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Keynote Address: The Neotropical Realm

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ABSTRACT. *The Neotropical Realm has been particularly active over the past decade, both in establishing new areas and in innovative management approaches. The concept of different categories of protected areas is now firmly established in the Neotropical Realm, and management planning is widespread. It is now time to develop more fine-grained systems of assessing protected area coverage at the national or regional level, in order to provide the guidance necessary to further develop protected area systems. Difficulties faced in the Realm include planning and implementation of categories other than national park, planning and implementation of national systems, implementation of management plans, and cooperation between scientists and managers; these difficulties are balanced by an equally impressive set of accomplishments.*

1. INTRODUCTION

The Neotropical Realm extends from the southern subtropical areas of the USA to the southern tip of South America, in "Tierra del Fuego", which is swept by cold Antarctic winds and is anything but tropical or warm.

There is a rich pre-Columbian heritage on conservation in the Neotropical Realm which probably included protected areas, although we understand only a fraction of the past situation. We know that the Incas protected the vicunas in the Andean region, and very possibly their pasture grounds. The decline came under the colonial status and even after independence it was not possible to stop this trend, in spite of some legal moves undertaken in the early 19th century by nobody less than the liberator Simon Bolivar. In Mexico, the Aztecs kept sophisticated semi-natural gardens of medicinal plants. Also, many Amerindian groups, such as the Kuna of Panama, have the practice of establishing

natural botanical parks or reserves for the exclusive use by medicine men for the collection of medicinal plants.

There is also some evidence that some of the small rodents were favoured by certain practices, such as protecting trees that produce food, such as *Brosimum* spp. Some trees like the *Ceiba pentandra* in Cuba or animals like the tapir in southern Venezuela were considered taboo, because of their association with human spirits. There are doubtless many other examples.

During the past century natural areas have been receding notably due to a traditional policy of "opening" new areas for agriculture, grazing and colonization, triggered mainly by population growth. This trend has increased over the last 15-20 years, triggered mainly by the very wasteful conversion of tropical forests to pasture, mostly to export lean beef for the hamburger industry in industrialized countries, where it is mixed with germ-fed beef (to meet the legal requirements for maximum permissible fat content). The rate of such conversion during that period reached alarming proportions and continues to grow worse.

Conservation through the official protection of areas of outstanding value probably began in Argentina, through the pioneer efforts of Perito Francisco Moreno in the early 20th century. The first record of a legally protected area was probably in Mexico, in 1898, known as Bosque El Chico Conservation Area, but it does not figure in IUCN's list and like many other protected areas one must assume that it was a well intentioned gesture which has not survived the following decades.

Many of the finest national parks of Argentina were established in the thirties. This included Iguazu, a frontier park created in 1934, which also was established on the Brazilian side in 1939. In Brazil, two national parks, Itatiaia and Serra dos Orgaos, also received legal status

in that decade. From then through the decade of the sixties, little by little national parks and protected areas were established in most countries of the realm. For historical and traditional reasons, the emphasis was almost exclusively on national parks and to a small extent on a few other very similar categories (natural monuments, scientific or biological reserves, wildlife sanctuaries). Other management categories were largely ignored as possibilities, indeed many of them had not yet been conceived. Likewise, the process was characterized by the "piecemeal" declaration of individual parks and similar protected areas, usually for highly disparate and varied reasons; it was not conceived of in terms of complete systems or subsystems of wildland management units, either of one or a few categories such as national park, even less so of a broader range of categories covering many types of wildlands management.

One important step which helped to stimulate the declaration of more parks and protected areas as well as broaden the number of different management categories being utilized, was the Convention on Nature Protection in the Western Hemisphere, approved in 1940 and since then ratified by 15 countries (IUCN, 1981).

By far the greatest achievements have taken place in the past 10-15 years, when both the number of legally established areas and the total area included have increased approximately three times. Likewise, the number of different management categories being utilized has increased notably, with categories such as multiple-use management area (national forest or forest reserve), biosphere reserve, water production reserve (hydrological reserve), archeological monument, resource reserve, indigenous or anthropological reserve and national recreation area, becoming ever more widespread throughout the realm during the period. A particularly striking example of this is the case of Central America reported by MacFarland and Morales (1981), where between 1969 and 1981 the number of different management categories went from 6 to 14, the number of wildland units or protected areas from 25 to 149 and the total area protected from 193,500 to 615,000 sq km.

