Governance Matters

2. Synoptic overview of governance associated with model forests and biosphere reserves at international, federal-provincial and local jurisdictional levels

Multi-level governance is deemed to be of importance in order for governance regimes to be able to address functional cross-scale interactions that occur within complex social-ecological systems. The different components of governance at different jurisdictional scales tend to develop over time somewhat independently of one another and each level has its own distinctive political and economic context in which this occurs. Nevertheless, they can have mutual influences on each other. While these can be difficult to discern in the day-to-day workings of governance at each jurisdictional level, they may be visible enough in larger patterns of inter-actions across scales.

International Programs Associated with Model Forests

United Nations

The Canadian Forest Service created the model forest program in September 1991. Note of it was made in the 1992-1997 National Forest Strategy saying only that members of the forest community will establish working models of sustainable forest management in the major regions of Canada by 1994 (Lapierre 2002). This was also duly announced at the United Nations Conference on Environment and Development (UNCED) at Rio in June 1992, along with an offer to fund model forests in other countries.

While some countries, including Canada, had hoped to have a Global Forest Convention negotiated in time for Rio this was not possible. There were a variety of reasons including north-south differences of views about the intent of this, and issues relating to proliferation of inter-governmental legally-binding conventions as well as the conditions that would have to be negotiated for a Convention focused exclusively on forests (e.g. Humphreys 2001). Instead, a "Statement of Principles on Forests" was agreed upon, and issues associated with "sustainable forestry development" were summarized in Chapter 11 of Agenda 21, a major statement adopted at Rio about environment and development issues that need to be addressed for the 21st century. In 1995, the UN

Commission on Sustainable Development (created after Rio) convened an Intergovernmental Panel on Forests with a 2-year life span to take up these issues. Discussions were to be based on implementing the UNCED decisions on forests, financial assistance, technology transfer, criteria and indicators for sustainable forest management, research, trade and environment, and existing international organizations and legal instruments relating to forests (Humphreys 2005). In 1997, the Panel was extended as an Intergovernmental Forum on Forests for another three years.

In 2000, the UN Economic and Social Council (ECOSOC) established the United Nations Forum on Forests (UNFF) as a subsidiary body of ECOSOC with the goal of promoting management, conservation, and sustainable development of all types of forests. With reference to the new UNFF, one of the first steps taken by the UN Food and Agriculture Organization (FAO) in 2001 was to draw upon a small Collaborative Partnership for Forests (CPF) that assisted FAO with forestry matters, have it endorsed to be a support group for the UNFF, and expand membership of international organizations, including International NGOs so the original 6 member CPF could become a broader network. CPF now includes 14 major forest-related international organizations, institutions, and convention secretariats.

The UNFF created an initial multi-year program of work based on some 270 proposals that came out of the IPF/IFF processes. While the CPF has no policy or decision-making authority, it does contribute to developing and implementing these work programs, and to monitoring, assessing, and reporting progress being made in them. Each of the 14 members is expected to take a lead role for at least one major component of the multiple year programs of work. The UNFF itself met annually until 2006 and then biennially after 2007. Canada continued to promote a “legally binding instrument” for forests, but in 2007 the UNFF agreed to adopt the “Non-legally Binding Instruments on All Types of Forests” as well as a work program for the period 2007-2015. UNFF declared 2011 as the International Year of Forests, and is involved in preparatory work for the Rio+20 UN Conference on Sustainable Development scheduled for Rio in June 2012. (ECOSOC 2009; 2010; Earth Negotiations Bulletin 2011). The multiple and interrelated issues that have come to light during these multilateral processes for reaching agreements on a global forest governance regime have been reviewed in some detail by Bass and Guérneau (2007).

Federal-Provincial Forestry Programs

Under the Canadian constitution, provinces have exclusive jurisdiction over forested lands and for policies that allocate responsibilities for use and management of them by the private sector or other organizations. The federal government retains jurisdiction over matters of international trade and development, research and development of science and technology, Aboriginal issues, federal lands such as National Parks, and matters falling under international Treaties and Conventions. There has been a long history of federal and provincial cooperation on selected problems in the forest sector dating back to the creation of the forestry profession in Canada in the first decade of the 20th century. This was subsequently enhanced under the Canada Forestry Act of 1949.

