



GUIDELINES FOR THE SELECTION OF BIOSPHERE RESERVES

AN INTERIM REPORT AND KEY

UNESCO'S MAN AND THE BIOSPHERE PROGRAM
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MAN AND THE BIOSPHERE

WORKING GROUP ON PROJECT 8: Guidelines
and Key for the Selection of Biosphere Reserves

Interim Report

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ABSTRACT

This document was initiated to fill the need for more specific guidelines in the selection of additional U.S. Biosphere Reserves. As such, it is intended to: (a) review the established prerequisite criteria for Biosphere Reserves, (b) provide a set of information requirements for site administrators submitting possible Biosphere Reserves nominations, and (c) establish the selection procedures for those who would determine the suitability and acceptability of a given site as a Biosphere Reserve. For countries not afforded the luxury of vast expanses of undisturbed lands, priorities may differ. In such cases, it is hoped that these guidelines will provide the necessary logical framework and ideas that may be adapted into other systems. This document was prepared for use by the U.S. National Committee for MAB Project 8 by Paul G. Risser and Kathy Cornelison, Department of Botany and Microbiology, University of Oklahoma, Norman, Oklahoma and Christine Schonewald, Natural History Division, National Park Service, Washington, D.C. Acknowledgements go to V. Carter, U.S.G.S. for her assistance on the coastal classification.

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INTRODUCTION

Objectives of Man and the Biosphere Project 8

Man and the Biosphere (MAB) project 8 was founded to ensure "Conservation of natural areas and of the genetic material they contain". Establishing a world-wide network of preserves, or "Biosphere Reserves", was conceived as being an essential first step. Three major objectives were delineated (5; p.11), as follows:

1. to conserve for present and future use, the diversity and integrity of biotic communities of plants and animals within natural ecosystems, and to safeguard the genetic diversity of species on which their continuing evolution depends;
2. to provide areas for ecological and environmental research including, particularly, baseline studies, both within and adjacent to such reserves, such research to be consistent with objective "1", above; and
3. to provide facilities for education and training.

MAB emphasizes the biogeographical representativeness of the Biosphere Reserve site selected for its program. Often comprised of already protected lands such as National Parks or Forests, the Biosphere Reserve network is intended to compliment other conservation efforts, enhancing rather than replacing existing conservation and research efforts. The Biosphere Reserve represents not only the local, natural condition but is also intended to meet local conservation and habitat restoration needs.

Sites selected by MAB include the diversity of ecosystems with their associated variations in soil, drainage, altitude, etc. They include continental, zonal systems as well as coastal azonal systems such as alluvial and tidal flats and intermittent water bodies in arid lands. It is in these sites where data obtained from monitoring, observation and manipulation, and restoration research are subsequently exchanged internationally and utilized for education and training. The publication of "The Relationship of the Biosphere Reserve to other Protected Areas" (2) has provided us with clear, in depth discussion of the purpose of MAB and MAB-8.

Existing Criteria for Establishment of Biosphere Reserves

The existing criteria for the establishment of Biosphere Reserves (see 5; pp.17-23) for further definitions and discussion are as follows:

1. Criteria for the selection of natural areas, representative of biomes, their major subdivisions and transition zones.

a. Essential criteria

- 1) representativeness - represent characteristic features of a particular biome;
- 2) ecosystem diversity - maximum representation of ecosystems, communities and organisms characteristic of the biome;
- 3) naturalness - degree of man-induced modifications from the natural state;
- 4) effectiveness as a conservation unit - factors such as size, shape and location which contribute to natural protective barriers.

b. Secondary criteria

- 1) degree of knowledge of area's history - completeness of information about past;
- 2) completeness of floral and faunal surveys - detail for extent of previous research;
- 3) presence of rare and endangered species - habitat for recognized special species;
- 4) education and research - potential for these activities.

2. Criterion for the selection of unique natural areas.

The single criterion for the selection of unique natural areas is that they contain sufficiently outstanding features that their international importance is beyond dispute.

3. Criteria for the selection of man-modified areas

a. Criteria for selection of modified or degraded landscapes

1. plausible chances for restoration to near-natural communities;
 2. adequate potential for research applicable to restoration management.
-

3. representative of the diversity of man's impact
- b. Criteria for selecting varied and harmonious landscapes under long-term land-use.
 1. diversity of landscape components
 2. stability of habitats under the given land-use.