In addition, the concept of planning and implementation of *systems* or networks of parks and protected areas came about in the late sixties (Budowski, 1967; Miller, 1980). And it has been in the last decade, that the first true, but still very partial, plans and strategies for national or subregional systems or subsystems of wildlands have been prepared and their implementation begun. Particularly notable have been the efforts in Brazil, Chile, Costa Rica, Dominica, Ecuador, and the Lesser Antilles (Miller, 1980; MacFarland, 1982; Putney, 1981).

The progression from the establishment of individual, scattered national parks to systems/subsystems strategic planning, represents a natural evolution and maturation of the process. It is particularly encouraging to observe the great strides achieved in recent years, which have far out-distanced all previous periods.

2. CURRENT COVERAGE OF PROTECTED AREAS

Table I shows the protected areas (numbers and hectareage covered) by biogeographic provinces for the entire realm, and Table II shows the protected areas by countries. The almost 320 areas represent approximately 450,000 sq km or 1.7% of the total terrestrial area of the realm. However, caution must be used in interpreting this information because it only includes four categories of the 10 basic ones described by IUCN: i.e., 1) Scientific Reserves/Strict Nature Reserves; 2) National Parks; 3) Natural Monument/Natural Landmarks; and 4) Nature Conservation Reserves/Wildlife Sanctuaries. Most countries in the realm have established fairly extensive areas in other categories, particularly notable ones being multiple-use management areas (national forests or forest reserves), watershed protection reserves, resource reserves and anthropological reserves, which, if added to IUCN's inventory, would probably increase the total area covered by at least 2-3 times.

3. WEAKNESSES AND GAPS IN PROTECTED AREAS COVERAGE

It is somewhat difficult to determine the key gaps and weaknesses in the existing biogeographic coverage by parks and protected areas for two main reasons.

First, the IUCN biogeographic classification system (Udvardy, 1975) is of limited usefulness for detailed analysis at the national level, as it is a macro-level system designed for global analysis.

Given that problem, other more objective and finer-scaled classification schemes must be developed and applied in order to be able to determine the adequacy and gaps in protected areas coverage. For example, in all of Central America and at least some South American and Caribbean countries, the Holdridge ecological or life zone classification system is being utilized to determine such coverage and to help in the selection of new wildland management units. That system, of course, has its limitations, but offers the following advantages:

- 1) It is based on straightforward, clear and easily understood parameters and methods which are used in a standardized manner (i.e. its subjectivity is minimal);
- 2) the parameters are ones for which information is usually available, being very basic and simple ones: precipitation and temperature;
- 3) the system is particularly useful in mountain areas where significant changes occur over small distances and areas;
- 4) it has been used very extensively and is well known throughout the tropical and subtropical Americas;
- 5) it gives a much better level of descriptive resolution, i.e. a much finer scale, without becoming too bogged down in detail, and still being

easy to utilize with a fairly minimum information base; and,

- 6) it offers the option, once the basic life zones or biomes are mapped, of being able to proceed to greater depth, within the system, to classify and map vegetative associations or ecosystems within each life zone (Holdridge and Tosi, 1972; Tropical Science Center, 1980).

An example of the difference is Costa Rica. According to the IUCN system, the entire country falls within two biogeographic provinces, one of them Cocos Island, and 6 biomes, but with the Holdridge system it consists of 12 life zones and 6 transitions between those zones, some of them easily subdivided into vegetation associations. The system has been applied to 16 countries in the Realm, including all of Central America, most countries in South America, several in the Caribbean, and the eastern U.S., as well as other tropical and subtropical countries. Ideally, the system works best when appropriate field checking is part of the process, but very useful first level life zone maps can be produced in the laboratory from only climatic data. It would not involve much cost and time to produce such first level "laboratory" maps for the rest of the Neotropical Realm's countries or subregions.

Another example of a finer-scaled and -tuned biogeographic classification is the use of "Pleistocene refuges" in the Amazon. More is being learned each year about those areas from which recolonization of vast regions occurred. Their identification is fundamental for the determination of where to establish parks and protected areas, as has been done in Brazil (Jorge Padua, this volume).

