

# Bioregions vs. Biosphere Reserves: Which is a Better Vehicle for Sustainability?

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**ABSTRACT:** In the past fifty years, various concepts have emerged that have the potential to assist societies in achieving greater sustainability. In this article I will briefly review the evolution of the bioregion and biosphere reserve concepts, look at definitional issues, at their similarities and differences, and at their relative strengths and weaknesses as vehicles for promoting the greater sustainability of human societies.

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**Keywords:** biosphere reserves, bioregions, sustainability, sense of place, Mount Arrowsmith Biosphere Region

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In the past fifty years, various concepts have emerged that have the potential to assist societies in achieving greater sustainability. In this article I will briefly review the evolution of the bioregion and biosphere reserve concepts, look at definitional issues, at their similarities and differences, and at their relative strengths and weaknesses as vehicles for promoting the greater sustainability of human societies. While the notion of bioregion has certain antecedents, it is marginally newer. Therefore, I will review the evolution of the biosphere reserve concept first.

## The Origin of the Biosphere Reserve Concept

The key milestones in the evolution of the biosphere reserve concept will be well-known to readers of this journal. In 1968, the United Nations Educational, Scientific and Cultural Organization (UNESCO) convened a conference of thought-leaders in Paris to discuss the challenge of how to create greater harmony between humans and their environment. Two years later, the Man and Biosphere (MAB) program was established, which sought amongst other things to create areas where biodiversity could be preserved and protected as representative segments of the earth's biomes and ecosystem types, including coastal areas. The biosphere reserve concept was officially christened in 1974, with the first designation occurring in 1976. (Coetzer, Witkowski, & Erasmus, 2013) The reserves were to be characterized by a core zone of protection, by a

buffer area where scientific research and education activities would be carried out, and by a transitional zone where more intensive sustainable practices were to be modelled. To quote MAB, "Each biosphere reserve is intended to fulfill three basic functions, which are complementary and mutually reinforcing:

- a conservation function - to contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- a development function - to foster economic and human development which is socio-culturally and ecologically sustainable;
- a logistic function - to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development." (UNESCOa, n.d., n.p.)

In the last 50 years, a number of such reserves have been created in 120 countries, while at the same time others have been withdrawn. The current total stands at 169. Reserves are nominated by nation-states or at least with their tacit approval. (UNESCOb, n.d.) Once accepted by UNESCO, they are subject to review every ten years. In theory, core areas are supposed to enjoy legal protection, but I have yet to find evidence that this is actually enforced. In many cases – as with Canada's Waterton Lakes Park or the Niagara Escarpment – they already enjoy some legal status nationally or provincially. (Reed 2010) Whatever jurisdictional status and protection

designation as a biosphere reserve confers is in the realm of what has been called 'soft law' – i.e. without binding authority. (Reed, 2010) Since its initial establishment, MAB has also added objectives related to the UN's *Sustainable Development Goals* and *Post 2015 Development Agenda*. In Canada we have 18 such reserves, including two in British Columbia, both on Vancouver Island. (Canadian Biosphere Reserves Association, n.d.)

### The Origin of the Bioregion Concept

The concept of bioregion and associated bioregionalism, while having antecedents, was first popularized in the mid-1970s by Peter Berg and Raymond Dasmann of the Planet Drum Foundation, an organization founded in 1974 to "pursue research and publish information on the relationship between human culture and the natural processes of the planetary biosphere." (Berg, 1983, p. 19) Berg was a longtime member of the California counterculture, and Dasmann, a noted ecologist, was a leading member of the International Union for Conservation of Nature and Natural Resources. (Alexander, 1990)

The word bioregionalism appears to have been coined by a Canadian, Allen Van Newkirk, in 1974 in a research prospectus entitled "Bioregions: Towards Bioregional Strategy for Human Culture." This prospectus first appeared in the Union's journal, *Environmental Conservation*, and was reprinted in *CoEvolution Quarterly*. Peter Berg likely picked up the term from Dasmann or from *CoEvolution Quarterly*. (Parsons, 1985)

That the idea was ready to be born is shown by the appearance in 1974 of Ernest Callenbach's bioregional novel, *Ecotopia*, about an ecological nation in northern California, Oregon, and Washington which secedes from the United States. (Callenbach, 1974) A couple of years later, David Haenke (1987), a future bioregional author and activist, began making plans for holding an Ozark Community Congress, the first bioregional gathering of its kind. Kirkpatrick Sale (1985, p. 43) offers perhaps the most concise definition of a bioregion as being "a place defined by its life forms, its topography and its biota, rather than human dictates; a region governed by nature, not legislature."