More recently in 1981, cooperation was initiated again by Environment Canada with its release of a forest sector strategy discussion paper. This was successful in stimulating discussions of forest issues especially by the Canadian Forestry Association, in part through a national forest conference they organized in 1986. In 1985, governments created the Canadian Council of Forest Ministers (CCFM) to set over-all policy direction for stewardship and sustainable management of Canada's forests. This in turn has led to a succession of five-year National Forest Strategies intended to stimulate good management of the forest sector in ways that meet both national and international commitments such as those under the UNFF and CFP.

While these strategy statements differed in some ways in their details, the general pattern has been the release by the CCFM of a discussion document mid-way in the current agreement to stimulate responses from anybody who wished to do so about the next follow-up agreement. They also held regional consultations to help refine statements of principles, strategic directions, and objectives. Sometimes organizations that could take a lead in implementing these were identified. The Canadian Forestry Association takes the initiative to sponsor National Forest Conferences to discuss issues further. The Association also arranges for reports on progress under a given agreement through a third party arrangement ("Blue Ribbon Panel"). They also create National Forest Strategy Coalitions to endorse the proposed new NFS. Up to 50 or so governmental and non-governmental organizations have been endorsing the most

recent NFS. This can only mean that they agree with the general statements in these documents, not that they can commit to implementing them. This ambivalence has been the subject of external criticism of the whole process. But it is the provincial forest tenure arrangements that pace or restrict whatever gets done.

The CCFM also took a major initiative to develop criteria and indicators (C&I) of sustainable forest management in 1995 and had a series of studies conducted to develop them over the following decade (CCFM 2005). Development of the C&I for temperate and boreal forests was coordinated with comparable work conducted by a Ministerial Conference on the Protection of Forests in Europe, and among non-European temperate and boreal countries, launched as "The Montréal Process" following initial meetings in Montreal in 1993. The CCFM also convenes working groups. Currently, there are working groups for forest science and technology (equipment design); for informing export markets about Canadian forest policies, practices and achievements to offset any "incomplete or inaccurate information" that could adversely affect acceptance of Canada's wood and paper products; for Aboriginal Forestry; and for assessing private woodlot tax policies as they affect sustainable forest management for private woodlots.

The third NFS for 1992-1998 was also tabled at UNCED along with an announcement of Canada's intention to create model forests to demonstrate how the principles could be dealt with on the ground. Otherwise, model forests tend only to get a mention in passing in documents relating to the NFS that compile examples of on-going activities by many organizations.

The Canadian Model Forest Network and Its International Context

The Canadian Model Forest Network

The "model forest" concept was formulated by the Canadian Forest Service in Natural Resources Canada. It was announced in 1991, and began in 1992. It was generally viewed as a positive response to the increased public opposition that had arisen over the previous decade or longer to the large-scale industrial exploitation of forests exclusively for timber products. This was especially so in British Columbia, but also elsewhere in

Canada (for example Temagami in Ontario) where other forest values at particular sites were widely deemed to be of much greater significance.

The general idea was to establish working models of sustainable forest management in all the major regions of Canada that would be based on developing a broad base of mutual trust and cooperation among different groups of people having diverse interests in the range of forest values at any given location. Thus, development of effective partnerships among different stakeholders and organizations for sustainable forest management (SFM) at some landscape scale was to be the most significant innovation about the approach (especially in the forest sector), and it was also seen as a pre-requisite to developing technical innovations for local forest-related management.

As summarized by Besseau (2010) the approach has been refined into six principles that were developed in consultation with network members, i.e:

- Based upon broad-based inclusive, voluntary partnership,
- Commitment by all partners to work toward sustainability,
- Large-scale land-base reflective of the areas' multiple land uses,
- Governance structure that is inclusive, accountable, and transparent;
- Program of activities that reflect the values and needs of the partnership,
- Commitment to networking from local to international levels in order to accelerate learning, innovation, and application of best practices.

These partnerships assume no jurisdiction over the landscape where they are applied, but they can lead to a consensus about effective stewardship practices for the particular circumstances of each location.