The second problem in determining gaps and coverage adequacy is that IUCN's inventory of wildlands or protected areas is still not complete, as mentioned in the previous section. We know (MacFarland and Morales, 1981; Paucar, 1982) that many countries, probably most, in the realm also have established sizeable numbers of protected areas in other categories, particularly categories V-VIII (multiple-use management areas, watershed protection areas, anthropological reserves, etc.), of which only a small fraction has been inventoried in the first round of IUCN monitoring (IUCN, 1982b). As IUCN has recognized, those areas must be included in the inventory process because they (or at least parts of them, depending upon management use zoning and category) protect substantial ecosystems, genetic resources and diversity. That is the case for example in several Central American countries, examples being:

- 1) Costa Rica where almost 27% of the national territory is in legally declared wildland units of all categories, but only one-third (national parks, biological reserves, wildlife refuges and recreation areas) entered into the IUCN first-round inventory, the other two-thirds being forest reserves, watershed protectorates and Indian re-

serves, which account for approximately 55% of all remaining primary forest in the country; and

- 2) Belize, where 18.5% of the country is in legally declared wildland units, but only about 1% was covered in the inventory (natural monuments and scientific reserves), the other 99% being in 10 forest reserves.

Thus, until we have both a better biogeographic classification(s), combined with a much more complete inventory, determining gaps and adequacy of coverage will be very provisional. The appropriate studies, for example the overlaying of Holdridge life zone maps for the countries with those of complete inventories of all protected areas or wildland units, has not been done for the vast majority of the realm. In one of the few cases in which it has been done, Costa Rica, a recent study by the Tropical Science Center recommends adding 47 new biological reserves, wildlife refuges, watershed protection zones, forest reserves and national parks, in order to give adequate coverage of terrestrial ecosystems, genetic resources and diversity. The vast majority would be relatively small in size, but in total it would add another 5-6% of the national territory to the wildlands system.

Another word of caution is necessary. As part of completing the inventory of areas, at least some minimal characterization and qualification of the type of management and zoning being applied in those other categories, as well as of the effectiveness of management in them, will be necessary. Since several of those other categories imply more direct uses of natural resources, such qualification will be necessary in order to obtain a first-level idea of effective (as against purely legal) coverage and gaps. Since IUCN will soon begin characterizing the effectiveness of management in the already-inventoried areas, it should be possible to combine the process of improving the biogeographic classification base, completing the wildlands inventory and characterizing effectiveness of management, for all areas. In this entire process it will be very important to keep in mind the very notable potential and need for biosphere reserves (and similar approaches) for protecting key representative "samples" of ecosystems, diversity and genetic resources, as well as for developing new and alternative management technologies for sustained resource use, through experimentation and research.

Despite all of the foregoing, it is already possible to note numerous gaps in the coverage by parks and protected areas using the IUCN classification system and inventory at hand: several biogeographic provinces are not represented at all and at least a dozen others are very poorly represented (Harrison, Miller, and McNeely, this volume; and Dourojeanni, this volume).

Two other general biomes are very poorly covered by protected areas in the realm: the dry (deciduous) forest and the cloud forest. The former is of course most liable to be converted to food or fibre crops and for grazing because, among other factors, the forest can be

easily removed by fire. More severe in consequence is the gradual disappearance of cloud forests, in view of their indispensable value as the most efficient water flow protecting device. As sad as it may appear, the value of the cloud forest is not yet sufficiently recognized. How many coastal or freshwater fishermen, for example, recognize that their catch depends on some of these forests or indeed how many scientists are aware of the increased horizontal precipitation from the fog drip that takes place?

Probably the single greatest gap in protected natural areas is in the coastal and marine area of the realm. With the very few exceptions of some scattered protected areas along the coasts of Central and South America and Mexico, this entire portion of the realm has been almost totally ignored. Most of those few protected areas which contain marine and/or coastal resources were established principally because of terrestrial resources, not the marine ones. The establishment, management and development of protected area systems, subsystems and units in the marine and coastal areas is in its infancy compared with progress in the terrestrial part of the realm. The one exception to this general situation is in the Caribbean, particularly the Lesser Antilles, where notable strides in the planning and implementation of marine and coastal protected areas have been made during the past 4-5 years, due to the activities of a number of national resource management agencies and NGOs, the Caribbean Conservation Association and the Eastern Caribbean Natural Areas Management Program or EC-NAMP (Putney, Jackson and Renard, this volume).

Finally, improving the biogeographic classification system, completing the protected areas inventory and characterizing the degree of effective management will go a long way toward providing a more solid base for answering several other key questions concerning parks and protected areas in the realm: have the most appropriate areas been selected as reserves? Are the protected areas of the most appropriate size, shape and distribution? Are they contributing to sustained development? More intensive review at country or subregional level as part of systems and strategy planning will be necessary to more fully answer those questions for the realm.

