

Analysis of the Evolving Nature of the United Nations Environmental, Scientific & Cultural Organizations's Man & Biosphere Reserve Program, and United States Compliance with its Statutory Framework

**By Tom McDonnell
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Introduction

As of July 2005, 482 biosphere reserves had been established in 102 countries. A number of these recent designations have been made to fulfill the obligations of the Convention of Biological Diversity and Agenda 21. The United States has been a principal player in the United Nations Education, Scientific and Cultural Organization (UNESCO) Man & Biosphere Program since its establishment in 1971. Today, the United States hosts more designated biosphere reserves than any other country in the world with 47. UNESCO documents show that more than 77 million acres are contained within these reserves, equating to a landmass the size of the United States' fifth largest state, New Mexico. However, the intended function of UNESCO Biosphere Reserves has evolved significantly since its origins, and most of the currently designated reserves in the U.S. are not in compliance with the program. The United States may find itself, like the United Kingdom, having to either modify existing reserves where appropriate, or withdrawing them from the program completely.

The Evolution of the Man & Biosphere Program

UNESCO's Man and Biosphere Program launched the concept of a biosphere reserve in 1974, with the World Network of Biosphere Reserves beginning in 1976. The functions of biosphere reserves have evolved considerably since this time, with greater focus on sustainable development. When the majority of Biosphere Reserves were listed in the 1970s, the emphasis of the program was on conservation, science and education. In the early 1970s UNESCO, in consultation with the IUCN-World Conservation Union, the United Nations Environmental Programme and the Food and Agriculture Organization of the United Nations, organized a Task Force on "Criteria and guidelines for the

choice and establishment of biosphere reserves." The three primary objectives of biosphere reserves at this time:

- to conserve the diversity and integrity of biotic communities of plants and animals within natural and semi-natural ecosystems, including those maintained under long-established land use; and to safeguard the genetic diversity of species;
- to provide areas for ecological and environmental research;
- to provide facilities for education and training.

Between 1976 and 1981, 208 biosphere reserves were designated in 58 countries, including 35 of the United States' 47 biosphere reserves. Most reserves worldwide were superimposed on existing protected or research areas. The idea of formal buffer zones surrounding these core areas involving other administrative entities was largely ignored.

In the 1980s, the concept of strengthening the linkages between conservation and development began to evolve in the Man & Biosphere Reserve Programme (MAB). In 1983 the First International Biosphere Reserve Congress was held in Minsk, Republic of the USSR. At this meeting it was recognized that the evolving concept of biosphere reserves was being applied in many different, sometimes contradictory, ways. The importance of involving local people in the development of regional perspectives centered on the protected cores of biosphere reserves also began to form at this conference. In fact, it was suggested that the biosphere reserves

"... be expanded in size, and for greater efforts to be made to support alternative lifestyles in biosphere reserve areas established for the primary objective of developing sustainable human ecosystems for (the) post-petroleum age."

In 1984, the MAB International Coordinating Council (ICC) approved an 'Action Plan for Biosphere Reserves' which included nine objectives including a statement that "*People should be considered part of a biosphere reserve.*" A Scientific Advisory Panel on Biosphere Reserves was also formed by the ICC. This panel published its report, that was then adopted by the ICC in 1986. The report concluded that

"a primary concern of the biosphere reserve is conservation...however,...the conservation function...should be demonstration sites of harmonious, long-lasting relationships between man and the natural environment."

From this report and the action plan, the objectives of biosphere reserves were redefined into three 'concerns' that were to be combined and harmonized in each reserve:

- conservation: "Biosphere reserves should help strengthen the conservation of biological diversity, genetic resources and ecosystems;"
- logistics (international research and monitoring): "Together, biosphere reserves should constitute a well identified international network of areas for research and monitoring..."
- development: "Biosphere reserves should associate environment and land and water resource development in their research, education and demonstration activities."

