

Sustainability

Community

Partnership

# Mount Arrowsmith:

Building a Biosphere Reserve,

Fostering a Community



Canadian Heritage National Parks Directorate

Sherry Sian B.Sc., MEdes Candidate

October 29, 1999

## ACKNOWLEDGEMENTS

This exploration of a grassroots approach to Biosphere Reserve planning was made possible through the assistance and generous support of several agencies and individuals.

Thank you to the National Parks Directorate of Parks Canada for providing the travel funding that made it possible for me to visit the Mount Arrowsmith region. I am also grateful to the Faculty of Environmental Design at The University of Calgary for their ongoing financial and moral support for my Master's research, of which this study is a part.

Thank you to my colleagues at the Faculty of Environmental Design - Kim Ayrton, Maureen Hill, Lesley Matthews, Michael Quinn and Dixon Thompson - for their invaluable advice and critical review of earlier drafts.

Thank you to Jim Birtch at the National Parks Directorate and Glen Jamieson of the Mount Arrowsmith Biosphere Foundation for their continued guidance, enthusiasm and feedback throughout the preparation of this document. A heartfelt thanks also goes out to all the extraordinary, anonymous contributors from the Mount Arrowsmith Biosphere Region - their experiences and insights are the heart and soul of this case study. Their ongoing efforts and successes are an inspiration to us all!

Sherry Sian

## FORWARD

This report examines the development process for the proposed Mount Arrowsmith World Biosphere Reserve (MAWBR). The case study documents the experience of a nascent Biosphere Reserve as local interests coalesce around the Biosphere Reserve concept to promote inter-jurisdictional co-operation and partnership for more effective, holistic management. The implications of the shift away from a predominantly “top-down” agency driven process to a “bottom-up” community initiative are also illustrated. The National Parks Directorate offers this study as guidance for other proposed Biosphere Reserves taking a similar approach and for any other potential partners (i.e., federal agencies and/or departments, provincial agencies and/or departments, municipalities, First Nations and industries such as development, oil and gas, mining, forestry, and fisheries) sharing an interest in long-term sustainability.

Requests for further information on issues discussed in the report may be directed to:

Glen Jamieson  
Mount Arrowsmith Biosphere Foundation  
P.O. Box 217  
Parksville, British Columbia  
V9P 2G4

phone: (250) 756-7223  
fax: (250) 756-7138  
e-mail: [mabf@nanaimo.ark.com](mailto:mabf@nanaimo.ark.com)



## CONTENTS

ACKNOWLEDGEMENTS	i
FORWARD	ii
INTRODUCTION	1
METHOD	2
<b>Methodological Considerations</b>	<b>2</b>
<b>Literature Review</b>	<b>2</b>
Published Documents	2
Archival Documents	2
Individual Papers	2
<b>Site Visit Interviews</b>	<b>3</b>
<b>Issues Identification</b>	<b>3</b>
<b>Retrospective</b>	<b>3</b>
A SENSE OF HOME	4
<b>Location</b>	<b>4</b>
<b>Natural Wonders</b>	<b>4</b>
Flora	4
Fauna	5
<b>Human Settlement and Economic Development</b>	<b>5</b>
<b>Zoning for Sustainable Landscapes</b>	<b>6</b>
THE EVOLUTION OF A BIOSPHERE RESERVE	8
<b>The Impetus</b>	<b>8</b>
<b>Partnership Building</b>	<b>9</b>
<b>Overcoming Challenges</b>	<b>10</b>
<b>Projects for Sustainability</b>	<b>12</b>
<b>National Linkages</b>	<b>13</b>
<b>Nomination</b>	<b>13</b>
<b>Designation</b>	<b>14</b>
THE PROCESS REVISITED	16
<b>Appreciating Context</b>	<b>16</b>
<b>Assessing Local Acceptance</b>	<b>16</b>
<b>Focussing on Holism</b>	<b>16</b>
<b>Fostering Inclusiveness</b>	<b>17</b>
<b>Internalizing the Vision</b>	<b>17</b>
<b>Maintaining Neutrality</b>	<b>17</b>
<b>Structuring Decision-Making</b>	<b>17</b>
CONCLUSION	19
REFERENCES	20
APPENDIX I	21

## INTRODUCTION

Biosphere Reserves are internationally recognized areas of natural and cultural significance to promote and demonstrate a balanced relationship between humans and the biosphere (UNESCO, 1996). They are designated by the United Nations Educational, Scientific and Cultural Organization (UNESCO) within the framework of Man and the Biosphere Programme. Biosphere Reserves strive to be sites of excellence through the fulfillment of the following roles on a regional scale: the **conservation** of landscapes, ecosystems, species and genetic variation; socially, economically and ecologically **sustainable development**; and **logistic support** for demonstration projects; environmental education and training; research and monitoring related to local, regional, national and global issues of conservation; and sustainable development (Batisse, 1990).

Traditional, top-down governance mechanisms for sustainable land management offer little to efficiently and effectively resolve tensions between environmental quality, economic development and human equity. Biosphere Reserves offer hope for addressing pluralistic goals within the broader context of regional sustainability. The democratic, co-operative approach to planning adopted by the proposed Mount Arrowsmith World Biosphere Reserve (MAWBR), unprecedented in the history of the Canada/MAB Programme, marks a new era best described as partnership building for sustainability.

An assortment of community driven initiatives over the past six years has demonstrated a clear commitment by the Parksville - Qualicum Beach area to fulfill Biosphere Reserve objectives. Local residents initiated a process for reaching out to all sectors to foster productive working relationships and rebuild a sense of place. Intent on achieving UNESCO Biosphere Reserve

designation, community members created the management infrastructure needed to co-ordinate Biosphere Reserve activities. The Mount Arrowsmith Biosphere Foundation (MABF), created in 1996, advocates the Biosphere Reserve concept to create a neutral forum for dealing with emergent environmental issues more proactively in the coming years.



*Aerial view of Mount Arrowsmith.*

## METHOD

### Methodological Considerations

A case study approach was adopted for this project. A comprehensive case study relies on multiple sources including: published literature, archival documents, individual papers, and site visit interviews. The disparity among these sources is the classic case of a blind man describing an elephant where the description is confined to the part of elephant the blind man is touching at the time. The description of any part of the elephant (i.e., trunk, tail, or leg) is not wrong but a matter of perspective. Each source reflects the outlook of a particular individual or group. These differences have important implications for analyses, interpretation and synthesis of material. The traits of alternative source materials, summarized in Table 1, highlight important considerations in effectively preparing this case.

Ultimately, integrating multiple sources is difficult only insofar as the sources are not mutually supportive. This challenge arose while documenting the MAWBR development process. The most notable difficulty arose during the integration of all the sources due to discrepancies among and between the interviews and the available documentation.

### Literature Review

A literature review identified published documents, archival documents, and individual papers describing or discussing some aspect of the MAWBR development process.

#### *Published Documents*

The published literature consists of: two papers contained in the *Leading Edge '97 Conference Proceedings*, the draft proposal posted on MAWBR's web site, and a brief article in issue Number 8 of the Canada/MAB Newsletter.

#### *Archival Documents*

Archival Documents are more limited including minutes from the Canadian Biosphere Reserve Association inaugural Meeting August 14-15, 1998, and the MAWBR nomination document.

#### *Individual Papers*

No individual papers were available.