In Canada, the CFS funding for MFs had been incorporated into the federal government's 1990 "Canadian Green Plan for a Healthy Environment" initiative for the 1990s. In early 1991, CFS organized a competition to select suitable sites. Criteria to be met included specification that the model forest had to be at least 100,000 ha in extent and include as potential partners representatives of two partners-with-authority, namely, a forester from the provincial ministry responsible for Crown land forest tenure arrangements, and forestry officials from one or more corporations that held long-term forest licenses for timber production in the area. From 50 or so applications received by early 1992, 10 were chosen by an advisory committee and technical advisory group

convened by the CFS. At the UN Conference on Environment and Development (UNCED) held in Rio de Janeiro in June 1992, Canada also announced funding support for the creation of model forests in other countries. These MFs would also reflect the statement on Forest Principles that were agreed upon at Rio to promote SFM around the world.

From 1992 to 2007, the Canadian model forest program went through three distinct 5-year stages, with funding from CFS for each MF conditional upon a favourable evaluation of the accomplishments of each phase. Each MF received up to $1.5 million annually initially, and this was reduced somewhat in subsequent 5-year periods with the expectation that more funding or in-kind contributions would be obtained from other partners in each MF. During Phase 1, MFs focus on developing partnerships and good working relationships among them while also beginning research programs decided upon by the group. During Phase 2, the MFs were also to concentrate on "strategic initiatives" assigned by the CFS, including developing local sustainability indicators following the national set of criteria and indicators developed by the CCFM; enhancing aboriginal involvement in the work of the MFs; and (where applicable) developing programs for private woodlands. In the last Phase 3, MFs were requested to exercise influence beyond their boundaries to help implement SFM throughout Canada's "forested land base" (Wellstead and others 2003). Other funding was provided to support a CMFN Secretariat and for research on topics such as information technology, ecologically-sound forestry practices, and the role of forests in climate change (Brand and others 1996). During this same period funding for one MF was terminated and two new ones were added. While the program reviews were mainly conducted through the CFS, Sinclair and Smith (1999) conducted one of the first independent reviews of model forests from the perspective of their experience with consensus-based decision-making during the first 5 years of the program.

Forest Communities Program (FCP)

In 2007, the model forest program was revised and re-named the Forest Communities Program. The CFS provided $1.5 million in new funding over 5 years (2007-2012) for the FCP. The main difference was that the emphasis is now placed directly on sustainable communities in forest settings that could be maintained at least in part by sustainable

forestry practices that give special attention to non-timber forest products. While private sector interests are included as partners, there is no necessity for them to be core players as they were in the original MFs.

A competition for a five-year FCP (from 2007-2013) drew a number of proposals, including one from each of the MFs. Funding was provided for six of the 11 original MFs and for six new ones. One of the original MFs was terminated at the end of Phase 2,and two of the original MFs were dropped from the network at the end of Phase 3 on the grounds that they had completed their work. Six of the 8 others had re-organized during the previous Stage 3 to fulfill requirements for exerting influence beyond the original MF boundaries, mainly by extending their field activities to other parts of the province they were in. The result is that the current CMFN has 15 members.

The CMFN itself was incorporated as a non-profit organization in 2008. In 2010 it re-structured its governance to provide a more cohesive partnership based on seven shared program themes. People from each MF agreed to work on a theme of their choice such that each theme had 3-5 people with one General Manager from a FC agreeing to serve as a Vice-President coordinator for the theme. The themes were (in alphabetical order): Business Development; Communications; Finance; International; Member Services; Policy & Partnerships; and Science & Research. Each such group developed their theme further for the entire network to review and consider adopting (CMFN Annual Report, 2011).

The International Model Forest Network (IMFN)

An international application of the model forest concept was announced by Canada at Rio in 1992 along with a pledge of $10 million from the Green Plan to explore how this might be done. Initially, two MFs were established in Mexico and one in Russia, each of which was “twinned” with a Canadian MF for guidance on their development. In 1995, a Secretariat for the IMFN was placed with the International Development Research Centre (IDRC) in Ottawa. The Secretariat receives funding from the CFS, IDRC, the Canadian International Development Agency (CIDA), and the Department of Foreign Affairs and International Trade (DFAIT). The Secretariat facilitates the further development of MFs elsewhere and champions them to other international

organizations. In 2008, The International Secretariat was moved to Natural Resources Canada/CFS.