Limitations of Existing Criteria

Although the above-mentioned criteria and their elaborations are thorough in their coverage, some distinctions and refinements are necessary. First, the concept of representative areas, as described by the MAB Task Force on Selection Criteria (5;p.24), originally proposed that a single site provide regions and facilities for both preservation and experimental research. However, the discovery that few known areas could sufficiently fulfill both criteria led to the concept of matching manipulation-oriented sites with those which were conservation-oriented, wherever two sites could be found within the same Biogeographic Province (1). For that reason, preservation-oriented and research-oriented sites are treated separately in this document, although the desirability of a single area satisfying both, remains.

The established criteria place great importance on natural area representation and provide several criteria for selection of sites. Especially in those countries where most of the landscape has been under human development for long periods of time, the criteria for selecting varied and harmonious landscapes under long-term land-use should be elaborated and further refined.

A second limitation which this document attempts to overcome is the absence of any reference to the total eventual number of Biosphere Reserves. The minimum number should be large enough to provide adequate ecosystem representation, while the maximum number should be small enough to allow manageability and simultaneously provide some assurance that the included sites would continue to be of high quality. Guidelines for arriving at this number of sites are provided in the following section.

GUIDELINES FOR SELECTION OF ADDITIONAL BIOSPHERE RESERVES

Assumptions, Definitions and Priorities

Sites nominated as Biosphere Reserves should satisfy all previously-established criteria, as summarized in the preceeding section entitled "Existing Criteria for the Establishment of Biosphere Reserves."

Completeness of representation in terms of major ecosystem types should be insured by invoking the following decisions:

- Since the International Union for Conservation of Nature and Natural Resources (IUCN) has developed systems of classifying natural regions for UNESCO (3), and the Biogeographic Provinces have been further modified for the initial selection of Biosphere Reserves (1), these modified Biogeographic Provinces shall form the classification basis for identifying future Biosphere Reserves.
- At least two sites for each Biogeographic Province should be acquired to represent major subdivisions and/or to more fully represent the diversity within and between Biogeographic Provinces, but the ultimate number of sites should be a function of the heterogeneity of the Biogeographic Province.
- If a Biogeographic Province does not contain representative Biosphere Reserves, MAB should actively seek identification and designation of appropriate sites.

For the purposes of determining suitability of a possible Biosphere Reserve, site characters should be considered according to their importance, as described by the Task Force on Criteria and Guidelines for Selection of Biosphere Reserves (5; pp.26-31).

1. Effective conservation measures.

- a. "Conservation...,especially of representative samples of natural ecosystems...,should be given highest priority..."(5: p.26).

Exceptions

Since "A research programme should be an objective of any Biosphere Reserve and will provide a means of distinguishing the Biosphere Reserves from the numerous existing programmes aimed exclusively at nature conservation," (5: p.30), this document recommends further distinctions be identified. In Biogeographic Provinces where conservation-oriented areas are already under effective conservation controls, new candidates must additionally satisfy one of the following:

- 1) experimental/manipulative research already must be allowed within certain areas of the site.
- 2) amendments to existing controls must be made to allow experimental/manipulative research in certain areas.
- 3) there must exist some site within the same Biogeographic Province which may be appropriate for designation as a comparable research-oriented Biosphere Reserve.

It is necessary to distinguish "observational" research from "experimental/manipulative" research. The latter permits major alterations in ecosystems, communities and populations for the purpose of answering scientific and management questions which can be answered in no other manner. Observational research does not permit alterations in the natural structure and function of these biological systems. Further elaboration of permissible observational research activities may be found in the Standards and Policy Guidelines for Research Natural Areas as codified by the Federal Committee on Ecological reserves.

- b. Conservation of unique samples of natural ecosystems is to be given second priority.

Exceptions

Again, where such areas are already under effective conservation controls, new candidates must additionally satisfy one of the three criteria given under "Conservation of representative samples...Exceptions.

2. Experimental/manipulative research potential in natural areas.

Since "MAB (is) essentially a programme of problem-oriented research,"(5; p.27), third priority should be given to sites where long-term baseline studies, as well as experimental and manipulative research, may be conducted.

