

ESTABLISHING THE CANADIAN COMMUNITY MONITORING NETWORK

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Abstract. Community-based ecosystem monitoring activities in Canada are increasing in response to a number of factors including: (i) the needs of decision-makers for timely information on local environmental changes; (ii) limited use of government monitoring data and information by decision makers; (iii) government cuts to monitoring programs; (iv) the increasingly recognized need to include stakeholders in planning and management processes; and (v) the desire of citizens to contribute to environmental protection. To date there has been no network coordination of community based monitoring in Canada. This paper reports on the establishment of the Canadian Community Monitoring Network by Environment Canada's Ecological Monitoring and Assessment Network Coordinating Office and the Canadian Nature Federation. Information on research prepared in support of network establishment is presented along with a discussion of the potential of the network.

Keywords: community based monitoring, ecosystem change, influence, sustainability

1. Introduction

Community based monitoring (CBM) activities in Canada are increasing with a number of government agencies and non-government organizations (NGOs) embracing the concept. Unfortunately, comprehensive descriptions of CBM activities in Canada are not yet available. The following examples highlight the diversity of CBM activities in the country. Two notable government initiatives are the Nature Watch Programs that currently include plant phenology, worms, frogs, and ice in/out administered by Environment Canada's Ecological Monitoring and Assessment Network Coordinating Office (EMAN CO) and the Wildlife Watchers Program administered by Environment Canada's Canadian Wildlife Service (Ecological Monitoring and Assessment Network, 2002; Environment Canada, 2002). Bird Studies Canada and the Canadian Nature Federation lead extensive bird monitoring throughout the country (Bird Studies Canada, 2002; Canadian Nature Federation, 2002). Community Environment Watch works with 'hundreds of community groups and school youth to assess the health of local waters' (Sharpe *et al.*, 2000:30). The Watershed Report Card has developed a watershed management



tool for use by communities to inventory, assess and monitor aquatic conditions in their watersheds (Watershed Report Card, 2003). Canada's Biosphere Reserve communities and associated NGOs monitor a variety of issues including forest biodiversity and land use change (Ecological Monitoring and Assessment Network Coordinating Office, 2002; Canada MAB, 2000). Hundreds of smaller groups, organizations, schools and individuals also undertake environmental monitoring that are less standardized and coordinated.

Despite this activity and general agreement that CBM has the potential to promote sustainability and adaptive management, there is no discernable network in place to support CBM in Canada. Nor is there a mechanism to coordinate standardized methods for data collection, data management and the delivery of information. This paper presents information on a new partnership initiative by Environment Canada's EMAN CO and the Canadian Nature Federation to create the Canadian Community Monitoring Network (CCMN). The purpose of the partnership initiative is to launch a nationally coordinated CBM network in Canada focused on collecting, evaluating and delivering ecosystem and other information designed to promote sustainability. Sustainability in this paper is defined through seven principles that address ecological integrity, human sufficiency and opportunity, equity, efficiency, democracy and civility, precaution, and integration (Gibson, 2001).

2. Community Based Monitoring

For the purpose of this paper, CBM is defined as a process where concerned citizens, government agencies, industry, academia, community groups and local institutions collaborate to monitor, track and respond to issues of common community concern. Emphasis is placed on monitoring designed to promote sustainability, leadership of monitoring by the community rather than individual organizations and use of monitoring data to inform decision-making. In essence, the view is of community driven monitoring that seeks to better deliver needed information and feedback.

There are at least four reasons for the rapid growth of CBM.

- (i) Government's reduced ability to monitor ecosystems as a result of quite severe government cutbacks to environmental programs and activities (Au *et al.*, 2000; Sharpe *et al.*, 2000; Scott and Herman, 1995);
- (ii) The majority of monitoring undertaken by government, although of high quality, appears inadequate to address the complex and emerging environmental and sustainability issues currently impacting Canadian society. Monitoring as practiced is necessary but insufficient to meet goals such as delivering timely, usable, accessible and relevant information and feedback to decision-makers (Vaughan *et al.*, 2001);
- (iii) Recognized need to involve stakeholders and citizens in planning and management processes in support of sustainability (Cuthill, 2000);

(iv) Citizen concern for place, perceived threats to environment and community, desire to learn more about the environment and to participate in environmental planning and protection activities (Bliss *et al.*, 2001).