**Table 1. Characterization of sources.**

#### Site Visit Interviews

Source	Characteristics
Published Documents	Intended for the public, published documents tend to be highly filtered and reliable. Several iterations of editing by agencies or partners discussed in the document typically eliminate any contentious statements and minority opinions.
Archival Documents	As an internal record of events for an organization, archival documents tend to be less filtered, containing a few details regarding controversial events or decisions. The account may not be agreeable to all participants involved, however they are important from an operational perspective.
Individual Papers	Individual papers are largely unfiltered and reflect insights into participant perspectives delimited by individual bias. The perspectives presented need not be resolved given that they tend to be presented as opinions of the author. Individual papers may appear as editorials or personal reflections in journals that are published and refereed or not refereed or may be personal notes.
Interviews	Interviews vary in the nature and extent of filtration of events and reliability or credibility of respondents. Profoundly affected by numerous variables, interviews may vary according to: individual recollection of the events; the extent, timing of involvement and duration of involvement in the organization (i.e., they convey the perspective of a participant or an observer); and any vested interests of some or all respondents.

Interviews were scheduled between January 13 and February 4, 1999. Glen Jamieson, the MABF President, contacted the interviewees and requested their participation in this study. These individuals were selected for their past or current involvement with the MABF, the diversity of stakeholder perspectives they represented, and their willingness and availability to participate in this study. Unfortunately, some members of the MABF (i.e., First Nations representatives and Forestry representatives) were not available for interviews. This limitation may have resulted in oversights regarding important aspects of the development process relevant to these stakeholders.

### Issue Identification

The documentation and interview transcripts were analyzed for content. Latent content analysis through coding of interview transcripts identified common recurrent themes such as site description, site significance for designation, aspects of the planning process, stakeholder perspectives, operational issues and barriers to implementation. Refer to Appendix I for an overview of this preliminary assessment and general observations.

### Retrospective

Synthesis of available documentation and interview transcripts created a critical history of the development of the MABF. Inconsistencies, arising from inaccurate chronologies and insufficient detail to ascertain whether an event occurred after the publication of existing literature, were eliminated through cross-referencing and relying on the most reliable source (i.e., published or archival documents over interviews given the multitude of factors that influence the reliability of interviews). Process details identified only during interviews were included if substantiated by other interviews.

After use in this case study, the interview transcripts were stored in a locked filing cabinet for subsequent use in a larger national study entitled, "Planning to Manage a Functional Biosphere Reserve in Canada". Upon their

use in this secondary study the transcripts will be shredded to maintain the confidentiality of the respondents.

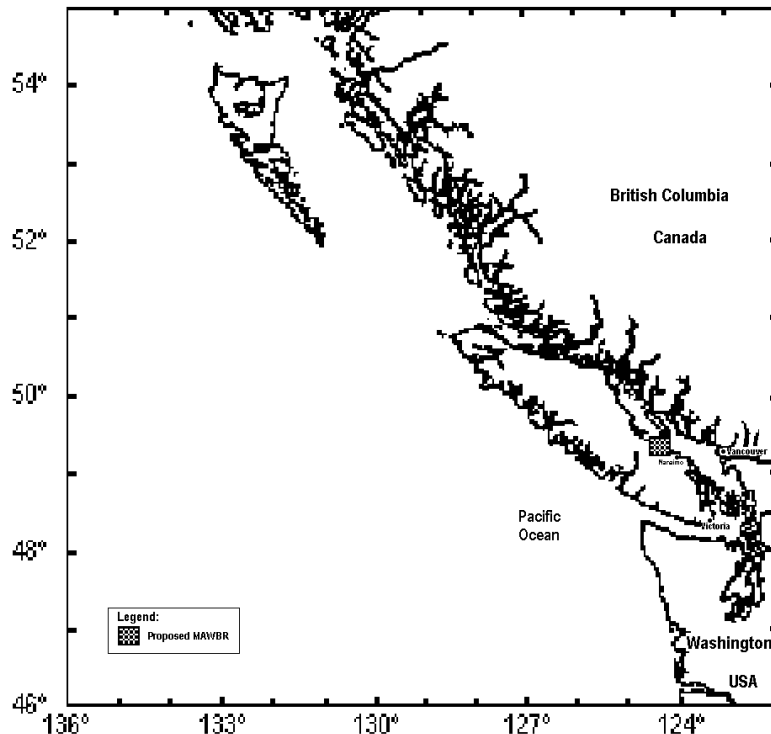
The draft document was submitted to MABF for feedback in two iterations on February 22, 1999 and October 10, 1999. Jamieson's comments were used to revise the final document before submission to the National Parks Directorate.

## A SENSE OF HOME

### Location

The proposed MAWBR is situated on south-eastern Vancouver Island, British Columbia, almost due west of Vancouver and north of Nanaimo. The proposed site is 792 km<sup>2</sup> (MABF, 1997a). Four watersheds draining Mounts Arrowsmith and Moriarty into the Strait of Georgia and a marine component extending halfway across the Strait to include the Nanoose Peninsula, and the Ballenas/Winchelsea Islands Archipelago constitute the proposed site.

Figure 1. *A location map of the proposed MAWBR*



### Natural Wonders

Located in the Pacific Maritime ecozone, the proposed MAWBR includes a range of habitats from alpine at the tops of Mount Arrowsmith, Cokely and Moriarty to marine estuaries at the Strait of Georgia. The combined landscape complexity, maritime climate, and rain shadow, on the eastern side of the Vancouver Island, result in tremendous biological diversity.

### Flora

A mosaic of vegetation zones occupy the proposed MAWBR. Western hemlock predominates at mid-elevations while mountain hemlock and yellow cedar occur at the highest elevations. Douglas-fir predominates at lower elevations, and grand fir and red cedar mix with Douglas-fir in wetter habitats. The proposed MAWBR also approaches the northern limit of the range of arbutus, Garry oak, and the hairy manzanita.

The forests are predominantly second growth due to extensive logging around the turn of the century. Stands of old-growth forest remain nestled in isolated, deep ravines. The Winchelsea/Ballenas Archipelago, of mostly uninhabited islands contain some of the last remaining undisturbed Coastal Douglas-fir ecosystem (less than 1% remains in a relatively unaltered condition) (Jamieson, 1997b).

Trillium, Easter lily, coast piperia, larkspur, and hundreds of other flowering herbs splash the forests, rocky outcrops and upper beach shore with colour in the spring. Several other red-listed, blue-listed and very rare plant species have also been identified including the Water-plantain buttercup of East Ballenas Island (CDC, 1999).

The Conservation Data Center (CDC) recorded notable rare treasures in the region including the red-listed Garry Oak-Arbutus community, and an undescribed ecosystem type for the Coastal Douglas-fir, known as the Shore Pine-Cladina-Kinnickinnick plant community (CDC, 1999).

### Fauna

The proposed MAWBR is on the Pacific flyway, offering critical migration and wintering habitats for over 220 avian species (Jamieson, 1997b). Over 100 thousand migrating waterbirds (i.e., the Brant, American Wigeon, Mallard, Goldeneye, Harlequin Duck) use the estuaries and coastal wildlife management area annually (MABF, 1997b). Trumpeter Swans use the estuaries as wintering areas as do songbirds such as the Western Meadowlark. Hundreds of Bald Eagles exist along salmon streams in the fall and winter, and nest on both river estuaries. Pelagic Cormorants, and Glaucous-winged Gulls breed on small islets of the Ballenas/Winchelsea Islands. In summer, the estuaries are important to the Savannah Sparrow and Mountain Bluebird.