4. FACTORS WHICH HAVE IMPEDED THE ESTABLISHMENT AND EFFECTIVE MANAGEMENT OF PROTECTED AREAS

As apparently is the case for most other realms, particularly for the ones covering the tropics, there are a number of key factors, which can be summarized as follows (not listed necessarily in order of priority):

- Virtual total lack of planned and implemented subsystems and individual units, other than of national parks and equivalent protected areas; i.e. particularly of multiple use management areas,

- anthropological reserves, protected landscapes, biosphere reserves, wildlife refuges and similar categories, and their equivalents in marine zones;
- poorly developed methodologies and technologies for the planning and implementation of those categories and subsystems indicated above, including the research needed to develop those technologies;
- lack of adequately developed methodologies for the strategic planning and implementation of complete national protected area systems, including all potential management categories;
- severe problems with the implementation of systems/subsystems plans and strategies and management plans for individual areas, even when they exist; and, likewise, similar problems with the organization of management agencies to effectively fulfil their responsibilities;
- general lack of clear and explicit government policies which support the establishment, management and development of broad-based national protected areas systems and units, as part of the general development process;
- excessive competition or at least lack of collaboration between institutions involved in the planning and implementation of such systems and units;
- lingering antagonism and lack of collaboration between conservationists and other key disciplines such as foresters, agronomists, engineers and others;
- insufficient quantities of experienced and trained personnel; and
- inadequate funding and similar support.

Each of these could be developed into a full-fledged separate paper, and several have been before. However, let us briefly examine several which have not been so treated:

4.1. Planning and implementation of other management categories

There is very little in the way of experience and developed technologies for the planning and on-the-ground implementation of systems and individual units of virtually all the management categories other than national parks and similar categories such as scientific reserves and natural monuments. The fact that most of the countries in the region have established or are in the process of legally establishing multiple use management areas (forest reserves or national forests), anthropological reserves, biosphere reserves, wildlife refuges and other categories, indicates that the urgent need for such areas has taken hold in many countries and is spreading. The same has even begun in the marine area, beginning with legal establishment of parks and later of marine multiple

use areas, fisheries reserves, etc., i.e. the marine equivalents of some of the categories indicated above.

However, the huge gap is between legal establishment and on-the-ground management of such units and subsystems. This is particularly critical in the Neotropical Realm because for almost all of the countries the final decisions on how to allocate virtually all the remaining natural resources are going to be made during the next decade, at most two decades in those few countries favoured by less pressure on their natural resources. Most of these irreversible decisions will have been made and implemented by the time the next World Park Congress convenes.

The critical need therefore is to design, test, improve and then apply on a widespread basis, methodologies for the planning and on-the-ground implementation of those "other" management categories. Although there is always room for improvement, such well-proven methodologies exist, are well-known and are widely used in the realm for national parks and similar categories. However, during the coming decade, without ignoring or leaving behind parks, natural monuments and scientific reserves, which always must form an important part of any well-designed wild areas system, the principal emphasis must shift to those other categories. It must start with pilot, experimental-demonstration cases and then move on to widespread use once the methodologies have been proven. Only if that is done will protected areas systems and units come to be recognized as a vital base for sound, sustained development, and in fact be such. If it does not happen, those potential areas will gradually all be destroyed irreversibly, and the parks and similar areas, seen as "green elephants", will follow next.

The foregoing comments apply particularly to the case for multiple use management areas (national forests or forest reserves), biosphere reserves and anthropological reserves, and the equivalents of the first two in marine areas.

The first attempts at solving this problem have begun in the past few years in the realm. In Central America, the first General Management and Development Plans have been developed for multiple use management areas, biosphere reserves, anthropological reserves, wildlife refuges, national recreation areas and archaeological monuments (MacFarland et al., 1982). Likewise, the first case of a planning methodology for and a plan and strategy for a national system of forest reserves and equivalent categories is being completed in Costa Rica (MacFarland et al., 1982; Alfaro, 1982). In the Eastern Caribbean, similar pilot programmes are underway, most heavily focussed on the equivalent marine protected areas management categories (Putney, Jackson and Renard, this volume).