As the number of MFs increased and developed into regional networks, regional Secretariats are being formed and are taking on the oversight role while the IMFN Secretariat facilitates the operation of the overall network with advice from an International Advisory Council and a Networking Committee. The IMFN Secretariat and regional networks have procedures for admitting new MFs to their network. A Model Forest Development Toolkit has been prepared that outlines procedures to follow, and gives examples of documentation required; Secretariat members also work closely with promising candidates to bring an application forward. As a rule-of-thumb, it takes about two years or so to organize a MF that meets the requirements.

As of 2011, there were some 55 MF sites in 24 countries. This includes the 15 in Canada now viewed as a network among other networks. The largest network is the Ibero-American Model Forest Network, headquartered in Costa Rica, and including 25 sites in Central and South America and one in Spain. A network is taking shape in Russia and northern Europe following the first MF established in Sweden in 2004. With European Union funding, a Baltic forest network is forming among the 8 Baltic Sea region countries. There is an Asian Pacific Network based in China with 8 MFs in 6 countries; a Mediterranean Model Forest Network that was launched in 2008 with interest shown by 13 regions and countries with two MFs in Morocco and Turkey; and a regional Model Forest Network in Africa, headquartered in Cameroon where the first two MFs for the Congo Basin are located.

An IMFN Global Forum has been convened every three years starting in 1996. These allow people from MF around the world to share experiences, review accomplishments and identify strategic directions" for developing the world network. While the earlier gatherings were relatively small, the subsequent ones in Costa Rica (2005), Alberta (2008) and Spain (2011) have drawn some 150-200 delegates. In 2008, the Forum adopted a statement of Model Forest Principles and Attributes and identified four strategic priorities for the IMFN to be climate change, community sustainability, documentation of ecosystem services, and knowledge management. In 2011, there was

considerable interest expressed in developing a circumpolar boreal forest network of MFs starting with those in the boreal forest of Canada.

This scaling up of the geographic extent of model forest involvement is also evident in discussion underway with the Barents Euro-Arctic Council about a model forest network in the Barents Region of northern Scandinavia and Russia (Jougda and others 2008), and in a proposal to include the nascent African Model Forest Network in a proposed Rwanda Forest Landscape Restoration Initiative for the entire country announced in 2011 with endorsement from the UN Forum on Forests and support from other international bodies (Besseau and others 2002; Besseau 2010; IMFN 2011). Canada also announced its support for the Rwanda program during a UNFF meeting 2011.

Canadian Biosphere Reserves and Their International Context

The UNESCO/MAB Program

The biosphere reserve concept was created by the "Man and the Biosphere" (MAB) program of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1971. The main insights that went into it came from two main sources in the 1960s. One was the International Biological Program (IBP) sponsored by the International Council of Science (ICSU – formally called the International Council of Scientific Unions) from 1964-1974. The main purpose of IBP was to demonstrate the importance of ecology as a distinctive scientific discipline, to promote studies of it throughout the world in relatively undisturbed (by humans) situations, and to protect selected examples of ecosystems for their long-term research potential. In addition, UNESCO co-sponsored with other UN bodies a major "Biosphere Conference" in 1968 at which delegates from many countries discussed the challenges posed to policy and management by environmental issues. "Pollution" was the emblematic example at the time. These kinds of issues are unconstrained by human boundaries, either those of a jurisdictional or administrative nature or those posed by fragmentation of disciplines and professions. Along with many observations, the main recommendation from this 1968 conference called for UNESCO to develop an international program of cooperation that would encourage countries to develop the capacity for what is now called inter-

disciplinary or trans-disciplinary research that also relates directly to the needs of policy-makers and managers in governments.

Following extensive consultations with member States, UNESCO was able to launch the MAB program in late 1971 (it can be noted here that "Man" was considered to be a generic word for people, and not a gender reference as it has sometimes been misconstrued by English-speakers). The stated over-all goal was impressively comprehensive:

> "to develop the basis within the natural and social sciences for the rational use and conservation of the resources of the biosphere and for the improvement of the global relationship between man (*sic*) and the environment; to predict the consequences of today's actions on tomorrow's world and thereby to increase man's ability to manage efficiently the natural resources of the biosphere" (UNESCO/MAB 1971).

