



**Arctic Borderlands Ecological Knowledge Co-op  
Proceedings of the Fourth Annual Gathering  
Inuvik, Northwest Territories  
March 1-3, 1999**

Produced by the  
Arctic Borderlands Ecological Knowledge Society, Whitehorse, Yukon



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# Overview of the Arctic Borderlands Ecological Knowledge Co-op

## Purpose

(from the Society's constitution)

- A. To monitor and assess ecosystem changes in the range of the Porcupine Caribou Herd and adjacent coastal and marine areas;
- B. To encourage use of both science-based studies and studies based on local and traditional knowledge in ecological monitoring and ecosystem management;
- C. To improve communications and understanding among governments, aboriginal and non-aboriginal communities and scientists with regard to ecosystem knowledge and management; and,
- D. To foster capacity-building and training opportunities in northern communities in the context of the above-listed goals.

## Snapshot

The Arctic Borderlands Ecological Knowledge Co-op is administered by the Arctic Borderlands Ecological Knowledge Society, a non-profit society incorporated in the Yukon. The Borderlands Co-op has a flat organizational structure, with decisions being reached by consensus at annual gatherings. A board of directors for the Society is elected at each annual gathering. Environment Canada (Yukon) provides overall co-ordination and support.

No management decisions or advocacy positions are taken — the Co-op's role is to develop and share information about ecosystems for decision-makers to use.

Funding is from various sources (currently government agencies and programs, and co-management boards and councils). In-kind support is also provided through staff support and sharing of data and knowledge. Membership is open and includes representatives of government agencies, co-management boards and councils, aboriginal government agencies, and academic institutions from northern Canada and Alaska.

## Guidelines

Go slow  
 Keep it simple  
 Be relevant  
 Think long term  
 Economize





## Development of the Arctic Borderlands Ecological Knowledge Co-op

In 1995 representatives of different agencies met in Dawson to start an ecological monitoring program for the Northern Yukon. This program, known initially as the Northern Yukon Ecological Knowledge Co-op, was linked to the new Canadian Ecological Monitoring and Assessment Network (EMAN).

Participants at the meeting identified the three main areas to be the focus of ecological monitoring: climate change, contaminants and regional development.

An important product of the meeting was a set of guidelines for development and implementation of this new program (see Page 1). These guidelines have stood the test of time well and have been useful in implementing the monitoring program over the past four years.

**The First Annual Gathering** of the Knowledge Co-op took place in Whitehorse in 1996. The gathering's participants, including representatives of 22 councils, boards and agencies in the Yukon, Northwest Territories, and Alaska, worked together for two days to develop a system for ecosystem monitoring that is relevant, feasible and practical in the northern Yukon.

Participants developed a list of potential indicators of change related to the issues of climate change, contaminants and development. These indicators range from basic environmental measurements (such as temperature and stream flow) to measurements of potential stresses (such as number of airplane flights) and effects on communities (such as time spent on the land). Over the next year, information on many of these indicators was pulled together by the staff at Environment Canada.

In addition, a pilot program of community-based monitoring was initiated in the communities of Aklavik, Fort McPherson and Old Crow.

**The Second Annual Gathering** was held in Inuvik in March 1997. Once again participants from a wide range of agencies met for two days to discuss the ongoing efforts related to ecological monitoring in the northern Yukon. This second gathering saw a wider representation from Alaska, which enhanced the scope of the Co-operative's monitoring abilities. Featured sessions included reports from the Community Monitoring program and an opportunity for participants to explore the Co-op's Web Site.

**The Third Annual Gathering** was held in Inuvik, in March 1998. Forty participants, representing government agencies, First Nations and Inuvialuit from the Yukon, Northwest Territories and Alaska, worked together for three days to maintain and enhance a system of ecological monitoring that is relevant and feasible to the Co-op's members.

A report was given on the plant project in Old Crow which was the community's first monitoring project. Findings from the community-based monitoring project were also reported. With the expansion of interest and participation into the NWT and Alaska, members decided to change the Co-op's name to the Arctic Borderlands Ecological Knowledge Co-operative and form a non-profit society.