2.1. APPROACHES TO COMMUNITY BASED MONITORING

Numerous approaches to CBM are emerging and the approach selected by a particular community, NGO or government agency depends on a number of factors. These include land use make-up, landscape characteristics, current environmental issues (O'Neill *et al.*, 1995), perceived threats to well-being, community culture, development trends and the acceptability of their outcomes, community experience with sustainability and environmental advocacy, and the nature of relationships between community members, elected representatives and government agency staff. Four approaches to CBM are described below. These approaches are not mutually exclusive and so initiatives may exhibit characteristics of each.

(i) Government lead CBM usually complements the actions of scientific experts (Stadel and Nelson, 1995) and is designed to provide early detection of ecosystem changes which may merit expert investigation and to create additional long term database sets on information relevant to both government and citizens. The Nature Watch and Wildlife Watcher Programs, identified above, are examples of government lead CBM.

(ii) The interpretive approach to CBM places emphasis on the educational aspects of monitoring through participation. This 'approach facilitates effective communication, helps contribute to conservation objectives and management, provides personal learning opportunities for participants, helps promote long-term commitment from volunteers and adds quality and meaning to their experience...' (Cuthill, 2000:136).

(iii) Advocacy monitoring usually focuses on local issues already of concern. Lukasik (2000:2) refers to the approach as 'data advocacy', where citizens concerned about an issue use monitoring data they understand to 'push for appropriate action to be taken'. The objective is to 'achieve positive change in environmental quality and move beyond data collection and public education to action and advocacy' (Sharpe *et al.*, 2000:31). Advocacy monitoring usually involves community members and NGOs not reliant on government or private sector support that have a local geographical focus on specific issues such as water and human health (Au *et al.*, 2000; Lukasik, 2000).

(iv) Multiparty monitoring is gaining widespread acceptance in the United States. All interested stakeholders – private landowners, individual citizens, representatives of civil society organizations, business, government, and others committed to the community are invited to participate. Multiparty monitoring fills gaps in existing environmental and social monitoring arrangements (Bliss *et al.*, 2001). The multiparty approach is more likely to influence decision making through cooperation as opposed to advocacy.

2.2. BENEFITS OF COMMUNITY BASED MONITORING

Government agencies benefit from CBM through extension of their monitoring networks, cost savings (Cuthill, 2000; Stadel and Nelson, 1995; Stokes *et al.*, 1990), flexibility to carry out fieldwork during non-office hours (Stokes *et al.*, 1990) and contributions to government planning through enhanced public participation (Au *et al.*, 2000; Cuthill, 2000). CBM also has a unique role in providing the early, albeit uncertain, feedback of information on change that allows scientific investigation programs, policy development and local ecosystem management to be responsive and adaptive.

Communities and NGOs benefit from CBM through the development of social capital and increased ability to influence local decision-making in support of sustainability. Bliss *et al.* (2001) indicate that CBM builds social capital through activities that engage volunteers, create agency connections, strengthen existing institutions, develop leadership capacity, solve problems, and identify community and resource values that would otherwise be overlooked. CBM exposes people to the environment and results in the development of the stewardship ethic (Stadel and Nelson, 1995). These activities and outcomes build social networks and the relations that contribute to healthy communities.

Community influence over land use, resource management and environmental planning processes may also increase. Monitoring information has the potential to translate into influence and ultimately 'shifts in the locus of power' (Bliss *et al.*, 2001:147). Simmons (1998) description of how NGOs exert influence through agenda setting, negotiating outcomes, conferring legitimacy, and implementing solutions provides insight into how groups and networks might use monitoring information. Information can help frame certain issues, justify further investigation and support the development of options and attainment of inclusive decisions. Post decision monitoring may provide information on whether the actions taken achieve the expected outcomes. This application of CBM has significant potential to inform public debate, influence local governments and promote adaptive management.