Exceptions

Where such areas already have extensive research programs in operation, they must additionally satisfy one of the following:

- 1) The site itself must contain an appropriate protected natural area on which man has and will continue to have minimal impact.

- 2) There must exist some site within the same Biogeographic Province which is appropriate for designation as a comparable conservation-oriented Biosphere Reserve.
3. Potential for studying effects of modifications by man.
 - a. Regions of long-term harmony should be given fourth priority. The rationale for this decision is supported by the following statements regarding sites containing varied and harmonious landscapes under long-term land-use: "areas (showing) minimal impact from man...should receive first priority in siting," (5; p.12); but the Biosphere Reserves should comprise not only completely natural ecosystems but also semi-natural ecosystems, including those maintained by long-established land-use practices (5; p.6).
 - b. For the same reason the long-term harmony should be given fourth priority while sites established in disturbed and degraded areas capable of restoration should be given fifth priority.

The total array of Biosphere Reserves should be limited to a manageable number in order to maintain the integrity and significance of designating sites as "Biosphere Reserves."

Ad hoc expert panels should be designated by the MAB-8 Directorate to determine the suitability of sites for nomination as Biosphere Reserves. Panel members should be chosen on the basis of their knowledge of the region and should include scientists, and managers and educators.

This panel will be asked to judge the representativeness of nominated sites, quality of existing research and management data, and potential protection integrity of the site. In addition, the panel must compare the candidate sites to existing Biosphere Reserves (Appendix II) and to other potential reserves in the same Biogeographic Province to ascertain that there are not preferable potential sites.

Data Required for Consideration as a Biosphere Reserve

For a site to be considered for nomination as a Biosphere Reserve, the evaluating panel members must be provided with information pertinent to Biosphere Reserves requirements. Foremost in these requirements is the fulfillment of the essential criteria established by the Task Force on Criteria and Guidelines for Establishment of Biosphere Reserves (summarized in II-D). A standard format, which was adopted by the I.C.C. for submittal by prospective Biosphere Reserves to panel members, should provide sufficient information, when properly completed and when

critically examined, to determine whether these criteria are satisfied. The format includes the following (6; pp.12-13):

Name	
Geographic Location	(coordinates of latitude and longitude; description of location in relation to major towns, rivers, mountain ranges; boundaries of administrative units; map)
Altitude	(range, in meters above sea level)
Legal Protection	(activities allowed or prohibited by law)
Land Tenure	(ownership --central government, local government, private, etc.)
Physical Features	(brief description, including representative topography, soils, geology and unique features)
Vegetation	(brief description of plant species and communities, including representative and unique features)
Fauna	(brief description of animal species, including representative and unique features)
Zoning	(delimitation of core areas, buffer zones, or other zoning)
Modification by Man	(major alterations of ecosystems from a "natural" condition; human population; structures; tourism and impacts)
Scientific Research Potential	(brief description of past, present, or proposed research in the area; special problems which require information from research; potential role of the area in international research programs; facilities which might aid logistics of research; ease of access to the area; any dominating feature being monitored or particularly appropriate for baseline studies)

Principal Reference Material	(most useful literature of scientific and general nature)
Staff	(personnel assigned to protection, maintenance, research, etc.)
Budget	(funds available each year for protection, maintenance, research, etc.)
Address of Local Administration	

Although the standard format requests information regarding land tenure, zoning, modification by man, scientific research potential and unique physical and biological features, the process of evaluation, through which additional Biosphere Reserves will be selected, requires that these particular data be carefully elaborated to provide panel members a precise description with which to work. Where there are existing Biosphere Reserves within the Biogeographic Province of a candidate site, it will be particularly useful if persons submitting the site will state clearly how the potential site either augments the existing sites or satisfies omissions in the existing Biosphere Reserve network.

Forms for presenting the requisite information in this standard format can be obtained from the U.S. MAB Program, % Natural History Division, National Park Service, Department of the Interior, Washington, D.C. 20240.

PROCESS FOR SITE EVALUATION: CONTINENTAL AREAS

Method

Used in conjunction with the set of references for this document and a completed standard format, the precise set of instructions given below should allow expert panels to determine the suitability of a site for nomination as a Biosphere Reserve. The Panel evaluating a site will seek to determine that the integrity of the candidate site is secure over a long period of time; existing sites may be reviewed for a change in designation status if conditions become altered significantly from those at the time of acquisition. When the "ACCEPT" decision is indicated below, it is assumed that the Panel has ascertained that no superior potential sites are available.

