

The Nunavut Wildlife Management Board's Community – based Monitoring Network Pilot Study

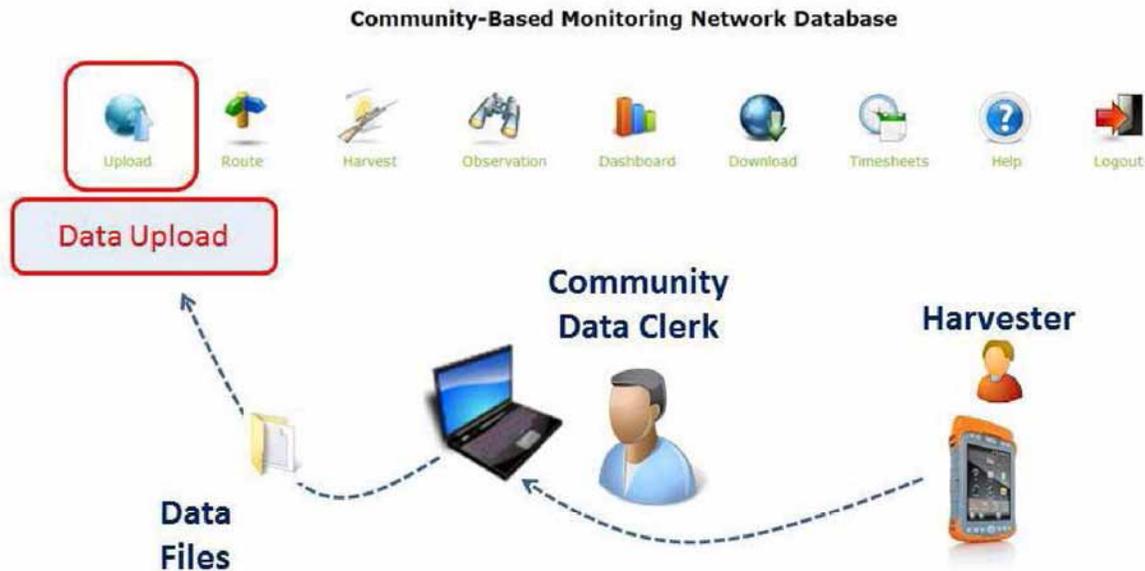


George Angohiatok from Cambridge Bay using MESA (Hand-held computer)

What is the Community-based monitoring Network?

The Community – based Monitoring Network (CBMN) Pilot Study brings together respected Nunavummiut harvesters to share their knowledge and observations about wildlife and the environment. Rather than rely on interviews to collect this information, participating harvesters are trained to use specially designed hand-held computers (MESAs) to record wildlife sightings, harvests, and other environmental observations while on the land.

When harvesters return from the land, trained data clerks in each of the communities transfer the information contained in the hand-held computers into a regional database.



The CBMN relies upon Harvesters, recognized by their respective communities as highly skilled and accomplished hunters, to record wildlife observations and harvests. The intent of the CBMN is to help compile information that is needed to address concerns affecting wildlife management, conservation, and Inuit harvesting rights and to obtain Inuit Qaujimatugangit (IQ) information in a format that can communicate with scientific modeling.

The data collected will be used in various wildlife applications in Nunavut, such as assisting with making decisions on species management, including the protection of habitat and the proposed listing of endangered species. Data collected will be combined to create a collective storehouse of knowledge that will be used to improve local, regional and Nunavut wildlife management practices by ensuring decision making bodies have up to date, direct information from those who spend most of their time on the land.

By bringing together their knowledge and observations over time, participating harvesters will help answer some important questions about wildlife, which might include the following:

- How are migration routes or seasonal ranges changing?
- What are the most effective harvesting techniques?
- Where is the most important habitat that should be protected from development?
- Where are sick or injured animals being observed, and how often?
- Are populations increasing? Decreasing? Remaining constant?
- What is the current level of harvest for key species?

Why is it called pilot study?

The Nunavut Wildlife Management Board (NWMB) established the CBMN in three communities (Arviat, Cambridge Bay and Sanikiluaq) for one year to test the methods and get feedback from participants before deciding whether to expand the network to a full-scale, multi-year study in more Nunavut communities. The data collection period for the CBMN pilot study began in February 2012 and ended on January 31st, 2013.

How was the idea formed?

The idea to establish a CBMN pilot study grew out of discussions with local community members, Regional Wildlife Organizations (RWOs), Hunter and Trapper Organizations (HTOs), and other stakeholders, and through lessons learned during the Nunavut Wildlife Harvest Study (1996-2001).