The scientific advisory panel also made another major conceptual advance in the design of biosphere reserves. This was to redefine the outer buffer zone as a "transition area" or "zone of cooperation." The panel defined the transition area as an area where there is

"...cooperation between the landowners and users of the area and the manager of the protected area...(It) is not strictly delineated and corresponds more to biogeographic than to administrative limits."

The panel envisioned that the information derived from experiments, research and land management practices within the inter buffer zone should be applied in the transition area, thus expanding the sphere of influence of the reserve. The panel also envisioned that a wide range of cooperative activities be developed between researchers, managers and local populations, with the view of ensuring appropriate planning and sustainable resource development of the region.

Thus by the end of the 1980s, biosphere reserves had evolved from an emphasis on the conservation of natural areas, science and education, into a worldwide system of core protected areas, buffer zones and transition areas. Core areas such as wilderness or nature reserves were for conservation and

monitoring of minimally-disturbed ecosystems. Buffer zones surrounding or adjoining these core areas were to be for research, education and activities deemed appropriate within defined ecological principles. And finally, open-ended transition areas where the information derived from the research and land management practices within the buffer zone could be applied and cooperative activities developed, with the view of ensuring appropriate planning and sustainable resource development within the region.

In the 1990s, the conservation of biological diversity on biosphere reserves was aligned with sustainable development. In 1992, two meetings of major importance occurred. The first was the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil. At this conference, negotiations of an all-encompassing document called [Agenda 21](#) were completed. The importance of this meeting to biosphere reserves is highlighted in the third paragraph of [The Seville Strategy for Biosphere Reserves](#) which states:

"While much of this [1984] Action Plan remains valid today, the context in which biosphere reserves operate has changed considerably. As was shown by the United Nations Conference on Environment and Development (UNCED) process and, in particular, the Convention on Biological Diversity. The Convention was signed at the "Earth Summit" in Rio de Janeiro, in June 1992, entered into force in December 1993, and has now been ratified by more than 100 countries. The major objectives of the Convention are; conservation of biological diversity; sustainable use of its components; and fair and equitable sharing of benefits, arising from the utilization of genetic resources. Biosphere reserves promote this integrated approach and are thus well-placed to contribute to the implementation of the Convention."

The second major meeting, the 4th World Congress of National Parks and Protected Areas, was held in Caracas, Venezuela. These meetings reinforced the clear need for linkages between policy frameworks for conservation and sustainable development. To this effect, the ICC established a new Advisory Committee on Biosphere Reserves.

The committee recognized that as long as a significant portion of a biosphere reserve served only as a protected area, without the involvement of transition

areas or local peoples, then these reserves would remain unlikely to achieve the three concerns defined in 1986 and the World Network of Biosphere Reserves would be severely weakened. The committee also recognized that ensuring that biosphere reserves contained all three zones and the activities within those zones corresponded with the 1986 criteria would lead to some delicate political issues. This was particularly true of reserves designated before 1984.

In 1993, the ICC Advisory Committee recommended that each reserve should be reviewed and decisions made to recertify each reserve, based on an assessment of program implementation. While the ICC did not adopt this recommendation, UNESCO saw its merit and the 1995 International Conference on Biosphere Reserves examined the 1984 Action Plan to analyze and comment on draft statutes for the World Network.

The IUCN at this time initiated a review of the 1984 Action Plan. What it found was that early concepts of biosphere reserves – conservation, research and monitoring had been implemented successfully across much of the World Network. Objectives of the 1984 Action Plan, including regional planning, local participation and environmental education had only been partially achieved, if at all. The IUCN also found that fifty percent of biosphere reserves consisted of national parks and a majority of the reserves were managed by people trained in biological sciences, more adept at working on ecological issues rather than socio-economic issues. Local participation was almost non-existent.

In March 1995, the IUCN findings served as the background for the preparation of the draft statutes for the World Network of Biosphere Reserves and the International Conference on Biosphere Reserves in Seville, Spain. An almost final draft of the [statutes](#) came out of this meeting, was finalized at the meeting of the ICC in June 1995, and was adopted at the General Conference of UNESCO in November 1995.