- A. Designate a modified Biogeographic Province (1) applicable to the site.
- B. Choose one of the following Biosphere Reserve categories which best describes the nominated site.
 1. Representative of the diversity of natural ecosystems in the given Biogeographic Province, or major subdivision, with well protected areas in which no manipulation is allowed (5: pp.17-21) Go to C-1.
 2. Representative of internationally unique features (5: p.21) Go to C-2.
 3. Representative of the diversity of natural ecosystems within the given Biogeographic Province or a major subdivision with extensive areas set aside for manipulative research (5: pp.24-31) Go to C-3.
 4. Representative of varied and harmonious landscapes under long-term land use (5: p.22)..... Go to C-4.
 5. Representative of man-modified or man-degraded landscapes capable of restoration of near-natural communities (5: p. 23) Go to C-5.
 6. None of the above,..... REJECT
- C. Evaluate each candidate in each category according to the following process.
 1. Representative of the diversity of natural ecosystems with well-protected areas in which no manipulation is allowed.
 - a. If there are no existing Biosphere Reserves representative of the diversity of natural ecosystems within the given Biogeographic Province ACCEPT
 - b. If there exists one Biosphere Reserve designated for conservation and representative of the diversity of natural ecosystems with the given Biogeographic Province CONTINUE
 - 1) and it represents the same major subdivision REJECT
 - 2) but it represents a different major subdivision CONTINUE

- a) and research is not and cannot be provided within the site or in a comparable site..REJECT
 - b) and research is or can be provided within the site or in a comparable site..... ACCEPT
 - c. If there exists within the Biogeographic Province, more than one conservation-oriented Biosphere Reserve, or one or more nonconservation-oriented Biosphere Reserves CONTINUE
 - 1) and a Biosphere Reserve category will then be duplicated (except in those Biogeographic Provinces where more than two sites have been designated)... REJECT
 - 2) and no Biosphere Reserve category will then be duplicated CONTINUE
 - a) if research is not and cannot be provided within the site or in a comparable site..... REJECT
 - b) if research is or can be provided within the site or in a comparable site..... ACCEPT
- 2. Representative of important unique features such that the international significance of these features is clearly discernible.
 - a. If a Biosphere Reserve exists which represents basically the same unique features REJECT
 - b. If there exist no Biosphere Reserves which represent basically the same unique features.....CONTINUE
 - 1) and the nominated site is not protected by effective conservation measures REJECT
 - 2) but the nominated site is protected by effective conservation measures CONTINUE
 - a) and observational research is not and cannot be provided within the site or in a comparable site.REJECT
 - b) and observational research is or can be provided within the site or in a comparable site ACCEPT
- 3. Representative of the diversity of natural ecosystems within the Biogeographic Province, with extensive areas set aside for manipulative research.

- a. If there are no existing Biosphere Reserves representative of the diversity of natural ecosystems within the given Biogeographic Province.....ACCEPT
- b. If there exist one or more Biosphere Reserves designated for manipulative research within the given Biogeographic Province.....CONTINUE
 - 1) and duplication of representation in any major sub-division would result REJECT
 - 2) and no major subdivision will have duplicated representation CONTINUE
 - a) and an appropriate protected natural area is not and cannot be provided within the site or in a comparable site REJECT
 - b) and an appropriate protected natural area is or can be provided within the site or in a comparable site ACCEPT
 - c) if there exist one or more Biosphere Reserves, not designated for manipulative research, within the same Biogeographic Province CONTINUE
 - 1) and if appropriate non-manipulative conservation areas are not and cannot be provided within the site or in a comparable site.....REJECT
 - 2) and if appropriate non-manipulative conservation areas are or can be provided within the site or in a comparable site ACCEPT
- 4. Representative of varied and harmonious landscapes under long-term land use.
 - a. If there exist one or more Biosphere Reserves with basically the same type of landscapes under the same usage within the given Biogeographic Province..... REJECT
 - b. If there exist no such similar Biosphere Reserves CONTINUE
 - 1) and the nominated site is not protected by effective conservation measures..... REJECT

