

# **Learning by example: A historical account of the experiences and transformation in the management of the Mount Arrowsmith Biosphere Region (Reserve), Vancouver Island, Canada.**

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## **Abstract**

This report outlines the developmental history of the MABR from its conception in the early 1990s through its evolution into an effective, functional biosphere region in 2016. It describes why and how the biosphere reserve concept was initially felt to be appropriate for the region; the challenges in trying to achieve UNESCO recognition without initial senior (provincial and federal) governmental support, and how this lack of support was overcome; the initiatives undertaken in the first decade after establishment; and how the biosphere reserve almost collapsed when it was largely commandeered by community members that had an anti-development advocacy agenda. It concludes by describing how the initiative evolved into what is now one of the most productive and dynamic Canadian biosphere reserves. The documented experiences of the world's biosphere reserves are valuable educational products, and it is hoped that descriptions of the challenges encountered and overcome in the Mount Arrowsmith Biosphere Region (Reserve) can benefit the development of other biosphere reserves both in Canada and world wide.

## **Introduction**

The United Nations Educational, Scientific and Cultural Organization's (UNESCO) Man and the Biosphere Programme (MAB) created the concept of biosphere reserves to recognise areas where local citizens are attempting to achieve a balanced relationship between people and nature to ensure environmental, economic and social (including cultural and spiritual) sustainability. This is achieved by striking a balance between the goals of conserving biological diversity, promoting economic development, and maintaining associated cultural values. A biosphere reserve demonstrates practical approaches in addressing its unique challenges in balancing conservation and local human use in its area.

The Biosphere Reserve World Network is more than a listing; biosphere reserves exchange knowledge and experiences on sustainable development innovations across national and continental borders. Of the more than 669 biosphere reserves in 120 countries now designated by UNESCO MAB in 2016 (Fig. 1), each has a unique story and history.<sup>1</sup> Benefits gained from being part of the network include access to a shared base of knowledge and scientific research, working toward high-level and common goals, and the opportunity to connect internationally to other biosphere reserves on issues of conservation, development, and sustainably managed ecosystems. The biosphere reserve concept is applied differently within each local context, and even among biosphere reserves in one country such as Canada, there are a multitude of ways that local communities embrace the opportunity that a designation offers (e.g., Canadian Biosphere Reserves (2012)). Biosphere reserves are areas that explore innovative approaches in a vast diversity of policy and management fields to work towards achieving a balanced

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<sup>1</sup> The number of biosphere reserves worldwide is as of May 2018 ([www.unesco.org/new/en/natural-sciences/environment/ecological.../biosphere-reserves/](http://www.unesco.org/new/en/natural-sciences/environment/ecological.../biosphere-reserves/))

relationship between mankind and nature as defined in Biosphere Reserve policy and strategy documents (Seville Strategy (1996), Madrid Action Plan (2008-2013)). In order for an area to be included in the World Network of Biosphere Reserves, work towards these ends within the area must be initiated at the local level, appropriate information about the region must be summarised, and the local population needs to have expressed its written support. Nominations for a biosphere reserve are prepared and submitted to UNESCO by national governments, in most cases through MAB national committees.

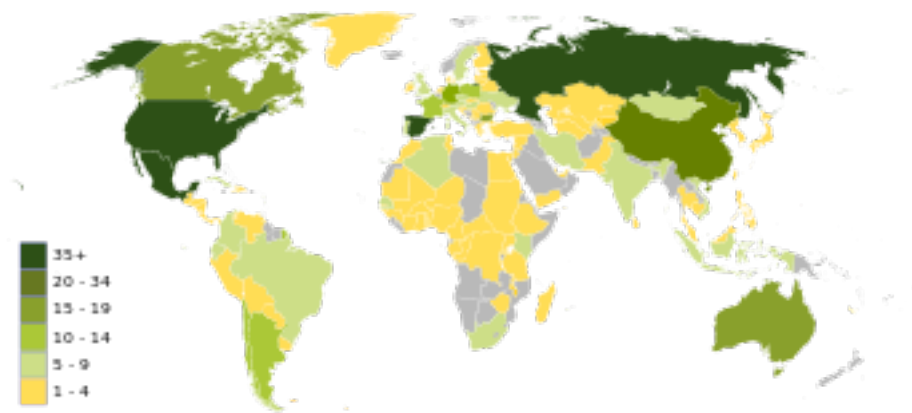


Figure 1: Map showing the World Network of Biosphere Reserves. As of 2016 total membership has reached 669 biosphere reserves, including 12 transboundary sites, in 120 countries occurring in all regions of the world.

This document summarises the development history of one of the earlier community-initiated biosphere reserves in Canada, that of Mount Arrowsmith, in the hope that descriptions of the challenges overcome there can benefit the development of other biosphere reserves both in Canada and world-wide.

## The Canadian Context

Biosphere reserves were established in Canada (Fig. 2) in two general episodes: an early federal government-initiated creation of six biosphere reserves (1978 to 1990) and a later more community-driven establishment from 2000 to present day. There are now 18 biosphere reserves (BRs) in Canada, with the most recent, Beaver Hills BR in Alberta and Tsá Tué BR in the Northwest Territories, designated in 2016.

