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Canadian Sustainability Indicators Network (CSIN)
Learning Event #23 Summary

Traditional Ecological Knowledge (TEK) Indicators

Event Date: February 9, 2007, 10:30am – 12:30pm CST

Report Date: February 27, 2007

Prepared by the CSIN Secretariat
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About CSIN Learning Events

The Canadian Sustainability Indicators Network is a group of 300 indicator practitioners from across Canada and around the world working in a variety of governmental and non-governmental contexts. Practitioners share resources over a listserv and website, and participate in regular knowledge sharing opportunities, called "Learning Events". CSIN's unique approach to engaging practitioners is reflective of a larger goal to forward the discourse and practice of sustainability indicator development in Canada.

Learning Events are conference calls held in tandem with online PowerPoint sharing. Relevant topics related to sustainability indicator development are explored using a presentation with discussion format. Participants from all levels of government, academia, NGOs, consultants and business bring perspectives and knowledge resources.

Participating in the network is free and easy: simply request to be placed on CSIN's listserv of 300 indicator practitioners. You'll receive notices of upcoming events, along with reports and announcements from members. Past event summaries and presentations, as well as listserv archives are available from CSIN's website: www.csin-rcid.ca

More information about CSIN is available at or by contacting CSIN Coordinator, Carissa Wieler: cwieler@iisd.ca; 204-958-7719.

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1. Snapshot

CSIN's 23rd Learning Event on Traditional Ecological Knowledge Indicators drew an unprecedented number of people, with an emphasis on First Nations, federal government departments and provincial governments. This rare opportunity for interaction among different perspectives was eagerly taken up during the 2 hour discussion, as participants offered analysis, critique and resources.

Three practitioners shared their work during the call. First, Standford Zent of NGO Terralingua discussed his research on the development of a TEK Vitality Index. Then, Deb McGregor, a senior policy advisory for Aboriginal Relations out of the Ontario region of Environment Canada shared her experiences with TEK at the State of Great Lakes Conference (SOLEC). Barb Buckland, of Knowledge Integration at Environment Canada, then asked participants for feedback on the inclusion of TEK in Environment Canada's Northern Ecosystem Report.

This summary, while by no means complete, offers a snapshot of that discussion. About 2/3 of these notes have been checked for accuracy by presenters and participants. Resources shared during the call are summarized in Annex C.

2. Presentation 1: Global Indicators of the Status and Trends of Linguistic Diversity and Traditional Knowledge

Presentation by Stanford Zent, Terralingua

The full PowerPoint presentation is available at: http://www.csin-rcid.ca/learning_events.aspx

Coordinated by Terralingua and sponsored by The Christensen Fund, the project addresses an overall need to gauge state and trends of biocultural diversity at a global level. Specifically, two indicators are being developed: (1) the status and trends of linguistic diversity, the Index of Linguistic Diversity (ILD), and (2) the status and trends of traditional environmental knowledge (TEK), the TEK Vitality Index (TEKVI). The presentation focused on the latter, TEK Vitality Index.

The presenter discussed two interdependent views on overall objectives of TEK: preservation and protection.

> **Protection** refers to the legal or ethical protection of fundamental rights, of which there are two different types: (1) the right to intellectual and material property, implying private rights to possession, use & transfer (while excluding third parties), and (2) the right to civil liberties and customary practices (i.e. human, cultural, political, resource rights, etc.), implying inclusive rights that everyone should have equally. In the case of traditional knowledge, it signifies protection against misappropriation, unauthorized use or sale, alienation, proscription, etc.

Preservation refers to sustainability (or retention) and resilience (or adaptability) of intellectual and material patrimony over time. In the case of traditional knowledge, it means the intergenerational transmission of knowledge, learning mechanisms and contexts, and practices of resource appropriation, use & management that are ancestral o particular to a cultural group.

There is no support or incentive for preservation without adequate protection because if it is lost, it can not be protected.

The purpose of a TEK Vitality Index is to design a locally-appropriate, globally-applicable data instrument that can be used to measure and assess the vitality status of TEK (i.e. inferable trends of retention or loss over time) within selected groups and allow for relative comparisons of that status among groups at different scales of inclusiveness. No such indicator currently exists. Intended users of the index include local communities, ethnic-based organizations, academic researchers, government or public agencies, nongovernmental organizations, and intergovernmental organizations (CBD & partner organizations).

The presenter then discussed the need for a TEK Vitality Index. Several reasons were listed including:

the important role of TEK and associated practices and innovations for biodiversity conservation;
TEK is situated at the interface of the natural environment & human cultural expression
there is a growing concern that TEK is being lost or eroded under modernization
a reliable tool is needed to assess trends in TEK including whether knowledge is being eroded, retained or increased; how fast loss or change is occurring; what groups are most affected; what domains of knowledge are most vulnerable; what is causing or creating conditions for change.
a potential linkage between TEK trends and biodiversity loss that needs to be evaluated
a need for more precise information to inform policy making and evaluation.

The following definition of TEK was provided:

The locally distinctive, situated and learned knowledge by which a particular society or community apprehends the biotic and abiotic components of the environment and their interrelationships and engages it in a practical sense for sustenance, health, shelter, tools and other survival needs and wants.