Extensive wilderness areas support all upland mammal species found on Vancouver Island. Mammalian species include Columbia blacktail deer, black bear, cougar, Roosevelt elk, martin, fisher, and river otter. Even the endangered Vancouver Island marmot has been reported in the alpine area of Mounts Arrowsmith and Moriarty (MABF, 1997a).

The Englishman and Little Qualicum Rivers support five species of salmon (i.e., chum, pink, coho, chinook and steelhead) and cutthroat trout (MELP, 1996). Both rivers, remain two of the top ten steelhead and cutthroat trout rivers in British Columbia (MABF, 1997a). The estuaries are important acclimation areas for smolts as they adapt to the marine environment and for adults returning to the rivers to spawn and die. Enos Lake also provides refuge for two undescribed endemic fish species (MABF, 1997 b).

The Ballenas/Winchelsea Islands are home to many marine mammals. Harbour seals are year-round residents. California and Steller sea lions, and elephant seals can be seen in the winter and spring (MABF, 1997a). Orcas, Pacific white-sided dolphins, Dall porpoises, and humpback and grey whales also occasionally pass along the coast (MABF, 1997a).

#### Human Settlement and Economic Development

The Nanoose and Qualicum Bands of the Coast Salish Nation, to the

south and north respectively, inhabited the area from prehistoric times. Middens along the shore offer a reminder of days long passed.

Mount Arrowsmith, formerly called Kuth-Kah-Chulth (meaning “that which has sharp pointed faces”) by the Tse-saht and Nitinat people of the Alberni area, was renamed in the 1850’s (Elms, 1996). Captain Richards of the H.M. S. Plumper, gave the prominent landmark a new name, to honor the English cartographers, Aaron Arrowsmith and John Arrowsmith (Elms, 1996).

European settlement followed in 1870 (Elms, 1996). The Esquimalt and Nanaimo Railway Company Land Grant transferred the entire east side of Vancouver Island and accompanying timber and mineral rights to the railway in 1871 as compensation for its development costs (MABF, 1997a). This grant included the entire MAWBR.

In 1904, the *Vancouver Island Settlers’ Rights Act* passed in the Provincial Legislature. This gave settlers, proving occupation and improvement of lands within the Esquimalt and Nanaimo belt, prior to enactment of the Settlement Act (1884) the right to obtain Crown Grants in fee simple (MELP, 1975). This effectively dispersed lands among many private interests and individuals.

Today, nearly all land in the proposed site is privately owned by forestry companies (i.e., Timber West Forest Ltd, MacMillan-Bloedel Ltd.), a sharp contrast to the west side of the island where crown land is held in public trust and leased to the forestry industry (Jamieson, 1997b). This situation makes south-east Vancouver Island unique with virtually no crown-owned forest land. Extensive logging, and long periods of forest renewal have moderated the role of forestry in the regional economy. Forestry is the second major employer in the region after tourism and service industries (MABF, 1997b).

Increasing appreciation of the region’s aesthetics, from snow covered mountains to exceptional beaches, have created a haven for tourists and retirees alike. Transportation corridors (i.e., provincial, municipal, and forestry roads) add to the accessibility of the area, making it ideal for mountain biking

and hiking. Other recreational activities such as wildlife viewing, skiing, climbing, fishing and camping serve as an attraction. Changing regional demographics have increased demand for facility-based recreation such as golf. Other amenities to service tourists and the aging population continue to rise. Tourism and service industries are the principle employer of the locals.

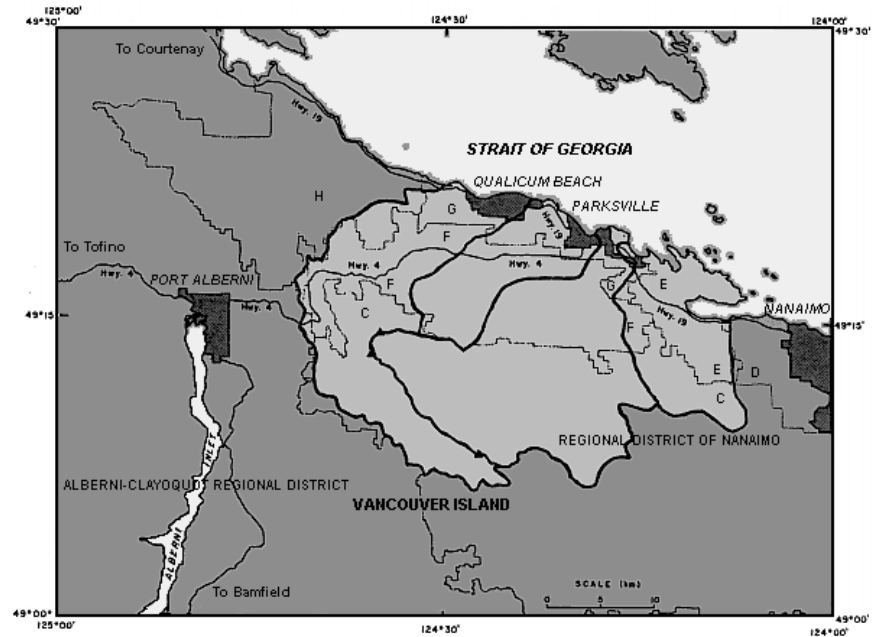
Communities throughout the proposed MAWBR have multiplied and expanded. Today, they include the City of Parksville (established 1945), the Town of Qualicum Beach (established 1942), and in the Regional District of Nanaimo (RDN), the Villages of Coombs, Dashwood, Errington, French Creek, Hilliers, and Nanoose Bay. The combined population, estimated at 38,000, resides in the few kilometres adjacent to the coast and Highway 4, the main mid-island route across Vancouver Island.

The RDN includes virtually all land in the Biosphere Region outside Parksville and Qualicum Beach. The District is divided into Areas, and all or parts of Areas C, E, F, G and H occur in the proposed MAWBR as illustrated in Figure 3. A few uninhabited square kilometres of the watershed are in the adjacent Regional District of Clayoquot-Alberni (RDCA). Mount Arrowsmith Regional Park, although within the RDN, is administered by the RDCA because of its proximity to Port Alberni (MABF, 1997a). The Islands Trust manages the Winchelsea/Ballenas Islands (Jamieson, 1997a).

**Figure 3. Areas of the Regional District of Nanaimo Zoning for Sustainable Landscapes**

The proposed MAWBR accommodates multiple uses through zoning that

identifies different levels of protection or development essential for long-term



sustainability. These zones overlap with a multitude of jurisdictions - federal, provincial, and private as summarized in Table 2 and depicted in Figure 4.