An important word of caution in relation to the above: basic and especially applied research is an element that is vital in developing the management technologies needed to implement all of these categories and subsystems. That is particularly true of multiple

use management areas and biosphere reserves, terrestrial or marine; managing Neotropical wet forests or most wildlife species on a sustainable production basis, for example, is largely an unknown. However, enough is known to design and test various schemes in selected habitats and communities and with selected species, in such reserves or protected areas, initially on a limited basis (which will also demonstrate certain use and positive intentions). But, in the Neotropical Realm, with a few scattered exceptions, no one is conducting such experiments yet. The same is true for marine protected areas.

4.2. Strategic planning and implementation of complete national protected areas systems

To date, the development of such systems plans and strategies at national and sub-regional level, and the methodologies to guide their preparation, have been limited in fact to subsystems involving national parks and similar categories. Those experiments have provided very useful lessons and guidelines about such methodologies and how to apply them, but the experience has been necessarily limited by the management categories included.

For most of the same reasons given in the previous subsection, during the next decade it will be critical to design, test, improve and then widely apply methodologies for preparing plans and strategies for complete national systems of protected areas, including consideration of all management categories. Without such plans and strategies, choices will be made anyway on resource use and allocation, but done so largely in a knowledge vacuum; the results in that case will not be positive and probably downright disastrous in most countries.

Such strategic plans for national systems of protected wild areas, depending on the individual country's situation, could be prepared separately or as a core part of a broader national strategy for management and use of natural and cultural resources. In either case they must feed into the national development planning processes as a core element. Initial steps have been taken to attempt such strategies in several countries of the region: St. Kitts-Nevis, Costa Rica, Nicaragua and Belize.

4.3. Implementation of plans

Most protected areas in the realm are still lacking General Management and Development Plans and most subsystems and systems are *de facto*, having no national plan and strategy. However, this problem will take considerable time to resolve. To prepare such plans, even when proven methodologies exist and when enough trained, experienced national staff is available, takes considerable time and effort and adequate financing. Worst off of all are the agencies in charge of multiple

use management areas, anthropological preserves, biosphere reserves and other such categories, because they have no plans and no experienced, trained planners plus there are no methodologies available. The problem therefore, in all these cases, is how to guide management of the areas and subsystems until plans can be prepared for the systems/subsystems and all individual units, which in most cases will take many years to complete.

However, the problem is even more complicated. As shown in the realm by the case of national parks and similar categories, fairly severe problems are encountered by management agencies in implementing both General Management and Development Plans for individual protected areas and systems plans and strategies. There are notable exceptions throughout the realm to both cases (e.g. see Jorge Padua and Ponce and Villa, this volume). Nevertheless, by far the most common situation is that such plans tend to gather dust or at best receive minimal implementation, despite the tremendous national (and frequently international technical cooperation) efforts which go into their preparation.

Added on top of these problems is the general one of relatively poor organization of operations in the management agencies at all levels.

First experimental attempts at solving these problems have been underway in Central America over the past few years. Operational Plans, i.e. short-term (usually annual or bi-annual) detailed plans, have been prepared for entire systems of parks and similar protected areas, for systems of forest reserves and related categories, for many different types of individual protected areas (national parks, forest reserves, scientific reserves, biosphere reserves, watershed protection areas, archeological monuments), and for all central office level technical and administrative departments of some management agencies. By combining all of these, an overall Operational Plan for an entire agency is produced. In almost all of these cases, several rounds of such planning (annual revisions) have been carried out, the plans have been implemented and initial evaluations have been done. The results have been very positive and led to considerably improved management of whole agencies, technical and administrative departments, entire subsystems and all their units, and individual management units. In the last case it has greatly improved establishing priorities and conducting basic or minimum protection and other types of management activities in those numerous cases where a General Management Plan did not exist, and in cases in which such a Plan did exist, its implementation was greatly improved.

More details can be found in MacFarland, Morales, and Barborak, (this volume).

4.4. Lack of cooperation between professions and management agencies

The isolation of planners or managers of protected areas in relation to other professions is an unfortunate stigma that weighs heavily against achievements and has triggered reactions such as competition for "jurisdiction" for funds, and of course for credit in the improvement of quality of life for human populations.