The General Conference also adopted a longer document entitled [The Seville Strategy](#). In its ten key directions, the original biosphere roles of research and monitoring are only mentioned once. Rather, the strategy places strong emphasis on the importance of sustainable development and conservation and notes that:

"The UNCED process laid out the alternative of working towards sustainable development, incorporating care of the environment and greater social equity, including respect for rural communities and their accumulated wisdom. Agenda 21, the Convention on Biological Diversity, Climate Change and desertification, and other multi-lateral agreements, show the way forward at the international level."

[The Seville Strategy](#) also states that "the global community needs working examples that encapsulate the ideas of UNCED for promoting both conservation and sustainable development...express[ing] all the social, cultural, spiritual and economic needs of society." The strategy goes on to say "Biosphere Reserves offer such examples. Rather than forming islands in a world increasingly affected by severe human impacts, they can become theatres for reconciling people and nature..."

Over the course of twenty years, biosphere reserves went from being areas of conservation, research and education to being theaters for reconciling people and nature on a regional basis. The template for this reconciliation is the United Nations Conference on Environment and Development (UNCED) Agenda 21. This point is reinforced in the [UNESCO Strategy 2002-2007](#) - a synthesis of UNESCO's purpose and objectives. This document not only sets the contexts of work, but moves to better link UNESCO purpose with UN system efforts of poverty reduction and equitable development. These principles appear not only to conflict with the U.S. Constitution, but also the free enterprise system itself.

The Biosphere Reserve Concept of Today

The [Seville Strategy](#) and the [Statutory Framework](#) clearly lay the criteria a biosphere reserve must meet if it is to become part of the World Network of Biosphere Reserves. In regards to reserves designated under previous criteria, Article 5, Section 3 states:

"Biosphere Reserves which have been designated before the adoption of the present Statutory Framework are considered to be already part of the Network. The provisions of the Statutory framework shall, therefore, apply to them."

Article 4 of the statutory Framework lays out the physical criteria of a reserve. In general, a biosphere reserve:

1. Should encompass a mosaic of ecological systems representative of major biogeographic regions including a gradation of human interventions.
2. Should be of significance for biological diversity conservation.
3. Should provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.
4. Should have an appropriate size to serve the three functions of Biosphere Reserves.
5. Should include these functions, through appropriate zonation, recognizing:
 - a. One or more core areas, which are securely protected sites for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research. These core areas are to be legally constituted area or areas devoted to long-term protection, according to the conservation objectives of the Biosphere Reserve, and of sufficient size to meet these objectives (Article 4, section 5[a]).
 - b. A buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place (Article 4, section 5[b]). In addition, section 7(a) states that provisions should be made for mechanisms to manage human use and activities.
 - c. A flexible transition area which may contain a variety of agricultural activities, settlement and other uses, and in which local communities, management agencies, non-government organizations, cultural groups, scientists economic interests and others work together to manage and sustainably develop the area's resources (Article 4, section 5[c]).

Objective 1.2.4 of [The Seville Strategy](#) lays out another physical recommendation:

"Link biosphere reserves with each other, and with other protected areas, through green corridors and in other ways that enhance biodiversity conservation, and ensure that these links are maintained."

Besides the criteria for the physical attributes of a biosphere reserve, the Statutory Framework also lays out criteria for management of the reserve. As previously mentioned, "*...a mechanism to manage human use and activities*" in the buffer zone or zones must exist. Biosphere reserves must also have:

1. a management policy or plan for the area as a Biosphere Reserve;
2. a designated authority or mechanism to implement this policy or plan; and,
3. programs for research, monitoring, education and training.