# Proceedings of the Fourth Annual Gathering

## Day 1 - March 1, 1999

### Introduction

Gary Kofinas welcomed all participants to the Fourth Annual Gathering of the Arctic Borderlands Ecological Knowledge Co-op. (For a complete list of participants see **Appendix 1A**)

Gary began with a general introduction to the Co-op and to the gathering's goals. Over the last five years the Co-op has been trying to document and understand changes in the environment. The Co-op has gone through various stages in its development, from its beginnings of getting the system up and running, to thinking about growth and ways to sustain the program.

The goals of the Fourth Annual Gathering:

- share the findings of the past year regarding ecological conditions and changes;
- take stock of what has been learned, and how the Co-op is doing overall, by looking at information critically;
- review the past year's activities and plan for the next year; and,
- consider how the Co-op fits into other programs.

### Co-ordinator's Report

Joan Eamer presented an historic review of the founding and development of the Co-op. When community and agency representatives first met to establish goals and guidelines for the Co-op, the area chosen for inclusion in the Co-op was the range of the Porcupine Caribou herd and the adjacent coastal/marine region. From the beginning, Co-op members have recognized the need for practical information in order to adapt and make decisions. One of the Co-op's goals is to use and link together local and traditional knowledge with scientific information.

Decision making has been on a co-operative

basis, pooling resources and ideas. The Co-op has involved co-management boards and councils of both the Inuvialuit and Gwich'in (including Vuntut Gwitchin) as well as Yukon, federal and Northwest Territories, and Alaskan government agencies. Yukon College and other academic institutions, and interested individuals have also been involved. Environment Canada has, to date, taken on the role of overall co-ordination.

Joan gave a summary of the Co-op's purpose and guidelines, and reviewed the activities of the Co-op's previous three annual gatherings (see Pages 1 and 2). The Co-op's programs and projects address four objectives:

- Track and communicate indicators of ecosystem change
- Coordinate and communicate local knowledge through community based ecological monitoring
- Facilitate and develop ecological monitoring projects.
- Provide a central point for information.

### The Co-op's Web Site

Participants were given a demonstration of the contents of the Co-op's website which is located at [www.taiga.net](http://www.taiga.net). The site has a number of pages and links related to ecological monitoring. Interested parties are given an opportunity to join the Co-op's mailing list by subscribing to Taiga Net News. The 'Reports and Databases' page has the reports from meetings and proceedings. Examples were shown of information found at some of the indicators sites.

The general format of the Arctic Borderlands Database of Information Sources, as seen on the website, was also shown. The database currently has about 450 records. Joan reported that the database is being reorganized and will soon include Alaskan regions. The database will eventually be available on disk.





## Update on the Action Items from the Third Annual Gathering

Jill Johnstone gave an update of the action items from the Third Annual Gathering. Action items fell into three categories - monitoring priorities, the Co-op as a registered society and going international.

### A. Monitoring Priorities

#### Continue with Community-based Monitoring

- The community-based monitoring has continued with the interviews being conducted in the fall. The question of when is it best to be interviewing is still being considered.

**Lake ice melt indicator** - The suggestion for this project was brought up last year. Questions remain as to what it is about lake ice that should be monitored. Should a temperature indicator be used? What are indicators of the first signs of melt and how to measure total melt in spring?

**Water levels** - The Co-op has had discussions on these indicators. Are the Old Crow Flats drying up? How can we study this? There are so many lakes and it is so dynamic an area that we need to have a broad scaled picture. Satellite images and the older air photos could be used. It is a complex procedure. A suggestion was made of getting a graduate student to help. This project will proceed over the next 2 years.

**Berry count and soil temperatures** - The Vuntut Gwitchin Renewable Resource Council participated in this monitoring which was conducted as part of the Old Crow Plant Plot Project. Rae Moses showed participants the pamphlet that the RRC had developed to describe the project. A few plants that were not common to the area were found. Procedures and problems associated with the project were discussed. Rae reported that funding may be available to run this project if the work is with schools and there is student involvement. The RRC tried to get students involved but there was no interest even when prizes were

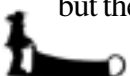
offered. There is a need to get students involved at the beginning of the school year for the next spring and provide them with an orientation and background to the project. This whole activity was a learning experience. The RRC is looking at developing some type of curriculum for next year. They want to put traditional names with the plants that are monitored and collected.