2.3. DEALING WITH CONSTRAINTS TO COMMUNITY BASED MONITORING

Certain problems have been identified with CBM. These include the loss of interest by volunteers (Stadel and Nelson, 1995), participant objectivity (Stokes *et al.*, 1990), inconsistent funding that causes data fragmentation (Bliss *et al.*, 2001) and accuracy of data collection (McLaughlin and Hiltz, 1999; Stadel and Nelson, 1995; Stokes *et al.*, 1990). The following are some best practices that address these constraints.

- (i) Secure adequate funding and commitment prior to initiation of monitoring activities (Long Point World Biosphere Reserve Foundation, 2002);
- (ii) Provide feedback to volunteers on how their work is contributing to planning and management (Stadel and Nelson, 1995);

- (iii) Understand participant motivations and skill level and match to the monitoring protocols selected (Bliss *et al.*, 2001; Cuthill, 2000);
- (iv) Collaborate with organizations already monitoring through partnership development (Long Point World Biosphere Reserve Foundation, 2002);
- (v) Utilize simple and scientifically tested methodologies (Au *et al.*, 2000);
- (vi) Incorporate training on monitoring protocols, field supervision and verification of monitoring data into the design of CBM (Au *et al.*, 2000; Stadel and Nelson, 1995; Stokes *et al.*, 1990);
- (vii) Establish a volunteer recognition program (Stadel and Nelson, 1995);
- (viii) Focus on outcomes that serve society through the delivery of policy relevant information (Vaughan, 2002).

A related issue is the relationship between government monitoring and CBM. There are two points that need to be addressed here. The first is that CBM must not be used, as Sharpe *et al.* (2000:33) warn, to legitimize 'the dismantling of environmental monitoring and enforcement programmes. . .'. The second point deals with the complementary nature of CBM and expert monitoring and research. CBM has the potential to augment monitoring conducted by government and other experts, in particular, through reconnaissance monitoring. CBM data may be used in the description of trends and, where warranted, followed up with expert investigation. Groups or networks initiating CBM should be aware of these issues and actively promote complementary monitoring in support of inclusive decision-making.

3. Establishing the Canadian Community Monitoring Network

The CCMN concept emerged during discussions over the course of three community based ecosystem monitoring workshops held during the 1999, 2000 and 2001 annual EMAN National Science Meetings. Participants at these workshops indicated that CBM activities in Canada would benefit from coordination and network support. In response, the EMAN CO and Canadian Nature Federation initiated the establishment of the CCMN (Ecological Monitoring and Assessment Network Coordinating Office, 2001). The link between CBM and sustainability emerged early in the initiative based on experience with implementation of sustainable development at the local level and ongoing Biosphere Reserve Program activities in Canada (Roseland, 2000; Canada MAB, 2000). The purpose of the CCMN is to enhance the ability of communities to contribute to the achievement of sustainability through monitoring and participation in planning and management processes at the local level.

Initiation of the Network has received funding from the Voluntary Sector Initiative (Treasury Board of Canada, 2001). Twelve regional coordinators are currently working on establishing or coordinating CBM in thirty communities across Canada (Figure 1). The regional coordinators received extensive training at a four-day workshop held in March 2002. Training was based on a framework specifically