**Table 2. A summary of the aerial extent of zones and accompanying land ownership (MABF, 1997b)**

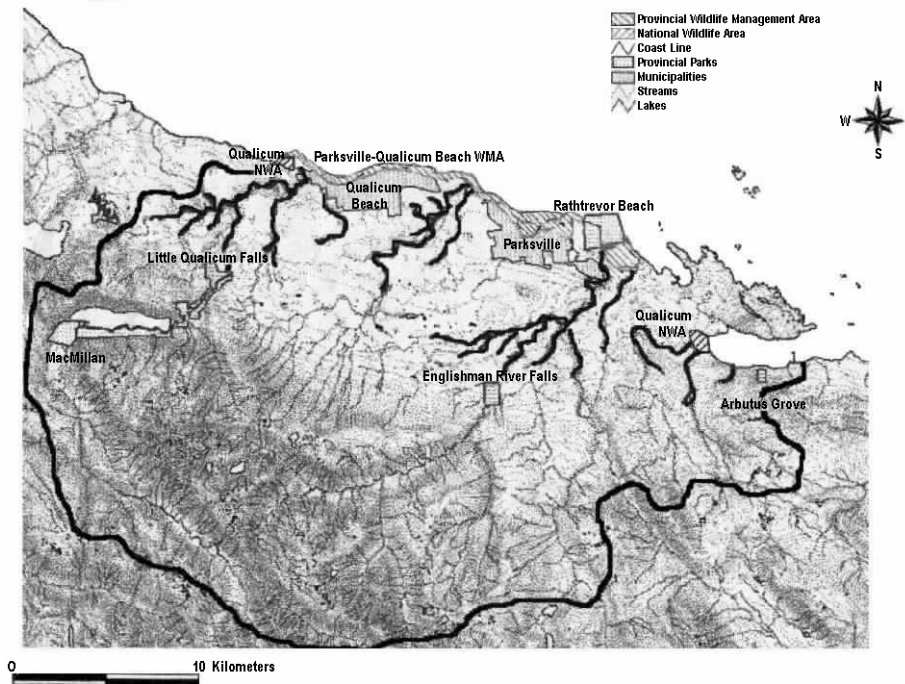
Codes: T - terrestrial, M - marine

Figure 4. Core and buffer areas of the proposed MAWBR

Land Ownership by Percentage				
Zone	Area (ha)	Federal	Provincial	Private
Core	961 (T) 899 (M)	7%	93%	0%
Buffer	1,500 (T)	1%	1%	98%
Transition Zone	~77,000 (T)	0%	2%	98%

Core area(s) offering recognized protection include provincial parks and the 19 km of marine foreshore and estuaries protected as national or provincial wildlife management areas (i.e., Parksville/Qualicum Beach Wildlife Management Area, Qualicum National Wildlife Area, and Rath Trevor,

Englishman River Falls, Little Qualicum River Falls, and MacMillan provincial parks). The National Wildlife Areas are under the jurisdiction of the Canadian Wildlife Service (CWS) while the B.C. Ministry of Environment, Lands and Parks (MELP) assumes responsibility over Provincial Wildlife Management Areas and Provincial Parks. The buffer zone, managed and protected to conserve the core, includes the riparian strips along fish-bearing rivers and creeks managed by the Department of Fisheries and Oceans (DFO) and MELP for salmonids. The zone of co-operation exists where perturbation of natural ecosystems is most likely and requires ongoing promotion of compatible land uses to sustain the core and buffer.



## THE EVOLUTION OF A BIOSPHERE RESERVE

### The Impetus

The east side of Vancouver Island from the Campbell River south has one of the highest rates of population growth in Canada, with a current annual growth rate of about 7% (Jamieson, 1997b). This rate of development is straining the infrastructure and resources of communities, including the Parksville - Qualicum Beach area. Sensitive environments, such as the Englishman River Estuary, were under development pressure that threatened their ecological integrity. This estuary had been the target of several development proposals until 1992.

A proposal for an upscale, luxury RV campsite in the early 1990's prompted several community groups to lobby the government for protection of this sensitive estuary ecosystem. In October 1992, after three years of lobbying, a \$2.7 million purchase of 64 hectares of estuary and forested lands was jointly supported by The Nature Trust and the Ministry of Environment, Lands and Parks (MELP) (MABF, 1997a). In April 1993, this area, along with 17 km of adjacent coastal foreshore, was incorporated into the Parksville - Qualicum Beach Wildlife Management Area, the largest marine wildlife management area in British Columbia (Jamieson, 1997a).

Subsequent to this designation, an environmental lobby group, the Society for the Protection of the Englishman River Estuary (SPERE) realized while most of the physical estuary was now saved from development, potential degradation of the estuary was still possible. An estuary requires the sustained flow of acceptable, quality water to function, and this was not guaranteed. Protection of the natural functioning estuary was part of a much larger issue - overall watershed management! Stresses, summarized in Table 2, associated with intensive or poorly managed land uses were affecting local ecosystems and human activities. A more co-operative approach to management of ecosystems appeared desirable to deal with the complex interactions of multiple land uses of urbanization, agriculture, forestry, fishing

and hunting.

**Table 3. A summary of the land use issues and their impacts on the Parksville - Qualicum Beach District (MABF, 1997b)**

Land Uses and Associated Impacts
<ul style="list-style-type: none"> <li>• Rapid urbanization with the development of residential sub-divisions, golf courses and light industrial/retail facilities and subsequent destruction or fragmentation of ecosystems and water pollution from agricultural and urban run-off;</li> </ul>
<ul style="list-style-type: none"> <li>• Relogging of second growth timber, with subsequent potential negative effects on seasonal water discharge and water quality;</li> </ul>
<ul style="list-style-type: none"> <li>• Development of agricultural lands and resulting stream channelization;</li> </ul>
<ul style="list-style-type: none"> <li>• Increased recreational activity and ecotourism, with potential damage to sensitive ecosystems; and</li> </ul>
<ul style="list-style-type: none"> <li>• Increased negative human:wildlife interaction, particularly with 1) large species such as elk and bear and 2) species with very specific habitat needs, such as migrating waterfowl and over-wintering species.</li> </ul>

The risk of irreparable harm to the ecological integrity of the area prompted SPERE, under the leadership of Jamieson, to propose the establishment of MAWBR in 1993. Jamieson contacted managers of other Canadian Biosphere Reserves requesting information about their establishment process and the structure for their Biosphere Reserves. Geographical distances between existing Biosphere Reserves and Vancouver Island (average standard deviation: 2290 (1047 km)), precluded close collaboration (Jamieson, 1997a). Furthermore, the national MAB administration did not yet have an effective process to help community-driven Biosphere Reserves.

### Partnership Building

The success of the proposed MAWBR initiative depended on the support of relevant political jurisdictions, so Jamieson requested permission to make presentations to the elected bodies of the Regional District of Nanaimo, Parksville and Qualicum Beach in January and February of 1993. The intent of this presentation was to introduce the Biosphere Reserve model as a means for addressing the multitude of problems faced in the Parksville - Qualicum Beach area (e.g., water issues and growth issues), and perhaps spark interest in their future involvement with the Biosphere Reserve initiative (Jamieson, pers comm.).

However, this was not to be. The lack of response and interest at the meeting suggested the timing was all wrong. The Biosphere Reserve initiative was inconsistent with the political priorities of the day which, in the early 1990's, still focused on facilitating increased population growth (Anonymous, pers comm.). The garnering of local political support was delayed until the political orientation of the elected councils became more receptive to addressing sustainability issues.

This lack of political support prompted Jamieson to focus on building cross-sector communication links and developing projects to demonstrate regional economic, social, and environmental benefits of the Biosphere Reserve approach. At the time, Jamieson met regularly with a core group of four individuals to identify possible research and education initiatives consistent with the Biosphere Reserve concept. It quickly became apparent that a broader cross section of stakeholders was desirable to show local residents and elected councils that the MAWBR proposal was not merely another "environmentalist" initiative and it represented a genuine opportunity to establish working partnerships.