- 2) and the nominated site is protected by effective conservation measures CONTINUE
 - a) and research is not and cannot be stipulated within the site or in adjacent similar areas REJECT
 - b) and research is or can be provided within the site or in adjacent similar areas ACCEPT
- 5. Representative of man-modified or man-degraded landscapes capable of restoration.
 - a. If there exist one or more Biosphere Reserves with similar modifications within the given Biogeographic Province CONTINUE
 - 1) but the duplication will provide a unique potential for research applicable to restoration research or management ACCEPT
 - 2) and the duplication would provide no new opportunities for research applicable to restoration or management REJECT
 - b. If there exist no such similar Biosphere Reserves..CONTINUE
 - 1) but there exists extensive potential for research applicable to restoration management ACCEPT
 - 2) and there is little potential for research applicable to restoration management REJECT

Ad hoc Panel

The ad hoc evaluation panel should be constituted so that its membership represents scientists, land managers and educators. Furthermore, the panel should be chosen on an ad hoc basis so that the members are familiar with the attributes of the Biogeographical Province of the candidate sites.

It will be necessary to insure that the panel is thoroughly acquainted with: (a) the objectives of MAB, Project 8; (b) the selection criteria and procedures contained herein; and (c) the existing Biosphere Reserves in the relevant Biogeographic Provinces (Annex II). Therefore, panel members should be provided with each of the references in addition to this document and the standard format submitted from the candidate site (5).

PROCESS FOR SITE EVALUATION: COASTAL AREAS

Method

Used in conjunction with the set of references for this document and a completed standard format, the precise set of instructions given below should allow expert panels to determine the suitability of a site for nomination as a Biosphere Reserve. The Panel evaluating a site will seek to determine that the integrity of the candidate site is secure over a long period of time; existing sites may be reviewed for a change in designation status if conditions become altered significantly from those at the time of acquisition. When the "ACCEPT" decision is indicated, below, it is assumed that the Panel has ascertained that no superior potential sites are available.

- A. Designate a coastal habitat type and ocean region applicable to the site (see Annex III).
- B. Choose one of the following Biosphere Reserve categories which best describes the nominated site.
 1. Representative of the diversity of natural coastal communities in the specified habitat type and ocean region, with well protected areas and where no manipulation is allowed (5: pp.17-21)..... Go to C-1.
 2. Representative of internationally unique features, such that the international significance of these features is clearly discernible (5: p.21) Go to C-2.
 3. Representative of the diversity of natural coastal communities in the specified habitat type and ocean region, with extensive areas set aside for manipulative research. (5: pp.24-31) Go to C-3.
 4. Representative of varied and harmonious communities under long-term use (5: pp.22)..... Go to C-4.
 5. Representative of man-modified or man-degraded coastal areas capable of restoration to near-natural communities. (5: p.23)..... Go to C-5.
 6. None of the above REJECT

C. Evaluate each candidate in each category according to the following process:

1. Representative of the diversity of natural coastal communities in the specified habitat type and ocean region, with well protected areas and where no manipulation is allowed.
 - a. If there are no existing Biosphere Reserves representative of the diversity of natural coastal communities within the given habitat type and ocean region ACCEPT
 - b. If there exists one Biosphere Reserve designated for conservation and is representative of the diversity of coastal communities within the given habitat type and ocean region..... CONTINUE
 - 1) and it represents the same combination of communities REJECT
 - 2) but it represents a different combination of communities CONTINUE
 - a) and research is not and cannot be provided within the site or in a comparable site REJECT
 - b) and research is or can be provided within the site or a comparable site ACCEPT
 - c. If there exists within the habitat type and ocean region, more than one conservation-oriented Biosphere Reserve, or one or more non-conservation-oriented Biosphere Reserve CONTINUE
 - 1) and a Biosphere Reserve category will then be duplicated (except in those habitat types and ocean regions where more than two sites have been designated) REJECT
 - 2) and no Biosphere Reserve category will then be duplicated CONTINUE
 - a) if research is not and cannot be provided within the site or in a comparable site..... REJECT