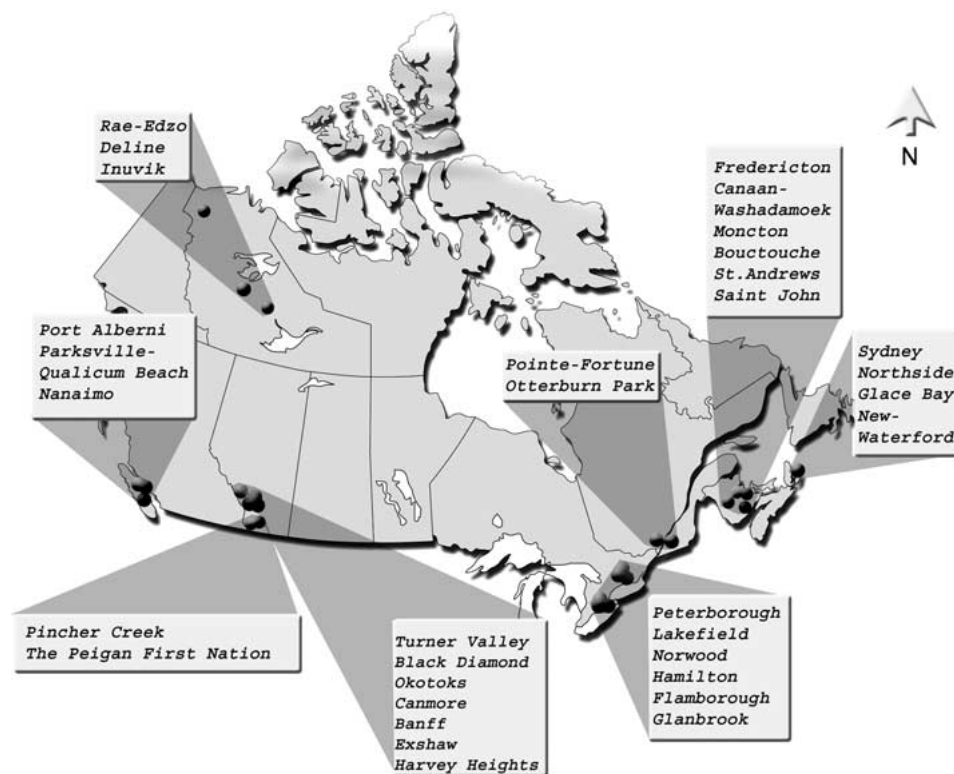


Figure 1. Communities participating in the Canadian Community Monitoring Network

developed to guide establishment of the Network. The framework was developed after an extensive literature review and interviews with 15 successfully operating NGOs dealing with sustainability matters across Canada (Whitelaw, 2002).

The framework consists of two phases. Phase one involves developing the infrastructure necessary to launch CBM in a particular community. Six related tasks are involved – governance analysis, consultation and outreach, identification of champion(s), partnership development, fundraising and selection of an appropriate organizational structure for the group or network.

(i) Governance analysis: The governance analysis identifies the main ‘actors’ (individuals, government staff, politicians, private sector, NGOs etc.) involved with environmental monitoring, sustainability issues, land use, resource use and environmental decision-making. Actor network analysis is used to assist with this task (Dalton, 2001).

(ii) Consultation and outreach: Consultation is broad and includes all individuals, groups and agencies that are interested in inclusive decision-making, sustainability issues and ecosystem monitoring. The governance analysis should inform on the individuals, groups and agencies to consult.

(iii) Identification of champion(s): Experience with sustainability initiatives across Canada suggests that a champion(s) is needed to ensure the longevity of community based activities such as monitoring. Champions usually emerge as the process moves forward.

(iv) Partnership development: Partnerships are sought with all government agencies, NGOs and private sector companies participating in management decisions, sustainability issues and monitoring activities in the community. In this case, the round-table technique is used to discuss and explore various approaches to CBM.

(v) Fundraising: Adequate funding is critical to successful CBM and monitoring activities should not be initiated until stable funding has been secured. Funding should be pursued from all levels of government, foundations and the private sector.

(vi) Selection of organizational structure: Potential CBM organizational structures are assessed including creation of a new group, coalition of interested groups coming together to form a network, one strong existing group in the community assuming monitoring coordination, NGO/Government partnership to undertake monitoring or some other arrangement suitable to local needs.