Last, as mentioned above, of equal importance to conservation effort, "*organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and carrying out of the functions of a Biosphere Reserves.*" (Article 4, Section 7)

Case Study – United Kingdom

Under Article 9 of the 1995 Statutory Framework, concerned authorities are required to submit a report on the status of biosphere reserves under the jurisdiction of the MAB every 10 years. UNESCO requested the United Kingdom (UK) to submit such a report in 1997. The United Kingdom had thirteen listed biosphere reserves, all of which were designated in 1976 and 1977. The UK commissioned Oxford University to conduct a study considering the application of Article 4 criteria to UK reserves. A study considering the application of the Statutory Framework was undertaken, with two main objectives:

1. Consider the concepts supporting biosphere reserves and analyze their current relevance and value in light of other designations across the UK.
2. Determine if there is any real wildlife gain (I.e. benefit to wildlife) to adopting the designation in the UK and, if so, under what circumstances.

This report was submitted to the UK Advisory Committee of Biosphere Reserves in 1999. What the report found was that all of the biosphere reserves were significant for biodiversity conservation (Article 4, Section 2) and they had a legally constituted core area devoted to long-term protection (Article 4, Section 5[a]). Many of the sites also encompassed a mosaic of ecological systems representative of major biogeographic regions, however, few sites had a gradation of human intervention (Article 4, Section 1).

The UK found that none of the sites:

- had a clearly identified buffer zone (Article 4, Section 5[b]).
- had mechanisms for managing human use or activities within those buffer zones (Article 4, Section 7[a]).
- had an outer transition area (Article 4, Section 5[c]).
- sufficient size to serve the three functions of biosphere reserves (Article 4, Section 4).
- provided "an opportunity to explore and demonstrate approaches to sustainable development on a regional scale" (Article 4, Section 3).
- had a management policy or plan for the area as a biosphere reserve (Article 4, Section 7[b]).
- had a designated authority or mechanism to implement this policy or plan (Article 4, Section 7[c]).

Further to the point, the UK found that two sites, the Claish Moss and the Saint Kilda in Scotland, had no possibility of being restructured to meet the new criteria of a biosphere reserve, since both were missing any local community. Without a local population, it was impossible for these sites to meet the sustainable development functions of a biosphere reserve. Both sites, however, had secured a number of other national and international designations which more appropriately protected these sites' resources.

In November and December 1998, Oxford University then began assessing the opportunities and limitations to restructuring the remaining sites to meet the current criteria of the Seville agreement. They interviewed site managers, representative agencies, landowners and relevant non-government organizations. What Oxford University found was that if any existing UK biosphere reserves were to continue as members of the World Network of Biosphere Reserves, considerable attention would have to be given to their

boundaries and their management. This in turn, would require new resources, new structures and substantial local and agency consultation.

In 1999 the Environmental Change Institute of Oxford University submitted a report to Advisory Committee of UK Biosphere Reserves. This report's conclusions were presented and discussed in 2000 during the International expert meeting of the implementation of Seville Strategy of the World Network of Biosphere Reserves 1995-2000, held in Pamplona. After review and consultation with national and local interests, Scotland found that the Claish Moss, Saint Kilda, Rum and Caerlaverock Reserves no longer met the criteria of a biosphere reserve, and had no potential of ever meeting these newer criteria. Because there were a large number of other natural area designations more appropriate, they determined these areas would be more suitably protected under one or more of these other designations. While Scotland found that the [Beinn Eighe](#), [Taynish](#), [Loch Druidibeg](#) and the [Cairnmore of Fleet](#) and [Merrick/Kells/Silver Flowe](#) also no longer met the revised criteria of a biosphere designation, Scotland chose to consider how they might restructure these reserves, so they could continue in the Network.

In 2002 a formal letter was sent from DEFRA (Department for Environment, Food, and Rural Affairs) to the UNESCO Council explaining in positive terms, [the reasoning for the delisting of four Scottish Biosphere reserves](#). The letter arrived in Paris in time for the MAB International Coordinating Council Meeting and the MAB Secretariat transmitted the UK notification of removal to the MAB Council under the agenda item 'Periodic review of Biosphere Reserves.' The [four reserves were removed from the list on March 19, 2002](#).