Bioregionalists believe that nation-states and other administrative divisions are artificial. As Bice Wilson (1995, p. 18) notes,

*We often define our communities on the basis of human boundaries, such as national borders, property lines, school districts, town boundaries, area codes, zip codes, government service districts, and zoning districts. These confusing service zones are often invisible and overlapping yet seldom connected, and not even based on geography.*

In contrast with modern industrial society which effectively alienates people from the land, bioregionalists advocate "living-in-place," which means "following the necessities and pleasures of life as they are uniquely presented by a particular site, and evolving ways to ensure long-term occupancy of that site." (Berg & Dasmann, 1987, p. 217) They argue that "Living-in-place is an age-old way of existence disrupted in some parts of the world a few millennia ago by the rise of exploitative civilization, and more generally during the past two centuries by the spread of industrial civilization." Berg & Dasmann, 1987, p. 217) Bioregionalism, in essence, is the regional fulfillment of Aldo Leopold's 'land ethic.' As Stephanie Mills writes, "In a bioregion, the citizenry is more than human. Bioregionalism goes beyond ecology, in its enfranchisement of other life forms and land forms, and its respect for their destinies as intertwined with ours." (Mills, 1981, p. 4) Thirty-two years before Mills, in 1948, Aldo Leopold had written that

*The land ethic . . . enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land. In short, a land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. (Leopold, 2014, pp. 25-26)*

The process of becoming an ecological citizen is described by Berg and Dasmann as "reinhabitation":

*Reinhabitation means learning to live-in-place in an area that has been disrupted and injured through past exploitation. It involves becoming native to a place through becoming aware of the particular ecological relationships that operate within and around it. It means understanding activities and evolving social*

*behavior that will enrich the life of that place, restore its life-supporting systems, and establish an ecologically and socially sustainable pattern of existence within it. Simply stated it involves becoming fully alive in and with a place. It involves applying for membership in a biotic community and ceasing to be its exploiter.* (Berg & Dasmann, 1987, pp. 217-218)

## **Boundary Demarcation**

From I have been able to determine, there is no one formula for determining the boundaries of biosphere reserves. In theory, biosphere reserves were to serve as ‘model regions’ “where people are living and working well together and in harmony with nature.” (MABRa n.d.; MABRRI, n.d.,n.p.) Moreover, there were originally to reflect the global distribution of biogeographical provinces, as defined by Miklos Udvardy (1975), and to provide scientists with a ‘living laboratory’ for studying ecological processes. (Reed & Massie, 2013) In the case of the Mount Arrowsmith Biosphere Reserve case (since redubbed Biosphere ‘Region’), now managed in partnership with Vancouver Island University, the nomination process was originally launched in 1996 by Dr. Glen Jamieson to “raise awareness of the biodiversity of watersheds on Mount Arrowsmith and adjacent watersheds.” (MABRa, n.d., n.p.) Was this a ‘model region’ of human/ nature harmony, or rather one where the process of degradation was not sufficiently advanced such that it made it sense to try to rescue it while the opportunity still existed?

Do biosphere reserves have an ‘organic’ unity? MABR is described as comprising “five watersheds: Englishman River, Little Qualicum, French Creek, Nanoose Creek, and Bonnel Creek.” (MABRb, n.d.) Why these particular adjacent watersheds? Presumably because they run off Mount Arrowsmith, the major landmark in the area. The region is also said to share “similar boundaries with the Regional District of Nanaimo.” (MABRb, n.d.) Actually, the boundaries of the two entities, while overlapping, do not coincide that closely (see Map 1).

More recently – in the last twenty years – biosphere reserves have come to emphasize social learning by a variety of stakeholders, not just scientists, and social science research has come to occupy a more prominent role than in the past. (Reed & Massie, 2013) Moreover, in the wake of the Brundtland

Commission report, *Our Common Future*, operationalizing and modeling ‘sustainable development’ has become a major theme. (Reed & Massie, 2013) This is certainly true in the Mount Arrowsmith Biosphere Region.

Bioregions, for their part, can be defined by any number of criteria. Natural regions include *physiographic* criteria, such as the Salish Sea/ Puget Sound depression (see Map 2) or even major islands, such as Vancouver Island; *vegetational* (such as Coast Douglas Fir zones), and *hydrological*, such as watersheds of varying sizes. These natural criteria almost always conflict with one another. (Alexander, 1993, p. 4)