All Hunter and Trapper's Organizations (HTOs) in Nunavut were sent information packages about the study. This package included a form which communities interested in participating in the study could fill out. Eight communities expressed interest in participating. Three communities were selected from this list.

The NWMB consulted with RWOs, Nunavut Tunngavik Incorporated (NTI), the Nunavut Inuit Wildlife Secretariat (NIWS), the newly formed Nunavut Inuit Wildlife and Environment Council (NIWEC) and other co-management partners on the criteria to select the most appropriate communities and harvesters for the pilot study. These criteria included but were not limited to: different social and economic circumstances (such as population size and employment rates), reliance on country foods, communities that had identified particular concerns about wildlife and/or the environment; and harvest level of marine mammals.



Sarah Spencer, NWMB staff with CBMN in Sanikiluaq

What are the Roles in the CBMN?

Through a request for proposal process, the NWMB contracted IMG – Golder to oversee the day to day administration of the CBMN.

Data Clerks:

Data Clerks were hired through a job competition. There is currently one data clerk in each community and they are responsible for:

- assisting with preparation and maintenance of equipment;
- distributing Mesas and Kestrels to Harvesters when they go on hunting trips and receiving them upon their return;
- downloading data from the MESAs and uploading the data to a database; and
- managing all data in a secure and confidential manner.

Harvesters:

The NWMB values harvesters as professionals and the CBMN pilot study is built around their participation and hard work. Therefore the NWMB compensates harvesters for recording harvest data, and for making observations regarding wildlife and environmental conditions while they are on the land.

There are currently 20 harvesters in Arviat, 9 in Cambridge Bay and 4 in Sanikiluaq. Harvesters are expected to follow a Health and Safety Plan while out on the land.

The primary responsibilities of harvesters are to collect data using handheld computers (Mesas and Kestrels); data collected includes:

- travel routes;
- wildlife sightings;
- wildlife harvests; and
- environmental / weather observations.

Both harvesters and data clerks received training in the use of the hand-held computers and the management of information and data (see picture below).



Mid-point community meetings with harvesters in Arviat

What type of technology is being used?

Noreca Inc. was hired as a sub-contractor by IMG-Golder and is responsible for the technical components of the program. Noreca developed the software for the handheld computers and their duties include but are not limited to: purchasing new equipment, equipment maintenance, maintaining the web application, server, and database, developing and installing software, including upgrades, as well as training study participants.

The two main tools carried by the harvesters are the MESA (hand-held computer) and the Kestrel (portable weather station) (See pictures below).

The MESA is made by Juniper Systems. This is a rugged computer and is built to withstand four foot drops, full immersion in water and extreme temperatures. The MESA appeared to live up to its name during the pilot study; however, in temperatures below minus 25 degrees Celsius the batteries depleted quite rapidly. Joe Pameolik from Arviat is currently involved in a research and development project to try and mitigate this issue.

The Kestrels are rated to work in temperatures of up to -10 C and that appeared to be their limit. Harvesters found that in temperatures below this limit, it takes a long time to calibrate the device and they may wait 5 to 10 minutes to get a wind speed and direction.



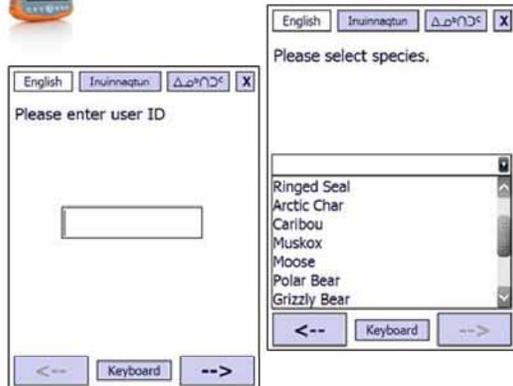
The many features of the hand held computers (MESAs) make them very versatile in terms of data collection. The software includes a series of screens. Each screen includes a question that harvesters respond to which describes what was harvested/observed. The software includes English, Inuktitut and Inuinnaqtun translations. An internal GPS records the travel route taken by the harvester. Harvesters are required to take a geo-tagged photo of their harvest/observation before they are able to complete the entry. Harvesters also have the option of recording an audio track, which can clarify what they harvested/observed or can be used to record oral knowledge.

There are several advantages to using this type of technology, most notably, the bias of harvester recall is eliminated because they take the hand-held computers out on the land and record the information in real time.