Several properties of TEK were also presented (Ellen & Harris 2000):

Local: rooted to a particular place & set of experiences; generated by people living in those places

- **Oral & Visual**: transmitted orally or through imitation & demonstration
- **Practical**: consequence of practical engagement in everyday life and is reinforced by experience, trial and error, and experiment
- **Empirical:** tends to be empirical and empirico-hypothetical knowledge
- **Repetitive:** repetition is a defining characteristic of tradition

- **Dynamic**: constantly changing, being produced as well as reproduced, discovered as well as lost
- **Shared:** characteristically shared to a greater degree than other forms of knowledge
- **Fragmentary:** differentially distributed among community members
- **Functional:** essentially "know-how" geared to practical response and performance
- **Holistic**: integrated and situated within broader cultural traditions

The presenter then shared several results from a literature review, main points of which are summarized here. TEK erosion as a consequence of cultural modernization is a recurrent and widespread trend but not universal and therefore not inevitable. A wide range of individual, cultural, biophysical, and societal factors have been attributed to TEK erosion. These factors range by site, history and environmental settings, and there remains much to be understood about interactions among factors. In some places, TEK has persistent in face of socio-economic changes, and so no generalizations can be made about the status and trends of TEK at this time.

Three main types of TEK knowledge were presented: theoretical knowledge, referring to various inventories of plants and animals and their verification; practices of TEK, referring to how TEK is applied in a practical way, including use of plants and animals; and the transmission of TEK in the community, along with social structures that enable that transmission.

Theoretical Knowledge:

- collective inventory of folk biological taxa
- no. of plants/animals known
- no. of uses per species known
- no. of biotopes known/named
- correct ID of plants/animals by name or taxonomic categorization
- correct ID of uses per species
- species rank by importance value
- ecological characteristics (morphology, behavior, habitat, interspecific relations) of species
- competence in ethnomedical curing

In Practice:

- no. & type of skills known (self-reported)
- frequency of resource use events reported per time period
- no. & volume of species utilized per time period
- diversity of species utilized per time period
- diversity of cultivated crop species/varieties inventories
- frequency of use of medicinal plants by disease/by healer

Transmission:

- comparative inventories of plants/animals by age, gender, community, occupation, education
- taxonomic complexity by age group
- nos. & types of social relations responsible for acquisition of traditional skills by type and life stage

- time allocation in different activities
- frequencies of interpersonal transactions by social category
- extension and density of social networks

Discussion

Q: What is the role of community engagement in the development of the TEK Vitality index?

A: Currently, effort is being made to develop a method and a pilot study. The indicator will provide communities with information about trends; they will then be able to use this information to influence policy, and program provision to target specific needs.

Q: There is a need for information systems that reflect First Nations world views. A broad range of data has been collected, from stories, archives, land management processes, and genealogy. Are there any information systems that can house this information from a traditional perspective?

A: From the perspective of a TEK Vitality Index, the dilemma is to develop an indicator that can have global relevance to allow points of comparison for policy makers at national levels. The information that is collected should be kept at the local level and not made available or transmitted beyond that context. We are aiming to compare and transmit trend patterns for policy makers. The entire process of documenting knowledge is something that should be conserved locally. Local information systems are beyond the scope of this Index development.

Q: How can the impact of innovative educational programs be evaluated using a tool like the TEK index?

A: A way to evaluate the impact of these innovative educational programs would be to obtain measures that would be included in the TEK index and see whether those aspects are changing.

Discussion:

> In some aboriginal communities, there was already awareness that traditional activities were being impacted (as with the James Bay Agreement), and that taking jobs with a company meant that people wouldn't be practicing a traditional lifestyle. To address this, income support was built into comprehensive claims to allow people to continue to practice their traditional lifestyle. In a Canadian context, people are also measuring how many people are trapping on the lands as part of environmental assessment processes, and communities are in a better position to know what to negotiate. It is important to know what the threat is going to be. – Deb McGregor
>
> The Belcher Islands is a good example where they are looking at dam projects and developed a database of the traditional knowledge they have been recording. They also developed it for a range of community educational purposes including

environmental learning for youth. The database is searchable. An outcome has been a project with Inuit students who aren't that active on the land, to acquire holistic traditional perspectives/ecological knowledge/hunting skills through modular, experiential learning from Elders, and experienced harvesters. – Reg Whiten

3. Presentation 2: Implementing Traditional Ecological Knowledge: SOLEC 2000 to 2006 (State of the Great Lakes Ecosystem Conference)

Presentation by Deborah McGregor, Environment Canada-Ontario

Deborah provided full speaking notes, located in Annex A is this report. The following are notes recorded from her talk.

One of the functions of the State of Great Lakes Ecosystem Conference (SOLEC) is to develop indicators to report on the state of the Great Lakes Ecosystem. Up to 2000, there was little input from aboriginal or First Nations people around the Great Lakes. This was pointed out to the SOLEC Steering Committee and the recognition that First Nations live on the land, rely on the waters, consume higher rates of eating fish than the non-Aboriginal population. It was thought then, that Aboriginal peoples have something to say about the state of the Great Lakes.