**Build on Pilot Project in Old Crow** - There are a number of potential projects which would build on the pilot project that has been conducted in Old Crow. The main objective of this initiative would be to involve the communities, through local organizations, schools, and individuals, in some form of ecosystem monitoring. This involvement would increase awareness and supplement existing ecological data sets. The exact type of monitoring could take many forms. The monitoring projects needs to fit within existing organizational mandates and should be something that could be repeated year after year. Funding for these projects would probably be a combination of Co-op and local contributions. Unless we have a specific source of funding, projects with a substantial cost associated with them would probably be difficult to carry out. Potential projects were described as follows:

**Bird monitoring** - Monitoring the arrival of migratory birds in the spring by recording first sightings and unusual occurrences. This information would feed into the Co-op's animal indicators and would help determine if the timing of migrations is changing. This would make a good school project.

**Snow monitoring:** Measurements of snow depth made at a single location, possibly near a school, throughout the winter. The timing of icing and storm events are recorded. Snow-water equivalent could also be measured a few times over the winter. Information on snow could be compared to weather records and local knowledge of caribou movements. A lot of school science programs can be tied into the study of snow, from weather to caribou to small mammals living in the snow pack. This could be a really useful indicator.

**Plant flowering in the spring and berries in summer** - The first flowers for certain plants, like





Labrador tea, could be monitored in permanent plots like those used for the berry monitoring in Old Crow. This would require going to the same spot every day or two to check on the flowers during the flowering period. It would also be useful to know when the first ripe berries show up. Berries could be monitored in the same way as the other plants. Counting the numbers of flowers or berries in the permanent plots would give information on year-to-year changes in plant production.

**Timing of lake freeze-up and melt -**

Monitoring freeze-up and break-up can be used as an indicator of changing environmental conditions from year to year. This is a community program the Co-op talked about getting going last year. When is there a complete cover of ice? When are there some open areas? When is it completely gone? Also you can get information on ice conditions and water levels by using bush radios.

**Animal track surveys -** If school groups are going on regular outings to the same areas every year, they could make counts of the number and types of tracks they encounter in the snow. This might give us some information on animal activity and how in changes in certain areas from year to year.

**An ecological observations calendar -** This could be modelled after the HTC surveys or the Co-op community monitoring survey. In the schools, young people could keep track of animals or birds they see, or keep track of animals seen and/or harvested by their immediate family. Calendars could also be given out to community members, such as the local experts that are interviewed for the community monitoring project. This information could feed into the community

monitoring program, and maybe help people keep track of their observations. We could provide people with a list of things to make notes about such as animal sightings or tracks (location, how many), first bird sightings for the spring, first flowers and first ripe berries for certain types of plants, and strange or important weather events (storms, ice-on-snow, others...)



**Fisheries related indicators and habitat measurements -**

There is anecdotal evidence that there used to be more water. There is a need to identify and monitor small critical habitats for certain stocks such as overwintering areas or spawning site critical for life cycle. There are questions regarding the start or end of fish runs. There have been unusual

sightings of salmon in the area as well as a broader range of fish species. Changes in ocean currents or temperatures can be monitored, which may be indicative of large scale changes. DFO and the FJMC are already working together. There are ways to coordinate findings. The Inuvialuit Harvest Study will be starting again next year and will provide some good linkages.

**Erosion -** Storm surge erosion at Tuktoyaktuk could be examined in relation to ice cover. It would seem that the further away the ice, the more erosion occurs. There is a need to look at the range of indicators that could be used and see what would work. There are reports of cabins falling into rivers. Information should be obtained from people who have seen this occurring.

**Canadian Wildlife Service's Breeding Bird Survey -** CWS distributes a pamphlet to get information on breeding birds. Participants require some experience.

**Monitoring of harvest -** Several agencies are





monitoring harvest. Some information could be put on the Web site. Monitoring could be done in the spring time when everyone is going out on the land and communicates with each other about observed changes.

**Summer Plants Monitoring** - The Co-op could work with organizations that hire students. It may be possible for students to take 1 or 2 weeks to measure plants. They would receive training from the Co-op on methods or techniques.

In order to get started on any of these projects there is a need to set monitoring priorities, find organizations that can carry out the work, identify funding sources and assess training requirements. It is possible to get some projects started in the spring and summer, possibly through the student mentoring program in communities. The question remains of who will supervise any project.

A discussion was held regarding the level of information that already exists and how to build on it.

A question was raised as to what makes a good indicator. It was agreed that there is a need to have a common measuring stick so that scientific knowledge and traditional knowledge are compatible. Concerns were raised regarding the involvement of schools and the turnover in the teachers. Any monitoring system developed must have guidelines and a protocol which can be followed by anyone.