- b) if research is or can be provided within the site or in a comparable site..... ACCEPT
- 2. Representative of internationally unique features, such that the international significance of these features is clearly discernible.
 - a. If a Biosphere Reserve exists which represents basically the same unique features REJECT
 - b. If there exists no Biosphere Reserves which represent basically the same unique features CONTINUE
 - 1) and the nominated site is not protected by effective conservation measures REJECT
 - 2) but the nominated site is protected by effective conservation measures CONTINUE
 - a) a observational research is not and cannot be provided within the site or in a comparable site REJECT
 - b) and observational research is or can be provided within the site or in a comparable site ... ACCEPT
- 3. Representative of the diversity of natural coastal communities within the given habitat type and ocean region, with extensive areas set aside for manipulative research.
 - a) If there are no existing Biosphere Reserves representative of the diversity of natural coastal communities within the given habitat type and ocean region... ACCEPT
 - b) If there exist one or more Biosphere Reserves representative of the diversity of natural coastal communities within the given habitat type and ocean region..CONTINUE
 - 1) and duplication of representation of any major Coastal community would result REJECT
 - 2) and no major coastal community will have duplicated representation CONTINUE
 - a) and an appropriate protected natural area is not and cannot be provided within the site or in a comparable site REJECT

- b) and an appropriate protected natural area is or can be provided within the site or in a comparable site ACCEPT
 - c) if there exist one or more Biosphere Reserves, not designated for manipulative research, within the same habitat type and ocean region CONTINUE
 - 1) and if appropriate non-manipulative conservation areas are not and cannot be provided within the site or in a comparable site REJECT
 - 2) and if appropriate non-manipulative conservation areas are or can be provided within the site or in a comparable site ACCEPT
 - 4. Representative of varied and harmonious communities under long-term use.
 - a. If there exist one or more Biosphere Reserves with basically the same type of coastal areas under the same usage within the given habitat type and ocean region REJECT
 - b. If there exist no such similar Biosphere Reserves CONTINUE
 - 1) and the nominated site is not protected by effective conservation measures REJECT
 - 2) and the nominated site is protected by effective conservation measures CONTINUE
 - a) and research is not and cannot be stipulated within the site or in adjacent similar areas.. REJECT
 - b) and research is or can be stipulated within the site or in adjacent similar areas ACCEPT
 - 5. Representative of man-modified or man-degraded coastal areas capable of restoration.
 - a. If there exist one or more Biosphere Reserves with similar modifications within the given habitat type and ocean region CONTINUE
-

- 1) but the duplication will provide a unique potential for research applicable to restoration research or management ACCEPT
 - 2) and the duplication would provide no new opportunities for research applicable to restoration or management REJECT
- b. If there exist no such similar Biosphere Reserves,
..... CONTINUE
- 1) but there exists extensive potential for research applicable to restoration and management..... ACCEPT
 - 2) and there is little potential for research applicable to restoration and management..... REJECT

Ad hoc Panel

The ad hoc evaluation panel should be constituted so that its membership represents scientists, coastal managers and educators. Furthermore, the panel should be chosen on an ad hoc basis so that members are familiar with the attributes of the habitat type and ocean region of the candidate sites.

It will be necessary to insure that the panel is thoroughly acquainted with: (a) the objectives of MAB, Project 8; (b) the selection criteria and procedures contained herein; and (c) the existing Biosphere Reserves in the relevant habitat types (Annex III). Therefore, panel members should be provided with each of the references on page 19, in addition to this document and the standard format submitted from the candidate site (6).

SELECTION CRITERIA AND PROCEDURES FOR BIOSPHERE RESERVES IN OTHER COUNTRIES

In October and November, 1977, a UNESCO Regional Workshop on "Techniques for Selection of Biosphere Reserves" was held in Australia and New Zealand, involving participants from several countries of the Asian and Pacific region. Thus report ^{1/} addresses the criteria for selection of Biosphere Reserves in a manner

^{1/} McAlpine, V. and B.P.J. Molloy. 1977. Techniques for selection of Biosphere Reserves. Report of the UNESCO Regional Workshop supported jointly by the UNESCO Regular Program and participation program and the Australian and New Zealand National Commissions for UNESCO.

similar to that used in the United States, but the former includes both an "ideal" and a "minimum" approach to be used. Annex IV is a reproduction of Table 1 (p. 13) from this document and is presented here for comparison.

Further elaboration and exploration of the MAB-8 objectives in relation to other protected area programs in the U.S. and other countries are continued in a recent report^{2/}. This information might be useful to those who wish to submit candidate sites.