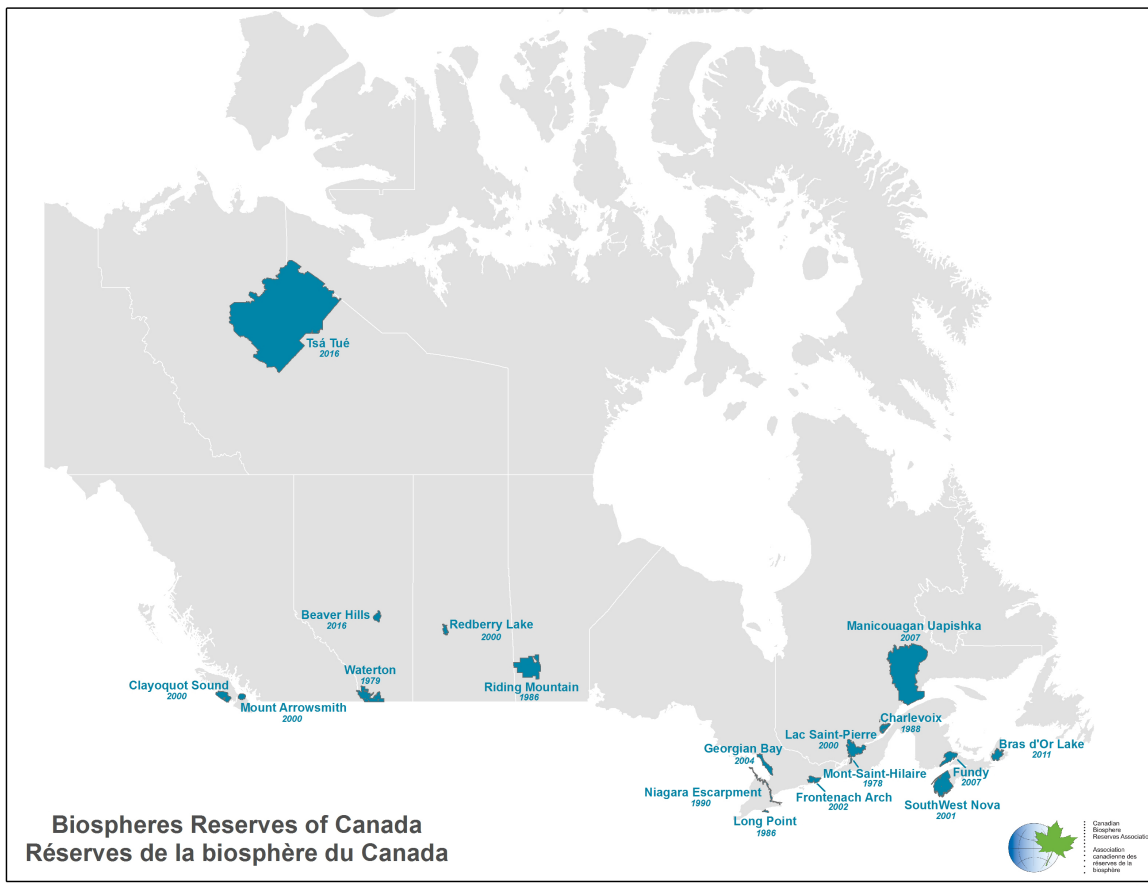


Fig. 2. Canadian biosphere reserves in 2016. Mount Arrowsmith is second from the left.

## Biosphere Reserves in Canada – prior to 2000

Canada's first biosphere reserve, Mont Saint-Hilaire, was established in Quebec in 1978, followed by Waterton in Alberta in 1979. Between 1986 and 1990, four more were established – one in Quebec (Charlevoix), two in Ontario (Niagara Escarpment and Long

Point), and one in Manitoba (Riding Mountain), creating a Canadian network of six biosphere reserves. In keeping with early days and development of the MAB Programme, these biosphere reserves were all established by the federal government with little involvement or formal coordination by local people.

### **Development of the MABR Proposal**

In the late 1980s and early 1990s, public interest in the well-being of the environment in British Columbia (BC) increased dramatically: the logging of old growth forests in coastal BC was of particular concern, along with concerns about sprawling residential development and the scale and nature of resource extraction activities occurring in many west coast communities, including fishing. This increase in human environmental impacts in BC coincided with the new awareness in BC of the potential of biosphere reserves, which until then had not been regionally talked about. In the early 1990s in the area of the future MABR, a group of local citizens were organizing regional and local environmental committees to try and conserve local environmentally sensitive areas that were being threatened by residential development, including the Englishman River estuary in Parksville on the east side of Vancouver Island. The Society for the Preservation of the Englishman River Estuary (SPERE) was formed, and along with other local groups, pressure (including national news coverage) was exerted on governments to protect this area, resulting in the establishment of the provincial Parksville/Qualicum Wildlife Management Area (PQWMA) in 1992. However, Dr. Glen Jamieson, then president of SPERE, soon realized that while the Englishman River estuary area was now protected, a functional estuary only existed if the river's water flow rate and quality were also being adequately monitored and managed, which was not then the case. For example, in the winter, when rains were heavy and the river had its maximum flow rates, turbidity was high, so cleaner water from regional wells was the preferred municipal water source and impacts on the river were minimal. However, in drought periods in the

summer, river flow rate often decreased to less than one m<sup>3</sup>/sec, yet this was the time of year when river water use by local governments was high due to the river's summer low turbidity. Coupled with a greater summer municipal water demand from a growing residential community, gardening, increasing tourism and increasing pollution from agricultural runoff upstream, the "health" of the river for aquatic species was increasingly a concern of SPERE. Protection of the estuary alone was seen as not sufficient, and sustainable water management needed to include the entire watershed.

In 1993, environmental groups around the Strait of Georgia were brought together by the Georgia Strait Alliance, formed in 1990. The concept of "biosphere reserves" was raised at one of the early information meetings, and Dr. Jamieson realised that this concept might be particularly appropriate for the east side of Vancouver Island. This area in the Georgia Basin had both unique ecosystems and unique resource management challenges, as it was almost entirely privately owned and the most urbanised area in BC. While biosphere reserve designation in itself did not legislatively protect land, it would further encourage awareness and responsibility by local peoples to take actions that would conserve values that they alone identified as important to them.