At SOLEC 2006 last fall, the conference focused on examples where aboriginal people might be developing indicators for assessing the health of the Great Lakes based on their worldview. This is happening internally in Aboriginal communities, and how it is relates to external processes, such as SOLEC is less known.

There was some discussion on trying to define traditional knowledge at the workshop. There isn't a consensus on a definition for traditional knowledge. Deborah's approach is to come to a shared understanding of what it means or what we have agreed to talk about for particular purpose. Even though TEK may be situated in aboriginal views and language, it is not all the same. There is an uncontrollable need in Western Society to define things and scope them out, and that needs to be respected as well Aboriginal peoples reluctance to do this. In a lot of the work on traditional knowledge, the aboriginal perspective is lacking, and this situation is changing. It was acknowledged by participants at the TEK workshop that science still seems to dominate; aboriginal concepts of TEK are holistic, and are referred to as a way of life; it is difficult to jam a way of life into a definition.

The Aboriginal participants at the SOLEC workshop talked about what TEK is, and that is it is described as relationship to Creation, and is more of a verb than a noun. In a presentation made by an Elder at the Cleveland, Ohio SOLEC in 2002, it was shared that a local community noticed the declining fish population and therefore made a management decision to conserve the population. The First Nation imposed a moratorium of commercial fisheries to conserve the stock, information based on their traditional knowledge. The Ministry of Natural Resources (MNR)had different indicators to tell what a healthy population of fish was. MNR and the First

Nation started to collaborate and draw on both traditional knowledge and science to sort out how to manage the fish population.

Work by Joyce King, Coordinator, Haudensosaunee Environmental Task Force (HETF) was invited to SOLEC 2006 in Milwaukee, WI and she talked about the development of criteria and indicators though the HETF that developed an environmental protection process based on the Haudensosaunee worldviews, traditional knowledge and values. They looked at traditions to understand what the environment was supposed to be like, what ceremonies are needed to live sustainably on the Great Lakes. She talked about strawberries being an indicator for the health of the people and the Great Lakes. Strawberries are really important culturally, spiritually and environmentally, as they come from the Spirit World. Strawberries are a way of understanding the state of the environment, including the people. They provide a link between environment, culture and people. In order to conduct a ceremony, you need strawberries, and in order to conduct ceremonies you need healthy people.. Therefore Haudensosaunee people conducting the strawberry ceremonies is an important indicator of the health of the Great Lakes in their traditional territory.

What is coming clear is that the best way to work with traditional knowledge is to work with aboriginal people directly. This is starting to gain some currency. In order to work with traditional knowledge, you need to work with people, to learn the culture and the protocols for working with elders and to recognize that Aboriginal People are already doing much of this work already utilizing their traditional knowledge..

Discussion:

> I come from a long line of dreamers, so language is very important in how we see the world and we know that the adaptation and feedback provides a framework to do some decision making. Land use development is changing how we evolve. What we constantly have to compete with are people who have a real knowledge of the written word in English. If we can't put the knowledge down in a way that is acceptable to academia, we have to come up with our own way rather than competing with people who can write very well. Our knowledge is being adapted in consultation processes. There is a process of using our knowledge to develop new ways of making a living. Yet this is no taught in school and is not part of an institutional framework, which makes it difficult to sustain over time. – Garry Oker

> There are people rooted in tradition who recognize the need for science. They know both, they can do both, they can speak both languages and they can figure out what scientists need to hear. A lot of First Nations can do this, so the scientists can understand. The inequity comes in that scientists aren't learning how to talk to aboriginal people, while aboriginal people are getting the science background. Aboriginal People who seek a science education are not rejecting traditional knowledge, they are just being smart. It doesn't mean they don't know who they are and they can still speak their language. First Nations recognize that you have to learn both, but there is an inequity, so it is important to promote traditional knowledge as part of it, to continually educate people. – Deb McGregor

> It is critical that the way we see things is not only written in form but in stories and language and songs…those need to be acknowledged in a written form.

Q: What type of collaboration is occurring between groups in a region?

A: One of the advantages in Ontario is that the Chiefs of Ontario are able to bring different Aboriginal groups together. The Chiefs said that the TEK work needed to be done by cultural groups (Annishinabe, Cree etc), and that people needed to be brought together. We will have a Traditional knowledge at the end of March –that is to bring different cultural groups together to share their views of TK from their own cultural perspective. There is a lot of collaboration. Prior to contact, there is a history of people sharing knowledge. Guelph University is now including an indigenous knowledge component to their curriculum in Environmental Science.