At this point, Jamieson began to give Biosphere Reserve presentations for a wide range of community groups (naturalist and environmental groups, Rotarians, church groups, historical societies, etc.) to increase awareness about the Biosphere Reserve initiative. Jamieson also began writing articles in the local newspaper describing activities undertaken in other Biosphere

Reserves around the world (Jamieson, 1997a).

A detailed proposal was prepared, explaining the Biosphere Reserve concept and describing specifics of the proposal: the area involved, physical and ecological attributes of the area, human demographics and environmental impacts, and a process for acquiring Biosphere Reserve designation (Jamieson, 1997a). All local elected politicians, environmental groups, First Nations, relevant federal and provincial government agencies, and major forest companies received the proposal (MABF, 1997a). Copies of the proposal were also sent to Biosphere Reserve managers across Canada.

Historically, local recipients of the proposal (e.g., community groups, elected representatives, government agencies and businesses) had little interaction with each other, so the core group organized a meeting to bring representatives of the different groups together (Jamieson, 1997a). This information meeting introduced stakeholders to each other, presented the Biosphere Reserve concept, and initiated the beginnings of a Biosphere Reserve Management Committee, common to most established Biosphere Reserves.

Twenty-five of the thirty individuals invited attended. Stakeholder meetings took place every 3-4 months for about 30 months, and were most productive in the first year (Jamieson, 1997a). The meetings featured two stakeholder presentations per session to acquaint other agencies and organizations with their interests and plans (Jamieson, pers comm, 1999).

At the second meeting, Dr. Leiff, past-President of Waterton Lakes Biosphere Reserve, gave a presentation on the Waterton Lakes experience, and encouraged the participants to develop draft objectives and a vision statement for the proposed MAWBR (Jamieson, 1997a). Leiff assisted with the development of a committee structure and the visioning process. He suggested the formation of a registered society that blended stakeholder interests. This was to be achieved through the election of eight Directors from the society's membership and the appointment of seven Directors to

represent significant stakeholders. Leiff then led the visioning process by asking participants to describe their vision of the Parksville - Qualicum Beach area in 100 years. Participants took these ideas and collectively wrote them into a vision statement that was later accepted by the organization. From this vision statement, participants generated a set of objectives, presented in Table 4.

### Overcoming Challenges

By the end of 1995, attendance at meetings had dropped from about twenty-five to ten individuals. The process of getting to know each other had run its course. This decline was attributed to scheduling difficulties, differences in decision-making power and accountability among the representatives, conflicting ideologies, and too much talking and not enough activity. This bred uncertainty regarding the commitment of stakeholders, the purpose of the Biosphere Reserve and capacity of the Biosphere Reserve to achieve collectively defined goals.

The scheduling of meetings was the primary challenge. Meetings had to be held during the day to accommodate the government agency and industry participants, but these often excluded elected councillors who had to work at other full-time jobs to supplement their small salaries. In the evenings, councillors often carried out official duties, and since different councils met on different days, no time seemed convenient for everyone. The unavoidable result was a steady stream of alternates from meeting to meeting. Furthermore, the alternates did not have the authority to speak for elected officials nor the companies they represented, functioning more as observers. The inconsistency in representation and lack of decision-making power among the alternates caused early meetings to be unfocussed.

**Table 4. Objectives for proposed MAWBR (MABF, 1997a)**

Foci	Objectives
Conservation	<p>a) Define objectives for core areas (e.g., maintain riverine and stream flow rates and water quality so as to maintain normal seasonal fish and estuarine productivity).</p> <p>b) Make recommendations as to how these objectives can be achieved (e.g., determine potential impacts of different activities on core areas).</p>
Education	<p>a) Identify and determine conservation values related to sustainable development (e.g., importance of a balanced ecosystem in achieving sustainable production).</p> <p>b) Identify the processes and activities by which these values might be conveyed to the public, agencies and business operating in the MAWBR (e.g., development of school curricula relating to forestry, fishery and wildlife topics).</p>
Research and Monitoring	<p>a) Identify biological, economic and social initiatives which will lead to sustainable development (e.g., identify data gaps and encourage studies to fill them).</p> <p>b) Establish baselines through monitoring to see if objectives are being achieved (e.g., monitor river flow rates or area of urban development to document trends over time).</p>
Public Involvement	<p>a) Ensure that all significant players are represented on the MAWBR Management Committee.</p> <p>b) Ensure that the MAWBR Management Committee remains open to hearing concerns expressed by the overall community.</p> <p>c) Ensure that the MAWBR Management Committee's decisions and operations are available and conveyed to the general public.</p>

The differences in perspective between some groups, summarized in Box 1, had also become obvious. Forest industry representatives, which had always been concerned that active participation might influence what they could do on their own land, gradually adopted the position of observers, enabling the remaining participants, mostly environmental group representatives, to determine direction. The MABF members worried that the lack of forest industry's participation would cause discussions to slip into a

sustainability of natural values in the public interest; however they are also under intense pressure to urbanize as new retirees move into the area and the population grows.

#### **Forestry** (*MacMillan-Bloedel Ltd. and Timber West Ltd.*)

The forestry companies operating within the proposed Biosphere Reserve region have been invited to select their own representatives to sit on the MABF executive. In the past, the company designates have been a good indicator of how the MAWBR proposal was being perceived. Early in the planning process, they hired a public relations consultant to represent them because the MAWBR proposal was thought to be a possible threat to logging that might ultimately affect the bottom line. More recently, the forestry companies have not appointed representatives, as they felt this might be perceived as giving support, but they have expressed an interest to be present as observers. However, since planning to solicit their greater involvement is frequently discussed, to date they have not been notified of meeting dates. The companies recognize that long-term partnerships for land management may be necessary given the multiplicity of development pressures in the area. Furthermore, forestry companies are on the verge of logging the re-growth that is now nearly a harvestable size, and from a public perception standpoint recognize they must appear willing to collaborate with other agencies for the long-term viability of the forests, particularly after the Clayoquot Sound protests of 1993.

#### **First Nations** (Nanoose First Nation and Qualicum First Nation)

Both the First Nations groups in the Biosphere area are Coastal Salish. Band Chiefs were invited to be Society Directors, but they appear to have passed these opportunities to other band councillors. To date, their involvement in this initiative has been limited due to concurrent and ongoing treaty negotiations. Both First Nations groups are supportive of the MAWBR proposal, which is culturally consistent from their perspective of a long-term approach to sustainability and management style predicated on consensus decision-making.

#### **Projects for Sustainability**

Jamieson used his research background and familiarity with funding solicitation obtained from being a research scientist with the Department of Fisheries and Oceans (DFO), to jump-start the process (Jamieson, 1997b). Jamieson began developing and submitting proposals in the fall, 1995. The timing was opportune, and within 6 months, Jamieson obtained over \$120,000 to support projects summarized in Table 5.

biased pattern, making their future involvement more difficult.

A means for engaging stakeholders was urgently required. The Biosphere Reserve initiative needed to start showing results before it simply faded away. Supporters of the MAWBR proposal decided to start developing Biosphere Reserve projects. Initiation of research allowed some players to strengthen their partnerships and re-build trust. Research on regionally contentious land use and water flow issues was avoided, since the Biosphere Reserve would not present conclusions or opinions on planning decisions.