One can also choose human regions, though this is done less frequently. For instance, there are *political* regions at a variety of scales – provinces, regional districts, and municipalities; *economic* regions, which can be defined in terms of commutersheds, urban shadow zones (areas affected by inflated urban real estate values, or areas served by major retail services, such as destination malls or media outlets), and *cultural* regions, such as the area occupied by the Halkomelem-speaking Coast Salish First Nations people or senses of place determined by distinctive settlement and land use histories, such as southern vs. northern Vancouver Island. All of these boundaries are quite graduated rather than hard and fast. Again, they do not often correspond with one another or with natural regions, although in the case of the Coast Salish peoples this does roughly correspond with the watersheds that drain into the Salish Sea (see Map 2), with the exception of the Fraser basin which, in its entirety, encompasses a quarter of the province of British Columbia. (Alexander, 1993) In addition to this, some bioregionalists refer to ‘terrain[s] of consciousness’ and ‘spirit places.’ – i.e. that bioregions exist where people *think* they exist. (Carr, 2004, p. 76)

Ideally, one would choose the best compromise between criteria or, alternatively, something that is clear cut such as watershed boundaries. Of course, such (bio)regional boundaries exist at a variety of scales – the *subcontinental*, such as Cascadia (defined by the temperate rainforest or Pacific salmon zone); the *bioregional* (the Salish Sea/ Georgia Basin); the *regional* (the Lower Fraser Basin or southern or northern Vancouver Island), or the *local* (a watershed

or regional district/ urban-centred area). (Alexander 1990) I myself prefer the local, as it is the area which seems to possess the strongest sense of place and popular identification.

An example of a local area would be the Cowichan Valley, which in addition to being a watershed, also possesses a variety of distinctive microclimates (often dubbed ‘Mediterranean’) that enable the cultivation of a diverse array of agricultural products. It possesses a strong sense of place and identification. The watershed includes major centres like Duncan, and an expanded definition of the ‘river valley’ or coastal plan includes communities such as Crofton and Chemainus. (Wikipedia, 2016) However, the regional district of the same name, while overlapping, does not correspond that closely with the watershed after which it is named (see Map 3).

### Similarities and Differences

Both concepts have a strong emphasis on biophysical factors and seek to celebrate and enhance ecological functioning and the sustainable integration of human activities into the region; however, traditionally, bioregions have lacked the focus on scientific research. Biosphere reserves have a stronger focus on having protected core areas. In theory, reserves are based on definable biophysical features, but how their boundaries are chosen seems somewhat idiosyncratic; there is no formula despite reference to Udvardy’s nomenclature in the early days. Nomination was often opportunistic and often based on existing protected areas (Reed & Massie, 2013). Administratively, they are governed – if at all – through consensus, i.e., through collaboration between stakeholders through roundtables and with the moral authority of the UNESCO designation, or by the authorities that normally govern the corresponding national or sub-national park or protected area.

Bioregions have *no* administrative authority or legitimacy, although occasionally governments have referred to large-scale bioregions, or some loose facsimile thereof – such as Cascadia – for limited purposes, such as economic cooperation, action on climate change, or conservation measures around salmon. (Brunet-Jailly, 2005) Despite a promising start as a social movement, bioregions do not have

much to show on the ground in contrast with biosphere reserves.

### Strengths and Weaknesses

The strength of biosphere reserves is that they enjoy recognition from a larger body – UNESCO. UNESCO has no ultimate authority beyond the ability to cancel a reserve after an unfavourable 10-year review. Ultimately, nation-states determine their fate, and a number have been withdrawn over the past 40-plus years. Even where they are still in existence, how well they are managed and with what degree of integrity is entirely up to national and sub-national jurisdictions, including biosphere reserve foundations and roundtables. Nonetheless, biosphere reserves seem to have the potential to foster the same ethic of ‘reinhabitation’ advanced by the bioregionalists.

In theory, bioregions have an organic unity that biosphere reserves may lack. However, bioregions have no authority whatsoever and are only as good as the popular allegiance they foster. This, in an age when globalization and consumerism is overtaking notions of citizenship of any description, tends to be limited.

### Conclusion

Much more research needs to be conducted on the degree of affinity residents feel for biosphere reserves, but my fear is that they lack an ‘organic’ sense of place attachment, something that the Cowichan Valley, for instance, possesses. Certainly, it’s not clear to me that the Mount Arrowsmith Biosphere Reserve/ Region makes natural ‘sense’ to the people who live there, though the Mount Arrowsmith Biosphere Region Research Institute (MABRRI) is doing its best to educate people about its value and to build up that affinity, including through its call to have people nominate “Amazing Places” throughout the Region (MABR, 2016). The extent to which a region – be it a bioregion or biosphere reserve/region – can serve as a vehicle for creating a more sustainable society and more sustainable land and water use patterns and practices is a question that can only be answered in practice. If it achieves the desired effect, that is ultimately what counts. As the old saying goes: “run it up the flagpole and see if anyone salutes.”

It would be useful, in further research, to focus on the degree of place attachment experienced by residents of biosphere reserves *and* bioregions and, with the latter, to discover what scale is the most effective for achieving this. Also, it would be worth looking at the extent to which each has been an effective focus for

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