At the outset, UNESCO suggested several broad themes to help guide collaborative work. Most were phrased in terms of understanding human adaptations to major kinds of environments such as mountains, arid lands, islands, or forests. Others related to research on the causes and consequences of pollutants including synthetic contaminants, and restoration measures that could be taken. The idea then was that at some point countries would report out some of the findings from their own investigations, and that these could become the basis for mutual exchanges with other countries addressing the same general themes. Exchanges of experience could also be fostered by UNESCO through co-sponsored workshops, conferences, or training programs along the way.

Once launched, the initiative to take up such challenges was left to individual countries. This took some time. In the meanwhile, UNESCO/MAB thought it desirable to find particular examples where this MAB approach was being effectively undertaken, so they could be made more widely known to the world. The question was how to find the examples, and what to call them. In consultation, MAB drew up a set of criteria for identifying good examples, and then asked member countries to submit nominations for examples for MAB to consider for a designation of recognition. Given the extensive vocabulary used in and among countries for landscapes designated for different purposes, MAB had to find a quite distinctive label for its program. It came up with the term "biosphere reserve", with "biosphere" linking it to the Man and the Biosphere

program, and “reserve” to the need for a candidate area to include protected sites for conservation, research and educational use along the lines that had been proposed by the IBP.

In 1974, MAB launched this biosphere reserve designation process. The first designations came from the USA and former USSR whose agreement on the approach was politically necessary for the initiative to proceed at the time. The US submitted some of its national parks, along with experimental forest reserves in the same general region arguing that together they offered the full range of conservation, ecological research, and education/training opportunities. The USSR submitted some of their strict nature reserves that also included research, monitoring, and education components. Other countries, including Canada soon followed suite.

Over the years the concept of a biosphere reserve evolved. This can be noted by major conferences held by UNESCO along the way. During the week-long conference in Paris in 1981 to celebrate the first decade of MAB, biosphere reserves were still discussed in abstract and somewhat theoretical terms, as exemplary research sites that were informing managers and landowners in ways that encouraged better land management in the nearby vicinity of the research site. At the first International Biosphere Reserve Congress, held in Minsk, USSR in 1983, some examples were given, especially of the Soviet approach to the issues. A main conclusion was that MAB should draft an “Action Plan for Biosphere Reserves” that could be used by member countries to come up with their individual Plans for the development of biosphere reserves. It was left largely to the discretion of member States how the plan should be prepared, and what it should cover. There was an implication that biosphere reserves should become established in major biogeographical regions of the world (UNESCO/MAB had commissioned work directed by Miklos Udvardy on a system to define these) and thereby help back-stop work going on in the MAB major themes of human use and adaptations to these situations.

Following the influence of the Brundtland Commission report in 1987, and the UNCED conference in 1992 where the themes of sustainable development were central, UNESCO convened the second world congress on biosphere reserves in Seville, Spain in 1995. On that occasion, MAB introduced a “Seville Strategy for Biosphere Reserves”

and the "Statutory Framework of the World Network". The strategy declared that (following a mention of UNCED):

> "…But the global community also needs working examples that encapsulate the ideas of UNCED for promoting both conservation and sustainable development. These examples can only work if they express all the social, cultural, spiritual and economic needs of society and are also based on sound science… Thus, biosphere reserves are posed to take on a new role. Not only will they be a means for the people who live and work within and around them to attain a balanced relationship with the natural world, they will also contribute to the needs of society as a whole, by showing a way to a more sustainable future. This is at the heart of our vision for biosphere reserves in the 21st century". (From the Seville Strategy, 1995)

The statement on the statutory framework also provided general directions, goals, and objectives, and made the criteria for biosphere reserves more explicit. In particular, the Statutory Framework required that biosphere reserves promote sustainable development in addition to their earlier mandate of biodiversity conservation and research. It also introduced the requirement of "periodic reviews" whereby each biosphere reserve is reviewed every 10 years to assess its experience and confirm that it still meets criteria necessary to retain its designation.

The 3rd World Congress of Biosphere Reserves was convened in Madrid in February 2008. It issued a Madrid declaration and a work plan for the period 2008-2013. The plan addressed modifications that should be considered by all governance components including UNESCO/MAB itself, regional and sub-regional networks, national MAB committees, and individual biosphere reserves. This would then lead to an administratively more coherent system to function across these different jurisdictional levels. Special note was made of global contextual conditions such as climate change, the need to recognize the value of ecosystem services along the lines developed by the Millennium Ecosystem Assessment studies (2000-2005), and the fact that more than half of the world's population is concentrated in large urbanized regions.