The picture below shows an example of two screens (left) which are part of the software used by the harvesters and a list of data files that can be collected (right).



CBMN Mobile Application



Data Files

- **Wildlife Harvests**
- **Wildlife Observations**
- **Weather Data**
- **Photos**
- **Audio Files (IQ)**
- **Travel Routes (GPS Waypoints)**

How will data be stored and who will have access to it?

This topic requires further discussion. Secure storage of the information contributed by Inuit harvesters is an important component of the pilot study. The NWMB will be establishing guidelines in conjunction with participating communities and co-management partners about how to best manage and care for the data.

Currently there are 3 levels of access. Using a unique ID and password harvesters have access to their own data, the Data Clerks have access to their communities' data and IMG-Golder, their sub-contractors and NWMB has access to all of the data.

Noreca Inc. has developed a database tool that allows the user to create graphs and charts which provides summaries of the data by choosing combinations of pre-determined criteria. Examples of this can be seen in the picture on the following page.



How much data was collected?

The first data was uploaded to the database on February 2nd, 2012. This data was from an Arviat harvester who travelled 60 kilometers and saw two caribou. From February 2nd, 2012 until the end of the pilot study data collection period on January 31st, 2013 over 8690 harvests and 4111 observations were recorded. This excludes the herd of approximately 90,000 caribou that was observed near Arviat in April 2012.

In Arviat during the pilot study over 1788 harvests were recorded; the most frequently harvested species were caribou, Arctic char, and game birds such as ducks and geese. They also recorded 2442 observations including 35 polar bear.

In Cambridge Bay over 6489 harvests were recorded, the majority were Arctic char. Muskox was also harvested routinely with close to 200 harvests recorded during the year. Cambridge bay recorded 1562 observations, including a pod of 191 Narwhal in October 2012.

In Sanikiluaq, 413 harvests were recorded. Arctic char, ringed seal, eider and eggs were harvested the most often. Sanikiluaq also recorded 107 observations throughout the year.



Polar bears at the dump near Arviat

What is the value of data?

Preliminary analysis of the data and monitored species suggests that this data collection method will allow wildlife managers to assist with:

- identification of main harvesting areas for each of the three communities;
- analysis of and seasonal changes in population health;
- identification of seasonal habitat use of selected species;
- estimation of total harvest rates per community and species; and
- identification of migration patterns.

As well, the MESA software can be changed to collect additional data that may be needed to address specific issues in communities. Data might be collected to address public safety concerns of polar bear near communities (see picture above); or caribou migration routes and calving grounds, which can then be protected during the land use planning process. Harvesters could use the MESA to record changes in wildlife populations over time, for example an increase in predators like grizzly bears or wolves; changes in the health of wildlife populations, including documenting new diseases; and changes in habitat including sea ice patterns.

The CBMN wildlife and harvest data collection efforts, including the frequently used audio feature, can help document Inuit oral knowledge as well as patterns of harvesting. Such information can be of critical importance for future land claims negotiations, environmental assessments, resource exploration issues, and land-use planning and development.

The CBMN could play an important role in allowing Government agencies and co-management partners to respond to international claims and to justify current management practices and new management actions. Because the data is available immediately after it is uploaded to the database it can provide the NWMB with the most current information to help in decision making.

Most importantly, this method of data collection allows Inuit to be able to gather oral knowledge and pass on their way of life; to gather historical data for future generations that will allow the youth to protect the wildlife and to show youth in the communities that the traditional ways of life are valued and respected because hunters are collecting the data for use in wildlife management locally, regionally and territorially.

Was there a Communications Strategy?

The NWMB realizes that clear, timely, and open communications between communities, harvesters, and other wildlife management agencies is critical to the success of the study. To this end a communication strategy was developed which includes:

- Maintaining open lines of communication with participating communities and co-management partners;
- Developing and sending monthly newsletters to participating communities and quarterly updates to co-management partners;
- Developing a website for the CBMN which contains information about the pilot study, including a series of frequently asked questions; and
- Holding in-person meetings and workshops (described below).

Mid-point meetings - In June and July 2012, in-person meetings were held in all three participating communities to get feedback from participants. Feedback forms were filled out; however, the pilot study was also discussed openly among participants. Overall, the Harvesters and Data Clerks were pleased to be part of the study team, found the project interesting, and believed the work is of value to their communities.