#### **Box 1. An Overview of the Major Players**

##### **Government Agencies** (*Parksville Council, the Qualicum Beach Council and the Regional District of Nanaimo*)

Representatives for the Parksville and Qualicum Beach Councils are appointed internally on an annual basis. The representative for the Regional District is affiliated with one of the Areas in District (i.e., there are 3 RDN Areas - E, F and G - included within the proposed Biosphere Reserve boundary). These agencies strive to achieve



*Long Point student volunteers exploring the shoreline at Mount Arrowsmith.*

Jamieson relied on elected MABF directors during this period primarily for feedback and validation of decisions he primarily was making about the selection of and approach to various projects. The problem of program management became obvious when the voluntary supporters of the proposed MAWBR could handle no more projects. The core group then expanded the total membership of the MABF executive from four to eight elected individuals.

Because funding agencies prefer to give funds only to registered societies, the MABF was registered as an official non-profit society under the *Societies Act* in B.C. in the spring of 1996. Having non-profit society status ensured better financial accountability (annual financial reports have to be produced) and allow greater access to funding for Biosphere Reserve initiatives.

The successful completion of projects contributed to the credibility of the MABF. Continuing outreach regarding program objectives to research and management agencies, universities, and other receptive audiences, increased awareness of the MABF. The regional stakeholders had come to recognize the MABF as a competent local entity with a strong conservation vision. Meanwhile, the 1996 municipal elections in Parksville and Qualicum Beach provided sufficient turn over in elected council memberships to revive the Biosphere Reserve project with more productive public discussion.

**Table 5. Activities undertaken in Mount Arrowsmith World Biosphere Reserve**  
National Linkages

Concurrent with increased local acceptance of the initiative, national linkages had begun to blossom. Regular reports of the MAWBR's development process were being forwarded to the national MAB administration. The most productive interaction occurred in 1996 and 1997 when Dr. George Francis and Brian Craig, respectively, dropped by during

visits to British Columbia. Both gave strong encouragement and suggested avenues to speed up the process leading to Biosphere Reserve designation.

Project Title	Description
Bio-inventory of the Englishman River Estuary	Preliminary detailed documentation of species inhabiting the Englishman River estuary began in the summer, 1993, with the goal of determining critical habitats so that optimal enhancements can be made to achieve maximal production from the system. Funding came from the DFO and the Canadian Wildlife Service (CWS).
Stream Mapping	Location and spatial plotting of all tributaries and creeks in the lower MAWBR was conducted by five community groups, headed by the SPERE, in the winter of 1996. Existing maps failed to accurately show many streams, and many others were totally absent. Funding was provided by the Habitat Action Plan, DFO.
Monitoring of Spring Staging Brant in the Parksville-Qualicum Beach area	Monitoring of Brant numbers and reading band numbers on banded birds have been conducted annually during spring staging since 1996. Annual reports present the findings. The behaviour and responses to natural and man-made disturbances was also recorded in 1996. Funding came from the CWS.
Methodology to Investigate Aquatic Insect usage of Riparian Habitat	Development of appropriate methodology to investigate the spatial distribution of indices of abundance of aerial, adult stages of aquatic insects in forest habitat was conducted in 1996, with funding from Forestry Renewal B.C.
Liquid Assets	In 1996, development of a television series (three 30-minute television shows) was begun for presentation on local cable vision and in schools on water availability and usage in south-east Vancouver Island ecosystems. One segment remains to be finalized. Financial support for this project came from the Habitat Action Plan, DFO, B.C. Hydro and Canada Trust's Friend's of the Environment Foundation.
Stream Stewardship	This project builds on the DFO-funded stream mapping project described above and relies on local community groups to act as stewards for their areas. This project was initiated in 1996 with funding from Mountain Equipment Co-op.

Jamieson also attended Leading Edge '97 (a conference jointly hosted by Niagara Escarpment Biosphere Reserve and Long Point Biosphere Reserve) where he gave two presentations on the significance of the proposed MAWBR for designation and the lessons learned during the planning of the MAWBR. Jamieson met several others involved in Biosphere Reserves across the country and used this opportunity to learn from activities and experiences of other proposed and designated Biosphere Reserves.

### Nomination

Representatives from the Biosphere Reserves Working Group, a subcommittee of the Canada/MAB Committee, encouraged Jamieson to prepare nomination forms to have MAWBR designated a Biosphere Reserve by UNESCO. The proposed site was well on its way with the MABF executive serving the role of a Biosphere Reserve Management Committee in accordance with site nomination criteria set out by the Canada/MAB Committee.

Much of the intervening time has been spent preparing Biosphere Reserve nomination papers. Members of the MABF with appropriate skills and interests compiled the requisite information.

In the fall of 1997, Biosphere Reserve nomination papers were completed and submitted to core and buffer area agency managers and the Province. The 1994-submission format that was used required signatures from buffer and core area administering agencies and a national Man and the Biosphere (MAB) representative to complete the nomination.

To obtain the support of the B.C. Ministry of Environment, Lands, and Parks (MELP), though, the Minister had to approve the nomination, which brought politics into the equation. To further complicate the process, in December 1997, a new format was released, requiring formalized support by local communities. The Provincial Government's concerns about the extent of public support for the initiative, conflict with another Biosphere Reserve

initiative simultaneously being supported by the Province, and delays while nomination papers worked their ways through bureaucratic channels meant that the 1998 nomination window with the old form was missed. The nomination material now had to be transferred to the new format.

In the meantime, Jamieson and the Ambassador to the Environment, John Fraser, met with Cassie Doyle, then Deputy Minister to MELP, to determine a process for assessing local community support that would be acceptable to the Province. This involved inviting regional representatives to a meeting with Jamieson and Brian Craig, President of the newly formed Canadian Biosphere Reserves Association (CBRA).

Following this series of meetings, local council representatives asked that presentations be made to the entire elected bodies on the Biosphere Reserve concept and the MAWBR proposal. This task was delegated to three different people: Ken Ryan presented to the Parksville Council, Marlis Diamond (a sympathetic Qualicum Beach Town Councillor) spoke to the Qualicum Beach Council, and Kari Nelson addressed the Regional District of Nanaimo. The issues raised by councillors during the presentations are summarized in Table 6.

#### **Table 6. *Issues articulated by councils during presentations***

This feedback was productive with an openness to expressing and discussing the issues. This openness had not been evident in the 1994 presentation to the councils. Issues were dealt with effectively, and endorsement of the MAWBR proposal followed from the Regional District of Nanaimo, the Parksville Council, the Qualicum Beach Council and the two local First Nations (Qualicum and Nanoose).