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ANNEX 1

Participants - MAB 8 Directorate

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Guidelines for the Selection of Biosphere Reserves

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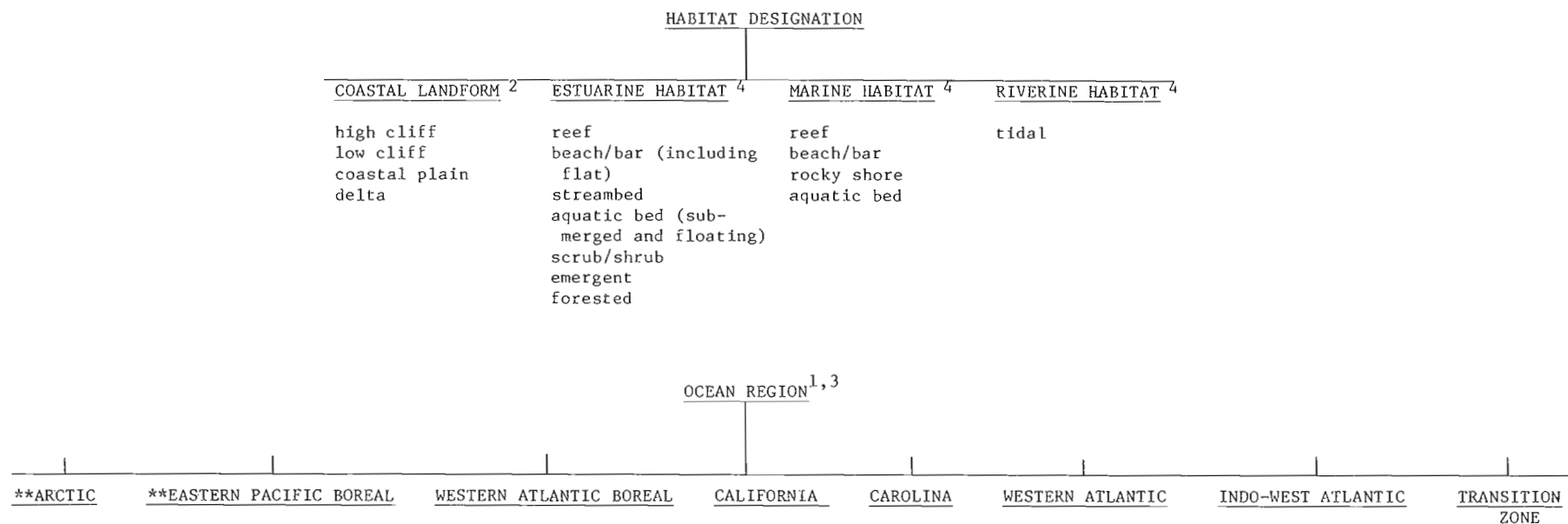
BIOSPHERE RESERVE PRESENTATION OF BIOGEOGRAPHIC PROVINCES

Biogeographic Province (Subdivision)	Existing Biosphere Reserves	BIOSPHERE RESERVE CATEGORIES				
		Representative		Man-Modified		
		Natural	Manipulative	Unique	Long-term Use	Degraded
Alaskan Tundra						
Aleutian Islands	Aleutian Island N.W.R.	X			X	X
Austroriparian						
Californian	San Dimas Experimental Forest	X	X		X	X
	San Joaquin Experimental Forest		X		X	X
California Islands	Channel Islands Nat'l Monument	X				X
Chihuahuan	Big Bend Nat'l Park N.P.	X				
	Jornada Experimental Range		X			X
Eastern Forest	Coweeta Experimental Forest	X	X			X
(South)	Great Smoky Mountains N.P.	X				
Eastern Forest	Hubbard Brook Experimental Forest		X			X
(Northeast)						
(Northcentral)						
Everglades	Everglades National Park	X	X	X		
Grasslands	Central Plains Experimental Forest		X			
(Short grass)						
Grasslands						
(True prairie)						
Great Basin						
(North)						
Great Basin	Desert Experimental Range	X	X			X
Greater Antillean	Luquillo Experimental Forest	X	X		X	X
Hawaiian						
Lesser Antillean	Virgin Islands National Park					X
Micronesian						X
Oregonian	Cascade Head Experimental Forest		X			X
	Olympic National Park	X				
Rocky Mountain	Coram Experimental Forest	X	X			X
(North)	Glacier National Park	X				X
	Yellowstone National Park	X		X		
Rocky Mountain	Fraser Experimental Forest	X	X			X
(South)	Rocky Mountain National Park	X				
Sierra Cascade	H.J. Andrews Experimental Forest	X	X			X
(North)	Three Sisters Wilderness	X				
Sierra Cascade	Sequoia-Kings Canyon National Park	X		X		X
(South)	Stanislaus-Tuolumne Experimental Forest		X			X
Sitka						
Sonoran	Organ Pipe Cactus Nat'l Monument	X				
(Typical)						
Sonoran						
(Mojave)						
Yukon Taiga	Mt. McKinley National Park	X				