Wrap-up meetings - In-person meetings were held in November and December 2012. During these meetings preliminary results were presented, feedback was solicited, and input and suggestions were collected for a future larger scale program. Again feedback from the participants was positive. All harvesters and data clerks said that they would/will continue to participate if the CBMN data collection period were to be extended.

Public meetings - a public meeting was held in each of the participating communities in conjunction with the harvester meetings in November/December 2012. Communities were shown a summary of the pilot study including an initial data summary and asked to provide comments/suggestions on the Community – based Monitoring Network. These meetings were well attended and support for the program was strong.

Co-management partner workshop - In March 2013, the NWMB hosted a workshop in Iqaluit. Community participants from Arviat and Cambridge Bay attended, as well a representative from both the Arviat and Cambridge Bay HTOs. In addition to community members, over twenty participants, from the Government of Nunavut, Parks Canada, Fisheries and Oceans Canada, Aboriginal Affairs and Northern Development Canada, Environment Canada, Nunavut Tunngavik Incorporated, World Wildlife Fund, IMG - Golder, and Noreca Inc. were present.

The primary objectives of the workshop were to provide a summary of the CBMN Pilot Study to co-management partners; to find common ground in terms of community based monitoring; and to discuss ways to pool resources in order find a way forward for the CBMN that optimizes opportunities for all co-management partners.

The workshop was a great success. All co-management partners in attendance expressed support for the continuation of the program and many organizations saw ways in which the CBMN could be combined with other community based monitoring initiatives in Nunavut in order to expand the program to other communities (a full summary of the workshop is available from the NWMB).



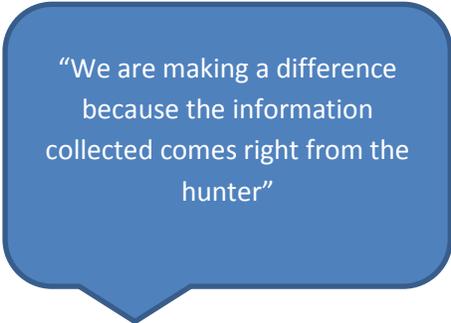
Participants at the Co-management partner workshop in Iqaluit

“Harvesters are the best eyes and ears on the land in terms of wildlife management. This program is valuable because it validates their knowledge and relies on them as experts” Paul Irngaut, NTI

What type of feedback has been received?

Throughout the pilot study feedback from harvesters and community members was positive.

- 100% of harvesters and data clerks currently participating in the study say they would like to continue to be part of the CBMN if the data collection period is extended.
- All communities have additional harvesters who have expressed an interest in becoming part of the CBMN.
- Hunters and Trappers Organizations in all three participating communities are supportive of the project continuing.
- Participants continue to provide helpful suggestions for improvement on everything from software and hardware to communications and project administration.
- All attendees at the co-management partner workshop expressed a strong desire to see this project continue and cited several examples of ways in which data collected from this program would benefit communities and co-management partners in wildlife management. Below are some quotes from CBMN participants.



“We are making a difference because the information collected comes right from the hunter”



“Our feedback is important for future generations”



“It is amazing how one thing can make a difference to the community and for the future of our hunters”



“Our participation in this study will help to improve the understanding about the wildlife”

Next Steps

The data collection period for the CBMN has been extended until March 31st, 2014, in order to allow time for a full review of the pilot study and to work towards an expanded CBMN program.

A full review of the pilot study will include a discussion on the utility of all hardware and software used during the pilot study, an exploration of options to incorporate suggestions for improvement; and further review of data utility and data collection methods.

Analysis of all aspects of the pilot study is ongoing but preliminary results suggest that the data being collected will be very valuable in terms of helping communities, the NWMB, and co-management partners to manage wildlife responsibly. Support from communities and co-management partners for extending and expanding the program is strong.

Prior to expanding the CBMN to other communities the NWMB will determine the best and most economically feasible method to do so. The NWMB will also work with participating communities and co-management partners to develop access and permissions for data and discuss ways to encourage buy-in from other communities while maintaining momentum in communities currently participating in the program.

The workshop has really helped to spread the word about the Community - based Monitoring Network. Community participants were interviewed by CBC during the workshop and these interviews appeared on both radio and internet. As well, many participants in the workshop have been spreading the word about this program and as a result the NWMB has been contacted by several researchers and non-government organizations involved in community-based monitoring initiatives who are interested in learning more about the CBMN.

Over the next few months, the NWMB will work together with IMG-Golder and their subcontractors, participating communities, and co management partners to determine a course of action for ensuring the future viability of the CBMN.