Current Situation on the 40th Anniversary Year of MAB

As of mid-2011 there were 581 biosphere reserves recognized in 114 countries. Sixteen are in Canada. Each one is expected to take up responsibilities under three major themes: "conservation" of ecosystems, species-at-risk and genetic resources; "sustainable development" including natural resource stewardship, strengthening

opportunities for sustainable livelihoods among people living in the area, and other related issues of community wellbeing; and “logistical services” that promote research, monitoring, education, and training that enhances community-level social learning about how to achieve these goals under the particular circumstances they face. UNESCO does not specify the organizational arrangements required to do this, leaving that decision to the discretion of member governments. There is considerable variation among countries in their institutional practices for governing biosphere reserves.

In order to achieve results, each biosphere reserve must also exhibit a mix of land uses that include conservation “core” areas of relatively undisturbed ecosystems, buffer zones that retain much of their natural vegetation cover but support a variety of resource uses, and a “transition area” where a variety of human uses of resources has transformed the landscape into some mix of intensive resource extraction, agricultural or urban uses. For heuristic purposes, MAB originally created a diagram of three concentric circles with the inner one labeled “core”, the next one “buffer” and the outer circle as “transition”. However, confusion sometimes resulted when administrative bodies interpreted this literally to be a set of required design criteria that had somehow to be replicated as circles on landscapes. Recent interpretations, such as in the Madrid Action Plan, emphasized landscape mosaics as a norm that could be interpreted as having component mixes of these three categories.

The continuing role of UNESCO/MAB is to review and approve nomination submissions for new biosphere reserves, see that periodic reviews are carried out for each biosphere reserve every 10 years from the time they were first designated, sponsor training and other workshops with seed funding to develop capacity in developing countries, and to co-sponsor biennial meetings of regional and/or sub-regional MAB committees. The latter include:

Europe and North America (Euro/MAB) formed in 1986 that now includes 52 member countries including Canada, and a sub-regional Nord/MAB network formed in 2004 with 7 member countries;

Africa (Afri/MAB) formed in 1996 that now includes 26 countries;

Latin America and the Caribbean (Ibero/MAB) formed in 1990 and now includes 21 member countries including Spain and Portugal;

Arab States (Arab/MAB): formed in 1997 and now includes 8 countries;

Asia and the Pacific (composed of four sub-regional groupings): Southeast Asian BR Network (SeaBRnet) formed in 1998 and now includes 12 countries; South and Central Asia Network (SECAM) formed in 2001 and now includes 8 countries; East Asian BR Network (EABRN) formed in 1994 and now includes 6 countries; and the Pacific MAB Network (PACMAB) formed in 2006 and now includes 4 countries. And

Inter-regional. East Atlantic BR network (REDBIOS) with 7 countries.

Euro/MAB meets every two years hosted usually by a biosphere reserve. During the 1980s the agenda usually included reports on the theme-oriented MAB activities of various kinds as well as (short) reports about biosphere reserves. In the past decade or so, the agenda is almost exclusively related to biosphere reserves with discussion groups around different topics of widely shared interest. In 2013, Charlevoix BR will host the first Euro/MAB meeting to be held in Canada.

Canada/MAB

Although the federal government participated in the IBP, sent a delegation to the 1968 Biosphere Conference, and endorsed formation of UNESCO/MAB in 1971, when it came to supporting a Canadian program there was much delay and confusion. The problem was that at its outset, the MAB program did not mesh at all with federal and/or federal-provincial administrative structures. While many agencies could claim ownership or veto-power over bits of it, no agency was authorized to support something with the scope of presumed integration inherent in the themes proposed by UNESCO/MAB or the concept of a biosphere reserve (even when it was mainly focused on protected landscapes).