4. Presentation 3: Environment Canada DRAFT Northern Indicators Report

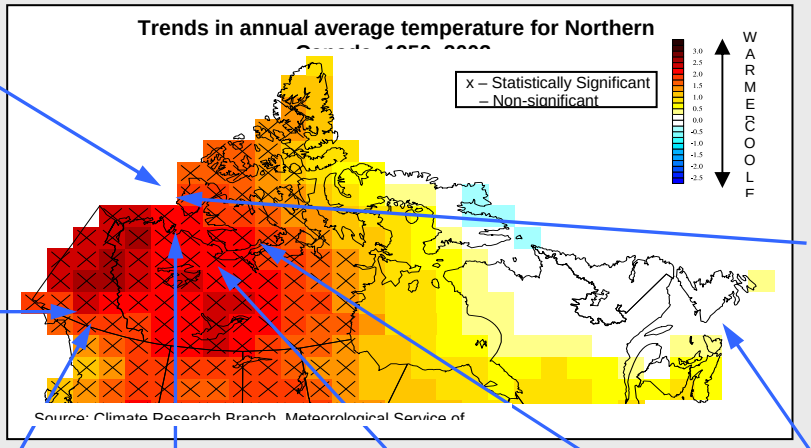
Presentation by Barb Buckland, Environment Canada

Environment Canada has a long standing National Environmental Indicator Series. There is now an effort to expand the series to include more northern information through the development of a Northern Indicators Report that will include some Traditional Knowledge found in previously published documents. The following two slides illustrate in draft form how traditional and scientific knowledge are combined in the report. The charts show change in temperature and sea ice extent and are surrounded by quotes from traditional and scientific knowledge holders.

A Changing Climate in the Canadian North: Observations based on Scientific, Traditional and Local

In the past three decades, in the Western Arctic, the area covered by sea ice throughout the year has shrunk by 25 percent, an average of 80,000 square kilometres (an area slightly larger than

In Dawson City, river ice break up records go back to 1896. For most of the twentieth century, break-up occurred in May; since the mid-1980s, April break-up dates have been more common, and the average spring break-up date now arrives about six days earlier



As part of a local monitoring program, IceWatch, data on ice break-up were recorded every year in Watson Lake between 1950 and 1991. The recorded break-up dates demonstrate a median rate of change of 2.5 days earlier per

Inuit in Paulutuk report that in the last few years there has been more freezing rain, increased strength and variability of winds, rapid erosion of banks and shorelines, later ice freeze-up and earlier ice break-up, and decreased ice

[T]he land is crumbling into the ocean. Whole riverbanks are crumbling into the river, also other embankments around the coast… The permafrost is melting in and around the community as well as along the whole coast

[T]he ice is thinner and weaker… The permafrost is melting… summers are way longer, freezing occurs later and later every year… Caribou cannot cross the channel anymore until later on in the year (Frank Analok,

We used to go out on the sea ice with dog sleds to hunt seals – now we have to use boats… We used to go a long way out – now we hunt close to shore (Andy Carpenter, Sachs Harbour, NT, 2002);

Even just up to a few years ago, we used to be able to go out with dogsleds with hunters-maybe five or six years ago, we used to be able to go quite a ways and not worry about it. The 1ast three years or

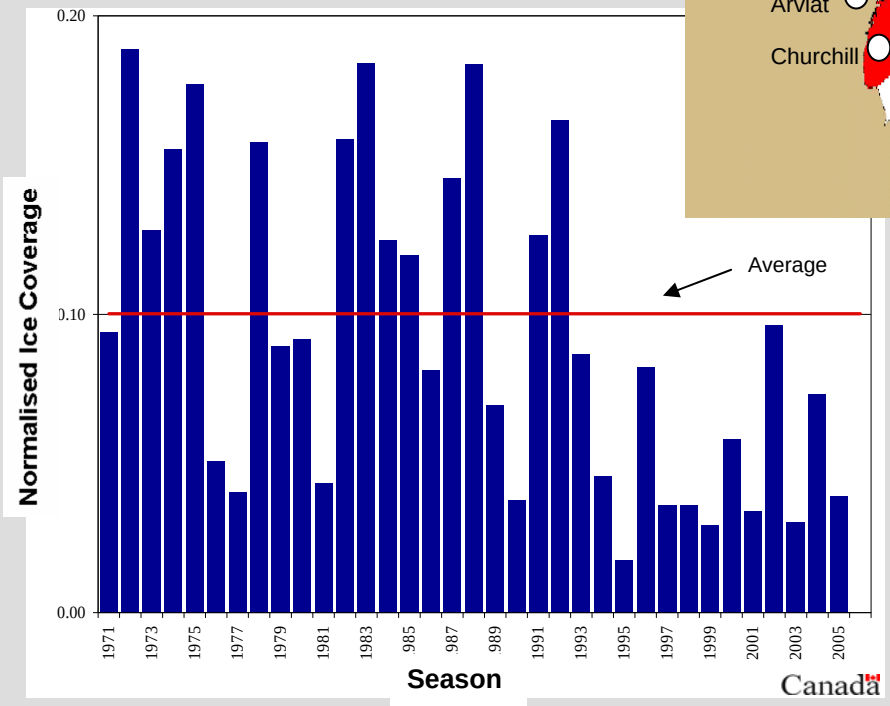
In Eastern Canadian waters, sea ice cover has increased over the last twenty years

Case Study: *Sea Ice Cover in Northwest Hudson Bay from 1971-2005*

In Chesterfield Inlet, warming temperatures are affecting sea ice and increasing the frequency of polar bears around the community (Leduc 2005).