Emphasis was placed on the biosphere reserve's non-advocacy role and their potential to be living examples of how research and education relating to specific local challenges could lead to improved local sustainable management. It was this new awareness of the biosphere reserve concept that resulted in an effort to establish a biosphere reserve in the British Columbian Georgian Basin, and specifically in the Englishman River watershed, which led to the proposal of the MABR. However, despite the local importance of the Englishman River Estuary, its extent (about one square kilometre in area) was relatively small compared to the areas of other Canadian BRs, and did not include any legislated core protected areas which often formed the basis of a BR given UNESCO guidelines of

the day (Seville Strategy 1996). To ensure that riverine flow rates and water quality issues could be managed as sustainably as possible over a more extensive area of adjacent watersheds, the desired boundaries of the MABR were established as the entire watersheds of the rivers and creeks flowing into the Strait of Georgia from Lantzville to the southeast and Bowser to the northwest (a straight line distance of about 30 km, although the actual shoreline distance is about twice that). These were the Englishman, Cameron and Little Qualicum River watersheds, the Nanoose and Bonell Creek watersheds, and the smaller stream watersheds between them. Five relatively small Provincial Parks within these watersheds then met UNESCO's definition of core areas within the BR.

Based on his involvement with local stewardship groups, and the termination of SPERE after the establishment of the PQWMA in 1993, Dr. Jamieson prepared a prospectus for a Mount Arrowsmith Biosphere Reserve (MABR) that he presented to municipal governments. At the same time, he engaged the Canadian Commission for UNESCO (CCU) and representatives from the six established biosphere reserves in Canada (four were affiliated with a National Park) in an effort to find out how to establish a new biosphere reserve. Representatives from the other Canadian biosphere reserves and Parks Canada provided encouraging support. During the mid-1990s, the UNESCO designation process advanced to incorporate recommendations of the Seville Strategy (1996), which required evidence of bottom-up community interest in the concept, including municipal and provincial support in the Canadian context.

While at the time there were no official steps or directives on how to proceed, it was suggested by a representative from the CCU that to achieve a Biosphere Reserve designation, an area would have to be functioning as a biosphere reserve before applying for the designation. It was noted that evidence for this would include the provision of

regionally relevant research in support of achieving sustainability. Dr. Jamieson, as a federal research scientist, took on the scientific/educational aspects of UNESCO's directives for biosphere reserves and initiated a program of regionally relevant research in support of achieving sustainability. By 1996, the first specific MABR research initiatives were underway, including a study with the Canadian Wildlife Service of Arctic-bound migrating Brant (a marine goose) which rely on seasonally productive waters for foraging each spring in the proposed biosphere area; an analysis of riverine/forest connectivity in the local area (the biodiversity and abundance of insects was monitored over streams and into the adjacent forest); and other initiatives supporting long-term research and monitoring such as the establishment of a Smithsonian Forest Monitoring Plot in the Mount Arrowsmith watershed.

With the cooperation of community members, the Mount Arrowsmith Biosphere Foundation (MABF) was registered in 1996 as a non-profit society, which was intended to be the management committee for a biosphere reserve in the area, if and when it was to be formally recognized. Based on the British Columbia Society Act (1996), the society was managed by a group of elected Directors who held decision-making and fiduciary responsibilities of the society as outlined in a formal MABF operating framework. Regional municipal representatives participated as liaisons, not as directors, to avoid any perceived conflict of interest. A seat on the Board was allocated to each of the two local Salish Sea First Nations (the Snaw-Naw-As in Nanoose Bay and the Qualicum further north), the two international timber companies that owned most of the proposed biosphere reserve's land, along with open chairs for community representatives. Thus, while there are seven First Nations with territories that the BR overlaps (see below), seats were only offered to the above two, since the others only had minor territory overlaps. The MABF provided a basic structure for activities, gave the initiative credibility, and to ensure as much community participation as possible, membership in the society was not



restricted beyond paying for an annual \$5 membership. However, as will be shown, in addition to resourcing the MABF (human and financial), this latter decision caused serious problems in the evolution of this biosphere reserve.

As the MABR concept was emerging on eastern Vancouver Island, representatives from the six existing Canadian biosphere reserves formed the Canadian Biosphere Reserves Association (CBRA), with the future MABR participating as an associate partner. The CBRA aimed to improve collaboration among Canada's existing biosphere reserves and to advocate for federal support on behalf of all Canadian biosphere reserves. Circa 1996, there was no directed federal financial support for any Canadian biosphere reserve, but those reserves that included a national park received logistical support and minimal funding (\$5000 year) from Parks Canada for associated activities. Incorporated in 1997, annual CBRA meetings were held, many in association with the "The Leading Edge" conference series jointly organized by the Niagara Escarpment and Long Point BRs near Hamilton, Ontario. Dr. Jamieson presented a number of papers (Jamieson 1997a,b) at these meetings, documenting his efforts in BC to establish the Mount Arrowsmith Biosphere Reserve, and in 1998, he was encouraged to gather and submit the information required for a formal application to the Canada Man and Biosphere Committee (Canada MAB) to make this a reality. With assistance from two MABF members and Dr. Fred Roots, then Chair of Canada MAB, the application was in its final stages by late 1999. No financial or planning support was directed toward the project from potential funding agencies. However, the nomination process came to a sudden halt in 2000 when the BC government indicated it would not support the MABR application.