Biosphere Reserve categories which are presently represented are indicated by "X".

ANNEX III

COASTAL ZONE: INTERTIDAL + INLAND ADJACENT* WATERS AND WETLANDS



*separated by land with potential tidal overflow or adjacent to estuarine wetlands but salinity less than 5‰: this may include LACUSTRINE AND PALUSTRINE

**Most of the Bering Sea lies in the Eastern Pacific Boreal Region, though its northern part extends into the Arctic Region.

Following is an example of a habitat designation and ocean region: The coastal landform is coastal plain; the site includes estuary with mostly aquatic beds and beach/bar (flats); the marine habitat consists mostly of beach/bar; and the site lies in the Carolina Region.

Increased detail may be used in subsequent descriptions of the site, and it is suggested that the terminology and format of the Classification of Wetlands and Deep-Water Habitats of the United States; operational draft (U.S. Fish and Wildlife Service, Department of the Interior)(4) be used.

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TECHNICAL PROCEDURES FOR BIOSPHERE RESERVE SELECTION

(A) STAGES	(B) IDEAL APPROACH	(C) MINIMUM APPROACH	(D) EXAMPLES
1. Establishment of an interdisciplinary disciplinary working party to develop an appropriate system of ecosystem classification suitable for MAB 8 Projects	MAB National Committee or regional co-ordinating bodies, designate groups or individuals Start with UDVARDY classification and assess national validity Define major ecosystems in the country.	Accept, modify, or replace Udvardy classification as appropriate. Define major ecosystems in country.	Interdisciplinary panel or scientists.
2. Application of such a classification system of major ecosystems to the land resources of the national territory to provide maps and description of the major ecosystems.	Complete a standardized inventory (within a country, or co-operatively within a region), of natural resources, current and past uses.	Inventory as resources permit, using: a. available data b. expert knowledge c. reconnaissance surveys	Wilson (1977) Stanton and Morgan (1977) Laut <u>et al</u> (1977) Specht <u>et al</u> (1974) Ratcliffe <u>ed</u> (1977)
3. Assessment of existing reserves against maps and descriptions and against Biosphere Reserve Criteria.	Detailed documentation of all reserves for selection, management and security including historical changes and objective comparison against Biosphere Reserve criteria.	Documentation of all reserves at the major ecosystem level and subjective comparison with Biosphere Reserve criteria	Field Surveys such as South Australia Ecological Survey (J. Douglas) and other surveys initiated in New Zealand and Australia. Land Use History. Publications Files. Unpublished reports. Data Storage and Retrieval System (see e.g. Appendix USA Biosphere Reserve Synthesis Project).

(A) STAGES	(B) IDEAL APPROACH	(C) MINIMUM APPROACH	(D) EXAMPLES
4. Assessment of existing reserves to Identify gaps in the coverage of major ecosystems, to add new reserves or supplement existing reserves to meet Biosphere Reserves criteria.	Ensure that all sites in all ecosystems are sufficiently documented as a basis for selection.	Confirmation that recommended location satisfies Biosphere Reserve criteria.	Field Surveys. Unpublished Reports Notes and files. Data Storage and Retrieval System Contracts and Assignments. Land Use History.
5. Nomination of an optimum number of Biosphere Reserves to encompass the range of major ecosystems within the national territory, considering programs in adjoining nations with similar ecosystems.	Select several possible Biosphere Reserve sites in each major ecosystem which meet criteria for MAB Biosphere Reserve.	Select among possible sites those which most nearly satisfy the criteria.	Final site selection by a committee including scientists and administrators after adequate public consultation. Preparation of standard nomination form for endorsement by MAB Committee.

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