Is this necessary? Can it be avoided? The answers are of course no and yes, respectively. Foresters, for instance, can play an important role in joining the cause of conservation by relieving the pressure on protected areas and cooperate in conservation actions through such action as buffer zones, fuelwood plantations, restoration of degraded lands, by planting nitrogen fixing trees, enhancing traditional systems that combine trees with food plants or cattle (agroforestry): Vice versa, conservationists should cease to criticize indiscriminately many of the wood exploitation schemes, particularly if they are based on plantations—be they exotic or no—that cover lands formerly degraded by faulty agricultural practices. The criticism of *Eucalyptus globulus* in the higher Andes, or for that matter, the billion dollar industry based on pine and eucalyptus plantation in southern Brazil appear counter-productive. Needless to say, the substitution of natural forest by these species should be condemned but not so the reforestation schemes on degraded lands.

5. FACTORS WHICH HAVE ENCOURAGED THE ESTABLISHMENT AND EFFECTIVE MANAGEMENT OF PROTECTED AREAS

Again the list is very long and only a few items are summarized here:

- efficient vigilance by concerned groups;
- promotion of a continuous "presence" such as visiting scientists;
- development of effective leadership;
- outside funding and technical assistance that triggers internal action (FAO, Unesco, IUCN, WWF, etc.);
- high quality publications (and other publicity) such as the series promoted by INCAFO (Spain) in cooperation with local authors;
- successful training programmes;
- recognition of leaders and achievements through awards by outside sources, as an effective tool to back productive people;
- resolutions of the World Conferences on National Parks;
- increasingly enlightened attitudes of large funding or loan agencies; and
- meetings on conservation in the countries or subregions to trigger the setting up of new protected areas.

Again let us illustrate a few cases.

In Costa Rica, which—like many Latin American and Caribbean countries—suffers from acute economic difficulties, the administrators of a wildlife refuge and adjoining National Park (Rafael Lucas Rodriguez and Palo Verde) were ordered by the previous President of the Republic to return a considerable part of the protected area to the owner, who had not yet been compensated for his land. A local conservation organization legally blocked this action by court action, calling it unconstitutional. The court ruled against the President and the integrity of the protected areas was maintained. An efficient vigilance system and enlightened public opinion can take the credit.

In 1972 the 2nd World Congress of National Parks introduced two important suggestions pertaining to international (or frontier) parks and regional systems of national parks and other protected areas (Recommendations No. 6 and 9, respectively). Both led to concrete actions.

In 1979, the Presidents of Panama and Costa Rica formally met along the border to agree on the establishment of the "friendship park" covering over 450,000 ha of forested land along the border, with 6 biomes. The Costa Rican part of that International Park has since been legally declared and basic protection started and the Management Plan for the park and surrounding areas is being prepared in both countries. On the Costa Rican side, the Park forms part of the core area of a contiguous complex of Indian Reserves, Forest (Watershed) Protection Zones and Biological Reserves, which was recently approved as a Biosphere Reserve of some 500,000 ha.

The Resolution on regional systems led to a governmental meeting organized by IUCN in San Jose, Costa Rica, in 1974, with representatives from 6 countries, including for each, representatives of the wildland agencies, tourism organizations, cultural resources and land-use planning agencies. The very detailed resolutions which resulted have been the single most important basis for continuing action-oriented protected areas programmes in Central America since that time.

In the seventies the Central American Bank for Economic Integration has funded the development of two protected areas: Tikal and Poas National Parks. This was not small money; for the improvement of the access road and the construction of the visitation centre of Poas National Park in Costa Rica, for example, \$2 million was provided.

Conservation meetings in the countries are often an excellent opportunity to promote the declaration and establishment of new protected areas. The latest is probably the declaration of the 37,000 ha Carlos Botelho Reserve along Brazil's highly vulnerable coastal forest in the State of Sao Paulo, during a Congress on native species on 12 September 1982.

6. A SPECIAL ISSUE: INDIGENOUS POPULATIONS AND PROTECTED AREAS

The literature on this subject is usually a mixture of frustrations, recriminations and failures with no clear solution in sight. The Indian reservation, U.S. style, is not appealing. Complete isolation from other groups appears impossible in the long run. Contact with missionaries, even well-intentioned anthropologists, has its flaws. Clearly for these "ecosystem people" as they have been aptly called by Raymond Dasinann, there seems to be no choice but acculturation, whatever that implies, and many believe that our mission is to make this process as painless as possible.