This lack of support centred around perceived conflict with another BC biosphere reserve initiative underway at the same time, which was receiving significant financial support from both the BC and federal governments. Together, these governments hired a

consultant to prepare a submission for a proposed Clayoquot Sound Biosphere Reserve on the west coast of Vancouver Island. This initiative arose from Jean Chrétien's interest as Canada's Environment Minister in 1993 to address and resolve the dispute over old growth logging in that area that received international attention, in part due to the largest mass arrests for civil disobedience in Canadian history. In 1996, as Prime Minister, Chrétien decided that the creation of a biosphere reserve in and surrounding Clayoquot Sound would make a strong environmental statement in support of sustainability. Work was initiated to gain local support from communities, First Nations, and local business groups (logging, fishing, and aquaculture). While the two initiatives were unrelated, Dr. Jamieson and Ross McMillan, the consultant that was leading the process to establish the Clayoquot Sound BR, were in close contact and the two initiatives, one on the east side and the other on the west side of Vancouver Island, happened to come to fruition at the same time. At that time, feedback to the MABF from the province indicated that the MABR application should be temporarily withdrawn, as representatives from both the province and Canada wanted the Clayoquot Sound application to be considered by Canada MAB alone to give it maximum profile. The understanding communicated to Dr. Jamieson was that the BC government would then support the Mount Arrowsmith submission in the next UNESCO consideration period of proposed new BRs.

In the Clayoquot Sound area on the west side of Vancouver Island, all forestry land was Crown Land, and as such, government had an influence on how it would be managed and ultimately logged. Governments were thus able to apply pressure to obtain consensus from all the main interests in the Clayoquot Sound area to support designation of the Clayoquot Sound BR. In contrast, because of the 1884 Esquimalt and Nanaimo (E&N) land grant on southeastern Vancouver Island between government and the logging industry, by the late 20<sup>th</sup> century, virtually all forestry lands in the Mount Arrowsmith area (i.e., most of the proposed biosphere reserve area) were owned by private

international forestry companies and much of the remaining land base was also held by individuals under private ownership. Supporting an initiative that would place a UN designation on privately owned lands was a difficult request for international forestry companies to support, and these private entities could not be entreated to support the Mount Arrowsmith BR designation. Executives of the forest companies in the proposed MABR thus approached the province and said that since consensus for a BR was required by all the major interests in the Clayoquot Sound area, it should also be required in the Mount Arrowsmith area, which caused the province to back off on its earlier indication of support for the Mount Arrowsmith BR nomination. A provincial representative even suggested to Dr. Jamieson that all private forestry land should be removed from the proposed MABR boundary, which Dr. Jamieson refused to consider since it was not compatible with achieving desirable overall watershed management practices, which was the rationale for trying to obtain MABR designation in the first place.

In contrast, local communities and First Nations in the proposed MABR were receptive to the biosphere reserve concept and potential future opportunities it might invite, such as increased local environmental awareness and tourism to a “model area”, and provided written support for the nomination. In these early stages, none of the local First Nations that were engaged expressed concern about a biosphere reserve designation despite their unresolved territorial rights and claims associated with the proposed boundary.

Despite the lack of support from the province and the lack of clarity in the requirements to proceed with an application at the time, Dr. Jamieson nevertheless elected to proceed. Further research into the UNESCO nomination process revealed only two requirements actually existed at that time: 1) that proposed biosphere core zones (areas with legislative protection) would stay protected into the foreseeable future, and 2) that industry management policies were of a sustainable nature. There was no actual mention of a need

for formal written support from the higher levels of either government or industry. Dr. Jamieson then confirmed in writing from local protected area managers that the existing parklands would remain protected into the foreseeable future. Policy documents from the local forestry companies were also found on the internet and were included in the BR application to document that industry management policies indicated that the forest companies wanted to work with local communities in support of sustainable forest management. Dr. Jamieson submitted this collection of material as required in the nomination process for the MABR to the Chair of Canada MAB, where it was accepted and then sent to UNESCO in the spring of 2000. The nomination was also accepted that spring and due to a delay in Paris in the approval of earlier submitted nominations that included the Clayoquot Sound BR, formal recognition of both the Clayoquot Sound and Mount Arrowsmith Biosphere Reserves ultimately did occur unexpectedly together in November 2000.

The designation of the Mount Arrowsmith Biosphere Reserve was not expected by either the Province of BC or the forestry companies, and their concerns were expressed to both the Canadian Commission to UNESCO (CCU) and to UNESCO headquarters. However, UNESCO determined that all relevant criteria had been considered, and so recognition of the Mount Arrowsmith Biosphere Reserve remained. Provincial representatives then stated that while the “birth” of the BR was “irregular,” the “baby” had nevertheless been born, and so it would be recognised by governments. At a public dedication ceremony of recognition by UNESCO six months after the designation, provincial representatives participated and even announced a significant expansion in area of one of the provincial protected BR core areas, the Parksville-Qualicum Wildlife Management Area. However, while the Clayoquot Sound BR received a \$12 million endowment fund (the Clayoquot Biosphere Trust) from Canada for its operations, Mount Arrowsmith did not receive any start-up or operational funding from either the province or Canada, and to this date, along

with most other biosphere reserves in Canada, fundraising still remains a priority activity for the MABR.

### **Mount Arrowsmith Biosphere Reserve - 2000 to 2009**

The Mount Arrowsmith Biosphere Reserve (MABR) is located on the east coast of Vancouver Island, British Columbia. From the top of Mount Arrowsmith (1817 m) in the Beaufort Mountain range, the MABR extends down to the sea, where it includes islands in the Ballenas/Winchelsea Archipelago and a marine area extending halfway to Lasqueti Island to a depth of about 300 m below sea level. The total land area is approximately 800 km<sup>2</sup> and the marine area at the surface is about 400 km<sup>2</sup>.

The BR is primarily within the Traditional Territories of the Snaw-Naw-As First Nation and Qualicum First Nation on the east side of Vancouver Island, but also overlaps portions of the unceded territories of the Snuneymuxw, K'omoks, Tseshaht, Hupacasath, and Ditidaht First Nations on the western side of Vancouver Island. Local governments include the City of Parksville, Town of Qualicum Beach, and the Regional District of Nanaimo (RDN). These governments and institutions are joined by dozens of registered non-profit organizations that address local MABF concerns, such as stream habitat enhancement and migrating seabird monitoring. Along with these groups, an active citizenry that is known for volunteerism and involvement in local issues characterizes the mid-Island area.