After much deliberation in Ottawa, MAB was assigned to the then new (1972) Department of Environment (now Environment Canada) which agreed to provide one

FTE staff person to be the Secretariat. In 1974, a Canada/MAB committee was created as a kind of two-tiered arrangement involving a group of senior federal civil servants and another group of research scientists from various disciplines. This seemed at the time to reflect the admonitions from the 1968 Conference about the need to forge links among disciplines and between research specialists with managers and/or administrators, but it apparently became somewhat unwieldy and was abandoned in 1979. In 1980, a new committee was established with a mix of civil servants, academics, and people from the private sector and K-12 educational sector. Working groups were formed, each chaired by a Committee member, but involving other people as necessary. One of these was a Working Group on Biosphere Reserves (WGBR), chaired initially by an academic and then by senior people in Parks Canada; it added people from individual biosphere reserves as these were designated, and included civil servants from agencies that seemed interested and supportive of the biosphere reserve concept. One of the first tasks was to prepare information materials on biosphere reserves for use in exploring possibilities for establishing more biosphere reserves in Canada as practical examples of the concept in practice.

By the late 1980s, funding support for the Secretariat of Canada/MAB was cut, and Canada/MAB ceased meeting altogether in 1992. There was no attempt to track on-going programs in Canada that might be matched to broad themes that UNESCO/MAB periodically up-dated. The working groups withered, but one for environmental education and information was re-organized by its Chair to become an independent NGO (and forerunner to what today is the Canadian Network for Environmental Education and Communication (EECOM); the former Chair now holds the UNU Chair for Education in Sustainable Development at York University on behalf of the UN Decade on Education for Sustainable Development (UNDESD).

The WGBR carried on with some support from Parks Canada. When it also re-organized to form the Canadian Biosphere Reserves Association (CBRA) in 1998, Parks Canada continued to support its work with a half-time Executive-Director and up to $15,000 annually, mostly for expenses associated with those biosphere reserves that had a national park as their main core area. Biosphere Reserves were also getting some support from Environment Canada through the (now former) Ecological Monitoring and Assessment Network (EMAN). People from BRs usually held a special session or gave

other presentations at the EMAN annual "citizen science" conferences held in different parts of Canada. Parks Canada supported the annual meetings of the WGBR and then CBRA that were co-sponsored by individual BRs in turn. Discussion of possibilities for further development of MAB continued when individual civil servants explored possible options for several years. It can also be noted that by that time, there was no work going on in Canada that was identified with the original themes and some supplemental ones that had been posed by UNESCO/MAB. Canada/MAB was not interested in or able to follow initiatives underway in other federal or provincial sectors as the sustainable development discourse gathered support from the mid-1980s on. In 2010, the Canadian Commission for UNESCO formed a new Canada MAB Committee as an *ad hoc* subgroup of its Sectoral Commission on Natural, Human and Social Sciences (see below).

Canadian Biosphere Reserves

The first biosphere reserves in Canada were Mont Ste-Hilaire, Quebec, designated in 1978, and Waterton Lakes National Park, Alberta, designated in 1979. Both arose from internal administrative decisions between McGill University and the Canada/MAB Secretariat for MSHBR, and Parks Canada for Waterton (which informed the Secretariat of the decision). No public consultations were involved. McGill's research and education work at its Mont-Ste-Hilaire property just south of Montreal exemplified a well-developed example of the original concept of a biosphere reserve. Waterton Lakes NP and Glacier NP (Montana) had been declared an "International Peace Park" in 1932, so when the US National Park Service nominated Glacier NP for a biosphere reserve in 1976 (without consulting Waterton), Parks Canada thought it desirable to nominate Waterton as well to help maintain the 1932 declaration. Again, the park on its own exemplified conservation, public education and field research activities sufficient to be consistent with the BR concept at the time.

The WGBR in the early 1980s thought it desirable to organize more biosphere reserves in order to have working examples of the concept in practice, and the group had public information in various forms prepared. It canvassed suggestions for possible sites mainly through Parks Canada contacts. It also took note of situations where the concept would seem to apply quite well, and undertook informal exploratory talks with park and

other authorities about the possibility. Sometimes this resulted in co-sponsored local meetings in which members of the WGBR presented the concept and as matters unfolded, would also draw on people from new BRs to describe how they used the recognition. Not all of these initiatives succeeded, but they did result in Long Point BR, Ontario (1985), which grew out of an inter-university research program on ecological rehabilitation as it could be applied to the north shore of Lake Erie; Riding Mountain Biosphere Reserve, Manitoba (1985), which was based on the consultative arrangements Parks Canada had established in 1982 through the Riding Mountain Liaison Committee composed of elected representatives from two tiers of rural municipalities around the park (and saw a BR group as a smaller technical committee); Charlevoix BR, Quebec, in 1988, which was motivated strongly by the view that Quebec should not be represented only by one research and education site owned by McGill (the premier anglophone university in Quebec); and the Niagara Escarpment Biosphere Reserve, Ontario in 1990, which was based on the existence of a legal framework for environmental land-use planning supplemented by two national parks adjacent to the north end of this 732 km geological formation.