Status and Compliance of Biosphere Reserves in the United States

The United States has been a [principal player](#) in the United Nations Education, Scientific and Cultural Organization (UNESCO) Man & Biosphere Program since its establishment in 1971. Today, the [United States hosts more designated biosphere reserves](#) than any other country in the world with 47. No new biosphere reserves have been designated in the United States in the last 14 years, because [local opposition has blocked the last four nominations](#). UNESCO documents show that the acreage within existing biosphere reserves has been expanded from 43,560,254 acres in 1994 to over 77.4 million acres in 2005. These reserves now equate to a landmass the size of the United States' fifth largest state, New Mexico.

Article 9 of the Statutory Framework requires that:

"The status of each Biosphere Reserve should be subject to a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4 and forwarded to the Secretariat by the State concerned."

This report is then passed on to the ICC for review. Under Article 9[5]

"If the ICC considers that the Biosphere Reserve no longer satisfies the criteria contained in Article 4, it may recommend that the State concerned take measures to ensure conformity with the provisions of Article 4, taking into account the cultural and socio-economic context of the State concerned. The ICC indicates to the Secretariat actions that it should take to assist the State in the implementation of such measures."

Article 9[6] goes continues:

"Should the ICC find that the biosphere reserve in question still does not satisfy the criteria contained in Article 4 within a reasonable period, the area will no longer be referred to as a Biosphere Reserve which is part of the Network."

It should be remembered that Article 5[6] of the statutory framework states that:

"Biosphere Reserves which have been designated before the adoption of the present statutory Framework are considered to be already part of the Network. The provisions of the Statutory framework shall therefore apply to them."

A report from the United States should be due in November 2005. To date, there has been no indication that such a report has been, or is being prepared.

Initial review by this report of UNESCO documents shows that only five of the 47 designated reserves in the United States, or 11 percent, have core areas that are legally constituted and devoted to long-term protection. These sites are to be securely protected for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research.

While efforts and plans have been made to restrict transportation, snowmobiling, concessions etc. in [Yellowstone, Glacier, Yosemite National Parks](#), and to secure minimally disturbed ecosystems, efforts to come into compliance with Article 4, Section 5[a] have been met with controversy and public outrage.

Further review reveals that only the [Everglades](#) and the [Champlain-Adirondak](#) biosphere reserves have clearly defined buffer zones, as required by Article 4, Section 5[b] of the Statutory Framework. This means that only 4 percent of all U.S. biospheres are in compliance with Section 5[a] and 5[b] of Article 4.

Only the [Southern Appalachian](#) and the Champlain-Adirondak biosphere reserves have reported to UNESCO the establishment of a transition area, as required under Article 4, Section 5[c]. Since the Southern Appalachian reserve has not designated a clearly identified buffer zone, it can only be assumed that only the Champlain-Adirondak biosphere reserve is in full compliance with Article 4, Section 5 of the Statutory Framework.

Under Article 4, biospheres must meet a number of other criteria. They must be of sufficient size to serve the three functions of biosphere reserves (Article 4, Section 4). This raises the question as to whether reserves such as the [Coram](#) and [University of Michigan Biological Station](#) can remain within the world network.

Reserves also must provide "an opportunity to explore and demonstrate approaches to sustainable development on a regional scale" (Article 4, Section 3). Scotland's Clais Moss and Saint Kilda reserves had to be removed from the World Network of Biosphere Reserves, because without a local population, it was impossible for these sites to meet the sustainable development functions of a biosphere reserve. [Denali](#) and the [Isle Royale](#) also have no local population, and should be removed from the list.

Article 7, Section 2 states that "Biosphere Reserves within the Network, as well as the objectives, should be given appropriate and continuing promotion." The U.S. Man & Biosphere Reserve Program is one of the least known programs in the United States. Few of the reserves disseminate information material about the reserve; a number don't have visible

commemorative plaques, putting them in non-compliance with the Statutory Framework.