I am now more fearful of the sea ice because we don't know if what used to be safe to travel on may not be safe. There are more unsafe areas on the sea ice (Johnny Karetak

Everything seems to be much later in freezing. The same thing with the floe edge. Everything seems to be behind (Luke Anowtalik, Arviat, 2001)



Sixty percent of Inuit Elders interviewed in Arviat, NU noted that the last few years have been marked by later and slower freezing of lakes, rivers and ocean (GN 2005).

"During the late 1990s and early 2000s, the ice on western Hudson Bay broke up approximately three weeks earlier than it had done in the early 1970s" (Stirling et al. 2004, 23).

The sea ice no longer freezes around October. Now it freezes around the middle of December. It seems to be later and later every year, the land fast around Rankin Inlet (Jerome Tattuinee, Rankin Inlet, NU, 2001).

Over the last few years the number of polar bears caught as part of the Polar Bear Alert Program in Churchill, Manitoba, has increased, as have calls to the emergency polar bear hotline in Churchill. Warmer falls and early springs have led to a shorter sea ice season, driving polar bears into the community (MC 2005).

Summary of Discussion Points:

There are some challenges with integrating a dashboard format and qualitative data, and questions were asked about other ways of integrated qualitative data.

The use of an anecdotal format was critiqued. One the one hand, it provides a snapshot for those who are not living in the region; on the other hand, it does not provide a showcase of indigenous knowledge, including breadth and where it came from. May depend on the purpose of the indicator.

The inclusion of a conceptual framework of traditional knowledge for the community where the knowledge came from has been used effectively in other publications (refer to "Voices from the Bay")

The use of traditional knowledge to back up scientific knowledge was questioned by some participants, and it was asked whether the reverse occurred, where traditional knowledge did not corroborate with scientific knowledge, and how that was handled.

The validation of traditional knowledge was discussed, in terms of the length of time it takes for the "canary in the coalmine" to be heard; and often it is 5-10 years before action is taken.

A comment was made that climate data has used information from diaries and other qualitative sources for along time, before we had the technology to measure it (references to "Co-Evolution of Life" and "Climate of Hunger").

The importance of non-aboriginal people becoming more multi-lingual was reiterated and linked to the need for shared knowledge.

Traditional knowledge is "living knowledge" that is practiced in everyday life; the best way to learn it is to go on the land and be part of the "living" process.

The need for better institutional mechanisms for TEK inclusion in assessment processes was raised. CEPA and Species at Risk both include a mandate for Traditional Knowledge. This doesn't mean it is done well, or that all the communities that need to be consulted are being consulted. Environment Canada's State of Environment report is mandated by CEPA and one could argue that SOE is not currently meeting its mandate.

Annex A: Learning Event Participants

(includes those who signed up for the call and were unable to attend)

First Nations

Doig River First Nation
Melissa Knight, Doig River First Nation, Special Projects Coordinator
Garry Oker, Doig River First Nation

National Aboriginal Forestry Association
Mark Kepkay, National Aboriginal Forestry Association

Treaty 8 Tribal Association
Jason Lee, Treaty 8 Tribal Association, Treaty 8 Negotiations Project, Wildlife Biologist
Kieran Broderick, Treaty 8 Tribal Association, Lands and Resources Director
Leeanna Rhodes, Treaty 8 Tribal Association, Treaty 8 Negotiations Project, GIS Advisor
Verena Hofmann, Treaty 8 Tribal Association, Consultation Process Agreement Implementation Coordinator

Tr'ondek Hwech'in First Nation / UNESCO
Rachel Olson, Tr'ondek Hwech'in First Nation, UENSCO Consultant (Local and Indigenous Knowledge Systems)

Federal Government

Agriculture and Agri-Food Canada
Francoi Eudes, Agriculture and Agri-Food Canada

Canadian Heritage
Helen Roos, Department of Canadian Heritage

Environment Canada
Barb Buckland, Knowledge Integration, Environment Canada
Cecilia Wong, Environment Canada
Dara Finney, Knowledge Integration, Environment Canada
Deb McGregor, Senior Policy Advisor-Aboriginal Relations at Environment Canada-Ontario region Canada
Jenn Vincent, Environment Canada
Kristin Stark, Knowledge Integration, Environment Canada
Lillian Hopkins, Knowledge Integration, Environment Canada
Nancy Stadler-Salt, State of Great Lakes Reporting, Environment Canada
Pauline Coupar,Knowledge Integration, Environment Canada
Sheila Allan, Environmental Assessment & Federal Programs Section, Environment Canada
Stacey Cherwaty-Pergentile, Environment Canada
Susan Bone, Environment Canada

Natural Resources Canada
Nathalie Beaupre, Natural Resources Canada

Parks Canada
Claire Herbert, Parks Canada
Chantal Ouimet, Parks Canada

Provincial Governments

British Columbia
Georgina Martin, Ministry of Agriculture and Lands, BC Government
Jaclyn Schmidt, Environment, Government of Alberta
Lisa Levesque, Forest Practices Branch, BC Government
Lynn Husted, Ministry of Environment, BC Government
Pierre Johnstone, Ministry of Environment, BC Government
Robert Barradell, Ministry of Agriculture and Lands, BC Government