## **B. The Co-op as a Registered Society**

It is important that the Co-op is able to stand on its own and not be reliant on funding solely from Environment Canada. As a registered society the Co-op itself can start applying for funds on its own. There are two separate applications to be made - one is to become a registered charity with Revenue Canada, which would allow the Co-op to issue tax receipts for donations, and the other is as a society under the Yukon Territory Societies Act. (For a

further discussion of this topic see 'First Annual General Meeting of the Arctic Borderlands Ecological Knowledge Society' in Day 2 of the proceedings)

## **C. Going International**

Alice Hartling reported on the work she has done making the Co-op's Database of Information Sources more efficient. Alice also outlined what has been done to incorporate Alaskan data.

Fran Mauer commented that the process has been slow in Alaska but that he has been able to contribute a digital map of the Co-op's geographical range.

The previous fall, Arctic refuge staff began to pull together all reference information that they have which is about 500 entries, which they will be able to transfer into Co-op database. They have been taking stock of all databases that have been previously developed over the last 20 years, but this will take a considerable amount of time to complete. Indicators and data sets have been examined and will be posted. ANWR applied for special funding to help with communities, which was approved. It is hoped that effective ways to use the money can be explored at this meeting.





Day 2 - March 2, 1999

## Community-based Monitoring Project Reports

Gary Kofinas introduced the Community-based monitoring project. The community-based monitoring project was initiated in 1996 in recognition that more time and money should be put into incorporating traditional knowledge into the management process. The objective of the project has been to determine and record the observations of people who are spending time on the land. Since the project started, over 300 interviews have been conducted with local experts in Aklavik, Old Crow and Fort McPherson. The project has been reviewed each year and modifications made accordingly.

In 1999, interviews were again conducted in the three communities. Field workers were Richard Gordon (Aklavik Inuvialuit), Norm Snowshoe (Fort McPherson and Aklavik Gwich'in) and Joe Tetlichich (Old Crow). The local experts that were interviewed were chosen by local leadership using common criteria. Honoraria in the form of gas coupons were paid to those interviewed.

Interviews were conducted as in previous years with one standard interview questionnaire containing both open and closed questions. Topic areas for questioning included fish, berries and caribou. Weather observations were recorded. Information was also obtained on moose, seals, birds of prey, grouse, small birds, ducks, swans, geese muskoxen, rabbits, bears, wolves and mosquitoes.

For the results from the 1999 Community-based Monitoring Program, along with summaries of the discussion and evaluation of this year's program refer to separate documentation.

**Action item:** timing of the interviews may need to be changed as there was a recall problem

**Action item:** Information, observations, are linked to time and space; need to do some mapping work.

## Taking Stock: What have we learned?

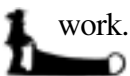
Jill Johnstone, Scott Gilbert and Gary Kofinas presented a first cut at a synthesis of observations and data collected and put together through the Co-op over the past three years. The indicators that are being used by the Co-op were selected on the basis of their significance to the people in the communities. The Co-op is trying to use these indicators to track change and hopefully learn more about ecosystems.

In reference to the climate related indicators, the scientific data is supporting what people on the land are experiencing. Local observations of climate-vegetation associated changes include less predictability in the weather, distant summer ice pack, more woody vegetation such as willows and lakes drying up. The plant project in Old Crow will contribute to tracking what is changing in that area. A Yukon Government botanist noted an increase in certain grasses on Herschel Island from 12 years ago.

Participants discussed the important links being observed between weather and harvesting. Are the caribou going to be affected by weather changes? It is known that fall storms move caribou as icing affects migration routes. The issue is very complex and science is having difficulty answering the questions. Elders are often better at noting how caribou are affected. It helps to educate people to observe these changes.

Is an increase in frost free days a useful indicator? Joan noted currently we are tracking only growing season but frost free days may be a useful indicator. There is more information we could be drawing out of our climate records.

The indicators about development are telling us a number of things. These include trends in the numbers of environmental screenings, changes in traffic on the Dempster highway, the numbers of aircraft flights and an increase in the visitors to Ivvavik National Park. Herschel visitor numbers are





about the same or increasing but the information is not based on registration. A question arose as to how can this indicator be measured more effectively. Jack Mathias commented that he has a masters student looking at visitation along the coast including air flights to coastal areas. Participants discussed additional indicators that could be used.