Canadian Biosphere Reserves on the 40th Anniversary Year of MAB

Interest in BRs re-emerged rather suddenly it seemed, when four nominations came forward in 2000, all as a result of local community-based "bottom-up" initiatives. Others have come forward regularly since then. In July 2011, the Bras d'Or Lakes Biosphere Reserve, Cape Breton, N.S., became the 16th BR in Canada.

Canada/MAB had been reduced to a "focal point" maintained by a retired senior scientist (Fred Roots) from Environment Canada. He had been involved in a considerable range of international science programs on behalf of Canada, and was a strong devotee to the MAB program and ideals. At least one retired academic (George Francis) continued to informally help groups develop documentation and steer through the formal process for bringing forth nominations to UNESCO/MAB, and the Parks Canada half-time staff person (Jim Birtch) would regularly refer requests to one or both of us to respond.

CBRA carried on as an organization of biosphere reserves for biosphere reserves. It had a few Honorary Directors for several years (including the two persons noted above), but

dispensed with this as the organization gained more confidence in what had to be done. Their major accomplishment was obtaining five-years of funding support from Environment Canada (2008-2013) for 14 of the 15 biosphere reserves that existed at the time (Clayoquot Sound BR had its own Clayoquot Biosphere Trust fund). Parks Canada stood-down at that time. This new funding provided in the order of $50,000 annually to each BR and supports 2 FTE staff for CBRA. In 2010, mainly in response to the Madrid Action Plan expectation that each country would have a viable national MAB committee, the Canadian Commission for UNESCO (CC/U) created a new Canada MAB committee, drawn in part from CBRA and people with experience from individual biosphere reserves. It is to take up responsibilities for reviewing procedures for new nominations, conducting periodic reviews, and advising CC/U on matters arising from UNESCO/MAB.

Looking ahead, UNESCO will be dealing with plans for the post-Madrid era of MAB (from 2013 on), the new Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) of which UNESCO is one sponsoring agency, the launch of the new Earth Systems Science Partnership among four intergovernmental research programs (including DIVERSITAS in UNESCO) and possibly other matters (especially relating to governance) arising from the United Nations Rio+20 Conference in June 2012. There have been a number of papers from different sources that have discussed issues of international governance (e.g. Lövbrand and others, 2009; Biermann and others (2010), the art of effective global assessments (e.g. Rothman and others, 2009), and the need to deal with cross-scale linkages, including the possibility that the world network of biosphere reserves could have a role in demonstrating how the local can relate to the global (e.g. Folke and others 2011; Westley and others 2011).

Visits to/from Biosphere Reserves in Other Countries

These kinds of visits only happen occasionally and opportunistically, and there is no central record kept of them. In 1989, several ranchers from the Waterton Biosphere Association visited Tibet to assess the possibility of a range and livestock management program and this was followed-up by a visit from four Tibetan farmers to view dry land ranching methods in southern Alberta. In addition, one of the ranchers made several visits to the Manu Biosphere Reserve in Peru to advise on an agricultural project. Delegations from China visited several Canadian BRs in the early 1990s, and one return

visit by people from four Canadian BRs was arranged (by China) to visit four BRs in China. In more recent years there have been informal links established by the Rhön BR in Germany with three Canadian BRs and some Canadians have visited Rhön and other German BRs; some German students have taken up short-term volunteer internships in Canadian BRs as part of their formal university studies.

EuroMAB meetings have also provided other opportunities especially now that BRs are the main subject matter for these meetings. This has allowed some people from Canadian BRs to visit BRs in Finland, the UK, Latvia, Turkey, Slovakia, and Sweden over the past 15 years or so. Some visits have been sponsored by UNESCO/MAB as "missions" to review or advise on overseas BRs, including a recent exchange between the Manicouagan-Uapishka BR and one in Benin, where it was arranged for students from Benin to take up internships in the MUBR.

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