Roger Vaughan, Ministry of Agriculture and Lands, BC Government

Ontario
Catherine Warren, Ontario Parks
John Fisher, Ontario Parks
Richard Phillips, Ontario Parks

NGOs and Consultants
Alexis Morgan, WWF Canada
Brent Tegler, North South Environmental Inc
Carissa Wieler, International Institute for Sustainable Development
Dale Rothman, International Institute for Sustainable Development
Ellen Woodley, Consultant, Terralingua
Laszlo Pinter, International Institute for Sustainable Development
Nancy Duxbury, Creative City Network
Reg Whiten, InterraPlan Inc.
Stanford Zent, Terralingua
Steve Litke, Fraser Basin Council

Academia
Katherine Cinq-Mars, Dept. of Political Science, McGill University
Meg Holden, Simon Fraser University, Regional Vancouver Urban Observatory
Natalie Ambler, York University
Shirley Thompson, University of Manitoba

Foundation
Genevea Rae, Canada West Foundation

Affiliation Not Known
Christine Patschull
Dale Bishop
Kamuran Sadar

Annex B: Speaking Notes – SOLEC Presentation

IMPLEMENTING TRADITIONAL ECOLOGICAL KNOWLEDGE: SOLEC 2000 TO 2006

STATE OF THE GREAT LAKES ECOSYSTEM CONFERENCE

Deborah McGregor, Environment Canada-Ontario

Introduction

SOLEC 2000 focused on Aboriginal people sharing their perspectives of TEK and exploring models for applying TEK in the SOLEC type activities.

The theme for Aboriginal people's participation in SOLEC 2002 is "managing Great Lakes Ecosystem health by applying TEK "

At the 2002, workshop John Seyler from Anishnabek/Ontario Fisheries Council and Elder Mr. Harold Michon from the Lake Nipigon area in northern Ontario to talk about their experience in working with TEK and Science to address fisheries management.

SOLEC 2004 did not include formal Aboriginal representation via workshop or presentations.

SOLEC 2006 focused on examples or case studies of how TEK is being utilized in Great Lakes indicator work.

TEK is not formally gathered by Aboriginal people and applied to SOLEC activities (at least on the Canadian side of the Great Lakes).

However, TEK is shared and utilized by Aboriginal people throughout the Great Lakes Ecosystem at the community level to address the same environmental concerns that SOLEC concerns itself with (biological integrity, water quality, forestry, fisheries, etc.)

There are examples of partnerships and collaboration in which TEK and Science are used in an acceptable fashion to meet the needs of the community. The Anishinabek/Ontario Fisheries Council is an excellent example of such a partnership.

An other noteworthy example of excellent work by First Nations on indicator work is Haudenosaunee Environmental Protection Process presented at SOLEC 2006 in Milwaukee, WI.

These case examples illustrate different models for utilization of TEK in indicator work in the Great Lakes.

The Key Message is "to work effectively with First Nations people means" **not** trying to extract knowledge from the community and knowledge holders but to work with them directly in SOLEC activities a mutually beneficial way.

Goal of Aboriginal Participation in SOLEC 2000

- The **goal** of Aboriginal involvement in SOLEC was, and continues to be, to develop a process which facilitates the utilization of Aboriginal Traditional Ecological Knowledge (TEK) in SOLEC initiatives.

- This goal necessitates the establishment and maintenance of positive, long-term and mutually beneficial working relationships between Aboriginal peoples and the SOLEC organizers.

SOLEC AND TEK: A SOLEC 2000 INITIATIVE

- Missing from the earlier SOLECs was the input of those who have the closest ties to and are most directly affected by the Great Lakes Basin and the ecological conditions within it.

- Environment Canada and the other SOLEC 2000 organizers recognized that not only was this an injustice to First Nations, but that non-Native scientists and decision-makers involved in SOLEC were missing out on the potentially invaluable contribution of those who collectively held thousands of years of knowledge and understanding of the Great Lakes ecosystem.

- This knowledge, referred to here as Traditional Ecological Knowledge, or TEK, has allowed Aboriginal peoples to live, prosper from, and contribute to the Great Lakes ecosystem for countless generations, and could provide valuable insight as to how current society might reestablish more harmonious ways of relating to the lands and waters of the area.

BACKGROUND TO TEK

- Remains controversial in terms of defining and seeking appropriate terminology

- History of TEK research and Aboriginal people. Aboriginal people are related to as research subjects and the methods are geared toward extracting TEK from knowledge holders.

- Aboriginal Perspective Lacking (although changing)

- Control by External interests. Western scientific methods dominate the field. Aboriginal interests are emerging.

- TEK, from a Native viewpoint, is a holistic form of understanding, encompassing all areas of human existence.

- TEK as more of a “way of life” than something which can be concisely described or written down. This also will be discussed again below.

What is TEK?

- Aboriginal and non-Aboriginal people hold contrasting views on what the concept actually entails.