A discussion was held regarding the inclusion of socio-economic data as indicators. Should people's perceptions of socio-economic health in the communities begin to be recorded? Some people felt that asking about the socio-economic information is too threatening. Participants questioned if the Co-op was really qualified to deal with these questions. It would be better to remain focused on areas where the Co-op members have some experience.

A number of local people have reported abnormalities in loche livers. Fewer abnormalities are being reported in other fish. People are wondering if these abnormalities are caused by contaminants. Joan commented that these liver changes may be due to a number of things, but that contaminants are often found in the livers of loche. It was noted that if the liver is unhealthy, then the fish should be unhealthy as well. Joan added that the Co-op is hoping to develop partnerships with communities, the Gwich'in Renewable Resources Board, the Department of Fisheries and Oceans, and the Northern Contaminants Program to begin a study to assess the livers. If it is a community concern it should be looked at. A comment was made that water quality questions should also be asked. Is it possible to incorporate questions regarding loche livers into other studies like the Inuvialuit Harvest Study?

A discussion was held regarding the reporting back of results. So many studies are being done but the communities rarely hear any results. There is a need for much better communications especially in relation to the contaminants issue. This is something that really worries people. Perhaps the Co-op should put something on their website. Not saying anything doesn't seem to be helping. People working in the community offices need resources to answer these questions.





# Arctic Borderlands Ecological Knowledge Society

## First Annual General Meeting

### 1. Review of agenda

Participants reviewed the agenda.

*Motion*

*To adopt the agenda, as presented*

Moved by: Andrea Hoyt

Seconded by: Ian McDonald

Motion carried.

### 2. Overview of Society Status

Joan Eamer gave an overview as to why the Co-op decided to become a society. By becoming a non-profit society the Arctic Borderlands Co-op can now apply for non-government sources of funding like foundation money. It is a way that the Co-op can access money and become less dependent on government. At last year's meeting, there was a strong desire to ensure that decisions that direct the Co-op be made by the membership at the annual community meeting. Members did not want to loose the co-operative feel the Co-op has enjoyed to date.

The Society's official name is the Arctic Borderlands Ecological Knowledge Society. The application process has been completed for the Society to be incorporated as a non-profit society. The next step is to elect a Board of Directors and establish membership, both of which need to be done at this meeting. To maintain it's standing the Society needs to file annual financial statements, hold an annual meeting and establish bylaws. The bylaws used to create the Society are standard bylaws used by other non-profit societies and can be changed at next year's AGM if the membership would like to do so.

### 3. Membership Criteria

Joan proposed that members can join the Society free of charge.

*Motion*

*To set the membership fee for the Arctic Borderlands Ecological Knowledge Society at zero (0) dollars.*

Moved by: Joan Eamer

Seconded by: Ian McDonald

Motion carried.

The membership criteria was proposed as -

- 'Individuals or organizations with an interest in co-operating on a) ecological monitoring and assessment;
- b) sharing local and scientific knowledge; and c) the communication of ecological information, within the geographic area defined by the range of the Porcupine Caribou Herd and adjacent coastal and marine





waters.'

There was some discussion about local verses traditional knowledge. It was decided that a definition of local knowledge should be developed within the bylaws of the society.

Following further discussion, it was decided that having a desire to participate as a member of the Arctic Borderlands Ecological Knowledge Co-operative was sufficient criteria for membership in the Society and that Directors would be involved in evaluating the membership criteria as the organization grows.

A question was raised regarding the Co-op consulting with other land claim groups. Joan noted that as the Co-op only provides information to land claim groups and does not make decisions for land claim groups, the need for a consultation process was not necessary.

*Motion*

*That the membership criteria be approved in principle and that the Directors discuss and finalize the wording. The Directors' wording will become the criteria for membership*

Moved by: Joey Amos

Seconded by: Doug Chipertzak

Motion carried

## 4. Election of Directors

Joan explained that there had to be a minimum of three Directors - President, Vice-President, and Secretary-Treasurer. Additional Directors could also be appointed to the Board. It was clarified that the decisions that would shape the Co-op would remain with the membership at the AGM.

The roles of the Directors were determined to be as follows:

President

- Coordinate the Annual General Meeting;
- Oversee financial matters of the society
- Review the agenda for the Annual General Meeting.