Revised nomination forms, now with local community support, were resubmitted to the Province in November, 1998, but the Province still refused to give its support. In late January, 1999, it was discovered that the B.C. Government wanted only the Clayoquot Sound Biosphere Reserve nomination to proceed in 1999, but provincial representatives could not state

this openly. As a consequence, MABF representatives pulled back their

Issues
• Uncertainty regarding the motives of the proponents of MAWBR proposal, given their past involvement with environmental activism within the community.
• Fear that the designation might add an additional layer of bureaucracy to the existing structures and constrain the mandate of existing authorities.
• Uncertainty as to whether the designation would affect individual property rights and hinder freedom to do as they wished on their private land.
• Concern that the public still largely ignorant of the proposal.

nomination on the last day before the deadline, allowing the Clayoquot Sound nomination to proceed alone, and then resubmitted their nomination for the third time the next day. As of the writing of this report (October, 1999), the Province has still not approved the MAWBR initiative because the Minister decided in 1999 that they wanted to hear the official views of the two forest companies about this initiative. Since this was required as part of the consensus process for the Clayoquot Sound nomination, the forest companies argued that it should also apply to the Mount Arrowsmith proposal. Designation

It is hoped that the MAWBR proposal will be supported by the Province before the 2000 nomination deadline. In the meantime, the MABF is considering how its efforts can be recognized in other ways, and is continuing to undertake various projects to demonstrate the importance of research and public education initiatives in the promotion of local sustainability issues.

The MABF members, for all intents and purposes, already think of themselves as a functioning Biosphere Reserve. At this point, designation is merely a formality, although it is recognized as an important one. Members continue to be realistic and pragmatic about the visioning of a Biosphere Reserve designation for their area, recognizing the potential benefits and inherent weaknesses that are summarized in Table 7.

The MABF continues to support the sustainability approach advocated within the MAB Programme. The MABF clearly recognizes the existing and potential impacts of growth on the Parksville and Qualicum Beach communities. These unsustainable growth trends are slowly eating away at the fabric of the communities and degrading the beauty and wilderness that prompted so many to move there in the first place. Balancing these issues is the central challenge to the MABF. This commitment to the Biosphere Reserve vision arises from the belief in the potential of the Biosphere Reserve concept to address points of view through better solutions.

**Table 7. Strengths and weaknesses of the Biosphere Reserve approach**

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>a neutral forum for discussing sustainable land and water use in the Parksville - Qualicum Beach region</li> </ul>	<ul style="list-style-type: none"> <li>offers no legal jurisdiction over the land with legally protected lands managed by relevant provincial and federal agencies</li> </ul>
<ul style="list-style-type: none"> <li>a process that will foster the development of strong social networks of the community</li> </ul>	<ul style="list-style-type: none"> <li>participants are not obligated to do anything</li> </ul>
<ul style="list-style-type: none"> <li>a means of establishing sense of place and further understanding how traditional growth economies contribute to the deterioration of the local features that are most valued</li> </ul>	<ul style="list-style-type: none"> <li>may not deal with any of the contentious issues such as land use or water flows in order to maintain partnership</li> </ul>
<ul style="list-style-type: none"> <li>an opportunity to promote the paradigm shift necessary to decouple the notion of a growth based economy from economic prosperity</li> </ul>	<ul style="list-style-type: none"> <li>does not provide sustained stable funding for projects and activities</li> </ul>
<ul style="list-style-type: none"> <li>international recognition that could elevate local issues in a political sense to afford some degree of protection and possible economic benefits of tourism</li> </ul>	<ul style="list-style-type: none"> <li>success is determined solely by the willingness of the partners to work together</li> </ul>
<ul style="list-style-type: none"> <li>an established network with other sites to facilitate large scale global change research</li> </ul>	<ul style="list-style-type: none"> <li>lack of commitment and enforcement arising from voluntary nature of all activities</li> </ul>

## THE PROCESS REVISITED

The grassroots development of the proposed MAWBR requires organizational memory. This can be extremely difficult for a bottom-up planning initiative but MAWBR benefits from documented case histories of its development. The MABF needs to remember its history to realize its future. The following describes the lessons to-date.

### Appreciating Context

Regional conflicts in land use, especially around forestry practices, contributed to the feeling of mistrust towards perceived environmentalists who are thought by some local residents to “expect Island society to change overnight” to accommodate their protectionist vision (Anonymous, pers. comm.). The initiation of a Biosphere Reserve proposal by environmentalists contributes to misinterpretation of the Biosphere Reserve concept such that it is thought to involve strict protection. On the contrary, the Biosphere Reserve Management Committee does not have legal authority or powers to manage lands contained within the proposed region. Rather the Management Committee has the responsibility to establish and maintain community and regional partnerships to achieve long-term sustainability and initiate or manage projects that promote sustainable development by demonstrating tangible benefits. Gradually, shared risk and responsibility fortify these partnerships. The trust achieved makes the organization more sustainable. The proposed MAWBR offers an integrating framework of partnership for conservation.

### Assessing Local Acceptance

Ideally, Biosphere Reserve Management Committees want the entire community involved in all facets of Biosphere Reserve activities. Although this is desirable to counter skepticism about the concept until it is locally understood and proven, the public has the right to choose not to participate. This should not be used as a basis for assessing political acceptability of the

Biosphere Reserve. It neither demonstrates support nor opposition. Some members of the community are not interested in being involved in a community-based, non-profit organization (such as MABF) while others simply do not have the time because of family, careers or other voluntary commitments. This does not mean residents do not value its contribution. Furthermore, community members do not all share the same level of commitment to sustainability. For some, sustainability is a pervasive force in all aspects of their lives, affecting everything from purchasing decisions to selection of transportation to how they manage their waste. For others, they have done their bit for the environment by simply using public transportation. Biosphere Reserves have the capacity to help individuals, businesses, and communities be sustainable, and this is most likely to occur with projects offering win-win situations such as those that improve both local employment and environmental quality.

### Focussing on Holism

The MABF, in co-operation with a multitude of local partners, has initiated projects to explore the local environment; to comprehend local sustainability issues; enlighten discussion and subsequent decision-making processes; and anticipate and respond to the perceived environmental vulnerabilities. These priorities will have to be addressed at multiple scales; local, regional, national and international. The structure of the MAB Programme is conducive to this multi-scalar focus required to address complex global problems. The exploration of local sustainability priorities should be developed first via a more inclusive process that learns from the community as much as the community learns from the biosphere reserve. This ongoing process will require a concerted effort by all stakeholders to cross mental boundaries associated with managing within the lines of mandated authority for a protected area or as defined by municipal limits.

### Fostering Inclusiveness

The most powerful and influential, and the weakest in the community must have the opportunity to participate in discussions. This approach improves fairness and equity in the distribution of benefits and costs to all stakeholders represented and hopefully, to the community at large. Questions of representation tend to plague grassroots initiatives because they are constrained by feasibility in terms of time and money. It can be difficult to solicit community involvement in an initiative offering so many indirect and intangible benefits. Nevertheless, stakeholders and citizens can derive benefit from this initiative. Politicians acquire greater insight into the perspective of their constituencies on contentious issues. Industry stakeholders benefit from improved public perception through the implementation of sustainable practices to maintain regionally valued attributes (e.g., rare bird species). Citizens benefit from employment opportunities managing or implementing Biosphere Reserve projects such as field studies of the Brant. The MABF continues to reach out to communities and demonstrate benefits. These achievements will inspire the dreams of individuals throughout the community to become more actively involved.