- Academics and western-trained researchers generally view TEK as a "body of knowledge,"...a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living things (including humans) with one another and with their environment.

- From an Aboriginal viewpoint, TEK is conceptualized as both more than and different from western definitions.

- Native understandings of TEK tend to focus on *relationships* between knowledge, people, and all of Creation (the "natural" world as well as the spiritual).

  TEK is viewed as the *process* (a *verb*) of participating fully and responsibly in such relationships, rather than specifically on the knowledge gained from such experiences.

Barriers to TEK Use: Hurdles to be Overcome by SOLEC

Three main problems of importance to SOLEC are noted briefly below based on the feedback from the Aboriginal participants at SOLEC 2000:

1. Aboriginal peoples are not accorded sufficient *meaningful participation* in studies and other work which should and in some cases does attempt to use TEK. As TEK is not separable from the people, the meaningful involvement of the people is necessary in order to utilize TEK in environmental work.

2. Aboriginal people and their knowledge are viewed as *objects* suitable for *study* rather than as *people* for *working with*. It is time to begin building positive long term relationships with Aboriginal people rather than simply studying them and their knowledge at the mercy of project-by-project funding.

3. Aboriginal people have little *control* over how the knowledge they share will be used. Again, meaningful involvement of Aboriginal people is required for TEK to be implemented effectively.

In general terms, it is important to realize that Environment Canada is a western science-based department whose work is directed by western scientific paradigms. However, the reality and perspectives of Aboriginal people must be recognized and respected as well.

SOLEC 2002

FEATURE Presentation by Harold Michon and John Seyler
Anishinabek/Ontario Fisheries Resources Centre.

John provided an overview of the environment of Lake Nipigon - located sixty miles

northeast of Thunder Bay, the lake is one hundred and seventy-three square miles and can reach depths of four hundred and fifty feet.

It is connected to Lake Superior by the Nipigon River. He noted that the local First Nations communities have a “profound knowledge of the lake bottom and fish habitat”.

The recent history of the lake includes the fact that it was a significant tourist destination in the late 1800's, particularly in fishing for brook and lake trout.

Between 1920 and 1950, hydro-electric development on the Nipigon River began to affect water levels and fish habitat.

Exotic species such as rainbow smelt first made an appearance in 1978 and are now an abundant food source affecting the population of lake trout and walleye.

Harold then identified traditional fishing practices including the use of wood trap nets.

He identified that suckers and pike are customarily taken in the spring and spawning species in the fall. The Hudson’s Bay Company used to commercial fish to feed dogs.

By 1917 the Lake was opened for commercial fisheries - this industry was dominated by Toronto-based fishing companies with large boats. By the 1950's, the Anishnabe people began to notice the effects of the hydro-electric development.

There was at least a three foot drop in water levels during the fall affecting the spawning beds and causing habitat loss. No one listened. Some time later, all fishing during spawning seasons was closed. In the late 1940's nylon nets were being used which could catch more fish using less length.

The Anishnabe people geared down from sixty foot nets to forty foot to lessen the harvest. The dominant catch is whitefish, with some walleye and the annual catch is kept at a certain level (ie. approx. 500,000 pounds).

In 1994 Binjitiwaabik Zaaging First Nation (BZFN) established their own fisheries unit, funded by Ontario Hydro, and focused on habitat and habitat loss.

The Government of Ontario also provided some funding but the levels were unstable.

This led to the 1996 initiative to create the Anishnabek/Ontario Fisheries Resource Council (A/OFRC). It serves the needs of forty-three First Nations and has a permanent fisheries unity on Lake Nipigon. Priorities are determined annually.

Case Example

In the 1980's the first signs of decline were noticed by the people of BZFN. There were fewer females, less catch, more effort for the desired amount, and it took more fish to fill up a fish box so it was obvious the fish being caught were smaller.

In 1993 BZFN declared a self-imposed closure of the fishery and waited two years for the non-Indigenous fishery to do the same after the Ministry of Natural Resources sponsored legislation on this matter. Since the year 2000 recovery is being monitored.

Whitefish management on Lake Nipigon demonstrated the difference in approaches between science and NKS.

Ontario froze whitefish quota's in the 1980's because scientists were not finding enough juveniles in their testing programs.

The people of BZFN did not have confidence in this method because they know juveniles and adults are different - they migrate differently and at different times of the year.

In conjunction with the people of BZFN, the A/OFRC mapped the differences in whitefish stocks and habitats. This led to a new assessment in 1999 with a more accurate determination of the health of the lake whitefish. This approach is also being applied to lake trout.

John and Harold proceeded to identify lessons learned.

- **Recognize the value of local knowledge**. Science should not be embraced as the only source of knowledge in resource management. NKS/TEK explains the variability of data. It is important to bring local knowledge to the table in management processes because local people often recognize changes first and they are important in initiating changes in management direction.

- **There is a need to improve how we select indicators**. There are too few observation-based indicators. The language of science is often just jargon - it must be understandable to all people. It is essential to have people buy-in for the credibility of the process;

- **Ongoing consultation is important**. Relationship-building and maintenance is labour intensive but it is necessary and valuable.