Vice-President

- Assume the role of the President in his/her absence.

Secretary-Treasurer

- Communicate to the membership
- Manage and report on financial matters.

Other Directors

- Participate in conference calls to help make financial decisions for the society.

The following nominations were received for the Board of Directors: Robert Charlie, Joan Eamer, Richard Gordon, Joe Tetlich, Gary Kofinas, Kias Peter, Rae Moses, Val Loewen

Gary recommended that Jack Mathias be appointed to the Board of Directors to represent DFO. Jack declined and agreed to participate in an advisory capacity. Members felt that interested individuals should sit on the Board as individuals instead of as organizational representatives. It was noted that Directors sit on





the Board for a one year term.

*Motion*

*That Robert Charlie, Joan Eamer, Richard Gordon, Joe Tetlich, Val Loewen, Gary Kofinas, Kias Peter and Rae Moses be elected to the Board of Directors of the Arctic Borderlands Ecological Knowledge Society and that the Directors determine amongst themselves what positions they will hold.*

Moved by: Jennifer Walker-Larsen

Seconded by: Joey Amos

Motion carried

## 5. Other Business

Joan Eamer gave participants an update of the society's financial position (Appendix 1B). It was agreed that the Board of Directors are to decide on the Society's fiscal year.

## 6. Adjournment

*Motion*

*To adjourn the meeting*

Moved by: Jennifer Walker-Larsen

Seconded by: Rae Moses

Motion carried





## Evening Session: Sharing our Work and our Knowledge

An evening session was held during which time participants from various agencies summarized their current monitoring activities and suggested ways they could work with the Co-op.

Anne Morkill from the Arctic National Wildlife Refuge summarized past monitoring initiatives in the Refuge (ANWR). Caribou movements have been studied using conventional and satellite collars. Moose populations, muskox population dynamics and movement, and the examination of snow geese flights in the fall have also been undertaken. Another long term study is the winter seismic exploration which is examining what has happened to the vegetation as a result of seismic activity. The Refuge is trying to establish sites for ecological monitoring in each of their five ecological zones. There are a number of sites they hope to look at over the years.

Anne reported that ANWR has just received funds that they can contribute to the Co-op's activities in Alaska. Arctic Village and Fort Yukon are becoming involved in ecological monitoring. ANWR would like to see a community-based monitoring system in place. Venetie and Kaktovik could also be included. There are other organizations in Alaska that would like to be involved. Suggestions are welcome as to how to go forward on approaching communities. It would be useful to bring Canadian representatives over to Alaska and exchange ideas, specifically on the local participant level.

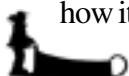
Kias Peter from the Council of Athabaskan Tribal Governments (CATG) reported that each of the eleven villages in Alaska included in CATG are trying to establish a natural resource/economic development group. Kias gave a summary of the work that is being done on contaminants in lichens. He also reported that there are concerns in Arctic Village regarding the heavy traffic at the airport and how it is affecting the caribou.

Jack Mathias from the Department of Fisheries and Oceans in Winnipeg reported on DFO activities. He commented that there are a number of ways that DFO can become involved in the Co-op through their three new programs which include integrated oceans management planning, marine ecosystem health monitoring program and the Marine Protected Areas initiative.

DFO is already involved in the collection of information from community people and from departments. Possible linkages to Co-op can be through information sharing, sharing of monitors and experience and the strengthening of the land/ocean connections.

Jack commented that there is no information on many of the indicators that have been mentioned, such as sea ice. It would be good to help pull these together. DFO may be able to provide assistance in reviewing current indicators especially those that relate to marine environment and help to provide more suitable and/or better indicators that should be examined.

Val Loewen from YTG's Department of Renewable Resources reported that the Fish and Wildlife branch is currently doing population monitoring of fish, moose, caribou. There is interest in improving connections with the communities so that community-based interests can be addressed.





Later this month there will be a workshop in Haines Junction where the Renewable Resource Council is interested in doing some type of work to evaluate the effects of the spruce beetle outbreak and recent extensive forest fires. The workshop is to get all groups together to see what can be done.

YTG has established tundra plots on Herschel Island to look at the changes in vegetation. Significant changes in vegetation have been noticed in some areas on the island since they were mapped 12 years ago. Plants will continue to be monitored over time to look at changes. YTG also wants to do some permafrost measures. This monitoring can be maintained over the long term if it is set up properly at the start. Additional long term plots have been established in Old Crow to monitor changes in the plant community in that area. This information can be given to the Co-op.