### Internalizing the Vision

The proposed MAWBR development began with a general vision of regional sustainability. Intuitively, the participants agreed on regional priorities for a good quality of life. The reality of implementing the vision caused stakeholders to examine the implications of their commitment to the Biosphere Reserve for their own operations. Stakeholders need time to reconcile the MAWBR vision with their operations or decide that intermittent participation is more suitable until the implications for the bottom line are better understood. The MABF's collective vision deteriorated as participants returned to their stakeholder positions rather than focusing on basic, collective concerns. This situation was exacerbated when some stakeholders began to blame others for their role in current crises (e.g., water quality, loss of biodiversity, etc.). The committee was distracted from their principle objective - sustainability. Participation then decreased. In the early phases of Biosphere Reserve planning, it may be better to present opportunities around new ways of doing things rather than preaching about the need for a healthy

environment. Recent MABF attempts to focus on productive, non-threatening activities have since improved stakeholder relations. Mechanisms to dissipate future tension still need to be incorporated into the process to avoid stakeholder paralysis. Such efforts could include mentoring by representatives from established Biosphere Reserves that have overcome similar stakeholder tensions, hiring a facilitator to make controversies transparent, or setting ground rules for discussion to eliminate potential polarization.

### Maintaining Neutrality

Biosphere Reserve Management Committees are expected to be apolitical. This characteristic enables them to partner with individuals and organizations representing diverse interests. However, the MABF, like many other Biosphere Reserves, has its origins in an environmental organization. This has made it more difficult for MABF to promote integration since some of its members are still seen as having a strong political orientation. The MABF currently subscribes to the Carver model for management as an approach to discourse requiring all stakeholders to leave their political baggage at the door. Skeptics about the MABF, until recently, were wary of one member who has since resigned. The MABF is currently reexamining its processes to improve operations in favor of a more open and transparent process that benefits the entire community.

### Structuring Decision-Making

When powerful organizations are represented, those able to make decisions on behalf of their organizations should be represented in discussions regarding the proposed MAWBR. Failing that, the decision-making process for the MABF must be flexible enough to accommodate the reporting back to senior officials within organizations in order to make decisions. For instance, a middle manager at a forestry company may have to go back to management to determine whether or not they can support a given Biosphere Reserve activity. The MABF needs a clearly defined process for

decision-making and priority setting to maintain transparency and trust among all members. All members do not need to participate in all decisions. A distinction must be drawn between higher level, strategic issues requiring organizational buy-in and operational issues that must be resolved by the Biosphere Reserve Chair or committee members with relevant expertise. The absence of a clearly defined process is leading to: burnout among the few with a clear idea about what needs to be done and alienation of committed, talented individuals uncertain about their role within the broader initiative.

## CONCLUSION

Building a Biosphere Reserve is about sustaining productive, healthy landscapes for the people, as determined by the people. The grassroots development of MAWBR paves a new direction for Biosphere Reserves. This bottom-up approach softens jurisdictional limits and creates a place where interagency cooperation is possible. Distinct from top-down planning approaches, the MABF fosters linkages within the community through dialogue to create a shared sense of ownership over the region. The beauty of this approach is its potential to create politically feasible solutions for environmental problems.

The MABF has not yet reached its full potential. The success of the proposed MAWBR for addressing regionally significant sustainability issues depends on the willingness of partners to work together. Remnant mistrust between some stakeholders is still obstructing meaningful dialogue regarding innovative solutions and proactive approaches to sustainability. Awareness of the contentious history of land use in MAWBR is vital for the MABF to move beyond sectoral concerns to deal with the public interests affected by land use practices on predominantly privately owned land. Understanding the constraints of stakeholders and creating projects that empower individuals, communities and industries to engage in activities that are environmentally, economically and socio-culturally sustainable will bring MABF toward its goals.

*The difficulty lies, not in the new ideas, but in escaping the old ones, which ramify, for those brought up as most of us have been, into every corner of our minds.*

*-- John Maynard Keynes*

**REFERENCES**

Anonymous a. pers. comm. January 15, 1999.

Anonymous b. pers. comm. February 4, 1999.

Batisse, M. 1990. Development and Implementation of the Biosphere Reserve Concept and its Applicability to Coastal Regions. *Environmental Conservation*. 17 (2): 111-116.

Canadian Biosphere Reserves Association. 1998. First Annual Meeting, August 14-15, Port Rowan. Meeting Minutes.

Conservation Data Center. 1999. *Tracking Lists*. Available on-line: <http://www.elp.gov.bc.ca/rib/wis/cdc/tracking.htm>. Accessed May 15, 1999.

Elms, L. 1996. *Beyond Nootka: A historical perspective of Vancouver Island mountains*. Misthorn Press: Courtney, B.C.: Misthorn Press.

Government of Canada. 1996. *The State of Canada's Environment Report*. Environment Canada. Ottawa, Ontario.

Jamieson, G. pers. comm. January 13, 1999.

Jamieson, G. 1997a. Establishing a Biosphere Reserve: The Proposed Mount Arrowsmith World Biosphere Reserve Experience. *In* Conference Proceedings The Leading Edge '97. October 16-18; Burlington Ontario. Pp. 285-288.

Jamieson, G. 1997b. A Proposal for the Mount Arrowsmith World Biosphere Reserve. *In* Conference Proceedings The Leading Edge '97. October 16-18; Burlington Ontario. Pp. 288-293.

Ministry of Environment, Lands, and Parks. 1975. *A History of the Esquimalt and Nanaimo Railway Land Grants*. Available on-line: <http://www.islandrail.bc.ca/reports/Crown%20Lands%20Grants.htm>. Accessed May 10, 1999.

Mount Arrowsmith Biosphere Foundation. 1997a. Mount Arrowsmith World Biosphere Reserve Proposal South Eastern Vancouver Island British Columbia, Canada. Available on-line: [www.island.net/~biores/](http://www.island.net/~biores/). Accessed November 10, 1998.

Mount Arrowsmith Biosphere Foundation. 1997b. Overview of the Proposed Mount Arrowsmith World Biosphere Reserve. Biosphere Reserve. Nomination Form.

United Nations Educational, Scientific and Cultural Organization, 1996. Biosphere Reserves: The Seville Strategy and The Statutory Framework of the World Network, UNESCO, Paris. 18 pp.



The scope and level of detail for the sources vary considerably. Furthermore, the level of detail from the interviews is not as comprehensive as that contained in the documentation except as it relates to perceived benefits of biosphere reserve designation that are not well documented in the literature. Discrepancies among and between interview and documentation were identified. The character of the data appears to result, in part, from the constraints on respondents. The potential source of these discrepancies is more evident when considering a few important characteristics of the respondents, presented in Table 2.

**Table 2. Respondent characteristics**

Interview Code	Status of Involvement	Duration of Involvement (years)	Involvement
11	Current	6	Frequent
12	Current	3	Intermittent
13	Past	1	Rare
14	Current	1	Frequent
15	Current	<1	Intermittent
16	Current	<1	Intermittent
17	Current	6	Intermittent
18	Current	6	Frequent
19	Current	6	Intermittent

**Legend:**

Frequent: >50 hours/year  
 Intermittent: 20-50 hours/year  
 Rare: <20 hours/year

The diversity and limited number of respondents, described in Table 2, are important factors when synthesizing the case. These respondents varied in the duration and level of their involvement. Collectively, these factors delimit individual understanding of the biosphere reserve initiative. Those frequently involved in the initiative feel greater ownership over the success of the initiative due to personal investment whereas those with rare or intermittent involvement interpret events more critically, like an observer as opposed to a participant. In addition, limited dispersal of responsibility for the sake of efficiency has created a situation where there is a primary point of contact for all activities and individuals. Thus other participants may only understand the events through the eyes of the local champion, enhanced by their own perspective.