herd. A common set could include:

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- Population size
- Movements
- Disease and parasites
- Calving success
- Mortality
- Recruitment
- Body condition

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Community-based monitoring

Community-based monitoring varies considerably among the partner countries, from unstructured observations in narrative format to detailed monitoring and assessment data, such as those from the US-Canada Arctic Borderlands Ecological Knowledge Cooperative. Community-based monitoring can serve as the primary means of linking social and economic indicators. The CARMA Network will attempt to incorporate all levels of community information contributed to the network.

Future developments

The official launch of the network will be in Vancouver, October 31, 2004 and November 1, 2004. A workplan will be finalized at that time.

For further information and additional copies contact:

CAFF INTERNATIONAL SECRETARIAT
Borgir
Nordurslod
600 Akureyri
ICELAND

Telephone: +354 462 3350
Fax: +354 462 3390
E-mail: caff@caff.is
Internet: http://www.caff.is