Ian McDonald from the Gwich'in Renewable Resource Board reported that the GRRB has set up two plots to monitor forest health and biodiversity in response to concerns from the elders. The monitoring will continue for 10 to 15 years. The GRRB also began a five-year harvest study last year.

Meredith Seabrook (Environment & Conservation, DIAND, Yellowknife) reported on the Mackenzie Valley Monitoring Program which is in its early stages. A workshop was held in November to familiarize participants with initiatives and background to monitoring work.

Two action items which arose from the workshop are to establish a steering committee starting with a regional approach (Gwich'in and Sahtu) and to develop a large database of monitoring work that has been done and is currently being done in this region. The Aurora Research Institute is working on developing this database which will be complete at the end of March, 1999.

Further linkages and how to fit in with the Co-op are not yet clear.

Gary Kofinas gave a presentation on the 'Sustainability of Arctic Communities' project which is funded by the National Science Foundation.

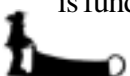


Initiated by the Institute of Arctic Biology, University of Alaska Fairbanks, and the University of Alaska Anchorage, the project is attempting to advance the ways that environmental assessment is being conducted. The goals of this project are to improve the ability of communities and scientists to discuss: (1) how community life may change in the future and, (2) how communities may be able to shape changes to reflect community values.

Communities involved in the project are Arctic Village, Old Crow, Aklavik and Fort McPherson.

There are five shared community goals:

1. Use of, and respect for, the land and animals in their homelands.
2. A cash economy that is compatible with, and supports, continued local use of the land and animals.
3. Local control and responsibility for what is





done in village homelands and what happens to resources used by the community.

4. Education of younger people in both traditional knowledge and western science, and education of the outside world about community goals and ways of living.

5. A thriving culture that has a clear identity, is based on time on the land and language, and which honours and respects elders.

The project is using model development as the primary way to decide what knowledge needs to be transferred to the communities to help them meet their goals. It is also using models to integrate the work of the research team and to foster discussions between community experts and researchers. Several demonstrations of the model were given including one on the effects of insect harassment on caribou.

More details of this project can be found on the project website at: [www.taiga.net/sustain](http://www.taiga.net/sustain).

## Day 3 - March 3, 1999

### Planning Session

The objectives of this final morning session were to reassess priorities, decide on action items for 1999-2000, and assign responsibilities.

The session began with a review of actions from the previous year's meeting. Each item was assessed for its current status and new ideas were generated as to how to further some of the actions. Overall, the actions of the previous year were completed to the participants' satisfaction.

A summary was given of the discussions held over the previous days.

Action items and responsibilities arising from the Fourth Annual Gathering (and those from the previous Gathering that were not completed) are listed in **Appendix 2**.





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## Appendix 1B

### Arctic Borderlands Ecological Knowledge Co-op's 4<sup>th</sup> Annual Gathering

#### Co-op Budget and Sources of Funding for Fiscal Year 1998/99 (end March 31)

<b>O&amp;M</b>	Community-based monitoring	30.0 K
	Casual employee (coordination, development and Web site maintenance)	10.0 K
	Contract (indicator and project development)	5.0 K
	Annual Gathering	10.0 K
	Printing and supplies	2.0 K
	<b>TOTAL O&amp;M</b>	<b>57.0 K</b>
<b>In-kind Support</b>	Environment Canada (co-ordination, development, communications)	30.0 K
<b>Salary</b>	Institute for Global Awareness (community-based monitoring, development, communications)	5.0 K
	Gov't of Northwest Territories (Community Interviewer salary)	3.0 K
	Wildlife Management Advisory Council (North Slope) : Co-ordination of Gathering	2.5 K
	Wildlife Management Advisory Council (North Slope): Youth Intern	3.0 K
	Fisheries Joint Management Committee: Youth Intern	2.0 K
	Fisheries and Oceans Canada : Youth Intern	1.0 K
<b>Office Overhead</b>	Environment Canada (estimated at 15% of O&M)	8.5 K
	<b>TOTAL IN-KIND SUPPORT</b>	<b>65.0 K</b>

#### O&M Funding Sources (1998/99)

Environment Canada (IFA implementation funding for wildlife projects)	15.0 K
Environment Canada (EMAN project funding)	12.0 K
Environment Canada (Yukon Land Claim Implementation and other regional funding)	15.0 K
GNWT (RWED, Inuvik)	5.0 K
DIAND (Northern Affairs, Whitehorse)	10.0 K
<b>TOTAL O&amp;M FUNDING SOURCES</b>	<b>57.0 K</b>

O&M = Operating and Maintenance





## Appendix 2

# Summary of Priorities - March, 1999

Overall need to reassess priorities, decide on action items for 1999-2000, assign responsibilities.