Phase two is designed to launch CBM, and link monitoring activities and data to decision making. Phase two ultimately involves actual monitoring, analysis, information sharing and contributing to local decision making in support of sustainability. The monitoring issues addressed in this phase are: preparation of a comprehensive inventory of existing monitoring in the community; identification of existing information on ecosystem status and trends; identification of gaps in existing monitoring; selection of monitoring themes based on the community vision (see below); selection of tested monitoring protocols; protocol training; field work; verification of data; data evaluation; and reporting. Monitoring is expected to focus on ecosystem issues initially and to extend to social, cultural and economic issues subsequently.

Five supporting tasks are also included in Phase two including: community visioning, membership skills assessment, capacity building, achieving influence and communication.

(i) Community visioning: Visioning is critical to the entire process and is used to identify a sustainable vision of the future. The process is inclusive, identifies short, medium and long-term considerations and identifies those components of the community (environmental, social, cultural) that should not be compromised by development. This is achieved through identification of an agreed to desired future that is used by the group or network to help identify issues of importance. These issues help focus the monitoring to be undertaken. The link between the vision and monitoring will ensure CBM is tracking progress to the desired future.

(ii) Skills assessment: A skills assessment of all participants is conducted once interested individuals and groups have come together. The skills information is important to help determine initial capacity of the group and training requirements.

(iii) Capacity building: The degree of initial capacity building required depends on the results of the skills assessment. Participants, including government staff,

academics, citizens and professionals may have expertise in areas such as communication, facilitation, planning, science, etc. and be in a position to provide training to the CBM group or network. The coordinating body of the CCMN will also play an important role in capacity building for member groups and networks (see below).

(iv) **Achieving influence:** Strategies to influence planning and management processes are identified for each of the four ways NGOs influence – setting agendas, negotiating outcomes, conferring legitimacy and implementing solutions (Simmons, 1998). The focus of the group or network should initially be on developing points of access to government decision making to maximize the use of their monitoring data. For example, providing monitoring information to help local governments identify emerging issues through existing or new mechanisms such as advisory committees, cooperating with experts who might respond with follow-up studies and development of new non-confrontational roles for NGOs (education, information sharing etc.).

(v) **Communication:** Communication strategies are developed to deal with both internal and external communication. Internal communication includes regular updates for members and a recognition program. External communication includes media contact, advocacy and data reporting. CBM groups or networks are in the unique position of generating data and information and communication strategies should address how best to share this knowledge and deliver information on concerns, options and tradeoffs according to decision-making needs.

The tasks in each phase, are not necessarily meant to be undertaken in sequence and certain communities with existing capacity may choose to skip certain tasks.

4. CCMN: The Path Forward

Strong interest in the network is expected based on the number of groups currently involved with CBM in Canada without any network support. Network support activities in the following areas will be required to ensure proper growth and functioning of the CCMN.

(i) Refinement of the framework discussed in this paper through evaluation of the thirty community initiatives currently under establishment. Each of the thirty initiatives has received ongoing evaluation and this information will be used to improve the framework. The improved framework will be applied and tested in additional communities across Canada.

(ii) As part of the above refinement process, testing of CBM in a variety of different management regimes will be initiated including larger geographic regional areas (e.g., Yellowstone to Yukon, Niagara Escarpment Biosphere Reserve), Model Forests, National Parks and other protected areas, near-shore and marine protected areas, municipalities and urban areas, and through organizations such as schools and Scouts Canada.

(iii) Support for capacity building in the areas of monitoring and achieving influence. Monitoring support is currently provided to this initiative by the EMAN CO. This will be further developed and take the form of ongoing protocol development, training, equipment lending, information management, data evaluation and reporting. Capacity building in the areas of developing social capital and achieving influence will involve training on how networks are developed, actor network analysis, partnership development, leadership skills, advocacy, negotiation and communication.

(iv) Marketing the CCMN to all potential groups and networks currently undertaking CBM through promotional material outlining the services of the Network.

Although in the early stages of development, the authors believe the CCMN will contribute to developing CBM capacity in Canada, community empowerment, meaningful public involvement, adoption of adaptive management at the local level and progress toward sustainability.

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