

Problems and Issues Across Institutions and Programs

Douglas Powell, National Monitoring and Evaluation Coordinator, USDA Forest Service
Jim Wood, Director of Forest Resources Program, Natural Resources Canada, Pacific Forestry Centre

The symposium identified the major barriers to collaboration among institutions and programs. This synthesis, while admittedly drawing from only a sample of the papers presented, provides a synoptic view of the major recurring themes voiced by participants.

Several overarching statements were voiced. No one institution or one program in isolation can hope to provide and integrate all of the necessary monitoring data, supporting science and information, or technology capabilities for use of decision makers. Monitoring is the unifying and integrating aspect of natural resource management. Information is the common currency for all resource stewardship activities. Agreement on basic standards for data collection and storage among institutions and programs is required to ensure access to the information and appropriate interpretation of trends. Significantly, science and active monitoring are key components of public dialog and partnership.

Many speakers discussed the need for multi-national and cross-institutional collaboration as a pre-requisite for sound decision making in the 21st century. Participants identified several characteristics of the new century, including a growing global population, increasingly scarce natural and financial resources, expanded global trade and commerce, and greater frequency of natural disasters. This century will demand innovative thinking and a renewed commitment to collaboration. Examples of where environmental disasters have forged new partnerships were presented. Global trade and commerce has created nodes and pathways of moving resources around the world, and this has forced countries to work together. An institution's mission may demand reaching across institutions and programs. For example, space agencies in different countries are collaborating on space sensors and platforms. Modest funding has forced cost-leveraging partnerships and integration.

In Canada, United States, and Mexico, for example, the environment has been identified as the issue most in need of institutional integration. Similar responses exist in other countries and continents. Who has the data and expertise often determines what institutions and programs will work together. Geography of concern defines partners. Complex issues require more program

involvement from a wider range of partners than more narrowly defined issues.

Many challenges, problems, needs, and disconnects were identified. Monitoring science is still not considered "real science." Does monitoring science really address the challenges of sustainability? How will we address cultural barriers among disciplines and partners? Data sharing across institutions can be a problem if standards are not in place and systems are incompatible. Intellectual property rights: that is, who owns the data and who must pay for access present formidable challenges. For example, how can we overcome mistrust when sharing data across nations, especially between developed and developing countries? Given uncertainty in how the data were collected, we need to be realistic about the actual usefulness of monitoring data. Sound interpersonal relationships and trust are key to reaching out to others and breaking down barriers. It is important to move knowledge into action and to get the results of science into the hands of decision makers in a form that they can readily interpret, absorb, and interpret. Organizational structures can create significant barriers.

The three North American countries have specific challenges related to national environmental monitoring. For example, in Canada, the distribution of powers among federal, provincial, and territorial governments can create institutional challenges. For example, differing land ownership patterns across the country, diversity of landscapes, and a highly urbanized population with increasing interest in the rural environment. The relatively small population compared to the immense size of the country presents unique challenges for ecological monitoring. The country struggles over the definition of ecosystem health and debates continue over meaningful indicators with which to measure it.

In the United States, there are many definitions of monitoring, which often hinder communication. There is a tendency to collect much data and use only a fraction of it. We lack consensus on what are the few vital indicators to assess environmental health. There is some level of distrust of government and industry, which makes information they provide suspect; hence the need for transparency. Organizational incentives and rewards are

often lacking. There is no national monitoring program for rangelands or grasslands. Multiparty monitoring is being demanded by many interested parties.

In Mexico, challenges to the development of an effective national monitoring program include: lack of existing national monitoring programs; differing institutional mandates at the national, state and local levels; long term institutional stability; data access at the appropriate scale; and lack of consensus on which environmental indicators to monitor (both ecological and social). The lack of a multi-scale policy on what to measure, how, where, when, and why has led to problems with data integration, comprehensiveness, completeness, scientific credibility, technical defensibility, utility of results, and limited inter-operability.

Many recommendations and potential solutions were offered by speakers to overcome barriers:

- Science evangelists must build support among all key sectors.
- Improve the efficiency of data sharing and management through adoption of standards and definitions. Data accessibility can break down barriers; citizens can compare data from a variety of sources. Geospatial interoperability--involves data standards and easy access and use.
- GIS is a great integrator and revealer.
- The path forward for monitoring for sustainability is partnerships among scientists, public, and resource managers in which technology transfer plays an important role in bridging the gap among all three sectors.
- Use infrastructure and governance of local communities to involve people.
- Keep monitoring simple: easier to conduct, understand, and communicate.
- Clearly define to decision makers/organizations how breaking down institutional barriers will be of benefit.
- Have all the ground work completed with pilots and demonstrations to illustrate vision and desirable outcome.

- Communicate/communicate/communicate.
- Reduce risk for decision makers; show how costs outweigh benefits. If you have a good idea/vision keep at it and look for the window of opportunity.
- Think big; have a vision that will excite and lead to positive outcomes.
- The concept of “boundary organizations” was put forth as an important means of overcoming institutional barriers to collaboration. Boundary organizations were defined as organizations that were created to address a specific issue in a particular time frame. They often have their own governance structure and consist of resources, both human and capital, from many organizations.

Many valuable lessons were shared. Government has an important role to play in bringing diverse groups together and in reaching out to the private sector to improve science and technology. Technology developed by one agency can find application by other agencies.

Identify shared vision and specific objectives. Senior-level managers must support monitoring and not see it as a threat. The process is of equal if not greater value than the outcome. Different institutions bring different expertise and perspectives to the problem. Indicator selection should be a partnership endeavor. Collaboration can be synergistic and achieve cost efficiencies.

Different countries adopt different views of sustainability. Environmental focus in the developed world and socially focused in the developing world. Be opportunistic and inclusive, work with all interested parties. Maintain continual dialogue between scientist and managers or program will disappear.

Standard protocols are necessary to withstand scientific and legal challenge. They are useful also in helping managers understand the complexity of monitoring and the need for appropriate designs.