While it had been established early on that there was little in the way of formal guidelines for achieving the biosphere designation at the time, the MABF also found that the path for both achieving the high level mandate of BRs and to make it relevant at the “boots on the ground” level was also not clear, with the result that society membership remained

small. In the early years following the MABR's designation, the society even struggled with maintaining a full slate of volunteer directors for the MABF's eight-member Board of Directors (BOD). Part of the reason was that functional BRs often have funded support staff to achieve MAB goals. In the absence of funds and with few society members because of the challenge described above, the MABF had a reduced capacity to work towards realizing the potential benefits outlined in the MAB Programme. The reality was that 1) there was a very limited number of highly dedicated people involved, and 2) a lack of funding. A small group can do a lot, but dedicated time and effort is needed, which is difficult when funding is not available. In this situation, a small group might not accomplish as much in the same time as a larger one, although more could have potentially been accomplished with a different group of people. Under these circumstances, the MABR could have benefited had it had more capacity to support staff to work towards the goals the MAB Programme laid out (Seville Strategy 1996; Madrid Action Plan 2008-2013). In contrast, funding was not a problem with the nearby Clayoquot Sound BR, which could utilise funds earned by their large endowment. Thus, whereas the focus of the MABF quickly turned to fund-raising, the focus of its sister biosphere reserve was focused on how best to allocate its available resources.

However, difficulty in obtaining operating funding did not impede all progress in the early years - some limited, project-specific funding was obtained for research, including:

- 1) the continued monitoring of the Smithsonian Biodiversity plot located in one of the MABR's core protected areas (with student and volunteer labour),
- 2) initial GPS documentation of invasive plants and animals locations in some of the core areas with federal-funded summer student support,
- 3) establishment of a GLORIA (Global Observation Research Initiative in Alpine Environments) site on the top of Mount Arrowsmith to document the effects of climate on alpine flora through involvement of a local university graduate student,

- 4) documentation of tagged migrating Brant geese for the Canadian Wildlife Service by a seasonal contract, and
- 5) development of a two-part television series titled “Liquid Assets”, which was about the Importance of water, i.e., its source and its usage, in the MABR, which was shown repeatedly on local television stations.

All this funding was secured by Dr. Jamieson through his professional contacts and his associate professor status with local universities, and he was the administrative supervisor in all these initiatives. While biological research was being conducted, initiatives in social sciences focused towards increasing community engagement were lacking. Volunteer effort within the BOD in this capacity was not present, but Dr. Jamieson did manage to get some support to document the environmental education challenges the initiative was experiencing (Fraser and Jamieson 2003).

The MABF was also actively involved at the national level by participating on the BOD of the Canadian Biosphere Reserve Association (CBRA) and with participants from other biosphere reserves in documenting Canadian achievements (Jamieson *et al.* 2008). The nature and sophistication of biosphere programmes in sustainable development was described, and it was shown that while much variability in capacity existed across Canadian biosphere reserves, the biosphere reserve concept with respect to the achievement of sustainable development was widely embraced by all communities in Canada associated with biosphere reserves. There was a wide diversity of initiatives, and Canadian efforts to develop biosphere reserve models of sustainable development at the community level were showing successes, largely because of great imagination and volunteer dedication. The CBRA was ultimately successful in receiving a commitment to five years of federal funding (approximately \$57,000 per year per BR), starting in 2008, for all the Canadian BRs except for the Clayoquot Sound BR, which had its own

government sourced endowment fund. Unfortunately the five-year program was terminated one year early in 2012 as part of general cutbacks across the public service, with the resulting implications discussed below.

### **MABR Funding Acquisition Initiatives**

Starting in 2003, there were two unique funding initiatives undertaken in the MABR, one under the biosphere name and the other through a separate society created to provide support for the biosphere, separate because it involved people not directly involved with the MABF. The first looked at establishing a Vancouver Island Biosphere Centre (VIBC) within the biosphere boundary, and to this end, funding was obtained from the City of Parksville and the Regional District on Nanaimo for three studies, an initial conceptual study, a feasibility study, and then a more detailed architectural study for a specific site. The VIBC was designed to be a physical building/structure that would showcase and interpret the exceptionally rich and diverse inventory of natural and cultural heritage resources that exists locally on Vancouver Island. The intent was to focus on increasing awareness of regional protected areas, their need to be effectively managed, and to highlight that protected areas can contribute economic value to local communities. The challenges in its establishment were to identify a potential physical location for the centre that: 1) offered natural habitats around the centre for interpretative walks; and 2) was acceptable to the community. A pre-design investigation that started in 2008 identified a “straw dog” site within Rath Trevor Provincial Park, one of the BR’s core areas. However, public opposition to the commercialization of parkland ended conceptual-only discussions on this site, and the Centre remains at a pre-design stage to this day until another site can be determined.



The other funding initiative was founded through a separate registered society, the Oceanside Monetary Foundation (OMF). The purpose of the OMF was to raise funds for Oceanside (the local name for the Mount Arrowsmith Biosphere Reserve area) community projects, promote a sense of regional pride, and foster local economic activity and autonomy. The Foundation created “Oceanside Dollars” that were a paper currency that could be purchased at local financial institutions and businesses and used throughout the area as regular paper currency at par with the Canadian Dollar. The Oceanside dollars resembled the Canadian paper currency in dimension and had a printed expiry date about two years from the date of issue. Certificates that were not redeemed by their expiry date created revenue for the OMF, as did the interest earned on the Canadian dollar reserve being held in the banks until each currency issue’s expiry date. There was a favourable response from local businesses and the program lasted for two years.