Without knowledge of the biosphere reserve, it becomes impossible for reserve authorities to work with local populations in the management of the biosphere reserve and the sustainable development aspects which UNESCO deems as important as the conservation aspects of the reserve. While local Agenda 21 projects have been developed, these efforts have been controversial, and questions have arisen whether these efforts have been those of the local population, or just the efforts of selected individuals.

Should the United States' 47 Designated Biosphere Reserves Remain in the World Network of Biosphere Reserves?

Only one of the United States' Biosphere Reserves appears to be in compliance with the conservation measures of Article 4 of the Statutory Framework. Further analysis is needed to determine if the biosphere reserve is in compliance with the sustainable development aspects of the framework. But before further analysis is undertaken, the United States should take note of the United Kingdom's examination of biosphere reserves. The United Kingdom:

1. Considered the concepts supporting biosphere reserves and analyzed their current relevance and value in light of other designations across the UK.
2. Determined if there was any real wildlife gain (i.e. benefit to wildlife) to adopting the designation in the UK and, if so, under what circumstances.
3. In addition, the United States should determine and document the extent and intensity of support by local "public authorities" and local communities, if such support exists. Without this local support, the sustainable development criteria of the Statutory Framework cannot be achieved.

Unlike the UK, the United States is not a party to the Convention on Biological Diversity and has no international obligations under Article 8 of the Convention to establish a system of protected areas.

As previously noted in **The Seville Strategy's** ten key directions, the original biosphere roles of research and monitoring are only mentioned once. Rather, the strategy places strong emphasis on the importance of sustainable development and conservation outside the reserve and notes that:

"The UNCED process laid out the alternative of working towards sustainable development, incorporating care of the environment and greater social equity, including respect for rural communities and their accumulated wisdom. Agenda 21, the Convention on Biological Diversity, Climate Change and desertification, and other multi-lateral agreements, show the way forward at the international level."

The Seville Strategy also states that:

"the global community needs working examples that encapsulate the ideas of UNCED for promoting both conservation and sustainable development...express[ing] all the social, cultural, spiritual and economic needs of society." "Biosphere Reserves offer such examples. Rather than forming islands in a world increasingly affected by severe human impacts, they can become theatres for reconciling people and nature..."

In light of **The Seville Strategy**, a bait and switch has been done on the US. The United States agreed to conduct research and monitoring and is now faced with implementing a program which only remotely resembles the program they agreed to. The United States needs to consider the concepts now supporting biosphere reserves and analyze their current relevance to the United States in light of other designations such as wilderness, national parks, national monuments, national recreation areas and other national and state designations. It may be possible these designations better serve the people and natural resources of the United States

Article 2, Section 3 of the Statutory Framework states that "Individual Biosphere Reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory framework, the States take the measures which they deem necessary according to their national legislation."

Article 9[8] goes on to state:

"Should a State wish to remove a Biosphere Reserve under its jurisdiction from the Network, it shall notify the Secretariat. This notification shall be transmitted to the ICC for information. The area will then no longer be referred to as a Biosphere Reserve which is part of the Network."

A review of the relevance of the UNESCO Biosphere Reserve program is needed. If the program is not found relevant, currently designated reserves should be removed from the list under Article 9. If the program is found relevant, it should be the decision of local communities whether the program should be implemented in their region. As noted above, the equally important sustainable development aspects of the World Network of Biosphere Reserves cannot be implemented, without involvement of local peoples and communities.

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Other work by Tom McDonnell:

[International Implications on Water Use in America](#)

[Case Study of Ecosystem Management, The Biosphere Reserve Program, the World Heritage Program & the Wildlands Project in the Greater Yellowstone Ecosystem](#)

[Technical Review of the UNESCO Convention on World Heritage](#)

[Executive Order 13112 on Invasive Species](#)

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