### Action Item Areas

1. Communications and Linking with other Players
2. Web Site Development
3. Community Based Monitoring
4. Local Monitoring Research Projects
5. Indicator and Database Information Sources Development
6. Important Items
7. Going International

#### 1. Communications and Linking with other Players

<i>Action Item</i>	<i>Lead</i>
Build monitoring into school curriculum whenever possible.	Co-op
Link with Aurora College Natural Resource Training Program to explore how students can be involved.	Aurora College
Link with Joint Secretariat student mentoring program.	Fisheries Joint Management Committee
Link different fisheries/marine data collection programs.	DFO
Set up to better provide information as and when needed by management bodies and planning processes.	Co-op
Distribute CD ROM copy of Taiga.net, load on community computers, introduce use.	Co-op
Get Co-op information into newsletters of various organizations.	Co-op & organizations
Fax memos about the Co-op to local organizations to update what we are doing—send just before their monthly meetings (send it in electronic form directly to organization to make it easier)	Co-op
Get linked with other web sites	Co-op
Create posters for communities that describe the Knowledge Co-op (caribou graph etc.)	Co-op
Report back about this meeting	Everyone who attended

#### 2. Web Site Development

<i>Action Item</i>	<i>Lead</i>
Summarize Northern Contaminants Program findings for the Co-op region and put on web.	Co-op
Contact organizations regarding web hookups.	Co-op
Add community knowledge to indicator pages.	Co-op
Add community-based monitoring section to cabin.	Co-op





**3. Community Based Monitoring**

<i>Action Item</i>	<i>Lead</i>
Carry out community based monitoring, staying with the process used this year. (individual interviews and discussions)	Co-op
Explore calendar idea.	
Deliver project summary to participating households.	Co-op
Create advisory group to advance community monitoring.	Co-op
Expand questionnaire to include local experts relationship/occupation to the land.	Co-op
Prepare simple overview of project to share with communities.	Co-op

**4. Local Monitoring Research Projects**

<i>Action Item</i>	<i>Lead</i>
Identify native language names of plants.	Co-op, Language Centers
Find summer youth hires and sponsoring local organizations to do small local monitoring research in conjunction with individual projects.	Co-op, RRC's, HTC's
Explore idea of the use of small-scale habitat monitoring to capture fish - marine-related changes.	
DFO	
Follow up on loche liver concerns.	Co-op, GRRB, NYRRC, Yukon
Contaminants Committee	
Develop specific projects (i.e. lake ice).	Co-op
Look at potential of lichen monitoring for levels of radionuclides.	Co-op

**5. Indicator and Database of Information Sources Development**

<i>Action Item</i>	<i>Lead</i>
Organize available data and research for fisheries/marine system.	DFO
Develop/explore using storm surge as an indicator.	Co-op, DFO
Draw on Herschel Island Park records and monitoring program .	YTG Parks
Draw on harvest studies to assess long-term change (i.e. records of the first duck shot each year)	
GRRB, IHS	
Get database of information sources linked with other programs.	Co-op, Vuntut Park, USF+WS
Look at improving analysis of weather data — expand to Alaska, try to track variability.	Co-op, USF+WS
Find improvements to current “development and tourism” indicators and add Alaskan data.	Co-op, USF+WS





**6. Important Items**

*Action Item*

*Lead*

- Pursue charitable status. Co-op
- Synthesize results from indicators and community based monitoring. Co-op

**7. Going International...**

*Action Item*

*Lead*

- Hold scoping meetings in Alaskan communities with Canadian participation USF+WS
- Provide list of participants for next gathering. Include Kaktovik USF+WS
- Continue to integrate information sources and indicator data from Alaska USF+WS
- Develop additional map products with Canada/Alaska - terrestrial and marine USF+WS