While this concept was unique among biosphere reserves worldwide, it encountered some start-up problems that eventually led to its demise:

1. The bills had the latest state-of-the-art anti-counterfeiting technologies built into them: they were printed on Teslin®, a synthetic printing substrate, additional corresponding UV bill serial numbers could be seen under ultraviolet light, and there was an image of a “ghost salmon” over the director signatures. However, unanticipated, the first printing on the then new plastic bills was “softer” than on the existing regular Canadian paper currency, which resulted in scratches on the bills when they were run through financial institution paper bill counting machines, which effectively destroyed them. They could not thus be counted this way, which created problems for the financial institutions that were supporting the initiative. Although this issue was soon resolved, it was not quick enough to overcome some negative public relations that occurred in the first year following bill release.

2. The success of the program depended on getting a large amount of Oceanside Dollars into community circulation as quickly as possible. In hindsight, greater efforts on communication and promotions were needed. The sales methods used targeted community markets and craft fairs, which was somewhat successful but time consuming, given the relatively little amount of Oceanside Dollars that ultimately entered into circulation. In hindsight, it would have been better to try and engage local groups such as Rotary, etc, and to ask their members to buy bills so as to get the bills into circulation faster.
3. The trend toward a “cashless” society with the increasing usage of credit and debit machines meant that local residents were less likely to use cash (or Oceanside Dollars) for their purchases.
4. The denominations of the bills (\$1, 2, 5, 10 and 20) were larger than most change given by businesses for many small cash purposes, which was generally in coins.
5. The \$1 and \$2 bills in Canada had also recently been entirely eliminated from circulation, being replaced by coins, called in Canada the “loonie” (it had an image of a loon on it) and “twoonie,” respectively.

At the close of the program, approximately \$25,000 was placed into circulation, far short of the intended hundreds of thousands that had been hoped for. However, the program was still an imaginative and innovative fundraising initiative, and did increase MABR awareness within the community. On another positive note, it also represented the world’s first unique biosphere reserve currency.

### **Mount Arrowsmith Biosphere Reserve - 2009 – 2014**

The years between 2009 and 2014 proved to be an incredible challenge for the MABR

but in the end, a positive outcome was achieved. During this time, the MABF suffered communication challenges including BOD disputes, difficulty retaining volunteers and staff, and a loss of funding when the Federal contribution agreement to Canadian Biosphere Reserves was cancelled in 2012. This period of difficulties in part took hold in 2009 following an Annual General Meeting (AGM) of the society, when none of the existing directors, including Dr. Jamieson, were re-elected to the Board of Directors, although Dr. Jamieson did remain as a society member. Being the only “environmental” group at the time with dedicated federal funding, management of the society was taken over by a surge of new members that hoped to advance a more advocacy-driven agenda, with their sudden joining the society facilitated by the inexpensive (\$5) society membership fee.

Meeting minutes made by MABF board members show that the period from 2009-2010 was a very difficult year for the organization because of core differences in MABR direction. Essentially, the MABF was in survival mode. Only three of the new directors persisted throughout much of 2010 and the first Coordinator hired had to be let go due to delays in the receipt of the approved federal funding. As shown by the minutes of the MAB, existing directors did not meet regularly as a result of an internal breakdown in communications and little progress was made in addressing the mandate of the organization during this time. Despite this breakdown, the BOD did undertake a hiring campaign and was able to bring on both a new Coordinator and a Communications Assistant in early 2011, as well as attract several new directors who together enabled a successful governance transition for the MABR in 2014 (described below).

In addition, there was the unfortunate timing of the first MABR Periodic Review, which began during the summer of 2010, as each biosphere reserve must undergo a formal evaluation every ten years. Recommendations from the review provide the basis for

decisions made by UNESCO's International Advisory Committee (IAC) on the progress and fate of a designation. Periodic Reviews are organized by the host country's national MAB Committee, and reviewers are assigned on a volunteer basis. Despite the fact that there were severe issues with funding, capacity and fierce internal disagreements, the MABF was able to host UNESCO researchers and facilitate the Periodic Review process. The reviewers spent several days interviewing MABF directors and members to compile information on how the society was operating for their review. Directors and staff of the MABF did not hear the results of the review until May 2011, and unsurprisingly, the review was not positive, but provided constructive recommendations. The MABF was then required to submit a Strategy and Action Plan that addressed these recommendations to the IAC by 2013, which if not accepted, would mean its loss of biosphere reserve designation.

Concerns identified by the review committee related to “not achieving the mandate of biosphere reserves, poor communications, limited community and First Nations involvement, and a lack of progress on local initiatives”. The problems that existed were well known by the MABF executive. However, a lack of procedure at Board meetings and the perceived advocacy role of Biosphere Reserves by some of the new MABF Directors and members remained key impediments to moving forward. It was noted by Directors and staff, including Karen Hunter, that not all Directors were willing to embrace UNESCO's requirement for biosphere reserves to provide a community space for dialogue on sustainability and continued to promote an anti-development agenda. However, work on the education and science mandate of BRs was developed and led by MABR staff and volunteers through this time, and good progress was made through several initiatives. Some of the federal funding allocated to the MABR supported a publication on the status of the MABR (Clermont 2012), environmental education

initiatives, a monitoring of marine invasive species project, and joint community removal initiatives for terrestrial invasive species within the MABR boundary.

Internal communications among the MABF BOD completely broke down in 2011 and a gap in the MABF's bylaws regarding how to deal with such conflict left the BOD with few options. By the 2011 AGM, the nature of the break down was publicly voiced by Directors and members through speeches and grandstanding, but suggested changes to the bylaws promoted by the majority of the Board did not pass a vote (75% + 1). Proposed mediation to try and resolve differences within the BOD was put forth as a recommendation, but this failed to receive unanimous support.