SOLEC 2006: FEATURE Presentation by Joyce King, Executive Director of the Haudenosaunee Environmental Task Force (HETF)

The HETF mission is to bring the traditional teachings together with environmental protection through a process "Haudenosaunee Environmental Protection Process".
This protection process is based on Haudenosaunee worldview, philosophies and values: Creation Story, Thankgiving Address, Great Law of Peace, Two-Row Wampum/Silver

Covenant Chain, Messages from Handsome Lake.
HETF is in the process of developing criteria and indicators for a healthy nation/environment.
One case example, currently being field tested involves strawberries (important for ceremonies and medicines).
For example, "incorporation of strawberries in ceremony" is an indicator of good, mixed and poor status for the people and environment.
Ceremony with strawberries: status-good; ceremony without strawberry- status-mixed; no ceremony and no strawberries- status-poor.

Indicators in this example are developed based on culture, tradition and values.

Recommendations
(from SOLEC conferences with FN involvement).

that an equitable, long-term and mutually beneficial partnership be established between Environment Canada - Ontario Region and those First Nations within the Ontario portion of the Great Lakes Basin. Such a partnership would enable the involved parties to share information, including scientific knowledge and TEK, on a mutually beneficial basis. This partnership should be created and maintained according to a co-existence model as described by the Two-Row Wampum.

that First Nations capacity-building for the purpose of contributing meaningfully to this partnership be funded by Environment Canada on a stable, long-term basis. This will ensure that the best results possible are achieved in all areas and will help to "level the playing field" in terms of information availability. Such funding must ensure that communities have the resources they need to conduct any necessary follow-up activities following specific projects.

that the unique status of First Nations in establishing and maintaining environmental partnerships be recognized by all parties, including Environment Canada. Any such partnerships must be negotiated on a Nation-to-Nation basis, accounting for the fact that First Nations continue to hold Aboriginal and Treaty rights.

that a Cultural Sensitivity Training Program be established for Environment Canada staff who can be expected to come into contact with Aboriginal peoples as part of their official duties. This training should be organized in partnership with First Nations and be delivered by Aboriginal people. Financial resources should be set aside by the respective governments for this training.

that existing First Nations projects on the health of the Great Lakes ecosystem (especially the EAGLE Project) be continued and built upon so that the wealth of information arrived at through such undertakings is not lost. This information could be put to

good use in the development of a separate First Nations process to run parallel to SOLEC.

that Environment Canada take steps to officially recognize TEK as a complementary and valid source of knowledge on a par with western science. If Environment Canada and First Nations are to enter into partnerships based on mutual respect, then Environment Canada will have to begin taking seriously the TEK which Aboriginal people offer. Native people will not share it if it is not valued.

that an Aboriginal focus be included in SOLEC web sites and reports. As part of establishing and maintaining partnerships, SOLEC Web pages should contain links to documents and other Web sites (e.g. EAGLE Project, Indigenous Environmental Network, Bkejwanong.com, etc.) which provide Aboriginal perspectives on Great Lakes issues and describe First Nations undertakings in this area.

that a representative group of Aboriginal people be included from the outset of any Environment Canada Great Lakes project or program, and that such representation be 50% female. Long term success depends on meaningful First Nations participation at all stages, from project formulation through to implementation and monitoring.

that community control be maintained over projects involving community TEK. If the people are to be expected to share their knowledge, they must be assured of having a meaningful say in how that knowledge is used. In order to guarantee this to the fullest extent possible, community members must be involved in all project stages, and must have a thorough understanding of all aspects of the project as it unfolds.

CONCLUSION

Still a very long way to go for SOLEC to be effective at engaging Aboriginal people, especially TEK holders
However, Aboriginal people are utilizing TEK in their own environmental/ecological work in the Great Lakes Basin.
Effective working relationships and mutual benefit are very important pre-requisites for effective collaborations and partnerships.
Aboriginal people are not interested in having their knowledge extracted from them……..but they do want to see it reflected in environmental decision making that impact their lives and environment.
In addition, another key process, is that science too must be shared with Aboriginal people. Aboriginal people want to develop relationships with scientists, not just receive.

Annex C: Resources noted during call

1. Voices from the Bay

To order Voices from the Bay, send $24.95 plus GST, postage and handling totaling $30.20 per copy to Canadian Arctic Resources Committee, 7 Hinton Avenue N., Suite 200, Ottawa, Ontario, Canada, K1Y 4P1.

2. Belcher Islands, Nunavut (Sanikiluaq): Contacts Miriam McDonald and Brian Fleming:

http://scholar.google.com/scholar?q=Belcher+Islands+Traditional+Knowledge+Studies&hl=en&oi=scholart
http://www.idrc.ca/fr/ev-84409-201-1-DO_TOPIC.html
http://idrinfo.idrc.ca/archive/ReportsINTRA/pdfs/v21n1e/109037.htm

3. Geographic Valuation System

http://datashare.gis.unbc.ca/gvs/

A collaborative project involving Halfway River First Nation (HRFN) and researchers at the University of Northern British Columbia (UNBC).