It may therefore be a pleasant surprise to relate that the Kuna Indians, a group of Amerindians of northeast Panama, have recently decided, partly as a measure to avoid encroachment on their territory by land-hungry colonists, decided that the best solution is to create a large National Park (and probably eventually a Biosphere Reserve) managed and controlled by themselves, with support from the Washington-based Inter-American Foundation, AID and CATIE. The Kunas have asked us to help prepare the management plan and train their people in such things as designing a detailed interpretive plan, carried out by themselves, of the rich heritage of plants and animals as well as landscapes, and of their own culture. They visited us recently in Costa Rica and we hope that this first close cooperation between park planners and Amerindians may set an example that, provided it is successful, could establish a precedent for similar cases elsewhere.

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Table 1. Number of Protected Areas and Total Area Protected in each of the 47 Neotropical Provinces of Udvardy (1983)

Name of Province	Number of Areas	Total Area (hectares)
1 Campechean	3	62,744
2 Panamanian	6	660,902
3 Colombian Coastal	6	860,000
4 Guyanan	25	2,155,122
5 Amazonian	16	13,894,181
6 Madeiran	1	268,150
7 Serro Do Mar	7	181,016
8 Brazilian Rain Forest	14	368,028
9 Brazilian Planalto	2	15,839
10 Valdivian Forest	5	1,685,995
11 Chilean Nothofagus	4	216,014
12 Everglades	15	774,714
13 Sinaloan	5	462,994
14 Guerreran	4	65,511
15 Yucatecan	2	106,970
16 Central American	22	821,425
17 Venezuelan Dry Forest	27	1,125,798
18 Venezuelan Deciduous Forest	12	774,725
19 Ecuadorian Dry Forest	3	161,300
20 Caatinga	3	236,100
21 Gran Chaco	6	1,294,000
22 Chilean Araucaria Forest	6	153,595
23 Chilean Sclerophyll	3	34,054
24 Pacific Desert	2	360,070
25 Monte	8	1,544,491
26 Patagonian	5	99,793
27 Llanos	3	1,207,000
28 Campos Limpos	3	3,192,000
29 Sabana	1	155,000
30 Campos Cerrados	12	2,518,529
31 Argentinian Pampas	1	
32 Urugayan Pampas	9	37,293
33 Northern Andean	9	913,288
34 Colombian Montane	8	1,397,050
35 Yungas	6	558,092
36 Puna	13	1,215,183
37 Southern Andean	19	4,139,684
38 Bahamas-Bermudean	4	122,540
39 Cuban	4	24,305
40 Greater Antillean	7	220,230
41 Lesser Antillean	16	89,574
42 Revilla Gigedo Island		0
43 Cocos Island	1	3,200
44 Galapagos Islands	1	691,200
45 Fernando De Noronja Island	1	36,249
46 South Trinidade Island		0
47 Lake Titicaca	1	36,180
TOTAL	331	44,940,128

Note: These figures only include areas of over 1000 ha unless the area is an island, in which case it is included whatever the size.

Categories I to V only are included.

Table 2. Protected Areas of the Neotropical Realm (1983)

Country	Number of Areas	Total Area (hectares)
Antigua	2	2,500
Argentina	31	3,458,551
Bahamas	4	122,540
Barbados	1	250
Belize	1	4,144
Bermuda	no information available	
Bolivia	10	4,440,783
Brazil	45	10,799,673
Chile	24	3,061,699
Colombia	30	3,958,750
Costa Rica	19	407,325
Cuba	4	24,305
Dominica	1	6,840
Dominican Republic	5	219,800
Ecuador	9	1,990,200
El Salvador	no information available	
French Guiana	-	
Grenada	-	
Guadeloupe	no information available	
Guatemala	1	57,600
Republic of Guyana	1	11,655
Haiti	no information available	
Honduras	2	400,000
Jamaica	no areas over 1000 ha	
Martinique	1	70,000
Mexico	12	636,475
Montserrat (UK)	no areas over 1000 ha	
Netherlands Antilles	3	13,400
Nicaragua	2	17,300
Panama	6	660,902
Paraguay	7	1,237,538
Peru	18	4,306,499
Puerto Rico	2	430
St Lucia	1	1,600
St Vincent	no information available	
Republic of Suriname	9	582,400
Trinidad and Tobago	12	16,567
Turks and Caicos Islands (UK)	-	
U.S.A. - Florida	15	774,714
Uruguay	7	30,593
Venezuela	36	7,616,711
Virgin Islands (UK)	6	928
Virgin Islands (US)	4	7,456
TOTAL	331	44,940,128

Note: These figures only include areas of over 1000 ha unless the area is an island, in which case it is included whatever the size.

Categories I to V only are included.