For the remainder of 2011, much of the early energy and resolve that had sustained the biosphere reserve was reduced, but funded programming continued to be delivered by staff. Board meetings were cancelled for a brief period and when they resumed, one Director resigned and there were considerable lapses in attendance by another. However, the small group that remained continued to work towards the goal of developing and submitting a Strategy and Action Plan to the IAC as required including: completing reporting requirements required by the BC Society Act and Environment Canada, the federal funding agency, supporting existing programs and initiatives, and revising the governance of the MABF. The latter included the suggestion to close the Society and pass on the privilege of managing the MABR to others.

In 2012 and 2013, much of the small working Board's activities focused on both gathering information and preparing the MABR Strategy and Action Plan to respond to issues raised by the earlier Periodic Review and investigating alternate management systems for the MABR. In July 2012, the MABF Board proposed that the Regional District of Nanaimo manage the MABR as a Community Service. This proposition was

declined principally due to the financial obligations of a new Service, but soon after, the City of Parksville Council passed a resolution to give the MABF minimal administrative support while it pursued other governance options. The MABF AGM in 2012 occurred without incident, and no general meeting occurred in 2013, as is permitted by BC Society Act regulations.

Regular discussions continued in 2013, and a community-university management partnership for the MABR between Vancouver Island University (VIU) and the City of Parksville began to emerge for the management of the biosphere reserve. In mid-year, a Memorandum of Understanding outlining this partnership was drawn up and put forward to both the University and City for consideration. This news was communicated to CBRA, the CCU and Canada MAB through email channels, and presented in person to officials at the bi-annual meeting of EUROMAB, which that year took place in Brockville, Ontario. MABR representatives who attended this meeting believed that the positive communications at this meeting were instrumental in deciding the fate of MABR.

In 2014, news from UNESCO disseminated via Canada MAB stated that the MABR's Strategy and Action Plan had been accepted and the threat of losing BR designation was eliminated. Dissolving the MABF was then immediately proposed and accepted by the MABF membership, with the understanding that the management of the MABR would then be passed to a new governing body comprised of Vancouver Island University, the City of Parksville, and other future members with jurisdictional interests in the MABR. A final MABF AGM was held to announce and celebrate the transition of the MABR designation to the new partnership.

### **The Mount Arrowsmith Biosphere Region – 2014 to the present**

The new MABR governance model includes VIU, the City of Parksville, Snaw-Naw-As First Nation, Qualicum First Nation, two private forestry companies, the Town of Qualicum Beach, representatives from provincial agencies, and two community members. The Board operates as a Roundtable with quarterly meetings that address issues of shared interest.

An initial action undertaken by the Roundtable was the renaming of the entity as the Mount Arrowsmith Biosphere Region (instead of Reserve). This change was made for several reasons: 1) the term “reserve” has a legal meaning in Canada, relating to the assigning of lands for Canada’s Indigenous communities; 2) the term has other English meanings that imply that a “reserve” is an area that is somehow protected or preserved from development, which is incorrect for most of the MABR’s area; and 3) the area is more accurately a region than a reserve by geographic definition.

In addition to the Roundtable, faculty and students at VIU initiated the development of a new research institute with a focus on creating new applied, community-based, participatory research initiatives that connect issues in the community to undergraduate and graduate student researchers. The Mount Arrowsmith Biosphere Region Research Institute (MABBRI) was founded in mid-2014 and to date has funded the involvement of over 120 students in a wide variety of research projects. Highlights include working with the City of Parksville on a Community Park Master Plan and Parks and Trails Plan, with the Snaw-Naw-As First Nation on a “Garden of Spiritual Healing”, eelgrass and bull kelp monitoring projects, and various other marine and terrestrial based restoration and mapping projects. To finance this, the Institute has been successful in attracting substantial funding from a wide variety of foundations and government sources.

The new management structure and the activities being conducted by the Institute have thus led to significant advancement in achieving the mandate and goals of the MAB Programme. The management structure – a roundtable – is recommended for other biosphere reserves grappling with issues of contested space and jurisdiction. All roundtable members, which at present do not include the authors of this article, recognize that the seven First Nations with unceded territory on the east side of Vancouver Island where the MABR is defined hold the closest ties to the land and water and the strongest jurisdiction. The members also recognize that while there is very little land in the MABR that is classified as parkland by any level of government, creative ways need to be found to benefit the human/nature connection. Taking a solution-focused approach has also worked well for the roundtable, as has the adoption of a meeting “Culture of Engagement” document, which states:

“At the Mount Arrowsmith Biosphere Region Roundtable, we engage with one another and with the land and culture around which we gather in the following ways:

- 1) We acknowledge the Traditional Territories within which our meetings are held.
- 2) We demonstrate respect for Indigenous protocol as individuals and as a group, upholding the MABR’s Guiding Principles for Collaboration with First Nations.
- 3) Our communication is open, honest, transparent and unemotional, and we are comfortable and willing to discuss potentially sensitive topics.
- 4) Before entering the gathering place, we hang bad feelings on a nail outside the door.
- 5) We work together to reach common goals for the betterment of our region.
- 6) We leave personal wants outside.
- 7) We are open to new perspectives, we seek to understand where each person is coming from, and we share information and beliefs in an environment of trust.
- 8) We listen to each other and work together to ensure that everyone has an opportunity to speak.
- 9) We keep personal stories that are shared in confidence inside this room.
- 10) We arrive and depart feeling at ease, and we look forward to meeting again.”

The MABRRI has also been a significant feature in the new success of the MABR. The energy and endless capacity of students to engage in community-based applied research



has enabled the MABR to raise its profile among both the world-wide biosphere reserve scientific community and, more importantly, the local community. Vancouver Island is known to be a prime destination for retirees from across Canada and the United States, and many of these individuals bring decades of experience relating to the human/nature connection. MABRRI has accessed some of this knowledge through the development of Technical Advisory Committees which bring local residents in to advise students on project development and protocols, and increasing these ties to community is the major focus of MABRRI in 2018/19.

### **Lessons Learned Over 20 Years**

1. Margaret Meade stated that “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.” This was true with respect to achieving recognition of the MABR. However, moving forward after recognition without any dedicated funding posed challenges that in hindsight perhaps should have been dealt with differently. The approach adopted was to try to obtain funding directly from its own initiatives, whereas perhaps the focus should have been on establishing different and more appropriate connections and collaborations within the community to allow engagement of a broader group in this endeavour.
2. Funding (or the lack of funding, more specifically) was always an issue for the MABR, even before it became designated as a biosphere reserve. It is difficult to attract volunteer resources when the first agenda item is always “fund raising,” and trying to develop a different approach might in hindsight have been desirable from the outset.
3. The overarching biosphere reserve concept can be difficult for many to grasp and

identify with: working toward achieving sustainability is a more nebulous goal than undertaking a specific activity, such as building a fish ladder or removing invasive species. In the MABR Area, there are many existing groups working on important, specific, task oriented initiatives, and instead of duplicating these, a biosphere management committee is better suited to: 1) act as a coordinating umbrella organization over a variety of community initiatives, and so support many initiatives and identify where gaps may exist in the overall achievement of cultural, economic and environmental sustainability; and 2) to participate in international in long-term monitoring activities efforts, such as GLORIA and with Smithsonian Biodiversity monitoring protocols. Communication on these facts is extremely important, and should be a major component of any biosphere reserve's activities to ensure maximum buy-in to the concept. The MABF in its early stages neither had the capacity nor resources to achieve this as successfully as was desired.

4. It is important to think and act outside the “box of convention” as demonstrated by Dr. Jamieson's success in achieving initial MABR recognition. While acknowledging that community projects require buy-in by society in their initial phases to be acceptable to key players, community inclusion does not necessarily need to follow established formats. Establishing the MABR in the early 2000s was in hindsight again too constraining. It is a perhaps one of the reasons why UNESCO altered the designation application to be very specific about the nature of community level support desired. In British Columbia, societies and not-for-profit groups generally have an open membership that is achieved through registration or the payment of a membership fee. For the MABR, in an effort to be as inclusive as possible, membership was open to all with only a relatively inexpensive annual membership fee that allowed for BOD take-over with minimal effort. For the first 14 years when the MABF had no significant funding, this was not an issue, largely

as membership was low (6 to 20 members per year). However, once some significant operational funding was realized in 2008, members from other more advocacy-focused groups in the community saw this as a way to advance their own specific interests. An open membership process allowed the entire Board of Directors of the MABF to be changed at the 2009 AGM, i.e., to have the agenda of the society replaced and determined by a new slate of elected directors that were not focused on achieving either UNESCO's requirements or the BR mandate. Again in hindsight, society membership should thus have been restricted. This kind of open governance structure is therefore not recommended for societies that hope to achieve a functional process for BOD appointment and replacement. Unpredictably, stable funding under these circumstances did not support the achievement of required identified BR objectives. The new MABR management structure now being used has avoided this problem by implementing a roundtable governance model (i.e., no open membership, and with both appointed directors and community advisors to the board) that meets to discuss issues of shared interest and to create opportunities for the Research Institute.

5. In Biosphere Reserves a poor level of funding can hinder the acquisition of committed volunteers and thus BR actions as they attempt to meet MAB objectives outlined in the Seville Strategy (1996) and the Madrid Action Plan (2008-2013). In the case of the MABR, there was burn-out among the few committed directors, and frustration among experienced directors because of the lack of resources to achieve what they desired to do. The result was great director turnover and a lack of capacity, with the resulting inability to really achieve the full potential of the biosphere reserve concept.
6. Biosphere Reserves require strong local leadership and ties to local governance in

order to realize and implement the BR concept. If local governments do not value the BR as a community asset, it will be less likely to achieve outcomes over time that will be satisfactory to UNESCO. In the case of the MABR, the value of the BR concept was recognized by local communities, even with all the challenges that occurred after 2009, which was why a new, more functional management model was ultimately developed for the MABR. With strong municipal government support and the active involvement of the local academic research community, i.e., MABBRI and Vancouver Island University, the MABR has overcome its early operational difficulties and has now become an effective, dynamic, functional organization.

## **Summary**

This report outlines the developmental history of the MABR from its conception in the early 1990s through its evolution into an effective, functional biosphere region in 2016. There have been many successes and challenges over this time period, but the end result is positive and the momentum is now in place to lead to significant future achievements. While many challenges remain, notably around ongoing funding, there is widespread community support for this biosphere region and many active projects are now underway. It is hoped that by documenting our experiences, other biosphere regions (reserves), and those under consideration can learn from our setbacks and achievements.

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Dr. Glen Jamieson was a federal Fisheries and Oceans research scientist when he initiated the Mount Arrowsmith Biosphere Reserve initiative in 1993, initially in stock assessment and later in conservation biology, before retiring as an emeritus scientist in 2008. After 2009, while no longer directly involved in MABR management, he participated “behind the scene” in helping to achieve a new management structure to overcome the problems described above, and continues to support the MABR in whatever way he can.

Karen Hunter is a biologist who was hired in January 2011 as the MABR Coordinator. When funding terminated in 2012, she became a Director of the MABF where she represented MABR at regional, national, and international levels, and led the transition of the MABR to its new administrative home in 2014. Karen has been employed as the Climate Response Program Lead at Fisheries and Oceans Canada, Science Branch, since 2012.